

**RECENTLY PATENTED INVENTIONS.**

**Engineering.**

**ROTARY ENGINE.**—Lewis C. Huson, Elmira, N. Y. In this engine the piston is formed in sections having their inner edges constructed to loosely interlock with each other, whereby the sections are connected together and yet may move to a limited extent independently, the valves allowing for operating the engine in either direction.

**ROTARY ENGINE.**—The same inventor has likewise patented a compound engine having three separated chambers, each with a piston head, and all the heads fixed on the same shaft, live steam being supplied to two of the chambers, and the exhaust therefrom discharging into the third chamber, the invention also covering a novel construction of the drum to increase the bearing surface for the steam without diminishing the guide surface of the piston.

**SAFETY VALVE.**—Francis X. Vien, Brooklyn, N. Y. This valve is mounted to slide vertically, a pin bearing in the center of the valve and a weighted lever pressing on the pin, the valve having downward projections for guiding it in its seat, and the invention also covering novel details and combinations of parts.

**BOILER CLEANER.**—William T. Haney, Childersburg, Ala. This cleaner consists of a brush having a block or body formed on its upper side with a beveled or inclined surface, arranged to be acted upon by the water as the brush is reciprocated, to force the brush against the boiler surface, it being intended to be operated while the boiler is being used.

**WATER ELEVATOR.**—William O. Leutz, Mauch Chunk, Pa. This invention covers novel constructions and combinations of parts for pumping water from shafts or slopes in mines in which an air pump arranged above is used in connection with a series of successive lifting columns or pipes fitted with suitable valves and connected with the pump.

**BURNER.**—James Gibbons, Jersey City, N. J. This is a device adapted to burn fluid fuels, coal or water gases, wherein the air supply to the burner is superheated and the volume of air may be regulated to a nicety prior to commingling with the fluid fuel in the mixing tube, and passing thence with the fuel to the point of ignition to produce an intensely hot flame.

**Mechanical.**

**MASON'S FLOAT.**—George Kautz, Albany, N. Y. This is a float of which the handle may be easily and quickly attached or disengaged at pleasure, the parts being so made that the blade will be held firmly by the handle without the use of nails, so that the blade may be worn completely out and the handle then used with another float.

**PATTERN WHEEL.**—James Keeton, Brooklyn, N. Y. This is a wheel for warp knitting machines used in making gloves, mitts, and like articles, and the invention covers a novel construction of the wheel and means for holding and adjusting the blocks, whereby they may be independently set in or out relatively to the center of the wheel, to change the pattern as required.

**NUT LOCK.**—Thomas W. Patten, Baltimore, Md. This device consists of a screw-threaded nut having an eccentric depression in one side, combined with a washer having an eccentric boss projecting laterally therefrom, and having on its inner periphery transverse teeth adapted to engage transversely the threads of a bolt.

**Agricultural.**

**POTATO DIGGER.**—Hiram M. Shaw, Genoa, N. Y. As this machine is drawn forward, a fork is oscillated vertically by mechanism driven from the sulky wheel, and the potatoes and earth dislodged by the hoe are passed on to the fork, where they are thoroughly separated and the potatoes left on the top of the ground, where they can be conveniently gathered.

**Miscellaneous.**

**PRINTER'S BRUSH.**—Joseph C. Israel, New York City. This brush has a liquid-containing vessel or compartment arranged in its top or back with a valve designed to allow small quantities of the liquid to be delivered to the bristles through the bristle-holding apertures, being especially adapted for use in cleaning printers' forms with benzine.

**DUPLICATING TABLET.**—William H. Pardee, Columbia, Dakota Ter. Two books are secured to one back by independent fastenings, with their leaves alternating with each other, a carbon paper being secured to the back and adapted to be folded in between the leaves, whereby salesmen and others may keep a record in duplicate of checks and memoranda made out.

**TEMPORARY BINDER.**—The same inventor has patented a temporary binder for holding leaves or tablets or for filing bills, the cover having two studs combined with a rock shaft having curved arms adapted to act in conjunction with the studs in holding the paper on the cover, a second cover being connected with the first by a link, and having recesses to receive the curved arms.

**STOVE OR RANGE.**—Henry E. Janes, New York City. According to this invention a grating is located at each side of the grate between the upper oven plate and the top of the stove, with a concavity in its rear edge to embrace the pipes of the water back, whereby coal and cinders will be effectually prevented from passing from the grate to the flues.

**SASH HOLDER.**—Henry A. Flatman and James Seed, Southbrook, New Zealand. Combined with the casing is a friction piece, a lever pivoted to the casing supporting the friction piece, which is also engaged by a spring, the device being applicable to window sash and sliding blind sash, and forming a clamp to prevent rattling.

