

ENGINEERING INVENTIONS.

A cable grip has been patented by Mr. John F. West, of Staunton, Va. The invention covers a simple device for operating movable jaws to grip the cable, and to lift the jaws, together with the grip head, above the line of the operating cable, to pass cross cables or sheave rollers of other lines.

A petroleum engine has been patented by Mr. Adolf Spiel, of Berlin, Germany. This invention covers a construction whereby the oil is drawn in with and mixed with air and then compressed before ignition, the quantities mixed and the compression being automatically regulated, and the construction being an improvement on a former invention of the same inventor.

A railroad signal has been patented by Mr. Randolph F. Hageman, of New Madison, Ohio. Combined with levers located at opposite sides of a crossing and pivoted to the rail, is a weighted lever operated by the pivoted levers when a train passes over, a signal arm and signal being operated by the weighted levers, making a signal which is automatic in operation.

A fish plate has been patented by Mr. Thomas A. Davies, of New York City. It has a head with substantially cylindrical surface to extend to the head of the rail, and an outwardly projecting longitudinal lip at the base, making a strap plate giving an equal amount of bearing surface upon the base and head of the rails.

An apparatus for filling blast furnaces has been patented by Mr. Samuel Thomas, of Catawauqua, Pa. It consists of a track leading to the top of a furnace and provided with an inclined frame, a car having a dumping mechanism operated by the frame, with means for returning the car after dumping its contents, and for pushing the loaded car to the top of the furnace.

A car coupling has been patented by Mr. Charles S. Edwards, of Forkland, Ala. The draw-head has a mortise for the coupling bar and a transverse bearing for engagement by the hook of the draw-bar, an uncoupling lever being pivoted in rear of this bearing, the invention covering various novel features of construction and combination of parts, making a simple and ready working device.

MISCELLANEOUS INVENTIONS.

A wire fence has been patented by Mr. James King, of Sandusky, Ind. The invention covers a novel construction and combination of parts whereby a strong fence may be made with few parts, neat and tasty in appearance, and easily built on undulating as well as level ground.

A support for electric conductors has been patented by Mr. Maurice J. Hart, of New Orleans, La. It consists of a series of towers erected at the intersection of streets, with cross bars for supporting conductors, and combining therewith a footbridge supported from the cables, all above the general level of the housetops.

A holder for yard sticks has been patented by Mr. Max Levy, of Newport, R. I. It is for supporting the yard stick near the edge of the sales counter in position for measuring off goods, whereby the work is facilitated, while when not in use it can be readily removed out of the way.

A plumb level has been patented by Messrs. Edwin A. Westworth and Adelbert J. Traver, of Atchison, Kansas. It is so made that it can be used with equal facility in a common stock or on a straight edge of any desired length to indicate the rise or fall of an uneven surface from a fourth of an inch or less to twelve inches to the foot, or so many feet to the rod.

A stove has been patented by Mr. Henry Waterman, of Brooklyn, N. Y. The fire chamber has on one side a horizontal hollow inwardly projecting upper breast, with aperture leading through the sides of the stove, and transverse air outlets, there being an externally projecting feeding chamber, and other novel features, making a stove especially designed for burning bituminous coal.

A wire drawing machine has been patented by Mr. Martin F. Roberts, of Kilburn, Middlesex County, England. Combined with the driving shaft and counter shaft is a friction disk mounted on a feather key, and a second friction disk driven at varying speeds, and secured on a shaft on which a drawing-through pulley is also secured, whereby any required number of dies and die holders, with drawing-through pulleys, may be used.

A road cart has been patented by Mr. Philip Fiege, of Lanesville, Va. A rectangular frame is secured at or near its rear corners to the upper members of the springs, the thills extending under the frame and being hinged to the side bars, the cross bar connecting the thills directly below the cross bar of the frame, while a curved spring is secured to the under side of the front bar, and bearing at its ends on the upper surface of the cross bar.

A fence has been patented by Mr. Reuben B. Eubank, Jr., of Maryville, Mo. It has panels, cross bars or sills, binding wires, with bearings for securing the arms of the binder when tightened, and other novel features, making a simple portable fence, which will be firm and steady, and can be readily erected on ground having an irregular surface.

