

**ENGINEERING INVENTIONS.**

A boiler has been patented by Mr. Joseph Leigham, of Lebanon, Pa. The invention covers boilers arranged in the furnace, with tubes surrounding the fire chamber above the grate bars and connected by branch pipes with the boilers, with a superheater held above the boilers and connected with them by branch pipes, and a mud drum held below the boilers, with other novel features.

A sliding door lock has been patented by Mr. Edward B. Searles, of Baltimore, Md. It is a car door fastening, comprising a plate with a series of undercut sockets and a slot connecting them, with a block having a portion adjustable into any one of the sockets, and movable in the connecting slot from one to the other, by which the door may be made fast closed, or open to any desired degree.

A car coupling has been patented by Mr. George J. Ferguson, of Greenville, Tex. This invention provides a locking and unlocking device to be placed entirely outside of end of car, to allow any mode of attaching drawheads, the unlocking device being self-retaining in uncoupled position, and permitting operator to uncouple and leave cars uncoupled without their being pulled apart, while it is unnecessary to go between the cars for coupling and uncoupling.

A tubular hot air furnace has been patented by Mr. Frederick Shriver, of Grand Rapids, Mich. The shell of the chamber is made of plate iron, with the lower part of the vertical section lined with fire brick, to form a fire chamber, and resting upon a cast iron bed plate, the latter supporting a fire grate resting upon a brick foundation, with other novel features, making a furnace that can be readily cleaned and repaired, is easily built, and will be effective and durable.

A combined steam and hot air furnace has also been patented by the same inventor. It is so constructed that a large amount of water-heating surface and air-heating surface are exposed to the direct action of the products of combustion, and that all the parts of the furnace can be readily cleaned and repaired.

**AGRICULTURAL INVENTIONS.**

A hay stacker and loader has been patented by Mr. Hubert L. Dewing, of Valley Center, Kansas. This invention covers a novel construction and combination of parts, so designed that the hay can be readily drawn upon the carrier, easily elevated, and dropped closer to or further from the rear side of the machine, as required.

A plow jointer has been patented by Mr. Thomas Lowden, of Lowell, Mass. It may be used as an attachment to any form of plow, and is so constructed as not to perceptibly increase the draught of the plow, being an improved form of device used for cutting off the edge of the furrow slice and depositing it in the previous furrow.

A sulky plow has been patented by Messrs. Joseph Marx and Adrian Virnig, of Cross Plains, Wis. It is designed so that two plows, preferably right and left hand plows, may be used alone or both together, in preparing lands or for cutting ditches and drains, and is arranged for conveniently guiding the machine and for regulating the operation of the plows, the colter, and the draught tongue, for working to any desired depth.

A hay gatherer has been patented by Messrs. James H. and Simeon W. Humphrey, of Platte City, Mo. It has a row of teeth forming a rake for gathering the hay, slats which form tables for the hay to accumulate on, and which may be used to assist in piling the hay upon the machine, turning the hay over upon itself and also in unloading, with levers which regulate the teeth for gathering, carrying the load, or traveling upon the road.

**MISCELLANEOUS INVENTIONS.**

An excavator has been patented by Mr. Howard W. Roop, of McMeekin, Fla. The apparatus consists of a shore pulley and its driving mechanism, a bog anchor and its pulley, an endless cable passing around the pulleys, and a detachable excavator bowl adapted to be operated by the cable from the shore upon the edge of a bog.

A breast pump has been patented by Mr. Anaximander B. Tutton, of Sioux Falls, Dakota Ter. It is so constructed that the force of the suction is partly upon a water leg or column of water and milk in a long siphon tube, modifying its effect, while the pulsations of the bulb are broken up and rendered more like a uniform suction.

A toy carousel has been patented by Mr. Samuel Pinnell, of Brooklyn, N. Y. Combined with the handle is a frame pivoted thereto at its center, weighted to throw its center of gravity off the pivotal center and adapted to be oscillated by and with and revolved by the handle, with a series of figures fixed to the outer part of the frame.

A method of ornamenting curtain poles has been patented by Mr. Theodore J. P. F. Lindberg, of Brooklyn, N. Y. It consists in covering the wood with plain sheet metal, then passing the pole and covering through a hollow revolving chuck, with a point or tool to run in contact with the metal for impressing on it spiral ornamentation and embedding it into the wood.

A bow for musical instruments has been patented by Mr. Daniel Nettekoven, of Fort Shaw, Montana. The invention covers a tapering pocket in which are placed the ends of the hair, and a wedge fitting into the pocket, with other novel features, whereby the hair can be quickly removed and replaced, and is not liable to become loose in its fastenings.

