

ENGINEERING INVENTIONS.

A car coupling has been patented by Mr. John G. Ogden, of No. 46 Jackson Street, Ill. This invention relates to means for automatically coupling and uncoupling railway cars without going between them, and to this end covers novel details of construction and arrangement of parts.

A steam boiler has been patented by Mr. Michael E. Herbert, of St. Joseph, Mo. The boiler combines an upper section with a semi-annular chamber communicating with a semi-cylindrical chamber at its rear end, the lower and inner section having a semi-annular chamber, and having the hollow bridge communicating therewith, circulating pipes connecting the sections together, and the coal magazine located at the front end of the boiler.

AGRICULTURAL INVENTIONS.

A cotton harvester has been patented by Mr. George W. Purcell, of Black Hawk, Miss. It is a device which can be held to the body and operated by hand, and combines a fork in which is journaled a picker disk, with cleaner brushes and means for revolving the disk.

A combined band cutter and feeder for thrashing machines has been patented by Mr. David Grubb, of Waldron, Ind. The cutters consist of circular disks with sharp edges to be pressed down in the sheaves, to insure the cutting of the bands, and the feeders have prongs or teeth to spread the grain and distribute it.

A roller bearing has been patented by Messrs. Henry H. Clay and Millard D. Philleo, of Cedar Falls, Iowa. The bearings are formed by ferrules fixed to the ends of the roller, to revolve in grooves in the faces of their supporting bars, with other novel features, the special object being to prevent clogging at their ends of endless carrier rollers of harvesting machines by straws and the like winding around the axles or gudgeons.

A convertible plow has been patented by Mr. Henry D. Terrell, of Covington, Ga. It is made with a foot plate or piece with edge flanges, and an offset shouldered end and the attachment thereto of interchangeable side plates or wings and plow points of various kinds, so as to make, as required, a scooper or bull nose plow, a turning plow, a shovel plow, and a scraper plow; also permitting small or short plow points to be used.

MISCELLANEOUS INVENTIONS.

An apparatus for the electrolytical separation and deposition of metals has been patented by Mr. Bernard Moebius, of Chihuahua, Mexico. This apparatus is for refining silver and separating it from gold, platinum, copper, lead, and other metals, by electricity. The anodes and cathodes form the elements of an electric battery, the solution of which is contained in a liquid proof tank, the contents of which may be heated by steam pipes as desired, enameled metal or earthenware being necessary for the tanks when the contents are to be heated. The cathodes and anodes have brushes for preventing the accumulation of metals and peroxides and bubbles of oxygen or hydrogen on the elements, and the exciting liquid consists of a solution of nitrate of silver acidulated with nitric acid, to which quantities of nitrate of copper are added. By heating the solution its resistance is decreased, and the decomposition of the anode is greatly facilitated. It is claimed for this apparatus that the operation is continuous and very simple, and large quantities of silver can be rapidly refined at a low cost, as only a small quantity of chemicals is used; the apparatus requires but little attention, all the parts can be easily replaced, and there is no need of filtering, transferring, or handling acids producing noxious and dangerous gases.

A bottle stopper has been patented by Mr. Charles L. Morehouse, of Brooklyn, N. Y. It is simple in construction, having a threaded screw ring and cap, and various novel features, making a strong and durable stopper to seal tightly fruit jars, cans, or other vessels.

A hub cap has been patented by Mr. Albert F. Taylor, of Pawtucket, R. I. This invention covers a novel construction and arrangement of parts for closing the outer end of a hub, and thus preventing the grease from flowing out and sand from passing in between the axle box and axle.

A garment has been patented by Mr. Ignac Pick, of London, Middlesex County, England. It combines in a single article a cape, boa, and muff, the muffs or pockets for the hands being at the lower edge of the cape, and the boa being stitched around the neck to form a collar.

A feathering paddle wheel has been patented by Mr. James Williams, of Laytonville, Md. This invention relates to such wheels formed with rotary paddles supported on radial shafts and operated by cams located within the wheel hub, and covers a special construction and arrangement of parts.

A detachable button or stud has been patented by Mr. Jacob L. Lindauer, of New York city. It is made with a back plate with a spring, and slotted to receive the bent parts of two J-shaped bars which have teeth in their adjacent convex surfaces, whereby both the bars will be returned by the movement of either.

A harness and neck yoke for double teams has been patented by Mr. Roswell R. Noyes, of Darlington, Wis. The back pads or skirts have means for holding the ends of the neck yoke, and the neck yoke is adapted so to be held, whereby the weight of the tongue of the vehicle may be borne upon the backs instead of the necks of the horses.

A chamfering plane has been patented by Mr. Richard V. Wicks, of Brooklyn, N. Y. It has a peculiarly constructed stock with an enlarged oblique opening through it for introducing a guide corresponding with the shape of the chamfer or moulding, and the cutter being also suitably formed, with other novel features.

