Scientific American.

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

VOLUME XI. NEW-YORK, AUGUST 2, 1856. NUMBER 47.

THE
Scientific American,

PUBLISHED WEEKLY

At 128 Fulton Street N. Y. (Sun Buildings.)

BY MUNN & COMPANY.

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

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

TERMS--$2 a-year,—$1 in advance and the remainder in six months

Direct Acting Pumping and Cornish Engines.

As considerable has appeared in our columns relating to the Cornish Pumping Engine, the same question has lately excited no small amount of discussion on the other side of the Atlantic. A paper has been read on the subject before the Royal Scottish Society of Arts, by D. Landale, in which he described a direct-acting pumping engine, which, since 1852, has been slowly making headway against the Cornish Engine, on account of its simplicity and cheapness. There are two kinds of this engine, both condensing, high-pressure, and expansive; one with a 40-inch cylinder and 12 feet stroke, which is simply a Cornish engine turned upside down, the cylinder resting on a strong sole plate over the mouth of the shaft, and the piston-rod attached direct to the forcing set-pump rods. The air pump is small in diameter, with the same length of stroke as the engine, thus doing away with the ponderous beam, parallel motion, and heavy masonry of the cylinder pedestal, lever wall, and engine house, and obtaining any desirable length of stroke by merely adding to the length of the cylinder and piston-rod, thereby increasing the efficiency of the pumps, and making smaller ones do the same work. The second kind of engine is also inverted over the shaft, and secured and attached to its work in precisely the same way. It also uses high pressure steam expansively; but its peculiarity consists in there being a constant vacuum above the piston, both during the descent and ascent of the load. During a portion of the descent the piston is nearly *in equilibrio*, having a vacuum on both sides; that under being a partial, and the one above being about 12 1-2 lb. per square inch, or the common condenser vacuum. As the piston and load continue to descend against this vacuum, a self-acting valve shuts toward the piston, and a full vacuum is acquired by the time the piston has got to the lower end of the cylinder, thus giving a tension or extra pressure equal to 4 tuns on the 70-inch cylinder at the moment when it was most required to overcome the *vis inertia*. The steam valve is then opened, and high steam admitted for the up-stroke. There are only two double beat valves worked by the engine. The vacuum valve is self-acting, oblong, and hinged, working on the upper port of the cylinder.

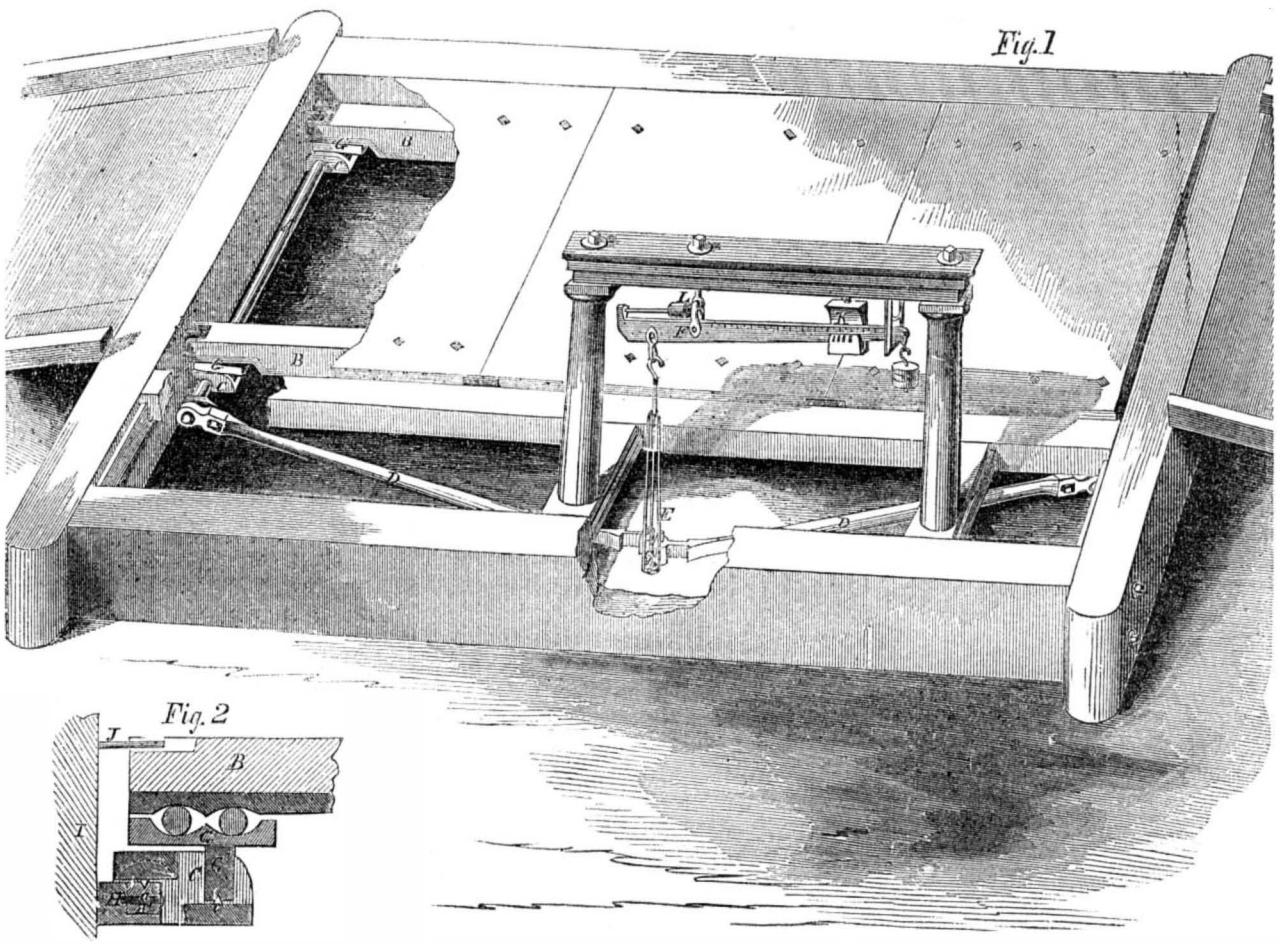
Convenient Railroad State.

It seems of the ninety-one counties in Indiana the inhabitants of eighty can leave home in the morning, go to Indianopolis by railroad, attend to business there from two to eight hours, and return home the same evening.

Polarized Light.

In the apparatus room of the Smithsonian Institution, there is exhibited an immense instrument for showing the colors of polarized light. The arrangement of this instrument is the invention of Dr. Edmundson, of Baltimore, who has long been known to the scientific world. The instrument presents on a larger scale than perhaps they were ever before exhibited, the gorgeous colors of light.

IMPROVEMENT IN PLATFORM SCALES.



Improved Platform Weighing Scale.

Our engravings illustrate the platform scales of Messrs Strong & Ross, Vergennes, Vt. Patented Jan. 15, 1856. Also patented in Europe.

In this invention, the long under bracing and levers generally required for platform scales, are dispensed with, rendering the pit in the ground unnecessary. The construction is also greatly simplified and cheapened. At each end of the platform there is a shaft, A. which is provided with short cranks, C. B B are the beams of the platform which rest upon the ends of the cranks, C, and consequently the weight upon the platform tend to turn shaft A. levers, D, extend from the shafts, A, and terminate in a sling, E, which connects with the scale beam, F, so that when A turns, no matter how slight its movement, the short end of scale beam E will be depressed; by putting on weights at the opposite end, the proper counterpoise will be obtained, and the correct weight of all articles placed on the platform indicated.

Fig. 2 is an enlarged view of the connection between the ends of the platform beams, B, and cranks, C. The end of beam B rests upon balls which are contained in a double cup-shaped piece, G; the latter has a vertical projection, G', which rests upon a knife edge, on crank C. H are studs projecting from the side frames, I; the studs support shafts, A, upon knife edges, *a*. The ends of these studs, H', are swiveled and turn on pivots, *e*, at right angles to the knife edges *a*; this arrangement permits the knife edges to adjust themselves by partial rotation upon the swivels, H', and thus a perfect bearing is insured; perfect accuracy in the fit and finish is also rendered unnecessary, expense reduced, &c. J are pins in frames, I, to prevent the ends of beams, B, from lifting out of place.

This method of connection gives free movement to the parts, in all directions, without friction, and yet keeps them all in proper place; the use of check rods is also unnecessary, for the platform does not rest rigidly upon the knife edges, and therefore there can be no direct shock or wear upon them.

When a very heavy load is placed upon the platform, its beams are likely to bend, and in common scales this bending pulls the levers, causing them to vibrate more than the true weight. The use of balls under the ends of the platform beams, totally obviates this objection.

The beam, F, has a sliding poise, K, of the vernier kind, graduated so that the fractions indicated by the beam may be easily read. This is very convenient in use, for only one operation is necessary to determine the weight of any load, viz., to slide the poise, M, until the proper balance is obtained. L is a screw weight for the finer divisions of fractions—such as ounces, half ounces, &c.

We saw the accuracy of this invention put to a severe test not long since. The capacity of the scales on trial was six tuns, a load consisting of a tun and a half of iron was rolled upon one corner, and then changed from place to place; at all points in which it was placed, the scale exhibited the same weight with scarce a variation of half an ounce; a copper penny thrown upon the platform, when thus balanced, would destroy the poise, so accurate was the apparatus.

The principles of this weighing machine are adapted to the construction of scales of the largest and longest description. For railroad purposes it may be arranged in elongated form, extending several hundred feet, so as to weigh a number of cars, with their burdens, at once.

It is extremely portable, rests flat on the ground, may be taken up and put down any where, or packed in small compass for distant transportation. Its construction is quite simple, and its manufacture very economical. The invention contains other points of interest, but our limited space prevents their special notice.

Address the inventors, as above, for further information.

Our Mechanics.

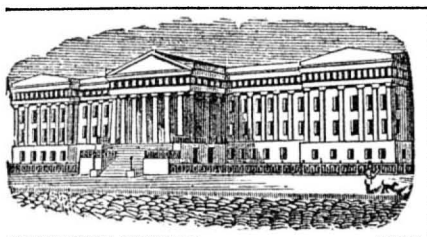
The Worcester (Mass.) *Telegraph* says:—"Without intending to disparage in the least the capitalists of Worcester, we may truly say that our city owes its growth and present business prosperity to the intelligence and activity of her mechanics. In saying this we cannot be accused of slighting those of our citizens who are enabled to live in well arranged mansions and to fare sumptuously every day, because most of these built the foundation of their present affluence in the machine shops of our city; most of them have in their day, toiled with their own hands, and started their fortunes by the sweat of their own brow. What they have accomplished others now laboring in our busy mechanical hives of industry will accomplish; and hundreds of young men who are now employed at the bench or vise, will, at no distant day, become the proprietors of the shops where they are now employed, and reside, perhaps, in the very mansions now occupied by their employers. Such is "manifest destiny," and such is the inevitable result of well-applied industry, and honest, upright conduct. So much for the mechanics of Worcester."

Cause of the Inundations in France.

At a late meeting of the Academy of Sciences, in France, a member read a paper, in which he attributed the recent destructive inundations in that country to a sirocco from Africa. He asserted that this sirocco passed over the sea, causing rapid evaporation, and that it carried the moist clouds to France, where they were condensed and fell on the mountains in heavy showers, melting the snows, and causing heavy torrents to flow down upon the plains, thus swelling the rivers to overflowing.

Good Speed.

On the 10th ult., the morning train bound east on the New York Central Railroad, ran from Buffalo to Syracuse, nearly 150 miles in 4 hours and 7 minutes.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 22, 1856.

RE-ACTING WATER WHEEL—A. Munroe, of Worcester, Mass.: I do not claim the scroll, A, nor the concave buckets, d, when separately considered, for they have been previously used. But I claim:

The scroll, A, having the guide or deflecting plates, a, attached to it, the wheel, B, provided with the concave buckets, d, and the plates, e, attached to its arms, c, the parts being arranged and combined, as shown, for the purpose specified.

TAPPING FLUIDS UNDER PRESSURE—J. P. S. Otterson, of Nashua, N. H.: I claim, first, the employment of a chamber, C', of sufficient capacity to contain the cock, I', together with the necessary tools for inserting the same in any pipe or vessel containing water under pressure.

Second, the employment of the rotary plate, C, or its equivalent, woorking in or forming part of the chamber, C', for the uses and purposes specified.

I do not limit my claims to the particular form of plate or chamber, as shown, but extend it to any other substantially the same.

VALVE FOR TYPE CASTING MACHINES—Edward Pelouze, Jr., of Philadelphia, Pa.: I am aware that a stopper operated by machinery has been used in connection with the nipple of type casting machines. This I do not claim.

I claim, in combination with the nipple, the self-acting valve and stopper, made and operating substantially in the manner and for the purpose set forth.

SELF RAKER—S. G. Randall, of Rockford, Ill.: I claim the railway carriage, F, when constructed, arranged and operated in respect to the platform, B, substantially as and for the purpose set forth.