A sofa and bed lounge has been patented by Mr. James P. Miller, of Boston, Mass. The seat has a back hinged to it and legs hinged to the back, with a spring secured to the seat and connected to the legs, for holding the back in a vertical position, with other novel features, so that but very little exertion will

be required to convert the lounge from a sofa to a bed, and vice versa.

A water heater has been patented by Messrs. Julius Helm and William H. Sweaney, of Williamsburg, Va. It is for heating water for bathing, laundry, or agricultural purposes, and the invention consists in a novel way of placing a stove constructed therefor in the end of a bath tub or other water receptacle, so that the water will partially surround the stove and be directly heated thereby.

A combined watch key and chain bar has been patented by Mr. Sherburn L. Swasey, of Newbury, Vt. It consists of a series of steel strips fixed in a barrel, the ends projecting from the barrel, and the inner sides of the strips shaped to form a square bore, which decreases in diameter from one end of the key to the other, the tubular barrel or bar having a chain-attaching ring secured between its ends.

A pipe bending machine has been patented by Mr. George B. Brownson, of North Springfield, Mo. Combined with a semicircular grooved block and grooved supporting blocks on pivoted dovetailed heads, adjustable at desired distances apart, are suitable means for moving the semicircular bending block down upon the pipe resting on the supporting blocks on the portion between the points of support.

A staff holder has been patented by Mr. Joseph Husband, of Rockwood, Ill. It is a device for holding brooms, canes, and similar articles, and consists of a base board with a horizontal shelf, with jaws pivoted to the shelf, a pair of levers pivoted to the base board, and a rod connected with the levers and having a socket for receiving the end of the broom handle or other article.

A combined door bell and letter box has been patented by Mr. John H. Pierce, of Omaha, Neb. This invention covers a bell-striking mechanism and mechanism for locking the letter box, the opening of which is closed by a flap plate adapted also to receive a name, above which is a push button of glass, hollow, and filled with a wooden plug painted with luminous paint so it will be visible at night, with other novel features.

A hat felting machine has been patented by Messrs. James C. Grant and Jarvis C. Brush, of Newburg, N. Y. The invention consists principally in connecting the sizing machines by a conveyor leading from the discharge opening of one machine to the feed opening of the next succeeding one, thus rendering the felting continuous and obviating the necessity of the operator's transferring the hat bodies from one sizing machine to another.

A sewerage system for buildings has been patented by Mr. Charles H. Shepherd, of New York City. It embraces a receiver for taking the waste and delivering it to the sewer pipe, there being in the receiver a broom for stirring up and discharging accumulating matter, with means for flushing the receiver and applying disinfectants thereto, and devices for drawing a soil pipe cleaning brush through the pipes, while preventing entrance of sewer gas to the building.

A mechanism for transferring patterns has been patented by Mr. Isaac Marks, of New York City. A leaf carrying the pattern in embossed or raised outline is hinged to a cutting table or other suitable bed, on which the cloth to be marked is placed; the raised pattern on the leaf is then covered with chalk or other marking material, the leaf turned down upon the cloth, and a roller specially arranged therefor made to travel over the back of the leaf, thus marking the pattern on the material.

An apparatus for launching torpedoes and an automatic brake therefor have been patented by Mr. Emil Kaselowsky, of Berlin, Germany. The launching device is a bar or beam that may be extended outward from the torpedo tube, and having a guide that conforms to a guide stud on the outer surface of the torpedo, so that as the torpedo leaves the case the projection will enter the slot in the guide bar, and the torpedo be thus supported and guided until it has entirely emerged from its tube, while the brake-releasing mechanism operates automatically simultaneously with or slightly before the application of the projecting force to the torpedo, in order to avoid the possibility of compressed air or gas, or similar projecting force, being admitted to the torpedo tube while the brake is applied.

**NEW BOOKS AND PUBLICATIONS.**

**AGRICULTURE IN SOME OF ITS RELATIONS WITH CHEMISTRY.** By F. H. Storer. New York: Charles Scribner's Sons. 2 vols. Pp. 529, 509.

While this is a work written for persons fond of rural affairs, and students of agriculture, it is not at all technical in the chemical information given; its character may be best judged by the fact that it is based upon lectures delivered by the writer, who is Professor of Agricultural Chemistry at Harvard, for two classes of students—young farmers and city men desiring acquaintance with land cultivation as connected with suburban homes. As is to be expected from this mode of treating the subject, the 1,000 pages of matter here presented furnish interesting reading throughout rather than dry technical details, although each chapter furnishes an epitome of the most recent and valuable information on some one branch of the study. The general relations of soil and air to the plant, the atmosphere as a source of plant food, and the movements of water in the soil, form the opening chapters, followed by a description of the instruments and operations of tillage, a consideration of soils as chemical agents, composting and the best ways of applying manures and fertilizers, the nitrates, phosphates, and ammonium compounds, lime, sodium, and magnesium and their compounds, with chapters on irrigation and draining, the rotation of crops, and special cultivation of hay, oats, barley, care of pasture land, etc. To one new to the subject, this work will furnish an invaluable guide, while the experienced agriculturist cannot fail to be benefited by its logical reasoning and rich store of clearly arranged facts.