The binding of blank books forms the subject of a patent issued to Mr. Thomas Beckett, of Jersey City, N. J. The invention consists of leaf sections having their leaves connected by stitches before the sections are connected with each other by parchment bands and the ordinary stitching, giving more strength and stability than blank books bound in the ordinary manner.

A secondary electric clock has been patented by Mr. Wirt B. Harvey, of Memphis, Tenn. It is designed to operate in a circuit where a regulator or master clock causes the circuit to be closed for a short

time during each minute, the invention being designed to simplify the action and increase the efficiency and certainty of operating, connecting and synchronizing the hands of the secondary clock.

A buckle has been patented by Mr. Alexander P. Waddell, of Union City, Tenn. It is designed especially as a trace carrier, and has a sliding plate, with means for attachment to the strap, in combination with a hinged plate permanently secured to and adapted to fold thereon, the plates each having parts which interlock and serve to receive and hold the trace.

A spoke socket has been patented by Mr. William E. Hardin, of Monterey, Ky. The invention consists in the formation of the clip adapted to be applied to the felly and for the reception of the end of the spoke, being especially applicable where a spoke has been broken at its tenon or a felly so split as not to hold the spoke and it is desired to continue its use or replace a broken spoke without taking the wheel apart.

A sewing machine, and a take up and tension for sewing machines, form the subject of three patents issued to Mr. Emilio Querol y Delgado, of Brooklyn, N. Y. The sewing machine is adapted to form one or two parallel rows of stitching, the distance between the needles and the shuttles being adjustable to suit the width of the parallel rows of stitches to be made, while one of the needles and its corresponding shuttle and thread may be dispensed with and the machine operated as a single stitch machine. The take-up device consists of a novel construction and arrangement of parts, being simple and durable, and very effective in operation, while the improved tension mechanism is adapted to prevent a too rapid unwinding of the thread, and also to prevent breakage thereof.

SCIENTIFIC AMERICAN
BUILDING EDITION.

MARCH NUMBER.—(No. 29.)

TABLE OF CONTENTS.

1. Elegant plate in colors, showing perspective elevations and floor plans of a cottage of moderate cost, together with full specifications, sheet of details, etc., etc.
2. Plate in colors of a handsome suburban residence, costing about Twelve Thousand Five Hundred Dollars, with floor plans, specifications, sheet of details, etc.
3. Elevations and floor plans of two dwellings of moderate cost.
4. Perspective view and floor plans of a house for Six Thousand Dollars.
5. Floor plans and elevations of a substantial residence at Tuxedo Park.—James Brown Lord, architect.
6. Perspective and two plans of a Cape Cod cottage of moderate cost.
7. Plans and perspective of a double house, costing about Six Thousand Five Hundred Dollars.
8. Elevation and plans of an alteration of a dwelling on Long Island.
9. Sketch of a one story residence erected at Birmingham, Ala., at a cost of Four Thousand Five Hundred Dollars.
10. Floor plans and perspective view of a neat cottage for Seventeen Hundred and Fifty Dollars.
11. Plans of an English country house.
12. Sketch of a handsome double house at Cleveland, Ohio. Cost, complete, Six Thousand Dollars.
13. Illustration of a house costing Three Thousand Dollars.
14. Designs of two substantial churches, costing about Four Thousand Dollars each.
15. Elevation and floor plans of a brick residence at Newark, N. J. Cost, complete, Seven Thousand Six Hundred and Seventy-five Dollars.
16. Sketch of the hall and stairway of a luxurious English dwelling.
17. Design for a carriage house and stable. Cost, Fifteen Hundred Dollars.
18. Plan of an old plaster ceiling, South Quay, Yarmouth.
19. Architectural Suggestions.—A Stairway in the Hotel Cluny.—A Stairway in Rouen.
20. Miscellaneous Contents: Ancient Water Works.—Making the House Water-Tight.—Mahogany.—Vibration of Buildings.—Building Accidents.—The Column Vendome, Paris.—Learning to Design Buildings.—Non-Inflammable Wood.—Large Redwood Boards.—An Experiment on the Expansion of Iron in Buildings.—Ornamental Hedges.—The Acoustics of Buildings.—Suggestions on House Painting.—Right and Left in Landscape Painting. Furniture Woods.—Range Boiler Explosion, with illustrations.—Plastering of Walls, Westminster Hall.—Notes on Bricks.—Mineral Wool.—The Jackson Ventilating Grate, illustrated.—The Spencer Hot Water Heater, illustrated.—The Alsop Furnace, 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 next issue.

