# Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. XIII. NEW YORK, APRIL 10, 1858. NO. 31.

THE
SCIENTIFIC AMERICAN,
PUBLISHED WEEKLY
At No. 128 Fulton street, (Sun Buildings,) New York,
BY MUNN & CO.

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

Responsible Agents may also be found in all the principal cities and towns in the United States.

Sampson Low, Son & Co., the American Booksellers, 47 Ludgate Hill, London, Eng., are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

Single copies of the paper are on sale at the office of publication and at all the periodical stores in this city, Brooklyn and Jersey City.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

☞ See Prospectus on last page. No Traveling Agents employed.


### Explosions in Molding.

We notice in one of our cotemporaries that while George Keyser was recently pouring some melted composition metal into journal boxes, at North Adams, Mass., an explosion occurred causing the molten metal to fly out in all directions, and some of it into his face, slightly injuring his eyes. The accident is attributed to some moisture having gathered in the cavity which was to receive the molten metal. This, we think, was the true cause of the explosion, as we have known like accidents occurring from similar causes; and we notice this one to give a word of advice.

Before metal is run into a mold it should be clearly ascertained that there is no water in it, because a very minute quantity is liable to cause an explosion when the molten metal comes in contact with it. In molding such simple things as rifle bullets, several persons have had their eyes permanently injured by neglecting this precaution. In the act of molding bullets it is not unusual to dip the mold into cold water, to cool it, and if not dried when the metal is again poured in, an explosion will certainly occur, and the lead, in all likelihood, will be thrown into the face of the molder. "A word to the wise is sufficient."

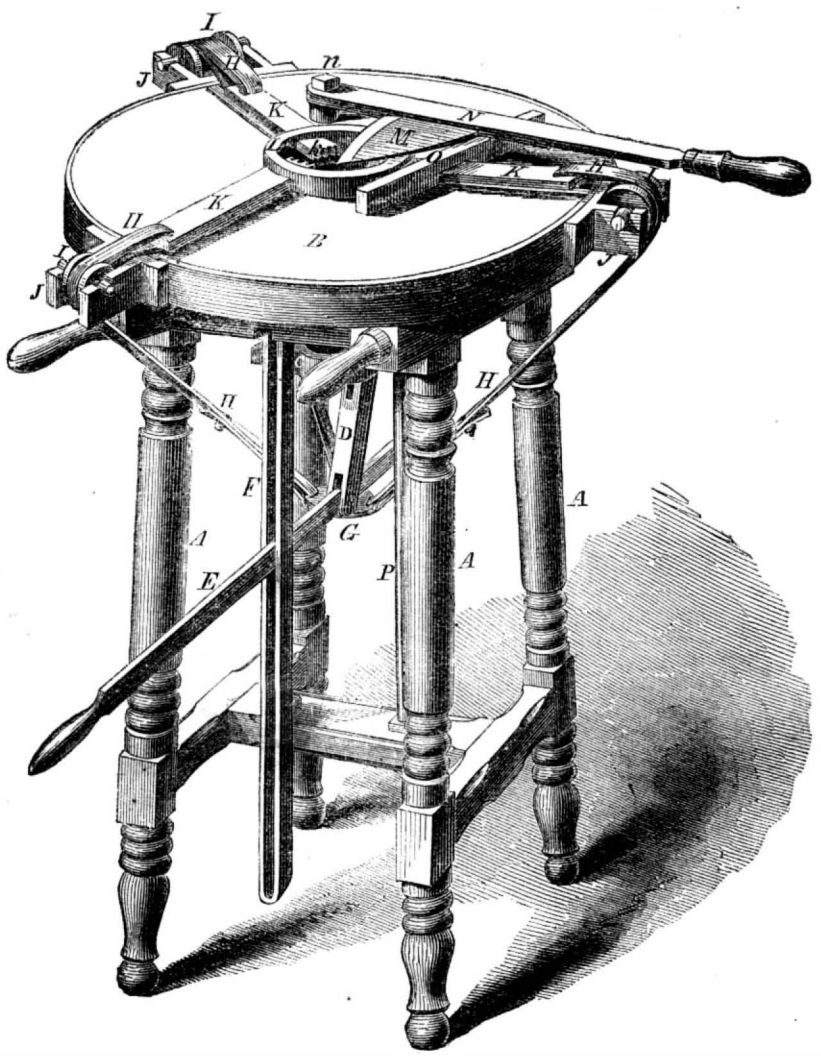
### Painted Pails.

A correspondent writing from New Lebanon, N. Y., informs us that a cheap description of pails, "painted inside," are extensively used in that region for gathering maple sap; and as the paint is very soon removed, some persons are afraid of lead being in it, which is a dangerous poison. Our opinion is solicited in regard to this question.

Of course we cannot tell whether there is or is not lead in the paint employed for these pails, but if there is, the detection of it is a very simple affair. Let any person take one of these pails and scrape some of the paint from it into a tumbler, then pour some boiling hot soft water upon it, and stir it up for a few minutes. Now take some bi-chromate of potash, (a piece about the size of a pea,) and dissolve it in another tumblerful of water, and then mix the two solutions together. If there is any lead present it will form a light yellow precipitate; the iodide of potassium also forms a yellow precipitate with lead, and the hydro-sulphuret of ammonia a black precipitate. These simple re-agents can easily be applied to detect very minute quantities of lead in solution.

Our correspondent also asks us if it is advisable or right, to use pails that are painted inside for holding water or milk for drinking. We think it is not advisable to use such pails for these purposes, nor is there the least necessity for painting them. As white lead acts as a poison when taken into the stomach, it should never be used for painting any vessel designed to contain food or drink.

## HURST'S IMPROVED CORN HUSKER.




The season will, in a month or two, be upon us, when green corn will form an article of general food, and the streets generally will be enlivened by the musical cry of "Hot corn!" It is, therefore, the proper time to illustrate corn huskers, so that before the crop is yet ready for gathering, the machines by which the ears of corn are prepared either for the market or the mill may be generally known.

The corn husker represented in our illustration is the invention of A. R. Hurst, of Chambersburg, Pa., and was patented by him on the 31st of March, 1857.

A are four legs, supporting the platform, B, having a circular hole through the center. On the bed-piece or platform, B, three metal plates, K, are placed radially from the center of B, and having their ends cut into teeth, *k*; they rest in slots in a rim, L, placed around the aperture in B. Each of these pieces, K, has a stop underneath it, which works on a rod placed in a groove in B. These pendants and rods serve as guides to K, and around these rods are also placed springs. To the outer end of each rod are attached straps, H, which pass over pulleys, I, on bearings, J, on the periphery of the bed piece, B. The springs on the rods have the tendency to keep the three pieces, K, in contact at their toothed end, *k*. To the lever, E, is pivoted the link, D, that is also pivoted to the disk, C. This lever works over another disk, G, that has the straps, H, fastened to it. The lever works in a guide, F. The disk, C, also works up and down in guide rods, P.

On the top of B a lever, N, is placed, having a screw, *n*, at its end, to form a fulcrum, and it is also provided with an angular knife, M; it works over a piece, O, which always keep it in the same plane.

The operation is as follows:—The lever, E, is depressed, and the plate, G, is also depressed, the pieces, K, are drawn back, and the ears of corn are placed one at a time, point downward, through the opening in the center of B. The points of the ears rest in C. The corn is placed with the butt just below the inner ends of the plates, K; the knife, M, is then operated by the lever, N, and the butt or stick is cut off. The butt being then cut off, the lever, E, is released, and is brought back by the springs in the groove in B. The plates, K, then grasp the corn by means of these same springs, and the disk, C, is then forced upward by elevating the lever; and as the toothed projections, K, grasp the ear, the husks are retained, while the corn is forced up, perfectly free from the husk or shell. This machine can be worked rapidly, and there are no parts to become choked or clogged, so as to render it inoperative. It is compact, and judging from the one we have seen, it will do its work cleanly and well.

Any further information can be obtained from the inventor, by addressing him as above.

### Starch from Horse Chestnuts.

This fruit contains a great quantity of starch, and as the tree will grow almost anywhere and everywhere, it would be advisable to apply the hitherto useless fruit to a valuable purpose. The tree is one of the most beautiful, and might well be planted along our streets and roads.

### American Submarine Explorers at Sevastopol.

By the most recent accounts from Europe, we learn that both of the two American companies, which had formed contracts to raise the sunken ships at Sevastopol, have given up the project as quite impracticable. The hulls of these sunken vessels have been rendered completely useless by the *teredo* of the Black Sea. Some of these vessels were caulked and made seemingly tight for the purpose of pumping out the water prior to the act of raising them, but the timber was afterwards found so rotten that the water run through it like a seive. The anchors and cables raised are sufficient to cover some of the expenses of the companies, but not the whole. No less than eighty-one vessels were sunk, and some of these were eighty gun ships—all are lost forever.

### Diller's Axle Box.

We have previously noticed this invention on page 218 of the SCIENTIFIC AMERICAN, but it will be better understood by reference to the accompanying engravings, of which Fig. 1 is a perspective view, and Fig. 2 a section showing the lubricating grooves.

*Fig. 1*

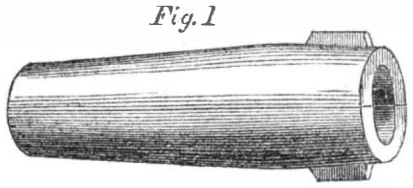
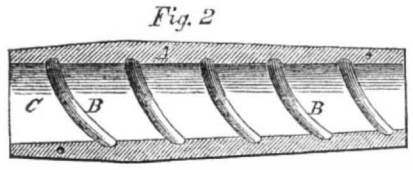


*Fig. 2*




A represents the axle box, which externally is of the usual form, and may have its inner surface chilled or not, as desired. Within the box, A, a series of grooves, B, are made. These grooves extend entirely around the box, and are inclined, as seen in Fig. 2. Any number of grooves can be used, according to the inclination and the length of the box. The grooves can be of any suitable width or depth, and are so arranged that the edge of one groove on one side of the box will nearly, if not quite, reach the edge of the adjoining groove at the opposite side of the box. As each groove extends entirely around the box, and as the base or inner diameter is of slightly taper form, the grooves, being inclined, will, of course, be slightly elliptic in their form. The grooves, B, are formed by having corresponding projections placed on the cone, and when the casting is made and the cone withdrawn, they can be planished, or cleaned out, and regularly formed by a proper tool, and the inner surface of the box bored out, reamed or smoothed.

When the arm is lubricated at C, the oil will collect in the grooves, B, they forming oil chambers; and as the box rotates, the whole surface of the arm is lubricated, the perfect lubrication being somewhat assisted by the slight longitudinal play of the arm. The bearing of the box is not much dimished, and the wear and tear will be less than if the grooves were made circumferentially in its center, to receive the lubricating material.

It is the invention of William Diller, of Lancaster, Pa., from whom any desired information can be obtained. Patented March 9, 1858.


**Issued from the United States Patent Office**

FOR THE WEEK ENDING MARCH 30, 1858.

[*Reported officially for the Scientific American.*]

CULTIVATORS—Joseph Banks, of Dadeville, Ala. : I claim the construction, arrangement and combination of the body of the implement and its movable teeth, as described, whereby it is readily adapted to properly receive in turn the several scrapers employed for performing the various modes of cultivation specified.

SUGAR MOLD CARRIAGES—C. E. Bertrand, of Williamsburgh, N. Y. : I claim the sugar mold carriage constructed and arranged to operate substantially in the manner described, that is to say, the platform in combination with stationary pins, supported by two wheels and a caster, the standard of which bears against and pivots in the upper or brace plate, the latter being composed of semi-circular arms, holding in connection with guard chains or bars the conical molds, in the manner and for the purposes set forth.

REGULATOR FOR TIME-KEEPERS—Dana Bickford, of Westerly, R. I. : I do not claim the compensating curb.

But I claim fitting the compensating curb to a curved groove, or its equivalent, furnished with a number of set screws, which operate as described, to secure the curb in its place, and to adjust or vary the effective length thereof, and thus constitute a means of correcting its compensation.

[Full particulars of this invention will be found on another page.]

MACHINES FOR HULLING AND CLEANING CLOVER SEED—J. V. Blackwell, of Ovid, N. Y. : I claim the application of the gravitating curtain, H, at the point of the eduction of the blast, for the purpose of modifying and diffusing the same, and preventing the waste of seed, substantially in the manner shown and described.

I also claim the combination and arrangement of the overshot grating cylinder, C, and feed roller, D, with the blast generator, G, and blast-regulating curtain, H, the whole operating conjointly in the manner and for the purpose described.

CIGARS—Thomas Blanchard, of Boston, Mass. : I claim the described cigaretta or paper cigar, made in the manner substantially as set forth.

STAPLES FOR BLIND SLATS—Byron Boardman, of Norwich. Conn. : I am aware that spikes, bolts and staples for various uses have been cut with transverse furrows, and bearded diagonally and otherwise, for the purpose of holding with greater force when driven into wood; and that stems or shanks of fish hooks have been serrated with indentations for their greater security to a line, therefore I do not claim the cutting, to produce a bearded or ragged surface or edge either to spikes, bolts, or staples, except in manner and form as described.

Nor do I claim the production of serrated indentations on the shank of fish hooks, or any other article, except the wire staples, such as are used for the slats of window blinds and screens.

Neither do I claim the production of staples of any kind, when not pointed or serrated as described.

But I claim constructing wire staples (such as are used for connecting the semi-revolving slats of window blinds and screens to a rod governing their positions) by giving them a rounded edge in the direction as shown at a c, and an acute or sharp edge, as viewed cross-wise, as at f h, in combination with transverse indentations across the wire, the whole being formed by compressions between dies, substantially as described.

PAPER FILES—W. Z. W. Chapman, of New York City : I claim the combination and arrangement of two or more wires, or their equivalents, on a rod, or its equivalent, substantially in the manner and for the purposes set forth.

I also claim the combination of the ring or rings, i, and lock plate, f, for securing the ends of the wires, as set forth.

HARVESTERS—George E. Chenoweth, of Baltimore, Md. : I claim compensating for the wear of the worm or groove in the driving cylinder, by making the parts of that cylinder adjustable, as described, thus giving increased certainty to the action of the cutters.

LUBRICATOR OF RAILROAD AXLES—William Clough, of Madison, Ind. : I do not claim the use of an arm, deriving such a motion from the axle as to dip into the oil or grease, and deposit upon the journal at every revolution thereof.

But I claim the combination of the oiling finger, E, slotted arm, G, and wrist, b, in the manner and for the purpose described.

And I also claim making the oiling finger, E, sleeve, F, and slotted arm, G, from the same piece of wire, in the manner and for the purpose set forth.

[We have noticed this invention in another portion of this journal.]

OPENING AND CLOSING OUTSIDE BLINDS—John E. Clokey, of Washington, D. C.: I am aware that blinds and shutters have been opened and closed from the inside by various complicated contrivances; but this I do not claim broadly.

I claim the combination of the bent levers, d, with the bars, g, when they are constructed, arranged and operated in the manner described, and for the purpose specified.

SCREW-CUTTING MACHINE—Richard H. Cole, of St. Louis, Mo.: I claim arranging a set of vibrating chasers a a a, in a revolving chuck, in such a manner that the said chasers may be opened and shut while the chuck is in motion, and of so constructing and adjusting the said chasers that they shall turn the bolt blank to a given size, and chase the thread on it in one and the same operation, substantially as shown on the drawing, and as described in this instrument.

