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Willis' Perpetual Motion.

One of the immutable laws of dynamics is, that all bodies when once set in motion, will continue their movements until stopped by some opposing force. Thus, a wheel placed upon a shaft, and made to revolve by means of the hand, would never stop from any cause contained within itself; it would always continue to revolve with a force exactly equal to the power that was originally imparted to it in the start.

The only known opponents to continued motion are friction, gravity, and resistance of the air. Whoever succeeds in constructing a mechanical device that, in itself, wholly overcomes these, will have produced what the world has never yet seen, viz.:—*a self-moving machine.*

Many attempts have been made during the last three centuries to evade the dynamic law first above mentioned; or rather, we should say, many persons, through ignorance, or inability to comprehend the law in question have gone industriously to work to produce machines that would, of themselves, not only generate force enough to impart and preserve their own motion, but also transmit power for mechanical purposes. All such efforts have, of course, come short of the mark. We could fill many pages of our paper with descriptions of pretended perpetual motion machines, some of them very curious, if it were necessary; let it suffice to refer the reader to the engraving of Austin's self-moving machine, on page 209, Vol. 2, SCIENTIFIC AMERICAN, and to another on page 267, same volume, as specimens of what has been done in this line.

The attempts to find self motors have, in many cases, resulted in the production of apparatuses in which the parts were so accurately made, and the friction so greatly diminished, that the contrivances, after being set in motion, would continue to move for a long time. Thus, a pendulum has been placed in a vacuum, and arranged to move with so little friction that, when once started, it continued to vibrate for three days; the exhaustion of power by friction and resistance were, in this case, so gradual as to be imperceptible to the eye.

The construction of a perpetual motion is an impossibility, but to make a moving machine, having its motive power concealed from view, is a very easy task. Hundreds of such contrivances have been made, and in more than one instance their owners have sought to impose upon the credulity of the public by unblushingly asserting that such machines were self-moving.

In former times these exhibitions were perhaps profitable to their cheating exhibitors—if not to their deluded victims. But mechanical and other marvels are so common now-a-days that we doubt whether such shows can, at present, prove very remunerative.

One of the latest attempts at "Perpetual Motion," is that of Mr. E. P. Willis. His machine was first put on exhibition at New Haven, Conn., but it has lately been brought to New York. Our engraving conveys a clear idea of its appearance and construction. It is heralded to the public through advertisements and placards like the following?

PERPETUAL MOTION!

THE GREATEST DISCOVERY EVER YET MADE.

Is now on exhibition at

565 Broadway, (Up-stairs.)

THIS MACHINE was manufactured in New Haven, and is the invention of Mr. E.P. Willis, by whom it was successfully exhibited in that place, and agreeably to public opinion, and the approbation it met with, it is beyond a doubt, the Greatest Curiosity, and the most successful attempt at a Self-acting Machine ever made in this or any other country.

Why it is not a *bona fide* Perpetual Motion, is left for the curious on that subject to determine.

CALL AND SEE IT!

