

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.

Our goods speak for themselves, and a trial will convince the most skeptical of their superiority over all others. Lehigh Valley Emery Wheel Co., Lehigh, Pa.

Wanted.—Cheapest way of cutting cord wood from largetrees. J. S. Porcher, Eutawville, S. C.

Wanted.—Water closet castings to make. We do good work. Sample casting sent if desired. Lehigh Stove and Manufacturing Company, Lehigh, Pa.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 364. For Mill Mach'y & Mill Furnishing, see illus. adv. p. 364.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 366.

Contracts taken to manuf. small goods in sheet or cast brass, steel, or iron. Estimates given on receipt of model. H. C. Goodrich, 66 to 72 Ogden Place, Chicago.

Brush Electric Arc Lights and Storage Batteries. Twenty thousand Arc Lights already sold. Our largest machine gives 65 Arc Lights with 35 horse power. Our Storage Battery is the only practical one in the market. Brush Electric Co., Cleveland, O.

Curtis Pressure Regulator and Steam Trap. See p. 349. Lightning Screw Plates, Labor-saving Tools, p. 248.

Engines, 10 to 50 horse power, complete, with governor. \$250 to \$550. Satisfaction guaranteed. More than eight hundred in use. For circular address Heald & Morris (Drawer 127), Baldwinville, N. Y.

Best Squaring Shears, Tinner's, and Canners' Tools at Niagara Stamping and Tool Company, Buffalo, N. Y.

Lewis' Combination Force Pump makes three machines made of brass throughout. See Adv. page 317.

Saw Mills, Hanck & Comstock, Mechanicsburg, Pa.

Stenographers, type-writers, clerks, and copyists may be obtained free of charge at the Young Women's Christian Association, 7 East 15th Street, New York.

Lathes 14 in. swing, with and without back gears and screw. J. Birkenhead, Mansfield, Mass.

Five foot planers, with modern improvements. Geo. S. Lincoln & Co., Phoenix Iron Works, Hartford, Conn. The Best.—The Dueber Watch Case.

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, 261 Broadway, New York.

Farley's Directories of the Metal Workers, Hardware Trade, and Mines of the United States. Price \$3.00 each. Farley, Paul & Baker, 530 Market Street, Phila.

Improved Skinner Portable Engines. Erie, Pa.

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.

Lists 29, 30 & 31, describing 4,000 new and 2d-hand machines, ready for distribution. State just what machines wanted. Forsaith & Co., Manchester, N. H., & N. Y. city.

"Abbe" Bolt Forging Machines and "Palmer" Power Hammers a specialty. Forsaith & Co., Manchester, N. H.

Railway and Machine Shop Equipment. Send for Monthly Machinery List to the George Place Machinery Company, 121 Chambers and 103 Reade Streets, New York.

25" Lathes of the best design. G. A. Ohl & Co., East Newark, N. J.

"How to Keep Boilers Clean." Book sent free by James F. Hotchkiss, 84 John St., New York.

Wanted.—Patented articles or machinery to make and introduce. Gaynor & Fitzgerald, New Haven, Conn.

Water purified for all purposes, from household supplies to those of largest cities, by the improved filters manufactured by the Newark Filtering Co., 177 Commerce St., Newark, N. J.

Latest Improved Diamond Drills. Send for circular to M. C. Bullock Mfg. Co., 80 to 88 Market St., Chicago, Ill.

For Power & Economy, Alcott's Turbine, Mt. Holly, N. J.

Ice Making Machines and Machines for Cooling Breweries, etc. Pletat Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3033, New York city.

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

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

Am. Twist Drill Co., Meredith, N. H., make Pat. Chuck Jaws, Emery Wheels, Grinders, automatic Knife Grinders. American Fruit Drier. Free Pamphlet. See ad., p. 381.

Drop Forgings. Billings & Spencer Co. See adv., p. 382.

