

RECENTLY PATENTED INVENTIONS.

Engineering.

FURNACE TAP.—Edward P. Mathewson, Pueblo, Col. This invention provides means whereby the operator may drive an agitating bar into the molten metal in the hearth or crucible, without stopping the blast or otherwise interfering with the regular process of smelting. A casing fastened to the furnace front has a matte hole and a slag discharge hole, a slag casing being arranged over the matte hole in front of the first casing, and there being slag spouts adapted for vertical adjustment in guideways in the sides of the slag casing.

PISTON ROD PACKING.—Thomas J. Hudders, St. Paul, Minn. This improvement is adapted for use in an ordinary gland or stuffing box, and is arranged to adapt itself to any irregularity in the movement of the piston rod. A concave annular seat is fitted to the stuffing box cap, a sleeve with a collar at or near its center, having a concave surface fitted to the annular seat, and provided with internal circular grooves at opposite ends, while a spiral spring in the stuffing box is arranged to press the sleeve outwardly against the seat. A packing ring of circular cross section is fitted in the grooves. The labor and delay of packing a piston rod is thus obviated, and friction and wear are reduced to a minimum.

LOCOMOTIVE BOILER.—Thomas A. Hendersen, Bucyrus, Ohio. This invention provides a readily removable baffle plate and an adjustable deflecting apron secured to its bottom, instead of the baffle plate riveted in the smoke box, according to the usual practice. Under the old method of construction, when a fine burst, or repairs are needed, the removal of the baffle plate is a work of some hours, which time is saved by means of this improvement.

Railway Appliances.

AUTOMATIC AIR BRAKE COUPLING.—William A. and Benjamin S. H. Harris, Pelzer, S. C. Two patents have been granted these inventors for improvements on couplers formerly patented by them, the main features of the improvements consisting in coupling heads with self-acting valves and locking mechanism, in connection with a supplemental air pressure pipe extending at the side of the brake pipe throughout the train, whereby the brake pipe sections attached to different cars couple and uncouple automatically. When accidentally parting when the train is running the brakes are instantly applied, according to this improvement, not only to the separated cars, but to those that remain connected with the locomotive. The valves of the couplings may also be closed at will by the engineer, preventing the application of the brakes whenever desired. One of the patents is specifically for a new valve locking and releasing mechanism, whereby certain important advantages are obtained in the automatic application and release of the brakes.

STREET CAR FENDER.—George Hipwood, Horatio C. Barrett, and Stephen Porter, Boston, Mass. In lugs depending from either side at the front of the dashboard is journaled a horizontal shaft actuated through bevel gears by a rod provided with a crank handle, and at each end of the shaft is a hollow tube in which is held a spring-pressed rod, the rods being united at their forward ends by a cross bar, forming the outer end of the fender proper. Intermediate spring-pressed bars are also connected with the cross bar, beyond which extends a series of curved, pivoted shoes, cushioned at the rear, and with their forward ends resting on rollers adapted to roll on the ground. The spring-pressed frame is covered by a network, and the shoes are adapted to rock and throw back into the net, without injury, any one accidentally in the track of the car, the toes of the shoes coming down very close to the ground. The device folds up against the dashboard when not in use.

Agricultural.

PLANTER.—Robert B. Ormiston, Winnipeg, Canada. This machine is especially adapted for planting cabbage, celery, onion, and similar seed or plants, making the necessary holes in the earth and depositing the seed or plant therein, and properly covering them as the machine advances. The cavities in the ground are made by a forward wheel, and the seed or plants are carried by pockets of a traveling belt, from which they are taken and deposited by fingers of a planting bar and the roots of the plant or the seed are covered by a covering bar. The machine is provided with markers, held out of operative position when not required.

COTTON HARVESTER.—Leonard R. Turner, Sing Sing, N. Y. This machine, in combination with a suitable driving mechanism, has a series of cylindrical fenders carrying whips, which swing in and out of the fenders, in their outward motion delivering blows upon the branches or bolls of the plant, thus loosening the ripe cotton and removing it to a conveying mechanism by which it is discharged into sacks, the unopened bolls being left uninjured for subsequent gathering after ripening.

Miscellaneous.

HOSE BRIDGE AND TOWER.—James Blake and Emil F. Begiebing, Union, N. J. This invention provides an improvement in devices to facilitate carrying a hose over a railway track, so as not to interfere with the free running of cars. The improvement comprises a telescoping body, extended by means of a crank and a rack mechanism, a hose holder being hinged to the top section of the body. It may be quickly and easily extended to make it the necessary height, and as readily folded and collapsed into a small compass. It may also be used by firemen as a tower, from which streams may be advantageously directed into the upper stories of buildings.

