

#### A JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, AGRICULTURE, CHEMISTRY, AND MANUFACTURES. NEW YORK, JULY 7, 1860. Vol. III.—No. 2. New Series.

IMPROVED LATHE FOR TURNING BEADED clutch, v, to which is attached a slide, R, for moving it back end. A collar, Z, on the hub turns with it. A wood work. jointed lever, A', is fitted in the disk, G, and is Those who adopt the most improved mechanism for alternately, and give the shaft, N, its forward and attached to the sliding plate, B', on the face of the disk, producing articles of manufacture obtain advantages over reverse motion. A lever, W, secured to the front part, G, as shown in Fig. 3. The finishing knife (more than

tide of progress. A very great variety of ornamental beaded work is employed for chair rounds, broom and tool handles, and various other purposes. The accompanying illustrations are a perspective side sectional and minor sectional of an improved pattern lathe for turning such work with great rapidity; and it is adapted for an endless variety of patterns and articles of different sizes. The sticks are taken into the lathe rough and carried through a hollow mandrel, where they are acted upon by reyolving tools, which turn the sticks into a perfect round form, and produce the ornamented surfaces at one continuous operation. Close attention is necessary to the description of the figures to obtain a perfect understanding of the operations.

A is the frame of the machine; B is the driving shaft, which has two pulleys, C C, within the frame, and another hidden in Fig. 1, from which the belt, a, passes over the upper pulley, E. Belts, b b, also pass from the under pulleys over the disks, F G, which are placed loosely on the hollow mandrel, H, which is fixed on a cross-piece, c. A die, d, is fitted at each end of the hollow mandrel. These dies are annular pieces of metal, which serve as bearings for the stick in the mandrel. Dies of different sizes, according to the size of the sticks to be turned, may be used. The spurs, e e, prevent the sticks from turning.

The disk, F, where the sticks are entered, is the placed where they are first operated upon by the gouge-cutter, I, to turn off the rough and make them perfectly round. A nut, f, is placed at the center of the disk. The cutter, I. revolves with the disk, and is attached to it by an adjusting screw, g, to be placed further in or out to suit sticks of different sizes. J, Fig. 1, is an adjustable feed wheel, secured on a standard, which is revolved by a wheel operated by a screw on the cross-shaft, N. A grooved guide bar, i, is attached to the standard of wheel, J. There is also an adjustable guide pulley, K, on the other side of the guide groove, i. The stick is fed into the mandrel, as shown in Fig. 2.

The cross-shaft, N, has a screw on it which gears into the wormwheel, P, and gives it motion. A pattern, Q, formed of a strip of metal, is secured by screws on the inner face of the wheel. P. and it is notched in such a form as to produce a corresponding form

hub of wheel, P, are two collars, U U', secured by



BALDWIN'S IMPROVED LATHE.



cured in bearings, y', below the mandrel. One end of of spirits of wine, constitutes the first dilution. A case screws, and there are pins, v v, which are to operate this rod bears against the pattern, Q; to its opposite of neuralgia in an old lady, which had resisted the clutch for actuating the pattern wheel. On shaft, end is secured the pendant arm, a', which is attached to every known remedy, was completely cured by this N. are two bevel wheels, w w, between which is a a sliding collar, V, on the hub of the disk, G, at the new agent.

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those who are too conservative to float onward on the has a spring x, bearing upon one of its ends. X, is a one may be used), C', which produces the beading ornamentation, is secured to plate, B', to

which a spring, D', is also attached. Motion is given to the shaft, B, and the disks, F G, by the belts, and likewise the cross-shaft, N, by the bevel gearing. The stick to be turned is forced between the wheel, J', and guide, K, thence through the guide bar, i, into the hollow mandrel. Thegouge cutter, I, rotating on the disk, now takes off the rough and makes the stick perfectly round As the wheel, P, rotates, the pattern, Q, presses upon the end of the tracer bar, X, which slides back and forth as it is moved by the notches. This sliding motion moves the pendant, a', with its collar, V, so as to press up or recede from the back end of the jointed lever, A', to which the sliding plate, B', of the ornamenting cutter, C', is secured. This operation produces an expanding and contracting motion of the beading cutter, which is thus guided by the pattern, Q, through the tracer bar, X, to produce the pattern on the stick, as shown in Fig. 2.

The cutters rotate while the sticks are carried straight through. The clutch, v, on the front shaft, N, operates the gear-wheels so as to give a reverse motion to the shaft, N, and pattern wheel alternately. The clutch is shifted through the pins on the collar of the wheel, P, through the slide R. The pattern wheel is thus operated to permit of the accurate and easy feeding of the sticks into the machine, and to save time by the continued operation of the pattern wheel back and forth. This lathe is automatic in its action, the sticks merely requiring to be fed into the disk. F.

The arrangement and combinations in this machine are ingenious, and as a whole, the lathe is easily managed, and produces excellent work.

The patent for this machine was granted August 4, and embraces three claims. More information may be obtained by addressing the patentee, Mr. Frederick Baldwin, formerly of Vermont, but now residing in Mendota, Ill.

## NEW REMEDY FOR NEURALGIA.-The Journal de Chemie Medicale contains an account of the discovery of a

new and powerful sedative in neuralgia, just discovered by Dr. Field. The substance used is nitrate of oxyd and glycile, and is obtained by treating glycerine at a low temperature with

in the stick; it is therefore a guide pattern. On the slide bar, or it may be called a "tracer," which is se- sulphuric or nitric acid. One drop mixed with 99 drops

### FACTS ABOUT COAL GAS.

A bill for regulating the sale of gas in Great Britain having been introduced into the House of Commons, the London Journal of Gas-lighting publishes the testimony of witnesses that have been examined by the committee of Parliament, in order to obtain correct information on the subject. We give, below, the substance of some of the testimony which was elicited.

A tun of Newcastle bituminous coal yields 9,200 cubic fect of gas : its price is sixteen shillings (\$3.88) per tun. It is the practice in many English gas-works to mix one tun of Scotch cannel with every two of common coal. They thus obtain about 30,000 cubic feet of gas of a very superior illuminating power. The cannel coal costs £2 5s. (about \$10.90) per tun in London. In that city, also in Manchester and several other large towns in England, the price of gas ranges from 3s. 9d. to 4s. 6d. per 1,000 cubic feet, the highest being but a little over \$1; and yet the profits range from 9 to 10 per cent to the companies. Pure cannel coal gas of a high illuminating quality is only \$1.25 per 1,000 cubic feet. The standard of illuminating power for gas made from cannel coal is that of 12 sperm candles for three cubic feet, and 20 candles for five cubic feet; that is to say, five cubic feet of this gas will give a light equal to that obtained from 20 sperm candles, and hence a "5-foot burner" is one which gives a light equal to 20 sperm candles; a "3-foot burner" gives a light equal to 12 candies. The main gas pipes in London are charged to a pressure of one inch; the pressure at the burners only amount to one half of this, and is subject to the control of the consumer. The pressure in the mains is generally greatest in the early part of the evening, and consumers frequently use more gas than they are aware of-some of it escapes unconsumed. The pressure of gas increases in pipes one-tenth of an inch for every 10 feet of elevation; at the top of a pipe at an elevation of 100 feet, the pressure is one inch greater than at the base. The pressure is determined by a gage used for the purpose. Gas generally contains ammonia, sulphureted hydrogen, and bi-sulphide of carbon. These impurities injure its illuminating qualities. The two former are capable of being removed with lime and sufficient washing, but the bi-sulphide of carbon remains incapable of removal by any of the ordinary means yet employed.

As the subject of gas-burners has recently formed the topic of considerable discussion at the meetings of the Polytechnic Association, in this city, we will state that a patent has been lately taken out in England (by A. L. Downie) for a burner which appears to be somewhat different in its construction from any described during those confabulations. The top of this burner is bellshaped, and has a broad flange around it, through which holes are bored from beneath in such a manner as to conduct jets of air diagonally into and across the flame, which keep up a sufficient supply of warm oxygen and the flame is said to be very bright. This burner also contains a small recess, in which is a disk of perforated pasteboard and another of thin cotton cloth, stretched on rings, and so arranged as to form a chamber between them. The gas passes through this chamber to the orifice, and is diffused so as to flow steadily to the burner and prevent flickering. This method of stuffing the burner to diffuse the gas is simple, and the pasteboard and cotton cloth can easily be removed if they become clogged, and the renewal of them is a mere trifle of trouble and expense.

### THE CARPET TRADE.

It is singular what a remarkable taste the American shows for a good carpet. It seems to be impossible for him to walk comfortably through life without a carpet under his feet. Every man who occupies a few square feet of house-room must have the brick or the boards protected from his tread by so much carpeting. Here carpeting appears in a thousand places where in other parts of the world it is never seen. The English shopkeeper thinks the bare boards good enough for the reception of his customers, and seldom does the merchant think of adding to the elegance of his counting-room by laying down a square of Brussels. Only those churches devoted to the service of the more aristocratic worshipers are furnished with the comforts of Kidderminister, the bare wood or bricks or stone being considered more consonant with the "self-denying duties of the sanc-

American. He believes in enjoying life; and considering that carpets contribute to life's enjoyment, he does not hesitate to spread everywhere he is accustomed to tread with a due quantity of three-ply, or Tapestry, or Brussels, or Turkey. Notwithstanding the high cost of foreign carpetings in this country, it is yet surprising to what an extent these are annually imported. In 1859, more than two million dollars' worth of carpetings was imported into the United States. Of that amount \$2,174,064 was for goods of English manufacture, and \$10,317 for French makes. Although a larger proportion of expensive carpetings is used in this country than perhaps in any other, yet it would appear that the kind most luxurious of all is sold to a very insignificant extent. The costly manufactures of Turkey are known throughout the world as at once the richest and the most durable of carpets; yet our entire importation of that make, during last year, amounted to only \$798, which fact is probably owing to the limited extent of trade with Turkey. The sale of mattings is a branch of the carpet trade which is yearly increasing in importance. The imports of matting in 1859 amounted to \$265,133; and this year in consequence of our growing trade with China, the chief source of supply, the receipts are likely to exceed considerably that amount. The imports of floor-cloth are comparatively trifling, our own manufacturer having succeeded in producing an article which has put foreign productions almost entirely out of the market. - United States Economist.

# OUR SPECIAL CORRESPONDENCE

Sugar Plantations—Mode of Culture—Railroads and Alligators—Galveston—Extensive Drouth and Injury to the Crops—Mule-drivers, &c.

GALVESTON, Texas, May 31, 1860. MESSRS. EDITORS:-A little before reaching New Orleans I came in sight of the first sugar plantations, and we passed through thousands of acres on the ride from New Orleans, 80 miles due west to Brashear, on the route to Galveston, Texas. The sugar cane in the present stage of its growth is simply a cluster of long sword-shaped leaves, looking very much like a lilv. It is planted in rows, from five to seven feet apart, and some of the rows that we passed through were a mile and a half or two miles in length. The mode of planting is to open a furrow, any time in the winter, and lay two or three canes in it and cover them up. The canes for this purpose require to be preserved by protecting them from the cold, which is effected by covering them either with earth or, more commonly, with cane leaves. The plant, after being cut, throws up shoots, the second and third and sometimes even the fourth year, so that it is necessary to replant a fourth, a third, or a half of the plantation each year. The ground must be plowed and hoed sufficiently to keep it clear of weeds till the cane plants get large enough to shade the ground, three plow ings being about the average. At about nine o'clock in the forenoon we passed a plantation in which the negroes were just taking out out the mules to water; having been plowing since daylight. There were some twenty of them, and the overseer was sitting on his horse, watching them as they rode off, perhaps a mile, to the well. The plantations are so large that the overseers generally ride. spending most of their time on horseback.

The railroad from New Orleans to Brashear passes through a very level country, a considerable portion of the way being a cypress swamp; and in the ditches by the side of the road we saw scores of young alligators, generally about five or six feet in length. Many of them were lying on the bank of the slitch, sunning themselves —slimy, scaly reptiles, as black as a negro, decidedly unattractive in their appearance. I am told that the female lays from two to three dozen of eggs, each as large as a turkey's egg and twice as long; that she covers them with sticks and leaves them to be hatched by the sun. It is only when disturbed in the neighborhood of her nest that the alligator is really dangerous. My informant says that on such occasions she is very ferocious, and will attack a man without hesitation.

laying down a square of Brussels. Only those churches devoted to the service of the more aristocratic worshipers are furnished with the comforts of Kidderminister, the bare wood or bricks or stone being considered more consonant with the "self-denying duties of the sanctuary." Widely different is it with the well-to-do

nsider- some of the streets. The yellow fever is the great scourge e does of the place.

There seems to be a general complaint of the drouth all the way from Maine to Texas. The corn, cotton and sugar crops are all suffering, and the latter especially is said to be in danger of failing entirely unless a rain comes soon.

My room-mate is an old Kentuckian who makes a business of buying horses and mules in Kentucky and Missouri and selling them in the southern States. He was quite uneasy on the steamship, as he had never been out of sight of land before. He said he didn't want to go where he couldn't see timber. A gentleman in the crowd, with a mole on the end of his nose, observed to him that, if that was the case, he had better take his hat and go ashore, as they would soon shove him into that fix. The weatherbeaten old frontiersman replied that he reckoned he could stand what any other man could. "Yes," said the gentleman, "Kentucky breeds that kind of men." Another rough customer from Alabama remarked that " he didn't know; he thought he couldn't stand being hen-pecked as some men are." "You oughten to say that," says Kentucky, "there was Delilah fooled Sampson, and he was the strongest man that ever was. No man ought to say that he can't be turkey-pecked." "No," responded the man with the mole on his nose, "there is no State that breeds that kind of men." в.

THE VENTILATION OF MINES-A NEW INVEN-TION FOR THE PURPOSE.

MESSRS. EDITORS :--- I have carefully perused the communication of your correspondent, R. Allison, of Pottsville, Pa. on the subject of the ventilation of mines (published on page 370, Vol. II, of the SCIENTIFIC AMERICAN); and like him I believe that too much importance has hitherto been attached to warming ventilation. This theory was treated at length by David Boswell Reed, and published in London in 1844, and again in a work by the same author, (who now holds a prominent position in the Smithsonian Institute at Washington) in a book published by Wiley & Halsted in 1858. I think that it may be fairly stated that Mr. Reed has given this system of ventilation all that it is entitled to. and I concur with Mr. Allison in saying that it is full time that, for some of the most important purposes, it may be considered a failure.

When economy-the great desideratum for Americans-is taken into consideration, the "jet-of-steam" system will meet with no better fate. Your correspondent mentions a case where a gentleman began with 25 jets of steam, but subsequently increased them to 45. Each one of these jets passed through a nozzle  $\frac{1}{8}$  of an inch in diameter, and at a pressure of 75 pounds on the steam gage. In a nozzle of  $\frac{1}{8}$  of an inch in diameter and the steam at the above pressure, it may be fairly stated that 710 feet will pass through a nozzle of that size each second, or 42,600 feet per minute. Now multiply this by 45, which is the number of his jets, and you have 1,917,000 feet of steam passing through the aggregate number. When this is viewed from an economical point of view, it may unquestionably be said that this process is too expensive, to say nothing about its being ineffective.

I accidentally saw, some weeks ago, the particulars of an invention of R. W. Sievier, of London, England, which in my judgment is peculiarly adapted to the ventilation of mines, and which will when properly applied prevent any further loss of life to the miner. It consists of a simple exhaust fan working in a drum head, which is attached to a pipe, the whole being airtight. This fan, when running at a speed of 1,000 revolutions per minute (and two-horse power if properly geared is sufficient to drive it at that speed), will exhaust 300,000 cubical feet of air per hour, through a pipe, shaft or flue, 15 inches in diameter. The construction of the fan is entirely different from any I have seen; and that it is capable of doing what is here stated for it is proved by the fact that one like it is now in operation in Newport, Ky., made by the same author. It is applied to what has heretofore been called a "blast furnace" for the manufacture of iron, and it exhausts a current of air through the furnace as shown by the monometer tube, equal to a blast through the ordinary tweers of 12 pounds to the square inch. If more exhaust is required, you have but to increase the speed of your fan, or if less, diminish the same. INQUIRER. Jersey City, N. J., June 28, 1860.

#### THE GREAT TORNADO IN THE FAR WEST. [Written expressly for the Scientific American.]

MESSRS. EDITORS:-On the third day of June, 1860, between the hours of 5 and 7 o'clock P. M., a violent tornado-combining the forms of a landspout and whirlwind-passed through a portion of the States of Iowa and Illinois. For about 12 months preceding this occurrence, a remarkably small amount of rain had fallen in those sections visited by the tornado. The surface of the earth had become excessively dry and parched, although the temperature of the atmosphere had not been unusually high at any time. During the last 6 weeks preceding it, the extremes of heat and cold had been sudden and frequent-so much so, for the time of year, as to often excite remark. The mercury in the same sections, and during the last-mentioned period, had ranged between 60° and 90° Fah.; never below 56°. The day of its visitation was marked by no peculiarities. During the forenoon the sky was clean and the wind blowing gently from the East; as the day advanced, it became warmer; and from 2 to 3 o'clock P. M, the heat was at times oppressive. Between 4 and 5, there were strong indications of a heavy and continued rain-a few drops occasionally falling; and about 5, the wind suddenly changed to a stiff breeze from the South-east Thick black clouds now seemed to ac cumulate in the West and North-west, and, rising upward from the horizon, would encounter each other with a violent agitation. Sharp flashes of lightning, accompanied by rapid and heavy discharges of thunder, also became frequent. Each moment the motion of the clouds increased in rapidity, and, shooting athwart each other in all directions with renewed violence, filled with awe the mind of the beholder

The meteor originated about 80 miles west of the Mississippi river. A thin, somewhat elongated, cone was seen to descend toward the earth, said cone having an almost inky blackness, and (as first seen from a distance) it was about the dimensions of a man's arm. As it moved eastward, it increased rapidly in size and the well-defined proportions of an inverted cone became plainly visible, and (like the metcor described by M. Seltier as seen in France on June 18, 1839) "little clouds were fluttering and whirling round the cone, and rising and falling rapidly " Occasionally, small portions of its vertex became detached and fell to the earth : then new ones formed, and, ascending rapidly, attached themselves to the main body, It seemed to have both a gyratory and progressive motion, and as it passed over bodies of water, clouds (?) were drawn upward with great velocity. After a short interval it lost its cone-like proportions, the vertex dropped from the cloud, and, as it swept rapidly onward, assumed a snake-like shape, darting through the sky with the undulatory motion appertaining to that animal. At last it disappeared altogether, and in its place was a mass of violently agitated clouds drawn with extreme velocity to a common center. Its progressive motion averaged about 90 miles an hour. A low, roaring sound was first heard, augmenting as it approached; and those who were directly in its path, and yet escaped alive, assert that, as it passed, "Not a sound was heard; the stillness of death prevailed." This was probably owing to the fact that the sense of hearing was destroyed for the moment. It was preceded by no rain, but torrents of water seemed suspended within it, and deluging the earth as it struck, passed on, leaving in its wake a cold, clammy fog, rising slowly upward, which fog, attaching itself to the skin, gave the cuticle a livid and unearthly appearance, noticeable upon the countenance for several days afterward. A strong sulphurous odor was also, in many places, plainly perceptible. The violent rotary motion was seen in the circular lines of its ruins and in the position of small branches of trees which were wound round about the trunk.