Also, the described method of operating the rake, H, and giving it at once its traverse and its tilting actions, viz., by the combination with the bent rake shaft, G, and arm, h', of the endless belt, I, and its eye, J, operating as and for the purpose set forth.

Also, the combination of the traverse rake, H, the spring rods, k', and the pressing guard, M, substantially as and for the purpose set forth.

REPEATING FIRE ARMS—C. S. Pettengill, of New Haven, Conn. I claim, first, in combination with the arrangement of the main spring, to work on a pivot, so as to be capable of relief from all strain, except at the time of firing, I claim the application to the said spring, of a spring, F, operating upon it as described, to draw back and effect the cocking of the hammer, substantially as described.

Second, in combination with the arrangement of the main spring to work on a pivot, as described, I claim the lever, H, and the cam, C', on the trigger, operating together and upon the main spring, substantially as specified, to strain and develope the elasticity of the main spring by the act of drawing the trigger to fire.

Third, the serc, D, as arranged, entirely disconnected from the trigger and operated upon to set free the tumbler, by means of a cam, C', on the trigger, substantially as described.

Fourth, the attachment of the dog which operates in the ratchet notches, a a, on the cylinder, to the same lever, d, by which the strain is thrown on the main spring.

Fifth, the arrangement of the slot, p, in the recoil shield and the holes, a a, at the end of the ratchet notches on the cylinder, whereby the cylinder is locked so as to be incapable of rotation, in either direction, before the hammer is let off, substantially as set forth.

GLASS FURNACES—Samuel Richards, of Philadelphia, Pa.: I claim, first, the employment of a series of interior tubes, h h', arranged and operating as described.

Second, the employment in connection with said tubes of vibrating or rotating agitators, J J

SCAFFOLD FOR SHINGLING ROOFS—J. W. Rodefer, of Abingdon, Va.: I claim constructing the scaffold as shown, viz., having the platform, A, hinged to the sleepers or string pieces, b, and having segment braces, B, attached to the sleepers or string pieces; the braces having holes, d, made through them and passing through the bars, a, of the platform, whereby the platform, by means of pins passing through the holes, d, in the braces, may always be adjusted in a horizontal position, whatever the pitch or inclination of the roof may be.

LIQUIDS USED AS A MOTIVE POWER—John C. Frasalomon, of Baltimore, Md.: I claim the sulphoil carbonic acid liquid, prepared in the manner substantially as described, and in combination with carbonic acid generated in any known way, or other equivalent liquifiable gas as a motive power.

RIDING SADDLES—J. C. fr. Salomon and G. E. Cooper of Baltimore, Md.: We claim the movable volute spring seat chair, c, with its guiding rods, d d, and the guides, e e, in which the same is moved on the upper sides of the pads, in combination with the supporting rod, f, attached to the under side of the metallic riding seat, in the manner and for the purpose set forth.

FRICTION MATCH MACHINE—C. D. Smith and H. Patterson, of Baldwinsville, Mass.: We do not claim any particular form or arrangement of parts or number of splints made or carried at once.

But, first, we claim the table, B, with its plate, G, and pieces, I I I, or their equivalents, to carry the splints from the dies and place them in the rack, substantially as set forth.

Second, we claim the peculiar construction of the rack pieces, L L L, to facilitate their receiving the splints, and for the better control of them, as described.

PENDULUM PUMPS FOR SHIPS—J. Stever, of Bristol, Conn.: I claim attaching a series of pumps, C, to a hollow shaft, A, which is allowed to turn freely in its bearing, and connecting the weighted bars, J J, to the plunger rods, F, of the pumps by means of the geared sectors, H I, and levers, G, substantially as shown for the purpose specified.

SEWING MACHINES—A. Swingle, of Boston, Mass., assignor to Elmer Townsend: I claim the employment of a hook in connection with the looping needle, and arranging said hook so that it shall pass into the cloth or material from the same side of it, on which the looping needle works or is situated.

TRIGGER PROTECTOR FOR FIRE ARMS—B. H. Westerhood, of Philadelphia, Pa.: I claim the employment in connection with fire arms, of a protector, D, which can be locked so as to entirely enclose the trigger, and opened so as to expose the same, the said guard being arranged and constructed substantially in the manner, and for the purpose set forth.

RIVING EQUAL PIECES FROM A BLOCK—Henry White of Oneida Castle, N. Y.: I claim traversing the block to be split by means of devices, substantially as are described or their equivalents, so that the froe will strike the pieces to be split, in the center successively to split them, substantially as set forth.

I also claim the springs, X X', so applied as to yield when the froe enters the block and re-act to close the split when the froe is withdrawn, as described.

SAWING COOPER'S HOOPS—J. O. Woodward, of Taunton, Mass.: I claim the new arrangement and operation of two circular saws for sawing irregular or crooked hoop poles, and the two shafts with the saws attached, at the inner ends thereof, being placed on an angle so that two edges of said saws run or operate near together, and the two opposite edges of said saws, will run or operate wide apart.

RELIEVING STEAM SLIDE VALVES FROM PRESSURE. H. R. Worthington, of Brooklyn, N. Y.: I claim transferring steam pressure from the back of a steam slide valve to a fixed point, by means of a piston and vibrating link, substantially as described and for the purposes set forth.

VALVES OF ACCORDEONS—C. M. Zimmerman, of Philadelphia, Pa.: I clrim the arrangement of the valves of accordeons in connection with sliding rollers, acted upon by the keys and regulated by stops, substantially in the manner set forth, for the purpose of producing from the actuating of one key, a variety of different tones by the simple pressure of the stops.

FOLDING GUIDES OF SEWING MACHINES—B. C. Boyes, (assignor to himself and H. Dercum,) of Philadelphia, Pa.: I do not confine myself to the precise shape of the metal plate, B, as shown, to the precise arrangement of the guard, b b', in respect to the plate, or to the number of helical or slit rings shown.

Nor do I claim a device for which patent was granted to Seth P. Chapin, and in which hems are formed on the edges of flexible materials, by means of folding guides made to turn the edge 180 deg. or more.

But I claim the employment of one or more helical or slit rings for the purpose of forming on the edges of fabrics single or double hems, or for forming plaits in the middle of fabrics previous to the said hems or plaits being submitted to the action of the needle and thread of sewing machines.

PLANING MACHINE—Asahel Lockwood, of Chicago, Ill., assignor to L. B. Flanders, of Cleveland, O.: I claim the support, I I, with its circular dovetail grooves, a a or their equivalents attached to the bed piece, B, together with the vibrating table, K, turning upon the center pin or king bolt, L, and in combination therewith the adjustable guide, M, and the sliding head, N, so adjusted and combined that a greater or less vibratory motion can be secured to the table, K, by means of the adjustable guide, M, by bringing it out of a parallelism with the ways, C C, and the bed, B, in the manner and for the purpose set forth.

SEWING PINS UPON PAPER, &c.—E. S. Woodford, of Winchester, Conn., assignor to J. R. Keeler, of New York City: I claim the roller or separator, marked B, made of india rubber or other elastic substance. Also, the turn table, marked C, for receiving and changing the pin from one place or position to another; or their mehanical equivalents.

I also claim the combinaton of one or a series of conductors for supplying pins in any desirable position and a sewing machine of any suitable adaptability for sewing pins upon paper or any other material, but I do not make claim to either of these elements of the combination by itself.

CHAIRS—James Fernald, of Boston, Mass.: I claim the oval back rest, D, or its equivalent, when made to rotate in manner and for the purpose essentially as described.

CUTTER HEADS FOR PLANING MACHINES—Lewis M. Berry, of Boston, Mass.: I claim the application and use of the pieces, l and m, substantially in the manner and for the purposes set forth.

ATTACHING SLEIGH BELLS TO STRAPS—Abner G. Bevin, of Chatham, Conn.: I claim making the bells, B, without shanks, and having holes, e, made through them to receive the staples, b, which pass through the strap, A, and cover, c, substantially as described for the purpose set forth.

DOOR KNOBS—Jeremy W. Bliss, of Hartford, Conn.: I claim the employment of the intermediate piece, c, having a cut or rucked surface corresponding to and secured upon the spindle by the set screw, d, at any desired point, in the manner described.

DRIVING CIRCULAR SAWS—John Broughton, of Chicago, Ill.: I claim the sliding frame, C, placed and working between the horizontal and segment guides or ways, b e, in the frame, A, the frame, C, having the saw, E, placed within it and driven by the belts, f g, from the shaft, J, arranged relatively with the frame, C, as shown and described, for the purpose specified.

FIXED CARTRIDGES—George Buckel and Edward Dorsch, of Monroe, Mich.: We do not claim broadly the use of two or more balls or a ball and shot in the same cartridge.

But we claim, first, the arrangement, side by side, in the same cartridge, and with their axes in the same circle, of a number of balls of cylindro-conidal or other partly cylindrical form, said balls being of a size to fit each to a separate groove of a circular grooved barrel, as described.

Second, the employment of a single partition piece, B, to separate each and all of the balls, substantially as described, for the prevention of their union by fusion when the charge explodes.

PERCUSSION TAPE PRIMERS—James Chattaway, of Springfield, Mass.: I claim the improvement of substituting for paper, metal, hermetically sealed and soldered of the continuous band so as to make it impervious to water, weather, or climate.

VIBRATORY STEAM ENGINES—Wm. Darker, Jr., of West Philadelphia, Pa.: I do not claim the interposition of water between the steam and the working parts of a steam engine.

But I claim the oscillating piston, A, of the form substantially as specified, arranged within a steam box, B, which is provided with a partition, e, and with suitable packing, all substantially as described, and with a suitable arrangement of a valve or valves and passages, the whole operating as set forth, in connection with suitable means of converting the oscillating movement of the piston into a continuous rotary motion.

ARTIFICIAL HANDS AND ARMS—John S. Drake, of Boston, Mass.: I claim the ratchet, 3, and pawl, 4, in the elbow joint, to sustain the fore arm at the proper position relatively with the stump, substantially as specified.

I also claim the construction of the wrist joint, f, with the slots and stops for allowing the necessary motion, substantially as specified.

I also claim forming the knuckle joints and joints between the different parts of the fingers and thumb with ratchets and pawls, so as to secure said joints at the point to which they may be moved in adjusting the fingers or thumb to any given article or purpose, substantially as specified.

I also claim disengaging the pawls, n and o, from their respective ratchets, by means of the sliding cross bar, p, (actuated by competent power) rods, t, and cam pieces, 20, substantially as specified.

I also claim the arrangement of the bars, p and q, crank, r, button and rod, s, for actuating the bar, p, and rods, t, substantially as specified.

And in connection with this arrangement I also claim the cross lever, 22, for actuating the bar and pawl, u, of the thumb, substantially as specified.

SELF-ACTING ELECTRIC TELEGRAPHS—Moses G Farmer, of Salem, Mass.: I do not claim arresting the motion of the type wheel by a positive stop upon the key which interrupts the motion of the wheel whenever a key is depressed, and at a moment when the circuit is broken as in the telegraph of Siemens and Halske's.

But I claim the method described of arresting the motion of the type wheel by means of the alternately open and closed keys, in combination with the circuit wheel, constructed and operating in the manner substantially as set forth.

Second. I claim the combination of a straight key-board with a circuit wheel, when the two are connected together by means of the wires, F and G, whereby the place of making and breaking the circuit may be transferred to the immediate vicinity of the key-board for the purpose set forth.

Thirdly, the method described of putting the two machines in correspondence with each other, the current being turned out of the operating magnet, M, of the receiving machine by means of the regulating key, R g, the arm, b', insulated spring c2, and their connections, operating in the manner substantially as set forth.

MOLDING AND PRESSING BUILDING BLOCKS FROM CLAY, &c.—Ambrose Foster, of New York City, and George M. Foster, of Fairhaven, Conn.: We do not claim a sliding hopper; nor do we claim a core placed within a press box for the purpose of molding hollow bricks, for these devices have been previously used.

But we claim, first, the sliding hopper, M, plunger, I, and vibrating press box, J, when the above parts are moved or operated relatively with each other, as shown, for the purpose specified.

Second, we claim operating the hopper, M, press box, J, and plunger, I, by means of the cam, H, on the shaft, G, the ledges, j j' and l, on the wheel, F, and levers, N Q, the above parts being constructed and arranged substantially as shown and described.

GAS STOP COCKS—James Humphrey, of Boston, Mass.: I claim the mercurial gas cock, constructed with the adjustable slotted cylinder, and the reservoir of mercury, arranged and operating substantially as described.

FELTING HAT BODIES—Lansing E. Hopkins, of Brooklyn, N. Y.: I claim, first, the combination of the beaters, the revolving belt, and the beater heads, operating substantially as described.

Second, the adjustability of the beater heads, in combination with beaters having a positive motion, substantially as shown.

HARVESTERS—Stephen Hunter, of Cortlandt, N. Y.: I do not claim the rotary cutters working within or through the slotted fingers, separately, or in themselves considered, for they have been previously used.

But I claim the employment or use of the rotating cutters, formed of circular plates, L, with teeth, e', at their peripheries, said teeth working through or between slotted fingers, c, on the plates, J J, when said plates are connected by a hinge or joint, b, and attached to the frame, A, as shown and described, for the purpose set forth.