For Steam Heating—the Dunning Patent Wrought Iron Boiler. Over 13,500 in use. Manufactured by New York Central Iron Works, Geneva, N. Y., U. S. A.

Belting.—A good lot of second hand belting for sale cheap. Samuel Roberts, 389 Pearl St., New York.

Burnham's turbine wheel is sold at net price to mill owners. Catalogue free. Address York, Pa.

An energetic business man, well established in Atlanta, Ga., desires to represent some manufacturing concern there. Reliable parties can address F. A. Stephens, 72 Gate City Bank Building, Atlanta, Ga.

For best quality, order your steel castings from the Buffalo Steel Foundry, Buffalo, N. Y.

"The Improved Greene Engine." Safety stop on regulator. Providence, R. I., Steam Engine Co. are the sole builders.

The Dieble Manufg. Co., Philadelphia, Pa., manufacturers of the Challenge Emery Grinding and Polishing Machinery, invite correspondence with all needing this class of machinery. Catalogues and prices on application.

Wanted—A practical tool maker. An experienced mechanic, capable of managing that department in a hardware manufactory, may apply for situation to "Hardware," P. O. box 773, New York.

Special facilities for the manufacturing of all kinds of light hardware and novelties, by contractor otherwise. Press work and stamping done on short notice. Acme B. H. Att. Co., Limited, 74 Fifth Ave., New York.

To Engineers and Engine Builders.—I have discovered a simple plan by which the most correct form and dimensions of the slide valve may be determined, according to the travel of the valve and size of the ports. I have altered a good many valves to this plan in the last two years, and found that they all gave more power with less steam than before. Also found the engines built with valves nearest to my plan gave most power. I will send an illustration and explanation of this plan to the address of any one upon receipt of \$2.00. Address John B. Meek, N. 327 Main St., Frankfurt, Ky.

Portable grinding mills. Chas. Kaestner & Co., Chicago, Ill.

Patent button fastener, No. 376,497, for sale, or placed on royalty. Address A. L. Winn, Hillsboro, Ark.

Don't figure percentage and make mistakes. Send for circular. Ladd's Discount Book, 35 Chambers St., N. Y.

The Diamond Prospecting Co., 22 W. Lake St., Chicago, Ill., general agents for the Sullivan diamond prospecting drills.

Foree Bain, 76 Market St., Chicago, designer and constructor. Electrical apparatus, fine and special machinery, etc.

Nickel Plating.—Manufacturers of pure nickel anodes, pure nickel salts, polishing compositions, etc. \$100 "Little Wonder." A perfect Electro Plating Machine. Agents 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.

Perforated metals of all kinds for all purposes. The Robert Aitchison Perforated Metal Co., Chicago, Ill.

For the latest improved diamond prospecting drills, address the M. C. Bullock Mfg. Co., 133 Jackson St., Chicago, Ill.

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

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.

Feed grinders. Chas. Kaestner & Co., Chicago, Ill.

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

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

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.

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

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

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

Billings' Patent Screw Plates. Drop Forgings, all kinds. Billings & Spencer Co., Hartford, Conn.

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

Cut-off blade, 1/2 x 6 in., 30c. To forge, costs \$2.00. Dwight Slate Machine Co., Hartford, Conn.

60,000 Emerson's 1887 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, 120 Liberty St., N. Y.

Paint mills. Chas. Kaestner & Co., Chicago, Ill.

Lathes for cutting irregular forms a specialty. See ad. p. 62.

Practical working drawings of machinery made by A. K. Mansfield & Co., 230 Broadway, N. Y. Correspondence invited.

Ax handle and spoke lathes. Railway cutting off saw machines. Rollstone Machine Co., Fitchburg, Mass.

Engines and boilers. Chas. Kaestner & Co., Chicago, Ill.

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.

NEW BOOKS AND PUBLICATIONS.

THE METALLURGY OF SILVER, GOLD, AND MERCURY IN THE UNITED STATES. By Thomas Egleston. Two vols. Vol. I. Pp. 558. \$7.50. New York: John Wiley & Sons.

