Scientific American.

A JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, AGRICULTURE, CHEMISTRY, AND MANUFACTURES.

VOL. 1.—NO. 17. NEW YORK, OCTOBER 22, 1859. NEW SERIES.

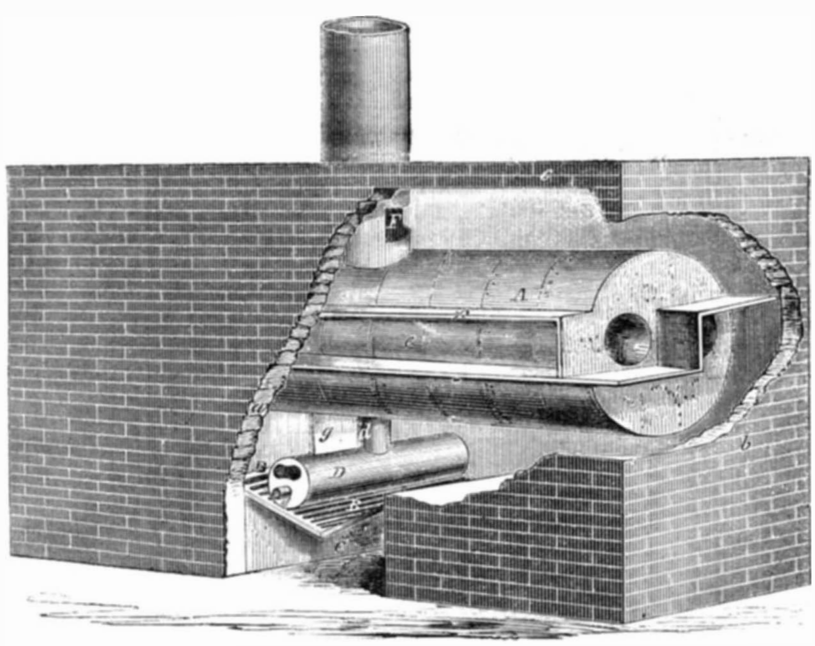
IMPROVED STEAM BOILER.

The great practical problem of the present day is the most economical and efficient mode of generating and using steam. The form and construction of the boilers are constant objects of experiment, and a vast amount of study has been expended upon the best mode of setting them. W. D. Ballard, of Kansas City, Mo., has conceived a plan, here illustrated, which he regards as better than any other.

The boiler, A, supported by piers at its ends, and, if necessary, by intermediate piers, is completely surrounded at a moderate distance, on all sides and overhead, by a tight brick wall. B represents the fireplace, C the ash-pit, and D a mud boiler which communicates with the main boiler by the pipe, *d*. The boiler has two flues, and a brick partition is constructed entirely around the boiler, extending from its outer surface to the surrounding wall above the level of the flues on one side, and below their level on the other, passing by a vertical angle, between the mouths of the flues at each end. The opening into the chimney is above the boiler. As the gaseous products of combustion rise from the fire-place, B, they pass to the right and left towards both ends of the boiler; those which pass to the right entering the flue, *h*, and, going through the boiler to the farther end, flow up over the boiler and enter the chimney at F; while those which pass to the left enter the other flue, and, going through the boiler in the opposite direction, also flow over and enter the chimney at the same place.

The patent for this plan of setting a boiler was granted on October 20, 1859. The claim may be found on another page. Inquiries for further information in relation to it may be addressed to him as above.

BALLARD'S IMPROVED STEAM-BOILER.



RUSSIA LEATHER.

It is known that much excellent leather, of every kind, is prepared in different parts of the Russian empire, and that, though numberless efforts have been made by manufacturers in other countries to imitate, in all respects, the genuine Russia article, such efforts have unvaryingly failed. The preparation, therefore, of fine Russia leather, so well known for its quality and for its peculiar smell, is a process which continues to remain exclusively with the artisans of that country. The hides are first put into a weak alkaline ley to loosen the hair, and then scraped on a beam; then, if calves', are reduced by dogs' excrement a sour oatmeal drench, and tanned with great care and frequent handling. The bark used is that of the willow, sometimes mixed with that of the birch tree. The skins are generally dyed red and black; the former color is given with alum and Brazil wood; black is dyed with the acetate of iron and logwood. Birch bark oil is generally applied as a dressing; and its smell is much prized, as it prevents the attack of insects when the leather is used for book-binding. The streaked or barred surface is given to the leather by a very heavy steel cylinder wound round with wires. It is remarkable that, for making a peculiar kind of leather, as well as sheet-iron, Russia surpasses all the rest of the world.

FAWKES' STEAM PLOW

Some time ago Mr. Fawkes was engaged by the managers of the American Institute to give an exhibition of his steam plow during the fair, and we expected this would have been both an instructive and attractive public *fete*. In this expectation we have been greatly disappointed. It was originally intimated that a favorable and an extensive piece of land near Harlem had been engaged for the display, but as the Third-avenue Railroad Company had fenced in a small plot of ground at Hamilton Park for the cattle-show, the managers of the institute, under a most perverse judgment, selected this field for the trial of the plow. There was not a rod of this ground fit for the experiment; it was filled with large rocks lying near the surface, and was not over an acre in extent. The consequence was, that during the several trials given on three days last week, the plow had to be stopped every few seconds on account of these rocks, and it was actually impossible to show what it could do. Those who went to see the plowing-match were disgusted with the arrangements, and declared that they could not have been better planned to defeat the very objects for which the steam plow had been engaged. On Thursday afternoon, while we were witnessing the display, the ease with which the plow was managed to move in any direction, back and forth, and to turn in a very small space, elicited the admiration of all the spectators. It dragged eight plows; and had there been no rocks to obstruct their progress, it could have plowed more than one acre in an hour with the utmost ease. This steam plow weighs seven tuns, and resembles a locomotive with an upright boiler, resting upon a single huge wheel or drum, six feet in diameter and of a like breadth. It has two small trailing-wheels in front of the boiler, which form the steering-gear to turn it in any direction. They turn on a swivel plate and are operated by a circular rack-gearing and a screw-shaft. There are two cylinders, one at each side, each nine inches in diameter and 15 inches stroke. The piston-rods are connected by gears and pinions to the shaft of the large drum, which is really the "driving-wheel." The motion of the piston is reduced by the gearing, owing to the great circumference of the drum. There is a small donkey-engine connected with the boiler, which answers for a feed pump, and also for a steam fire-pump, if desired. The face of the drum has adjustable spuds on it to give it adhesion on the ground, and the plows are connected by chains on a long angular beam, and set one behind the other. They are raised up and let down by devices actuating small windlasses, for winding up the chains, and all is under the control of the engineer standing at the steering-wheel in front.

It is to be regretted that the ground was so unfavorable; had it been otherwise, the exhibition would have been an entire success.

An engraving and description of this celebrated plow was published in No. 11 of the present volume of the SCIENTIFIC AMERICAN.

SIR JOHN FRANKLIN'S REMAINS.

The expedition fitted out two years ago, under Capt. Robert McClintock, at the expense of Lady Franklin, to search for her husband in the Arctic regions, have returned with full and correct tidings of the sad fate of Franklin and his companions. Captain McClintock found the record and remains of Franklin at Point Victory; and it seems that he died in June, 1847—about 11 years ago. The whole of his companions also perished, some at one place and some at another, in those inhospitable and desolate regions. We hope the last expedition to these dread solitudes of ice and snow has been made. A north-west passage was discovered by Captain McClure; but of what value is it? For the purposes of navigation, it is perfectly impracticable; and the conclusion is, that the life and treasure which have been expended in Arctic expeditions have been wasted in the pursuit of an impracticable object. No less than 120 persons perished with Franklin; and five separate expeditions have been fitted out to search for the lost explorers; one of these, on one occasion, was within a few miles of some of the survivors, according to the records which have been found.

NEW WATER HOSE.—We have lately examined a new water tubing manufactured by James Boyd & Sons, of Boston, which promises to be a cheap and very suitable substitute for the hose now made from other materials. It is composed of a strong cotton webbing, not woven in tube form, like the Grenoble hempen hose, but in a plain loom, then lined with india-rubber and riveted like leather hose. It has been successfully tested under a pressure of 170 pounds to the square inch, and appears well adapted for all purposes to which flexible water-hose is now applied.

ALABAMA COTTON.—A correspondent, writing to us from Alabama, states that the cotton fields are white for the picking-season, but that they have been considerably injured by rains and winds. During the year ending the first of this month, we sent 2,019,252 bales of cotton to England.

GOVERNORS FOR MARINE ENGINES.

So far as we know, the importance of providing a governor for steamships was first prominently brought before the public through our columns several years ago; and since that period, Silver's and other marine governors have been invented. Although these things are facts, and the necessity of such a steam regulator for paddle-wheel vessels is universally admitted, yet such a contrivance is almost unknown, so far as its application is concerned. In view of this, we embrace the opportunity of giving the substance of a paper on such governors, lately read before the Institution of Engineers in London, by Peter Jensen, of Sweden, and published in *Newton's Journal*:—

The engines in very large screw steamers, with deep draught, are considered to work with sufficient regularity even in a gale, as the size and weight of a ship, to a great extent, prevent it from pitching; and for this reason no great difference in the depth of immersion of the screw takes place; but, except in the above case, serious irregularity is experienced in the working of marine engines in a heavy sea, when the screw or the paddle-wheels are deeply immersed and the next moment revolving half or more in the air. A waste of power then occurs; it is at that time wasted in driving the screw of the paddle-wheels with great speed in a little draught of water, and a great amount of slip or loss in the effective speed of the vessel consequently ensues. In applying a governor to marine engines, economy of power must result, as in the case of stationary engines. Moreover, most of the accidents occurring to marine engines are due to the sudden shocks that will happen during a gale, even in well-balanced engines. The lubrication is also often rendered difficult, because the oil is thrown out of the cups; and the great amount of wear and tear in marine engines may be attributed partly to the shocks and irregular motion, and partly to imperfect lubrication.

Marine engine-governors have been attempted on several occasions, but only very few are yet applied. An ingenious modification of the ordinary Watt's centrifugal governor has been employed for this purpose—Silver's four-ball governor (illustrated on page 356, Vol. XI., SCIENTIFIC AMERICAN), in which the action of a spiral spring is substituted for that of gravity, and the whole apparatus is balanced so as to remain undisturbed in action during the pitching of the vessel. But the mode of action of all such governors is, by checking the supply of steam, to control the speed of the engine *after* it has begun to change either to quicker or slower; and it has appeared to the inventor of the governor forming the subject of the present paper, that the principle desideratum in a good engine-governor is an instantaneous action, so that whenever the screw or the paddle-wheels are going down in the water, more steam may be admitted to the engines as quickly as possible, and in the opposite case the admission of steam may be as quickly checked, before the speed of the engines has been sensibly affected.

The construction of the new marine engine-governor is as follows:—A cylinder is placed at each inner side of the vessel below the water line; the bottom of the cylinders communicating with the water outside by means of valves. Each cylinder is fitted with a piston, which is loaded with a spring, either of steel, compressed air, or india-rubber. The piston rods act upon bell-crank levers, which, by means of connecting rods, give motion to a common spindle from which the throttle-valves of the engines are worked. When, therefore, the pistons go down, the throttle-valves are closing; and when the pistons go up, the valves are opening. Now, as the pressure of the external water increases in proportion to the depth, when the opening of the valves come into different depths in consequence of the pitching or rolling of the vessel, the pressure on the pistons will be changed proportionately; and to each pressure will correspond a certain position of the pistons and of the throttle-valves connected with them. Omitting the pitching of the vessel in a paddle-wheel steamer, and considering only the rolling motion, when one paddle-wheel is deeply immersed and the other nearly or entirely out of the water, the pressure on the two pistons will be different; but supposing them connected together, the position of both, and of the throttle-valves, will be then corresponding to the difference of resistance on the two paddle-wheels.

If these cylinders are placed as near to the propeller as convenient, so as to insure pretty nearly the same depth of immersion, this apparatus will then act as a governor for the engines; for when the propeller is revolving in a light draught of water, the supply of steam to the engine is proportionately diminished; and when revolving in deep water, the supply of steam to the engine is proportionately diminished; and when revolving in deep water, the supply of steam is proportionately increased.

In a discussion which followed the reading of this paper, Mr. W. Smith thought it was very desirable for attention to be drawn to the great importance of having such a governor generally employed in marine engines, for controlling their speed in rough weather; he considered an efficient governor was even more necessary for marine engines than for land engines, for not only were marine engines subject to more sudden shocks, but there were abundant facilities for repair on land, while at sea any accident to machinery was of much more serious consequence, involving the risk of disabling the vessel. He thought the governor described would be very serviceable if properly applied, and in the best situation. Another governor had also been recently designed for the same purpose, similar in many respects to the one now described, consisting of a long vertical cylinder fixed in the after part of the vessel near the propeller, having the piston connected to the throttle-valve by levers, and adjusted to the draught of water, with springs to give a quicker action; and for paddle-wheel steamers, two of these cylinders were proposed to be employed, and to act separately on the throttle-valve. He understood this governor had been tried in one of the Glasgow and Philadelphia steamers; but it did not appear to have been very successful in working, and had therefore been removed.

The governor described in the paper was not required in still weather, when the work upon the engine was nearly uniform, as the ordinary governor was then sufficient for regulating the speed; but a separate special governor might be desirable in stormy weather, to avoid the objectionable necessity of a man standing by the throttle-valve to ease the engine instantly when beginning to run off. Several plans had been proposed for that purpose at different times, in one of which a pendulum weight was employed in connection with the throttle-valve, to regulate the admission of steam according to the rolling motion of the vessel.

Mr. Jensen said he had long had this plan of governor under consideration, and, on coming over to England, expected to find some such contrivance already in use for regulating the speed of the engine in stormy weather; but on making inquiries on the subject, he could not learn that such a governor had ever been tried, and was therefore induced to bring it forward, as something of the kind was evidently much needed in a rough sea.

A HUMBOLDT INSTITUTE.

Immediately after Humboldt's death a meeting of ministers of state, foreign ambassadors and men of science and of business, was held in Berlin, in order to determine in what way they might best testify their respect for his memory. It was unanimously deemed best that Humboldt's monument should be one which might exert a living, active influence, by promoting the advancement of the sciences, and especially those in which he took particular interest. It was decided to inaugurate a movement which should not be limited to his own city or nation, but which, extending beyond the boundaries of Prussia, of Germany and of Europe, should be shared in by the whole civilized world. A committee of nineteen was appointed to carry out these views, and has issued a public address, inviting contributions for the foundation of an institution dedicated to Humboldt's memory, bearing his name, and devoted to the furtherance of the sciences in whose field he most labored—especially to natural history and geography in its widest sense.

The plan contemplates the equipment of able men for special researches and explorations, the immediate selection to be made by the Royal Academy of Sciences at Berlin. It is intended that the funds shall be employed to enable men of known ability to prosecute special researches attended with expenses beyond their means.

Contributions will be received and transmitted by Dr. Jacob Bigelow, President American Academy in Boston, and by Professor Louis Agassiz, or Dr. B. A. Gould, Jr., in Cambridge, Mass.

PROPERTIES CHARACTERIZING STEEL.

The distinction between iron and steel, notwithstanding the present advanced state of chemistry, is not very clearly understood. We know only that steel is a particular modification of iron—that it is a compound of carbon and iron in an intermediate state between that of malleable and pig-iron; but in what respect the carbon it receives makes such a marked difference in the character of the two materials is certainly not so well understood. Pure iron, indeed, is considered to be wholly divested of carbon; but it is not likely that such a piece of iron, in a solid bar, was ever produced; so that all malleable iron, in some measure, partakes of the property of steel. The increase in weight which the bars of iron receive in their conversion to steel have been stated to be from four to twelve ounces per hundred-weight, but this proportion does not agree with other estimates. Should the process be pushed much further than this, the steel would melt, and, in the act of fusion, would take an additional dose of carbon sufficient to bring it to the state of No. 1 pig-iron.

The pecular property of steel, which renders it so valuable in the arts, is that it may be made extremely hard, or tempered to any degree between extreme hardness and the total absence of that property. These different states are produced by raising the temperature of the steel to a certain point, and then suddenly immersing it in cold water or some other fluid. This property renders it extremely useful in the formation of various cutting tools, springs, &c. When very hard it is brittle, resists the file, yields sparks in collision with flint, and retains magnetism for a long time. Its hardness and temper are destroyed by heating to redness, and leaving it to cool gradually. It is malleable at a red heat, is less so at a white heat; and if exposed to a higher degree of temperature it is fused, and returns again to the state of pig-iron.

DYEING HATS AND FEATHERS.

To Dye Straw Bonnets Black.—Suppose there are two bonnets to dye, one leghorn and one straw. Put an ounce of sulphate of iron into a vessel with two gallons of water; make the liquor boil; then put in the bonnets, and let them boil for one hour. Then take out the bonnets, and hang them on a peg to dry. When dry, rince them in cold water. This portion of the process of dyeing is called mordanting, the liquor being termed the mordant. After the bonnets are thus mordanted, the mordant must be poured out of the boiling vessel, and two gallons of clean water made to boil in its place; into that liquor put half a pound of gall nuts (broken) and half a pound of logwood, together with the bonnets, and allow the whole again to boil for one hour. Then take them out of the hot liquor, and hang them to dry as before, when they will be of dusky brown-black color. Chip bonnets as a rule do not require so long as straw, because the chip takes the dye easier. The final process is to size or stiffen the bonnets, and put them into shape. This operation requires two ounces of best glue, put into two quarts of cold water overnight, and next day completely dissolved by boiling. When the glue is melted, strain the liquor (then called size) into an earthen vessel. Into this put the bonnets one at a time, till thoroughly soaked. When the bonnets are taken out of the liquor all superfluous size must be sponged off. They are then brought into shape as they get gradually dry, or they may be dried on a block. After this sizing process the color of the dye is improved, and becomes black as jet.

To Clean and Re-Dip Black Feathers.—Feathers that have become rusty in color may thus be restored: First, well wash the feathers in soap and water, using the best mottled soap, and the water scalding hot for the purpose; then thoroughly rinse them in clean water and dry them. Next, take half an ounce of logwood, and boil in a quart of water. When scalding hot, put in the feathers, and there let them remain till the liquor is cold, after which rinse them in cold clean water, and put them to dry. Finally, rub or brush over the feathers the smallest portion of oil, which simple operation brings out the glistening jet appearance in a remarkable manner. If you draw a long strip of paper between the thumb and a blunt pen-knife blade, the paper will curl up. Feathers may be treated in the same way, using only such tender care as may be expected to be required in "touching a feather."

SEPTIMUS PIESSE.

THE MANUFACTURE OF AXES.

In the early part of our present volume we published an account of the manufacture of axes at the Collinsville Works, by the peculiar machinery and processes belonging to that establishment; the following is a description of the more common and general methods of manufacturing such tools. The readers of the SCIENTIFIC AMERICAN who have never been through an ax factory will doubtless be interested in this description of the manipulations through which the metal passes from the raw material until it is converted into those instruments by which the forest is made to bow beneath the woodman's sturdy strokes.

In technical language the ax is simply called a cutting tool, and indeed there is no appearance of complication about it. One with a talent for rapid description and contempt for details would describe it to be a wedge-shaped lump of iron with a steel cutting-edge, and a hole to admit a handle. This, however, gives us but a very rough idea of an ax; and a "chopper" would both sneer and laugh at the description. It is true, if not touching, that many choppers think of and cherish their axes as though these were so many children, or precious talismans. We are not sure that choppers could not be found who swear by their axes, and take them regularly to bed as a *vade mecum*. This will not appear so absurd when we learn that the ax has been made half human by the gift of a "head," an "eye," "cheeks," in one stage of its manufacture, "lips," a "throat," and a sharp, tongue-like member called a "bit."

In the best shops for the manufacture of axes, machinery is made to perform the greater part of the labor, and the workmen have little more to do than to guide the different operations. There are but few such manufactories in this country. Axes are often made entirely by hand, as it is called, that is without the aid of machinery. They cannot be made in this way, however, without great labor and little profit. The largest class of manufactories embraces those in which these two systems are combined, machinery performing the heavier work, and the lighter portions being done by hand. A factory of this kind will be had in view in the description which will shortly ensue.

THE MATERIAL OR "STOCK."

Ax-makers exercise great care in the selection of their stock. Iron that is not soft, pure, and easily welded, will make but indifferent axes. Steel that is but partially converted (from iron), or is flawy, brittle, or coarse-grained, is equally valueless. This will seem probable when we remember the constant and severe strain to which an ax is subjected while in use, and that the cutting-edge is constantly retreating towards the "roots" of the steel, from repeated sharpenings and wearing away, thus severely testing every part of it.

The best iron is brought from Russia, and is called "Old Sables." This is the most expensive of the varieties in common use, and its high price confines its employment mostly to the manufacture of the finer kind of tools. The "Swedes" iron ranks next, and is the one most generally employed. Every shade of quality may be found in Swedes iron. Very good iron, for some purposes, is made in the northern part of the State of New York. It has been successfully used in the manufacture of axes. "Ax bars" are about three inches in width, by 5-16 of an inch in thickness, and will average 12 feet in length.

The steel now almost universally used in this and other manufactures, is called cast-steel, from its being, in the process of conversion from iron, melted and cast into ingots, which are afterwards drawn out into bars under the trip-hammer. It is thought, by most, to be superior to the steel formerly used, called English blistered steel, from the manufactured bars being covered with hollow swellings resembling blisters; but still some workers of steel prefer the latter. The most celebrated makers of cast-steel are Sanderson, Bros. & Co., Naylor & Co., and Jessup & Sons, all of Sheffield, England. A newly invented process for making cast-steel was three or four years ago described in the SCIENTIFIC AMERICAN. It is thought to be of some value, but it is feared there can be no certainty of anything like uniformity in the quality of the steel made by this process. If the invention should prove entirely successful, it will have the effect to greatly cheapen the article, the costliness of which has always borne heavily on the consumer.

The bars of steel used for axes are usually one and a quarter inches in width, and $\frac{5}{8}$ of an inch in thickness. They are imported in cases of 500 and 1,000 pounds; the bars in the larger cases being 10 or 12 feet in length, and in the smaller, from 6 to 8 feet.

THE SHOP, WORKMEN AND TOOLS.

The forging-shop has usually the solid ground for a floor. and when everything is in full blast, it affords a tolerable idea of the infernal regions. To a stranger, the roaring flames, the half-naked men, straining every muscle and perspiring in torrents, the dark recesses of the space now lit up by a sudden glare and now relapsing into their original gloom, the sparks and streams of fire flying angrily in every direction, the horrid and infernal din, the clangor of tools, and the great hammers falling with tireless, thundering energy, present together a spectacle that seems hardly earthly. No one could easily forget his first experience of such a scene.

In the forging part of the manufacture, two workmen are employed at each fire or forge; the foreman, who directs, using a small hammer, called a "hand-hammer," and the "helper" or "striker," who tends the fire and wields a large, two-handed sledge, weighing from 12 to 15 pounds. They stand on opposite sides of the anvil. The "fire" consists of a frame of cast-iron, supporting an oblong box of the same material, three or four feet in length, lined with fire-bricks, and capped over with a cast-iron lid (also lined with bricks), the blast for the fire coming up from an air-chest beneath, into which it is driven by a fan-bellows, worked by machinery. Several of these fires are distributed around the forging-room, occupying such positions as are convenient in respect to light, &c.

The foreman has ranged at hand several pairs of tongs, proportioned in size and capacity to those portions of iron or steel which they are intended to seize. The Hercules of the ax-factory—the great and never-tiring wonder-worker—is the trip-hammer. This formidable engine consists of a head of iron weighing from 30 to 60 pounds, fitted to one end of a horizontal beam, which is suspended towards the other end in a framework of solid timber, and, by means of machinery, made to play up and down, rapidly or slowly, at the will of the workmen. The head or hammer strikes upon an anvil beneath, both anvil and hammer being grooved to admit the insertion of pieces of hardened steel, called "swedges," so fashioned on their inner surfaces that when they are driven forcibly together, the lump of heated iron or steel between them must take a determinate shape. Several sets or pairs of these swedges are used in the manufacture of axes. A very useful little tool, used in cutting, is called the "hardy," a wedge-shaped piece of hardened steel, fitted to stand upon the forging-anvil, with its cutting-edge uppermost. Variously-shaped "cold chisels" are also used for the same purpose, and are furnished with handles, that they may be held by the foreman and struck by the "helper." They are tempered for cutting iron or steel, either hot or cold, from which latter use they take their name. In fashioning the eye of an ax, various "eye-pins," or wedges of hardened steel, are used. They are driven into or through the eye, and keep it in shape while the "cheeks" are being hammered to the proper shape and thinness. These are the principal tools used in the forging of axes. A number of others are occasionally employed.