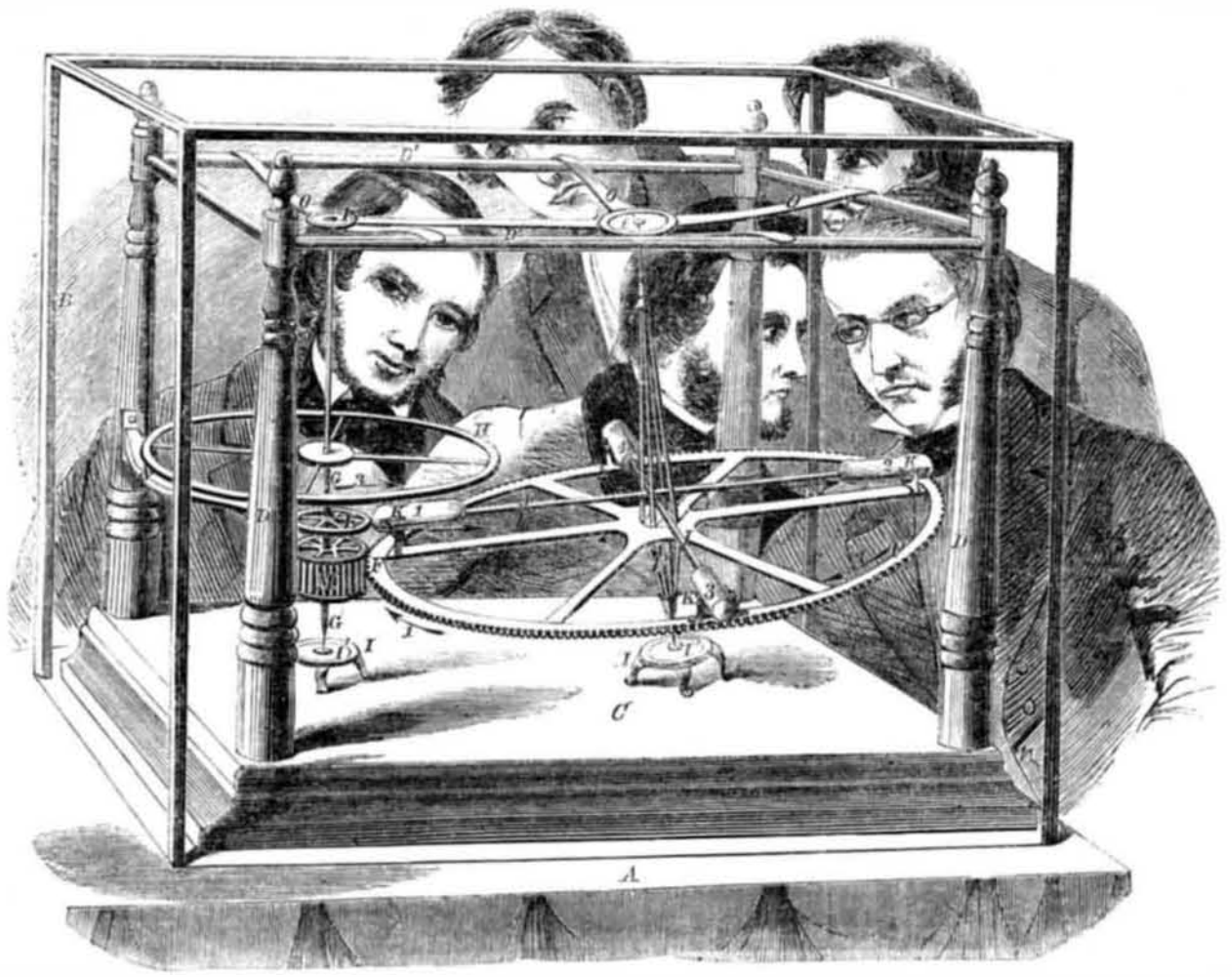
and our word for it you will not regret the trouble.

Hours of Exhibition from 9 to 1; 2 to 6, and from 7 to 10.

ADMISSION 25 CENTS.

Agreeable to the above invitation we went to see the *elephant*, and found it in a second story front room, on Broadway. The contrivance rested on a common table, and was carefully separated from close scrutiny by a glass case. We urged the exhibitor several times to remove the case and give us a fair chance either to satisfy ourselves that it was a genuine "perpetual motion" or to detect the trick, but he positively refused. He said it was a very delicately-constructed apparatus, and was fearful that it might be injured if the case were taken off. The movements and general arrangement of parts were to be clearly seen through the glass, and for the amusement of our readers we will describe them.

NEW PERPETUAL MOTION.



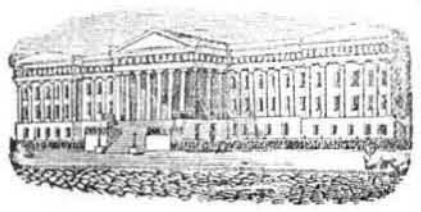
Referring to the engraving, A is a table on which the machine rests, B the glass case, C base of the machine, D D' frame. E is an inclined shaft, carrying the driving wheel, F. G is a vertical shaft, carrying a fly wheel, H. The bottom bearings of shafts, E and G, are steel points, and rest upon small stands, I, slightly elevated, as shown. The stands are simply metal frames which support flat disks of glass, I'. In the center of these glass disks are metal bearings, on which the points of the shafts are placed. The upper bearings are arranged in the same manner, so that the shafts are perfectly insulated. The observer is therefore supposed to satisfy himself that the machine is not propelled by any electrical contrivance or other means introduced through the shafts. O O' are braces for supporting the bearings. The driving wheel, F, is placed on an angle, and carries four small weights, 1, 2, 3, 4, which are connected in pairs by the rods, J. The weights are supported on the small guides, K, and slide laterally. The wheel appears to be inclined just as far as can be without causing the weights to slide back of their own gravity after being pushed up.