Professor Egleston has been for many years a professor of mineralogy and metallurgy at the School of Mines, Columbia College, and, in addition to the advantages afforded by his professional training, has had superior opportunities to become acquainted with most that has been done in the mining and metallurgy of the metals treated of in the United States for many years. This volume treats mainly of the mining of silver and the working of its ores, concerning which most elaborate details are given of the machinery and processes that have been and are at present employed, including specific descriptions of the plant and mode of working at the present day in many of the most prominent mines. Stamp mills and crushing machinery, furnaces for roasting ores, and apparatus for amalgamating, are described with such detail, in connection with many valuable scale drawings, that the work cannot fail to be of great assistance to the mining engineer, and invaluable to the seeker for comprehensive information on the general subject.

L'ANNEE ELECTRIQUE. By Ph. Delahaye. 4me Annee. Paris: Baudry & Co. 1888. Pp. xv, 359.

This useful annual again has reached us, marking the progress of another twelve months. In its pages we find treated electric lighting, primary and secondary batteries, telegraphy, telephony, distribution of force, and all the other phases of electrical work and progress. To those conversant with the French language, no more useful and concise compendium could be recommended. Its obituary notes, giving the necrology of the year, are of value as a brief record of the departed ones.

INDUSTRIAL INSTRUCTION. By Robert Seidel, Mollis, Switzerland. Translated by Margaret K. Smith, Oswego, N. Y. Cloth. Pp. 170. Price \$1.00.

Besides a skillful refutation of the objections that have from time to time been raised against industrial instruction in the schools, the author has presented in this book a philosophical exposition of the principles underlying the claims of hand labor to a place on the school programme. It gives in vivid, because homely, phrases the present aspect and prospects of industrial training. No branch of education excites the same interest at the present day as this one, because all seems pointing to the extensive introduction of manual training in the schools of America. It has to be tried and developed on a grand scale here. Hence this work is a timely publication, and should meet with much encouragement from those interested in the culture of the race.

THE MANUAL TRAINING SCHOOL. Its Aims, Methods, and Results, with Detailed Courses of Instruction in Shop-work and Drawing. By Professor C. M. Woodward, of the Manual Training School, Washington University, St. Louis. Cloth. Pp. 374. Price \$2.25.

This book, as the publisher states, is exceedingly practical, its main object being to show just how a manual training school should be organized and conducted. It contains courses of study, programmes of daily exercises, and working drawings and descriptions of class exercises in wood and metal. The course of drawing, which has proved eminently successful in the St. Louis school, is quite fully given. The book includes a full description, with illustrations, of the work done in this somewhat famous institution. The different samples of woodworking, blacksmithing, turning and founding, are of interest and add largely to the practical value of the book. It is a work which would serve as a teacher's guide, for founding a school to tread in the path so well marked out by Professor Woodward's professional labors.

MANUAL OF ENGINEER'S CALCULATIONS. By D. McLaughlin Smith. St. John, N. B., Barnes & Co. 1886. Pp. 346. \$3.00.

This work bears the marks of the working engineer throughout. It is written with special reference to the Canadian examinations. It gives many popular expositions of natural laws. The practical steam worker will doubtless find much that is useful in its pages. It has as frontispiece a heliotype portrait of Mr. William N. Smith, the author's father, said to be the oldest steam boiler inspector in America, and his biography is included in the work.

THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC AND PHOTOGRAPHER'S DAILY COMPANION. 1888. \$1.00. Henry Greenwood & Co., London, England. Pp. 710.

This is an excellent compendium of the principal items of photographic interest for the past year, containing suggestions and formulas of especial value to the photographer and amateur. Twenty pages devoted to "Technical Essays for Young Photographers" will be found very useful for beginners. The book has for a frontispiece an illustration of the Thistle, made on bromide paper, by Morgan and Kidd, from a negative by Arthur H. Clark, Esq.

PHOTOGRAPHER'S DIRECTORY. A directory for photographers, lithographers, and for all allied trades in the United States and Canada. The Lithographic Publishing Company, New York. 1887-88. Pp. 202.

This is one of the class of trade directories that within the last few years have grown of such importance in trade circles. The work is well and clearly printed, and is a valuable addition to its class of literature.