Brass & Copper in sheets, wire & blanks. See ad. p. 380.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 20,000 Crank Shafts and 15,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

Millstone Dressing Diamonds. Simple, effective, and durable. J. Dickinson, 64 Nassau street, New York.

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

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 380.

Gear Wheels for Models (list free); Experimental Work, etc. D. Gilbert & Son, 212 Center St., Phila., Pa. See New American File Co.'s Advertisement, p. 372.

Renshaw's Ratchet for Square and Taper Shank Drills. The Pratt & Whitney Co., Hartford, Conn.

Woodwork'g Mach'y, Rollstone Mach. Co. Adv., p. 382.

20,000 Duc Spherical Elevator Buckets, sizes 3 1/2 to 17 inches, constantly on hand. Telegraphic orders filled. T. F. Rowland, sole manufacturer, Brooklyn, N. Y.

First Class Engine Lathes, 20 inch swing, 8 foot bed, now ready. F. C. & A. E. Rowland, New Haven, Conn.

Steam Pumps. See adv. Smith, Vaile & Co., p. 382.

Straight Line Engine Co., Syracuse, N. Y. See p. 380.

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

Supplement Catalogue.—Persons in pursuit of information on 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.

NEW BOOKS AND PUBLICATIONS.

THE BREWER, DISTILLER, AND WINE MANUFACTURER. Giving full directions for the manufacture of beers, spirits, wines, liquors, cordials, etc. Illustrated. Edited by John Gardner, F.C.S. P. Blakiston, Son & Co., 1012 Walnut Street, Philadelphia.

This volume appears to be directly practical, not only giving instruction in the various processes of brewing, distilling, and fining, but describing adulterations and showing the method of their detection, usually by processes which may be wrought by any intelligent person. It may be a surprise to the general reader to ascertain, from this volume, from how many materials spirituous liquors are obtained by distillation. All the cereals are used, potatoes, Jerusalem artichokes, beets, carrots, cherries, milk ("koumiss" is fermented milk distilled), palm tree sap, molasses, sugar, and cider. These are exclusive of the products of the grape—wine and brandy.

TWENTY YEARS WITH THE INDICATOR. By Thomas Pray, Jr., C.E., M.E. Boston: Journal of Commerce Publishing Company.

The author introduces the indicator to the practical mechanic and engineer, to the manufacturer, to the user of steam power, and makes them acquainted, not only with its capabilities, but demonstrates its uses and instructs in its reading and handling. The volume, of 150 pages octavo, contains forty practical "lessons" in the use of the indicator, embracing diagrams taken from all classes of engine under all possible (or probable) circumstances, detailed instructions in the use of the indicator, and full illustrated descriptions of the instruments in use. It is a very thorough work, and appears to be amply sufficient for the guidance of the practical engineer and the information of the intelligent engine builder, or the manufacturer. The letter press is excellent and the working of the cuts admirable.

BERLEY'S BRITISH, AMERICAN, AND CONTINENTAL ELECTRICAL DIRECTORY. George Cumming, 219 East 18th Street, New York.

This is a handsome octavo of nearly 700 pages, containing a record of all the industries relating to electricity and magnetism as applied to the arts; a list of all persons and firms connected, in the trade or professionally, with the science of electricity, and information, in reading or in tabulated form, that makes the volume of value to all who are interested in electrical progress. The book contains, also, much information of a more general character, but germane to electricity as an applied science.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at the office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) E. C. asks: Can you tell me what is used to give the white coating to rubber hand stamps? A. The white coating in new rubber bands is due to the sulphur contained in the preparation, which comes out on the external surface and remains there till worn away.

(2) N. P. I. writes. 1 I am making a steam yacht 25 feet keel, 30 feet over all, and 6 feet beam. What size cylinder had I best put in? A. About 5 inches diameter of cylinder and 6 inches stroke. 2 Will you also please state the size of wheel and boiler to run a craft of that sort to the best advantage? I want all the speed I can get. A. Wheel 30 inches diameter and 3 feet 9 inches pitch. Boiler to have about 200 feet heating surface.