**FENCE MACHINE.**—John Sornson, Brayton, Iowa. This device comprises a body portion, with arms hinged at intervals upon one face of the body, the arms having a transverse groove in opposite sides near their free end, and a clamping fork extending across the grooves, making a simple and effective means for wiring in pickets or planks to make a fence.

**MOVABLE DAM.**—Addison M. Scott, Charleston, West Va. This invention covers an improved construction of dams which are composed of a series of wickets or shutters, which, when erect, form the dam, being then braced by a prop, movable as the dam is raised or lowered, the improvement relating especially to the "hearter" and the down-stream "slide."

**LIQUID HOLDING VESSEL.**—Stewart R. Mace, Moulton, Iowa. This is a pivoted can with a hollow handle and upwardly projecting spout, with its end in alignment with the spout, there being a valve for closing the spout and another between the handle and can, whereby the can may be readily manipulated and its entire contents emptied without danger of spilling.

**INSULATOR.**—Warren C. Brown, Tarrytown, N. Y. This insulator is formed of two halves, each having a semicircular groove, one half having also a lug and the other a recess for causing the grooves to register when clamped upon a wire, which may be done without the use of binding wires, the insulator to be made of glass, vulcanite, or other suitable material.

**COCOANUT COMPOUND.**—Leopold Schepp, New York City. This is a compound in which granulated dried cocoonut is mixed with granulated sugar, granulated tapioca, granulated baked corn, and other ingredients, in specified proportions, to make an article ready for use as a pie-filling or other purpose, but mainly for cocoonut tapioca puddings.

**COCOANUT COMPOUND.**—This is another food compound by the same inventor, having cocoonut, sugar, starch, gelatine, flavoring extract, and other materials, and being more especially adapted for use as a cocoonut cream pudding, the compounds being both designed to be put up in small sized air and water tight packages in convenient form for family and hotel use.

**LINIMENT.**—David Bates, Bonham, Texas. This liniment is made of linseed oil, turpentine, sulphuric acid, oil of wintergreen, tincture of button snake root, and other ingredients, to form an antiseptic compound for the treatment of all kinds of wounds, lame joints, etc., and is also designed to act as an insecticide.

**SCIENTIFIC AMERICAN BUILDING EDITION.**

**MARCH NUMBER.—(No. 41.)**

**TABLE OF CONTENTS.**

1. Elegant plate in colors showing elevation in perspective and plans of an attractive residence costing five thousand dollars, sheet of details.
2. Plate in colors of a cottage for three thousand dollars, with plans, elevations, sheet of details, etc.
3. Perspective and plans of a villa at Paris-Auteuil.
4. Moving a house thirteen miles by water. From Wheeler's Mills, on the Housatonic River, above Stratford, Conn., to West Stratford, Conn. Full page of engravings showing the various stages of the operation, also floor plans of the building.
5. A beautiful residence lately built on Reynolds Terrace, Orange, N. J., from designs by architect John E. Baker, of Newark, N. J. Perspective and floor plans.
6. A villa near New York. Cost eight thousand dollars. Plans and perspective.
7. A Queen Anne cottage for three thousand five hundred dollars, lately erected at Richmond Hill, N. Y. Floor plans and perspective.
8. A beautiful "Old English" house, lately erected at Richmond Hill, N. Y. Perspective and floor plans.
9. An attractive cottage lately erected at East Orange, N. J., at a cost of six thousand dollars. Plans and perspective.
10. A residence at Bridgeport, Conn. Cost four thousand and four hundred dollars. Perspective and plans.
11. A house for eighteen hundred dollars, recently built at Rutherford, N. J. Floor plans and elevations.
12. A cottage for two thousand one hundred dollars. Plans and perspective.
13. Engraving and plans for a cottage costing two thousand three hundred dollars.
14. A residence for five thousand dollars, lately erected at Rutherford, N. J. Plans and perspective.
15. Miscellaneous Contents: A lien law for grave-stones.—How to save ceilings when cracked, sagging, and ready to fall.—The Willer sliding blinds, illustrated.—Improved woodworking machine, illustrated.—An improved reversible ratchet brace, illustrated.—Canton, Ohio.—An improved dumb waiter, illustrated.—Water pressure regulators.

The Scientific American Architects and Builders Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects. The Fullness, Richness, Cheapness, and Convenience of this work have won for it the LARGEST CIRCULATION of any Architectural publication in the world. Sold by all newdealers.

**MUNN & CO., PUBLISHERS,**  
361 Broadway, New York.

**Business and Personal.**

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

For best casehardening material, address The Rogers & Hubbard Co., Middletown, Conn. Send for circular.

For Sale—Steam heater patent. Well introduced. Cheap to manufacture. Jerome L. Boyer, Reading, Pa.