Attached to shaft, G, is a small wheel, L, the office of which is to move the weights, and this is apparently done in the following manner. Driving wheel, F, moving in direction of arrow 1, brings weight 1, in contact with wheel, L; the result is, that weights 1 and 2 are pushed forward in direction of arrow 2, weight 1, being thrown in towards the center of wheel, F, while weight 2, is thrown beyond the periphery of the driving wheel. Weight 2, therefore, has an advantage of leverage over weight 1, and the wheel, F, being placed on an angle, accordingly rotates in direction of arrow, 1. The movement of the weights takes place just after reaching the highest point of elevation, or dead point. The movement of wheel F, brings all the weights in contact, one after the other, with wheel L, in the manner described, and thus, as the exhibitors allege, continuous rotary motion is produced. Motion is transmitted from the driving wheel, F, to shaft, G, by means of the pinion, M, which gears with F, as seen. The extremities of the weights, where they come in contact with the pushing wheel, L, are rounded so as to lessen the friction. Any one would suppose that the machine would stop whenever a weight touched wheel L; but the exhibitors allege that the momentum previously acquired is sufficient to overcome the resistance, and also to push up two weights at once, thus renewing the propelling force continually, and rendering the contrivance a self-moving machine, perpetual in its motions—perpetual until the parts wear out. The large weighted wheel revolves about five times per minute, the fly wheel about fifty times. N is a brace, placed in very suspicious proximity to the fly wheel, The fly wheel is not solid; it consists of a shell of brass, of which a section would resemble the form of an inverted U. There appeared to be a series of holes in the upper surface of the brace directly beneath the fly wheel, and covered by the latter. The fly wheel also seemed to touch the brace at each revolution.

This machine is very beautifully constructed. The shaft bearings are fine steel points and have but little friction. Possibly it is one of those contrivances that will run for a few hours without stopping, owing to nice adjustment and the trifling amount of friction; we are inclined to think, however, that it is driven by electro-magnetism, but perhaps it is operated by some other concealed power. The weighted wheel is evidently intended to attract the attention of the spectator—in other words, to tell a plausible lie—to make people believe that the weights give out more power in coming down hill than is required to take them up.

The ideal water wheel to work a pump and lift water enough to keep the wheel always moving, is planned on the same principle.

The parties interested in this machine wisely refuse to submit it to close inspection, and therefore we cannot reveal all its secrets. In their placards they say:—"Why it is not a *bona fide* 'Perpetual Motion' is left for the curious on that subject to determine." But after thus inducing spectators to come, they allow no one a fair opportunity to examine, and thus determine. It savors more of audacity than smartness, to ask the *curious* to point out the secret moving power of the toy, while at the same time it is purposely kept excluded from scrutiny.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING FEB. 26, 1856.

DEPOSITING COAL IN CELLARS—William Bell, of Boston, Mass.: I claim the bed plate conductor and slide with the tube attachments, in connection with a hole in the cart or other vehicle, as set forth.

PITMAN—Andrew Blaikie & Walter Clark, of St. Clair, Mich.: We claim the exclusive application of the hollow rod or tube, A, and the combination therewith of the wood, B, bushes, C C, and straps, D D, gibs, E E, keys, F F, and bolts, K K, in the manner and for the purpose substantially as described and shown.

EDGING WALL PAPER—H. J. Brunner, of Nazareth, Pa.: I do not claim revolving shears upon feeding rollers, but I claim the bearing pivots, d d, supporting arms, N N, movable blocks, L L, sliding carriage, c b, and adjusting device, S P b, arranged and combined in the manner and for the purposes set forth.

I also claim the sliding clamps, f f, constructed and operating substantially as set forth.

I also claim the combined arrangement of the rolling and unrolling devices, so that they may be quickly shifted from one side of the machine to the other, for the purpose specified.

WAGONS—B. B. Bundy, of Walton, N. Y.: I claim the mode of combining the springs and axles of wagons, substantially as set forth.

MILL SAW—Nathan T. Coffin, of Knightstown, Ind.: I do not claim the spreading of the square edged teeth by the use of the forked punch, or otherwise. Nor do I claim the bevel or diamond pointed teeth, nor the tapping down or the turning of the points of the teeth by the use of the hammer or otherwise.