A combination gauge has been patented by Mr. Andrew J. Hellings, of Philadelphia, Pa.

This invention covers a novel design of gauge for use by mechanics for squaring corners and hexagonal corners, gauging equilateral triangles, finding the center of a square, measuring the angle of a center hole, measuring the depth of apertures, etc.

A dish warmer has been patented by Messrs. Richard V. Lewis and Henry C. Conger, of New York city. The device is constructed to inclose the dishes, and is designed to be placed near the table in the dining room, where the heat rising from the most convenient fuel or a lamp will heat the dishes and keep them warm till required for use.

A hoof clamp has been patented by Mr. Alexander H. Carroll, of Philadelphia, Pa. It is formed of two clips, each having a hook prong at the end on its inner surface, and a transverse dovetail groove in the front surface, with a key fitting in the groove to hold the clips together, the object being to hold split hoofs in correct position until the parts have grown together, when the clamp is removed.

A bag holder has been patented by Mr. John G. Wagner, of Cooperstown, Pa. In combination with a baseboard having staples is a standard with means for engaging the mouth of a bag, and with a base consisting of two crossbars having hooks or catches thereon adapted to be engaged by the staples, the standard having an adjustably connected band, and cam for holding the band to the mouth of a bag.

An improved sash for car windows has been patented by Mr. Eugene D. Mann, of New York city. Double panes of glass are used, forming a dead air space between them, and combined with them and with the frame are duplicate glazing strips and soft or flexible beddings for the panes and glazing strips, whereby the fullest advantages of the dead air space are obtained, and moisture and dust effectually excluded.

A fur clipping and unhairing machine has been patented by Mr. Theophil Rasmus, of New York city. The invention covers an improvement on a former patented invention of the same inventor; with a strip over which the fur is passed are knives for cutting off the hair, an air forcing apparatus, combs for holding down some of the hairs that have been laid by the current, the comb so arranged that they will be first moved toward each other, and then downward.

An automatic coffee roaster has been patented in the United States and the principal foreign countries by Mr. William H. Bruning, of Madison, Ind. The invention is intended especially for roasting coffee in large quantities, and requires but one skilled operator to roast one thousand bags of coffee per day. It consists of large revolving cylinders, the shell being unperforated and tightly caulked, to protect the coffee from the smoke and gases of the fire. The cylinders have an aperture end with spiral conveyers within, which receive and retain the coffee when the cylinder is revolved in one direction, and discharge it when the motion is reversed. The device also has a breeching inclosing the open end, with a pipe at the top leading to a flue or chimney, to carry off all the steam and odor from the roasting, and a pipe at the bottom for spouting the roasted coffee into a covered cooler upon the same floor or floors below, preventing any coffee smoke or odor within the building.

NEW BOOKS AND PUBLICATIONS.

COAL MINING DESCRIBED AND ILLUSTRATED. By Thomas H. Walton. Henry Carey Baird & Co., Philadelphia. Price \$5.

This quarto volume, of 175 pages of text and 24 large plates, after actual workings and apparatus, presents the latest modes of taking out coal contained in coal seams, as practiced in England and the United States. The book is the work of a practical mining engineer, and, with much general information concerning coal mines and miners, gives details and actual experiences connected with the working of many mines, treating especially of coal dust and gas, marsh gas, improved methods of ventilation, working levels, and district and panel workings, topographical features, reworking of old mines, drilling and blasting, drainage, underground fires, miners' tools, etc. The various branches of mining work are described in a plain, matter of fact way, easily understood by those previously entirely unacquainted with the subject.

MAGNETO AND DYNAMO ELECTRIC MACHINES: with a Description of Electric Accumulators. Edited by Paget Higgs. Symons & Co., London. Price 6s.

This volume is one of a "Specialists' Series" edited by Dr. Paget Higgs and Professor Charles Forbes, all containing much useful information on subjects of current interest, and, without adding much new matter, presents in condensed form an epitome of electrical progress up to recent dates.

A TEXT BOOK OF HYGIENE. By George H. Rohe. Thomas & Evans, Baltimore, Md.

This book is a treatise on the principles and practice of preventive medicine from an American standpoint, by a practitioner and professor of long experience. It is a book which cannot fail to be useful at a time when the public mind is in a state of apprehension as to the possible early advent of an epidemic.

COMPARATIVE PHYSIOGNOMY. By James W. Redfield. Fowler & Wells Co., New York.

This is a late edition of a book heretofore widely known. The publishers say of it that "one may read the book out of mere curiosity, or may look at it from a humorous point of view," but will in any case find suggestions of value—a statement which its reputation for many years attests.

Received.