And I also claim the combination of the two plates, N N, and the cam, P, with the cross head, O, substantially as shown and described, for the purpose specified.

And I also claim combining the turning lathe with the screw-cutting machine, whereby the heads of the bolts are turned at the same time the chasers cut the thread on their points, in the manner set forth.

And I also claim combining a universal chuck in the opposite end of the same shaft on which the chasing chuck is fixed, whereby the nut can be tapped at the same time the thread is cut on the bolt, and with the same power and motion, substantially as specified.

HORSE HAY RAKES—Asahel Cowley, of Harpersfield, N. Y. : I claim the described combination of a separator with a wheel rake, the whole being constructed, arranged and operated in the manner and for the purpose as set forth.

MANUFACTURE OF SOAP—Dalrymple Crawford, of Toronto, Canada : I do not claim mixing flour, corn meal, starch, or vegetable matter generally with soap.

I do not claim making soap with a fat or oil and an alkali, with or without rosin.

But I claim mixing with soap the refuse from indian corn after it has been subjected to the action of alkali in extracting the starch, as substantially set forth.

FOLDING BILLIARD TABLE—Charley Croley, of Cincinnati, Ohio : I claim the arrangement of certain devices for folding and moving the frame of the table, and swinging the bed of the table as represented, consisting of the pieces, C C, hinges, d and f f, the levers, P P, leg pieces, m, and rollers, n, and the links, g g, and rollers, J, all connected and arranged as represented, and for the purpose specified.

COMPOSITIONS FOR TANNING LEATHER—Clinton Daniels, of Elk Horn, Wis. : I claim the combination and use of cream of tartar and bi-carbonate of soda with catechu in making a liquor, and using the same for tanning hides and skins, no claim whatever being made to the discovery and use of the catechu alone, for tanning purposes, by me.

BALANCE STEAM TRAP—W. M. Davis, of Philadelphia, Pa. : I lay no claim to the various parts separately.

Nor do I claim the forcing of the water through a submerged pipe by the pressure of steam upon its surface, thus forming a steam trap.

But I claim the construction of a balanced lever, through which a passage to discharge the excess of condensation is opened by the weight of such excess, in the manner, or an equivalent manner, to that described.

PRINTING PRESSES—G. W. Davis, of Seneca Falls, N. Y.: I claim the arrangement of the double armed lever G, plate, E, bed, C, and the adjustable spring frisket, K', as and for the purposes shown and described.

[We give a notice of this in another column.]

DEVICE FOR PREVENTING CORROSION OF THE BINDING SCREWS IN GALVANIC BATTERIES—George Doyle, of Ottawa, Ill. : I claim making the connections of the battery by fitting the jars with covers of glass, glazed or enameled earthenware, gutta percha, or other insulating substance, with holes in them to receive the shanks of the binding screw sockets, and screwing the said sockets through the said holes into the clamps, for the plates with interposed washers of india rubber, leather, or similar protecting material, all substantially as described.

[See a description in another portion of this paper.]

ROTARY RECIPROCATING KNIVES FOR SMOOTHING STAVES—William B. Dunning, of Geneva, N. Y. : I do not claim the vibrating saws, as they have been used before.

But I claim the construction, arrangement and employment of the oscillating cutting tools for smoothing the stave, &c., substantially in the manner set forth.

SELF-LOOSENING HORSE AND CATTLE TIE—John J. Eshleman, of Lancaster, Pa. : I claim the bolt, B, in two sections, connected by the sliding scarf joint, H, for the purpose of instantly loosening the horse, as set forth.

I also claim the devices of the bolt, B, spiral spring, F, and casing, A, all in combination, operating together, substantially in manner and for the purposes set forth.

AXLE BOXES—William B. Fahnestock, of Lancaster, Pa. : I claim the combination of the axle and boxes, arranged and constructed as described, for the purpose of allowing the axle to turn and accommodate the wheel to the direction of the rail.

CAR WHEELS—William B. Fahnestock, of Lancaster, Pa. : I claim, first, The wheel with the hub outside of the tread or rim, and the bearing on the axle within the tread or rim, or at the balancing point.

Second, I also claim the combination of the independent wheel, bearing, K, and pivot, M, with the short axle, for the purpose of preventing the sliding and friction of the wheels on, or against the rail.

PNEUMATIC SPRINGS—W. R. Fee, of Cincinnati, Ohio: I claim the described pneumatic spring, having a hollow metallic piston working closely in a hollow metallic cylinder, and packed by leather and oil, for the purpose of increasing the elasticity of the spring, and preventing explosions and leakage, the whole being constructed substantially as set forth.

CANE FOR PAYING OMNIBUS FARES—Samuel W. Francis, of New York City : I do not limit myself to the arrangement just described, as I know it can be modified in a variety of ways to obtain the same result.

But I claim inserting pieces of money in a cane, for the purpose of handing omnibus fares, substantially as described and set forth.

[An engraving and description of this invention will be found on another page.]

METHOD OF LIGHTING GAS BY ELECTRICITY—Samuel Gardiner, Jr., of New York City : I claim placing a coil of platinum wire, or its equivalent, in the relative position to the jet of gas, as described, for the purpose of lighting the jet by electricity, and for the re-igniting it when blown out under the circumstances and for the purposes set forth.

[This is an invention for lighting gas by electricity, and is an improvement on previous inventions and patents. It consists in placing the ignition coil at the side of the burner, instead of over it, and by that means prevents the cooling action of the gas upon the fine wire before it is ignited.]

MACHINE FOR TESTING AND MEASURING THE STRENGTH OF CAR SPRINGS—Perry G. Gardner, of New York City : I claim the combination and arrangement of the plunger, G, with the adjustable spindle, N, and adjustable knife-edge pivot, w, and the guide plate, Q, arranged and operating in connection with the balance beam, so as to test the power of the spring, and at the same time measure with great facility and rapidity the exact weight or pressure to which the spring has been subjected, the whole being adjustable to any required size or power of spring.

MACHINES FOR SLATING COAL—T. Garretson, of Pottsville, Pa. : I claim the construction of the sides of the screen and the openings, a a therein, substantially as described, to bring the said openings outside of the guard bars, B B, and give to the said openings a tangential direction, and to form tangential, or nearly tangential, conductors, C C, leading to the said openings, as set forth.

[The improvement in this machine is in the peculiar construction of the sides of a rotary screen, and of the openings in these sides, which encourages and permits the escape through these openings of pieces of thin flat form, like the pieces of slate in broken coal, but not of lumps of coal.]

HORSE-POWER MACHINES—James Grant, of Rochester, N. Y. : I claim making iron horse-powers with an open center to the caps, A, and an adjustable or a fixed bridge-piece, a, and making a double length or reversible pinion, B, as and for the purposes specified.

CONSTRUCTING DOLLS' HEADS—Ludwig Greiner, of Philadelphia, Pa. : I claim strengthening the seams and protecting the exposed parts of doll heads, by cementing or pasting on those parts, muslin, linen, silk, or other equivalent material, in the manner and for the purpose set forth.

APPARATUS FOR MANUFACTURING WHITE LEAD—Henry Hannen, of Dubuque, Iowa : I claim the pipe, G, with its branch pipes, J, and stop cocks, n, the pipes C and E, and the diffusing pipes, B and a, and their respective stop cocks, e and e', in combination with the valves or stoppers, g and l, the whole being arranged and operated in the manner substantially as described, for the purpose of exposing the metal to the action of the different agents employed, alternately and successively.

CLOTHES' DRYER—J. J. Hamilton, of New Castle, Ind. : I claim the application of the roller and pulleys to the arms, and the folding of the arms to the post.

SELF-WAITING TABLE—G. W. Hagey, of Smithland, Ky. : I claim the handles, F, for the purpose of turning the table, and to which a table cloth may be buttoned, substantially as described.

SAWING MILL—Wm. Hawkins and Wm. C. Clary, of Milwaukie, Wis. : We claim the manner described of automatically changing the saws after each cut, alternately from an oblique position in one direction to an oblique position in a contrary direction to the line of the log carriage by means of the studs, p, slide, K, double lever, D, connecting rods, d, in combination with the frame. F, and the guides, n, and n', for the purpose set forth.

We also claim the use of the two-wedge rollers or wedges, P' P'', to keep the board clear of the saw, while cutting in either direction, substantially in the manner described.

We also claim the combination of pinions, i, and their pins o, entering into recesses of plates b, the ratchet wheels, g, the ratchets, r, the adjustable segments, J, the wheels, G', the screws, G, and the rods, k, with their clutches, z and v, for the purpose of automatically setting the log to the saw, and stopping the setting when the log frame advances too close to the saw.

We also claim the notched plate, t, in combination with the latch, g, lever, u, and link, l', for the purpose of operating the belt shifter, l, without turning the lever, u, substantially in the manner set forth.

HEATING APPARATUS—F. L. Hedenberg, of New York City : I claim the arrangement within the case, A, of the firebox, B, spark or draft chamber, J, and the flue and air pipes, M N, the whole being surrounded by water space, and connected and arranged substantially in the manner and for the purpose set forth.

RAILROAD CAR WHEELS—Wm. W. Hubbell, of Philadelphia, Pa., and R. H. Hubbell, of Delaware County, Pa. : We claim the circular vertical flanges of the rim and plate cast separately, turned off smooth and fitted together, substantially as described.

Also, The central plate strengthened with ribs and made thicker around its water edge where it is secured to the rim in combination with the vertical flanges on the rim and plate, substantially as described.

GAS GENERATORS—John G. Hock, of Newark, N. J. : I do not claim broadly, to be the first inventor of retorts having perforated bottoms and chambers, nor do I claim the chambers, B', C, separately considered, substantially as shown and described.

What I claim is the arrangement together of the rain retort, B, chambers, B', C, and open space, c, substantially as and for the purposes set forth.

[A notice of this invention will be found on another page.]

COMPOSITION FOR COATING TELEGRAPH WIRES—J. B. Hyde, of New York City : I do not wish to be understood as confining myself to the precise proportions set forth.

But I claim an insulating compound for telegraphic wires formed by mixing boiled linseed, cotton seed, or rosin oil, with natural or artificial asphaltum, substantially in the manner as described.

STRAW CUTTERS—W. W. Hollman, of Eddyville, Ky.: I claim the combination of the movable bottom, when constructed as set forth, with the cam shaft, C, cams, A and B, and connecting rod, D, for giving a projection of straw under the knife by raising the lever, W, said projection being gaged and furnished by the upward and downward motion of the lever, in the manner and for the purpose set forth.

COFFEE AND TEA POTS—J. M. Ingraham, of New York City : I claim the steam tight coffee pot, the filterer, c, with the conical chamber, B B, and the siphon combined, arranged and operating in the manner and for the purpose as described.

AIR HEATING FURNACES—T. D. Ingersol, of Monroe, Mich. : I claim constructing the radiator, B, and arranging the dampers, H I, within it, substantially as shown, so that the dampers may perform the double function of dampers and scrapers, as set forth.

[The invention in this furnace is in the arrangement of the radiators and dampers, so that the dampers may be made to perform the double function of dampers and scrapers, and the radiators will thereby be kept perfectly clean.]

CHURN—J. A. Jordan, of Shelbyville, Tenn. : I claim the employment of the revolving wheel, D, and stationary wheel, C, constructed and operating in the churn as set forth, the bottom of the same being fitted to a stove casing in the manner and for the purposes specified.

COMBINATION OF LEAD PENCIL AND ERASER—H. L. Lipman, of Philadelphia, Pa. : I do not claim the use of a lead pencil, with a piece of india-rubber, or other erasing material attached at one end for the purpose of erasing marks.

But I claim the combination of the lead and india-rubber, or other erasing substance in the holder of a drawing pencil, the whole being constructed and arranged substantially in the manner and for the purpose set forth.

SCISSORS SHARPENER—J. C. Loveland, of Springfield, Vt. : I claim as a new article of manufacture the described instrument for sharpening scissors, consisting essentially of the revolving file, B, and guide, d, constructed and operating in the manner substantially as set forth.

DIVING BELLS—Benj. Maillefert, of Astoria, N. Y. : I claim the combination of the reservoir, C, with the bell, A, and tube, B, as and for the purposes set forth.

[A notice will be found in another column.]

LATHE CHUCK—J. L. Mason, of New York City : I claim the chuck described for spinning screw caps, &c., having a flange or rounded thread and a rounded groove, the groove and thread vanishing gradually at the flange, substantially as described.

WINDLASSES—Joseph P. Manton, of Providence, R.I.: I do not claim the brakes, for they have been previously used, and I am also aware that pawls, ratchets and gearing have been used and arranged in various ways, for the purpose of varying the speed and power of windless drums by simply reversing the movement of the driving shaft or arbor.

I therefore do not claim, broadly, such device, irrespective of the described arrangement of parts.

But I claim the arrangement of the pawls, g h, wheel, N, hub, P, ratchets, S, and gearing, Q Q', R, F, G, so as to operate as and for the purpose set forth.

[This is an improvement in that class of windlasses in which the drum may be operated with two different speeds, and power obtained when necessary by sacrificing speed and *vice versa*. The invention is in a peculiar arrangement of pawls and gearing, whereby the desired end is attained by very simple means, thus rendering the windlass as a whole extremely light, durable and efficacious in its operation.]

WASHING MACHINE—James McVicker, of Green Co., Pa. : I claim forming a receptacle within the wash-box for containing the clothes to be steamed preparatory to their being washed by means of the ribs or slats, m, attached to the wash-box, and the ribs or slats, r, attached to the lid, P, so that upon opening the lid of the wash-box, the receptacle also is opened for the introduction or removal of the clothes, substantially as described.

TICKET HOLDERS FOR RAILROAD CARS—M. L. Mickles and L. S. Olmsted, of Aurora. Ill.: We claim a ticket-holder, composed of two chambers or compartments, A B, into the upper one of which the ticket is placed and exhibited, and thence transferred to the lower one in the act of closing and opening the door of said upper compartment, by means of the movable floor, and ledge or projection, P, all operating substantially in the manner and for the purposes specified.

WRENCH—Archibald Murray, of Troy, N. Y : I claim my improved adjustable wrench, in which the movable jaw is fastened to the fixed one, by means of a ring or collar which surrounds and slides upon the shanks of both jaws together, substantially as described.

DESK SEATS FOR SCHOOLS—Chas. Perly, of New York City : I claim supporting the seat by a bracket extending from the pedestal or column of the desk, whether said seat be a permanent fixture, or fitted to swing around substantially as and for the purposes specified, whereby the floor is unobstructed by the separate legs or pedestals of the seat, and greater facility afforded for clearing the room, and more space given for the feet of the scholars.

BRICK MACHINE—J. L. Ransom, of Charleston, S. C.: I claim the box, B, provided with the follower, C, in combination with the roller frame, I, feeding-bar, L, and scraper, G, when the whole are arranged relatively with each other, so as to operate substantially as and for the purpose set forth.

I also claim the adjustable roller, i, arranged as shown, and operated by means of the cams, l, on shaft, J, substantially as and for the purpose set forth.

[We have given a notice of this machine in another column.]

SEWING MACHINES—O. L. Reynolds, of Dover, N. H.: I claim the loop distended, t, operated by and operating in combination with the shouldered looper, l, substantially as and for the purpose set forth.

