

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.

First-class Patents Bought and Sold on Commission by Chas. Babson, Jr., 24 Congress Street, Boston, Mass.

Curtis Pressure Regulator and Steam Trap. See p. 76. Free.—"Useful Hints on Steam," a book of 96 pages, illustrated. By mail, 15 cents. E. E. Roberts, 107 Liberty Street, New York.

Mammoth, the celebrated cave in Kentucky, and the name of the largest Falcon pen made by Esterbrook. Ask your stationer for Esterbrook's Mammoth Falcon Pens.

The Portable Electric Light Co. are having large sales for their Portable Electric Lighter. See adv.

Wanted.—Situation in electric lighting. Understands machines, etc. References. Buren, 12 Orange Place, Newark, N. J.

A man competent to write specifications may secure a permanent situation at the Iowa Patent Office, Des Moines, Ia.

Apple Drier wanted. Capacity, 100 to 250 bushels daily. Geo. S. Worcester, Thetford, Vt.

Inventions for children's use solicited for manufacture. D. Higham & Sons, manufacturers of wooden goods in general, Cumberland Street and Aramingo Canal, Philadelphia, Pa.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'rs, 23d St., above Race, Phila., Pa.

Drop Forgings of Iron or Steel. See adv., page 76.

Cope & Maxwell M'fg Co.'s Pump adv., page 77.

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

Diamond Engineer, J. Dickinson, 64 Nassau St., N.Y. 50,000 Emerson's Hand Book of Saws. New Edition. Free. Address Emerson, Smith & Co., Beaver Falls, Pa.

Eagle Anvils, 10 cents per pound. Fully warranted. Gould & Eberhardt's Machinists' Tools. See adv., p. 76.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 76.

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

Upright Self-feeding Hand Drilling Machine. Excellent construction. Pratt & Whitney Co., Hartford, Conn.

Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 77.

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

The Porter-Allen High Speed Steam Engine. Southwork Foundry & Mach. Co., 430 Washington Ave., Phil. Pa. Common Sense Dry Kiln. Adapted to drying of all material where kiln, etc., drying houses are used. See p. 78.

The Sweetland Chuck. See illus. adv., p. 78.

Knives for Woodworking Machinery. Bookbinders, and Paper Mills. Taylor, Stiles & Co., Biegelsville, N. J.

For Sale.—A Foundry and Machine Shop, with a Corn and Feed Mill, the whole driven by an automatic engine and boiler of 80 H.P. No other shop within a radius of 50 miles. The present owner will retain a one-half interest, if the purchaser will superintend the business. Address N. W. Girdwood, Asheville, N. C.

Works by Tyndall, Huxley, Spencer, etc., 15 cts. each. J. Fitzgerald, 30 Lafayette Place, New York.

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

Scientific Books. See page 44. 100 page Catalogue free. E. & F. N. Spon, 44 Murray Street, N. Y.

Drop Forgings. Billings & Spencer Co. See adv., p. 45.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 44.

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

Improved Skinner Portable Engines. Erie, Pa.

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.

Steam Pumps. See adv. Smith, Vaile & Co., p. 29.

Stone bottles for beer and ink. Merrill & Co., Akron, O. 25" Lathes of the best design. G. A. Ohl & Co., East Newark, N. J.

For Power & Economy, Alcott's Turbine, Mt. Holly, N. J. "How to Keep Boilers Clean." Book sent free by James F. Hotchkiss, 84 John St., New York.

Engines, 10 to 50 horse power, complete, with governor. \$20 to \$50. Satisfaction guaranteed. More than seven hundred in use. For circular address Heald & Morris (Drawer 127), Baldwinville, N. Y.

Brass Finishers' Turret Lathes, 13 1/2 x 4, \$165. Lodge, Barker & Co., 189 Pearl St., Cincinnati, O.

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

Latest Improved Diamond Drills. Send for circular to M. C. Bullock Mfg. Co., 80 to 83 Market St., Chicago, Ill.

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.

