SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES

Vol. XIX.—No. 10. [NEW SERIES.] NEW YORK, SEPTEMBER 2, 1868. $3 per Annum. [IN ADVANCE.]

Improvement in Hand Planing.

Rotary cutters are extensively used for trueing lumber—getting it out of wind, removing occasional inequalities, etc.,—but none of them leave the stock with a smooth surface; that must be obtained by the hand plane. This is one of the instances in which hand work is superior to machinery. But there is a great difficulty in securing perfect joints (edges) by hand planing, especially on long pieces, as the direction of the "bit" or cutter of the plane is guided wholly by the hand of the workman, assisted by his eye and the use of the trying square frequently applied. Of course, this compels such constant care that the work of trueing up is a slow process, as it depends wholly upon the skill of the workman. When the piece to be jointed is of considerable length the difficulty of making a uniform joint is increased, as in that case the workman must himself move along the side of the bench, the motion of his body being liable to change the direction of the plane as his criterion of correctness is continually changing with every change in his position.

Under such circumstances it is almost impossible for the workman, however skillful and experienced, to carry a perfectly steady hand and produce perfectly exact work.

The object of the devices illustrated in the accompanying engravings is to obviate these difficulties and to insure perfection of work with rapidity and the smallest expenditure of time and labor. It consists mainly in an attachment to the side of the plane stock which guides the bottom and side of the plane and can be set at any angle to produce the bevel desired. Fig. 1 shows its use in edging a board or plank, giving either a square or an angular inclination to the edge. Fig. 2, a transverse vertical section, and Fig. 3, a perspective view of the device attached, show the appearance and the action of the contrivance. Fig. 4 represents a holding board for edging strips at any angle of the edge. The board, A, is secured in the vise at one end and rests on a pin at the other as usual when edging a board or plank, or it may be permanently fastened to a bench. The adjustable guide board, B, is secured to the board, A, by bolts, C, the heads of which traverse in angular slots, D, by which the guide board may be raised and secured at any hight required for the width of the strips. These strips are held firmly against the guide board, B, by bnttons, E, and pivoted wedges, F. In Fig. 2 three strips, G, are seen as held on the board or rest and being operated upon by a common jack-plane. This plane has secured to its guide side—that nearest the workman—a strip, H, held by screws at either end of the plane working in adjustable slots, so the strip can be raised or lowered as desired. Its edge rests on the guide board, and its projection below the face of the plane is intended to leave enough of stock to be removed by the jointer, without touching the guide board.

Fig. 1.

Fig. 2

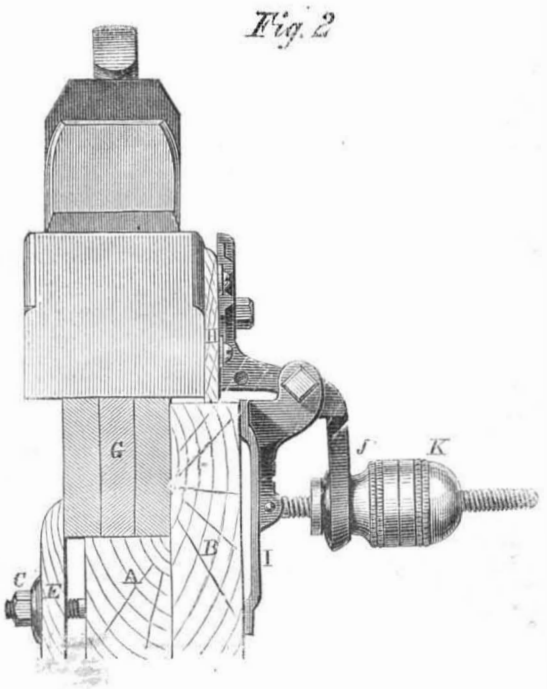


Fig. 3

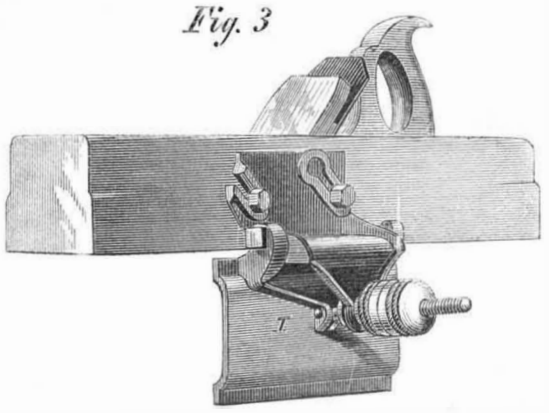
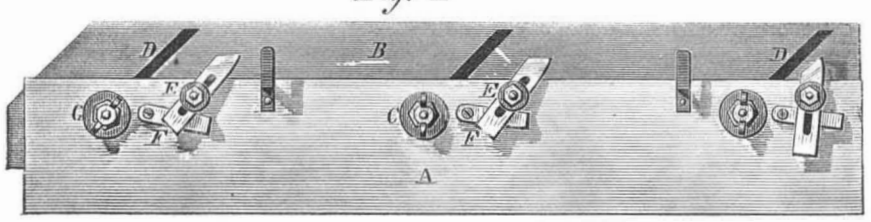


Fig. 4



WOODVILLE'S SQUARE AND PATENT LEVEL ATTACHMENT TO PLANES.

The device for guiding the plane is the attachment seen very plainly in Figs. 2 and 3. In Fig. 2 the contrivance is represented in vertical transverse section, and in Fig. 3 in perspective. The guide or movable part, I, is made of malleable iron, or some other metal, with planed faces bearing against the facing board, B. The bearing of these metal faces is determined by the action of the combined adjusting and check nuts, J and K, which serve to adjust the direction of the guide, I, so that it may be set to any bevel or angle required, and be always a guide to the direction of the face or bottom of the plane. The device or guide that gives direction to the plane may be easily detached or as easily attached by means of angular slots through which pass bolts screwed into the stock of the plane.

By the use of this attachment the workman has only to note his progress by the scribe mark or gage, there being no necessity of continually resorting to the test of the try-square or bevel. The guide can be set to square or bevel as easily as any piece of work may be so gaged. It is not only useful in ordinary work, but will be found to be specially adapted to the use of tank builders, ship joiners, and millwrights.

Patented by John Woodville, Nov. 6, 1866, who may be addressed at Cincinnati, Ohio. Orders may also be sent to his agent, John L. Frisbie, at 50 John street, New York city.

Teaching by Machinery.

Mr. Alfred Long has delivered a series of lectures before the Royal Polytechnic Institution of London, upon the use of a machine for purposes of instruction in languages and music, which is really a species of language. He calls his invention a "metabolical machine," which to those having rhyming tendencies is singularly suggestive. No doubt this machine might be advantageously substituted for many of the human machines called teachers which are so extensively employed at present in the work of education. The metabolical machine is a contrivance for enabling children and others to acquire a knowledge of languages, music, etc., in a much shorter time than they could do so, we are told, without its use. Its action is based upon a principle professed by Mr. Prendergast, which enacts that, in order to acquire a language promptly a small number of words should be chosen at first and presented to the child in every possible kind of arrangement, until he has thoroughly mastered them. The metabolical machine is an ingenious piece of mechanism, capable of being made at a very moderate cost. It consists of a series of cubes inclosed in a box with a glass side; on these cubes are written the words (or notes, in case of music) which it is intended the child shall learn, and then by turning the handle of the machine the words appear in various arrangements, and are read off each time, or translated as they appear, by the pupils.

Coating of Cast Iron.

Herr W. Lieke, of Hanover, has made a series of practical experiments upon the various processes for covering cast iron with a protecting varnish. The author's observations were made with the view of discovering some new method of protecting cast iron objects from oxidation or rust when exposed to the damp atmosphere. In the first place, he observed that "zinc dust," which is now extensively produced as a waste product of zinc furnaces, can be applied with considerable advantages. Half an ounce of this zinc dust mixed with one ounce of oil varnish, and rubbed several times upon one square foot of cast iron will, he finds, preserve the metal from rust in a variety of circumstances; but it is not entirely satisfactory when the iron is subjected to soap water or other alkaline liquids.

To be effective against the action of these solutions, the iron must be coated with two parts of waterglass (silicate of soda), employed in solution, marking 20° Baumé, and one part of zinc oxide intimately mixed together. This material, laid on as a thick varnish, gives the iron a kind of enameled appearance, and the protective coating will not yield to soap water.

In the next place, the author has studied the various methods of coating iron with other metals, such as copper, tin, and zinc, with or without the use of galvanism. In the former case he shows that when acid baths are used for this purpose, the results are always unsatisfactory, and alkalies cannot be used without decomposing the bath. To avoid this, however, Herr Lieke advocates the use of a tartrate either as a soda or a potash salt, especially for coppering iron by means of galvanism. The best results were obtained with a solution of twenty parts of crystallized sulphate of copper in 160 parts of water, which solution is mixed with fifty parts of neutral tartrate of potash dissolved in 650 parts of caustic soda solution of 1·12 specific gravity.

GREEN COLOR FOR SWEETMEATS.—A beautiful green color, devoid of poisonous properties, economical, and useful for confectioners, can be obtained as follows: 5 grs. of saffron are shaken up with ¼ oz. of distilled water, and the mixture allowed to stand 24 hours; at the same time, 4 grs. of indigo carmine are shaken up with ½ oz. of distilled water, and the mixture also allowed to stand for 24 hours. At the end of this time the two solutions are mixed together, which produce a very fine green solution, capable of coloring no less than 5 lbs. of sugar.

From the Atlantic Monthly for August.

WILL THE COMING MAN DRINK WINE?

Continued from page 131.

Of all the experiments which have yet been undertaken with a view to trace the course of alcohol through the human system, the most important were those made in Paris a few years ago by Professors Lallemand, Perrin, and Duroy, distinguished physicians and chemists. Frenchmen have a way of coöperating with one another, both in the investigation of scientific questions and in the production of literature, which is creditable to their civilization and beneficial to the world. The experiments conducted by these gentlemen produced the remarkable effect of causing the editor of a leading periodical to confess to the public that he was not infallible. In 1855 the *Westminster Review* contained an article by Mr. Lewes, in which the teetotal side of these questions was effectively ridiculed; but in 1861 the same periodical reviewed the work of the French professors just named, and honored itself by appending a note in which it said: "Since the date of our former article, scientific research has brought to light important facts which necessarily modify the opinions we then expressed concerning the *rôle* of alcohol in the animal body." Those facts were revealed or indicated in the experiments of Messrs. Lallemand, Perrin, and Duroy.

Ether and chloroform—their mode of operation; why and how they render the living body insensible to pain under the surgeon's knife; what becomes of them after they have performed that office—these were the points which engaged their attention, and in the investigation of which they spent several years. They were rewarded at length with the success due to patience and ingenuity. By the aid of ingenious apparatus, after experiments almost numberless, they felt themselves in a position to demonstrate, that, when ether is inhaled, it is immediately absorbed by the blood, and by the blood is conveyed to the brain. If a surgeon were to commit such a breach of professional etiquette as to cut off a patient's head at the moment of complete insensibility, he would be able to distill from the brain a great quantity of ether. But it is not usual to take that liberty except with dogs. The inhalation, therefore, proceeds until the surgical operation is finished, when the handkerchief is withdrawn from the patient's face, and he is left to regain his senses. What happens then? What becomes of the ether? These learned Frenchmen discovered that most of it goes out of the body by the road it came in at—the lungs. It was breathed in; it is breathed out. The rest escapes by other channels of egress; it all escapes, and it escapes unchanged! That is the point; it escapes without having *left* anything in the system. All that can be said of it is, that it entered the body, created morbid conditions in the body, and then left the body. It cost these patient men years to arrive at this result; but any one who has ever had charge of a patient that has been rendered insensible by ether will find little difficulty in believing it.

Having reached this demonstration, the experimenters naturally thought of applying the same method and similar apparatus to the investigation of the effects of alcohol, which is the fluid nearest resembling ether and chloroform. Dogs and men suffered in the cause. In the moisture exhaled from the pores of a drunken dog's skin, these cunning Frenchmen detected the alcohol which had made him drunk. They proved it to exist in the breath of a man, at six o'clock in the evening, who had drank a bottle of claret for breakfast at half-past ten in the morning. They also proved that at midnight the alcohol of that bottle of wine was still availing itself of other avenues of escape. They proved that when alcohol is taken into the system in any of its dilutions—wine, cider, spirits, or beer—the whole animal economy speedily busies itself with its expulsion, and continues to do so until it has expelled it. The lungs exhale it; the pores of the skin let out a little of it; the kidneys do their part, and by whatever other road an enemy can escape, it seeks the outer air. Like ether, alcohol enters the body, makes a disturbance there, and goes out of the body, leaving it no richer than it found it. It is a guest that departs, after giving a great deal of trouble, without paying his bill or "remembering" the servants. Now, to make the demonstration complete, it would be necessary to take some unfortunate man or dog, give him a certain quantity of alcohol—say one ounce—and afterward distill from his breath, perspiration, etc., the whole quantity that he had swallowed This has not been done; it never will be done; it is obviously impossible. Enough has been done to justify these conscientious and indefatigable inquirers in announcing, as a thing susceptible of all but demonstration, that alcohol contributes to the human system nothing whatever, but leaves it undigested and wholly unchanged. They are fully persuaded (and so will you be, reader, if you read their book) that, if you take into your system an ounce of alcohol, the whole ounce leaves the system within 48 hours, just as good alcohol as it went in.

There is a boy in Pickwick who swallowed a farthing. "Out with it," said the father; and it is to be presumed—though Mr. Weller does not mention the fact—that the boy complied with a request so reasonable. Just as much nutrition as that small copper coin left in the system of that boy, plus a small lump of sugar, did the claret which we drank yesterday deposit in ours; so, at least, we must infer from the experiments of Messrs. Lallemand, Perrin, and Duroy.

The Coming Man, then, so long as he enjoys good health—which he usually will from infancy to hoary age—will *not* drink wine, nor, of course, any of the coarser alcoholic dilutions. To that unclouded and fearless intelligence, science will be the supreme law; it will be to him more than the Koran is to a Mohammedan, and more than the Infallible Church is to the Roman Catholic. Science, or, in other words, the law of God as revealed in nature, life, and history, and as ascertained by experiment, observation, and thought—this will be the teacher and guide of the Coming Man.

A single certainty in a matter of so much importance is not be to despised. I can now say to young fellows who order a bottle of wine, and flatter themselves that, in so doing, they approve themselves "jolly dogs:" No, my lads, it is because you are dull dogs that you want the wine. You are forced to borrow excitement because you have squandered your natural gaiety. The ordering of the wine is a confession of insolvency. When we feel it necessary to "take something" at certain times during the day, we are in a condition similar to that of a merchant who every day, about the anxious hour of half-past two, has to run around among his neighbors borrowing credit. It is something disgraceful or suspicious. Nature does not supply enough of inward force. We are in arrears. Our condition is absurd, and, if we ought not to be alarmed, we ought at least to be ashamed. Nor does the borrowed credit increase our store; it leaves nothing behind to enrich us, but takes something from our already insufficient stock; and the more pressing our need the more it costs us to borrow.

But the Coming Man, blooming, robust, alert, and light hearted as he will be, may not be always well. If, as he springs up a mountain side, his foot slips, the law of gravitation will respect nature's darling too much to keep him from tumbling down the precipice; and, as he wanders in strange regions, an unperceived malaria may poison his pure and vivid blood. Some generous errors, too, he may commit (although it is not probable), and expend a portion of his own life in warding off evil from the lives of others. Fever may blaze even in his clear eyes; poison may rack his magnificent frame, and a long convalescence may severely try his admirable patience. Will the Coming Man drink wine when he is sick? Here the testimony becomes contradictory. The question is not easily answered.

One valuable witness on this branch of the inquiry is the late Theodore Parker. A year or two before his lamented death, when he was already struggling with the disease that terminated his existence, he wrote for his friend, Dr. Bowditch, "the consumptive history" of his family from 1634, when his stalwart English ancestor settled in New England. The son of that ancestor built a house in 1664, upon the slope of a hill which terminated in "a great fresh meadow of spongy peat," which was "always wet all the year through," and from which "fogs could be seen gathering toward night of a clear day." In the third generation of the occupants of this house consumption was developed, and carried off eight children out of eleven, all between the ages of sixteen and nineteen. From that time consumption was the bane of the race, and spared not the offspring of parents who had removed from the family seat into localities free from malaria. One of the daughters of the house, who married a man of giant stature and great strength, became the mother of four sons. Three of these sons, though settled in a healthy place and in an innoxious business, died of consumption between 20 and 25. But the fourth son became intemperate—drank great quantities of New England rum. He did *not* die of the disease, but was 55 years of age when the account was written, and then exhibited no consumptive's tendency! To this fact Mr. Parker added others:

"1. I know a consumptive family living in a situation like that I have mentioned for, perhaps, the same length of time, who had four sons. Two of them were often drunk, and always intemperate,—one of them as long as I can remember; both consumptive in early life, but now both hearty men from sixty to seventy. The two others were temperate, one drinking moderately, the other but occasionally They both died of consumption, the eldest not over forty-five.

"2d. Another consumptive family, in such a situation as has been already described, had many sons and several daughters. The daughters were all temperate, married, settled elsewhere, had children, died of consumption, bequeathing it also to their posterity. But five of the sons, whom I knew, were drunkards—some, of the extremest description; they all had the consumptive build, and in early life showed signs of the disease; but none of them died of it; some of them are still burning in rum. There was one brother temperate, a farmer, living in the healthiest situation. But I was told he died some years ago of consumption."

To these facts must be added one more woeful than a thousand such—that Theodore Parker himself, one of the most valuable lives upon the Western Continent, died of consumption in his 50th year. The inference which Mr. Parker drew from the family histories given was the following: "Intemperate habits (where the man drinks a pure, though coarse and fiery liquor, like New England rum) tend to check the consumptive tendency, though the drunkard, who himself escapes the consequences, may transmit the fatal seed to his children."

There is not much comfort in this for topers; but the facts are interesting and have their value. A similar instance is related by Mr. Charles Knight; although in this case the poisoned air was more deadly, and more swift to destroy. Mr. Knight speaks in his Popular History of England, of the "careless and avaricious employers" of London, among whom, he says, the master-tailors were the most notorious. Some of them would "huddle sixty or eighty workmen close together, nearly knee to knee, in a room fifty feet long by twenty feet broad, lighted from above, where the temperature in summer was thirty degrees higher than the temperature outside. Young men from the country fainted when they were first confined in such a life-destroying prison; the maturer ones *sustained themselves by gin*, till they perished of consumption, or typhus, or delirium tremens.

To a long list of such facts as these could be added instances in which the deadly agent was other than poisoned air—excessive exertion, very bad food, gluttony, deprivation. During the war I knew of a party of cavalry who, for three days and three nights, were not out of the saddle fifteen minutes at a time. The men consumed two quarts of whisky each, and all of them came in alive. It is a custom in England to extract the last possible five miles from a tired horse, when those miles *must* be had from him, by forcing down his most unwilling throat a quart of beer. It is known, too, that life can be sustained for many years in considerable vigor, upon a remarkably short allowance of food, provided the victim keeps his system well saturated with alcohol. Travelers across the plains to California tell us that, soon after getting past St. Louis, they strike a region where the principal articles of diet are saleratus and grease, to which a little flour and pork are added, upon which, they say, human life cannot be sustained unless the natural waste of the system is retarded by "preserving" the tissues in whisky. Mr. Greeley, however, got through alive without resorting to this expedient, but he confesses in one of his letters that he suffered pangs and horrors of indigestion.

All such facts as these—and they could be collected in great numbers—indicate the real office of alcohol in our modern life: *It enables us to violate the laws of nature without immediate suffering and speedy destruction.*. This appears to be its chief office, in conjunction with its ally, tobacco. Those tailors would have soon died or escaped but for the gin; and those horsemen would have given up and perished but for the whisky. Nature commanded those soldiers to rest, but they were enabled, for the moment, to disobey her. Doubtless nature was even with them afterward; but, for the time, they *could* defy their mother great and wise. Alcohol and tobacco supported them in doing wrong. That is their part—their *rôle*, as the French investigators term it—in the present life of the human race.

Dr. Great Practice would naturally go to bed at ten o'clock, when he comes in from his evening visits. It is his cigar that keeps him up till twelve and a half, writing those treatises which make him famous, and shorten his life. Lawyer Heavy Fee takes home his papers, pores over them till past one, and then depends upon whisky to quiet his brain and put him to sleep. Young Bohemian gets away from the office of the morning paper which enjoys the benefits of his fine talents at three o'clock. It is two mugs of lager beer which enable him to endure the immediate consequences of eating a supper before going home. This is mad work, my masters; it is respectable suicide, nothing better.

There is a paragraph now making the grand tour of the newspapers, which informs the public that there was a dinner given the other evening in New York, consisting of twelve courses, and kept the guests five hours at the table. For five hours, men and women sat consuming food, occupying half an hour at each vivand. What could sustain human nature in such an amazing effort? What could enable them to look into one another's faces without blushing scarlet at the infamy of such a waste of time, food, and digestive force? What concealed from them the iniquity and deep vulgarity of what they were doing? The explanation of this mystery is given in the paragraph that records the crime: "There was a different kind of wine for each course."

Even an ordinary dinner party—what mortal could eat it through, or sit it out, without a constant sipping of wine to keep the brain muddled, and lash his stomach to unnatural exertion. The joke of it is, that we all know and confess to one another how absurd such banquets are, and yet few have the courage and humanity to feed their friends in a way which they can enjoy, and feel the better for the next morning.

When I saw Mr. Dickens eating and drinking his way through the elegantly bound book which Mr. Delmonico substituted for the usual bill of fare at the dinner given by the Press last April to the great artist—a task of three hours' duration—when, I say, I saw Mr. Dickens thus engaged, I wondered which banquet was the furthest from being the right thing, the one to which he was then vainly trying to do justice, or the one of which Martin Chuzzlewit partook, on the day he landed in New York, at Mrs. Pawkins's boarding-house. The poultry, on the latter occasion, "disappeared as if every bird had had the use of its wings, and had flown in desperation down a human throat. The oysters, stewed and pickled, leaped from their capacious reservoirs, and slid by scores into the mouths of the assembly. The sharpest pickles vanished, whole cucumbers at once, like sugar plums, and no man winked his eye. Great heaps of indigestible matter melted away as ice before the sun. It was a solemn and an awful thing to see" Of course, the company adjourned from the dining-room to "the bar room in the next block," where they imbibed strong drink enough to keep their dinner from prostrating them.

The Delmonico banquet was a very different affair. Our public dinners are all arranged on the English system; for we have not yet taken up with the fine, sweeping principle that whatever is right for England is wrong for America. Hence, not a lady was present! Within a day's journey of New York there are about thirty ladies who write regularly for the periodical press, beside as many more, perhaps, who contribute to it occasionally. Many editors, too, derive constant and important assistance, in the exercise of their profession, from their wives and daughters, who read books for them, suggest topics, correct errors, and keep busy editors in mind of the great truth that more than one half of the human race is female. Mrs. Kemble, who had a treble claim to a seat at that table, was not many miles distant. Why were none of these gifted ladies present to grace and enliven the scene? The true answer is: *Wine and smoke!* Not *our* wine and smoke, but those of our British ancestors who invented public dinners. The hospitable young gentlemen who

had the affair in charge would have been delighted, no doubt, to depart from the established system, but hardly liked to risk so tremendous an innovation on an occasion of so much interest. If it had been put to the vote (by ballot), when the company assembled, shall we have ladies or not? all the hard drinkers, all the old smokers, would have furtively written "not" upon their ballots. Those who drink little wine, and do not depend upon that little; those who do not smoke, or can easily dispense with smoke—would have voted for the ladies; and the ladies would have carried the day by the majority, it is so hard to get—two-thirds.

It was a wise man who discovered that a small quantity of excellent soup is a good thing to begin a dinner with. He deserves well of his species. The soup allays the hungry savage within us, and restores us to civilization, and to one another. Nor is he to be reckoned a traitor to his kind who first proclaimed that a little very nice and dainty fish, hot and crisp from the fire, is a pleasing introduction to more substantial viande. Six oysters upon their native shell, fresh from their ocean home, and freshly opened, small in size, intense in flavor, cool, but not too cold, radiating from a central quarter of a lemon—this, too, was a fine conception, worthy of the age in which we live. But in what language can we characterize aright the abandoned man who first presumed to tempt Christians to begin a repast by partaking of all three of these—oysters, soup, and fish? The object is defeated. The true purpose of these introductory trifles is to appease the appetite in a slight degree, so as to enable us to take sustenance with composure and dignity, and dispose the company to conversation. When a properly constituted person has eaten six oysters, a plate of soup, and the usual portion of fish, with the proper quantities of potatoes and bread, he has taken as much sustenance as nature requires. All the rest of the banquet is excess; and being excess, it is also a mistake; it is a diminution of the sum total of pleasure which the repast was capable of affording. But when Mr. Delmonico had brought us successfully so far on our way through his book; when we had consumed our oysters, our cream of asparagus in the Dumas style, our kettle-drums in the manner of Charles Dickens, and our trout cooked so as to do honor to Queen Victoria, we had only picked up a few pebbles on the shore of the banquet, while the great ocean of food still stretched out before us illimitable. The fillet of beef, after the manner of Lucullus, the stuffed lamb, in the style of Sir Walter Scott, the cutlets, à la Fenimore Cooper, the historic pâtés, the sighs of Mantalini, and a dozen other efforts of Mr. Delmonico's genius, remained to be attempted.

No man would willingly eat or sit through such a dinner without plenty of wine, which here plays its natural part—supporting us in doing wrong. It is the wine which enables people to keep on eating for three hours, and to cram themselves with highly concentrated food without rolling on the floor in agony. It is the wine which puts it within our power to consume, in digesting one dinner, the force that would suffice for the digestion of three.

On that occasion Mr. Dickens was invited to visit us every twenty-five years "for the rest of his life," to see how we are getting on. The Coming Man may be a guest at the farewell banquet which the press will give to the venerable author in 1893. That banquet will consist of three courses, and, instead of seven kinds of wine and various brands of cigars, there will be at every table its due proportion of ladies, the ornaments of their own sex, the instructors of ours, the boast and glory of the future Press of America.

Wine, ale, and liquors, administered strictly as medicine—what of them? Doctors differ on the subject, and known facts point to different conclusions. Distinguished physicians in England are of the opinion that Prince Albert would be alive at this moment if no wine had been given him during his last sickness; but there were formerly those who thought that the Princess Charlotte would have been saved, if, at the crisis of her malady, she could have had the glass of port wine which she craved and asked for. The biographers of William Pitt, Lord Macaulay among them, tell us that at fourteen that precocious youth was tormented by inherited gout, and that the doctors prescribed a hair of the same dog which had bitten his ancestor from whom the gout was derived. The boy, we are told, used to consume two bottles of port a day; and, after keeping up the regimen for several months, he recovered his health, and retained it until, at the age of forty-seven, the news of Ulm and Austerlitz struck him mortal blows. Prof. James Miller, of the University of Edinburgh, a decided teetotaler, declares for wine in bad cases of fever; but Dr. R. T. Trall, another teetotaler, says that during the last twenty years he has treated hundreds of cases of fevers on the cold-water system, and "not yet lost the first one;" although, during the first ten years of his practice, when he gave wine and other stimulants, he lost "about the usual proportion of cases." The truth appears to be that, in a few instances of intermittent disease, a small quantity of wine may sometimes enable a patient who is at the low tide of vitality to anticipate the turn of the tide, and borrow at four o'clock enough of five o'clock's strength to enable him to reach five o'clock. With regard to this daily drinking of wine and whisky, by ladies and others, for mere debility, it is a delusion. In such cases, wine is, in the most literal sense of the word, a mocker. It seems to nourish, but does not; it seems to warm, but does not; it seems to strengthen, but does not. It is an arrant cheat, and perpetuates the evils it is supposed to alleviate. * * * * * * * *

We drinkers have been in the habit, for many years, of playing off the wine countries against the teetotaler; but even this argument fails when we question the men who really know the wine countries. Alcohol appears to be as pernicious to man in Italy, France, and Southern Germany, where little is taken except in the form of wine, as it is in Sweden, Scotland, Russia, England, and the United States, where more fiery and powerful dilutions are usual. Fenimore Cooper wrote: "I came to Europe under the impression that there was more drunkenness among us than in any other country, England, perhaps, excepted. A residence of six months in Paris changed my views entirely; I have taken unbelievers with me into the streets, and have never failed to convince them of their mistake in the course of an hour. * * * On one occasion a party of four went out with this object; we passed thirteen drunken men within a walk of an hour; many of them were so far gone as to be totally unable to walk. * * * In passing between Paris and London, I have been more struck by drunkenness in the streets of the former than in those of the latter." Horatio Greenough gives similar testimony respecting Italy: "Many of the more thinking and prudent Italians abstain from the use of wine; several of the most eminent of the medical men are notoriously opposed to its use, and declare it a poison. One fifth, and sometimes one fourth, of the earnings of the laborers are expended in wine."

I have been surprised at the quantity, the emphasis, and the uniformity of the testimony on this point. Close observers of the famous beer countries, such as Saxony and Bavaria, where the beer is pure and excellent, speak of this delicious liquid as the chief enemy of the nobler faculties and tastes of human nature. The surplus wealth, the surplus time, the surplus force of those nations are chiefly expended in fuddling the brain with beer Now, no reader of this periodical needs to be informed that the progress of man, of nations, and of men depends upon the use they make of their little surplus. It is not a small matter, but a great and weighty consideration, the cost of these drinks in mere money. We drinkers must make out a very clear case in order to justify such a country as France in producing a billion and a half of dollars worth of wine and brandy per annum.

The teetotalers, then, are right in their leading positions, and yet they stand aghast, wondering at their failure to convince mankind. Mr. E G. Delevan writes from Paris within these few weeks: "When I was here thirty years since, Louis Philippe told me that wine was the curse of France; that he wished every grape vine was destroyed, except for the production of food; that total abstinence was the only true temperance; but he did not believe there were fifteen persons in Paris who understood it as it was understood by his family and myself; but he hoped from the labors in America, in time, an influence would flow back upon France that would be beneficial. I am here again after the lapse of so many years, and, in place of witnessing any abatement of the evil, I think it is on the increase, especially in the use of distilled spirits."

The teetotalers have always underrated the difficulty of the task they have undertaken, and misconceived its nature. It is not the great toe that most requires treatment when a man has the gout, although it is the great toe that makes him roar. When we look about us, and consider the present physical life of man, we are obliged to conclude that the whole head is sick and the whole heart is faint. Drinking is but a symptom that reveals the malady. Perhaps if we were all to stop guzzling suddenly, without discontinuing our other bad habits, we should rather lose by it than gain. Alcohol supports us in doing wrong! It prevents our immediate destruction. The thing for us to do is to strike at the causes of drinking, to cease the bad breathing, the bad eating, the bad reading, the bad feeling, and bad thinking, which in a sense, necessitate bad drinking. For some of the teetotal organizations might be substituted Physical Welfare Societies. * *

NAVAL DEFENCES.

Col. Jervois, R. E., in a recent paper contributed to United Service Institution, makes the following remarks in regard to the use of torpedoes fer harbor defence:

The successful results attending the employment of torpedoes as engines, both of attack and defence, by the Americans, and more especially by the Confederates in the recent war, have attracted considerable attention to these engines of destruction. Though the means at command were limited, and the arrangements generally of very crude description, there are official records of the destruction of no less than twenty-four ships of the Federal States, and of the injury of nine others, by means of torpedoes. The progress made in the application of these mines during the civil war in America, is shown by the fact that, while in the year 1862 only one Federal vessel was destroyed, in the first four months of the year 1865 eleven were destroyed or sunk, and four injured.

If it is considered that the area of water or passage to be defended may be perfectly closed against friendly vessels without disadvantage, the employment of torpedoes which are exploded by self-acting mechanical contrivances present advantages over torpedoes which are exploded by electricity, as being less costly, and more expeditiously placed in position.

This class of explosive machines would be of a size to contain about one hundred and fifty pounds of powder, and would be so moored as to be within the range of the bottoms of vessels of small size. They can be fitted up and placed in position with great expedition, and their cost being comparatively small, their number could be so large that even the most careful search after them by the enemy would fail to render a water safe to their ships.

These mechanical torpedoes are, however, altogether inapplicable in positions where it is desired to keep the water open to friendly vessels, and to close it effectually against an enemy.

In such instances, it is indispensable that submarine mines should be arranged to be exploded by electric currents.

Electric torpedoes or mines may either be self-acting, *i. e.*, their explosion may be accomplished by the collision of a ship with them, or with a mechanical arrangement floating near the surface, and connected by an electric cable with the mine beneath; they may also be exploded at will by operators on shore, when a ship is observed to be over them or in their immediate vicinity; or they may be so arranged that the collision of a ship with the self-acting mechanism with which they are provided will instantly give a signal at the station on shore, whereupon the mine may be at once exploded by the operator at the station. Lastly, the torpedoes may, by simple means, be so arranged that they may be either exploded spontaneously by a passing ship, or at the will of the operator on shore, in the possible event of the ship not coming into contact with the self-acting trap.

The torpedoes would be placed some fathoms below the surface, and at such distances apart that the explosion of one would not seriously affect those in its vicinity. Their charges would be sufficiently large to ensure the destruction of a ship by their explosion, not merely when immediately over one of them, but even if any portion of her were within forty or fifty feet of that position. It is obvious that by arranging the torpedoes in two or more checkered lines, a vessel, even if passing harmlessly between two torpedoes in one line, must come within destructive range of a torpedo in the second or the third line. The placing of torpedoes at considerable depths, and their arrangement for optional explosion from on shore, must render it extremely difficult for an enemy to interfere with such a defensive arrangement, and such interference is impossible if the area of water defended is guarded by artillery. It is often stated that the torpedoes may be removed by night, but this objection is effectually met by lighting up the channel by the electric lights or other lights which may be employed for that purpose. The Federals used to bombard Charleston, I was going to say, by candle light. The knowledge and experience acquired within the last few years regarding the application and effects of explosive agents more destructive in their action than gunpowder, have demonstrated that some of them, and especially gun-cotton, may be advantageously employed in submarine mines. The Austrians used gun-cotton as the explosive agent in torpedoes, which were applied by them to the defence of Venice, and the results which they obtained in experiments with these indicated that a submerged charge of 40lbs. of gun-cotton produced destructive effects at least equal to those obtained with 1,000lbs. of powder. Improvements recently made by Mr. Abel, the chemist of the War Department, in the preparation of gun-cotton have led to a very considerable reduction in the space occupied by a charge of the material, and experiments with the new form of gun-cotton have demonstrated that very important advantages, both as regards destructive effect and reduction in weight and dimensions of a charge, are secured by the substitution of gun-cotton for gunpowder as the explosive agent in torpedoes.

[Col. Jervois also spoke in terms highly commendatory of Capt. Moncrieff's plan of mounting guns, as follows:]

I must now notice a very important invention with regard to gun-carriages, which, probably, will very greatly affect the construction of the parapets of open batteries, and which, though not a substitute for turrets in all cases, will afford the advantage of lateral range obtainable from turrets and guns on turn-tables or *en barbette*, without exposure of the gun to direct fire, except at the time when it is being laid and discharged.

The principle I refer to is that which has lately been so successfully dealt with by Captain Moncrieff, of the Edinburgh Militia artillery. Very ingenious suggestions, with a view of attaining the same object, have also lately been made by two officers of engineers, Lieutenant Hogg and Lieutenant Lloyd. These two last-named officers proposed to effect the object by different plans, but both by means of two guns, one counterbalancing the other, and to fire alternately.

Captain Moncrieff, in his plan, mounts the gun on a carriage with curved sides, which rock on a level platform; attached to the carriage is a counterpoise weight, rather in excess of the weight of the gun, thus enabling it to get up like a man, to fire over the parapet, while it stores up the recoil, and when fired, the gun makes, as it were, a low curtsey, and retires behind the parapet.

The great point of this invention is, that it enables us to protect guns in open batteries by a parapet unweakened by openings, and thus to have the advantage of the great lateral range of barbette batteries even at a low level above the water without exposure, except at the moment of firing; it enables us at the same time to avoid the expense of iron shields for embrasures for open batteries.

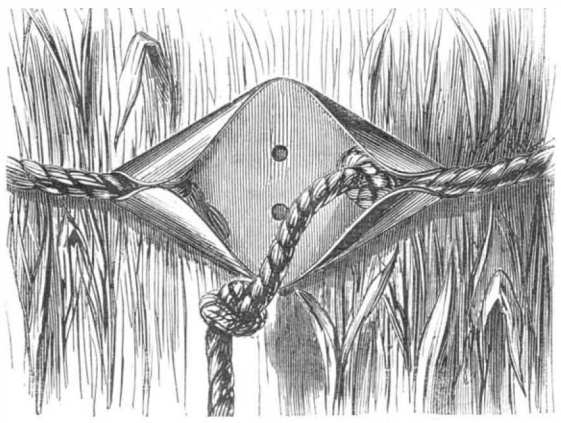
Some extra expense may probably be necessary for this gun-carriage as compared with one of the late service-pattern carriages, but I doubt the Moncrieff carriage being dearer than a muzzle-pivoting carriage (which is necessary to afford the smallest opening for an embrasure), and it is with this that its cost should be compared.

After witnessing the late experiments with this carriage, I did not hesitate at once to submit proposals for the application of the invention to several of our new works of fortification. Works constructed for carriages of this description will not afford protection against vertical fire, nor are they applicable in cases in which casemated structures are necessary.

MR. EZRA CORNELL, the celebrated founder of the Cornell University, at Ithaca, N. Y., announces publicly that young men desirous of paying their own way in obtaining an education, will be given employment upon the large farm connected with the institution, or in its machine shop, where they will be engaged in making tools, machinery, models, and patterns. Better exercise than rowing or football, more remunerative, and conducive to good habits and morals.

THUSLOW'S PATENT SHEAF BINDER AND BAG TIE.

The embarrassment of the large western wheat growers caused by the scarcity of skilled binders to follow the reaping machine and secure the crop, with the consequent exorbitant demands of the binders, led to the contrivance of the simple device herewith exhibited. It is so simple in construction and so facile in use that even a child may bind a sheaf with it. The inventor asserts that its use is a great saver of time, an important consideration in the harvesting of cereal crops, so liable to be injured by exposure to the inclemency of the weather. Not unfrequently, also, the straw is weakened by rains or its toughness impaired by the peculiarities of the soil on which the grain is grown, so that it is difficult to make a binding band of it.