[This invention relates to that description of sewing machine in which a needle and looper are employed, with a single thread to form the chain stitch. It consists principally in a device termed the "loop distender," operating in connection with a looper of suitable construction for the purpose of distending the loop in a proper manner, and to a proper extent to ensure the entrance of the needle.]

RAILROAD CAR COUPLINGS—J. W. Rice, of Springfield, Mass. : I do not claim the hook link, as that has been used before, but was found defective, as the hook link would work out when the cars were in motion, and hence was abandoned as dangerous and unsafe.

What I claim is the fulcrum drop, D, and notches, l and l l, on the underside of the hook link, C, and the rod, G, when used in combination with each other, for the purposes substantially as described.

RAILROAD BRAKES—J. C. F. Solomon, of Baltimore, Md.: I claim, first, The employment of small auxiliary wheels between the main wheels of the locomotive and several cars of the train, said wheels being adjustable up and down, substantially as and for the purposes set forth.

Second, The combination with the said auxiliary suspending and compensating wheels of a brake, which is constructed and arranged substantially as and for the purpose set forth.

[See notice on page 246.]

STOVES—S. T. Savage, of Albany, N. Y. : I am aware that stoves have been constructed with grates open all round or basket-wise, so as to use the radiant heat from the back of the fire for roasting or other cooking, but that arrangement does not effect either one of the objects of my invention as stated, and I therefore disclaim any such construction or arrangement of grate and stove.

But I claim in furnaces or stoves the employment of a receptacle for the fuel, closed at front and partially at bottom, with open grate bars for a part of its bottom and for the rear, opening into an air or draft chamber between them, and the back plate of the fire chamber, substantially as described in the specification and for the purposes set forth.

CASTING TYPES FOR PRINTING—George Schaub, of Hamburg : I wish it to be understood that I do not limit myself to the precise details described and represented, as the same may be varied without departing from the nature of my said invention.

But I claim the new or improved manufacture of types for printing before described, and illustrated by the accompanying drawing, that is to say, manufacturing types for printing by casting the stems or bodies of the types at the back of a sheet of tyve heads, and finishing the same as described; also the manufacture of spaces used in setting up printing types by the use of the movable frame described and represented.

APPLYING PENDULUM POWER—Andrew Slevin, of Ann Arbor, Mich. : I am already aware that bevel wheels, pawls, ratchets, pendulum, &c., have been heretofore in use for some mechanical purpose or other, and therefore I do not claim any one of them separately. nor do I claim the bevel wheels, pawls, and ratchets, causing thereby of themselves rotary motion.

But I claim the peculiar combination of the pendulum, bevel wheels, pawls, and ratchets above specified, for the purpose of obtaining a rotary motion from the reciprocating motion of the pendulum for the uses and purposes described and set forth.

TUBULAR WROUGHT IRON SHAFTS—W. A. Stevens and R. Jenkins, of Covington, Ky : We claim the manufacture of wrought iron bars for the tubular axles, shafting, or other purposes, by rolling from a solid pile in a system of grooves, substantially like that described. by which the pile is first flattened, then grooved longitudinally, and afterwards has the sides of its groove closed together and welded as set forth.

[See another page.]

SHELLING PEAS—Wm. J. Stevenson, of New York City : I do not claim separately and broadly the employment or use of rollers as separators, for they have been previously used for such purposes, as for instance in the roller cotton gin, where the seed is stripped from cotton by the same process as herein described.

Neither do I claim broadly the employment of the rollers with an endless belt or carrier, irrespective of the construction of the same. and its arrangement with the rollers, whereby the apron serves as a carrier for the pods, and allows the shelled peas to pass through it.

I claim the combination of the rollers, C D E, and endless cords, F, arranged to operate substantially as for the purpose set forth.

[A notice of this will be found on another page.]

CROSS-CUT SAWING MACHINE—Geo. Telford, of Pike, N. Y. : I do not claim attaching a saw to a reciprocating bar, which is fitted in or allowed to work through an adjustable frame for the purpose of allowing the saw to be elevated, so that the log may be fed to the saw for this device has been previously used. Nor do I claim the swinging guide bar, N,

But I claim the bar, H, with saw, M, attached to the arm, F, connecting rod, E, and wheel, D, when arranged relatively with each other as shown, and for the purpose set forth.

I also claim the bar, H, and saw, M, operated as shown, in combination with the log carriage, O, and cylinder, F, grooved and armed with spikes, the whole being arranged to operate substantially as and for the purpose set forth.

[This is described on another page.]

MASTIC COMPOSITION—Joseph Thompson, of North Wrentham, Mass. : I do not claim any particular oily residue, or mixture of tar, pitch or bitumen as a component part of a mastic, but use each of them as are best adapted to mixing with the new material, which serves as a basis.

Nor do I claim or use sand, brick dust, gravel, or any of the earths and oxyds heretofore used in such mixtures.

I claim the right of using the naturally finely divided remains of silicious rocks, which have an alkaline action on test paper, as Fuller's Earth, instead of sand, gravel or other solid material.

HARVESTERS—William Van Anden, of Poughkeepsie, N. Y. : I claim the use of a rectilinear spring in combination with the detent cam, J, having guides. K1 and K2, on the face thereof, for the purpose of actuating the

cutter of a harvester machine endwise in opposite directions from a state of rest, by the impulsive stroke of the spring, which said spring is charged by its opposite curvatures, while the cutter remains at rest, the said parts being made and operated substantially as set forth.

Second, I also claim the employment and use of the cam wheel, J, having on its face guides, K1 and K2, substantially as set forth, in combination with a crank shaft for the purpose of giving two vibrations to the cutter to one revolution of the cam wheel, substantially as described.

Third, I also claim the combination of the springs, (or springs as may be used) with the cam wheel, crank shaft and vibrating lever attached to the cutters for the purpose of operating the same, substantially in the manner set forth.

TEMPERING AND HARDENING STEEL AND IRON—Horace Vaugn, of Providence, R. I. Patented in England Dec. 29, 1856: I do not claim the use of the within named substances, when the same are used in a state of aqueous solution.

But I claim the use of a bath of chloride of sodium with or without ferro-cyanide or bi-chromate of potash, or either of them, or of other ingredients possessing similar chemical properties combined with animal or vegetable charcoal and ground bone, when the foregoing substances are in a state of igneous fusion, combined and operating as set forth.

WOOD SCREWS—James M. Whiting, of New Bedford, Mass., and George F. Wilson, of Providence, R. I.: We claim the making of wood screws with the upper side of the thread of greater depth than the under side of the thread, substantially as described.

ROTARY CUTTERS FOR TONGUEING AND GROOVING—James A. Woodbury, of Winchester, Mass.: I claim the combination of the chisel cutter or cutters, with the lip cutter or cutters, substantially as described.

MILLS—Joel Woodward, of Philadelphia, Pa.: I claim, first, the mode of the bush on the plate, A A, running up inside of the balance syne, C C, in the manner and for the purpose set forth.

Second, And the mode of the lower stone, K K, working on a loose or balance syne, C C, that has a nut or breaker, v v, resting on or fastened to the top of it, and may work with or without a balance or upper bearing as set forth.

Third, And the manner of the inside pot or teeth, Q Q, made to raise and lower to open and close the aperture, r r, by means of the lever, W, (or screw) to regulate the feed of the stones, and grinding of the crusher or breaker in the manner and for the purpose set forth.

SEED DRILLS—George S. Ball, (assignor to Benjamin Kuhns) of Dayton, Ohio, I do not claim the upper or lower slide, such having been used before.

But I claim the slide, A, with the attachment of the clips, C, in combination with the slides, D and E, the whole being arranged and operated in the manner and for the purposes set forth.

CORN SHELLERS—Peter Bergen, (assignor to Jane Ann Bergen,) of New York City: I claim the combination of the delivery flap or bottom, h, of the hopper, the piece, P, the pins, m, on the shelling cylinder, the cradle, d, and the springs, e and f, when these several parts are constructed and relatively arranged as described, to operate in the manner and for the purposes set forth.

RAILROAD CAR WHEELS—Henry C. Bulkley, (assignor to James M. Ross,) of Springfield, Mass.: I claim, first, my mode of constructing the hub, viz, by reducing the iron around the outer periphery of the hub, and give the requisite strength, I substitute a flange or ring on the end of the hub, when used in combination with a railroad car wheel of one or more plates for the purpose substantially as described.

Second, I claim increasing the thickness of the disk as it recedes from the hub to the tread of the wheel in the manner and for the purposes described.

PRESSES—Simon Ingersol, (assignor to himself, S. B. Turner and George W. Kimball,) of Brooklyn, N. Y.: I am aware that levers similar to those used by me have been used before in various ways, I therefore disclaim them in and of themselves considered.

But I claim the levers, g g, h h, chain, I, shieve, J, when arranged on the beams, E E, in the manner shown and for the purpose set forth.

MANUFACTURE OF HOES—J. Knight, of Newark, N.J.: I am aware that a wrought iron plate has been applied in the form of a cap, to assist in the union of the steel blade, and malleable cast iron eye of a hoe by the welding process, and therefore I do not claim the iron edge of a hoe uniting plate when not interposed between the steel blade and malleable cast iron eye; and I do not claim the lapping of the margin of the wrought iron plate over the edges of the flanch of the eye.

But I claim the welding of a wrought iron plate between the steel blade and the malleable cast iron eye, substantially as and for the purpose set forth; or in other words, I claim the hoe constructed of the three pieces, A B and C, arranged relatively to each other, and welded together substantially as specified.

STEERING APPARATUS—Isaac Moore, (assignor to himself and Francis N. Gove,) of Brooklyn, N. Y.: I do not limit myself to the relative sizes of the gears, e and f, nor to the exact arrangement of the screws and nuts, as all these parts are well known and might be varied to suit particular circumstances. And I do not claim a yielding motion between the steering wheel and rudder head, as this has before been allowed by means of springs and by ropes of a slightly yielding, nature, but I am not aware of any previous instance in which the screws acting on the rudder head have been allowed an endwise motion resisted by springs or equivalent yielding pressure as specified.

Therefore what I claim is the manner described of relieving the rudder stock of any sudden strain or concussion by the endwise motion allowed to the screws, x x, in combination with the springs, l l, or equivalent yielding pressure as and for the purposes specified.

HAND EXERCISER FOR MUSICIANS—Jules Monestier, of St. Denis, near Paris, France, (assignor to R. F. Spangenberg, of Brooklyn, N. Y.) Patented in France, Jan 12, 1857: I do not limit myself to any particular size or weight of my "agili-main," nor to the manner of fastening the same in place, although I believe that shown to be the best.

But I claim the manner described of giving agility and suppleness to the fingers, hand and wrist of musicians by the exercise induced by the application of my "agili main," substantially as and for the purposes specified.

PERMUTATION LOCK—John H. Morse, (assignor to himself and Lester Patee,) of Peoria, Ill.: I do not claim the arrangement by which a change of combination or mental key is produced.

Neither do I claim the arrangement for finding the combination in case it should be lost in making a change.

But I claim the "blind," or shallow slots, i i i, or their equivalents, in the circular plates, B B B, made and arranged so as to receive the points of projections, E E E, on the bar, A, acting in the manner and for the purpose specified.

MACHINES FOR BURRING WOOL—Thomas Musgrave, of Leeds, (assignor to Anna Musgrave, of Northampton,) Mass.: I do not claim the construction of the burring cylinder, or strippers or beaters, nor the combination of beaters or strippers with a burring cylinder.

But I claim the combination of the second burring cylinder and its beaters, substantially as described, with the first burring cylinder and its beaters, substantially as described, by means of an interposed stripper, or an equivalent therefor, as described.

METHOD OF ATTACHING THE PLUMB LINE TO A PLUMB AND LEVEL INDICATOR—John L. Rowe, (assignor to Frederick Stevens,) of New York City: I do not claim the employment of two spirit levels.

Nor do I claim the employment of a pivoted pointer to indicate the plumb.

But I claim the attachment to a plumb level indicator, made substantially as described, of the reel, E, and cord, H, as and for the purposes set forth.

[An engraving and description of this invention will be found on another page.]

SEED PLANTERS—Samuel Thompson, (assignor to himself and A. W. Taggert,) of Hopedale, Ohio: I do not claim separately the reciprocating slides, F, for distributing the seed, for they are a well known device and in common use.

But I claim the cutters, D, attached to the wheel, C, of the framing, A, in combination with the seed distributing slides, F, operated by the cams, e, attached to the cutter wheels, C, substantially as and for the purpose set forth.

[This invention consists in having a series of cutters attached to the periphery of wheels, which are placed in a framing and combined with reciprocating seed slides in such a way that the cutters will form holes in the sod to receive the seed dropped by the action of the slides. The framing being also provided with adjustable supplementary wheels, whereby the cutter wheel, may, when, necessary, be raised above the surface of the ground, and the machine readily transferred from place to place. This invention is designed to plant seed in newly broken prairie or similar soil, and to overcome the difficulty attending the planting of seed in soil having a tough sod upon its surface.]

LIGHTNING CONDUCTORS—Oren White, (assignor to Henry C. Janes.) of Racine, Wis.: I claim, first, a lightning conductor consisting of iron wires enwrapped by sheet copper, for the purpose of increasing the strength and the conducting power of the rod, without materially lessening its flexibility, or greatly increasing the expense of manufacture, as set forth.

Second, The sheet metal joint or clutch for connecting additional rods or points to the main rod, as described.

HUBS OF CARRIAGE WHEELS—James M. Whiting, of New Bedford, Mass., (assignor to himself, George F. Wilson, and Alfred Anthony, of Providence, R. I.): I claim the making of the hub an elastic compound cylindrico lever, each end of which rests for a fulcrum on vulcanized india rubber or gutta percha, or other elastic substance, in combination with the coupling nut, by which the pressure thereon may be regulated.

I also claim the grooves in the body of the hub, or their equivalent, and the projections on the outside of the box, or their equivalent, in combination with the said elastic substance.

COTTON PRESSES—Henry Shrader, of Burnsville, Ala.: I do not claim the use of racks, as they have been heretofore used, neither do I claim the toggle joints.

But I claim the construction and combination of the double racks with the toggle joints as above described for the purpose explained, and in the manner as set forth.

I also claim the hinge connecting the lower ends of the toggle levers with the follower in combination with the operation of the levers as described by which both followers are operated in the same time and with the same application of power.

RE-ISSUES.

RAILROAD CAR WHEELS—W. B. Treadwell, of Albany, N. Y. Patented Jan. 9, 1849: I claim, in railroad wheels to be cast in one piece with a chilled rim, the forming of such wheels with a hollow concentric annulus or ring, the plates forming a curve substantially as specified to yield by bending to the unequal contraction, in combination with the connection thereof with the rim at or near the middle of its width by means of the solid ring, substantially as described, to give the required support to that part of the rim which is most exposed to fracture in use, as set forth.

And I also claim, in combination with the hollow annulus or ring connected with the rim by a solid ring substantially as described, the inner hollow annulus or ring next to and connected with the hub substantially as described, and connected with another hollow annulus or ring by a solid ring, substantially as described, whereby ample provision for yielding to the unequal contraction is obtained, while at the same time the metal composing the wheel is so disposed as to prevent in a great measure the injurious effects of vibrations, and to resist the jars and concussions to which railroad wheels are exposed in use.

ADDITIONAL IMPROVEMENTS.

