

ENGINEERING INVENTIONS.

An operating mechanism for railway switches has been patented by Mr. William B. S. Reed, of Brooklyn, N. Y. This invention provides a mechanism whereby but a single lever is used, and such lever is inoperative to open more than one switch or system at a time, or to open another while one remains open.

AGRICULTURAL INVENTIONS.

A hand corn planter has been patented by Mr. Seth Hackett, of Bronson, Mich. It has a combination of pocketed disks, which are intermittently rotated to effect the discharge of the seed and secure a reliable delivery every time the planter is operated or moved stepwise to the operator.

MISCELLANEOUS INVENTIONS.

An automatic flushing siphon has been patented by Mr. William B. Parsons, Jr., of New York city. This invention covers a main and auxiliary siphon of novel construction for intermittent flushing, in connection with a water closet or for other similar purpose.

A carpet stretcher has been patented by Mr. Robert R. Jones, of Blossburg, Pa. It consists in a bar having at one end a spur to be driven into the floor, and having pulleys, a lever, and a rope, while combined therewith is a sliding crosshead carrying pointed teeth or hooks for engaging the carpet.

A twine and wire cutter has been patented by Mr. William L. Haas, of Charles City, Iowa. It has a handle section with hollow head in which is fulcrumed an upper lever section with cutting edge and movable jaw, with other novel features, making a tool to cut telegraph wires or the wires or twine bands used for binding sheaves of wheat, etc.

A draught equalizer has been patented by Mr. John L. Powles, of Goodland, Ind. The single and double trees are so pivoted as balanced levers that the draught will be made alike for four horses working abreast, with one horse at one side of the tongue and three horses at the other side, which is often desirable in operating grain harvesters and other machines.

A bag holder has been patented by Mr. Walter S. Kendall, of Grand Rapids, O. This invention relates to a device for holding bags open and in an upright position to be filled, facilitating the attachment of the empty bags to the holder and their removal therefrom, and preventing the spilling of substances over the mouth of the bag.

A windlass has been patented by Mr. Frederick W. Thomson, of Maitland, N. S., Canada. This invention covers a novel arrangement of friction band wheels and bands, with a contrivance of break mechanism comprising brake shoes which may be forced against the interior faces of flanges on the main grabs or purchase wheels.

A magazine spring gun has been patented by Mr. Stephen D. Engle, of Hazleton, Pa. It has a longitudinally fluted barrel with a follower fitted to work therein, subject to the control of the trigger, with other novel features, the invention being an improvement on a former patented invention of the same inventor.

A wood sawing machine has been patented by Mr. Samuel P. Dresser, of Pleasant Mount, Mo. It can be operated by one or two persons, by turning one or two cranks, whereby a saw is rapidly reciprocated, the saw blade being pressed downward in the kerf by a spring, the pressure of which can be readily regulated.

An umbrella or parasol has been patented by Mr. George W. Jones, of Brooklyn, N. Y. It has telescopic braces and a runner connected with the ribs, the braces and their runner, in connection with a hollow stick, to hold the ribs from being forced too far back, with other novel features, to promote convenience in opening and closing umbrellas and parasols.

A barrel making machine has been patented by Mr. Josiah J. Philbrick, of Birmingham, Ala. It is designed to allow more effective trussing of the staves and hold them even across the edge joints on both faces, keeping the croze of the staves even or in line all around the barrel or cask, so the heads will fill the croze and make a perfectly tight barrel or cask.

A pipe vise has been patented by Mr. Andrew L. Rose, of West Troy, N. Y. This invention provides for vises constructed to hold pipes firmly while being cut, or having screw threads cut in them, and the vise can be readily adjusted to hold pipes of different sizes, and conveniently operated to clamp and release pipes.

A saw has been patented by Mr. George N. Clemson, of Middletown, N. Y. It has its opposite edges hardened, with a soft body between the edges, making a cutting edge which is very hard and durable, and at the same time furnishing a saw which is tough and flexible, and especially adapted for use by butchers, metal workers, etc.

A device for centering vessels in dry docks has been patented by Mr. Adam Bulman, of Jersey City, N. J. This invention consists principally of an attachment made with two sliding blocks adapted to engage with the opposite sides of the keel of a vessel, and to be moved to the center of the dock by drawing upon ropes attached to the sliding blocks.

A funnel has been patented by Mr. Frederick Catlin, of New York city. It has a cock casing formed with longitudinal and transverse apertures, with other novel features, and is adapted for use not only for pouring liquid from one vessel into another, but also for measuring and conveying or transporting liquids.