The device under consideration is simply a piece of tin or other sheet metal bent in the form shown in the engraving and having attached a knotted cord which readily engages with the turned-up lips of the metal clasp. It is cheap, durable, portable, and easy of application. It is intended also, to be applied to securing the mouths of grain sacks, for which purpose it may be attached permanently to the bag by sewing it on, for which the holes seen in the face of the clasp are intended.

Patented through the Scientific American Patent Agency, June 30, 1868, by Edward Truslow, who may be addressed at 78 Maiden Lane, New York city.

HIGH HEELS, NARROW TOES, AND OTHER ABSURDITIES OF FASHION.

The medical journals, and some other papers, are making a feeble crusade against the high-heeled and narrow-toed boots now in vogue. This fashion must be creating a rich harvest for the corn doctors, and it is sure to result in a greater or less degree of permanent deformity. Especially may the latter consequence be expected, in the cases of young children. When the heel is raised, as is the prevalent custom, the bones of the thigh, pelvis, and leg as well as the foot, are thrown into abnormal positions; and while the bones retain their plasticity, the effect of such unnatural tension is sure to be perpetuated, in the shape of crooked shins, bandy legs, elephantine toe joints, and cramped ungraceful gait. Let us hope that before these evils shall have become greatly multiplied, fickle fashion may remove the cause, and give us something more sensible and endurable than these toe-screws, which are giving us the hobbling gait of Chinese women, and which possess neither beauty nor comfort.

The newspapers report that the "Grecian Bend" is all the rage at fashionable watering-places; and one correspondent actually gained the important information from an elderly female acquaintance, as to the *modus operandi* of its accomplishment. The "Grecian Bend" is an S-like curvature of the upper figure, caused by thrusting out the chest, bending forward the head, contracting the stomach, and elevating the hips, the latter effect being aided by wearing very high-heeled shoes, and an arrangement upon the hips called a *panier*, which is, most unsophisticated reader, in plain English, a bustle. The obliging matron above referred to thus discloses the mysteries of this wonderful female structure:

"The 'Grecian Bend' is quite painful and wearisome, and some girls adopt artificial contrivances to aid them in preserving the posture for several consecutive hours. 'A belt is fastened about the waist, under the skirts. From this belt, down either side the hips, two straps, furnished with buckles, descend, and are attached to strong bands made fast around the lower thighs. As the buckles of the straps are tightened, the hips are drawn up and held in position."

"'This,' said my amiable informant, 'is a relief, of course, to only one part of the frame. The construction of the upper part has to be preserved with no other aids than the stays, and those often render it the more difficult and tiresome.

"'You perhaps notice another peculiarity about some of the ladies' dresses. The bodies are not only cut very low, but are so far from clinging jealously to the figure as to seem to challenge the gaze.

"'So gracious a condescension on the part of our belles,' continued the matron, in a tone tingling with irony, 'commends them, you will surely admit, as a far more honest and unequivocating set than the haunts of fashion are used to boast of.' And, indeed, this claim might be founded upon proofs even more striking than the one alluded to. Nobody who has been entrapped here, as a spectator of the frequent displays of under-drapery on the stairways and the edges of verandas and colonnades, can doubt that many of the embroidered hose and delicate laces which adorn the limbs of the exhibitors were donned as well for beauty as for wear, and that the manner of making a graceful disclosure of them is studied as a fine art."

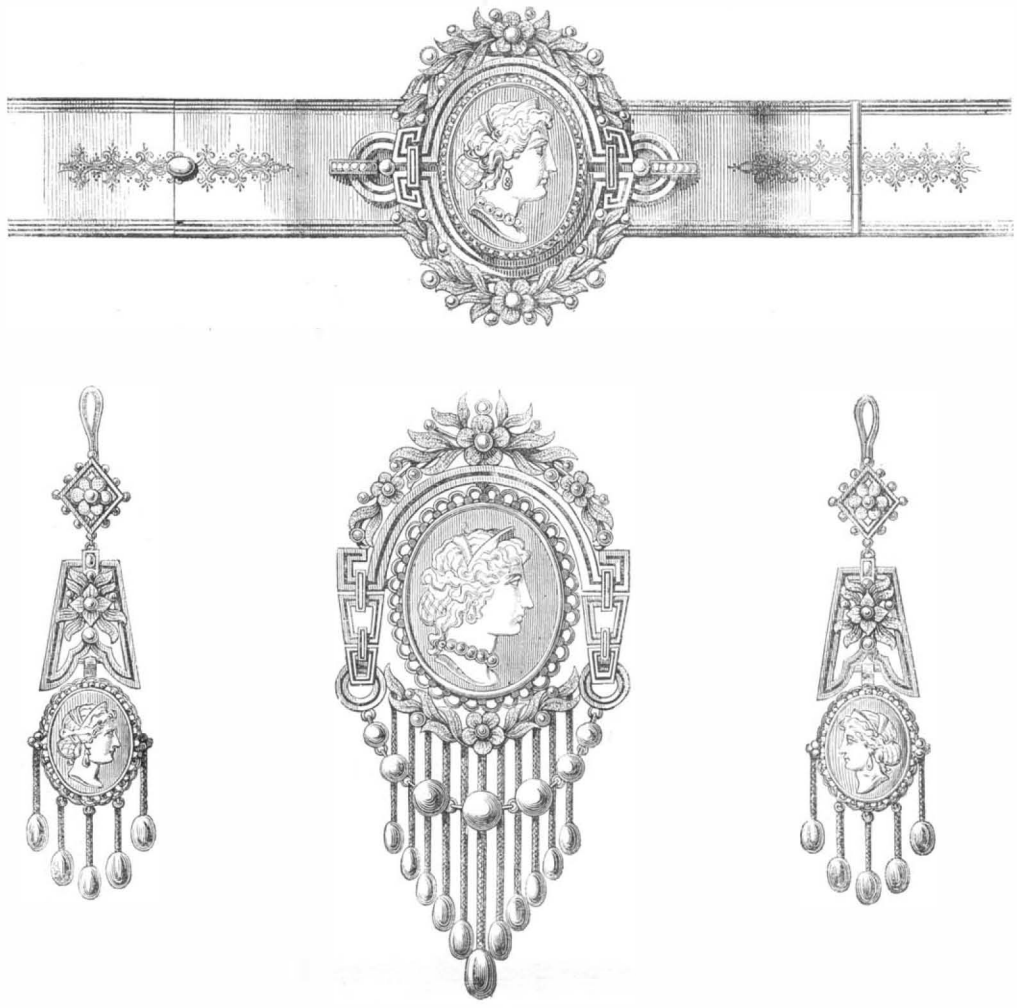
No sensible person can read this description without regret that we have no Juvenal to sing the flagrant follies (too mild a term) of the age.

Appearance of Encke's Comet.

Mr. B. T. Sands, superintendent of the United States Naval Observatory, reported to the Secretary of the Navy that Encke's comet was observed at Washington on the morning of the 13th August by Professor Hall. It was near the place predicted by Messrs. Becker and Van Asten. At 3 o'clock that morning (15h. m. t.), the comet's right ascension was 6h. 59m. and declination 30° 52m. It is about two weeks behind the time it was expected to appear. Our National Observatory has the credit of being the first to discover it this time. It is nearly in the same position that it was thirty years ago. It is now observable between 3 A. M. and daylight. It will disappear in a week or two, and then reappear in the latter part of September, when it can be seen with the naked eye from 9 o'clock in the evening until 2 o'clock in the morning.

DESIGNS FOR MODERN ARTICLES OF JEWELRY.

We herewith produce from the *Workshop* a beautiful design for a set of jewelry, comprising a Bracelet, Brooch, and Ear-



pendants, which will command the admiration of lovers of the beautiful, as well as the large number of our subscribers who are engaged in the manufacture of fine jewelry.

GREAT MACHINE TOOL-MAKERS.

William Fairbairn, the celebrated machinist, has left it on record that, when he commenced his career at the beginning of the century, the human hand performed all the work that was done. In these days, such a statement seems very strange, and the wonder is, how the craftsmen of the days of our fathers managed to get through the work they did. At the present time, in the vast majority of occupations, we have reversed the old order of things, and machinery may now be said to have superseded the use of the ten fingers, in most cases where rapidity and cheapness of manufacture are required. It is said that the first person who invented labor-saving machines was Bramah, the maker of the patent lock. He found it necessary to give the greatest exactness to every part of the ward and key of this celebrated lock. This he found very difficult to do without employing the very best workmen; and their charges were so exorbitant, that his invention was in a fair way of dropping out of use on account of expense. In this dilemma, he was forced to turn his attention to the introduction of machinery to produce with unerring nicety the different parts of the complicated little apparatus with which his name is yet associated. The workshop in which the many clever contrivances to perform this work with speed were invented, may be said to have been the training school for the early machinists, whose labors have, within the present century, built up the mechanical greatness of England. Accuracy of machine-work before his day was utterly unknown. Watt had the greatest difficulty in getting his first model of the steam engine constructed with sufficient truth to work; its cylinder was not bored, but hammered, and consequently was so imperfect that it leaked in every direction, and, when his "old white iron man" died, he was plunged into despair to obtain another skilled man. Even when he had obtained the trained workmen of the Soho Foundery, they found a difficulty at first in constructing working engines after his design. The accuracy and quality of the best workmen of the day may be gaged by what he says of the working of his steam engine: "The velocity, violence, magnitude, and horrible noise of the engine give universal satisfaction to all beholders,—believers or not." What a contrast this to the smooth, irresistible noiseless action of a steam engine of the present day, constructed with mathematical accuracy and perfect finish! But to attain these qualities, machinery had to be constructed in a wholly different manner to the methods pursued by the old smiths. Every step, in fact had to be built up. The invention of the famous fixed slide rest by Maudslay, the journeyman, who learned his trade with Bramah, was the first step in a series of inventions leading towards the same end. Before its invention, the turning lathe depended for its accuracy upon the steadiness of the muscles of the workman. If at any moment, in turning a cylinder, for instance, he leaned heavier upon the tool than another, the whole work had to be gone over again. By simply fixing the turning tool, however, this cause of error was entirely obviated, and mathematical accuracy of workmanship was obtained. Maudslay was the man who executed from the drawings of the elder Brunel the series of labor-saving machines at present at work in Portsmouth Dockyard for the manufacture of ships' blocks. These ingenious machines, forty-six in number, were only a few years ago the curiosities of the place, and may be, for aught we know, yet. They were the first ever set up in a public yard, and, though they have been at work for sixty years, they remain still in capital working order. Maudslay afterward, in conjunction with his partner Field, founded in Lambeth Marsh the famous firm which is still carried on under their names. This firm has done much towards training the splendid machinists which have made English work so famous throughout the world. We are told, indeed, that Belgium is running us hard in this kind of work,—at all events, she is underselling us in cheap locomotives; but we do not fear that any nation will excel us in really conscientious work. We are told, and we believe it, that first class machine makers cannot afford to turn out any but first class work.

Clements was another inventor who learned his art in the school of Bramah, and afterwards worked for Maudslay and Field. This clever machinist invented the planing machine, without which no perfect plane can be made. The value of such a machine is incalculable. Indeed, upon the truth of the plane depends the whole value of modern machinery. Of old, by chipping and filing, an attempt to approach the plane was made, but of course perfect accuracy was out of the question.

The fame Clements acquired by his planing machine, directed the attention of Professor Babbage to him when constructing his famous calculating machine. This instrument was, perhaps, the most wonderful specimen of mental labor-saving machine that was ever conceived. Professor Babbage, indeed, only commenced its construction, and before he had proceeded with the working drawings far, we are told that his ideas with respect to its capacity as a calculating machine developed so rapidly, that the Government became frightened. Certain portions of this curious engine were, however, furnished by Clements, and remain now, we believe, in the South Kensington Museum, as splendid fragments of mental and mechanical labor. But, although the English had not the honor of carrying out the idea conceived by one of her sons, yet it did not fall to the ground. The Messrs. Scheutz, of Stockholm, followed it out, and, after many years' labor, produced a calculating machine, a copy of which was purchased, some years since, by the British Government, and was subsequently employed in calculating a large volume of life tables, which we are assured by the authorities at Somerset House never would have been undertaken had this machine not been in existence. Everything Clements undertook he did effectually. To this day we all of us have experience of this in the steam whistle, which was invented by him.

Perhaps a still greater pupil of Maudslay was Nasmyth. This remarkable man was the son of the celebrated artist of that name, consequently he sprang of a cultivated stock.

Nevertheless, he commenced work in his master's celebrated shop at ten shillings a week, and worked his way up from the bottom to the top of the ladder in his own walk of art. This ingenious man may be said to have been called forth by Brunel's gigantic design for the Great Eastern steamship. It was originally proposed to propel this vessel by the paddle, but the shaft for this purpose would have been so large that no forging tools then in existence would have been able to turn it out. Brunel accordingly appealed for help to Nasmyth, who responded by sending a drawing, by return post, of his famous steam-hammer. It was, nevertheless, determined to substitute the screw for the paddle, and the drawing was forgotten. Some years afterwards, however, Nasmyth was visiting a celebrated iron foundery in France, and, noticing a piece of forged work that he knew could not have been accomplished by the ordinary means, was curious enough to inquire how it had been produced. The answer was, "Why, with your steam-hammer, to be sure." The Frenchman had been shown the drawing, and rightly estimating its value, he had one made. Large designs call forth large tools, and large tools, in their turn, call forth large designs. Had it not been for Nasmyth's hammer, there would have been no such things as iron-clads, neither would there have been any of the monster cannon built upon the coil system, as they are at present. The steam-hammer enables us to undertake Cyclopean tasks, which we should never have dreamed of otherwise.

The last and best known machinist of the goodly band that issued from the establishment of Messrs. Maudslay & Field is Joseph Whitworth. This celebrated iron worker improved upon Clements planing machine, in his Jim Crow planer. This machine works with a cutter, which reverses itself, cutting backward and forward without losing any time. It was at work, it will be remembered, in the Industrial exhibition of 1862. Whitworth is, perhaps, best known by his rifle gun, the rifling of which is the very perfection of art. Accuracy of work, learned by him from the traditions of the shop in which he was taught, led Whitworth to contrive various machines for the furtherance of that object. He has invented one machine which detects variations of a millionth of an inch. It is very likely that this contrivance will be but rarely used, but the influence of the practice of its inventor must have immense effect upon the trade, and help to keep up a standard of excellence which less known men, if they would succeed, will have to attain. The use of machinery has now become so general, that the perfection of workmanship is almost a necessity. Such contrivances as those we have drawn attention to, would have been beyond the reach of the simple hammer and file of our forefathers; and if the world were reduced once more to the hand of the craftsman for the production of its machinery, all its great operations would gradually be brought to a standstill. Yet it is but little more than half a century since the hand was all we had to depend upon in the world of mechanics. If the reader wishes to measure the difference between the old work and the machine work of the present day, he has only to look down the hold of any small steamer at one of Penn's marine engines, or to behold the splendid specimen on board the *Warrior* iron-clad. This engine was designed, also, by the Messrs. Penn; and the perfection of its workmanship may be estimated by the fact, that, when its five thousand pieces were assembled together for the first time, such was the mathematical accuracy of their fit, that as soon as steam was got up, it began to move with the utmost smoothness. Let the reader, we say, compare this splendid piece of work with the old Newcomen engine in the South Kensington Museum, and he will at once see the ages of mechanical genius we have traversed since Watt took the latter in hand, and by patient thought built up out of it the present steam engine. Yet it is not more than a century ago that the machine represented the most powerful motive engine we possessed, and was as fair a specimen of work as the eighteenth century could turn out. Such are the differences that have been brought about by half a dozen able men carrying out the traditions handed down by Henry Maudslay,—mere workshop traditions, which now are acted upon throughout Europe wherever the machinist's skill is known.—*Cassell's Magazine.*

SCARCITY OF PAPER MATERIAL.

The scarcity of paper stock, felt almost immediately after the inauguration of the late war, is not singular. In Bishop's "History of American Manufactures," we learn that in 1748 a similar scarcity existed in the Massachusett's Colony. Thomas Fleet, who (copying his public notice) was "Printer at the Heart and Crown, in Cornhill, Boston," advertises thus:

CHOICE PENNSYLVANIA TOBACCO PAPER TO be sold by the Publisher of this Paper (the *Boston Evening Post*), at the Heart and Crown; where may also be had the Bulls or Indulgences of the present Pope Urban VIII., either by the single Bull, Quire, or Ream, at a much cheaper rate than they can be purchased of the French or Spanish Priests.

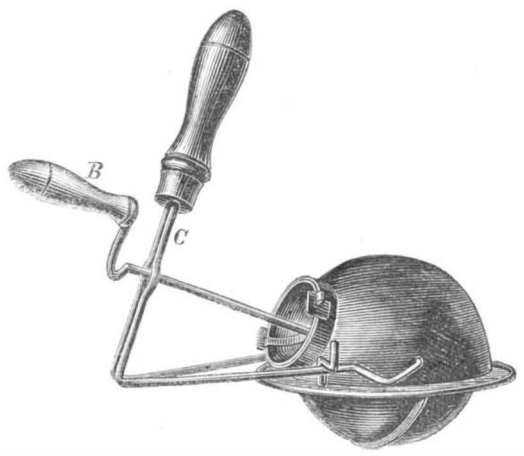
This selling of Papal indulgences and bulls, in Puritan New England, seems odd, but the facts of history account for it. Several bales of the indulgences, printed on one face or page of a small sheet of very good paper, had been taken in a Spanish ship captured by an English cruiser during the war with France and Spain in 1748, of which Mr. Fleet purchased a large quantity. He made use of them for printing ballads, the back of each copy of the bull being large enough for two songs, as "Black-Eyed Susan," etc. "To what base uses do we come at last."

In cutting some timber in Omaha, a few days since, a bullet was found imbedded in the trunk of a rock elm. The grains which had overgrown it show that it must have been deposited there sixty-two years ago, a time when the country had not yet been visited by any white men, except the explorers Lewis and Clarke.

SIMPLE DEVICE FOR ROASTING COFFEE.

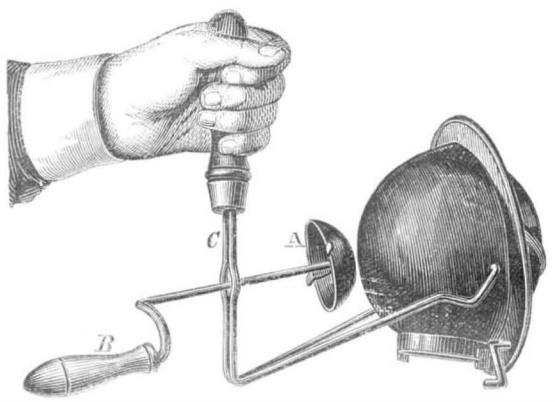
The adulterations perpetrated in the preparation of coffee ready ground for the use of the family have greatly stimulated the sale and use of household devices for the preparation of the berry. One of the best coffee roasters we have seen is that illustrated in the accompanying engravings. It is a hol-

Fig. 1



low globe of cast iron with a circular opening for the reception of the berries, closed by a convex or cup-shaped cover, A, attached to the handle, B, and furnished with lugs engaging with ears on the globe, by which the globe is revolved over the fire. This globe or receptacle turns in a hemispherical cap that is furnished with a flange fitting over the opening in the stove or range. A forked lever, C, the arms of which project on each side of the globe and act as springs, engages with catches fixed on the circular flange to hold the globe in place while being used. A simple movement of the levers, B and C, disengages the cover and reverses the globe, thus discharg-

Fig. 2

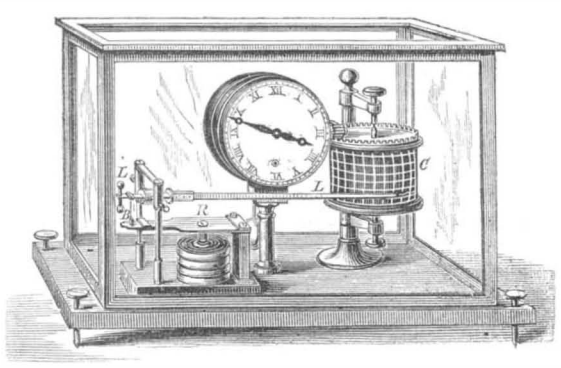


ing its contents. The action of the hand on the lever, C, removes the cover, disengages the catches, and reverses the position of the globe. While in operation, the catches of the lever, C, hold the globe in position for operation.

This improvement was patented by Fred Max Bode, through the Scientific American Patent Agency, July 28, 1868, and assigned to C. G. Mueller, No. 12 Theater Platz, Hanover, Prussia, to whom all communications should be addressed.

A NEW REGISTERING BAROMETER.

THE following is a description with an engraving of the Barometrograph, recently invented in France. We do not believe it to be as delicate as the Self-regestering and Printing Barometer invented by Prof. Hough Astronomer in Charge at



the Albany Observatory, but it seems to be less complicated and expensive.

It is usual in taking barometrical and thermometrical observations for the purpose of registration, as regards changes of weather and for foretelling weather, to take them at stated and regular intervals, so that the variations at those periods may be noted and, if required, plotted out on a chart. Indeed for obtaining quick and useful comparisons, there is nothing compared to the plan of projecting the curves of atmospheric variation on the charts specially prepared for that purpose; it enables one at a glance to see the variations of the barometer during the past day—saving the bother and calculation necessary where the observations are simply noted down as so many figures. But there is one great objection attendant upon observations of this nature; however carefully they may be recorded or described on charts, they are but observations of the time only, and show nothing more. For instance, the hight of the barometer at the two usual times of observing, in the morning and evening, are recorded, and a line drawn on the chart from the one point to the other is assumed to show the variation between those times. True, it does to some extent, but only to the extent of the difference of the two. In stormy or unsettled weather the rise and fall of the barometer may be considerable between the two periods of observation, and yet it is possible that at the two periods the observed indication will be precisely the same. The chart would consequently show an even state of pressure, whereas the opposite would be really the case. Accurate results can, therefore, only be obtained when the observations are made hourly, or, at least, at very frequent intervals. This is, as far as regards personal observation, quite impracticable for the generality of observers; and to give a true and faithful record of the variations of the barometer from minute to minute and from hour to hour we can only look to mechanical means for bringing about this much-desired result.

Among the plans suggested but very few have been ever practically carried out, and of those we have seen their great expense proves an almost insurmountable barrier to their adoption. The "barometrograph" depicted in the accompanying illustration, seems to combine simplicity with cheapness, and accuracy with ease of observation. The records are continuous and comparable, and are produced by the variations of the barometer known as the aneroid. The pressure of the atmosphere affects four metallic boxes, as in the ordinary aneroid, having their upper and under faces undulated; a vacuum is made in each of them separately, and they are attached together in one series, so that for an equivalent variation of pressure the movement is four times greater than it is for one box only. A very strong flat steel spring, R, acts upon the barometric boxes in an opposite direction to the atmospheric pressure. This spring controls the indicating lever, L L, by means of a connecting piece at the point B; this connector receives the action from the extremity of the spring and communicates it to the lever, L L, at a point very close to its axis, from whence it follows that a considerable multiplication of movements is the result.

The indications of the movements of the lever are registered in the following simple manner: A cylinder, C, is revolved by the regular movement of an ordinary pendulum time piece; it makes a complete revolution in one week, and carries a glazed paper, which has been smoked black by means of a candle. At the extremity of the lever is a very fine spring pointed at the end, which rests upon the cylinder and traces a white line upon the black ground. At the end of each week the paper is changed for a fresh one, the old one being prevented from having its record destroyed by having a coat of varnish. The whole operation takes but a little time, including the attachment in a book, or, when required, the record of one week to that of the preceeding, so that the indications might be continuous. The barometrical arrangement of this instrument is far less liable to error than the ordinary aneroid, where so many movements and acessories are required to translate the changes of the barometric box to the indicating needle on the face of the instrument. In order to render the indication recorded useful for comparison, the paper can be divided into equal parts, representing the days of the week, and again subdivided to represent the principal divisions of the day; this has been done in practice, and instruments similar to what we have just described have been in use some time, earning great approbation for the fidelity and utility of the observations recorded by them.

Reducing Tin for Coating Metals.

THE *Mechanics' Magazine* contains a description of a new method for coating metals with tin which has been recently patented in England. This invention relates to the application of the electro-plastic process for the reduction of pure tin in a metallic state of all thicknesses, so as to render it cohesive, ductile, and of such density that it may be stamped up, drawn, and rolled, and may also be deposited in molds in the same manner as copper by the galvano-plastic process, or on metals, especially lead and its alloys, for coating or plating the same. This reduction is effected whatever may be the nature of the hot or cold alkaline or acid baths used, provided that the salts, oxides, or acids of the tin employed are chemically well prepared, which is an essential condition. The tin reduced by the electro-plastic process, according to this invention, is rendered sufficiently ductile, malleable and cohesive to assume any form by chasing, embossing or engine-turning without cracking, which is the case when tin used as a plating on lead in thin sheets in ordinary use is stamped up in a similar way.

The tin produced in the manner herein described, may also be applied, first, for forming a relief surface on a plain ground for capsules, covers, and other articles for the purpose of obtaining greater firmness and a more elegant appearance. The relief surface is obtained by stamping or embossing, in the ordinary way, with a male and female die, or when the metal is sufficiently ductile only one die is needed, which would produce an impression or embossed surface in a similar manner to that made by a seal on wax; second, for reproducing figures and ornamentation, such as objects of art, or others, by embossing or stamping in imitation of metal castings by the aid of a die or dies, in the manner above described. Many attempts have been made to produce in metal trade and other distinguishing marks on the corks or stoppers of bottles and other vessels, or on other articles, either by embossing, coloring, or printing, in imitation of those produced in wax or metal capable of receiving an impression. The result has been, however, to produce an inferior impression, the design being obtained on a plain surface, and bearing but an imperfect resemblance to a wax seal.

In order to obtain a mark of a perfect nature, the inventor

first produces the design or mark in wax, and reproduces the impression on a stamp, with which he marks the various articles, their genuine character being thus insured by having the real mark on each. He also, as a substitute for the leaden seals used in the Customs, interposes a soft material between sheets of tin produced in the manner already described, and stamps them together. In this manner is produced a mark covered with tin. Instead of interposing a soft material beneath the tin, tin alone may be used, but somewhat thicker, and doubled together, afterward stamping it as before.

This improved product may also be applied for electro-chemically coating or plating lead and other metals or alloys in any thickness for making cartridge cases, percussion caps, capsules for botties and other vessels, covers used for preserves and other purposes, wrappers for eatables, and generally in all cases where pure tin and its alloys are employed. Further, for lining pipes, sheets, or ornaments or utensils of lead where tin is employed for preserving it from oxidation. Lastly, the inventor applies the electro-chemical tin, above mentioned for plating glass in imitation of silvering, and for ornamenting articles required to present a silvered effect.

Alphabet for the Blind.

REV. C. H. Carpenter American Missionary at Harpoot, Eastern Turkey, has invented a novel alphabet to be used in the instruction of blind Armenians, of which many are found in his field of labor.

"A very small round-topped tack, thrust upright into a piece of pine board, represents the first letter. The same tack inclined to the top, represents the second, and leaning to the bottom, the right hand and the left by turns, the next three. For the next four letters, one side of the tack is then cut off, and the cut portion made to face by turns the top, the bottom, the right and the left hand. The half-headed tack inclined to the top, the bottom, the right and left hand, again by turns representing the next four letters. Essentially the same course is then pursued with the next two styles of tacks, and our alphabet is ready. Other sorts of tacks and variations of them then furnish points for punctuation and the numerals, and with a good supply of tacks and a piece of soft pine board for a page, we are ready to write a chapter of the Bible or a hymn for one blind reader whose sensitive fingers will so learn to run along the line of iron and copper with such speed and assurance as are ours in reading the printed page. The page once committed to memory will be passed along to a second reader, or the tacks withdrawn and like your printer's type, used for printing another page." In this way two or three dollars' worth of tacks may be made available for printing, if he choose, all the chapters of the Bible and the hymns of the hymn book, or anything else which is needed.

NEW PUBLICATIONS.

A SYSTEM OF MINERALOGY. By James Dwight Dana, Silliman Professor of Geology and Mineralogy in Yale College, aided by George Jarvis Brush, Professor of Mineralogy and Metallurgy in the Sheffield Scientific School of Yale College. Fifth edition. Rewritten and enlarged, and illustrated with upward of six hundred wood cuts. New York: John Wiley & Son, No. 2 Clinton place.

This work might have been aptly entitled a cyclopedia of mineralogy, as it seems to comprise all the facts relating to it both in mineralogy proper and in the collateral sciences, and lacks nothing except the usual arrangement which is generally expected in a work bearing that title. The new features which we find in this edition, aside from additions necessary to bring the work up to the present standpoint of mineralogical science, are "the recognition, and the description of the different varieties of species," the adoption of the new chemical symbols in the formulas given throughout the work, and its valuable historical synonomy. The latter contains the first author and the first publication of each species, and follows with all the names it has borne in their chronological order, with much other matter of interest. Prof. Dana, in the preface to this edition, thus speaks of the recognition and description of varieties: "The first edition of this treatise, that of 1837, was written in the spirit of the school of Mohs. The multitudes of subdivisions into subspecies, varieties, and subvarieties, based largely on unimportant characters, which had encumbered the science through the earlier years of this century, and were nearly smothering the species, were thrown almost out of sight by Mohs, in his philosophic purpose to give prominence and precision to the idea of the species. Much rubbish was cleared away and the science elevated thereby; but much that was necessary to a full comprehension of minerals in their diversified states was lost sight of. In the present edition an endeavor is made to give varieties their true place; and to insure greater exactness with regard to them, the original locality of each is stated with the description." A full exposition of the new nomenclature is given in the introduction, and in the adoption of it in this edition, the foothold which it has attained in the most scientific institutions of our country is brought forcibly to view. The hydrocarbon compounds are most comprehensively treated, and the book will prove a most valuable work of reference upon this subject. The work is printed in clear bold type, and will prove one of the most valuable recent additions to scientific literature.

ANILINE AND ITS DERIVATIONS. A Treatise upon the Manufacture of Aniline and Aniline Colors, by M. Reimann, P. D. L. A. M., to which is added in an Appendix, the Report on the Coloring Matters derived from Coal Tar, by Dr. A. W. Hofmann, F. R. S. Published by John Wiley & Son, No. 2 Clinton Hall, Astor place, New York.

We published an extract from this work, entitled "The Aniline Blue," on page 102, No. 7, current volume, with some remarks commending the work. We will add to what we have already said, that further examination and reference to its pages only adds to the good opinion we at first conceived. Not only are a host of facts given relating to the manufacture of this important class of substances, but they are given in a plain and intelligible form. Without ceasing to be scientific he has made his work eminently practical. This is a rare feat of authorship and from its accomplishment we predict a brilliant success for the book.

THE LATHE AND ITS USES.

This is the title of an octavo volume of 284 pages published by John Wiley & Son, No. 2 Clinton place, New York city, which is profusely illustrated, and is one of the best compendiums of information relative to the lathe and to lathe work we have yet seen. The lathe has been elevated from a mere machine as an aid to the production of works of simple use, to the position of companion and means for employing leisure hours. Its use is one of the pleasantest occupations for a rainy day or otherwise idle hour, and may be made productive and profitable pecuniarily. The growing practice on the foot lathe in this country makes the appearance of this work timely and valuable.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

The Erie railroad company have contracted for 8,000 tuns of steel rails.

The total value of live stock and agricultural productions in the United States in 1867 was $2,507,257,065.

Recent dispatches announce another terrible colliery explosion at Jemmapes, in the province of Hainault, Belgium. Fifty-one persons were killed and a great number injured.

GEORGIA AIR LINE RAILROAD.—A bill has been introduced into the Legislature of the State of Georgia to aid in the building of the Georgia Air Line Railroad.

The number of miles of railroad in operation in this country is 20,000, and they cost $78,000,000.

POLYTECHNIC SCHOOL IN CHICAGO.—An ordinance appropriating $25,000 to aid in the establishment of a polytechnic school in Chicago was recently passed by the common council of that city.

EIGHT-HOUR LABOR.—Fifty-one buildings are being erected on the west side of the city, on which one hundred and fifty workmen are employed on the eight-hour system.

GOLD DISCOVERIES ON THE CIMAERON RIVER.—The New York *Daily Tribune* says: "The discoveries of gold on the Cimarron River, near the corners of Colorado, Kansas, New Mexico, and Texas are creating great excitement, and miners are rushing into the new diggings. The mineral belt is the same that has already been opened and worked from Montana to Mexico. There can be no doubt of the existence of valuable mines on the head waters of the Cimarron, as well as of the Canadian and other forks of the Arkansas heading in the Rocky Mountains. The new diggings are on the line of the proposed extension of the Eastern Division of the Union Pacific Railroad to Santa Fé."

THE ELEVATED RAILWAY.—The experiments on the elevated railway in in Greenwich street have proved satisfactory to the engineers appointed to test it. It is expected that by the 1st of January next, the road will be finished to Thirteenth street.

RAPIDITY IN BRIDGE CONSTRUCTION.—Time is money, and railroad men know it. On Monday evening, July 27, the bridge on the Toledo, Wabash, and Western Railroad, over the Vermillion railroad at Danville, Ill., was entirely burned up. On August 8, a new bridge was completed, and trains crossed on it. The bridge is 1,100 feet long and about ninety-eight feet high above the bottom of the river.

SUGAR IN RUSSIA.—The American Consul at Moscow, states in a letter to the Commissioner of Agriculture, that beets are there very largely cultivated for sugar. Almost all the sugar used in Russia is produced in the country.

REMOVAL OF OBSTRUCTIONS AT HELL GATE.—The estimated cubic contents of the rocks known as "Frying Pan" and "Pot Rock" at Hell Gate to be removed are, respectively, thirteen hundred cubic yards over an area of twelve hundred square yards, and five hundred and seventy cubic yards over an area of thirteen hundred square yards. These rocks are to be removed to a depth of twenty-five feet mean low water. General Newton, of the United States Engineer Corps, intends vigorously to prosecute the work very shortly.

In the last year, the Marquette district of Lake Superior produced 500,000 tuns of ore, or an amount equal to one quarter of the entire product of the iron mines of the United States.

Missouri is literally on her metal. Lead has been discovered in over two hundred different localities, zinc and copper frequently, while the iron under the soil is estimated capable of yielding a supply of one million of tuns for over 200 years at years.

The Pittsburg Fort Hill Works have recently made a trip hammer of twenty-one tuns, for a new iron shop in the same city. One of the Pittsburg machine shops have made a locomotive weighing only one tun, for use in a coal mine. By the side of one of the great freight engines of the Pennsylvania railroad, this little worker must have given the pair the appearance of a locomotive with her kitten.

Steam plows have not been eminently successful, but there seems to be a revival of enterprise in this direction. In a short time past, a company has been formed at Chicago, with $500,000 capital, to manufacture Willard's steam plows which will cost the purchaser about $2,500 each. Quite recently a citizen of Ohio announced a successful plow, and a Meadville, Pa. inventor has brought out one which on trial is said to have worked perfectly. Last spring it was announced that an English steam plow was coming over to gratuitously overturn 2,000 acres of Illinois prairie, but these things indicate that this trouble need not be taken.

Two monster furnaces have been constructed at Ferry Hill, England, and have operated to a charm. They are both 105 feet high, and 28 feet in diameter and give the works of the company to whom they belong, a capacity of 180,000 tuns of pig iron a year.

A gas and water pipe factory at Newport, Ky., obtains the crude ore from Iron Mountain, Mo., and transmits the ore of one morning into castings on the way to market by the next day at noon. Some of the pipes made by this company have an interior diameter of 40 inches.

Harry Meigs left San Francisco a few years since in bad repute, as a million dollar bankrupt. He went to Chili, made friends with the Government, aroused an interest in railroads, and built nearly all the roads in that country. He then went to Peru, repeating his Chilian experience, and has just taken a contract to build 100 miles of railroad for $120,000 a mile, on which experts figure to Mr. Meigs several millions profit.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the most important recent home and foreign patents.

SUBMARINE LANTERN.—Michael Vander Weide, St. Petersburg, Russia.—This invention relates to a new apparatus for submarine lighting for the use of divers, and for other purposes, whereby the difficulties of submarine exploration are greatly diminished.

CONVERTIBLE AGRICULTURAL IMPLEMENT.—J. H. Heald, Columbus, Miss.—This invention relates to a new and improved device whereby various implements are formed by different combinations of the parts.

VARIABLE NOZZLE.—James A. Cushman, Seneca Falls, N. Y.—This invention relates to the discharging end of a fire engine hose pipe, and especially to the nozzle which is attached thereto, and the invention consists in so constructing the nozzle that the stream of water discharged therefrom may be raised at will by a simple movement of the hand of the operator.

TOOL HOLDER FOR PLANING MACHINES.—W. J. Linton, Detroit, Mich.—This invention consists in a bracket which may be secured to the tool slide, and having a right angled arm projecting forward from the cross plate a sufficient length and provided with a pivoted holder for the tool.

BELT TIGHTENER.—Samuel Patton, Chatsworth, Ill.—The object of this invention is to provide a simple and effective attachment to belt pulleys, by which the belt can be tightened to any required degree without difficulty.

COMBINED CORN PLANTER AND CULTIVATOR.—Geo. W. Kinzer, Linden Station, Ohio.—The object of this invention is to provide a combined corn planter and cultivator which shall be economical in construction and convenient in operation.

FRUIT CRATE.—W. G. Goodale, Centralia, Ill.—In this invention the fruit is packed in a crate in well ventilated boxes, supported upon springs to prevent their bruising it. The whole crate is very simple, cheap, and durable, and will effectually protect the fruit from injury.

SCREWDRIVER AND COUNTERSINK.—Peter N. Jacobus, Flatbrookville, N. J.—The object of this invention is to construct a screwdriver in such a manner that it shall grasp the screw by the head and hold it firmly while inserting it into the wood or removing it therefrom; and while inserting the screw, shall cream away the wood around it, so as to form a countersink for its head.