DUMPING RACK.—William Underwood and Cornelius Prall, Fair Grange, Ill. A dumping rack which may be attached to the running gear of an ordinary wagon after the body has been removed is provided by this invention, whereby a large load of broom corn

and similar material may be carried, and the load readily dumped as desired. A rearwardly extensible fender is arranged to project beyond the tail end of the rack body, to engage and secure the rearwardly projecting portions of the load.

PNEUMATIC TIRE REPAIRER.—Charles E. Buckbee, Flushing, Mich. For repairing punctured pneumatic tires or other rubber tubes, this inventor utilizes a flexible tube for holding rubber cement, the cap of which is provided with a tubular needle, which the cement will follow into the puncture as the tube is squeezed, until the cement accumulates as a small button on the inside of the tire, after which the needle is withdrawn and the tube gently squeezed to supply sufficient cement to fill the puncture and tightly seal the opening.

LIQUID MEASURE.—Harold Gregson, Detroit, Mich. A piston is held to slide in a cylinder having suitable inlet and discharge ports, a handle being connected with the piston and a gauge rod arranged at one side of the handle, while an indicator on the handle moves opposite the rod. The measure is adapted for use with any kind of liquid, however light or heavy, the measure simultaneously filling on one side of the piston as it discharges on the other, as the handle is moved in and out, and the measure being always full so long as the supply of liquid lasts.

PORTABLE PERFUME RECEPTACLE.—Gustavus A. Ritter, New York City. This is a device in the form of an opera glass, and with similar tubular sliding extensions, but of such peculiar construction as to afford two liquid holders adapted for a separate discharge of their contents, and which may be separately sealed in a convenient manner. It is also designed to be carried in a case similar to that of an opera glass, and be appropriately finished, affording a unique and neat design.

BAG OR PURSE FRAME.—Louis B. Prahar, Brooklyn, N. Y. A latch for frames of this kind, devised by this inventor, is of such construction that the frame may be unlatched and opened with one hand only, the device being very simple, strong and inexpensive. A spring-pressed bolt projects above a housing attached to one member of the frame, there being on the other member a keeper on which slides a cap to which is secured a pin working in the keeper and adapted to engage the bolt.

PLATE AND CUP AND SAUCER HOLDER.—Oscar L. Miller, Ravenna, Neb. This is a device of simple and durable design to facilitate the advantageous display of table ware, permitting the articles to be conveniently attached to and removed from the holder. The plate holder is formed preferably of a single piece of wire, bent to the required form, and with which may readily be connected a second plate holder, as well as a hanger, and a cup and saucer holder, each formed of single pieces of wire.

GLOVE.—Henry M. Peyser, Boston, Mass. According to this improvement, two tapes are secured in a peculiar manner to the glove at one side of the slit, to facilitate the closing in of the inner heads of the buttons in a sheathing, at the same time insuring the proper sewing up of the several parts forming the sheathing. The sheathing is thus very conveniently formed without any stitching being seen on the outside.

LIFTING FORK FOR KITCHEN USE.—George M. Parsons, Virginia City, Nev. This is a simply made device to facilitate the lifting of hot dishes. It is strongly made of a single piece of wire, so bent as to enable a variety of different shaped dishes to be readily grasped thereby, and handled as desired without danger of breaking the dishes or burning the fingers.

MOSQUITO NET FRAME.—Albert C. Lottman, Houston, Texas. This is an improvement on a formerly patented invention of the same inventor, providing a very simple and inexpensive frame, with but few parts, which may be readily attached to or removed from a bedstead without injuring or marring it. It may also be used to support a tester or frame with its canopy connecting the tops of the posts in a four-post bedstead, facilitating the carrying of the netting over the bed or over the headboard without interfering with the tester.

BOTTLE COVER OR CAP.—Antenor Asorati, New York City. This device consists of a shank capable of a sliding movement in relation to a clip spring upon the receptacle or a bottle neck, a counterbalanced cover being pivotally connected with the shank, and means for holding the latter in place after it has been adjusted. When the bottle or other receptacle to which the device is applied is in an upright position, its mouth will be effectually sealed, but as the receptacle is inclined its mouth will be uncovered.

ANIMAL TRAP.—Newton J. Tanner, Oviedo, Fla. This is a trap which, when sprung, will jump bodily upward, thus raising the jaws so as to make sure that they catch on the leg of the animal springing the trap. It is also provided with a series of hooks which extend outward beyond the free ends of the jaws and overlap, the hooks catching and holding the animal should it escape the jaws as they come together.

