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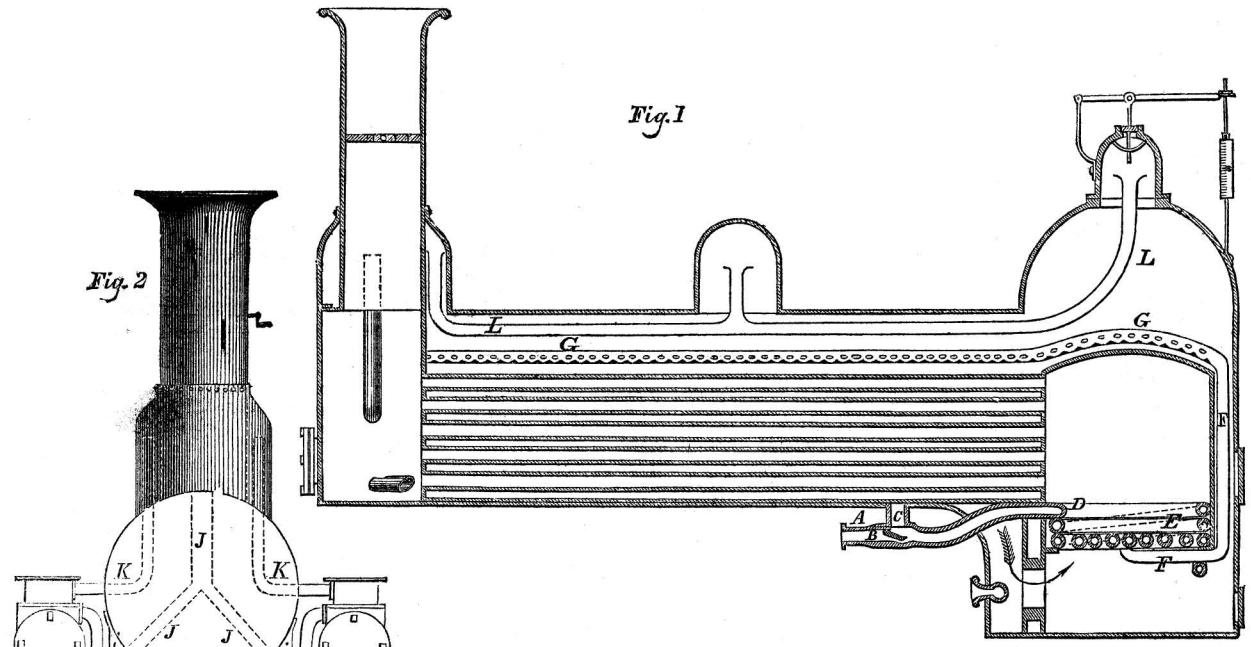
CHAMPION'S STEAM BOILER IMPROVEMENTS.



Steam Boilers and Furnaces.

The annexed engravings are views of improvements in steam boilers and furnaces, for which a patent was granted to Thomas Champion, of Washington, D. C., on the 26th of last month.

Figure 1 is a vertical longitudinal section, showing the feed water arrangement, and fig. 2 is a transverse end view, showing the cylinders with their attachments—furnace and blast—applied to a locomotive, but the improvements are applicable to all boilers.

In figure 1 the new mode of feeding the water and keeping up a rapid circulation by a sprinkler, is shown.

A is a pipe to which the feed pump or supply pipe is attached. B is a valve in said pipe, hinged above at its junction with pipe C, which intersects with the boiler at or near the bottom, or with a leg or water space. D are coils, or the extension of pipe A, round the furnace, to preserve the plates, forming sides, or a basket, for the coal above the grate; after which the coils may be still further extended into a scroll grate, E, the convolutions of which regularly wind from the outer coils or sides to the center, from which point the pipe, F, starts, passing into the water space, and up above the fire box or flues, where it enters the sprinkler, G, which extends through the length of the boiler, above the furnace and tubes or flues. The sprinkler is pierced with a series of small apertures at the proper angles to sprinkle any part or the whole of the surface where the fire acts on the opposite sides of the metal, when bare of water. While the pump is feeding, or the supply passing into the boiler, the valve, B, will rise by the pressure under it, closing the pipe, C, and the feed water will pass on through the coils, grate, tube, and sprinkler, entering the boiler highly heated; but should the pump fail to supply, the steam pressure in the boiler and pipe, C, will open the valve, B, and admit the water from the boiler into the coils, and the intense heat to which these coils are subjected causes the hot water and vapors to pass upwards with rapidity through the sprinkler, spraying the plates, whether the pump is feeding or not.

Mr. Champion says, "so long as any water remains in the boiler above the valve, C, the sprinkling of the fire surface plates will be continuous, and thus all the water may be evaporated, the steam exhausted, and the engine stopped, without any explosion taking place, or even injuring the boiler, provided the fire be extinguished as soon as the engine shows signs of stopping.

By this mode of feeding and circulating water in steam boilers, the amount of water need not be more than one third, and the evaporation thus rendered far more effective—very important items in speed and expense in both steamboats and locomotives. In building new boilers they need not be more than one-half the usual size, as the whole boiler may be enveloped in the furnace or flames, except a small dome or drum to take dry steam from.

The mode of feeding cold water through the coils round next to the fire box plates, admirably prevents their destruction, by the intense heat that they are otherwise subjected to, and the jointless scroll grate saves much heat and loss in replacing burnt grate bars. By this mode of returning the heat by the blast under the boilers of locomotives, more surface is exposed to the action of the fire."

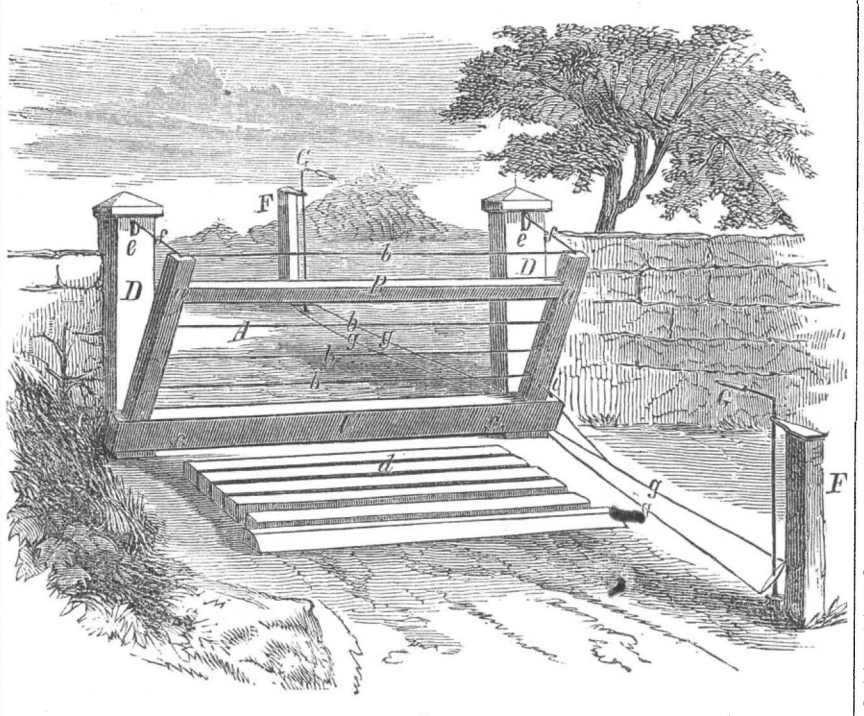
For locomotives he also arranges two triangular flues, H, H, as shown in fig, 2, parallel with the center of the sides and bottom of the horizontal part of the boiler, for the return of the unconsumed heat, smoke, and gas, to the ash pit beneath the grate, that may escape through the tubes to the smoke box, from which it will be forced along the two triangular passages by the exhaust steam alone from the pipes, *i i*, which exhausts and commingles with the products of combustion, becoming part and parcel thereof, small supplies of fresh air being admitted from an inlet pipe between each puff of the exhaust, in small jets, to the fire.

Additional pipes, J J, are attached to the pipes, *i i*, for the escape of a portion of the exhaust steam into the atmosphere, through a valve, should it exert too much force on the fire when running at the greatest speed. There is a pipe conveying dry steam from the main and the center, some to the dome or space that surrounds the stack, from which the steam pipes, K K, supply the cylinders. M is a damper to close the opening or openings between the triangular flues and ash pit while the fire is starting and steam rising, after which the damper in the chimney and the ash pit doors must be closed, and the damper, M, opened; this saves the heat of the fuel and exhaust steam.

These inventions are presented to the attention of those interested in improvements steam engine boilers, applied to locomotives, steamboats, and for manufacturing purposes.

More information may be obtained by letter addressed to the patentee, at Washington.

CONVENIENT FARM GATE.

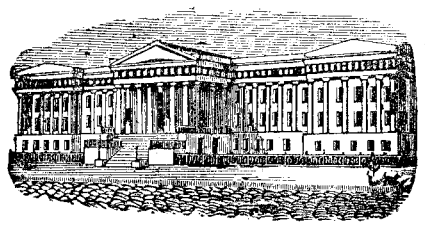


The accompanying engraving is a perspective view of an improved farm gate, for which a patent was granted to Henry B. Lumm, of Sandusky, Ohio, on the 17th of May last. This gate is so constructed and arranged, that it may be opened or closed by a person in a carriage, or on horseback. It is very simple in its construction, and operates well. D D are the two posts of the gate; they are hollow, and have an opening near the cap, in each, in which is secured a grooved pulley, *e e*; *f f* are cords or chains secured to the top of the side bars, *a a*, and passing over the pulleys, *e e*, into the hollow posts. To the inner ends of these cords are secured balance weights, so that when the gate is up or closed, these hold it plumb in position, keeping the gate, A, closed. This gate has a lower bar, C, which is hinged at *c c*, to the sill between the two posts. It therefore folds upward when closed, and downwards when open. The gate is formed with the side bars, *a a*, the lower bar, C, and top bar, B, and strong smaller bars, *b b b*. When folded down, these bars are received in the openings made for them in the roadway, *d*. When the gate is open, therefore, it lies flat between the roadway sleepers, *b*, which act as fenders, and the carriage drives over it. F F are posts a little distance from the gate on each side; G G are handles to upright levers, which are connected at the middle to two strong crossing wires or iron rods, *g g*, which are secured at one side to a lug, *i*, on the lower bar, C. These levers turn or vibrate in their sockets, and by turning the handles, G G, to the one side or the other, the gate is opened and closed, folded up, and let down.

OPERATION: Allowing the gate to be in the position shown (closed), and a carriage going forward from the nigh side to pass through; the driver has but to take hold of the lever G, and push it forward, when the off wire, *g*, will be thrown further back, and draw the gate down flat between the sleepers of the roadway, *d*, and the carriage is allowed to proceed through the gate. When it arrives at the other side, the driver takes hold of the other handle G, and draws *it* to the one side, and thus changes the wires, *g*, and raises up the gate, closing it after him. This gate can be cheaply made, as it is very simple in construction and operation.

More information may be obtained respecting it, by letter addressed to the patentee.

Henry F. Snyder, of Williamsport, Pa., informs us that he has made, for some years, wood bearings for shafts of mills the same as those used for propellers in the British Navy, and recently illustrated in our columns.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office,

FOR THE WEEK ENDING JULY 10, 1855.

APPARATUS FOR DRAINING SUGAR—John Aspinal, of London, Eng. : I claim the combination of the porus carrier conveying a thin layer of the sugar to be drained, with the exhausted chamber, having apertures covered by the carrier, whereby the said sugar is exposed to atmospheric pressure while passing said apertures, in the manner and for the purposes set forth.

VENTILATING RAILROAD CARS—Charles Atwood, of Birmingham, Conn. : I claim the method described of constructing, attaching, and using the flexible connections, when constructed, attached, and used substantially as set forth.

I also claim the combination of the flexible connections with any suitable method of receiving the air at the front end of the tender.

RAISING AND LOWERING THE CUTTERS OF HARVESTERS —J. F. Barrett, of North Granville. N. Y. : I claim connecting the front of the frame with a lever, M, arranged and operated substantially as set forth, for effecting the elevation of the cutters, for the passage of obstacles by the driver's foot, as specified.

PROCESSES FOR TREATING WOOL—Thomas Barrows, of Dedham, Mass. : I claim the application of niter or any of its equivalent salts, as set forth, to wool in a warm bath, for the purpose of restoring the wool when it has become changed, as well as for cleansing, softening, and preparing it so as to better adapt it to receive dyes, and being finished in fabrics.

AUTOMATIC MACHINE FOR TURNING SHIP SPARS, &C.—William Blackburn, of Jersey City, New Jersey: I claim, first, the combinnation and arrangement of the gears, N N, and d, with the self-adjusting rests, J J J, or mechanism substantially the same, for holding the stick whether straight or tapering, always firm and steady during the operation of turning.

Second, I claim the combination of the chisel holder, O, screw, Q, and gear, d, or mechanism equivalent thereto, for working the chisel holder simultaneously with the self-adjusting rests, substantially as set forth.

AIR AND STEAM ENGINES—F. B. Blanchard, of Waterville, Me. : I claim, as arranged with the boiler and stack of tubes, b b b, or their equivalents, the two chambers, C C', and their respective connection pipes, M M, such chambers, pipes, and stack of tubes being used for the purpose of regulating the temperature of the mixture of steam and gases, or producing results substantially as specified.

I also claim, in combination with the air pump and the furnace, the tubular air condenser, constructed substantially as described, and for the purpose of reducing the heat of the condensed air and relieving the air pump from back pressure, substantially as set forth.

I claim combining with the coal feeder the distributing valve, f. I do not claim hollow grates; but I claim arranging them on an angle, as described, in combination with arranging them with and directly under a full supplying tube or hopper, so that the fuel dropped out of the latter and upon the inclined grates, may be distributed by them, as set forth.