But I claim the arrangement of the common shaped mill saw, teeth on the blade in sets of three teeth, each with a wide deep space under the lower tooth of each set of teeth. Also the increasing of the spaces of teeth, from the center of the saw each way to the ends. Also the regular combination of the square edged and the diamond or bevel pointed teeth, the former standing straight with the blade.

COMBINED KNIFE AND PENCIL CASE—Richard Cross, of Attleborough, Mass.: I do not claim a handle formed with the chambers or recesses for receiving several instruments, which respectively slide into and out of said recesses and chambers.

But I claim my improved mode of constructing such a handle, viz.: of two separate tubes, o, formed and applied that when one is extended through the other, it shall not only serve to support it on two of its opposite sides, so as to prevent them from being crushed inwards, but form with the remainder of the enlarging tube, and between it and the latter, one or more chambers for the reception of instruments, as specified.

I also claim arranging the spring of the knife blade in a slot made through the shank of the blade as described, the same being in manner and for the purpose as set forth.

DOVETAILING MACHINE—Ari & Asahel Davis, of Lowell, Mass.: We claim the arrangement and operation of the cutter heads, X, b, and L, one movable and adjustable with the bar, D, which carries it, and the other stationary, so as to bevel and form the groove in one end of the wood, and bevel and form the tongue to fit this groove on the opposite end of the wood at one single operation, so as to complete the dovetailing of each piece, of any desired length, without changing the cutters, essentially in the manner and for the purposes fully set forth.

We also claim the carriage B, or its mechanical equivalent, and its movable and adjustable slide, F, which carries the board being dovetailed, and which can be moved and adjusted in conjunction with the bar or way, D, and cutters, thereon, so as to give any desired length to the board, essentially in the manner and for the purpose set forth.

SHIRT COLLARS—Othniel W. Edson, of Troy, N. Y.: I will here state that I do not limit my claim to the particular modes described, of giving the desired or necessary movements to the jaw, tongues, and blades, as other devices besides the cams and levers shown in the drawings, can be effectually employed in their stead for these purposes.

I claim the jaws, A B, tongues, C D, and blades, E F, when the same are combined and operated substantially as herein described, to simultaneously fold inward two contiguous edges of double cloth.

Second, I claim giving a forward longitudinal motion to the blades, E F, immediately after the edges of the cloth have been turned inward thereby, as described, to complete the formation of the corners of articles folded.

CHURNS—J. W. Fiester, of Winchester, Ohio: I claim the cams, b, and eccentric circle, e, in combination with the agitators for the purpose of breaking or cutting the current of cream in its passage through them, and for producing friction by the lateral motion of the two sides of the agitator, as described and for the purposes set forth.

BOX FOR CARRIAGE HUBS—A. C. Garratt, of Roxbury, Mass.: I claim the combination and arrangement of this peculiar lubricator or its equivalent, with the recess grooves or oil chamber of the box, in the manner set forth and shown, so as to form an improved combination wheel box for carriage axles.

COUPLING FOR THE JOINTS OF FELLIES—S. A. Garrison & D. C. Morey, of Chelsea, Mass.: We do not claim of itself a mere overlapping brace tightened by a separate bolt, as is used for stiffening joints.

But we claim the stay bolt composed of head, stay and bolt as described, in combination with the embracing cap piece tightened, as specified, for securing the joints of fellies from lateral movement, in addition to security against radial action.

AIR-COCK FOR STEAM HEATING APPARATUS—S. J. Gold, of New Haven, Conn.: I claim the automatic regulation of the air cock by the secondary action of a fluid which vaporizes at a low temperature, substantially as set forth.

GIRDERS FOR BRIDGES—Peter C. Guion, of Cincinnati, O.: I am aware that a trussed girder of the bow string kind has been made by combining the angular iron with wood, the wood being placed on the sides of the iron; and therefore I do not claim the use of iron and wood only as described.

Neither do I claim the application of wood on the sides of the iron arch.

But I do claim the application of segmental timbers on the top of the iron arch.

I claim the peculiar combination of parts constituting the arch, A, to wit, the two angle irons, c c, the spurs or double skew backs, d d, and the timbers, e, all applied and united substantially as set forth.

ARCHED TRUSSED BRIDGE—H. L. Hervey, of Quincy, Ill.: I claim, first, the use of compression braces in combination with the tension braces to support alternate bearing points.