HANGING CARRIAGE BOXES—J. M. Jones, of Palmyra, N. Y. Patented July 22, 1851. I claim the combination and arrangement of the disk, or fifth wheel, D, attached to the front axle, the embracing circularly flanged annular disk, with its laterally projecting arms or trunnions to which are attached the bars or spring levers, K, so as to preserve the horizontal position of the fifth wheel while allowing the necessary play of the said bars, in the manner described.

AUTOMATIC RAILROAD CAR BRAKE—W. R. Jackson, of Baltimore, Md. Patented Sept, 8, 1857: I claim the arrangement of parts described, or its equivalent, for the simultaneous compression of the forward and rear springs, and the consequent operation of the brakes, the same consisting in the combination of the lever, L, with the slide bar, B, and pushing rods, D D, constructed, arranged, and operated substantially in the manner specified.

## To Raise Potatoes.

A correspondent—Wm. Aldridge, of Goreland, Ind.—writing to the *Prairie Farmer*, states that having noticed how potatoes were interrupted in their growth, and invariably pined away and died if disturbed and bruised when wet with dew or rain, he selected a patch of a potato field, the whole of which was good soil and in good order to try an experiment. This patch he only plowed once, and then loosened the soil with the hoe when the vines were above ground, and in the heat of the day when they were perfectly dry. He never touched them afterward until they were dug in October last year. These vines kept green throughout the season, and the yield of potatoes was very large. The other portion of this same potato field was purposely worked three times, when the vines were wet with dew. These blighted early, did not produce half a crop, and the potatoes were of a very inferior quality. The ground, seed, and time of planting in both patches were the same.

At this season of the year, the foregoing may be very useful information to many of our farmers, who do not generally pay the least attention in cultivating their potatoes as to whether they are wet or dry.

## How to Cool Water.

If it is desired to cool water for drinking in warm weather, and ice cannot be obtained for this purpose, let it be kept in an unglazed earthenware pitcher wrapt around with two or three folds of coarse cotton cloth kept constantly wet. The theory of cooling water in this manner is the absorption of heat from it, by the evaporation of the moisture in the cotton cloth—expansion produces cold, compression heat.

## Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims:—

IMPROVED PRINTING PRESS.—G. W. Davis, of Seneca Falls, N. Y., has invented an improved printing press, the improvement in which consists in the employment of a swinging platen, adjustable spring frisket, inking device, and a reciprocating bed, arranged so that the several parts are, by the most simple means, operated conjointly by the movement of a single lever, The improvement is intended chiefly for hand presses.

GALVANIC BATTERIES.—By the application of covers of non-conducting material through which the binding screws pass, and protecting the binding screws by means of washers from the action of the acids, the inventor, G. Doyle, of Ottawa, Ill., has produced a battery which is free from the common objection of local action between the jars, and the corrosion of the binding screws is prevented.

MACHINE FOR SHELLING PEAS.—This invention consists in the employment of rollers in connection with a series of endless cords, arranged and used with or without a vibrating hopper, so that the peas may be shelled and separated from their pods with the greatest facility. W. J. Stevenson, of New York, is the inventor. An engraving of this invention will soon appear in our columns.

BRICK MACHINE.—This is an improved machine for molding bricks, and is designed chiefly for manual operation. The object of the invention is to obtain a simple device, that cannot readily get out of repair, and one that may be easily manipulated with but a small expenditure of power. J. L. Ransom, of Charleston, S. C., is the inventor.

COMPENSATING REGULATORS FOR WATCHES.—Dana Bickford, of Westerly, R. I., has invented an improved regulator for watches, which affords great facility for connecting the compensation, as the effective length of the curb is varied, without shifting the curb pins on the hair spring. When the compensation is insufficient, it is corrected by simply tightening a set screw furthest from the curb pins; and when it is too great, it is corrected by tightening a set screw nearer to the curb pins; in either case loosening the screw which previously held the curb, so that the curb may be left perfectly free to expand or contract.

RAILROAD BRAKE.—This invention consists in introducing small adjustable auxiliary wheels between the main wheels of the truck, so that when the train is passing around curves, those wheels which are in line with the inward or shortest curve of the track may be suspended above the rails, while the small wheels rest on the rails and perform the office of the large wheels in such a manner, owing to their decreased diameter, as to allow the main wheels of the outward or longest curve to run over a greater length of space in a given time than the small wheels travel over—thus compensating for the difference in the length of the inner and outer curves of the track. This arrangement of small wheels allows of all the large wheels being suspended, and the speed of the whole train reduced to a mere fraction in a few moments, without danger of one car crowding upon another. It is the invention of John C. Fr. Salomon, of Baltimore, Md. Mr. S. patents, in connection with the above, an improved style of brake peculiarly adapted for his invention. We regard this as one of the good improvements of the age.

IMPROVED DIVING BELL.—The principal object of this invention is to establish a communication between the interior of a diving bell and the surface of the water, so that the divers may be permitted to come out of the bell and above the surface of the water at their own pleasure, without the tedious and laborious operation of raising the bell.—This object is attained by providing the diving bell with a tube or hollow trunk, of sufficient length to extend from the body or working chamber of the bell to above the surface of the water, and of sufficient size for a man to pass through, the trunk being provided with a man-hole valve at or near its junction with the working chamber of the bell, and another further up, so that by opening only one of these valves at a time, the descent into, and the ascent from, the working chamber can be effected with a very little loss of compressed air from the bell. Benjamin Maillefert, of Astoria, N. Y., is the inventor.

LUBRICATOR.—W. Clough, of Madison, Ind., has invented an improved lubricator for railroad axles, which consists in a hand attached to a sleeve, or hub, which is fitted to work on a spindle within the oil box, and which has also attached to it a slotted jointed arm. This arm is connected with an eccentric wrist at the end of the axle, the said arm, hand, and sleeve being so arranged that, by the rotary motion of the wrist with the axle, the hand is caused to receive a swinging motion, which alternately dips into the oil in the oil box, to take up a small quantity of oil or grease, and lift it up into contact with the journal, and to deposit the oil so taken up, or a portion of it, upon the journal. The invention also consists in making the slotted arm, sleeve, and hand of a single piece of wire, in such a manner that the sleeve constitutes a spring, which enables the hand to rest for an instant against the journal to insure the deposit of oil thereon, and serves to obviate any liability to breakage of the arm or hand, by the concussions produced by their very rapid motion.

TUBULAR WROUGHT IRON AXLES AND SHAFTS.—This invention consists in the manufacture of tubular wrought iron bars for axles, shafting, or other purposes, from a solid pile, by means of rolls, with a system of grooves properly constructed, by which every portion of the iron is subjected to the same degree of drawing and compression, and the bars are rendered much more sound, and of more uniform texture than tubular bars, produced by making a faggot of a number of segments arranged together, with a central opening between them, and then welding and drawing them between rolls. This last is, we believe, the only method heretofore practiced of making tubular wrought iron axles, &c., and which method, owing to all the drawing effected by means of rolls, being on the outside, with no resistance on the inside of the tube, tends to open the grain of the iron instead of closing it. It is the invention of E. W. Stephens and Richard Jenkins, of Covington, Ky.

GAS APPARATUS.—John G. Hock, of Newark, N. J., has invented some improvements in the manufacture of illuminating gas, particularly designed for small gas-works for dwelling houses and public buildings, though they are wholly or in part applicable to gas-works on a larger scale. One improvement consists in certain provisions for vaporizing the tar from coal or other gas, and returning it in a state of vapor to the retort, to be decomposed and converted into gas, which improvement is also applicable to rosin oil or other substances in a liquid state, or capable of liquefaction by heat previous to its introduction to the body of the retort, to be decomposed or converted into gas. Another improvement consists in a certain construction of the condenser, whereby provision is made for varying the surface of pipe exposed to the cooling influence of the atmosphere. And a third improvement consists in a certain mode of providing for a constant supply of water to the channel, by which the sealing of the cover of the lime purifier is effected.

# New Inventions.

### Francis' Omnibus Cane.

Fig. 1 is a general view of the cane, *a* being the handle, *b* a little knob to be pushed by the thumb, *c* a slot out of which two three cent pieces are made to project; *d* the bottom which is unscrewed to fill the cane. Fig. 2 represents a longitudinal section of the cane. Unscrewing the bottom, *d*, and taking out the spring, *i*, with the pusher, *j*, joined to it, the space *m* is filled with three cent pieces, and the bottom screwed on.

FIG. 1.

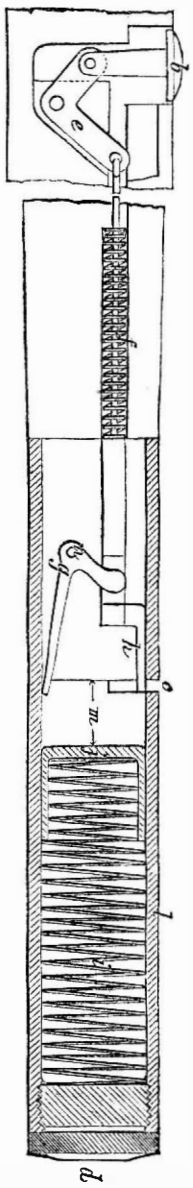
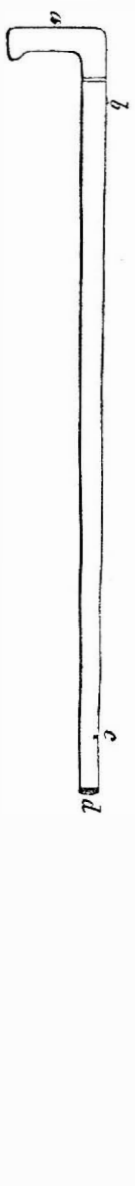


FIG. 2.



The operation is as follows:—Knob, *b*, being depressed, the bell lever, *e*, pulls the wire, *f*, and consequently the first movement is the slipping back of the cover, *h*, which confines the pieces and prevents their falling out of *c*. The latch, *h*, being removed, two three cent pieces are made to project through the slot, *c*, as they are pushed up by the long arm of bell lever, *n g*, whence they can be easily taken by the driver. *l*, the ferrule, holds 32 three cent pieces, sixteen rides.

It must be obvious to all persons who ride in omnibuses that some new means of paying their fare is demanded, thereby dispensing with the inconvenience of leaving their seats, crushing their hats, treading on crinoline, or otherwise rendering uncomfortable those who are their fellow passengers for the time being. This cane answers in every other respect the purposes of a walking-stick.

A patent was issued this week for this invention (see List of Claims), and any communication may be addressed to the office of S. W. Francis' Patent Printing Machines, 442 Broadway, New York.

### Improved Cotton and Hay Press.

This cotton press belongs to that class wherein the power is obtained by a system of levers called "toggles." It is intended for horse or hand power; and the inventor states that with the one which was tried at Madison, Ind., he put twenty-seven pounds of hay into a space of one cubic foot, and that he has a power of 300 tuns. It is equally applicable for hay or cotton, and the chief improvement is, that the horse only travels in one direction—one round in the same direction that pressed the bale rendering the press ready for the next.

In our engravings, Fig. 1 is a perspective view of the press, and Fig. 2 a section of its working parts. The same letters refer to similar parts in each.

A is a base or platform, quite level, and A′ is the casing or frame. B is a door, there being a similar one on the opposite side. C is an upper door or shutter, which is held down by a catch when the bale is being pressed, and D is a bar, connected with the opposite door to B, having a catch on it, which fastens into a slit in a cross bar on B, and so fastens them both. E is the bale, and F is a bar that has a pendant from its end, which, when the

## PENNISTON'S IMPROVED COTTON AND HAY PRESS.

*Fig. 1*

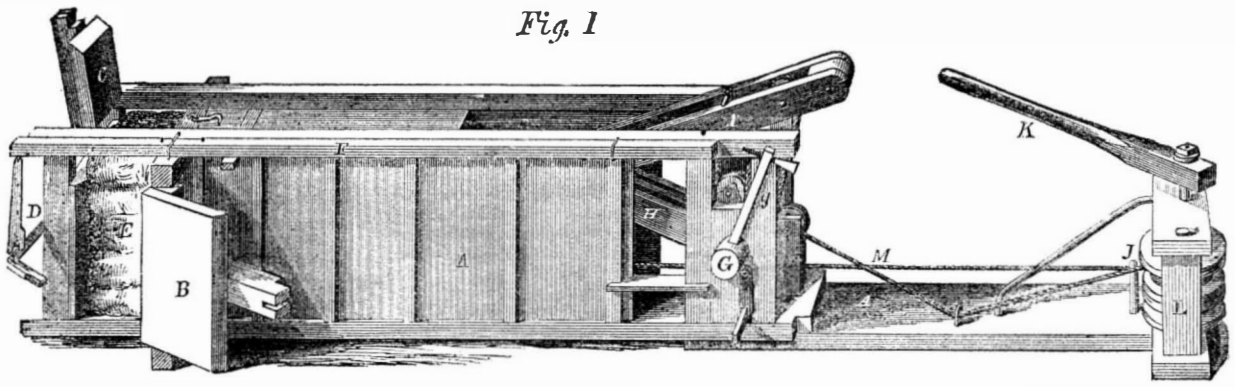
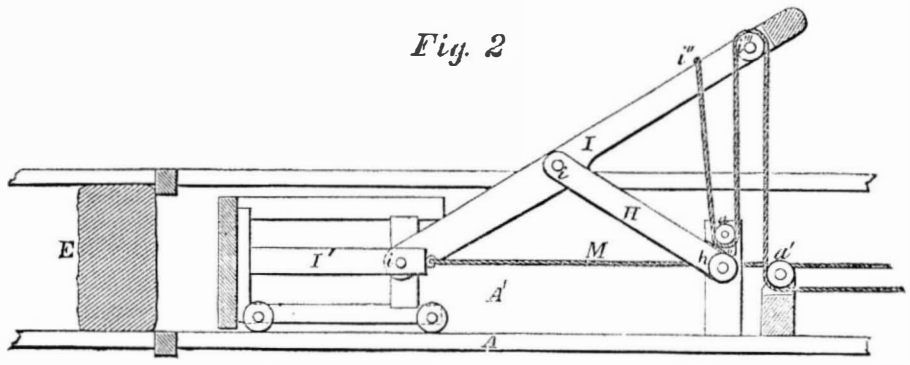



*Fig. 2*



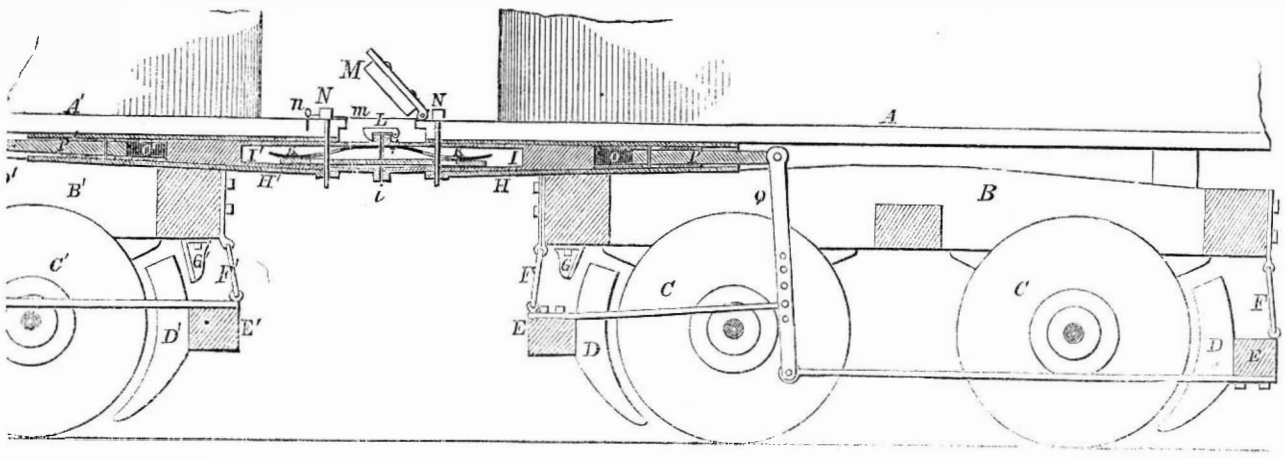

follower has pressed the bale to its full extent, releases D, and allows it to be bound and removed. G is an axle, having an arm, *g*, with a screw through it, that operates F by pushing it out, and being also connected with the toggle, H, which is hinged at *i* to the lever, I, which is hinged to the follower and carriage, I′, by a pivot, *i*′.