A high wind from the North, accompanied by a drenching rain, almost immediately followed. In the progress of the meteor eastward, it rose and fell occasionally, and seemed to visit with greater destruction the highest points of land. As it swept onward in its course (within the narrow belt, from one-quarter to onehalf a mile in width), everything animate or inanimate was doomed to certain destruction. Human beings fled to cellars and caves for safety. At many points, huge oaks were either uprooted or twisted from their founda-

and washed white and clean. Rails. boards and timbers were driven like spikes into the fields upon almost every square foot; excavations of earth formed in many places; in fact, all was laid waste as with some devastating torrent. The persons killed were enrolled in rags, perfectly saturated with mud, water and blood, and not recognizable until washed! The destruction seemed most complete near the town of DeWitt, in Iowa, where whole families were instantly killed, and their buildings and contents entirely destroyed !

The counter-current, an instant after the tornado passed, seemed almost as destructive. It threw the already shattered fragments into every conceivable shape and direction. The distance traversed by the tornado was nearly 140 miles, and it occupied about  $1\frac{1}{2}$  hours, in which time nearly 150 persons were killed and about 300 or 400 wounded. The night succeeding the storm was unusually calm and clear; the mercury fell 8° or 10°, and the full moon looked out silently upon the awful scene as upon some deserted battle-field. Altogether, it was one of those incidents which, once witnessed, can never be erased from the memory. FRANK A. HOWIG.

DeWitt, Iowa, June 23, 1860.

[We are much obliged to our correspondent for his interesting and graphic account of the recent fearful tornado. It will be read with much interest by all.-EDS

AN IMPROVEMENT IN BAKING LIGHT BREAD. MESSRS. EDITORS :- About twenty-five years ago, being aware of the fact that carbonate of ammonia is a volatile salt-both base and acid-I gave my wife a weak solution of that salt, and told her to make up a dough and bake light cakes with it, without any other thing to make it rise; and she did so. The cakes were light and good, without any smell of that salt, and ever since we have used it in our family to bake any sort of cakes-wheat, rve, buckwheat or corn-meal. In all these it is far superior to saleratus or super-carbonate of soda. It does not take one-half as much as any of those salts, it does not color the bread; and, as far as we have observed, it is not injurious to health But sometimes, when we had no carbonate of ammonia, and could not get it, we used saleratus, and latterly the super-carbonate of soda, both of which salts we found to be injurious to health, and they also color the bread, besides imparting a disagreeable taste to it. And furthermore, whenever a woman makes a batch of dough, and it happens to get sour and therefore will not rise, if the requisite quantity of carbonate of ammonia is added, it will revive it and make good bread. The objections to the general use of this salt are: first, if cake or bread is cut or broken open while yet too warm, it will be apt to liberate an ammoniacal smell; second, it is about three times as expensive as the super-carbonate of soda ; third, its great volatility necessitates it to be kept in close vessels; fourth, there are few stores in the country that keep the article. In reference to the last objection, however, if the demand was increased, chemists would manufacture it with increased vigor, and hundreds of storekeepers would keep it. I suppose the super-carbonate of ammonia JOSEPH J. JODER. would be the best for baking.

Shanesville, Ohio, June 30, 1860.

### AMERICAN NAVAL ARCHITECTURE. [Reported expressly for the Scientific American.] THE STEAMER "MASSACHUSETTS."

This fine steamer, erected in Boston by the Atlantic Works, will soon take her appropriate position on the route of her intended service-Boston to Charleston, S. C. All the modern improvements that experience has suggested in the construction of steamships have been advantageously used in the erection of this vessel. and it is confidently expected that she will prove a per fect success and an honor to her well-known builders. We herewith subjoin the particulars of her hull, &c.:-Length on deck, from fore-part of stem to after-part of stern post (above the spar deck), 210 feet; breadth of beam at midship sections above the main wales (molded), 35 feet; depth of hold, 17 feet; depth of hold to spar deck, 25 feet; draft of water at load line, 13 feet 8 inches ; tunnage, 1,150 tuns.

Her hull is of wrought iron plates, from  $\frac{1}{2}$  to  $\frac{3}{4}$  of an tions; other trees were often deprived of every leaf and inch in thickness, and very securely fastened with rivets

limb-stripped of every vestige of root, bark and branch, 3 of an inch in diameter, every 2, 2 and 23 inches, There are 5 fore-and-aft vertical keelsons, of 17 inches in depth, all tapped with angle iron. The floors are shaped Z L, and are molded  $4\frac{1}{2}$  inches, sided  $\frac{1}{2}$  of an inch; distance of frames apart at center, 18 inches.

The Massachusetts is fitted with one vertical directcondensing engine; number of cylinders, 1; diameter, 64 inches; length of stroke of piston, 3 feet 8 inches. material of propeller, cast iron; number of blades, 4.

She is also supplied with one horizontal tubular boiler, located in hold, and possessing a water bottom. Shape of keel, I; dimensions, 9 by 3 inches; water-ways are of white pine-24 inches by 14 inches. Blowers are not used to furnaces. She has one smoke pipe, one independent steam fire and bilge pump, one bilge injection, and bottom valves or cocks to all openings in her bottom Her bunkers are of iron; she has two large anchors and four water-tight athwartship bulkheads; there are two cargo ports on main deck.

Her rig is that of a brigantine. In addition to these features, she is amply protected from communicating fire from the boiler by felt, zinc, tin and sheet iron.

This steamer is owned by the Boston and Southern Steamship Company

#### THE PROPELLER "KILANEA."

As this steamer has been recently erected for parties in other countries, we think it not inappropriate that the essential elements of its construction should have a place in the columns of the SCIENTIFIC AMERICAN, and so proceed to give them in detail, as follows:-Length on hur. ricane deck, 140 feet 8 inches; length on lower deck, 133 feet 6 inches; breadth of beam at midship section, above the main wales (molded), 24 feet 11 inches; depth of hold, 10 feet; depth of hold to spar or hurricane deck, 16 feet 6 inches; draft of water at load line, 9 feet 10 inches; tunnage, measured as a single-decker, 315 tuns, but, more properly, as a double-decker, gives 398 tuns, her correct measurement.

Her hull is of white oak, with hacmetac top timbers cross-fastened with iron, and with tree-nails in outboard driven through ceiling; butts fastened with yellow metal and copper, butt bolts and large spikes. Distance of frames apart at centers, 30 inches, and these are diagonally strapped with iron  $3\frac{1}{2}$  by  $\frac{3}{2}$  inches. The floors are molded 13 inches; sided 12 inches to 14 inches.

The Kilanea is fitted with two direct-acting vertical engines, number of cylinders, 2, diameter of same, 26 inches; length of stroke of piston, 3 feet; diameter of propeller, 9 feet; material, of "composition;" number of blades, 3; extreme width of same, 5 feet 6 inches, acting direct; their pitch, 21 and 23 feet; and length, 3 feet 6 inches.

She is also supplied with one single return flue boiler, located in hold, forward of the engine : length of boiler. 28 feet; breadth of same, 7 feet 9 inches, and its hight (exclusive of steam chimney) is 8 feet 10 inches; number of furnaces, 2; breadth of these, 6 feet 8 inches; length of fire-bars, 6 feet 3 inches; number of flues above, 4, number of same below, 10; internal diameter of those above, 18 inches, and the internal diameter of those below, 8 of  $10\frac{1}{2}$  inches and 2 of 18 inches; length of flues above (extreme), 22 feet 8 inches, length below, 15 feet 11 inches; possesses 1 smoke pipe : diameter 3 fect 3 inches : boiler has water bottom; no blowers to furnaces, and no slip joint to steam pipe.

Ample protection has been made against communication from fire by the boiler, in the shape of felt, canvas, paint, &c., &c; the protection in the chimney-room from the smoke pipe is by iron casing. Maximum pressure of steam, 25 lbs.; point of cutting off (variable), ordinarily at 1 stroke; maximum revolutions at this pressure, 55; and speed of vessel, in knots, 10 nautical miles.

She has one independent bilge pump, two bilge injections and bottom valves or cocks to all openings in her bottom ; bunkers are of iron ; water-ways of yellow pine ; has two masts, and rig similar to an hermaphrodite brig; anchors are three in number; respective weights, 524, 1,120 and 1,487 lbs.; total weight of the three, 3,131 pounds.

The hull was constructed by Mr. Paul Curtis; the machinery by the Atlantic Works, East Boston, Mass. The location of her intended service is around the Sand wich Islands.

## PATENT BEEHIVE. 1

"The little busy bee "-emblem of provident frugality-has many enemies which seek to prey upon the fruit of its untiring industry. Those, therefore, who cultivate bees seek to protect the little denizens of their hives from insect robbers and moths, and various devices and conformations of hives have been devised for this purpose. The accompanying engravings represent a perspective (Fig. 1) and a section (Fig. 2) view of an improved construction of hive-trap for catching drone and robber bees and the "miller moth," for which a patent is lowered for a short period of time, when they will pass was granted to R. Hawkins

Fig.I.

0-0

on the 24th of April last. The hive is made with two apartments, A B, and with doors, a a, at its back and front; b b are removable glass panels between the doors and the working chambers, for the purpose of inspecting the bees and for the removal of honey. At one side, leading into each chamber, are long tubes, cc, which are provided with a removable stopper. These tubes are opened at their plugged ends, whenever it is desirable to have the bees pass through them from the hive. By employing long tubes for these passages, the bees will not cluster on the sides in the same manner as in hives having only holes cut in their sides. The bottom, D, of the lower chamber of the hive is made of a V-shape in its transverse

casing, E, in a V-shaped extension, F, so that an ingress passage, S, for the bees exists between it and the extension from one end of the casing to the other, as represented. This passage communicates with the long narrow opening, d, at the lower part of one of the inclined sides of the V-shaped extension, F. By thus constructing the bottom of the lower chamber, the lower V-space below the point where the bees begin to work can be nearly filled up, and a free passage is also secured for the bees at both the side edges of the bottom after set at such a distance apart that, if a working bee should to so many purposes, like this one; it being adapted, as

they have entered at the opening, d. It is very important thus to fill up the V-space; because, if it is left open, the bees are exposed to cold air in inclement weather, and in order to keep warm, they seek a place at the top of the hive, and, as a consequence, the lower portion of the comb in the lower chamber is left exposed to the enemies of the bee, and the moth soon finds access for evil. By having openings only at the side edges of the bottom, D, and center of the V-shaped extension, F, the bees will be merely subjected to air at the side edges of the bottom, D, and will not be compelled to retreat from the lower to the upper chamber in order to keep themselves sufficiently warm in cold weather. By this arrangement, therefore, they will always be in a position to meet intruders and defend

the bottom of the lower chamber.

To permit of feeding the bees in cold weather, the Vshaped bottom is made hollow, and a drawer, G, of suitable form, slides into this space, through an opening in one end of the casing. The passages, e e, are for the inventor, Robert Hawkins, at Beallsville, Pa. bees to pass down into the feed drawer, G, which has ventilating openings, t, covered with wire gauze. A cut-off strip, H, is arranged at the egress passage, d, for confining the bees when required. A series of tubes, H' H', are arranged below this passage, and in rear of a very energetic chemical action.

these is a triangular chamber, I, for entrapping millers, drones and robber bees. There is a grating, f, and a plate of glass, g, in front of this trap, and by removing the glass, it may be used at all times as a drone trap without danger of imprisoning the working bees. By replacing the glass, it may be used at certain periods for catching robber bees and the millers. At those seasons when the miller and robber bee hover round the hive, the glass plate, g, is placed in front of the grating; and if it is desired to catch robber bees, the cut-off strip, H,

Fig. 2

### IMPROVED BENCH VISE.

It is essential to the favorable action of a vise that its jaws should move parallel, and to effect this object in a simple manner, and at the same time provide a vise suitable for workers in both metal and wood, has been a desirable object. The accompanying figures represent an improved vise embracing such qualities, for which a patent was issued on the 24th of April last.

Fig. 1 is a perspective view of the improved vise for workers in iron, Fig. 2 is a view of a vise with wooden jaws, adapted for joiners and workers in wood, and Fig.

> 3 is a face view of a metal plate applied at the back of the wooden jaws, and through which the screw and parallel guide bar pass. A A are the jaws of the vise, which are pivoted to two arms, B B, which are also pivoted together at their lower ends. These four parts are made of suitable material and work freely on their joints. D is a right and left screw shaft passing through each jaw, and having a handle for turning it to open and close the jaws. At the middle of the screw shaft is a small ring wheel, b, which turns in a grooved projection, c, on the parallel guide bar, F, and keeps the latter in place. A recess is made in the inside of the jaws to receive the wheel or ring, b, and the projection, c, to permit the jaws to close. The two vises are represented

A R HAWKINS' PATENT BEEHIVE.

direction, and is suspended from the end boards of the into the trap, I, and may be destroyed. The miller is as secured on a bench by a fastening plate, J, screwed caught in the same manner, and is thus prevented from depositing its eggs, where they would be vitalized, and in due season destroy the honey. The cut-off strip, H, is raised sufficiently high to admit the working bees but not the drones. The working bees enter the opening, d, and run into the working chamber by the passage, S; the drone bees, not being able to enter the passage, d, pass through the tubes, H', of the trap, I, in seeking an entrance into the hive. The grate bars of the trap are

down in a proper manner The object of the guide bar, F, is to keep the jaws always parallel, and when they are screwed upon an article, it prevents them from drawing on the screws and injuring the thread. As a consequence, the strain on the jaws is rendered more equal and they can be driven up with more ease. A parallel and powerful wrench may be obtained by inverting the parallel bar and placing it above the screw, D. It is seldom the case that an improvement is applicable



### BEARDSLEY'S IMPROVED BENCH VISE.

themselves from all enemies which may seek to enter at | find entrance into the trap, it may escape through the | cotemporaries. It consists of a conical screw turbine on grate, the gless, g, being removed; but the drones, being larger, cannot escape by the grates, and are therefore caught.

More information may be obtained by addressing the

NEW THEORY OF OZONE.-M. Schoenbein has found that there are two species of ozone-the one electro-positive, the other electro-negative-both of which exercise in Fig. 1, for the iron vise of a machine-shop, and as in Fig. 2, for cabinet-makers, wheelwrights, carpenters and joiners. The vise may be entirely of cast iron, or partly of cast and wrought; and the jaws have suitable provision made to attach to the jaws strips of leather, so as to obviate the marking of articles that may be secured in them.

More information may be obtained by applying to the patentee, Levi A. Beardsley, South Edmeston, N. Y., or S. A. Heath & Co., No. 102 Williamstreet, this city, where one of the implements may be seen.

BUSSON'S NEW PROPELLER FOR STEAMBOATS.-A French inventor, M. Busson, has lately exhibited a working model of his boats on one of the ponds in in Paris, and it has received elaborate praises from our Paris

a vertical shaft, placed in front of the boat, to suck in the resisting water, and thus form a partial vacuum at the bow, while the discharging water at the sides re-acts to propel the boat forwards. Such a propeller appears to us to be altogether unsuited for such a purpose. It embraces the same principle of action as the water pump system of Rumsey, and is not so simple nor effectual as the screw applied to act directly at the stern upon the water. A turbine propeller is also liable to become choked with sea-wced, &c.



Scientific American.

MUNN & COMPANY, Editors and Proprictors 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

Benainder 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 subscrip-tions for the SoureNrive American. See Prospectus on last page. No Traveling Agents employed.

Vol. III., No. 2 ...... [New Series.] .... Fifteenth Year. NEW YORK, SATURDAY, JULY 7, 1860.

A CONTINENTAL RAILROAD'- THE JAPAN AND CHINA TRADE.



IF the plain question were asked-"For what purpose have we provided national vessels to carry a few semibarbarous Japanese chiefs across the ocean, and made feasts and processions for them at such a vast expense ?" it would, perhaps, not be difficult for most persons to return a definite answer. The people, however, have formed some kind of a notion respecting the nature of these demonstrations.

and if this notion is not correct, these pageants and expenditures must be set down as contemptible absurdities. The feeling in the public mind is that, as a piece of policy, our government officials have done all these things to astonish the Orientals, and overpower them with a sense of our greatness and generosity, in order to break down their long-established exclusiveness, so that a profitable trade may be established between the ports of Japan and those of our Pacific States. These objects deserve praise, whether the means sought to attain them will ultimately be successful or not. A more lofty scheme than this-yet embracing this one in its foldshad been previously presented to our people. This was the grand Pacific Railroad of Whitney, which was the topic of general discussion about 15 years ago. It involved the idea of making our continent the "half-way house" between the East Indies, China, Japan and England. It was intended to construct this railroad from the Atlantic Ocean to the Pacific; and all Asiatic products designed for European markets, as well as articles of European mcrchandise for Asiatic consumption, were to pass through the whole breadth of our country ; thus making the United States the grand caravanserai of nations. The project was really sublime and plausible, and some day it may be executed; but what we wish particularly to direct public attention to, at present, is the utter want of sustem in our present railroad system for the consummation of such a laudibly ambitious project.

