

RECENTLY PATENTED INVENTIONS.

Engineering.

VALVE GEAR.—Edwin Garst, Dayton, Ohio. Combined with a rotary cam is a longitudinally sliding valve-operating frame, and a transversely sliding frame thereon embracing a cam, with other novel features, the valve being simple and durable in construction, using steam expansively, and automatic in its operation.

BOILER.—George F. Spencer, Thompson, Pa. This invention provides a boiler designed to be economical in fuel, and in which provision is made for the settlement of all waste in the base of the boiler, thereby preventing incrustation of the tubes, the object being also to increase the area of the heating surface, and provide for the rapid circulation of the water and steam.

Railway Appliances.

AIR BRAKE.—Joseph S. Lapham, American Fork, Utah Ter. Combined with two auxiliary reservoirs on each car, connected by a pipe, is an operating pipe connected with the reservoirs, a valve, and a coupling connected by a rod with the valve, with other novel features, the pipes being connected in the usual way with the main reservoir on the locomotive.

CAR STOVES.—Robert H. Gilmour and Fortunatus G. Kellogg, Huntington, Ind. This invention covers an apparatus to be located in each car and connected with the engine and the stove in the car, so that the engineer can extinguish at will the fire in the stoves on a train by causing water or chemicals to be discharged into the stoves.

Agricultural.

SULKY PLOW.—John H. Zinn, Gettysburg, Pa. The plow frame has slotted cross pieces to which the beams are adjustably secured, that they may be raised and lowered as required, and the plows or shovels have a socket connection with the beam, also adjustable according to the work to be done, while the driver's seat is so arranged that it may be moved either forward or backward on the frame.

Mechanical.

FRICITION CLUTCH.—Daniel T. Denton, Soudan, Minn. This invention covers a construction in which the clutch wheel is pivotally connected by toggle links with a collar secured on the main shaft, with other novel features, the clutch being especially adapted to hoisting machinery, in which a powerful friction and large bearing surface are required.

COTTON PRESS.—August Schkade, Giddings, Texas. This invention covers a tramping attachment for cotton presses which may be readily applied to any press, and is designed to be operated by steam, the attachment being simple and durable, and the invention covering various novel features of construction and combinations of parts.

CONVERTING MOTION.—Edward Burke, Le Mars, Iowa. This is a mechanism for converting reciprocating motion into rotary motion, or the reverse, employing a rectilinearly reciprocating rod, a shaft with rigid crank arm, a small traveling gear wheel mounted on the outer end of the crank and having a crank connecting with the rectilinearly moving rod, a stationary concentric gear being connected with the traveling gear wheel.

Miscellaneous.

SAD IRON.—Julius J. Czepull, Charleston, S. C. This is a self-heating sad iron which has a hollow body connected by pipes, and so constructed that when the reservoirs are once filled with gasoline, and the gases issuing from the burner are ignited, the sad iron will be continually heated for about six hours before the reservoirs need to be refilled with gasoline.

BOTTLE STOPPER.—William P. Cray, New York City. In this stopper the cork is covered with cloth or other tissue, which is tied above the cork, and extends above the binding cord to furnish a grasp or handle for withdrawing the cork from the bottle, this covering being also adapted to be tied down over the neck of the bottle to protect the cork and neck.

WATCH CASE PENDANT.—Frank G. Faxon, Mount Morris, N. Y. This invention covers a construction of a pendant set in which the watch bow will retain the winding and setting stem within the pendant when in its normal position, but which will release the stem-holding springs when the bow is in a particular position.

BRICK TRUCK.—James C. Steele, Statesville, S. C. This is a wheeled truck, with a pair of rests or lifting arms arranged between the wheels and near the ground, with lifting mechanism for both the front and rear ends of the arms to raise and lower them in level position, the arms being designed to be pushed under a platform carrying a load of bricks.

VEHICLE BRAKE.—John Fraser, Simcoe, Ontario, Canada. This invention covers novel details and combinations of parts in a brake designed to be simple and durable, and which will not only lock the wheels when the vehicle is descending a hill, but which will also lock the wheels should the vehicle be stopped in ascending a hill.

LETTER SHEET AND ENVELOPE.—Henry A. Ditzell, Romulus, N. Y. This is a sheet with gummed projecting portions adapted to make a combined letter sheet and envelope, and also having a projection adapted to bear the return address on the front of the envelope.

WARM AIR INHALER.—Louis Weigert, Berlin, Germany. This invention relates to an apparatus for supplying heated air of a suitable temperature for inhalation by persons suffering from diseases of the throat or lungs, the apparatus having a chamber

heated by a burner, with outlets for the escape of the products of combustion, and an outer chamber to heat air by contact with the central chamber.

FLYING MACHINE.—Reuben J. Spalding, Rosita, Cal. This machine consists of a jacket adapted to the body of the aeronaut, right and left wings and a tail held to the jacket, and a balloon from which the aeronaut is suspended by connections to the jacket and to straps or bands encircling his legs.