The rope that pulls the lever down, and so moves the follower, is fastened at *i*″, then passing round a pulley, *a*, goes over another pulley, *i*‴, on I, and passing under the pulley, *a*′, is wound round J. This pulley is so arranged on an axle that by raising or lowering it, it can be thrown in or out of gear with the axis, so that the lever, K, will either turn it or allow it to rest, and instead, turn the lower pulley that contains the rope, M, which draws back the follower carriage, I′.

The operation is simple; the follower being drawn back, A′ is filled with hay or cotton, and the ropes adjusted; the doors, B and C, are shut and secured, and the lever, K is rotated; this pulls down I, and consequently forces in the follower, and when the cotton or hay is fully compressed, the screw stop on *g*, pushes F, the pendant on which releases the catch, D, the doors open, and the bale can be be bound and drawn out; the top wheel of J in the frame, L, is then slightly raised, another turn given to the handle, K, and the follower drawn back, ready to repeat the process.

This press was patented December 1, 1857, by the inventor, G. W. Penniston, North Vernon, Jennings co., Ind., from whom all further particulars can be obtained.

## BRAUER'S SELF-ACTING CAR BRAKE.




Inattention on the part of the person having charge of a train of cars has often caused the loss of many valuable lives, and it is desirable to, as far as possible, make the braking operation, on which frequently the safety of a whole train depends, automatic. This has been done by the inventor of this system, our illustrations giving a side view of the car and section of the working parts of the brake.

A and A′ are the platforms of two cars, B and B′ being the trucks on which they are supported, and C and C′ are the wheels. D D′ are the brake blocks attached to bars, E E′, that swing by links, F F′, from the cars. G G′ are stops to prevent the brake blocks from going too far back. H H′ are two cases or square tubes suspended by braces underneath the platform, and in these again are placed hollow frames, I I′, which meet in a flanch at *i*. J is the coupling link, kept in its place and prevented from shaking up by the springs, K. L is a hook passing over the flanches, *i*, and keeping them in contact, while the space between the two cars is filled by a door, M, wound round the axle of which is a cord, *m*, tied to a small pin, *n*, that fits in a hole in A′. N are the two pins that pass through the platforms, springs, and coupling link, and thus fasten together the two cars; the slot in the link and springs allowing an horizontal play on them.

The pieces, I I′, are connected with the bars, P P′, by a hinge, and the joint is made elastic by placing between them pieces of india-rubber, O O′, or similar elastic substance. The bars, P P′, are pivoted to the levers, Q Q′, that operate the brakes.

The operation of this brake is as follows:—So long as the cars are being pulled by the locomotive, the tension of the cord, *m*, keeps M in the position shown in the engraving, but the moment the speed is slackened gradually, that is, by means of the pistons of the locomotive and not by its brakes, and the train left to run out its momentum, the door or shutter, M, drops down and keeps the cars at a proper distance apart, and also prevents the brakes operating. Should it be required, however, to stop the train suddenly, and the driver not only shuts off steam but applies his brakes, the suddenness of the jerk loosens *m* so quickly that M drops down, and rests on the platform, A′, and thus does not prevent the action of the brakes. The cars pushing one against the other compress the pieces, I I′ in H H′, and they push back the bars, P P′, and these by operating the levers, Q Q′, bring the brake blocks, D D′, in contact with the wheels, and so apply a braking force on the wheels exactly in proportion to the speed o

the train. The moment the train is stopped, the brakes are released, and it is ready to again resume the journey, and at any time the operation is repeated. This brake, as will have been seen from the description is perfectly automatic, and requires no more attension than coupling the cars together before starting as at present, with the exception of pulling in the pin, *n*, which is no extra trouble; everything can be done from the platform of the car, and thus for many reasons it is an accident preventer.

Louis Brauer, of Washington, D. C., is the inventor, and he patented the invention May 12, 1857. Mr. B. will be happy to furnish any further information on being addressed to the care of C. Shaeffer, Ninth street, in the same place.

Scientific American.

NEW YORK, APRIL 10, 1858.

### Decision in a Telegraphic Case.

We learn from one of our exchanges that Judge Logan lately rendered a decision of some interest in the Chancery Court, at Louisville, Ky., in a telegraphic suit. The suit was entered by A. E. Camp against the Western Union Telegraph Line, to recover damages for loss resulting from erroneous transmission of a message. Plaintiff ordered a certain amount of whisky by telegraph, at the rate of *fifteen cents.* The wires delivered the message with *sixteen* substituted for the correct figure. The order was filled, but plaintiff refused payment at the increased price, and came upon the company for damages. Judge Logan decided for defendants, on the grounds that the failure to deliver the message correctly was not alleged to be the result of negligence, but the result of a mistake, to which, from the very nature of telegraphic operations, communications are liable; and that the message in this case was sent subject to the express condition that defendants would not be liable for mistakes arising from any cause, unless the message was repeated by being sent back, in which case the mistake would not have occurred. The learned Judge moreover declared that the points of difference between the nature of telegraphic companies and the nature of common carriers are so numerous and so obvious, as to render the unqualified application of the law of common carriers to telegraph companies delusive and dangerous.

With all proper deference to the judgment of the erudite judge, we beg leave to differ from him in the main positions he has assumed. Our mind tells us that neglect may arise from carelessness or inattention; and we humbly opine that the mistake of sending the word *sixteen* over telegraphic wires instead of the word *fifteen*, or rendering one word for the other at the opposite terminus, clearly indicates a most flagrant lack of comprehension or care on the part of the operators, or else an inability to properly operate the telegraphic instrument, in all of which cases we believe the company to be, by law and equity, liable for any damage that accrues from such inexcusable blunders. The fact that the message was sent subject to the condition that the company would not be liable, unless an additional sum was paid for its return and repeated transmission, does not, in our opinion, remove the liability of the company for such damages, any more than the repeated declarations of railway and steamboat companies, "all baggage at the risk of the owners," frees them from their legally acknowledged responsibility for its safety.

In regard to the alleged difference between the nature of the two chartered companies, in respect to the messages to be transmitted by the one, and the baggage and passengers by the other, our theory is simply this:—In the former case, the telegraphic operator receives a written message to transmit, either directly from the author or from an agent through whom he can communicate with the author, in the event of its illegibility. If he and the receiver at the station to which it is sent understand their business, and properly observe their duty, it is utterly impossible for such a blundering error as the substitution of one word for another to occur. After the delivery of a message at the office it is out of the sight and power of any controlling influence of the one who sends it. The operations of the telegraph are entirely free from the liabilities to the many unforseen and unavoidable accidents that frequently happen in railway conveyance, and are so exclusively under the control of the employés of the company, that we really think the just principle which binds the common carrier for the safety of his charge, should in like manner apply to telegraphic companies, and make them equally liable for damages arising from their blunders.

As there is no method of ensuring correctness but by reading the proofs of the messages sent, which is now done by telegraphing back, it would be an improvement to have a registering arrangement operating in connection with the key which transmits the message. This would enable the message to be read as transmitted by one operation, and correct mistakes (if any) on the spot.

### Colt's Application for Extension of Patent.

We have received the printed copy of an able remonstrance to Congress, praying that body not to grant the late petition of Samuel Colt for a renewal or extension of his patent for seven years, which we trust will be freely circulated for signature among the great body of our people, who, although fully alive to their obligations to the meritorious class of inventors with which our country fortunately abounds, are yet sensible and jealous of their own privileges, and ever ready to check and rebuke the attempts of one individual or company to establish an unjust monopoly at their expense, or in any manner curb or check the inventive genius of others. The exercise of this duty is peculiarly called for at this time when numbers are endeavoring to secure to themselves for a longer period than the ingenuity, skill, time and expense exercised and expended would justify, an exclusive right to combinations and arrangements of parts essentially necessary to the production of certain results, but susceptible of greater improvement.

We have always opposed the system of special legislation in relation to existing or expired patents, except so far as is necessary to correct errors developed by judicial decisions, or to grant pecuniary rewards or indemnity, or cases of an analogous character. We have not hesitated on former occasions to animadvert with such a degree of firmness against the attempted renewal by Congress of many patents, as to produce the strongest feelings of pain and resentment in the minds of previously personal friends interested in their success. In many of these cases some substantial grounds for the interposition of Congress were adduced, although not sufficient in our opinion to justify the granting of the extension applied for, but in the case of this last appeal of Mr. Colt for the re-establishment of a monopoly, whose exclusive enjoyment for twenty-one years has brought millions to his coffers, after the law has virtually given all claim to the invention to the public, we can only see additional reasons for the previous animadversions we have thought it our duty to make. The injury which the consummation of this measure would inflict upon the public at large, although great, would be but trifling compared with that which it would have upon the many enterprising and deserving manufacturers in the East and West, who have commenced the manufacture of revolving pistols, different in the construction and arrangement of many of their parts to Colt's, yet embodying the main features secured under his expired patent. Such an act of injustice would not only be fraught with the evils we have heretofore stated, but in direct opposition to the very spirit and genius of our laws, and the objects for which they are formed.

In the grounds assumed for the additional renewal, Mr. Colt does not deny that the pecuniary reward he has derived has compensated him in a most extraordinary degree for the ingenuity, skill and expense bestowed upon his invention, nor does he deny the oft-repeated statement that the long, exclusive protection he has enjoyed, has enabled him to realize such an immense capital, and construct such perfect machinery for the fabrication of the most intricate parts of his pistol, as to pre-eminently place him in a superior position to compete with all rival manufacturers. Indeed, the necessity of what he has now more than accomplished, in these respects, by his last seven years' protection, was one of the main arguments he used to Commissioner Burke in 1850; and common fairness to his co-laborers in the field of invention and enterprise, if not the desire to adhere to a tacitly implied promise, should have prevented him from making this additional demand. The granting of this extension would place in the hands of Mr. Colt a supreme power over the actions of a large number of manufacturers, who have in good faith, and under manifest disadvantages, invested their all in their establishments. It would, moreover, deprive the public of the use of many improvements, which ingenious mechanics throughout the country have devised, and at many sacrifices of time and money, put into successful practice, under the firm conviction that they would be allowed to use the very base of their contrivances, the revolving chambers, after the expiration of the patent in February, 1857. We commend this remonstrance, as well as the able opinion of Judge Mason attached thereto, to the perusal and signature of our readers, and trust that when the consummation of the grave outrages, which it is intended to avert, is attempted in Congress, the Representatives of the people will properly comprehend the mission entrusted them by their constituents, and defeat this odious scheme. By such a course they will vindicate the purity of their motives from the improper imputations cast upon many of them by the press throughout the country.

### A Curious Freak of Nature.

We have received a letter of interest from J. E. Holmes, of Newark, Ohio, who informs us that there is a white oak tree, of fine healthy growth, standing near Robinson's Coal Oil Works, in Perry county, on which, at fifty-five feet from the ground, is engrafted a black oak top of lofty and vigorous growth. It is about two feet in diameter at the usual hight of cutting trees, and the body stock is fourteen inches at the grafting portion, and the black oak immediately above it at once enlarges to twenty-two inches. The grafting is represented as being of the most perfect description, and there is no appearance of deterioration in either the white or black oak portions. There are several limbs below the union, and those above are said to be equal to any tree of the same description in that section of the country, and would form a luxuriant and proper superstructure for a stock of three feet in diameter. The only reasonable supposition for this curious growth is, that the white oak portion was broken by the falling of a black oak tree near it, and that a branch of the latter must have been so driven into the fracture as to unite and grow in a firm manner to produce the singular phenomenon above related.

### Daniels' Patent Granular Fuel.

An engraving illustrating the manufacture of this fuel was presented to our readers on page 228, Vol. XI, Scientific American. It consists in converting the stunted growth of brushwood, with which farms generally abound, into a compact excellent fuel for light fires, or for igniting the more solid materials employed in heavy ones. This is effected by cutting the several twigs and heavier portions of brushwood into lengths about equal to their average diameter, by means of a machine constructed and operating after the manner of an ordinary straw-cutter, and thus producing a new and useful article of manufacture from a material which has heretofore been considered as worse than useless. Whether the exclusive claim to a fuel prepared in this way is a legal one or not, we do not pretend to judge, as the question has not, to our knowledge, been subjected to any judicial test since the issue of the patent under which it is held, and which was issued to Reuben Daniels, of Woodstock, Vt., in June, 1852.

As a fuel for kindling coal fires or for heating small apartments, it possesses the important desiderata of inflammability, cleanliness and economy, as we can confidently assert from experience. We think this invention well worthy the attention of farmers in the vicinity of cities, who are overrun with brushwood, and annually destroy large quantities of it, from the fact that from its nature and cumbersome character, they are unable to transport or store it in a compact form. Persons desiring further information, with a view of entering into a business of this kind, can address Daniels & Raymond, Woodstock, Vt.

### To Sportsmen.

S. Sutherland, of Richmond, Va., gives the following rule to load a gun properly:—"Try it repeatedly with charges, consisting of equal bulks of powder and shot, till you come to a quantity with which the gun will not recoil, or but slightly; this will give you the proper quantity of shot. With this load, however, the gun will scatter in all directions. To correct this, reduce the quantity of powder until you find that the shot is carried as close as you desire. A gun loaded thus, will never burst. To make it carry further, use shot of a larger size. No gun should be fired more than twenty times without being wiped out. When in the field, it will be much safer to carry the piece always at half-cock."

### Freaks of Cold.

While our past winter was one of the mildest within the memory of man, it was very different in Southern Europe and some other countries, where frost and snow are seldom seen. In Italy, the river Po was frozen over at Ferrara, the first time in the present century. At Constantinople snow fell for 14 successive days. and in all the Isles of Greece snow and frost were common. Snow also fell in the Island of Malta for the first time since 1812; and on the shores of the Mediterranean and throughout various parts of Asia Minor, snow was seen for the first time in half a century.

### New Food for Bees.

It is stated that two agriculturists of the department of the Ver, France, recently discovered their bees feeding upon cakes of oil seed, which had previously been subjected to the oil press, and which was being beaten up into a paste with water, to be used as manure for potatoes. The bees were afterwards allowed abundance of this food, and their owners have since been rewarded with nearly ten times the usual increase in their productions of the insect. This is a piece of valuable information to our bee-keepers, and we should advise them all to try the experiment.