GAS REGULATORS—Saml W. Brown, of Lowell, Mass. : I claim the described lever, F, and valve, E, and the knife edged guides or points of support, P O and L L, for sustaining and guiding the lever, F, and valve, E, and the float, H, which are so arranged and operating by the pressure of gas within the float, H, as to apply great force to open the regulating valve, to overcome the sticking or adhesion of this valve to the top of the induction tube, B, by the gas tar, and then to continue to open or close it in proportion to the number of lights which are being regulated, and the pressure of the gas through the induction tube, B, so as to regulate the burners nicely and evenly, essentially in the manner and for the purposes set forth.

LUBRICATING COMPOUNDS—Eleazer Brown, Jr., of Binghampton, N. Y. : I claim the use and application of saltpeter combined with common hard soap, and fat salt pork, or any similar oleaginous animal substance, thereby forming an anti-frictional refrigerating lubricating compound, adapted to the purpose of lubricating the journals of railroad cars, locomotive engines, and also the journals of all kinds of machinery, as described.

SUN SHADE—S. N. Campbell, of Elgin, Ill. : I claim attaching a frame formed by the rods, a and e, to a head band, f, or to a cap, said frame being covered with any proper material, for the purpose set forth.

[Where is the individual whose daily occupation requires continual out-door exposure, that has not often, when sweltering at his toil on a hot summer's day, longed for relief from the scorching rays of a tropical sun—for some invention, which, while it afforded the much-needed protection, should nevertheless be as handy and convenient as the hat upon a man's head? Reader, this much-wished-for desideratum has been reached: Mr. S. N. Campbell, of Illinois—that State rich in all good productions—is the fortunate inventor. A grateful public will hasten, we do ubt not, to testify its admiration of his genius, by overwhelming him with orders for his new discovery. The invention is nothing more nor less than an umbrella hat. A suitable band of some soft material fits the head like a cap. To this band the frame of an ordinary sun-shade or light umbrella is attached and covered with silk in the usual manner. It presents a rather odd appearance when applied, and you would be apt to laugh if you saw your neighbor wearing one. But it affords complete protection and is substantial.]

SADDLE TREES—Daniel Campbell, of Washington, D. C. ; I do not claim uniting the side bars of a saddle-tree to the pommel and cantel by means of joints; but what I claim is the combination of the side bars, a a, to the pommel and cantel by means of the springs, b b, substantially in the manner and for the purpose set forth

DEVICE TO ALLOW ESCAPE OF WASTE WATER FROM PUMP BARREL—James E. Cronk, of Poughkeepsie, N Y. : I claim the valve, G, placed over the outlet passages, h, leading from the chambers, c, d, e, said valve being attached to a spring lever, H, which is acted upon by a sliding rod, I, arranged substantially as herein shown, so that said valve will be closed by merely grasping the handles, M M, of the sliding rod, I, and lever, D, in operating the pump. The valve being opened when the handles, M M, are freed from the hand by the action of the spring, J, as shown and described.

[The chief object of this invention is to prevent pumps from freezing up in winter, and its nature consists in connecting a lever with the lower valve of the pump, one end of the lever being made to project alongside of the brake in such a manner that the hand of the operator, in working the brake, will also grasp the lever and close the valve Whenever the operator's hand is removed, the valve, which is self operating, opens, and all surplus water immediately runs back. Some of the ordinary pumps are so arranged that by lifting high the brake, the lower valve can be opened and the surplus water discharged. But this is a tax on the memory, which is generally not very active at bed time—especially on cold winter nights. Hundreds of housekeepers and farmers, who have experienced the inconvenience of an ice-bound pump or a bursted pipe, will testify to this fact. They will also agree with us that an improvement like Mr. Cronk's, which infallibly does the business, without requiring any thinking, is a good one and well worthy of public attention. For further information address the patentee.]

STRAW CUTTERS—Lyman Clinton, of North Haven, Ct. : I do not claim as new placing knives or cutters on revolving winged arbors, irrespective of the peculiar arrangement herein shown, of the grooves or rebates at the edges of the wings.

But I claim placing knives or cutters, F, on the wings, b, of two revolving arbors or shaft, C C, when the edges of said wings have rebates, e, cut in them, so as to form lips or ledges, d, opposite the cutting edges of the knives or cutters, for the purpose as shown and described.

[One of the most common arrangements for straw cutters is the combination of a cylinder or arbor carrying lateral knives, with another cylinder covered with hide, the straw being clipped by passing between the knives and roller.—Mr. Clinton has avoided the disadvantages of this method, by a very ingenious arrangement which dispenses with the hide roller altogether, and substitutes in its place a second knife cylinder. The knives are straight and mounted on narrow shoulders or wings, and on the periphery of each wing, just behind each knife, there is a groove or rebate. The arbors are so geared that the knife edges come together in the act of revolving, like a pair of shears, and cut off the straw in the most perfect manner, as fast as it is fed in between them. The edge of the rebate, behind each knife, serves as a fulcrum on which the ends of the straw rest during the act of cutting. We consider this a valuable invention.]

SPARK ARRESTERS—Daniel Deshon, 2nd, of Whitestown, N Y. : I claim the arrangement of the deflector at the base of the pipe, and the curved flange, C, at the top, and the gauze or grating, D, at the side, as and for the purpose set forth.

LOOMS—R. M. Dill, of Holyoke, Mass, : I am aware that a slotted lever, operated by a pin in the lay, has been used in looms with movable shuttle boxes to hold the picker forward, and thereby stop the shuttle, and therefore I do not claim such.

But I claim a sliding bar attached to the lay, having projections adapted to each shuttle of a series at its outer end, and actuated from the inner end by a groove attached to the frame of the looms, substantially in the manner and for the purpose described.

BUCKLES—S. S. Hartshorn, of Orange, Conn. : I claim the improvement in the manufacture of buckles composed of but two pieces, when constructed substantially as described.

SHIP PUMP—S. J. Heard, of Boston, Mass : I claim the attachment, B, with its gate, G, operating in the manner and for the purpose set forth.

FASTENINGS FOR CARPETS—Enoch Jackman and E. G. Dunham, of Portland, Me. : We claim the method of securing carpets to floors by the arrangement and application of a socket and pin, or a plate and pin so applied, that the friction which is caused by the contraction of the carpet in canting the pin in the socket, may prevent the pin from slipping out of the socket; all in a manner substantially as set forth, so that carpets may be put down and taken up at pleasure with nothing but the hand.

SLIDE WRENCHES—B. F. Josleyn, of Worcester, Mass. : I do not claim making a slide wrench with one part or jaw sliding in the other, and surrounded by a nut, as such.

But I claim the nut, E, surrounding both parts of the jaws and long enough to give the required motion, with a thread on its inside, working in the edge of part B; the part A surrounding the part B, with the slot from C to D, as described, and the part B sliding in A, with a thread on its projecting edge to receive the nut, E, the whole arranged as described for the purposes set forth.

WASHING MACHINES—Wright Lancaster, of Harmony Township, Ind , I claim the floating rods, marked B, which are claimed to be an improvement on any former machine, for their freedom of action, their adaptation to the washing and cleansing of cloths by friction, without damage to the finest fabric, and the facility and speed with which this otherwise laborious process is performed by the use and application of this improvement.

And to all other parts of the above machine. I hereby disclaim all and any right to Letters Patent, and confine my claim especially to the aforesaid improvement, B, by the use of floating rods.

STEAM BOILERS—James Murphy, of New York City : I claim, in the construction of tubular steam boilers, in combination with beads or their equivalents on the tubes, grooving the surface of the tube sheets around or partly around the tube holes, to receive the metal of the tube when riveted, substantially as described, by means of which I am enabled more effectually to secure tight and strong joints, than by any other known method, as set forth.

PULVERIZING CLAY—John O'Neil, of Kingston, N. Y. : I claim the combination of the spring blades with the ridged surface of the cylinder against which they act substantially as and for the purpose set forth.

The combination of the aperture, J, in the depressed part of one or more of the ridges, f, with the spring blades which eject or force out the stones, substantially as set forth.

The combination of the cutting or pulverizing blades with the ridged surface of the cylinder, substantially as and for the purpose described.

The perforated or grated door and slide, for the purpose of regulating the discharge of tempered clay, as set forth.

CUTTING SCREWS ON BEDSTEADS—Orson Parkhurst and Daniel Bullock, of Cohoes, N. Y. : We claim arranging and operating the rotary cutters at an angle, so that we can traverse them parallel to the rail, and cut under the concave shoulder, substantially as described.

HARVESTERS—I. I. Hite, (assignor to W. F. Pagett,) of White Post, Va : I claim the combination of a raker's seat or stand, with McCormick's machine for cutting grain and gathering it upon a platform.

SAW SETS—F. A. Parker, of Shaftsbury, Vt. : I make no specific claims on the several parts of the saw set; but I claim the arrangement of the circular spring, C, the adjustable bar, A, and the connecting rods, R, substantially as specified.

ATTACHING CAST POINTS TO STEEL MOLD BOARDS OF PLOWS—Adonijah and Limeon Peacock, of Cincinnati, O. : We claim nothing new in the form of the solid cast metal point which we use, except the recess or shoulder at B C, fig. 1, for the purpose of attaching the steel part of the mold board to the cast point the balance of the point being similar in principle to the point of a cast mold board in common use, with all its bolts and screws.

We claim nothing new in the steel mold board which we use, except cutting the point off at B C, fig. 2, which is generally done at a distance of from six to eight inches from A, fig. 1, for the purpose of attaching to the cast point at B C.

We claim, in the manufacture of mold boards for plows, the use of a solid cast metal point, as described, in connection with steel or other wrought metal mold boards for plows when united therewith, as described, or in any way equivalent thereto, so as to form of the two parts a mold board, the greater part of whose surface is steel or other wrought metal, and the point or front part of solid cast metal, as a wearing point.

ROPE AND CORDAGE MACHINES—Samuel Pearson, Jr., and W. H. Gardner, of Roxbury, Mass : We do not claim the combination of a laying frame or flier, and a series of twisting fliers, each of which is made to operate one or more bobbins.

But we claim arranging two or more twisting fliers, or two or more series of the same, with the twisting axes of revolution of one of them in line with the others, respectively, and combining with each two fliers in line, hollow tubular necks, (for the reception and support of yarn or strands from the bobbin, as described,) and a contrivance or contrivances for either uniting or disconnecting such necks, so that the fliers of several series thereof, may be rotated together, or separately, as specified, in order that when small sizes of rope are to be made, only one twisting flier or series may be put in operation, and when larger sizes of rope are to be manufactured, two or more twisting fliers or series thereof, may be combined and put in action together, and with one laying flier, as specified.

And we claim the rope or strap, R, and its weight, T, or the equivalent thereof, in combination with the conical laying tops, K, and the bearing plate, y, the same being made to operate in manner and for the purpose of smoothing and finishing the rope, as described.

STAVE MACHINE—William Robinson, of Augusta, Geo. : I make no claim to the mere fastening of the riving knife to stationary springs, as shown in Stoddard's Shingle Machine, patented Dec. 7, 1852 Neither do I claim the vertically slotted movable knife bars shown in the patented shingle machine of Stevens and Kidder.

But I claim the horizontally slotted spring knife holders, a a, combined as specified, with the guides, h h', on the driver, C, so as to prevent the longitudinal movement of said holders during the riving operation, and cause the knife at the completion of the cut, to force the stave into the lower bed, and there hold it during the return stroke of the driver, as set forth.

VIBRATING STOP-WATER FOR SHIPS AND OTHER VESSELS—Stephen Saunders of South Kingston, R. I. : I claim the improvement produced by the combination of vibratory water stops, with the hulls of vessels, substantially as set forth.

COUNTER SCALES—Frederick Scheurer, of New York City : I claim the combination of two common beam scales, with their inner arms connected together by links, to which the scale to receive the weights is attached, and their outer arms being connected by a frame to carry a flat or straight scale, to place the goods on which are to be weighed, the whole being constructed in the manner and for the purpose substantially as described.

SELF-REGULATING WATER PACKING FOR PUMPS, &C. —Joseph Smart, of Philadelphia, Pennsylvania: I claim the application to pump caps of the stuffing boxes, so arranged one above the other, leaving a space or reservoir between them; also the manner of supplying the same with water by means of a small valve on the lower plate, or any other substantially the same, which will produce the intended effect, as described.

EXCAVATORS—S. W. Soule, of Oswego, N. Y. : I claim the frame, F, placed on the crank, D, of the axle or shaft, C, said frame being provided with buckets G G, one at each end, and inclosed by a box, E, provided with transverse pins or rods, c, substantially as shown for the purposes set forth.

[Perhaps a more ordinary cognomen for the above ingenious improvement would be that of a "Self-loading Cart," for in outward appearance it bears a resemblance to that highly useful vehicle—the common dirt cart, We presume that railroad contractors and laborers employed by them, will hail the advent of this contrivance with peculiar pleasure, since the slow, back-breaking process, of loading carts by the single shovelfull, will be done away with. Carts fitted with this invention have only to be driven across the spot where the sand lies, when they scoop up the dirt and load themselves voluntarily, "quicker than you can say Jack." The driver, meantime, need not leave his seat. An opening is made in the middle of the cart body, through which a narrow frame or wheel, somewhat like a steamboat paddle wheel, revolves. The ends of the spokes are furnished with scoops or shovels, and the wheel receives motion by a connection with the axle of the cart wheels. When the cart moves along, the scoops dig into the ground, underneath the cart, and bring up the dirt, depositing the same into the body of the vehicle with great rapidity. As soon as the cart is loaded the driver pulls a lever which throws the mechanism out of gear, and brings the scoopers away from the ground. For railroad grading, and many other purposes, this improvement seems admirable. It is intended to effect an important saving of manual labor. We commend it to public attention.]