(3) L. J. W. asks: 1 What composition will prevent axle grease from penetrating the wooden boxes which hold it? A. Paraffine. 2 By what means can the tin on the tomato can be removed therefrom? A. No satisfactory means has yet been devised for this purpose.

(4) F. C. asks how to clean the pipes used with a beer pump (tin lined), a sort of a coating forms inside and comes off in flakes, have tried common soda,

but it makes a taste in the beer afterward, and that is what I wish to avoid. A. The best plan is to use a solution of soda and then wash all traces of the soda out by letting water run through the pump. All taste will be removed if the pump is thoroughly cleaned by allowing sufficient water to run through it.

(5) S. F. asks: Will you please inform me in what manner the chloride of silver is fastened to the silver wire or strap in the chloride of silver battery? A. It is fused in a porcelain or platinum crucible and cast around the wire in a mould.

(6) H. M. G. writes: I am using an ice box refrigerator (the ice is not in the interior) which has acquired an offensive odor, that repeated washing does not entirely remove; what must I use to render it sweet? A. Clean thoroughly with dilute sulphuric acid, then carefully wash away all traces of the acid with water.

(7) C. V. N. asks what coating there is, which can be applied to the insides of wooden or iron tanks to render them acidproof. A. Coat them with a mixture of 1 part pitch, 1 part resin, and 1 part plaster of Paris (perfectly dry) melted together.

(8) M. F. B. asks: What is the best material to use in painting a large wrought iron tank, to preserve from rust? (Tank is used for water supply.) A. A paint made with boiled linseed oil and red oxide of iron, or Prince's metallic paint; sometimes it is called iron paint. No turpentine.

(9) S. W. B. writes: You copy an exchange as saying that builders of machinery frequently design their machines for too narrow belts. In most small machine tools it is well to have a weak place in the transmittive machinery, where the machine will be certain to give way before occasioning serious accident to the attendant, to the work, or the expensive parts of the machine. The belt is usually made the weak point. Some carelessness is inevitable about machinery, and an important method for reducing the accident resulting from such carelessness is to make some inexpensive part proportionally weaker than the rest. This will be the belt nearest the working parts of a machine tool, a cheap piece of cast iron for the roll bearings to abut against in ore crushing, or the toggle joint in the Blake crusher.

(10) M. J. asks for a good receipt for welding two pieces of cast steel together. A. 10 parts borax, 1 part sal ammoniac, pulverize together thoroughly, with which sprinkle the parts to be welded.

(11) F. C. & Co. write: We have considerable trouble from the quantity of smoke and soot emitted from our boiler through the smoke stack. Being in the laundry business, it gives much annoyance by soiling work. If you can suggest a remedy other than using harder coal, we shall be indebted to you. A. You can prevent soot with soft coal only by making the combustion perfect. Construct the furnace so as to feed the fresh coal under the fire or at the front by pushing it in upon the front part of the fire, so that the smoke will pass over the red hot coal. There are several patented smoke burning furnaces.

(12) C. M. writes: Suppose that at the bottom of a well 4 1/4 inches in diameter, and 1,500 feet deep, there is pond of salt water 50 feet deep, and full strength. Now, if a tube 2 3/4 inches outside diameter, and 2 1/2 inches inside diameter is put into the well and extended 30 feet into the brine, so that no fresh water can enter it, and then the well outside of this tube is filled with fresh water to the top, how high will the salt water rise in the tube? What I want to ascertain is whether it would be practicable to force the salt water out by the use of a steam siphon? A. Your arrangement would work, provided you were sure that the pond of salt water had no outlets that would carry off the water under the great pressure which the filling of the pipe would produce. The probability is that the crevices in the earth that supplies the water to the salt bed would also empty it, under a hydrostatic pressure reaching to the surface of the earth.