CUTTER ATTACHMENT TO PLOWS.—T. E. Marable, Petersburg, Va.—This device is a neat, simple, and cheap cutter, which can be readily attached to the beam of any plow, in front of the colter moldboard, or shovel, and which will graze along the surface of the ground in advance of the plow, cutting up all weeds, grass, etc., and throwing them out of the way on the side opposite to that on which the plow throws its dirt.

SHOVEL PLOW.—B. F. McCollester, California, Mo.—The object of this invention is so to construct and attach shovel plows to their standards or beams that they can be adjusted at any inclination, and, when worn out or injured in one end, can be reversed without difficulty.

MEDICAL COMPOUND.—A. V. Lee, Clayton, Ala.—This invention relates to a combination of ingredients for forming a medium for the cure of diseases which prevail in almost all climates to a greater or less extent, and which diseases have generally baffled the skill of the medical faculty—more particularly bilious diseases, and especially what is known as fever and ague.

ELEVATOR.—Erwin T. Hope, Philadelphia, Pa.—This invention consists of an arrangement of a series of vertical telescopic tubes and a plunger, on the top of which the carriage is supported, and moved between suitable vertical guides, when the said telescopic tubes are extended by the action of water forced in at the bottom to the lower tube, which is stationary.

WINDOW VENTILATOR.—R. H. Long, Milwaukee, Wis.—This ventilator for windows consists of a frame carrying a pane of glass, so as to be transparent, which frame has an elliptical or other spring applied to one of its sides, and is arranged to move up and down within a frame made of metal or other suitable material, attached to the inside of that section of a sash frame where it is to be located, the glass of which has been cut out to a degree corresponding to that of the supplementary frame having the glass thereon arranged to move or slide.

MACHINE FOR SAWING SHINGLES OR HEADINGS.—L. C. Robinson, Shepardsville, Mich.—The nature of this invention relates to improvements in machines for sawing shingles or headings, or other similar articles, whereby it is designed to provide a more simple and effective machine than any now in use, and that will either saw them in a straight or tapered form, cut off the ends and plane the edges, and it consists in the combinations and arrangements of the parts whereby the same is effected.

CONSTRUCTION OF SCOWS.—E. J. Allen, Rondout, N. Y.—This invention relates to a new manner of constructing scows, with an object of strengthening the same, and consists first in strengthening the fore and aft partitions by means of trestle work; second, in arranging cross keelsons above and at right angles to the fore and aft keelsons, and in the use of cross beams on head of fore and aft keelsons, and parallel to the cross keelsons; the fore and aft partitions are not only made substantial by means of the trestle work, but still more so by the cross keelsons and beams.

GATE.—William E Nichols, Baldwin, Mo.—This invention consists in an arrangement of cords and pulleys for effecting the above-described object and the necessary posts for supporting the same.

RAT TRAP.—M. D. Fowler, Vincennes, Ind.—This invention has for its object to furnish a simple, convenient, and reliable rat trap, which shall be so constructed and arranged as to catch, without fail, any animal that may enter the trap and try to eat the bait.

IMPROVED FASTENER FOR VEHICLE SEATS.—Charles Dixon, Weedsport, N. Y.—This invention has for its object to furnish an improved fastener, by means of which the seats of wagons, sleighs, and other vehicles may be conveniently, securely, and detachably secured in place.

MACHINES FOR UNHAIRING HIDES.—Elias Brock and Judson Schultz, Ellenville, N. Y.—This invention has for its object to improve the construction of the unhairing machines, patented by Elias Brock June 25, 1867, and numbered 66,124, and by Judson Schultz, June 25, 1867, and numbered 66,176, so as to make said machines more convenient in use and more satisfactory in operation.

WAGONS.—Samuel Seitz and L. D. Arnold, Melmore, Ohio.—This invention has for its object to furnish an improvement in the construction of wagon boxes, by means of which the end boards of the box may be securely held in place, and which shall at the same time be durable and allow the end boards to be conveniently and quickly put in and taken out.

POTATO DIGGER.—B. D. Vanderveer and Daniel Riddle, Freehold, N. J.—This invention consists in the arrangement of a plowshare to raise the potatoes from the ground and shakers for separating them from the soil, and in a device for cleaning the machine of vines.

SKATE.—Charles Gooch, Cincinnati, Ohio.—The present invention relates to that class of skates which are provided with a fastener, that acts upon the boot or shoe hole in the direction of its length and from end to end, and it consists in a novel construction and arrangement of the toe and heel clamps of such fasteners, whereby the skates can be adjusted to more fully and perfectly accommodate the various lengths of boots, and thus the fastener rendered more general in its application or adaptation to the varying sizes on the length of the boots.

CAR BRAKE.—J. L. Miller, De Witt, N. Y.—This invention relates to a new and improved car brake, which is applicable to either horse or steam cars, and it consists in a novel construction and arrangement of the brake, where by it is rendered capable of being operated through the medium of a friction wheel, and the brake operated on a single car, or all the brakes of a series of cars comprising a train operated simultaneously.

CURTAIN FIXTURES.—J. D. Legg, Long Eddy, N. Y.—This invention relates to a new and useful improvement, or a curtain fixture for which Letters Patent were granted to J. D. and I. W. Legg, May 5th, 1868. The object of the present invention is to obviate the difficulty attending the lowering or drawing down of the shade, and the winding up of the coil springs, the inner ends of the latter being attached to the cylindrical boxes out of or at a short distance from their centers, a necessity in the old arrangement, and which causes the springs to bind after a few convolutions have been drawn together by a few revolutions of the cylindrical boxes, so that the springs cannot be fully wound up.

APPARATUS FOR ROASTING NUTS.—D. A. T. Gale, Poughkeepsie, N. Y.—This invention consists of a rotary cylinder suitably confined in a hot-air case and provided with gas burners, and of a warming apparatus to which the tube which supplies gas to the roasting apparatus is connected for supplying heat to it and so arranged that after the nuts have been roasted and placed in the said warming apparatus the flow to the roasting burner may be stopped while that to the warming apparatus continues.

ROTARY STEAM ENGINES.—John Woody, Mount Vernon, Ind.—This invention relates to that class of steam engines, known as rotary engines, where the steam acts continuously and the pressure is applied without intermission and with uniform effect.

EXTENSION CLOTHES-LINE SUPPORTER.—Francis W. Tilton, and Moses C. Swift, New Bedford, Mass.—The object of this invention is to provide means for supporting clothes lines and elevating the same.

BUCKLE.—H. C. Wessel, Indiana, Pa.—This invention relates to a new and improved buckle designed for bridles and other parts of harnesses, and also for other purposes. The object of this invention is to construct a buckle in such a manner that it may be applied without any stitching or sewing and also without the aid of rivets and other permanent fastening and still be readily applied to and detached form the straps which it joins or connects.

EASY CHAIR.—Dumont Mareau, Hubbardstown, Mass.—This invention consists in attaching the seat to two or more springs and in connecting it with the legs or seats of the chair by links which form joints whereby great elasticity and flexibility are obtained.

TOOL HOLDER.—William J. Linton, Detroit, Mich.—This invention consists in a holder having a rectangular slot through a flattened central portion in which are arranged two clamping jaws, one stationary and one movable, and provided with two handles one of which screws into the said flattened central portion for adjusting the movable jaw in a manner similar to the construction of die plates for cutting screws.

WAGON COUPLING.—James M. Wynn, Scipio, Ind.—The object of this invention is to provide a simple and effective means of coupling the rear axle of a wagon to the reach pole or perch of the same. It consists of a plate at

fixed to the front ends of the rear hounds for the purpose of holding them rigidly and forming a recess in which the pole rests. It also consists of a bolt or pin passing transversely through the reach pole and the hounds, and held in place by a spring button, together with other devices perfecting the whole.

HAT FELTING AND NAPPING MACHINE.—W. J. Benedict and John Wylie, South Norwalk, Conn.—This invention consists of a felting cloth hanging in a bight between two rubbing surfaces, one of which is afforded by a hollow steam bed sliding up and down in a frame, and the other surface by an adjustable apron arranged with reference to the bed, so that as the latter slides up and down in its frame the roll of hat cones or other articles resting in the bight of cloth will be submitted to their felting action.

WINDOW SASH.—Wm. Randall, May, Mich.—The object of this invention is to operate window sashes in a cheap and efficient manner and is applicable to all windows where the wall is hollow.

WAGON HUBS.—Edwin R. Baker, Fairhaven, Mass.—This invention is designed more particularly as an improvement upon cast metal hubs for wagons, and other vehicles, and consists in forming the same in two parts and uniting them in a more simple and superior manner than has heretofore been done with cast hubs.

SHEEP-SHEARING MACHINE.—Hiram A. Reid, Beaver Dam, Wis.—The object of this invention is to accomplish the shearing of sheep by mechanism in an easy and expeditious manner. It consists of a shearing comb containing a serrated shearing wheel which is revolved by means of a flexible shaft, by which the comb is suspended from a crane provided with accessory gearing for transmitting motion to the flexible shaft. Other devices perfecting the whole render this machine the most perfect of its kind.

MACHINE FOR TURNING BOOT LEGS.—Jacob Shearman, Fayetteville, Pa.—This invention is a machine for turning boot legs after the same have been sewn wrong side out, as is usual in making boots. It operates in a simple and efficient manner.

CORN-HUSKING MACHINE.—Samuel Patton, Chatsworth, Ill.—This invention consists of a pair of pointed spindles, arranged side by side on a two-wheeled conveyance and combined with accessory mechanism for drawing in the corn between the pointed end of the spindles, which latter in revolving pull the ears from the stalk, together with other devices perfecting the whole.

APPARATUS FOR PRINTING AND GROUPING PHOTOGRAPHS.—A. S. Kilby, Huntington, Ind.—This invention provides a simple and convenient apparatus for printing and grouping photographs. It consists of two wooden leaves or boards, hinged together, and provided with an adjustable sun opening and a case containing a reel for holding the sensitized paper, which is drawn off between the boards as wanted, to bring it under the sun opening in which the negative is located.

FLOOD GATE.—Joseph Leatherman, Napoleon, Ohio.—This invention has for its object to furnish an improved flood gate for use upon brooks, creeks, and other streams which shall be so constructed that the bars may rise and fall with the rise and fall of the water, and which will allow drift to pass through without becoming choked up.

WASHING MACHINE.—Wilhelm Hoeft, Fountain City, Wis.—This invention has for its object to furnish an improved washing machine, simple in construction, easily operated, not liable to get out of order, durable, and which will do its work quicker and better than other machines, and at the same time will not injure the clothes.

GRATE BARS.—John W. Griswold and Edgar L. Thomson, Philadelphia, Pa.—This invention has for its object to furnish an improved grate bar constructed in such a way as to cause a more perfect combustion of the fuel, to prevent the bar from being burned or destroyed by the heat, to prevent in a great degree the formation of clinkers, and which shall at the same time be lighter than the ordinary solid bar.

VAGINA INJECTOR.—G. W. King, Saratoga Springs, N. Y.—This invention has for its object to furnish an improved instrument to take the place of the female syringe now in use, and which shall at the same time be simpler in construction and more satisfactory in use.

SCREW CUTTING DIES.—George Grubel, New Orleans, La.—This invention relates to a new manner of arranging screw cutting dies, with an object of reducing the friction and of obtaining additional power. The invention consists in omitting every other half thread in each check of the die, two such checks being supposed to constitute the whole die: thereby the aforesaid desired result will be obtained.

COMPOSITION FOR PRESERVING WOOD.—B. A. Jeager, Bowers Station, Pa.—The object of this invention is to produce a substance by which wood can be preserved from decomposition, and by which its pores will be filled, to prevent them from receiving moisture and oxygen.

SHOVEL PLOW.—Aaron Jennings, West Cairo, Ohio.—This invention relates to a new shovel plow, which is so arranged and constructed that it will uproot and cover weeds or grass close to the plants, and that it will prevent clods, from falling upon young plants, such as rice or corn plants.

EMBROIDERING ATTACHMENT TO SEWING MACHINES.—William Carpenter Fairbury, Ill.—This invention relates to a new apparatus which is attached to the presser foot of a sewing machine, and which has the object to guide two threads and to cross them at each stroke of the needle in such position that they are caught and held firm by the needle thread. In this manner a beautiful embroidering stitch can be produced by means of a very simple and effective attachment.

DEVICE FOR TURNING LOGS ON SAW MILLS.—George Willett, Richburg, N. Y.—This invention relates to a new apparatus for revolving logs on the carriages of circular and other saw mills. Its object is to do away with the jar and shock caused by the ordinary method of turning over the logs.

PORTABLE STOVES.—O. B. Hale, Malone, N. Y.—This invention consists of a circular or any other conveniently shaped bed plate supported upon legs, provided with a suitable central depression for an ash chamber, having a door opening downward, and provided also with a fire grate at or about the level of the upper face of the same; from the said upper face rise vertically four or any other suitable number of brackets, supporting a top plate, which is provided with a central hole for kettles, and which, when not in use, is covered in the ordinary manner with a round cover. The said brackets are also provided with vertical grooves on their sides, and the sides of the stove are divided into sections, which are made to slide vertically in the said grooves from the top downward through slats provided for them through the bottom plate, whereby communication may be opened through the sides of the stove with the fire at any desired place. The cooking vessels may be arranged to be suspended at the sides of the stove, when the said side plates are shoved down, thereby bringing the sides of the said vessels toward the stove, directly in contact with the fire.

BRANCH CEMENT PIPE.—Lockhart, Roberts & Knight.—In this invention the branch is molded on to the main pipe at the time the pipe is made, and at a trifling additional expense. Where the branch is stuck on to the main pipe in the usual manner it adds very much to the cost besides being less durable. As cement pipes are now being used so generally for sewers, the invention is an important one. Patented July 28, 1868.

EYE WATER OR MEDICAL COMPOSITION.—J. Roemheld, Chicago, Ill.—This invention relates to a new medical composition, to be used for curing sore, inflamed, and weak eyes. Patented August 11, 1868.

RICE-POUNDING MACHING.—John H. White, Lima, Peru, S. A.—This invention relates to an improvement in rice-pounding machines whereby the rice may be whitened and cleaned by the use of spring pounders striking the rice in rapid succession and from the peculiar shape of the mortars which are raised to a point in their centers, will thus prevent the pestals from crushing the kernals of rice, and at the same time cause them to spread from under the pestals, thereby causing the rice to be kept in constant motion and rapidly agitated. Patented August 11, 1868.

LAMP BURNER.—L. J. Marcy, Newport, R. I.—The object of this invention is to obtain increased illuminative power from double wicks, and is intended for burning kerosene oil. It consists in the formation of the cap or cone with two indented shoulders, to properly deflect the air current. Patented August 11, 1868.

CAR TRUCK.—J. H. Densmore, Boston, Mass.—This invention consists in the provision of axle sleeves properly affixed to the framework of the truck, and enclosing the whole length of the axles between the wheels in such a manner that should the axle of any one pair of wheels become broken, the wheels will still be held in place on the rails, and continue in motion with sufficient steadiness until the train is stopped, thereby preserving the train from accident. Patented August 11, 1868.

BEAN PULLER.—S. R. Niles, Rawsonville, Mich.—The object of this invention is to accomplish the scraping up or pulling of field beans, and other similar plants, in a rapid and expeditious manner, by the employment of horse power. Patented August 11, 1868.

MILLSTONE DRESSING MACHINE.—E. C. Henderson, and R. A. Henderson, Albia, Iowa.—The object of this invention is to provide a simple and effective machine for dressing millstones, in a uniform and expeditious manner, whereby the operation of cutting the furrows in the stone, can be performed by a person not necessarily skilled in using the hand pick for the same purpose. It consists of a pick operated by a train of mechanism, the motion of which is produced by simply turning a hand crank. Patented August 11, 1868.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisemets at $1 00 a line, under the head of "Business and Personal."

☞ *All reference to back numbers should be by volume and page.*

J. S. P., of Mo.—Any wire of whatsoever material becomes intensely heated by the electric current when it is too small to conduct it readily. Use a very small wire and you will have no trouble.

G. N. J., of Wis.—The device you describe we believe to be of no practical value. With perfect fitting it would be useless, and it certainly would be without. We have no faith in such things.

A. J. S., of Md.—Small streams of water may be used to advantage in hydraulic engines. The valve ports should be larger than those for steam. Such engines are generally not very durable, and have never been much in favor, except for some special purposes.

A. R. B., of Pa.—To lay out a mill hopper or other square flaring box, first lay out the proportions of the exterior. The line of junction of the interior can then be laid out upon the other side of the board; it is parallel to the outside line and further in by just the thickness of the board. These lines can be gaged as is well understood by any mechanic.

J. F. W., of Tenn.—The drawing you send us is wrong; the movable arms would never be in the position you have shown them, unless so put by some external force. In the position they would naturally assume they would exactly balance, and remain motionless. This experiment has been tried in a thousand forms, and is absolutely worthless.

R. L. H., of N. H.—How can I clean white leather or white lamb skin? If not very dirty, only somewhat yellow, rub into it a mixture of fuller's earth and alum. Brush thoroughly, and rub again with dry bran and whiting, then brush again. If very dirty, wash with soap and water; rinse, and when about half dry rub with pipe clay made into a paste with beer. Rub thoroughly and when dry brush. Finally cover with paper, and smooth with a warm iron.

J. W., of West Va.—We do not know where the mica glasses can be obtained in this country. You can use all recipes published in the SCIENTIFIC AMERICAN, unless they are patented. Water does not burn at any temperature. The hydrogen it contains however burns, when heated with oxygen to about 800° Fah. The other question you ask must remain unanswered. It demands too much time.

G. B., of Mich.—What you call a yellow roach is what is generally known as the Croton bug. Phosphorus, mixed with oils of anise seed and rhodium is a deadly poison which is eaten with avidity by these insects. It can be obtained at almost any drug store, ready prepared, but it should be used with caution.

J. B., of Ill.—Buildings for the preservation of fruit are constructed of iron, air-tight, having double walls, between which is placed some good non-conducting material as shavings, etc. The air in them is kept by means of ice down to as low a temperature as possible without freezing the fruit. There is such a building at Albany, N. Y., and we have heard there are some further west but we do not know their precise location. They are eminently successful in keeping the fruit. As financial operations they have been reported to pay well.

T. M. H., of Ohio.—"Can fire produced by lightning be extinguished by water?" Yes, if the fire results from the combustion of any material that can commonly be put out by water. The origin of the fire has nothing to do with putting it out.

C. A. S., of Va.—If from either side of a piston fitted tightly in a cylinder, the air should be exhausted, and at the same time the air should be condensed upon the other side, the piston would be moved with a force proportional to the size of the piston and the pressure per square inch upon the side next the condensed air. If the air were only exhausted from one side, the piston would move with a force of about 15 lbs. to every square inch of its area, provided the air were freely admitted at the other end. The horse power can not be computed from the data given.

J. P., of Mass.—We know of nothing better as a dentifrice—for cleaning the teeth—than borax dissolved in water and applied with a brush. It is excellent also used as a hair wash.

L. S., of N. Y., says "if you will examine an almanac you will find that (omitting fractions of a minute) the day begins to lengthen by the late setting of the sun Dec. 14th, but that it does not begin to lengthen by the sun's early rising until January 8th. I am unable to see why it does not increase in length equally from both causes, commencing immediately after the winter solstice." We cannot illustrate and elucidate the subject without the aid of diagrams. The cause is to be found in the inclination of the axis of the earth to the plane of the orbit, and the fact can be demonstrated by the aid of a globe, or the charts usually found in any elementary treatise on astronomy or physical geography.

A. G. B., of N. B., wishes to understand the galvanizing of iron in all its varieties. We have given various recipes for which practical men are responsible. We cannot enter into a description of all the processes for different styles of the work. One cannot expect to learn the manipulations of a mechanical business from the pages of a periodical.

J. F. V., of Tex.—"Is tin plate injurious to canned fruit? How long should fruit in the can boil, if any?" 1st, Tin plate is not injurious. 2d, Fruit need not boil, but the cans should be placed in boiling water or a steam bath sufficiently long to expel by heat the atmospheric air contained in the cans.

G. B. R., of R. I.—A "jump" weld is in some cases much to be preferred to a scarf weld, especially in uniting the ends of two cylindrical pieces as shafts etc. The labor and time required is much less and the results of the job, if properly performed, much superior. "Upset" the ends to be united to allow for waste in working down to size after being united, take a good heat in a clear fire, using clean quartz sand for a flux, and have an assistant who can properly tend his piece in heating and present it properly on the anvil when heated. Be sure to have the two faces to be united perfectly clean and smooth. When the striker lays his end on the anvil bring the other to it and strike one or two light blows on the end, then dispense with the assistance of the striker until the weld is to be drawn to size. The process is very simple and very effective, and for work that is to be finished in the lathe much to be preferred to scarf welding, which not unfrequently leaves short crooks hard to remove.

J. F. P., of Ind.—"I have an engine with cylinder 8 by 12 inches running 150 revolutions, but the steam valve is so made that when one port is just opening the other is barely closed, consequently I cannot cut off to work steam expansively. Can I remedy it by lengthening the valve? If I run my engine at 200 revolutions would I gain power, and what would be the power of my engine at that speed?" Lengthening the valve is the remedy for the difficulty of leading steam the whole length of cylinder. The length of throw of the valve would be the guide for the length of the valve As the speed of engine is increased so is the consumption of the steam. The power of the engine with an average pressure of 30 lbs. per square inch on the piston would be 21 H. P. But there might be 60 lbs. on the boiler and not 30 on the piston.

W. F., of N. J.—What is the difference per cent in point of economy between a variable cut-off engine regulated by the governor or one with ordinary slide valve, steam throttled or wire drawn?" The variation in style, build, and duties of engines is so great that it would be difficult to establish an unvarying rule of comparison. In extreme cases the difference in favor of the variable cut-off sometimes reaches 30 or 40 per cent. Where the load on the engine is frequently and suddenly varied, as in sawing and planing and iron rolling mills, the variable cut-off is almost indispensable. Where the load is even the necessity is not so great.

H. L. of N. J., a "practical boiler maker" in reply to J. H. Hassler's inquiry on page 100, current volume, says, "any one desiring to test a boiler can do so by filling the boiler entirely full of water and then firing up on it."

R. N. of Ga.—The "American Standard" of nuts, bolts, and screw threads is used by a number of our best manufacturers. J. R. Browne & Sharp of Providence, R. I., make the gages for this system, and they will send you a circular relating to it, or a chart may be obtained of Edward Lyman, New Haven, Conn. We regard the standard as the best and most practical in use, at least in this country, and its general adoption as a desideratum.

P. J. P., of Ohio.—The French buhr stone used for millstones is simply a variety of quartz, but it is in part composed of pure silex or flint. We have before us now a piece chipped from a rough millstone which is pure semi-transparent flint, of a yellowish, creamy color, honeycombed with holes in which were imbedded minute specimens of marine shells. A substitute for the French stone is found in the bituminous coal measures of northwestern Pennsylvania and eastern Ohio, but the French product is preferred. It is filled with the remains of minute fossil shells.

S. M., of N. Y.—The statement made lately in a daily cotemporary as to the possible evil effects of the use of soap made from tallow of diseased animals need not cause alarm. The alkali of soap destroys all the noxious and contagious qualities of diseased animal fat. Physicians in dissecting dead bodies protect their hands from possible deleterious effects by the use of iodine or permanganate of potash, or other alkaline salts.

J. P. B., of Mass.—Cut nails are toughened by subjection to an annealing process. The nails picked up from among the ruins of a burned building are generally to be preferred to those just from the mill. In driving nails, either wrought or cut, into hard wood, a dipping into grease of any kind will assist greatly in their ease of penetration.

Business and Personal.

The charge for insertion under this head is one dollar a line.

Improvement in Steam Gages.

The essential difference between this and all other steam-gages consists in the peculiar method of corrugating the steel diaphragm which receives the pressure, and transmits the motion derived from it to the indicating apparatus. This diaphragm is shown in Fig. 3. Instead of the corrugations being concentric as upon other steam gages in common use, they extend from the center spirally toward the circumference of the diaphragm. The advantages of this construction are increased durability and elasticity, as the strain is transmitted to the several corrugations in such a manner that a slight rotation is given to the center of the diaphragm; causing it to assume a convex shape more gradually and easily, and also transferring the points of greatest tension successively from the center to the circumference, so that at the highest pressure the strain is sustained mostly by the outside portions of the diaphragm. The corrugations are less abrupt in their curves than concentric ones, which also adds to their durability. Fig. 2 represents this gage with dial removed, and and also with a portion of the plate which supports the movement, broken off in order to show the corrugations of the diaphragm, A. To this plate is screwed a metallic support, C, for the lever, B. This lever has its arms of equal length, and therefore does not multiply the motion of the diaphragm; it only forms a medium through which motion is imparted to the movement. At the end next the diaphragm it has an arm extending at a right angle from it and resting upon the diaphragm. All motion of the diaphragm is communicated to this lever, which is connected by a rod to the lever, H, attached to the axis of the toothed sector, F, which drives a pinion attached to and moving the hand on the dial shown in Fig. 1. The spiral spring, I, shown in Fig. 2 restores the original position of the movement whenever pressure is removed, and also moves the hand backward to suit variations in pressure. The primary adjustment is made by means of a set screw fitted into a slot in the lever H. This lever is thus adjustable so that the motion of the hand upon the dial may be increased or decreased to adapt it to the scale of the dial, or to set the hand to any desired point.

It is claimed for this gage that it possesses greater delicacy than any other, and that on account of the peculiar construction of the diaphragm its motion increases with the amount of pressure, so that instead of working stiffly under high pressures, it becomes more delicate in its action.

This gage was patented by R. C. Blake, of Cincinnati, Ohio, July 31, 1866. All information cheerfully given by Perkins, Livingston & Post, sole manufacturers, Cincinnati, Ohio.

Fig. 2

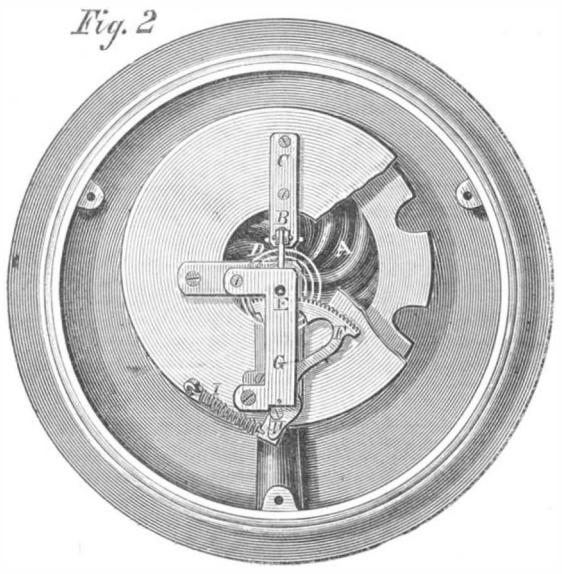
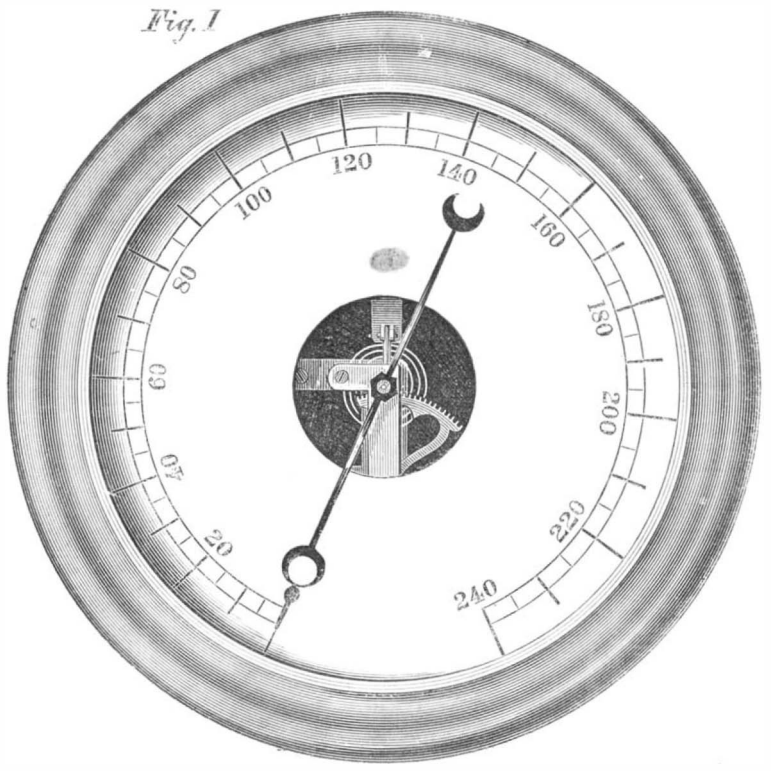


Fig. 1



R. C. BLAKE'S PATENT STEAM GAGE.

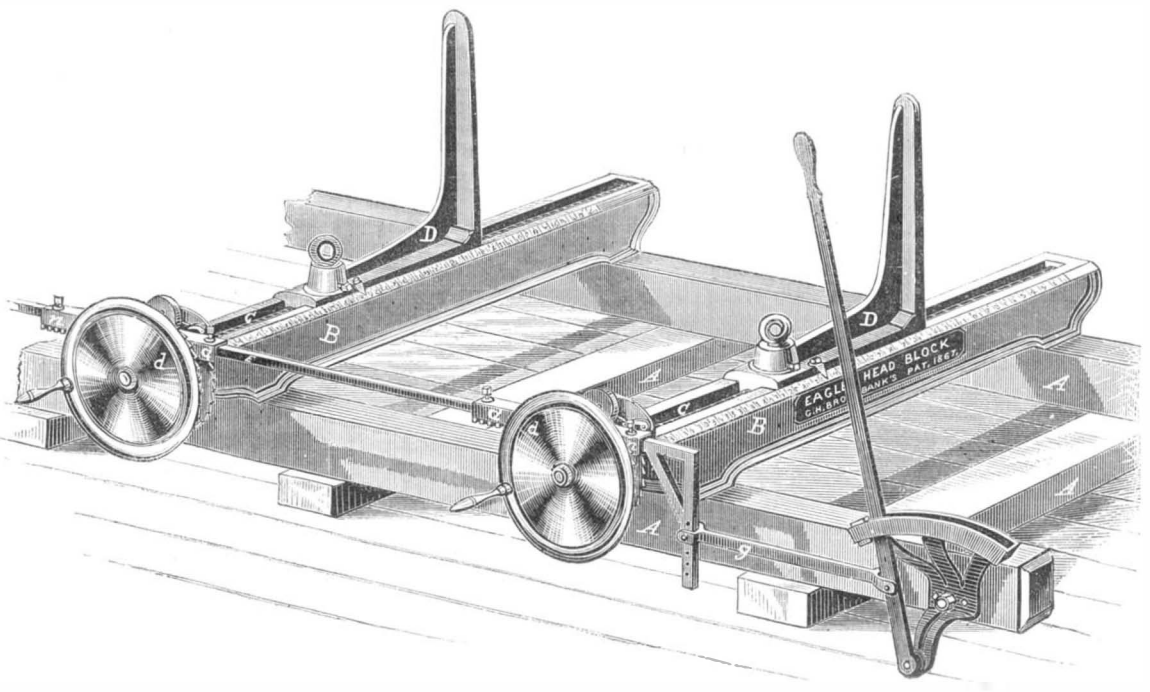
Improvement in Sawmill Head-Blocks.

The object of this improvement is to overcome the difficulty existing in other machines which will not allow the increasing or diminishing the thickness of boards less than by eighths of inches, and at the same time work accurately, leaving the last board always perfectly even. With this device the thickness of the board can be regulated to the smallest fraction of an inch.

A represents a saw carriage and B the bases of the head-blocks. These may be of any suitable material or form. C is a four-threaded screw with inch and a-half pitch, two inches diameter. D is the standard or knee sliding on the base, B, and having a nut on the under side engaging with the screw, C, and a set bolt to hold it steadily in place.

One revolution of the screw advances or recedes the knee one and a-half inches. E, on the front of the machine, is a horizontal bar to which is secured by set screws the two racks, *n*, the teeth of which mesh in pinions turning loosely on the screw shaft, C, the pinions having cast on them ratchets in which engage pawls pivoted to the balance wheels. An inside ratchet is keyed fast to the screw shaft, and is merely for the purpose of holding to its place the screw after it is set. The whole is operated by a hand bar or lever, as shown in the engraving, a full throw of the lever setting the heads for a one and a-half inches board, and a set screw regulating its throw for other thicknesses. The edges of the bases, B, are graduated to inches and their fractions, as a guide to the eye.

The simplicity, accuracy, and durability of these head-blocks have commended them to the proprietors of a number of the largest mills in the country, and they have never yet failed to give entire satisfaction. Patented through the Scientific American Patent Agency, Nov. 19, 1867, by Charles H. Brookbank, Connersville, Ind., whom address for machines and shop rights.



BROOKBANK'S PATENT "EAGLE" HEAD-BLOCK.

Female Machinists.

MRS. DALL, in her recent book, discussing "Woman's Work," gives the following:

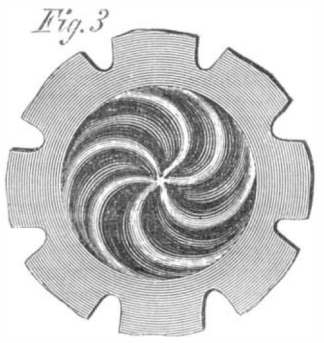
"According to thy request," writes a Quaker friend from Wilmington, Delaware, "I send thee some facts concerning Sarah Ann Scofield. Some fifteen years since, her father became very much involved in debt. He owed some ten or twelve hundred dollars, having lost largely by working for cotton and woolen mills. His business was making spindles and flyers. His daughter, then just sixteen, proposed to go into her father's shop and assist him, she being the eldest of seven children. He accepted her offer, and he told me himself that in twelve months she could finish more work and do it better than any man he had ever trained for eighteen. She earned fifteen dollars a week at the rate he then paid other hands. Her father died. Her two eldest brothers learned the trade of her, and went away. She has now two younger sisters in apprenticeship, and a brother fourteen years of age, all working under her—turning, polishing, filing and fitting all kinds of machinery. I went out to see her last week. She was then making water-rams to force streams into barns and houses. She is also beginning to make many kinds o carriage axles. She is her own draughtsman, and occasionally does her own forging. To use her own words, "What any do I can but try at." She has a steam engine, every part of which she understands; and I know that her work gives entire satisfaction. When they have steady employment, they clear sixty dollars a week, and she says she would rather work at it for her bread, than sewing for ten times the money. The truth is, it is business she is fond of."

Ventilation of Large Halls.

THE *U. S. Railway Times* contains a description of the method lately adopted to ventilate the Massachusetts State House:

"The air is forced into the hall through an opening about an inch wide, extending all around the base of the dome-like ceiling. Its motion is upward along the ceiling, and as the currents meet in the center of the arch a commotion is created. Then the air is drawn down by the exhaust through common ventilating pipes opening in the floor and discharged from the building. There is no lateral movement of the air and no current in the body of the hall. To demonstrate all this, tiny balloons were sent up into the dome, where they were floated along the ceiling to the top of the arched roof.

Fig. 3



Balanced balloons sent to the top of the ceiling were drawn down to the floor, and sought the exhaust openings. White ribbons, fastened just above the openings by which the air enters, fluttered continually upward, and a wind-wheel placed six inches above one of the exhaust openings, was kept in rapid motion by the air which passed out. Then, to show the control over the moisture of the air, steam was introduced into the air in the mixing room in the basement, and very soon the hygrodeik indicated 90°. The humidity was then readily reduced. Powder was burnt in various parts of the hall until the chamber was chokingly filled, and in twenty-seven minutes the smoke and odor was completely removed. At an ordinary rate the apparatus will renew the air of the Representatives' Hall in eleven minutes, and at its highest rate in four minutes. After the experiments the company inspected the engine and the huge fans in the basement. The peculiarity of the fans is that the wings have an eccentric motion combining the simple fan action with that of bellows. As a wing in revolving approaches the opening through which the air comes it goes slower, while the wing at the opening increases speed, and thus a suction is made by the disparity of speed between the two wings. By one of the fans the air is forced into the mixing room, where moisture is added with steam, and thus mixed goes on its mission of health in the numerous rooms above. The moisture is indicated by a hygrodeik suspended in the main flue. The exhaust fan is used for the two chambers and the green room only, the foul air of the other rooms passing from the cupola instead of being drawn down by the exhaust fan. The operation of the machinery was shown to be quite simple and easily controlled."

WATER METERS.—The New York Society of Practical Engineers, recently organized, discussed at its first meeting the subject of water meters. It was stated that upwards of sixty patents had been issued in this country for meters, but that none of them met the wants of the public. It was also stated that three times the quantity of water allowed to each inhabitant of London and Philadelphia is consumed in this city, which shows a great and needless waste of the water supply.

It was suggested that the Croton Board offer a prize for a meter that will correctly register the quantity consumed by each family, and a committee was appointed to investigate the subject.

Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

☞ "The American News Company," Agents, 121 Nassau street, New York.

☞ "The New York News Company," 8 Spruce street.

☞ Trubner & Co., 60 Paternoster Row, London, are also Agents to receive subscriptions.

☞ A. Asher & Co., 20 Unter den Linden, Berlin, are Agents for the German States.

☞ Messrs. Sampson, Low, Son & Marston, Booksellers, Crown Building, 188 Fleet street, London, are the Agents to receive European subscriptions or advertisements for the SCIENTIFIC AMERICAN. Orders sent to them will be promptly attended to.

VOL. XIX., No. 10...[NEW SERIES.].... *Twenty-third Year.*

NEW YORK, WEDNESDAY, SEPTEMBER 2, 1868.

Contents:

(Illustrated articles are marked with an asterisk.)

REFORM IN THE PATENT OFFICE.

Congress, at its last session, voted to take away the surplus fund of the Patent Office, and passed an act appropriating the sum of $250,000 to pay its current annual expenses, and simply for the good reason that during some years past the financial affairs of the Office have not been conducted with skill and economy. It appears from a report now before us of a Committee appointed to investigate the matter of printing done by authority of Commissioner Theaker, that within the space of two years the large sum of $181,000 was expended upon the items of books, paper, and printing, and among other transactions of a doubtful character, $48 per thousand were paid for manilla envelopes having the Commissioner's frank printed thereon. The expenses of the Office also ran up from $274,199, in 1865, to $639,293 in 1867. We conclude, from these and other items in the Committee's report, that Congress was justified in interfering to prevent an extension of this system of wasteful—we might almost say criminal—misuse of the patent fund.