Assays and Analyses of ores and all commercial products. Advice given and investigations made in all branches of chemical industry. Send for circular. N. Y. Assay Laboratory, 40 Broadway, New York.

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

Combination Roll and Rubber Co., 68 Warren street, N. Y. Wringing Rolls and Moulded Goods Specialties. First Class Engine Lathes, 30 inch swing, 8 foot bed, now ready. F. C. & A. E. Rowland, New Haven, Conn.

Ice Making Machines and Machines for Cooling Breweries, etc. Hotet Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3083, New York city.

Steel Stamps and Pattern Letters. The best made. J. F. W. Dorman, 21 German St., Baltimore. Catalogue free.

C. B. Rogers & Co., Norwich, Conn. Wood Working Machinery of every kind. See adv., page 62.

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

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y. Presses & Dies. Ferracuta Mach. Co., Bridgeton, N. J.

Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions, Sunday schools, colleges, and home entertainment. 116 page illustrated catalogue free. McAllister, Manufacturing Optician, 49 Nassau St., New York.

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 this 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. M. H. asks: 1. Is there any difference between the effect of quantity and intensity currents upon an electro-magnet? A. Yes; quantity currents are adapted to coarse wire magnets used on short circuits. Intensity currents are adapted to fine wire magnets and circuits of high resistance. 2. What proportion should the size of the core bear to the number of coils to get the greatest effect? A. In general, the winding should equal the core in thickness. 3. Should a larger gauge wire be used for an intensity current than for a volume current when wrapping a magnet? A. See reply to first query.

(2) Ph. L., Brazil, writes: Please let me know through your columns a good recipe for preparing fish for export—canned, smoked, and salted. Will extraction of air from tins prevent putrefaction? A. See SUPPLEMENT, No. 320.

(3) A. M. W. asks how to take the lime out of the water for use in boilers. The water is very hard and alkaline. A. Dr. C. F. Chandler says, in his report on "Water for Locomotives, and Boiler Incrustations," that barium chloride decomposes calcium sulphate (sulphate of lime), forming barium sulphite, which is deposited; barium carbonate is sometimes used, but these are, perhaps, too expensive, and hence catechu, nutgalls, oak bark, shavings and sawdust, tan bark, tormentilla root, mahogany, logwood, etc., are recommended. These substances contain tannic acid, which is extracted by the water, and forms a basic calcium tannate (tannate of lime) that separates out. The use of the aqueous extract of these substances is the best on account of avoiding mechanical obstructions liable to occur in the use of chips, sawdust, etc. An incrustation powder composed of sawdust, 70 parts; barium chloride, 15 parts; ammonium chloride (sal ammoniac), 10 parts; is good, but perhaps too expensive.

(4) C. H. L. writes: I have in my parlor a chandelier made in imitation of bronze. The bronze has worn off, and consequently gives the chandelier a whitish gray appearance. Is there not a paint or stain by which I can rebronze it? A. All dealers in artist's colors sell bronze powders and bronze or gold paint, which will answer your purpose.

(5) H. G. L. asks: 1. Could a Ruhmkorff induction coil have a wooden hobbin on which the insulated wire is wound? A. Yes. 2. Would it be better to coat this hobbin with shellac? A. Yes. 3. Is there any article in the SCIENTIFIC AMERICAN or SUPPLEMENT which relates to induction coils? A. See SCIENTIFIC AMERICAN SUPPLEMENT, 160.

(6) B. T. B. asks: 1. Should the resistance of the field magnets in a self-exciting dynamo be equal to that of the armature? A. No; it may be more in some cases and less in others. 2. If the resistance of the armature in a low tension machine be such a small fraction of an ohm, how can the resistance of the field be the same, and yet have enough wire to magnetize sufficiently? A. In this class of machines the resistance of the magnet exceeds that of the armature. 3. Is there any advantage in having long magnets, as on the Edison machine? A. Yes. 4. I want to make a Gramme machine with ring core, outside diameter 3 1/2 inches, and 2 1/2 wide, wound with four layers No. 18 wire, making resistance of armature about one ohm. What size and quantity of wire would be best for field? A. Use six or seven layers of No. 16. Better make a larger machine. It will cost no more, and will give better satisfaction.