FLY TRAP—Joseph Hyter, of Kent, Ind.: I claim a trap for catching flies having an opake front and bottom, a b, inclined transparent back, d, small front decoy passage, B, grooved bait board, C, and trough, D, substantially as set forth.

CUTTER STOCK FOR METAL PLANERS—Joshua Mason, of Paterson, N. J.: I do not claim a swinging or adjustable cutter stock, irrespective of the arrangement of the same, as shown and described.

But I claim the cutter stock, C, placed within a ring or band, B, which is suspended by journals, a, within the frame or box, A, the stock being provided with a sliding or adjustable plate, L, provided with a slot, g, and the stock adjusted or operated at the end of each stroke of the bed by the pins, f f, on the side of the bed, and the levers, G H I K, the above parts being arranged as shown and described, for the purpose specified.

SAWING STONE OR MARBLE—Matthew J. McBird, of Logansport, Ind.: I claim the combination of the turn table, D, and the lateral moving platform or bed, E, when connected and arranged substantially as shown, so that when the turn table, D, is revolved, the stone or marble, F, will be brought in oblique position under parallel moving saws, h, while the platform or bed, E, when that is given a lateral transverse movement to the parallel position of screws, h, the stone or marble, F, is given a corresponding movement and brought to the position required, for the purposes set forth.

COTTON GINS—James B. Miles, of Chicot, Ark.: I claim the arrangement of the swing board, L, in combination with the mechanism described, so that the varying size of the roll of cotton in the gin shall govern the feed and keep it uniform, or nearly so.

POLISHING MACHINE—John Moore, of Gardiner, Me.: I claim the general construction of the machine substantially as described, having a rubber, R, revolving by power, and so constructed as to be readily applied whilst in motion to all parts of the work as required.

MARBLE SAWING MACHINE—John M. Mott Jr., of Lansingburgh, N. Y.: I do not claim the manner of suspending and driving the saw gate, nor the method used for raising the same, nor the mode of supplying water to the saws, nor the use of adjustable guide bars, guide rods and slides, for these have been long known and much used.

But I claim the use of adjustable guide bars, guide rods, and slides on the guide bars, or their equivalents, substantially as described, in combination with the slides carrying the saws, and for the purpose specified.

RE-ISSUES.

METALLIC PEN.—A. W. Rapp, of Philadelphia, Pa.: Patented Jan. 6, 1852, I claim reducing or thinning the sides of the pen at a, between the shoulder, A, and split, c, whereby the advantages stated are free y attained, and the metallic pin made to possess the qualities of the quill pen.

RAKING AND LOADING HAY—Joseph Smith, of Condit, Ohio. Patented June 3, 1856: I claim the combination of rake, S, with spring guard plate, S', and fork, P, the whole being arranged and operated in the manner and for the purpose set forth.

ADDITIONAL IMPROVEMENT.

GAS HEATER—Wm. F. Shaw, of Boston, Mass. Patented Jan. 23, 1855 I do not claim the application of a boiling chamber, to a heating apparatus, but as an improvement on the peculiar gas heater, patented by me as specified. I claim the arrangement therein in manner, as described, of a separate or boiling chamber, G, that is attached to or between the flue pipe, E, and the reverberating dome or space, F, substantially as described, in order that the apparatus may be made to perform functions, as stated.

The Poison Strychnine.

This drug, which has lately become so notorious for destroying the lives of human beings—as in the case of the infamous Dr. Palmer, recently executed in England—is a most deadly organic poison. A dog has been killed with the sixth part of a grain of it, and a human being with less. When introduced into the stomach it acts with fearful energy, causing lock-jaw immediately, violent spasms, and death in a few minutes. It is odorless, but so intensely bitter as to be perceptible to the taste when one part is diluted in a million parts of water. The composition of strychnia is carbon 44, hydrogen 24, oxygen 4, nitrogen 2 equivalents. It is colorless, and forms soluble crystalizable salts. It is an alkaline base, and is extracted principally from the *Strychnos nux vomica*. The tree from which it is obtained is of moderate size, and grows in several parts of the East Indies and the island of Ceylon. Its fruit are large orange-colored berries, the pulp of which is the favorite of many birds. The seeds contain the deadly poison. They are flat and round, about an inch in diameter, and gray in color. These seeds were used as a medicine, and as a poison, by the Hindoos, long before they were known in Europe. Many of the natives of Hindostan often use it as people use opium. They commence with taking the eighth of a nut a day, and gradually increase their allowance to an entire nut, which would be about twenty grains. If they eat it directly before or after food, no unpleasant effects are produced; but if they neglect this precaution, spasms are the result.

The bark of the tree is also poisonous, and from its resemblance to Angustura or Cusparia bark, a tonic medicine imported from South America, caused a great deal of alarm and excitement in Germany, in the early part of this century, by being mixed with that bark. No sure antidote has yet been discovered for this poison, but some chemists have attained to great skill in detecting it, when administered as a poison. The following is Dr. Thompson's method of detecting the one-thousandth part of a grain:—

Having placed a drop of strong sulphuric acid on a piece of glass, add to it a small quantity of the suspected substance, and stir the whole together, so as to favor solution; then sprinkle over the mixture a little powdered bichromate of potash, and gently move a glass rod through the fluid. If strychnia be present, a violet color of considerable beauty will be almost immediately produced which, after a few minutes, will fade into a reddish yellow, but may be renewed by the addition of more bichromate, so long as any strychnia remains undestroyed in the mixture. In this way the thousandth part of a grain of that alkaloid may be made to yield a very decisive indication. The points to be noticed are, that sulphuric acid alone produces no apparent effect, and that the action begins at once round each particle of the bichromate, so that if the glass be held in a vertical position, streams of a violet colored fluid may be seen to flow from each particle; and if at this time the whole be slowly stirred, the entire bulk of the fluid will speedily assume the same characteristic tint.

Railroad Accident.—The Verdict.

The Coroner's Jury, in the case of the terrible railroad accident on the North Pennsylvania Railroad, mentioned by us last week, is, that "the collision was caused by the criminal negligence of Alfred Hoppel, the conductor of the excursion train, who carelessly and negligently run his train beyond the sideling at Edgehill."

This conductor is now in jail. The total number of the dead by this accident is 66; wounded, over a hundred. Will any person be punished for the criminal negligence which caused this accident? Let the people of Pennsylvania answer.

More American Printing Presses for England.

The Illustrated London News announces that it has contracted for one of Hoe's printing presses, and the *London Times* has also ordered a very large one.

At the Complimentary Supper given by the proprietor of the New York *Sun*, a few years ago, to Col. Hoe, when the first large press was put up in the Sun Establishment, James, the Novelist, who was present, said, "Westward Hoe" had become a byeword, but "Eastward Hoe" would soon supersede it. He said this in reference to a demand that would yet arise for such presses in Europe. His prediction is now fulfilling.

Recovery of the Lost Telegraph Cable.

About 50 miles of the above cable has been recovered by the Telegraph Co. They fitted out a brig from Cape Breton, with fifty men and a powerful capstan, and they have fished up the above length of it, leaving thirty miles lying in the ocean. With $50,000 of insurance recdived on it in London, the Company have recovered nearly all they had paid out for it.

Bust of Columbus.

Mr. A. Herbemont, U. S. Consul at Genoa, Italy, possesses the only bust of Columbus now in the native city of the great discoverer. Mr. Herbemont found a bust in the Campidoglio, at Rome, which was the only one in Italy, except one at Naples. From the former he procured two casts, one of which was sent to the South Carolina College Library, at Columbia, and the other is in the U. S. Consulate Office at Genoa.

Death of an Artist.

Thomas Doughty, a distinguished American landscape painter, died in this city on the 23rd inst. His last days were passed in comparative poverty, and he has left a destitute family.

A portion of the rock over which the water falls at the Falls of St. Anthony, gave way for a distance of about fourteen feet from the Minneapolis side, on the 6th July. The break does not diminish the hight of the fall any, but removes that portion of it some distance further up stream.

Interesting Experiments with Steam Boilers.

Our constant readers will remember the views we presented, on page 302, on the explosion of steam boilers, in reviewing the inquiry into the cause of the explosion of a boiler in the city of Albany, N. Y., last spring.—Some of the engineers examined as witnesses attributed the explosion to hydrogen, and other gases generated in the boiler, on account of low water. This opinion we pronounced erroneous, stating that this could not occur. In that article we also pointed out the fallacious opinion entertained by many engineers, that explosions are caused by water assuming the spheroidal state when injected upon red hot plates. These views have been practically demonstrated to be correct by some recent experiments made in London by William Radley, Chemical Engineer, who has contributed an account of them to the London *Mining Journal* of June 28th.

He had a cylinder 4 1-2 feet long, 12 1-2 inches diameter, 1-9 of inch thick of good iron, and capable of standing a pressure of 480 pounds to the square inch. This he sometimes used as a steam boiler, and had a furnace under it of 2 1-4 square feet. A short time since it was worked till it was empty, while a powerful fire was under it, and as a consequence, one third of the lower surface became *red hot*. In this state 4 gallons of hot feed water was let into it slowly, which produced a roaring sound, but not sufficient steam to raise a safety valve of 10 lbs. weight to the inch. As the steam rose, the gas in the boiler was collected and tested, and was found to be only atmospheric air—not an inch of *hydrogen*. Shortly after this he evaporated nearly all the water in the boiler, and then left it to cool, with the safety valve open, to allow the free entrance of air. Next day he replaced the safety valve, loaded it with 30 lbs. to the square inch, and forced in a cubic foot of impure hydrogen gas. He then, by a contrivance, ignited and exploded this hydrogen gas and air mixture in the boiler; a puff came through the safety valve, and a small steam engine was worked for 42 1-2 strokes by it, but the boiler was neither burst nor strained.

On another occasion he was conducting an experiment which required the steam to be kept up at a pressure of 50 lbs. per inch for 36 hours consecutively, but using a very small quantity of steam. The boiler was filled to within two inches of the top (10 1-2 inches of water) and it was not fed during the 36 hours; at the end of that period it was only reduced 4 1-2 inches, and contained 6. The feed pump was then set in motion to fill the boiler, and although the steam only fluttered gently at the safety valve all day, at the very first stroke of the feed water, the boiler commenced to roar, the engine bounded off with a higher velocity, and with the second and third strokes of the pump the safety valve was forcibly raised, the steam burst from two joints in the top of the boiler, and Mr. R. declares that had he not quickly opened a 3-4 inch steam way, he believes the boiler must have exploded, as it exhibited great spasmodic action. He did not anticipate such a result, and the peculiar fact led him to reflect as to the cause. He came to the conclusion that the water in the boiler might have attained to a higher temperature than 280° Fah.—the heat at 50 lbs. pressure—and if so, a rapid evaporation of steam would be caused when the feed water was supplied. thus suddenly generating a great pressure.—He, however, could not satisfy himself of this without an experiment. As he required more steam than his small boiler furnished, he put up two others, side by side, in line with it, and placed the furnace under the end of one of the new ones, which we will call No. 1; then the flues was deflected and passed under the middle one, No. 2, then returned under No. 3, and into the chimney. The feed water entered No. 3 only, and passed thence by a pipe to No. 2, and from it by a pipe to No. 1. The steam was carried by a small pipe from each, and was collected in a larger one for use. A thermometer was placed in each boiler through a stuffing-box, and dipped low down into the water. The boiler No. 1, with the furnace under it, had its steam up in 1 hour; No. 2 had its steam up in 1 hour 40 minutes; No. 3 in 2 1-2 hours, at which period the three thermometers indicated 212°—an equality of heat. At the end of the first six hours the thermometer in No. 3 indicated 280°, Fah., in No. 2, 2 8°, in No. 1, 290°. The bulbs of the three thermometers were then slid upwards, to raise them out of the water, when the temperature of each fell to 280°—that of the steam in each boiler at 50 lbs. pressure. The thermometers were slid down into the water again, and the experiment continued for 6 hours longer, when they were examined again. The thermometer in No. 3 indicated 232°, in No. 2, 290°, in No. 1, 300° Fah. The thermometers were again raised out of the water, when they all fell to 280°. This, he states, convinced him of the *rationale* of many mysterious steamboat explosions; but his chemical experiments not being finished, he again restored the thermometers, and left them for 18 hours longer. On examining them again, thermometer No. 3 was standing at 285°, No. 2 at 298°, and No. 1 at 312°. They were again raised out of the water and fell to 280°—the steam in each boiler being at the same pressure, although there was a difference of 27° between the water in No. 1 and No. 3.

We will now present Mr. Radley's conclusions respecting these experiments:—

"Here we have conclusive data suggesting certain rules to be vigorously adopted by all connected with steam boilers who would avoid mysterious explosions: First, never feed one or more boilers with surplus water that has been boiled a long time in another boiler, but feed each separately. Second, when boilers working singly or fed singly are accustomed, under high pressure, to be worked for a number of hours consecutively, day and night, they should be completely emptied of water at least once every week, and filled with fresh water. Third, in the winter season the feed water of the boiler should be supplied from a running stream or well; thaw water should never be used as feed for a boiler."