Supposing that a railroad were completed in a few years hence from California to St. Louis, as many expect, it would be unsuitable for an international carrying trade, owing to the frequent loading and unloading of freight to accommodate the cars of the different lines. In New York, the general rail gage is 4 feet  $8\frac{1}{2}$  inches, with the exception of the Erie Railroad; it is the same in New Jersey, Pennsylvania, Maryland, Kentucky, Illinois and Indiana; but the Ohio gage is 4 feet 10 inches, and the Pacific line west of the Mississippi is the broad gage. With particular cars having broad wheels, freight is sometimes run direct from New York to St. Louis; but what we want is a continental trunk line, of a uniform gage, from the Atlantic to the Pacific. We are no admirers of the 4-foot 81-inch gage; but as it is the most general, we think Ohio should endeavor to contract her rails, and we advise the people of Missouri to come to the same rational conclusion. As a railroad will be carried to the Pacific some day not very far off. it is certainly desirable that it may form one entire system from ocean to ocean, in order that we may be able to take advantage of our growing trade between China and Japan. It is wise to concert measures for further contingencies, so as to be prepared for all exigencies favorable or unfavorable. At the North, our Canadian neighbors have already laid the foundation of a great Atlantic and Pacific Railroad. The Grand Trunk Rail-

road has a gage of 5 feet 6 inches, and 1s now 1,100 | fermented by the addition of yeast. The specific differmiles in length. The intention is to carry it forward to the Pacific, and make Canada, instead of the United States, the public highway of the nations-the "halfwav house" between China and Europe. It thus appears that the great design of a national continental railroad, which was first proposed by an American, is in a fair way of being appropriated successfully by the Canadians; and unless our people awaken to a true sense of their interests, the benefits of the *fetes* which we have given to "John Japan" may yet travel in a direction straight for Uncle John Bull.

### THE LOST ARTS.

A great deal of nonsense has been uttered by sensa tion lecturers and magazine writers about wonderful arts which perished with the ancients. To trust in the lamentations of these wiseacres over the "lost arts," one would think we had fallen upon very degenerate times indeed. But none of the doleful stories are true. Cleopatra, no doubt, was a very fine woman; but she never dissolved pearls in wine. Archimedes was a great man in his day, but he never set fire to the Roman ships with burning glasses as the fable relates.

The ancients had no useful arts which we do not understand better and practice more skillfully than they did. The humblest American mechanic could teach the polished Greek and the cunning Egyptian sciences and arts of which they never dreamed. The ancients, indeed, did many wonderful things which have not been since repeated; but they were only such things as are not worth doing over again. If we had occasion to build such a foolish thing as a pyramid, we would improve on our model in every respect; and instead of keeping a hundred thousand half-starved slaves at the work for twenty years, we would turn it out finished in a few months. George Law and a hundred others would be willing to take the contract at a day's notice.

If any people, now-a-days, lived in a condition like the ancients, they would be objects for sincere pity, and it would be our duty speedily to send missionaries among them. What a lamentable sight would be a nation of great mental vigor, half-clothed and poorly fed, tilling the earth with wooden plows ; without soap, pins, friction matches or india-rubber ! How queenly would one of our factory girls appear to them ! How magical the art of a Yankee clockmaker! Beggars, now-a-days, with regard to the substantial comforts of life, fare better than ancient kings.

Our modern civilization is surely just what is suited for the welfare of humanity. The steam engine, politics, electricity, morality, and every good thing move on together harmoniously. We look back into the Past, to note, as warnings, the paths of error which our predecessors trod, and we push on cheerfully and confidently, feeling that the Present and the Future are of the utmost importance to us.

### WHAT IS LAGER BIER?

There are thousands of people in New York who seem to have quite forgotten the use of plain water as a beverage. In certain quarters of the city "lager" is the main staple of life, being for sale in almost every house, and the drink, and even the food, of all the men, women and children. There is no single article of manufacture and sale which employs so many people and requires so much space. There are at least five thousand places in the city where you may buy a glass of lager, and many of these places accommodate their customers by thousands. At the Volk's Garten, for example, on a warm Sunday night, enough lager is carried away in capacious stomachs to float a navy. The flow of lager is incessant-the voices which call for lager are never still-lager is king!

Lager is one of our most most modern institutions. Ten years ago it was only a vulgar German word of unknown import; then it was looked upon as an insipid Dutch beer; but finally, a majority, perhaps, will vote that it is "the people's nectar." Lager has defenders, now, among all classes; they say it is not intoxicating, and that it contains a great deal of nourishment. An examination of the method of manufacture of lager and its composition will clearly show what foundation there is for the virtues claimed.

Beer and ale are the fermented extracts of malt, hops being added to give an agreeable flavor. Malt is steeped and boiled in water, and the infusion or solution is then

ences of the various beers and ales is due to the methods of making the malt and conducting the fermentation. The peculiarity of the lager bier process is that the fermentation is conducted at a very low temperature, and continued for a very long time. The chemical change in the fermentation consists in the decomposition of the malt extract into carbonic acid gas and alcohol; the malt extract disappears and alcohol takes its place. The longer the fermentation continues the less will the beer be nourishing as food, and the more intoxicating it will be as drink. By the conversion of grain into beer its nutritive substance is mostly lost, being changed into alcohol and gas. Grain extract-even in the best shape, as gruel or porridge-is not the most fit food for a healthy man; and to claim that beer is nourishing from its homeopathic dose of malt extract is ridiculons. Lager bier, on account of the long continued fermentation, contains less nutritive matter and more alcohol than other beer or ale. A comparison of about twenty chemical analyses of lager and other beer show that, in lager, the alcohol is always in excess over the malt extract, while in other beer the excess is in favor of the malt extract. In lager the malt extract does not reach five per cent, so that one would be obliged to drink two or three gallons in order to get from this villainous food such an amount as would be required if taken in a civilized way. Ale often contains a larger per-centage of alcohol than lager, but the malt extract is still in excess unless the al be verv old.

Certain witnesses have testified and courts ave decided that lager is not intoxicating; but in view of the fact that a pint of lager contains as much alcohol as an ordinary glass of brandy, it might be suspected that those witnesses and courts had been indulging in lager just at the time they needed their soher judgment. Finally, it is claimed that lager is a pleasant bitter tonic, stomachic, anti-dyspeptic, &c. But healthy men need no medicine; and a friend of ours, who prides himself on being an American, suggests that lager is too-tonic.

# AN EXPENSIVE LUXURY.

The municipal authorities of this city appropriated \$30,000 to entertain the Japanese during their stay in New York. The ambassadors and their attendants have princely quarters provided them at the Metropolitan Hotel, and are enjoying "all the luxurics of the season" at the expense of the tax-payers. It is estimated that the hotel bill alone will reach the snug sum of \$65,000, and, in all probability, before we get fairly rid of these Orientals, the bills will foot up against the city to nearly \$100,000. The committee have "gone it with a perfect looseness," and will make their helpless constituency smart under their extravagance.

It is quite probable that the Japanese Ball (which came off on Monday evening, the 25th ult.) will very nearly engulph \$25,000 out of the original appropriation. It was undoubtedly the greatest affair of the kind that ever occurred on this continent; the guests actually numbering from 10,000 to 12,000-male and female; and if the proprieters of the hotel do not make more money out of the affair than the merchants of New York will out of the commerce which will occur between the two countries for 10 years to come, then we shall be most happily disappointed.

The Japanese are a shrewd people, and will no doubt return home only to laugh heartily at our foolishness. Verily, we are a set of asses. Kossuth found out this fact sometime ago, and the Japanese have just discovered the same "auricular extension."

All that is now necessary to "cap the climax" of this ridiculous tomfoolery is to get the Common Council (the commonest in the known world) to seduce his Royal Highness, the Prince of Wales, to make us a visit, and Tal Shaffner to lay a cable from Siberia to Greenland.

#### ----APPLICATION FOR THE EXTENSION OF A PATENT.

Double-seaming Machine for working Sheet Metal.-George B. Moore, of Mt. Pleasant, Pa., has applied for the extension of a patent granted to him on the 19th of September, 1846, for an improvement in the abovenamed class of inventions. The testimony will close on the 20th of August next; and the petition will be heard at the Patent Office on the 3d of September.

#### POLYTECHNIC ASSOCIATION OF THE AMERI-CAN INSTITUTE. [Reported expressly for the Scientific American.]

On Thursday evening, June 21st, the usual weekly meeting of the Polytechnic Association was held at its room in the Cooper Institute, this city; Professor Mason presiding.

### MISCELLANEOUS BUSINESS.

Granulated Cork .- Mr. S. W. Smith, of this city, exhibited samples of granulated cork intended as a norconducting packing for refrigerators. The granulated cork is made of the refuse, by a recently-patented corkcutting machine. The refuse parings and imperfect pieces of wood are put through a mill which chips them up to about the fineness of very coarse sawdust. The granulated cork is especially recommended as packing under sheet metal roofs, to keep out the sun heat. Its value has been tested for that purpose, and as a lining for refrigerators and water-coolers. The advantages claimed for it over other substances applied to similar use are that it is not subject to dry-rot or other decomposition, that it is light, easy to handle, does not absorb moisture and is cheap. Mr. Smith sells it for 50 cents per harrel.

The president remarked that this substance promised to be of utility in the lining of refrigerator ears. Heretofore, sawdust and charcoal had been used. At present, charcoal is preferred, and a few cars have been lined, at a considerable expense, with slabs of cork closely laid together, but the granulated cork seems to be preferable to either. Refrigerator cars have been found practicable, and will come into extensive use, and anything which promises an improvement for them is worthy of serious attention.

The Re-organization —A communication was received from the Committee of Arts and Sciences, establishing the re-organization of the Club, as agreed upon last week. The new order of things will be probably put in operation at the next meeting.

Artificial Leather.—Mr. Penniman presented samples of artificial leather or leather-paper, manufactured at North Amherst, Mass. The basis of this leather is the scrapings of curriers, and waste pieces of leather. This material is treated in a paper mill precisely like rags, being reduced to a pulp and formed into sheets. The artificial leather, of course, has not the strength of genuine leather, but in other respects it appears about the same, and may be used as a substitute for leather when no great strength is required. It is especially recommended for the lining of the soles of shoes, eap fronts and dashers for carriages.

Mr. Johnson-Mr. Cooper uses a great deal of waste leather for the manufacture of glue. Glue or gelatine is the chief constituent of leather.

The President—Prussia requires that her soldiers shall return to the government their old shoes, before they can have new ones.

Mr. Butler—This is the reason that prussiate of potash is manufactured so extensively in Prussia.

The artificial leather seemed to meet the approval of the meeting.

#### DISCUSSION.

Mr. Stetson opened the discussion with remarks on the importance of the subject. Nearly all of the ten thousand steam engines in and about the city of New York are provided with cut-offs, and engineers and owners of engines generally approve their use. But the exact gain or loss (as some contend) by cut-offs is not clearly understood. If they are useless, we must examine the subject so as to find it out.

Mr. Rowell-Mr. Isherwood, the author of "Engineering Precedents," has examined the details of the experiments recently made at the Metropolitan Mills, and fully endorses our conclusion that there is no advantage in the use of the cut-off. Mr. Isherwood has examined the subject of cut-offs with great care, and his convictions are positive against their use.

Professor Hedrick—In the cylinder without the cutoff, the force of the steam is nearly constant to the end of the stroke; not absolutely constant, for the reason that the piston is moving away from the stroke. When the cut-off is used, the force gradually diminishes, so that if the tension is low and the cut-off short, the force exerted at the end of the stroke is nothing, or is in the contrary direction. If the reastance to be overnoome or the work

to be done is unvarying, the force employed should be constant. There is, however, a clear theoretical gain in the use of the cut-off, and I shall be able to present it at another meeting.

Mr. Garvey—In the discussion of this subject the difference between dry and wet steam must be kept in view. If cut-offs are of use, it can only be in the case of dry steam.

The Association then adjourned to 8 o'clock P. M., of the 28th.

### WATER WHEEL EXPERIMENTS.

We publish the following from the report (just received) of Chief-engineer H. P. M. Birkenbine, to the Select Council of the city of Philadelphia:—

GENTLEMEN: --- In answer to your resolution of May 31, 1860, the department would submit the following general report upon the experiments made with turbine wheels at Fairmount Works:---

The experiments were made in obedience to a resolution of the Committee on Water, and by an appropriation of \$500 made by councils. An advertisement was inserted in the SCIENTIFIC AMERICAN, calling attention to these experiments. If a detailed report is thought desirable by your honorable body, an appropriation of \$350 will be necessary to print it in pamphlet form, with the necessary diagrams and tables to make it fully intelligible and useful.

An experimental apparatus was constructed at Fairmount Works, for the purpose of testing such turbine water wheels as might be presented. The department entered reluctantly into these experiments. First, for the want of time to conduct the investigations with the care and detail which their importance demands; second, on account of the limited appropriation made to carry them out; third, the delay consequent upon the experiments in completing the plans and details of the works, and also the difficulty felt in making deductions from model experiments which would guide us in the selection of wheels of the great power required for these works. So far, however, as these experiments have been prosecuted, they have been carefully done. The tests were made simply for the purpose of ascertaining what proportion of the power employed would be utilized by the different wheels or their co-efficient of useful effect. The wheels were tested under a head and fall of 6 feet, and weights of from 500 to 1,600 pounds were raised from 14 to 25 feet.

Nineteen different wheels were tested, and 122 different experiments made with them. Several of the wheels were removed without submitting them to a public test; of these no accounts have been kept. The accompanying table exhibits the best results obtained from some of the wheels:—

	Mo		TZ:	10	E I	-	A. ]	And
Names.	nroe & Bartlett, Worcester, Mass nben Rich, Salmon River, N. Y	Littlepage, Austin, Texas	R. Merchant, Guilford, N. Y	llins, Haydock & Wildman, Troy, N. Y	Gevelin, Philadelphia, Pa	E. Stevenson, Paterson, N. J	P. Mason, Buffalo, N. Y.	drews & Kallbach, Bernville, Pa
Weight raised in pounds.		 825	925	1900	1000	. 925	. 750	700
Hight raised, in feet.	- 38 B	22 4	88	38	81	26	5	8
Cubic feet of water discharged.	105.72958 80.19836 109.384	109.384 77.21516	114.356 86.0156	100 25759	81.19276	. 70.25436	79.0548	56,9294
Head, in feet.	6.5 G	6.00	03	50	5	9	6	æ
Time, in seconds.	388	85	88 88 89	27.6	26	23.6	27.6	18.6
Ratio.	.61359 5415	.7123	.6412	.7662	.8210	.8777	6324	619
· D.	Oct.	Dec.	Jan.	Feb.	;	Mare	: ;	;
2	20 7	19 Å	20,12	ەر ئ	<u>8</u>	59	16	23,
fria	185	1859	1866	18	186	1860	186	1991

cut-off is used, the force gradually diminishes, so that if the tension is low and the cut-off short, the force exerted at the end of the stroke is nothing, or is in the contrary direction. If the resistance to be overcome or the work

was required to ascertain the amount of water used or result produced; but they were actually weighed and measured.

It was necessary to refuse to test a number of the wheels, as the appropriation was all exhausted and the completion of the plans for the wheels could be no longer delayed, and the department was so fully occupied with the extension of the works that time could not be found to pay them the proper attention.

Valuable assistance was rendered in these experiments by the chairman of the Water Committee, O. H. P. Parker, Esq., James Millholland, of Reading, Wm. B. Bement and Charles S. Close, of this city. Among the wheels which produced the best results, and to the makers of which certificates have been given, as shown in the accompanying table, the highest co-efficients of useful results were produced by the Jonval wheels made by J. E. Stevenson, of Paterson, N. J., and E. Geyelin, of this city, and a modification of the Parker wheel, made and patented by Andrews & Kallbach, of Bernville, in this State. The majority of the wheels worked very satisfactory, and the makers of them were mechanics of more than ordinary ability. It is believed that no country could produce, from the same number of wheels promiscuously collected, so satisfactory a series of experiments.

The best result was procured from the Jonval wheel made by J. E. Stevenson, of Paterson, N. J., which gave an actual useful effect of the power employed of nearly 91 per cent. The wheel of Andrews & Kallbach, of Pennsylvania, is remarkable for its simplicity; and, had it been constructed with the same amount of care and finish as that of some of the others, it is believed that the co-efficient of useful effect would not have been surpassed by any. Two of these wheels placed upon a horizontal shaft might make a most desirable arrangement for our new works; but the department is not prepared to recommend their adoption, as it might involve a risk of a failure, and we are adverse to making any experiment at so great an expense and loss of time which might result to the city. We have been unable to fin-l any wheels now in operation of the aggregate power that we will require, or arranged in the above manner, or under similar circumstances to our require-

The department, therefore, see no reason to change the plan of the works, and will adopt the Jonval turbine, arranged and geared similar to the one now in use at Fairmount.

In coming to the above decision, and recommending the Jonval wheel, the department has been influenced by the following considerations:—

First, They have always been esteemed among the most efficient wheels, and, although other forms of wheels have been removed to give place to Jonval turbines, the department does not know an instance where the turbine wheel has been taken out to introduce another form of wheel. Our experiments upon the turbines have also proved them the most effective, giving the highest co-efficient of useful effect.

Second, They are the best adapted to our particular situation, on account of the comparatively small fall at Fairmount and the large amount of power required for each wheel (a mean of 125-horse power), and the low velocity they run as compared with other turbines, making less reduction of the speed necessary by means of gearing.

Third, Their durability, and the facility with which repairs and renewals can be made.

Fourth, They can be constructed and connected to the pumps at as small cost as any other form of turbine wheel. No objection can be urged against the Jonval wheel, arranged as proposed, except that involving mere mechanical arrangements, viz.: the step and bevel gearing necessary. Practically, these are not objections; the step of the present wheel at Fairmount Works has required but one renewal since it has been erected, which is the only repair found necessary to the wheel; and, as regards the bevel gearing, or reducing the velocity for the proper speed of the pumps by two or four wheels, there is only an apparent additional loss by friction, but none in reality, as a little reflection will demonstate.

Fifth, The favorable experience the city has had with the wheel of this kind at Fairmount, built by Emile Geyelin, which has been in constant use since December, 1851. The reasons of rejecting the plan of two wheels upon a horizontal shaft, as recommended by the former chairman of the Committee on Water, are as follows:—

First, Our minimum head and fall is but 8 feet. To produce 125-horse power by two wheels would require each of them to be 50 inches in diameter, and they would occupy so large a proportion of the head and fall that the co-efficient of useful results would of necessity be low.