PAPER BOX.—Emil L. Meyer, Brooklyn, N. Y. This invention covers a blank of novel form and a box set up from such blank, which will be strong and inexpensive, and which may be mailed or shipped cheaply in flat or unfolded condition, and will keep its shape when set up, without the use of glue or other adhesive at the joints.

TRUNK.—Henry W. Rountree, Richmond, Va. This improvement is designed to give access to the body of the trunk without the necessity of lifting the tray out, the arrangement being such that the tray may be slid back on a horizontal line into the hinged lid or top when open without lifting the tray off its supporting strips.

EYEGLASS POLISHER.—Edward E. Thorpe, New York City. This polisher consists of an outer backing or body of flexible material and an inner sheet of polishing material, the latter being connected to the backing or body, the polisher being preferably made in a form convenient to fold and carry in the pocket.

CASH CARRIER.—Nelson Weeks, Jr., Long Island City, N. Y. This invention is designed to so improve cash carrier apparatus as to effect the complete independence of the several sales stations, conveying the cash pockets to and from each station by a single carriage without the interference with or dependence on the cash pockets of the other stations.

SHIPPING RECEIPTS.—Daniel K. Howe, Portland, Oregon. This invention provides a safe and convenient receptacle for a large number of receipts or papers, without the necessity of binding them between covers, and where also duplicate receipts or stubs may be safely and conveniently kept prior to filing them away.

TAG HOLDER AND TAG.—Martin L. Fogel, Superior, Neb. This is adapted to be readily attached to and detached from packages of goods to be marked without injury to the goods, to remain securely upon the package until the package is consumed, while the tag holder can be used over and over again until worn out.

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 newsdealers.

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

For reflecting or refracting telescopes, spectroscopes, diffraction gratings, polarizing eye pieces, heliostats, or any apparatus for astronomical photography or observations, address J. A. Brashear, Allegheny, Pa.

Wanted—Position as superintendent, foreman, or experimenter. Thoroughly understands designing labor-saving devices, and management of men. Can furnish first class reference from those whom I have had business with. "A." P. O. box 773, New York.

For Sale—Patent ash sifter. No. 399,371, March 12, 1889. Geo. W. Bown, 1023 S. 3d St., Philadelphia Pa.

Wanted—A competent draughtsman familiar with machine work. Address, with reference, post office box 152, Philadelphia.

To Manufacturers—The valuable patent, No. 389,629, for improved newspaper folding, wrapping, addressing, and binding machine, is offered to some responsible firm to manufacture, introduce, and sell the machines on favorable terms. For particulars, address Mrs. G. S. Alden, Red Cloud, Webster Co., Nebraska.

Wanted—A position as manager or superintendent by an experienced and practical civil and mechanical engineer and business man. A thorough draughtsman. Address G. D. H., P. O. box 773, New York.

For Sale or Lease—Machine shops for iron and wood, iron and brass foundry and tools. Good water power, with governor. Address P. O. box 83, Milford, Delaware.

Curiosities of U. S. Patent Office. A great book. 12 pp. pamphlet for stamp. W. C. Raymond, Syracuse, N. Y.

For Sale—Fifteen horse power Otto gas engine. Call at or address 67 Beekman St., New York.

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.

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

—Ball Engine.—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., 139-143 Center St., New York.

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.

Gun and Machine Makers' Screwdrivers, drop forged in best Tool Steel. Billings & Spencer Co., Hartford, Ct. Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Safety Elevators, steam and belt power; quick and smooth. The D. Frisbie Co., 112 Liberty St., New York.

"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.

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

Rod, pin, and dowel machines. 1,000 to 3,000 lineal feet per hour. Rollstone Machine Co., Fitchburg, Mass. Shafting Straighteners. J. H. Wells, Tampa, Fla.

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

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.

(538) A. W. P. K. asks for (1) method of cutting glass by means of fire. A. File a notch in the glass and touch with a red hot iron. This may be repeated until a crack is started. A drop of water may be placed on the spot to start it, if it fails to appear. Then by moving a hot iron a little in advance, the crack can be led in any desired direction. 2. Recipe for making an invisible chemical substance which makes a snapping noise when stepped upon. A. Mix 2 parts chlorate of potash and 1 part red phosphorus with a little gum water, and apply drops of it to paper. It is very dangerous to work with. 3. Candle power and voltage of a 4 quart Bunsen battery. A. Such a cell will give nearly 2 volts and 10 watts, equivalent to two or three candle powers. 4. How many 4 quart Bunsen cells are required in operating a 2 gallon nickel plating solution? A. One or two cells.

(539) W. H. C. writes: 1. What is the difference between an electrical and a steam horse power? A. There is no difference, properly speaking. One horse power second of mechanical energy converted without loss into electrical energy would generate 746 volt-coulombs. The rate of one mechanical horse power is 33,000 foot pounds per minute; the rate of one electrical horse power is 746 volt-amperes. But as in the conversion there is inevitably a loss, ten per cent may safely be subtracted from the electrical H. P. to get a practical figure. 2. How many storage batteries would it take, of 300 ampere hours and 2 volts, to run a motor of four electrical horse power? A. If we assume a discharge rate of 30 amperes, then 50 cells would be needed. 3. About what would be the cost of storage batteries of the above capacity? A. For prices address any reliable firm of electrical supply dealers.