[To be continued.]

HYDRAULIC AND STEAM CRANES.

MESSRS. EDITORS:—In No. 7 of the "new series," page 100, of the SCIENTIFIC AMERICAN, I find an article on the steam crane invented by R. Morrison, of New-castle-on-Tyne, England, in which a comparison is made between his crane worked by steam and one worked by hydraulic pressure, giving the steam crane a wonderful superiority in point of economy as compared with the hydraulic one.

Having under my charge two cranes worked by hydraulic pressure, I am in a position to be able to say something in connection with their operation and expense. These are the only ones of their kind in North America. The water acts upon them in nearly the same manner as the steam on Morrison's crane, and, for utility, economy and dispatch, I believe, they stand unrivaled. The mode of operation is as follows: To a steam-engine of 16 horse-power is attached a pair of six-inch lifting-pumps, which raise the water from the harbor into a reservoir in the engine-house, whence it flows into six pressure pumps, which force the water into an accumulator, where it receives a pressure of about 700 pounds on the square inch. From the accumulator, the water is conveyed through pipes the whole length of the dock (about 1,500 feet), and, at intervals, are branches to connect with the several cranes (two only of which are at present erected), which are capable of lifting 2,350 pounds at each lift; but the engine, using steam at a pressure of 35 pounds, is able to keep 10 such cranes in full work.

I find that 1,545 cubic inches, or nearly $6\frac{3}{4}$ gallons, of water at the above pressure are sufficient to raise 2,350 pounds from the hold of a vessel, and deposit it in a railroad car 50 feet distant, or *vice versa*, the time occupied in each revolution being one and a half minutes. One man with two levers (one for raising and lowering, the other for turning) can do the whole with the greatest ease imaginable. The amount of fuel used in working one crane one day is only three-fourths of a cord of wood, costing $1.50, or 15 cents per hour; and I have no doubt that, in using a number of cranes, the cost would be considerably less per crane.

B. H. W.

Port Dalhousie, C. W., Oct. 13, 1859.

GOLD AMALGAMATORS.

MESSRS. EDITORS:—The proper materials of which gold amalgamators should be made is a matter of no small consequence to the miners of every auriferous region in our country. Various materials have been tried, and as iron is more durable than wood, and is not subject to be acted upon by mercury, it has been adopted in many cases; but thus far with unfavorable results. When new iron amalgamators that are kept moving with such a speed as to keep the pulverized ore from deposition answer very well, because their rough surfaces tend to keep the auriferous particles in a state of suspension: yet, at the same time, these rough surfaces of the metal also tend to subdivide the mercury so very minutely as to render it what the miners call "floured," which, in that state, is liable to run off at considerable loss.

Gold amalgamators should be made of wood. It is the best material for this purpose. The water slightly softens its surface, and the friction of the same renders it uneven, and of course exposes a greater extent of area to the amalgamating action. The surface of the wood never divides the mercury so minutely as to cause it to flow off; and while it thus prevents loss, it is also most efficient in producing the last results. This, at least, has been my experience for the past seven years which I have devoted to the business. * * *

Pioneer Mills, N. C., Oct. 17, 1859.

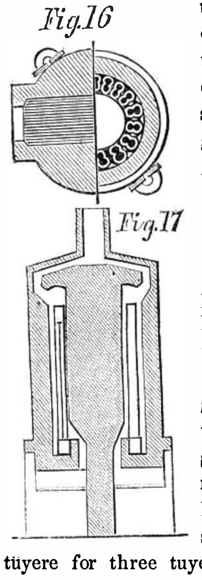
STREET-SWEEPING BY MACHINES.—The Street Inspector of our city has contracted with R. W. Smith, inventor of the sweeping-machines, to sweep Broadway at $37 per night, from the Battery to Fourteenth-street, and numerous streets named in the contract at $4 to $30, according to their length, at a total expense of about $2,000 per week. The annual expense of street-cleaning under this contract will be about $100,000. Heretofore the total expense has been about $400,000, which leaves about $300,000 to be expended in cleaning streets not named in the contract. We have no doubt but the sweeping-machines will do the work much better than has been done by hand. Great opposition has been exhibited by interested parties to keep the machines from being used. The principal objection seems to be that these machines are not able to *vote*, and have no controlling influence over the ballot-box.

STEAM VERSUS HORSE-POWER.—The subject of steam culture is now attracting the attention of the agricultural world to a large extent, having within a year or two past awakened increased interest, in consequence of the partial success which has attended the efforts to apply steam to plowing, both in England and in our own country. The subject is certainly one of the highest importance to our agriculture at large. Of the superiority
steam for all the purposes of threshing, grinding, and its
fodder, roots, &c., there can scarce be a ques has one hun-
very general adoption by every farmer, provided, upon
dred acres to cultivate, is not fairly demonstrated that
careful experiment, it can se or human power.
it is more economical

HOT-AIR OVENS FOR IRON FURNACES.

[Concluded from page 252.]

Figs. 16 and 17 show a further improvement of the round oven, representing one constructed in 1857, with an internal core, C, at the writer's suggestion, by Messrs. Perry, of Bilston, for Messrs. Holloways' iron-works, in the Forest of Dean. This arrangement has been found to be a valuable improvement, increasing the heating capacity of the round oven to the extent of one-third, with a smaller consumption of fuel. The advantages of a core consist in affording a greater amount of reverberatory surface, in making the temperature more uniform by absorbing any excess of heat and giving it out again on any diminution of temperature, and in occupying the large vacant space in the center of the oven, thereby compelling a much larger amount of the heated gases to come into contact with the pipes. The area of fire-grate in this oven is 33 square feet, and the area of the direct heating-surface in the pipes 850 square feet, or 280 square feet per tuyere for three tuyeres; it is capable of heating the blast for three tuyeres to a temperature of about 800° Fah.



Shortly before this last form of round oven was erected, Josiah Smith, of Dudley, who had paid great attention to the subject, and to whom, in a great measure, the previous improvements in the setting of the round oven were due, finding that he required rather more heat than one round oven would afford, and not wishing to go to the expense of erecting two, devised the plan of elongating the semi-circular mains of the round ovens by the addition of a straight length of pipe at the extremities of each, thus forming an oval main, and increasing the number of pipes from 24 to 32 in each oven, and, at the same time, affording a considerable additional space for the fire-grate. This was found to be so great an improvement on the ordinary round oven that, in the next one constructed, the mains were further elongated so as to hold 18 pipes each, or 36 per oven, with a proportionate increase of fire-grate; at the same time, a middle partition wall was built between the two mains, whereby the oven was divided into two distinct compartments, so that one-half could be cleaned out at any time without interfering with the other.

In the next example of oval oven, the middle wall was overhung on each side by course over course being gathered over, thus forming a core, which was found to produce the same striking improvement as in the round oven before described. An oven on this occasion, with 56 square feet of grate area and 1,350 square feet of direct heating-surface, is now heating the blast supplying seven tuyeres to a temperature of 800° Fah., at the writer's works, at the Parkfield Furnaces. In some recently-erected ovens, shifting grate-bars have been used with advantage.

From a consideration of all the circumstances and requirements of a good hot-blast oven, those constructed as shown in Figs. 16 and 17 appear to the writer to be far superior to any other. The best oven is that which, for the longest period without leakage, will bear the greatest amount of blast to the highest temperature with the smallest consumption of the cheapest fuel; and, in all these respects, the round or oval ovens with internal cores are to be preferred.

In regard to the economical consumption of fuel, it is difficult to compare one oven with another, whether they be of nearly similar construction, or whether built on different principles, but of nearly the same heating capacity. The difficulty arises from the differences in the construction, burden and working of the furnaces to which the ovens are applied; and also from the differences in the temperature of blast, the quality of slack ..ed for the oven, and the care of the stoker, all of wh.. must m.. independent of the construction of the oven, of slack con.. ..r less affect the yield—that is, the quantity from the furna..d by the oven per tun of iron produced consumption of fuel.. is also a mistake to look to the .. a test of the efficiency of a hot-blast oven, as it is quite possible for one oven consuming six cwt. of slack per tun of iron to be a more economical one than another consuming only five cwt. per tun; the blast in the first case being kept more uniformly at a higher temperature, and the furnace yield, perhaps, showing several hundred weight of coal per tun of iron in its favor.

Mr. Sampson Lloyd having been connected with the first introduction of hot-blast into Staffordshire, and the earliest manufacture of hot-blast iron in that district, had witnessed the whole progress of the invention from the commencement, and thought the paper just read gave a comprehensive account of the successive improvements that had taken place. It also pointed out, in a clear and useful manner, the difficulties that had been met with and the causes from which they arose. There was an almost inconceivable prejudice at first against the use of hot-blast in iron furnaces, so much so that it was at first nearly impossible to sell a single pig of hot-blast iron; and several years elapsed before the consumption of hot-blast iron was anything to be mentioned; while, at the present time, the hot-blast was almost universally adopted wherever iron was made. A remarkable circumstance was, that, at that time, the ordinary make of iron was only about 50 to 60 tuns per week from each furnace, which was considered a good yield; but at the present time, with the extended use of hot-blast, the yield was increased to over 200 tuns per week from the same sized furnaces, thus showing the enormous increase of production effected with the same outlay of capital by the employment of hot-blast and other improvements in the furnaces.

Mr. W. Smith thought the paper that had been read was one of much interest, giving a valuable historical account of the successive steps in practically carrying out the system of hot-blast; and the large increase in yield of the furnaces, that had been referred to, marked the introduction of the hot-blast as a stop of the greatest importance. The prejudice against the use of hot-blast iron was, however, still entertained; and he had noticed, in a recently-published report on marine-engines for the navy, by the government commissioners, a recommendation that hot-blast iron should not be used in their construction, which was a conclusion much at variance, he thought, with the results of general experience in the use of best hot-blast iron. It was a question of the quality of the ore from which the iron was made, and the care in its manufacture, rather than a question of hot or of cold-blast.

AGRICULTURAL MECHANICS.

A correspondent of the Philadelphia "Farmer and Gardener" pictures the careful and intelligent farmer as follows:—

"A neighbor of mine is a plain unassuming man—one of that class who never intrude their opinions upon others unsolicited. He is an intelligent man with a smalt library of well selected books, the majority of which treal of subjects connected with agriculture. He is of an investigating turn of mind, always debating a subject well with himself and through undoubted authorities, before he is prepared to take sides. He is not the first man in the neighborhood to take hold of an improvement, nor is he the last. If satisfied that it is the thing he requires, he purchases it, not otherwise. He is a considerate man, and is willing to admit his own imperfections. Consequently, if an accident happens to any of his machines, he does not rail out against the manufacturer until he first inquires whether the accident was not the result of his own negligence. But accidents are not frequent with him. Why? Because he understands the principles of mechanics so well that he provides against their occurrence. When he is prepared to take the field with his plow or his mowing-machine, you may rest assured of the fact that it is all in perfect order. His wrench, oil-can, screw-driver, hammer, &c., always go with him, so that tf he has occasion to use them they are always convenient. Now, what is the secret of his success? It all lies in the simple fact that he has made agricultural mechanics a subject of close study. When he goes to purchase a machine, his knowledge of mechanics enables him, almost at a glance, to determine whether it is as well or better adopted than others to the purposes for which he wishes it. If upon trial, difficulties present themselves, you rarely see him hastening to the blacksmith or manufacturer for help. Here again his knowledge of mechanics befriends him. He readily discovers the cause and, generally, is ready with the remedy."

SYMMES' GAS VALVE.

We illustrate here a most original and ingenious device for shutting off the gas in street burners by means of one stop-cock in the main at the gas-works, without interfering materially with the burners in houses.

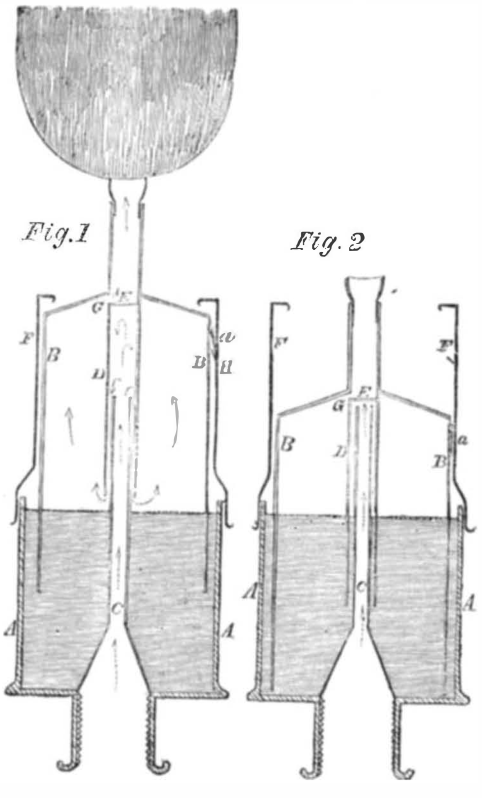


Fig. 1 represents the valve open so that that the gas is flowing through it, and Fig. 2 represents it closed. A is a cylinder or cup of mercury over which the cup, B, is inverted, its edge dipping into the mercury as shown, the cup, B, being suspended by the pendulum, *a*, falling into the barb, H. In this position the gas comes from the main through the pipe, C, and, flowing in the direction indicated by the arrows, passes out to the burner. The inverted cup, B, is made of such weight that it may barely overcome the ordinary pressure of the gas, and in order to shut off the gas, the stop-cock in the main at the gas-works is suddenly opened for an instant more widely than common, so as to increase the pressure of the gas by a sudden puff. This lifts the cup, B, and draws the pendulum, *a*, from the barb, H, and when the pressure is again instantly reduced, the cup, B, falls, submerging the lower end of the tube, D, in the mercury and cutting off the flow of the gas. This position is shown in Fig. 2.

One of these valves must be supplied to each one of the street lamps, and it may be connected with the burner as shown, or the valve may be placed at any convenient distance from the burner, in which case the cup, B, is made tight at the top without any orifice, and a pipe leads from it down through the mercury and away to the burner.

By a slight modification of the apparatus the valve may be closed by a sudden and brief reduction of the pressure instead of an increase. In this modification the pendulum, *a*, and the barb, H, are dispensed with, and the weight of the cup, B, is so balanced that the pressure of the gas against the whole area of its top will keep it suspended with the bottom of the tube, D, above the mercury, so that the gas may flow through the valve. When it is desired to shut off the street burners, the stop-cock at the gas-works is suddenly nearly closed and immediately opened again to its ordinary width. The sudden reduction of the pressure drops the cup, B, into the mercury, closing the lower end of the tube, D, and stopping the flow of the gas. On the restoration of the pressure, the cup, B, is not lifted from the mercury, because the gas only presses against the small area, E, of the top of the tube, D. The hooks, F F are provided to prevent the cup, B, being raised so far that its edge will be above the mercury and thus permit the escape of the gas.

The patent for this invention was issued to H. K. Symmes, of Newton, Mass., on the 4th inst. Inquiries for further information in reference to it may be addressed as above.

ICE MANUFACTURE.

Messrs. Editors.—It has been a question, for many years, whether ice could be economically manufactured for domestic purposes, and as yet, no solution of the matter has been made public.

In our business we use large quantities of ice; and the last winter being a mild one, we failed to harvest our usual crop, and as "necessity is the mother of invention," we were constrained to make the attempt to supply our wants by artificial means; a plain statement of the course pursued to accomplish the object may possibly possess some public interest, and we therefore make a condensed report of our proceedings.

The well-known process of abstracting heat by vaporization of some volatile liquid was the basis of our experiments, and hydro-chloric ether seemed the best adapted to the purpose, but we were not able to obtain a sufficient quantity, and the only resource left was to use the much inferior agent, common or sulphuric ether. The prospect of success was much diminished in consequence of being confined to the less volatile liquid, but careful investigation led to the belief that it might be made to answer the destined purpose. Our plan or device was this, we procured a metal cylinder of the size required for our business, with an air-tight compartment around the whole circumference, $\frac{3}{4}$ inch wide, similar to a steam jacket; the cylinder was open at the top, and intended for the reception of the liquid to be frozen. A leaden pipe communicates with the upper end of the steam-jacket at one extremity, and with an entrance aperture of a rotary pump, prepared for this purpose, at the other. Another leaden pipe was attached to the exit aperture of the pump, and was carried in a spiral through a tank of water, like the condensing worm of a distillery, and thence, at the bottom into a condensing chamber, fitted with an escape cock, and containing a self-acting valve. From near the bottom of the condensing chamber another pipe led through the cover and back into the jacket. The whole apparatus described was made completely air-tight. The jacket was then charged with sulphuric ether. The pump was started and the escape cock in the condenser left open until the ether vapor had expelled the air, when it was closed, and the vapor drawn from the cylinder was condensed in the worm and the condensing chamber, and returned in liquid form to the cylinder thus keeping up a constant circuit, abstracting the heat from the cylinder and discharging it in the water surrounding the worm. The mechanism and process are exceedingly simple, but it required much thought to perfect this apparatus and make the necessary investigations.

Those familiar with this branch of science will readily perceive it is an easy matter to calculate the quantity of vapor it would require, theoretically, to freeze a gallon of water; and it will be apparent that, since ether boils, in vacuo, at 44° Fahr. below zero, a temperature of at least 15° below zero could be obtained by this process under favorable circumstances, and at no other loss than that of working the pump. We found the apparatus to work admirably, and with a small cylinder unprotected from the air, we caused water to freeze readily, and the thermometer, indicated 15°; but on a large scale, adapted exclusively for our business operations, there was so much surface necessarily exposed to the warm air and such a large body to freeze at one time, that the pump we used was not sufficient to draw of the vapor with such rapidity as to suit our purpose, and the expense being too great to venture on a new trial, we abandoned the project, and depended on the natural production for supplying our wants. We are satisfied that the principle adapted was sound, and the device we used may be made available for manufacturing ice with economy, and will eventually be brought into use, perhaps, by some enterprising Yankee. Sulphurous acid or hydrochloric ether, would either of them be a far better agent than the one we used, as at a low temperature the same bulk of vapor would carry off a much greater quantity of heat.

Such an apparatus for ocean steamers would undoubtedly be of much value, if it could be made to work satisfactorily, and we think it might be made to answer the proposed purpose. M. & C. Painter.

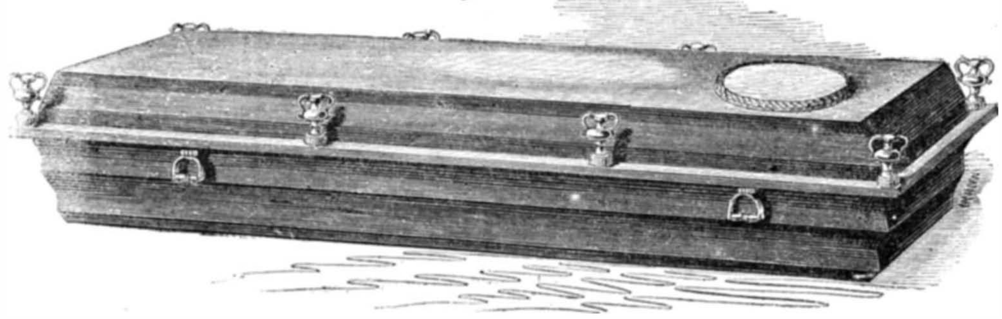
Owing's Mills, Md., Oct. 18, 1859.

IMPROVEMENT IN COFFINS.

The annexed views illustrate an improvement in coffins invented by Dr. H. Marshall of Cincinnati, Ohio, and patented on October 4, 1859.

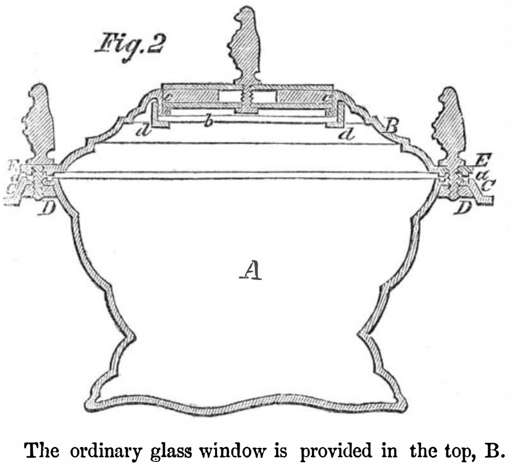
Fig. 1 is a perspective view, and Fig. 2 an end view. The improvement consists in making coffins of corrugated iron, as a substitute for the heavy cast iron coffins at present in use, thus avoiding the great weight and consequent difficulty of handling and transportation. The body of the coffin is made separate from the top, and the two are fastened together by screws which pass through the flanges, C and E, (Fig. 2) and screw into the wrought iron frame, D, which passes around the coffin. The corrugations of the flange, E, of the cover are fastened with their convex surfaces opposite to the concave surfaces of the flange, C, of the body, and a sheet of india-rubber is interposed between the flanges to pack them air-tight.

Fig. 1.



MARSHALL'S PATENT COFFIN.

Fig. 2



The ordinary glass window is provided in the top, B. The glass plate is suspended between an angular flange, c, projecting down from the top, B, all round the window space, and another angular shaped flange, d, screwed or attached to the flange, c, as shown. Thus arranging the window relieves the packing-piece of all upward pressure. To pack the window air-tight, an india-rubber gasket is placed between two plates which are moved apart or brought together by a screw. By inserting the packing device in the window space as shown and driving up the screw, the plates will be caused to compress the rubber and force it edges against the sides of the window space so as to pack it perfectly.

Persons desiring further information in regard to this light air-tight coffin may address the inventor as above.

Steam Fire-engine Prizes.—At the late Pennsylvania State Fair, there was a grand trial of steam fire-engines, and on the 1st inst., the prizes were awarded as follows:—The first premium, a silver horn, worth $250, to the *Hibernia*; second, a silver horn, worth $150, to the *Washington*; third, a gold medal, worth $100, to the *Good Intent*; all steam fire-engine companies of Philadelphia.

ILLUMINATING GAS.

We have recently described the process of making gas; we will now explain what becomes of it when it is burned. Illuminating gas consists almost wholly of carbon and hydrogen, combined in two different proportions. One of these is called carbureted hydrogen, and consists of two gallons of hydrogen combined with one gallon of the vapor of carbon; the three gallons, when combined, condensing, by a curious action which gases sometimes manifest, into precisely the measure of one gallon. In this combination, though the hydrogen is the most bulky, the carbon is the most ponderous, there being two pounds of hydrogen to six pounds of carbon. The other combination of these two substances, which we find in illuminating gas, consists of two gallons of hydrogen and two gallons of the vapor of carbon, all condensed into one gallon. This is called bi-carbureted hydrogen, and, though it constitutes but about 13 per cent of its volume, is the principle source of light in illuminating gas, having the property of precipitating its carbon in small solid particles, which, becoming red hot shine with a bright light. Carbureted hydrogen precipitates its carbon in the same way; but being less dense, the light is much feebler.

The burning of gas, like the burning of everything else, consists simply in combining it with oxygen. The combination of oxygen with the hydrogen forms water, which when heated to the temperature of flame, is of course expanded into steam and invisible; but if we place a cold body in the room, a vessel full of ice for instance, we find this steam condensing into drops on its side. These drops may be collected in a tumbler, and if we taste them we shall find them to be water, though a portion of them may have just been formed by the combination of the oxygen of the air with a part of the gas which issues from the burner.

The combination of the carbon with oxygen forms carbonic acid, a substance which in moderate quantities in the stomach is beneficial, but which taken in large quanties into the lungs produces instant death. Where several jets of gas are burning in a small room, ample provision should be made for ventilation, for the effect or burning the gas is not merely the removal of the oxygen, the life-giving element of the air, but the supplying of its place with a deadly poison.