Now Mr. Radley has demonstrated (not discovered) the fact that water in a steam boiler can be highly heated above the particular degree indicated by the steam pressure; he does not explain the cause—if he has caught a glimpse of it. It is very evident to us, from his description of the experiments, the reason why the water in any of the boilers rose in heat above the temperature of the steam; it was the absence of atmospheric air in the water. If a small feed of water containing air had been going on into the single, or into each of the three boilers, the water would never have risen above the steam temperature

In our columns the discovery was first published in this country that water deprived of its atmospheric air does not boil until it attains to 300°, and that it is liable to explode at this temperature. On page 357, Vol. 5, Scientific American, these facts are set forth, and scientific information presented, which Mr. Radley's experiments have fully confirmed.

In the first experiment of Mr. R., when the single boiler worked so long without feed water, and when two of its joints were burst at the second stroke of the feed pump by the sudden generated steam pressure, it is evident to us that the whole of the atmospheric air had been boiled out of the water, and that its temperature thereby had been greatly elevated. In the experiment with the three boilers it is also evident that most of the air would be expelled from the water in No. 3, where the feed was supplied, then perhaps the whole of it was expelled in No. 2, which would leave No. 1 to be supplied with feed water containing no atmospheric air at all. Thaw water from ice contains little or no atmospheric air; therefore we would infer that Mr. R., in forbidding its use for boilers affords us evidence that he is aware of the cause, although he does not state it in so many words. Being a chemist he must be acquainted with Prof. Donnets' and Faraday's discoveries, described on the page of the Scientific American already referred to.

Locomotive, steamboat, and stationary engine boilers have their fires frequently *banked up* for hours, without feeding water, and the steam fluttering at the safety valve, so as to have them all ready for starting at a moment. This is a dangerous practice, as the foregoing experiments demonstrate. While so standing, all the atmospheric air may be expelled from the water, and it may thereby attain to a high heat, ready to generate suddenly a great steam pressure when the feed pump is set in motion. This is, no doubt, the cause of the explosion of many steam boilers immediately upon starting the engine, even when the gauge indicates plenty of water.—The remedy for such explosions must be evident to every engineer—keep the feed pump going, however small may be the feed required.

[For the Scientific American.]

Walls of Hollow and Solid Bricks.

My opinion, based upon the experience and observation of some years, is, that walls for dwellings, in city or country, for stores or mills, are stronger, warmer, drier and cheaper, when built double or, technically, "vaulted," of solid bricks, then when built single of hollow bricks.

The ordinary thickness of a common class of dwellings, is two courses, making in this vicinity an eight-inch wall.

By laying the two courses an inch and a half apart, making a nine and a half inch wall, bonded by "flemish headers" once in ten courses, but one-thirtieth of the wall, superficially, is solid; whereas, in a wall of hollow bricks, nearly or quite one-half will be. A vault of an inch and a half, if kept clear, is enough for a double wall.

For buildings of a heavier class, an 8 and a 4 inch wall, two 8 inch walls, or thicker, as the case may require, bonded in the same manner, or as in the case of the celebrated Pacific Mill, at Lawrence by 4 inch cross walls, two or three feet apart.

Vaulted walls have a broader base, and are consequently firmer than solid ones; in fact, the only objections to them being the loss of the land covered by the space, and increased care in laying—minor considerations—in view of their great superiority. What is still cheaper, and requires less care, is to give the inside of the outside course a coat of cement before "backing up," thus forming a sheet of cement between the two courses, making it stronger, and when well done, impervious to water.

In either case it is plain that such a wall must be stronger than when laid of hollow bricks, for the reasons that the "bearing" is the whole size of the brick, and the brick itself is not weakened by the space formed through it.

One great objection to the use of hollow bricks, is the increased waste, which, in solid bricks, amounts to quite a percentage, and to handle them as we do "face brick," to avoid breaking, would materially enhance the cost.

In the haste to build many rather than good buildings, the subjects of vaulting, ventilating, draining, &c., our houses and our stores, churches, school houses, &c., have been sadly neglected, but I am happy to think an improvement is becoming more apparent.

In thus expressing my opinion, I am influenced only by a desire to assist any who may be practically ignorant upon the subject, and who might be desirous of obtaining information or advice from practical builders—who should be supposed to understand the best modes of building; nor do I speak in reference to any other section of country than this, well knowing, from some experience in other countries, and in distant parts of this, that the materials and modes of building differ as widely as do the tastes and customs of the people.

Bricklayer.

Boston, Mass.

Mechanical Discussions.—American Institute Club.

A Club, for reading essays on subjects connected with science, art, and philosophy, has existed for a few months in connection with the American Institute, this city. Its objects are commendable, and we have frequently suggested the formation of such a department in connection with the Institute. Some very excellent papers have been already read at the meetings, and more may be expected. In some instances, those who have read papers, and some who joined in discussions which followed the reading of certain essays, indulged in personal allusions. These must be avoided for the Club to maintain a good character. A gentlemanly candor should reign supreme at every meeting.

Locks.—At the meeting last month, Wm. H. Butler, of the firm of Valentine & Butler, extensive safe manufacturers, of this city, read a very interesting paper on the subject of Locks. These, in general, may be divided into two classes: first, those in which many fixed obstacles were presented to stop the key in its efforts to touch the bolt; and, second those in which hinged or sliding obstacles were to be removed before the bolt would move, however strong it was acted on. The first are termed ward locks, and though provided with complex keys, can be picked by a crooked wire. A general name for the second and better class is that of "tumbler" locks, Tumblers are levers or pins which catch in the bolt, and must be all lifted at once. A Mr. Baron, in England, improved on this simple idea, by so constructing the tumblers that lifting them too high was as bad as not lifting at all. This change had led to improvements, of which there will probably never be any end. The English Bramah lock, picked by Mr. Hobbs, an American, who thereby won a large prize at the great Fair in London, in 1851, had sixteen tumblers, all of which were required to be elevated to different hights. Of one hundred men, equally ingenious and equally familiar, both with the business and with the construction of that particular kind of lock, probably not ten would possess fingers sufficiently delicate, and not five the patience necessary to accomplish the object. The changeable key and lock introduced within the last twenty years, made the lock safe against its maker, or any burglar who might purchase one to examine it. These locks were now perfected, so that a simple change in the bitts or parts of the key impressed a corresponding change on the lock, and a bank safe might be secured every night unknown to any but the cashier.

Two splendid changeable bank locks,—Butler's and Yale's were dissected and lying on the table, and reference was made to them by Mr. B. It was remarked, in the discussion which followed, that all these locks were expensive, and could not be purchased by the masses, and as a consequence the locks still in general use could easily be opened with a crooked nail by any expert burglar. Mr. Butler then explained his rotary lock, which has no bolt, and which has a *fall lever* that prevents the lock being easily opened on the outside. With the true key made for it, and which required to be pressed simply into a narrow slit, the door opened easily, but without the true key, Mr. B. said, "a skillful lock-picker might work for hours and days before he could get the tumblers arranged properly to open the lock. The key of this lock is thrown out, when its work is done, and it never can remain in the lock for an impression to be taken of it by a burglar.

Thomas D. Stetson, on the same occasion, explained the new lock of E. M. Hendrickson, of Brooklyn. It combines the principles of the ward and tumbler locks. Levers and tumblers have to be very accurately adjusted before it can be opened. The key-hole is small and round, and the key, when inserted, opens like an umbrella. The arms of the key extend through intricate passages in a revolving ring, which is moved by a certain action of the key. The locking is performed without the key, by pressing a small button on the face of the lock. In answer to a question, whether this lock was unpickable, Mr. S. stated that every new lock was unpickable until it was picked, and so this one was. This was a pretty good answer, and contained more truth than poetry.

New Source of Chloroform.

If 600 parts water, 200 parts chloride of lime, and 25 parts oil of turpentine are well mixed in a retort and distilled, a violent reaction takes place, carbonic acid gas being liberated in great abundance. As soon as the mixture begins to rise the retort is withdrawn from the fire, and the process goes on to the end without the application of external heat. The receiver is found to contain three layers of liquid, the undermost having a scent of chloroform. If separated from the higher liquids by means of a pipette, rectified, and re-distilled over chloride of calcium, it presents the usual composition and properties of chloroform

New Inventions.

The Woodworth Patent Extension.

This Bill is just about to be brought forward by interested friends, in the House of Representatives, and many persons are afraid that it will be rushed through by craft and intrigue. The owners of the patent are leaving no means untried to secure their object, and it is said that although numerous remonstrances have been sent in against its extension from almost every part of our country, only a few have been presented; the others have been kept back, for purposes best known to the members who received them. We hope those who are opposed to the extension of this monopoly, and who have sent in petitions against it, will see to it that the Representatives who have received their remonstrances, do their duty, not only in presenting their petitions but taking an active part against the extension. Those who are opposed to the extension must not suppose they have done their whole duty, by merely signing remonstrances, and sending them on to Washington, or in having been the means of getting their Legislatures to pass resolutions against it; they must watch and work, and see that their Representatives do not betray them, until the question of the extension is settled forever.

Seward's New Patent Bill.

The Washington *Intelligencer* says :—"The subject of patents for useful inventions is one of growing interest in this country, and the inventive genius of our countrymen has even made an impression in the Old World, from which quarter high honors have been awarded. Mr. James, of Rhode Island, introduced into the Senate, some time ago, from the Committee on Patents, a bill which attracted a good deal of attention. It has not yet come up for final consideration, but Mr. Seward has introduced a substitute for it, which deserves notice. It omits, as we learn, the radical provisions of Mr. James' bill which relate to the extension of patents, the review of decisions of the Commissioner in granting patents by *scire facias*, &c., and confines itself to certain amendments necessary to relieve the Patent Office of much heavy labor, and expediate the transaction of the patent business therein. Inventors will scan all these movements with a close reference to their own interests, and the public at large have an interest in them scarcely less important. That the subject is one of great delicacy is evinced by the earnest debates which have occurred within a few days past in regard to reaping machines."

The new Steam Frigate Wabash.

This frigate—one of the six new ones—is about completed. It was designed by J. Lenthal, Esq., Chief of the Bureau of Construction, at Washington. The engines have been constructed by Merrick & Sons, Philadelphias The length of keel is 261 feet, over all 301 feet; breadth of beam 54 feet 4 inches. It. tunnage is 4,700 tuns. The frame is of the best live-oak. It has two engines with cylinders of 72 inches bore and 3 feet stroke. These have slide valves worked with the link motion. They are designed to run at the rate of 50 revolutions per minute, under a steam pressure of 20 lbs. Their power is 1,480 horses. It has four tubular boilers made according to Chief-Engineer Martin's patent. These have 5,440 tubes and 16,660 square feet of heating surface, and are fired from 20 furnaces. The propeller is two-bladed, 17 feet in diameter, and weighs over ten tuns. We hope this frigate will do better than the *Merrimac* has yet done. The *Niagara* is getting along somewhat slowly at the Brooklyn Navy Yard. Push on the work, gentlemen, and let us see the result of the enterprise.

Philosophy of Wetting Bricks.

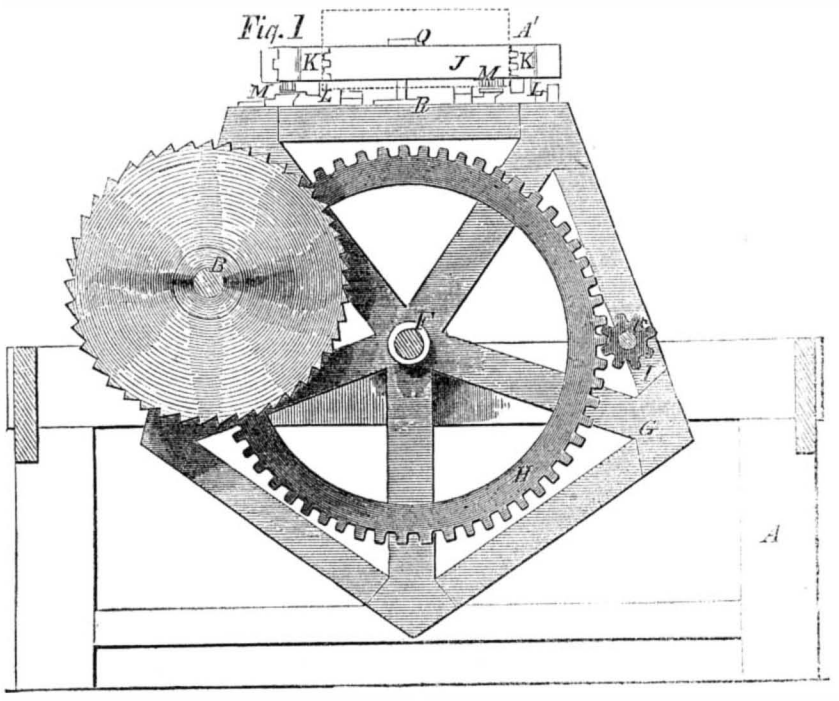
Little bits of practical information which we are accustomed to collect and present to our readers we frequently find appropriated by other journals after they are years old; and again, we often find these paragraphs copied from paper to paper, credit being given for the second-hand productions. This we have found to be the case with an article having the above caption. It has recently been going the rounds, credit being given to the Philadelphia *Journal*. It was published ten years ago in the Scientific American.