The producing of metallic printing plates has been patented by Mr. Cesar Felix Joz, of Bockenhelm, Germany. The process consists in first mechanically graining the plates, then extracting all grease by alkalies, and opening or raising the grains by means of astringents operating mechanically, and giving the metallic surface the affinity for ink, lithographic crayon, etc.

A hose or suction tubing forms the subject of a patent issued to Mr. James Jones, of Dublin, Ireland. It is formed of fabric treated with oil to render it air and liquid proof, the fabric being wound on a spiral wire core and held in place by a spiral wire wound around it, the metallic support for the tube proper being intended to prevent any considerable contraction under suction.

A folding box or crate has been patented by Mr. Edward Harris, of Cambria, Wis. The ends are hinged to end pieces and the sides to side pieces of the base section, while on the inner surfaces of the ends are held wires which extend from top to bottom, the lower ends forming hooks projecting from each other and the upper ends being bent over the top edges, the wires being held in place by staples.

A ventilator has been patented by Mr. Richard de Logerot, of New York city. It consists of an elastic bulb with valves and tubes, one tube leading outward and the other connecting with perforated distributing pipes in an apartment, the bulb being operated by clockwork mechanism to alternately compress and permit the expansion of the bulb, for ventilating buildings, public conveyances, mines, etc.

A clothes drier has been patented by Messrs. Charles Goodyer and William Morse, of Warren, Pa. It consists in a hollow upright having offsets in the sides, the offsets having openings, with a slide in the upright, and arms or bars pivoted to the side edges and projecting through, making a clothes bar of simple construction, which can be compactly folded when not in use.

NEW BOOKS AND PUBLICATIONS.

POULTRY CULTURE. How to Raise Manage, Mate, and Judge Thoroughbred Fowls. By I. K. Felch. Chicago: W. H. Harrison, Jr., 1886.

Poultry culture has heretofore received from the farmer just as much attention as he regarded necessary to keep the flock alive, after everything else on the farm had been looked after. Now, however, the introduction of business methods into farm work has caused an invasion of the poultry yard also. Enthusiastic exponents like Mr. Felch have brought forward an array of results that is quite astonishing. Few people realize the fact that the egg and poultry product of the United States exceeds in value such substantial crops as corn, cotton, or hay, and that the profit, in keeping some of the finer breeds of fowl, amounts to as much as \$4.00 per head. When these are remembered, the industry seems worthy of careful attention, and one can understand why Mr. Felch should recommend it to young men as a possible opening. In presenting the results of his own thirty years' experience in the business, he is able to give a great many valuable hints to those similarly interested.

Art Age, published monthly, \$2 a year. Turnure & Gillies Bros., 75 Fulton Street, N. Y. This contains usually one or more supplements—reproductions of paintings, decorative designs, photographs, architectural drawings, etc., specimens sometimes of several different engraving processes. The January number is particularly attractive.

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.

A Profitable Investment can be made in a postal card, if it is used to send your address to Hallett & Co., Portland, Maine, who can furnish you work that you can do and live at home; few there are who cannot earn over \$5 per day, and some have made over \$50. Capital not required; you are started free. Either sex; all ages. All particulars free.

Dynamo Machines for all purposes. Dynamo machines of highest efficiency, accurately calculated (as to capacity, etc.), and built to meet requirements in connection with all **Industrial Applications of Electricity,** including: Electric Lighting, Transmission of Power, Electro Mechanical Machinery, Electro Deposition of Metals, Electro Chemical Work, Telegraphy in place of Batteries, Electric Motors, of various horse power, to be run by Dynamo Currents. All dynamo and motor apparatus built to suit the work required and according to the best of known models for economy and efficiency.

J. H. Bunnell & Co.,
106 and 108 Liberty St., New York.

Don't fail to send for circular of new Laboratory Lamp. Dangler V. S. Co., Cleveland, O.

To Manufacturers.—The undersigned, traveling for the past eight years on the European continent in the interest of eight American firms, solicits catalogues and price lists to be sent to him by manufacturers of all sorts of agricultural and industrial machinery, for the purpose of introducing such of them that may be found suitable for the trade. Address A. V. Perrin, Brussels, Belgium.

The Magic Square.—A novel instrument for solving problems in arithmetic by a mechanical method, without mental labor. Equal to a slide rule twenty feet long. By mail, 25c. W. H. Wythe, Ocean Grove, N. J.

A "Pointer." When Col. Sellers gives you a "pointer" in stocks, my friend, leave them severely alone, but when your own feelings tell you that you have palpitation of the heart, asthma, bronchitis, or catarrh, which, unless checked, are apt to run into consumption, heed the admonition before it is too late. All the diseases enumerated, and others, arise from impure blood. Put the liver in action, the largest gland in the human body, and you will speedily regain your lost health, and your bad feelings will disappear. Dr. Pierce's "Golden Medical Discovery" will accomplish the work speedily and certainly. Of your druggist.