### Lightning and Gas.

The galvanic gas igniter of Saml. Gardiner, Jr., illustrated on page 320, Vol. XII, Scientific American, has been applied to the great chandelier of the Senate Chamber in Washington, and, as we are informed, with decided success. By the simple turning of the circuit key, fifteen hundred gas jets were ignited in an instant!

### Preliminary Examinations.

A correspondent writing from Georgetown, Ill., sends us a sketch and a fee of $5, for the purpose of having a preliminary examination made at the Patent Office. There is no name signed to the letter, therefore we cannot answer it until we can receive this information from our correspondent.

### Evaporative Qualities of Iron, Copper and Brass in Boilers.

In a recent article on page 204, this volume SCIENTIFIC AMERICAN, we presented some very useful information on this subject from the London *Mechanics' Magazine*. It was stated from a series of experiments conducted by George Tosh, that brass boiler tubes were found to possess an evaporating power exceeding those of iron twenty-five per cent, and that copper tubes exceeded those of brass thirty-one per cent. We observed that the accuracy of the experiments was doubtful, and our doubts we perceive are confirmed by the last issue of the London *Artisan*, received by us since the article referred to was published. It contains a very good report of the discussion which was elicited by the reading of Mr. Tosh's paper before the Institution of Mechanical Engineers. At that meeting, W. B. Johnson stated that the results obtained by the author of the paper (Mr. Tosh) were very different from his experience, as he had been led to the conclusion that there was no appreciable difference between iron and brass in evaporative power. He had a good opportunity of comparing them on a large scale in "two boilers of 160 horse power each, which had been made exactly alike, excepting that one had iron and the other copper tubes. The result of the working of these boilers was about equal, and no difference could be noticed beween them."

Professor Rankine stated that a series of experiments had been tried a number of years ago, by James R. Napier, with experimental boilers of copper and iron of various thicknesses heated over the same gas flame, and he found but a small difference in their evaporative power, about one-thirtieth being in favor of copper. "In all experiments of the kind," he said, "the state of the heating surface was important, that is, whether smooth or rough, clean or encrusted. The effective evaporating result or transmission of heat through metal depends on three properties—first, the resistance of the first surface (that next the fire) to absorption of the heat; second, the resistance of the internal particles of the metal to the conduction of heat; and thirdly, the resistance of the second surface (that next the water) in giving off the heat. The resistance to internal conduction is less in copper than iron, but its surface resistance is greater. It had been found in experiments very carefully conducted that when the surface became dull, the transmission of heat through all metals was about equal."

Mr. Siemens stated that Dr. Ure had proved by a series of experiments that the conducting power of copper was so good, that by increasing its thickness in a boiler, its evaporative power was not sensibly retarded, while with iron, the result was different—by increasing its thickness, evaporation was greatly retarded. On the other hand, Mr. Roberts stated he had found that the thickness of the metal in a boiler—whether of copper or iron—greatly affected the evaporation of the water. The plates, when thick, retarded the passage of heat, and tended to injure the metal by not permitting the caloric to be carried off so rapidly as it should be by the water. He found that brass tubes of No. 18 wire gage, lasted much longer than thicker ones of No. 14 wire gage, under the same conditions precisely. Mr. Craig stated he had not found much difference in practice between brass and iron tubes in locomotives, and did not know of any definite result in favor of one more than the other as to evaporative powers.

Mr. Henry Maudsley stated that in steam engine boilers—particularly marine and stationary—there were other reasons affecting the use of copper or iron beside evaporative qualities or conducting power for heat. Their durability, under exposure to rusting or corrosion, and liability to encrustations being formed in them, were questions of great importance. He had known a case of nine marine copper boilers ordered for Naples in preference to iron, because allowance had to be made for their being sometimes laid up without working, and not to suffer from rust, as iron boilers were sometimes under the same conditions seriously injured in eighteen months, while copper boilers were not affected. The original cost and conducting power of boilers, under the same circumstances, were secondary questions to durability.

Mr. Tosh then stated that where he has had charge of locomotives and other engines for several years at Maryport, he had used a great number of brass and iron boiler tubes with apparently equal success, but brass tubes had been generally preferred for locomotives working at a high pressure, because there is less difficulty in keeping them fast in the tube plates, and encrustations are not so liable to form on them as on those of iron; and when iron tubes became leaky in the least degree, their ends were rapidly destroyed, which was not the case exactly with brass. Iron boiler tubes are now extensively employed in England, and many engineers are of opinion that no other kind should be used, but brass is still preferred by the majority.

The foregoing information on this subject—giving the substance of opinions expressed by engineers distinguished in their profession—is of much importance, and will interest our readers generally.

### Laboratory—No. 2.

*Equivalents.*—We can no more make progress in chemistry without studying its principles and its laws, than an artist can paint a perfect picture without knowing the rules of perspective; it is for this reason that we have recently turned from the subject of experiments to that of doctrines, especially as we hope that some of our readers will at a future day give us credit for being the finger-post on their road of life which pointed to the path leading to honor. The term "equivalent" in chemistry has much the same meaning as it has in ordinary things. An equivalent means of the same value; thus, twenty shillings in silver (English currency) are equivalent to one sovereign in gold. In the laboratory, the word equivalent implies an atom of matter that is equal to another of a different kind; thus, as we learned in a previous article, that every atom of an element has a specific weight compared with another atom, this weight has, by the consent of philosophers, been denominated its "equivalent." Hence, 28 parts of iron, combining with sulphur, always unite with 16 parts of that fiery element; let the weight of the materials be in grains, ounces, or pounds, the same proportion is always there—in sulphuret of iron. You will say, for the sake of argument, "But suppose we only put 14 parts of iron to 10 parts of sulphur, they will unite." Chemical doctrine says "No," for there will be free sulphur containing no iron; in the mixture, the 14 parts of iron will have combined with 8 of sulphur, which is in the same proportion stated, for as 28 : 16 : : 14 : 8. It is thus we call 28 the "equivalent" of iron, and 16 the "equivalent" of sulphur, because we have made hydrogen as the standard of comparison, and have fixed upon 1 as its equivalent, and the base or unit of calculation in measuring the equivalents of all other bodies. A list of equivalents or atoms in weight is given in every elementary work on chemistry; it is, therefore, sufficient for us to point out the road where the philosopher's stone may be found.

### Alloy for Medals, Small Figures, &c.

Herr von Bibra states that an alloy consisting of 6 parts bismuth, 3 tin, and 13 lead, is very fusible, and remarkably hard, without being brittle. The fracture does not present any crystalline appearance. When objects cast with this alloy are moistened with dilute nitric acid, and rubbed with a woolen rag, the raised portions appear bright, and the depressions dull. Some castings of medals from gypsum molds were so perfectly reproduced that writing, which could be read on the originals only by aid of the microscope, was quite distinct in the copies. It is probable that this alloy would be serviceable for typographic purposes.—*American Mining Chronicle.*

### Foreign Summary.

C. D. Seropyan, of New Haven, Conn., has secured a patent in England for a mode of preparing bank notes, bills of exchange and other papers, to prevent counterfeiting by photography and its kindred processes, by using two or more colors, which do not reflect nor transmit, but absorb the chemical rays of light, one of which shall be so applied to the paper as to cover the surface with a tint of a red or a yellow shade of color, while an ink of a different color from the surface tint shall be used for printing the other parts of the note, that is, the obligatory and ornamental parts of the said surface. Where this mode of preparing notes is observed, counterfeiting by photographic or kindred means cannot be effected; for so long as the tint or ground and the vignettes and lettering remain together, a distinct impression of the latter cannot be obtained sufficiently clear and distinct to answer the purpose of the counterfeiter, because both the colors neither transmit nor reflect, but absorb, the chemical rays of light.

POWERS, THE SCULPTOR.—We observe that our distinguished countryman, Powers, has secured another patent in England for a machine for punching, stamping, or cutting metals or other substances, in which the tool can be changed very quickly, and the whole machine can be taken to pieces and re-adjusted with great expedition. Like the singularly and novel formed rasps he invented a few years since, it appears to be simple in construction and admirably adapted to the purposes for which it is designed.

ANOTHER AMERICAN TELEGRAPH.—There is a project on foot at St. Petersburg for establishing a strictly overland telegraphic company with North America. The plan has been presented to the government by a Belgian engineer, and consists in carrying a telegraphic line by Siberia, and to establish a submarine communication between Capes East and Prince of Wales, then to join the lines to those of the United States through the territories of Russia, and England.

THE LEVIATHAN.—Some idea of the immense magnitude of this monster steamer may be formed from the fact that the mere cost of completing her for sea, putting on board stores, &c., and fitting her for the trip she is expected to make to Portland, Maine, the coming summer, will amount to the enormous amount of $600,000. No less than ten anchors are required to hold her at her present moorings, each with lengths of cable from 40 to 160 fathoms. All her masts are to be stayed by iron rope standing rigging of the most massive kind, the shrouds and stays of which are so secured at their ends through iron rings as to enable a single skilful man to cast loose all the fastenings of each mast in five minutes, in the event of disaster, though until the rings are opened, the sides might yield from the ship before the shrouds would yield.

THE ATLANTIC TELEGRAPH.—Four hundred miles of new cable are in course of manufacture to supply the loss from the failure of the experiment last year, and 300 additional miles which it has been resolved should be provided, so as to allow greater length of slack than was originally contemplated. The cost for these additional 300 miles is estimated at $180,000. It is generally believed that the plan of joining the cables in mid ocean, instead of starting from either shore, will be resorted to. Considerable modifications are being made in the machinery, and experiments are now in progress with a view of making the machinery for paying out as nearly as possible self-acting.

NEW LUBRICATING MATERIAL.—M. Rohrig has discovered a means of removing the acid principles of fat, and thus enabling it to be applied as a lubricator for machinery, without danger of oxydizing the metals with which it comes in contact, besides freeing it from all disagreeable smell and taste, and rendering it to a consistence of castor oil. It hardly colors copper, bronze or brass, does not run like olive oil and other thin oils, and is much cheaper than the ordinary lubricating material.

## Correspondents

J. C. R., of Va.—A patent cannot be obtained for any improvement but in the name of the inventor. The apparatus for extracting tannin from bark, described by you, is not new, and therefore not patentable. Vegetable oils are generally injurious to leather, and so are some animal oils. Flax, olive, and whale oils soon rot leather. Tallow and neats-foot oil make a good leather composition. Tooth powders should be avoided, if possible; they are not required if the teeth are, as they should be, kept clean.

E. B. S., of Iowa.—You will find the artificial ears to which you refer, illustrated on page 67, Vol. XII, SCI. AM.

C. O. R., of N. J.—The fine gloss on shirt bosoms can be produced by a mixture of gum arabic with the starch; but we believe that our city laundresses do it by the quickness with which they iron.

M. F. C., of Iowa.—The friction of your water-tight joints through which D passes, would alone prevent your ever obtaining perpetual motion. Turn your attention to something useful, and do not try to catch shadows.

M. A. W., of Ill.—You can precipitate iron from its solutions as sesquioxyd, by adding a solution of carbonate of soda. It cannot be precipitated in a metallic state.

F. L. W., of S. C.—We could not get up nice engravings of your invention without the aid of a model to take the views from. Engravings taken from the drawings which are attached to the Letters Patent can seldom be made to illustrate an invention in so practical a manner as when the views are taken from the machine or a working model; therefore it is as important to you to furnish good material, to get up your engravings from, as it is to us.

E. C. M., of N. Y.—Your communications cannot be published. We can fill our columns with matter of more interest to our readers than what you have written.

P. A. P., of Fla.—A revolving battery intended for the use of war vessels, is not new. If you have anything new in this department it can be patented. Send us a sketch and description of it for examination.

A. H., of Wis.—The employment of a long tube through which to run out the submarine telegraph cable, has been already suggested to us.

J. J., of Ohio.—The "Railway Association" for the encouragement of inventions, to which you refer, is *non est inventus*. The squaring of the circle means the multiplying of any part of a circle into such a number as will give the exact circumference—without a remainder.

R. F. B., of Mo.—Your plan of propelling boats by two direct-acting blades working in tight boxes through the stern of a vessel, is not new, except in being placed on an incline, and being lifted out of the water at each stroke. This is not an advantageous method of operating; they should be placed horizontally.

S. R. Reed., of Buffalo, N. Y., wishes to correspond with the manufacturer of the ditching machine exhibited at the Elmira (N. Y.) Horse Fair last fall. Inventors and patentees who hide their light under a bushel must expect to be neglected, or if found at all it must be by some such method of pursuit as is adopted in this case. Such requests as Mr. Reed makes are becoming very numerous.

H. H. F., of Miss.—We are of opinion that your present patent covers the modification of your machine, as represented in the diagram you have sent us.

B. B., of Ohio—Gloves made of stout cotton canvas, boiled in a strong solution of alum, and then dried thoroughly, should last much longer than either leather or india rubber, for handling potash. Several methods for steering vessels have been patented; see Captain Brown's, illustrated on page 268, Vol. 6, SCI. AM.

L. S., of Ind.—Your idea of conveying gas in suitable vessels from place to place, for the purpose of illuminating small villages, is very old. Many years ago a company was formed in London to manufacture illuminating gas, and deliver it to the consumers in bags at their own houses. It was a failure.

J. W. H., of Ind.—Your theory "that there are two funnel-shaped holes running into the earth from the poles, through which light and heat enter into it, to disseminate their life-giving properties, and which for forty years you have been maturing," is highly improbable. Mariners and explorers have been very close to both poles, and have not seen anything of the holes; again, the penetrative powers of light and heat have been measured, and we know exactly how they penetrate the earth. The facts are against you, and true theories can only be formed on known facts. The idea is an old one, having been first promulgated by a Prussian philosopher in the time of Frederick the Great.

L. K., of Pa.—The expansion of hot air is uniform. The pressure increases one pound for every 33 degrees of heat. The pressure is 15 pounds on the square inch, when raised to 490 degrees of temperature.

R. B. N., of Pa.—Your barn being 40X90 feet, should be protected with a lightning rod at each end, which should extend at least ten feet above the summit of the roof, and down several feet into the damp ground, or into a well of water. Unite the sections perfectly together, and fasten the rod to the barn with glass cleets, or brackets of dry wood covered with shellac varnish. The higher and thicker the rod, the more perfect will it be as a lightning conductor.

W. J. S., of ——.—Messrs. Crum & Paul have a patent for an improved process for making bread, but we are not aware of any patented machinery of theirs for this purpose. If you had informed us in what State you reside you would have had our answer by mail several days since. There are Newports in almost every State in the Union.

J. R. S., of Va.—We advise you not to expend time and labor in experimenting with hot air engines. No power can be obtained from contracting the air—it is a mechanical impossibility. The best way to use hot air is upon the principle of the non-condensing high-pressure steam engine.

R. D., of Mich.—Tin being dearer than copper, of course an alloy of these two metals is more expensive than brass made of zinc and copper. Muntz metal for sheathing is composed of 70 per cent of zinc, and 30 of copper. Bronze sheathing may be made with 95 per cent of copper, and 5 of zinc. We have never seen copper coated on one side with tin as thick as the copper sheet. The address of the Waterbury Brass Agency is No. 52 Beekman st., this city.

E. E., of N. Y.—If the circumstances are as you state them, Mr. A. cannot secure a patent on his alleged improvement; but if his invention is new, no influence can possibly avail to prevent the issue of a patent to him. Every case presented to the Patent Office is judged on its merits, and to attempt to stop a case by "protest," under the circumstances, would be of no avail. You can have an interference declared by making an application for the same device, and if you can sustain your right to it by proof of priority of invention, you can secure the patent—not otherwise.