It explains briefly the philosophy of wetting brick during warm weather. Lime-mortar only acts as a bond, with brick by adhesion, the vehicle being the moisture or water of the mortar. Dry porous bricks at once abstract the moisture from mortar, and it soon evaporates; and thus the binding vehicle between the two is removed.

Spring and fall are the best seasons of the year for building brick houses. In warm dry weather the moisture of the mortar evaporates too rapidly; and in frosty weather it crystalizes, and when thawed it sweats out.

Mortar becomes hard by absorbing carbonic acid from the atmosphere; and it acquires by age the character of stone. Without moisture it will not become hard and solid, but crumble into dust, hence the necessity of preventing the rapid evaporation of moisture in mortar used in buildings of brick or stone.

IMPROVED SHINGLE MACHINE.



New Shingle Machine.

This invention consists in attaching a series of carriages to the faces or sides of a polygonal wheel, and having said carriages attached to racks in which pinions gear, the axes of the pinions having ratchets attached to them, in which ratchets, pawls, on a sliding bar, catch. the above parts being arranged and operating in connection with a circular saw, as will be presently shown and described. so that the stuff or blocks from which the shingles are cut, will, as the polygonal wheel rotates, be automatically fed to the saw.

In our engravings, A is a rectangular frame on which an arbor, B, is placed, said arbor having a circular saw, C, on its inner end. The saw, C, is driven by a belt, *a*, from a driving pulley, D, on a shaft, E, said shaft being on the end of the frame, A, opposite to the end where the arbor, B, is placed.

F is a shaft placed on the frame, A, at about its center. This shaft has a polygonal wheel, G, upon it. One side of the wheel, G, has a geared rim, H, attached to it, which rim meshes or gears into a pinion, I placed on the inner end of the shaft, E. On the several faces of the wheel, G, there are placed carriages, J, (only one is represented, that being sufficient as they are all similart each other, and arranged end operated precisely alike.) The carriage, J, is attached to racks, K K, a rack being at each end of the carriage. The racks, K K, are fitted in metal guides, L L, which are pivoted at one end to the faces or sides of the wheel, G. M M are pinions which gear into the racks, K K. The axes of these pinions pass through the side or face of the wheel, and have ratchets, N, on their inner ends. O is a sliding bar placed on the under side of the face of the wheel, and having two pawls, *b b*,

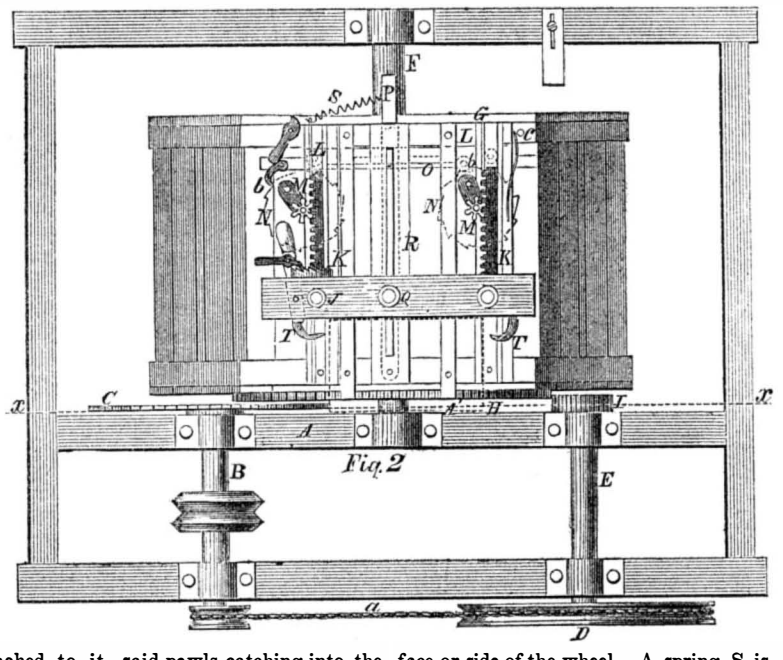


Fig. 2

attached to it, said pawls catching into the ratchets, N. P is a lever, one end of which is pivoted to the under side of the face of the wheel. The bar, O, is attached to this lever, and the outer end of the lever, P, projects some distance beyond the side of the wheel, G. Through the center of the carriage, J, there passes a bolt, Q, the inner end of this bolt works in a slotted plate, R, attached to the face or side of the wheel. A spring, S, is attached to one of the guides, L, the end of said spring bearing against a pin, *c*, on the face or side of the wheel. This spring keeps the racks, K, in gear with the pinions, M M. To the ends of the carriage, J, dogs, T T, are attached. These dogs are of usual construction.

The operation is as follows:—The blocks designated by A, and from which the shingle are sawed, are secured by the dogs, T, to the several carriages on the wheel, G. A rotating motion is given the driving pulley, D, in any proper manner, and a rotary motion is communicated to the wheel, G, and saw, C. As the wheel, G, rotates, the saw, C, cuts the shingles from the blocks, and the lever, P, of each side or face of the wheel, as said sides approach the saw is operated by a projection, U, on the frame, A, and the sliding bars, O, are actuated, and the pawls, *b b*, turn the ratchets, N, and the pinions, M M, move the racks, K K, and the carriage, J, and block, towards the saw.

It will be seen that the feed motion is automatic or self-acting, each block being fed towards the saw a requisite distance, at every revolution of the wheel.

This machine operates, we are told, with great success. It cuts all kinds of timber equally well, and the shingles are more even than those ordinarily produced, as it sets itself with great precision. It also performs its work with great rapidity, for the blocks on which the stuff is secured, having a revolving motion, a new block is presented to the saw the instant the preceding shingle is cut off. In ordinary machines time is lost by the back movement of the carriage after each cut. Price of machine with jointer complete, $200. Mr. Jason Palmiter, of Jamestown, N. Y., is the inventor, of whom, or of Messrs. J. A. Knight & Co. 334 Broadway, N. Y., further information can be had. Patented June 10, 1856.

Recent Foreign Inventions.

A Perpetual Motion Again.—The *London Mechanics Magazine* states that the following is the full specification of a patent recently taken out by E. Poulson :—"My invention consists of a new constructed engine for marine, locomotives, and standing engines, to be worked either by steam or principally by manual labor, by a suspended lever, or a new constructed fly wheel charged with quicksilver, as the case may be; that is to say, as fly wheels are not convenient to work on shipboard in a gale of wind or a hurricane, the engine may be worked by manual labor only and the action of the engine from the motive point of power, is by an action and re-action."

This specification is clear *as mud*, yet amid the puddle, we can perceive that the inventor has got hold of a perpetual motion. He expects he increases the power of his engine *ad infinitum*, by the length of the lever he employs; and in his quicksilver loaded fly-wheel, we perceive the unbalanced mercury wheel, which has been brought forward so many times for an action and re-action perpetual motion. All fools are not dead yet.

Preventing Water Entering Steam Cylinders.—J. W. Duncan, London, patentee.—This invention consists in placing in a suitable chamber in the steam chest, a quantity of waste wire or fine cuttings of metal and passing the steam from the boiler through these before it enters the valve chamber and cylinder.

In consequence of priming in boilers, much water sometimes passes over into the cylin ders or steam engines, causing them to labor heavily and oftentimes to break down. And without priming, some water is generally carried over with the steam, in all engines, which (however small the quantity), clogs their action. Locomotive cylinders are discharged of water before starting, by cocks in their ends. A perforated metal plate interposed between the valve chest and steam pipe, is often employed to shed this water, which may not be as effective as the fine wire placed in a separate chamber, as embraced in the foregoing patent. This chamber, of course, has a blow-off cock.

Superheating Steam.—F. Allman, London' patentee.—For superheating steam engines, this inventor employs a separate heating chamber for the steam, which is admitted in separate quantities, according to the strokes of the engine, instead of allowing it to pass continuously from the boiler as generated, into tubes passing through the furnace, thence to the cylinder. The steam is generated in a boiler in the usual way, then passes into the steam space or dome, from which it is admitted into the calorifier to be superheated, by a valve worked regularly by the engine.

Scientific American.

NEW-YORK, AUGUST 2, 1856.

Improvements.—No Standing Still.

Some persons have expressed the opinion that we must soon reach the climax of invention and mechanical improvement. The reasons which they give for this opinion are in substance as follows:—"So many wants have already been supplied by inventions, that the objects on which to exercise the faculties of inventors are becoming less daily, and must soon become very limited in number."

Such reasons are not founded on correct data, observation, or reflection. It is true that the minds of inventors have been very active during the present century, and they have happily supplied a multitude of wants for the benefit of mankind, but instead of these inventions circumscribing the number of objects for exercising the inventive faculties, new objects seem to multiply, and the field for improvement has expanded with the advance of invention. No better evidence can be adduced in support of these assertions than the number of patents which continue to issue from the Patent Office—instead of decreasing in number they have rapidly augmented. And it never can be otherwise in any country where proper inducements are presented for making improvements. The mind of man is so constituted that when it is directed aright, it strives after that perfection which is the attribute of the Deity. And as the object to be attained is infinite excellence, there is room for man to advance and improve forever. Every new step which he makes in his onward progress, shows him more of his defects and incites him to do something better still. Every new object also, to which he devotes his attention, in order to make improvements, is like a new torch lighted up before him; it throws its beams over a greater area, and reveals new objects, unseen, or overlooked by him before. As the road to perfection has no ending, and as new discoveries reveal new wants and new objects, therefore the field for the exercise of inventive genius must continue to expand.

The old Greeks, no doubt, thought they had arrived at the climax of intelligence and perfection in the arts; and the Chinese have considered themselves a finished people, in all things, for centuries, but in learning and in useful science and art, the Greeks were but children to the moderns, and the conservative Chinese—once the furthest advanced in the arts—are now barbarians. A blind conservatism respecting any art, exerts a withering influence: it stops improvements and turns the wheels of industry backwards.

Whenever a want is felt, it is a good plan to let it be as publicly known as possible, and to offer a reward (if this can be done) for its supply. A short time since a prize was offered for improvements on machinery for sawing marble, and in a very short period afterwards the improvements sought were produced.—Our last week's number contained an account of movements now making in Illinois to offer a handsome prize for a useful steam plow. Such an invention—just because it is felt to be a great want—must ultimately be supplied. By such means many useful inventions have been developed, which otherwise would still have been slumbering in oblivion. No nation can stand still in the course of improvement; it must either go forward or retrograde. Every new improvement in the arts, therefore, should but incite to efforts for further progress and the attainment of a higher degree of excellence.

Does the Moon Rotate.

Since we published the article a few weeks since on the above subject, stating that the common opinion of the moon rotating on its axis once in 28 days exactly, had been questioned by an inspector of schools in England, we have received a great number of letters on the subject, all endeavoring to confirm the twenty-eight day rotating theory. To some of these letters we replied on page 334, stating that the arguments presented were not conclusive. Since that time we have again received quite a number of letters on the subject, some of them very ingenious in their demonstrations, and yet differing from one another as to the cause of the moon always presenting the same face to the earth. We have not room for the publication of these letters, even the most acute and able of them, and beside, they would not settle the mooted question. The best way to settle it would be the construction of an apparatus showing the earth and the moon's joint rotations, and the revolutions of the moon around the earth while the latter is rotating 28 times. It would be well to have 28 radii on the wheel which connects the earth with the moon, and to have beads or points on moon and earth, to show their coinciding bearings during the 28 rotations of the earth, while the moon is making one rotation and one revolution.

Testing Natural and Bent Ship Knees.

A series of interesting experiments with ship timber—as noticed by us last week—commenced at the "Novelty Works" this city, on the 16th ult., and were continued daily for six days. They were conducted under the inspection of B. F. Delano, Esq., naval constructor, Brooklyn, and Lieut. Worden, U. S. N., by order of the Secretary of the Navy, and were made at the request, we understand, of R. H. Belden, President of the American Timber Bending Co. The object of the experiments was the testing of the relative strength of natural and machine-bent ship knees; the artificial knees being bent at the factory in Greenpoint, by the machinery and according to the process patented by the well known Thomas Blanchard, Esq., of Boston.

The machinery for testing the strength of the knees was got up under the charge of Mr. Davidson, of the Novelty Works, who conducted the trials. It consisted of a cast and wrought iron bed and frame, in which the ship's knees (one at a time) were secured, and the breaking force applied by a powerful hydraulic press, operating upon one end of each knee, with the fulcrum at or near the center of the throat, the other part of the knee being firmly fastened, to prevent it yielding.

The first experiment was with a machine-bent knee, of 10 1-2 inches siding. With a leverage of 5 feet 4 1-2 inches, it was sprung or squeezed inwards by the press, a distance of 1 inch, by 7,500 lbs. (total pressure); 2 inches by 10,000 lbs.

The experiment with a *natural* knee of 10 1-2 inches siding—same angle as the machine bent knee, and conducted in the same manner—gave a lower degree of strength. It was sprung inward 1 inch by 5,500 lbs. pressure; 2 inches by 9,500 lbs.