The quality of gas—its illuminating power—varies very much depending principally upon the proportion of bi-carbureted hydrogen which it contains. Gas made from oil is superior to any made from coal, but oil is too expensive a material for this purpose. A tun of coal (2,000 pounds) will produce about 11,500 cubic feet of gas, amounting, at $2.50 per thousand cubic feet, to $28.75. The business of making it is no doubt profitable.

Important New Patent on Skirts.—"A patent was issued on Tuesday last, the 4th inst., to S. H. Doughty, of this city, and others, for what is known as the 'woven skeleton skirt.' This construction of skirt has become very popular, and has been made by a great number of manufacturers in all parts of the country, under the supposition that it was not patentable."

The above paragraph has appeared in several of our city papers. The idea conveyed is that a patent has just been issued covering, broadly, the manufacture of woven skeleton skirts. This is erroneous as the reader will perceive by an examination of the claims of the patentees, as officially reported and published in our last number. The manufacture of ladies' skirts has become a vast business, and we consider it our privilege of correct the erroneous impressions attempted to be conveyed in this instance.

Perhaps the largest plate of glass ever produced was one made at the St. Gobain Works in France. The length of the plate was 5.37 meters (18 feet), and it was 3.36 meters (11 feet 9 inches) wide, and 12 millemeters or nearly half an inch thick.

NOTES ON FOREIGN INVENTIONS.

Photographic Pictures on Wood.—A new method of taking photographic pictures on wooden blocks, for engraving, has been patented by W. Spence, of London, and is described as follows:—The white of an egg is beat up into froth with one-half its volume of water, and the face of the block carefully moistened with this by a soft brush, then allowed to dry slowly. A solution composed of fine isinglass, 30 grains, chloride of sodium, 2 grains, to 1 ounce of warm water, is now also rubbed over the face of the block and allowed to dry. The block is now heated so as to coagulate the albumen of the egg in the pores of the wood under the isinglass, and another coat of the latter is now applied until the surface has a glazed appearance. But no more isinglass is allowed than fills the pores of the wood; any excess is removed with a knife. A solution of nitrate of silver is now applied to the wood, and the block placed in the camera, when the picture is taken. The picture is now fixed in a warm solution of sulphite of soda, which removes the gelatine, but allows the albumen to remain, and the picture being taken directly on the wood can be engraved with more facility than when it is applied on collodion, which is liable to scale off. The improvement claimed in this process is the application of the albumen in the pores of the wood in such a manner as to form an insoluble base. The nitrate solution is thus prevented from penetrating the pores, while the picture is taken directly on the surface of the wood itself. This is a subject of great interest and importance at the present moment, great efforts being made to dispense with drawing on the blocks.

Lead Paint.—A patent has been issued to J. A. Clarke, of Liverpool, for coating the bottoms of iron ships with carbonate of lead (the white lead of commerce), mixed with naphtha and rosin varnish. The white lead is ground up with the naphtha until it attains a proper consistency, after which the rosin varnish is added. This paint can be used either hot or cold, for painting the bottoms of vessels; it is said to be a good protection against the action of sea water, and prevents the adhesion of marine plants and barnacles.

Purifying Coal-gas.—Dr. J. Leigh, of Manchester, has patented a very peculiar mode of purifying coal-gas. The invention consists in the constant and extensive use of gas-water, commonly called ammonia-water, in the purification of coal-gas, the object of such use being the removal of various salts of ammonia from the gas. It is well known that coal-gas contains, before its purification, a large quantity of ammonia combined with carbonic acid, hydro-sulphuric acid, prussic acid, &c., and for the removal of this ammonia from the gas various substances have been employed, such as sulphate of iron, salts of manganese, sulphurous acid, &c.; but instead of these, the patentee washes the gas in suitable vessels with the gas-water or ammonia-water itself, by which he finds that all the ammonia salts are removed. The apparatus employed may be of any convenient size and shape. The ammonia-water is supplied at the upper end of a deep vessel by an injection pipe, and spread about by a dispersion-plate. At intervals in the interior of the vessel are shelves, each of which is covered with materials to retard the return of ammonia-water, and thus afford time for it to mix with and purify the gas; the said materials being composed of bricks, ashes, or other suitable substances. This invention is similar in nature to that of Dr. Clarke for removing lime from hard water by the use of fresh lime. As the coals yield their own ammonia in producing gas, if this invention is as effective as it is stated to be, it will be of great advantage to all gas companies.

The Drummond Light.—The common "oxy-hydrogen" "calcium" and "Drummond" light is simply the combustion of hydrogen and oxygen gases on a piece of prepared lime. It produces the most brilliant chemical light known. An improvement in the process of producing this light has been made by J. Copcutt, of London; it consists in admitting the gases to the lime under great pressure, by a force pump, and in order that the lime against which the flame of the ignited gases strikes may progressively rotate and present constantly fresh surfaces to the jet, motion is given to the lower disk or cup in which it rests, and an upper disk is employed to press on the upper surface in such a manner that this plate may rotate freely with it. This arrangement and method of using the gases under pressure has, it is said, greatly increased the intensity of this light

Novel Wheelbarrow.—One of the workmen employed n the gardens of the Tuileries, in Paris, has brought out a new wheelbarrow which has attracted considerable attention. The two legs of the barrow are replaced by two wheels which are somewhat smaller than the usual running one in front, and these are secured immediately under the body or box of the barrow. The handles are raised so as to be on a level with the hands of the workman; and thus, upon a level road, a slight push is all that is necessary for the transport of the heaviest load. The three wheels being almost close together, the act of turning the barrow in the smallest space becomes as easy as possible. This improvement will certainly add greatly to the durability of the barrow, an implement which most persons seem to consider perfect in its present form. In resting with a barrow, after wheeling a heavy load, it is too often allowed to drop heavily upon its legs and these are thus frequently broken. The wheel-legs of the French barrow will prevent breakage from this cause.

Starch.—A patent has recently been obtained by John Hamilton, of Belfast, Ireland, for submitting starch—after it is deposited in the manufacturing process—to the action of a hydraulic press, in suitable boxes, so as to press all the water out of it, instead of evaporating all the moisture by artificial heat in highly-heated rooms, according to the usual practice. A great saving in fuel is thus effected by well-known and very simple means.

MORE ABOUT COAL-OILS AND COAL.

We have recently received a great number of letters on this subject, in addition to those which have already appeared in our columns. There can be no doubt of it being a topic of vast and growing importance, involving great interests, both as it regards the mines which yield the proper kinds of coal and the manufactories where the coal is distilled and purified for obtaining the oil. Some companies appear to have attained to greater perfection than others in purifying the oils; hence we have many inquiries as to the best modes of removing the offensive odor of the product. Such information is greatly desired by many companies; while others, again, find much difficulty from their retorts burning out.

Messrs. Austens, agents of the New York Kerosene Oil Company, of this city, announce the price of their oils at one dollar per gallon, wholesale, and give the following table as the result of a photometrical examination of the light-giving qualities of various burning fluids, by Edwd. N. Kent, Esq., chemist, of this city:—

MATERIALS.	LAMPS.	Intensity of Light.	Quantity of Light from an equal Measure of Oil.	Price of the Oil per Gallon.	Cost of an equal Amount of Light.
Kerosene..........	Kerosene..........	13.689	2.435	$1 00	$4 10
Camphene..........	Camphene..........	5.625	1.299	63	4 85
Whale Oil..........	Solar..........	1.892	833	1 00	12 05
Lard Oil..........	Solar..........	1.640	706	1 25	17 70
Sperm Oil..........	Solar..........	2.025	850	2 25	26 47
Burning Fluid......	Large Wick..........	583	300	87	29 00

In a letter from Mr. Calvin Dickey, of Coshocton, Ohio, he says:—"Your paper is the only one through which coal-oil men appear to exchange their views in reference to this immense interest. Our region here is rich in cannel coal, the seams being from four to six feet in thickness, and they make excellent oil. There are some fifteen works in operation and in the course of erection in two townships in this county. All combined, they manufacture from 7,000 to 1,000 gallons of crude oil per day."

Another correspondent from Charleston, Kanawha county, Va., states that there are several companies in that place largely engaged in this manufacture, and they have a large capital invested in the business. "The Union Works, at Stockton," he says, "are making crude oil from 94 retorts; the Kanawha Coal-oil Company, at Charleston, have 40 retorts in operation, and will have 60 more by December 1st. This company refine their oil, and send large quantities to Boston and other markets. Several other companies have from 30 to 40 retorts each in full blast, but do not yet refine the crude article; they are, however, making preparations to do so."

The above-named correspondent also states that L. A. R. (whose letter on cannel coal appeared on page 151 of the present volume of the SCIENTIFIC AMERICAN) is not posted-up in the cannel coal deposits of our country. It was asserted that the only pure cannel coal known on this continent was that of the Prince Albert mine in New Brunswick, and the Forest Hill mine in Fayette county, Va. In the Kanawha Valley there are several mines of cannel coal as good as that of Forest Hill, though not "as oily as a lump of fat," nor "as elastic as india-rubber." Our correspondent also asserts that there is more cannel coal in this Virginian valley than in all the rest of the United States. Some of the deposits vary from 30 inches to 6 feet in thickness, and most of them compare very favorably with the Boghead and Prince Albert cannel coals.

On page 222, of this volume, we published the letter of a correspondent who stated that none of the establishments engaged in the coal-oil manpfacture had "paid a dividend on the money invested." To this statement, Mr. Geo. M. Mowbray, of Greenpoint, L. I., answers: "One of your correspondents dating from Cincinnati, in an article on 'Coal-oil Manufacture,' asserts that none of the companies formed for the purpose of manufacturing this oil have hitherto paid a dividend. This is an error; the Columbia Company having paid a dividend of 10 per cent, besides having a surplus for contingencies. My authority for this assertion is Mr. Furber, one of the directors of the company."

We have thus had contradictory statements from different correspondents on this subject, but the truth comes out in the accumulated information we present. The writer of this article is well acquainted with cannel coal, and has examined as good specimens from Virginia, Kentucky and Ohio as the famous Boghead. On Coal river, Va., there is an illimitable supply of cannel coal for making oil and gas; and it is to be regretted that the carriage of it costs so much to this city, which is supplied with English coal for making gas. We would especially direct the attention of our American cannel coal companies to this subject, because it would be a vast benefit to our citizens if this coal were obtained at cheaper rates, so that the price of gas could be so reduced as to enable every house in this and other large cities to be supplied with it. At present it is too expensive for the working-classes to use, and the excuse offered by the companies is the high price of coal.

In a letter from E. E. Calcott, Esq., of the Providence (R. I.) Gas Company, he gives us the cost of the coal which they use as follows:—$3.77 per ton in London; freight to Providence, $4.18; exchange, 45 cents; duty, 99 cents: total at the wharf, $9.39. This is a very high price for a tun of coal. We have always been given to understand that the price of Boghead coal in London was $11.40 per tun; and that it could be imported to New York, with the exception of the tariff duty, as cheaply as to London. Surely some of our western coal companies can institute measures to send their coal to the eastern seaboard, and sell it for $6 or $7 per tun.

There is another matter connected with this subject which our readers should understand more fully, viz.: the quality of gas obtained from different kinds of coal. Most persons suppose that all coal-gas is of the same quality, and that a cubic foot of the one is just as good as a like quantity of any other. This is a mistake. There is a great difference in the illuminating power of gas obtained from different kinds of coal. Cannel coal-gas is nearly double the power of that obtained from the Newcastle coal.

EMPLOYMENT OF CAMELS IN THE UNITED STATES SERVICE.—A letter has recently been received by the Secretary of War from Superintendent Beale, dated Fort Tejon, California, in which the writer speaks in the strongest terms of the great advantage to be derived from the employment of camels in the public service in the West. He states that he lately tried, effectually, the comparative value of mules and camels as pack animals, and the experiment proved beyond all question the great superiority of the camel, both as regards rate of speed and amount of burden. From what he had read, he dreaded the difficulties which seemed to present themselves in breeding them; but his experience had satisfied him that they were as easily bred as cows and calves. He prefers them, for all such purposes as those in which he has employed them, to three times the same number of horses and mules.

SOME of the river steamboats employed upon the Rhone are, according to a drawing exhibited in Paris, 250 feet long and 16 feet wide, the length being 15 2-3 times the width. The engines are 500 horse-power.

THE FOUR ORGANIC ELEMENTS.
OXYGEN, HYDROGEN, NITROGEN AND CARBON.
IV.—CARBON.

Carbon is the most curious and interesting of all the four elements which we have undertaken to describe. The simple manner in which it passes from the animal to the vegetable kingdom, and from the vegetable back to the animal, has attracted to it as much attention from the physiologist and the geologist as from the chemist. A large portion of our food consists of carbon. When we take our food into our stomachs, a small portion of it is digested, and, after being mixed with a proper quantity of bile, is carried by a duct and poured into one of the great veins leading to the heart. From the heart, the blood is spread through the lungs into vessels which ramify into a very extensive surface of exceedingly thin membrane, on the opposite side of which is atmospheric air. The oxygen of the air passes through this membrane, and enters into combination with the carbon, in other words, burns it; producing that slow fire which warms our bodies. This burning is simply the combination of carbon with oxygen producing carbonic acid, which is always composed of precisely the same proportions of carbon and oxygen, being 6 pounds of carbon to 16 pounds of oxygen. This acid can be solidified in the form of white and intensely cold snow; but it generally exists in the form of gas, which is transparent and invisible.

A portion of the carbonic acid in the atmosphere comes in contact with the leaves of plants, which absorb it, when, by a combined action of light and of the force of vegetable life in a way which is not yet understood, the acid is decomposed into its two elements—oxygen and carbon, the oxygen passing off into the air, and the carbon being carried by the sap to build up the structure of the plant. Carbon is the only one of the four principal organic elements which preserves the solid form when uncombined. If we heat the trunk of a tree or other portion of a plant, it is decomposed, and the oxygen, hydrogen and nitrogen pass off in the form of gas; while the carbon, if it is protected by a covering of turf or by a tight retort from contact with the air, remains in the form of charcoal. If the carbon, while heated, is allowed to come in contact with the air, it combines with the oxygen, forming carbonic acid, when it too assumes the gaseous form and floats away into the atmosphere, ready to be re-absorbed by leaves and to resume its round of change.

The various coal beds of the earth contain abundant evidence that they are formed of the remains of plants. Coal is constantly found, in which the form and structure of the trunk, the branches, the buds, the leaves and the fruit of various trees are perfectly preserved; the flowers alone are wanting, probably because their great delicacy has prevented them from being preserved through the heat and pressure to which the coal has been subjected. Pines, palms and ferns are the three orders of plants of which most of the coal is formed, though numerous species of other genera have been found, and the botany of the coal has become an extensive study. The vegetable matter of which the coal is composed generally grew in great swamps, which, being filled by small plants, were finally covered by forests, when the whole mass, by the changes constantly going on upon the earth's surface, settled down beneath the sea in the same way that the south of Italy is now settling. Shells, sand, lime and other substances were then deposited upon it, forming a rock in the same way that a rock is now being formed along the telegraphic plateau; after which the whole was lifted again above the water, as Chili is now being raised. During these changes, heat and pressure expelled more or less of the volatile portion of the vegetable matter, leaving the carbon and earthy matter or ashes. In anthracite coal a larger portion of the hydrogen and other volatile portions have been expelled than in bituminous coal.

In the beds of rock below the coal, and which, of course, were deposited before, and are older than the coal, there are numerous remains of fishes, but not one single specimen of the remains of any air-breathing animal has ever been found; while the rocks directly above the coal are filled with the remains of air-breathing animals. From these facts the inference has been drawn that, before the coal era, the atmosphere was so charged with carbonic acid that no animal could breathe it, and that this acid was removed by being absorbed by the leaves of trees and converted into coal, when it was stored away in great beds for the use of the present active generation.

HISTORICAL DAYS IN OCTOBER.
[Collated expressly for the Scientific American.]

1.

1676. Bacon, the rebel of Jamestown, died; 1730. Stockton, one of the signers of Independence, born; 1746. Muhlenburg, an American general, born; 1807. Muhlenburg died on his birthday; 1754. Paul, Emperor of Russia, born; 1777. Alexander Sumorokof, founder of the Russian theater, died; 1815. Murat, one of Napoleon's marshals, shot.

2.

1780. Major Andre executed; 1782. General Charles Lee died; 1803. Samuel Adams, one of the signers of the Declaration of Independence, died.

3.

No event of interest transpired on this day.

4.

1641. Father Raymbault, a French Jesuit, reached Sault St. Mary; 1777. Battle of Germantown.

5.

1056. Henry III., Emperor of Germany, died; 1318. Edward Bruce defeated at Dundalk, Ireland; 1710. Port Royal taken by the British; 1740. Baratier, a distinguished scholar, died; 1761. Wm. Pitt resigned his power to George III.; 1787. Thomas Stone, one of the signers of the Declaration of Independence, died; 1805. General Cornwallis died; 1809. A levy of 36,000 men raised in France by Napoleon; 1813. Simon Girty, a barbarous tory, killed.

6.

877. Charles II., King of France, poisoned; 1285. Phillip III., King of France, died; 1510. Dr. John Cains, an eminent physician, born; 1781. General Scammel died; 1849. Thirteen Hungarian officers shot by the Austrians.

7.

929. Charles III., King of France, died; 1747. Dickinson, founder of the New Jersey College, died; 1765. Second Colonial Congress held; 1777. Battle of Saratoga.

8.

1726. John Condiac, a child of astonishing learning, died; 1751. Teignmouth born; 1793. John Hancock died; 1805. Treaty on neutrality made by Naples.

9.

1047. Clement II., Pope of Rome, died; 1553. Thuanus, a celebrated French historian, born; 1746. John Brainard, an Indian missionary, died; 1781. First shot thrown into Yorktown; 1812. Two British brigs taken at Fort Erie; 1813. A levy of 280,000 men raised in France; 1854. Opening of the trenches before Sevastopol.

10.

1738. Benjamin West born; 1775. General Gage left America; 1797. Carter Braxton, one of the signers of the Declaration of Independence, died; 1827. Colonel Howard died.

11.

1347. Louis V., Emperor of the West, died; 1614. Charter granted to the Amsterdam Company; 1776. First naval battle fought between Great Britain and America.

12.

1492. Columbus discovered America.

13.

1417. Gregory XII., Pope of Rome, died; 1503. Pius III., Pope of Rome, died; 1759. Captain Joseph Graham died; 1777. British landed at Kingston, N. Y.; 1795. Wm. Prescott, a bloodthirsty Englishman, died; 1803. Battle and fall of Agra, India; 1812. Battle of Queenstown: American loss, 860; British about the same.

14.

1066. Battle of Hastings; 1644. Wm. Penn born; 1705. Stanilaus crowned King of Poland; 1734. Francis Lightfoot Lee, one of the signers of the Declaration of Independence, born; 1806. Battle of Jena; 1806. Battle of Anerstadt; 1809. Peace signed between Austria and France.

15.

1558. Congress of Cambray between the Spaniards and French; 1591. Gregory XIV. died; 1789. Dr. John Morgan died.

16.

29. Christ preached the sermon on the Mount; 1758. Noah Webster, author of "Webster's Dictionary," born; 1777. Lorenzo Dow born; 1793. Marie Antoinette, Queen of France, beheaded; 1813. Battle of Leipsic; 1817. Kosciusko died.

17.

707. John VII., Pope of Rome, died; 1346. Battle of Durham; 1683. The people of New York exercise legislative power; 1777. Burgoyne surrendered; 1781. Cornwallis surrendered; 1797. Peace of Campo Formio; 1842. Fremont returned from his first exploration; 1854. Opening of the fire against Sevastopol.

18.

1806. Saxony overcome by the French; 1812. The British vessel *Frolic* captured: British loss, 100.

19.

1216. John I., King of England, died; 1665. Sir Thomas Browne born; 1682. He died on his birthday; 1745. Jonathan Swift died; 1809. The walls of Vienna blown up by Napoleon; 1814. Mercy, wife of James Warren, died.

20.

1422. Charles VI., King of France, died; 1632. Sir Christopher Wren born; 1722. Leopold, Duke of Brunswick, born; 1780. Champe deserted to take Arnold; 1805. Ulm surrendered to Napoleon; 1827. Battle of Navarino.

21.

1681. Edward Quincy born; 1754. Williams, one of the capturers of Andre, born; 1774. John Bradstreet died; 1805. Admiral Nelson killed; 1805. Battle of Trafalgar.

22

1555. Charles V. conferred on his own son, Philip II.. the Grand-mastership of the Golden Fleece of Burgundy; 1642. Raymbault, a French discoverer, died; 1705. Sir Cloudsley Shovel died; 1775. Randolph Peyton, one of the delegates of the first Continental Congress, died; 1777. Fort Mercer attacked by the Hessians.

23.

1739. England declared war against Spain; 1750. Thomas Pinckney born; 1777. Americans attacked at Fort Mifflin.

24.

1415. Battle of Agincourt; 1760. George II., King England, died; 1812. Combat of the Carion, Spain; 1852. Daniel Webster died.

25.

1154. Stephen, King of England, died; 1400. Chaucer died; 1555. Charles V. abdicated his throne to Philip II.; 1760. George III. ascended the English throne; 1764. Hogarth, a distinguished painter, died; 1854. Battle of Balaklava.

26.

1751. Dr. Doddridge, an eminent divine, died; 1812. Napoleon commenced his retreat from Moscow; 1850. North-west passage discovered.

27.

1439. Albert II., Emperor of Germany, died; 1492. Cuba discovered; 1682. William Penn arrived in America; 1776. The American brigantine *Hampden* wrecked; 1807. Treaty between Napoleon and the King of Spain; 1823. Zephariah Swift, Chief Justice of Connecticut, died.

28.

900. Alfred the Great died; 1467. Erasmus born; 1704. Locke died; 1776. Battle of White Plains; 1810. Lieut. Colonel Edward Carrington died.

29.

1562. George Albot, Archbishop of Canterbury, born; 1591. Pope Innocent IX. died; 1618. Sir Walter Raleigh beheaded; 1727. Earthquake in New England; 1808. Napoleon left Paris for Spain; 1842. Allan Cunningham died, aged 56.

30.

1753. John Adams born; 1813. Battle of Hanau; 1840. Destructive earthquake at Zante.

31.

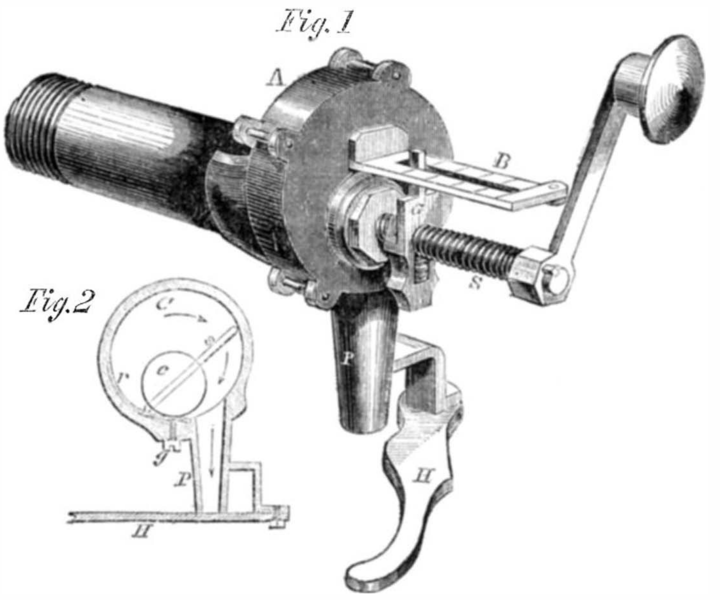
1448. John VII., Emperor of Constantinople, died; 1674. Dutch rule abolished in America; 1687. The charter of Connecticut hidden in the oak; 1733. The Moravians commenced their voyage to Georgia; 1740. William Paca, one of the signers of the Declaration of Independence, born; 1803. United States frigate *Philadelphia* lost near Tripoli, 1808. Combat of Durango, Spain.