RAILROAD DRAW BRIDGE SIGNALS.—Simeon L. Spafford, deceased, late of Philadelphia, Pa : I claim first, the combination of the sliding signal frame, C, the signal boards, A A A A, the signal lanterns, and the signal lever, G, arranged and operating in the manner and for the purpose substantially as described

Second, the combination of the sliding signal frame, C, the signal boards, A A A A, the signal lever, G, and the stop lock, *H*, arranged and operating in the manner and for the purpose substantially as described.

Third, the combination of the latch lever, *I*, the signal lever, G, and the sliding plate, *L M*, arranged and operating in the manner and for the purpose substantially as described.

CUTTING LEGS FOR PIANOS, TABLES, &C.—Andrew Stoeckel, of New York, N. Y. : I do not claim turning the stuff the required forms by means of patterns, for that has been previously done; neither do I claim the cutter disk, Q, nor the rotating cutters, (i) (i,)

But I claim the arrangement of the carriage, B, with the vibrating frame, C, attached, cutter disk Q, and cutters, (i) (i), on the shaft, ●, and drum, V, placed in the swinging frame, W, substantially as shown for the purpose set forth.

[It would be difficult, without illustrative engravings, to convey a proper idea of this invention, and therefore we shall not attempt it. We would state, in general terms, that the machine consists of a species of lathe, into which the log, from which the piano leg is to be turned, is placed, the first operation consisting in producing a plain round tapered leg, by means of a pattern. After this, without removing the leg from its centers or bearings, a series of planes are brought into operation, by means of peculiar mechanism, which shave off the stuff longitudinally, into hexagonal, octagonal, or any other angular form that may be desired. This invention abridges the labor of producing ornamental piano legs in a very remarkable degree. It will prove of importance to the manufacturers of that favorite musical instrument—the piano.]

GAUGE FOR STAIR RAILS —Charles M. Swany, of Richmond, Ind. : I do not claim the adjustable spring pencils separately, for they or their equivalents have been previously used.

But I claim the combination of the yielding or movable gauge, F, and adjustable spring pencils, D D, arranged as shown, and for the purpose set forth.

[This implement is intended to facilitate the workman in reducing the curved portions or "wreaths" of stair rails to an equal thickness. It resembles in appearance a common carpenter's gauge, the nature of the improvement consisting in rendering the fence or guide piece elastic, so that when the edges of the stuff to be gauged are angular, the fence will yield to the angle, and enable the operator to mark the gauge lines with convenience and precision. In its way, it is a very valuable improvement.]

INCREASING THE DRAFT IN LOCOMOTIVES.—Charles F. Thomas, of Taunton, Mass. : I do not claim combining with a chimney a tube for receiving a current of air, and injecting it into the chimney in order to improve its draft; nor do I claim so combining a steam eduction pipe with the chimney of a locomotive steam carriage, that the steam proceeding from the pipe may be caused to flow or rush into and up the chimney, so as to improve its draft; nor do I claim combining with the furnace or fireplace of a locomotive steam engine, an air-blast apparatus; nor do I claim merely arranging on the front of the chimney or flue of a locomotive steam carriage, a funnel or mouth for introducing air into the flue or chimney, and increasing its draft when the carriage is in motion, so as to carry the funnel or mouth against the air.

But I claim combining with an air receiving mouth, L, (arranged on the front ends of the locomotive steam carriage) the chimney, I, and smoke box, O, a secondary chimney, K, and a concentric or surrounding air passage, M, whereby when the steam carriage is in movement on the railway, a current of air may be caused to rush into the chimney, and around and above the mouth of the secondary chimney, and so as to aid in increasing the draft through the smoke tubes as specified

And in combination with the air deflector, T, the air passage, L, I claim one or more closing valves or doors to the former, a covered deflector, A, and one or more other mouths or openings, U U, and a closing contrivance or annular valve, V, the same being so applied as to enable the engine, either in moving forward or backward, to cause a current of air to enter its chimney, in manner and for the purpose as specified.

I also claim the manner in which the valve, C, is made and applied to the passage, M, and the secondary chimney, K, in order that it may not only serve to diminish the discharging mouth of said passage, but deflect or contract the tubular current of air passing out of it, and so as to improve the draft of the same.

BRICK PRESSES.—Stephen Ustick, of Philadelphia, Pa. : I claim first, combining the inner and outer peripheries of the rim of the revolving casting, shaped in segmental curves, eccentric with each other, and with the center of the shaft on which the casting is secured, in such relation to the upper and lower pistons for pressing the brick frames to which they are attached, and to the friction wheels in said frames, as to cause the said segmental surfaces to operate on the friction wheels in their revolutions between the same, after the manner of a wedge, and thus avoid all liability of strain on the shaft, B, arising from the resistance of the pressure exerted in pressing the bricks, by confining it to the body of metal between the two surfaces, substantially in the manner set forth.

Second, I claim forming the faces of the pistons of longitudinal and transverse plates, secured to the blocks or main body of the pistons by dove-tailed tongues or grooves, and wedges or gibs, and capable of being moved outward sidewise and endwise, so as to increase the area of the face of the pistons, in case of wear, as before described.

Third, I claim forming a narrow slit in the center or other part of the face of the piston, widening as it extends from the face, or not, as desired, and communicating with the outside of the pistons, through their ends, for allowing the air confined in the molds to escape during the pressing of the clay into bricks, as described.

OPEN STIRRUPS.—Orrin D. Vosmus, of Mt. Sterling, Ky. : I do not claim an open stirrup, as it is not new.

But I claim, in combination with an open stirrup, a shank piece or arm which passes between the stirrup straps, and is held in place by a loop or its equivalent substantially in the manner and for the purpose set forth.

MACHINES FOR MAKING BOLTS —Wm. E. Ward, of Port Chester, N. Y. : I claim in the before described machine, the mode of operation substantially as described, for drawing or rolling to a cylindrical shape the end of the stem of square bolts, by means of the segment rollers in combination with the jaws, or equivalent therefor, on the sliding and rotating mandrel operated by an arrangement of mechanism such as described, or any equivalent therefor.

I also claim the mode of operation, substantially as described, for taking the bolts from the feeding ways, or any equivalent device by which they may be supplied, and bring them to a horizontal, or nearly horizontal position, by means of a vibrating wing which enters back of the bolt to be separated, and then vibrates to bring it to a horizontal, or nearly horizontal position, in combination with the transferring pincers, or any equivalent therefor, by which they are transferred to the jaws, the required motion being imparted by an arrangement of mechanism substantially such as described, or any equivalent therefor.

SEWING MACHINES.—Jerome B. Woodruff, of Washington, D. C. : I claim first, the arrangement of the needle shuttle and feeding arms, the connecting rod, H, and pulley, P, with its wrist pin (d), substantially in the manner and for the purpose set forth.

Second, I claim the giving to the needle and the shuttle such relative range of vibration, that at the time the shuttle is forward, the needle is raised, and the tension upon the stitch the greatest, the distance between the eye of the needle and the eye of the shuttle, and the stitch, will be equal, thereby more effectually ensuring an equal draft on both threads of the stitch within the body of the cloth.

Third, I claim the combination of the feeding pawl with the feeding lever, to raise and lower the teeth of the pawl, and the inclined plane to vibrate them laterally, in the manner and for the purpose set forth.

Fourth, I claim the combination with the feeding pawl of the eccentric pin, X, a pointer, Z, and an index or dial graduated and numbered, whereby the machine can be adjusted to vary the length of the stitches, at will, to any required number to the inch, and the number which the machine, as adjusted, will make, can at any time be observed, without measurement or calculation, whether it be in operation or not.

MACHINE FOR BORING POSTS AND POINTING RAILS.—John Young, of C, of Middletown, Md : I do not claim any of the separate devices set forth.

But I claim the reversible clamp and feed carriage, in combination with the boring apparatus, substantially as set forth, for the purposes mentioned.

SELF-REGULATING WINDMILL.—John Elgar, of Baltimore, Md. : I claim a double set of wings attached to the arm of a wind wheel, and to act in the following manner: One set, those that are *behind* the arms in the line of rotation, are stationary in their plane, except in a storm, and furnish the means of a *constant* power; while the other set, those which are forward of the arms in the rotation of the wheel, are controlled by the wind and springs, so as to act automatically, even in the varying impulse of the wind, and relieving it from danger of injury in a storm, substantially as described.

MANUFACTURING PLATE GLASS FROM CYLINDERS.—Wm. P. Walter, of Philadelphia, Pa. : I am aware that cylinders of glass have been fashioned into an oblong shape, with two flat sides, by forcing them between two pieces of wood, in a heated state, also by holding them upon bars or rods in the kiln or furnace, and by "percelars" in the hands of the workman, as in flint glass works. The putting of glass cylinders into an oblong shape is not new. This I do not claim. The stretching of glass is not new. Cylinder glass is stretched by the blower when he swings the hot glass in the operation of making the cylinder. Glass is also stretched in the operation of making glass tubes. Stretching glass I do not claim.

But I claim the forming of cylinder glass into an oblong shape, with two flat sides, by my improved flattening instrument.

GRAIN AND GRASS HARVESTERS.—Abner Whitely, of Clark County, Ohio : I claim first, so constructing the machine that when the joint between the tongue and frame is flexible, the latter may, while the team is in motion, be raised and lowered in a sector of a circle whose center is the finger bar, and thereby enable the operator at once to change the angle of cut, and this I claim irrespective of the mechanical device by which the motion is produced.

Second, the frame lever, C C, provided with means of fixing its position at will, and linked as described to the main frame, C C, in combination with the guiding slotted plate, S S, as a means, when used with the flexible joint between the tongue and frame (for mowing), of oscillating the frame about the finger bar as a center, and thus varying the angle of cut; and, when used with a rigid joint (for reaping), of raising and depressing the frame and finger bar.

Third, the combination with the link, G G, of the receding curve in the bottom of the slots in plates, S S, in which the axis of the driving wheel plays, or of their equivalents respectively, for the purpose of enabling the driver to throw the cutter pinion out of gear, substantially as described.

Fourth, suspending the main frame, C C, and its attachments from the driving shaft, substantially in the manner set forth and described, in order that, whether used in reaping or mowing, the driving wheel and the finger bar may be independently adjustable, and the wheel may rise over obstructions, or descend into depressions, without altering the angle of cut, or otherwise affecting the cutters.

SELF-REGULATING WINDMILL.—Benj. Frantz [assignor to John Phillips], of Waynesborough, Pa. : I claim making a direct use of the wind itself for governing windmills, by means of the wind lever, K, or its equivalent, connecting rods, m m, collar I, and strap rods, e e, in combination with the wings, G G, substantially in the manner set forth.

PNEUMATIC SPRINGS.—James F. Heyward [assignor to "The Delaware Air Spring Manufacturing Co."], of Wilmington, Del. : I claim the method of rendering available the elasticity of aeriform bodies, in the construction of springs, bumpers, &c., by employing a fluid piston to effect their compression, substantially as described.

RE-ISSUES.

IMPROVEMENT IN MACHINERY FOR FELTING HAT BODIES. —Wm. Fuzzard, of Charlestown, Mass. Original Patent dated Jan. 13, 1855: I am aware that rollers and aprons, or belts have been used in machinery for felting, but not under an organization having a mode of operation analagous to the machine described, and therefore I do not claim broadly the use of rollers, or rollers and an apron, except under an organization substantially such as is described, and resulting in the mode of operation specified.

I claim giving the felting action by means of the moving apron, arranged substantially as specified, to receive the article or articles to be felted within the folds thereof, and there confined and compressed by the rollers, or their equivalent, acting on the apron, and resulting in a mode of operation substantially as described.

CORN PLANTERS.—Samuel Malone, of Tremont, Ill. Original Patent dated Jan. 3, 1854 : I claim the peculiar construction of the horizontal slide, G, made reversible from end to end, for the purpose of varying the quantity of seed planted, in the manner set forth.

[In this re-issue the inventor says:—The nature of my invention consists, first, in combining a horizontal feeding slide with the vertical discharging slide or plunger, so that they shall both be operated at the same time by one movement of the hand. By this combination, which I believe never was made prior to my invention, I am enabled to have a machine which will supply seed from the hopper into the conducting tubes at every upward movement of the vertical slide, and drop and discharge seed into the ground at every downward movement of the same, and thus save one half the time and labor expended in planting a hill of corn with the hand planters used prior to my invention. It consists, second, in providing two tubes, two handles, and two

sets of slides arranged and operating in combination, whereby I am enabled to produce a double hand planting machine, which is capable of planting two hills of corn at one operation, and which can be operated with the same, if not with greater ease and convenience than the single hand planters in use. It consists, third, in providing the horizontal slide with two holes—one larger than the other, and making it capable of being reversed, so that the quantity of grain may be lessened orincreased." Mr. Malone's invention was fully illustrated and described on page 288, Vol. 9, Sci. Am. It is well known as being one of the best inventions of the kind in use. The present re-issue will doubtless give additional value to the patent.]

Portable Grinding Mill.—Lyman Scott, of St. Louis, Mo. Original Patent dated May 16, 1854: I claim the alternate deep and shallow sections of furrows upon the main grinding surface of the burr, for the purpose of distributing the material over said surface, and preventing a surfeit or clogging upon any one point of said grinding surface, substantially as described.

I claim the method of supporting the shell, and adjusting the burr therein, by means of the lower brfdge-tree, grooved legs, sockets and adjusting screw rods, when said legs served the double purpose of supports to the shell, and guides to the bridge-tree, as described.

I claim the arrangement of driver, G, arms, I, burr, B, and shell, A, constructed as herein shown and described, so that the several operations of breaking the ear, cracking the cob, and grinding into meal, may be all conducted without straining the mill, or power applied substantially as described.

Endless Chain Horse Power.—George Westinghouse, of Central Bridge, N. Y. Original Patent dated June 13, 1854: I wish it to be understood that the mode of gearing, by internal gear and pinion, I have adopted, is old, and has long been in use, but the peculiar construction of the parts of it is my invention.

Therefore, I claim the construction and attachment of the gearing, substantially as set forth, having a hub or pinion permanently affixed on the ends of each shaft, to either of which, the center caps or hubs of either the driving or band wheels fit and are fastened.