METEOROLOGICAL OBSERVATIONS AT THE ADELAIDE OBSERVATORY AND ELSEWHERE IN AUSTRALIA, FOR 1881. Under the direction of Charles Todd, Observer and Superintendent of Telegraphs.

ARCHITECTS' AND STAIRBUILDERS' TABLES OF TREADS AND RISERS. By John A. Hamilton. William T. Comstock, 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.

Lane's Patent Anti-friction Steel Door Hanger and Track. Lane Bros., Box 276, Poughkeepsie, N. Y.

\$5 Telephone Magneto Bells. W. E. Lewis, Corry, Pa. Wrought Iron Bridges, Roofs, Girders, and Structural Iron Work. Hudson Bridge Works, Box 411, Hudson, N. Y.

See our special offer of Single Breech-loader in next week's paper. J. A. Ross & Co., Boston, Mass.

Manufacturers, Mechanics, Artisans, should read the Industrial Review. Send for sample copy. Industrial Review Co., Limited, Philadelphia.

Wanted.—A Steam Engine and Machine Tools. Emory College School of Technology. Three hundred students. Ten thousand catalogues circulated annually in Atlantic and Gulf States. Manufacturers correspond with I. S. Hopkins, President, Oxford, Georgia.

All kinds of Steam and Water Packing. Greene, Tweed & Co., 118 Chambers St., N. Y.

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

Scientific Works by Huxley, Tyndall, Spencer, etc., very cheap. J. Fitzgerald, 20 Lafayette Place, New York. Forced Sale.—Drill Presses. S. M. York, Cleveland, O.

Whistles, Injectors, Damper Regulators; guaranteed. Special C. O. D. prices. A. G. Brooks, 261 N. 3d St., Phila.

Agents with \$2 capital wanted. Brown, Elliott & Spears, Silver Creek, N. Y.

Experimental Machinery Perfected, models, patterns, etc. Tolhurst Machine Works, Troy, N. Y.

Brush Electric Arc Lights and Storage Batteries. Twenty thousand Arc Lights already sold. Our largest machine gives 65 Arc Lights with 45 horse power. Our Storage Battery is the only practical one in the market. Brush Electric Co., Cleveland, O.

The Cyclone Steam Flue Cleaner on 30 days' trial to reliable parties. Crescent Mfg. Co. Cleveland, O.

For Steam and Power Pumping Machinery of Single and Duplex Pattern, embracing boiler feed, fire and low pressure pumps, independent condensing outfits, vacuum, hydraulic, artesian, and deep well pumps, air compressors, address Geo. F. Blake Mfg. Co., 44 Washington St., Boston; 97 Liberty St., N. Y. Send for catalogue.

Stationary, Marine, Portable, and Locomotive Boilers a specialty. Lake Erie Boiler Works, Buffalo, N. Y.

Wanted.—Patented articles or machinery to manufacture and introduce. Lexington Mfg. Co., Lexington, Ky. "How to Keep Boilers Clean." Book sent free by James F. Hotchkiss, 86 John St., New York.

Mills, Engines, and Boilers for all purposes and of every description. Send for circulars. Newell Universal Mill Co., 10 Barclay Street, N. Y.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. For Power & Economy, Alcott's Turbine, Mt. Holly, N. J.

Steam Boilers, Rotary Bleachers, Wrought Iron Turn Tables. Plate Iron Work. Tippet & Wood, Easton, Pa.

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

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.

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

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. Complete outfit for plating, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., 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.

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

Walrus and Sea Lion Leather for Gin Rolls and Metal Polishing. Greene, Tweed & Co., N. Y.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv. page 438.

For Sale.—Steel Figures, \$1 per set. S. M. York, Cleveland, O.

Curtis Pressure Regulator and Steam Trap. Seep. 14. Woodworking Mach'y, Rollstone Mach. Co. Adv., p. 14.

Drop Forgings, 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 East 8th Street, New York.

Rubber Skate Wheels. See advertisement, page 13.

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

Hoisting Engines, Friction Clutch Pulleys, Cut-off Couplings. D. Frisbie & Co., Philadelphia, Pa.

Barrel, Keg, Hogshead, Stave Mach'y. See adv. p. 422.

Munson's Improved Portable Mills. Utica, N. Y.

For best low price Planer and Matcher, and latest improved Sash, Door, and Blind Machinery, send for catalogue to Rowley & Hermance, Williamsport, Pa.

Young Men! Read This!

The VOLTAIC BELT Co., of Marshall, Mich., offer to send their celebrated ELECTRO-VOLTAIC BELT and other ELECTRIC APPLIANCES on trial for thirty days, to men (young or old) afflicted with nervous debility, loss of vitality and manhood, and all kindred troubles. Also for rheumatism, neuralgia, paralysis, and many other diseases. Complete restoration to health, vigor, and manhood guaranteed. No risk is incurred, as thirty days' trial is allowed. Write them at once for illustrated pamphlet free.