(13) B. X. S. writes: I have a lot of glass castings seven-sixteenths of an inch thick, and they have a hole in the center three-eighths of an inch in diameter; with what and how could I make the holes five-eighths of an inch in diameter. A pulley that I have I wish to run under water; the pulley carries a V-shaped belt. One end the belt is out of water; what kind of belt should I use to give the least resistance and that will not pump up water? What shall I use to put on the pulley so that the belt will not slip? Would a kind of rubber cement do? A. Provide a vertical spindle with a copper cap the size of the hole you wish to make in the glass pieces. Drive the spindle with a band and hold the glass upon the end, and feed emery and water into the hole. It will soon cut through. For running under water use a rubber belt or band. Probably you cannot prevent the pumping of water by the belt; it depends somewhat upon the speed. You can cover the pulley with a strip of pure rubber, put on with rubber cement.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

June 5, 1883,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions such as Agricultural machine, Alarm, Amalgamating ores, Ammonia and its salts, Animal trap, Antimony, Automatic driving gate, Axle box, Axle gear, Axle lubricator, etc.

Table listing inventions such as Axle, wagon, Bale tie, Bar, Bark cutter, Basket, Battery, Beamer, Bed bottom, Bed, sofa, Beer chip, Bell, Berth, Billiard cue, Bird cage spring, Blind stop, Blower, Board, Boat, Boiler, Boiler tubes, Boot or shoe, Bottle packing box, Box, Brake, Bridle, Buckle, Burial casket, Burglar alarm, Button, Britton fastener, Button stud, Button setting instrument, Button, sleeve, Calamine compound, Calipers, Camera, Can opener, Cant hook, Car brake, Car brake, automatic, Car coupling, Car coupling, A. W. Case, Car coupling, W. F. Freeman, Car coupling, W. B. Nichols, Car coupling, C. Van Deusen, Car coupling, C. Weik, Jr., Car door and attachment, Car signal, Car starter, Car wheel, Car wheel, H. G. Yates, Card support, Carriage curtain fastener, Carriage top standard, Carriages, equalizer for spring, Carrier, Cartridge packing case, Cartridges, tubular package for blasting, Cash carrier, Cash transmitter, Casting, divided, Cementing composition, Center board, folding, Chair, Chair seating needle, Charcoal, manufacture of, Child's chair, Chuck, lathe, Churn, Cigars, making, Circuit opener, automatic, Clasp, Cleaner, Cloak, circular, Clock bell, Clock bell, A. C. Sanford, Clock movement, electric, Clock pendulums, device for adjusting, Clothes wringer, Collar, Collar fastener, Collar for female wear, Colter hub, plow, Colter hub, wheel, Confectionery and pill coating and rounding machine, Comb, Composing stick, Corn husker, sheller, and separator, combined, Cornice pole support, Corset, Counting and registering the revolutions of a rotating shaft, instrument for, Coupling, Crane, traveling, Cravat supporter, Culinary utensil, Cultivator and cotton and corn planter, combined, Cup, Curry comb, Bunce & Sammis, Curtain pole, cornice, E. D. Mersereau, Curtain roller, C. C. Clawson, Cutter, Dental engine, Dental vulcanizer, Deodorizing organic substances, process of and apparatus for, W. S. Hatheway, Desk, cash, J. Fanning, Die or swage, M. L. Ritchie, Digger, Distillation, sublimation, or roasting of solid materials, apparatus for the continuous, F. Lürmann, Door hanger, Eberhart & Stevens, Door lock, J. Mathiesen, Door securer, A. Boucher, Door spring, G. W. Downes, Draft regulator, H. W. Norwood, Draft regulator for locomotive and other furnaces, H. W. Norwood, Dredger, H. R. Koon, Drier, See Fruit drier, Sand drier, Drill, See Grain drill, Drilling machine, hand, G. W. Smith, Dynamometer, A. H. Emery, Electric apparatus, commutator for, W. H. Chapman