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Best, most convenient, and effective Laboratory Lamp ever made is the Dangler. Cleveland, O.

Safety Elevators, steam and belt power; quick and smooth. D. Frisbie & Co., Philadelphia, Pa.

Wm. Frech, Manufacturer of Sensitive Drills, Turret and Speed Lathes, Power Punching Presses, 68 W. Monroe St., Chicago.

For Sale.—One 50 H. P. and one 200 H. P. Corliss Engines, built by Geo. H. Corliss; also one 30 H. P. Portable Engine, built by Erie City Iron Works, nearly new; used only few months. Henry I. Snell, 135 North 3d St., Philadelphia.

Modern M'ch. Tools a specialty. Abbe Bolt Forgers, Power Hammers, Lathes, Planers, Drills, and Shapers. Send for Catalogue. Forsaith M. Co., Manchester, N. H.

To Manufacturers.—The owner of 260 acres of ground at Pittsburg, on the Allegheny River and Pennsylvania system of railroads, in order to improve the property, offers to donate a number of excellent manufacturing sites. See adv. of Whitney & Stephenson, this issue.

Order our elegant Keyless Locks for your fine doors. Circular free. Lexington Mfg. Co., Lexington, Ky.

Geo. E. Lloyd & Co., Electrotype and Stereotype Machinery, Folding Machines, etc. Send for catalogue. Chicago, Ill.

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 Laquer Kristaline. Complete outfit for plating, etc. Hanson, Van Winkle & Co., Newark, N. J., and 92 and 94 Liberty St., New York.

Grimshaw.—Steam Engine Catechism. A series of thoroughly Practical Questions and Answers arranged so as to give to a Young Engineer just the information required to fit him for properly running an engine. By Robert Grimshaw. 13mo, cloth, \$1.00. For sale by Munn & Co., 361 Broadway, N. Y.

Woodw'kg. M'ch'y, Engines, and Boilers. Most complete stock in U. S. Prices to meet times. Send stamps for catalogues. Forsaith M. Co., Manchester, N. H.

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The Knowles Steam Pump Works, 44 Washington 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.

Haswell's Engineer's Pocket-Book. By Charles H. Haswell, Civil, Marine, and Mechanical Engineer. Giving Tables, Rules, and Formulas pertaining to Mechanics, Mathematics, and Physics, Architecture, Masonry, Steam Vessels, Mills, Limes, Mortars, Cements, etc. 900 pages, leather, pocket-book form, \$4.00. For sale by Munn & Co., 361 Broadway, New York.

Air Compressors, Rock Drills, J. Clayton, 43 Dey St., N. Y.

Machinery for Light Manufacturing on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y.

Send for Monthly Machinery List

to the George Place Machinery Company,

121 Chambers and 103 Reade Streets, New York.

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.

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.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every description. Send for catalogue.

Wood Working Machinery. Full line. Williamsport Machine Co., "Limited," 110 W. 3d St., Williamsport, Pa.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 46.

Hercules Lacing and Superior Leather Belting made by Page Belting Co., Concord, N. H. See adv. page 46.

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

Iron Manufacturers wishing to purchase large deposit of high grade magnetic ore, see adv. on page 78.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, 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 East 8th Street, New York.

Pat. Geared Scroll Chucks, with 3 pinions, are sold at same prices as common chucks by Cushman Chuck Co., Hartford, Conn.

Crescent Solidified Oil and Lubricators. Something new. Crescent Mfg. Co., Cleveland, O.

Curtis Return Steam Trap returns all condensations into the boiler without waste. Curtis Regulator Works, Boston, Mass.

Curtis Pressure Regulator and Steam Trap. See p. 350.

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

Emerson's Book of Saws free. Reduced prices for 1885. 50,000 Sawyers and Lumbermen. Address Emerson, Smith & Co., Limited, Beaver Falls, Pa.

The new Vapor Laboratory Lamp made by Dangler V. S. Co., Cleveland, O. is a grand success.

Rubber Belting, Cotton Belting, Leather Belting, Economy Belting, and Polishing Belting. Greene, Tweed & Co., New York.

"How to Keep Boilers Clean." Send your address for free 88 page book. Jas. C. Hotchkiss, 85 John St., N. Y.

Barrel, Keg, Hoghead, Stave Mach'y. See adv. p. 76.