EAVES TROUGH HANGER.—Allen R. Lewis, Shelton, Wash. This is a hanger which may be adjusted horizontally and vertically and it may also be adjusted to receive eaves troughs of different widths, or attached to an inclined eave, holding the trough horizontally. It is simply and strongly made, and may be quickly and easily put in place.

DRAIN.—John L. Steitz, Chicago, Ill. This invention relates to stop and waste devices used in cold weather to drain water supply pipes and prevent their freezing. The drain is intended to be used in places where the water pressure does not exceed twenty pounds, the pressure being used to compress air to operate the device. The device is entirely automatic, and during warm weather may be rendered inactive by turning a stop cock.

BADGE HEADING DESIGN.—Edward L. Torsch and James R. Lee, Baltimore, Md. This is a novel form of clasp pin frame, of oval shape and special marginal configuration.

DESIGN FOR EXHIBITION STAND.—Isaac Hermann, New York City. A mirror exhibition

stand, designed by this inventor, has vertical panels at right angles to each other, with horizontal figures in re-creating, step-like form partially intersecting the panels.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

ENGINEERING EDUCATION. Being the Proceedings of Section E of the World's Engineering Congress, held in Chicago, Ill., July 31 to August 5, 1893. Published by the Society for the Promotion of Engineering Education as Volume 1 of their Proceedings. Edited by De Volson Wood, Ira O. Baker, J. B. Johnson, Committee. Columbia, Mo. 1894. Pp. viii, 342. Price \$2.50.

A society for the promotion of engineering education exists in this country, and in this volume we have the first volume of its proceedings. It includes a number of excellent papers on college education, such as the place of mathematics therein, systems of examination and other practical features thereof. These papers are by prominent educators, and discussions on them are introduced. The volume is largely a report on the work done in the direction of engineering education at the International Congress of Engineering held at the World's Fair in Chicago. There is no question that the proper system of engineering education is a problem of the day, and how better to reach a knowledge of its different conditions than by the perusal of such volumes as this is not easy to see. The volume lacks an index, something which would add very greatly to its value.

"The Shoe and Leather Reporter Annual" for 1894 is the title of a solid octavo volume of 773 pages, affording the most complete directory anywhere published of the boot and shoe manufacturers and dealers, tanners and carriers and leather sellers, and those engaged in related branches of business. The lists of names for the United States and Canada cover about all that could be desired and the volume also includes the principal houses in all other parts of the world. The book likewise contains valuable trade records and statistics.

SCIENTIFIC AMERICAN BUILDING EDITION.

FEBRUARY, 1894.—(No. 100.)

TABLE OF CONTENTS.

1. Elegant plate in colors showing a suburban dwelling at Plainfield, N. J., erected at a cost of \$4,600 complete. Floor plans and perspective elevation. A tasteful design. Messrs. Rossiter & Wright, architects, New York.
 2. Plate in colors showing an elegant residence at Pelham Manor, N. Y. Perspective view and floor plans. Estimated cost \$7,000 complete. An excellent design.
 3. The Jamaica Club House, recently erected at Jamaica, N. Y. Perspective views and floor plans, also an interior view. Cost \$9,000 complete. Messrs. Haus & Osborne, architects, Brooklyn, N. Y.
 4. A beautiful residence at Portchester, N. Y., recently erected for A. V. Whiteman, Esq. Perspective and floor plans. Mr. Frank W. Beall, architect, New York.
 5. Engravings and floor plans of a suburban residence erected at Ashbourne, Pa., at a cost of \$4,800 complete. An attractive design. Harrison Albright, Esq., architect, Philadelphia, Pa.
 6. A suburban dwelling recently erected at Edgewater, Ill., at a cost of \$10,216. Floor plans and perspective elevation. Mr. F. B. Townsend, architect, Chicago.
 7. A colonial cottage at Buena Park, Ill., recently completed for Guy Magee, Esq. Floor plans and perspective elevation. An artistic design.
 8. A modern half-timbered cottage at Wyncote, Pa., erected at a cost of \$4,250 complete. Floor plans and perspective elevation. Mr. A. S. Wade, Philadelphia, Pa., architect.
 9. A modern colonial residence at Oak Lane, Pa., erected at a cost of \$6,800 complete. Perspective view and floor plans. Mr. F. R. Watson, of Philadelphia, Pa., architect. An attractive design.
 10. The residence of Rev. Samuel Scoville at Stamford, Conn., erected at a cost of \$6,516. Mr. W. W. Kent, architect, New York. An excellent design.
 11. Examples of interior decoration and furniture in the Moorish style.
 12. A Queen Anne dwelling at Jenkintown, Pa., recently completed at a cost of \$5,000. Messrs. Burke & Dolhenty, Wyncote, Pa., architects.
 13. Miscellaneous Contents: The growth of plants in odd places.—Acoustics in buildings.—Improved steam power brick machine, illustrated.—A new style stamped ceiling, illustrated.—The telethermometer or distant temperature indicator.—The improved Thatcher furnace, illustrated.—Improved sash chains and fixtures, illustrated.—An improved sliding door latch, illustrated.—Aluminite in cement plaster.—Fire losses of 1893.—Graphite paint.—The Columbian sash and door lock, illustrated.—An improved sash lift, illustrated.
- 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 the following week's issue.