(7) G. L. G. says: Can you tell me of any gum or article of any kind that can be applied in a liquid form to fill the openings of wire cloth, so as to make a partially transparent sheet which will stand the

weather? My idea is to obtain a substitute for glass in hot bed sash. A. Possibly gelatine may answer, in following proportions: Water ounce, gelatine ounce; bi-chromate of potash. The latter renders the gelatine insoluble.

(8) W. C. & Co. ask: What is the best way to burnish tin? We have a foot lathe capable of making 600 to 900 revolutions per minute. A. Tin can be burnished in the same way as with silver, viz., with a polished steel burnisher and soap water. It is also planished with polished hammers in the process of manufacture; but these are tedious processes for ordinary ware. A revolving brush and wet whiting or chalk will be more appropriate for your work. Some use a buff wheel of wood covered with felt, where the surfaces are large and plain. Buff or brush crosswise, so as not to streak the work. For a final finish a soft cotton cloth and dry Vienna lime gives a fine luster.

(9) F. E. G. asks: 1. In which of two cases will a wire wear the least and run with the least friction in turning a right angle—to make the turn around one wheel 7 inches in diameter, or to run around two wheels of 3 1/2 inches to make the turn? A. The wire will work better and last longer running over the larger wheel. It is sharp bending around the small wheels that soon breaks the wire; besides, in using two wheels to make a turn, the wire is bent and straightened twice in making the turn. 2. Are there any pearls found in the oysters of this country? A. Pearls are occasionally found in the common oyster; they are of no value.

(10) V. T. asks: Will salicylic acid prevent cooked fruits or preserves and jellies from souring or moulding? Is there anything better than salicylic acid to keep preserves and jams from spoiling? A. Salicylic acid will answer your purpose. Prof. Kolbe says "that the preserving power of salicylic acid will be greatly increased by adding a small proportion of potassium bisulphate and potassium chloride; these will prevent the salicylic acid from combining with the phosphates contained in the substance, thereby losing its efficiency." Benzoic acid is considered, according to Watts' 3d Sup., to be more powerful as an antiseptic than salicylic, boracic, or formic acids.

(11) J. C. asks: 1. Of what is printer's varnish made that is used to thin ink, and the amount of each ingredient used in a pint? A. Either resin or linseed oil. 2. What is used for a "drier"? A. Manganese borate. 3. How can job ink be made indelible? A. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 157. 4. How can it be made to give a glossy appearance? A. Job ink cannot be made glossy, except by the subsequent application of varnish.

(12) J. E. A. writes: I am in want of information in regard to the best manures for orange growing in the soil of Florida. A. SUPPLEMENT, 227, contains "Florida Orange Culture;" SUPPLEMENT, 242, "Cheap Manure for Gardens;" SUPPLEMENT, 177, "Agricultural Plant Feeding;" SUPPLEMENT, 171, "Homemade Superphosphates;" SUPPLEMENT, 186, "How to Make a Poor Soil Fertile." Dealers in fertilizers furnish pamphlets on this subject.

(13) G. F. asks: How can I wash or erase printed matter from paper? A. Use plenty of naphtha or benzol, or strong hot caustic soda or potash solution (in water).

(14) S. H. J. asks: 1. How to make those small pellets known as serpent eggs, which, when ignited, form themselves into long masses or cylinders. A. Potassium dichromate, 2 parts; potassium nitrate, 1 part; white sugar, 3 parts. Pulverize each of the ingredients separately, and then mix them thoroughly. Make small paper cones of the desired size and press the mixture into them. Also, see SUPPLEMENT, 250. 2. How can I make a brilliant black ink? A. The addition of sugar will give a gloss to the ink. For receipts, see SCIENTIFIC AMERICAN SUPPLEMENT, 157.