IRA KINMAN'S MEASURING-FAUCET.

We call the attention of all grocers who wish to avoid the use of sticky pots—gallons, half-gallons, quarts and pints—for measuring molasses, tar and varnish, to the simple and compact measuring-faucet represented in the annexed cut.

Fig. 1 is a perspective view of the whole, and Fig. 2 a transverse vertical section representing the interior arrangement. The cylinder, *c*, (Fig. 2) is connected with the screw, S, so that it may be rotated by turning the crank. The slide, *s*, (Fig 2) is of sufficient width to fill the large cylinder, A, (Fig. 1) and slides through a slot in the small cylinder, *c*. It will be seen that as the cylinder, *c*, is made to rotate, the slide, *s*, forces a determinate quantity of the liquid down into the discharge pipe, P The slide, G, (Fig. 1) fitting by a thread upon the screw S, is carried along by each revolution a certain distance which is measured on the scale, B This slide is of course to be set back to zero before the drawing of the liquid is commenced By means of the regulating spring, *a*, adjusted by the set-screw *g*, the slide *s*, may is pressed firmly against the inside of the cylinder, C, or may be allowed to revolve loosely within it, and thus the quantity delivered at each revolution may be somewhat varied. From the end of the screw, S, and fastened to it, a spiral screw extends through the main pipe of the faucet, and by its rotations draws along the thick liquid so as to keep the large cylinder, A, constantly supplied When the desired quantity of liquid is drawn, the pipe, P is tightly closed by means of the slde, H. The end of the main pipe is guarded against the admission of sticks by a strainer.

The patent for this improvement was granted May 3, 1859, to Ira Kinman, of Freeport Illinois, but is now the joint property of the inventor and B. H. Wiley, and further information may be obtained by addressing either of those gentlemen as above.

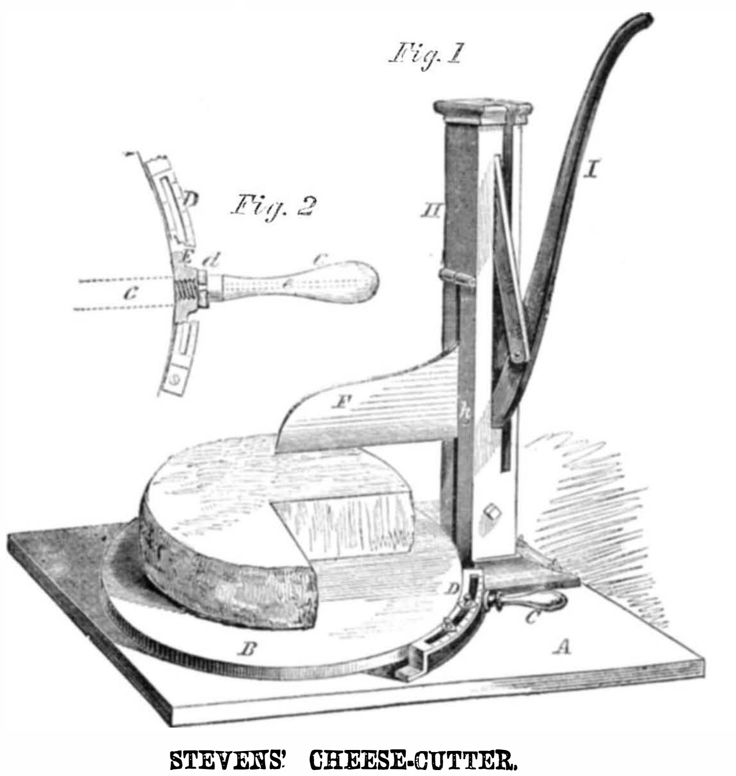


KINMAN'S IMPROVED MEASURING-FAUCET.

CHEESE-CUTTER

The improvement in the familiar operation of cutting cheese, which this apparatus is intended to secure, are ease and rapidity of movement, neatness convenience, saving of waste, and accuracy of weight —advantages which grocers will appreciate.

The machine consists of a knife operated by a lever descending upon a revolving platform upon which the cheese is placed.



STEVENS' CHEESE-CUTTER.

Fig. 1 gives a perspective view of the apparatus, and Fig. 2 exhibits the mode of operating the platform, A, is the common counter in a store, on which the revolving platform turns round a pivot at its center. The measuring scale, D is secured first on the counter, A. The flat rod, *c*, turns upon the pivot at the center of the platform, and has its outer end turned up at right angles to serve as an index which sweeps along the scale, D. Into the handle C, is firmly fastened the pin, *e*, which passes loosely through a hole in the bent part of the flat rod, *c*, and is held by an enlarged head this head is formed into a screw, which, turning into the shoe, E, forces said shoe against the edge of the platform, B, thus enabling the platform to be rotated by means of the handle, C.

The knife, F, is fastened to a slide in the middle of the standard, H, said slide being connected with the lever, I, by means of the rod, J, so that the knife may be brought down through the cheese by depressing the lever, I. The scale, D, is divided into 500ths of circumference of the platform, and has a slot with sliding indexes which can be set to any number of parts.

The plan of operation is as follows: Divide 500 by the total weight of the cheese, this will show the number of parts to be set off upon the scale with the sliding indexes to indicate one pound, two pounds, three pounds, and so on. Then by means of the platform-handle bring the cheese under the knife at the required point, and depress ing the lever, it will force the knife easily and smoothly through the cheese The patent for this combination was issued on June 7, 1859, to DeWitt Stevens, of Newark, N. J., to whom application for further information in relation to it, or for machines, may be addressed.

One of these machines is on exhibition at the Fair of the American Institute.

It is only by labor that thought can be made healthy, and only by thought that labor can be made happy; and the two cannot be separated with impunity.

DEATH OF PROFESSOR NICHOL.

Another eminent man of science "has gone the way of all the earth." Professor John Pringle Nichol, of Glasgow College, died on the 19th of last month, in the 55th year of his age; and in his death the world has lost the most brilliant lecturer on astronomy that perhaps ever lived. He visited this country about 12 years ago, and delivered a course of lectures in this and other cities, and they were deemed the most captivating displays of science in the shape of popular lectures ever given in our country. His eloquence was of a very lofty order, as if he had been a traveler who had journeyed among the rolling spheres, had witnessed their stately marches through the boundless regions of space, and returned to tell us of the grandeur of the scenery and the majesty of the subject. He was a native of Brechin, in the north of Scotland, and when young, it is stated, worked for several years as a mechanic. Having a taste for science and literature, he educated himself, early became a fine scholar, and was for some time a schoolmaster. Astronomy was his favorite study, and he soon acquired eminence as a popular lecturer and writer on this science. His "Architecture of the Heavens," the "Planetary System,' and several other works, which have been re-published in our country, have rendered his name and acquirements familiar to our people. He did much to popularize astronomy, and he was ever active as a speaker and writer. As a man, he was highly esteemed for the kindly qualities of his heart and a cheerfulness of disposition which rendered him a most acceptable guest in every company. His arduous duties as a professor in Glasgow College, and the many labors which he was called upon to perform as a public lecturer and writer for scientific periodicals, operated too severely upon his constitution. He was overworked; his nervous system became deranged, and we find him cut off at 55 years of age, with no special disease but that resulting from an excess of mental labor.

MODE OF CASE-HARDENING WROUGHT AND CAST IRON.

Case-hardening is that process by which wrought-iron is first converted exteriorly into steel, and is subsequently hardened to that particular depth; leaving the central parts in their original condition of soft, fibrous iron. The process is of great importance in the mechanic arts, as the pieces combine the economy, strength, and internal flexibility of iron, with a thin coating of steel, which, although admirable as an armor of defense from wear or deterioration as regards the surface, is unfit for the formation of cutting-edges or tools, owing to the entire absence of hammering, subsequent to the cementation with carbon. Cast-iron obtains in like manner a coating of steel, which surrounds the peculiar shape the metal may have assumed in the iron-foundry and workshop.

The old agents used for case-hardening are animal matters, as the hoofs, horns, bones, and skins of animals; these being nearly alike in chemical constitution, and they are mostly charred and coarsely pounded. Some persons also mix a little common salt with the preceding.

The new method is to coat the article with a paste of prussiate of potash and flour, allow this to dry, then keep the metal in a clear fire until it becomes red-hot, after which it is plunged in cold water.

CURING FELONS.

MESSRS. EDITORS:—A recipe found in your valuable paper (sometime since and cut out for future use) was tried, viz., to cure felons on the finger by applying the spinal marrow of the ox on a piece of cotton rag, changing it every four hours; it quite successfully cured a felon on a lady's finger in this city. The writer feels quite grateful for the information. B.

Boston, Oct. 11, 1859.

THE AMERICAN INSTITUTE.—Although the Institute is known to the public principally through its annual fairs, it has a library of nearly 10,000 volumes for practical men. A list of works recently added to it will be found in another column.

The most valuable part of a man's education is that which he receives from himself, especially when the active energy of his character makes ample amends for the want of a more finished course of study.

Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY
At No. 37 Park-row (Park Building), New York.

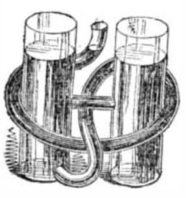
O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.
Single copies of the paper are on sale at the office of publication, and at all the periodical stores in the United States and Canada.
Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.
☞ See Prospectus on last page. No Traveling Agents employed.

VOL. I., No. 17......[NEW SERIES.]......*Fifteenth Year.*

NEW YORK, SATURDAY, OCTOBER 22, 1859.

HYDRAULIC SCIENCE.



YDRAULICS, although one of the oldest, is still one of the most imperfect of the sciences. This opinion refers only to its practical application for purposes of utility, not to the principles upon which it is founded, as these are well known and established beyond dispute. The principal hydraulic machines employed in the useful arts may be divided into three classes, namely, the motors by which the force of falling water is applied as a power to drive machinery; pumps for lifting and forcing water; and pumps for operating through hydrostatic pressure. Among the practical men engaged in constructing and applying hydraulic machines there exists a wide difference of opinion on many subjects connected with their pursuits.

Pumps are about the oldest hydraulic machines in existence, and their number and modifications are endless; yet who can tell which is the best among all the improvements of the present inventive age? As there is but one right way in everything, there must be but one right pump. This idea naturally suggests the question, has a perfect pump, so far as science is concerned, yet been invented? Another question also arises in this connection, namely, the circumstances of application, as a pump which operates perfectly in one situation will not do so in another of a different character. It is well known to our readers that many different opinions have been expressed through our columns, regarding the practibility of drawing water through a pipe half a mile long and then raising it 30 feet high; see page 85 of the present volume of the SCIENTIFIC AMERICAN. As the pressure of the atmosphere can sustain a column of water over 30 feet high and as water will flow into a vacuum of this altitude, if practice is equal to the theory of hydraulic science, water can be drawn such a distance and elevated to such a height. Some of our correspondents—good engineers—assert that this is impracticabl , while others as positively express contrary opinions. So far as the practicability of accomplishing the result is concerned, the question should be, what is the best method of conveying water long distances by pumping? The custom among engineers who employ large motors for suppling cities with water, is to place the engine near the level of the water source on a short suction, and force the water the longest distance. This is a better method than drawing the water the longest distance; but for some situations the inferior mode, as a measure of necessity, may be carried out successfully. In all such cases the circumstances must determine the best measures to be employed.

There is little or no difference of opinion as to the application of the hydrostatic press, and nothing requires to be said on the subject. It is very different, however, with that ancient class of hydraulic machines—water-wheels, more especially, the modern species of turbines in which the water acts by pressure in passing through the buckets. Scores of such wheels, modified in different ways, have been brought before the public, and yet who can tell which is the best, or what is the principle which renders one superior to another. The oldest kinds of such wheels gave out only about 45 and 50 per cent of the water-power; now it is asserted that most of those constructed according to modern improvements give out over 75 per cent, and Mr. Boyden's (of Boston) over 90 per cent of the water-power. A proper method of testing the power of wheels, has been a desideratum. The friction brake applied to the shaft of the wheel is one way, and the lifting of weights by the wheel another. A series of interesting experiments are now going on at the Fairmount Water-works, Philadelphia, under charge of Chief-engineer Birkenbine, for testing the qualities of turbine wheels. The method pursued is to measure the quantity of water which passes through the wheel during the period of time it is raising a certain load. The water is measured by a box of known capacity in cubic feet, and gaged accurately, and all the apparatus is arranged to obtain fair and correct results. Two model wheels have already been tested; one—a center-vent—gave out only 52.10 per cent. Tests are also being made in relation to the capacity of the wheels at different velocities, and the quantity of water which passes through them when standing still, and when in motion, Several days are devoted to each, and quite a number have yet to undergo the testing operation. As some new wheels are required for the Philadelphia Water-works, these experiments were undertaken to determine whether turbines are superior to the breast wheels which are now used, in order to adopt them, if the tests proved favorable. There is one large turbine now in operation at these works, but it is held to be somewhat less efficient (so we have been informed) than the old breast wheels; and all the experiments thus far do not promise much for the new class of wheels. We know manufacturers who have substituted turbines for overshots, and have failed to get as much work from them as from the old motors; on the other hand, turbines have superseded breast wheels at Lowell, Mass., and with the most favorable results. How can we account for these things? Practical science, is simply the best method of securing the best results; and by this rule, hydraulic science is certainly not very generally understood, or why such different results, by different parties? We hope to be able to present the details of the experiments at Philadelphia to our readers, when they are completed. We commend the method pursued by Mr. Birkenbine for conducting them, as we have little confidence in the accuracy of the friction brake by which other parties have tested their wheels. This is a subject of vast importance to thousands in the community, and it deserves wide-spread attention.

STEAM-ENGINE REGULATORS---GOVERNOR CUT-OFFS.

When a steam-engine is employed to drive various machines, such as spinning-jennies in a rope factory, looms in a cotton-mill, burrs in a grist-mill, or lathes in a machine shop, it should be provided with a device for regulating the supply of steam to the cylinder, so as to adapt its power to variations in the machines driven. Thus, in a rope manufactory, if one or more frames are thrown out of operation to mend a broken sliver, or for any other purpose, unless the steam is cut off to the extent of power required to drive these machines, the rest of the machinery will be driven at an undue velocity, much steam wasted, and fuel consumed only to do evil. The old "throttle valve," and the common positive cut-off, are not perfect regulators of the steam power. The "Crumbie & Briggs Cut-off," manufactured by Duryee & Co., No. 177 Lewis-street, this city (which was illustrated in the first number of this volume of the SCIENTIFIC AMERICAN), is an invention designed to admit the exact amount of steam behind the piston during each stroke, to do the duty necessary—no more and no less. It is a self-acting, variable cut-off, by which the puppet-valve in the steam-box is operated by the governor, and it is applicable to all engines in common use. Last week we took the trouble to examine two engines, in separate rope manufactories in Williamsburgh, N. Y., to which this cut-off has been applied, and we received information as to its practical efficiency from the engineers in charge. The first examined was that of Messrs. Wall & Sons, Bushwick-avenue, on which it has been working for several months. This engine is 125 horse power; its cylinder being 24 inches by 5 feet in dimensions, and transmitting the power 1,100 feet before it is applied to drive the machinery in the factory. Even at this distance, the cut-off acted with great regularity, and the engineer said it was saving at the rate of about 500 tuns of coal per annum, and, at the same time, it enabled the engine to do more work.

The other cut-off which we examined was in the adjacent factory of Mr. Lawrence; it was quite new, having been in operation but four days, on a cylinder of 20 inches in diameter and 3½ feet stroke. With this very short trial of its qualities, the saving in fuel effected was about one and a half tuns of coal per day. Besides this great saving in fuel, we were more particularly gratified with the perfect regulation of the steam power for the work to be done, as we are well aware that much breakage and injury of machines in factories are caused by the want of a good regulator.

ONE HUNDRED THOUSAND SUBSCRIBERS!

We believe there is not one reader of the SCIENTIFIC AMERICAN who will not say that it justly deserves a circulation of at least *one hundred thousand copies a week*. We believe there is not a single family in the United States that would not directly receive benefit from the perusal of its pages for one year; as the household recipes in every volume are worth, in cash value, at least ten times the subscription price. We believe there is not one mechanic in the whole country who would not find its visits, during twelve months, equivalent to the gift of twenty years' subscription in gold. We believe there is not any man whatever, who—while professing to read the newspapers and to desire to keep up a proper knowledge and familiarity with the actual progress of the best interests of the nation—thinks it possible to obtain, from any other source, more solid and valuable information than that derivable from the careful reading of one volume of the SCIENTIFIC AMERICAN. A single yearly subscription to this journal is only $2. For six months the paper can be had for $1. Now, we ask, without disparaging any other journal in existence, where can the same amount of useful information be obtained elsewhere for the same small investment? We also say, and we feel justified in asserting it, that the same general information cannot be obtained in any other periodical now published, at any price.

At least twenty journals, each professing to occupy the same field, have come and gone during the fifteen years in which *this* journal has had existence; all of them had no other than a puerile and feeble being, and not one of them possessed the elements essential to success or permanency. The SCIENTIFIC AMERICAN has gone on steadily progressing, and has now a larger subscription list than at any other former period, by several thousands. It will still go on; and as it progresses, it will gather strength and material by which its utility will be more and more apparent.

We ask the friends of the SCIENTIFIC AMERICAN to consider that, for $2, this journal furnishes a yearly volume of between 800 and 900 pages, and from 500 to 600 engravings *never before published*. When ten persons join in a club, the paper can be had for $1.50 a year, or less than three cents a week. This barely pays the cost of publication—a fact which, we apprehend, few of our readers appreciate; and but for our large professional business conjoined in one establishment, we could not publish this journal in any way equal to its present substance and style, and at the present low price.

Reader, we ask your earnest consideration of this article; and when you have finished its reading, do us the favor to take up your hat and a subscription-paper, and see if you cannot form a club of five or ten names at the rates published on another page. If you cannot do this, get a single yearly or half-yearly subscriber; and you will do us a favor which we can and will appreciate.

Our subscription list should be at least *fifty thousand before the first of January next*; and it can be increased to that, and even to *a hundred thousand*, if our friends will aid us. Who will send the first club of ten subscribers?

ANNOUNCEMENT.—We shall commence the publication, in our next issue, of a brief series of articles upon the rise, progress, and present condition of the manufacturing industry of Paterson, N. J., carefully prepared for the SCIENTIFIC AMERICAN by an experienced and competent writer. We believe there is not one of our own readers who will not follow these articles as they are contributed, for three or four weeks, with much interest and profit.

A tooth of some extinct monster was found near Lafayette, Ind., a few days since; it weighed over two pounds. A similar discovery was made in Fountain county about the same time. A portion of the jaw-bone of a mastodon was found, which measured three feet long and one foot wide at the widest part.

FAIR OF THE AMERICAN INSTITUTE.

Since our last issue new machines have been introduced, and the fair has become more varied and extensive. We continue our notices.

VALVES OF STEAM-ENGINES.

On March 10th, 1849, Geo. H. Corliss, of Providence, R. I., patented an invention for attaching the governor of a steam-engine directly to the induction valves in such a manner that the speed is regulated by varying the point of the cut-off; if the speed increased, the expansion of the balls of the governor caused the steam to be cut off at a shorter part of the stroke, and if the speed diminished, the fall of the balls kept the valves open and allowed a full head of steam during a greater part of the stroke. The idea had been previously suggested, but it was first rendered really of practical value by Corliss' combinations, and when reduced to practical use was found to effect a great saving of steam, and consequently of fuel. Messrs. Corliss & Nightingale began to sell their engines on the plan originated by Watt. They would take a certain fixed price, or would take the value of the coal saved by their engine in a given period in doing the same work as had been done by an ordinary steam-engine, at the option of the purchaser. In all cases the purchasers, after a fair and thorough comparison of the Corliss engine with the one displaced by it, decided to pay the fixed price rather than to give the value of the coal saved during the period agreed upon. Already the practical application of this simple idea has saved hundreds of thousands of dollars' worth of fuel to the users of steam-engines, and it has very justly yielded a handsome fortune to the man who accomplished it.

The established and unquestionable superiority of the Corliss engine in the economy of fuel has stimulated inventors to devise other means of connecting the governor with the induction valve, so as to accomplish the same results as Mr. Corliss without violating his patent; and any one who will go through the history of these inventions must be impressed with the boundless fertility of ideas in the minds of our inventors. If we remember rightly, there were eight different engines, in which the governor operated on the induction valve, exhibited at the fair last year. On page 8, this volume of the Scientific American, we illustrated an engine of this character, invented by Crumbie & Briggs, of No. 177 Lewis-street, New York, and in another column will be found some statements of what it has accomplished. In the fair this year there are three engines in which the cut-off is varied by the governor. One of these is operated by a link connection, which varies the slide of the valve by raising or lowering the fulcrum of a crank. This is Uhry & Luttgen's patent of March 20th, 1855, and Sept. 7th, 1858. The engine was made by Todd & Raferty, of Paterson, N. J. Another engine has C. A. Schultz's patent cut-off, illustrated in No. 13 of the present volume, in which the governor turns a cam on its shaft and thus varies the point at which the induction port is closed. The third engine was made at the Novelty Works, in this city, and has C. H. Reynold's cut-off—the simplest of the three. In this the puppet valves are operated by one rod, while another rod, connected with the governor, enters the steam chest and, by its turning, varies the point of the stroke at which the valves close. It would be impossible to give a full idea of these several devices without diagrams, but the great interest which the subject is attracting among engineers has induced us to note what is being exhibited in this department at the present fair.

STEAM PUMPS.

There are a number of steam pumps in the fair. Holmes & Foster, of Brooklyn, N. Y., have a direct-acting, straight cylinder pump, in which the cylinder of the pump is on a line with the cylinder of the steam-engine, and the valves are shifted by an arm on the piston-rod, which simply strikes a shoulder on the valve-rod at each stroke. They say that they run a small engine with this valve at the rate of 1,500 strokes a minute.

MOLDING-MACHINE.

S. M. Hamilton, of Baltimore, Md,, has in operation a molding-machine, which, though the result of five inventions by three men, and producing a wonderful variety of effects, is one of the simplest machines conceivable. An upright cutter-head, provided with suitable slots for receiving the cutters and a set screw to hold them, is capable of a great number of combinations. The molding is pressed close to the cutter by a cam and drawn away by a spring, producing a wave in the molding, and finally, by the simple process of feeding the molding diagonally to the cutter, more varied and beautiful effects are produced.

COFFINS.

A very neat model of Marshall's coffin, described and illustrated in another column of this week's Scientific American, is on exhibition, and attracts considerable attention.

BEE-HIVE.

Francis Hart & Co., No. 63 Cortlandt-street, New York, have placed in the fair a hive of live bees, which are busily at work and which pass in and out of the hive through holes which are covered with little hanging doors of zinc, which are intended to keep out that moth of which the larvae are so destructive to the honey bee. It is the invention of Mr. Steele, and is said to be perfectly effectual, the moths not being sufficiently strong to push open the doors while the bees can do it with ease. Two sets of doors are provided, one swinging inward for the entrance of the bees and the other swinging outward for their exit.

CAST-STEEL PLOWS.

In No. 15 of the present volume, in speaking of Stenton's landside-cutter, we remarked that the plow to which it was attached was of cast-steel, and was the handsomest plow that we had ever seen. The cast-steel plow is the product of a series of western inventions, the clayey soil of that region having stimulated inventors to devise a moldboard so fashioned and polished that it would not load with dirt, however adhesive the soil. Their efforts have been crowned with success. The graceful moldboard of the cast-steel plow, with its polished surface as smooth as glass, will turn a clean furrow through any field which it is possible to find. The plow in the fair, of which we have spoken, was made by John Deere, of Moline, Ill., and we venture the opinion that it has never been surpassed by any plow which has ever been seen on the face of the earth.

WEEKLY SUMMARY OF INVENTIONS.

The following inventions are among the most useful improvements patented this week. For the claims to these inventions the reader is referred to the official list on another page.

MACHINE FOR CUTTING OUT BOOT AND SHOE SOLES.