Second, The experiments made by the department at Fairmount proved that two wheels arranged upon a horizontal shaft will not give as good results as one on a vertical shaft. Two Parker wheels arranged upon this plan gave but a co-efficient of 67 per cent, while a Parker wheel by the same maker, on a vertical shaft, gave a co-efficient of 75 per cent. Two Jonval wheels, upon a horizontal shaft, gave but a co-efficient of 68 per cent, when one Jonval wheel, by the same maker, on a vertical shaft, produced a co-efficient of 82 per cent.

Third, The velocity of the wheels would be so great (from 70 to 96 revolutions per minute with the two wheels, while the one Jonval wheel upon a vertical shaft will make but from 31 to 42 revolutions per minute), and the reduction of the speed, by means of gearing; to the speed of the pumps would therefore involve much greater loss by friction than could in possibility be the result of the plan adopted for the gearing of the Jonval wheel, as proposed.

In obcdience to a resolution of the Committee on Water, the department addressed letters to J. E. Stevenson, of Paterson, N. J.; E. Geyelin, of Philadelphia; Andrews & Kallbach, of Bernville, Pa., and Levi Smith, of Reading, Pa. In answer to these, the following propositions were received and opened by the Committee on Water, April 24th:-

From Emile Geyelin, of Philadelphia, for three turbin	1e \$6,900	00
Gearing for the same	. 16,500	00
Total	\$23,400	00
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<b>m</b>	0.05 450	

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Care has been taken by the department not to commit the city, either in the advertisement or in letters addressed to makers of wheels, in such a manner as to give to the maker of any wheel which might be presented for test a claim upon the city. This was done that the department might not be embarrassed in considering simply the interest of the city in selecting and constructing the wheels. In regard to the form of the wheel recommended, none of the Jonvals tested claimed any patent or peculiarity of construction, but simply differed in proportion and mechanical finish.

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In reply to the questions propounded by the committee, the following is the substance of the remarks of the Japanese:---

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The Photographical Society, at its last meeting, made arrangements to send a photographer with the expedition of Dr. Hayes, which is to sail for the Arctic regions at the end of the present month. The project must meet with favor from all concerned, and if carried out liberally, will be productive of a great deal of good. If good photographic views are brought back, we shall be able to study Arctic geology, natural history, and even the climate, all by our cheerful firesides. A photographic view always shows more than any pencil sketch, and we are sure it tells "the truth, and nothing but the truth." The camera takes in *everything* before it; and it may be that the Arctic photographs will enable us here to discover important fasts which would escape the attention of the traveler chilled with cold, however zealous he might be.

A SMALL brass cannon has been found at the bottom of a deep well of the Castle de Cluey, in France, with the date of 1258 upon it. The date of the invention of cannon has historically been assigned to the year 1324-66 years later. A COLUMN OF VARIETIES.

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In various parts of the world, there are subterraneau gas-works. In most of the petroleum regions of our country-such as the Kanawha district of Virginia, Oil Creek, in Pennsylvania, and in several sections along the shores of Lake Erie—a supply of natural gas is obtained for illumination by pipes connected with the petroleum or oil springs. The same kind of gaseous exhalations are found extending over a large district on the shores of the Caspian Sea; and in some parts of China the natives obtain a supply of underground gas for illumination by sinking bamboos a few feet under the soil.



# THE ARRIVAL OF THE MAMMOTH STMSHIP "GREAT EASTERN" AT NEW YORK.

recent reception of "John Japan" and his boy "Tommy." history of her construction, previous adventures and late voyage. in a superior manner to any troop ship.

This "leviathan" steamship arrived at this port on the 28th | great magnitude-she being 692 feet in extreme length, 83 | success. In the great and increasing trade between Engpotentates, savans, and a great array of wealth and fashion that | illustrated on page 264, Vol. XII. (old series), of the Scient of having her water-feed of June, and her appearance in our waters has created a much feet beam, and of 27,000 tuns actual capacity; second, her and Australia, it was found that common steamships wer had assembled to witness the mighty event of the "leviathan" TIFIC AMERICAN. The screw engines have cylinders of 84 jacket burst, whereby five firemen were killed and several greater national excitement than the pow-wow got up for the peculiarity of construction-being of iron, and double cased to capable of carrying cargo or competing with sailing vesship rushing like a mountain from its fastenings into the obedi- inches bore and 4 feet stroke. The former were built by J. others severely wounded. This event was the result of about three feet above the water line, and built on the cellular owing to the great amount of coal required for such a long ent water to the south of the Thames-the iron mammoth, like a baulky Scott Russell ; the latter by J. Watt & Co., of Soho. The blundering carelessness, and caused considerable damage to the To this steamer we may well apply the old saying, "Long- principle; third, she is propelled by the combination of paddle- age. Brunel calculated that a large ship could be built to' thorse, refused to obey the reins of the driver; and it cost no workmanship is excellent, but they are not up to the latest boilers and main saloon, besides the deaths of the workmen. looked-for has come at last," for assuredly no enterprise, ex. wheels at the sides and a screw at the stern. With regard to sufficient coal for the entire round trip and at the same less than \$400,000, and constant labor from that day till Jan. cepting, it may be, the laying of the Atlantic cable, has up- her magnitude, some contend that this exceeds Noah's ark; make quick passages, take a great number of passengers, # 31st in the subsequent year, before she was floated in the supply them, and if this great ship were to be built over breathing his last in London, and despondency seemed to settle heaved the public mind on both sides of the Atlantic with so but be that as it may, we know that the clipper ship Great good paying cargo besides. He therefore designed the (river. When launched, her entire cost was \$3,831,520, again, totally different engines and boilers would be put in. down upon the public mind. Disagreements now arose among many hopes and fears during the past four years. But after Republic, the frigate Niagara, and the steamer Adriatic-all Eastern (about 1853) with these objects in view; and a which exceeded the original estimate by \$1,500,000, and With all her machinery, her weight is 12,000 tuns-8,000 being the directors; and Scott Russell was charged with improper many disappointments, the Great Eastern has at last safely fully loaded-would make about a fair cargo if taken within pany of wealthy merchants in London was formed to tu yet she was then totally unfit for sea. the weight of the 30,000 plates of iron and rivets in the hull. workmanship in fulfilling his contract. The directors, howand slowly breasted the billows of the Atlantic and is now her capacious sides. She can carry 4,800 passengers, with the capital to complete the project. To J. Scott Russel The Great Eastern is now fitted with eight engines for pro-On August 8, 1859, the Great Eastern was pronounced com- ever, were men of great capacity ; their motto was "never say pleted for her trial trip, and on that day a grand banquet was fail;" so they raised more money, and on went the alterations plate was laid at his works in Millwall, London; and is number for the screw. Their united nominal power is about given on board by the directors of the company. She did not, and repairs, with a tenacity of purpose and determination of There are three leading features connected with the Great and by the late distinguished vember, 1857, she was ready to be launched. Great mort 4,000 horses. The cylinders of the paddle engines are each 74 however, finally depart until the 7th of September last, when will which does infinite credit to Uncle John Bull. Eastern which naturally excite attention. These are, first, her engineer, Mr. I. K. Brunel, upon the most rational grounds of tion was experienced on Nov. 2, when-mid a crowd of prisinches in diameter, and the stroke is 14 feet. These were she made a very successful coasting trip of two days, but she And now, since the Great Eastern has actually arrived, she

moored in Manhattan waters. We will therefore give a succinct good and full accommodations; or an army of 10,000 men, given the contract for building the hull; in 1855, the pulsion, namely, four for the paddle-wheels, and the same

The reasons of rejecting the plan of two wheels upon the right to prohibit the export of specific articles to other a horizontal shaft, as recommended by the former chaircountries? man of the Committee on Water, are as follows:-

First, Our minimum head and fall is but 8 feet. To produce 125-horse power by two wheels would require each of them to be 50 inches in diameter, and they would occupy so large a proportion of the head and fall that the co-efficient of useful results would of necessity be low.

Second. The experiments made by the department at Fairmount proved that two wheels arranged upon a horizontal shaft will not give as good results as one on a vertical shaft. Two Parker wheels arranged upon this plan gave but a co-efficient of 67 per cent, while a Parker wheel by the same maker, on a vertical shaft, gave a co-efficient of 75 per cent. Two Jonval wheels, upon a horizontal shaft, gave but a co-efficient of 68 per cent, when one Jonval wheel, by the same maker, on a vertical shaft, produced a co-efficient of 82 per cent.

Third, The velocity of the wheels would be so great (from 70 to 96 revolutions per minute with the two wheels, while the one Jouval wheel upon a vertical shaft will make but from 31 to 42 revolutions per minute), and the reduction of the speed, by means of gearing; to the speed of the pumps would therefore involve much greater loss by friction than could in possibility be the result of the plan adopted for the gearing of the Jonval wheel, as proposed.

In obedience to a resolution of the Committee on Water, the department addressed letters to J. E. Stevenson, of Paterson, N. J.; E. Geyelin, of Philadelphia; Andrews & Kallbach, of Bernville, Pa., and Levi Smith, of Reading, Pa. In answer to these, the following propositions were received and opened by the Committee on Water, April 24th :---

 
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SSUED FROM THE UNITED STATES PATENT OFFICE FOR THE WEEK ENDING JUNE 26, 1860.

[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 use-ful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

28,821.-P. Z. Allen, of Knox, N. Y., for an Improved Washing Machine: I claim the combination and arrangement of the convx rubbers C C, upright arms, D D, slot, d, cross-bars, E, bracket arms, F ivots, f, cross-bars, J J J, connecting-rods, l k, sha:t, m, wher sed for the purposes specified.

28,822.—H. H. Angell, of Clermont, Iowa, for an Im-

20,022.—n. n. Angell, ot Clermont, Iowa, for an Improvement in Unloading Hay:
 I claim the employment or use of the carriage, C, fitted on the ways
 B, provided with a tackle frame, G, and looks, II H, and used in connection with the rope mechanism, M, and the hook separator formed of the bars, L d, and beveled projections, e, or their equivaents, all being arrang id and applied substantially as and for the purpose set forth.

[This invention has for its object the facilitating of the unl of hay and other crops from carts or wagons direct from the field, and moving the same as it is unloaded. The invention consists in the employment of a carriage placed on suitable ways within the barn at its peak, said carriage having a tackle connected with it, and a catch or fastening; the above parts being used in connection with a detaching device.]

28,823.-M. S. Beach, of Brooklyn, N. Y., for a Print

28,823.—M. S. Beach, of Brooklyn, N. Y., for a Print-ing Press: I claim, first, Closing the fingers of printing cylinders by the com-bined operation of the coil spring, G', the finger crank, H and fric-tion roller, H 2, and the cam, J2, or their equivalents, constructed and operated substantially as described. Second, Closing the fingers of printing cylinders by means of the pendulum switch cam, L, and the operating pin, N, or their equiva-lents, constructed and operated substantially as described. Third, Closing the fingers of printing cylinders by means of the ram, K, and the combination of friction roller, I 2, and pin, I 1, or their equivalents, constructed and operated substantially as de-scribed.

men equivalents, constructed and operated substantially as de-scribed. Fourth, Opening or throwing backwards the fingers of printing cylinders or paper rollers by means of the coil spring, a', and closing them by the combined operation of the finger crank, c, caraik pin, c', and the cam, e, or their equivalents, constructed and operated substantially as described. Fifth, Depositing sheets on a board or table by means of the rollers T, or their equivalents having an axial combined with a planetary motion, constructed and operated substantially as described. Sixth, The rollers, T 2, used in connection with the rollers, T T, in drawing forward and depositing sheets or their equivalents, con-structed and operated substantially as described. Seventh, The concave form of the fly-board, D, Fig. 1, as de-scribed.

Beribed. Eighth, The deflecting points, F, or their equivalents, used in con-nection with the rollers, T T, in depositing the sheet, constructed and operated substantially as described.

28,824, --L. A. Beardsley, of South Edmeston, N. Y., for a Machine for Removing Bark from Willows, &c.: I claim, first, A rubbing slab having its acting surface of undulat-ing form, as described, the said surface being formed of yielding seg-ments, the whole being constructed substantially as described and for the purpose specified. Second, The rubbing slab, H, having a flat, elastic, and yielding surface, acting in combination with another properly formed slab and a feeding device acting substantially as specified. Third, Receptacles for water forming part of the rubbing slab, as described.

and a feeding device acting substantially as specified. Third, Receptacles for water forming part of the rubbing slab, as described. Fourth, Giving to the rubbing slabs or one of them a motion, at times and by means of the cams, d d, or their equivalents, which shall separate the two slabs, and prevent their action upon the twigs, while the twigs are moved, for the purpose of feeding. Fifth, A yielding clamping surfaces are to feed the twigs, sub-tantially in the manner described. Sixth, The mode substantially as specified for presenting different teristics being that the twigs are moved by the feeding device during relieved, and that the feeding device ceases to act upon the twigs is relieved, and that the feeding device ceases to act upon the twigs is relieved, and that the feeding device cases to act upon the twigs. Seventh, In combination with a rubbing mechanism for loosening the time when the pressure of the rubbing mechanism for loosening the bark and a feeding device. an automatic raking or scraping de-vice, constructed substantially in the manner described and for the purpose specified.

28,825.-C. C. Bier, of New Orleans, La., for an Im-proved Iron Tie for Cotton Bales: I claim the particular novel mode of making an iron tie, for the purpose of securely fastening of cotton bales, or other baled goods as described, using for the manufacture of the same any metal suit-able for the purpose.

28,826.-Caleb Bond, of Richmond, Ind., for an Im-

provement in Water Wheels: In combination with the passages, g, I claim the hinged auxiliary buckets, h, the whole being constructed and arranged to operate, substantially in the manner as specified, for the purposes described.

28,827.—N. W. Bonney, of Victoria, Texas, for an Improved Bolt for Doors: I claim the combination of lever stop, j, cam, i, and spring, b, with the two wings, m n, of a door, when the same is so applied that the closing of two wings brings the bolt into effective action, and the opening of the wing which has the lock applied to it allows the bolt to automatically cease its action, as set forth.

28,828.-E. W. Brettell, of Newark, N. J., for an Im-

20,020.—D. W. Drettell, Of Newark, N. J., for an Improved Lock: I claim the employment or use of the tumblers, D. placed within the tube, F, which is fitted within the cylinder, E, attached to the lock case, in connection with the plate, I, stationary or yielding, the tube F, having the dog, J, attached, and all arranged substantially as and for the purpose set forth.

28,829.-R. M. Brooks, of Greenville, Ga., for an Im-

28,830.-W. W. Burson, of Yates City, Ill., for an Improvement in Grain-binders: I claim extending and contracting the fore-arm, A, by the action t the rear portion of A' upon the cords, B and C, substantially as set orth.

forth. The combination of the hooks, Z P u, and the bent lever, S, oper-ating substantially as described. The arrangement of hooks, P and u, whereby the latter is passed through the loop, substantially as and for the purposes described. The arrangement of lever, S, in combination with shield, h, acting substantially as and for the purpose set forth. The slotted hook, Z, in combination with hook, a, substantially as

The source nook, a, and receptacle, c, arranged and operating together substantially as described and for the purposes set forth.

28,831.-J. F: Cameron, of Livingston county, Mo.,

for an Improvement in Cultivators: I claim the described arrangement and combination of the rotary culters, Z Z, beam, B, ber, C, helves, A F G H I K and L, cross-ars, M N, and braces, D E O P Q R S T U V, in the manner and for he purposes set forth.

28,832 — John Champlin, of East Middlebury, Vt., for an Improvement in Water-elevators:

an Improvement in Water-elevators: I claim, first, The buckets, F, one or more attached to the pulleys, CC, of shaft, B, in connection with the tilting shoes, E, through the medium of the links and rims, j i, or their equivalents, and the pawls arranged relatively with the ratchet, a, as and for the purpose set forth. Second, The ball, I, and box, H, on shaft, G, in connection with the pawls, by, attached to the inner side of the curb, A, the shaft being connected to the shoes, E, through the medium of the links and arms, j i, or their equivalents, and the pawls arranged relatively with the ratchet, a, as and for the purpose set forth. Third, The adjustable spont, L, arranged in connection with the slide, M, and tilting shoes, E, and adjusted respectively within and to the curb, substantially as and for the purpose set forth.

28,833.-James Charlton, of Alleghany, Pa., for an

20,000.—oauses Unariton, of Alleghany, Pa., for an Improvement in Cultivators: I claim the arrangement of the flanged bar, e, bent so as to form the segment of a circle and furnished with slots, x and i, the bar point or moldboard and scraper being attached to said flanged bar, ar-ranged, constructed and operated as described and for the purpose set forth.

28.834.--E. D. Clark, of Earlville, N. Y., for an Im-

provement in Mills: I claim so combining a fanning device with a mill for crushing and shelling corn as that, by the movement of the shifter. N, the contents of the hopper, G, may be discharged into mill, B, or through spout, C; the parts composing said mill being arranged substantially as described and for the purposes set forth.

28,835.—J. M. Cobb, of Jackson, Tenn., for an Im-provement in Cotton-scrapers: I claim the construction and arrangement of the frame, sole and moldboard, when united in the manner and for the purposes repre-sented and described.

28,836.-J. M. Cobb, of Jackson, Tenn., for an Im-

or provement in Plows:
 I claim the combination and arrangement of the moldboard, stand-ird and sole with landside plate, H, and beam, A, and with the sub-toiler, I, as represented and for the purpose set forth.

28,837 .- C. L. Daboll, of New London, Conn., for an provement in Fog Alarms.

provement in Fog Alarms. I claim, first, The general method, substantially as set forth, by which air which has been mechanically condensed shall be applied to the sounding of a trumpet or whistle for the purpose of giving marine signals by sound. Second, The use of the cam, C, when used for the purpose of com-municating a series of signals more intelligible than mere inde-pendent sounds, substantially as set forth. Third, The combination of the cam, C, the stem, D, and valve, E, for the purpose of giving a variety of sounds of a trumpet or whistle, for the purposes and in the manner described. Fourth, The trumpet, T, in combination with the reservoir, R, and connecting pipe, L, when used for the purpose set forth.

28,838.—Wm. A. Crowell, of Salisbury, Conn., for an

Improvement in Spring Balances: I claim arranging the adjustable index finger, I, relatively to the rod, E, and shoulders, K, substantially in the manner and so as to secure the advantages set forth.