For some reason the surplus fund of the Patent Office—taxed out of the pockets of inventors—has furnished an easy opportunity for our Commissioners to gratify some very luxurious notions, as any one may see by a visit to the barbaric upper gallery, decorated under the supervision of Commissioner Holloway, whose knowledge of fine art must have been acquired in studying the faces and baskets of the aborigines who migrated west of the Mississippi before railroads had introduced a more refined and civilized art.

However, that job is done, and paid for, and we cherish the hope that it may long remain a curiosity to all beholders. We submit, however, that the sum of $250,000 is not enough to meet the necessary annual expenditures of the Office. The present pay-roll amounts to $340,000, to say nothing of the contingent expenses, which are considerable.

Commissioner Foote assumes the duties of his position hampered by the effects of mal-administration and a procrastinating policy which well nigh destroyed the good name and efficiency of the Patent Office.

We are happy to be assured, however, that the new Commissioner is bending all his energies towards introducing much-needed radical reforms. He has already cut down needless expenditure, and with a careful weeding out of all blockheads and suspicious characters—if there are any—to clog the business, and betray its sacred trusts, the public may expect to see the Patent Office restored to its ancient vigor and recognized usefulness. Commissioner Foote has the ability and energy to put the house in order, and inventors may safely repose confidence in his integrity and firm purpose to administer the affairs of the Office, not only in a generous spirit, but without fear or favor.

THE VALUE OF EXPERIENCE IN THE MECHANICAL ARTS.

While it may be conceded that "success is the measure of ability," it may not be improper to ask, "What are the conditions which produce the ability necessary to success?" Only one of these conditions we propose to speak of; that is experience, and necessary to experience is time. Many a young mechanic wonders why he, when he can do as good a job as an "old hand," cannot receive as much pay. If a machinist, he may do a job at the lathe, or on the planer, as perfectly as he who has grown gray in the business, and he wonders why the "old man" should receive more for his work than himself. To him it appears that the business is easily learned, that there are no secrets of the methods of doing the work withheld from him, and he knows that in some respects he is fully equal to his senior. So he is, ordinarily, and it is not strange that he should chafe under the fact that his work is not so well rewarded as the same work when performed by a veteran in the business. But he forgets that while he may be able to put through a plain job as effectually and rapidly as an old hand, he lacks the experience, the maturity of judgment, the fund of resources valuable in exigencies, which the experienced workman possesses. These old men are invaluable. They "know whereof they affirm." Years of practice have made their manipulations perfect, and no amount of attention and sheer endeavor alone can ever take the place of the experience which can be gained only by time.

We remember an old bald headed and white bearded man, whose sole business in the shop, at a time when the file held a much higher and more important place than now, was to fit the gibs and keys for the straps of locomotive connections. He worked, as became his age, moderately—little by little, like a "day by day" machine—never hurried, never driven. But when night came his bench showed a goodly result in amount, and a better result in quality of work. None of his jobs ever came back, like curses to roost with him. What he did was well done. Continual practice, careful attention, and, above all, the experience gained by years of practice, made him, as a filer, as nearly perfect as one could hope to be. He was also the recourse of "boss" and hands in any and every emergency, and he never failed to meet the difficulty and to show the way out or over it. "Smartness" will not do as preferable to experience. Youthful confidence, and self-sufficient assurance, are not the conditions or qualities which prove useful when emergencies and accidents arise or occur. To be a good mechanic one must be an *experienced* mechanic. Ability, talent, and earnestness, are necessary to success; but experience—the wisdom gained by years—tells. The young mechanic should not feel harshly toward those whose years make them his masters, but strive to overtake them and antedate their success by his more careful attention to the details of his business. If he does not succeed in this, immediately, he can assure himself of gaining, in time, as good a name and as pleasant a position as that of those whom he now envies.

OPTICAL ILLUSIONS.

We place more dependence upon the evidence of the senses than facts will warrant. The senses are not infallible guides to truth; they frequently mislead on occasions and at times when it would seem the conditions were most favorable to their normal and proper exercise. The state or condition of color blindness—incorrectly designated—is one evidence; as when one mistakes one color for its complement, even a green being mistaken for a red. This extreme case may not be often noticed, but it is quite a common fact that a person cannot distinguish between scarlet and crimson, or orange and yellow. These faults of vision may be laid to an organic defect; for it is well known, for instance, that the best painters—the best colorists—are those who have blue, gray, or light eyes. The black eyes may be excellent for seizing upon the forms and dimensions of objects and the relative proportions of parts; but they cannot well determine the shades of color. Scarlet is no more like crimson than it is like orange. Nor is yellow either like orange or green. Violet is not blue, nor is purple either red or blue. Shades of color formed by the combination of the original prismatic tints must bear some distinctive names, and by these names many recognize them, rather than by the use of the eye. It has become the fashion to affix arbitrary names to shades of color which are calculated to mislead. The bismark and cuir is merely what was known years ago as snuff or light brown. Magenta is merely a cross between crimson and purple. In short, the gamut of colors is capable of as much extension and change as the gamut of the musical scale. And music and colors are very closely allied. The one suggests the other to many persons of very sensitive organizations. We remember a man who always asserted that white suggested to him the note, A, the key of three sharps; red, F; and blue, E flat. This may have been merely a fancy or the product of a too vivid imagination; but how often do our fancies and whims prove, on investigation, to be founded on fact.

The mirage, either on land or sea, is a notable instance of optical illusion. We have stood on the beach at Lynn, Mass., and seen Egg Rock and the point of the promontory of Nahant apparently within a stone's throw of the point of observation, while, in fact, they were more than a mile away. Vessels, also, which, when the atmosphere, changed by the sun's rays, were invisible, were shown clear above the surface of the sea.

A friend related the other day a most singular experience. He was crossing the western plains and saw distinctly a broad stream, fringed with trees, and having dwellings on its banks, so plainly described and fairly presented that he urged his horse on to reach what, to him, was a paradise, but found only bare sand.

These appearances are not to be attributed wholly to the exercise of the imagination, and no explanation, founded on the law of optics, has, as yet, been made, which seems to meet all the conditions and explain all the difficulties necessary to be removed to reach a solution. It is evident that the sense of sight is not always reliable.

Is it not possible that some railway accidents, now attributable to culpable negligence or carelessness in the management of switch signals, are really occasioned by this defect in the eye which prevents the distinguishing of colors?

THE TRANSATLANTIC STEAMSHIP COMPANY.

The report of the Transatlantic Steamship Company, recently made public, contains many items of general interest. This company own three lines of steamships running between Havre, Brest, Saint Nazaire, and America. The first line runs directly from Havre and Brest to New York; the second to Havana, St. Thomas, Vera Cruz, and New Orleans; the third to Guadaloupe, St. Thomas, Guaymas, Venezuela, Aspinwall, and Panama. The second of these lines has suffered somewhat in its business from the suspension of trade consequent upon the evacuation of Mexico by the French, the recent earthquakes in St. Thomas, and the prevalence of yellow fever last year in Louisiana. It is proposed by the company to establish a line to the Pacific States of South America, as it is believed that they will thus secure a trade amounting annually to $26,000,000. A monthly line is also to be established between Panama and Valparaiso, including the intermediate ports. Upon this line are to be placed three new steamers, each of 3,000 tuns burden, and with an engine nominally of 450-horse power.

The business of the company has been constantly on the increase since its first establishment. It owns in all twenty-one steamships, with an aggregate of 80,000 tuns capacity. They are gradually substituting screws for the side wheels formerly used upon their steamers. Each steamer to New York is to have a new condenser and to be provided with a double screw, which, from their experiments with it on the *Washington*, the company feel confident, will give excellent results. The *Washington*, on her last trip to Vera Cruz, ran at an average speed of over 12 knots per hour, thus making a reduction of three days and nights over the average trips of other steamers on the same line.

The company has introduced another improvement invented by M. Foucaut, the Doctor of the *Europe*. It is called an electrical speaking telegraph. By its use orders can be transmitted instantaneously to all parts of the vessel, and the ship is worked without a word being spoken. Several seconds are said to be gained by this apparatus in the transmission of orders, an important consideration in some emergencies, as the abrupt meeting of two vessels in a fog. This apparatus is in use upon the *Europe*, and it is soon to be adopted by the French Government to be applied to the service of artillery in place of the speaking tube now in use. That it will wholly supersede the old system of giving orders in the working of vessels is however improbable.

THE CATTLE PLAGUE.

The accounts of the plague which has caused such devastation among the cattle in different parts of the United States, particularly in the West, have probably been somewhat exaggerated to subserve the purposes of speculators. Making due allowances for this fact, the disease has been, without doubt, a terrible reality, all the more to be dreaded, from the universal ignorance in regard to its cause, method of propagation, and cure. The only thing which can be said to be known in regard to it is, that it can sometimes be prevented by the use of disinfectants. Many take strong grounds in favor of the contagious character of the disease, while others, among whom may be mentioned Prof. Gamgee, of the Veterinary College in London, now in this country, maintain the opinion that it is not contagious. Some strange and inconsistent statements are made about the complaint as it prevails in the West; one of which is that the Texas cattle do not manifest the symptoms of the disease themselves, while they impart it to others when brought in contact with them. A tour of inspection having been fixed upon by the Pork Packers Association of Chicago, Prof. Gamgee, accompanied by Mr. M. E. Ricardson, have visited Tolono, Farina, Cairo, and other infected points, and give the following conclusions as the result of their observations:

First:—We have not to deal with a contagion or an infectious plague, but with a form of poisoning, due to the native cattle eating off lands polluted by droves of Texan steers.

Second:—We fail to find a single case of disease beyond the limits over which the Southern stock has been distributed, and every animal, without exception, dies on the Texan trails.

Third:—No system of medical treatment can be relied on or conveniently applied. Plagues call for preventives, and are not among the curable maladies.

Fourth:—Prevention consists in herding native stock on inclosed pastures wherever Texan cattle exist, and then not moving the Texan herds to and fro, as panic-stricken communities insist on, but keeping them well by themselves and in proner inclosures.

Fifth:—In relation to the trade in Texan cattle, which is as important for the meat consumer of the North as for the cattle producer of the South, it is obvious, from all we have learned, that during the entire winter the trade can go on unchecked, without the least danger of disease arising among our native cattle. In all probability, however, the theory is sound which was suggested at our last meeting, that even in summer, under judicious treatment, Texan steers can be cleared of the poison which infects them.

The chief disinfectant relied upon is carbolic acid, the nature of which is fully described in No. 4, current volume of the SCIENTIFIC AMERICAN, and it is recommended to use the crude and cheap fluids known as heavy oil of coal-tar, or the coal-tar itself, upon yards, paths, and all the droppings and manure. The cheapest kind of carbolic acid will be best upon the floors and sides of cattle cars. There should be a complete coating or wash of these sprinkled over the entire surface that is to be disinfected. Grounds and paths should first receive a thin coating of quick-lime, and upon this sprinkle the heavy oil of the tar from a common watering-pot. The floor and sides of foul cars should be thoroughly moistened with carbolic acid. It may be applied with sprinkler or brush.

Manure heaps and droppings from Western cattle should be carefully disinfected with a sufficient quantity of quick-lime and heavy oil or crude acid. A barrel or two to the acre of "heavy oil" or of good coal-tar would be a sufficient quantity; and a pint of carbolic acid diluted in 50 parts water would suffice for a 16-head car.

TRIAL OF HALL'S AUTOMATIC ELECTRIC RAILWAY SIGNAL.

On Thursday, August 20th, a number of practical railroad men and prominent mechanics, were invited to witness the operation of the above mentioned device, which was illustrated and briefly described on page 277, Vol. XVI., SCIENTIFIC AMERICAN, and patented through this agency. In this case, the apparatus was located on the west side of the Chest-

nut street station, of the New Jersey railroad, in Newark, N. J., and is operated by any one of five switches with which it is connected, the one furthest from the signal being at a distance of 3,000 feet. The signal box is a structure of a a pyramidal form, having at the top a disk, glassed and surrounded with a broad black border. A vault, or cellar, under the structure contains a battery which is defended from changes of temperature by being thus sunk in the earth, and from which lead the insulated wires, buried in the ground, beyond the reach of frost, alongside the track, and having terminations at each switch connected with the signal.

The signal itself is simply a disk of red stuff (merino) balanced on one end of a vibrating lever, held in place by the armature of a magneto-electric battery. It is so delicate in operation that the slightest movement of either of the switches, whatever the distance from the signal, produces a movement of the signal; and a connection between the metallic plates representing the poles of the electric current, was made by means of the head and point of a common toilet pin, which easily and instantaneously moved it.

At this place, on the New Jersey Road, which here crosses seven or eight streets, the trains run at full speed in coming into the city, and it is necessary that every means should be used to guard against accidents. This device, having been in use on a portion of the New York and New Haven railroad for more than eighteen months and never having failed in a single instance, was adopted by the New Jersey Railroad and Transportation Company on the most exposed portion of their line, and has proved, by the testimony of Mr. Smith, the section master at that end of the line, and a railroad engineer of some twenty or more years experience, to be absolutely reliable under all circumstances.

The results of the trials made on the occasion referred to were so convincing, as to the advantages of this device, that the unanimously expressed opinion of the gentlemen present was entirely and wholly favorable. Its applicability to bridge draws as well as railway switches, its non-liability of getting out of repair, certainty of action, and simplicity of construction seem to prove its value for general adoption on our railways, as a preventive of the loss of life and destruction of property occasioned by misplaced switches and open drawbridges. It is in use on the New York & New Haven, New Jersey, Morris & Essex, and is being introduced on other roads.

OBITUARY.

JEREMIAH CARHART.

We have often been called upon lately to record the deaths of distinguished men who, by their inventive genius, have greatly added to the general wealth and prosperity of the country. We have again to perform this sad duty for Mr. Jeremiah Carhart, of this city, an esteemed client, a worthy citizen, and successful inventor, who died at his residence, No. 216 East 19th street, on the 16th inst. Previous to 1846, at which time the firm of Carhart & Needham was formed, Mr. Carhart devoted years of experiment to the improvement of the melodeon, which was at that time an inferior instrument, both in quality of tone and power. In that year he took out a patent for an improvement upon this instrument, the nature of which consisted in drawing the air through the reeds into a bellows, instead of forcing the wind through, out of the bellows, as had been previously the case. Trifling as this change may appear to be to those not familiar with the mechanism of these instruments, it revolutionized the whole business of melodeon manufacture, and so changed the character of the instrument, that the plan has been universally adopted. Having been eminently successful in this improvement he next turned his attention to the perfection of the reeds, or thin strips of metal, the vibration of which produces the tones of the instrument. In this he was also very successful. He invented a machine that would make, rivet, and plane these reeds to the proper size and thickness, and followed up this improvement by the invention of a "tube board" to hold them when finished. Soon after he invented a new reed, the peculiarity of which is, that it is held by its thickness and not by the edge, as had been previously the case. He also invented a machine for riveting the reed to the block which does the work of twenty men with far greater accuracy than it could be possibly done by hand. Another of his inventions was an automatic machine for cutting the cells in the reed board, which is such a marvel of ingenuity that it has been ranked with the celebrated Blanchard lathe. This machine is not only capable of cutting in straight lines, but it carves scrolls with a nicety and rapidity entirely unequaled by hand labor.

His improvements gave the firm the monopoly of the reed manufacture, it being divided with two other firms, which paid a royalty for the privilege. The instruments manufactured by this firm, early took, and have always maintained, a leading rank in the trade.

Mr. Carhart was an industrious, honorable man, and a genial warm-hearted companion. His business success was well merited, and his death will be lamented by a large circle of friends and acquaintances.

CAPT. COMSTOCK.

We regret to announce the death of Capt. Joseph Jesse Comstock, who was widely and favorably known as the commander of the steamer *Baltic* and other vessels of the Collins line. Capt. Comstock died at his residence in New York city on the 16th inst., from an attack of pleurisy. He commenced his nautical career, as a boy, on a Long Island schooner. After having served four years on a ship in the China trade, he took the position of first officer on a Liverpool packet. Subsequently, he commanded a steamer on the Long Island Sound, and remained upon that route until 1850, when he entered the service of the Collins line, remaining in it until its suspension, after which he commanded at different times the *Baltic* and the *Adriatic*, used as transports by the Government. He delivered to the Russian government the *General Admiral* in 1859, the *Re d'Italia* to the Italian Government in 1863, and the famous *Dunderberg* to the French Government in 1867. He was also for two years agent for the New York and Havre line. Upon the sale of the vessels of that company he retired to private life, to enjoy only for a brief season the fruits of an active and useful career. He was an able seaman, and his death will cause pain to many who are indebted to his superior skill for safe and pleasant voyages across the stormy Atlantic, as well to a nearer circle of friends.

CHANGES IN THE PATENT OFFICE.

COMMISSIONER FOOTE, of the Patent Office, has promoted Samuel Duncan, First Assistant Examiner, to special duty in the Commissioner's room as his assistant, and V. D. Stockbridge from a clerkship to be Second Assistant Examiner. James L. Norris and Charles Page have also received promotion to the Examining Corps. J. H. Adams of Boston, has been appointed to take charge of the annual "Patent Office Report," in place of Edward H. Knight removed, rumor says on account of his connection with a Patent Agency. Mr. Adams is a very competent man, and, previous to his removal to Boston, was connected with the Examining Corps of the office for many years.

Editorial Summary.

THE act of Congress amending the Postal Laws declares that it shall not be lawful to deposit in a post-office, to be sent by mail, any letters or circulars concerning lotteries, so-called gift concerts, or other similar enterprises, offering prizes of any kind, on any pretext whatever. In conformity with this law, Postmaster-General Randall has directed that all such matter be sent to the Dead Letter Office, without being returned to the owners. We hope the result may be to rid the mails of a mess of trash, by means of which ignorant people permit themselves to be swindled, in the delusive hope that somehow they may suddenly get rich, by a matter of chance. But will the system work? We doubt it.

IT is a prevalent but mistaken idea in the Eastern States, that there are but few factories in the west. The fact is, that the cities and villages of the west are teeming with busy workshops. For instance, of the cities, St. Louis has over 300 factories and produces nearly $50,000,000 worth of goods annually, and of the villages, Moline, Ill., among other things, makes 50,000 plows of various kinds a year, and has $120,000 invested in shops where a log enters one end of the building and emerges from the other in the shape of tubs, pails and churns.

ONE of the divers employed in ascertaining the condition of the harbor bottom at the mouth of the sewer at the Dry dock of the U. S. Navy-yard, was suffocated to death in the diving bell used for that purpose on the 20th inst. A companion who was with him at the time was also rendered insensible so that his life was saved with considerable difficulty. The bell was not built on the same plan of the one used on the wreck of the *Hussar*, recently described in our columns.

ANOTHER NEW PLANET.—Prof. Watson, of the Detroit Observatory, announces the discovery of another new minor planet, which was made by him on the night of August 16th. It appears like a star of the 10th magnitude, and at twilight on the morning of the 17th its right ascension was 35° 24′, and its declination 0° 48′ south. Its apparent motion is west and north, 34″ in right ascension, and 4′ of arc in declination.

CHICAGO sent forward to the east last year, 48,000,000 bushels of grain, of which ninety-one per cent. went by water, and nine per cent. by rail. Of the millions of bushels of corn which were forwarded east from the same point, ninety-nine per cent went by water. And all this in face of the four and one-half months of suspension of navigation during the season.

DITCHING is something of a feature in farming operations in the west, especially in Ohio. The work is often performed under supervision of the county authorities. The Commissioners of Paulding county, Ohio, have established a ditch eleven miles long, and one has been completed in Wood county, 12 miles long, at a cost of $75,000.

AT the recent hurricane in Mauritius all the railway stations were unroofed, the iron doors of an engine shed were torn from their fastenings, and one of them weighing a tun and a quarter is said to have been blown entirely across the line of the railway. Two spans of an iron viaduct one hundred and twenty feet in length were hurled into a ravine below.

WE would call attention to the advertisement headed "To Coal Oil Manufacturers." From the analysis of Professors Ellet and Everett it is shown that Breckinridge coal yields a very large per cent of paraffine and lubricating oil, placing it measurably out of competition with petroleum and putting it, as regards a market, with sperm oils.

QUEEN VICTORIA has just signed an act of Parliament authorizing a company to lay down and work a street railway in the city of Liverpool. Street railways are a very convenient nuisance in this city.

SOME velocipede amateurs of Marseilles, France, are arranging a long journey with this novel means of locomotion. The velocipedes are to start from Marseilles for Genoa by the Corniche road, and thence to Turin and Susa over Mont Cenis, and back to Marseilles by the valley of the Rhone.

IT was some time since predicted by some geologists, that naphtha would be found in the Caucasus Mountains. It is now announced that this belief has been realized. A boring 276 feet deep has reached a deposit near Knaaco, which is said to be yielding a large daily average.

AN IMPERIAL INVENTOR.—We learn through private advices that the Emperor Napoleon has invented a single-rail railway, which is now working satisfactorily between the villages of Raincy and Montfermeil, near Paris. No description of the improvement has yet been published.

IN some of the large railway stations in France, the walls are decorated by large carefully painted maps of the main line, showing also its connections with branch roads.

A "Labor Parliament" is to be held in London, England, to devise measures for securing seats in Parliament for at least a dozen *bona fide* workingmen.

OFFICIAL REPORT OF PATENTS AND CLAIMS

Issued by the United States Patent Office,

FOR THE WEEK ENDING AUGUST 18, 1868.

Reported Officially for the Scientific American.

PATENTS ARE GRANTED FOR SEVENTEEN YEARS, the following being a schedule of fees:—

On filing each Caveat.....$10
On filing each application for a Patent, except for a design.....$15
On issuing each original Patent.....$20
On appeal to Commissioner of Patents.....$20
On application for Reissue.....$30
On application for Extension of Patent.....$50
On granting the Extension.....$50
On filing a Disclaimer.....$10
On filing application for Design (three and a half years).....$10
On filing application for Design (seven years).....$15
On filing application for Design (fourteen years).....$30

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay $500 on application.

☞ *Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to Inventors, may be had gratis by addressing MUNN & CO., Publishers of the Scientific American, New York.*

81,060.—DEVICE FOR VENTILATING AND DESICCATING.—E. H. Ashcroft, Lynn, Mass.

I claim the combination of the T-shaped pipe, A, and the inner horizontal one, d, constructed and operated in the manner substantially as shown and described, and for the purpose set forth.

81,061.—SOLES FOR BOOTS AND SHOES.—Alexander Joseph Bassett, Philadelphia, Pa.

I claim a sole for boots and shoes, arranged substantially in the manner and for the purpose specified.

81,062.—SUGAR PACKER.—E. J. Biederman, Brooklyn, N. Y.

I claim, in devices for packing barrels with sugar and other substances, the combination of the forked bar, F, with clamps, G G, and screws, H H, the crank shaft, D, and platform, A, arranged and operating substantially as and for the purpose herein set forth.

81,063.—GAS BURNER.—W. J. Brassington, Brooklyn, N. Y.

I claim, 1st, The valve, A, placed inside of the ordinary gas burner, and operated so as to cut off the force of the gas to the desired quantity necessary to supply a miniature flame, substantially as described.

2d, The valve seat, I H I, formed by the under side of the tip in the ordinary gas burner, against which the valve, A, seats itself, for the purposes specified.

3d, The application of the spiral spring, B, in combination with the valve, A, for the purposes herein specified.

4th, The movable jacket, M, or casing, with the slot, N, in combination with the band, W, for the purposes of receiving the movable glass protector or hood, R, substantially as described.

5th, The combination of the internal movable valve, A, with the elastic packing, F, and plate, G, and screw, D, or their equivalents, substantially as shown and described, for the purposes set forth.

6th, The application and use of the spring point, P, attached to the movable jacket, M, or casing, and the notch, K, to receive the same, for the purpose of securing the aforesaid movable jacket, M, or casing in its proper position, when it is raised to protect the small flame, U, or drawn down to permit a full flame at T, as herein specified.

7th, A pull or handle, O, or other suitable device, attached to the movable jacket, M, or casing, for the purpose of operating the same, either up or down, substantially as described and herein set forth.

81,064.—BEARING FOR FLYERS IN SPINNING MACHINES.—Jas. Brown, Pawtucket, R. I.

I claim the within described arrangement of the confining screws, a b, the tube, c, the rail, A, and the oil trough, d, placed underneath the rail, the screws by such arrangement being within the rail, and the oil trough being below, and covered by it, in manner as specified.

Also, the arrangement of the confining screws, a b, the tube, c, the rail, A, provided with oil and air ducts, e f, the oil trough, d, and the oil duct, i, substantially as described.

81,065.—SOFA BED.—Wm. Brown, Worcester, Mass.

I claim, 1st, The combination, with the sofa bed, of the pieces, d d, and the loops, a a', or either, and the spring arms, g g, substantially as and for the purposes set forth.

2d, The combination, with the hinged legs, G G, and loops, a a', of the pieces or legs, H and arms, g, substantially as and for the purposes set forth.

3d, The combined head boards and detachable legs, H, substantially as described.

81,066.—CORN PLANTER.—Jarvis Case, Lafayette, Ind.

I claim, 1st, Connecting the front and rear frames of the machine by means of the flexible plate, t, when said parts are combined substantially as described.

2d, The catch, n, pivoted to the rear frame, and arranged to engage with the bar, U, for locking the front and rear frames rigidly together, substantially as and for the purpose set forth.

3d, The scattering device, arranged in the lower end of the seed tubes, when constructed substantially as described.

4th, The seat, T, when arranged to be adjusted in rear of the axle, or over the front part of the platform, substantially as described.

5th, The combination of the valve, f, pivoted cam g, and sliding arm, i, attached to the seed slides, constructed and arranged to operate substantially as shown and described.

6th, The removable hopper bottom, C, having the cut-off e, attached thereto, when constructed and arranged substantially as shown and described.

81,067.—CAR COUPLING.—Ed. W. Chadwick (assignor to himself and Wm. P. Chadwick), Edgartown, Mass.

I claim the arrangement and combination of the chambered cap, C, with the chambered draw bar, A, the spring, h, and the lever catch, B, made as described.

81,068.—ARTIFICIAL TEETH.—J. W. Clark, Philadelphia, Pa.

I claim, 1st, The arrangement of the double notched pin, P, and the manner of securing the same in proper position by means of notches in dies, 1, 2, 3, 4, 5, and 6, and slide, D.

2d, The manner of arranging the dies, 1, 3, 3, 4, 5, and 6, and drawing them out from the sides of the molds: also, the arrangement of the bolts, B, and thumb screw, S, for securing said dies firmly in place.

81,069.—BIT FOR BORING WOOD.—Ransom Cook, Saratoga Springs, N. Y.

I claim the improved spoon bit, constructed substantially as hereinbefore set forth.

81,070.—LOOM.—George Crompton, Worcester, Mass.

I claim, in combination with angular evener levers and horizontal harness levers, operated upon by such eveners (to bring the jack hooks into line), the rocker links, t, which connect such eveners with the slide rods, substantially as set forth.

Also, in combination with jacks operating upon horizontal harness levers, and with angular lifter and depresser levers operating such jacks, the angular lifter and depresser levers, connected to the slide rods by which they are operated, by the rocker links, n, substantially as described.

81,071.—MANUFACTURE OF COMPOUND OILS.—Francois Louis De Gerbeth, Dalston, England, assignor to Thomas S. G. Kirkpatrick. Dated August 18, 1868; patented in England, November 11, 1867.

I claim the production of an oil resembling linseed oil, and applicable to

painting and varnish making, from a mixture of petroleum or coal oil, or such like hydrocarbon and rosin oil, such oils being treated with oxidizing agents, ozonized air, galvanic electricity, and dryers, as herein described.

Also, the treating petroleum, coal oil, or other similar hydrocarbon oil with oxidizing agents, and galvanic electricity, so as to improve the color, as herein described.

Also, the production of a spirit similar to turpentine, from a mixture of light petroleum or coal oil, or other similar light hydrocarbon oil or spirit, and light rosin oil or spirit, such oils or spirits being treated with oxidizing agents, ozonized air, and galvanic electricity, as herein described.

Also, the apparatus hereinbefore described, for the treatment of oils and spirits by means of ozonized air.

81,072.—GOVERNOR FOR STEAM ENGINES.—J. L. Dickinson, Dubuque, Iowa.

I claim the crank form of the upper end of the ball arms, in combination with the adjustable boxes, giving both lateral and vertical motion to the balls, for the purpose and in the manner substantially as herein described.

81,073.—MACHINE FOR MAKING FRINGES.—Edward Doran, Philadelphia, Pa.

I claim, 1st, The pulley, L, with its ratchet tooth or notch, in combination with the pawl, O, and the arbor with its arms, l', the said parts being constructed, arranged, and operated by the cord, p'', pulleys, P and Q, cord, q', weight, q'', and the lay, B, as and for the purposes described.

2d, The slotted plate, M, stem, m', spring, m'', bar, k'', and lever, K, the said parts being arranged and supported so as to be operated together by means of the said spring, m'', trigger, k', and the projection, r, on the lay, or their equivalents, substantially as and for the purpose described.

81,074.—LUMBER DRYER.—John Du Bois, Williamsport, Pa

I claim, 1st, The arrangement of drying sheds provided with grated or open floors for sticking lumber standing on end, it being held upright by series of strips or stickers e e e, resting on the girts, b b, on plates, d d, substantially in the manner as described for the purposes herein set forth.

2d, The rib or raised portion on the inner edge of the girts, in combination with the cleats, i i, on the ends of the strips or stickers, e e e, substantially as and for the purposes herein specified.

3d, The application of the car, C, with the turntable frame thereon, and elevated track, B, when used in combination with the drying sheds, constructed as herein set forth.

81,075.—DEVICE FOR MOVING VESSELS TO AND FROM WHARVES OR DOCKS TO WATER.—John Du Bois, Williamsport, Pa.

I claim the floats, F E, constructed and arranged as herein described, in combination with transversible, detachable, and adjustable framework, a e d g, in the manner and for the purpose herein set forth.

81,076.—DREDGING MACHINE.—John Du Bois, Williamsport, Pa

I claim, 1st, The arrangement of the sliding frame, E, with its elevators, G G, and hook prongs, i i, substantially as herein described.

2d, The adjustable sliding frame, E, in combination with the rail track frame, N, for the raising and disposing of the mud, earth, or gravel, as herein specified.

3d, The construction and arrangement of the grouser boats, A' A', with their platform connections, in combination with a dredge boat or scow, substantially as set forth.

4th, The mode by which the dredging scow, A, is moved forward and guided while in the act of operation, substantially as herein set forth.

5th, The construction and arrangement of the car track, P P, with its adjustable supporting legs, R R, in combination with the mud or earth-removing vessel, B, as herein described for the purposes set forth.

81,077.—FARM GATE.—Elias Easton, Prairieville, Mich.

I claim, 1st, The combination of the rear gate-post, B, when provided with perforations, as described, with clasp hinges, c c, and an ordinary gate, for the purpose of adjusting said gate at any desired elevation, as herein fully set forth.

2d, The combination of the levers, F and H, with the cords, j j, and side posts, M, and pitman, I, when arranged substantially in the manner and for the purposes specified.

81,078.—ROOFING.—Michael Ehret, Jr., Philadelphia, Pa.

I claim roofing consisting of granulated slag, scoria, or cinder, applied to a cement surface, as set forth.

81,079.—AXLE.—John Elmire, Martic Township, Pa.

I claim the arrangement of a stout bed plate, A, in combination with the prolonged shouldered bearings, B B, inserted through the bed plates, A, and secured by a nut on a screw end, in the manner shown, when combined with a cylindrical roller, C, and inserted in the manner and for the purpose specified.

81,080.—TENSION DEVICE FOR SEWING MACHINES.—H. C. Goodrich, Chicago, Ill.

I claim the plates, A and C, in combination with the pivoted spring or lever, D, and set screw, i, constructed and arranged to operate with the presser shank, substantially as specified.

81,081.—SNOW PLOW.—N. S. Green, Utica (Welaunee Post-office), Wisconsin.

I claim the arrangement of the mold boards, C C, upon a V-shaped skeleton frame, when said boards are provided with scrolls, F F, upon their entire upper edges, and with beveled fronts, to the rear of which are formed vertical flanges, G G, all as herein shown and described.

81,082.—MOLDING WATCH CASES AND LOCKETS FROM HARD RUBBER.—W. H. Halsey, Hoboken, N. J.

I claim, 1st, The dies, constructed with the cavities, 3 3 3', when made in the form described and shown, for the purpose of molding watch cases and lockets of hard rubber, substantially as herein set forth.

2d, As a new manufacture, watch cases and lockets, when made of hard rubber, by means of the herein-described dies.

81,083.—WHEEL AND AXLE FOR RAILROAD CARS.—T. C. Hargrave, Boston, Mass.

I claim the within described car wheel, with its plate and axles, constructed and operating substantially as set forth.

81,084.—ALARM FOR CARDING MACHINE.—J. Haythorn and C. E. Price, Thompsonville, Conn.

We claim the combination of the rolls, B and C, spring posts, b b, cord, F, with bolt, G, and lever, H, with its bell, all arranged substantially as described and applied to a carding machine, for the purpose set froth.

81,085.—THILL COUPLING.—S. E. Horner, Shiloh, N. J.

I claim the clip, A, thill, D, snap hook, E, and the gum block F, when combined as shown and described.

81,086.—FLOUR BOLT.—C. B. Horton, Sand Bank, N. Y.

I claim, 1st, The combination of the blast apparatus, D E e, for supplying air to the interior of the bolt chest, with ventilators, F', constructed of any suitable cloth, and arranged substantially as herein set forth.

2d, The arrangement of spring rappers, H I' J, mounted transversely upon the exterior of the bolt chest, and operating in the manner and for the purposes specified.

81,087.—BOOT CRIMPER.—A. J. F. Howard (assignor to himself and E. Mann), Milford, Mass.

I claim as my invention, the improved construction of the movable jaw of a boot crimper as made of a tapering or frusto-conical form, in manner and for the purpose as herein explained and shown.

81,088.—MEAT CUTTER.—J. C. Howe, Worcester, Mass., assignor to himself and Thomas Gates.

I claim, 1st, The combination and arrangement, in a meat-cutting machine, substantially as described, of the vertical cutters, c, and horizontal cutter shafts, in the manner set forth, whereby the said cutters while revolving around a vertical axis, shall have an independent rotary movement in a vertical plane upon their own axes, so as to produce the compound drawing cutting motion, substantially as specified.

2d, The combination, with a cutting bed, and a receptacle for meat or other material, of the central shaft, N, horizontal shaft or shafts, H, having cutters, c, of greater diameter than the gears, I I, and arranged for joint operation, substantially as and for the purposes set forth.

3d, The combination with the base, A, and cutting table or bed, G, of the disk, F, and adjusting screws, b, substantially as and for the purposes set forth.

4th, The combination and arrangement of the parts, A F G and D, substantially as and for the purposes set forth.

5th, The combination, with the parts, A B D and E, of the operating shaft, N, and cutting mechanism, substantially as and for the purposes set forth.

81,089.—HAT.—Henry C. Hulbert and Alonzo Follett, Brooklyn, N. Y.

We claim the combination of a body of stockinet, of the form of the head covering required, with a pliable coating, the said combination being consolidated by pressure between dies, substantially as before set forth.

Also, the combination of a cloth body of the form of the head covering required, with an embossed coating, composed of india-rubber, substantially as before set forth.

81,090.—HARVESTER RAKE.—Stephen Hull, Poughkeepsie, N. Y.

I claim, 1st, The intermediate platform, E, placed between the grain platform and draft frame, and having mounted upon it the rake and reel post, F, substantially as described.

2d, The cam plate, H, the spur wheel, G, and the adjustable journal box, C2, applied upon the post, F, in combination with the pinion shaft, D, and driving wheel, B, substantially as described.

3d, The closed cam-plate, H, constructed to operate upon the reel and rake arms, as described, and extended to or nearly to the inner surface of the cam rail, K, so as to serve as a top shield for the rake and reel gearing.

4th, The cam-projection, j', arranged as described, in combination with the projections, J, upon the pivoted reel arm hinging portions, H2, substantially as described.

5th, The construction of the cam rail, K, inner divider, L, and the device, K', so that these parts unite and form conjointly a continuous closed shield at the inner front corner and inner edge of the platform, as shown, and thus serve for keeping the loose straw and other obstacles from getting under the cam plate, H, as set forth.

6th, The combination of the side shield, L, and the extended closed cam plate, H, the same being constructed and arranged substantially as shown and described,

7th, The removable apron, N, applied to the bearing, B1, and cam rail, K, substantially as and for the purpose described.

8th, Shaft, d, supported at one end by a sliding bearing, c2, on post, F, and connected at the other end to the axle of the wheel, B, by a coupling box, h, in combination with the pinion, e, and a clutching device, substantially as described.

9th, The slotted and pivoted extended brace, s', applied on the side of the tongue or pole, M, and serving to brace the same, and also serving as a means for raising and lowering the same, in combination with the vibrating latching lever, t, and segment, R, the whole substantially as herein described,

10th, A combined revolving reel and rake, mounted on a support, which is on the intermediate platform, E, of a harvester, such combined reel and rake having its arms hinged to one bead, which revolves independently of the support, and also has its arms guided and controlled by a cam or cam and guide rail, in their movements over the grain platform, and turned up at intervals to nearly an upright position in rear of their support or axis, the shaft or axis of said reel and rake being vertical, or nearly so, substantially as and for the purpose described.

11th, The combination of a vertical shaft, which has its support on platform, E of the harvester, a cam guide-way and reel and rake arms combined, which revolve independently of the vertical shaft, all substantially as and for the purpose described.

12th, The construction of a seat standard, A6, of a strip or piece of spring metal twisted, substantially as and for the purpose described.

81,091.—VENTILATOR.—Aaron Hurff, Swedesboro, N. J.

I claim a ventilator, having a swinging foul air pipe, combined with an outlet or discharge pipe, substantially as and for the purpose described.

Also, the above, in combination with an adjustable funnel, substantially as and for the purpose described.

81,092.—ATTACHING POLE STRAPS TO NECK YOKES.—Nathaniel Irish, Rochester, Minn.