Foreign Editorial Correspondence.—No. 7.

Paris Exhibition, &c.

Paris, June 21, 1855.

I regret that up to this time I have been obliged, for the want of something better to do, to waste my time upon the mere surface work of the Exhibition, instead of treating the more important subjects that belong to the manufacturing and mechanical interests. The backward state of affairs in the machinery department, together with the reckless confusion every where visible, have prevented me from attempting any analysis of such subjects as are most interesting to the readers of the Scientific American.—The past two weeks have wrought great changes in the condition of the machinery to be exhibited. and now, instead of a confused mass of boxes and scattered iron muscle, intermixed with bricks and mortar, order begins to appear, and most of the machines stand sleeping and motionless under their canvas covering, and only need the lash of the motive power to enable them to exhibit their true metal. The spectacle will be interesting, as most of the machinery will be actively employed in producing articles for which they are intended, and thus will be gathered under one roof, almost the entire details of manufacturing industry. I already recognize many old and familiar faces, imposingly put forward "to work revolutions," inventions that have many times been buried in the United States within the past ten years. Thus, one exhibitor is constantly attracting an eager crowd to witness the working of a model of an endless chain propeller—an invention reaching so far back into the early history of propelling and steam navigation as to be almost lost in the maze of obscurity. He announces his intention to create a complete revolution in the system of navigation. It would not be difficult to pile up a long catalogue of similar *antiques*, but this would be neither useful nor interesting. So far as I can judge, the display of machinery will be more useful than really novel, yet I hope to discover some new inventions, a notice of which will confer some benefit upon the mechanical industry of the United States. I wish now, very briefly, to place upon record some facts concerning the management of the Exhibition, for the future justification of the American Commissioners who are now here devoting their time to the interests of their countrymen. I indicated in my first letter, that the United States Department would be a failure, and have since given my reasons for it, therefore it is unnecessary to elaborate this point now so generally understood. Under the administration of General Morin, the Director-in-chief, many concessions were made, and justly so, to the United States, and a very large and valuable space was awarded to them, under the hope that a good contribution would be the result. This was an error, one that ought not to have been committed after the experience of the London Exhibition. Upon the day set for the opening of the palace, it was evident that the indulgent grant of space made to the United States was a gross error, and measures were taken to gradually cede to the Imperial Commission such portions of the generous allotment as could not be made use of, and under the written assurances of the Commissioner of Classification that all articles sent from the States would be received at any time during the Exhibition, letters were sent out to exhibitors to send on their articles without delay, as there was plenty of space for them, and ample time to place their articles upon exhibition. Suddenly, with one grand flourish of Prince Napoleon's baton of authority, Gen. Morin, and also M. Fresco, Commissioner of Classification, are wheeled out of the ranks, and new men appointed in their stead. Now comes a new order of things. The new broom commences, and is expected to make a clean sweep. The American Commissioners are attacked, and a mighty flurry of dust and confusion envelopes them. They are charged with laxity in management, and are warned that if the space is not occupied within so many hours, that the Imperial Commission would take violent possession of it. No regard is paid to the concessions made to the United States by the former manager—these are set at naught, and while its Commissioners were waiting with ghastly countenances for the arrival of boxes,—some by Havre, some by the Orkney Islands, and some by way of Adrianople,—the Imperial Commissioner comes down bang upon them, with the cry that their "admirable patience" is clean gone, and that every square foot of unoccupied space, after a certain hour of the day, would be taken possession of by them, as they could no longer forbear. The plea of former concessions is in vain, and our pledges to exhibitors are treated with contempt, and, as good as their word, we were suddenly hustled out, and compelled to bivouac upon a more dense, and less freely ventilated ground.

Therefore, the United States exhibitors who may decide to send additional contributions, will find upon their arrival, the doors closed against them. This may appear severe, and it is in one point of view, but the interests of the Exhibition have suffered from the tardy manner in which United States exhibitors have sent forward their contributions, and it is but fair now to submit with becoming decency to the efforts of the Imperial Commission, to protect the interests of the Exhibition from suffering. Goods from the United States have been straggling along from all points in the compass, solely from the carelessness of their contributors in not observing the necessary directions for their packing; and I may mention as one evidence of this fact, that a case of goods was traced to Aix la Chapelle, a city on the eastern frontier of Prussia. The exhibitor traveled eleven days in the "annex" searching for his box, and must have made, at least, a distance of one hundred miles in his peregrinations. Many exhibitors have sent their goods without any regard to care in packing, and others have made no arrangement for having them exhibited at all, unless they expect the Commissioners to procure suitable cases and attend to fitting up the stalls at their own expense, which of course they are wholly unwilling to do.

It is now a matter of regret to every American in Paris, that any efforts have been made to have a distinct Exhibition from the United States, as failure—a word that grates harsh upon the ear of our people—stares us full in the face, and no efforts, however herculean, can now prevent a result so mortifyingly unpleasant.

With this brief statement of the results that menace us, I will quit the murky details of the Exhibiton, and endeavor in future, now that the field begins to become clear, to find something more useful and congenial to dwell upon.

S. H. W.

Model Steam Engines.

Some of the most beautiful working model steam engines that we have ever had the pleasure of seeing, are manufactured by Mr. H. Schlarbaum, cor. Reade street and Broadway, New York. A complete model engine and boiler, standing 6 or 8 inches high, costs only $8. The engine is on the oscillating plan. All one has to do, to set it in operation, is to pour in a little water and light a small spirit lamp beneath the boiler. In a few minutes the little joker begins to snort and puff—on a very small scale, to be sure—while the diminutive fly wheel revolves with lightning rapidity. There is no danger of explosion. They reflect much credit upon the skill of Mr. S. as a model maker.

War News.

On the 18th of June, the Allied army before Sevastopol sustained a terrible defeat in attempting to take the fortress Redan. Their loss, in killed and wounded, was over five thousand, and among the slain were several of their bravest and most prominent commanders.

A correspondent of the *National Intelligencer* says, that the French army of reserve, as it was called, that was near Constantinople, has been forwarded to Sevastopol, but a new army of reserve will be sent immediately from France consisting of 45,000 to 50,000 men, which will be entrenched near Constantinople, and will not be sent to Sevastopol except in case of great necessity. The full force before that place will be kept up by other troops, which will be forwarded direct from Toulon, Marseilles and Algeria.

Every thing indicates that they do not intend to quit Constantinople, where they are constructing buildings on the most extensive scale and of very massive nature, which will require years to complete. These structures are intended for defence and protection as well as for accommodations for troops and material. The French will take the lion's share by holding the European coast of Turkey, while the English may take the Asiatic side of the Bosphorus.

The sufferings of the Allies have recommenced. There is even a want of water, and under a burning sun to which they are exposed, the cholera has re-appeared, and several distinguished officers have died of it. Typhus and other fevers, with dysentery, are all very prevalent, and opthalmia is also making progress among them.

Various American clipper ships have been embarking troops, materiel, &c., and most of them have sailed from Toulon and Marseilles. The *Great Republic* was towed by the *Navarino*, of 100 guns, a screw three-decker; the *Queen of Clippers* by the steam frigate *Eldorado*. The *Monarch of the Sea*, the *Gauntlet*, the *Nonpareil*, and the *Alleghanian*, all went under their own canvas. The above six vessels took on the aggregate 1,900 horses, 2,800 troops, and more than 10,000 tuns of military stores and supplies, beside what was on board the two ships of war, both of which were loaded down with similar articles. One of the above vessels had on board 500 tuns of bombs.

It is reported that the owners of the ex-hot air but now steam ship *Ericsson*, expect to sell or charter her to the allies.

The St. Petersburgh *Naval Magazine* publishes a report from Dr. Peragoff, chief army surgeon at Sevastopol, in which it is said that never in the history of surgery were such frightful wounds known as those which came under the treatment of the Russian surgeons during the bombardment which commenced April 9th, and caused by the 65-pounder shot and 200-pound shell of the besiegers. On the 9th, besides small operations of surgery, 300 amputations were performed in only three of the operating rooms. In the chief depot of wounded, ten surgeons were continuously occupied, and a large assembly room was four times successively filled with wounded.

Another Great Russian Railway.

To show how great are the exertions of Russia in the present war, it is now said that they have, by the most incredible exertions, so far advanced with a railroad from Moscow to Perekop, that it will be completed and in full operation in the autumn. This will enable them to pour into the Crimea soldiers and supplies without limit. The French are so well aware of this that they are fortifying Kamiesch, and will render it the strongest fortress in Europe, and sooner or later they will probably retire to it. Perekop is about 800 miles south from Moscow, and stands at the junction of the Crimean Peninsula with the main land. It is 100 miles north of Sevastopol. When the above railroad is complete, Russia will have a continuous track of over 1200 miles in length, extending north and south through her dominions, from St. Petersburgh, on the Gulf of Finland, to the shores of the Black Sea. At no distant day, St. Petersburgh and Constantinople will doubtless be connected by railroad.

The Heat of Steam.

Our neighbor of the *Railroad Advocate* is getting facetious. He compares himself to Perkins' steam gun charged with steam of 360,400°, and thinks he ought to make some impression upon our *brass*, but as he has confessed that this high temperature of his represents *nothing*, his volleys can neither do good nor harm to our brazen walls. Our cotemporary, like ourselves, may possess a considerable quantity of such a useful and respectable metal as *brass*, but he lays the lacquer on so awfully thick, it is difficult to perceive the metal, especially when it gets up to 360,400°.

Mechanical Trade Reviving.

The Boston *Traveler* states that the business in the machine shops of that city is beginning to revive, and that manufactures are returning to life and activity. A good fall business is anticipated, as orders are coming in rapidly. One locomotive firm has recently received an order for the building of 40 new engines. We are glad to hear this.

Terrible Steamboat Explosion.

The steamboat *Lexington* exploded her boilers on the 30th ult., near Rome, on the Ohio river. Both boilers burst with a terrific noise, in the night. Four persons were killed and twenty-five wounded. This is the first disastrous explosion since the new law went into force. We hope the Inspectors in that district will give the case a thorough sifting.

Balloon Traveling.

Mr. S. Rangard made a successful balloon ascension from Springfield, Mass., July 4. He ascended 15,000 feet, passed several thunder-storms below, and landed in 30 minuses at New Salem—air-line distance traveled, 30 miles, being at a velocity of a mile a minute. When shall we have trains of balloon cars, starting and arriving at fixed hours.

Horse Flesh vs. Steam Power.

A grand horse race took place on the Centreville course, near New York, on the 12th inst. A racing mare called *Lady Fulton*, was entered to trot a distance of 20 miles within one hour, for a wager of $5000. The animal was driven in harness, and won the bet by accomplishing the distance in 59 minutes and 55 seconds. Rapid traveling and close shaving that.

The Voyage of the Ericsson.

The *North Star* arrived at this port on Friday last week, and reported that she met the *Ericsson* on the 30th ult., 45 miles from Havre. The old *Washington* beat her one day. Without any cargo, the *Ericsson* has taken 14½ days to make the voyage.

Patent Office Promotion..

Mr. A. B. Little, late law clerk in the Patent Office, has been promoted to a principal Examinership, and will devote his labors to the class of Miscellaneous Inventions. Mr. L. is a man of discrimination and experience. We are glad to record the fact of his elevation.

The New York and Erie Railroad and the New York Central Railroad have, it is said, set up opposition, the Erie having put down its fare to attract passengers. There is quite an ill feeling in existence between the managers of the two railroads.

Ship building in Portsmouth, Me, appears to be brisk; eight large ships are now on the stocks.

New Inventions.

American Ship for Russia.

The *European Times* contains a ridiculous account of an 84 gun screw ship building in this city for the Emperor of Russia, and which is to cost $840,000. No such ship is building here. The person who propagated the story is no doubt some wag who did so for the purpose of witnessing a display of bile by Uncle John, and he has been gratified, for the British papers talk fiercely of keeping a sharp look out for it by the Baltic Fleet, and not to let it slip as did the *Samuel Appleton*, with its cargo of rifles.

Fruit Preservatory.

The accompanying engravings represent the improved fruit ice house of W. D. Parker, of this city, for which a patent was granted on the 19th of last month.

Figure 1 is a longitudinal vertical section of the fruit preservatory, and fig. 2 is a transverse vertical section. The object of this invention is principally the perfect preservation of fruit in all seasons, by keeping it at a low and equal temperature, free from moisture and injurious gases.

The house may be of any proper form.—The sides of it, *a a*, are double, with a space, *b*, of suitable width being allowed between them. The roof is also formed of two thicknesses, *c c*, space, *d*, being allowed between them. The spaces, *b d*, are filled or well packed with sawdust, *e*, or other non-conducting substance. A short distance above the bottom, *f*, of the ice house, there is a slatted floor, *g*. The slats rest upon proper supports, *h*, and the space between the slats and the bottom, *f*, forms an ice chamber. Just below the upper ends of the sides, *a a*, there is secured a double inclined flooring, *i i*, the highest point of which is at the center of the house, and inclining downwards towards each side, as shown clearly in fig. 2, and directly underneath this flooring there is placed a wire screen, *j*, a space being allowed between the screen and flooring. This space is filled with charcoal, *k*, or other proper absorbent.

Over the highest point of the flooring, *i i*, there is placed a narrow horizontal flooring, *l*, which has upright sides, *m m*, and through the flooring, *l*, and screen, *j*, there are made holes or traps, *n*, which may be provided with doors, *n'*. At one end of the house at the upper part, there is a door, *o*. The sides of the house are kept firm, or prevented from spreading under the thrust or pressure of the roof by means of the rods, *p*.

The space or ice chamber between the slatted floor, *g*, and the bottom, *f*, of the ice house is filled with ice, and ice is also placed on the inclined flooring, *i i*, on the outer sides of the upright sides, *m m*, of the flooring, *l*, fig. 2.