For steel castings of best quality, write the Buffalo Steel Foundry, Buffalo, N. Y.

Water purification for cities, manufacturers, and private users. The only successful legitimate system. Hyatt Pure Water Co., 16, 18 & 20 Cortlandt St., New York.

Will Sell or Lease—Machine shop, iron and brass foundry, wood machinery and tools. First class water power, with governor. P. O. box 88, Milford, Delaware.

Wanted—A thoroughly competent and experienced workman to engage in the business of steam goods manufacture, both brass and iron. One who has served as foreman or inspector of such work will answer for the position. To the right man a good salary will be given, with a chance to gain interest. Address, stating what experience has been had in this direction, and that of managing hands. C. E. W., box 773, New York City.

To persons or firms desiring to have manufactured light machinery, hardware, and novelties, can make favorable terms by addressing the undersigned. American Sewing Machine Company, 20th St. and Washington Ave., Philadelphia, Pa.

Shafting Straighteners. J. H. Wells, Tampa, Fla. All books, app., etc., cheap. School of Electricity, N. Y.

Automatic cut-off. Ball Engine Co., Erie, Pa. Philip Parsons, Bishopsgate Within, London, solicits agencies for the sale of American goods in England.

Screw machines, milling machines, and drill presses. E. E. Garvin & Co., 339-143 Center St., New York.

For the latest improved diamond prospecting drills, address the M. C. Bullock Mfr. Co., Chicago, Ill.

For the best Hoisting Engine for all kinds of work, address J. S. Mundy, Newark, N. J.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Perforated metals of all kinds for all purposes. The Robert Aitchison Perforated Metal Co., Chicago, Ill.

The Holly Manufacturing Co., of Lockport, N. Y., will send their pamphlet, describing water works machinery, and containing reports of tests, on application. Pedestal tenoner. All kinds woodworking machinery. C. B. Rogers & Co., Norwich, Conn.

Drop Forgings. Bronze Forgings. Upward of 3,000 different articles. Billings & Spencer Co., Hartford, Conn. Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudzeon, 24 Columbia St., New York.

Friction Clutch Pulleys. The D. Frisbie Co., N. Y. city. "How to Keep Boilers Clean." Send your address for free 96 page book. Jas. C. Hotchkiss, 120 Liberty St., N. Y.

The best Coffee roasters, coolers, stoners, separators, polishers, scourers, glossing apparatus, milling and peaberry machines; also rice and macaroni machinery, are built by The Hungerford Co., 69 Cortlandt St., N. Y.

Lathe for cutting irregular forms. Handle and spoke lathes. I. E. Merritt Co., Lockport, N. Y.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

**Notes & Queries**

**HINTS TO CORRESPONDENTS.**

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication. References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn. Special Written Information on matters of personal rather than general interest cannot be expected without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(447) H. W. C. asks (1) whether the wire on the eight light dynamo is single or double would. A. Double covered. 2. Whether the rings of armature will make any difference if the hole is 1 3/4 inches instead of 1 1/2. I have the rings with 1 3/4 hole, and find that it is lots of work to turn them out. A. It will make no difference.

(448) Subscriber asks: 1. Would annealed steel wire do for the armature core? A. No. 2. Can the motion of the motor be changed by reversing the current? If not, how can it be reversed? A. No. You must shift the brushes. 3. Can more power be developed if two of such motors be coupled to one or the same shaft, and the current be run through both? A. Probably not with the same current.

(449) G. C. asks for the best method of eating copper wire from silver work without injuring the silver. A. Immerse in muriatic acid and add to it a little nitric acid. Or heat in chloride of copper solution. In using first method be careful to use as little nitric acid as possible, with a good excess of muriatic all through the operation.

(450) B. F. M. asks (1) whether the dynamo described in SUPPLEMENT, No. 161, can in any way be run as a motor. If so, how can it be done? A. The dynamo referred to works well as a motor, but it would

work better if two or three layers of the winding of the field magnet were omitted. 2. Can the stumps of electric light carbons which have been used be utilized in making a battery? A. Yes. See SCIENTIFIC AMERICAN, Dec. 17, 1887, and Oct. 27, 1888.

(451) Advance.—We advise you to consult Herring's Dynamo Electric Machinery for the information you desire.

(452) A Tyro asks if dynamo described SUPPLEMENT, No. 600, can be used as a motor, and if so, of what power with a current of say 110 or 220 volts. A. The dynamo referred to will develop about one horse power.

(453) A. F. W. asks for the best and cheapest way to amalgamate zinc, used in Bunsen battery. A. Place a very little mercury and some dilute sulphuric acid on a plate. Wet the zincs with acid and rub them with the mercury, using a piece of galvanized iron to pick it up. Or you may get a little mercury to adhere to one zinc and then may spread it by rubbing one plate against the other.