**BOILER MAKING.** By W. H. Ford. New York: John Wiley & Sons.

This is a practical treatise on work in the shop, intended for the use of boiler makers, showing methods of riveting, bracing, staying, punching, drilling, smithing, etc. The descriptions in this little hand-book are so minute, accompanied as they are with illustrations showing the tools used and the best way of doing many kinds of work, details which workmen generally only acquire by long experience, that it cannot fail to be an extremely valuable assistant to the young boiler maker.

**THE METAL TURNER'S HANDY BOOK.** By Paul N. Hasluck. London: Crosby, Lockwood & Co.

This is an English manual for workers at the foot lathe, giving elementary information on the tools, appliances, and processes employed in metal turning. It is intended for the beginner, and has numerous illustrations, some of which are of styles of lathes and appliances differing somewhat from what one usually sees in this country.

**Received.**

**LEVELING; BAROMETRIC, THERMOMETRIC, AND SPIRIT.** By Ira O. Baker. New York: D. Van Nostrand.

**ANALYSIS OF ROTARY MOTION AS APPLIED TO THE GYROSCOPE.** By Major J. G. Barnard. New York: D. Van Nostrand.

**Just published. A New and Enlarged Catalogue of Scientific Books, furnished free of charge on application by addressing Munn & Co., 361 Broadway, N. Y.**

\*\* Any of the above books may be purchased through this office. Address Munn & Co., 361 Broadway, New York.

## SCIENTIFIC AMERICAN BUILDING EDITION.

**MAY NUMBER.****TABLE OF CONTENTS.**

1. Plate in Colors of a Country House, in perspective, enlarged and improved at moderate expense, with floor plans, also sheet of details, specifications, bills of estimate, etc.
  2. Plate in Colors of a Dwelling at Orange, N. J., with plans, sheet of details, description, etc.
  3. The Queen of England's Cottage at Cannes, with half page engraving.
  4. A Twenty-five Hundred Dollar Cottage. Page engraving, showing perspective, and floor plans.
  5. New Apartment House in Brooklyn, with perspective view and floor plans.
  6. A Two Thousand Dollar House, with three-quarter page engravings, including perspective and floor plans.
  7. An Eastlake Cottage, with elevation and floor plan.
  8. The New Law Courts Birmingham, page engraving—a splendid example of recent architecture.
  9. Design for Local Offices. Half page engraving.
  10. A Double Cottage of Moderate Cost, two pages of engravings, with elevations, floor plans, and partial specifications.
  11. A Thirty-five Hundred Dollar Cottage, with elevation and floor plans.
  12. New Hotel at Mentone, page engraving, showing perspective and plans.
  13. A Dwelling of Moderate Cost, page engraving, perspective and floor plans.
  14. Design for a Seaside Cottage, perspective view and plans.
  15. A Country Church costing \$5,000, a picturesque design in perspective, with floor plan.
  16. A Church in Stone, to cost from \$20,000 up. An elegant design, with plans.
  17. Shop Fronts in Birmingham, a suggestive and elegant design.
  18. The Ponce de Leon Hotel, at St. Augustine, Fla. An elegant and unique specimen of architecture; two engravings.
  19. Mode of Raising and Repairing the old U. S. Court House at Boston, with three engravings.
  20. The Arch of Triumph at Karlsruhe. Designed by Prof. Gotz. Half page engraving.
  21. Design for a Monument and Mausoleum to Gen. Grant, by George Matthias; half page engraving.
  22. Miscellaneous Contents: Heating by Hot Water, illustrated.—Architectural Wood Turning, illustrated.—Ruling and Section Lining, illustrated.—Iron Ceilings, with illustrations.—Rose covered Porches, with engraving.—Tin Roofing, with an engraving.—Planning Mill Construction, with diagrams.—Reservoir with Automatic Valve, engraving.—How to make Good Roads.—How to make a Cold Room for Eggs, etc.—New way of building Concrete Walls under Water.—How to remove Paint.—Embossed Wood, how made.—Knitting, and Its Uses.—Strength of Plaster of Paris.—Water Back Explosions.—Stone Filters.—Experiments in Drying Woods.—Shrinking of Seasoned Timber.—Cement Buildings.—The Acropolis of Athens.—Architectural Excellence.—Artificial Rubies.—Gelatine Moulds for reproducing Carvings.—Paper Roofs.—Floors and Ceilings, Ancient and Modern, by C. Powell Karr.—Built-up Doors.—Staining Wood.—Shelter Belts and Hedge Screens.—Building Constructions under Water.—How to Finish in Natural Wood.—Best Arrangement of Plumbing.—Bursting of Lead Pipes.—Costs of Different Kinds of Walls.—Imitation Stone.—How to Grain Walnut.
- 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., 128 Jackson St., Chicago, Ill.