T. M. P., of N. Y.—To stamp an unpatented article "patent right secured," would be a clear violation of the law and punishable by fine.

D. A. B., of Ala.—If your plan for forcing letters through tubes, by means of atmospheric pressure was new, we should have no confidence that it would ever succeed. Similar plans have been tried without success.

J. B. C., of Ind.—If you own the right in a patented invention for a certain territory, you can make and sell to any and all purchasers upon your own ground. If parties purchasing are willing to run their own risk in attempting to use them upon the territory belonging to another, the responsibility falls upon them, and not upon you.

F. J. M., of Mass.—When salt water is employed for steam boilers the salt sinks to the bottom—becomes concentrated—it does not rise to the surface; and is removed either by a brine pump or blowing-off. At the Mount Hope Iron Works, where the water is brackish, it must contain the carbonates and sulphates of lime, and will, therefore, readily form incrustations. It ought to be purified before being admitted to the boiler; if this is not done, you must blow-off regularly at both the lower and upper blow-off cocks.

T. B. J., of Mass.—We are much obliged to you for your attention in sending us the extracts regarding the Russian steamer *Manjoor*.

M. M. K., of Texas.—You say that owing to the long drouths of the summer and the ravages of the cutting ants, no hedging has yet been tried in your State that answered the purpose, and that by a careful study of the thorn shrubs of your region, you have found one that will stand these unfavorable conditions, and inquire if you can get a patent for it. Surely not. The patent laws have no provisions for the protection of such discoveries. Your State ought to reward you if it proves permanently valuable.

H. J. H., of Ill.—The philosophy of color is simple. Colors are not substantives, but appearances caused by reflected light, and are no more material than the light itself. When we see a color we know it is produced by a reflected ray of light, just as a shadow is caused by intercepted light; but neither the color nor the shadow are substances.

J. C., of Texas.—Silver or copper are the best metals you can use for electro-plating. You should get "Smee's Electro-Metallurgy," published by Wiley & Halstead, this city. It will give you all the necessary instructions, and you may be able to construct your own batteries.

S. W. B., of Vt.—There are arrangements of gearing on various machines for communicating a fast or slow motion to machinery. A cone pulley is the most convenient and common, but not the absolute method.

W. H., of ——.—Your gunpowder engine is new to us. We cannot tell you what would be the cost of it as a power. The sketch which you have sent us representing an endless belt of buckets is not a new water motor, but one that is as old as the genuine water wheel.

D. A. M., of Pa.—The number of the Sci. Am. you wanted has been sent. A millstone of 3¼ feet in diameter will not produce backlash so readily as one of four feet, if the revolutions of the two are equal, no matter what kind of gearing may be employed.

J. D., of N. Y.—Blocks of granite about twelve inches deep, and seven or eight inches wide, set edgewise, are now employed for paving in this city, and have been so used for a hundred years in Europe. There is no necessity for using cement between the interstices, as these assist to give footing to the horses. It makes a very excellent pavement, and your views in this respect are perfectly correct.

P. V. S. of Texas.—We are obliged to reject your article upon "weight and motion;" it is evidently not intended for our readers. Your views are vague and incorrect.

C. C., Jr., of Mass.—The "first" is the only edition we have seen of Minifie's work on drawing. We do not know the price of pure metal cobalt, but the oxyd is sold at the rate of $1 per ounce.

W. H. L., of Wis.—We are quite certain that your hopes for a patent are futile, and we must discourage you. When we say that we have had the same thing in our office, we mean it. If you wish to try for a patent you can always depend upon our doing the best we can for you.

D. A. S., of Wis.—Earthenware cases are among the earliest devices used for burial purposes. We published a number of articles in Vol. 5, Sci. Am., proving the popular notion "that bodies will not sink to the bottom of the ocean at great depths," to be a popular delusion.

---

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, April 3, 1858:—

W. H. C., of Ill., $27; J. O., of N. Y., $305; S. & A., of Mich., $25; J. C., of N. Y., $30; J. & J. C. H., of N. Y., $30; C. M. L., of Ohio, $25; G. W. S., of Ind., $30; O. S., of N. Y., $30; R. G. E., of N. Y., $40; I. Z. A. W., of Pa., $25; L. E., of Mich., $84; T. H. W. & Bros., of Ga., $30; L. F., of N. J., $30; W. W. L., of Conn., $30; S. T., of ——, $20; J. W. P., of Pa., $30; W. & D., of Mass., $25: W. D. J., of N. Y., $25; F. B. of N. Y., $20; F. & J., of Ohio, $25; S. H., Jr., of Vt., $10; N. H. S., of Ill., $25; N. A., of N. Y., $25; S. W., of N. J., $25; D. B. W., of N. Y., $30; L. T., of N. Y., $20; H. A. N., of Mass., $30; W. B., of N. J., $30; J. C. D., of Ky., $30; J. C., of N. Y., $30; B. A. R., of Conn., $30; J. F. K., of Ind., $25; G. S. R., of Ohio, $25; W. C., of N. Y., $25; I. R. L., of Pa., $55; C. & B., of N. Y., $35; W. O. P., of N. Y., $25; J. T., of N. Y., $25; T. O., of Miss., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, April 3, 1858:—

J. C. S., of Mass.; I. Z. A. W., of Pa.; W. C., of N. Y.; C. F., of N. J.; S. & A., of Mich.; J. W. H., of R. I.; C. M. L., of Ohio: W. H. C., of Ill.; J. R. L., of Pa.; J. T. B. R., of N. Y.; C. & B., of N. Y.; F. & J., of Ohio; W. & D., of Mass.; W. D. J., of N. Y.; F. B., of N. Y.; W. O. P., of N. Y.; N. H. S., of Ill.; N. A., of N. Y.; S. W., of N. J.; M. G. F., of N. Y.; J. F. K., of Ind.; G. S. R., of Ohio; J. T., of N. Y.; T. O., of Miss.; R. G. E., of N. Y.

## IMPORTANT TO INVENTORS.

**AMERICAN AND FOREIGN PATENT** SOLICITORS.—Messrs. MUNN & CO., Proprietors of the Scientific American, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of twelve years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office. 128 Fulton street, New York. We have lately established a Branch Agency on the corner of F. and Seventh streets, Washington (opposite the United States Patent Office). This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

Communications and remittances should be addressed to MUNN & COMPANY,
No. 128 Fulton street, New York.

---

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

Messrs. Munn & Co.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.
Yours, very truly, CHAS. MASON.

---

**TWO LARGE VENEER SAWS**—BUILT IN the most thorough manner, and in good running order, will be sold very low. For particulars, address DANA JONES, care of T. C. Kimball, 266–267 West Washington Market, New York.

---

**TURKEY YELPERS**—A TURKEY CALL OF my own make and pattern can be mailed to any State in the Union by enclosing $1 to S. SUTHERLAND, Gun-maker, Richmond, Va.

---

**HORSE CHARMING FOR $1 IN GOLD**—I will send the great horse taming secrets, for which many are paying large sums. No bonds required. Address JOHN M. VENN, Galt, C. W.

---

**THE LIFE OF GEORGE STEPHENSON,** Railway Engineer.—By Samuel Smiles. From the 4th London Edition. One large handsome 12mo. volume, with portrait, $1 25. "Deep and permanent is the interest excited by this wondrous story of genius. No one can read unmoved the early struggles of this remarkable character, as they are narrated in this work. To young men faltering, it gives lessons which should supply fresh vigor. The continuous effort, the persistent valor, the daring ingenuity, and ever active intellect of this collier-boy, teaching himself, gradually making his value felt by all around him, and finally raising himself to one of the noblest positions in life—that of a great benefactor to mankind—these must be studied in the pages of this biography."—*Leader*. The above work just published by TICKNOR & FIELDS, Boston, Mass. Copies sent free of postage on receipt of price.

---

**THE NATIONAL SEED PLANTER**—PATented November 10, 1857, by E. Russell, Coatesville, Chester county, Pa. This new and useful machine will plant the following seeds with accuracy and despatch:—Corn, (thirty acres per day,) cotton, buckwheat, beans, peas, rye, and sugarcane seed. The following States and Territories for sale or exchange by Zadoc C. & James S. Cochran: Illinois, Tennessee, North Carolina, Georgia, Alabama and Missouri; and the States of Maryland, South Carolina, Mississippi and Virginia, by A. D. Harlan. Also the States of Ohio, Michigan, Wisconsin, Kentucky and Texas, by W. B. Mendenhall. And the following States: New York, Iowa, Indiana and Louisiana, by H. W. Russell. For any of the above territory, address the gentlemen as above-mentioned, at Coatesville, Chester county, Pa.

---

**MACHINE SHOP AND FOUNDRY** FOR Sale at Louisville, Ky.—With the best stock of engine, pulley and gearing patterns in the city. The Finishing Shop has 12,000 square feet of room, with one large horizontal boring mill for cylinders, two vertical boring mills, turns 6½ and 8 feet, one double-headed lathe, 36 feet bed, swings 40 inches, one double-headed lathe, 21 feet bed, swings 33 inches, seven small slide lathes, turns 3 to 12 feet, one planer, 12 by 3 feet square, one compound planer with circular attachment, three wood-turning lathes, three drill presses, one gear cutter, bolt cutter, vises, and a large assortment of small tools to expedite work. Foundry has 3,500 feet molding floor, with every facility. Blacksmith Shop has six forges, with requisite tools for a jobbing shop. Buildings are of brick, and none over five years old. Having made a conditional sale of the patterns and flasks, will sell the buildings and any portion of the tools, separately or together. Parties who might wish to engage in the same business, or convert it into an agricultural machine shop, can seldom meet with such an opportunity to get a bargain. Apply to or address, E. A. GARDNER, assignee of LAWSON & PEARCE.

---

**NEW SAW-GUMMING MACHINE,** FOR Re-toothing Circular and Mill Saws, &c.—This machine, as represented in our catalogue, is entirely of wrought and cast iron; it is of sufficient power to re-tooth with ease the thickest and largest saw made. Our catalogue gives a further description, and will be forwarded on application. R. HOE & CO.,
29 and 31 Gold st., New York.

---

**LATHE CHUCKS**—WE WOULD CALL THE attention of machinists to a Geared Screw Chuck we are manufacturing, which is warranted to be superior to any in use. We are also building a Car Wheel Chuck, which can be fitted true to any sized face plate or boring table with ease. For list of sizes, testimonials, cuts, &c., address E. HORTON & SON, Windsor Locks, Conn.

---

**FOR SALE**—RIGHTS IN TWO PATENTS FOR Steam Engine improvements, being a valuable variable cut-off, and practical direct connection of piston rods with crank, effecting great saving in construction and fuel. Interests given to capitalists. Inquire of B. ACKERMANN, 710 Broadway, New York.

---

**FIRE-ARM CHALLENGE**—MR. GILBERT SMITH'S conditions are accepted. He is likely to be my only opponent among the host of breech-loaders in this country, (Sharp's Co. and Colt also,) and his change of ground from simple accuracy to combined accuracy and endurance, are accepted, and $300 staked. Within 300 shots (merely to save time and labor) my challenge is open to the 22d of April, 1858, to any aspiring inventor of breech-loaders. No respect will be paid to firing for rapidity.
J. C. SYMMES, 1st Lieut. U. S. Ordnance,
March 31, 1858. Watertown Arsenal, Mass.

---

**CLOCKS**—TOWN CLOCKS OF ALL SIZES, Regulators and Timepieces for all purposes. Dials for illuminating. VOSBURGH & CO., Agents, No. 26 Liberty street, New York. JOHN SHERRY, Manufacturer, Sag Harbor, N. Y.

---

**CORLISS' PATENT STEAM ENGINES**—About 250, most of them from 40 to 400 horse power, are now in operation. On application, pamphlets will be sent (by mail), containing statements of responsible manufacturing companies where these engines have been furnished, for the saving of fuel, in periods varying from 2¼ to 5 years. Boilers, shafting, and gearing.
CORLISS STEAM ENGINE CO.,
Providence, R. I.

---

**CHURCH AND REGULATOR CLOCKS,** models, engravers' ruling machines that work themselves, and light work done at low prices, at J. STOKELL'S Clock Factory, No. 26 Platt street, New York.

---

**MACHINISTS' TOOLS**—A FULL SUPPLY OF every variety, and superior quality, now on hand, and made to order at short notice. Also one 8-horse upright engine, in complete order; price $300.
CARPENTER & PLASS,
No. 479 First ave., New York.

---

**PICKPOCKETS DEFEATED**—YOUR WALlet secured to your pocket by convenient Patent Locks, which are outselling everything before offered the public. Agents wanted. Send stamp to DICKINSON & BATE, Hudson, Mich.

---

**THE WORKS OF THE AUBIN GAS CO.,** (General Office, No. 44 State st., Albany, N. Y.,) as now perfected, are adapted to all materials and localities, and are in successful operation in villages, factories, and private dwellings. For full information as to cost, probable income of public works, &c., apply as above. For plans, &c., see Scientific American of March 13th.

---

**STEAM WHISTLES**—IMPROVED PATterns manufactured by HAYDEN, SANDERS & CO., 306 Pearl street, New York.

---

**ANOTHER WONDER**—BALDWIN'S TURbine Water Wheel (represented in No. 51, Volume XII, Sci. Am.,) gives from 75 to 97 per cent of power, according to the size of wheel and head employed. Usual sizes, with 4 to 25 feet fall, give 80 to 90 per cent. For information address S. K. BALDWIN, Laconia, N. H.

---

**5000 AGENTS WANTED**—TO SELL FOUR new inventions. Agents have made $25,000 on one—better than all other similar agencies together. I give away what fourteen other agencies sell. Only send address and get eighty pages of particulars, gratis.
EPHRAIM BROWN, Lowell, Mass.

---

**THE LITTLE BRICK MAKER** TAKES the rough clay, previously one night in soak, tempers and molds 4,000 bricks a day, driven by one man, or horse, and attended by one man and four boys; the brick is beautiful. Thus every farmer can be his own brick-maker, as it requires only common laborers. Price $70; if the molds are 12 x 6 x 3, price $85. The larger machines worked by one horse, making 7,000 per day, $150; by two horses, 14,000, $200; by steam, 25,000 $400. For further particulars, in a pamphlet giving full instructions on brick-setting and burning, address FRANCIS H. SMITH, Sun Building, Baltimore, Md.

---

**SOMETHING USEFUL** FOR MACHINISTS and Operatives of Machinery.—Simmon's Decimal Chart, for finding the size of wheels and pulleys for any required number of revolutions per minute—a great saving of time and lengthy calculations. Sent free for one dollar. D. G. SIMMONS,
346 West 27th street, New York.

---

**FOR SALE**—THE PATENT RIGHT OF LAMSON'S Combined Tool, an engraving of which appeared in No. 26, Vol. XIII, of the Scientific American. Apply to the patentee, New Worcester, Mass.

---

**J. A. FAY & CO., WORCESTER, MASS.,** build the best Planer and Matcher in use, with wrought iron cylinder and Fitt's patent feed works. Ask all machinery agents for Fay & Co.'s "Bay State Planer," or address as above.

---

**SAMUEL McELROY, CIVIL ENGINEER**—Late U. S. Naval and Civil Engineer. Special attention paid to water-works with pumping power. Address "Engineer's Office," Water-works, Brooklyn, Long Island.