This invention consists in the use of a suitable die attached to an arbor which has an intermittingly rotating movement and also an up-and-down movement, and so operated that the die will cut out the soles from the leather alternately in opposite positions as regard the toe and heel, and thereby produce the work with the least possible waste of "stock," and by an exceedingly simple means. The invention also consists in the peculiar means employed for operating the arbor and die, both as regards the rotating and up and down movement, and the gaging or determining of the length of each movement. The invention further consists in a novel means employed for operating a gage, whereby the same, at the proper time, serves as a stop to secure proper adjustment of the leather beneath the die, and is removed at the proper time to permit the cut soles and refuse to be discharged from the platform, previous to each cut of the die. The invention consists lastly, in the employment of an adjustable bed to receive the die, so arranged that it is made to withstand the action of the die much longer that if stationary. The patentee of this improvemen is W. Munroe, of West Auburn, Maine.

IMPROVEMENTS IN ELECTRO-MAGNETIC TELEGRAPHS.

With this invention a great progress has been made in bringing telegraph instruments to perfection. To transmit 2,000 words an hour is considered exceedingly well done with Morse's instrument; while with this instrument it is easy to transmit from 10,000 to 15,000 words. The dispatches are set up by types which together with the composing stick form a portion of the circuit, and which are are so arranged that a double closing of the circuit is effected as each tooth comes in contact with the closing mechanism. The dispatches are recorded by means of a siphon pen, either in a continuous line or by dots or lines exactly in the same characters in which they are represented by the types, so that each man may use his own signs and that a dispatch can be transmitted with perfect secrecy. The inventor of this instrument is Dr. L. Bradley, of Folsom, Cal.

MANUFACTURE OF ILLUMINATING GAS.

In the manufacture of illuminating gas, more especially in its manufacture from resin, resin oil, or oils or fats of any kind, the accumulation of carbon on the sides and bottom of the retort has heretofore been a source of great annoyance, requiring the frequent stoppage of the process to clean out the retort. The object of this invention is to obviate this difficulty, and to enable gas to be made continuously; and to this end the nature of the invention consists in the admision to the retort, during the gas-making process, of chlorate of potassa or other substance in which there is an excess of oxygen which will combine with the excess of carbon in the gas-making material, and cause it to pass off from the retort as gas. The inventor of this device is Alfred Marsh, of Detroit, Mich.

GASKETS FOR STEAM AND OTHER JOINTS.

The several materials at present employed for gaskets in making steam joints, are all liable to serious objections. Copper, which makes the safest joints, requires to be so tightly screwed-up as to produce frequent breakage of bolts and caps. Lead is liable in a less degree to the same objection, and besides seldom makes a perfectly tight joint; and india-rubber, which is in some respects the best, is liable to blow or squeeze out, or to be destroyed in removing the caps. The object of the present invention is to obviate these difficulties, and it consists in making a gasket of a ring of india-rubber, partly encased with copper, or other tough but ductile metal, by which means the safety and neatness of the copper gasket are combined with the steam-tight quality possessed by india-rubber, besides obviating the necessity of such tight screwing-up as to be liable to break the bolts and caps, and preventing the gaskets being injured by the removal of the caps or other portions of the joints. This is the invention of J. S. Colvin, of Alleghany City, Pa.

CHROMATIC KEY-BOARD FOR PIANO-FORTES.

This invention by Mathieu Philippi, of Troy, N. Y., consists in so constructing the upper surfaces of the several keys of a piano-forte, that, while the ordinary form of the key-board is preserved, portions of all the keys are brought to the same level in the key-board, the principle object of such construction being to factlitate the playing of chromatic passages, but other advantages being obtained by it.

HYDRAULIC ENGINE.

The object of this invention is to obtain a means whereby water may be advantageously used as a motor in those cases where there is but little fall. The invention consists in the use of lever frames provided with buckets having sliding bottoms, and used in connection with gates attached to pen-stocks, the gates and sliding bottoms being connected with the working parts as to be operated automatically and cause the water to actuate the lever frames, so as to impart a continuous rotary motion to a shaft from which the power is taken. This contrivance is the invention of Miles Keely, and G. W. Cressman, Barren Hill, Pa.

Inventors who apply for patents should be cautious not to confer upon their agents by power-of-attorney, the right to withdraw the $20 in case the application should be rejected. Honorable agents do not care to receive this particular power, unless there is some express consideration beforehand whereby they should be clothed with it. Our reasons for this caution is that rejected cases are frequently coming into our hands for examination, and upon proceding to discharge the duty, we find that the agent, by virtue of the power-of-attorney, unwittingly signed by the inventor when he executed the papers, has withdrawn the application and received back the $20. This leaves the unadvised inventor no other alternative but, either to abandon his claim, or incur the expense of a new application.

A small pamphlet, in which is given some useful tables showing the width of belt necessary to be used for producing different amounts of horse-power, how to put bands upon pulleys to avoid kinks, &c., may be had gratis by addressing the New York Belting and Packing Company, 37 Park-row, this city.

ELECTROTYPING BY LIGHTNING.

In front of the Bibliotheque Imperiale at Paris there exists an open space, ornamented with a large bronze fountain, which was coated with copper by the electrotype process. The operation was carried on in a workshop, built for the purpose, at the neighboring village of Auteuil. While the upper basin, from which the water flows through sixteen tigers' mouths, was in the bath of sulphate of copper, a violent thunderstorm burst over Paris, and the lightning fell close to the workshop in question. Immediately after the storm had subsided, the electrotyper caused the liquid to be poured off, in order to examine the vase, and to assure himself that the electric fluid had not deranged the deposit. He was extremely surprized to discover that the copper had been deposited on the tigers' heads in streaks or lines, and so happily arranged that they form a veritable tiger's skin, covered with hair, in as perfect a manner as if they had been produced by the hands of a skillful engraver. This curious effect of the electric fluid has accordingly been allowed to remain, and the result is a great addition to the expressive character of the work. The fountain now erected has a square garden round it, in imitation of those of London, and was inaugurated on Aug. 13th, previous to the emperor's *fete*. The successful completion of this, the largest work ever attempted by the electrotype process, will be followed by an application of a copper deposit on the fountains of the Place de la Concorde, and all the iron and bronze statues in the capital.

FOREIGN SUMMARY—METALS AND MARKETS.

A method of taking photographs upon plates of polished copper for the purpose of engraving therefrom, has just been made known to the public, through the London *Mechanics' Magazine*, by Colin Smart, of Sunderland. It is described as follows:—Take some perchloride of iron and pour it over a plate of polished copper (such as is used by engravers), when the plate will at once be affected and its color changed. It is now washed with cold water and dried with a soft cloth, when it is sensitive to sunlight. If a negative picture is placed upon it in the ordinary way and exposed to sunlight, a beautiful black positive picture will be produced on the copper in the course of ten minutes or a quarter of an hour This establishes the fact of pictures being taken direct on a copper plate for the purpose of engraving directly from it.

J. Scott Russell, the builder of the *Great Eastern*, has taken out a patent for constructing vessels of what is called "yellow" or "Muntz metal." Iron plated vessels are liable to become foul under water by the adherence of marine vegetation and minute shells; the object of substituting yellow metal plating for the iron is to prevent such fouling of vessels bottoms. The framing of the vessel is specified to consist of angle bars of Muntz metal and the sheets or plates of the same metal fastened by rivets of similar material—the whole hull, in short, to be made of brass. This alloy is a brass composed of 60 parts, by weight, of the best copper and 40 of spelter. It is well known that copper and zinc combine in different proportions, producing yellow metal of various qualities. The foregoing proportions are supposed to be the best, as it is believed the brass thus made is nearly like iron in its electrical character, and that if the iron of the machinery is placed in contact with it, no electrical action will take place, as when iron and pure copper are placed in contact. This application of brass will never amount to much in a practical point of view. Such metal is far more expensive than iron, and experiments have proved it to be less durable and vastly inferior in strength.

Prince Albert, as President of the British Association for the Advancement of Science, which lately met at Aberdeen, made an introductory speech which does him great credit, as he paid the highest possible compliment to those who are engaged in scientific pursuits. He said his election was an act of humility on the part of the members of the association; but although he felt unworthy of occupying his position, yet it would have appeared like pride on his part if he had refused the honor. He accepted the situation, as the representative of the people and as the husband of the Queen, to testify their appreciation of the labors of the Association for the Advancement of Science. We give the following paragraph from his speech:—"Science is not of yesterday. We stand on the shoulders of past ages, and the amount of observations made and facts ascertained have been transmitted to us and carefully preserved in the various storehouses of science. Other crops have been cut, but still lie scattered on the field; and many a rich harvest is ripe for cutting, but waits for the reaper. Economy of labor is the essence of good husbandry, and no less so in the field of science. Our association has felt the importance of this truth, and may well claim, as one of its principal merits, the constant endeavors to secure that economy."

PRICES OF FOREIGN METALS, SEPT. 29.

	£	s.	d.
Iron, English Bar and Bolt:—			
In London, per tun.	7	0	0
In Wales	6	0	0
In Liverpool	6	10	0
Staffordshire Bars	7	10	0
Sheet, single	9	0	0
Double	10	10	0
Hoop	8	10	0
Rod, round	7	10	0
Nail Rod, square	7	10	0
Shipping Iron:—			
Staffordshire Bars	7	10	0
Sheet, single	9	0	0
Double	10	10	0
Hoop	8	10	0
Rod, round	7	10	0
Nail Rod, square	7	10	0
Iron, Rails, in Wales, cash	6	5	0
Do. 6 months	6	0	0
In Staffordshire	7	0	0
Railway Chairs, in Wales	4	0	0
In Clyde	4	0	0
Pig No. 1, in Clyde	2	13	6
3-5ths No. 1 and 2-5ths No. 3	2	13	0
Staffordshire Forge Pig, at the works, L. W., nom.	4	0	0
Welsh Forge Pig	—	—	—
Acadian Pig, Charcoal	8	15	0
Scotch Pig, No. 1, in London	3	10	0

	£	s.	d.
Iron, Swedish, bars, per tun	11	10	0
Russian C C N D	17	0	0
Steel, Swedish Keg, nom	18	10	0
Do. Rolled	19	10	0
Faggot	20	0	0
Spelter	21	0	0
Zinc, in sheets	27	10	0
Copper, Tile	107	10	0
Tough Cake	107	10	0
Sheathing & Bolts, per lb	—	—	12
Sheet	—	—	12
Bottoms	—	—	12½
Old	—	—	10
Yellow Metal	—	—	10
Lead, British Pig	22	15	0
Spanish	22	10	0
Sheet	23	10	0
Tin, English Block, nom	136	0	0
Bar	137	0	0
Refined	142	0	0
Foreign Banca	144	0	0
Straits	140	0	0
Tin Plates, Charcoal, IC, per box	1	10	0
Do. IX	1	16	0
Coke, IC	1	5	0
Do. IX	1	13	0
Canada, Plates, p'r t'n	12	0	0
Quicksilver, per bottle	7	0	0

[The above are prices within three per cent discount, the pound being valued at $4.85.

New York Markets.

COAL.—Anthracite, $4.50; Liverpool, $8.50; Sidney, $5 per tun.

COPPER.—Refined ingots, 22¾c. per lb.; sheathing, 26c.; Taunton yellow metal, 20c.

COTTON.—Ordinary, 8½c. a 8¾c.; good ordinary, 9½c. a 10c.; middling, 11⅜c. a 11¾c.; good middling, 12c. a 12¾c.; middling fair, 12⅜c. a 13c.

FLOUR.—State superfine brands, $4.60 a $4.65; Ohio common, $4.75 a $5; Michigan, $4.65 a $4.75; Genesee, extra brands, $5.40 a $7; Missouri, $4.75 a $7; Canada, $5.50 a $6.30; Virginia, $6.25 a $7.25.

HEMP.—American undressed, $140 a $150; dressed, from $190 a $210. Jute, $90 a $95. Italian, $275. Russian clean, $200 per tun. Manilla, 6½c. per lb.

INDIA-RUBBER.—Para, fine, 56c. a 60c. per lb.; East India, 40c. a 50c.

INDIGO.—Bengal, $1 a $1.60 per lb.; Manilla, good to prime, 55c. a $1.10; Guatemala, $1 a $1.15.

IRON.—Anthracite pig, $23 a $24 per tun; Scotch, $22.50 a $23; Swedish bar, ordinary sizes, $87.50 a $90; English refined, $53 a $54; English common, $43 a $15; Russian sheet, first quality, 11c. a 12c. per lb.; English, single, double and treble, 3½c. a 3⅞c.

LEAD.—Galena, $5.75 per 100 lbs; German and English refined, $5.70, bar, sheet and pipe, 6c. a 6¼c.

LEATHER.—Oak slaughter, light, 32c. a 34c. per lb.; Oak, medium, 33c. a 35c.; Oak, heavy, 30c a 33c.; Hemlock, slaughter, light, 23c. a 23½c.; Hemlock, medium, 23c. a 24c.; Hemlock, heavy, 22½c. a 23c. Upper Leather.—Rough, oak, light, 31c. a 33c.; Oak, heavy, 30c. a 31c.; Oak, Southern tan, 30c. a 31c.; rough Hemlock, good light, 26c. a 27½c.; Hemlock, good heavy, 24c. a 26c.; Hemlock, polished, 14c. a 15c.; Hemlock, buff, 15c. a 18c. Cordovan, 50c. a 60c. Morocco, per dozen, $18 to $20. Patent enameled, 16c. a 17c. per foot, light Sheep, morocco finish, $7.50 a $8.50 per dozen. Calf-skins, oak, 57c. a 60c.; Hemlock, 56c. a 60c.; Belting, oak, 32c. a 34c.; Hemlock, 28c. a 31c.

LUMBER.—Timber, white pine, per M feet, $17.50; Timber, yellow pine, $35 a $36; Timber, oak, $18 a $28; Timber, eastern pine and spruce, $16; White Pine, select, $25 a $30, White Pine, box, $14 a $18; White Pine, flooring, 1¼ inch, dressed, tongued and grooved, $24.50 a $25; Yellow Pine, flooring, 1¼ inch, dressed, tongued and grooved, $29 a 32; White Pine, Albany boards, dressed, tongued and grooved, $20 a $21; Black Walnut, good, $45; Cherry, good, $45; White Wood, cherry plank, $42; Spruce Flooring, 1¼ inch, dressed, tongued and grooved, each, 22c. a 24c.; Spruce Boards, 15c. a 17c.; Hemlock Boards, 12½c. a 14c.; Hemlock Joist, 3 by 4 inch, 12½c. a 14c.; Shingles, cedar, per M, $28 a $35; Shingles, cypress, $12 a $25; Staves, W. O. pipe, light, $55 a $58. Staves, white oak, pipe, heavy, $75 a $80; Staves, white oak, bbl. culls, $20; Heading, white oak, hhds., $65. Mahogany—Duty, 8 per cent. ad. val.—St. Domingo, fine crotches, per foot, 35c. a 45c.; St. Domingo, ordinary do., 20c. a 25c.; Honduras, fine, 12½c. a 15c.

NAILS.—Cut at 3c. a 3⅜c. per lb. American clinch sell in lots, as wanted, at 5c. a 6c.; wrought foreign, 3¾c. a 3½c.; American horse-shoe, 14½c.

OILS.—Linseed, city made, 57c. per gallon; linseed, English, 58c.; whale, bleached winter, 53c. a 60c.; whale, bleached Fall, 58c. a 60c., sperm, crude, $1.35; sperm, unbleached winter, $1.40; sperm, unbleached Fall, $1.35; lard oil, No. 1 winter, 90c. a 95c.; refined rosin, 30c. a 40c.; camphene, 47c. a 49c.; fluid, 54c. a 56c.

RESIN.—Common, $1.60 per 310 lbs. bbl.; No. 2, &c., $1.70 a $2; No. 1, per 280 lbs. bbl., $2.25 a $3; white, $3.25 a $4.50; pale, $5.50.

SPELTER plates, 5⅛c. a 5¼c. per lb.

STEEL.—English cast, 14c. a 16c. per lb.; German, 7c. a 10c.; American spring, 5c. a 5½c.; American blister, 4½c. a 5½c.

TALLOW.—American prime, 10¾c. to 10⅞c. per lb.

TIN.—Banca, 32¼c. a 32¾c.; Straits, 30½c.; plates, $7.25 a $9.25 per box.

TURPENTINE.—Crude, $3.62½ per 280 lbs.; spirits, turpentine, 46c. per gallon.

WOOL.—American, Saxony fleece, 50c. a 55c. per lb.; American full blood merino, 46c. a 48c.; extra, pulled, 45c. a 50c.; superfine, pulled, 37c. a 41c.; California, fine, unwashed, 24c. a 32c.; California, common, unwashed, 10c. a 18c.; Mexican, unwashed, 11c. a 14c.

ZINC.—Sheets, 7¼c. a 7½c. per lb.

The foregoing rates indicate the state of the New York markets up to October 12th.

The wool trade is growing into vast proportions, and no better sign could be required than this in regard to our increase in a very stable class of manufactures. The finer qualities are now more sought after, thus indicating progress in the production of superior fabrics. About 85,000 lbs. of domestic fleece were sold last week. There were arrivals of 985 bales of native and 284 of foreign wool.

During the week ending the 10th inst., the quantity of boots and shoes exported from New York was as follows: To Danish West Indies, 9 cases, $447; Cuba, 3 cases, $600; Dutch West Indies, 3 cases, $173; British West Indies, 3 cases, $364; Chili, 58 cases, $2,946: total, 76 cases, $4,530; to clothe the feet of the creoles and others in the West Indies.

Leather has a downward tendency, but the sales have been so limited that the change in prices is not worth noticing. During the month of September, 255,889 sides of leather arrived in the city.

Flour has increased in price a little over ten cents, owing to a break in the Erie canal, which prevented the usual amount of arrival.

American sperm candles have been in active demand at from 38c. to 50c. per lb.

The cotton market has been somewhat dull. The arrivals during the week have been 4,476 bales, of which Texas sent 614, Georgia, 2,384; South Carolina, 1,220; Virginia, 41; Maryland, 178; and the rest foreign.

Well's Commercial Express (Chicago) states that 3,472,289 bushels of wheat have arrived in that city, this Fall, which is an increase of 1,000,000 over the arrivals in 1858 for the same period. The crop this year is stated to have been a very large one.

About 35,000 sides of lace leather are used up annually for the manufacture of belting in the establishment of J. Davis, Pawtucket, R. I. The Dunnel Manufacturing Company, of the same place, print from 6,000 to 10,000 pieces of calico per week, by six machines.

There were shipped on the Lehigh canal, during the week ending the 8th inst., 31,000 tuns of anthracite coal, being an increase of 2,850 over the same period in 1858; and thus far, there has been an increase of 97,000 tuns over the total export of last year.

SALE OF PATENTS.

We understand that T. H. Wilson & Bro., of Athens, Ga. (whose patent horse-power was illustrated on page 256, Vol. XIV., SCIENTIFIC AMERICAN), have sold the right for Texas for $10,000.

Mr. Theodore Frederick Weil, of New Orleans, returned from England by the last steamer, having sold his English patent on a fish-hook to a Birmingham house for £5,000 ($25,000). The hook is of the sockdologer kind, and has been pronounced an excellent invention. Patents were secured upon it for the United States, Great Britain and France, through the Scientific American Patent Agency.

We congratulate our clients on their good success.

A SUBMARINE OYSTER SALOON.—Mr. E. Maillefert, who removed the rocks at Hellgate, East river, N. Y., proposes to build a mammoth diving-bell, with which to work the mammoth oyster-beds recently discovered in Long Island Sound. Parties may then enjoy the pleasure of taking the oysters from their beds and devouring them at a depth of six fathoms below the surface of the Sound.

NEW CEMENT FOR TEETH.—Freshly calcined oxyd of zinc, 9 parts; finely powdered borax, 1 part; finely powdered silex, 2 parts; all mixed well together. A correspondent of the *Druggist* states that this makes a firm plastic mass, and that it is used by French and German dentists.

NATIVE iron has been discovered in but few parts of the world. Specimens have been found in Austria; and in Canaan, N. Y., there exists a seam of native iron, 2 inches in thickness, from which horse-nails have been forged.

ISSUED FROM THE UNITED STATES PATENT OFFICE

FOR THE WEEK ENDING OCTOBER 11, 1859.

[Reported Officially for the SCIENTIFIC AMERICAN.]

. Pamphlets giving full particulars of the mode of applying for patents, 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.

25,709.—W. H. Allen and A. J. Bentley, of New York City, for an Improved Rope-nipper:

We claim the rope-pinchers, composed of the grooved pivoted jaws, D, and levers, A, and otherwise constructed as shown and described.

[The object of this invention is to dispense with the present tedious and objectionable mode of "taking a sheep shank," and to provide an instrument with which a pulley-block can be securely attached to any rope in a few seconds without being liable to dip.]

25,710.—Thos. C. Avery, of New York City, for an Improved Galvanic Battery:

I claim, first, The use of the insulating amalgam, substantially as described, in combination with the surfaces of the zincs of galvanic batteries for telegraphic purposes, for obtaining the results before set forth.

Second, I also claim the use of two or more independent strips of platinum in the construction of galvanic batteries for telegraphic purposes, as an improvement on the Grove Battery, for the purpose of obtaining the results before set forth, but irrespective of their use in combination with the insulated amalgamated zines before described.

25,711.—Augustus Bailey, of Gardiner, Me., for an Improved Machine for Bending Wood:

I claim the combination of the aforesaid horizontal sliding roll, G, and graduated hook, 2, with the semi-cylinder, A, acting substantially in the manner and for the purpose set forth and described.

25,712.—J. D. Baldwin, of Columbus, Ga., for an Improvement in Composition for Paint Oil:

I claim, as a new or improved article of manufacture, the paint oil composed of the ingredients specified, essentially in the proportions named and prepared, substantially as described for use as set forth.

25,713.—W. D Ballard, of Kansas City, Mo., for an Improvement in Steam Boiler Furnaces:

I claim the arrangement of the fireplace, B, the partitions, f f g h h, of the setting, and the chimney F, substantially as described, with the two-flued boiler.

[A description and engraving will be found on another page.]

25,714.—G. F. Benckert and D. H. Benckert, of Philadelphia, Pa., for an Improved Signal-bell:

We claim, first, The latch, D, operating with the hammer and pull-bar, with the one spring, as specified.

Second, Placing the working parts of a signal bell within the sounding-box, substantially as and for the purpose specified.

25,715.—S. E. Blake and Thos. Johnston, of Louisville, Ky., for an Improvement in Hemming-guides for Sewing-machines:

We claim, first, The combination and arrangement of the spiral tongue, G, flanged roller, F, f, and yielding plate, B, for the purpose set forth.

Second, The spring-plate, B B', constructed as described with an oblique slot in the limb, B, combined with the adjustable gage, C, in the manner and for the purpose set forth.

Third, The yieldieg pressure roller, K, adapted and applied substantially as set forth, to smooth and flatten the hem previous to stitching.

25,716.—Reinhold Boeklin, of Jersey City, N. J., for an Improvement in Connecting-rods applied to Cranks:

I claim giving the rod elasticity, both longitudinally and in a lateral direction, parallel with the plane of revolution of the crank, by extending it in the form of a bow or arc, beyond the crank-pin or wrist, and making such bow elastic, substantially as and for the purpose specified.

27,717.—J. K. Booton, of Luray, Va., for an Improvement in Machines for Breaking and Cleaning Hemp:

I claim, first, The combination and arrangement of the cylindrical grating, J J, K K K, and lever arms, x x y y, and swords, z z, and concave grating b2 b2, with the hurder cylinder, F, formed with alternate plain edges, and serrated ridges or ribs, q r, q r, substantially as set forth and described.

Second, I claim the combination and arrangement of a fan or blast wheel, C2 C2 C2, with the hurder cylinder, P q r, and endless apron, u u, substantially as set forth and described.

25,718.—L. Bradley, of Folsom, Cal., for an Improved Telegraphic Machine:

I claim, first, Arranging the type and mechanism for closing the circuit, substantially as described, or in an equivalent manner, so that a double closing of the circuit is effected, as each tooth of the type comes in contact with the closing mechanism.