I claim the pole straps, C C, and metallic loops, B B, when constructed, arranged, and used, substantially in the manner set forth.

81,093.—LUBRICATING OIL.—John A. Kestler, Chicago, Ill.

I claim the oil composed of the ingredients, and manufactured as herein described.

81,094.—APPARATUS FOR DRYING BRICKS.—William O. Leslie, Philadelphia, Pa.

I claim the drying house above described, consisting of the brick building, A, having the compartments, A1 A2 A3, the furnace, F, the hot air pipes, H H1, the registers, h1 h2 h3, the valve doors, a a a, the doors, B B, and D D, and the railroad, R R, all constructed, combined, and arranged substantially in the manner and for the purpose specified.

81,095.—MACHINE FOR BENDING WOOD.—William P. Letchworth, Buffalo, N. Y.

I claim the herein described device for bending hames, consisting of the former, A, notched at one end, and provided with a hook at the other, and employed in connection with the strip, f, all constructed and arranged in the manner and for the purpose set forth.

81,096.—BOOT-CRIMP.—Elbridge Mann, and A. J. F. Howard, Milford, Mass.

We claim the construction of the movable jaw, a, as having its teeth of a curved or irregular shape, in manner and for the purpose as before described.

81,097.—STATION-INDICATOR.—C. K. Marshall, New Orleans, La. Antedated August 6, 1868.

I claim, 1st, The endless chain, C, when the same is composed of metal plates, D and E, so united and arranged as to form the T-shaped ratchet bearing, substantially as and for the purpose specified.

2d, The combination of the endless chains, C C, and tags, F F, when the same are constructed and arranged substantially as described.

3d, The combination of the chains, C C, plate, G, pawl, I and spring, H, when the same are constructed and arranged substantially as described.

81,098.—CANT HOOK.—Joseph McDonald, Oshkosh, Wis.

I claim the combination of the hook, B, and its stoppers, E E, with band, D, bar, F, and the handle, A, the several parts being constructed to operate substantially as described.

81,099.—FLY NET FOR WINDOW.—William C. McGowan, and J. Madison Hale, Georgia Plains, Vt.

We claim a bag of netting, B, extended over the frame, b b, etc., over the upper portion of a window, and provided with the flap, C, for closing the mouth, as and for the purposes described.

81,100.—BREECH-LOADING FIRE-ARM.—Joe V. Meigs, Washton, D. C. Antedated August 5, 1868.

I claim, 1st, The loose breech block, D, constructed, arranged, and operating as and for the purposes described.

2d, The bent lever or link, E, constructed, arranged, and operating as and for the purpose described.

3d, The hook, e3, constructed as described, and vibrating in a vertical plane, to push in the cartridge as the breech is closed, and hooking over the edge of the cartridge shell as the breech is opened.

4th, A cartridge-inserting and extracting lever, having three movable fulcra or working pivots, substantially as described.

5th, The combination of the sliding guard, the vibrating lever, E, and the breech block, all constructed and arranged for joint operation as described.

6th, The combination of a vertically sliding horizontally slotted breech block, with a vibrating lever, having a pin working in the slot of the breech block, whereby the block is held up to close the breech securely without strain on the lever.

7th, The combination, as described, with the hammer, of the vertically moving loose breech block, constructed as described, whereby the block can be used as a firing pin.

81,101.—BRUSH.—William M. Newton (assignor to himself and John E. Armendt), Baltimore, Md.

I claim the improved trencher-brush, consisting of the combined handle and frame, A, made of a single piece of metal, and the plate, B, secured thereto, as herein shown and described.

81,102.—ATTACHING HANDLE TO SAW.—James Ohlen, Columbus, Ohio.

I claim, 1st, The construction of the socket, B, jaws, B1, and slotted or split screw bolt, B2, in one piece, substantially as shown and described.

2d, The slotted washer, E, in combination with the nut, D, bolt, B2, jaws, B1, and socket, B, substantially as described.

81,103.—MACHINE FOR WIRING WINDOW-BLINDS.—Gerrit V. Orton, and William H. Doane, Cincinnati, Ohio.

We claim the feed bar, d, when so pivoted and arranged that it will be depressed by the action of the driver, b, substantially in the manner and for the purposes herein set forth.

81,104.—COMPOUND FOR PRESERVING EGGS.—J. B. Patterson, Portage City, Ohio.

I claim the herein-described compound, composed of the ingredients substantially as set forth, for the purpose specified.

81,105.—MACHINE FOR GRINDING THE CUTTERS OF MOWING-MACHINE.—Henry F. Phillips, and Henry W. Leonard, Auburn, N. Y.

We claim, 1st, In combination with the curved or hollowed-out block, B, the rocking and adjustable bearer, c, for adjusting the shaft of the grindstone, substantially as and for the purpose set forth.

2d, In combination with the shaft, D, and its stone, E, the collar, e, and arm, g, so that the same may be fed and held up to the sections by a positive and unyielding feed, or be held rigid by said arm, substantially as and for the purpose described.

3d, The combination of the table or arcs, I I', with the holder, G, for guiding, holding, and gaging the inclination of said holder, by devices connected therewith, substantially as described.

4th, In combination with a fixed position of rotation of the stone, the screw, g, as a feeding screw, to feed the section to the stone and rigidly hold it against jar or motion, and thus prevent the stone from wearing out of round, substantially as described.

81,106.—SHOE.—Joel Putnam, Danvers, Mass.

I claim, as my invention, the new or improved manufacture of shoe as made with two flies applied and fastened along the sides of its lacing slit, and formed so as to overlap one another under circumstances as specified.

81,107.—WATCH.—George P. Reed, Boston, Mass.

I claim forming an orifice in the top, on stop works plate of a watch, and partially or wholly surrounding the winding arbor thereof, such orifice being disposed above or opposite the main wheel and winding ratchet, and the spring and click of the latter, essentially in manner, and to operate as herein shown and described,

81,108.—CULTIVATOR.—Jacob Reichard, Fayetteville, Pa.

I claim an improved cultivator, arranged, constructed, and operating substantially in the manner as shown and described, and for the purpose set forth.

81,109.—GRATE FOR HOT-AIR FURNACE.—Edward Sabine Renwick, New York city.

I claim the combination of the following instrumentalities, viz., the fire-box, two gangs of grate bars, the members of one of which are reciprocable longitudinally relatively to those of the other, a rock shaft, with which the grate bars are connected, so that they may be tipped, and a grate bar mover, connected with one gang of grate bars in the vicinity of the axis of the rock shaft, all operating substantially as before set forth.

Also, the combination of the following instrumentalities, viz., the fire-box, two gangs of grate bars, having the relationship aforesaid, the rock shaft, on which the grate may be tipped, the grate bar mover, connected with one gang of grate bars in the vicinity of the axis of the rock shaft, and a lever-handle, arranged at the exterior of the ash pit, substantially as before set forth.

81,110.—HARNESS ROSETTE.—C. F. Richers, New York city.

I claim the employment of the detachable fringe holder, D, in combination with the rosette, provided with the spring, G, substantially as and for the purpose herein stated.

81,111.—SCREW-HANDLE ATTACHMENT.—Ezra Ripley, Troy, N. Y.

I claim the conical shank, B, or its equivalent, having the screw, C, on one end thereof, for the purpose of connecting wooden or other handles to spoons, bowls, or other culinary vessels, substantially in the manner and for the purposes herein described and set forth.

81,112.—SLATE-TRIMMING MACHINE.—Henry J. Ruggles, Poultney, Vt.

I claim the arrangement of the cutting edges, f and g, of the moving knife, so as to cut from both opposite edges of the slate, and cause the cut to terminate at a distance from either edge, substantially as and for the purpose herein specified.

81,113.—LOOM.—John Salsbury, Central Falls, R. I.

I claim, 1st, The protecting pin, a, constructed as described, with a rubber packing, b, or spiral spring, and slide or pin, c, substantially as and for the purpose specified.

2d, The combination of the barrel, C, fig. 3, rubber packing, D, and piston, E, in combination with the breast beam, in the manner and for the purposes specified.

3d, The combination of the rod, F, cylinder, H, and spiral spring or rubber packing, constructed and arranged substantially as described for the purpose specified.

4th, The combination of the device shown in fig. 3, the frog or shoe, L, and the breast beam, in the manner described, and for the purposes specified.

81,114.—STEERING APPARATUS.—Amos Sargent, Brewer, Me.

I claim the curved and elastic guard, f, applied to the rack, d, and pinion, c', as and for the purpose set forth.

81,115.—CARRIAGE AXLE COUPLING.—George F. Smith, Plantsville, Conn.

I claim the combination of the bed plate, c, with clips, a a, joined to it, so as to embrace the axle at its middle.

Also, the bed plate, c, the king bolt, E, and the middle clips, a a, as joined together in one piece.

Also, the arrangement of the ends of the bed plate within the clips, d d, of each pair of the sweat clips, when such bed-plate, the middle clips, and the king-bolt are joined together in one piece, as set forth.

Also, the king bolt, its cylindrical or base, the bed plate, and middle clips, as joined together and applied to the axle, as set forth.

81,116.—FRUIT JAR.—Charles F. Spencer, Rochester, N. Y.

I claim the combination of the annular recess, C, provided with shoulders, a d, and stopper, B, formed with its upper edge beveled or cone shaped and central lug, e, or its equivalent, with the cross rod, g, inclined bearings, i i, and gasket, b, arranged and operating substantially as and for the purpose set forth.

81,117.—FEED-WATER HEATER FOR BOILERS.—Edwin R. Stilwell, Dayton, Ohio.

I claim, 1st, A distributing-disk, located above the series of shelves, to receive and distribute the water from the induction water-pipe, substantially as described.

2d, A series of shelves to check the flow and receive the impurities of water in combination with a steam pipe or pipes, arranged substantially as described, and provided with a series of orifices for introducing the steam at different levels, so as to bring several currents of steam into fresh and simultaneous action upon the water, substantially as described.

3d, The induction steam pipe, H, entering below the series of shelves, and provided with a series of openings for the escape of steam, substantially as described.

4th, The dripping troughs, h h, arranged substantially as and for the purpose described.

81,118.—GRATE OF RAILROAD CAR STOVE.—Jacob Stone, Belvidere, N. J., assignor to himself and Abram F. Randolph, Washington, D. C.

I claim the combination with a car stove grate, of a central post, arranged to be turned in its bearings, and to which the grate is centrally hinged, substantially as and for the purpose set forth.

Also, the combination of the grate with the central post, when the latter extends downward through the ash chamber, and beyond its bottom plate, and is supported in the latter, so that the grate may be agitated or unset, substantially in the manner set forth.

81,119.—MILK CAN.—Isaac Vanderslice, Philadelphia, Pa.

I claim the cast iron milk can bottom, B, having the upward and downward projecting flanges, b1 b2, the latter having an external beveled surface, to form a thread upon which to roll the can, as set forth.

81,120.—SPRING SLAT BOTTOM.—Joseph Scott Vanhorn and William H. Pack, Jersey City, N. J.

We claim, 1st, The spring, a, constructed substantially as shown and applied as a central bearing for a bed slat, in the crown of its arch, substantially as set forth.

2d, The combination, with the springs, a, and the arched slats of the adjustable pieces, f f, arranged to be shifted in the side pieces, substantially as and for the purpose described.

3d, The combination of the rods, c, and hooks or clasps, e, with the slat and its central supporting spring, substantially as and for the purpose described.

81,121.—CORN SHELLER.—William H. Whiterow, New Albany, assignor to himself and William Detrick, Greencastle, Ind.

I claim, 1st, The shelling lips, c, and spiral feeding edges, d, the pivoted bars, H H, and the wheel, G, constructed and arranged substantially as and for the purposes specified.

2d, The bars, J J, at the rear of the upright, A, in connection with the bars H, provided with the shelling lips and feeding edges, all arranged substantially as and for the purpose specified.

3d, The tube, F, in combination with the bars, J J, bars, H H, and the wheels, E G, all arranged and combined to operate in the manner substantially as and for the purpose set forth.

81,122.—MEDICAL COMPOUND.—Charles Henry Whittemore, Lewiston Me.

I claim the combination of the three ingredients herein first named, also their combination with either or both of the others.

81,123.—MACHINE FOR SPLITTING KINDLING WOOD.—William M. Williams, New York city.

I claim, 1st, A pair of feeding rollers, m n, moved progressively when the splitting knives are out of the wood, in combination with the said splitting knives, and trough in which the wood is moved along by said rollers, and supported while being split, substantially as specified.

2d, The spring-steadying bars, n', in combination with the feed rollers, m n and splitting knives, i, as and for the purposes specified.

81,124.—STREET CAR LANTERN.—Albert A. Young (assignor to himself and Francis McLaughlin), Boston, Mass.

I claim, 1st, The construction and arrangement of the lantern B, adjusted upon the roof of the car, A, by suitable fastenings, whereby the light from a single lamp, reflected as described, will both light the car and indicate its destination, substantially in the manner and for the purpose described.

2d, The construction and arrangement of the single light, c, inserted in the lantern, B, at each end substantially in the manner and for the purpose described.

3d, The ventilators, b b, as constructed and arranged, with wire netting, or its equivalent, upon the sides of the lantern, B, substantially as described.

4th, Lighting street cars from the center of the roof of the car, by means of a lamp or other light, hung in a lantern provided with reflecting surfaces, said lantern being raised above and fastened upon the roof of the car, substantially as described.

81,125.—SCOW.—Enoch J. Allen, Rondout, N. Y.

I claim the combination of the cross keelsons and beams, H I, transverse trestles, J, and longitudinal trestles, G, arranged as described, in a scow, whereby the cross keelsons support the transverse trestles, and the latter support the longitudinal trestles, as herein shown and described.

81,126.—SAW GRINDING MACHINE.—Emanuel Andrews, Williamsport, Pa.

I claim, 1st, The combination of the sliding bed F, grindstone, Q, and two rollers, 4 4, when the latter are geared to and their circumferences are caused to traverse at the same speed as the bed, substantially as described, for the purpose specified.

2d, The combination of the traversing bed, the frame, E, and the system of levers herein described, or the equivalent to the same, whereby a yielding upward pressure is applied to elevate the said frame and bed.

3d, The combination of the said traversing bed, the frame, E, the system of levers herein described, or their equivalents, and the set screw, m, or its equivalent whereby the extent of the upward movement of the said bed may be limited without preventing the bed from yielding when necessary

4th, The combination of the traversing bed, the grindstone spindle, and its bearings, when the latter admit of separate vertical adjustment, as described.

5th, The combination of the grindstone spindle, the operating screw, P, and the devices or their equivalents connected therewith, for the purpose of imparting a lateral motion to the said grindstone.

81,127.—WAGON HUB.—Edwin R. Baker, Fairhaven, assignor to himself and John R. Linton, New Bedford, Mass.

I claim, 1st, The metallic bub, cast in two hollow parts, with the part, B, cast upon the box, D, both parts being fitted together as described, to clasp the ends of the spokes, C, between them, as set forth.

2d, The metallic hub, when its hollow shell, B, is cast upon and with the box, D, as herein described, for the purpose specified.

81,128.—LAMP BURNER.—Philander Baker, Chicago, Ill. Antedated Aug. 5, 1868.

I claim, 1st, The combination of the tubes, B D, and the sectional or divided wick tube, C C', arranged and operating as and for the purposes described.

2d, The combination of the tubes, B D, plate, E, standards, c, or their equivalent, and the perforated plate, F, substantially as specified and shown.

3d, The combination of the tubes, B D, divided wick tube, C C', plate, E standards, c, and perforated plate, F, arranged and operating substantially in the manner and for the purposes set forth.

81,129.—HARVESTER.—Andrew B. Barnard, Sherman R. Nye, and Richard L. Hewett, West Fitchburg, Mass.

We claim the combination of the compound lever, e f, the cam lever, g, with the cam lever, l, and foot lever, l, or their equivalents, substantially as and for the purpose set forth.

81,130.—HARVESTER RAKE.—James B. Bowen, Cleanthus A. Reed, and Charles A. Whelan, Madison, Wis.

We claim, 1st, The rake, F, mounted on the rod, G, in combination with the guide board, L, having the groove P, formed therein, and the spring, H, all constructed and arranged to operate substantially as described.

2d, The combination of the wheel, A, having the groove, B, formed therein, as described, with the lever, D, pivoted to the standard, M, having the arm, T, attached, for operating the yoke, substantially as set forth.

81,131.—SASH FASTENING.—Thos. H. Bowerman and Calvin J. Dart, Cold water, Mich.

We claim the window fastener as constructed, with the slotted plate, A, catch, B, spring, D, and arm, c, as arranged in combination with the sliding pin, e, and knob, c, for operating the same, substantially in the manner as and for the purposes herein set forth.

81,132.—FEED WATER HEATER FOR STEAM FIRE ENGINES. Wm. A. Brickill, New York city.

I claim the combination with a steam fire engine of a heating apparatus constructed substantially as described, for the purposes fully set forth.

81,133.—LET-OFF FOR LOOMS.—L. C. Briggs, Boston, Mass.

I claim, 1st, The combination and arrangement of the wheel, L, the screw arm, D, the spring, S, and friction disk, F, working substantially as described and for the purpose set forth.

2d, The combination and arrangement of its pinion, P, spur wheel, O, shaft I, barrel pinion, K, wheel, L, the screw arm, D, spring, S, and friction disk F, working substantially as described and for the purpose set forth.

81,134.—WASH BOILER.—Paul M. Burns, Freetown, Mass.

I claim the cylindrical sprinkler, C', applied to a wash boiler, and provided with holes a', on the lower half of its surface, and arms, D', for holding down the clothes, the whole arranged and operating substantially as described.

81,135.—CARRIAGE TOP.—Nelson G. Burr, Homer, N. Y.

I claim supporting the top of a carriage with a single bow or pair of standards, substantially as described,

And in combination with a single bow supporting the top of the carriage the stands to which the bow is pivoted, so as to be raised or lowered.

Hanging the single bow or pair of standards which support the top of the carriage on pivots, so that it may be raised or lowered as desired.

Extending the ends of the bow beyond the pivots on which it swings, to serve as a means of locking the bow below the pivot when the top is raised substantially as described.

The spring catches for locking the bow or standards of the top in position when it is raised.

And in combination with the spring catches, K K, the lever or handle and the link, Q, which connects the catches so as to release them both at once by moving the lever or handle, P.

In combination with the single bow supporting the top, the bars, I I, and ribs, J, which support the covering, substantially as described.

81,136.—METHOD OF GENERATING GAS FROM PETROLEUM.—Car Carpenter, Buffalo, N. Y.

I claim, 1st, The method herein described of generating illuminating gas from crude petroleum or other impure liquid hydrocarbons, consisting in, first, vaporizing the same, by subjecting a body thereof to a low boiling heat in a boiler, and then converting said vapor into a fixed gas, by subjecting it to a high heat in a separate retort, substantially as described.

2d, In combination with the boiler, A, constructed and operating as described, a condenser, E, substantially as and for the purpose described.

3d, In combination with the boiler, A, constructed and operating as described, the steam or vapor gage, a', substantially as and for the purpose specified.

81,137.—APPARATUS FOR HEATING RAILROAD CARS.—Car Carpenter, Buffalo, N. Y.

I claim the combination and arrangement of the steam pipe, K, fan, E, valve, S, furnace, D, conducting pipe, F, branches, H H', provided with valves, j j', and register and radiator, I I', adapted for the use of steam and

hot air alternately or together in heating a train of cars, substantially in the manner set forth.

81,138.—BRAIDING ATTACHMENT FOR SEWING MACHINES.—Wm. Carpenter, Fairbury, Ill.

I claim, 1st, The combination with a sewing machine of the braiding attachment herein described, consisting of the braid reel, braid foot, and pivoted guide fingers, substantially as and for the purpose described.

2d, The combination with a sewing machine of the braid foot and pivoted guide fingers, substantially as herein shown and described.

3d, The combination with the braid foot of the guide fingers, H H, and guide rod, I, substantially as and for the purpose described.

81,139.—STOVE GRATE.—William Caven, Cincinnati, Ohio.

I claim, 1st, The combination of the grate, D, provided with a central socket, E, handle, G, and pivot, H, the bar, C, provided with the central stud F, and extension, c, and the slots or recesses, (b', all arranged and employed substantially as described, for the purposes specified.

2d, In combination with the elements of the preceding clause, the stop, J, for the purpose explained.

81,140.—CUTTING PRINTERS' LEADS.—Wm. E. Clark, Boston, Mass.

I claim, 1st, The arrangement of the guide, b, shelf, n, a movable and stationary cutter, and slot, E, substantially as and for the purpose described.

2d, The arrangement of the graduated scale, i, the adjustable gage, H, the movable and stationary cutter, and a guide, b, when constructed and operated as and for the purpose set forth.

81,141.—CARRIAGE WHEEL.—Charles Clarke, Coral, Ill.

I claim the brace, C, having the shoulder, d, and spur, f, all constructed as described, and applied to a wheel substantially as and for the purpose set forth.

81,142.—HORSESHOE.—John N. Clarke, Cincinnati, Ohio.

I claim the detachable calk for horseshoes consisting of the inwardly curved bars, B C, calks, b b' c c', retaining screw, D, and clips, E, either with or without the spurs, E, substantially as herein described and set forth.

81,143.—SHEET METAL CAN.—Porter Cook, Baltimore, Md.

I claim an angular sheet metal can having some or all of its sides provided with depressions, a a', of increasing depth, forming inward convexities, for the purpose of preventing the bulging outward of said parts by pressure within the can, substantially as described.

81,144.—SURFACE GAGE.—Wm. F. Cornell, Adrian, Mich.

I claim, 1st, The T-headed arbor, H, having a semi-cylindrical head, and semi-spherical staple, o, in combination with the T-ended collar, N, with its concave and semi-cylindrical end, for the purpose of forming a clasp, all constructed in the manner and for the purpose set forth and described.

2d, The conical shaped washer, b, and feather, c, in combination with the clasp, E, nut, D, and nut, D, and T-headed arbor, H, constructed in the manner set forth and described.

81,145.—RATCHET BRACE.—Wm. F. Cornell (assignor to himself and Silas Hurlbut), Adrian, Mich.

I claim, 1st, The combination of the socketed arm, B, ratchet wheel, J, and shaft, C, and feed screw, i, substantially as and for the purpose set forth.

2d, The combination of the screw ring cap, E, with the cylindrical socket, A, and ratchet shaft, C, substantially as and for the purpose set forth.

3d, The comoination of the counterbore, K, or countersink, M, with ratchet shaft, C, wheel, J, the cylindrical socket, X, shank, V, feather, c, and seat, i, for the purposes as set forth and described.

4th, The combination of the thumb nuts, n and o, with spindle, L, constructed in the manner and for the purpose as set forth and described.

81,146.—VANE.—L. W. Cushing and Stillman White, Waltham, Mass.

We claim in the construction of vanes the cast metal outline in combination with the plates forming the sides, substantially as described and for the purpose set forth.

81,147.—MODE OF PRESERVING THE ROOFS OF BUILDINGS.—Isaac W. Dean, Franklin, Conn.

I claim saturating the roofs of buildings with preserving material by means of a receptacle, or its equivalent, placed at or near the top of the roof, said receptacle containing the preserving material, substantially as described and for the purpose specified.

81,148.—PLOW.—J. H. Dickson, Alford, Ind.

I claim the adjustable plate, C, and the curved knives, D D, when used in combination with a shovel or other plow, B, and its beam, A, the several parts being constructed and arranged substantially as and for the purpose herein set forth.

81,149.—MODE OF PREPARING COAL DUST FOR FUEL.—A. D. Ditmars, Lancaster, Pa.

I claim preparing coal dust for fuel substantially as herein shown and described and for the purposes set forth.

81,150.—FASTENER FOR VEHICLE SEAT.—Charles Dixon, Weedsport, N. Y.

I claim the cam or eccentric, D, lever, E, lever hook, F, and ears, C constructed and combined with each other substantially as herein shown and described and for the purpose set forth.

81,151.—EGG CARRIER.—George Dorn Albany, N. Y.

I claim the cords, c' e" c'", of twine, rubber, or their equivalents, as described, woven and arranged substantially as described, for the purpose specified.

81,152.—COMPOUND FOR CURING FELONS AND SIMILAR DISEASES.—Rachel Feibelman, Columbus, Ind.

I claim the combination of matter compounded from the ingredients, and substantially in the manner set forth.

81,153.—FRUIT CRATE.—William G. Goodale, Centralia, Ill.

I claim the fruit crate above described, consisting of the box, A B, loose plates, C G, springs, D S, and boxes, F F1 F2, constructed and arranged in the manner described.

81,154.—MACHINE FOR COVERING MOLDS FOR TASSELS.—Charles Feickert, New York city.

I claim, 1st, The movable bracket, G, in combination with the fiver, F, carrying the spools, E, and guides, i, substantially as and for the purpose set forth.

2d, The hooks, i, forming guides for the wires, e, on their passage to the spindle, C, and also for the threads, as the same are deposited on the wires, substantially in the manner herein shown and described.

3d, Depositing the threads on the wires, e, before the same reach the mold, substantially as and for the purpose set forth.

81,155.—GRATE BARS.—Addison C. Fletcher, New York city.

I claim, 1st, A grate bar, constructed or provided with separated fuel points of a detachable character, and so that the same may be readily fitted to and retained by the main portion or body of the bar at suitable fixed distances apart, leaving air-ducts or spaces between them substantially as specified.

2d, In combination with the main portion or body, A, of the bar, the loose or detachable points, B, when constructed so as to leave air spaces of an enlarged or enlarging capacity in a downward direction between them, essentially as herein set forth.

3d, The combination, with the body portion of the bar, of detachable separated fuel points, having air ducts or pasages through them, substantially as specified.

81,156.—STIRRER FOR SEED SOWERS.—F. G. Floyd and E. A. Floyd, Macomb, Ill.

We claim the rotating arm, D, attached to the shaft, C, as shown and described, and arranged to revolve within the hopper, B, for the purpose set forth.

81,157.—MEANS FOR STOPPING HORSES.—Norman Fountain, New York city.

I claim, 1st, The spring, e, carrying the pads, g, and adapted to passing across the horse's nose, in combination with the metallic slides, d, introduced in the headstall, and with the rein, f, attached at the back ends of said spring, the parts operating in the manner and for the purposes set forth.

2d, The lever, h, fitted as specified, in combination with the reins, for the purposes set forth.

81,158.—HARVESTER.—Herbert E. Fowler, North Branford, assignor to himself, J. W. Bishop, D. P. Calhoun, and L. Cowles, New Haven, Conn.

I claim the arrangement of the eccentric, M, or its equivalent, upon the driving shaft, in combination with the toggle joint, O and P, lever, R, arm, C, and bell crank, S, so as to operate substantially in the manner, herein set forth.

81,159.—ROASTER FOR NUTS.—D. A. T. Gale, Poughkeepsie, N. Y.

I claim, 1st, The described arrangement of the perforated case, A, having the hinged cover, B, the rotating cylindrical heater, C, gas-pipe, i, provided with burners, case, K, heating chamber, L, and hot-air chamber, H, as herein described for the purposes specified.

2d, The arrangement of the gas-pipe, G I, having the burners and cocks, with relation to the roasting cylinder, C, and warming apparatus, K, whereby heat is applied to C K, simultaneously or alternately, as herein described for the purpose specified.

81,160.—TUCK CREASER FOR SEWING MACHINE.—Harry C. Goodrich, Chicago, Ill.

I claim the spring, E, when provided with a permanently-attached notch, f, which is always in position in relation to the point or blade, b, whatever the position of the plate, A, may be, in combination with the spring arm, D, all constructed and operating substantially as described.

81,161.—GRATE BAR.—John W. Griswold, and Edgar L. Thomson, Philadelphia, Pa.

We claim perforating the bar, A B constructed as described, with vertical conical holes, D, substantially as herein shown and described and for the purpose set forth.

81,162.—TAP AND DIE.—George Grubel, New Orleans, La.

I claim as my improvement of screw-cutting dies and taps whose threads are divided transversely, so as to present two or more salient cutting points omitting every alternate thread, and arranging those that remain in alternation, so that the sections of cutting thread following one another shall successively cut and give shape to opposite sides of the thread in the nut or on the bolt which is being threaded or tapped, substantially as described.

81,163.—PORTABLE COOKING STOVE.—Oliver B. Hale, Malone, N. Y.

I claim, 1st, A portable stove, whose sides are composed entirely of distinct sections, E, fitted to slide in vertical grooves, formed in the opposite sides of posts, D, substantially as herein shown and described, for the purpose specified.

2d, A stove provided with the vertical grooved ways or guides, D, and with boilers or vessels, F, arranged to slide in the said ways, to be brought into or moved out of contact with the fire, substantially as and for the purpose described.

3d, The combination, with the sections, of the springs, G, and guide rods, H, substantially as and for the purpose described.

4th, The sections, E, provided with the pins or hooks, b, for suspending a boiler or other similar apparatus over the fire, substantially as and for the purpose described.

5th, Perforating the sections, E, at or near their upper edges, so that when said sections are shoved down for the attachment of a cooking vessel, the drafts of air will be directed through the fire, or above the fire, when the sections are fully up to their places, substantially as herein described and represented.

6th, The combination with a stove, arranged as described, of the ash-door, B, substantially as and for the purpose described.

81,164.—METHOD OF REMOVING TIN AND OTHER COATINGS FROM SHEET METAL.—B. H. Harmon and D. B. Sturdevant, Clifton Springs, N. Y.

I claim the process of removing coatings from sheet metal or other materials, by confining the latter in a closed retort, and subjecting it to a current of hot air, as herein set forth.

Also, imparting to the basket containing the scraps a jarring or vibrating action, for the purpose of liberating the melted material, as herein set forth.

Also, constructing the basket holding the scraps with an open or grated bottom, and with perforated sides, in the manner and for the purpose specified.

81,165.—BOLT FOR PRISON DOORS.—Benjamin F. Haugh, Indianapolis, Ind.

I claim, 1st, The doors, B and E, hinged hasp, L, bolts, v, and bar, w, in combination with compartment, F, all arranged as and for the purpose set forth.

2d, The hasp, H, and hooks, O, for securing the door, D, in combination with compartment, F, arranged as and for the purpose set forth.

81,166.—COMBINED FORK, SHOVEL, AND HOE.—J. A. Heald, Columbus, Miss.

I claim the tubular handle, A, the hookshank B, and the washer, E, when the same are constructed, arranged and combined, substantially as shown and described for the purposes set forth.

81,167.—STEAM SAFETY VALVE.—Henry W. Hewett, New York city.

I claim, 1st, The arrangement of the steam ports, b, to the center or thereabouts of the valve seat, whether said seat be a concave or convex cone, or both combined, substantially as set forth.

2d, The arrangement of the double seat, n n, on the same plane, one on either side of the ports, b, substantially as shown and described.

3d, The arrangement of an annular cavity or groove, centrally or nearly so, in the face of the valve, and of greater width than that of the ports, b, in the seat, so as to span said ports, substantially as and for the purposes set forth.

4th, The arrangement of the case, f f', in combination with the spring, e, valve, C, collar, D, and locking cap, G, substantially as shown and described for the purpose set forth.

81,168.—DIRECT-ACTING ENGINE.—William D. Hooker, San Francisco, Cal.

I claim 1st, The auxiliary ports, m m', together with the main ports, i i', in combination with the main valve, f, piston, c, and auxiliary valve, q, of a direct-acting engine, constructed substantially as described.

2d, The arrangement of the auxiliary valve, q, ports, p p' and n n', in combination with the main valve, f, and piston, c, of a direct-acting engine, constructed substantially as described.

3d, In combination with the main valve, f, supply ports, i i', exhaust ports, j j', auxiliary valve, q, and ports, p p', the small ports, l l' and k k' substantially as herein described.

81,169.—COFFEE POT.—N. Hotz, Greenpoint, N. Y. Antedated August 5, 1868.

I claim the condenser, C, within the chamber, B, having its one end open to the boiler, A, and its other open to the atmosphere, by an orifice in the side of said condenser substantially as and for the purpose specified.

81,170.—MACHINE FOR FINISHING CLOTH.—George C. Howard, Philadelphia, Pa.

I claim, 1st, The combination of the cylinders, V v, placed on opposite sides of web, W, and the rests, x, and handle, Z, arranged and operating substantially as described.

2d, The combination of the rolls, B b, shaft, F, and rolls, D d, with lever, J, racks, G, pinions, H, and friction, I, the rolls, B b, turning the shaft, F, and through it, or the roll of material, E, also turning the rolls, D d, substantially as described.

3d, The combination of the shaft, F, provided with points, N N, the threaded end and notch, m, with the catch, K, and sleeve, Z, substantially as described.

4th, A stop motion with the clutches, S S, and curved arms Q Q, in combination with the clutch, R, bar, O, slotted arms, P P, pins, K K, and guides, f f, substantially as described.

81,171.—SCREW-DRIVER AND COUNTERSINK.—Peter N. Jacobus, Flatbrookville, N. J.

I claim, 1st, A screw-driver, provided with sliding jaws, so operating that as they are slid inward they converge, and grasp the head of the screw firmly, and as they are slid out again, they diverge and release it.

2d, The combination of the part, A, having the fixed ring, R, the sliding ring, S, the movable jaws, J J J, and the metallic piece, B, substantially as described.

81,172.—COMPOUND FOR PRESERVING WOOD.—Bartholomew A. Jeager, Bowers Station, Pa.

I claim a composition for preserving wood, consisting of the ingredients herein set forth.

81,173.—SHOVEL PLOW.—A. Jennings, West Cairo, Ohio.

I claim the plow, provided with the side projection, a, and with the upright guard, b, on which the fingers, c, are secured, substantially as herein shown and described.

81,174.—WASH BOILER.—F. Judson, Castleton, N. Y.

I claim the combination of the steam chamber, B, with its top, a, sides, b, tubes, D, and cross bars, E, with the wash boiler, A, provided with the shoulders, F, rack, C, and supports, G, in the manner and for the purposes herein described.

81,175.—CARRIAGE WHEEL.—George Kenny, Nashua, N. H.

I claim, 1st, The metallic flanged ring or casing, B, provided with sockets, E E, and screw threads on the inside of its inner end, when used in combination with the spokes, C C, which are provided with a tenon on their ends, fitting into the mortises on the hub, A, and its shoulder resting on the outside periphery of the hub, substantially as and for the purposes set forth.

2d, Uniting the spoke and felloe by tenon, when said tenon consists of two members, H H', substantially as described and for the purpose set forth.

81,176.—MODE OF ATTACHING MICA TO STOVE PLATES.—John H. Keyser, New York city.

I claim providing for securing transparent plates over openings made through stove plates or door, by means of a self-fastening frame, substantially as described.

81,177.—COMBINED PLANTER AND CULTIVATOR.—George W. Kinzer, Linden Station, Ohio.

I claim, 1st, The combination of the plow, Y", beam, Y, and standard, Y', hinged at z, substantially as described.

2d, The combination of the distributing apparatus, G H I, with the valve, a, arm, J, sliding bar, L, and cam wheel, h, substantially as described.

3d, The combination of the markers, T T, with the springs, u u', the shaft, T', gearing, t t', and spur, e, substantially as described.

4th, The combination of the slide, Q, with the gearing, r r', foot rest, r", and plow standards, f f or Y', substantially as described.

81,178.—SASH FASTENER.—F. Kramer, St. Louis, Mo.

I claim, 1st, The face plate, B, provided with metallic tongues, b, for the purpose of holding and guiding the sashes, when applied to the window frame, A, as and for the purpose herein set forth.

2d, In combination with the face plate, B, and its tongues, b, the pivot, b', for securing and locking the sashes, substantially as set forth.

81,179.—SASH HOLDER.—Daniel P. Lacey, Orfordville, Wis., assignor to Robert R. Ball.

I claim the combination of the widened point, B', notches or depressions, A2, pivoted bolt or tumbler, B, lock bolt, C, and springs, E E, all arranged and employed substantially as and for the purpose set forth.

81,180.—FLOOD GATE.—J. Leatherman, Napoleon, Ohio.

I claim, 1st, An improved flood gate, formed by the combination of the posts, A, auxiliary posts, B, cross bars, C, inclined bars, D, and hanging bars, E, with each other, substantially as herein shown and described, and for the purpose set forth.

2d, The inclined bars, d, upon which the hanging bars, E, move up and down with the rise and fall of the water, substantially as herein shown and described and for the purpose set forth.

81,181.—MEDICINE FOR FEVER AND AGUE.—A. V. Lee, Clayton, Ala.

I claim a medical compound, composed of the above-mentioned ingredients in about the proportions named, substantially as and for the purposes set forth.

81,182.—TOOL HOLDER.—William J. Linton, Detroit, Mich.

I claim, 1st, The combination with the stock, A, of the jaws, P and E, when the jaw, p, is provided with the longitudinal opening, e, extending entirely through it, and communicating with the hole, f, in the stock, A, all substantially as herein shown and described for the purpose specified.

2d, The spring lever, b, pivoted in a slot in the screw handle, C, and adapted for operation as herein set forth.

81,183.—TOOL HOLDER.—William J. Linton, Detroit, Mich.

I claim, 1st, The bracket, A, provided with the slot, b, in the front, and having the shoulder, f, in combination with the slotted holder, C, constructed and pivoted thereto, substantially as and for the purpose described.

2d, The combination of the tool holder, as above described, with the tool-slide of a planing machine, substantially as and for the purpose described.

81,184.—WINDOW VENTILATOR.—R. H. Long, Cincinnati, Ohio, assignor to himself and R. T. Trail, New York city.

I claim, 1st, The side grooves, C, applied to a sash frame surrounding a single plane of glass, in combination with the movable supplementary frame, F, substantially as described for the purpose specified.

2d, The shaft, H, applied to the supplementary sash frame, F, substantially as described for the purpose specified.

81,185.—PROCESS OF PRESERVING ANIMAL SUBSTANCES.—Orazio Lugo, New York city, assignor to David Lyman, Ross C. Browning, and Mason C. Weld.

I claim, 2st, Introducing phenol, or any of its equivalents, into the system of a living animal or animals until death takes place, for the purpose substantially as herein specified.

3d, Introducing or diffusing phenol, or any of its equivalents, into the system of a living animal or animals just before bleeding or killing the said animals, for the purpose substantially as herein specified.

3d, The within-described method of introducing phenol (carbolic acid) or its homologues, into the system of living animals, or the purpose substantially as herein described.