28,839.-Wm. Dixon, of Chicago, Ill., for an Improve ment in Loading Hay:

I claim the arrangement of the endless chains, K, rake teeth, J, guide pieces, L, stationary rake, P, apron, R and caster wheel, S, as and for the purpose shown and described,

[This invention consists in an arrangement of rakes upon end less chains which are made to move in a direction suitable for gather ing and elevating cut hay from the surface of the ground and con ducting the hay over a wagon placed in the forward part of the ma chine; the rakes are operated by suitable gearing driven by the wheels upon which the machine is supported.]

28,840.-Wm. C. Drum, of Bellevernon, Pa., for an Improvement in Feed-water Heaters for Steam Boilers:

I claim the heater composed of the vessels, A and B, the these, C C, with inlet and outlet pipes, D E F G, sediment collector, H, and receiver, L; the whole combined and arranged substantially as de-scribed.

[This improved feed-water heater consists of a vessel of cylindrial or other suitable form, having inclosed within it a smaller vesse so arranged within it as to leave a space between them above, below and on all sides, such smaller vessel having tubes running through and communicating at each end with the interior of the larger, but not with the interior of the smaller vessel, and the interior of the smaller vessel constituting a water space having an inlet from the feed pipe and an outlet to the boiler and a receptacle below it for sediment; and the space surrounding the smaller vessel and the tubes, constituting a steam space, having an inlet from the exhaust pipe of the steam engine or other apparatus supplied by the boiler, and an escape pipe to the atmosphere, with a receiver below said pipe for the collection of the water of condensation; the object of such apparatus being to heat the feed-water by the cscaping waste steam.]

28;841 .-- J. P. Fuller, of New York City, for an Improved Garter:

I claim, as a new article of manufacture, the garter constructed ubstantially as described.

28,842.-E. N. Foote, of New York City, for a Watch Chain Hook:

I claim the watch book, constructed as described and represented [This invention consists in the employment of a jointed ring or elliptical bows, having a pointed tenon at the point where the two ends come together that fits into a corresponding hole made in one and of the bows; in combination with a female screw socket that con-fines the jaws of the bows together."

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28,843.-O. F. Fitch, of Morristown. Ind., for an Im-provement in Cultivators: I claim the described combination and arrangement of braces and frames, arranged in the relations set forth, and made to serve the purposes described.

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[This invention consists in combining a large and small wheel with a plane beam that is made of two bars, and, with this beam, using curved handles that serve both for plowing and harrowing, while one wheel is only used in harrowing, and in applying such a plane stock and sector brace for adjusting the plow and bracing it to the been that they will serve an important object in attaching the har-row to the plow, bracing it, and assisting in the extension and contraction of the harrow wings; the whole making a very cheap and convenient machine for the cultivation of drill husbandry.]

28,844.—Wm. C. Fisher, of Charlestown, Mass., for an Improvement in Bolts for Store Shutters: I claim, as a new article of manufacture, the described bolt for securing store window-shutters, operating substantially as set fortb.

28,845.—J. P. Fisher, of Rochester, N. Y., for an Improvement in Iron Bridges: I claim, first, Combining the posts and the sections, A A and F, of the lower chord of the truss by means of the double dovatil lower portions, b, of the post, the doverail grooves in the ends of the soid sections, the shoulder, x, and the screws, c, on the posts, and the plates, it, and nuts, g; the whole applied and operating substan-tially as set forth. Second, In combination with the sections. A and C, posts, B, sod-

taily as set forth. Second, In combination with the sections, A and C, posts, B, sad-dles, j, connected and sectived together, as described, I claim the transverse girders, G, and the tension braces, H I and J, applied and arranged relatively to each other and to the said sections and posts, substantially as specified. Third, The tightning of the wire rope braces, H H and J, or any other wire rope tension braces of a bridge, by means of screws and nuts, r s and tu, constructed and applied substantially as described —that is to say, so that the screws tighten the braces by twisting their parts together and hold them tight, and serve to tighten them further by bearing in recesses in a rigid part of the structure, sub-stantially as specified.

28,846.-D. F. Elmer, of Haydenville, Mass., for a

25,940.—D. F. Elmer, of Haydenville, Mass., for a Watch Key and Guard Bar: I claim the combined watch key and guard bar, constructed as de-cribed, with a sheath having an L-shaped slot fitted to the key tube and to a pin or projection thereon, substantially as described. [This is a very convenient and durable arrangement for combining

the watch key and guard bar.] 28,847.-Davis Dutcher, of Blue Grass, Iowa, for an

28,847.—Davis Dutcher, of Blue Grass, Iowa, for an Improvement in Corn Planters: I claim, first, The combination of the geeding and marking apparatus, operating together in the manner and for the purpose substantially as described. Second, I claim the combination of the plows and supporting and gaging wheels, f, so that they may be self-yielding to pars over any intermediate obstacle and be raised up by the driver from his seat, in Third, I claim, in combination with the rear supporting wheels and the front self-yielding wheels, the marking and seeding devices arranged between them, and a driver's seat behind, for the purpose of balancing the machine, and still allowing the front wheels to rise and fall with the plows, as represented.

28,848.-D. M. Dumzack, of Salem, Mass. ror a Chisel

for Opening Boxes: I claim the arrangement and combination of the several parts, when arranged and combined as described, for the purposes set forth.

28,849.—F. N. Du Bois, of Chicago, Ill., for an Improvement in Machines for Crushing Quartz: I claim, first, Soconstructing and arranging the stationary back of the hopper and the vibrating front of the hopper that the escape pas-sage, S, shall extend on a curved line in rear or on one side of a line drawn vertically through the apex of the angle formed by the two inclined sides of the hopper, substantially as and for the purposes set forth.

forth, Second, An adjustable stirrup, u, in combination with eccentrics, ef, and the arms, g h, of two or more vibratory jaws, p p, for the pur-pose of limiting the extent of the motion of these jaws, substantially pose of 11mi as set forth.

28,850.—J. W. Gaines, of Melrose, Texas, for an Improvement in Millstone Dress:

I claim making each of the main grooves in five sections, a n b b ni e j f g k c h l d m d n d, in combination with the shoulders, bc i, and inclined planes, o e f p m l, in the manner and for the pur-loses described.

28,851.-J. E. A. Gibbs, of Mill Point, Va., for an

28,851.—J. E. A. Gibbs, of Mill Point, Va., for an Improvement in Sewing Machines: I claim, first, So constructing a rotating boper and a stationary thread guard or guide, and applying the same in combination with the needle of a sewing machine, as to effect the twisting of the loop and the passage of each loop twice through its predece. The substan-tially as described, for the production of the stitch specimed. Second, The employment of a stationary thread guard or guide, in combination with a rotating looper, for the purpose of spreading the loops to facilitate the entrance of the needle thereinto, substantially as specified. Third, The stationary guard, M, applied in combination with a rotating looper, substantially as described, to prevent the looper from entering the loop which is being drawn up towards the cloth.

28,852 .- J. J. Greenough, of New York City, for an

28,852.—J. J. Greenough, of New York City, for an Improvement in Pegging Machines:
I claim transferring the contact between the sole of the boot or shoe and the rest-pice, e, or its equivalent, to the block, d, or awl stock, a, or their equivalent, while the lateral movement is made to space the distance between the pegs, substantially as and for the purposes set forth.
I also claim the rost-clamp described, consisting of a heel and toe-rest and intermediate forces or clamps, substantially as and for the purpose specified.
28,852. The stock of the substantial of the substantial

28,853.—Thomas Grundy, of Boston, Mass., for an Improvement in Water-closets: I claim the arrangement of devices described, the same consisting of the piston valve, k, playing up and down in the cylinder, j, and operated substantially as and for the purpose specified.

28,854.-Daniel Guptail, of Elgin, Ill., for an Improve-20,004.—Daniel Guptail, of Elgin, Ill., for an Improve-ment in Raking Attachments for Harvesters: I claim, first. The employment or use of lazy-tongs, I, with rake, J, attached in connection with the bar, H, with the rake or plate, M, attached; the lazy-tongs and bar being operated by the revolving arm, E, pin. K, and slot, G, substantially as described. Second, The frame, N, in combination with the lazy-tongs, I, for the purpose of preventing the grain that is being cut, while the rake is in operation or passing over the platform, interfering with the operation of the rake, as specified. [This invention consists in an argument of the state of th

[This invention consists in an arrangement of a system of levers

known as the lazy-tongs, with rakes and a peculiar operating mechanism, whereby a very simple and efficient reaping device is obtained.

and one that may be applied to all harvesters that have their sickles

28,855.-E. J. Hale, of Foxcroft, Maine, for an Improvement in Lamps: I claim so combining or arranging a tubular air guard, D, within r with the cone or deflector, C, and with respect to the wick tuber

behind the ground wheel.]

that air passing up through the cone or deflector, C, shall be caused to freely circulate not only against the sides and edges of the flame of the wick, when inflamed, but against the outer surfaces of the sides and ends of the air guard. I also claim so combining an air guard with the cone or deflector as to be removable with and by it, with respect to the wick tube, as set forth.

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28,856.-John Hamlyn, of Bellevue, Mich., for an

20,000.—John Rampin, of Denevue, Mich., for an Improvement in Stump Extractors: 1 claim the application and use of the described arrangement of toggle bars, T T, disks, G and H, rollers, c c, &c, rack bar, E, and catch pins, pl 22, in combination with an auxiliary lever, L2, sub-stantially in the manner and for the purposes described and set forth stanti forth

Forth. 28,857.—Henry Harger, of Delhi, Iowa, for an Improvement in Setting Type: I claim, first, The follower, C, with the arm, c, in connection with the pawl, E, and rod, D, or their equivalents, substantially as described and for the purpose seth forth. Becond, The finger, G, or its equivalent, substantially as described and for the purpose set forth. Third, The connecting rod, M, spring, N, follower, S, finger, P P, and bar, I, substantially as described. Fourth, The guides, V V, or their equivalents, substantially as described and for the purpose set forth.

28,858.—H. M. Hartshorn, of Malden, Mass., for an Improved Carpet-stretcher: I claim the combination of the tack-holding cup with the carpet-stretcher, composed of a toothed plate and provided with a handle, as specified.

28,859.—James Hathen, of Philadelphia, Pa., for an Improved Carpenters' Square: I claim the use of one or more adjusting clamps, J, attached to either end of the square stock, and made to serve in conjunction with the pins, C and C', for securing the blade to the stock and set-ting the same in a proper position substantially as described and re-presented. ting the presente

[This invention consists in attaching the blade of a square stock by one or more adjustable screws, applied at either end of the stock, in connection with a clamping plate or plates and a pivot at-tachment of the blade. This admits of an adjustment of the blade in case it should be out of true.]

28,860.-H. L. Haynes, of Kcene, N. H., for an Im-proved Coupling for Shafting: I claim, in combination with the keve, D D, and coupling, A, the scarfs, J J, in the ends of the shafts, B B, constructed as described.

28,861.-G. J. Hill, of Buffalo, N. Y., for a Dating

Machine I cla plat Machine: I claim the relative arrangement of the type apron, G, type, D, and platen, H, with the inking rollers, E K K<sup>\*</sup>, and automatic lever, M, for the purposes and substantially as described.

28,862.-J. J. Holwell, of New York City, for a Fire

escape: I claim, first, The arrangement and combination of the wheeled tormentors, F, pointed rods, e, vindlass, E, truck, B, and ladder, A, constructed and operating substantially in the manner and for the purpose specified. Second, The arrangement of the adjustable cross brace, d, in com-bination with the tormentors, F, constructed and operating substan-tially as and for the purpose set forth.

[An engraving and a full description of this invention will appear

in our paper in a few weeks.] 28,863.-J. W. Houghtelin, of Du Quoin, Ill., for an

wo,oue.—J. W. Houghtelin, of Du Quoin, Ill., for an Improvement in Bran-dusters:
 I claim the employment or use of the holt or screen, F, plates, f, and gatherers, g, placed within a case, A, and arranged to rotate in reverse directions, when combined with the spiral wire or ledge, G, feeders, h, and scrapers. d, substantially as and for the purpose set forth.

[The object of this invention is to obtain a machine that will cleanse the bran thoroughly, and, at the same time, allow the same to pass readily through without the liability of choking or clogging.] 28,864.-G. C. Howard, of Philadelphia, Pa., for a

Printing Press: I claim the combination of the plate, A, the sliding rod, I, the whiter rod, B B, and the treadles, H H', or their equivalents; the whole being connected by levers or their equivalents, and so arranged that the machine cannot be started in the wrong direction, substan-tially as described.

28,865.-J. C. Howels, of Madison, Wis., for an Im-

23,005.-5. C. Howers, of Matrixin, wis., for all improved Nozzle for Fire-engines: I claim the "trangement and combination of the rotary collar, C, cap, F, the e.rs, b, the pins or screw heads, c c, with the adjustable month-pieces, B B, substantially as and for the purposes set forth and described.

28,866.-A. P. Hutchinson, of Pembroke, N. H., for an Improvement in Attaching Whiffletrees to Sleighs:

Sleights: I claim arranging the whiffletree soast o project beyond one of the thills, in the manner described. I also claim the application of the whiffletree to the thill bar, by an adjustable slider or its equivalent. I also claim the arrangement or combination of the spring stops, c d, with the thill bar and the adjustable slider applied thereto and made to support the whiffletree, substantially as specified.

28,867.-W. H. Jenifer, of Baltimore, Md., for an Im-

5,55, - ..., AL. JOHNET, OL BAILIMORE, M. A., for an J proved Military Saddle: I claim the combination and arrangement of the flat English s [, the curved cantle, B, the pommel, A, the curved valise, C, aps, F, surcingle, D, slots, E E; tho whole constructed and user sectified.

28,868.—T. J. Jolly, of Olean, Ind., for an Improve-ment in Loading Hay: I claim the reciprocating toothed rods, H, constructed and opera-ting in combination with gathering mechanism, E F G, in manner substantially as and for the purposes set forth. 28,869.-George Juengst, of New York City, for an

Improvement in Shuttles for Sewing Machines: I claim the brush, bi n combination with the center, a, spring, c, ond screw, d, as specified, whereby the whole of the parts can be re-noved for changing the spring and the position of the center, a, can be adjusted, as set forth.

28,870.-Thomas Kinghorn and Robert Kinghorn, of Morgan, Ohio, for an Improvement in Cultivators: We claim the combination of the adjustable side-pieces, B B, with their teeth, H, and adjusting rear supports, D D, with the central beam, A, hooks, e e, and caster wheel, E, arranged to operate in re-lation to each other substantially as and for the purposes set forth.

28,871.-K. P. Kidder, of Burlington, VP, for an Im-

provement in Beehives: I claim the removable and reversible bee-catcher or passage way, (shown in Fig. 2), provided with a series of pivoted pendant doars c stats, R, arranged and applied to the beehive in the manner and or the purpose specified.

28,872.—George Lavally, Jr., of Champlain, N.Y., for an Improvement in Couplings for Railroad Cars: I claim the application to rail car bunters of slots, T V and L, a lever, N, supported at center by a fulcrum, G, and attached to the pintle, A, a bar, S, a spiral spirng, R, the steel spiring, C, and the cord or chain, M, constructed and arranged substantially as de-ceribed ord or

73.-••. L. Lawson (assignor to the New York Car and Steamboat Gas Company), of New York City, for an Improvement in Gas-holders: 28,873.

claim the reservoir, E, composed of one or more cylinders, or its ivalent, placed between the force pumps, B, and holders, K, for purpose of facilitating the filling of said holders, substantially as I claim th he purpo

Second, I claim the wheel, A, and levers, B, in combination with the digger, C, operating as set forth.

28,875.-Wm. H. Letterman, of Philadelphia, Pa., for an Improvement in Desulphurizing Ores and Coal: an Improvement in Desulphurizing Ores and Coal: atm the described process of treating oil and soal with chemical dients and steam, substantially as set forth, for the purposes fied. T clai

28,876.-William Lewis and Wm. H. Lewis, of New York City, for an Improvement in Photographic Baths:

We claim securing the edges of the glasses, d g, in grooves in the , a a b, in the manner and for the purposes specified. 28,877.—Austin Leyden, of Atlanta, Ga., for an Im-

Provement in Sewing Machines: I claim giving the swivel hook the necessary movement upon the pindle, n, which carries it around the spool-carrier bed, N, by means f two eccentries, r and s, attached to the hollow stem and working n eccentric ways, t and u, surrounding the said bed, N, substantially s described. [This invention consists in an improved mode of operating what is

ned the swivel hook, employed in combination with a spool applied as described in the Letters Patent granted to the above inventor. dated Jan. 3, 1860.

28, 878.—Leon Londisky, of New York City, for an Improved Mode of Binding Cap Fronts: I claim the binding of cap fronts with japanned, colored or enameled metal, by means of flexible tools, substantially as described and for the purpose set forth.

for the purpose set forth. 28,879.—D. W. M. Lower, of Albia, Iowa, for an Im-provement in Seeding Machines: I claim, first, The connecting of the wheels, B B, and roller, C, by means of the cranks, a a b, b, and rode, E, when said wheels and roller have the pins, 1, and ris, c, attached respectively to them as shown, and fare used in connection with the seed distributors, H, or their equivalents, substantially as and for the purpose specified. Second, The attaching of the shares, J, hoppers, G, and seed-dis-tributing devices to adjustable frames. F, arranged as described, to admit of the varying of the depth of the furrows as circumstances may require.

[This invention relates to that class of seeding machines designed for planting corn and other seeds in hills and in check rows. The object of the invention is to place the machine under the entire control of the attendant or operator, and insure an uniform dropping of the seed as well as to regulate the depth of the planting of the same as circumstances may require.]

28,880.--William McCord, of Sing Sing, N. Y., for an

28,880.--William McCord, of Sing Sing, N. Y., for an Improved Fire-escape:
I claim, first, The arrangement and combination of the rising and falling frames, G II I (more or less), links, F, braces, i, and platform, L, constructed and operating substantially as and for the purpose specified.
Second, Arranging the links, F, and braces, i, with rounds, sub-stantially as described, so that the same form the means to go up to and down from the platform, L. Third. The combination with the platform, L, of a ladder, N, and swivel, M, 'constructed and operating substantially as and for the purpose specified.
Fourth, The arrangement of the derrick, O, and rope, T, to operate in combination with the ladder, N, and swivel, M, substantially as and for the purpose described.
[This invention consists in arranging a series of rising and falling

[This invention consists in arranging a series of rising and falling

frames on links supported by self-acting braces and operated by two windlasses, in combination with a platform, in such a manner that by raising one frame after the other, the platform can be elevated t a considerable hight, convenient for the firemen to reach the fire in a building or to assist the persons inclosed in a burning building to escape.]