The next machine-bent knee of the same siding, 10 1-2 inches, was sprung 1 inch by 9,500 lbs. pressure, 2 inches by 11,000 lbs. pressure.

The next *natural* knee of same siding and angle as the bent knee, was sprung 1 inch by 7,500 lbs. pressure, 2 inches by 10,500 lbs.—These experiments were of the crushing character, operating in the direction to squeeze the ends of the knees together.

The hydraulic press was then reversed, for the purpose of forcing the knees outward—riving them apart. It was an interesting trial, as it had been supposed by many that a knee or stick of artificial bent timber could be easily brought back to its original shape, but it was found more difficult to force it outwards than inwards.

A machine-bent knee of 10 1-2 inches siding, with a leverage of 5 feet 4 1-2 inches was sprung outward 1 inch by a pressure of 14,000 lbs., 2 inches by a pressure of 22,500.

The question was then raised that the pieces of timber which were bolted on the knee to represent the deck beam and the side of the ship as they butted closely together, greatly increased the power required to spring the knee outwards. For the purpose of testing this, the end of the beam was cut off, so that the ends of the timbers were entirely open and clear of each other. The pressure was continued until the knee had sprung outward ten inches, when it was taken off, and it went back five inches. The pressure was then applied the second time, and upon reaching the point where the strain had been taken off at the first trial, it required to spring it 1 inch 28,000 lbs. of pressure, thus showing that it required more than double the power to strain outward than inward. The knee was sprung ten inches without the least break, at a pressure on the last half inch of 38,500 pounds.

The last natural knee of the same angle as the foregoing bent knee, with siding of 10 1-2 inches, was a remarkably fine specimen. With a leverage of 5 feet 4 1-2 inches, it required to spring it outward 1 inch, 22,500 lbs. pressure, 2 inches, 38,500 lbs. pressure; at this point it broke near the center of the throat.

The machine-bent knees proved to possess greater elasticity than the natural ones, and after springing them inwards or outwards some distance, and then allowing them to go back; upon the pressure being applied the second time, it was found, in one trial, that the knee sustained a slightly greater pressure, but in another about six per cent. less.

Recent American Patents.

New Repeating Pistol.—By C. S. Pettengill, of New Haven, Conn.—This invention relates to that description of repeating fire-arms, in which a chambered cylinder is arranged to rotate on an axis parallel with the barrel.—The main object of the invention is to allow the operations of rotating the breech and firing to be performed easily with a simple arrangement of mechanism operated by a single pull on one trigger. The invention consists n certain arrangements and combinations of the parts of the lock, by which the hammer is made self-cocking after every fire, and the main spring is relieved from all strain while the hammer remains cocked. Other features of the invention consist in certain novel arrangements and combination of mechanical devices, by which the rotating of the cylinder, the locking of the same at the time of firing, and the letting off of the hammer are effected. This pistol is one of the most practical and ingenious improvements of its class that we have seen.

Jingle, Jingle.—Improvement in Sleigh Bells.—By Abner G. Bevin, of Chatham, Conn.—Every body knows how sleigh bells are commonly made—with shanks that are thrust through holes in the leather strap, and secured by a bent wire. The leather on which a string of bells are arranged in the ordinary way, consists, when properly finished, of five parts:—the middle strap, to which the bells are fastened, the back lining strap, which covers the fastening wires, the patent leather front strap, and the two bindings which cover the edg of the whole. The bells must be put on and fastened before the bindings can be sewed. The latter work must be done by hand slowly, because the bells cannot go through a sewing machine. In the other stages of the work the bells are also in the way, and when silvered, as all fine bells should be, become stained by frequent handling before they leave the workman.

The present improvement consists in employing bells without shanks, and attaching them by means of wire staples. Two holes are left in the base of the bell, through which the staples enter, and are then bent together in the interior, forming an effectual fastening. This arrangement does not require the attachment of the bells until after the strap is completely finished. Therefore the work is done more neatly, quicker, and cheaper. Less metal is also consumed in the casting, as the shank and thick parts near it are dispensed with. No handling of the bells is involved, so that they look neater, &c.

With the thermometer at 95°, we find the subject of sleigh bells very refreshing.

Sawing Machine.—By John Broughton, of Chicago, Ill.—Consists in placing the saw within a sliding frame, the back end of which works in ways or guides which form segments of circles, of which the driving shaft is the center. The front end of the frame works between horizontal guides, and the several parts are so arranged that a sliding saw and stationary table is obtained. The saw is pushed up against the stuff, instead of the stuff against the saw. The saw is operated with a small number of pulleys and small amount of belting. The machine is simple in construction, and, we should judge, very effective in action there are no friction pulleys, and the belts work in the simplest manner, by merely passing around the actual driving pulleys. The whole of the working parts are immediately before the eye of the operator, are very accessable for the purpose of oiling, and very likely to attract his attention in case lubrication is required, thus lessening greatly the liability to wear by the parts being concealed, and the neglect of oiling. This is a good improvement.

Improved Water Filter.—By Jas. H. Wright, of New York City.—In this improvement the filter is divided into two chambers, each having a separate stop cock, the arrangement being such that either filtered or unfiltered water may be drawn off at pleasure. The water passes slowly through the filtering machine; hence the convenience of a second stop-cock, through which the liquid may be more rapidly drawn, in case of necessity or when filtration is not required.

Fig. 1

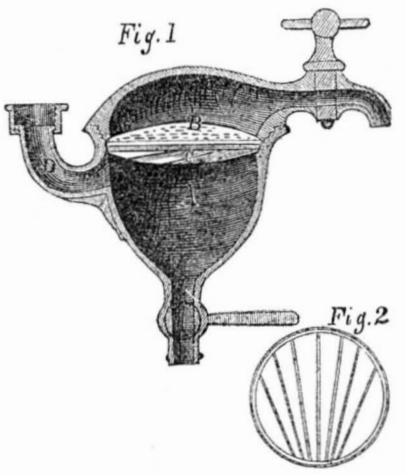


Fig. 2

A is the shell of the filter. The filtering medium consists of a piece of felt or flannel, or other suitable substance placed between a perforated disk, B, and a barred ring, C. D is the induction pipe, through which the water enters. If filtered water is needed, the lower stop-cock is closed, and the water rises and passes out through the upper faucet. Unfiltered water can be had at any time by opening the lower faucet. The bars in the ring, D, serve to direct the water across and against the bottom of the felt or other filter, when the lower cock is opened, and thus to sweep off and keep the under side of the filter always clean. This is an important feature. One great objection to the use of small filters is their liability to clog up by the accumulation

Fig. 3

of dirt on one side of the filtering material. The present improvement overcomes that difficulty, in a great degree. Fig. 3 shows the external appearance, which may be rendered highly ornamental. The invention is applicable to large cistern reservoirs, and the purification of rain water. The form here shown is chiefly intended for city use. Patented July 1, 1856. Apply to the inventor, 835 Broadway, N. Y., for further information.

Improvement in Cartridges.—By George Buckel and Edward Dorsch, M.D., Monroe, Mich.—This invention relates to cartridges for fire-arms whose bore is entirely formed of a number of circular grooves. It consists in the arrangement, side by side, with their axes on the same circle, of several balls of cylindro-conoidal or other partly cylindrical form, of a size to fit the grooves of the bore, the number of said balls being equal to the number of grooves in the bore, so that every groove may receive a separate ball. It also consists in the separation of the several balls by a partition piece of paper or other material for the purpose of preventing their union by fusion when the charge explodes, which, with-

out the partition piece, would sometimes occur when lead balls were used.

When a ball cartridge, constructed as above specified, is fired from a gun of straight bore, it is found that the balls will scatter very slightly; that is to say, they will be confined within a circle of about two feet six inches in diameter when projected to the distance of three hundred paces, thus being very destructive. By giving the grooves a twist the balls will scatter less. It is intended that the gun shall be sighted accurately for one of the grooves that one ball may strike the mark at which aim may be taken. The balls are all thrown about the same distance.

If the piece employed to project the cartridge contains more than four or five grooves, a sufficient space will be left in the center to contain a central ball of greater diameter than the others. The inventors of the above improvement have already patented a number of other valuable and ingenious inventions relating to fire-arms.

Machine for Making Hollow Bricks.—By Ambrose Foster, of New York City, and G. M. Foster, of Fairhaven, Conn.—Consists in the employment of a sliding hopper, plunger, and vibrating box, so arranged and operated that the clay or other mixture is taken from a hopper, pressed into the mold, formed into hollow bricks, pushed from the molds and from the machine, without being touched by the attendants. A good idea of the general principles on which this invention operates may be obtained by reference to the large engraving of Messrs. Buck, published in No. 34 of our present volume. The two improvements are somewhat analagous.

Improved Harvester.—By Stephen R. Hunter, of Cortlandt, N. Y.—Consists in the employment of rotary cutters fitted within slotted fingers, and attached to curved plates, which are hinged together by a joint and fastened to the axle in such a manner that the cutters may be made to conform to the inequalities of the ground. An improvement of this kind has long been needed in many sections of the country.

Fly Trap.—By Joseph Hyter, of Kent, Ind.—Consists in so constructing the trap that the flies, after being decoyed by a bait into it, through a small opening at the front, shall be deluded by a very strong light above, to ascend until they arrive over a trough filled wtth strong soap suds, into which they foolishly precipitate themselves, and are drowned. A gentleman of our acquaintance who uses one of these patent traps says it is a good thing.

Improved Steam Engine.—By William Darker, Jr., West Philadelphia, Pa.—Consists of an oscillating piston arranged within a steam box, which is provided with a partition, and with suitable packing; also with a suitable arrangement of valves and passages. Without drawings it would be difficult to convey an intelligible idea of the construction. Suffice to say that it is extremely simple and cheap in construction, while leakage of steam is very effectually provided against by interposing water between the steam and all the working parts of the engine. The water also serves to lubricate the working parts.

Self-Acting Ship's Pump.—By J. Stever, of Bristol, Conn.—Consists in attaching a series of pumps to a frame, which is secured to a hollow vertical shaft, the latter being allowed to turn freely in its bearings. The pumps communicate with the hollow shaft, and have weights connected by gearing and levers with their pistons, so that the pumps will be operated by the motion of the ship as it rises and falls, or rolls on the sea. The hollow shaft serves as the force and suction pipe. Many plans have heretofore been devised to take advantage of the motion of vessels to pump water from their holds; but this is the most ingenious and practical of any that have come under our notice.

Improved Water Wheel.—By A. Munroe, of Worcester, Mass.—Consists in placing the wheel within a spiral sluice or scroll, having deflecting or guide plates attached to it, for the purpose of causing the water to act in the proper direction against the buckets. Also in having concave buckets attached to the wheels, and inclined plates attached to its arms, whereby the greatest effective force of the water is obtained, and the water so discharged from the center of the wheel as to allow a free and unobstructed current to pass through the spiral or scroll sluice.

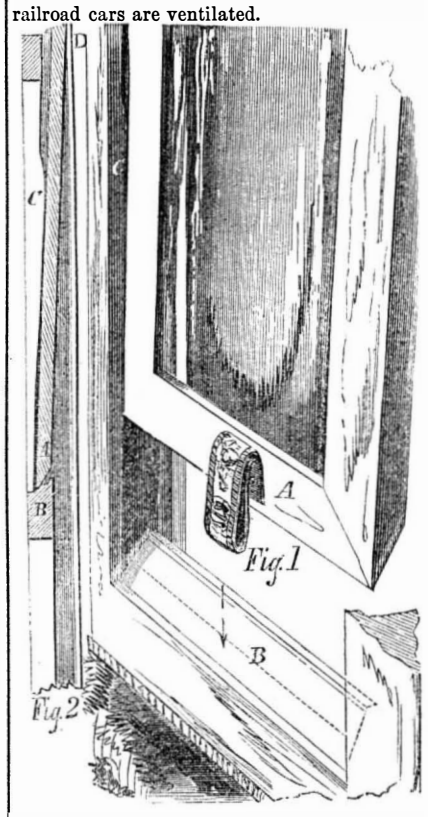
Double-Acting Planing Machine for Metal.—By Joshua Mason, of Paterson, N. J.—Consists in placing the cutter stock inside of a ring, which is hung upon journals within a frame, so that the stock may oscillate therein. Also in operating or adjusting the stock and regulating its position so that the cutter may cut while the bed and work is moving in either direction, and also cut at different hights, according to the formation of the work which it is required to plane.

Roof Platform for Shingling.—By J. W. Rodefer, of Abingdon, Va.—Consists in having a platform hinged to a small angular frame which rests on the roof. The platform is so arranged that it may always be adjusted to a horizontal position, whatever the pitch or inclination of the roof may be. There are spurs in the bottom of the frame, which prevent the contrivance from slipping.

Improvement in Coach Windows.

A variety of means are in use for preventing the rattling of coach and car windows, but hardly any of them accomplished the purpose successfully. Springs and wedges, which are most generally used, have a tendency to bind on the window frames and render them difficult of movement. Alterations in the form of the window have been used, but without much success.