Second, I claim the clamps with or without slots in them, or slots in the arch with or without friction rollers traversing the wedge blocks, or the equivalents of them, in combination with the truss, for the purpose of allowing the truss to rise and fall in proportion to the chamber in the arch, as set forth.

HEATING BY GAS—W. F. Shaw, of Boston, Mass.: I claim the combination and arrangement, substantially as described, of air and gas burners or distributors chambers, A' and B', and their flue and air supply conductors, F G C, the whole being made to operate together essentially as specified.

I also claim, in combination with the gas burner, the open top and closed bottom wire gauze tube, g, operating as specified.

PROJECTILES—C. T. James, of Providence, R. I.: I claim, first, the combination of a band of fibrous packing around a cannon ball with a means of distending it into the scores or rifles of the cannon (without enlarging the shot itself, as it is done where it is wholly or partially formed of flexible metal) by the pressure of the explosive gas, substantially as described.

Second, I claim the combination of a mandrel passing through the shot for the purpose of driving out the pins, with a nut for drawing it in, substantially as described.

Third, I claim the combination of a mandrel entering the shot with a ratchet or equivalent catch for holding it in place, substantially as described.

Fourth, I claim the combination of any pliable packing ring surrounding the shot, with the openings communicating between its inner surface and the chamber, where the explosive gas is generated for the purpose of communicating the power to distend such packing, substantially as described.

SEPARATING GOLD AND OTHER PRECIOUS METALS FROM FOREIGN SUBSTANCES—E. N. Kent, of New York City: I claim the employment of what I term a grain separator for separating the grains of metal from the earthy substances, or crushed gangue, substantially as described, preparatory to and in combination with the crusher, or equivalent therefor, when the separator is employed as a hopper to the crusher, and combined therewith by a feeding tube or equivalent therefor, for conducting the substances to be crushed below the column of water in the crusher, substantially as and for the purpose specified.

I claim, also, an improved chilian mill, consisting of a deep outer vessel, A, holding a high column of water, in which the double acting vertical wheels, B B, combined therewith, are wholly or nearly submerged for the purpose substantially as specified; and I wish it to be understood that I do not claim as shallow vessel in which single acting horizontal stones are used; neither do I claim the ordinary chilian mill.

LAMPS—W. M. Kimball, of Rochester, N. Y.: I claim the recess, C, operating in the manner and for the purpose, substantially as described.

DOMESTIC STEAM GENERATORS—J. T. King, of New York City: I claim the combination of a water tank, steam chamber, and steam generator, connected together in the manner and for the purpose specified, so that the hight of the water in the water tank above the orifice of the pipe leading to the steam chamber, shall always regulate the pressure of the steam, while there will be a free escape of steam as soon as the water in the tank falls below said orifice.

PERCUSSION LOCKS FOR FIRE ARMS—J. H. B. Latrobe, of Howard Co., Md.: I claim, first, the hammer chambered to receive the primer, in combination with a pusher attached to the lock plate, and protruding the primer as the hammer moves, substantially as described.

Second, also the movable cutter, in combination with the projection, on the piece, as described, to cut off the cap to be exploded, while at the same time it closes the chamber and protects the rest of the primer from the fire of the explosion, substantially as described.

Third, also the claw on the end of the detent to keep the primer always in place for protrusion.

Fourth, also the movable catch for throwing the pusher out of play, in the manner described or any other substantially the same in combination with the pusher.

Fifth, also the ferrule round the boss, in combination with the chambered hammer.

Sixth, also the twisting of the primer between the boss and pusher to permit of its being bent to suit the form of the hammer, as described.

Seventh, also the arrangement of the parts described so as to protrude the primer while the hammer is falling instead of while the piece is being cocked.

PAINTING OR VARNISHING WOVEN WIRE—W. Lincoln, of Oakham, Mass.: I claim exposing the wire work cover or articles, after having been dipped in the varnish to a powerful blast or current of air so brought to bear upon it as to pass through and clear its meshes of the liquid varnish, and pile it more on one side of each side of the wires than on the opposite side thereof, in the manner and so as to produce an effect as stated.

HORSE RAKES—Nathan Martz, of Briar Creek Township, Pa.: I claim the combination of the coiled spring, S, axle, B, rock shaft, E, and rake teeth, T, when arranged in the manner and for the purpose described.

BINDING GUIDES—J. S. McCurdy, of New York City: I claim the center piece in combination with the plates, A and B, arranged and operating substantially as set forth, for the purpose of adjusting the binder, for the use of binding of different widths, and of applying the same, with unequal lap to the material bound.