28, 881.—Robert McCormick, of Greenville, Va., for an Improved Machine for Stoning Fruits:

Inproved Matchine to Booming France. I claim the combination and arrangement of the right and left screws, A A', the brushes, B B', the cog wheels, D D', the bands, E E', the pulleys, f', the hopper, II, the follower, h, the screw check, i, the gase, a, the band-tighteners K K-all substantially as and for the purpose specified.

28,882.—John McCullock, of San Francisco, Cal., for an Improved Process of Treating Ores of Gold,

an Improved Process of Treating Ores of Gold, Silver or Copper: I claim the mode of reducing and liberating the metals-gold, sil-ver and copper-from their ores, together or separately, by mixing with any one or more of the said ores, in a very finely powdered or comminuted state, and when initiately mixed with ground charcoal or other carbonaceous matters, a certain proportion of plastic mate-rial, as common brick clay, china clay, or any other natural or com-pounded materials, that will agglutinate only at temperatures under a white heat forming the metalliferous and carbonaceous mix-ture so compounded with plastic material into masses, bricks, blocks cor cakes, and then submitting the whole to artificial heat, which is continued while the earthy frame-work, which forms a porous mattrix commanding a great extent of internal as well as external surface, holds and exposes the metallic ores or compounds; and also the car-bonaceous matters to the decomposing action of atmospheric air, oxy-gen, "carbon and heat, in a klin, clamp, oven or furnace. The re-duced metallic constituents may then be collected by pulverization, washing in water, and subsidence therefrom, by melting and fluxing, or by amalgamation, as may be most convenient. 28, 883.—J. W. McLean and A. Gummer of Indiana

28,883.—J. W. McLean and A. Gummer, of Indiana-polis, Ind., for an Improvement in Lath Machines We claim the rack, d d, the angular slot, g, Fig. 2, the section o wheel, e.e., or their equivalents, in connection with the rod, k, Fig. 1 the two supporters, 1 l, and the sct screw, m, substantially as and for tee purpose set forth.

28,884.-D. M, Mefford, of Jeffersonville, Ind., for an Improvement in Corn-huskers:

Improvement in Corn-nuskers: Relaim, first, The combination of spiral beads and grooves on ver-tical or inclined rollers adapted in the manner set forth, to act con-tinuously during the descent of the ear, substantially as described, Second, The use of teeth or servations in the bead substantially in the manner and for the purpose set forth. 28,901.—Ludlow Pierson, of Jeffersonville, Ind., for an Improvement in Making Eave Troughs:
 I claim, first, The combination of block, A, rocker, B, and jaw, C c D-the whole being constructed and operating substantially as set forth.

28,885--G. E. Mills, of New York City, for an Im-

proved Amalgamator: I claim a series of floors inclined reversely one above another, in combination with the several dams and compartments to retain the ninerals as described and for the purposes specified.

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28,886.-T. S. Mills, of Iberia, Ohio, for an Improve-

(8,886.—1. S. MIIS, Of IDERIA, OHIO, FOLAR EMPLOY ment in Corn Planters: I claim the cam, E, when formed of two parts, h i, for operating he seed slide, F, and markers, H, and fitted in the adjustable frame, b, having the shares, G, attached by the rods, n, for the purpose of dmitting of the connection or disengagement of the wheels, d g, nd the adjustment of the shares, G, substantially as described.

[The object of this invention is to obtain a corn-planting machine of simple construction, by which corn may be planted in check rows or simple construction, by which corn may be planted in check rows without previously furrowing the ground. The invention consists in the use of markers combined with a seed-dropping mechanism, all being arranged in such a way that, as one row of hills are planted, the spots for the hills in the succeeding row will be marked, and the seed-dropping mechanism placed under the complete control of the driver or operator, so that the latter can cause the seed to be dropped at the desired spots.]

at the desired sposs.] 28,887.—G. A. Mitchell, of Turner, Maine, for an Im-proved Machine for Cutting Blanks for Shoe Tips: I claim the double die-holder, E and G, and cutting die, H, in combination with cutter, J, stamp, S, and guide, U, to cut and stamp the blank at one operation, essentially in the manner and for the purposes fully set forth and described.

28,888.—G. A. Mitchell, of Turner, Maine, for an Improved Machine for Swaging Shoe Tips: I claim the combination of the die, G. guide, K. die box or holder, E. and follower, J. arranged and operated in the specific manner described and for the specific purpose fully set forth and described. 28,889.—W. P. Mitchell, of Baltimore, Md., for an Improved Machine The State State

provement in Hemming Attachments for Sewing Machines:

I claim the arrangement and combination described of the toothed wheel, C, and the non-metallic concave wheel, D, of larger diame-ter formed of india rubber, leather or their equivalent flexible ma-terial, both wheels being attached to and revolving on the same axis, g, as and for the purposes set forth.

28,890.—S. A. Morgan and C. C. Morgan, of Auburn, N. Y., for an Improvement in Harrows:

N. Y., for an Improvement in Harrows: We claim a harrow composed of at least two hinged and separately-adjustable segments, A. A., furnished with adjusting bars running across the frames, and so that they may be detachable an't capable of use when so separated, as cultivators by applying handles to the ad-justing bar, substantially in the manner and for the purpose set forth.

28,891.-Levi Morris, of Woodbury, Ill., for an Im-

Provement in Corn Planters: I claim the combination of the double crank, L, with the pitman, K, the rod, R, the slide, P, the levers, J J, the hoes and handles, m and n, and the imechanism connecting and regulating them, for the purposes and substantially as described.

28,892.—J. A. Naylor, of Rahway, N. J., for an Improvement in Adjustable Carriage Seats: I claim the jointed and branched bars, C C, and the rod, N, in combination with the slots or slides, I, and the seats, A and B, when constructed substantially in the manner described.

28,893.-Cæsar Newman, of New York City, for an Im-

28,893.—Cæsar Newman, of New York City, for an Improvement in Machines for Making Hoop Skirits:
I claim, first, The twisting apparatus constructed substantially in the manner and for the purposes set forth, and consisting of a epolholder and tension apparatus as described, and strand guides or head and cap, se described.
I also claim the head and cap, i', as specified, however combined in the manufacture of hoop skirts, and fiver frame constructed and applied as set forth in the manufacture of skirts by machinery.
I also claim the guides, g, for guiding the springs or loops into the manufacture of skirts by machinery.
I also claim the guides, g, for guiding the springs or loops into the the guided by hand into the curve-all as specified.
I also claim the employment of the elevating cord, c, and drum, d, combined with the machinery for forming the spring skirts, as specified.
28 894 — John Ollis of Bloomington III for an Implice as the set of the

28,894.-John Ollis, of Bloomington Ill., for an Improvement in Automatic Rakes for Harvesters: I claim the mechanism substantially as described for operating the

28,895.-

1946. 28,895.—Andrew Overend, of Philadelphia, Pa., for a Machine for Wetting Paper: I claim the reciprocating carriage, C, combined with the perforated water tubes, I I J J, the feed and receiving platforms, V R F, and the paper-holding and discharging device formed of the rod, IV, and plate, C', or their equivalents arranged for joint operation substan-tially as described.

[The object of this invention is to obtain a machine by which paper may be moistened in a very expeditious and thorough manner pre-paratory to the printing thereof. The invention consists in the use of a reciprocating frame, perforated water-supply tubes, feed receiving boards or platforms and a holding device, arranged for joint operation to effect the desired end.]

28,896.—Benjamin Owen, of Dayton, Ohio, for an Im-

provement in Cotton-seed Planters: I claim the arrangement of the cylinders, D D, with the slides, C C, when said cylinders are provided with teeth and revolve in ep-posite directions to each other, and when the slides are provided with seed apertures and have an alternate reciprocating motion under the cylinders, substantially as and for the purpose specified.

28,897.-Nathan Parish (assignor to G. B. Peters), of Galesburgh, Mich., for an Improvement in Stump Extractors:

I claim the arrangement of the rocking lever, b, with the frame, a, the cords, e and m, the tackle block, d', and with the chain or its equivalent which passes around the stump or grub in such a manner that power may be exerted by both ends of the lever, substantially as specified. 28,898.-J. W. Patten and G. P. Terry, of Albany, N. Note: W. Fatten and G. P. Terry, of Albany, N. Y., for a Fire-escape: We claim the arrangement of the spring, S, and the check rope, in their relation to the brakes, K K', and to the drum or reel, F, set forth.

28,899.-J. G. Pavyer, of St. Louis, Mo., for a Ma-

28,899.—J. G. Favyer, of St. Louis, Mo., for a Ma-chine for Scouring Type: I claim, first, The application of endless aprons or their equival-ents to stones or their equivalents, substantially in the manner de-scribed for the purposes specified, and— Second, Connecting the upper and lower stones and aprons with each other by means of yielding connections, so as to allow the type topass between them, and so that they will adjust themselves to the different thicknesses of type, substantially as described.

28,900.-J. G. Perry, of South Kingston, R. I., for an

Improved Sausage-filler: claim the combination of the cylinder, B, and stud slips, D, sub-tially as described herein and for the purposes set forth.

orth. cond. The crimping clamp composed of the hinged blocks, G G, G'', lever, H, and staple, I I'. ird, The final soldering clamp, J K L M, constructed and oper-g as explained.

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jaw, Th

28,902.-A. D. Purinton, of Dover, N, H., for an Int-

proved Hat Cushion: I claim the elastic felted cushion: leather, A, and the crown of the hat, substantially as described for the purpose specified. 28,903 -T. H. Quick, of New York City, for an Im-

proved Machine for Cutting Sugar: I claim the arrangement and combination of two pairs of movable cutting surfaces having their cutting edges at right angles to the other, and at such distances one from the other that, by the success-ive action of said cutting surfaces, the sugar is cut up in the desired shape, substantially as described.

[The object of this invention is to cut up loaves of sugar in regular cubic lumps of a convenient size for daily use. To accomplish this the loaf is first cut up in slabs or disks of the thickness of about three quarters of an incl., and these disks are passed through between two pairs of rollers or through between two different pairs of movable of rollers or through between tw cutting surfaces, one pair to cut up the disks into four-sided pris aud the other pair to cut up these prisms into cubic lumps of the de sired size.]

28,904.-J. J. Reeves, of Sulphur Springs, Texas, for a Medical Compound: I claimthe medical compound described.

28,905.—John Rix and J. S. Shaw, of Springfield, Mo., for an Improvement in Rotary Engines:
We claim the combination of the two hollow, eliding abutments, E E', and the slide valve, K, the said abutments being provided with parts, d d', as described, and applied within separate compartments of a box, D, to which steam is admitted by the said valve alternately, and the whole operating as set forth.
[The nature of this invention is ixplained by the claim.]
29,006. Checke Schumer, ef Michington D, G. for

28,906 -Charles Seltman, of Washington, D. C., for

an Improved Settiman, of Washington, D. C., it an Improved Shutter Operator. I claim the combinat on and arrangement of the shank, A, notche f', cog plate, d, spring, i, pinion, D, rack, d, wedge-shaped torgue, c, correspondingly-growed bay, h, crank binges, E E', and th netal boxing, F, when used in the manner and for the purposes sp wifed.

28,907 .- J. W. Shipp and C. W. Crenshaw, of La We clain

Grange, Tenn., for an Improvement in Plows: e claim the arrangement of the handles, H, standard, B, ring, toches, 11, bar, A, standard, C, mold board, E, heel, G, and le point, F-the whole operating substantially as set forth. acouble point, F-the whole operating substantially as set rota.
28,908.—C. W. Smith, of Evans, N. Y., for an Improvement in Window Blinds:
I claim, first, The described method of operating the blind slats, as, by means of jack levers.
Second, The described method of attaching them to the levers.
Third, Weighting said levers to assist in elevating the blinds.

1 Third, Weighting said levers to assist in elevating the blinds.
28.909.—Hervey Sloan, of Franklin, Ind., for an Improvement in Seed Planters:
I claim the arrangement of the seed boxes, A A' A", which are provided with three slides connected together and to a pitman or the purpose specified.
The arrangement of the seed boxes, A A' and B B', in the relative positions seen—their seed slides being connected together by the bars, c, substantially as and for the purpose specified.
The combination of the gear-frame, F, provided with levers, m and n, and chains or cords, p, with the frame upon which the seed forces are grazed when the same are arranged substantially as and for the purpose specified.
28.910.—O. M. Stillman of Storiester. Cord.

for the purpose specified. 28,910.—O. M. Stillman, of Stanington, Conn., for an Improvement in Air Engines: Iclaim, first, Compressing and working the air in the single cylin-der, A, by the single piston, B, in combination with the valves, an air passage, R r' E F and M, or their equivalents arranged and operating substantially in the manner specified. Second, The combination of the induction valve, R, with the stuff-ing box, R', piston rod, B', and head, A', of the cylinder, A, so that the friction of the suffing box upon the piston rod sids and con-trols the motion of the valve, substantially as shown and described. Third, Causing a circulation of air through an annular space be-tween the plunger, O, and the interior of the piston or piston rod, for the purpose of cooling the latter, substantially as set forth. Fourth, Cooling the extenior of the cylinder, A, sy alternately in-ducting and expelling air through an annular space, X, substantially in the manner described. 28,911.—O. M. Stillman, of Stonington, Conn., for an

28,911.-O. M. Stillman, of Stonington, Conn, for an

3,911.—O. M. Summan, or Gronington, Com, i.e. and Improvement in Air Engines: I elaim, first, Using a portion of the power of an engine to cool he air used in the same by blowing currents of air over the moist-ned surfaces of the refrigerating vessels, substantially in the man-ional forth. Second, The arrangement of the refrigerating reservoir, G, and wring vessel, O, relatively to the cylinder, A, and piston, B, sub-ntially as set forth.

23,912.—John Sweeney, of Chicago, Ill., for an Improved Tobacco Press: I claim the combination of the worm wheel and screw, E F, chains, J, cross-head, L, guides, B B, follower, C, one or more, and base or box, A, with the ratchet and lever, H' P, or their equivalents arranged for mutual action as and for the purpose set forth.

[This invention consists in the use of a worm wheel and screw combined with chains, stirrups, a cross head and guides, whereby a very simple, compact and powerful press is obtained, and one that may be manipulated by any one of ordinary ability-the invention being designed for manual operation.]

28,913.-W. A. Suddith and J. F. Suddith, of Charles-town, Va., for an Improvement in Cotton-seed Planters:

We claim the arrangement of the rocking beam, C, arm, o, piston and Y, spring, R, shaft, G, with spiral spring and cavity, B, con ructed and operated as described for the purpose specified. We 28,914.-Joseph Sutter, of New York City, for an Im

28,914.—Joseph Sutter, of New York City, for an Improvement in Seeding Machines: I claim the arrangements of the arms, L, the moldboards, M, the seedspoats, F, the cylinder, D, as constructed, and the cylinder, G, provided with harrows, d, when the same are connected together and to the frame, C, in the manner and for the purpose specified.

28,915.-A. B. Taylor, of Newark, N. J., for a Print

ing Press: I claim the combination of the endless rack of the type carriage with the cog wheel that imparts motion to it, by means of two pin-ions and a solid pinion shaft having boxes or bearings that adapt themselves to the different positions which the piniou shaft assumes in the operation of the printing press. I also claim the combination of the griper shaft, an arm and stop (for rocking it) and a cam and pin (which control its rocking) sub-stantially as set forth.

28,916-C. A. Taylor, of Chicago, Ill., for an Improved Bonnet Box:

claim the arrangement of the sliding stand, D, form, E, and rable spring pad, F, in combination with the box, A, constructed operated substantially in the manner and for the purpose set [This invention consists in arranging in the honnet box an adjust

able stand with a suitable form to receive the crown of the bonnet, in combination with a spring pad in such a manner that bonnets of different sizes can be secured between said form and spring pad and sent from place to bace without getting injured, even if the box i roughly treated and knocked about without regard to its contents.] box be

28,917.—Richard Taylor and Rensellaer Sprague, of Prairie City, Ill., for an Improvement in Corn Planters:

Flanters: We claim the atataching of the sced boxes, F, and the furrow and covering shares, 1 H, to sliding frames, E, placed on inclined sur-faces, b c c, and having the seed slides, G, of the boxes, F, arranged in relation with the staples or tappets, 1 i, on the axle, c, substantially as and for the purpose set forth. We further claim, in connection with the slsding frames, E, hav-ing the seed boxes and shares attached, the lever, K, provided with the notch, o, and arranged relatively with the pin, p, for the purpose when necessary of stopping the rotation of the axle, C, as set forth.

[This invention relates to a novel and improved arrangement of seed boxes and shares, whereby the seed-distributing device may, when necessary, be rendered inoperative with the greatest facility, and the shares, at the same time elevated, above the surface of the ground-both results being obtained by the same movement or manipulation of the driver.]

28,918.-James Thierry, of Detroit, Mich., for an Im-

28,918.—James Thierry, of Detroit, Mich., for an Im-provement for Regulating the Exhaust of Steam Engines: I claim, first, The combination of the exhaust nozzle or nozzles of locomotives or other steam-blast employing engines with a steam-balanced exhaust valve controlled by the variable pressure of the steam in the boiler, through the medium of an elastic siphon-shaped steam tube or its equivalent, said combination producing a governor to regulate the generating of steam for said engines substantially as described. Second. The combination of the said combination producing a governor

described. Second. The cambination of said nozzle or nozzles with said bal-anced exhaust valve controlled by the engine man through the me-dium of a cobvenient hand gear, in substance and for the purpose as described.

28,919.-J. P. Thompson, of Jackson, Tenn., for an

Improvement in Plows: I claim the frame, c, with its plow point, j, and wings or mold boards, D, when the whole is constructed, arranged and united as set forth and described.

set forth and described. 28,920.—Fr. Toggenburger, of Chicago, Ill., for an Im-provement in Sewing Machines: I claim the arrangement of a tubular projection, v, on the cap, P, in combination with a loop, w, or its equivalent, on the shield, Q, constructed and operating substantially as and for the purpose de-scribed

scrib [By this improvement a correct action of the needle and the loc in relation to each other, is insured, and a dropping of any of the

loops is prevented.]