The articles to be preserved are hoisted up to the door, *o*, and placed upon the flooring, *l*, and lowered down through the holes or traps, *n*, upon the slatted floor, *g*, and as the holes or traps extend along the whole length of the flooring, *l*, the house may be filled or the articles stored within the house in a proper manner.

When the door, *o*, is open, the doors, *n'*, are closed, and when the flooring, *l*, is covered, the door, *o*, is closed, and the doors, *n'*, opened, and the articles lowered into the house by not keeping the door, *o*, and the doors, *n'*, open at the same time, the lower chamber is kept free from atmospheric influence and change of temperature. The sawdust, or other non-conducting filling, *e*, together with the ice, keeps the house at a low temperature, the filling keeping the interior of the house free from atmospheric influence. The charcoal and other absorbent keeps the house dry by absorbing moisture and gas—vapor arising from the articles to be preserved.

The house is placed entirely above the ground, and may be constructed of any proper material—wood would probably be preferable. In case of the melting of the ice, proper pipes may be inserted to carry away the water, and the floors on which the ice is placed may be properly inclined for that purpose.

Different absorbents, *k*, may be used, according to the nature of the articles to be preserved. The absorbents may be readily removed and adjusted upon the screen, *j*, the screen being movable, or arranged in any proper way.

The construction of ice houses above ground, with double walls, filled between with straw, &c., is not new, and is not claimed as such in this patent, but the general arrangement and combination of parts for the more perfect preservation of fruit, &c., in all seasons, by keeping the temperature of the house low by the ice and non-conconducting walls, also maintaining a dry and pure atmosphere inside, by the use of the absorbents described. The great feature of this invention is the prevention of incipient decomposition and decay of fruit, which can be accomplished in a low and dry atmosphere—the conditions fulfilled by this fruit preservatory. The value and importance of a perfect house for preserving fruit during all seasons, in such a country as ours, cannot be over-estimated. Millions of dollars' worth of good fruit are lost every year by its early decay, owing to the want of a proper method of preserving it; to save all this, and to have finely flavored fruit at all times of the year, especially during spring and summer, is the great object of this improvement. More information may be obtained by letter addressed to the patentee

IMPROVED FRUIT ICE HOUSE.

Fig. 1

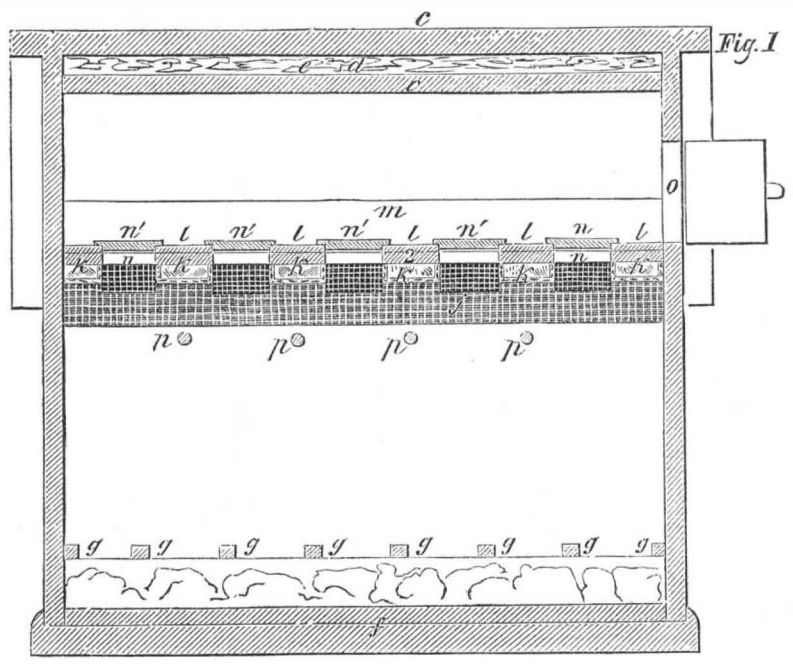
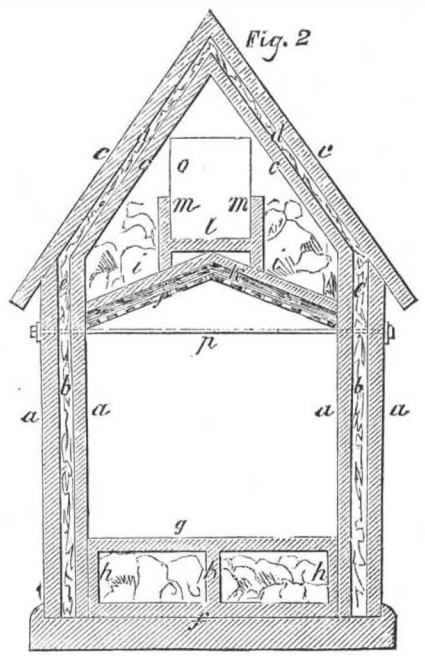


Fig. 2

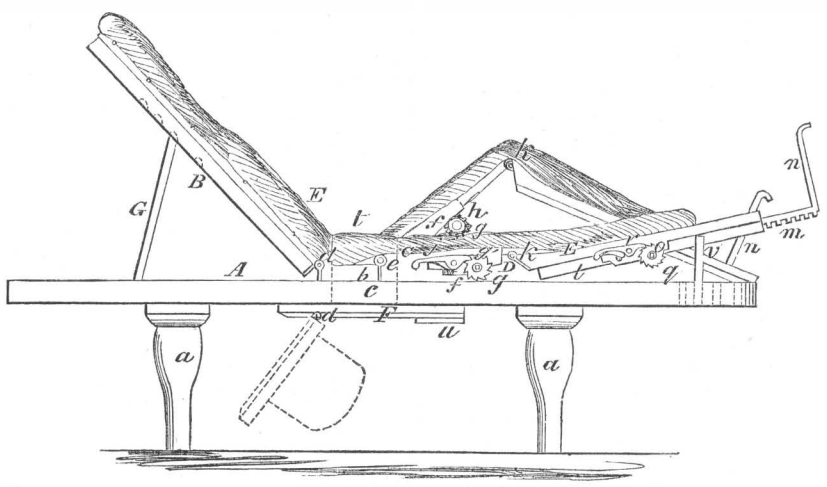


INVALID'S ADJUSTABLE BEDSTEAD.

The accompanying figure represents a side view of an adjustable bedstead, to be used in the treatment of fractures of the lower limbs, for which a patent was granted to E. Daniels, of Union, Broome Co., N. Y., on the 29th of May last.

The nature of the invention consists in the peculiar construction of the bedstead, by which the position of the patient may be changed as often as desired without any annoyance or inconvenience, and the lower limbs operated upon with great facility,

A represents a platform of a suitable length and width, and supported by four legs, *a*. To the upper surface of the platform, A, there is attached a cross-piece, *b*, at a short distance from the center, and directly through the center of the platform there is made a circular hole or aperture, *c*. (in dotted lines,) said hole or aperture having a semicircular cut or recess in the cross-piece, *b*. To the straight edge of the cross-piece, *b*, there is attached by hinges, *d*, a board, B, termed the body plane, the width of which may correspond with that of the platform, A, and when depressed its outer edge may be even with the edge of the platform. The sides of the body plane may be elevated or raised so as to be slightly concave on its outer surface. To the opposite side or edge of the cross-piece, *b*, and at each side of the semicircular cut or recess formed by the hole or



aperture, *c*, there are are attached by hinges, *e*, cast-iron plates, C C, which are provided with grooves or ways at their sides, in or between which plates, D D, work. The plates, C C, D D, (one on each side,) are thigh planes, and their edges are provided with easr or projections, *f*, in which a shaft, *g*, works, one on each plate, C. On each shaft, *g*, there is placed a pinion, which gears into a rack attached to the under surface of the plates, D D. At one end of the shafts, *g*, there are attached ratchets, *g'*, in which pawls, *j*, catch, said pawls being attached to the sides of the plates, C C. To the outer edges of the plates, D D, there are attached by hinges, *k*, boards, E, E; these boards are leg planes, and are slightly raised at their inner ends, where they are connected to the plates, D, in order to form depressions to correspond to the shape of the legs. To the under surface of each leg plane there is attached a metal guide, *l*, in which a rack, *m*, works, the outer ends of the racks have bars, *n*, projecting from them at right angles. To each leg plane there is attached a shaft, *o*, having a pinion, *p*, and ratchet, *q*, thereon, and pawls, *r*, which catch into the ratchets, *q*, the pawls being attached to the outer sides of the leg planes. The pinions gear into the racks, *m*. The body plane, and also the thigh and leg planes, are covered by a suitable mattress, E', with a hole made through it to correspond with the hole or aperture, *c*, in the platform, A, and the mattress is slit or cut to cover properly the thigh and leg planes without interfering with their movements. To the underside of the platform, A, there is attached by hinges a flap, F, having a stuffed pad or cushion, *t*, upon it, which, when the flap, F, is secured upward against the platform, A, fits in the hole or aperture, *c*, in the platform and mattress. The flap is secured against the platform by a button, *u*.

Operation—Suppose a person has his thigh fractured, the body, thigh, and leg planes are placed in a horizontal position, and the patient is placed thereon. The body plane, B, is then elevated as much as comfort may dictate, and secured at the proper point by a prop, G. The knees are then elevated upon the thigh and leg planes, by raising them, the latter being secured by pins, the leg being brought at a right angle with the thigh, or more, if desirable. A crank may then be applied to the shaft, *g*, of the thigh plane on which the injured part rests, and the plate, D, of said plane is forced outward or extending by the rack and pinion until the fracture is reduced, and the plate, D, is held at the proper point by the pawl and ratchet. Now suppose there is a fracture of the same leg below the knee, the ankle is secured to the bar, *n*, at the end of the rack, *m*, and by the use of the pinion, *o*, and rack, *m*, the same result described in the thigh fracture is obtained. The counter extending force, while the thigh is operated upon, is the weight of the body, and that for the leg is found in the under side of the thigh in its angular relation to the leg. But if it should be necessary in certain cases to treat or operate upon the limb in an extended position, the plane on which the injured limb is placed is put in a horizontal position, and the opposite planes are raised up, forming an angle of 70° or 80°, the ankle of the injured limb being secured to the bar, *n*. The necessary extension is then made by moving out the plate, D, and the counter extension will be upon the opposite side of the pelvis, where it rests against the thigh plane. The advantages of this improvement are the extreme simplicity of its application, the accuracy with which the extension may be adjusted, an inch being divided on the ratchets into sixteen parts. No derangement of position is necessary to enable the patient to have every attention required in his case.

Will our hospital surgeons give this bedstead a careful attention, and have it introduced into all our hospitals as soon as possible? The most approved means should always be employed for facilitating surgical operations; there should be no vacilation about adopting such improvements.

More information may be obtained by letter addressed to the patentee.

Scientific American.

NEW YORK, JULY 21, 1855.

The Expense of Etherizing Congress.

It has been publicly announced that the recent failure of the late treasurer of the Eastern Railroad Co., Mass., to meet his liabilities—amounting to $207,000—is in a measure attributable to the money he advanced in order to obtain from Congress, in 1852 and 1853, a large appropriation for Dr. Morton, of Boston, as the discoverer of etherization. We have here some inkling of the large sum that was expended by Dr. Morton's friends in order to operate upon Congress in furtherance of his claims, which ended in a vote to grant $100,000 to C. T. Jackson, M. D., or W. T. G. Morton, or the heirs of H. Wells, upon fair judicial proof of original discovery. Dr. Morton went to Washington and petitioned for remuneration, as being the original discoverer of etherization. He employed counsel, got up testimony in support of his claims, and succeeded in getting committees appointed in both houses on his case. Perhaps he would have been successful in obtaining a large grant, but for the contesting of his claims by Dr. Jackson, and the friends of Dr. Wells, and the prominence given to the subject by the Boston *Medical and Surgical Journal*, and the SCIENTIFIC AMERICAN. We contended that no grant should be made by Congress but upon such judicial proof as would, in the eye of the law, fairly establish the just claims of the original discoverer. This was the conclusion at which Congress arrived, and which rendered all the efforts and expenditures of the claimants no better than water showered upon a rock. The day, we hope, has gone past forever, when one-sided claims for Congressional grants can be rushed through Congress by the mere force of money. The Argus-eyes of the press now peer into such practices and give note to the people of approaching danger. The opinion used to be somewhat common, that any private bill could be passed by Congress by the judicious expenditure of $30,000. Those who have tried within the past three years to act upon this principle—and the number is not small—respecting patent matters, have found themselves miserably mistaken. The failure of those interested in the Woodworth and Colt patents is evidence of the truth of this. We do not suppose, however, that those who have private interests to subserve in getting special bills passed by Congress, will renounce every effort to accomplish their objects. Such persons are not so easily deterred from prosecuting their plans. If they fail of success on one tack they will try it on another. If lobbying to get special bills passed at Washington, by giving tea parties and presents to members of Congress, has become a subject not only of too great expense, but of general scoffs and jeers, they will no doubt adopt some other course; and we have been creditably informed this will be the case with respect to the extension of the Woodworth patent. The plan is to visit the Members of Congress at their residences, by specialagents, before they go to Washington next winter. This is a bold idea, and really deserves a patent for its originality, but as it wants the essential element of usefulness, we hope it will be rejected.

Consuming Smoke in Furnaces.