---

**MACHINERY.**—S. C. HILLS, NO. 12 PLATT street, New York, dealer in Steam Engines, Boilers, Planers, Lathes, Chucks, Drills, Pumps; Mortising, Tenoning, and Sash Machines, Woodworth's and Daniel's Planers Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c.

---

**SWISS DRAWING INSTRUMENTS**—A full stock of these celebrated instruments always on hand. C. T. AMSLER, (formerly Amsler & Wirz,) Philadelphia, Pa.

---

**READ**—NEW CATALOGUE, (FOURTH EDITION), with two hundred and fifty illustrations of Mathematical, Optical and Philosophical Instruments, and attachment of a large illustrated sheet, representing the Swiss instruments in their actual size and shape, will be delivered, on application, to all parts of the United States, by sending 12 cents in postage stamps or money, which amount will be deducted from the bill, if an order is sent. C. T. AMSLER,
No. 635 Chestnut st., Philadelphia, Pa.

---

**E. FORBES, ARTIST,** 89 NASSAU STREET, New York, Mechanical and General Draughtsman on Wood, Stone, &c.

---

**STEAM ENGINES, STEAM BOILERS,** Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and Pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front street, Brooklyn, N. Y.

---

**HARRISON'S 30 INCH GRAIN MILLS**—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn.

---

**TO CONSUMERS OF ALUM**—POCHIN'S Patent Aluminous Cake, as a substitute for alum, is rapidly taking the place of alum, both in England and this country. The price per pound is about the same as alum, while the cake is 25 per cent stronger. Circulars with full particulars can be had on application to J. B. SHEFFIELD & CO., Sole Agents for the United States and Canada, 63 and 65 Beekman st., New York.

---

**ALCOTT'S CONCENTRIC LATHE**—THIS Lathe is capable of turning under 2 inches in diameter with only the trouble of changing the dies and patterns to the size wanted. It will turn smooth over swells or depressions of ¾ to the inch, and works as smoothly as on a straight line, and does excellent work. Price $25, (without frames,) boxed, and shipped with directions for setting up. For sale by MUNN & CO., 128 Fulton street, New York City.

---

**SECOND-HAND MACHINISTS' TOOLS**—Consisting of 20 Engine Lathes, 9 Iron Planers, 4 Upright Drills, Hand Lathes, Chuck Lathe, Gear Cutters and Vices, all in good order, and for sale low for cash. For particulars, address FRANKLIN SKINNER, 14 Whitney avenue, New Haven, Conn.

---

**MACHINE BELTING, STEAM PACKING,** ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY. JOHN H. CHEEVER, Treasurer, No. 6 Dey street, New York.

---

**NEW HAVEN MANUFACTURING CO.**—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn."

---

**ENGRAVING ON WOOD AND MECHANICAL DRAWING,** by RICHARD TEN EYCK, Jr., 128 Fulton street, New York, Engraver to the Scientific American.

---

**WOODWORTH PLANING MACHINES.**—Having over $40,000 worth now completed, I will sell, from this time henceforth, at a very reduced price, and am ready to construct any sizes not on hand at short notice. JOHN H. LESTER,
57 Pearl st., Brooklyn, Long Island.

---

**LAP-WELDED IRON BOILER TUBES**—Prosser's Patent.—Every article necessary to drill the tube-plates and set the tubes in the best manner.
THOS. PROSSER & SON, 28 Platt st., New York.

---

**SAWS.**—HOE & CO.'S PATENT GROUND SAWS Plastering Trowels, &c., can be had, wholesale and retail, at the principal hardware stores, at the salesrooms of the manufacturers, 29 and 31 Gold street, or at the works corner of Broome, Sheriff and Columbia sts., New York. Illustrated catalogues, containing prices and information interesting to sawyers generally, will be sent by post on application.

---

**WELCH & GRIFFITHS**—ESTABLISHED 1830—Manufacturers of Improved Patent Ground and Warranted Extra Fine Cast Steel Saws, of the various kinds now in use in the different sections of the United States and the Canadas, and consisting of the celebrated Circular Saw, Graduated Cross Cut and Tenon, Gang, Mill, Pit, Segment, Billet and Felloe Saws, &c., &c. For sale at their warehouse, No. 48 Congress street, Boston, Mass.

---

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

---

**VAIL'S SPEEDWELL IRON WORKS,** Morristown, N. J., manufacture Craig's Patent Double-acting Balance Valve Oscillating Steam Engines both stationary and portable, Knowles' Patent Muley, Portable, Gang and Re-sawing Mills, Sugar and Chinese Cane Mills and Sugar Pans, Grist Mills, Mill Irons, Rich's Water-wheels, Forgings and Castings. Orders for the above, and all descriptions of labor-saving machinery will receive prompt attention.
JOHN H. LIDGERWOOD & CO.,
No. 9 Gold street, New York.

---

**SWISS DRAWING INSTRUMENTS**—A full stock of these celebrated instruments always on hand. Catalogue, 4th edition, with 250 illustrations of Mathematical, Optical and Philosophical instruments, and attachment of illustrated sheet representing the Swiss instruments in the actual size and shape, will be delivered, on application, to all parts of the United States, by sending 12 cents in postage stamps. Address C. T. AMSLER, 635 Chestnut st., Philadelphia, Pa.

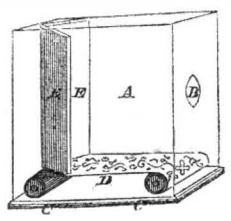
---

**WOODWORTH IMPROVED**—TWO GOLD Medals have been awarded to me for my patented improvements upon the celebrated Woodworth Planing Machine. The above awards, and the large number of these machines now in operation, fully demonstrate their great superiority over all others. Machines of all sizes constantly for sale.
JAMES A. WOODBURY,
69 Sudbury st., Boston, Mass.

---

**RIGHTS FOR SALE** of a PATENT LIME-KILN which will burn less wood or coal, and more lime, than any other in use. Address A. G. ANDERSON, Quincy, Illinois.


Our first engraving shows one of the prettiest optical illusions that can well be imagined, and it is produced thus: Provide a box, A, having in its front a round hole, B, in which may be fitted an eyeglass or small magnifier; on the bottom of the box, and suspended by axles passing through the sides, place two rollers, C, and roll up on the first a quantity of paper having trees, houses, patterns, pieces of wall paper, pieces of printed muslin and similar articles having colored devices upon them; then paste or gum the other end of the paper to the other roller, so that when turned it will wind it upon itself and unwind it from the other roller. Then place two




pieces of looking-glass in the position shown at E E, leaving them free for the paper to roll under. Now look through the hole, B (having just uncovered the top to admit of light), and by a handle or other means turn the back roller, C, and in the mirrors there will appear to be two endless panoramas ever changing and always advancing; then turn the nearest roller, and the panoramas will appear receding, ever fresh and lively.

Our next is a little experiment illustrating the compressibility of air and water, called the "bottle imps." Take a jar of glass, and fill it with water up to the neck; next provide a little figure having a hole in its center that will contain sufficient air to make it buoyant. Put it in the water, and close the bottle with a piece of parchment or india-rubber tied tightly over the mouth. Now when the hand is pressed on the cover, the figure descends, and when it is removed, the figure quickly ascends, and so it may be kept dancing up

and down for any length of time. The reason is this:—The water in the bottle is incompressible; when, therefore, you press upon the surface, it rises in the interior of the figure, and consequently by compressing the air into less space, renders the figure less buoyant; but no sooner is the hand removed than the inclosed air resumes its former volume, and expels the intruding water; in consequence, the figure regains its former lightness, and reascends.

Summer is close at hand, the trees are beginning to wear their livery of green, and the flowers and plants push their small heads into notice from the bosom of mother Earth. It is now no longer healthy or proper to stay indoors, trying experiments, when out-door exercise can be so conveniently and properly had; and so we know that kite flying, marbles and spinning tops will take the place of indoor amusements, and our "Science in Sport" will have but little chance of being read. We recommend our juvenile readers, to whom this column has been specially addressed, to do all they can to render their bodies strong with fresh air and healthy active exercise, that their minds may also be the stronger, and more able to think for them with vigor and freedom. Hoping that they part with this column, as we do, namely, with some regret; and also hoping that it has been a source of amusement and information to many, for the present, "Science in Sport" bids them *Farewell!*

### Printing from Veneers.

The French journals tell us of a new process of fabric printing from wood. The sheets of veneer or inlaying to be copied are exposed to the vapors of muriatic acid. This novel plate is then laid on the cloth, and the impression struck off with an ordinary printing press; heat must then be applied, and a perfect impression of the veneer, in a wood-like tint, is immediately developed. Oak, walnut and maple answer best.

## GULLETT'S COTTON GIN.

*Fig. 1*

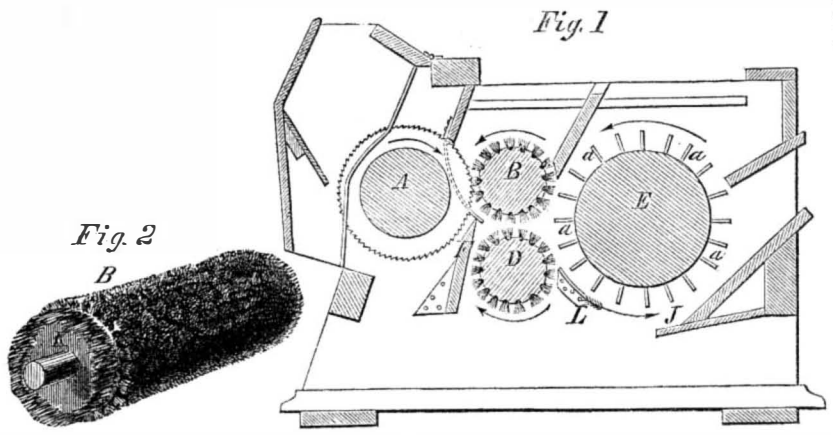



*Fig. 2*



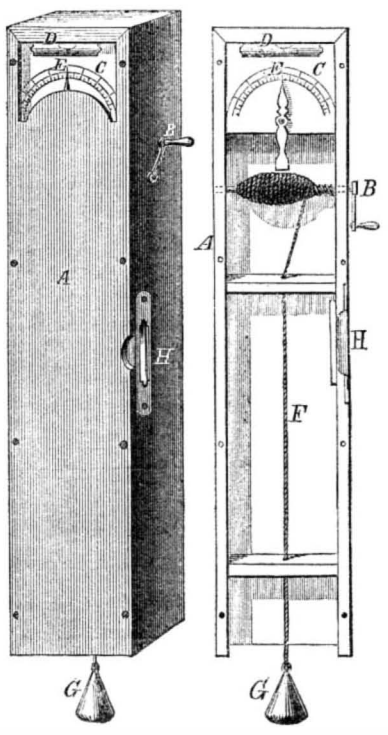

The cotton gin, though so much improved since its origin, is yet continually progressing, and the following illustration exhibits several important and novel features of improvement, for which Letters Patent were granted to B. D. Gullett, of Aberdeen, Miss., Feb. 23, 1858.

A represents the cylinder of saws, B the gin brush, D a carding brush, E a stripping, carding and distributing cylinder, armed with steel combs, *a a*. The several arrows indicate the direction of the movements. F represents a blast board for directing the cotton, and preventing its being carried back by the gin, A, and L represents guard pieces on either side of the frame or panel, near the ends of the stripper, E, which prevent "end waste," and direct the lint to the flue, J. On the ends of the brushes, B and D, are end brushes, K, Fig. 2, which prevent the accumulation of lint at these points, which is not unfrequently the cause of fires in cotton gins, from great friction.

The patent embraces five distinct features of novelty and improvement. The performance of this gin at the State Fair of Mississippi, in November last, is thus noticed by the *Planter and Mechanic*, published at Jackson: "The cotton gin of Gullett, Gladney & Co. excited much wonder among the cotton planters, being capable of turning out sixteen bales a day. The samples of cotton exceeded in beauty, softness, and freedom from nap, any that we ever saw, looking more like smooth bats from a pair of common cotton cards than samples from a cotton gin." A gin of eighty saws readily makes ten bales a day.

For sales of rights or license of manufacture address Professor Charles G. Page, Washington, D C., where samples of the ginned cotton may be seen.

### Rowe's Plumb and Level Indicator.




The plumb and level, one of the oldest of instruments used by masons, builders and others, usually consists of a lead weight, (hence its name, from *plumbum*—lead,) placed in a frame of wood, and by placing the side or base of this against or on the structure, the level is taken. The level is made either of water or spirit, enclosed in a sealed glass tube, containing also a bubble of air; it is then mounted in a proper case, and the position of the bubble of air shows the level of the structure or substance against which it is placed.

The subject of our engravings is a combination of a plumb and level, and indicator, invented by J. L. Rowe, of New York, and assigned by him to Frederick Stevens, No. 177 Greenwich street, this city. The claim appears in another column, the patent being granted this week.

The left hand view shows the apparatus in perspective, the other having the front removed, to show the interior arrangement.

A is a rectangular case, made perfectly square at its sides and ends; through the upper part of this runs an axle, and a crank handle, B, is inserted, and on to this is wound the cord, F, having suspended from it the plummet, G. H is a spirit level placed so as to act when the apparatus is placed down horizontally on any stuff, and D is another one, to act when the apparatus is used vertically. At the upper end of A is a plate of brass, C, having on it a graduated arc, divided into dergrees otherwise, as convenient, and E is a pointer, that swings freely on an axis, also having its lower end heavier than its upper; so that it will always keep the perpendicular; and when the case, A, is placed against anything, the level of which is desired, the pointer still keeping the perpendicular, will indicate on the divided scale the amount in degrees that it is out of the perpendicular.

It is a most convenient and useful combination, and we have no doubt will be thoroughly appreciated by those whose trade requires its use. Should any more particulars be desired, they can be obtained by addressing the assignee as above.

### The Mineral Wealth of Michigan.

The Detroit *Weekly Advertiser* gives some very interesting information on this subject—the result of the patient labors of Dr. Houghton and other gentlemen, who have been engaged in developing the riches of this State. Michigan contains coal, and in the neighborhood of Sandstone, two hundred and fifty tuns have been raised during the past season. The coal is of good quality, and the working is safe and easy. The beds outcrop for a hundred miles or more on the Grand river, and from more recent discoveries would seem to extend to the Straits of Mackinaw. Quantities have been sold in Jackson county at $3 per tun, and when some system is employed in the mining, it is expected to be much cheaper. The State is working a shaft by convict labor in the prison of Jackson.

Copper occurs frequently in the upper peninsula, and silver has also been found to a considerable extent. Cannel coal has been discovered in Jackson county which makes a most excellent gas.

### Hard Times in Texas.

A correspondent—Josiah Bishop, of Austin, Texas—informs us in a letter that the times are very hard in that quarter, and everything is very dear. Here are some samples of prices:—Flour, $16 per barrel; corn, $2 50 to $3 06 per bushel; meal, $2 60; sweet potatoes, $2 50; Irish potatoes, $6 per bushel; lard, 25 to 30 cents a pound; butter, 40 cents; pork, 15 cents; and brown sugar, 16 cents. Eggs are 25 cents per dozen, and have been 40. These are very nearly famine prices; but as the expression *have been* occurs in relation to eggs, we hope that it may shortly apply to all other articles of food.