Second, The combination of the type and composing-sticks with a yielding insulating plate, carrying the mechanism for breaking and closing the circuit, whereby the contact of the closing mechanism with the face of the type is insured.

Third, The vibrating hook, g, and bar, i, or their equivalents, in combination with a yielding insulating plate and type and sticks, for the purpose of closing the circuit.

Fourth, The combination of the composing-stick and type with the spring, c, or its equivalent, arranged substantially as described, so that the type are made to form a portion of the circuit for the purpose set forth.

Fifth, The combination of the carrying-band, and mechanism for closing the circuit, with the composing-sticks, and type arranged on the band, in relation to each other, substantially as described, so that the sticks are successively carried forward in the order in which they are arranged, brought into the current, and the message transmitted without interruption.

Sixth, The combination of the movable platform carrying the recording mechanism, with the rotating cylinder carrying the record-paper, arranged substantially as described, so that the message as transmitted is recorded in parallel lines on the paper.

Seventh, Constructing the composing-sticks and types, substantially as described, so that the sticks when filled with the type shall present an even and flat surface on either side.

Eighth, The application of a siphon pen, constructed and arranged substantially as described for the purpose of recording the messages.

Ninth, The nclined plane, B, arranged substantially as described, in combination with the band, D, whereby the composing-sticks are received from the band in such manner as not to interfere with each other's delivery, and in the same order in which they were placed on the band.

25,719.—T. B. Burtis, of Chicago, Ill., for an Improved Refrigerator:

I claim the employment or use of the ice-chamber, B, water chamber, C, air-passages, D E G, and a series of provision chambers, F, arranged relatively with each other, for the purpose set forth.

[This invention consists in a peculiar arrangement of an ice-chamber, water-chamber, air-passages and provision-chambers, so arranged that currents of pure air are made to pass simultaneously through a series of separate provision chambers, keeping the contents cool, and removing therefrom the impure air and deleterious gases.]

25,720.—John Buzby, of Moorestown, N.J., for an Improvement in Grate-bars:

I claim making the mortises, m, and the tenons on the grate-bars, alternately, one above the other, so that the mortises may be made entirely through the bar, without interfering with the tenons, and so the tenons may extend entirely through the bar without interfering with one another, and be made so long as not to be drawn out of the mortise by the warping or springing of the grate-bars.

25,721.—A. S. Capron and D. S. Davis, of Grass Lake, Mich., for an Improvement in Potato-diggers:

I claim the arrangement of axle, B, wheels, A A', and wheel, C, pinion, F, crank and shaft, E, guides, e e, roller, y, rake, D, apron, H, and hooks, i i, the whole being connected together and operating substantially as and for the purpose specified.

25,722.—Tisdale Carpenter, of Providence, R. I., for an Improvement for Operating the Valves of Steam-engines:

I claim the adjustable graduated scroll-shaped side cam, so arranged as to be traversed and adjusted by a regulator or governor, while the engine is in motion, substantially as described or adjusted and fixed or set by hand while the engine is stopped.

25,723.—Samuel Chace, of Providence, R. I., for an Improvement in Awnings:

I claim the application of the various devices described, viz., the gear-toothed tracks, C C, with the pinions, E E; also the dogs, G G, and finally the box or covering, K, to an awning, the whole being constructed substantially as and for the purposes set forth.

25,724.—James S. Colvin, of Alleghany, Pa., for an Improved Gasket for Steam and other Joints:

I claim a joint gasket, composed of a ring of india-rubber, encased with copper or other metal, substantially as described.

25,725.—Norman Cowles and A. Hulbert, of Edgefield, S. C., for an Improvement in Spring-back Carriage-seats:

We claim the employment of springs, D D, substantially as described, when in connection with a back, B, supported by hinged uprights, in the manner and for the purposes set forth.

25,726.—Biram C. Davis, of Binghamton, N. Y., for an Improved Hand-machine for Wiring Blind-rods:

I claim, first, The setting-form, A, which sets over the rod, C, and straddles the slats, D, and which is secured under the blind by means of the stationary bar, B, in such a manner as to let the staples through the eye of the staple in the rod, C, into the slats; D D being the equivalent means employed for setting the staple into the rod, C, in combination with the adjustable arrangement, K, operating substantially as described.

Second, I claim, in combination with the form, A, the joint lever, G, flange-rod or drivers, H, dividing-slide, I, inclined needle-bar, J, the whole being arranged substantially as described and for the purpose set forth.

25,727.—E. Dougherty, of Cedarville, Ohio, for an Improved Wheelwright Machine:

I claim the combination of devices as specified, substantially as and for the purposes set forth.

25,728.—H. F. Drott, of Cumberland, Md., for an Improved Shutter-hinge:

I claim the employment of the spring, E, as constructed, when used in connection with the plate, n, as constructed, the two being used in combination with any common shutter-hinge substantially as and for the purpose specified.

25,729.—B. Wells Dunklee, of Boston, Mass., for an Improvement in Furnaces:

I claim the general arrangement, as described, of the space, Q, the chamber or dome, I, the dampers, M and N, and pipe or T-L, and the ventilating-pipe, S, and smoke-drum, G, and ventilating-pipe, P, and smoke-pipe, t, and air duct, R, and series of dampers in flues, F, in relation to each other and with respect to the flue, F, and hot-air chamber, E, the whole being made to operate substantially in the manner and for the purposes set forth.

25,730.—Wm. O. Grover and Wm. E. Baker, of Boston, Mass., and O. B. Potter, of New York City, for an Improvement in Sewing-machines:

We claim a non-penetrating instrument and a piercing eye-pointed needle, acting together to make an interlocking of threads, substantially as represented, in combination with a clamping-apparatus, acting substantially as specified, the combination being substantially such as set forth, and acting to make a double-looped stitch substantially in the manner described.

And, second, We claim mounting a spool or bobbin, from which thread is to be delivered for the purpose of sewing by machinery, upon two truncated cones, substantially as set forth.

25,731.—Horace Gushee and John G. Dawes, of San Francisco, Cal., for an Improvement in Bee-hives:

We claim the combination of the comb-frames, D, rods, E staples, a' a, and cleat, H, arranged as described, whereby the comb-frames may be readily removed or inserted in the manner described and for the purpose specified.

25,732.—John R. Guy, of Springfield, Ohio, for an Improved Bedstead:

I claim the arrangement of the frame, C D E, with reference to the heads, B A, and their connection by means of the joints, H G, and slides, I, and plates, J, or their equivalents, substantially as described.

25,733.—Joshua Hendy, of San Francisco, Cal., for an Improved Double-friction Coupling:

I claim the application of two such truncated cones to one coupling (one at either end), and operated by a single lever, so as to work in cavities or conical sleeves attached to pulleys or wheels arranged on one shaft, so that said shaft may be run slow or fast, or backward, or forward, or entirely stopped, without stopping the prime-motor or changing its speed, substantially as set forth and explained.

25,734.—Hatsel Higgins, of Orleans, Mass., for an Improved Steering-apparatus:

I claim the arrangement, substantially as specified, of the rudder-head intermediately between the supports which, respectively, serve as bearings to the hand-wheel shaft and the rudder-operating gear, said shaft extending back of and over said gear, whereby the rudder may be operated either by the gear or by a tiller from the wheel-shaft, as described; and also compactness of steering-apparatus and economy of deck-space is obtained.

25,735.—Isaac H. Hobbs, Abraham W. Rand and Geo. H. Sellers, of Philadelphia, Pa., for an Improvement in Hot-air Furnaces:

We claim, first, The general arrangement of the subdivided air-chamber, in connection with the separate receiving and discharging openings, substantially in the manner and for the purpose specified.

Second, We also claim the deflecting diaphragms, in combination with the above-described arrangement, in the manner substantially and for the purpose set forth.

25,736.—Sidney S. Hogle, of Cleveland, Ohio, for an Improvement in Rotary Harrows:

I claim the combination of a series of individually-rotating toothed frames or wheels, with a rotating central frame or wheel, in such a manner that the said parts will operate substantially in the manner set forth.

25,737.—D. E. Holmes, of Halifax, Mass., for an Improved Clothes-frame:

I claim the combination of the standards, A A, horizontal hinged-frames, C C, when the same are sustained and braced by slotted braces, F F, all arranged substantially in the manner as and for the purposes set forth.

[This frame is so arranged that it can be spread out to receive a large amount of clothing, and, at the same time, the parts constituting the frame are so constructed that when not in use it can be closed in a very compact state, so as to obtain a great economy in room.]

25,738.—Bold R. Hood, of Clinton, N. C., for an Improvement in Plows:

I claim the combination of the standard, D, with the standard, C, and land-sides, E, when the parts are constructed as described, and adapted to receive the various forms of shovel points and mold-boards in use, in the manner described for the purpose specified.

25,739.—William H. Johnson, of Springfield, Mass., for an Improved Telegraphic Cable:

I claim an electric telegraphic conductor, constructed in the manner and for the purpose set forth.

25,740.—W. M. Keague, of Brooklyn, N. Y., for an Improved Omnibus-register:

I claim, first, The arrangement and combination of the platform, D, vibrating-lever, C, and adjustable spring, G, substantially as and for the purpose specified.

Second, I combination with the platform, D, and spring, G, I claim the sliding-bar, H, spring-catch, n, and wheel, K, substantially as and for the purpose described.

Third, Arranging the step, A, in combination with the registering-apparatus, substantially as described, so that it registers half-fares as well as full-fares.

[The steps of the omnibus are connected with the registering-mechanism by means of an adjustable spring, so that it can be set to any desired weight, and that not only full-grown persons are registered, but also such as pay half-fares.]

25,741.—Miles Keely and G. W. Cressman, of Barren Hill, Pa., for an Improvement in Hydraulic Motors:

We claim the arrangement and combination with the levers, M, lever-frames, K L, and bottoms, k, of the adjustable slots, r, and bars, t, by which the speed of the machine, length of stroke of the levers, and distance of water may be regulated at pleasure, as shown and described.

25,742.—Archibald C. Ketchum, of New York City, for an Improvement in Tea Kettles:

I claim the combination of the tin top, copper bottom, and sheet-iron skirt, when the same are all united by one and the same lap-joint, and just below the spout of the kettle, as described, constituting a new article of manufacture.

[This invention consists in making the body of the kettle of three parts—copper, tin and a sheet-iron jacket—and in uniting these parts together in one joint so as to be perfectly water-tight, and, at the same time, so as not to be injured by the heat should the water in the kettle get below this joint.]

25,743.—Isaac R. Lawrence and George E. Gould, of Green Island, N. Y., for an Improvement in Endless Chains for Horse-power Machines:

We claim, first, Extending both the lugs, A, and the links, B, of such chains to or beyond the treads, q, of the friction wheels, c, carried by axles, h, cast on the links, substantially as and for the purpose described.

And, second, We also claim forming and arranging projections, r and s, on the links B, of the chain, substantially as and for the purpose set forth, the links, being provided with male lugs, d, and female lugs, f, substantially as described.

25,744.— Lucius Leavenworth, of Trumansburgh, N. Y., for an Improvement in Straw-cutters:

I claim the arrangement and combination of the rockers, C and E, and springs, d, substantially as described, for the purpose of giving a double motion to the knife, and to avoid friction of the working parts.

[This straw-cutter is very simple and compact. It is so arranged that it can be suspended from the wall when it is to be used, and taken off and hung up out of the way when not required for use. The lever to which the knife is attached is furnished with a rocker that works against another similar rocker on the frame, both being connected by means of springs in such a manner that a shear cut is produced and the cutting greatly facilitated.]

25,745.—Sylvester Marsh, of West Roxbury, Mass., for an Improved Apparatus for Stirring and Delivering Grain:

I claim, first, The combination with the reticulated bed or other suitable drying table, of a reciprocating truck, armed with paddles or stirrers for agitating the grain on the drying surface.

Second, The arrangement, substantially as specified, of the truck-paddles in rows, one in advance of the other, and the paddles of each preceding row intermediate of those next behind them.

Third, Giving to the paddles of the reciprocating truck an oblique set for and during the forward travel of the truck, and giving them an edge presentation or set for and during the back travel of the same, essentially as and for the purposes set forth.

Fourth, Giving to said paddles reverse obliquities, for and during the forward travel of the truck, so as to throw the grain to the right and to the left, alternately, in the feed forward of the grain by the paddles.

Fifth, The combination with the reciprocating truck and its paddles, of a cross sliding-frame, made to gear by cranks, or their equivalents, with the several paddles, for simultaneously changing the latter from an oblique to a straight set, and vice versa, substantially as specified.

Sixth, The combination with the cross sliding-frame to the reciprocating truck, of one or more adjustable inclines and stops for automatically reversing the position of the paddles in their one direction.

Seventh, Drawing the cross frame back to its original position, to give to the paddles a different set, by means of a clip-lever, acted on by a weight, weighted catch, and inclined projection, connected with the reciprocating truck, or their equivalents, also afterwards returning said lever to its former position to be locked by the weighted catch by an inclined plane on the truck, acting against and over a swell on the lever, substantially as set forth.

Eighth, Varying the range of motion of the reciprocating truck on or over the drying surface, and relatively to the feed or delivering-ends thereof, by means of a lengthening and shortening driving pitman, made adjustable, substantially as specified.

25,746.—Andreas Maurer, of New Carlisle, Ind., for an Improvement in Seed-planters:

I claim the arrangement and combination of the vertically-moving and seed-distributing supporting-axle, D, and boxes, E, and lever F, as and for the purpose set forth.

[This invention relates to a novel and improved arrangement of the seed-distributing device whereby the same may be adjusted with the greatest facility, so as to be rendered, as the machine moves along, operative and inoperative, as desired. The invention consists in having the axle of the supporting-wheel extend through the sides of the frame of the machine, and below the seed boxes, the ends of said axle being provided with seed cells, and the axle allowed a certain degree of longitudinal play in its bearings, so that the seed cells may be shoved underneath the seed boxes or out from underneath them, and the desired end thereby attained.]

25,747.—Thomas J. Mayall, of Roxbury, Mass., for an Improvement in the Method of Combining Emery with Caoutchouc:

I claim the new process described of making emery sharpening and polishing tools by combining emery with india-rubber, gutta-percha, or other substances, and then submitting them while under great pressure to a high degree of artificial heat, substantially as set forth, whereby, with a given quantity of rubber, emery may be combined in much greater quantities than it could be heretofore done.

25,748.—James McAleer, of Chambersburgh, Pa., for an Improvement in Harvesters:

I claim the arrangement of the two seats, D, D′, one facing at right angles to the other conducting-trough and binding-table, F, F′, and the elevating device, C, all for use together, in the manner and for the purposes set forth.

25,749.—J. McDougal, of Masonville, Mich., for an Improved Mode of forming Joints in India-rubber Belting:

I claim the employment in combination with the belt ends, A B, of the tongues and cavities, c c, so that the sides of the tongue portion shall be protected by the selvedges of the cavity parts, substantially as shown and described.

[India-rubber belting, as ordinarily made, is composed of cloth saturated and coated with india-rubber, and doubled in such a manner that the junction of its edges is formed along the center of one face of the belting, leaving a fold at each edge. The best method hitherto adopted for forming the joints in such a belt is to split to a certain distance from each end, and remove the terminal portion of one of the two layers by cutting them square across where the splits at one end of the belt and of the opposite layer at the other end terminate, and lapping together the single layers thus left, and cementing and stitching them together; but by this method the selvedge of the belt is destroyed for the whole length of the joint. This invention consists in so forming the joint by cutting the two ends which are to be joined, to such an angular, pointed or rounded form that by splitting the terminal portions and cutting away the opposite layers at the two ends in lines or angles corresponding with those of the terminal edges, the lap joint may be formed without the destruction of the selvedges at more than a single point in each.]

25,750.—S. T. McDougall, of New York City, for an Improved Traveler's Ticket-holder:

I claim the lever, C, spring, C′, point, i, or other equivalents, in combination with an ordinary shawl pin; the whole constructed and operating as set forth.

25,751.—James P. McLean, of New York City, for an Improvement in Skates:

I claim the arrangement and use of the side or ankle springs, A, A′, with parts, B, B′, and instep projections, 2 and 3, adjustable or otherwise, in combination with the heel spring, h, having a pad at its top end, and with the cork sole, m, in the form of a shoe, or otherwise, as set forth.

Second, I claim the combined arrangement and use of the railroad attachment, K, K′, and Y, Y′, as applied to a skate; the same forming a toe-strap loop if required, in the manner and for the purpose set forth.

25,752.—James C. Miller, of Union township, Pa., for an Improvement in Horse-power Locomotive:

I claim horse-power sweep levers connected with one or more ground wheels, substantially as described and for the purposes specified.

25,753.—George F. Milliken, of Chelsea, Mass., for an Improved Electro-magnetic Burglar Alarm:

I claim the combination of a galvanic battery, an electric circuit, a circuit-breaker, operated by a window or door, with a step by step indicator, substantially as described.

I claim causing a window or door automatically to prevent any alteration upon the circuit during the closing of the window or door, until it is nearly closed, in any manner substantially as described.

I claim the use of the armature, J, for the double purpose of regulating the movements of the points and setting in motion the alarm apparatus.

25,754.—B. S. Morgan, of Delhi, Iowa, for an Improvement in Cultivators:

I claim the arrangement and combination of the side wings, D, and wheels, H H I, of a cultivator, with the levers, h h i, bar, d, rods, e, and hand-lever, f, substantially as and for the purpose specified.

[This cultivator is so arranged that an instantaneous side motion can be given to the wings, so that the cultivator can be adjusted to the varying width of the same furrow; and the wheels which support the frame are so constructed and connected with a hand-lever that said frame can be raised or lowered parallel with the ground.]

25,755.—William A. Morrison, of Morrisania, N. Y., for an Improved Boot and Shoe Brush and Scraper:

I claim the arrangement of the springs, B, in combination with screws, A, in such a manner as to throw the brushes, C, forward parallel with the scraper, D, as and for the purpose specified.

25,756.—Abel R. Nixon, of Rhea Spring, Tenn., for an Improvement in Hand Looms:

I claim, in combination with the lay beam and spring picker-staffs, the toggle-levers, b b, triggers, f f, and flexible connections, e h, for effecting the setting and tripping of the picker-staff substantially as described.

And I also claim, in combination with the lay and the treadles for working the harness or sheds, the toggle-levers, q, and trigger-cords, h, so that the shed shall be properly made before the trigger is drawn to let the shuttle fly, thus ensuring a perfect sequency of operation, and with great saving of manual labor on the operator, as set forth.

25,757.—Samuel Page, of Chelsea, Mass., for an Improved Varnish:

I claim the described varnish, made of the materials specified.

25,758.—Wm. Munroe, of West Auburn, Maine, for an Improvement in Sole-cutting Machines:

I claim, first, The arrangement of the vertical slots, i i, in the arbor, E, elastic bars, q r, with their projections, s, fitting respectively in said slots; the weight, P, bar, f, and the shafts, I N, provided respectively with the cam, K, spring, P′, pinions, M, part-pinion, L, and strap, O, substantially as described, to operate the arbor, E, and its die or cutting-flanch, I.

Second, The stop, S, attached to a shaft, Q, provided with springs, j′ k′, and actuated by the pin, h′, on the rod, F, and the notched block, f′, attached to the bar, R, substantially as and for the purpose set forth.

25,759.—Henry Pfaner, of New York City, for an Improvement in Gear-cutting Engines:

I claim a pattern, t, mounted on a shaft or spindle, which also carries the gear to be cut, in combination with a fixed dog or guide, u, when said dog or guide is so located that the pattern runs off and is clear of the same, so as to be turned at the time the gear is clear of the cutter, and said pattern again takes and is held by said dog, as the cutting commences, and is proceeded with as set forth.

I also claim the arrangement of the lever, x, pawl, y, and adjustable stop, z, to give motion to the pattern, t, when not in contact with the stop or dog, u, as described.

In combination with the pattern, t, and dog, u, I also claim the stock, carrying the shaft or spindle, s, and actuated by the lever, k, for the purposes as specified.

25,760.—Mathieu Philippi, of Troy, N. Y., for an Improvement in Key-boards for Pianofortes:

I claim so constructing the upper surfaces of the keys of a pianaforte, that while the ordinary form of the key-board is retained, portions of all the keys are brought to the same level in the key-board, substantially as and for the purpose specified.

25,761.—Henry B. Ramsey, of Indianapolis, Ind., for an Improvement in Harvesters:

I claim the combination of the frames, N O and K, chain, L, chain-wheel, M, crank, V, screw-rod, X, friction-bearers, b b, and grain-table, Y, when the several parts are constructed and arranged for operation in the manner and for the purpose set forth.

25,762.—L. B. Richardson, of Athol, Mass., for an Improvement in Lasting-pincers:

I claim the application of a swinging fulcrum to lasting-pincers, constructed and arranged substantially in the manner and for the purpose set forth.

25,763.—Robert E. Rogers, of Philadelphia, Pa., for an Improvement in Umbrella Frames:

I claim combining, with the tubular ribs and stretchers, constructed as described, the means for uniting the ribs and stretchers, and for strengthening the tubular parts of the frame, as set forth.

25,764.—Wm. Seeley, of Chillicothe, Ill., for an Improvement in Cultivators:

I claim the arrangement of the post, D, arms, E, cross-bar, F, lever, H, wheels, W, shovels, B and C, chains, R and Q, arms, U, cross-bar, K, vertical lever, Y and Y2, rods, Z, whiffletree, X, and draft-hook, A2, the whole being constructed and combined in the manner and for the purpose described.

25,765.—Joseph Seymour, of Syracuse, N. Y., for an Improvement in Making Spoons:

I claim the machine known as the "rolls," having the former or figure of any article to be made up plain, of silver or other metal, cut upon one or both of them, so much larger than the same article when finished, that the article itself can be cut with a punch, of the desired size and shape, out of a piece of metal after it has been passed between the rolls and entirely within the margin or edge of the impression made upon the metal by the form or figure cut into one or both of the rolls, substantially as described and set forth.

25,766.—H. O. Sheidley, of Republic, Ohio, for an Improved Invalid Bedstead:

I claim the combination of the sliding hinged bottom, B B′ B″, with the crank shaft, cords and attached levers, and the movable foot-board, F, substantially as and for the purposes set forth.

25,767.—John H. Shrote, of Baltimore, Md., for an Improvement in Cutting and Panning Cakes:

I claim the cutters, A, as constructed or their equivalents, in combination with the pan, E, and bottom-board, D, for the purpose of facilitating the cutting and removing the cakes to the oven, as set forth and described.

25,768.—Charles R. Smith, of Haverhill, N. H., for an Improved Device for Bracing and Ventilating Fence Posts:

I claim, first, The peculiar construction and arrangement of the wire-loop, K, in combination with one pair of braces, a post and a sill, substantially as and for the purposes set forth.

Second, The grooved post, E, and the grooved cleats, D and F, in combination with the longthwise boards or slats, B B B B, substantially as and for the purpose set forth.

25,769.—A. D. Snow, of Rochester, N. Y., for an Improvement in Governors for Steam and other Engines:

I claim the use of collar, T, first, to control the passage of steam through the valve, A, on starting the engine; secondly, to control the extreme downward movement of the valve, A, by means of stops, I I, so connected with the valve-openings, E E, as to close them at either extreme of the movement.

I also claim locating the weight, X, beneath and partially entering the tube of the valve, A, as represented.

25,770.—C. M. Spencer, of Manchester, Conn., for an Apparatus for Cutting and Attaching Labels:

I claim the cutting and affixing labels upon spools by one or the same action of a machine as the dies, M L, on the tubular cutters, e, follower, c, or their equivalents, substantially in the manner and for the purpose described.

25,771.—Joseph Andrew Stephan, of Lafayette, Ind., for an Improvement in Adjustable Rails for Replacing Cars on the Track:

I claim, first, The fish pieces, B C D, clamped to the permanent rails, A A, and elevated high enough above said rails to carry the flanges of the car to be replaced over them, substantially as described.

Second, I also claim, in combination with an elevated temporary track, secured to and high enough above the permanent track, to carry over the flanges of the wheels the sections, G G′, and their switches, e h, extending to each of the pairs of wheels of the car, said sections having all the elements of switches, frogs and rails, substantially as described.