The Paddington, Oxford Street, and other kinds of omnibuses of London, in order to prevent as much as possible the intolerable noise of rattling windows, and the rapid wear caused by their constant vibration, are arranged with half the usual number of windows, the space ordinarily occupied by the other half being used for cases into which the window frames slide latterly. In this way they are, in a measure, partially relieved from the noise, but the bus is rendered dark and gloomy. This plan is also used to some extent in Paris. In the more northern cities of England—Liverpool, Manchester, Birmingham &c.—it is customary to insert plate glass solid into the coach frames, so that they cannot be opened, and depend for ventilation upon openings at the top of the coach, in the form of blinds, similar to the way that some of our railroad cars are ventilated.



Our cut illustrates a plan patented by Thos Silver, of Philadelphia, Pa, June 13th, 1854, and which has been very thoroughly tested in several omnibus lines of that city.

The window sash, A, is beveled at its lower part, and the frame, B, is also correspondently beveled. The frame of the window bulges a little at C, so as to form a bearing for the sash, and the upper part of the sash touches also at D. When the window is closed, therefore, it has three bearings, B, C and D, as shown in section, fig. 2. The bevels of A and B, combined with the other bearings, C D, cause the window to wedge itself firmly, so that it cannot rattle. The weight of the window frame is thus taken advantage of to make it rest firmly in its place, and the necessity of springs wedges or other mechanical device is avoided, and the window frame is left free to be moved when desired, &c.

It is no more expensive to arrange windows on the above plan than upon any other plain method. Any wear upon the bearings can have a tendency only to improve the solidity or firmness of the frame in its seat. The wearing of gutters in the coach body is also prevented.

The improvement is equally useful for all windows that are not balanced by weights, as in manufacturing establishments, where a rattling noise is frequently heard that far exceeds that caused by the machinery, to say nothing of the destruction of glass. For further information address J. W. Harrison, 92 Chesnut street, Philadelphia, Pa.

Notes on Patented Inventions.—No. 16.

Cider Wine.—The wine made from cider at present, however good, is certainly inferior in astronomical relationship to that for which a patent was granted to Jacob Hugus, of Hempfield, Pa., in 1832. It was made by adding five gallons of very strong cider brandy to the barrel of sweet cider, which in the specification is stated "must be made during the decrease of the moon." The moon, we believe, does not influence the planting of potatoes, the making of cider wine, &c., so much as it used to do, when intelligence was less universal.

Self-Igniting Segars.—In April, 1834, John March, of New York, was granted a patent for attaching any of the chemical compounds that ignite by friction to the end of segars, to which was also added a piece of tinder. Such segars had their day. How immeasurably inferior is this plan of lighting segars in comparison with the lucifer match, now so common.

Bronchitis Cure.—Peter Faulkner, of Rockville, Pa., secured a patent in September, 1843, for an elixir to cure that troublesome and somewhat wide-spread disease, bronchitis. It is made as follows:—Two pounds of dried sweet apple bark are boiled in six gallons of soft water until it is reduced to one gallon, and then strained. To this are added 2 1-2 oz. of pulverized jalap, half a pound of nitrate of potass, one pint of spirits of camphor, and half a pound of loaf sugar. All these are well incorporated together, and bottled for use. Mr. Faulkner stated he had discovered that this elixir was excellent, not only for bronchitis, but sore throats, asthma, croup, whooping cough, and dyspepsia. A teaspoonful of this elixir is enough for a dose.

In the last number of the *Medical Reporter.* (Richmond, Va.,) Jackson's "Pectoral Syrup" is described by F. Sterns, pharmaceutist, Detroit, Mich., and he states it to be a favorite prescription with many physicians where he resides. It is composed of one ounce of ipecacuanha, seneka, 3 ounces, refined sugar 2 pounds, sulphate or muriate of morphia, 16 grains, oil of sasafras, 10 miniums. These make two pints of syrup. The ipecacuanha in coarse powder is steeped for fourteen days in a pint of diluted alcohol. The seneka is digested in water, 10 oz., alcohol, 2 oz., at a heat of 104° Fah., for six hours, then strained. This is mixed with the ipecacuanha extract and the other drugs, and the sugar dissolved in them at a gentle heat. From one to two teaspoonfuls is a maximum dose

Burning Fluids.—Many persons suppose that camphene is an explosive burning fluid, but this is a mistake. Camphene is simply rectified spirits of turpentine; its vapor mixed with a certain portion of air, is, no doubt, explosive, but not the fluid. The common burning fluids—known by the names of phosgene, &c.—which burn with a clear flame, emit but little smoke, and are so cleanly to use in lamps, are composed of alcohol and turpentine. Were it not that this hydro-carbon compound fluid is so volatile, so liable to assume the gaseous state, become saturated with the oxygen of the atmosphere and thereby rendered dangerously explosive, it would be preferred to all other fluids for artificial illumination. But dangerous though it is, and in spite of the great number of accidents which have taken place from its use, it goes on superseding all kinds of oils with astonishing rapidity.

To Isaiah Jennings, of New York City, belongs the credit of introducing this burning fluid. In October, 1830, he obtained his first patent. It is described as follows:—To produce light from alcohol and spirits of turpentine, mix unequal parts of them and agitate for a short time; then let them stand a while, when the alcohol will be found combined with a small quantity of turpentine, forming about the eighth part of the mixture. This is drawn off, and is ready for use in lamps with or without wicks. He used wire wicks in some of his early lamps. He claimed a mixture of alcohol and turpentine applied to common lamps.

In March, 1834, Samuel Casey, of Lebanon, Me., was granted a patent for a burning fluid compound, composed of one gallon of alcohol, one pint of turpentine, and half a pound of camphor. This fluid will, no doubt, emit a very pleasant smell, but it has no advantage over common alcohol and turpentine.

In December, 1839, Mr. Jennings secured another patent for a mixture of the oil of whiskey, (fusel oil) spirits of turpentine, and alcohol. The benefits of using the fusel oil is stated to be the saving of alcohol. The use of fusel oil is rather to be avoided, we think

The use of alcohol turpentine burning fluids in common lamps is now public property.—About 9 parts of alcohol to one of turpentine makes a good mixture. They are shaken together, and the clear liquor alone employed. The vessels and lamps containing such a fluid should be kept perfectly air-tight and in a cool place. With care, this fluid may be employed with safety.

[For the Scientific American.]

To Make Ink.

Seeing in your column "To Correspondents" your answer to a communication from C. C., of Ohio, I send you the enclosed circular, which I received from Detroit, in answer to a note "enclosing stamp." If C. C. wishes a good ink let him try this.

1. Take three ounces of best galls and 1-4 of an ounce of cloves, bruise to a coarse powder, and boil over a slow fire in a pint of water for a few hours, stirring frequently; then set aside in a covered vessel till cold; then strain, and supply the place of the water lost by evaporation till it measures one pint. 2. Now dissolve 1 ounce and 1 dram of best copperas in 1-2 pint of water and strain; then dissolve 5 drams of gum arabic in 1-2 pint of water, and add to the copperas solution and 1-2 pint of good cider vinegar. Now mix 1 and 2, and add 1 ounce of liquid blue. Use soft water Let your ink be exposed to the air and you will have a black ink. T. E. K.

Boston, July, 1856.

The Expected Comet.

M. Babinet, a member of the Academy of Sciences, Paris, says that the comet expected the present year is one of the largest comets described by Europeans or Chinese observers, and that its periodical course is three hundred years. It was seen the last time in the year 1556, shining with extraordinaay brilliancy. M. Boune, an eminent astronomer, assisted by Mr. Hind, has gone over all the calculations pertaining to the comet's re-appearance—making a new estimate of the separate and combined actions of all the planets upon this comet, of three hundred years, the result of which is, that in 1858—or somewhere between 1856 and 1860—it will again be visible.

Glass Ballot Box.

A transparent ballot box, made of glass, has been on exhibition at the Mayor's Office, this city. Every ballot, as it is deposited, can be seen. Its object is to prevent *ballot stuffing*, or the introduction of false votes. With corrupt inspectors of election no ballot box is safe.

Southern Wheat.

Some of the planters in the State of Mississippi devoted themselves this season to the cultivation of wheat for the first time, and with great success. Twenty-five barrels of flour, made from Mississippi wheat, were recently sold in Natchez, and were pronounced the best ever sold in that city.

TO CORRESPONDENTS.

R. N., of N. Y.—Our correspondent's inquiries had reference entirely to the manufacture of artificial stone, and according to your own statement our answer was correct.

A. A. W., of C. W.—We really would not like to recommend or suggest the plan you propose for curing hydrophobia.

C. B., of N. Y.—The pump you submit only differs from the common stomach pumps in the use of the rubber globe, and we consider it not patentable.

A. Warnock, of Galt, Canada West—Wishes to purchase a press for packing hay for a foreign market.

W. T., of Conn.—The employment of bags to be attracted to vessels under water and then inflated is not new or patentable. If your way of constructing the bags is new, or your method of attaching them, those features could be patented. But you do not describe them, and therefore we cannot determine as to their novelty.

J. B., of Ind.—Beware of all advertisements where such trememdous inducements are offered for so small a consideration. It is not very probable that $1000 is to be made by inclosing a 3 cent stamp to the advertiser: and we are surprised that any one should ever take the trouble to answer such an advertisement unless out of curiosity, expecting to be humbugged. Bees are the only genuine honey makers that work without pay that we ever heard of; and we should look with suspicion on all other kinds.

M. & W., of N. Y.—We are not a branch of the U. S. Patent Office, but we prepare and obtain a very large proportion of all the patents granted by this government.

W F. B., of Iowa—Silver's marine governor patent embraces its application to the regulation of every description of machinery, wind, water, or steam. We published an engraving of this invention only a short time since. By reference to the list of claims in our paper under date of his patent you will see his claim. $1 received, and, under the circumstances, credited to your subscription.

E. B. of N. Y.—Yours will be attended to in our next number.

C. L., of Conn.—All daguerreotype pictures are imperfect: we have noticed the defect you mention. Could you not try the plane convex lens.

R. T. L., of Ohio—You can obtain straight magnets from J. Pike, philosophical instrument maker, Broadway, this city. Communicate with him by letter.

J. H. L.—of Ky.—You must make some more experiments with flavoring matters. You have received all the information we can give you on the subject.

W. H. C., of N. Y.—We do not know that the "Engineer" publishers have any agency in this country. We receive it direct from the publication office in London.

M. G. C., of Pa.—We should be most happy to enlighten you on the subject of raising poultry, but the matter is not in our line. No doubt C. M. Saxton & Co., Agricultural Book Publishers, this city, could furnish you with just such information as you desire.

J. H., of Ind.—Messrs. Wagner & Imlay, of Philadelphia, patented a brick machine in 1852 or 3, which covers all the features described in your letter, and considerable more. Try again.

H. R. H., of Ill.—Henry Rodgers, of Addison, Vt., took out a patent on a pump, in 1854, which was operated by the weight of cattle upon a platform while standing at the well. Your proposition, if we understand your explanation, embodies the same principle. J. A. Ayres, of Hartford, Conn., took out a patent about six months ago, for operating buckets in the same manner. See No. 33, present Vol. SCI. AM.

W. A. W., of S. C.—We never engage in the sale of patents. J. A. Knight & Co., 334 Broadway do an extensive business in that line.

J. T., of Phila.—Liquid caoutchouc as drawn from the tree, cannot, so far as we know, be obtained in this city, nor can we direct you to any person who could supply you with it.

J. P. Storer, of Brunswick, Me., wishes to purchase a mill for grinding bones for manure.

P., Phila.—There are several dovetailing machines.—From what you say, the improvement you have in view strikes us as a valuable one.

Money received at the SCIENTIFIC AMERICAN Office on account of Patent Office business for the week ending Saturday, July 26, 1856:—

W. W. H., of N. H., $25; C. W. Jr., of N. Y., $30; D. H., of Pa., $30; J. B. E., of N. Y., $10; J. W., of Ind., $30; S. McL., of N. Y., $55; S. A., of ——, $20; G. J. S., of Pa., $30; N. B. S., of Ind., $650; R. V. J., of Pa., $55; M. & B., of N. Y., $25; O. H. P., of O., $30; D. T., of Ark., $10; B. & T., of N. Y., $30; J. H. K., of N. Y., $30; G. W. B., of N. Y., $60; T. B., of N. Y. $250; H. Q. H. & Co., of N. Y., $250; J. B., of Ill., $25; S. G., of Pa., $10; T. W. C., of N. Y., $30; T. C. C., of N. Y., $25; J. C. B., of Conn., $60; G. C. M., of N. J., $27: G. S., of N. Y., $25; E. R., of O., $20; J. D. H., of Ill., $25; L. R., of Mass., $30; A. H. C., of N. Y., $30; H. B. H., of O., $55; B. & C., of N. Y., $30; C. O. & C., of M. T., $30; H. G., Jr., of N. Y., $27; N. S. S., of N. Y., $27; L. B. F., of N. Y., $26; H. L., of N. Y., $55; M. G. H., of N. Y., $25; P. B., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 26:—

N. B. S. of Ind.; J. T. D., of N. Y.; W. W. H. of N. H.; M. G. H. of N. Y.; M. & B., of N. Y.; J. C. G., of O.; J. D. H. of Ill.; M. E., of N. Y.; S. McL., of N. Y.; P. B., of N. Y.; J. B., of Ill.; E. R. of O.; G. S. of N. Y.; G. C. H., of N. J.; H. G., Jr., of N. Y.; N. S. S. of N. Y.; G. H. of Ill.; H. L., of N. Y.; L. B. F. of N. Y.