81,186.—TEA AND COFFEE POT.—E. B. Manning, Middletown, Conn.

I claim a tea or coffee pot constructed with a hard metal or iron body, the inner side coated with porcelain, or similar material, and the outer with soft metal after the lining has been baked, substantially in the manner herein set forth.

81,187.—CUTTER ATTACHMENT FOR PLOWS.—T. E. Marable (assignor to himself and S. A. Plummer), Petersburg, Va.

I claim, 1st, The cutter, F, when constructed and arranged, in connection with a plow, so as to scrape the surface of the ground in front of the moldboard and the whole width of the furrow, cutting the weeds, grass therefrom, and casting them out of the way of the plow, on the side opposite to the mold board.

2d, The combination of the plow, B, beam, A, cutter, F, shank, G, and box-strap, H, substantially as described.

81,188.—SHOVEL PLOW.—B. F. McCollester, California, Mo.

I claim the combination of the double-pointed shovel plow, B, with the standard, A, plate' C, having lugs, c c, block, D, bolts, E E, and screw nuts, e e, substantially as and for the purpose above set forth.

81,189.—SHOVEL PLOW.—J. Meyer, Bloom township, Ohio.

I claim the upright center bar, A, provided with the notched cross bar, L, in combination with the springs, d d, and the lugs, e e, substantially as and for the purposes herein set forth.

81,190.—ARTICLE OF FOOD FOR THE SICK.—A. Meyerberck, Frankfort-on-the-Maine, Prussia, assignor to Alfred Mellor and H. N. Rittenhouse, Philadelphia, Pa.

I claim the employment or use of the serum of beeves' blood, as a constituent in the production of a nutritive sirup for the sick and delicate, substantially as described.

81,191.—SEWING MACHINE.—Nicholas Meyers, (assignor to E. L. Chamberlayne, and E. C. Pomeroy), Buffalo, N. Y.

I claim, 1st, The plate, k, provided with the wedge-shaped and inclined part, k', in combination with the pivoted triangular-shaped piece, l, and the plate, m, the latter being provided with the triangular-shaped slot, m'", and the feed plate, o, operating together to produce the feed motion, substantially as described.

2d, The shaft, A, in combination with the vibrating arm, l, the connecting rod, e', and the carrier, h, bearing upon one side the shuttle, and upon the other side the feeding mechanism, substantially as described.

81,192.—CAR BRAKE.—G. L. Miller, De Witt, N. Y.

I claim, 1st, The construction and arrangement of the central bar, G, having the rack, H, and lugs, e, pivoted levers, E, connected to the brakes, C, by the links, b b, the adjustable pinion, I, and friction wheels, J K, as herein described and for the purpose specified.

2d, The spring rack bar, G, when provided with the central lugs, e, in combination with the pivoted levers, E and brakes, C, as herein described for the purpose specified.

3d, The pinion, I, upon the shaft, f, when such shaft is hung in bearings adjusted vertically by the bar, i, and lever, M, and when provided with the friction wheel, J, engaging with the wheel K upon the axle, L, of the tender as herein described for the purpose specified.

81,193.—STUMP JOINT FOR CARRIAGES.—F. B. Morse, New Haven, Conn.

I claim a stump joint, consisting of the two parts, A and B, hinged together by a connection, C, pivoted to each of the parts, forming the meeting ends of the joint, of irregular form, the one corresponding to the other, so as to operate substantially in the manner specified.

81,194.—ADJUSTABLE CAR STEP.—William Neumann, St. Louis, Mo.

I claim the car step, B, when constructed so as to be convertible at pleasure into a step or guard, substantially as herein described and set forth.

Also, the construction of the step, B, riser, b, sliding rods, a, and platform, A, when arranged as and for the purpose herein set forth and described.

81,195.—FRICTION BRAKE FOR SEWING MACHINES.—Daniel Newton, Southington, Conn.

I claim the loosely-enclosed cylinder, C, of suitable material, within the trough, B, the latter being securely held to plate, A, and is adjustable by means of screws and slots, the whole arranged and applied substantially as described, and for the purpose set forth.

81,196.—GATE.—William E. Nichols, Baldwin, Mo.

I claim, 1st, The combination with the gate, A, provided with the arm, D, of the latch rod, H, and cords, I and K, suspended as described, for opening and closing the same, substantially as and for the purpose set forth.

2d, The combination with the cords, I and K, of the cords, O and N, suspended as described, for opening and closing the gate, the same, substantially, as and for the purpose described.

81,197.—COAL STOVE.—B. Oertly and Xavier Fendrich, Washington, D. C.

We claim a stove, made in whole or in part of an iron or other metal frame-work, coated or embedded in a composition or mass of suitable glass and mineral matter that will be fire-proof, substantially as and for the purpose set forth.

81,198.—APPARATUS FOR THE MANUFACTURE OF ILLUMINATING GAS.—F. W. Ofeldt and A. W. Almqvist, (assignors to themselves and Thomas Fitzsimmons, New York city.

We claim, 1st, The upright conical or spherical retort, A, the reservoir, B, and the cooler, J, arranged substantially as described, for the purposes set forth.

2d, The tube, E, the valve rod, F, and the float valve, H, in combination with the retort and reservoir, arranged and operating substantially as and for the purposes specified.

3d, The method, herein shown and described, of uniting and securing together the retort and reservoir by the flanges, C C, and swing bolts, d d, as set forth.

4th, The method oxygenating the gas, or the drums, O and P, revolving in the large drum or case, M, constructed and operating substantially as shown and described.

5th, The method of securing the gasometer to the head and bottom by grooves and rings, substantially as described.

6th, The method of securing the gasometer against the force of the gas, by means of hoops, C, suspended by cords, as shown and described.

7th, The safety pipe, V, with its valve, d, constructed and operating substantially as and for the purposes described, in combination with the gasometer T.

8th, An arrangement of means for supplying air for oxygenating gas by the expansive action of the gas, substantially as and for the purpose described.

81,199.—PREPARING PAPER FOR THE MANUFACTURE OF FLOOR COVERINGS, BELTING, WINDOW SHADES, AND THE LIKE.—Joseph J. Ott, Washington, D. C.

I claim, as an article of manufacture, the combination of two or more sheets of paper, when prepared by passing through a solution of acid, and connected together by puncturing with a toothed roller, substantially as herein described for use as carpeting, belting, and other purposes as set forth.

81,200.—MACHINE FOR CUTTING SOAP INTO SLABS.—George T. Palmer, Brooklyn, N. Y., and Philo P. Bush, New Haven, Conn.

We claim, 1st, The open-bottomed frame, A, made in such manner that it may be passed entirely over a mass of soap, substantially as and for the purposes herein shown and described.

2d, The reciprocating carrier frame, C, when made separate from the cutting-wire frame, N, for the purpose shown and described.

2d, The combination and arrangement, in relation to each other, of the carrier frame, C, and removable cutting-wire frame, N, substantially as and for the purpose set forth.

4th, The horizontally-moving, open-bottomed, or inverted U-shaped barrier frame, B, for the purpose herein shown and described, said frame moving independently of and disconnected from frames, C and N.

5th, The open-bottomed or inverted U-shaped cutting-wire frame, D, for the purpose of cutting masses of soap, said frame being independent of and disconnected from frames, C and N.

6th, The combination and arrangement, in relation to each other, of the carrier-frame B and removable cutter-wire frame, D, substantially as and for the purpose shown and set forth.

7th, The windlass, F, arranged across the end of the frame of the machine, for the purpose shown and described.

8th, The removable or shifting braces, M M, or their equivalents, for the purpose herein shown and set forth.

9th, Operating the butter-wire frames of a soap-cutting machine with chains and pulleys, and such suitable gearing and means of propulsion as may be required therefor, substantially as herein shown and set forth.

10th, A soap-cutting machine, composed of frame, A, independent vertically moving cutting-frame, N, and independent horizontally-moving cutting-frame, D, when combined with suitable gear or means for operating the cutting-frames, substantially as herein described.

81,201.—SPINDLE STEP.—Samuel L. Pattee, Northbridge, Mass.

I claim a spindle step, having the upper oil chamber, g partly covered by a flange, which encircles the spindle the lower oil chamber, c, the passage, d, at the bottom of the spindle socket, and axial therewith the passage, f f, extending from the chamber, c, to the edge of the beveled base of the socket, and passages, i i, extending from the upper to the lower chamber, the whole constructed and arranged substantially as described.

81,202.—CORN HARVESTER.—Samuel Patton, Chatsworth, Ill.

I claim, 1st, The rollers, m m, arranged, as described, out of contact with each other, and provided with longitudinal ribs, n, all operating in the manner and for the purpose specified.

2d, The curved projecting horns, p' p', upon the front of the frame, h, arranged in relation with the wheels, n n and rollers, m m, for the purpose of preventing the accumulation of refuse matter beneath said wheels, and furnishing bearings for the forward ends of the rollers, m m, as hereinafter shown and described.

81,203.—SEAL LOCK.—O. S. Pease, Zenia, Ohio.

I claim a lock which will be secured by means of one or more cartridges when inserted through the casing, A, and tumbler, d, and which can be unlocked only by the explosion of the cartridges, in the manner substantially as described.

81,204.—SEAL LOCK.—O. S. Pease, Zenia, Ohio.

I claim the escutcheon or guard, B, in combination with lock, A, when both are so constructed and arranged that they can be bolted together with cartridges, employed substantially as and for the purpose described.

81,205.—FRUIT BASKET.—E. F. Percival and N. S. True, Hammonton, N. J.

We claim, as an article of manufacture, a fruit basket, or other hollow wooden ware, when the slats or staves composing the same are connected at the top with a continuous band, forming both inside and outside hoop, the whole constructed substantially as herein set forth.

81,206.—BEE HIVE.—J. F. Pool, Monroe, Wis.

I claim the hive, constructed with walls a a', hinged bottom C, ventilating holes, B B' F F', and opening or entrance, D, all arranged substantially as and for the purpose set forth.

81,207.—SASH SUPPORTER.—William Randall, May, Wis.

I claim, 1st, The upright, h, pulley, l, cord, j, and weight, c, in combination with the upper sash, B, and part, o, of the window-frame, all constructed and operating together substantially as shown and described, and for the purpose set forth.

2d, The slotted tubular upright, b, cord, a, arm, l, rod, d, and weight, c substantially as shown and described, in combination with the lower sash, A and part, n, of the window frame, as and for the purpose set forth.

81,208.—HARVESTER RAKE.—Amos Rank, Salem, Ohio.

I claim, 1st, The combination, in a harvester, substantially as set forth, of an endless discharging apron, with a wheel on a vertically vibratable arm for the purposes specified.

2d, The combination, in a harvester, substantially as set forth, of an endless discharging apron and a propelling wheel, on a vibratable arm, with devices operated by the driver for raising or lowering the wheel to stop or start the discharging apron.

3d, The combination in a harvester, substantially as set forth, of an endless apron with a cut-off, vibrating horizontally in a circular path, for the purposes specified.

4th, The combination, in a harvester, substantially as set forth, of a discharging apron, a propelling wheel to move the apron, and a cut-off, with a device operated by the driver, which simultaneously starts the discharging apron and interposes the cut-off.

5th, The combination, substantially as set forth, of a reel, an apron, a walking-wheel, and a cut off.

81,209.—GATE LATCH.—Peter Rasar and D. J. Mayes, Illiopolis, Ill.

We claim a gate fastening, composed of the latch, b, and double spring, d, constructed and arranged relatively to each other and the rest of the gate, substantially as and for the purpose specified.

81,210.—SHEEP SHEARING MACHINE.—Hiram A. Reid, Beaver Dam, Wis.

I claim the arrangement of the wheel, J, slotted rod, K, cutting wheel, V, pinion, M, slotted bar, N, and hooked plate, Q, all operating as described, whereby a rotary motion is imparted to the wheel, V, and a prehensive movement given to the hooked teeth, r, as herein described, for the purpose specified.

81,211.—APPARATUS FOR HEATING AND VENTILATING RAILROAD CARS.—E. L. Roberts, New York city.

I claim, 1st, The combination, with railroad cars, of the exhaust tubes E, provided with valves, arranged substantially as and for the purpose described.

2d, The combination, with the supply tubes, A, of the steam or air heater, G, and heating tube, H, and the pipe connecting the heater to the heating tube, substantially as and for the purpose described.

81,212.—STEAM GENERATOR.—Robert E. Rogers, Philadelphia, Pa.

I claim, 1st, The boiler, composed of separate elongated sections or staves, connected at bottom for the interpassage of water, and at top for the interpassage of steam, one or more of such sections being provided with circulation tubes on the side next the fire, each being set on end, and all the sections being arranged around a common fire so as to form the fire chamber or furnace flue, substantially as shown and described.

2d, The combination of the blank sections or staves with those having circulation tubes, substantially as described.

81,213.—CARD GRINDER.—B. S. Roy (assignor to himself and H. S. Morse), Lowell, Mass.

I claim the endless chain, A, and wheels, B and C, and the radial shaft, a, gears, G and H, and the connecting link, F, combined with the shaft, D, and the grinding wheel, E, and all arranged to operate substantially as and for the purpose set forth.

81,214.—BREWING ALE, PORTER, ETC.—F. M. Ruschhaupt, New York, and Gustavus Burhenne, Williamsburg, N. Y.

We claim the use of bran of wheat, bran of oats, or bran of rye, together with meal of kiln-dried indian corn, and with a certain amount of malt, either alone or with the addition of the herein named and specified phosphates, for the purpose set forth and herein fully specified.

81,215.—HARVESTER.—I. S Russell, New Market, Md., and H. R. Russell, Woodbury, N. J.

We claim, 1st, The coupling plate, D, formed with a twist, so as to assume a vertical position where attached to the axis of the wheel, and an outward inclination at its hinge-pin connection with the machine, substantially as and for the purpose set forth.

2d, The combination of the coupling plate, D, constructed and hinged to the machine, as described, with toe pivoted axis of the wheel, G, substantially as set forth.

3d, A supporting wheel, which is so constructed and applied to a harvester that the horizontal axle about which it turns, and also the arm to which said axle is applied shall be free to vibrate and allow the wheel to conform to the circular movements of the machine while turning, in the manner substantially as specified.

81,216.—WAGON.—Samuel Seitz and L. D. Arnold, Melmore, Ohio.

We claim, 1st, The springs, F, in combination with the side boards, C, and end boards, E, substantially as herein shown and described and for the purpose set forth.

2d, Securing the end boards, E, to the side boards, C, by means of the springs, F, catches, G, projections, d', of the cleats, D, and the notches or recesses, e', formed in the said end board, E, substantially as herein shown and described and for the purpose set forth.

81,217.—RUNNING GEAR FOR WAGONS.—C. M. Sexton, Aurora, Ill.

I claim the combination and arrangement of the divided axle, C, double guide, h, rods, I, braces, K, and slotted plates, L, substantially as herein set forth.

Also, the hangers, O o, strap, P, pulleys, Q, equalizer, R, and springs, H, when constructed and used for the purposes substantially as herein specified.

81,218.—SASH PULLEY.—A. P. Seymour, Jr., Hecla Works, and W. R. Goodrich, Whitestown, N. Y., assignors to Hecla Works Company.

We claim, 1st, The construction of the cheeks, B B, with projections, locking in a dovetailed or hooked manner, within or through the face plate, A, and secured by a rivet, e, holding the said cheeks together by the lugs or ears, at their outer edge, substantially as shown and described.

2d, Forming the pivot or pivots, on which the pulley, C, turns, by a projection or projections, b, cast on to the inside of the cheek or cheeks, B, of the frame, substantially as described.

81,219.—SEWING-MACHINE MOTOR.—Elisha Shiver, Columbia, S. C.

I claim, 1st, A sewing-machine motor when constructed with the double springs and shafts, a and a', gearing, drums, and brake, n, and adapted to be placed under the ordinary sewing machine, substantially as and for the purpose set forth.

2d, In connection with the motor, so constructed, a balance wheel, when provided with wings, constructed and arranged as and for the purpose set forth.

3d, In combination with a balance wheel of such a motor the catch, h, with its cord and hook, all arranged to operate as and for the the purpose set forth.

81,220.—TRELLIS FOR PROPAGATING BEES.—Andrew Simons, Fairfield, Iowa.

I claim the protecting of bees during winter by means of a cloth or other textile covering, substantially in the manner and form as above described, rendering other protection, as housing, placing in cellars, wrapping hives with straw, etc, unnecessary.

81,221.—HARVESTER.—E. W. Skinner, Madison, Wis.

I claim, 1st, The plate, A, provided with the projections or flanges for attaching the parts to, and otherwise constructed as shown and described.

2d, The main frame, consisting of the plate, A, bars, B and C, and the iron box, D, all constructed and arranged substantially as set forth.

3d, The tubular reel support, I, attached at its outer end to the adjustable post, n, and resting at its inner end upon the bar, r, in such a manner as to permit the inner end of the reel to be adjusted forward or backward, as described.

81,222.—STEAM-BOILER FURNACE.—Sidney Smith, Worcester, Mass.

I claim, 1st, A fire chamber, with walls of perforated blocks, with perforated sheet-metal jackets behind said blocks, and said blocks and jackets secured between plates, substantially like plates, C H I, by the rods, J, so that the fire chamber may be set up and its parts secured before the construction of the incasing wall.

2d, The blocks, G G', made in the form and perforated as shown, to adapt them to the construction of a fire-chamber such as described.

3d, The plates, C and I, constructed as described, in combination with perforated fire bricks, substantially as and for the purpose described.

81,223.—REGISTERING FARE RECEIVER.—W. G. Smoot (assignor to himself and Antonio Pelletier), Washington, D. C.

I claim, 1st, The registering apparatus, consisting of the stationary dial, B, with the index, E, operated by the tilting tube, G, and the rotating dial wheel H, all constructed and arranged to operate substantially as described.

2d, The combination of the registering apparatus, as above described, with the case, A, having the tubes, f, and the tilting table, G, arranged therein, substantially as set forth.

81,224.—MAKING NUTS.—J. H. Sternbergh, Reading, Pa.

I claim, 1st, The combination of the weighted lever, or levers, P W, with cross head, H H, crowner, L, and cam, n, on shaft, B, for the purpose of throwing the finished nut or washer out of the die box at the time and in the manner specified.

2d, The combination of the crowner, L, with weighted lever, P W, and gage T, for the purpose of graduating the space in the die box between the punch, D, and crowner, L, to different thicknesses of iron, without unnecessary waste of time, substantially as described.

81,225.—STEAM GENERATOR.—James Sutliff, East Boston, Mass.

I claim the combination of the bridge wall, B, hollow slues, C C, pipes, c c, drum, D, boiler, A, pipes, b d and a, all constructed, arranged, and operating as herein set forth.

81,226.—PIANO LOCK.—John Thielemann, Newark, N. J.

I claim the hook bolts, C C', connected together by a lug and stud, and provided with cams, ee', in combination with a stud, d, substantially as and for the purpose described.

81,227.—CARRIAGE.—Smith Titcom, Amesbury, Mass.

I claim, 1st, The construction of a carriage body with fixed and movable seat slides, the movable slides having a carriage top attached thereto, and combined as described, so that the carriage and the same seat or seats may be used with or without the top.

2d, The combination of the plates, E E c c and G G, with flanges, d d, and thumb screws, F F, with the fixed and movable seat slides of a carriage, substantially in the manner and for the purpose as herein described.

81,228.—WEATHER STRIP.—E. S. Torry, New York city.

I claim, as an article of manufacture, the construction of a weather strip out one side of which is inserted, in a dovetail groove, c, a piece of india-rubber, or other elastic material, as described, and on the other side of which is inserted a straight strip of india-rubber, or other elastic material, b, as and for the purpose herein set forth.

81,229.—CEMENTING AND STRENGTHENING BOXES FOR PACKING LARD AND OTHER SUBSTANCES.—C. L. Tucker, Chicago Ill.

I claim, 1st, Filling the score openings of angular boxes with cement, substantially as and for the purposes specified.

2d, Filling the interstices or openings caused by imperfect construction or material in thin wood boxes with an insoluble cement, so that the boxes are strengthened and made tight at the same time, substantially as specified.

3d, As a new article of manufacture, tight or non-leaking angular boxes, when the sides, a, are made of veneers of thin wood, and cemented, substantially as described.

81,230.—POTATO DIGGER.—B. D. Vanderveer and D. Riddel, Freehold, N. J.

We claim, 1st, In combination with a plow or plowshare of any construction, when used for the purpose described, the shakes, J J, and the vine clearers or bars, k k, arranged substantially as described for the purposes specified.

2d, In combination with the shakes, J, the double crank-shaft, D, connecting rods O, and gearing, whereby motion is communicated from the axle to the crank shaft, all arranged to operate substantially as herein shown and described.

3d, The lever, P, when connected directly with the pole, R, by means of the chain, t, and provided with the spring, p', adapted to rest upon the hounds, to prevent the lever, P, from falling forward, all constructed and arranged to to operate as herein shown and described.

81,231.—SUBMARINE LANTERN.—M. Vander Weide, St. Petersburg, Russia, assignor to C. M. Clay.

I claim the submarine lantern having the semicircular channels, B C, formed concentrically in the body of the cylinder, the former being closed at the top and opening into the cylinder at the bottom, and the latter closed at the bottom and opening into the cylinder at the top, said chamber communicating, respectively, with the supply and exhaust tubes, F G, upon each side of the burner, as herein described for the purpose specified.

81,232.—APPARATUS FOR THE MANUFACTURE OF ILLUMINATING GAS.—P. H. Vander Weyde, M.D., (assignor to Alfred Phillips and John MacDougall), New York city.

I claim, 1st, The rotating carbonizer, consisting in a revolving disk or disks, operating in connection with shaft or pulleys and chain, as herein described and for the purposes specified.

2d, The detachable carbonizer, h h and d d d, with its compartments, a b c and e e, and valve, v, as herein shown and described and for the purposes specified.

3d, The gas regulator, k, with its buoyant chambers, m m, and interior valve, as shown and described and for the purposes specified.

81,233.—COMPOSITION FOR CLEANING AND RENOVATING BRICK WALLS.—W. B. Walters, Lock Haven, Pa.

I claim the combination of the ingredients, above mentioned and described, and the application of the same to brick buildings, using for that purpose the aforesaid compound, or any other substantially the same, and which will produce the intended effect.

81,234.—HORSE HAY RAKE.—C. W. Warner, New Haven, Vt.

I claim, in combination with the lever, H, carriage frame, A, and revolving rake, C, the bolt, F, link, K, and lever, L, or their equivalents, to operate substantially as and for the purpose set forth.

81,235.—JACK FOR KNITTING NEEDLE.—Horace J. Wickham (assignor to himself and Milton Keeny Manchester, Conn.

I claim a knitting-needle jack, constructed with an inclined rebate, d, and slot, e, as and for the purposes set forth.

81,236.—DRUM EVAPORATOR.—David Wolf, Easton, Kansas.

I claim a safety boiler, as constructed, when the same is provided with two or more pans or troughs for holding water, so arranged as to be drawn out, one from either side of the drum or case, whereby the treble function of tempering the atmosphere in the room, arresting the sparks, and regulating the draft is accomplished, substantially as and for the purposes set forth.

81,237.—COMPOSITION FOR TANNING.—Ira Wood, Woodstock, Vt.

I claim a tanning liquid, made from the leaves of the oak and the maple, or of the willow, or of the three combined, or by the addition of the leaves of the beech, in about equal proportions, when combined with alum, Glauber's salt, and nitric acid, in about the proportions specified, for the purpose and in the manner set forth.

81,238.—APPARATUS FOR CARBURETING.—Henry Woodward, London, England.

I claim, 1st, The arrangement, in a cylindrical carbureting-vessel, of a partition dividing said vessel into an upper and lower chamber, in combination with concentric perforated bridges or diaphragms in the upper chamber, as and for the purposes set forth.

2d, In combination with the arrangement of chambers and concentric bridges, as claimed under the preceding clause, wicking passing over said bridges, through the partition and into the lower chamber substantially as set forth.

3d, The combination, with the bridges and dividing partition, of plates arranged tangentially or nearly so to said bridges, and forming with the wicking a packing-joing, as and for the purposes set forth.

4th, In combination with the arrangement of chambers and concentric bridges, as claimed in the preceding clauses, an air-inlet pipe, opening into the annular space formed by the casing and the outermost bridge, and a gas-eduction pipe leading from the space between the dividing partition and the innermost bridge out of the carbureter, as and for the purposes set forth.

5th, The carbureting vessel and float contained therein, in combination with the wicking or equivalent material, and carved bridges or diaphragms upon which the same is spread and held, under the arrangement and for operation as herein shown and specified.

6th, The combination with a carbureter, substantially as herein described, of an inlet tube for the carbureting liquid arranged to traverse both the upper and lower chambers, and terminating at or near the bottom of the latter, as shown and set forth.

81,239.—ROTARY STEAM ENGINE.—John Woody, Mount Vernon, Ind.

I claim the arrangement of the ingress steam pipes, E E, exhaust pipes, F F, abutments, I I, and casing, B B, substantially as described.

81,240.—WAGON COUPLING.—James M. Wynn, Scipio, Ind.

I claim the coupling device, a a a, e e. b, f, g, all substantially as and for the purpose set forth.

81,241.—HARVESTER.—George W. N. Yost, Corry, Pa.

I claim the two cases, A and A', combined with the main axle, G, when the axle is put transversely through the middle of the cases, so that the body may be evenly balanced thereon, and combined with and fastened together by the axle bolt, H, when the axle bolt is put through the cases, parallel with the main axle, midway between the middle and hind end, and also combined with the support bolt, I, when the support bolt is put through the cases parallel with the main axle, midway between the main axle and the fore end.

81,242.—NOZZLE FOR PIPE.—Francis S. Babbitt, Taunton, Mass.

I claim an improved hose-pipe nozzle, consisting of the body, A, the hollow screw plug, B, the milled nut, D, and the check nut, L, the whole being constructed and made to operate together, substantially as above set forth.

Also, the screw plug B, as made with the chamber or recess, f, the same operating in conjunction with the stud or projection, h, disposed on the inner periphery of the body, A, in the manner and for the purpose set forth.

81,243.—AIR-TIGHT CAN.—Christian Barry, Philadelphia, Pa.

I claim a cylindrical can, having ends flaring from the direct line of the body, and the lid or cover for the top or bottom of which is swaged or depressed and bent at the edge so as to overlap the flaring end of the can, to which it is secured substantially in the manner herein described and represented.

81,244.—FELTING MACHINE.—W. J. Benedict and John Wylie, South Norwalk, Conn.

We claim, 1st, In a hat-felting and napping machine, the combination of the reciprocating steam-box, L, the bight or loop of cloth, H, roller, K, and adjustable plate, M, substantially as described, for the purpose specified.

2d, The racks, J J, box, L, and bight or loop of cloth, H, constructed and arranged substantially as set forth, and for the purpose specified.

3d, The arrangement of the shaft, D, crank, E, rod, F, box, L, uprights, B, and looped cloth, H, all substantially as and for the purpose shown and described.

4th, The screw, K, in combination with the plate, M, and looped cloth, H, arranged substantially as shown for the purpose set forth.

51,245.—WATER ELEVATOR.—Silas R. Boardman, Fort Wayne, Ind.

I claim the bucket, A, the bottom valve, a, the tilting rod, d, the stop, s, the disk, b, in combination with the cylinder, C, the same being constructed in the manner and for the purpose substantially as set forth and described.

81,246.—ATTACHING WIRE TO BRIM OF HATS.—C. F. Bosworth, Milford, Conn.

I claim attaching the wire to hat-brims by a continuous or direct line of stitches parallel with the wire, the said stitches alternately crossing the wire, so as to secure the wire to the brim, substantially in the manner specified.

81,247.—MACHINE FOR UNHAIRING HIDES.—Elias Brock and Judson Shultz, Ellenville, N. Y., assignors to Judson Schultz.

We claim, 1st, So arranging the operating mechanism of the feed of an unhairing machine that the said feed may move in the same direction with or in an opposite direction from the movement of the knife cylinder, at the will of the operator, substantially as herein shown and described, and for the purpose set forth.

2d, Connecting the knife cylinder, B, with the main feed roller, H, by means of the gear wheels, D F I J G, and lever, E, constructed and arranged substantially as herein shown and described, and for the purpose set forth.

3d, The combination of the roller, T, ratchet wheel, U, and pawl, V, with the pivoted frame, R, for the purpose of adjusting the tension of the apron, S, substantially as herein shown and described.

4th, The combination of the rollers, L M Q, and the finger gear wheels, N O P, with each other, and with the rollers, H, substantially as herein shown and described, for the purpose of holding the hide and controlling its movement.

5th, So arranging the operating mechanism of the feed of an unhairing machine, as to ease or diminish the shock caused by reversing the feed, substantially as herein shown and described, and for the purpose set forth.

6th, The combination of the crank arm, K, with the journal of the feed roller, H, and with the slotted gear wheel, G, substantially as herein shown and described, and for the purpose set forth.

81,248.—MECHANICAL MOVEMENT.—Arthur W. Browne, Brooklyn, and William F. Goodwin, East New York, N. Y.

We claim, 1st, Any number of revolving arms, F F1 F2, each carrying a train of wheels, rotating by the wheels, D D1 D2, in the manner herein described, to communicate motion with multiplied speed or power.

2d, The intermediate pinions, G G1 G2, employed in combination with the wheels, D H I, substantially as and for the purposes explained.

81,249.—CLOTHES DRYER.—Manly T. Campbell, Lima, Pa.

I claim the hinged legs, E, applied to the racks, C D, of the main stand, A, in the manner described, and held in supporting position by the bolts, F, or their equivalent, for the purpose set forth.

81,250.—SHOE BUTTONER.—Edward Card, North Providence, R. I. Antedated August 7, 1868.

I claim the use of a jointed arm, D, furnished with hook, a, and presser, b, operating substantially as described.

Also, the combination of the opening, c, hook, a, and presser, b, to insert a button in a button hole, substantially as described.

81,251.—LINK FOR ENDLESS CHAIN FOR HORSE POWERS.—Joseph Casho (assignor to Casho & Company), Newark, Del.

I claim, 1st, The combination of the grooved and slotted plank with ribbed journal bearing brackets, geared links, friction rollers, and through bolts, all arranged as set forth for joint operation.

2d, The combination, substantially as set forth, of the grooved and slotted plank with ribbed journal bearing brackets, each carrying geared links and friction rollers, and secured to the plank by a shank connecting the brackets, for the purpose set forth.

81,252.—FELTING MACHINE.—A. Cattaneo, Newark, N. J.

I claim a felting apparatus, formed of two ranges of rollers, arranged in pairs, and driven by the worm pinions and gears, as represented, in combination with the frame, g, carrying the upper range of rollers, to which frame and rollers a reciprocating motion is given in the manner and for the purpose specified.

81,253.—PAPER FILE.—Wm. R. Clough, Cambridge, Mass.

I claim, 1st, Combining, with the cap, C, the two links, E E', and D D', with the base, A B, arranged and operating substantially as described, and for the purpose set forth.

2d, Combining, with the links, E E', and D D', the saddles, N N', arranged and operating substantially as described, and for the purpose set forth.

81,254.—WATER WHEEL.—C. S. Corsett, Middleville, Mich.

I claim the wheel, A, composed of sections, C and D, when the upper and lower surfaces of the same are concave and convex in form, and the whole is constructed and arranged substantially as described, as and for the purposes specified.

81,255.—DEVICE FOR APPLYING CLOTH PATCHES TO PAPER COLLARS.—John P. Courtney and Charles Redmayne, Brooklyn, N. Y.

We claim, 1st, The receptacle, a, for paste, formed with a perforated bottom, of the size and shape required, for pasting the surface of the collar for the cloth lining or patch, substantially as set forth.

2d, The tube, f, applied in the bottom of the paste receptacle, a, in combination with the peg, e, that acts as a guide to the button hole of the collar the patch, and the paste receptacle, substantially as set forth.

81,256.—HOISTING APPARATUS.—William W. Crapster, Mechanicsburg, Pa.

I claim, 1st, The combination of the drum, D, shaft, B, clutch or dog, E, rod, F, and lever, G, for attaching the drum to the shaft, and detaching it therefrom, substantially as shown and described.

2d, In combination with the above named elements, the connecting bar, I, bell crank, I', and the belt or chain, K, arranged substantially as shown and described.

81,257.—HOSE PIPE NOZZLE.—James A. Cushman, Seneca Falls, N. Y.

I claim the overlapping segments, E, operated through the medium of the pins, F, fixed radial slots, i, in the parts, C, and the curved movable slots, K, in the section, H, whereby, as the nozzle is contracted and expanded, the overlapping segments form a continuous metallic ring, as herein shown and described, for the purpose specified.

81,258.—CURTAIN FIXTURE.—Jacob David, New York city.

I claim the within described method of hanging and operating a curtain, by securing the same to its roller at or about the middle of its length, said roller being fastened to the window frame at the middle thereof, and the curtain being operated substantially as set forth.

81,259.—UMBRELLA.—Anthony G. Davis, Watertown, Conn.

I claim the cap, a, constructed as explained, in combination with runner, A, substantially as and for the purpose described.

81,260.—BIT STOCK.—S. W. Davis, Wilmington, Del.

I claim the combination of the shank, D, and spring, e, coiled thereon, the moveable sleeve, C, pawl, a, and projection, b, in a bitstock, H G, all substantially as shown and described, and for the purpose set forth.

81,261.—COVER FOR CHAMBERS AND OTHER VESSELS.—John S. Davidson and Nicholas Lorton, Cranberry, N. J.

We claim the formation of an air tight cover, by means of caoutchouc or india-rubber, when stretched over a hoop as herein described, the whole being arranged as and for the purpose above set forth.

81,262.—BUSTLE ATTACHMENT FOR SKIRTS.—Robert Bleloch Duncan, West Roxbury, Mass.

I claim a bustle frame or hoop skirt supporter, constructed and adapted to be used as and for the purposes set forth.

81,263.—FRAME FOR STRETCHING DRAWERS.—Job Dyson, New Britain, Conn.

I claim a board or frame for stretching drawers, constructed substantially as described, with its hinge, a, arranged in direction of the width of the boards, A. A, at their upper or body ends, and they shaped on their edges, b c, to conform to the profile of the leg, and provided with a stretcher, B, at their opposite ends, substantially as specified.

81,264.—LATHE DOG.—William Emmett, Paterson, N. J., assignor to himself and S. E. Horton, Windsor Locks, Conn.

I claim the construction and arrangement of the dog frame, B, having angular sides, D, pinion shank, E, and groove, O, the set screw, C, sliding frame, F, consisting of plates, G H, with inclined sides, I, stud or projection, J, extension arms, M, and lug, N, and operating substantially as and for the purpose described.

81,265.—ANIMAL TRAP.—Samuel F. Estell, Richmond, Ind.

I claim, 1st, The lever, as formed by the end of lateh, e, extending beneath platform, B, by which the platform is raised by the action of gate, P, substantially as specified.

2d, The latch, e, for holding the platform in its reversed position when operated by means of gate, P, substantially as described, in combination with the lever, e', that raises the platform simultaneously with the opening of the gate.

3d, The lock, H, for securing the gate when operated by the platform, as set forth.

81,266.—SELF-ADJUSTING CURB FOR HYDRANTS.—John A. Finnegan, Charlestown, Mass.

I claim a curb, made with a flange, and arranged relatively to the pipe or well, substantially as and for the purpose specified.

81,267.—CIRCULAR SAW.—John F. Folmer (assignor to himself and A. J. Kelly), Philadelphia, Pa.

I claim a circular saw, the blade of which is composed of any desired number of straight sides, the continuation of each of which forms the back of one tooth, the front of the latter being parallel, or nearly so, with the back, as set forth for the purpose specified.

81,268.—RAT TRAP.—M. D. Fowler, Vincennes, Ind.

I claim the arrangement herein shown and described, with relation to the catch arm, E, and lever catch, F, of the crank shaft, M, connection, N, angular lifting lever, O, all arranged within the trap, A G H, to operate as set forth, for the purpose specified.

81,269.—SKATE.—Charles Gooch, Cincinnati, Ohio. Antedated August 8, 1868.

I claim the sliding toe-clamp, C, sliding heel-clamp, M, fixed heel clamp, I, screw rod, G, and thumb nut, K, all constructed as described, whereby said clamps are adapted to bear only upon the sole and heel of the boot or shoe, without touching the uppers, as herein shown and described.

81,270.—CONNECTION FOR WOODEN RODS.—Adam Good, Jr., and Simon Strouse, Titusville, Pa.

We claim, as combined with the union joint, A, the socketed connection, consisting of the tapering tube, B, the tongue, C, with its enlargements, and the adjusting screw, D, all substantially as shown and described.

81,271.—MECHANICAL MOVEMENT.—William F. Goodwin, East New York, N. Y.

I claim, 1st, The drum, F, with its ratchet b, and pawl, c, in combination with two or more of the series of pulleys, G, all substantially as shown and described.

2d, The combination of two or more of the series of pulleys, G, with their circles of internal cogs, g, external pinion, k, and intermediate pinions, i and j, and arm, I, substantially as shown and described.

3d, The arm, I, carrying the pinions, i and j, in combination with the shaft, D, both so constructed that the said arm will move freely on the said shaft, longitudinally, but will not revolve upon it, substantially as and for the purposes shown and described.

4th, The combination of two or more of the series of pulleys, G, with the non-revolving shaft, D, and arm or arms, I, all as shown and described.

81,272.—MOP HEAD AND WRINGER.—Christopher Gullman, Poughkeepsie, N. Y.

I claim, 1st, The combination of the hinged jaws, B D, convex block, C, handle, A, and sleeve, b, as shown and described.

2d, The hooks, c, on the stationary cup, E, in combination with the jaws, B D, block, C, and handle, A, as and for the purpose set forth.

81,273.—WASHING MACHINE.—Wilhelm Hoeft, Fountain City, Wis.

I claim, 1st, The combination of the pivoted frames, E, beaters, F, connecting rods, G, and double cranks, c', formed upon the driving shaft, C, with each other and with the tub, B, when arranged so that the double beaters approach and leave each other, substantially as herein shown and described and for the purpose set forth.

2d, The arrangement of the hinged parts, b', of the sides of the tub, B, end-boards of said tub, and removable top, K, with each other, and with the projecting ends of the frame, A, substantially as herein shown and described and for the purpose set forth.