We have recently received a number of letters requesting information respecting the best method of consuming the smoke of bituminous coal in furnaces. To all such we must say, that we have little more to offer than we presented in Vol. 7, SCIENTIFIC AMERICAN, which contains illustrations of a number of furnaces designed for burning the smoke of the coal; also Baker's furnace, on page 60, Vol. 9. By an act of Parliament, passed in Britain a few years since, it has been supposed by many that various new improvements have been introduced into furnaces, in that country, whereby not only a great saving in fuel has been effected, but the smoke nuisance also prevented. The proprietors of the London *Illustrated News*, after trying a number of smoke-consuming furnaces, have made the public statement that all of the furnaces had failed to be as economical of fuel as the old kind in which there were no smoke-consuming arrangements. One conclusion certainly arrived at, amounts to this, that every arrangement of furnaces, for mixing *cold* air with smoke, to give it the requisite quantity of oxygen for combustion, is wrong in principle, and wastes fuel. The only hopeful arrangement for the purpose of consuming smoke, is to mix heated air with it. The period when smoke escapes in dense volumes from a furnace, is at the time of mending the fire with fresh fuel; the mixture of hot air then with thesmoke would be advantageous. Perhaps the most simple and best way to ecocomize coal and consume the smoke, is by having a furnace constructed with a long mouth before the grate bars, which should have a perforated plate for its bottom, on which the fresh coals should be fed: this was Watts' simple furnace. The fresh fed coals are baked at the mouth of the grate, and the volatile products in smoke have to pass over the hot white coal on the bars, where they are ignited and all the smoke consumed. When the furnace has to be fed, the baked coal on the mouth plate is pushed forward on the grate bars, and the fresh coal is shoveled on the plate, there to be partially cooked before it is pushed forward into the fire. This simple method of constructing and feeding furnaces, may be very useful to many of our readers living in regions where bituminous coal is exclusively used for fuel.

By the *European Times*, of the 30th of last month—received after the above was penned—we find an abstract of the Report of the General Board of Health, which has been laid before the British Parliament, on this very subject. It states that there are great impediments in the way of carrying out the law to prevent smoke in furnaces, but attributes them mostly to the ignorance of furnace makers, and the obstinacy of practical men in adhering to one beaten track. It asserts that many have succeeded in consuming the smoke of their furnaces, and if it were accomplished by all, it would save millions' worth of fuel yearly. It does not specify any furnace for accomplishing the object, but recommends Arnott's fireplace for houses, which is thus described:

"The principle of the fireplace is that of supplying the fresh fuel at the bottom instead of heaping it on the top of the fire. The coal is in a box, nearly air-tight, below the fire; the tar vapors and gases produced by the decomposition of the coal pass through the incandescent fuel above, and burn on reaching the air, while fresh fuel is supplied by pushing up the coal from below. The draught is regulated by a single valve, and the useless escape of heated air up the chimney diminished. The fire burns quite free from smoke, the burnt air is safely carried away, and fuel economized. The invention may be easily adapted to existing fireplaces."

This plan is nearly the very same in principle as that we have recommended above for furnaces, for which Arnott's would not be suitable.

Fairmount Suspension Bridge.

C. Ellett, C. E., who built the Fairmount Suspension Bridge about fourteen years ago, wrote a letter two years since to the county Commissioners, upon whom is devolved its care and management, requesting them to examine the cables at the point of fastening which is hid from sight. The letter was delivered to the Commissioners, but no reply was made to the offer contained in it, viz., that he would make the examination. He has therefore directed public attention to the question, through the columns of the Philadelphia *Ledger*. He says, "it is time that such an examination was made, although the bridge was built very strong, yet it cannot get stronger, and is likely to deteriorate." For greater security, he suggests that a new cable be placed on each side of the bridge, and attached to an independent anchorage. We hope the people of Philadelphia will see to this suggestion, as we have seen accounts of the falling of a number of suspension bridges in different parts of our country within the past six months.

Trial of Dick's Self-Adjusting Railroad Switch.

It affords us sincere gratification when we hear of any person or company introducing any new or manifest improvement into their business; and we take pleasure in recording an instance of this kind with respect to the Buffalo and New York City railroad, which joins the New York aud Erie at Hornellsville, and runs to Buffalo, a distance of 91 miles. On this railroad thirty-two of the self-acting patent switches of James M. Dick, of Buffalo—which was illustrated on page 188, Vol. 8, SCIENTIFIC AMERICAN—have been placed, and seventeen of these were publicly and severely tested on the 27th ult. On the return of the party who witnessed the trial, they held a meeting at the Wadsworth House, Buffalo, when Judge Hawley, of Hornellsville, was called to the chair, Ald. Waters, of Buffalo, Secy., and the following resolutions, expressing the sense of the meeting, were adopted:

"Resolved, That the action of Dick's patent self-adjusting switch we have this day witnessed under every circumstance which it could be tried, has been of the most satisfactory character, and in our opinion establishes its superiority both for safety and utility, over that of any other switch now in use.

Resolved, That the running of the train this day at an average speed of more than forty miles per hour for the whole distance, with the switches open at every station, has satisfied us that where these switches are used, no accident can possibly occur from the carelessness of switch tenders.

Resolved, That the Buffalo and New York City railroad, in adopting this switch for use on their road, have exhibited a regard for the safety of the traveler worthy of all commendation, thereby adding another claim upon the confidence and support of the public.

Resolved, That A. C. Patchin, the lessee of the road, in authorizing this test to be made, has added another to the many proofs that no pains or expense will be spared by him to protect the lives of the traveling community."

Three other resolutions were passed at the meeting, but as they do not relate particularly to this test of the switch, we therefore omit them. To show the efficiency of this self-acting switch, we will mention some other things not embraced in these resolutions:

The train consisted of two cars drawn by a new and excellent locomotive named the *Alpha*, the first one built in the city of Buffalo (superintended by Edwin Rees.) It made the run from Hornellsville to Buffalo—91 miles—in two hours twenty-five minutes, making two stops amounting to fifteen minutes. On the road seventeen of the thirty-two self acting switches were set wrong, and three of these between Darien and Lancaster were passed over at the very high speed of 15 miles in 17 minutes. This was an extraordinary test, as was the whole of the other switches. The engine was driven by Myron E. Brown, the master mechanic, and the switches acted perfectly. It is not intended that these switches should be set wrong, but if so, the nature of their construction is to set themselves, by the locomotive acting on a sunk lever head at the side of the rail. This is placed about sixteen feet from the switch, and as soon as the front wheel of the engine treads on it, the switch is thrown instantaneously into place by a spring, so that the train cannot run off the track. The switches on which the trial was made had been in use all last winter, so that their ability to stand tear and wear have thus been put to the proof also. This switch was first tested in May, 1853, and a number of times between that and the 13th September last year, when it was tried at the high bridge of Portage, on an embankment forty feet high, and the train running at the speed of 35 miles per hour. The test was completely successful, hence the introduction since of so many of these switches on the above named railroad. We like to see our railroads exhibiting a proper spirit for ensuring greater safety to passengers, and consequently greater economy to themselves, by the adoption of such inventions.

Catalogue of Patents Issued.

We have received a pamphlet by J. S. Brown, of Washington, containing a list, with the titles, of the patents granted by our government, up to the beginning of this year. The pamphlet is somewhat interesting as presenting the number of patents issued in classes. On Air Engines—not one of which is in use—no less than twenty-one patents have been granted. On Baby Jumpers, again, we find that only one patent has been obtained, thus leaving some room for more improvements in teaching the young ones how to dance. No less than 148 patents have been granted on Steam Boilers, and yet, for all this, there are but few engineers who do not entertain the opinion that many improvements have yet to be made on them. The manufacture of India-rubber goods is but of recent date, and yet no less than forty-two patents have been obtained on such manufactures. Sewing Machines are of still more recent date, the first patent having been obtained in 1846, only nine years since; and yet no less than sixty patents have been granted on such machines. This affords evidence of their popularity and usefulness. The number of Water Wheel patents is somewhat high, being 327, but that of Washing Machines comes nearly up to it, being no less than 309. We have heard it asserted, a number of times, that agricultural inventions do not bear a like proportion with those relating to manufactures. This is a mistake: 111 patents have been granted for Grain and Grass Harvesters; 372 for Plows; 153 for Straw Cutters; 140 for Smut Machines; 163 Winnowing Machines, and 378 on Thrashing Machines. The highest numbers in classes belong to the agricultural department, with the exception of Stoves, on which the enormous number of 682 patents have been issued, and 478 for designs, making a total of 1160 patents on Stoves; and yet we must say that we have not yet seen a stove that suited us inall respects. *The* stove has yet to be invented. It is really instructive to look upon this large list of patents; it is a good record of the universal genius of our people.

A Tunnel under Niagara River.

It is proposed to dig a tunnel for a railroad track under the Niagara River, at Black Rock, near Buffalo, N. Y. Its length will be 2,400 feet, descent of grade on each side 75 feet per mile, cost $500,000. The river is 20 feet deep at the proposed locality, and its beds of solid limestone.

This is a grand idea, but to carry it out our Buffalo friends will find that it will cost nearer two than half a million of dollars. We hope, however, that this will not deter them from the attempt. Buffalo is an enterprising city.

The Harvest and Crops.

The accounts from every State in our country speak in the most glowing terms of the prospects of a harvest superior in productiveness to any that has ever preceded it.. The crops are not only larger in proportion to the acre, but the quantity of land under culture is at least one fourth greater than it was last year. All kinds of fruit promises an abundant yield. The peach and apple orchards every where are heavily laden with their fruitage. This is cheering, as it offers a prospect of great manufacturing prosperity, forit is evident that art, science, and literature are dependent entirely upon the surplus products of the earth. In all countries where the inhabitants have to struggle with nature for the bare necessaries of life, art, science. and literature are unknown.

Sugar.

The average annual quantity of cane sugar produced and sent into the markets of the civilised world is above one million tuns, exclusive of that mannfactured in China and the Malayian archipelago. The value of this sugar cannot be estimated at less than $75,000,000.

(For the Scientific American.(

History of the Earth.

Mr. Editor—Will you permit me to ask your candid opinion upon one or two points in connection with geology?

1st. Was the present density and compactness of the crust of the earth obtained by the laws of gravitation, aided by the action of water, or fire, or both; and if by both, which of them was first in the order of time?

2nd. If it be replied, the igneous theory is no doubt the proper and most scientific explanation which can be given to the question, then I would take the liberty to ask, secondly, where were the oceans which now surround our globe, when the earth had been in a state of fusion? Or was the formation of such a body of water an after consideration, placed there when the surface of the earth became sufficiently cooled for its reception.

3rd. My third question is, When were the mountains and hills produced? Were they formed at an early period of the work of creation, or are they of comparatively recent date?

Mr. Editor, My own humble opinion, after some little attention to the subject, is something like this:—The materials of the globe, in a state of solution in water, formed the chaos of which we read in the good book. These chaotic materials, in a state of rest, or comparative rest, settled and arranged themselves in tolerable good order, in accordance to the generally received laws of gravitation and attraction of cohesion. By the operation of these laws, the water would in due time be pretty thoroughly squeezed out of the body of the earth to swim on the surface, where the shell fish and later tribes might swim. But being deprived of water and free communication with the atmosphere, the bowels of the earth would in due time generate many sorts of gases, and end in spontaneous combustion. The combustion going on, we should, of course, ere long have igneous rocks and volcanic action to elevate the surface of the earth into hills and mountains—which elevations would carry up with them their surface deposits of shells and fishes, but the water would modestly retire into the lower levels, as at this day.

I have been brought to this conclusion, Mr. Editor, by the examination of granite and other so-called primary formations. Primary, indeed! formed of mica, quartz, feldspar and hornblend—substances fused together, but long, long previously brought together by the laws of attraction and gravitation, from the still previous chaotic state of our planet. J. W. M.

[The most prevalent opinion among geologists is that of the igneous theory, based on the nebular hypothesis, which supposes that the whole of the now solid matter of our globe was once a molten mass. Some suppose that Saturn is now so hot as to keep the water of it in a state of steam, and that this forms its well known ring. This is asserted by Nasmyth, who has lately written an account of the recent eruption of Mount Vesuvius, calling it a bursting out of the internal molten matter. As the earth's crust gets thicker, he concludes that volcanoes will cease altogether. Our correspondent's theory of it the early condition of our globe is older than the igneous theory. He will find an account of in Goldsmith's History of the Earth. He will also find a description of the formation of mountains in the same work. We believe this answers our correspondent's three questions.

Photographic Pictures—A Disclaimer.

Messrs. Editors—Through the politeness of Dr. W. H. Pile and Prof. Chas. E. Smith, both of this city, I have had pointed out to me an article on page 121, Vol. 15, for 1853, *Silliman's Journal*, from Sir David Brewster, on photographic pictures taken with different sized lenses, in which that gentleman points out the true cause of the distortions noticeable in pictures taken with lenses larger than the human eye. And as I have no desire of appropriating to myself the laurels of others, I cheerfully disclaim my third claim on page 291, present volume Scientific American. And I assure you that it affords me much more pleasure to make this disclaimer, inasmuch as that article, being from the highest authority of the present age, corroborates the truthfulness of my deductions, not only in respect to the distortions of pictures, but also, indirectly, the balance of my article in No. 32, Scientific American. I say corroborates, because it will be self-evident to any one reading the article of Sir David Brewster, that he arrived at precisely the same conclusion in this respect with myself, although starting from entirely different premises.

It had long ago been noticed by artists that pictures taken through small diaphragms were "sharper" than those taken through larger lenses without a diaphragm, but whoever pointed out the true cause before Sir David Brewster did, two years ago, and the additional facts (independent of the stereoscopic angles, etc.,) contained in my article alluded to? The fact has always been explained to me by artists upon the principle of a profusion of light. Somewhat similar to what takes place when looking at objects through a microscope, in which the light is admitted through a large aperture or diaphragm, but it will be seen from the articles alluded to, that this explanation is not correct.

In conclusion, I would earnestly recommend all those interested to give the article of Sir David Brewster a careful perusal, assuring them that they will be amply rewarded for their time. J. F. Mascher.

Philadelphia, June 25, 1855.

Gumming Saws.

Messrs. Editors—I noticed an article in the Scientific American of the 23rd inst., by A. G. Drake, of Sturges, Mich., stating that a piece of sheet iron (No. 16) made into a circular plate sixteen inches in diameter, &c., was well adapted for gumming a buzz saw.