(454) L. D. Le N.—It is impossible to identify a plant from merely a strip of cuticle taken from the stem. It will be necessary for you to send the flowers and leaves of the plant, properly pressed and dried, and inclosed between sheets of cardboard to prevent breakage during transmission.

(455) M. H. N. asks: How can I etch my name on a lantern globe? Also, what acid is used for etching on steel or iron? A. Paint all around the letters of your name with black varnish, and protect the rest of the glass with paper. Let fall from a funnel a small stream of emery, about No. 50, upon the letters of the name. When sufficiently cut, clean off the varnish with turpentine. Also see query 456. Use weak nitric acid to etch steel and iron.

(456) H. E. B. asks: 1. How much water would waste from a boiler carrying 100 lb. of steam, through a hole in the boiler of 1-16 inch in diameter? Also through a hole of 1-32 inch in diameter in one hour's time? A. Provided the holes were straight and round, the discharge would be 45 gallons per hour from the 1-16 inch hole, and 11 gallons per hour from the 1-32 inch hole. 2. About what per cent of power is utilized in that class of small water motors that run by having a stream of water (under pressure) play against the cups on the rim of the wheel? There are several in a neighboring town, run by water from the city water works. A. 55 to 60 per cent for wheels with open buckets. With jacketed buckets running in a case, or with concave buckets or cups, the power realized may rise to 75 per cent. 3. Supposing the water wheels were made hollow, and from projecting arms the water was ejected backward from the way the wheel was running, and so run by reaction, would it not give just as much power as does the present style of wheels that run by direct action, same as the wheels in my second question? A. In the reaction wheels as high as 80 per cent has been claimed. There is a mechanical difficulty in connecting the supply through the shaft, that interferes with their usefulness. 4. In the electric blowpipe described in SCIENTIFIC AMERICAN of February 2, if the other end of the magnet was presented to the arc, would it repel the arc same as it does in that figure? A. Both poles are repellent to the electric arc. 5. Of what does the arc consist? Of fine particles of carbon? A. Fine particles of carbon are carried between the points by the electric current.

(457) D. E. W. asks: 1. Is Brown & Sharpe's wire gauge the same as the American wire gauge? A. Yes. 2. In the simple electric motor will it hurt the working of it if I paint the coils on the field magnet and armature? What kind of paint shall I use? A. No. Use shellac varnish, with any pigment to suit. 3. By the word "abut" do you mean to overlap or simply touch? A. To touch at the ends. 4. If the armature ring is wound with No. 18 wire, should the field magnet be wound with No. 16 or 18? A. No. 16. 5. What is a shunt? A. A branch circuit. 6. In a Leclanche battery of what are the pieces on each side of the carbon plate composed? A. Black oxide of manganese and a small quantity of shellac. Another formula gives the following: Oxide of manganese 40 parts, carbon 52 parts, gum lac 5 parts, bisulphate of potash 3 parts, compressed at 300 atmospheres at 212° F. 7. Would the whole carbon surface of a Leclanche battery be enough for one cell of the bichromate plume battery? A. Yes; but it is not in the right form. 8. Could you give me simple instructions for making a storage battery for experimental work? A. Consult the SUPPLEMENT.

(458) F. W. T. asks how to go to work to make a vacuum, and what machinery would be necessary and where obtained. A. You can produce a partial vacuum by driving the air out of a vessel by means of steam, then condensing the steam; also by means of an aspirator or air pump. If you want a high vacuum, you must use a Sprengel or Geissler air pump. You will find the names of dealers in vacuum machinery in our advertising columns.

(459) H. H. A. writes: 1. Is it advisable or possible to use two different styles of batteries on an electric bell circuit, for instance, the Leclanche and Gasner's dry battery? A. It is not generally done, but the combination mentioned might answer. 2. Which is the best battery for ringing bells? A. For open circuit work the Leclanche or some form of salammianic battery is generally employed. For closed circuit a bichromate couple is most economical.

(460) E. B. K. writes: Are hens' eggs manufactured in any artificial way, and sold in the market, so as to represent the genuine article? A. No; but dried eggs are sold for use in cooking.

(461) W. C. asks: Can you recommend any method for taking out the lead from the grooves of a badly fouled rifle? Have tried coal oil and turpentine. Is there no chemical which will dissolve the lead and not injure the rifle barrel? A. Clean the inside of the barrel with a strong solution of caustic soda, wash with hot water, and close one end with pine plug. Pour into the barrel 2 or 3 ounces mercury, plug the end, lay the barrel level, and occasionally turn it over, so that the mercury may come in contact with all parts. In a