All books and everything relating to electricity cheap. School of Electricity, N. Y.

Solid and Shell Reamers, durable and efficient. Pratt & Whitney Co., Hartford, Conn.

Catalogue of Books, 128 pages, for Engineers and Electricians, sent free. E. & F. N. Spon, 35 Murray Street, N. Y.

The Porter-Allen High Speed Steam Engine. South-wark Foundry & Mach. Co., 430 Washington Ave., Phil. Pa.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocum & 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 Information requests on matters of personal rather than general interest, and requests for Prompt Answers by Letter, should be accompanied with remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service 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) W. T. T. asks how to find the length diagonally of a given square. For instance, a true square 12x20 measured diagonally from one corner to the other. A. Obtain the diagonal by squaring the sides; add them together. The square root of the sum is the length of the diagonal. Thus in your true square, $12^2=144$, $20^2=400$, $144+400=544$, the square root of which is 23.3238076 inches. We have no other printed catalogue of SCIENTIFIC AMERICAN articles than such as appear in the closing numbers of each volume.

(2) L. Y. asks: 1. What is good to put in a boiler to clear it of scale formed by the boiling water, and how use it? A. Many back numbers of SCIENTIFIC AMERICAN and the SUPPLEMENT treat of this subject at length. 2. What is the largest cylinder that could be used with a boiler 6 feet long, 4 feet in diameter, and what sized screw wheel would be suitable for such a machine? A. Cannot answer this without the detail of tubes, etc. A boiler of the size (a simple cylinder) would be of little use in a boat. 3. Is sturgeon oil a good lubricator? A. Sturgeon oil would probably be as good a lubricator as most fish oils. 4. What should be done with the machinery of a boat to keep it all right during winter? A. Paint all the finished parts with a mixture of white lead, tallow, and lard oil (equal parts); heat and thoroughly mix. Apply hot with a brush. Work a mixture of lard and kerosene oil through the steam chest and cylinder. Pump one or two quarts of kerosene oil into the boiler while steam is on, draw the fire, and blow out clean. Close all openings, and protect from the weather.

(3) H. P. writes: 1. By what means can I keep cold a gold ring or other jewelry that contains a precious stone while hard soldering it? A. The safest way is to take the stone out. If the shank is very light, the setting may be wrapped in a rag and kept wet. 2. What does the pickle consist of which brass finishers use for brightening brass, such as clock trimmings? A. Dipping bath for sheet brass: Sulphuric acid 1 pound, nitric acid 1 ounce, muriatic acid 1 ounce, niter 1 pound, water 1 ounce. 3. How can I repair old zinc clock dials from which the enamel is partly chipped off? A. By filling the chipped places with thick white japan varnish, and baking as in the process of japanning. 4. What kind of varnish or lacquer is used on polished brass, and how is it to be applied? A. Thin shellac varnish. Heat the articles to 150° as near as you can guess, and varnish quickly with a flat camel's hair brush.

(4) R. B. asks for (1) a mixture or dip to clean brass ware, brass coach trimmings, something that would not be any worse than strong lye-water in its effects on the hand. A. Take 1 ounce oxalic acid, 6 ounces rotten stone, ½ ounce gum arabic, all in powder, 1 ounce sweet oil, and sufficient of water to make a paste. Apply a small portion, and rub dry with a flannel or leather. The liquid dip most generally used consists of nitric and sulphuric acids, but this is more corrosive even than the alkalies. 2. A receipt or direction as to the best manner of disguising the taste, or to take coal liver oil without buying the compounds they have on hand in drug stores? A. Make an infusion of Irish moss, strain, and agitate with equal parts of the coal liver oil, flavor with oil of wintergreen, or an emulsion can be made by agitating the oil with milk with a little gum arabic. Flavor as before.

(5) R. B. R. asks (1) why hemispherical cups, instead of conical, are used on the United States Signal Service Anemometers. A. The hemispherical cups are supposed to present less negative resistance to the force of the wind than any other form, the apex of a hemisphere being in the line of direction of the wind in all parts of its revolution. 2. How the velocity and force of the wind are determined by such anemometers? A. By trial or experiment. 3. If there is a constant ratio between the velocity of the wind and that of the cups; and if so, what the ratio is, and how calculated? A. The ratios of velocities are also found by experiment for a standard anemometer, when newly constructed ones are graduated by comparison.

(6) O. A. T. asks what kind of red paint would be most suitable for a towboat's funnel. At present I am using a wash made of red lead and buttermilk, but it is not desirable in wet weather, and red paint made with linseed oil don't keep its color on account of the heat. What would you recommend? A. We know of nothing better than red oxide of iron (Prince's metallic paint, and linseed oil). Any color will