There is no doubt it will do the work as he describes upon any saw, but lest any of your many readers should try the plan, I think it well to make this statement, viz:—that it is not advisable to adopt that plan for gumming any saw that will require dressing up with a file afterwards, as it leaves the parts thus gummed so hard that a file will not act upon. I have known it tried, and abandoned, as it left the saw almost past redemption. T. N. Killen.

Fort Valley, Ga., June 29, 1855.

Is Hydrogen a Metal.

Messrs. Editors—Some time since Dr. Mitchell, of the 13th street College, published that he had discovered, or at least from his researches, had reason to believe that hydrogen was a metal; since then he has not gratified the public with any further light on this interesting subject. Though a poor chemist, chemistry is my hobby-horse. Will the Dr. let us hear from him?

Hiram Shaddock.

Fifth Avenue, N. Y., July 5th, 1855.

Anointing with Oil.

The custom of anointing the body with oil seems to be entirely abandoned. The present cry is "Baths and Washouses," "Hydropathy," "Water Cure," "Fountains," "Street watering," "Scrubbing out the house," &c.; and these are now so much the fashion that the bare mention that *these things may be done in excess* will, we fear, render us liable to be drowned in a flood of watery effusions from the modern hydromaniacs. Nevertheless, at the risk of such a watery grave, we will assert that our belief is in oil. Yes, we actually believe St. Mark (vi. 13) when he says, "And they anointed with oil many that were sick, and healed them." The fact is, that the use of some pure unction or oil on the surface of the skin is in many instances of infinite service, and can with great advantage be used instead of water. In this country, children are perpetually "watered," as though they were amphibious animals. In the East Indies children are rarely washed in water; but they are oiled every day. A child's head can be kept much cleaner if oiled than without it. Many young people with hectic cheeks would probably never know the last days of consumption if their parents would insist on having the chest, the back, and limbs anointed with sweet oil two or three times a week. The Hebrew physicians seem to have considered oil as more efficacious than any other remedy for the mitigation of various disorders of the human frame. The sick were always anointed with oil as the most powerful means that was known of checking the progress of disease. One of their medical prescriptions is this: "He who is afflicted with pains in his head or eruptions in his body, let him anoint himself with oil." In the Epistle of James (v. 14) we read, "Is any sick among you? Let him call for the Elders, and let them anoint him with oil." Our geographical position ensures for the inhabitants an atmosphere sufficiently aqueous for their general health; indeed, if any thing, it is already too moist, and therefore a little discretion is necessary before allowing one's dwelling to be "scrubbed," and the house converted into a gigantic vapor-bath. Nor should people bathe in this country to a great extent, in imitation of the Romans. Doing as the Romans do when you are at Rome is all very well; but trying to ape them in the climate of America is sheer folly.

London. Septimus Piesse.

(For the Scientific American.)

Variations of the Magnetic Needle.

In the Scientific American, of June 30th, I observe that some inquiries were propounded by a highly intelligent gentleman of Kennett's Square, relative to the variations of the Magnetic Needle. I do not propose to answer the inquiries, but I beg leave to communicate a few additional facts on the subject, for the consideration of those who may undertake to answer them. The variation of the needle was, I believe, discovered by Columbus, in 1492—some authors allege that it was discovered by Sebastian Cabot, in 1500. It seems to have been long known that the magnetic pole does not correspond with the pole of the Earth. Its location, however, does not always appear to be at the same point. It is probably, about this time, in the neighborhood of 70° North latitude and 97° West longitude from Greenwich. In 1657, the line of *no variation* was at London and Dublin. In 1660, it was at Paris. In 1855, it lies along the western part of Pennsylvania, Virginia and North Carolina. It is remarkable that instead of its being a *straight line*, it is actually a *curved line*. I am informed, in a letter from Professor Henry, of the Smithson Institute, dated 28th March last, that the Institution is endeavoring to collect all reliable information relative to the subject in North America, and that it has just established a magnetic observatory, in which, by means of a photographic arrangement, the needle is made to register its own vibrations on a paper moved by clock work.

From various sources, which I consider reliable, the needle, at the times and places given, stood as stated below:

Albany,	1750	about	7°	30′	west of North.
"	1810	"	4	45	"
"	1854	"	7	—	"
Boston,	1800	"	5	22	"
New York,	1840	"	4	41	"
Philad'lp'a,	1839	"	3	40	"
Lancaster,	1840	"	3	08	"
St. Louis,	1819	"	10	47	east of North.
"	1835	"	8	49	"
Charleston,	1810	"	9	36	"
"	1813	"	8	16	"
"	1815	"	7	35	"
"	1817	"	6	43	"
"	1819	"	5	38	"
"	1820	"	4	45	"
"	1822	"	3	58	"
"	1824	"	3	05	"
"	1825	"	2	50	"
"	1827	"	1	56	"
"	1830	"	1	40	"
"	1832	"	1	31	"
"	1835	"	1	17	"
London,	1580	"	11	15	"
"	1657	No variation—due North.			
"	1672	"	2	30	west of North.
"	1692	"	6	—	"
"	1723	"	14	17	"
"	1773	"	21	09	"
"	1800	"	24	03	"
"	1814	"	24°	22′ 22″	"

It will be observed that in 1810, at Albany, the needle pointed 4° 45′ *west* of North, while in the same year, at Charleston, it pointed 9° 36′ *east of North!* It will also be perceived that at London it changed from 1580 to 1814 more than 35 degrees! At Charleston, from 1810 to 1835, it changed more than eight degrees!

The facts above stated may serve to show that the needle is governed by some general law; but they also show that the general law must be subject to some disturbing influences of a temporary, and others of a local, character. I do not presume to suggest a theory. My object is merely to place the foregoing facts by the side of those communicated by Mr. Davis, in order that gentlemen acquainted with the subject may favor the public with their explanations.

When it is considered that the boundaries of states and individuals, as well as the mariner's course on the ocean, are regulated by the magnetic needle, the importance of understanding the law which governs it, and regulates its departure from the true North pole of the Earth, must be manifest to all.

Ellis Lewis.

Philadelphia, July 10, 1855.

Volcanoes and Heat of the Earth.

The last number of the London *Mining Journal*, dated June 23d, received by us this week, contains an able article on a subject lately discussed in our columns, viz.: the central heat theory of the Earth. It is an answer to James Nasmyth, who had written a long and somewhat able article on the late eruption of Mount Vesuvius, in proof of the interior of the Earth being a mass of fiery molten matter. The author of the reply is Wm. Radley, Chemical Engineer, who takes our view of the question, and presents some of the arguments which we have presented on the subject, adding some others to strengthen all those already advanced. The following are a few of these:

"Supposing, with Herschel, Bessel, and other geometers, that our orb was formed by the condensation of nebulous matter, it can be shown that a very high temperature never resulted from the aggregation of this vaporiform cosmical matter; and other equally valid considerations attest the high improbability of the interior of our Earth being occupied by igneously molten matter.

"The depth to which volcanoes penetrate has been approximatively estimated, upon good data, and found not to exceed seven to eight miles; and whilst the erupted matters are derived solely from materials that do not exceed in density 2.5 times that of water, it must follow that, far, far below the volcanic sources, the density of the compounds must at least equal 7.5 times that of water.

"That the Earth is hotter the lower we descend, I deny beyond a certain moderate limit; and the annals of Cornwall attest, *that rocks of the same depth differ in temperature, the one from the other*, 15° to 20° Fahrenheit.

"An increase of density of the Earth would necessarily be attended by a diminution in the orbital period, but it is a fact that, in the lapse of 3,000 years, this yearly period has not increased nor diminished one minute of a degree—in fact, not any appreciable quantity either way.

"Mr. Nasmyth has transcribed, without reflection, the absurd notion of the Plutonist school."

These are stubborn facts to which the great majority of professors of science in our colleges would do well to take heed. We especially recommend them to the attention of Prof. Guiot.

Composition for Coating Metals, to Prevent Oxydation.

Melt together three parts of lard and one part of rosin. A very thin coating will preserve Russia-iron stoves and grates from rusting during summer, even in damp situations.

A petrified rattlesnake was found at Indiana, Indiana county, Pa., last week, in a stone which some workmen were dressing for a building being erected by David Stanard, Esq. The scales are distinct. The curiosity has been presented to the Philadelphia Academy of Natural Science.

TO CORRESPONDENTS.

A "Subscriber" is informed that we are not acquainted with a work called the "Tinner's Guide," nor one of a similar character.

H. F. S., of Pa.—We have known of a piece of steel being cut by a piece of tin in a lathe thirty years since.

A, B. R., of Md.—The great object is to be able to telegraph, from station to station, on a train and with a train. Your plan with seven wires would be very expensive and troublesome; this is our opinion.

N. W. W., of Ohio—We think both of your valve arrangements are patentable. Separate patents would be required to secure both.

J. H. H., of S. C.—Fowler's plan of gravel walls is used to a considerable extent in this State and New England—in every case that we have heard of with satisfaction and success. The walls, we believe, become harder the longer they stand. We think you could employ the system in your locality with safety and economy. You had better correspond with Mr. Fowler. $3 received: papers will be forwarded.

W. M, B., of Del.—It is not too late for your engraving.

P. M., of Ill.—Your Letters Patent came duly, and are in the hands of the engraver, who will have the cuts ready to publish in about two weeks.

E. O. P., of Iowa—We have no recollection of publishing the article which you enclosed, from the California *Chronicle*, but possibly may have done so a good while ago.

J. W. N., of Va.—There is no other publication but the SCIENTIFIC AMERICAN that illustrates mechanical inventions in this country, we therefore cannot send you such a work as you describe.

X. C. S., of Vt.—The purchaser of a State right in a patent has the right to manufacture the article for others to sell out of the States, but the purchaser must look out and not get caught selling the article out of territorry in which the manufacturer owned the right, or he will be likely to be made to pay more than the profit he has made on his goods, if he was knowing to the fact that he was infringing upon others' rights. An infringer of a patent is liable to be mulcted in damages to an amount treble the actual damage.

F. F., of Phila.—The Black Douglas coat of arms is a nude savage with a club, defending a bloody heart. The stroke of an engine, is just the distance the piston travels every revolution. Multiply the distance in feet a piston travels in a minute by the pressure of steam on the square inch, into the area of the piston in inches, and divide by 33,000, and you will have the horse power of the engine. Deduct 25 per cent for friction.

G. W. H., of N. Y.—Dextrine is British gum, made from heated flour.

H. H. A., of Ill.—We cannot give you a receipt for the paste, as requested. You can obtain information respecting a Catalogue of the Heavens, by writing to Lieut. Maury, a Washington. Well boiled black paint is the kind used for the lanterns.

W. I., of Ill.—Your protector for keeping the lungs free from dust, is new to us, and we think patentable.

J. Y., of Ill.—We think there are patentable features in your planter. Send model and government fee of $30 whenever you desire to proceed.

W. T., of N. Y.—The convex sounding board having been used for stringed musical instruments of one class (violins, &c.), no patent, we think, would be granted for its application to stringed instruments of another class.

S. W., of N. Y.—We do not know of any plan whereby you can secure a benefit to yourself by any plan for crossing the North Pole. As we are not acquainted with your plan, of course, we cannot give an opinion respecting its practicability.

L. R., of N. B.—Perpetual motion is entirely out of the question: it cannot be accomplished by any man.

J. G. H.—Yours will meet with attention.

J. E. H., of Ohio—A letter on another column, set up before yours came to hand, contains the same views you have expressed. We had heard of the plan twenty years ago; the reasons why it was dropped are now on record for future reference.

A. D. B., of Ga.—We are obliged to you for the interest you are continually manifesting towards the SCIENTIFIC AMERICAN. The new subscribers you send shall be treated like all the other members of our numerous family, and their inquiries answered if possible. One kind of Georgia money will answer our purpose as well as another.

A. L., of Pa., You cannot carry water practically much higher than 30 feet by a siphon; theoretically it should be about 33 feet, that being the hight of a column of water which equals the pressure of the atmosphere.

W. T., of N. Y.—Yours has been received.

W. E. B., of Ala.—Yours on boilers will soon appear.

S. & M., of N. Y.—The substance of your letter will be published next week, in reference to the zig-zag cutter. The answer to which you referred in our correspondent column, should have stated that "the sickle teeth, having reversed angles, is claimed in McCormick's Patent."

H. K., of Phila.—The street sweeping machines have done well in this city, but their use has been fiercely opposed by contractors who have employed laborers for the same purpose. These laborers have been incited to hold meetings, and denounce the contract system of cleaning our streets.

R. R. W., of Ohio—The heating of the feed water for locomotives it not new, aad you could not obtain a patent therefor.

S. J., of Mass.—Your letter is far too long for insertion. You appear to know how to write more concise; do so the next time.

M. L. G., of N. Y.—The nominal horse power of marine engines is a very indefinite matter.

H. S., of Pa.—Permanent magnets cannot give motion to machinery. You mistake the production of a current of magnetism by permanent magnets in a magnetic electric telegraph, for motion produced by the current. The permanent magnets must be rotated by some other power. Electro magnets can give motion to machinery.

T. C., of D. C.—Your last letter came too late to have the paragraph to which you refer inserted.

Money received at the SCIENTIFIC AMERICAN Office on account of Patent Office business for the week ending Saturday, July 14:—

F. W. W., of Ct., $20; M. T., of Ill., $30; J. W. R., of O., $35; J. S. H., & Co., of O., $50; L. & W., of N. Y., $30; H. T., of O., $25; G. P. D., of Pa., $25; J. D. H., of Va., $70; M. & N., of Ct., $30; J. G. H., of Fla., $26; F. A., of Ct., $30; J. W. H., of R. I., $250; W. H. E., of N. Y., $200; G. C., of N. Y., $30; R. W. B., of Mo., $20; J. H. B., of N. Y., $250; E. G. R., of O., $30; J. W., & A. F., of Me., $30; M. & C., of N. Y., $25; S. H. G., of Ct., $25; J. H. J., of Iowa, $30; W. B., of Ct., $25; J. J. D., of Ct., $30; W. S., of N. Y., $25; S. B., of N. Y., $15; J. E., of Mass., $60; H. B., & O. S. W., of Ind., $30; S. W. H., of Mass., $30: D. R., of Pa., $10; H. N. B., of Ill., $35; M. R., of Pa., $25; J. A., of Va., $30; A. J. B., of Mich., $25; J. A. B., of Ill., $20; S. B., of Mich., $25; T. V., of Cal., $20; S. L., of N. Y., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 14:—

S. L., of N. Y.; O. B., of N. Y.; L. S., of N. Y.; S. H. G., of Ct.; W. B., of Ct.; W. S., of N. Y.; J. J, D., of Ct.; M. R., of Pa.; A. J. B., of Mich.; M. & C., of N. Y.; T. V., of Cala.