"U. S." metal polish. Indianapolis. Samples free. Stave machinery. Trevor Mfg. Co., Lockport, N. Y. Best drying machines. S. E. Worrell, Hannibal, Mo. Air compressors for every possible duty. Clayton Air Compressor Works, 26 Cortlandt Street, New York.

Wanted—A first class patented lock for folding paper boxes. Address Boxes, care of Scientific American.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Nickel-in-slot machines perfected and manufactured Electrical supplies, Waite Mfg. Co., Bridgeport, Conn.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Latrit and Canal Sts., New York.

Centrifugal Pumps for paper and pulp mills. Irrigating and sand pumping plants. Irvin Van Wie, Syracuse, N. Y.

Carborundum—hardest abrasive known. Send for prices of wheels, powder, etc. The Carborundum Co. Monongahela, Pa.

Emerson, Smith & Co., Ltd., Beaver Falls, Pa., will send Sawyer's Hand Book on Circulars and Band Saws free to any address.

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

Thos. Pray, Jr., box 278, Boston, Mass. Testing Steam Power, Waterworks Pumping Engines, Steamships, etc. Write for advice, charges, information.

U. S. patent of a new combined heater, cooler and ventilator for sale. (Agents need not apply.) Address Emil F. Ruehr, inventor, 430 W. 3d St., Davenport, Iowa.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4; Munn & Co., publishers, 361 Broadway, N. Y.

Patent Electric Vise. What is claimed, is time saving. No turning of handle to bring jaws to the work, simply one sliding movement. Capital Mach. Tool Co., Auburn, N. Y.

Competent persons who desire agencies for a new popular book of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office, 361 Broadway, New York.

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. Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same. 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.

(5842) W. C. K. writes: Some people claim that if you will make a noticeable mark upon the trunk of a young tree, the mark will always remain the same distance from the ground as when made. Now, is this a fact? And if so, can you explain? A. Our forest trees are supposed to have a slight rise in the lower parts of their trunks by reason of the expansion and uplift of their roots, so that marks on the bark near the ground may rise a few inches, or a foot or two, in the course of its growth. Some kinds of trees rise more than others.

(5843) O. H. P. writes: 1. What is the power of the motor described below, if the proper current is applied? The field magnet is the same as the one described in SUPPLEMENT, No. 641, for simple electric motor, excepting it is wound with 2 1/4 pounds of No. 24 magnet wire and No. 18 on armature and connected by shunt. A. About 1/2 horse power. 2. Is there any change you recommend in the motor to increase its efficiency? A. No. 3. What change should be made to make it an efficient dynamo for incandescent lighting? A. Cast iron fields and finer winding. 4. How many, and what voltage and candle power, should the lamps be? A. The voltage depends on the winding. It should give 10 or 12 candle power. 5. I have made a storage cell with thirteen plates cast of lead, 6 inches long, 4 inches wide, 1/2 inch thick, with forty 1/2 inch holes in each plate. The surface of the plates is roughened with a knurl and the holes were well filled and the surface coated with a paste of red lead. How many such cells will be required to develop 1/2 horse power for one hour at a time in the motor described? A. Ten. 6. Should the cells be connected in series or in parallel? The cell I have made will run the motor without load for four hours. A. It depends on the winding. For your winding connect in series. 7. How many 6x8 gravity cells will be required to charge the storage cells that I may use the motor one hour each day at full capacity? A. 26 cells in series and 5 in parallel, a total of 130 cells. 8. What would be the effect if the zinc in a gravity cell were amalgamated? A. It is not necessary, and involves loss of mercury. 9. If the positive plates in the storage cell described were 1/2 inch thick, would it have a greater amperage? A. No. 10. What should be the specific gravity of the acid solution for the storage cell I have made? A. 1.170 before charging, 1.200 or 1.210 after charging.