Fine Models. Haven, 211 Mulberry St., Newark, N. J.

The principal changes in the present edition of "Trautwine" are those in regard to flow of water in channels, friction, and timber preservation. The formulae for strength of pillars are greatly simplified.

Stearns new bench drill. Low priced, highly finished. Used by all mechanics. Immense numbers sold. See advt., p. 301.

Position as foreman boiler maker. Reference as to ability, etc. Address J. W., box 773, N. Y.

Wanted—Good second-hand engine and boiler, 18 horse power, modern build. N. Churchill, Monroe, Wis.

Just Published.—A new and enlarged catalogue of scientific books, furnished free of charge on application by addressing Munn & Co., 361 Broadway, N. Y.

For Sale—Machine shop plant, in operation. Best tools. Address Chas. W. Griggs, 175 Dearborn, Chicago.

Engines and boilers, 1 to 4 H. P. Washburn Engine Co., Medina, O.

The Australian-American Trading Co., 20 Collins St., West Melbourne. Sole agencies for American novelties desired. Correspondence solicited. Care of Henry W. Peabody & Co., Boston.

The Knowles Steam Pump Works, 113 Federal St., Boston, and 93 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

Link Belting and Wheels. Link Belt M. Co., Chicago.

The Railroad Gazette, handsomely illustrated, published weekly, at 73 Broadway, New York. Specimen copies free. Send for catalogue of railroad books.

**Protection for Watches.**

Anti-magnetic shields—an absolute protection from all electric and magnetic influences. Can be applied to any watch. Experimental exhibition and explanation at "Anti-Magnetic Shield & Watch Case Co.," 18 John St., New York. F. S. Giles, Agt., or Giles Bro. & Co., Chicago, where full assortment of Anti-Magnetic Watches can be had. Send for full descriptive circular.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

Supplement Catalogue.—Persons in pursuit of information of any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

Woodworking Machinery of all kinds. The Bentel & Margedant Co., 116 Fourth St., Hamilton, O.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. \$100 "Little Wonder." A perfect Electro Plating Machine. Sole manufacturers of the new Dip Lacquer Kristaline. Complete outfit for plating, etc. Hanson, Van Winkle & Co., Newark, N. J., and 92 and 94 Liberty St., New York.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn.

Catalogue of books on civil and mechanical engineering, electricity, arts, trades, and manufactures, 116 pages, sent free. F. & F. N. Spon, 35 Murray St., New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Pumps for liquids, air, and gases. New catalogue now ready.

Iron and Steel Wire, Wire Rope, Wire Rope Tramways. Trenton Iron Company, Trenton, N. J.

Curtis Pressure Regulator and Steam Trap. See p. 45.

Iron, Steel, and Copper Drop Forgings of every description. Billings & Spencer Co., Hartford, Conn.

We are sole manufacturers of the Fibrous Asbestos Removable Pipe and Boiler Coverings. We make pure asbestos goods of all kinds. The Chalmers-Spence Co., 419 and 421 East 8th Street, New York.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

60,000 Emerson's 1886 Book of superior saws, with Supplement, sent free to all Sawyers and Lumbermen. Address Emerson, Smith & Co., Limited, Beaver Falls, Pa., U. S. A.

Hoisting Engines, Friction Clutch Pulleys, Cut-off Couplings. D. Frisbie & Co., 112 Liberty St., New York.

"How to Keep Boilers Clean." Send your address for free 88 page book. Jas. C. Hotchkiss, 33 John St., N. Y.

If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN patent agency, 361 Broadway, New York.

The Holly Manufacturing Co., of Lockport, N. Y., will send their pamphlet, describing water works machinery, and containing reports of tests, on application.

Machine drawing and designing. A. K. Mansfield, Chicago.

Planing and Matching Machines. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn.

Wardwell's patent saw benches. All sizes in stock. Rollstone Machine Co., Fitchburg, Mass.

Astronomical Telescopes, from 8" to largest size. Observatory Domes, all sizes. Warner & Swasey, Cleveland, O.

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 Books for sale by Munn & Co., 361 Broadway, N. Y. Free on application.