Important Items.

BACK NUMBERS AND VOLUMES—We have the following numbers and volumes of the SCIENTIFIC AMERICAN, which we can supply at the annexed prices:—Of Volume 5, forty numbers, bound, $1,75. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Volume 7, all; price in sheets, $2; bound, $2,75. Of Volume 8, none complete, but about 30 numbers in sheets, which will be sold at 50 cents per set. Of Volume 9, bound, $2,75. Of Vol. 10, all except Nos. 17, 25, 26 27, and 28, at the subscription price.

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 enclosing $1 for 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 acknowledgement of the receipt of their funds.

MODELS—We are receiving almost daily, models of inventions which have not the names of their inventors marked upon them. This usually prevents us from taking any notice of them whatever. 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 sometimes prevent the model from being mislaid.

PATENT LAWS, AND GUIDE TO INVENTORS—Congress having adjourned without enacting any new laws pertaining to applications for patents, we have issued a new edition of the old laws, which may be had at our counter or sent by mail. This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office Price 12½ cents per copy.

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☞ All advertisements must be paid for before inserting.

Science and Art.

The Art of Dyeing.—No. 30.

FAST BLACK ON WOOLEN GOODS—If woolen goods are first dyed a light reddish color with camwood, and then finished in a blue vat, the most durable color known is obtained. Boil the goods in camwood—two pounds of dyestuff to the ten of goods—for one hour, without any mordant, then wash them, and finish with an indigo woad vat. This, by some dyers, is believed to be the best method of dyeing fast black on woolen goods. The oldest plan has been to dye the blue color first on the goods, then to dye a black on the top, in the manner described in article 29, with the addition of some madder to the logwood, and about one handfull of sumac to each ten pounds of wool.

CAMWOOD BLACK—Boil ten pounds of woolen goods for one hour in two pounds of camwood and one of fustic, then lift them, and introduce eight ounces of copperas, and boil for twenty minutes. Take them out of this, air them for fifteen minutes, and then wash them. After this they are boiled in a clean liquor with four pounds of logwood for one hour, and then lifted. Four ounces of copperas are then introduced into the kettle, and the goods boiled for half an hour longer, after which they are lifted, washed, and dried. Some dyers use one pound of madder and one of camwood, with a handfull of sumac, instead of using camwood altogether.

CHROME BLACK—Within fifteen years the bichromate of potash has come into extensive use in dyeing black colors on white woolen goods. Prepare the goods—10 lbs.—by boiling them for one hour in six ounces of the bichromate of potash, three ounces of alum, and two of red tartar (argol.) They are then lifted, aired, and rinsed in two clean waters. Into a clean kettle, five pounds of logwood and half a pound of camwood are introduced, and the goods boiled in this for an hour and a half, when they are lifted, washed, and dried. This is a blue black, and has not that depth of shade belonging to the other processes. By avoiding the use of alum and tartar in the mordant, and giving some fustic and more logwood, jet black is produced.

The use of sumac must be carefully attended to in woolen dyeing. Excepting for blacks and drabs, it should never be employed, and for these colors only a very limited quantity. Some dyers have supposed that because sumac and copperas make a black solution in water, that the same results can be obtained by the use of these substances on woolen dyeing; but this is a mistake.—Woolen goods boiled in sumac assume a rusty brown color, and are so altered in their nature by the tannin of the sumac, as to repel every effort to dye them a good black. Excepting in very minute quantities, sumac should never be used even in black woolen dyeing, as it is liable to injure the goods in appearance. It is often necessary to give weight for weight of logwood and goods for a good full black, and about one-fourth of the weight of fustic, to throw the color on the jet shade. Some dyers use too much blue vitriol (sulphate of copper) in dyeing black on woolen goods; and our farmers' wives, when dyeing wool a black for home-made cloths, make the same mistake. Wool dyed black with a preparation of blue vitriol soon becomes rusty, and fades when exposed to sunlight and the atmosphere. This is owing to this salt of copper parting so easily with its oxygen. Copperas of a dark dirty green color, free from peroxyd, is the best quality for use. In dyeing black on woolen goods, one ounce of it to the pound, with one-fourth of an ounce of blue vitriol, are about the proper quantities for the mordant. Verdigris is recommended by some dyers; but it is found in but few dyeshops; its use is far more limited now than it was fifty years since. Nut galls, hickory bark, and the rinds of walnuts are used in dyeing black on wool, but should in no instance be so used unless on the top of logwood; or with logwood when the goods have received an indigo bottom in a vat. None but the finest quality of black goods receive a dip in the woad vat, as this makes the color expensive. Almost all black woolen goods—broadcloths, narrow cloths, merino twills, delaines, &c.—are now dyed with the bichromate of potash preparation or mordant, and finished in a logwood and fustic liquor.

To Measure Distances by Visual Angles.

Prepare a scale by marking off on a pencil what length of it, when it is held off at arm's length, a man's hight appears at different distances (previously measured with accuracy,) of 100, 500, 1000 feet, &c. To apply this when a man is seen at any unknown distance, hold up the pencil at arm's length, making the top of it come in the line from the eye to his head, and placing the thumb nail in the line from the eye to his feet. The pencil having been previously graduated by the method above explained, the portion of it now intercepted between these two lines will indicate the corresponding distance.

IMPROVED CARRIAGE MEASURE.

Fig. 1

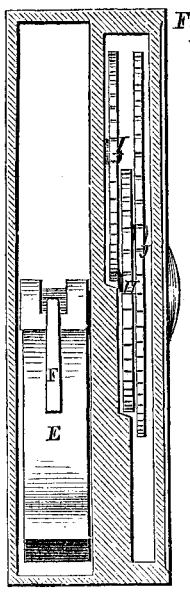
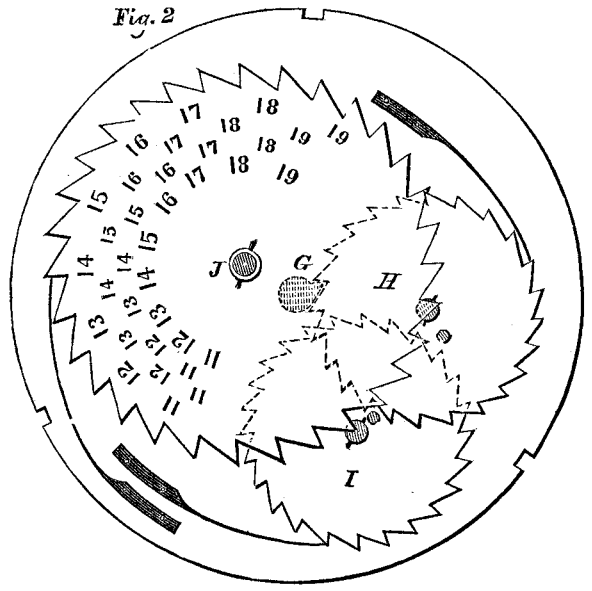


Fig. 2



The annexed figures represent a new odometer for measuring the distance which a carriage travels, invented by F. S. Coburn, of Ipswich, Mass., who has taken measures to secure a patent.

Fig. 1 is an edge view of the odometer. Fig. 2 is an inside view showing the toothed wheels. Fig. 3 is a view of the odometer weight, E, and fig. 4 is the dial of the odometer. This small and neat instrument is attached to a carriage axle by a clamp, which holds it to the hub. The clamp is slipped over the end of the axle tree, and turns round with the axle as the wheel revolves. In the inside of this odometer, which is a small box, the weight, E, is suspended on a stud or small shaft, and it will be observed that it always hangs perpendicularly while the odometer revolves with the axle. Upon this principle of action the whole of the wheels are operated. On the small stud on which E is hung, is the ratchet wheel in fig. 3, into which the ratchet, F, takes, which moves one notch every revolution, but the ratchet, F, by passing over the teeth of the small wheel, fig. 3, when the carriage is backing, allows the weight to move freely, and consequently there is no registering. The motion imparted in one direction by the weight to the shaft, G, moves the wheel, H, fig. 2, one tooth every revolution of the odometer, and every revolution of wheel, H, moves the wheel, I, (which should be set with its ratchet in a contrary direction) one tooth, and this wheel, I, moves the one, J, which is the dial plate, and an opening in the case, fig. 4, shows it with the miles marked out. The dial is divided so as to be applied to wheels of different sizes. This odometer is small and neat; the figures represent one of full size which has been used repeatedly. It will be observed that the wheels are simply

Fig. 3

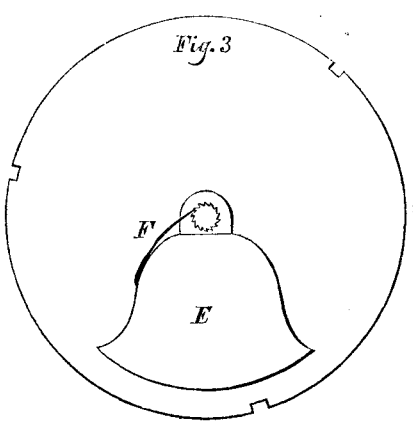
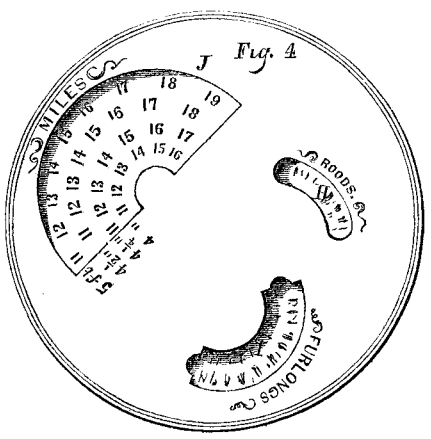


Fig. 4



moved on the clock-work principle of gearing to reduce the revolutions from the first to the last, which registers the miles; the whole operations being dependent upon the suspended balance weight, E. The instrument is neat and simple, and is very convenient. There are but few persons who go out with a carriage but would like to be able to tell the distance they have traveled when they return, and yet there is no way of doing this but by such an instrument. With turning to the one side and the other on a road—turning out and turning in on the track—the mile stones are no guides for indicating the distance traveled; the odometer alone is the true tell tale. An odometer is the same as the tell-tale on the steam engine, without which no steamship navigates the ocean. We hope such instruments will soon come into more general use.

More information about this one may be obtained by letter addressed to Mr. Coburn at Ipswich.

Uses of Sulphur.

Sulphur is the key of the operative chemist. With it he unlocks Nature's "secret drawer," and exposes for public benefit many of its invaluable treasures. Color making in its various branches, dyeing, paper making, bleaching, the most valuable medical preparations, the instruments of war, the electric telegraph, daguerreotype, and many other arts, would scarcely be known but for sulphur. A chemist begins his work by first making sulphuric acid; having this, he can prepare nitric acid, hydrochloric acid, and all their compounds; also phosphorus, chlorine, platinum, &c.; these lead to a thousand other substances, used daily in the arts of life. We may truly judge of the manufactures of a country, and its comparative civilization, by the quantity of sulphur that it consumes. In this particular Great Britain stands pre-eminent. A nation will never become commercially and politically great without it can readily procure coal, sulphur, and iron; take either of these away, and its power will sink into insignificance.

Blackberry Wine.

The following is said to be an excellent recipe for the manufacture of a superior wine from blackberries:—Measure your berries and bruise them; to every gallon adding one quart of boiling water. Let the mixture stand twenty-four hours, stirring occasionally; then strain off the liquor into a cask; to every gallon adding two pounds of sugar; cork tight, and let stand till the following October.

A Barbaric Act.

Some evil disposed, ignorant persons in Yorktown, Va., recently destroyed three new brickmaking machines introduced into that place.

LITERARY NOTICES.

THE BIBLIOTHECA SACRA—This profound theological review, for July contains a long and solid article on American Antiquities by the Rev. John Taylor, of Andover, Mass.; another on Millenarianism, by Prof. Sanborn, of Dartmouth College; an expository Dissertation on the twelfth chapter of Second Corinthians, by Edward Beecher, D.D., author of a singular book on the pre-spiritual existence of man. The Rev. J. Thompson, of New York, has an article on the Dead Sea; but the most curious article of all is one by H. Peet, L.L.D., of the New York Deaf and Dumb Institution. It certainly contains many strange ideas, and much information respecting the deaf and dumb, that is entirely new to the world. The *Bibliotheca Sacra* is published by Warren F. Draper, Andover, Mass. Its fame is world-wide.

STAIR BUILDING—This is the title of a neat little work by J. R. Perry, Stair Builder, and published by A. R. Ranney, 195 Broadway, this city. It treats of the Art of Stair Building, and is designed to enable every carpenter in the country to learn the business by the easiest methods. It is illustrated with a number of neat wood cuts, and although not got up in such large style as some other works on the subject, it appears to be very practical and generally useful. The author employs simple language, and has the faculty of rendering his descriptions plain and clear.

COACHMAKER'S MAGAZINE—The July number of this useful Magazine, by C. W. Saladee, Columbus Ohio contains two lithographic plates, embracing four figures of a Phæton, two Flemish carriages, and a crane neck coach. It contains a number of excellent receipts on carriage painting, and a great deal of other useful information connected with the art.