(15) R. V. J. asks: 1. What is the effect of burning salicylic acid in atmospheric air? A. There would result from the combustion of salicylic acid in air, carbon dioxide and water. From the general properties of nitrogen, we should infer that its presence would have no effect upon the combustion. With nitrous oxide, a decomposition of the latter would result. Nitrous oxide is one of the most stable of the oxides of nitrogen, and we presume it could be kept for some time without its becoming decomposed, providing, of course, that it was kept away from the air. 2. Can protoxide of nitrogen be confined in closed vessels for a length of time without change? A. Yes.

(16) R. B. C. asks: 1. After the sand is packed around the pattern for casting, how is the pattern taken out without breaking the mould? A. Use a flask that divides through the middle, and place the pattern in the flask, so that every part shall have a taper from the dividing plane; or, if the pattern be properly made and itself divided, mould one-half upon a board and in a half flask, then turn the flask over and place the other half upon it, and the half of the flask in its place. Then sift a little powdered charcoal upon the sand in the side made up. Then finish the mould and separate the flasks and take out the patterns, after rapping it a little one way and the other. We recommend you to visit a foundry before you commence. 2. What kind of a crucible should I use for melting brass, and where can I obtain such? A. Use a black lead crucible. Such crucibles are sold by all dealers in metallurgists' supplies. 3. At what temperature is brass fusible? A. Brass melts at 1,900°.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

G. M. W.—Sample a. Hornblende. Sample b. Contains two small brown paper packages, one containing iron pyrites with quartz gangue, the other, darker, is similar with an iron oxide gangue. They may carry gold, which can only be determined by assay. One large specimen of hornblende showing small crystals and crystalline structure. Several specimens of quartz with pyrites, possibly gold bearing. One specimen of brownish quartz with small crystals; and also smaller specimens of hornblende gangue without any apparent

definite mineralogical character. Sample c. Limonite, hydrated sesquioxide of iron. Sample d. Quartz containing pyrites—probably carrying gold.—C. H. D.—The mineral sent is calcite, a calcium carbonate. If it contains phosphorus, it would be of value for fertilizers; from its appearance we would infer that it does not contain sufficient of that constituent to make it desirable.—C. J. S.—Iron pyrites, iron sulphide probably carrying gold.

COMMUNICATIONS RECEIVED.

On Vital Force Developed in Hatching Eggs. By H. S. On the Tides. By C. W. T. On the Sun. By J. T. R. On Fire Escapes. By P. T. S. On the Chemistry of the Galvanic Current. By W. H. G.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

January 23, 1883.

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also or any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications, not being printed, must be copied by hand.

Table listing various inventions and their patent numbers, including items like Aerial ship, Air motor, Alarm, Alkali packing caustic, Amalgamating and separating gold, Auger, Axle box, Axle box, car, Axles, Bag and twine holder, Baling press, Bar, Beans, Bed bottom, Bedstead, Beehive, Beer, Belt fastener, Blower, Blower, fan, Boiler, Bolt, Bolt guard, Boot and shoe last, Boot and shoe show-box, Boots and shoes, Bottle box, Box loop, Brake, Brake lever, Brush for cleansing water closets, Bung barrel, Burring machine, Button fastening, Buttons, Camera box, Cannon, Car brake, Car brake, Car coupling, Car coupling, Car coupling, Car motor, Car motor, Carding machines, Carpet lining, Carpet linings, Carrier, Cart, dumping, Cartridge case, Case, Chain, Chain bar, Chain link, Chest, Chopper, Churn, Chute, Cigar envelope, Cleaner, Clock alarm, Clock, Clutch and reversible pawl for sewing machines, Collar pad, Cornice, Cot, Cotton picker, Crimping tool, Crucible, Cultivator, Cultivator, tongueless, Currents and streams, device for utilizing the force of, Cut-off valve gear, Cutter, Cutter head attachment, Desk, Desk, folding, Digger, Ditching machine, Door bolt.