Important Items.

NEW EDITION OF THE PATENT LAWS.—We have delayed for some months the issue of another edition of the present Patent Laws in the expectation that Congress would most certainly, at this Session, make some simple amendments to them – such as are earnestly sought for by inventors and patentees. As there is now little hope that any such changes will be made during the session, we have issued a complete edition of the laws, including the regulations of the Patent Office—copies of which can be had for 12 1-2 cents each. If any of our readers, who have ordered the laws and regulations, and have not received them, they will be promptly supplied upon renewing their requests by letter.

TO THE UNFORTUNATE—We are no longer able to supply the following back numbers of the present volume Nos. 6, 12, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 27, 28, 29, 30, 34, 35, and 37. Such numbers as we have to furnish, are gratuitously supplied to such subscribers as failed to receive them; and we would take occasion to state, that any person failing to receive their paper regularly, will confer a favor by notifying us of the fact. Missing numbers should be ordered early, to insure their receipt, as an entire edition is often exhausted within ten days after the date of publication.

MODELS—We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and date of patent when known, and enclosing $1 as fees for copying.

RECEIPTS—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Science and Art.

The Effect of Color upon Health.

From several years' observations in rooms of various sizes used as manufacturing rooms, and occupied by females for twelve hours per day, I found that the workers who occupied those rooms which had large windows with large panes of glass in the four sides of the room, so that the sun's rays penetrated through the room during the whole day, were much more healthy than the workers who occupied rooms lighted from one side only, or rooms lighted through very small panes of glass. I observed another very singular fact, viz., that the workers who occupied one room were very cheerful and healthy, while the occupiers of another similar room, who were employed on the same kind of work, were all inclined to melancholy, and complained of pain in the forehead and eyes, and were often ill and unable to work. Upon examining the rooms in question, I found they were both equally well ventilated and lighted. I could not discover anything about the drainage of the premises that could affect the one room more than the other; but I observed that the room occupied by the cheerful workers was wholly whitewashed, and the room occupied by the melancholy workers was colored with *yellow ocher*. I had the yellow ocher washed off, and the walls and ceilings whitewashed. The workers ever after felt more cheerful and healthy. After making this discovery, I extended my observations to a number of smaller rooms and garrets, and found, without exception, that the occupiers of the white rooms were much more healthy than the occupiers of the yellow or buff-colored rooms; and wherever I succeeded in inducing the occupiers of the yellow rooms to change the color for whitewash, I always found a corresponding improvement in the health and spirits of the occupiers.

[The above is from a correspondent of the London *Builder*, and is very important information. We are framed with natures which are influenced by color; but the manner we are influenced is not yet sufficiently understood. Chevrieul has investigated the laws of color relating to contrast, so as to arrange different colors in a correct manner to produce the most pleasing effect upon the vision; but we know very little of the laws relating to health and color. These laws can only be discovered by observation and experiment. We hope this subject will meet with more general attention and further investigation.

Wonderful Fountains.

The fountains of the Crystal Palace at Sydenham, Eng., are among the greatest wonders of the world. Two huge fountains throw vast jets of water to a hight of 280 feet. Two towers are erected on the highest part of the grounds, each 270 feet high; powerful engines take water from artesian wells 575 feet deep, and throw it to the top of these towers, whence it descends and feeds the fountains. The total weight of each tower, when the fountains are playing, is over three thousand tuns.

Besides the two colossal fountains, there are ten lesser ones, that throw jets one hundred feet high, as well as almost countless smaller fountains, in addition to water-temples, cascades, &c., and several thousand small jets, requiring 120,000 gallons of water per minute to supply them. Ten miles of iron pipes are required to conduct the water that feeds these works. The sight, when they are all in full play, is said to be magnificent. The spectator sees before him a group of basins, arranged on terraces that rise above each other, the Crystal Palace building crowning the summit; and each of these basins seems alive with jets flashing in the sunshine, and crossing and recrossing each other, while cascades diversify the scene, and the two colossal fountains shoot to a dizzy hight.

It is said that there is not an ounce of that famous perfume, pure *otto of roses*, sold in our country. It is adulterated before it is sent from Egypt—the country which furnishes the almost entire supply.

Growth of Mineral Earths.

E. Merriam states that the floor of the Mammoth Cave in Kentucky is covered by three or four feet of dirt, yielding about three pounds of nitrate of lime to the bushel; and such is the condition of the atmosphere of the cave that the dirt, after being lixivated and thrown back from the hoppers in the cave, re-impregnates as fully in three years as it was before lixiviation. Thus the supply is inexhaustible. Glauber and epsom salts are abundant in some distant apartments of the cave. Pebbles, chalcedony, including geodes lined with crystals, flints, fibrous sulphate of lime, crystalized carbonate of lime, oolite, chalk, red and gray ocher, calcareous spar, gypsum and soda are found in the cave.

Plate Glass.

The Albany *Knickerbocker* states that the plate glass manufactured by the American Plate Glass Company of this city is the invention of John P. Pepper, of Albany. This is really news to the scientific world. Plate glass was manufactured before Mr. Pepper was in existence; and the plate glass of the company referred to is made at their works, East Brooklyn, by Joseph Dickson, the introducer, but not the inventor of the art.

Artificial Stone.

Fifteen parts of clean sand, five of plaster of Paris, and three of lime, mixed with animal blood, and made into a thick paste, then molded into any form, becomes very hard, and if not exposed to the weather, will endure as well as natural stone, which it resembles in appearance.

IMPROVEMENT IN CARRIAGES.

FIG. 1.

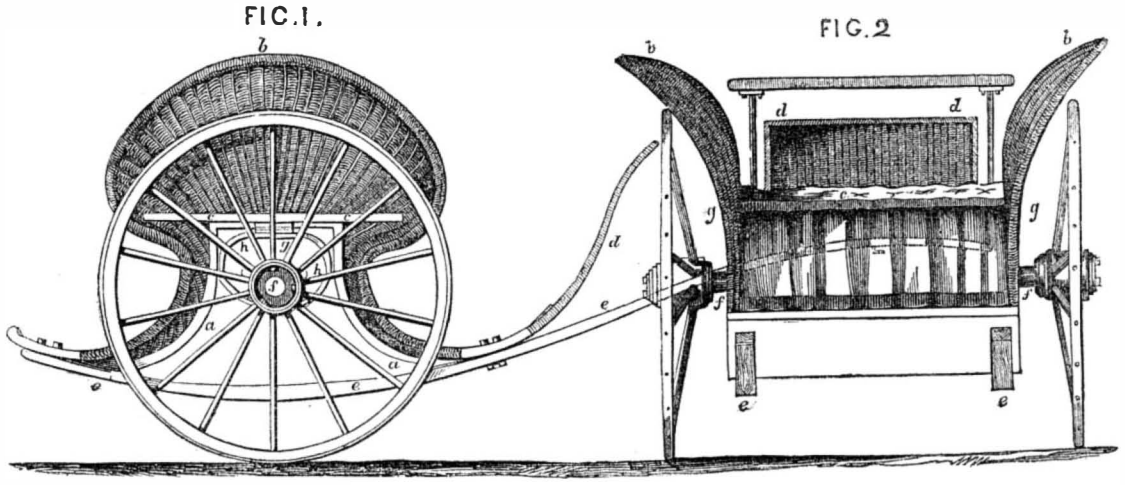


FIG. 2

Improved Carriage

This invention, which has reference to an improved construction of vehicle, denominated the "kophilon" cart or carriage, consists of a light, open, frame-work body, provided with sides or wings extending over and above the tyres or upper portions of the wheels in an arched or shell-like form, the axles being secured through the intervention of double C springs to the underneath fixings of the seat in such a manner as to work freely within the center of the open frame of the body.

Fig. 1 represents a side elevation of a two-wheeled vehicle of the improved construction; fig. 2 a back or end elevation. *a a* is the open frame-work body, *b b* arched or shell-like sides or wings; *c c* is a top framing or seat, capable of being adjusted to the accommodation of two or more persons; *d d* is a dash board; *e e* are shafts attached to the lower framing, extending throughout the entire length of the body in such a manner that the line of draught may be below the axis of the wheels upon which the carriage runs; *f* is the axle; *g g* are blocks securing the springs to the underneath framing of the seat; *h h* are the springs. Either single or double bodied vehicles may be constructed on the principle above described, but for two-wheeled carriages an arrangement of seats is preferred, by which the persons may be conveniently seated in couples, back to back, and the sides or wings, where great lightness is required, may be formed of wicker work.—[London Engineer.

A New Sugar Plant.

Mr. Wray, an American gentleman residing in Paris, in a communication to the London *Times*, describes a new plant of the sugar-cane species called the "Imphee," the culture of which seems destined to bring about a revolution in the production of sugar. A Chinese variety of this plant called the "Shurgo" has been recently cultivated with some success in French Algeria. But a far more valuable species is the "Zulu-Kafir," of which Mr. Wray has fifteen varieties, collected in Caffer-land. Sugar manufactured from these plants was first imported into Europe in the beginning of 1854. The plants vary in time of growth from seventy-five to one hundred and thirty days, the most precious requiring only from seventy-five to ninety days to arrive at maturity, others, again, ninety to one hundred days, and so on up to the gigantic "Bim-bis-chu-a-pa," which requires one hundred and thirty days, and reaches a hight of thirteen feet. The Chinese kind, even in the luxuriant soil and climate of Algeria, does not ripen in less than one hundred and sixty days, and is less full of juice than the Caffer variety.

Palace Discovered Underground.

The remains of a magnificent palace have been discovered under a garden in the Isle of Capri. It must not only have been splendid in structure, but in situation, commanding a view of the Bay of Palermo and Vaples.—Marble of various colors were used in its construction, and all its apartments, so far as the examinations have proceeded, are of the most spacious and elegant character. The doorway is twelve feet wide, and of white marble, and the rooms are paved in mosaic, while the walls are painted red, blue. yellow, &c. Several coins of the reign of Augussus and Tiberias have been found, some of them disclosing the curious fact that the coins of one reign were at times recoined in another.

Frazee's Saw Mill.

As we have had a number of inquiries respecting the above named saw mill, which we could not heretofore answer. We now state, for the information of all inquirers, that one of these mills, has recently been put up at Hoboken, near this city, for the express purpose of showing its construction and operations. It is operated by a small steam engine; and its parts, which are few and simple, can be easily disengaged, taken down, and put together, so as to render it capable of being removed without much trouble from place to place, as the timber is sawed up around it, in order to save the trouble and expense of drawing logs a great distance to it. The saw is upright, and is not strained by either gate or spring, but plays between guides—the upper end unconnected, the lower end secured to a lever, uniting it with the eccentric wrist pin on a driving fly wheel.

Manufacture of Chinese Porcelain.

Jerome Nickels, the Paris correspondent of Silliman's *Journal of Science*, gives a brief description of a work recently published in that city on the above named art, by M. Julien. The Chinese made porcelain as early as 185 B. C. The porcelain paste used by the Chinese is a mixture of kaolin, which is infusible in the furnace, being merely baked. The glazing of the famous Sevres' porcelain, of France, is of pure flint, which is more difficult to fuse than the Chinese glazing.

Literary Notices.

AGRICULTURAL JOURNALS—No better evidence could be produced to show the amount of intelligence among our farmers than the great number of publications now issued devoted to agricultural interests. We can remember when there were not over three such journals in the whole country. Now every State has one, at least, and some of the older States support several. We are led to make this statement upon receiving a copy of the Wisconsin Farmer, handed to us by Mr. Powers, one of its editors. This journal is issued monthly at $1 per annum It is handsomely got up, and contains a large amount o useful and instructive matter in reference to the farm and garden. We are glad to know that it has a good circulation.

HAND-RAILING SIMPLIFIED—The above work, by Robert Riddell, of Philadelphia, which has been noticed in our columns, has been re-published in London, and has received the commendation of the "London Builder." It was submitted to the examination of a London stair-builder, who cordially agrees with the editor of the Builder in the use of the trammel, as proposed by Mr. Riddell in his work, instead of the ordinary method of lines; he considers this of great importance to the trade.

MUSPRATT'S CHEMISTRY—Four other numbers of the above-named work—making nine published—have just been issued by Russell & Brothers, publishers, Boston, and 290 Broadway, this city. It really appears to be the most complete encyclopedia of chemistry yet attempted to be published. Number 7 contains a steel plate likeness of Berzelius, and No. 9 a very fine one of Dr. Dalton, the author of the atomic theory of matter. When finished, this work will be a very complete chemical library in itself, written up to the present state of the science. It is beautifully printed and admirably illustrated with engravings.