81,274.—POWER WINDLASS FOR MAKING CASKS.—Edward Holmes, and Britain Holmes, Buffalo, N. Y.

We claim the combination of the driving pulley, E, provided with a friction clutch, the screw shaft, D', worm, D, worm wheel, C, clutch, H, and windlass drum, B, operating in the manner and for the purpose described.

81,275.—PEG-FEED STOP FOR PEGGING MACHINERY.—S. A. Holt, and C. H. Wilhams, Hudson, Mass.

We claim the lever, C C', or its equivalent, for actuating the pawl, a a', substantially as described, and for the purpose set forth.

81,276.—ELEVATOR.—Erwin T. Hope, Philadelphia, Pa.

I claim, 1st, The combination, with the telescopic tubes, of a carriage, H, and ways, K, substantially as and for the purpose described.

2d, The combination, with the telescopic tubes, of the rods, E, and cushions, L, substantially as and for the purpose described.

3d, The combination of the telescopic tubes, provided with cushions, L, and stuffing-boxes, D, and connected by rods, E, the grooved ways, K, carriage, H I, three way cock, N, and rod, M, having arms as described, all substantially as herein set forth and shown.

81,277.—APPARATUS FOR PRINTING PHOTOGRAPHS.—A. S. Kilby, Huntington, Ind.

I claim the leaves, D E, slider, G, case, A, roller, B, any suitable clamps, f f, all substantially as described, when contributing to form an apparatus for printing photographic pictures, all as set forth.

81,278.—VAGINA INJECTOR.—G. W. King, Saratoga Springs, N. Y.

I claim, 1st, An improved vaginia injector, formed by the combination of the bowl or cup, A, and tube, B, said parts being constructed and arranged substantially as herein shown and described, and for the purposes set forth.

2d, Forming a partial cover, C, upon the top or mouth of the cup or bowl, A, of the injector, substantially as herein shown and described, and for the purpose set forth.

81,279.—EXTENSION LADDER.—M. M. Knowles, Elmira, N. Y.

I claim the combination of ladders, A and B, adjustable brace, D F, and pin, J, all constructed and arranged substantially as described, as and for the purpose specified.

81,280.—CURTAIN FIXTURE.—J. D. Legg, Long Eddy, N. Y.

I claim the coil springs, J, enclosed concentrically within the cylindrical boxes, G, and attached to the shafts or axes, I, and the peripheries of the boxes, G, in combination with the pawls, e, ratchets, dx, and curtain, A, all being arranged substantially in the manner as and for the purpose set forth.

81,281.—BUSTLE.—Jason B. Loomis, Chelsea, Mass.

I claim my arrangement of bow springs, b, connected as described, with

the bow spring, e, the hook, f, or its equivalent, and the adjusting strap, g, the whole being applied to a waistband, as set forth.

Also, the combination and arrangement of the shield or abutment, k, with the bustle made and provided with the spring, e, as set forth.

81,282.—EASY CHAIR.—Dumont Mareau, Hubbardstown, Mass.

I claim the springs, E, arranged as described, in combination with the seat, A, rails, C, links, F, and hooks, g, substantially as set forth for the purpose specified.

81,283.—BREECH-LOADING FIRE-ARM.—John Merlett (assignor to himself and John Smalley), Bound Brook, N.J. Antedated August 7, 1868.

I claim, 1st, The laterally swinging chambered breech piece, C, attached to the barrel by the semicircular joint, c, and arranged in relation with the spring, A*, substantially as and for the purpose herein set forth.

2d, The sliding plate or apron, e, arranged in relation with the joint, c, substantially as and for the purpose specified.

81,284.—BRICK-MACHINE.—Anthony Nulsen, Eugen Haneisen, and Albert Wagner, Cincinnati, Ohio, assignors to A. Nulsen & Co.

We claim the relative arrangement of the endless carrier, A, hopper, G, case, F, rolls, B C D E, and throat, H, constructed to operate as described.

81,285.—BELT-TIGHTENER.—Samuel Patton, Chattsworth, Ill.

I claim, 1st, The arrangement of the drums, D D', in connection with the belt, C, and pulleys, B B', in such a manner that the drums press the belt directly against the surface of the pulleys, substantially as described.

2d, The combination and arrangement of the belt, C, drums, D D', pulleys, B B', spring bearings, E E', and adjusting screws, or their equivalent, F F', substantially as shown and described.

81,286.—MORTISING MACHINE.—Joseph A. Peabody, Philadelphia, Pa.

I claim the regulators, composed of rings, R and R', plates, P and P', with slots, S S', bolts, b b1, b2, and b3, screws, C and C', substantially in the manner and for the purpose specified.

81,287.—STOCK PUMP.—Anderson H. Piland, and Andrew H. Turner, Indianapolis, Ind.

We claim, 1st, The foundation framework, consisting of the elements, A B C F G, constructed and arranged substantially as and for the purpose set forth.

2d, The hinged platform, E E' E'', supported on the timbers, J, and by the braces, K L M, strutting from the sliding post, D, and attached to the post, F, by the straps, I I', as set forth, in combination with lever, N, eduction pipe, V, and pump, all arranged and operating substantially as and for the purpose set forth.

3d, The cone-shaped piston, f, packed as described, in combination with the valve chamber and valve, X, and eduction pipe, V, attached to the vibrating platform, all arranged and operating substantially as set forth.

81,288.—GRAIN SEPARATOR.—J. F. Pool, Monroe, Wis.

I claim, 1st, The spouts, i i, placed, one on each side of the frame, A, and emptying into the conductors, O O, substantially as and for the purposes herein set forth.

2d, The box, h, placed under the slide, g, so that when said slide is removed, the grass seed will drop into the same, substantially as herein set forth.

3d, The adjustable and movable screens, d d, when constructed as described, and operating as and for the purposes herein set forth.

4th, The cross screen m, placed between the series of screens c c and screens d d, substantially as herein set forth.

81,289.—HOISTING MACHINES.—George H. Reynolds, New York city, assignor to himself and Cornelius H. Delamater, same place.

I claim, 1st, In a system of hoisting machines, providing for endplay, by the employment of the feather, b, or its equivalent, in combination with the V-shaft, friction gear wheels, B' C1, substantially as and for the purposes herein set forth.

2d, In combination with the shaft, C, and friction wheels, B' C1, the movable box, M', links, m2, and eccentric pins, O, mounted relatively to the shaft, P, and handle, p, so that the pins, o, shall come nearly on their dead points when the friction wheels, B' C1, are properly connected, as and for the purposes herein set forth.

3d, Connecting the shaft, C, and the winding drum, E, in a hoisting machine by the peculiarly constructed and arranged parts, C3 C4 and l3 E4, as and for the purposes herein set forth.

4th, The bearings, m1, for supporting the drum, E, and its connections, independently of the concentric shaft, C, as and for the purposes herein set forth.

5th, The binders, H h1 h2, constructed and arranged to serve relatively to the shafts, B C, and their several connections, so as to support the frame, A, and aid in preventing any spring or displacement of the parts under the strains and vibrations to which they are subjected, as herein set forth.

81,290.—BREECH LOADING FIRE ARM.—C. B. Richards, Hartford, Conn.

I claim so shaping and connecting the breech plug, a, and a yielding hooked extractor, that the free end of the extractor will be locked to the breech plug by the relative movement of the two in the act of retraction, substantially as and for the purpose hereinbefore set forth.

81,291.—MACHINE FOR MANUFACTURING FUSES.—Thomas Richards, Medford, Mass., assignor to Edward D. Manning, same place.

I claim the hollow shaft, M, having open slots, s, at its upper end, in combination with the ring, t, substantially as described for the purpose herein set forth.

81,292.—CORKSCREW.—Charles L. Ridgway, Boston, Mass.

I claim the stud or fulcrum, E, provided with the notch, N, working in combination with the shoulder, E, substantially as described, and for the purpose set forth.

81,293.—CLAMP FOR HOLDING LEATHER.—Alvah Rittenhouse, Philadelphia, Pa.

I claim the arrangement of the jaws, J and J', hinge, H, and lever, L substantially in the manner and for the purpose specified.

81,294.—FEATHER RENOVATORS.—Hiram H. Robbins, Lynn, Mass.

I claim the above-described device for restoring feathers, consisting of the two cylinders, A and B, constructed and arranged as described, in combination with the steam conduits, f f &c., and the ports, g g, &c., such conduits and ports being regulated by the tubular valve, h, and the whole operating in manner and for the purpose as before explained.

81,295.—SHINGLE MACHINES.—L. C. Robinson, Shepardsville, Mass.

I claim 1st, The combination, with the sash, C, of the laterally moving sash, b, having its saws hinged, as described, and operated by the feed roller, d2, through the medium of the bell crank, d, and connecting rod, d1, substantially as and for the purpose specified.

2d, The cut off saw, D, in combination with the sliding mandrel, spring f, ratchet bar, f1, and pawl, f2, operating in the manner described, with relation to the hinged saws, a a', as and for the purpose specified.

81,296.—FRUIT JAR.—F. Rohrbacher and F. Hormann, Philadelphia, Pa.

We claim a jar, having, at the inside of the neck, inclined recesses, b, and vertical recesses, c, open at the top, and above the said recesses a flanged projection, the upper edge of which is an unbroken circle, in combination with a cap, B, rubber ring, i, and lugs, a, arranged as specified.

81,297.—RAILROAD CAR VENTILATOR.—William M. Russell and D. E. Holmes, Cincinnati, Ohio.

We claim the deflector, D E, when the same is provided with projecting pins, e e', in combination with the angular base, b, and sash, c, and the whole is so constructed and arranged as to operate substantially as described and for the purpose specified.

91,298.—CLAMPS.—William Sailer, Philadelphia, Pa.

I claim a clamp, consisting of a bar, a, upon which are projections, b d, serrated at their edges, and lugs, f f, the said clamp being adapted for use in connection with a wedge, y, substantially as described.

Also, the clamp, A, consisting of a bar, a upon which are lugs, f f, and projections, d b, serrated at their inner edges, the said lugs and projections being arranged as and for the purpose described.

81,299.—ELEVATOR.—George Scott, Louisville, Ky.

I claim, 1st, The combination of the wheel, G, rope, f, axle, Q, wheels, Q' and P, and the clutch, O, substantially as and for the purpose set forth.

2d, The pulley, E, when constructed with a double beveled groove, and used in combination with a rope, b, fixed at both ends, and operating substantially as described.

3d, The arrangement of the rope, b, fixed at both ends, at, B B, the platform, F, the pulleys, E L D and C, the latter being placed in a balance weight, M, substantially as described.

4th, The arrangement of the rope, f, passing through bulls' eyes in the platform, F, substantially as and for the purpose set forth.

81,300.—FASTENER FOR BUTTONS, STUDS, &c.—Thomas S. Sedwick, Onargo, Ill.

I claim an auxiliary attachment for securing buttons and studs, consisting of an elastic loop passing through or united to the fabric near to the button hole or eyelet, all substantially as described.

81,301.—MACHINE FOR TURNING BOOT LEGS.—Jacob Shearman, Fayetteville, Pa.

I claim, 1st, The cylinder, E, table, B C C, wheels, c, racks, d d, rod, f, hooks g, shaft, a, and crank, j, all arranged and operating substantially as and for the purpose shown and described.

2d, The racks, b, and ring, i, substantially as described, in combination with the accessory mechanism, all as set forth.

81,302.—MACHINE FOR OBTAINING MOTIVE POWER.—Robert Side, Union Street Borough, England.

I claim the cranks, working in pairs, one within the other, in opposite directions, for imparting rocking motion to weighted beams, having no fixed axis of motion, but so constructed that the crank pins move in slots in the said beams, substantially as above described.

81,303.—ICE CUTTER.—Franz G. Siemers, Winona, Minn.

I claim, 1st, The reciprocating frame, D, having the series of pickers, a a', arranged to operate substantially as described.

2d, In combination with the ice cutting frame, D, the follower, L, arranged and operated substantially as described, for feeding the ice to the pickers as it is cut.

3d, The combined ice cutter and refrigerator, when constructed and arranged for use as shown and described.

81,304.—OYSTER DREDGE.—Thomas P. Sink, Fairton, N. J.

I claim the construction of an oyster dredge with an adjustable rake, as herein described and for the purpose set forth.

Also, the clevis or ratchet, or its equivalent, in combination with an oyster dredge, for the purpose of setting and keeping a dredge rake to the proper pitch, as herein described, and for the purpose set forth.

81,305.—FAUCET.—David P. Smith, Salem, N. J.

I claim the washer or jam nut, B, in combination with the elastic packing, C, and the screw cut cylindrical portion, a' a''' of the barrel, A, the said parts being constructed and arranged to operate together, when applied to the wooden vessel, substantially as and for the purpose described.

81,306.—PIANO-FORTE.—Theodore Steinway, New York city.

I claim, 1st, A metallic action frame for piano-fortes, said frame being secured to the wrest plank, and composed of metallic hangers or standards, A, provided with holes to receive the metallic traverses, substantially as shown and described.

2d, The flanged traverses, B, constructed substantially as and for the purpose set forth.

3d, The intermediate plates, C, provided with holes to receive the flanged traverses, B, substantially as and for the purpose described.

4th, The adjusting screw, F, provided with a square end, n, and jam nut, o, in combination with the hangers or standards, A, substantially as and for the purpose set forth.

5th, The segmental or spherical ends, p, of the hangers, fitting into corresponding steps, and operating in combination with the screws, F, substantially as and for the purpose described.

81,307.—HORSESHOE.—Chas. O. Stevens, Auburn, Me.

I claim the top piece, B, and rear piece, C, joined by the pivot, G, secured to the hoof by means of the screw cross bar, e, substantially as herein set forth and for the purposes herein mentioned.

81,308.—FASTENING HANDLES TO AXES, PICKS, ETC.—James Stewart, St. Cloud, Minn.

I claim the metal tongue, C, constructed as described, and provided with a a circular projection, f, on its lower end, and one or more bolts, a, on its upper end, when used for the purpose of fastening handles to tools, substantially as herein set forth.

81,309.—ENGINE LATHE.—Squire Teal, Rochester, N. Y.

I claim, 1st, The combination of the adjustable bracket, H, the pattern plate attached thereto, and the jointed guide bar, B, with the tool holder, when arranged and operating substantially as described.

2d, The combination of the sleeve, r, set screw, v, and screw, f, with the tool holder, in the manner described, for the purpose of permitting or prohibiting to the tool holder, as may be found necessary, independent transverse movement.

3d, Arranging the bracket which supports the pattern on the tailstock of the machine, and connecting the tool holder with the pattern by a jointed lever, in the manner substantially as herein described.

81,310.—CLOTHES LINE SUPPORTER.—Francis W. Tilton and Moses C. Swift, New Bedford, Mass.

We claim, 1st, The tubular slotted stand, A, with the hooked notches, h, therein, substantially as and for the purposes described.

2d, In combination with the stand, A, the pole, E, with the rod, G, and hook F, arranged substantially as and for the purposes set forth.

81,311.—STRAP HOLDING DEVICE.—John Way, Waterbury, Conn.

I claim a holding device composed of a double acting cam or eccentric button, in combination with a suitable bearing surface, the whole operating substantially in the manner described, for the purpose set forth.

81,312.—CLOTHES HOOK AND LINE HOLDER COMBINED.—Theophilus Weaver, Harrisburg, Pa.

I claim the combination of the hook, S, lever, L, and the posts, a b a' b', substantially as described and for the purpose set forth.

81,313.—BRICK MACHINE.—Darius Wellington, Boston, Mass.

I claim in combination with the follower (which intermittently feeds forward the series of molds), and with the rotating pulverizing blades, d, and feed screw, k (which break up the clay and force it into the molds), the scraper bar, t', the throat piece, u, and the "doctor," y, each arranged to operate substantially as set forth.

Also, in combination with the reducing and feeding mill, b, and with the mold feeding mechanism, the solidifying plunger, v, and expelling plunger, w, when arranged to operate substantially as described.

Also, the arrangement of the bevel gear, f, at the bottom of the pulverizing and mold filling mill, b, to be driven by a pinion, g, on the driving shaft, just above the bed, a, substantially as described.

Also, the arrangement of the crank and cam wheel, s, connecting rod, r, slides, q, lever, d, and slide plates, a', for driving the follower o, and plungers v w, substantially as described.

81,314.—MACHINE FOR SEPARATING STONES FROM CLAY.—Darius Wellington, Boston, Mass.

I claim, in a clay mill, the arrangement of the parts, substantially as herein described; that is to say, arranging the delivery gate, d, beyond the shaft, b, and these in relation to the incline, e, so that the blades on said shaft shall cause a movement of the mass of clay over the grate and under the incline e, by which movement the clay is forced through the grate, and the stones moved forward thereon, and into the pocket, h, which pocket is provided with movable bars, a, or their equivalents.

81,315.—LATHES FOR TURNING BALLS.—J. Burns West, Geneseo, N. Y., assignor to Samuel Finley.

I claim, 1st, The swing rest, constructed and arranged as described, for the purpose of rounding one end and the sides of the block from which the ball is cut, by a single traverse of the tool across the axis of the mandrel, as set forth.

2d, The combination, with the swing rest, of the fixed notched tool holders, and swinging locking clamps, O, all these parts being constructed and operating as described, so as to hold the tool either horizontally or at an angle, as set forth.

3d, The combination with the swinging rest and locking clamps, of the twist ed gouge, L, and stop block or gage, k, these parts being constructed and arranged as described, for joint operation.

4th, The combination of the perforated chuck and mandrel with the push ing rod sliding through them, and with the vibrating hammer to knock out the finished balls, these parts being constructed, arranged, and operating as described.

5th, The combination, as described, with the chuck supporting the block from which the ball is to be cut at one end only, of the swinging rest, which carries the tool across the axis of the mandrel, as set forth.

6th, The method, herein described, of finishing a portion of the ball somewhat greater than its hemisphere, by a tool swinging transversely across the axis of rotation of the ball, (which is sustained at one end only), and then inserting the finished end in a perforated concave chuck, and completing the remainder of the sphere by a repetition of the former swinging movement of the tool.

7th, The combination, as described, with the chuck and swing rest, of the marking spring, O', constructed and arranged as set forth.

81,316.—TURNING LOGS IN SAW MILL.—George Willett, Richburg, N. Y.

I claim the described arrangement of the wheels, E E, relatively with the head-blocks, operating in connection with the cant hook to turn the log, as herein shown and described.

81,317.—CRANE.—C. Williams, New York city.

I claim, 1st, The clamping brake, arranged with reference to the crane, and the lifting rope thereof, substantially as and for the purpose specified.

2d, The brace, constructed with the swinging post, E, in combination with the standard, B, of the crane, substantially as and for the purpose specified.

3d, The detachable foot piece, L, in combination with the base, A, of the crane, substantially as and for the purpose specified.

4th, The pawl, K, arranged in relation with the notched collar of the turning standard, B substantially as and for the purpose specified.

5th, The collar, B*, and its sustaining braces, c, in combination with the turning standard, B, and the base, A, substantially as and for the purpose specified.

81,318.—BUCKLE.—H. C. Wissel (assignor to himself and H. F. Shryock), Indiana, Pa.

I claim a buckle, composed of a plate, a, provided with loops, b b, and a tongue, B, all constructed and arranged to operate in the manner substantially as and for the purpose set forth.

81,319.—HOOP SKIRT AND BUSTLE COMBINED.—Alexander K. Young, Boston, Mass.

I claim the arrangement of the hoop bustle on the outside of the main skirt, and with the ends of the hoops of the bustle connected with the hoops of the skirt, as set forth.

Also, the combination of an expansive hoop bustle as described, with a hoop skirt, it being arranged on the ontside of and fixed to the hoops of the said skirt, substantially as set forth.

REISSUES.

66,563.—AX.—Dated July 9, 1867; reissue 3,083.—Thomas Bakewell, and John Lippincott, Pittsburg, Pa., assignees of Daniel W. Colburn, Laomi, Ill,

We claim, 1st, Making that part of the edge of an ax which lies forward of the broadest part of the bit of a semi-circular shape, or of a shape nearly semi-circular, substantially as and for the purposes hereinbefore set forth.

2d, Continuing the cutting edge of an ax around the swell of the bit on both ends of the ax, substantially as and for the purposes above set forth.

3d, Making an ax with a pole of gradually increasing width from the eye towards the bit, when combined with a bit having a curved cutting edge extending around and back of its broadest part, on both ends of the poll, so that the poll may be reversible, and that the handle may be inserted at either end of the eye.

59,192.—HARVESTER PITMEN.—Dated October 30, 1866; reissue 3,084.—Division C.—J. W. Doty, Lockport, N. Y.

I claim the combination of the bolt, H, ratchet nut, e, and pawl, p, with the conical or spherical wrist, m, and socket, n, or their equivalents, for the purpose set forth.

61,735.—MATERIAL FOR VARIOUS STRUCTURES.—Dated December 26, 1865; reissue 3,085.—Division A.—John K. Mayo, New York city, for himself, and Andre Cushing and George B. Cushing, St. John, New Brunswick, assignees of John K. Mayo.

I claim a compound scale board, consisting of a plurality of thin sheets, scales, or layers of wood, connected together with the grain in divers directions, as a material for manufactures, and for the formation, lining, or covering of land or marine structures.

51,735.—MATERIAL TO BE USED IN CONSTRUCTING BRIDGES, ARCHES, BEAMS, TUNNELS, AND OTHER WORKS IN CIVIL ENGINEERING.—Dated December 26, 1865; reissue 3,086.—Division B.—John K. Mayo, New York city, for himself, and Andre Cushing and George B. Cushing, St. John, New Brunswick, assignees of John K. Mayo.

I claim the employment or use of the compound scale board hereinbefore described, in the formation of the specified or analogous structures in civil engineering.

51,735.—CONSTRUCTION OF SHIPS, BOATS, BUOYS, AND OTHER NAUTICAL AND MARINE STRUCTURES.—Dated December 26, 1855; reissue 3,087.—Division C.—John K. Mayo, New York city, for himself, and Andre Cushing and George B. Cushing, St. John, New Brunswick, assignees of John K. Mayo.

I claim the employment or use of the compound scale board hereinbefore described, in the formation of the specified or analogous nautical structures.

51,735.—CONSTRUCTION AND FINISHING OF HOUSES AND OTHER BUILDINGS.—Dated December 26, 1865; reissue 3,088.—Division D, John K. Mayo, New York city, for himself and Andre Cushing and Geo. B. Cushing, St. John, New Brunswick, assignees of John K. Mayo.

I claim the employment or use of the compound scale board hereinbefore described, in the construction and finishing of houses and other buildings, or parts thereof.

51,735.—HOUSE DECORATIONS, FURNITURE, FITTINGS, AND THE LIKE.—Dated Dec. 26, 1865; reissue 3,089.—Division E.—John K. Mayo, New York city, for himself and Andre Cushing and Geo. B. Cushing, St. John, New Brunswick, assignees of John K. Mayo.

I claim the employment or use of the compound scale board hereinbefore described, in the formation of the specified or analogous structures or articles of house decoration, fitting, and furnishing.

51,735.—CONSTRUCTION OF BOXES, TRUNKS, BUCKETS, BARRELS, AND OTHER CONTAINING VESSELS.—Dated Dec. 26, 1865; reissue 3,090.—Division F.—John K. Mayo, New York city, for himself and Andre Cushing and Geo. B. Cushing St. John, New Brunswick, assignees of John K. Mayo.

I claim the employment or use of the compound scale board hereinbetore described, in the formation of the specific or analogous receptacles or parts thereof.

51,735.—PIPES, TUBES, FUNNELS, FAUCETS, ETC.—Dated Dec. 26, 1865; reissue 3,091.—Division G.—John K. Mayo, New York city, for himself, and Andre Cushing and George B. Cushing, St. John, New Brunswick, assignees of John K. Mayo.

I claim a conductor or vessel made of thin scale boards or laminæ of wood cemented together, with the grain crossed or diversified, substantially as and for the purpose herein set forth.

51,735.—CONSTRUCTION OF CARRIAGES, CARS, COACHES, AND OTHER VEHICLES.—Dated Dec. 26, 1865; reissue 3,092.—Division H.—John K. Mayo, New York city, for himself and Andre Cushing and Geo. B. Cushing, St. John, New Brunswick, assignees of John K. Mayo.

I claim the employment or use of the compound scale board hereinbefore described, in the formation of the specified or analogous articles and structures.

75,070.—HARVESTER.—Dated March 3, 1868; reissue 3,093. Wm. H. Stevenson, Auburn, N. Y.

I claim, 1st, The combination with a dished driving spur wheel, D, of a spur pinion, E, bevel wheel, H, and bevel pinion, I, which will admit of the arrangement of the crank shaft, J, substantially as and for the purposes specified.

2d, The arrangement of the gear wheels, D E H I, the wheel, E, running loosely on a shaft, F, and being provided with a clutch face, f, and shipping lever, G, substantially as described.

3d, The adjustable shifter holder and guide, G1, constructed in one piece, and attached to the main or draft frame by bolts passing through one or more slots in the shifting plate, G2, whereby the shifter fork may be adjusted to the groove in the spur wheel, substantially as described.

4th, The combination of the adjusting lever, T, linked connection, L, and curved guide, S, the latter working endwise in a guide box, K, on the frame, with the drag bar, P, substantially in the manner shown and described.

DESIGN.

3,160.—SLEIGH BELL.—Ezra G. Cone, East Hampton, Conn.

EXTENSION NOTICES.

U. S. PATENT OFFICE,
WASHINGTON, D. C., July 22, 1868.

William Porter, of Williamsburg, N. Y., having petitioned for an extension of the patent granted to him on the 24th day of October, 1854, for an improvement in "Securing Lamps to Lanterns," it is ordered that said petition be heard at this office on the 19th day of October next. Any person may oppose this extension. Objections, depositions, and other papers, should be filed in this office twenty days before the day of hearing.

9 ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE,
WASHINGTON, D. C., July 29, 1868.

Clara B. Snow, of Independence, Iowa, executrix of the estate of Harvey Snow, deceased, having petitioned for an extension of the patent granted to the said Harvey Snow the 21st day of November, 1854, for an improvement in "Presser-bar for Planing Machines," it is ordered that said petition be heard at this office on the 2d day of November next. Any person may oppose this extension. Objections, depositions, and other papers should be filed in this office twenty days before the day of hearing.

9 ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE,
WASHINGTON, D. C., August 3, 1868.

Chesley Jarnagin, of Bean's Station, Tenn., having petitioned for an extension of the patent granted him on the 31st day of October, 1854, for an improvement in "Seats for Wagons," it is ordered that said petition be heard at this office on the 19th day of October next. Any person may oppose this extension. Objections, depositions, and other papers should be filed in this office twenty days before the day of hearing.

9 ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE,
WASHINGTON, D. C., Aug. 5, 1868.

George Miller, of Providence, R. I., having petitioned for an extension of the patent granted to him on the 7th day of November, 1854, for an improvement in "Leather Banding for Machinery," it is ordered that said petition be heard at this office on the 26th day of October next. Any person may oppose this extension. Objections, depositions, and other papers, should be filed in this office twenty days before the day of hearing.

9 ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE,
WASHINGTON, D. C., Aug. 11, 1868.

George Crompton, of Worcester, Mass., having petitioned for an extension of the patent granted to him on the 14th day of November 1854, for an improvement in "Looms for Weaving Figured Fabrics," it is ordered that said petition be heard at this office on the 26th day of October next. Any person may oppose this extension. Objections, depositions, and other papers, should be filed in this office twenty days before the day of hearing.

9 ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE,
WASHINGTON, D. C., Aug 12, 1868.

John Cram, of Boston, Mass., having petitioned for an extension of the patent granted him on the 28th day of November, 1854, for an improvement in "Towel Stand or Clothes Horse," It is ordered that said petition be heard at this office on the 9th day of November next. Any person may oppose this extension. Objections, depositions, and other papers, should be filed in this office twenty days before the day of hearing.

10 ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE,
WASHINGTON, D. C., Aug. 13, 1868.

Jacob Swartz, of Philadelphia, Pa., having petitioned for an extension of the patent granted him on the 14th day of November, 1854, reissued on the 5th day of June, 1860, and again reissued in three divisions, numbered 1,313, 1,314, and 1,315, on the 3d day of June, 1862, for an improvement in "Harvesters," it is ordered that this petition be heard at this office on the 2d day of November next. Any person may oppose this extension. Objections, depositions, and other papers, should be filed at this office twenty days before the day of hearing. 10 ELISHA FOOTE, Commissioner of Patents.

Inventions Patented in England by Americans.

[Compiled from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

1,952.—CONSTRUCTION OF ZINCING BATHS.—Frederick Kraft and Frederick Cbase, Philadelphia, Pa. June 15, 1868.

2,009.—METALLIC CARTRIDGE.—Oliver Fisher, Winchester, New Haven, Conn. June 22, 1868.

2,083.—TOY MORTAR OR SPRING GUN.—Wm. Rose, New York city. June 29, 1868.

2,121.—CART.—Burgess Long, Philadelphia, Pa. July 2, 1868.

2,123.—CONSTRUCTION OF BRIDGES.—Rufus S. Merrill, Boston, Mass. July 2, 1868.

2,137.—REDUCING ALUMINIUM FROM ITS ORES OR EARTHS AND PRODUCING ALLOYS THEREFROM.—Anthony L. Fleury, Boston, Mass. July 4, 1868.

2,151.—INDIA-RUBBER SOLES FOR BOOTS AND SHOES.—Thos. J. Mayall, Roxbury, Mass. July 7, 1868.

2,160.—ELECTRIC TELEGRAPH CABLE.—Thos. J. Mayall, Roxbury, Mass. July 8 1868.

2,166.—APPARATUS FOR EVAPORATING AND CONDENSING LIQUIDS.—Thomas Prosser, New York city. July 8, 1868.

2,180.—BEARING SURFACES OF HORSE COLLARS, SADDLES, ETC.—Eugene Sullivan, New York city. July 9, 1868.

2,286.—MACHINERY FOR CLEANING AND FINISHING THREADS.—Tobias Kohn, Hartford, Conn. July 21, 1868.

2,159.—GAS TUBING AND OTHER ARTICLES OF INDIA-RUBBER.—Thomas J. Mayall, Roxbury, Mass. July 8, 1868.

2,199.—LOCK.—John Dewe, George Harding, and Bartholomew Lalor, Toronto, Canada. July 11, 1868.

2,368.—GLUE AND OTHER SIMILAR MATERIAL.—Christian Wahl, Chicago, Ill July 28, 1868.

CITY SUBSCRIBERS.—The SCIENTIFIC AMERICAN will be delivered in every part of the city at $4 a year. Single copies for sale at all the News Stands in this city, Brooklyn, Jersey City, and Williamsburg, and by most of the News Dealers in the United States.

RECEIPTS.—When money is paid at the office for subscriptions, a receipt for it will be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona-fide* acknowledgment of their funds.

Advertisements.

The value of the SCIENTIFIC AMERICAN *as an advertising medium cannot be over-estimated. Its circulation is ten times greater than that of any similar journal now published. It goes into all the States and Territories, and is read in all the principal libraries and reading rooms of the world. We invite the attention of those who wish to make their business known to the annexed rates. A business man wants something more than to see his advertisement in a printed newspaper. He wants circulation. If it is worth 25 cents per line to advertise in a paper of three thousand circulation, it is worth $2.50 per line to advertise in one of thirty thousand.*

RATES OF ADVERTISING.

Back Page.....$1.00 *a line.*
Inside Page.....75 *cents a line.*

Engravings may head advertisements at the same rate per line, by measurement, as the letter press.

WANTED.—Salesmen everywhere, farmers and others, to sell an article in great demand. $400 made by one agent his first month. Address immediately BLISS & McEATHRON, Louisville, Ky. 10 4

CIRCULAR SAW MILLS.
Woodworth Planers, etc., from latest improved patterns by S. HEALD & SONS, Barre, Mass. Prices low. Send for circular. 1 13

SHINGLE & HEADING MACHINE,—Law's Patent. The simplest and best in use. Shingle Heading, and Stave Jointers, Stave Cutters, Equalizers, Heading Turners, Planers, etc. Address
9 tf TREVOR & CO., Lockport, N. Y.

Sault's Patent

FRICTIONLESS Locomotive Valves, easily applied; requires no changes.
25 13* M. & T. SAULT COMPANY, New Haven, Conn.

ANATOMY, PHYSIOLOGY, PHRENology, Physiognomy, Psychology. A new class for professional instruction in Scientific Character Reading is now forming at 389 Broadway, N. Y. Send stamp for circular to PHRENOLOGICAL JOURNAL, New York. 10 4

FABRICATION OF VINEGAR.—Prof. H. DUSSAUCE, Chemist, is ready to furnish the most recent processes to manufacture vinegar by the slow and quick methods, with and without alcohol, directly from corn or other grains. Address, New Lebanon, N. Y. 10 1*

TODD & RAFFERTY, Manufacturers and DEALERS IN MACHINERY.
Works, Paterson, N. J.; Warerooms, 4 Dey st., N. Y., Boilers, Steam Pumps, Machinists' Tools. Also, Flax, Hemp, Rope & Oakum Machinery; Snow's & Judson's Governor's; Wright's Patent Variable Cut-off and other Engines. tf 1

TO CAPITALISTS.—Wanted by a practical, thorough Engineer and Machinist, who has had the superintendence of large factories in England, an active or silent partner with sufficient capital to carry out several valuable inventions. Good references given and required. Address Box No. 443, Waterbury, Conn.

GREAT ECONOMY in Saws and the articles of Files, Time, and Power, by the use of Noyes' Patent Adjustable Saw Guide and Jointer. Also, Combined Gage and Square for Setting and Filing Saws. New illustrated Pamphlet sent on application. Address
1* BAKER & NOYES, Manchester, N. H.

20,000 SOLD.—The Magnetic Pocket Timekeeper and Compass, handsome Case, Glass Crystal, White enameled Dial, Steel and Metal Works, Watch Size, Warranted to keep in order and denote correct time for two years. Satisfaction guaranteed. Sent securely by mail, postpaid, for only $1; 3 for $2. Address MAGNETIC WATCH CO., Hinsdale, N. H. 10 2*

PATENTS of Practical Importance, Economy, and Usefulness, Introduced and Sold on Satisfactory Terms. Address
E. TIFFANY & CO.,
Financial Agents, 15 Wall st., New York.
References:—"E. Tiffany & Co. are a Reliable Firm," G. T. Hawes, Pres. Com. Ins. Co., 151 Broadway; W. H. Kipp, Pres. Baltic Ins. Co., 106 Broadway, New York.

Machine-made Watches

By the
TREMONT WATCH COMPANY,
BOSTON, MASS.
The Cheapest Reliable Watch. Their Watches are dust proof, and all have their best Chronometer Balance. For sale by all respectable dealers. 10 13eow

MAKE YOUR OWN SOAP at Two Cents a Pound, with
GEO. F. GANTZ & CO.'S
PURE WHITE ROCK POTASH.
It makes Pure Soap that will not injure the finest fabric, and, beside saving money in Soap, will save a great deal more in wear of clothes.
Send for some and try it.
Office 136 and 138 Cedar st., New York.
One can makes fifteen pounds of Soap.

$325 A MONTH and expenses! 28 new articles. H. B. SHAW, Alfred, Me. 1 11*

WHAT SHALL WE EAT?—The question of Human Food, always important, is doubly so now, when our BEEF is said to be diseased. The best works on the subject are

FOOD AND DIET, Containing an Analysis of every kind of Food and Drink. By Dr. J. Pereira. Edited by Dr. C. A. Lee. $1 75.

FRUITS AND FARINACEA THE PROPER FOOD OF MAN. With notes and engraved illustrations. $1 75. Agents wanted.

THE SCIENCE OF HUMAN LIFE, ON DIET PHYSIOLOGY, ANATOMY, etc. By Sylvester Graham, with a biography. $3 50.

PHILOSOPHY OF DIGESTION. The Principles of Dietetics. By Dr. Combe, 50c. THE STORY OF A STOMACH. By a Reformed Dyspeptic. 75c. HYDROPATHIC COOK BOOK, with new recipes, $1 50. SOBER AND TEMPERATE LIFE, with notes and illustrations, by Cornaro, 50c. PHILOSOPHY OF EATING. By Dr. Bellows. $2. Sent first post by S. R. WELLS.
10 2 No. 389 Broadway, New York.

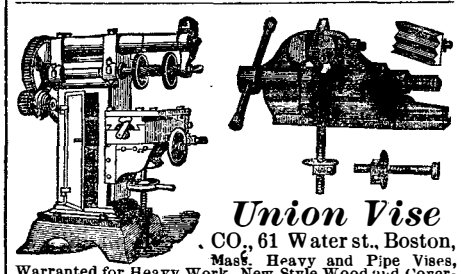
THE PHRENOLOGICAL JOURNAL for September—contains an account of the Presidential Candidates—Grant, Colfax, Seymour and Blair, with portraits and concise sketches of character; also, Hon. Anson Burlingame, Franz Listz, the composer; Arminius Vambery, the Oriental Traveler; H. Littlefield, artist. Who are the Yankees? Use legs and have Legs; A Key Thought; The Development Theory Defined; Finding a Situation; A Perfect Church on Earth—Is it Possible? Only 30 cents, or $3 a year; $1 50 for half a year; newsmen have it. Address S. R. WELLS,
10 2 No. 389 Broadway, New York,

THE LATHE AND ITS USES.—
JOHN WILEY & SON, No. 2 Clinton Hall, Astor Place, New York,
HAVE JUST PUBLISHED

The Lathe and its Uses.

OR, INSTRUCTIONS IN THE ART OF TURNING WOOD AND METAL, including a description of the most Modern Appliances for the ornamentation of Plane and Curved Surfaces, with a description, also, of an entirely novel form of "Lathe" for Eccentric and Rose engine turning—a Lathe and Turning Machine combined, and other valuable matter relating to the art. 1 vol. 8vo. Copiously illustrated. Cloth.....$6 50

☞ Mailed and prepaid on receipt of price.
"The most complete Work on the subject ever published."—American Artizan. 10 2



Union Vise

CO., 61 Water st., Boston, Mass. Heavy and Pipe Vises, Warranted for Heavy Work. New Style Wood and Covered Screw. Standard Milling Machines, simple, great capacity, power, and strength, two sizes. Heavy, 2,300 lbs. Light, 950 lbs. 10 52

$10 A Day for all. Stencil tool, samples free. Address A. J. FULLAM, Springfield, Vt. 7 13

THE 21ST ANNUAL EXHIBITION
OF
American Manufactures & the Mechanic Arts,
Under the direction and Superintendence of the
MARYLAND INSTITUTE,
Will be opened, in its spacious Hall, in Baltimore, on Tuesday evening, Oct. 13, 1868. For particulars, address the undersigned, or Joseph Gibson, Actuary.
6 10 W. HENRY JOHNSON, Ch. Com.