28,921.—Albert Tracy, of the United States Army, for Improved Folding Furniture:
 I claim, first, In the construction of articles of furniture, the com-bination of the awinging straps or arms, C, constructed as described, with either pair of legs, or their equivalents, substantially as set forth.

ond, I claim the fixed strap or arm, C, constructed as described, connected and operating with the legs, substantially as set forth.

and connected and operating with the tage, substantially as set for an 28,922. — Gregor Trinks, of Jersey City, N. J., for an Improved Window Curtain Slide: I claim, in connection with the slide of a sliding cord pulley of a window curtain fastening, the improved construction and arrange-ment of the spring latch and double rack, substantially as described, and substantially for the purposes set forth.

28,923.—H. C. Velie, of Poughkeepsie, N. Y., for an Improvement in Mills: I claim casting the arm, J, on the case of the mill to support the journal of the shaft, and allow room for the hopper around the shaft between said arm and the case of the mill, substantially as de-scribed.

scribed. 28,924.—George Walker, of Philadelphia, Pa., for an Improvement in Vapor Lamps: I claim, first, The combination of the external shell or tube, G, with the wick or packing tube, P, and heater tube, I, provided with the heater. J, and plates, cc, for the purpose set forth. Second, The ccnnecting of the described vapor-burning apparatus to the body of a tamp by means of a tube, D, in the manner substan-tially as and for the purpose set forth.

[This invention relates to a lamp for burning volatile hydro-carbons by first vaporizing or gastfying the same, the illuminating flame being fed by the vapor, and the invention being capable of being applied to the ordinary fluid lamps. The invention consists a novel arrangement of a burner, heater, wick or packing tube, external shell, and heater tube, so constructed, arranged and app nsists in to the fountain or body of the lamp, whereby the hydro-carbon within the lamp may be quickly vaporized or gasified, the distance between the flame and the heater regulated as desired, according to the amount or intensity of light required.]

28,925.-Alonzo Warren and E. Damon, Jr., of Boston,

28,925.—Alonzo warren and E. Damon, Jr., of Boston, Mass., for an Improvement in Dynanometers: We claim combining the index, g, with the two pullers, CD, by means of a spring pawl. f, slide, I, arc-formed ratchet bar, H, spring I, and a socket, j, or other suitable projection from an arm, E, the whole applied and operating substantially as specified.

[This improved dynanometer is of that class which is used for measuring the power transmitted by shafting to machinery. It con-sists of two pulleys—one fast and the other loose—upon the same shaft, and the two combined by means of one or more arms and spiral springs working on one or more concentric arc-formed guides in such as manner that, by applying a belt to run on one of them from a pulley on the driving shaft and a belt to run from the other one to a pulley on the shaft to be driven, the power may be transmitted through the said spring or springs, and by such transmission, will produce a greater or less compression thereof, and the amount of this compression indicated upon a scale attached for the purpose to one of the pulleys of a dynanometer, will, if the velocity of the revolution of the pulley is ascertained, enable the power transmitted to be calculated. A part of the invention also consists in the manner of applying the index so that it may indicate the minimum of power itted.

28,926.-David Warren, of Gettysburgh, Pa., for an

Improvement in Seed Planters: I claim the arrangement of the turning bar, F, the arms, H and a the slide, d, rod, c, and stirrer, e, substantially in the manner and fo the purpose fully set forth. 28,927.-Geo. Wheeler, of New York City, for an Im-

proved Boot-jack: I claim the new article of manufacture described, consisting of the orked base piece, a, and the detachable inclined standards, b b, with he swelled pins, 33, arranged in the manner and so as to combine he advantages set forth. forked base the swelled the advants

20, 528. - Wm. Wickersham, of Boston, Mass., for an Improved Nail-cutting Machine: I claim the described mechanism in nail-enting machines for shifting or moving laterally the sheet of metal or material to be cut into nails the distance of the length of two nails, or more if desired, for each series of nails cut from said sheet, substantially as de-scribed. Second, I claim feeding the material to scribed. Second, I claim feeding the material to be cut into nails far enough towards the cutters for the width of a nail while it is moving later. ally, substantially as described.

28,929.-J. M. Williams, of Greenville, Ga., for an Improvement in Cultivators:

provement in UnitVatOFS: I claim the arrangement of the beam, A, the two collateral beams, B R, the graduated bars, a a, the handles, M M, the supports, F F, and the bar, D, when said bar is secured to the man beam and rests upon the collateral beams, and when the several beams are provided with vertical and horizontal mortises for receiving the bars and shanks, as is fully set forth, and for the purpose specified.

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28,930.-R. S. Williams, of Bairdstown, Ga., for an

Improvement in Plows: I claim the casting of the foot, D, with a socket, E, and pockets, d, substantially as shown, to receive the beam, A, and the lower ends of the handles, C C, substantially as described. I further claim, in connection with the sockets, E, and packets, d d, the base or cross-piece. B, and thaper beam, A, the former being at-tached to the beam and handles, as described.

[This invention relates to an improvement in that class of plows which are generally known as shovel plows, and are used in the cul-tivation of crops which are grown in hills or drills. The object of the invention is to obtain a simple, economical and durable plow of light draught, and one that may be managed or manipulated with the greatest facility.]

28,931.-Thomas Wilson, of Winterset, Iowa, for an

28,931.—Thomas Wilson, of Winterset, Iowa, for an Improvement in Seeding Machines: I claim the arrangement of frame, C, set forth, in combination with the lever, G, toggle levers, k k, and clutching devices, e e g g, as set forth, whereby the dropping of the seed may be stopped and the plows raised from the ground at the same time.

[This invention consists in a novel arrangement of cranks, con-necting rods and gearing placed in a carriage frame for operating the seed-distributor; in connection with a means for raising the front of this frame, and at the same time throwing the parts out of gear, for the purpose of moving the machine about from place to place without dropping the seed, the parts being so arranged that they may be thrown into gear by the driver at any moment.]

-E. M. Woodward and J. E. Woodward, of 28,932 Philadelphia, Pa., for an Improvement in Railroad

r mauerpnia, ra., for an improvement in Railroad Station Indicators: We claim the application of the hand, A, to an ordinaryclock, used in combination with a dial having the various points along the route marked upon it; the whole be so arranged as to show whether the car is in advance of or behind time at any point, substantially as de-soribed.

28,933.-L. B. Woolfolk, of Nashville, Tenn., for an an Improvement in Steam Plows:

an improvement in Steam Piows: I claim, first, The arrangement of the cylinder, S, rovided with bevel wheel, R, having the shaft, C, passed through it eccentrically, shaft, I, springs, g g, bevel wheels, f f, sleeves, i, pinion, G, rim, F, wheels, F, and plows, W, the whole being constructed in the manner and for the purpose described. Second, I also claim, in combination with the above, the cylinders, S S2, sleeve, u, bevel wheel, R, and shaft, C, as described.

28,934.—Wm. Workman, of Ripon, Wis., for an Improvement in Seeding Machines: I claim the combination of the principal seed box, C, and supplemental seed boxes, F, the latter being provided with inclined planes, h, h, and wheels. H, and fitted in the trough, D, having the inclined bottom or scattering board, E, as and for the purpose set forth.

[This invention relates to an improvement in that class of seeding nachines which are designed for sowing seed broadcast. The object of the invention is to effect an even distribution of the seed by a very simple arrangement of means, and to this end there are used, in connection with a seed-boxor hopper, a scattering board and a number of supplemental hoppers, communicating with the main or principal one, and provided with seed-distributing wheels and inclined boards.1

28,935.—G. C. Wright, of Le Roy, Ohio, for an Improvement in Cutting and Coring Apples:

I caim the arrangement of the slide, E. cross-head, E. treadle pring, L. and the cutting and coring knives, a b, the several p eung constructed and combined for operation in the manner cribed, for the purpose specified.

28,936.—Elijah Young, of Fayetteville, Mo., for an Improvement in Seed Planters: I claim the use of the plows, B, in combination with tubes, D and C C', and the boxes, E F, and the wheels, I and H, for the purpose specified.

28,937.-H. M. Zimmerman, of Washington, D. C., for an Improved Hinge: I claim, as a new and improved article of manufacture, a butt hinge, constructed as specified, for the purposes set forth.

28,938.—D. C. Colby, of Newport, N. H., assignor to himself and J. P. Upham, of Claremont, N. H., for an Improvement in Harrows:

I claim, first, The arrangement of the toothed rollers, B B (and more than two if need be) at a greater or less angle with the line of draught, so that the teeth of the rollers shall cut the soil diagonally to the lines made by the stationary teeth, a a, &c., in the frame of the harrow.

We find the hard by the stationary teen,  $\mathbf{x}$ ,  $\mathbf{x$ 

28,939.—Solomon Godfrey, Loren Barnes, Henry Blish and S. S. Smith, of Fairfield, Ohio, for an Improvement in Stills:

ment in Stills: We claim, first, The combination of three or more chambers of a still with bent tubes, I G, radiating perforated tubes, O, and straight tubes, K L, when arranged in relation to each other, substantially in the manner and for the purposes set forth. Second, The combination of the above with the heater and doub-ler, in the manner and for the purpose set forth.

40.—Joseph Ottner (assignor to P. and F. Corbin), of New Britain, Conn., for Improved Lifting Han-28.940.

of New Britain, Conn., for improved in ting fram-dles: I claim the raised socket, e, having parallel slits, f, starting from the underside or edge of the sockets, and extending upward to the center (or nearly so) thereof, so as to hold the handle in a proper lifting position, with the double rivoted shanks, h, made to corre-spond to the chamber of the sockets so as to hold it (the handle) in place, as and for the purpose described.

place, as and for the purpose described.
28,941.—S. S. Sherwood (assignor to himself and Alexander Douglas), of New York City, for an Improvement in Skeleton Skirts:
I claim the combination of the device described for securing the braid or tapes from slipping laterally upon the hoops, by sewing the braid or tape through the covering of the hoop with the device cascribed for securing the hoops from slipping upon the tapes or braids which form a vertical support by returning the braid or tape or braids which form a vertical support by returning the braid or tape or tape bloop and sewing it through itself, substantially as set forth.

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42.-T. C Simonton (assignor to De Grasse B. Fowler), of Paterson, N. J., for an Improvement in 28,942.-

Fowers, of raterson, N. J., for an improvement in Filters: I claim the placing of the tube, D, and the plates, B B, containing the filtering mediums, C, secured as described in the case, A, as shown, in connection with the pipes, E F G J, provided with the cocks, H I K, communicating with the case, and arranged relatively with the plates or the compartments formed thereby, to operate as nd for the purpose set forth

28,943.—J. L. Smith (assignor to himself and J Q. Sloan), of Neoga, 11., for an Improvement in Corn Planters

Planters: laim the arrangement of the seed boxes, 8 9, slide, 10, crank, 11, r, 12 13, operating as described for the purposes specified.

28,944.—A. W. Sweeny (assignor to himself and C. N. Tyler), of Washington, D. C., for an Improvement

in Hinges. I claim the described hinge as a new article of manufacture, the cam, latch and catch being constructed and arranged substantially in the manner and for the purposes set forth. 45.—Josiah Turner and T. P. Smith, of Sunapee, N. H., assignors to themselves and Edward Burke, 28,945.-

of Newport, N. H., for an Improvement in Cultiva

tor Teeth: We claim, first, The coulter, A, with the indentation or recess, E, constructed substantially as described. Second, The coulter, A, in combination with the concave wing, C, with the curved point, G, constructed and operated substantially as described.

28,946 — Joshua Turner, of Cambridgeport, Mass., as-signor to himself and Francis Guild, of Dedham, Mass., for an Improvement in Plane-iron Sharpen-are.

ers: I claim the combination and arrangement of the separate cutter-carrier and its curriage with the whetstone supporter, with parallel ways or equivalent means of guiding the carriage, the whole being to operate together substantially as and for the purpose specified. I also claim the arrangement of ball bearings on opposite sides of the cutter-carrier, and to operate with a socket of the carriage, as specified. I also claim making the socket or step adjustable vertically for the purpose explained.

purpose explained. I also claim the combination and arrangement of an an adjustable stop, with the table, the cutter-carrier and its carriage applied to the table and with reference to the whetstone or its supporter, as speci-fied.

28,947.-M. D. Whipple, of Charleston, Mass., as-signor to the Whipple File Company, for an Im-provement in the Manufacture of Files: I claim, as new article article of manufacture, a file having its teeth eared off smooth and of an uniform hight, substantially as speci-

thean 28,948.

48.—J. A. Smith, of Fond du Lac, and Isaac Orvis, of Oakfield, Wis., administrator of the estate of L. M. Orvis, deceased, for an Improved Printing Press

I 1688; I claim, first, The arrangement of the form beds, I J, and station-arr platen, K, substantially as shown, so that the imppression may be given simultaneously and by the same application of power, and the under side of the upper form be made to serve as a platen for the lower one.

Second, The arrangement of the form beds, I J, and platen, K, with the roll of puper, O, substantially as shown, and operated re-spectly and intermittingly, so that the puper may be printed from a continuous sheet and at both sides during a single passage through

continuous sheet and at both sides during a single passage through the press. Third, The endless wet blanket, N, arranged to pass underneath the platen, K, and to be moved simultaneously with the maper, O, for the purpove of moistening the same during the pressure which causes the puper to receive the impression from the forms. Fourth, The ink rollers, k k k' k', operated through the medium of the bars, h i, arms, g, rockshaft, G, the slotted curved bar, F, and wristpin, e, on wheel, d, when said rollers are used in connection with the form beds, I J, and platen, K, as set forth. Fifth, The combination of the form beds, I J, platen, K, endles-blanket, N, ink rollers, k k k' k', paper roll, O, rotary knife, R, and stationary bar, S, all arranged for joint operation as and for the purs pose set forth. RE-ISSUES.

RE-ISSUES.
Scligman Kakeles, of New York City, for an Improvement in Fluid Lenses. Patented April 24, 1860:
I claim, first, The application and use of a magnet, or its equivalent, in the bottom a glass globe filled with a colored fluid, for the purpose as set forth.
Second, I claim the arrangement and combination in a lantern of a light and glass globe filled with a colored liquid, when said globe is surrounded by two reflectors facing opposite directions, and when said light is placed either before or behind the glass globe, so as to produce and reflect, by the use of only one light, a colored light in one direction and a white or colores light in the opposite direction.

Thomas Mitchell, of Lansingburgh, N. Y., for an Inc.

proved Machine for Finishing Hair Brush Handles. Patented June 28, 1859:

Patented June 28, 1859: I claim, first, The employment, in combination with the brush clamp, G, or pattern, H, or their equivalents, of a wheel, D, which is provided with V, or gouge-shaped cutters, b, or their equivalents, and which act upon the wood, substantially as and for the purposes shown and described. Second, The combination with the pattern, H (of the brush clamp), of a supporting ledge or projection, a<sup>\*</sup>, or its equivalent, as and for the purpose shown and described. Third, The combination of the guide, F, with the pattern, H, and cutter, D, as and for the purpose shown and described. Fourth, Centering the unfinished brushes in the clamp, G, by means of the bristles, i, in connection with the strip or plate, J, and the inner curved edge, H, on its extension, H', substantially as de-scribed.

the inner

Cæsar Newmann, of New York City, for an Improve-ment in Skeleton Hoop Skirts. Patented Nov. 1, 1859

skeleton skirt constructed as described. I clain

ADDITIONAL IMPROVEMENTS. B. B. Briggs, of Sharon, Ohio, for an Improvement in Apparatuses for Laying Drain Tile. Patented Oct.

4, 1859:

I claim the described ball, B, the double-acting clutches fingers, F F, with its notched slide, g, and lock attachment, H, mole attachments as in Fig. 2, when used in combination with rope, R, or its equivalent.

Daniel Jones, of Boston, Mass., for an Improved Steer-ing Apparatus. Patented Feb. 21, 1860: I claim the arrangement and combination of parts described, the same consisting in placing the athwarteling screw, H, directly above the rulder post, and operating it by means of a byvel wheel fixed at its middle and gearing into a similar wheel on the after end of the shaft of the steering wheel, all substantially as set forth and shown.

J. H. Shrote, of Baltimore, Md., for an Improvement in Cutting and Panning Cakes. Patented Oct. 11, 1859:

I claim the scrap clearer, B, the annular jumble cutters, C, and the bottoms, A and A', substantially as and for the purposes specified.

E. M. Smith, of Indianapolis, Ind., assignor to himself and E. G. Mayhew, of Shelbyville, Ind., for an Im-provement in Molding Machines. Patented Feb. 1860:

I claim the circular guide or rest, O, and the spring, Z, when ructed as and used for the purposes substantially as set forth.



CORRESPONDENTS sending communications for publication in our columns are requested to avoid writing on both sides of a sheet of paper. This fault, though comm a sheet of paper. This fault, though common to persons unaccus-tomed to writing for the press, gives great trouble to the printer (especially in long articles), and, when combined with illegibility of handwriting, often causes interesting contributions to be regret fully consigned to our waste-paper basket.

L. C., of Conn.-A rectangular knee, of the same bore, put on a vertical pipe, under any head, will involve but little if any loss of flow, and will be proportioned in informed heads. With regard to horizontal pipes with elbows, there are various opinions as to the loss, but the amount is considerable. It is so easy to construct pipes differently, that it is foolish to lose any of the flow by ab

S. R. M., of Del.-We do not know where you can obtain a work on the masonry of chimneys.

A. W. C., of Mass.-The best method of removing the stains on jewelry, caused by soldering, is by polishing with "crocus," in the usual manner.

W. S. T., of Pa.-To make black japan, take ground burnt umber, ½ a pound, and asphaltum, 4 ounces; dissolve them in boiling linseed oil, so that it will be about the thickness of mo-lasses, when finished. It is now cooled and thinned with turpentine, so that it may be put on with a brush. If 2 ounces of the sul-phate of zinc are added cautiously, it will dry more rapidly.

B. & C., of Md.-Fire-brick or soapstone is the best material you can employ as non-conductors above your fire-place stove. If you can make plaster-of-paris adhere, it will perhaps answer as good a purpose.

G. J., of Del.-There is no reliable rule for determining the pressure of gas in main pipes, by the pressure at the station. The best way to ascertain the pressure at any part is by the gage. You will find some useful information on this subject in an

J. W. R., of Ohio.—Iron can be coated with brass, by first cleaning it, then giving it a coat of tin, upon the top of which the brass will adhere. We do not know of any other good method than this for brassing iron.