"Wrinkles in Electric Lighting," by V. Stephen; with illustrations. Price, \$1.00. E. & F. N. Spon, New York.

Blake's Belt Studs. The strongest and best fastening for Rubber and Leather Belting. Greene, Tweed & Co., 118 Chambers St., New York.

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

Wanted.—Second hand Engine and Boiler, about 8 horse power, to drive yacht. Must be in good condition. Send price and description to Jos. Minchener, Lane Park, Fla.

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. **Minerals** sent for examination should be distinctly marked or labeled.

(1) A. W. C. asks: Will the attachment of the ground wire from telegraph office to a water pipe effect the freezing of the water? A. No. The freezing must be due to the position of the pipe, and not to the effect of the electric current.

(2) M. L., Jr., writes: A fire alarm telegraph wire goes over the house I am in. It is held in place by a glass insulator at the ridge of the roof. Now, I have an electric bell, such as are used for door calls, etc., which I would like to connect with this fire alarm wire if I can without cutting it. A. By connecting the wire with the fire telegraph wire, running it to your bell, and from the bell to a good ground, you will be able to get the alarm; but we think you would render yourself liable by such an operation, and might also interfere with the efficiency of the fire alarm telegraph.

(3) E. A. C. writes: I wish to make an electric motor one-half the size of the one described in SUPPLEMENT, No. 161, and I am uncertain about the size wire which should be employed in winding the field magnet and armature. Can you inform me through the SCIENTIFIC AMERICAN? I also wish to know how many layers of wire should be wound on the field magnet, and how many Robert's batteries (e. m. f. 2 volts) would be necessary to run the same? A. For a motor, you should use No. 16 wire on the armature, and the same size on the magnet, employing about four layers on each leg of the magnet. You would require 5 or 6 cells of the battery. 2. What form of motor is best for running a small fan, and where can I get drawings or information in regard to the same? A. Probably there is no better form for a small motor than the one you propose to adopt. 3. I wish to make a spark coil for electric gas lighting, and do not know the size wire which should be employed, or the number of layers which should be wound around the core, in order to secure the best results. A. SUPPLEMENT, No. 160, will give you information that will enable you to make a coil for lighting gas.

(4) W. K. asks: What substance could I add to wax (such as used for artificial flowers), in order to render it pliable in cold weather and at the same time preserve its whiteness? A. Any substance which would render wax pliable in cold weather would render it too soft to preserve its shape in warm weather. Paraffine is sometimes added to wax to toughen it. A small percentage of glycerine might also effect the same result.

(5) J. McC., Jr., writes: I am making a dynamo-electric machine like one described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 161, with permanent magnets. 1. Does increased speed give increased power, or is there a limit to the speed which gives the best results, and if so, what is it? (I use twelve 1 inch magnets, and armature is 3½ inches long.) A. Increased speed gives increased power; the limit of speed is governed by the rapidity of magnetization and demagnetization of the core of the armature. 2. Is this machine able to drive a small incandescent light, and how many candle power? A. This machine will drive three or four 4 candle power lamps. 3. Will it be improved for running an incandescent light by using finer wire on the armature, and what number of wire? A. For a single lamp of high resistance, yes. 4. Will a dynamo driving an incandescent lamp (say four candle power) be able to drive four one candle power lamps? I have noticed that one candle power light requires more than one-fourth the number of volts that a four candle power lamp requires. A. It depends, of course, upon the resistance of the lamps and the way in which they are arranged in the circuit. We think, however, that you could drive four one-candle power lamps with a machine that would supply a four-candle power lamp.

(6) J. O.—Propeller wheels are named from their form of the section of a screw, and plow through the water in the same manner that any screw runs in a nut, only that the pitch is greater and the nut is water.

(7) C. & D.—Diamond drills are made by setting borts or black diamonds in the ends of iron or steel tubes. The tubes are rotated, cutting a solid core, which, by an arrangement of a nipper in the drill, is lifted out with the drill.

(8) W. A. B.—There are several reckonings of time. The civil year commences at midnight, December 31. The astronomical year is also reckoned with the civil year. The equinoctial year is reckoned from the vernal equinox. The sidereal year is the time of revolution of the earth in its orbit from a given line between the sun and a fixed star. The perigee is not used in the division of time, only in regard to the moon. Perihelion is the earth's position when nearest the sun.

(9) J. L. asks (1) how Fehling's solution is made. A. Fehling's solution is made by dissolving 34.63½ grms. pure copper sulphate in water and adding a solution of 173 grammes of Rochelle salts in 480 cubic centimeters of sodium hydrate having a density of 1.14 and diluting to one liter. 2. How to detect putty