CONSTRUCTING WALLS AND FLOORS OF CELLARS—A. R. Moen, of New York City: I claim the mode described of forming walls and floors, by combining into one mass, the cement and asphaltum, by means of the stone or other suitable material, as specified, by which the asphaltum is caused perfectly to adhere to the bricks or stone of the wall, and admits the hydraulic cement, also to adhere to the same stone or brick, as described.

SEWING MACHINES—T. J. W. Robertson, of New York City: I claim the looper, b, constructed, applied, and operated substantially in the manner set forth.

DOOR SPRING—C. G. Smith, of Carbondale, Pa., I claim the use of the lever, E, in connection with the barrel, b, and spring, c c, constructed and operated in the manner described.

BORING MACHINE—James Temple, of Birmingham, Pa.: I claim the combination of the horizontal and vertical slides, b and c, arranged and operating substantially as and for the purposes specified.

VELOCIMETERS FOR VESSELS—Ira F. Thompson, of Westerly, R. I.: I claim the gate or slide, b, actuated by the vertical weighted lever or pendulum, h, in combination with the hinged drag, b, in the manner and for the purposes specified.

MEASURING THE LENGTHS OF BRACES IN CARPENTRY—H. Whipple, of South Shaftsbury, Vt.: I do not claim determining the length of the hypothenuse and the subtended angles by a square and rule, as this has been done in several instruments.

But I claim the button, c, to receive and clamp the square on the center line of motion of said button, in the manner and for the purposes specified.

I also claim the traveler, e, with one side on the line of the slot, r, and center of the button, c, for the purposes and as specified.

HARDENING HATS—Russel Wildman, of Charlestown, Mass.: I claim the inflated elastic rubber described, constructed and operated in the manner substantially as set forth.

EXCLUDING DUST FROM R. R. CARS—Joseph Wood, of Jersey City, N. J.: I claim the employment or use of the slatted frames, c, attached to the sides of the bottom or platform of the cars, substantially as shown for the purpose specified.

BENDING SHEET METAL—J. Wright, of Hamar, Ohio: I claim the combination and arrangement, substantially as shown and described by the seting down, bending, and finishing rollers, or wheels, H I, with the table or disc, F, for operation together, and in relation thereto and each other, in the manner and as specified, one wheel, I, having a projecting ledge or bead, and for the purpose of gauging the double seam and clipping or holding it from opening, whilst being bent, essentially as set forth.

CULTIVATING PLOWS—W. E. Wyche, of Brookville, N. C.: I do not claim one or more cutters on the ordinary mold board, or the standard of a plow with a mold board on the opposite side, as these are not new.

But I claim substantially, a series of knives or cutting blades on the standard in the place of, and for dividing, cutting, and turning the furrow slice horizontally or nearly so, and depositing the pulverized soil mostly in the furrow, and turning the sod or turf upon the surface, and this I claim whether said knives be made adjustable or otherwise, substantially as described.

COFFEE POTS—Jacob M. Webb, of Sommerville, Tenn.: I do not claim a cover containing cold water for condensing the steam generated in the coffee pot, nor generally passing a stream of cold water along a condensing surface, as such are well known.

But I claim the combination of the funnel receiver, C, with its pipe, b, descending nearly to the bottom of the hollow cover, B, with said hollow cover, and with a capillary spout or orifice, d, leading from the top thereof, substantially as described, whereby a continual and self-regulating flow of cold water is conducted along the condensing surface in the manner set forth.

HYDRAULIC METER—John S. Barden, of New Haven, Conn. (assignor to himself and A. W. Rockwood): I claim a partitioned hollow cylinder or chamber and two series of induction or eduction passages, arranged with respect to the partition of said chamber, substantially as described, in combination with three or any other suitable number of oscillating cylinders and pistons connected together and applied to the partitioned cylinder and made to operate essentially as explained, and for the purpose of receiving and discharging water or any other fluid, and measuring the same, as set forth.

I also claim combining each oscillating cylinder with the partitioned cylinder by a yoke, screw bolts, and pressure springs, or their mechanical equivalents, arranged and operating together, substantially in manner and for the purpose as set forth.

I also claim making the bottom of each cylinder dishing or concave below the lower terminus of the path of the piston, and towards the passage of said bottom as specified, the same being for the purpose as set forth.