H. K., of N. H.-You can dye a good brown color on wool with camwood, logwood and fustic. On cotton, a good brown is colored with catechu, sulphate of copper and bichromate of otech

W. H. W., of Mass.-We prefer the plate to the cylin drical electrical machine, for experimenting

G. W. F., of Ind.-The best method of polishing brass is to scour it first with fine brickdust and very dilute sulphuric acid. Afterwards wash it with warm soft water, then rub down with fine emery and finish with tripoli or whiting.

E. G. W. R., of Ind.-Particles of steel which fly from tools and remain a long time in the flesh without rusting, are pro tected from the action of oxygen.

P. K., of Mich.-A globe filled with compressed air, at a pressure of 30 pounds on the square inch, is heavier than one filled with air at atmospheric pressure, and will be less buoyant in water, unless the heat of the water exceed that of the atmosphere.

E. B., of N. Y.-Any good work on hydraulics will furnish you with rules to calculate the amount of water under different heads, for different horse-powers. Under a 9-foot head th actual velocity will be 15.3 feet per second, or 918 feet per minute A horse-power is equal to 550 pounds lifted one foot in a second On a fall of 9 feet, 36 pounds of water falling per second is equal orse-power

T. McK., of Va.—The gloss put upon shirt collars made in fac ories is done by pressure and friction upon curved surfaces of hard pasteboard. The linen must be pressed upon a hard, smooth surface or no gloss will be produced. Those who make it a

business to dress linen have all the necessary appliances to glaze it. All kinds of cotton and linen cloth can be glazed by pressure and friction between smooth rollers; this is the way calico is calendered and glazed. C. J. F., of N. J.-No definite speed, as a fixed stand-

ard, can be given to a circular saw. The speed at which one of any size should be driven depends on the hardness of the wood to be cut, the mode in which the saw is hung and the form and sharpness of the teeth. It is only by practice that the most suitable speed for any saw can be determined.

#### MONEY RECEIVED

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, June 30, 1860:-

Office business, for the week ending Saturday, June 30, 1860:-N. & McN., of N. Y., \$35; E. D., of Mass., \$30; W. A. T., of Miss., \$30; L. W. N., of N. Y., \$30; J. H. S., of I.a., \$12; E. G., of Mo., \$25; P. B., of N. Y., \$25; J. B. T., of N. Y., \$30; G. B. P., of N. Y., \$150; G. H. G., of Miss., \$25; D. B., of Mich., \$10; J. F. W., of I.a., \$25; E. B. & T. S. P., of N. Y., \$25; G. L. T., of N. Y., \$32; G. W. H., of Ill., \$25; R. & W., of Iowa, \$10; J. F. F., of S. C., \$30; T. C. H., of Ga., \$25; S. D. McC., of Ky., \$30; J. F. F., of S. C., \$30; T. C. H., of R. I., \$30; J. D., of Mass., \$25; R. G. H., of N. Y., \$30; C. H. L., of S. C., \$35; W. W. M., of Mo., \$55; O. D. of Md., \$28; F. & C., of Iowa, \$30; W. R. (of Ill., \$30; J. M. F., of N. Y., \$30; Y., \$30; J. M. H., of Miss., \$25; S. C. A., of Ark., \$30; Y. R. of Y., \$30; J. M. H., of Miss., \$25; S. C. A., of Ark., \$30; Y. R., of Mass., \$30; J. E. W., of Pa., \$25; W. C. of Ohio, \$30; S. A., of N. Y., \$25; L. W. T., of Minn., \$30; J. W., of Ill., \$35; F. B., of Ga., \$30 ; J. W. C., of N. Y., \$30 ; P. D., of R. I., \$55 ; W. T., of N. Y.

of N. Y., \$30; H. C. D., of Mass., \$30; S. H., of Mich., \$30; J. C., of Mass., \$30; S. H., of Mich., \$30; S. P., of , of Nis, \$25; P. &. R., of Tenn., \$35; S. A., of Mo., \$30; J. S., of N. Y., \$45; K. D. & Co., of N. Y., \$25; S. F. Van C., of Cal., S., of N. Y., \$46; K. D. & Co., of N. Y., \$25; S. F. Van C., of Cal.,
\$12; G. W. L., of N. Y., \$55; M. D., of Minn., \$30; P. K., of R. I.,
\$35; W. S. L., of Ohio, \$10; R. T., of Iowa, \$25; A. H., of Iowa,
\$25; H. & G., of Ill., \$55; R. G. H., of N. Y., \$28; A. W., of N. Y.,
\$25; J. F. K., of N. Y., \$25; H. E., of N. Y., \$25; M. C., of
Mass., \$55; J. F. P., of Mo., \$30; W. H. B., of Conn., \$30; C. W.,
of Va., \$30; W. M. G., of Ohio, \$25; T. A. G., of Ill., \$25; E. W. G., of Mass., \$30; J. H. B., of Mo., \$30; J. H., of N. J., \$25; S. & G., of Vt., \$35; J. H. B., of N. Y., \$30; J. C., of N. Y., \$25; S. A. La F. & Co., \$250; G. W. L., of N. Y., \$55; D. S. H. of N. Y., \$30.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent

ties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 30, 1860:-J. T., of La; A.<sup>1</sup>W., of N. Y.; E. G., of Mo.; J. H. S., of La; R. J. H., of Ohio; W. F., of Mass; E. B. & T. S. P., of N. Y.; W. W. M., of Mo.; J. W. C., of N. Y.; G. L. T., of N. Y.; S. A., of N. Y.; S. S., of Mass; W. M. G., of Ohio; R. T., of Jowa; T. A. G., of Ill; J. D., of Mass; J. H., of N. J.; J. E. W., of Jwa; T. A. G., of Tenn, J. M. H., of Miss; I. W., of Vt; P. B., of N. Y.; H. Y. W., of Pa; K. & W., of Iowa; H. E., of N. Y.; W. B.  $\P$ , of Ill; J: W. W., of Ohio; P. & R., of Tenn; A. H., of Iowa; R. S., of Ill; J. S. D., of Ohio; S. A., of Mo.; J. S., of N. Y. (2 cases) J. G. M. J. S. D., of Ohio; S. A., of Mo.; J. S., of N. Y. (2 casee) : J. G. M., of N. Y.; J. F. K., of N. Y.; G. H. G., Sr., of Miss.; R. W. P., of Mass.; F. H., of S. C.; W. R., Jr., of Pa.; K. D. & Co., of N. Y.; W. D. M., of Va.; A. H. B., of N. Y.; S. F. Van C., of Cal.; S. P. G., of Wis.; C. W., of Va.; S. & G., of Vt.; J. C., of N. Y.

SCRUBBING BRUSHES, FLESH BRUSHES, see illustration on page 400, last volume of the SCIENTIFIC AMERICAN. 2 8

THE WATER CURE JOURNAL FOR JULY, THE WATER CURE JOURNAL FOR JULY, now ready, contains:-Hygienic and Drug Medication Con-trasted; Diseases of the Throat and Lungs; Home Practice of the Morement Cure-Treatment of the Croup; A Family Necessity; A Homepathic Dose; Dr. Winship's Experience; The Cattle Disease; Collusion Between Doctors and Druggists, and much other matter useful to every reader. A NEW VOLUME commences with the present number, and now is the time to subscribe. Only \$1 a year. Address FOWLER & WELLS, No. 308 Broadway, New York. 29

THE SWEDISH MOVEMENT CURE-ITS HIS-"ILL SWELDISH MOVEMENT CURE—ITS HIS-Lory and Philosophy, with practical directions for the treatment of various diseases; illustrated with 70 engravinare, forming a com-plete Manual of Exercises. By Geo. H. Tayler, M.D. 1 vO, 12mn, 400 pages. Price, prepaid by mult, \$12.5. Address FOWLER & WELLS, No. 308 Broadway, New York. This is the first complete work on this subject published in America. It will be found useful to all classes, in or out of the profession, and to all men, women and children.

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THE PATENT RIGHT TO PUSEY'S GOVerror, for Railroad Horse powers, for sale. On account or engagements which prevent me from giving it proper attention, will sell my right and title to this valuable little Governor, now gen erally introduced and selling throughout the United States. 2 3\* LEA PUSEY, Wilmington, Del.

2 3\* LEA PUSEY, Wilmington, Del. ONJURING !-THE WHOLE ART OF CON-juring made easy, with full directions for performing 150 of the most astonnding feats of Hocus Pocus, Sleight-of-hand, Ventrilo-quism and Legerdemain; profuely illustrated. Price 15 cents; sent free by mail. Address M. M. SANBORN, Brasher Falls, N. Y. ee b 2 2\*

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PATENT ARTICLES AND RIGHTS OF MERIT G. sold on commission, by BARTON S. PRINGLE, Barnesville, 21\*

WARREN'S TURBINE WATER WHEEL WARREN'S TURBINE WATER WHEEL (Warren & Damon's patent), manufactured by the Ameri-can Water Wheel Company, Bocton,—This Wheel stands at the head for great economy in water. Over 600 are now operating with great success in cotton and worlen factories, &c., &c. With its modern improvements, it cannot be surpassed. Send for our 'th annual pamphlet of 1860 (inclose two stamps), containing a treatise on hy draulics, beautiful illustrations of the Warren Turbine, practi-cal rules for computing water power, prices, &c., &c. It is the Wheel for the North, because ice does not affect it; for the South, because it is compact and ready to attach and operate without great mechan-ical skill; for the world, because it generates more available power from the water used than any other Water Wheel in existence. Ad-dress A. WARREN, Agent, No. 31 Exchange-street, Boston, Mass. 26<sup>5</sup>

ESTER'S SEWING MACHINES-FOR MANU-LESTER'S SEWING MACHINES—FOR MANU-L facturing and for family use, as good as any in the market, manufactured under legal rights from Elias Howe, Jr., Wheeler & Wilson, Grover & Baker, I. M Sineer & Co., with their combined im-provements, at prices from §50 to §130. Large commissions allowed to local agents to purchase to sell again. Agents wanted through-out the country, and especially in the South, as this machine is to be manufactured expressly at Richmond, Va., as soon as the buildings which are now being put up are completed. Address the Lester Man-maturing Company, Richmond, Va., or J. H. LESTER, No. 57 Pearl-street, Brocklyn, N. Y. 2 5eow CONSOLIDATION OF THE "AMERICAN" AND Steam Gage Company" hereby give notice to their friends and the public that, having made a mutual arranement with the "Ameri-can Steam Gage Company" whereby the whole business of the two on manies has been consolidated, all orders for gages heretofore made by the "National Steam Gage Company" under the patents of E. G. Allen, should be addressed hereafter to the "American Steam Gage Company," they having, by assignment, become the exclusive owners of said patents, and the rights to manufacture under them. Thank-ing our numerous friends for their generous patronage extended to steam Gage Company," for instruments heretofore manufactured by us, will be filled promptly, and with gages made in a style and finish equal to those heretofore made . N. HUNT, President.

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In the second se

BACK NUMBERS.—IMPORTANT TO PAT-ENTIFIC AMERICAN CAD VERTISERS.—Back numbers of the Sci-ENTIFIC AMERICAN can be furnished to new subscribers who desire them. Every number of the paper is electrotyped, and therefore any quantry of any NUMBER issued since the commencement of the "New Series" can be furnished at the office of publication, and at most of the periodical stores throughout the country. Patentees whose engravings have appeared in these columns cannot make their inventions known to the trade, in their respective line, better than by purchasing a large number of copies of the paper containing their engraving, and circulating them among their friends and the Scientrific American is but little more than the cost of as many handbills or circulare, while the benefit derived from circulating the paper containing the illustration will be found to far surpass the dia-tribution of handbills or any other mode of advertising. Address MUNN & CO., Publishers, No. 37 Park-row, New York.

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NOTICE.—TO MANUFACTURERS OF WOOD LATHES.—Wanted, lathes for turning handles for axes, picks, hatchets, &c. Address, with full particulars, E. & S., Box 316, Tren-ton, N. J. 12\*

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

BOARDMAN'S IMPROVED METALLIC CAR-RIAGE HUB. Various modifications of metal hubs for carriage wheels have been used, but great difficulty, has been experienced in rendering them easily fitted, adjusted, repaired and, at the same time, firm and not likely to work loose. The objects of the hub shown in this illustration are to obviate the defects pointed out, and to se cure the advantages of durability and facility of adjustment in a very simple and effectual manner.

A is the cast iron hub, having grooved chambers, B, to receive the spokes. C. which are inserted and fitted into them. The ends of the spokes are beveled to an edge, and when one of them works loose, an angularshaped wedge, D, of metal or other material, is inserted at the point into the chamber, B, which thus tightens the loose spoke, without interfering with any of the others. In this manner the tire may be always kept tight, without requiring to be re-set, which saves a great deal of trouble. E are clamps or metal plates secured to the hub by the screw bolts, F, for the purpose of securing the spokes in the hub. By means of these plates a single spoke may be taken out, if injured, and replaced with a new one, without taking the whole hub or wheel apart.



A loose spoke may be tightened by a wedge with equal facility. G is the box in the hub. We are informed that a set of these hubs have been in use on a heavy twohorse wagon for two years, and that they have required no repairs, and are apparently as good as new, although they have been subjected to very severe tests. These spokes, having no tenons at the hub ends, are inserted much further than in the wooden hub, and are consequently stronger. On a wheel having this hub a tire never requires re-setting. These hubs are equally well adapted to the lightest carriage and to the heaviest wagons and carts, and possess many advantages over the wooden hub. More information may be obtained by letter addressed to Spencer, Boardman & Co., Lancaster, Pa.

#### NEW ADJUSTABLE WINDOW STOP.

The sash of a window is kept in place by a vertical strip called a stop, which extends from the top to the bottom, and is generally fastened to the window casing with small nails. These stops are not adjustable to fit snug or loose, as may be desired; and they are not readily detached to permit the sash being taken out for the purposes of glazing, washing, painting, &c. In removing common stops, the paint is frequently injured, and the removal of the nails oftentimes causes the stops to be broken. The invention represented in the accompanying figures is designed to obviate these defects, by providing a simple fastening for securing the stops, by rendering them easily adjusted-tight or loose-and ca. pable of easy removal and replacement.

Fig. 1 is a vertical section of a window, with the invention applied to it; Fig. 2 is an enlarged section of the invention applied to a window; Fig. 3 is a view of the screw socket; and Fig. 4 a view of the small slotted plate for the stop to render it adjustable.

A represents a window casing; B is the upper and C the lower sash; D is the stop of the window (there is one at each side) secured in the inner sides of the casing to retain the lower sash, C. In each stop, at about its center, there is fitted the small metal plate, a, Fig. 4, the collar of the caster, D, and into the metal socket,

with an oblong slot, b, in it, and a corresponding opening  $|\mathbf{E}|$ , in the leg of the chair. The stock has a permanent is made in the stop. In the stile or jamb, c, of the casing, and in line with the plate, Fig. 4, a socket nut, d, Fig. 3, is fitted. It has a screw on its outside to secure it in the case, and it has a thread cut in its inside to



receive the adjusting screw of the stop. A notch is cut on its outer end for screwing it in with a driver. E is a small sectional globe washer, Fig. 2, through which the screw, F, passes, and is made to fit snugly, and secure the stop, D, to its place in the casing. This is the entire fastening. In order to remove the stop, D, to permit the sash being taken out, the screw, F, has but to be turned fully backward; and in order to adjust the stop close to the sash, the screw, F, has just to be slightly unscrewed, when the oblong slot of the plate, a, will permit the stop to be set nearer to or further from the sash. and thus a ready adjustment is effected. It will be readily perceived that from the application of this simple fastening to windows, the stops can be easily detached and adjusted for the purposes stated. The invention is simple and efficient, and may be applied to any window, and either one or more to a stop, according to the size.

The patent for this invention was granted on the 20th of March last. More information may be obtained by letter addressed to the inventor, Mark Howland, of Waterbury, Conn.

## FRY'S IMPROVED FURNITUREE CASTER.

The chair and sofa caster in common use is very defective in its construction, and is therefore attended with several disadvantages. The point of bearing of the chair upon the wheel of the common caster is so far from the center that it is liable to get out of order, by bending the central stock. The legs of chairs-especially those which are slender or curved, embracing those which



are the most costly-are frequently broken by persons sitting down upon them suddenly, or when the chairs are drawn across a carpeted floor and meet with some obstruction. To overcome such defects, also to insure the caster rolling straight, when moving, are the objects of the invention illustrated in the accompanying figures, representing a side elevation and a vertical section.

C is the central stock or spindle which passes through

cap, F, in its base, and the wheel revolves on the stock with freedom. A spring of india-rubber or metal, B, is placed around the central stock, C, to operate with the caster, D, in such a manner as to support the weight of the chair when it is empty, thus upholding it on the spring. When, therefore, a heavy person sits on such a chair, the springs will permit the caster or wheel to slide up, and the chair will then be supported firmly on the floor by means of the cap, F.

This improvement also permits the bearings of a chair to be placed at a proper distance from the central stock, as the wheels have great freedom to present their proper sides to the line of travel. To avoid strain on the legs and stocks, some casters have been made with their bearing points upon the wheel, so near the central stock that the roller could not turn round readily, but presented flat sides to the line of travel, thus making them slide, instead of rolling upon the carpet. These defects are obviated by this useful improvement, for which a patent was granted, on the 10th of April last, to Mr. Thomas Fry, No. 120 Fulton-street, Brooklyn, L. I., from whom more information may be obtained by letter.

A WIND WAGON.—A western genius lately constructed a wind wagon to bear him to Pike's Peak, which has realized his most sanguine expectations-carrying him through in 20 days. Encouraged by this success, other parties in the same town set about the construction of the same kind of wagons, and a party of eight started out on the prairies to try one which had been finished. The wind was blowing a gale at the time, and everything worked to a charm. The occupants, gliding swiftly over the prairies, were delighting themselves with anticipation of a speedy and comfortable trip to the mines, when the velocity of the vehicle created a lively alarm for their safety. The wagon sped onward before the driving wind faster and faster, until the axletrees broke and deposited them all on the ground, and in a somewhat damaged condition, from broken heads, bruised limbs and bodies. The speed of the machine is said to have been 40 miles per hour. We suggest the use of brakes.



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