25,772.—David Stewart, of Annapolis, Md., for an Improved Method of Preparing Bones for Fertilizing Purposes:

I claim the stratification of the bones with materials, animal vegetable and mineral, substantially in the order and upon the principles set forth, using the materials above designated, or their equivalents, whereby bones are reduced, in a most economical manner, to an available condition for manure, and a thorough compost obtained adapted to all the necessities of growing and fruiting plants without any mechanical labor other than that of stratifying, cutting down and screening, as set forth.

25,773.—Wm. H. Tambling, of Berlin, Wis., for an Improved Milk Safe:

I claim the described safe, as an article of manufacture, constructed in the particular manner set forth, to wit, with gauze wire sides and doors; and with shelves, which consist of longitudinal slats, C C, to which are secured a series of wooden cross slats, D D, which are made broad at their base and beveled to an edge on their tops, the whole being arranged together and used in the manner and for the purpose specified.

25,774.—Wm. H. Tambling, of Berlin, Wis., for an Improved Washing-machine:

I claim, first, The arrangement of the buckets, D D, in the four corners of the interior of the box, A, said buckets being made in a triangular form and open at one angle, as at x x′, the same being used in the manner and for the purpose specified.

Second, The arrangement of the bars, a a, as provided with pins, n n, and in the form represented when used in connection with the box, A, and the buckets, D D, as constructed, the whole operating substantially as and for the purpose specified.

25,775.—Francis C. Treadwell, Jr., of New York City, and Henry McCollum, of Windham, Conn., for an Improved Mode of Making Cylindrical Strips of Dough in the Manufacture of Crackers:

We claim the described improved method of forming skin-covered strips from a sheet of previously smooth-rolled dough, by passing it between a pair of grooved rollers, arranged and constructed substantially as described, with the groove separated by portions of the plane surface of the rollers.

25,776.—John G. Treadwell, of Albany, N. Y., for an Improvement in Apparatus for Ventilating Railroad Cars:

I claim the arrangement of the boxes, A′, of the porous partitions, C C, and the pipe, e, provided at its lower end with a sprinkler, O, when the same are used in connection with the openings, D, substantially in the manner and for the purpose specified.

25,777.—Isaac Wait, of Watertown, N. Y., for an Improvement in Grain-cleaners:

I claim the combination of the separating sieves and the burr surfaced plates, by means of the vibrating lever, which gives a contrary motion to each at every revolution of the wheel or crank, substantially in the manner and for the purpose described.

25,778.—John Walker, of Sunbury, Ohio, for an Improved Locomotive Cross-cut Sawing Machine:

I claim, first, The arrangement of an upright steam-engine, A, on a truck frame, B, with a horizontal crank shaft D and a vibrating saw, L, substantially as set forth.

Second, The employment of conical pulleys, Q Q1 Q2 Q3, and shiftable bands, R R, in combination with the other machinery and the engine which operates the saw, for the purpose of guiding the machine when moving from place to place, substantially as and for the purposes set forth.

25,779.—Caleb C. Walworth, of Boston, Mass., for an Improvement in Cutting Screw Threads on Gas Pipes:

I claim the combination of two or more mandrels parallel, or nearly parallel to each other, and arranged to carry cutting tools with two or more vises, when these are arranged to revolve round a common center.

I also claim the combination of two or more sets of mandrels, as above, with two or more sets of vises, as above, when each set of mandrels is arranged to operate in unison with its corresponding set of vises.

I also claim the combination of two or more series of vises, one beyond the other, and arranged to revolve about a common center.

I also claim operating two or more vises, independently of each other or together, by one wrench, and by the means and in the manner substantially as specified.

25,780.—Daniel Winder, of Cincinnati, Ohio, for an Improved Bed-bottom:

I claim the combination of the rings, a and b, and tension screw, c, operating in connection with a radial bed-cord or webbing, in the manner and for the purpose set forth.

25,781.—Oliver Evans Woods, of Philadelphia, Pa., for an Improved Life-preserving Buoy:

I claim a buoy arranged with two frames, A A′, stays, D, and cross braces, E, and with a valve or valves, F and otherwise constructed and operated as described.

[This invention consists in arranging two frames, covered and united by some flexible air and water-tight material in such a manner that, when the frames are separated or parted through the agency of gravitation or of stays, the whole assumes the shape of a box, which can be rendered perfectly air and water-tight by closing the valve or valves which are attached to one or both of the frames and acting in conjunction therewith. In this state it serves as a buoy of great efficiency. By opening the valves, and especially the air valve, the buoy may be compressed into a very compact form, occupying but little space.]

25,782.—Francis G. Woodward, of Worcester, Mass., for an Improvement in Sewing-machines:

I claim the peculiar manner of working the looping-hook, d, by means of the wheel, F, and the double joint, E′, substantially as specified.

25,783.—Le Roy S. White, of Waterbury, Conn., for an Improved Burnishing-machine:

I claim, first, The arrangement of the burnisher or burnishers in a burnishing-machine in a sliding-gate, or its equivalent, carried by and working perpendicularly to a rectilineally reciprocating shaft, or its equivalent, substantially as and for the purposes described.

Second, Providing for the burnisher or burnishers employed on one side of the article to be furnished, in a so-applied gate, or its equivalent, such a movement independently of that or those employed on the opposite side, substantially as described, as to produce the greater movement that is necessary or desirable, for the reason explained, on the convex side of any article of curved form.

Third, Fitting a burnisher in a burnishing-machine to a suitable holder, g, or its equivalent, in which it is permitted a free vibration, laterally, to the movement it makes in the burnishing operation, substantially as and for the purpose specified.

[This invention consists in a novel mode of applying and operating the burnishers in a burnishing-machine, whereby some important advantages are obtained in burnishing curved surfaces.]

25,784.—Geo. W. Banker, of Medford, Mass., assignor to himself and G. O. Carpenter, of South Reading, Mass., for an Improved Mode of Manufacturing Barrels, &c.:

I claim the method described of securing the heads of casks by means of the chamfer, 5, and shoulder, e, as described.

Second, I claim a keg furnished with ears and a bale as described, for the purpose specified.

25,785.—Oliver D. Barrett (assignor to himself and Lears E. Smith), of Cleveland, Ohio, for an Improvement in Sewing-machines:

I claim, first, The crank, consisting of the disk, Q, and pin, O, in combination with the pin, o′, in the pulley, Q′, and hinge, R, whereby I am enabled to turn the machine up from the table designed for it to stand on, in order to adjust or thread the under needle, d, without unbanding the machine, substantially in the manner and for the purpose described.

Second, Hinging the footholder, F, to the head of the goose necks, B, in a position vertical to the feeding surface of the feeder, Y, substantially in the manner and for the purpose described.

Third, The footholder, F, constructed and hinged as set forth, in combination with the rod, H, spring, I, foot, K, and feeder, Y, substantially in the manner and for the purpose set forth.

25,786.—Thomas A. Earl, of North Attleborough, Mass., assignor to himself and Charles A. Durgin, of New York City, for an Improvement in Bustles:

I claim the segment, C, supported as described, in combination with the projecting strut, E, slide, F, and strip, G, the whole being constructed and operated substantially as set forth and described.

25,787.—Wm. Gluyas (assignor to himself and Wm. H. O'Neill), of San Francisco, Cal., for an Improvement in Composition for Preparing Gold and Silver Ores for Amalgamation:

I claim the mixture or composition described, used with pulverized ores or tailings, the whole being brought to a boiling heat and being constantly agitated, thereby preparing the precious metals for a more perfect amalgamation with quicksilver.

25,788.—Stoughton B. Holden, of Woburn, Mass., assignor to himself and Parker Nichols, of Reading, Mass., for an Improved Burglar's Alarm:

I claim the the arrangement of the candle-carrier, D, and its hammer, b, upon the torpedo post or standard, B, the trigger lever, g, and the grate or friction plate, C, the whole forming an improved, efficient and simple alarm, to operate as specified.

25,789.—John S. Lash, of Carlisle, Pa., assignor to himself and Franklin Knauss, of Allentown, Pa., for an Improvement in Straw-cutters:

I claim forming the bed, F, in sections, c, each being provided with a spring, e, and having the spiral beaters or followers provided with shoulders, g, substantially as shown, to prevent the lateral movement of the straw or stalks in the feed-box, under the action of the beaters or followers.

[The object of this invention is to obtain all the advantages of the spiral rotating knives or cutters hitherto used in a certain class of straw and stalk cutters, and at the same time avoid the disadvantages attending the same. This object is attained by using spir l beaters or followers attached to a rotating cylinder in connection with a stationary knife, the parts being so arranged relatively with each other that the same effect is obtained as with the spiral knives. The invention also consists in forming the bed adjoining the stationary knife in sections, each of which is allowed to yield or give to a certain extent, and having the spiral beaters or followers so formed with shoulders that the cutting device is rendered much more efficient than it otherwise would be.]

25,790.—Alfred Marsh (assignor to John Q. Dudley), of Detroit, Mich., for an Improved Method of Preventing Deposition of Carbon in Gas Retorts:

I claim the introduction into the retort, during the gas-making process, of chlorate of potash, or other substance which evolves oxygen, when heated for the purpose set forth.

25,791.—Charles O'Bryan (assignor to himself and Joseph S. Haldeman), of Salem, Ohio, for an Improved Tool for Cutting Round Tenons:

I claim the combination of the hollow, conical head, A, external nut, B, and plate, C, constructed and arranged as described, for adjusting and holding, when adjusted, the bits or cutters, or their guides, substantially as represented.

25,792.—Robt. Patterson, of Philadelphia, Pa., assignor to Horace Vaughn, of Providence R. I., for an Improved Solution for Thinning Lubricating Compound:

I claim a thinning solution applicable to the reduction of the lubricating compound, described in the patent of Vaughn & Hutton, dated Aug. 2, 1859, made of the substances and applied substantially in the manner specified.

25,793.—Thos. D. Richardson (assignor to W. Richardson), of New York City, for an Improvement in Pen and Pencil-holders:

I claim the arrangement and combination of the elongated tube, h, with the handle, A, and tubes, B C, as and for the purpose shown and described.

[This invention is especially designed for the counting-room, and is intended to form a convenient article therefor: the parts being so arranged as to admit, by a single adjustment, the using of either a pen or pencil with one and the same holder. The invention consists in having a metal tube attached to a wooden handle or holder, the tube being so constructed that it may be firmly attached to the holder and receive both the pen and pencil slides, and also allow, with a moderate length, a proper movement for each, so that they may be forced into and forced out from the tube as may be required.]

25,794.—Nathan C. Travis (assignor to himself, Nathan Johnson and Richard Emerson), of Alton, Ill., for an Improved Regulator Valve for Steam-engines:

I claim, first, The arrangement and combination of the valve-box, A, and casing, C, as and for the purposes shown and described.

Second, The arrangement and combination of the screw socket, k, stem, j, rod, l, arm, p, groove, q, and band-wheel, J, so that by turning the band-wheel, J, the stem, j, may be elevated and depressed irrespective of the rise and fall of the rod, l, and without rotating the latter, all as shown and described.

[This invention consists in a valve of cylindrical form applied to work in a direction parallel with its axis within a cylindrical box containing two seats, and having between the said seats a series of diamond-shaped openings to admit steam through the valve to a surrounding annular steam casing, said valve, by a proper screw connection with the governor, being made to serve both as a governor valve and a stop valve.]

RE-ISSUE.

Jeremiah Stever, of Bristol, Conn., for an Improvement in Machines for Burnishing Metals. Patented May 1, 1855:

I claim the burnishing of silver-plated and other metallic ware, such as spoons, knives and forks, or other similar articles which have a concave, convex or other bevel surface, by an organized machine, requiring no other attention than being kept in proper order, adjusted to suit the article about being burnished, set in motion, and having the articles properly introduced to it successively, substantially in the manner set forth.

ADDITIONAL IMPROVEMENT.

Douglas Bly, of Rochester, N. Y., for an Improvement in Attaching Thills to Vehicles. Patented April 12, 1859:

I claim combining with the hook, A, a collar, G, having a reverse hook or lip, K, corresponding with the point, A, to form an eye therewith, together with the screw shank and binding-nut, H, substantially as and for the purpose specified.

EXTENSION.

Lewis Edwards, of Norwich, Conn., for an Improvement in Ruling-machines. Patented Oct. 9, 1845:

I claim causing the pens to be raised by the edge of the paper in its passage through the machine, thus causing each sheet to determine the length of its own lines.

DESIGNS.

Roswell Kimberly, of Ansonia, Conn., for a Design for a Clock-case Front.

James H. McLean, of St. Louis, Mo., for a Design for a Trade Mark.

Literary Notices.

MEMOIRS OF ROBERT HOUDIN. G. G. Evans, publisher, Philadelphia.

We have received from the above-named publisher the translation of those memoirs which are attracting so much attention in France and England. Houdin is the prince of conjurers, and his autobiography, written with the sparkling vivacity of the French, is one of the most readable of books. This work can also be procured from Dick & Fitzgerald, Ann-street, this city.

NEW YORK CITY REGISTER. H. Wilson, publisher, 379 Broadway.

This register contains lists of the members of the city government, courts, police bureau, asylums, churches, banks, insurance companies, newspapers, telegraph offices, hospitals, educational institutions, foreign consuls, expresses, secret societies, omnibus lines, ferries, libraries, miscellaneous societies, clubs, railroads, &c. It is a useful work of reference.

Notes & Queries

M. R., of Ala.—Convey our acknowledgements to the friend who has favored us with the recipe for making blackberry wine, and also for the excellent samples which have been forwarded to prove the reliability of the directions given.

H. V., of Conn.—Roast the oxyd of manganese in a close vessel, and you will obtain the calcined article to correspond with the purpose for which you wish to use it.

E. M. R., of Pa.—A. Frazee, No. 95 Fulton-street, this city, manufactures small lathes, and can supply tools for amateurs.

OSCAR NESMITH.—Please inform us in what town and State you reside, so that we may proceed with your business, and write to you intelligibly.

E. F., of Wis.—You can procure a "Tinner's Guide" by addressing Blinn & Battle, Detroit, Mich.

S. L., of Mass.—If you will send us the model and description of your invention, we will proceed to prepare the application without delay. You may also remit the government fee ($30) in draft on New York, payable to our order. Inventors oftentimes suffer from their own neglect to prosecute their applications.

E. C. C., of N. Y.—There is no ground for a patent on the point you wish to cover in the construction of a rice-hulling machine. We think a claim to the arrangement, however, could be obtained. We have sent you our pamphlet of advice.

A. G., of Ohio.—We consider your case a doubtful one, and would advise a preliminary examination to be made at the Patent Office before incurring the expense of an application for the patent. To enable us to conduct this examination properly, we will require a sketch and description of the improvement. A pen and ink sketch will be sufficient, The examination fee is $5.

G. W. G., of Maine.—Black lead crucibles are the best you can use for making experiments with scrap-iron to obtain steel.

J. F. D., of Pa.—Nine square feet of heating boiler-surface, and one square foot of grate surface, are allowed for a horse-power in stationary boilers.

W. H. W., of Pa.—Your article on graphite paint is inadmissable in its present form. You should have been more specific regarding its composition and the particular cases wherein it has been so successfully applied. This would have been pointed and interesting information. The antiseptic properties of graphite are admitted; but more than this is required for a desirable paint.

A. H. S., of N. H.—The silicate of soda is the substance which you wish to use in graining; but, as you state, "the alkali is to be neutralized. It will not answer your purpose, for it has been an excess of soda.

D. P. B., of Ind.—Plaster-of-Paris is calcined gypsum. Common plaster, which farmers employ as a fertilizer, is ground unroasted gypsum.

S. S., of Ind.—A patent could not be obtained for making journal-boxes of wood saturated in oil, and the end or cross-grain applied to the journal. This is an old method; and, though it is not much used, it is very good for some purposes. Solid pieces of fat pork and tallow are frequently used in the journal-boxes of engines.

W. H. W., of Conn.—No prize has been offered by European governments for a perpetual motion. They have more sense than thus to expose their folly

S. R. J., of Pa.—You have not described your improvement for constructing railroads with sufficient clearness for us to judge of its novelty or merits.

H. L. M;, of Pa.—Charcoal plates for galvanic-batteries are made by combining hard charcoal dust (obtained from gas-retorts) with flour paste, then allowing them to dry. Nitric acid is generally employed for them, the same as in the Groves battery. We prefer platinum to charcoal plates.

J. H., of Ill.—The minerals which you have sent us are iron pyrites, of no value whatever.

G. M., of N. Y.—We thank you for calling our attention to the misprint of which you speak. The elements of the atmosphere, being mechanically mixed and not chemically combined, vary somewhat (though very little) in their proportions. The following is about the average in 100 parts:—Oxygen, by volume, 20.55; by weight, 22.76. Nitrogen, by volume, 78.16; by weight, 76.15. Vapor of water, by volume, 1.25; by weight, 1.03. Carbonic acid, by volume, 0.04; by weight, 0.06. Your views in regard to the light of burning carbon and hydrogen are perfectly correct. You will find the subject thoroughly discussed in another column, in the article entitled "Illuminating Gas."

J. McM., of Ohio.—To case-harden iron, the article to be treated is covered with ground prussiate of potash and flour paste, then set aside to dry. After this, it is heated red-hot in a clear fire, or what is better, molten lead, then dipped into cold water.

J. R. W., of Iowa.—An artesian well is one in which the water flows up from an under seam above the surface. Such wells are generally formed in basins, where the rocky strata dip downwards, and they are supplied from distant elevations or the water would not be forced up to the surface.

C. E. P., of N. Y.—Neatsfoot oil is the best lubricant known to us for keeping belts pliable without injury to the leather.

L. L. R., of N. H.—What was the result of the steam fire-engine trial, on the 15th of last month, at Manchester?

S. & M., of N. Y.—We do not know where you can can find a person to drill agates.

E. R. H., of N. H.—You can subscribe for "Hall's Journal of Health" by enclosing $1 in a letter, addressed to W. W. Hall, M. D., No. 42 Irving-place, this city.

J. W., of Vt.—You cannot make paraffine from your peat-bog to compete in cheapness with that which is made at coal-oil works. We therefore do not advise you to commence the business.

R. E. R., of Va.—The answer mentioned did not refer to your press. We sent you the 150 copies of our paper ordered.

Money Received

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, Oct. 15, 1859:—

J. D., of Pa., $25; J. W. H., of Ind., $30; E. A. W., of N. Y., $35; D. W. C., of Ill., $25; D. W., of N. Y., $25; B. & C., of N. Y., $40; E. B. C., of Fla., $30; B. F. D., of Pa., $25; E. A. W., of N. Y., $55; N. D., of N. J., $25; J. B. T., of Pa., $55; G. W. B., of Pa., $25; R. T., of Ohio, $15; J. T. T., of Texas, $20; G. W. D., of Ill., $10; G. A. M., of N. Y., $25; T. M., of Minn., $25; A. A. D., of S. C., $25; A. B., of Vt., $50; J. B., of N. Y., $30; J. J. M., of Fla., $20; G. D., of Ill., $30; W. J., of R. I., $30; K. F. W., of N. H., $30; W. F., of N. Y., $30; D. D. F. D., of Mass., $30; G. W. R., of Ill., $30; A. B. F., of Ohio, $53; J. G., of La., $30; C. W. R., of Ga., $25; H. Mg. Co., of Conn., $100; J. E. H., of N. Y., 25; N. B., of Ill., $25; W. B. S., of Pa., $30; S. A. S., of Mo., $25; C. C., of Iowa, $30; E. T. W. of N. H., $30; Mrs. E. B., of N. Y., $10; J. R. S., of Conn., $55; A. A., of N. Y., $55; H. M. S., of Maine, $30; H. S., of N. Y., $30; J. A. H., of R. I., $30; J. C. B., of Miss., $30; S. L. S., of Ill., $35; H. W. C., of Conn., $30; C. P. B., of Ohio, $30; J. H. L., of N. Y., $40.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 15, 1859:—

B. & C. of N. Y.; D. W. of N. Y.; J. S. of N. Y.; D. W. C. of Ill.; J. C. R. of N. Y; J. E. L. of Conn.; B. F. D. of Pa.; N. D. of N. J.; G. W. B., of Pa.; R. T. of Iowa; J. A. B. of Ky.; E. R. P., of N. Y.; J. A. S., of Mo.; E. T. W., of N. H.; J. L. W. of Ohio; W. B. R., of La.; A. B., of Vt.; J. J. M. of Fla.; C. W. R. of Ga.; J. W. C., of N Y.; B. & C. of N. Y.; Mrs. E. B. of N. Y.; W. D., Jr., of Pa.; R. F. W. of N. H.; J. E. H. of N. Y.; R. H. of N. Y.; H. C. F., of Pa.; J. T. T. of Texas.

PHILADELPHIA MACHINERY DEPOT.—Woodworth planing machines; mostising, tenoning and sash molding machines; also a large stock of lathes, iron planers, drills, chucks, &c., at reduced prices. Address CHAS. H. SMITH, No. 135 North Third-street, Philadelphia. 17 6*

LEHIGH MOUNTAIN SPRINGS WATER-CURE, Bethlehem, Pa. In successful operation since 1846. Exceedingly well adapted for Fall and winter cure. Dr. F. H. OPPELT. 1*

DEAFNESS CURED, HOWEVER CAUSED, BY a new method. Address Dr. BOARDMAN, personally or by letter, at No. 974 Broadway, New York. 17 4*

INGERSOLL'S IMPROVED PORTABLE HAY and Cotton Press is the best and cheapest in the country. Farmers and planters will do well to examine ours before purchasing elsewhere. Prices for hay presses, $50 to $75; cotton presses, $85 to $200; delivered in New York free of charge. Liberal arrangements made with dealers. For circulars and further information, address the Farmers' Manufacturing Company, Greenpoint, Kings county, N. Y. N.B. Also on hand and made to order presses for Hides, Hair, Hemp, Husks, Broom Corn, Rags, &c. 17 6*eow

F. SCHOTT'S KNITTING-MACHINE, FOR THE manufacture of regular-fashioned hosiery, is now on exhibition at the Fair of the American Institute, New York City. 16 4*

MORRIS' PATENTED COMPRESSING OR End-pressure Wood-bending Machines, Circular Saw-mills, and Wood-working Machinery in general.
16 5* LANE & BODLEY, Manufacturers, Cincinnati, Ohio.

STEPHENS' DYES OR STAINS FOR WOOD—For dyeing and bringing out the grain of inferior woods in imitation of black walnut, mahogany, satinwood, rosewood or oak. Specimens and prospectuses sent to all parts of the States, on receipt of 15 cents in stamps. HENRY STEPHENS, Chemist,
16 8* 70 William-street, New York.

APPEALS BEFORE THE JUDGES OF THE U. S. District Court, from the final decisions of the Patent Office, in Rejected Cases, Interferences, &c., are prosecuted by the undersigned on moderate terms.
MUNN & CO., Solicitors of Patents,
No. 37 Park-row (Scientific American Office), New York.

KNITTING MACHINES, CIRCULAR AND straight, and machine-knitting needles, of all sizes and gages, on hand and made to order. ddress WALTER IKEN, Franklin, N. H. 7 22t*

W. M. WHITTEMORE (SUCCESSOR TO John Whittemore & Co.) 91 Maiden-lane, New York, Commission Merchant and dealer in Cotton and Woolen Machinery and manufacturers' supplies. 11 13*

FULTON & VANKIRK'S PATENT PARAGON COAL-OIL BURNER.—The inventors of this Burner would call the attention of the trade to its superiority over any other now in use. It is admitted by all who have examined it to be the best as to strength, less liability to get out of order, and ease of management, giving a more perfect light than any other burner ever offered to the public. This burner is manufactured in three different sizes, Nos. 1, 2 and 3; the largest (No. 3) giving as much light as a 10-foot gas-burner, at one-third less expense. Lamps, with the above burner, suitable for hand, hall, hanging, bracket and side-lamps; also, for railroad stations, steamboats and public buildings; also, Coal-oil, of superior quality, may be had, at the lowest market prices, at TUCKER & PADDON'S, 42 John-street, Agents of the American Coal-oil Company. 14 4*

SALEM WIND TURBINES, FROM ONE TO one hundred horse-power, under perfect regulation. For illustrations address Treasurer of Turbine Manufacturing Co., Salem, Mass. 13 12*

PARAGON COAL OIL BURNERS.—TO MANUFACTURERS of and Dealers in Coal Oils, and Coal Oil Lamps.—The above burners are admitted to be the best in use as to strength, least liability to get out of order, and ease of management; giving a larger blaze than any other burner. Lamps with the above burners, suitable for hand, hall, hanging bracket and side lamps; also, for Railroad Stations, Steamboats and Public Buildings. The best Burning and Lubricating Oils, as well as Lamps, in quantities to suit purchasers, at the lowest market prices. H. COULTER,
15 4t* No. 56 South Second-street, Philadelphia, Pa.