ROACH TRAPS—J. Goodyear and T. J. Berry, of Philadelphia, Pa. (assignors to themselves and Wm. Foster, of Carlisle, Pa.): We do not claim the falls, tubes or boxes, separately considered, nor do we confine our claim to the precise form and construction of the body of the trap, nor to the precise number or form of the tubes and falls, as these may be varied to suit circumstances.

But we claim the tubes, C C, and the falls, B or B', when the same are arranged and operated together, substantially in the manner and for the purpose set forth and described.

WHEELWRIGHT MACHINE—C. H. Guard, (assignor to J. A. Scroggs and C. H. Guard,) of Brownsville, N. Y.: I claim the combination of the boring and mortising shafts, C C, with the levers, E' E', through the medium of the toothed saddles, I I, the toothed segments, H H, and the oscillating shafts, D D', or their equivalents, substantially in the manner and for the purpose set forth.

OPERATING THE VALVES OF STEAM ENGINES—John Scheitlin, (assignor to himself and Oliver A. Dailey,) of Washington, D. C.: I claim the four teeth cylinder, B, keyed on the main driving or crank shaft, A, the maltese cross, C, with its shaft, H, and the small crank, C', keyed thereto, said cross, by means of the feather, f, or any equivalent device being susceptible of a free and steady to-and-fro motion along whilst driving its shaft, H, not being so moved by the rack and pinion, D, a screw or other equivalent means, and by which also it can be retained on its shaft, H, in any desired position in relation to the cylinder, the whole being arranged, connected, and operated substantially as set forth, whereby a single steam valve of a steam engine can be worked either as a feed valve, or as a feed and as a cut off valve alternately, and the steam cut off at any required point of the stroke whilst the engine is in operation.

SAWING MACHINE—Wm. P. Wood, (assignor to himself and J. S. Gallaher,) of Washington, D. C.: I claim attaching two saws to the opposite ends of two parallel rocking beams by means of swivel bearings, and in combination with the mode of straining, substantially as described.

I also claim, in combination with the saw table and upright or column, the reversible graduated scale gauge, W W, as set forth.

RE-ISSUES.

SEWING MACHINES—Wm. H. Johnson, of Granville, Mass. Originally patented March 7, 1854: I claim, first, the making of a seam with a single thread, by the combination of a single needle, forked hook and expanding lever, operating substantially in the manner and for the purposes specified.

Second, the forming or making of a seam from a single thread by the running of a loop of the thread through the material to be sewn, the running of a second loop through the material, and putting the first loop through the second, the running of a third loop through the material and through the first named loop, the carrying of a fourth loop through the material, and then putting the third loop through it and so on, putting the first loop through the second and around the third, the third loop through the fourth and around the fifth, and so on, forming the belaying double loop stitch, described, in the manner set forth.

Third, the feeding of the material to be sewn by means of a vibrating piercing instrument, whether said needle be the instrument itself or an independent instrument in the immediate vicinity thereof, substantially as described.

GAS CONSUMERS—David Matthews, of Philadelphia, Pa. Patented orginally Feb. 20, 1849. Re-issued Oct. 4, 1853: I claim the combination of the receiving case shield plate or head and filter with and over the top and sectional chimney with the enlarged base and smaller section in the smoke box to convey off and arrest the sparks without pernicious effect, as described.

Also I claim increasing the base of the chimney beyond the diameter of the upper end of the section extending vertically to near the lower horizontal flues and bottom of the smoke box to aid in the generation of steam as described.

Also I claim the trumpet-mouthed tube over the chimney, said tube being divided into two or more parts, to collect sparks and direct them inwardly by aid of the opening between said parts, as described.

Also I claim the manner in which I connect the case at the top of the chimney with the furnace or fire box by means of the pipes or tubes, G G and H, cases, L L, and the openings thence into the fire box or furnace to carry the sparks and gas to the furnace to be consumed, as described.

ADDITIONAL IMPROVEMENT

GRINDING MILLS—A. Felton, of Troy, N. Y. Patented originally Jan. 2, 1855. Re-issued Jan. 29, 1856: I claim in combination with the cylinder concave and spiral ribs, the cracking or crushing apparatus preceding the grinding surfaces for the purpose of adapting the mill to the grinding of corn and the cobs or other similar material, as set forth.

Foreign Scientific Notes.