Lucius W. Pond,

IRON and Wood working Machinery. Machinists' Tools and supplies, Shafting, Mill Gearing, and Jobbing. Also, Sole Manufacturer of TAFT'S CELEBRATED PUNCHES & SHEARS, (Works at Worcester, Mass.) 98 Liberty st., New York.
2 8* tf

NEW BOOKS FOR CARPENTERS.—
ARCHITECTURE IN DETAIL.
MODERN AMERICAN ARCHITECTURE.
THE PRACTICAL STAIR BUILDER.
Price for each, $10. Sent free when paid for in advance or by express, C.O.D. Illustrated Catalogues free.
A. J. BICKNELL & CO., Publishers,
6 tf Troy, N. Y., and Springfield, Ill.

WROUGHT-Iron Pipe for Steam, Gas and Water; Brass Globe Valves and Stop Cocks, Iron Fittings, etc. JOHN ASHCROFT, 50 John st., N. Y.
26 13*

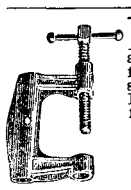
NEW AND IMPROVED BOLT CUTTER—Schlenker's Patent.—The Best in use. Cutting Square, Coach Screw and V-Thread by once passing over the iron. Cutter Heads can be attached to other Machines, or the ordinary Lathe. Taps furnished to order. Circular price list, with references, mailed on application.
4 11* R. L. HOWARD, Buffalo, N. Y.

LATHE CHUCKS—HORTON'S PATENT—from 4 to 36 inches. Also for car wheels. Address E. HORTON & SON, Windsor Locks, Conn.
6 tf

PORTABLE STEAM ENGINES, COMbining the maximum of efficiency, durability, and economy with the minimum of weight and price. They are widely and favorably known, more than 600 being in use. All warranted satisfactory or no sale. Descriptive circulars sent on application. Address
J. C. HOADLEY & CO. Lawrence, Mass. 1 tf

IRON PLANERS, ENGINE LATHES, Drills, and other Machinists' Tools, of Superior Quality, on hand and finishing. For Sale Low. For Description and Price, address NEW HAVEN MANUFACTURING CO., New Haven. 20s tf

R. BALL & CO., Worcester, Mass., Manufacturers of the latest improved patent Daniels', Woodworth's, and Gray & Wood's Planers, Sash Molding, Tenoning, Power and Foot Mortising, Upright and Vertical Shaping and Boring Machines, Scroll Saws, Double Saw Bench, Re-Sawing, and a variety of other machines for working wood. Also, the best Patent Hub and Rail-car Mortising Machines in the world. Send for our illustrated catalogue. 25 13* tf



LE COUNT'S PATent Hollow Lathe Dogs and Clamps.—A set of 8 dogs from 3/8 to 2-in., inclusive, $8. A set of 12 from 3/8 to 4-in., $17 30. Five sizes Machinists' Clamps, from 2 to 6 in., inclusive, $11. Send for Circular.
C. W. LeCOUNT.
South Norwalk,
8 tf Conn.

CHILLED ROLLS,

RUBBER CALENDERS,
GRINDERS, ETC.
IRON, BRASS, COPPER, AND BRITANNIA ROLLING MILLS.

Heavy Mill Gearing, Shafting, Hangers, and Pulleys, Power and Hand Presses, Trip Hammers, Shears, Hydraulic Pumps, and Iron and Composition Castings of every description, manufactured by the
FARREL FOUNDERY AND MACHINE CO.,
11 14&17* tf ANSONIA, CONN.

RIVERVIEW MILITARY ACADEMY, POUGHKEEPSIE, N. Y.—Location healthy. Scenery unequaled; Building convenient; Teachers highly educated, earnest, working men; System of Order unsurpassed. A wide-awake, thorough-going School for boys wishing to be trained for Business, for College, or for West Point, or the Naval Academy. For circulars address OTIS BISBEE, A.M., Principal and Proprietor
4 8

PHOENIX IRON WORKS—
Established 1834.
GEO. S. LINCOLN & CO.,
Iron Founders and Manufacturers of Machinists and Gun Tools, 54 to 60 Arch street, Hartford, Conn.
Samples may be seen in our Wareroom. 7 tf

MASON'S PATENT FRICTION CLUTCHES, for starting Machinery, especially Heavy Machinery, without sudden shock or jar, are manufactured by V. W. MASON & CO., Providence, R. I.
Also, TAPLIN, RICE & CO., Akron, Ohio.
2 monthly]

IMPORTANT.—MOST VALUABLE MAchine for planing, irregular and straight work, in wood, is the Variety Molding and Planing Machine, for all branches of wood working. Our improved guards make it safe to operate. Combination collars for cutters save one hundred per cent. For planing, molding, and cutting irregular forms, the machine is unsurpassed.
We hear there are manufacturers infringing on our eight patents on this machine. We caution the public against purchasing such.
All communications must be addressed to COMBINATION MOLDING AND PLANING MACHINE CO., P.O. Box 3,230, New York city.
Our machines we warrant. Send for descriptive pamphlet. Agents solicited. 2 tf eow

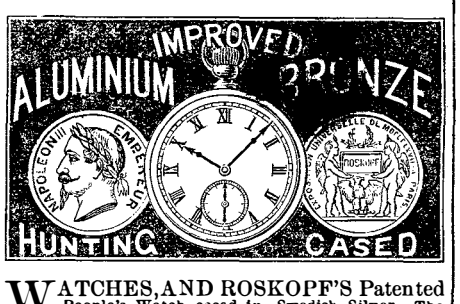
VERY IMPORTANT.

THE WHOLE FOUNDATION OF THE OLD VARIETY MOLDING MACHINE, built at New York, is the GEAR PATENT, extended Sept. 30, 1867. The C. M. and P. Machine Company own ONLY A VERY LITTLE OF THE PATENT, outside of the State of New York. The owners, and Attorneys for owners, of the GEAR PATENT, and *sole* manufacturers of the best improved machines made for planing and molding straight and irregular forms in wood, perfectly safe to operate, with improved Feed Table, and improved adjustable collars for combination cutters, saveing 100 per cent; for all the rest of the United States] are
A. S. GEAR, JOHN GEAR & CO.,
New Haven, Conn., and Concord, N. H.
☞ *We Warrant our Machines, and Caution the Public to Buy Machines of Lawful Owners* ONLY.
☞ We are Sole Manufacturers of the only **practicable** Guards invented. They can be attached to any Machine.
☞ Send for a Descriptive Pamphlet. 2 eow tf

BEAH'S PATENT

Self-Centering Chuck.

The Morse Twist Drill and Machine Company of New Bedford, Mass., having frequent applications for Chucks, were induced to give their attention to the various descriptions in use, with a view to select from among them one which should most fully meet the wants of their customers, and have, after great care and a thorough examination of the most desirable patterns, become satisfied of the superiority and advantages possessed by the Beach Patent Self-centering and Self-tightening chuck, and can fully recommend the same and have purchased of the Meriden Tool Company the entire and exclusive right to manufacture Chucks under said Patents. These Chucks are made entirely of steel, and are of superior workmanship, accuracy, and finish. The company are now engaged upon their manufacture, and prepared to fill orders for any number of the various sizes, and warrant them to give entire satisfaction. Orders addressed to the Morse Twist Drill and Machine Company, New Bedford, Mass., will receive prompt attention. 8 2eow



WATCHES, AND ROSKOPF'S Patented People's Watch, cased in Swedish Silver. The improved Aluminum Bronze is a metal differing entirely from any ever offered to the public. Its qualities and resemblance to Gold are such that even judges have been deceived. It has seriously occupied the attention of scientific men, and has not only called forth the eulogiums of the press in consequence of its peculiar properties, but has also obtained a Gold Medal at the Paris Exposition.
The movements are well finished, perfectly regulated, and as all these goods are manufactured in my own factory, I am enabled to warrant them as excellent timekeepers. Price from $16 to $22.
Further details will be found in my pamphlet, which will be sent, postpaid, on demand.
A full assortment of chains. Also, Aluminium Bronze Cases for Waltham Watches. Goods sent by express, C. O. D., with charges. Address
JULES D. HUGUENIN VUILLEMIN,
6 eow tf No. 44 Nassau st., New York.

MACHINISTS send for Price List of Tools GOODNOW & WIGHTMAN, 23 Cornhill, Boston.
18 eow tf

PLANER and Matcher for $350, a good new Machine. S. C. HILLS, 12 Platt st., New York.
22 8eow*

MANUFACTURERS—
And others using Steam Engines can, by applying the IND CATOR, ascertain the condition of their Engines; the power required to do their work, or any portion thereof; the economy of fuel expended, when compared with power developed. The undersigned makes a specialty of this branch of engineering, and will wait on any party who desires his services. Instruments furnished and instruction given. F. W. BACON,
18 tfeow Consulting Engineer, 84 John st., N. Y.

WANTED—Ladies and Gentlemen everywhere as Agents. $5 to $20 per day. No Humbug. Samples and circulars sent by mail for 25c. WHITNEY & SON, 6 Tremont st., Boston, Mass. 3 tf

POWER PUNCHES AND SHEARS, Straightening Machines, Line Shafting and Pulleys. Address GREENLEAF & CO., Indianapolis, Ind.
4 tf

OIL! OIL!! OIL!!!

FIRST PREMIUM.....PARIS, 1867
Grand Silver Medal and Diploma!
WORLD'S FAIR—London, 1862.
TWO PRIZE MEDALS AWARDED

PEASE'S IMPROVED OILS!

Engine, Signal, Lard, and Premium Petroleum is the Best Made for
Railroads, Steamers, and for Machinery and Burning.
F. S. PEASE, Oil Manufacturer,
Nos. 61 and 63 Main street, Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the world
1 tf

Sheet and Roll Brass,

BRASS AND COPPER WIRE,
German Silver, etc.,
Manufactured by the
THOMAS MANUFACTURING CO.,
Thomaston, Conn.
☞ Special attention to particular sizes and widths for Type Founders, Machinists, etc. 23 26*

FOR STEAM ENGINES, BOILERS, SAW Mills, Cotton Gins, address the ALBERTSON AND DOUGLASS MACHINE CO., New London, Conn. 1 tf

Philadelphia Advertisements.

MERRICK & SONS,
Southwark Foundery,

No. 430 Washington Avenue, Philadelphia.
William Wright's Patent
VARIABLE CUT-OFF STEAM ENGINE,
Regulated by the Governor.
Merrick's SAFETY HOISTING MACHINE,
Patented June, 1868. DAVID JOY'S PATENT
VALVELESS STEAM HAMMER.
D. M. Weston's Patent
Self-Centering, Self-Balancing Centrifugal Sugar-Draining Machine.
AND
HYDRO EXTRACTOR
For Cotton and Woolen Manufacturers.
10 eow tf New York Office, 62 Broadway.

POWER LOOMS. Improved Drop Box,

Spooling, Winding, Beaming Dyeing, and Sizing Machines, Self-Acting Wool Scouring Machines, Hydra Extractors. Also, Shafting, Pulleys, and Self-Oiling Adjustable Hangers, manuf'd by THOS WOOD, 2106 Wood st., Phil'a, Pa
9 13

ALLEN PATENT ANTI-LAMINA FOR Removing and Preventing Scale in Steam Boilers. It has never failed. Send for Circulars. Price $5 per can.
ALLEN & NEEDLES,
9 3 41 South Water st., Philadelphia.

Bridesburg Manf'g Co.,

Office No. 65 North Front Street,
PHILADELPHIA, PA.,
Manufacture all kinds of Cotton and Woolen Machinery including their new
Self-Acting Mules and Looms,
Of the most approved style. Plan drawn and estimates furnished for factories of any size. Shafting and mill gearing made to order. tf

ROBERT McCALVEY, Manufacturer of HOISTING MACHINES AND DUMB WAITERS.
26 13* 602 Cherry st., Philadelphia, Pa.

Woodworth Planers.

Woodworking Machinery generally, Manufactured cor. Fifteenth and Penn Avenue, Phila. POWER & DAVIS
4 13

SMITH'S IMPROVED WOODWORTH PLANER AND MATCHER, Sash and Door, Molding Mortising, and Tenoning Machines, Scroll Saws, Saw Mills, etc., at reduced prices. Address CHAS. H. SMITH 135 North 3d st., Philadelphia, Pa. 1 13*

Cedar Vats, Tanks, and Reservoirs,

For Brewers, Distillers, Dyers, Chemists, Manufacturers etc., Public and Private Buildings, etc., etc.
GEO. J. BURKHARDT & CO.,
1 13 Buttonwood, below Broad st., Philadelphia, Pa.

FOR SALE CHEAP—A PATENT-right for a useful, novel, and ornamental article, which can be made and sold at a reasonable price, and will make a splendid holiday present. Address A. K. SAURMAN, 822 Spring-garden st., Philadelphia, Pa.
9 1os 3is

Priest's Ready Solder.

The only Patent issued. All persons are cautioned against infringements. Samples sent on receipt of 25 cents. For sale everywhere. Agents wanted. Sole proprietors, W. W. BEAUCHAMP & CO., No. 40 Hanover st., Boston Mass. 7 4*

YOU CAN SOLDER your own tin ware without a soldering iron by buying one bottle of Wilson's Prepared Solder. Samples sent on receipt of 35 cents, with price list. Agents wanted everywhere. Direct to WILSON & CO., 19 Lindall st., Boston. 1 tf-D

BOILER FELTING SAVES TWENTY-five per cent of Fuel. JOHN ASHCROFT,
26 13* 50 John st., New York.

MODELS, PATTERNS, EXPERIMENTAL, and other Machinery. Models for the Patent Office, built to order by HOLSKE MACHINE CO., Nos. 528, 530, and 532 Water street, near Jefferson. Refer to SCIENTIFIC AMERICAN office. 4 tf

WOODWORTH PLANERS—IRON Frames 18 to 24 inches wide. $125 to $150.
2 tf b S. C. HILLS, 12 Platt st., New York.

PAGE'S GREAT WATER FLAME Coal, Patented Lime Kiln will burn No. 1 finishing lime with any coal or wood, mixed or separate, in same kiln. Rights for sale by C. D. PAGE, Rochester, N. Y.
24 26*

WHEATON'S OINTMENT cures the Itch
WHEATON'S OINTMENT will cure Salt Rheum.
WHEATON'S OINTMENT cures Old Sores.
WHEATON'S OINTMENT cures all diseases of the Skin.
Price 50 cents;—by mail 60 cents. All Druggists sell it.
WEEKS & POTTER, Boston, Proprietors. 1 19* os

WOODWORTH PLANERS A SPECIALTY—From new patterns of the most approved style and workmanship. Wood-working Machinery generally. Nos. 24 and 26 Central, corner Union street, Worcester, Mass.
3 13* WITHERBY RUGG & RICHARDSON.

CHARLES A. SEELY, CONSULTING and Analytical Chemist, No. 26 Pine street, New York. Assays and Analyses of all kinds. Advice, Instruction, Reports, etc., on the useful arts. 1 tf

Zur Beachtung für deutsche Erfinder.

Nach dem neuen Patent-Gesetze der Vereinigten Staaten, können Deutsche, sowie Bürger aller Länder, mit einer einzigen Ausnahme, Patente zu denselben Bedingungen erlangen, wie Bürger der Ver. Staaten.

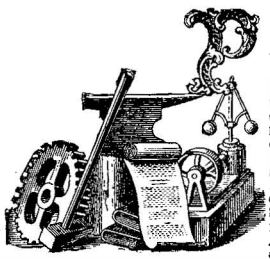
Erkundigungen über die, zur Erlangung von Patenten nöthigen Schritte, können in deutscher Sprache schriftlich an uns gerichtet werden und Erfinder, welche persönlich nach unserer Office kommen werden von Deutschen prompt bedient werden.

Die Patentgesetze der Vereinigten Staaten,

nebst den Regeln und der Geschäftsordnung der Patentoffice, und Anleitungen für die Erfinder um sich Patente zu sichern, sind in Buch-Format von uns in deutscher Sprache herausgegeben, und werden gratis an alle versandt, welche darum mündlich oder schriftlich einkommen.

Man adressire

MUNN & CO.
37 Park Row, New York.



PATENTS

The First Inquiry that presents itself to one who has made any improvement or discovery is: "Can I obtain a Patent?" A *positive* answer can only be had by presenting a complete application for a Patent to the Commissioner of Patents. An application consists of a Model, Drawings, Petition, Oath, and full Specification. Various official rules and formalities must also be observed. The efforts of the inventor to do all this business himself are generally without success. After a season of great perplexity and delay, he is usually glad to seek the aid of persons experienced in patent business, and have all the work done over again. The best plan is to solicit proper advice at the beginning.

If the parties consulted are honorable men, the inventor may safely confide his ideas to them: they will advise whether the improvement is probably patentable, and will give him all the directions needful to protect his rights.

Messrs. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN, have been actively engaged in the business of obtaining patents for over twenty years—*nearly a quarter of a century.* Over Fifty thousands inventors have had benefit from our counsels. More than one third of all patents granted are obtained by this firm.

Those who have made inventions and desire to consult with us, are cordially invited to do so. We shall be happy to see them in person, at our office, or to advise them by letter. In all cases they may expect from us an *honest opinion.* For such consultations, opinion, and advice, *we make no charge.* A pen-and-ink sketch, and a description of the invention should be sent, together with stamps for return postage. Write plainly, do not use pencil nor pale ink; be brief.

All business committed to our care, and all consultations, are kept by us *secret and strictly confidential.* Address MUNN & CO., 37 Park Row, New York.

Preliminary Examination.—In order to obtain a Preliminary Examination, make out a written description of the invention in your own words, and a rough pencil or pen-and-ink sketch. Send these with the fee of $5 by mail, addressed to MUNN & CO., 37 Park Row, and in due time you will receive an acknowledgment thereof, followed by a written report in regard to the patentability of your improvement. The Preliminary Examination consists of a special search, which we make with great care, among the models and patents at Washington to ascertain whether the improvement presented is patentable.

In Order to Apply for a Patent, the law requires that a model shall be furnished, not over a foot in any dimensions,—smaller, if possible. Send the model by express, prepaid, addressed to Munn & Co., 37 Park Row, N. Y., together with a description of its operation and merits. On receipt thereof we will examine the invention carefully and advise the party as to its patentability, free of charge.

The model should be neatly made of any suitable materials, strongly fastened, without glue, and neatly painted. The name of the inventor should be engraved or painted upon it. When the invention consists of an improvement upon some other machine, a full working model of the whole machine will not be necessary. But the model must be sufficiently perfect to show, with clearness, the nature and operation of the improvement.

New medicines or medical compounds, and useful mixtures of all kinds, are patentable.

When the invention consists of a medicine or compound, or a new article of manufacture, or a new composition, samples of the article must be furnished, neatly put up. Also, send us a full statement of the ingredients, proportions mode of preparation, uses, and merits.

Reissues.—A reissue is granted to the original patentee, his heirs, or the assignees of the entire interest, when by reason of an insufficient or defective specification the original patent is invalid, provided the error has arisen from inadvertence, accident, or mistake without any fraudulent or deceptive intention.

A patentee may, at his option, have in his reissue a separate patent for each distinct part of the invention comprehended in his original application, by paying the required fee in each case, and complying with the other requirements of the law, as in original applications.

Each division of a reissue constitutes the subject of a separate specification descriptive of the part or parts of the invention claimed in such division; and the drawing may represent only such part or parts. Address MUNN & CO., 37 Park Row, for full particulars.

Interferences.—When each or two or more persons claims to be the first inventor of the same thing, an "Interference" is declared between them, and a trial is had before the Commissioner. Nor does the fact that one of the parties has already obtained a patent prevent such an interference; for, although the Commissioner has no power to cancel a patent already issued, he may, if he finds that another person was the prior inventor, give him also a patent, and thus place them on an equal footing before the courts and the public

Caveats.—A Caveat gives a limited but immediate protection, and is particularly useful where the invention is not fully completed, or the model is not ready, or further time is wanted for experiment or study. After a Caveat has been filed, the Patent Office will not issue a patent for the same invention to any other person, without giving notice to the Caveator, who is then allowed three months time to file in an application for a patent. A Caveat, to be of any value, should contain a clear and concise description of the invention, so far as it has been completed, illustrated by drawings when the object admits. In order to file a Caveat the inventor needs only to send us a letter containing a sketch of the invention, with a description in his own words. Address MUNN & CO., 37 Park Row, N. Y.

Additions can be made to Caveats at any time. A Caveat runs one year, and can be renewed on payment of $10 a year for as long a period as desired.

Quick Applications.—When, from any reason parties are desirous of applying for Patents or Caveats, in GREAT HASTE, without a moment's loss of time, they have only to write or telegraph us specially to that effect, and we will make special exertions for them. We can prepare and mail the necessary papers at less than an hour's notice, if required.

Foreign Patents.—American inventors should bear in mind that, as a general rule, any invention that is valuable to the patentee in this country is worth equally as much in England and some other foreign countries. Five Patents—American, English, French, Belgian, and Prussian—will secure an inventor exclusive monopoly to his discovery among ONE HUNDRED AND THIRTY MILLIONS of the most intelligent people in the world. The facilities of business and steam communication are such that patents can be obtained abroad by our citizens almost as easily as at home. The majority of all patents taken out by Americans in foreign countries are obtained through the SCIENTIFIC AMERICAN PATENT AGENCY. A Circular containing further information and a Synopsis of the Patent Laws of various countries will be furnished on application to Messrs. MUNN & CO.

For instructions concerning Foreign Patents, Reissues, Interferences, Hints on Selling Patents, Rules and Proceedings at the Patent Office, the Patent Laws, etc., see our Instruction Book. Sent free by mail on application. Those who receive more than one copy thereof will oblige by presenting them to their friends.

Address all communications to

MUNN & CO.,
No. 37 Park Row, New York City.
Office in Washington, Cor. F and 7th streets.

Patents are Granted for Seventeen Years, the following being a schedule of fees:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Reissue	$30
On application for Extension of Patent	$50
On granting the Extension	$50
On filing a Disclaimer	$10
On filing application for Design (three and a half years)	$10
On filing application for Design (seven years)	$15
On filing application for Design (fourteen years)	$30

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay $500 on application

---

BUERK'S WATCHMAN'S TIME DETECTOR.—Important for all large Corporations and Manufacturing concerns—capable of controlling with the utmost accuracy the motion of a watchman or patrolman, as the same reaches different stations of his beat. Send for a Circular. J. E. BUERK,
P. O. Box 1,057, Boston, Mass.

N. B.—This detector is covered by two U. S. patents. Parties using or selling these instruments without authority from me will be dealt with according to law. 2 13* tf

Advertisements.

A limited number of advertisements will be admitted on this page at the rate of $1 per line. Engravings may head advertisements at the same rate per line, by measurement, as the letter press.

PATTERN LETTERS to put on Patterns for Castings, etc. KNIGHT BROS., Seneca Falls, N. Y. 1 50*

TO COAL-OIL MANUFACTURERS.—The Cloverport Oil and Coal Co., (formerly the Breckenridge Co.,) will make a contract to furnish a given amount of Breckenridge Coal per month, for a term of years, to parties that will establish

COAL-OIL WORKS

at Cloverport, Ky. On the ground are the principal materials for erecting the works, which will be sold at less half-price. The richness of the Breckenridge Coal is shown by the following:—

"Without entering into a detailed account of all the trials made by us, it may be sufficiet to state, that the purified product of one tun of coal will not be less than

Pure Illuminating Oil.....15 gallons.
Pure Lubricating Oil.....35 gallons.
Solid Paraffine.....18¾ lb.

WM. H. ELLET, Prof. of Chemistry.
ALEX. H. EVERETT, Analytical Chemist.

☞ For full particulars and for sample of coal, apply to J. THOMPSON, No. 2, Wall st., New York, or S. L. CASEY, Cloverport, Ky. 10 1*os

TO METAL WORKERS.—12 Valuable Receipts, including how to give Iron the color of Gold or Copper, preserve Iron from Rust, Bronze Guns, etc., give Brass a brilliant polish, make Gold or Brass Lacquer, Gold, Silver, and Iron Solder, etc., etc., will be sent on receipt of $1. Address T. HENDERSON, Box 2752, Buffalo, N. Y. 10 1 os

FREE. Our New Catalogue of Improved STENCIL DIES. More than $200 A MONTH is being made with them S. M. SPENCER & CO., Brattleboro, Vt. 1 tf

POOLE & HUNT, Baltimore, Md., Manufacture the celebrated LEFFEL TURBINE WATER WHEEL, for use in the Southern States. 6 tf

CAP AND SET SCREWS As perfect as Engine-cut Screws. Send for price list to S. C. SMITH, Lowell, Mass. 7 13os

Ready Roofing

THE FIRST CUSTOMER IN EACH place can buy 1000 feet for $30, about half price. Samples and circulars sent by mail. Ready Roofing Co., 81 Maiden Lane, New York. 24 tf os

Pressure Blowers

OF ALL SIZES, for purposes where a blast is required. For particulars and circulars, address B. F. STURTEVANT, No. 72 Sudbury st., Boston, Mass. 5 11* os

THE INDICATOR APPLIED to Steam Engines. Instruments furnished and instruction given. F. W. BACON, 84 John st., New York. 1 tf

WOODWARD'S COUNTRY HOMES. 150 Designs, $1 50, postpaid, GEO. E. WOODWARD, Architect, 191 Broadway, N. Y. Send stamp for catalogue of all new books on Architecture. 9 ostt

DO YOU WANT GAS

WE can afford to pipe your house, or pay for your fixtures, or both and leave them as your property if we cannot put up a Machine that shall be perfectly satisfactory under any and every condition. Circulars and information. UNION GAS CO., 14 Dey st., New York. 1 os tf

TWIST DRILLS, FLUTED HAND REAMERS, exact to Whitworth's gage, and Beach's Patent Self Centering Chuck manufactured by Morse Twist Drill and Machine Co,. New Bedford, Mass. 5 ostt

Factory, Trenton, N. J. . . . . Office, No. 2, Jacob st., N. Y.

Branch Office for Pacific coast, No. 606 Front street, San Francisco, Cal. 5 tf

Duplex Turbine.

OFFICE OF THE CAMERON SAW MILLS,
Cameron, Pa., July 29, 1868.

J. E. STEVENSON, Esq., 83 Liberty st., New York,

DEAR SIR:—Yours of late date, inquiring how we were pleased with the 60-inch "Duplex Turbine" we bought of you was duly received.

We have been running the wheel about three months, and can truly say, it far exceeds our expectations as to power, and steadiness of motion, either with a full gate, or when we only use a part of its power. We have only seven feet head, and are driving four Shingle Mills, one Blocking Saw, and are making Fifty Thousand 24-inch Shingles per day. Our Engineer and Millwrights think it a great success and unequaled by anything they ever saw.

Yours Respectfully,
H. NIEMANN.

The above statement is correct.

L. H. SIMPSON & CO.,
10 1os 42 Broadway, New York.

HICKS' Improved CUT-OFF ENGINE, AND Non-Explosive Circulating Boiler Cannot be equaled for correctness of principle, economy in operation, perfection of workmanship, and cheapness of price. W. C. HICKS, 85 Liberty st., New York. 10 os eow

WIRE ROPE.

Manufactured by
JOHN A. ROEBLING
Trenton, N. J.

FOR Inclined Planes, Standing Ship Rigging, Bridges, Ferries, Stays or Guys on Derricks and Cranes, Tiller Ropes, Sash Cords of Copper and Iron, Lightning Conductors of Copper. Special attention given to hoisting rope of all kinds for Mines and Elevators. Apply for circular, giving price and other information. 1 13* os tf

GREAT ECONOMY IN

WATER POWER.

LEFFEL'S DOUBLE TURBINE WATER WHEEL.—Best Wheel in Existence.—Manufactured by JAS. LEFFEL & CO., at Springfield, Ohio, and New Haven, Conn. New Illustrated Pamphlet for 1868 sent free on application. 4 os tf

STEAM AND WATER GAGES, STEAM Whistles, Gage Cocks, and Engineer's Supplies. JOHN ASHCROFT, 50 John st., New York. 26 13*

TALLOW LUBRICATORS and a General assortment of Brass Work, of superior quality at low prices, at Cincinnati Brass Works. F. LUNKENHEIMER, Prop. 1 12*

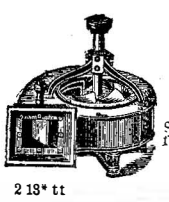
FOR Twist Drills, Reamers, Chucks, and Dogs, address Am. Twist Drill Co., Woonsocket, R. I. 3 os 8* tf

PATENT SHINGLE, STAVE, AND Barrel Machinery, Comprising Shingle Mills, Heading Mills, Stave Cutters, Stave Jointers, Shingle and Heading Jointers, Heading Rounders and Planers, Equalizing and Cut-off Saws. Send for illustrated List. FULLER & FORD,
10 tf 282 and 284 Madison street, Chicago, Ill.

TO RAILROAD MEN & CAPITALISTS. All interested in the question of Broad and Narrow Gage Cars, are invited to address the undersigned, who will send description of a car truck designed to run upon roads of different ganges. HENRY T. CARTER,
10 2*os Mechanical Engineer, Portland, Maine.

J. CORNELL & CO., Manufacturers of Fourneyran Turbine Water Wheels, Paper Engines, Stuff and Fan Pumps, and most kinds of paper machinery. Address J. CORNELL & CO., Sandy Hill, N. Y. 9 4os

POCKET REPEATING LIGHT.—A neat little self-lighting pocket instrument, with improved Tape Matches, giving instantly a clear beautiful flame by simply turning a thumb piece, and can be lighted fifty times in succession without filling. A sample instrument filled with the inflammable tape, with circular and list of prices, sent by mail on receipt of 65 cents. Address
6 tf REPEATING LIGHT CO., Springfield, Mass.



Reynolds'
TURBINE WATER WHEELS
And all kinds of
MILL MACHINERY.
Send for New Illustrated Pamphlet for 1868.
GEORGE TALLCOT,
96 Liberty st., New York.
2 13* tt

ASHCROFT'S LOW WATER DETECTOR will insure your Boiler against explosion. JOHN ASHCROFT, 50 John st., New York. 26 13*

Published by E. STEIGER, in New York.

The Workshop.

A MONTHLY JOURNAL, devoted to the progress of the Useful Arts, with Illustrations and Patterns covering the wide range of Art applied to Architecture, Decoration, etc., and to most classes of Traders and Manufacturers. Price $5 40 per year. Single numbers 50c.

☞ One single available design or pattern may be worth far more than a full years' subscriptions. Prospectuses sent gratis. Agents and Canvassers wanted everywhere on very favorable terms. German, American, English, and French books & periodicals in the various departments of TECHNOLOGY, on hand, and supplied on receipt of order, or imported promptly from Europe. Catalogues gratis.
9 2os E. STEIGER, New York.

MORE MYSTERY.
PLANCHETTE OUTDONE
THE PENDULUM ORACLE!
MOVES FOR EVERYBODY.—ANswers any question at once. Will tell your inmost thoughts, and astonish as well as amuse all who consult it. Price, ONE DOLLAR. To be had at retail of SCHIFFER & CO., 713 Broadway. Trade supplied by WALTON VAN LOAN, 111 William street, N. Y. 9 2os

A SURPRISE.—A GENTLEMAN WHO recently visited the establishment of the HOLLY MANUFACTURING COMPANY, Lockport, N. Y., spoke in terms of high praise of a Force Pump in his large Woolen Manufactory, which cost $800, and which could throw a ⅜ inch stream 80 feet high. His surprise was unbounded when called to witness the performance of one of Holly's celebrated Elliptical Rotary Pumps, which the Holly Company manufacture and sell at $350, and which in his presence threw a 1¼-inch stream some 200 feet high!! Parties in want of any of the sizes of the above pump can be supplied on call or short notice. For full particulars send for illustrated catalogue or address C. G. HILDRETH, Treasurer 8 4 os

Philadelphia Advertisements.

The Harrison Boiler.

THIS IS THE ONLY REALLY SAFE BOILER in the market, and can now be furnished at a *GREATLY REDUCED COST.* Boilers of any size ready for delivery. For circulars, plans, etc., apply to
HARRISON BOILER WORKS,
Philadelphia, Pa.; J. B. Hyde, Agent, 119 Broadway, New York; or, to John A. Coleman, Agent, 53 Kilby st., Boston, Mass. 6 tfos

STOCKS, DIES, AND SCREW PLATES, Horton's and other Chucks. JOHN ASHCROFT, 50 John st., New York. 26 13*

WANTED—BY A PRACTICAL AND Theoretical Machinist, who has had several years' experience in building, rebuilding, and repairing locomotives, a situation as Master Mechanic or Superintendent. Also, designing and drafting railroad buildings and machinery. Best of reference given. Apply to Box 293, Mount Vernon Post-office, Knox County, Ohio. 8 3

SPECIAL INDUCEMENTS.—First Class workmanship and design and lowest prices for Woodworth Planers, Molding Machines, Portable and Stationary Engines, Saw Mills, Corn Mills, Hoisting Engines, Lathes, Planers, Drills, etc.
HAMPSON & COPELAND,
Warerooms 89 Libertystreet, New York.
Address P. O Box 5,767. 8 4

A WATCH FREE.—GIVEN GRATIS to any live man who will act as agent in a new, light, and honorable business, paying $30 per day, sure; no gift enterprise; no humbug, and no money wanted in advance. Address R. M. Kennedy & Co., Pittsburg, Pa. 8 4

B. E. LEHMAN, MANUFACTURER OF brass and iron body globe valves and cocks, gage cocks, oil cups, steam whistles. Special attention paid to heavy iron body valves for furnaces and rolling mills. Send for price list to B. E. LEHMAN,
8 13 Lehigh Valley Brass Works, Bethlehem, Pa.

SHAPERS AND LATHES.—Also, Special Machinery made to order by
9 2* LOUIS DUVINAGE, 209 Center st., New York.

PROFESSOR H. DUSSAUCE, ANALYTical and Industrial Chemist. Consultations on chemistry applied to arts and manufactures. Address, NEW LEBANON, N. Y. 9 2*

I WILL SELL TO THE BEST BID RECeived (before the 20th of September) for two valuable patents, 1st, Photo-Printing Frame, issued Feb. 11, 1868; 2d, Ladies' Hair Crimper, issued April 7, 1868. Address S. F. CONANT, Skowhegan, Me. 9 2

CARPENTERS'

PLANES OF ALL DESCRIPTIONS manufactured to order. Send for Price List to TUCKER & APPLETON, Boston, Mass. 9 4

PUBLIC SALE

OF FIRST-CLASS FOUNDERY AND MACHINE SHOP.

THE COPARTNERSHIP OF "REYNOLDS & CO." and "AURORA IRON WORKS" having expired, they will sell at Public Auction, on the premises on the 23d day of September, 1868, at 10 o'clock A. M., all the property owned and occupied by them at Aurora, New York, consisting of a first-class Brick Foundry, 35x75 feet; Machine Shop, 35x100 feet; Blacksmith Shop, all with slate roofs. Two frame Storehouses, Paint Shop; good Dwelling-house; Barns, etc., and about two acres of Land, with Docks and Piers convenient for shipping; together with Engine, Boiler, Cupola, Line Shaft, Belting, two Iron Planers, four Lathes, Tumbling Barrels, Circular Saws and Frames, Emery Wheels, Patterns, unfinished work and stock on hand, and all fixtures necessary for doing an extensive business. All nearly new, and in good order. Possession given on or before October 15, 1868. For further information, address,
AURORA IRON WORKS,
AURORA, CAYUGA LAKE, N. Y.
August 13, 1868. 9 3

RICHARDSON, MERIAM & CO., Manufacturers of the latest improved Patent Daniels' and Woodworth Planing Machines, Matching, Sash and Molding, Tenoning, Mortising, Boring, Shaping, Vertical and Circular Re-sawing Machines, Saw Mills, Saw Arbors, Scroll Saws, Railway, Cut-off, and Rip Saw Machines, Spoke and Wood Turning Lathes, and various other kinds of Wood-working machinery. Catalogues and price lists sent on application. Manufactory, Worcester, Mass. Warehouse, 107 Liberty st., New York. 3 8* tf

RENSSELAER Polytechnic Institute, Troy, N. Y.—Very thorough instruction in Civil, Mechanical, and Mining Engineering, Chemistry, and Natural Science. Graduates obtain most desirable positions. Reopens Sept. 9. For the Annual Register giving full information, address Prof. CHARLES DROWNE, Director. 8 5*

1868.

SCIENTIFIC AMERICAN.

Established 1845.

The **SCIENTIFIC AMERICAN** is published every week, and is the largest and most widely circulated journal of its class now pulished in this country. Each number is Illustrated with **Original Engravings,** representing New Inventions in Mechanics, Agriculture, Chemistry, Manufactures, Steam and Mechanical Engineering, Photography, Science, and Art; also Tools and Household Utensils. TWO VOLUMES with COPIOUS INDEXES, are published each year, commencing January 1st, and July 1st. **Terms:**—One Year, **$3;** Half-Year, **$1 50;** Clubs of Ten Copies for One Year, **$25;** Specimen Copies sent gratis.

Address

MUNN & CO.,
37 Park Row, New York.

☞ The Publishers of the **Scientific American,** in connection with the publication of the paper, have acted as **Solicitors of Patents for twenty-two years. Thirty Thousand** Applications for Patents have been made through their Agency. More than **One Hundred Thousand Inventors** have sought the counsel of the Proprietors of the **SCIENTIFIC AMERICAN** concerning their inventions. Consultations and advice to inventors, by mail, free. Pamphlets concerning Patent Laws of all Countries, free.

☞ **A Handsome Bound Volume,** containing **150** Mechanical Engravings, and the United States Census by Counties, with Hints and Receipts for Mechanics, mailed on receipt of **25c.**