(540) R. H. B. writes: In SUPPLEMENT, No. 633, p. 10110, you describe Prof. Low's incandescent gas burner. Would you please inform us through your columns what is the incandescent cone made of, and how is it made? Please tell us of some cheap composition that will stand incandescence for five or six hundred hours, over a Bunsen burner. A. The composition of the cones of incandescent burners is secret. Zirconia forms a prominent constituent. Platinum wire is sometimes used. A mixture of zirconia and magnesia or lime would answer, but it is doubtful if it would last 600 hours.

(541) G. W. R. writes: Will you inform me what effect about 2,000° Fah. will have on graphite in its powdered state, also whether it is considered a good non-conductor of heat? A. The heat mentioned will have no effect on graphite. It is a conductor of heat if compressed, but only a poor one; if in loose powder, it is a still worse conductor.

(542) J. R. B. asks in what manner the alternating current differs from other currents in electricity. A. As its name denotes, it changes its direction continually, sometimes many hundred times a second.

(543) H. D. W. writes: In Greensburg, Pa., is located a house which often is the scene of peculiar electrical phenomena. Everything therein in the way of metal becomes charged with electricity, such as gas fixtures, door knobs, etc., and even the occupants in passing each other in rooms or halls who touch hands can experience a shock. In turning on a gas light the shock is often very pronounced. The house is located in the natural gas region, which is burned in fireplaces and ranges, but is not used for illuminating, and there are no electric wires attached to the house at any point. One or two other houses in the same place have been charged with electricity, but not to such an extent as the one under consideration, and the disturbance can be noticed only on clear days. Can you throw any light on this subject? Will you please, if it can be done, explain why this electricity is in the house and where it comes from? A. The air of the house and the materials composing it, we presume, are very dry, so that the friction of a person's shoes upon the carpet is enough to excite electricity.

(544) H. C. writes: I am making a small electric motor. The magnet is made of ten pieces of Russia iron, each 1 3/4 in. long, 2 in. wide, and about 1-40 of an inch thick, bent in the form of a circle about 4 1/2 in. in diameter. The armature is a gray iron casting for an H armature, 2 in. long, 1 1/2 in. diameter, with a groove 1 in. x 3/4 in. for the wire. I should like to run the motor with three Crowds Universal batteries, each having an advertised E. M. F. of 25 volts, an internal resistance of 0.4 ohm, and a current through its own resistance of 5 amperes. 1. Please tell me how much and what size wire I should put on each magnet pole and armature to obtain best results with my battery? A. Your results will be very inferior on account of the material and construction of your armature. It should be built up of sheet iron punchings with shellacked tissue paper between them. Wind field and magnet with No. 20 wire, using altogether 200 feet. 2. How much power should you think the motor ought to give? A. The motor will not give over 1-100 H. P.

(545) H. P. writes: I would like to ask you how to make a battery to run a small or toy motor. I have a jar 6 in. x 8 in. Is there any way of constructing it to run the motor? Or is there any battery that will run a small motor for months without recharging the same? If so, how are they made? A. For battery see SCIENTIFIC AMERICAN, December 17, 1887, and for a battery plate made from electric light carbons see SCIENTIFIC AMERICAN, October 27, 1888. A large gravity battery is most constant for long periods. See SUPPLEMENT, Nos. 157, 158, and 159, for description of all prominent batteries.

(546) M. L. asks the relative loss by friction on a common steel shaft running in: 1. Ice boxes (theoretically)? A. The friction of steel on ice journals has no record. On runners it is very low, probably not exceeding one per cent of the load. 2. Steel boxes? A. Steel shaft in steel boxes, continuous lubrication, 3 to 3 1/2 per cent. 3. Babbitt metal boxes? A. Steel shaft in Babbitt, 4 to 4 1/2 per cent. 4. Brass boxes? A. Steel shaft in brass, 4 to 5 per cent. 5. Graphite boxes? A. Steel shaft in graphite boxes dry, 5 to 6 per cent of the load. The friction of journals varies very much with the quality and kind of lubricants.

(547) F. S. — You will find the red mulberry tree growing in Central Park, on the Bloomingdale road (this side of the Asylum), on Hoboken Heights, N. J., and at Glen Cove, L. I.; and the white mulberry you will find rather common in cultivation about the city, and in Astoria, Hoboken, etc. As regards distribution, the red mulberry (our native species) is found in rich woods from New England to Illinois and southward.

(548) F. H. S. writes: I have a steam fruit evaporator, which is a horizontal shaft of the following dimensions: Length 46 feet 8 inches, height 7 feet, width 4 feet. The heat is obtained by five horizontal coils of 1 inch steam pipes. Horizontally the pipes are 4 inches apart, and vertically 12 inches apart. One end of the shaft is raised 4 inches to give drainage to the pipes. The drying is done on eleven rows of gal-