THE DIVINING ROD—The London *Mining Journal* states that the Rev. A. Suckling, recently delivered a lecture at the St. Helliers, Jersey, on the "history, antiquity, and correct principles of the 'dowsing' rod, for the discovery of minerals, metals, and springs of water below the surface of the earth." Mr. Suckling stated that he was convinced there existed a certain, though inexplicable, affinity between the effects of operations with the divining rod and what, in our present modern designation, is termed "mesmerism;" that he refers them to one and the same source. It was then attempted to be shown that mesmerism was known to the ancient Egyptians, and that many anecdotes and passages of Scripture show that it was well understood among the entire population of Asia. To this principle is ascribed the application of Naaman, captain of the host of Syria, to obtain a cure for his leprosy, and the interview of Saul with the Witch of Endor. In the course of the lecture it was stated that many of the wells in the island had been discovered by himself and others, endowed with the peculiar power which was said to appertain only to certain persons.

DISTANCE OF THE SUN FROM THE EARTH INCREASING—Some German papers are endeavoring to prove that the distance between the earth and the sun is increasing annually, and argue from it that the increasing humidity of some summers and the loss of fertility by the earth, are to be attributed to this circumstance.

In the course of six thousand years from the present time, they absurdly assume the distance will be so great that only an eighth part of the warmth we now enjoy from the sun will be communicated to the earth, and it will then be covered with eternal ice, in the same manner as we now see the plains of the North, where the elephant formerly lived, and have neither spring nor autumn.

ENGRAVING MACHINE—A number of our exchanges have recently given wide circulation to the following paragraph:—

"M. Barrere, a French inventor, has exhibited a machine which engraves lines so minute as to be undistinguishable and almost imperceptible to the naked eye. It is designed for the production of private marks in bank notes, and is capable of producing two hundred different combination of minute kaleidescopic line figures, only to be seen by the aid of a powerful microscope, yet perfectly regular and distinct, and unsusceptible of being imitated. At every turn of the tiny wheels which work it, the machine produces four entirely new designs, exceedingly complicated, and quite different from one another."

This machine is of American origin, and is the invention of J. Bogardus, of this city, and work executed by it, as described above, has been on exhibition in this city for fifteen years.

HOW TO MAKE A FIRE IN A COMMON GRATE.—A correspondent of the London *Builder* thus describes a new method of burning bituminous coals in a parlor grate:—

"Clean out your grate, and cover the bottom with a sheet of paper folded to fit; then place the coals in the grate to the level of the top bar. The fire is then to be lighted on the top and allowed to burn downwards."

It is stated that this plan of burning bituminous coal saves a great deal of fuel, and makes a cheerful brilliant fire. The theory of this saving consists in the gases arising from the fresh coals below having to pass through the fire, where they are consumed, and thus give out heat in combustion, at the same time preventing smoke.

CHEMISTRY AND MATERIALISM.—The renowned Liebig delivered a public lecture on "Animal Chemistry" at Munich, on the 19th of Jan., in which he took occasion to declare, from his position as chemist and naturalist, his opposition to the widely-spread views of Moleschott, Vogt, Buchner, and others of the most rugged materialism. He pronounced himself with dignity and energy against the "deniers of mind and vital power," and illustrated and combatted, from his profound conviction, their erronous theories on pure scientific ground. He showed how impossible it is to explain on chemical principles the existence of even the lowest connecting parts of an organism—of a cell or a muscular fiber—and how much more so to account for the mysterious processes of life and thinking by a change of matter. He demonstrated how unable materialists were to distinguish organic combinations from those purely chemical. Nothing, he said, was more absurd than to derive the process of thinking and willing from a phosphorescence of the brain, as Moleschott had done. How much more of thinking stuff, then, (material of thinking,) would there be contained in bones, which have four hundred times more phosphorus than the brain?

Coal in a Curious Place.

A correspondent of the Philadelphia *Ledger* states, he has examined coal at the tunnel on the North Pennsylvania railroad, in a situation never before known to geologists. It is found fron 30 to 60 feet below the surface in rock of horn blende. The coal is confined in cracks of the rock, which diminishes in width (which is only a few inches) towards the top. He believes this coal was ejected from below, and that it is proof against the prevalent opinion of geologists, that coal is of vegetable origin.

Is he sure that it is coal? It may be a carbon shale, and not true coal.

The small bug which fell on the snow at Alexandria, Va., on Jan. 12th, has been discovered to be the black cochineal bug of Mexico. These were, no doubt, carried by a hurricane from Mexico.