THE FOLLOWING VILLAGE GAS-WORKS ARE now erecting under the Aubin system, viz.:—For the city of San Antonio, Texas; for the villages of Bath, N. Y.; Plattsburgh, N. Y.; Gloversville, N. Y. (charged from rosin works); Rutland, Vt.; Dover, Del.; Jersey Shore, Pa.; Flemington, N. J.; Greensboro, N. C.; and Point Levi, Canada. For reference to the Aubin village works erected last year and this spring, where both consumers and stockholders are satisfied, apply to the Aubin Company, No. 44 State-street, Albany, N. Y. 15 12

HARRISON'S GRIST MILLS—20, 30, 36 AND 48 inches diameter, at $100, $200, $300 and $400, with all the modern improvements. Also, Portable and Stationary Steam-engines of all sizes, suitable for said Mills. Also, Bolters, Elevators, Belting, &c. Apply to S. C. HILLS, No. 12 Platt-street, New York. 1 e3w

INSTRUMENTS. — CATALOGUE (SIXTH EDITION), containing over 250 Illustrations of Mathematical, Optical and Philosophical Instruments; list of Stereoscope-pictures, with attachment of a large sheet representing the Swiss Instruments in their actual size and shape, will be delivered, on application, to all parts of the United States, by sending 12 cents in postage stamps.
C. T. AMSLER, 635 Chestnut-street, Philadelphia.
Catalogues, without the large sheet of Swiss instruments, furnished gratis, on application. 10 6eow*

CLOCKS FOR CHURCHES, COURT-HOUSES, &c.; Time-pieces for Jewelers, Railroad Offices, &c. Also, Glass Dials for illuminating, and other kinds. Address JOHN SHERRY, Manufacturer, Oakland Works, Sag Harbor, N. Y.
9 13* eow

EIGHT-HORSE PORTABLE STEAM-ENGINE. cylinder 7½ by 15, governor, balance-wheel, &c., a tached to flue boiler, all new. Price $625. S. C. HILLS,
8 e3w No. 12 Platt-street, New York.

JOHN W. QUINCY & CO., IMPORTERS AND Dealers in Metals, Cut Nails, &c., No. 98 William-street, New York. 15 13e5w*

AMERICAN INSTITUTE LIBRARY.—COOPER Union Building, corner of Eighth-street and Fourth-avenue. The American Institute Library, devoted to Agriculture, Commerce, Manufactures and the Arts, and containing nearly 10,000 volumes, is open daily from 8 A.M. to 6 P. M., and until 9 P.M. after November 1st. Members have the privilege of taking out books. Initiation fee, $5; annual dues, $2; which entitles a member to a family ticket during the Fair, and all the other privileges of membership of the Institute. Among the recent additions to the library will be found the following new and valuable works, viz.:—Encyclopedia Britannica, 18 vols., eighth edition; American Cyclopedia, 7 vols.; Chevreul on Color, London edition; Liebig's Modern Agriculture, London edition; De La Rive's Electricity, London edition; Useful Metals and their Alloys, London edition; Mitchell's Practical Assaying, London edition; Hogg on the Microscope, London edition; Lesley's Iron Manufacturer's Guide; Feuchtwanger's Treatise on Gems; Downing's Landscape Gardening, new edition; Graham's Chemistry; Stevenson on Lighthouse Illumination; Langstroth on the Hive and Honey Bee; Mulder's Chemistry of Wine, London edition; Greener's Gunnery in 1858; American Stair Builder; Price's Manual of Photographic Manipulations; French's Farm Drainage; Easton on Horse-power or Street Railways; Transactions of the Batavian Society of Arts and Sciences, Java, 1857.
WILLIAM HIBBARD, Chairman Library Committee.
E. A. HARRIS, Librarian. 1*

THE WORLD-RENOWNED ENGINEER.—THE Life of George Stephenson, Railway Engineer. By Samuel Smiles. Second American from the fourth London edition. 1 vol., 16mo., price $1.
The biography of this self-made man is one of the most remarkable in the world. There can hardly be found in the range of English literature the record of a life which, from so humble a beginning, rose through such terrible obstacles to such stupendous results.—Springfield Republican.
Deep and permanent is the interest excited by this wondrous story of genius. No one can read unmoved the early struggles of this remarkable character, as they are narrated in this work. To young men faltering, it gives lessons which should supply fresh vigor.—London Leader.
It is not too much to say that Mr. Smiles has performed his office with eminent success, and a considerable void has been filled up in the page of modern history. We see the vast achievements and the epic story of this age of ours more than half comprised in the feats of its strongest and most successful worker.—London Times.
Copies of the above work sent post-free to any address in the United States on receipt of $1. TICKNOR & FIELDS, publishers, Boston.
1*

A MANUAL OF TOPOGRAPHICAL DRAWING. By Lieut. R. S. Smith, United States Army, Professor of Drawing in the United States Military Academy, West Point. 1 vol. 8vo., plates, cloth. $1.50.
The design of this manual is to be a practical assistant and office companion, to be consulted on all matters connected with topographical drawing.—Preface.
We regard the work as a choice addition to the library of science and art, and one that has long been needed by the professor.—Railroad Journal.
We think this an admirable treatise on topographical Drawing.—Commercial Advertiser.
For sale by JOHN WILEY, publisher and importer of scientific works, No. 56 Walker-street, New York.
⁂ Copies mailed and prepared on receipt of price.

HOARD & WIGGIN'S STEAM TRAP VALVE, for relieving steam pipes of condensed water and keeping back the steam. By its use the boiler pressure is kept up, the full heat maintained, and a large saving in fuel made. It cannot freeze up and become inoperative, is self-adjusting, and being once attached requires no attention whatever. The device is small, being only six inches long by four in diameter, and yet of capacity sufficient for the largest circulation. For simplicity of construction and perfectness of operation this machine is without a rival. Having over one thousand of them in operation under all varieties of pressure and condensation, enables us to offer them not as an untried experiment, but with entire confidence that they will accomplish all that we claim for them. For an illustrated circular, or the machines, address HOARD & WIGGIN, Providence, R. I. 1*

JONES & LENNIG, NOS. 313 AND 315 NEW Market-street, above Vine, Philadelphia, Pa., Manufacturers of Wet and Dry Patent Gas Meters; Station, Experimental, Show and Customer Meters; Meter Provers, Burner Provers, Mercury Cups, Governors, Center Seals, &c.; Pressure Registers, Indicators and Gages, &c., &c. Messrs. Jones & Lennig beg leave to call the attention of Gas Companies, Gas Engineers, Gas-work Builders, and of consumers generally in the United States, Canada, South America, Cuba and California, to the superior instruments they are now offering. Meters tested by a sworn inspector. Orders promptly attended to. 12 4*

OIL! OIL! OIL!—FOR RAILROADS, STEAMers, and for Machinery and Burning. Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This Oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior to and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The SCIENTIFIC AMERICAN, after several tests, pronounces it "superior to any other they have ever used for machinery." For sale only by the Inventor and Manufacturer, F. S. PEASE,
No. 61 Main-street, Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 1 13

McALLISTER'S ILLUSTRATED CATALOGUE. We have just issued the eleventh edition of our priced and illustrated catalogue of Optical, Mathematical and Philosophical Instruments. Contents:—Mathematical Instruments, Astronomical Telescopes, Galvanic Batteries, Magic Lanterns, Surveying Compasses, Surveying Chains, Rain Gage, Magnifying Glasses, Tape Measures, Watchmakers' Glasses, Platina Points, Air-pumps, Landscape Mirrors, Electro-magnetic Machines, Pocket Compasses, Spy Glasses, Microscopes, Microscopic Objects, Stereoscopes, Polyoramas, Barometers, Camera Obscuras, Kaleidoscopes, Prisms, Sun Dials, Thermometers, Hydrometers, Globes, Goggles, Spectacles, Eye Glasses, &c. This catalogue (116 pages, 200 illustrations) is furnished gratis, on application, and mailed free of charge to all parts of the United States. McALLISTER & BROTHER (established in 1796), No. 728 Chestnut-street, Philadelphia.

5.000 AGENTS WANTED—TO SELL FOUR new inventions. Agents have made over $25,000 on one—better than all other similar agencies. Send four stamps and get 80 pages particulars, gratis. EPHRAIM BROWN, Lowell, Mass.
17 13*

KEEP YOUR CIDER SWEET.—AN ORIGINAL invention, and a new article of merchandise which is kept for sale by all hardware dealers, druggists, agriculturalists, grocers, &c. Patented September 27, 1859. Designed for the use of hotels, grocers, liquor and camphene dealers, lager-bier venders, families, &c. It will keep sweet cider and all kinds of malt liquors, sirup, &c., on draught. Send for a circular; enclose a stamp. Address J. J. NORMAN & CO., No. 379 Broadway, up stairs, New York. Agents wanted. 1*

A MESSIEURS LES INVENTEURS—AVIS IMportant.—Les inventeurs non familiers avec la langue Anglaise, et qui prefereraient nous communiquer leurs inventions en Francais, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront recues en confidence.
MUNN & CO., Scientific American Office, No. 37 Park-row, New York.

PATENT EXTENSIONS.—ALL PATENTS FOR Inventions, granted by the United States during the year 1845, will expire by their own limitations during the current year (1859) UNLESS EXTENDED ACCORDING TO LAW. The statute provides for the extension of Patents for an additional term of SEVEN YEARS, the grant being made to the inventor himself, or if deceased, to his heirs and administrators. The EXTENDED TERM inures solely to the benefit of the inventor or his heirs. Assignees or owners of rights under the first term of the Patent have no rights whatever in the extended term. The inventor or his heirs may, however, sell their interests in the Extension prior to the grant thereof, in which case the Extended Patent, when granted, becomes the exclusive property of such purchaser. Applications for Extensions must be made at the Patent Office at least 65 days prior to the extension of the Patent. The undersigned, having had great experience in Patent business, will promptly prepare the various documents and prosecute Extension cases on moderate terms. For further information address
MUNN & CO., Solicitors of Patents,
No. 37 Park-row (Scientific American Office), New York.

THE COMPLETE PRACTICAL DISTILLER. By M. L. Byrn, M. D., with illustrations, 12mo. A new edition of this work just ready, and will be sent by mail free of postage; price $1. HENRY CAREY BAIRD, publisher, Philadelphia. 17 3

PHOTOGRAPHIC OUTFITS. — INVALUABLE to Manufacturers, Engineers and Architects for copying machinery, models, drawings, &c.; also for taking portraits, views and stereographs. Process very easy. Complete apparatus and instruction from $30. Enclose a stamp for catalogue. C. J. FOX, Photographic Warehouse, No. 681 Broadway, New York. 17 3*

YATES' IMPROVED PATENT RAILWAY SHINGLE MACHINE.—Best ever patented. State and County rights can be had of W. H. G. YATES, patentee, Chittenango, N. Y. Manufactured by Seymour & Adam, Rome, N. Y.
15 10*

WOODWORTH'S PATENT PLANING MACHINES, of every description and kind, at reduced prices, very low for cash, at the old stand, No. 57 Pearl-street, Brooklyn, N. Y. Send for a circular of styles and prices. Address
J. H. LESTER, Brooklyn, N. Y.
I am also manufacturing and selling as good Shuttle Sewing-machines, under legal rights, as was ever offered to the public, and for less money. For samples of sewing, and circular of prices, address
15 10* J. H. LESTER, No. 483 Broadway, New York.

HOSIERY KNITTING-MACHINE FOR FAMILY and Plantation use; the most simple and complete Stocking-machine ever offered to the public. No family or plantation should be without one. Patent secured both in this and foreign countries, by the inventor and manufacturer, J. B. AIKEN, 84 Merchants' Exchange, Manchester, N. H. For an illustration and price of the machine, send for a pamphlet. 12 3mo

PECK'S PATENT DROP PRESS.—THE MOST perfect machine in use for the manufacture of silver, copper or tinware, spoons, jewelry, &c. Manufactured by the patentee.
4 22* MILO PECK & CO., New Haven, Conn.

IRON PLANERS, ENGINE LATHES, AND OTHER Machinists Tools, of superior quality, on hand and finishing, and for sale low; also Harrison's Grain Mills. For descriptive circular, address New Haven Manufacturing Co., New Haven, Conn. 14 13

NEW YORK MACHINERY DEPOT.—MILBANK & ANNAN (successors to A. L. Ackerman), manufacturers and dealers in Woodworth Planers, Wick's Patent Re-sawing Machines; Sash, Door and Blind Machinery, Steam-engines and Boilers, Machinists' Tools, Files, Leather and Rubber-belting, and findings of every description, No. 222 Pearl-street, New York. 9 24*

CHARLES W. COPELAND, CONSULTING AND Superintending Engineer, No. 122 Broadway, New York. Plans and Specifications prepared for all kinds of Steam-engines and Machinery. Steam Vessels and Steam-engines, both new and second-hand, for sale. Also, Wire-rope, Steam and Water-gages, Indicators, Steam Fire-engines, Pumps, &c., &c. 10 13*

MACHINE BELTING, STEAM PACKING, ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The Hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise at our warehouse. NEW YORK BELTING AND PACKING COMPANY. JOHN H. CHEEVER, Treasurer,
13 14 Nos. 37 and 38 Park-row, New York.

WOODWORTH PLANERS—IRON FRAMES TO plane 18 to 24 inches wide, at $90 to $110. For sale by S. C. HILLS, No. 12 Platt-street, New York. 1 tf

CARY'S CELEBRATED DIRECT-ACTING SELF-Adjusting Rotary Force Pump, unequaled in the world for the purpose of raising and forcing water, or any other fluid. Manufactured and sold by CARY & BRAINARD, Brockport, N. Y.
Also for sale by J. C. CARY, No. 240 Broadway, New York. 8 13

BOILER FLUES FROM 1 1-4 INCH TO 7 INCHes outside diameter, cut to any length desired, promptly furnished by JAMES O. MORSE & CO.,
7tf No. 76 John-street, New York.

GUILD & GARRISON'S STEAM PUMPS FOR all kinds of independent Steam Pumping, for sale at 55 and 57 First-street, Williamsburgh, L. I., and 74 Beekman-street, New York.
1 13 GUILD, GARRISON & CO.

LUCIUS W. POND, MANUFACTURER OF SUperior Planing-machines for Iron, Engine Lathes and Machinists Tools generally. Address L. W. POND, Worcester, Mass. 2 16t*

WROUGHT IRON PIPE, FROM ONE-EIGHTH of an inch to six inches bore; Galvanized Iron Pipe, (a substitute for lead,) Steam Whistles, Stop Valves and Cocks, and a great variety of Fittings and Fixtures for Steam, Gas, and Water, sold at wholesale and retail. Store and Manufactory, No. 76 John-street, and Nos. 29, 31 and 33 Platt-street, New York.
7tf JAMES O. MORSE & CO.

Zur Beachtung für Erfinder.

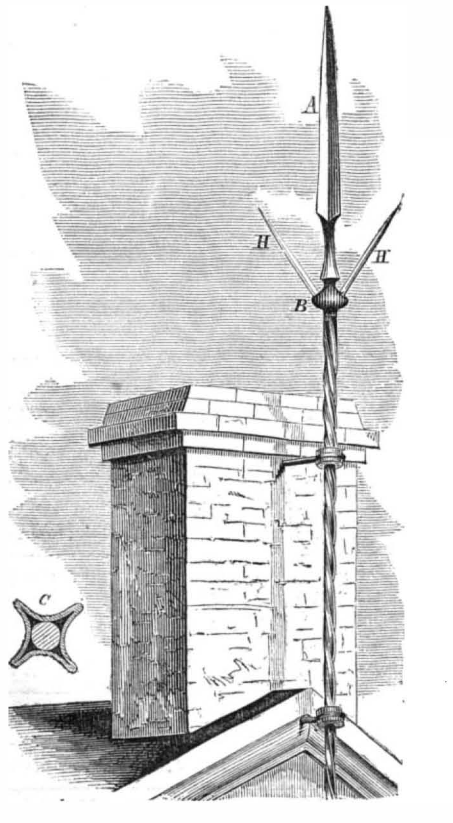
Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu adressiren an

Munn & Co.,
37 Park Row, New-York.

Auf der Office wird deutsch gesprochen.

BALDWIN'S LIGHTNING-ROD.

If any man can satisfy the community that he has invented and is making a rod which is a more complete protection from lightning than any other, he may rely upon a very large business. L. S. Baldwin, of St. Louis, Mo., has devised a combination (here illustrated) which he deems better than any before known, and for which he received Letters Patent on August 9, 1859.



It consists, in combination with a peculiar point, of a round piece of iron surrounded by a square tube of sheet copper, which tube is fluted and twisted spirally. The size of the iron rod is such as to bring it in contact with the sides of the copper tube, as shown at C. The point, A, is a triangular dart, plated heavily with silver except the extreme point, which is plated with gold, the edges being made prominent by fluting the sides. At the base of the point, A, is the bulb, B which is filled with a steel magnet, and communicating with this magnet are three auxiliary points, H H, made of steel, and, of course, magnetic from their connection with the bulb. These points, H H, are opposite the middle of the sides of the main point. A. The inventor says that experiments have shown that the attractive power is greatly increased by this combination of the point with magnets, and that his combination of the iron rod with the copper tube forms a remarkably strong, efficient, cheap and easily-constructed rod.

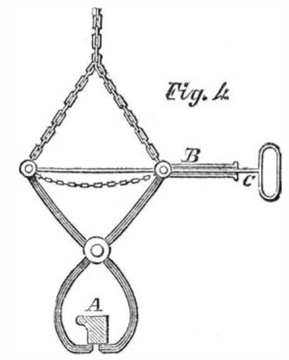
Mr. Baldwin will furnish further information if addressed at 57 Washington-avenue, in the above-named city.

MOLDING FRUITS AND INSECTS IN METAL.

Small castings of iron, copper, or any other metal, may be made in molds composed of plaster-of-Paris. Such molds are easily made and are very suitable for such articles. Fac-similes of birds, flowers, fruit, and insects may be cast in plaster-of-Paris molds as follows:— Make a tight box of boards, with two or three wooden pins in it, and suspend in it, by a piece of strong linen cord, the objects of which casts are desired; then take five parts of plaster-of-Paris and one of brick-dust and make them into a paste of the consistency of cream, and fill up carefully the box so as to cover the objects without distorting them. The box—with the articles in the interior of the plaster—is now suffered to dry very slowly; then it is placed in a low fire, the heat of which is increased gradually until the box is consumed, and the plaster heated red-hot. This is now taken out of the fire, and the places where the wooden pins were inserted will form small holes opening into the interior. The place which was occupied by the leaves, flowers, or insects will be found to contain only the ashes of these, which are blown through the pin-holes with a pair of bellows, leaving a space inside of the form of the object to be cast. A small quantity of mercury is generally poured in through the hole left by the burnt cord; it collects the ashes by shaking and then runs out of the pin-holes. The molten copper or brass is now poured in by a jet through the pin-hole, which may be enlarged for the purpose, and the air will pass out by the small opening left by the cord. When the metal is cold, the mold of plaster is broken and the casting taken from its interior. Groups of fruit, flowers, lizards and frogs have been cast by this process with an exact faithfulness to nature.

MELLEN BATTEL'S CANT-HOOK.

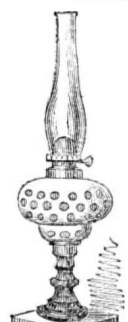
A simple little modification of cant-hook, for lifting hot railroad tires or other pieces of heavy iron, is represented in the accompanying illustration.



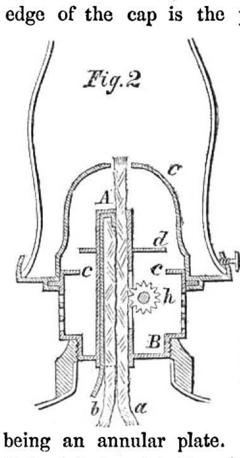
A, is a section of the tire or other iron grasped by the hook. The tube, B, is firmly fastened to one arm of the hook and the rod, C, to the other arm. A workman, by taking hold of the tube, B, with one hand and of the rod, C, with the other, is able to open and shut the hook while standing at a tolerable distance from the fire. By having two or three of these hooks attached to the crane, the tire may be quickly and easily raised from the furnace although bedded in coal.

Mellen Battel, of Albany, N. Y., is the inventor and manufacturer of these hooks, and for further information address as above.

DRAKE'S IMPROVED LAMP.



ALTHOUGH all classes of inventors, including the profoundest philosophers and the most thorough masters of science, have exhausted their ingenuity in the construction of lamps, it is far from certain that the best form has yet been discovered; at all events, it is probable that the manufacture of new varieties of oil will call for new modifications in the construction of lamps. The accompanying engravings illustrate a lamp which is the product of a series of inventions by John L. Drake; the cut at the head of this article being a perspective view, and Fig. 2 a vertical section which illustrates the several parts. The wick-tube, A, is a rectangular prism containing two flat wicks, *a*, and *b*, of which the edges are shown; *a*, alone extending above the tube, and being lighted; *b*, merely serving as an auxiliary to aid in the supply of the oil. The cap, C, has a long rectangular slit in its top through which the wick, *a*, protrudes. Two or more pinions, *h*, for raising and lowering the wick, are fastened upon a shaft which passes through the side of the tip and is provided with a milled head by which it may be turned. Around the lower edge of the cap is the projection for supporting the chimney, being a flat ring with raised edges, which is struck with the cap from a piece of plate metal. This ring is perforated for the supply of air to the sides of the flame. The body, B, of the tip is a cylinder, perforated with numerous holes for the supply of air to the base of the flame, having a screw at its lower end by which it is attached to the lamp. Around the upper edge of the cylinder, B, is the projection, *c c*, being an annular plate. Above this projection is the disk, *d*, fastened to the wick tube. The object of these combinations is the supply of two currents of air to the flame, one at its base and one at its sides. The air which enters through the perpendicular holes in the chimney-supporter, passes up into the chimney and comes in contact with the sides of the blaze, while the air which enters through the sides of the body of the tip is spread by the projection, *c c*, and the disk, *d*, in a thin hollow sheet, and brought in a warm condition in contact with the base of the flame. The cold air passing through the chimney-supporter keeps it cool so that it may be handled even while the lamp is burning, thus avoiding the ordinary delay for the lamp to cool before it can be trimmed or replenished. Nearly all the separate pieces of this tip being struck from pieces of plate metal, it may be constructed with great economy.



This lamp is the invention of John L. Drake, of Cincinnati, Ohio; the patent for the wick tube having been issued May 17, 1859, and the one for the combination of the disk and cap, Sept. 20, 1859.

Further information may be had by addressing J. L. Drake or C. P. Lindsay, No. 36 Beekman-street, New York.

AMERICAN CARNELIANS.—We have received a few specimens of carnelian stones from J. H. Chilcote, of New Paris, Ind., who gathered them from the shores of a small lake in the interior of Minnesota. He states they appear to have been formed from a soft substance, which had in some manner accumulated on the surface of the water, and became indurated during hot weather. Great quantities of these beautiful stones, of different sizes and forms, are found at this lake; and some of the specimens are exceedingly beautiful, and have been set in jewelry. The carnelian is one of the varieties of quartz belonging to the chalcedonic series. They are much used in common jewelry; and when cut and polished, the colors become deeper on exposure to the rays of the sun. The Japanese cut carnelians into beads of various forms, but most commonly into that of the olive-berry.