

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.

Manufacturing plant for sale, consisting of real estate, with capacious factory buildings, a large lot of general machinery, general and special tools, etc., etc. Address Box 65, Middletown, Conn.

Philosophical and Chemical Apparatus and Materials. Send for catalogue. Queen & Co., Philadelphia.

Steam Pipe and Boiler Covering, Roofing Paints, Prepared Roofing, and general line of Asbestos materials. Phil Carey & Co., 127 Central Avenue, Cincinnati, O.

For Sale.—Steel Fig's., \$1. S. M. York, Cleveland, O. Lightning Screw Plates, Labor-saving Tools, p. 140.

25' Lathes of the best design. Calvin Carr's Cornice Machinery. G. A. Ohi & Co., East Newark, N. J.

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.

Best Squaring Shears, Turners', and Cannery Tools at Niagara Stamping and Tool Company, Buffalo, N. Y.

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

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.

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.

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

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

Aneroid Barometers, Mercurial Barometers, Thermometers, Anemometers, Hydrometers, Hygrometers. Send for catalogue. Queen & Co., Philadelphia.

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.

Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3063, New York city.

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

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

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocum & 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.

Improved Skinner Portable Engines. Erie, Pa.

Fossil Meal Composition, the leading non-conducting covering for boilers, pipes, etc. See adv., p. 190.

Curtis Pressure Regulator and Steam Trap. See p. 142.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad., p. 140.

For Mill Mach'y & Mill Furnishing, see illus. adv., p. 140.

Mineral Lands Prospected, Artesian Wells Bored, by C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 142.

Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 157.

Spy Glasses, Telescopes, Opera Glasses, Field Glasses. Send for catalogue. Queen & Co., Philadelphia.

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

Drop Forgings of Iron or Steel. See adv., page 172.

Diamond Tools. J. Dickinson, 64 Nassau St., N. Y.

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

50,000 Emerson's Hand Book of Saws. New Edition. Free. Address Emerson, Smith & Co., Beaver Falls, Pa.

Gould & Eberhardt's Machinists' Tools. See adv., p. 172.

Barrel, Keg, Hogshead, Stave Mach'y. See adv., p. 172.

The Lehigh Valley Emery Wheel Co., Leighton, Pa., sell a new Stove Plate Grinder, with traverse motion, and an Automatic Planer Knife Grinder, with a cup wheel. Cuts and descriptions sent upon application.

Fine Taps and Dies in Cases for Jewelers, Dentists, Amateurs. The Pratt & Whitney Co., Hartford, Conn.

For best low price Planer and Mather, and latest improved Sash, Door, and Blind Machinery, Send for catalogue to Rowley & Hemanee, Williamsport, Pa.

The Sweetland Chuck. See illus. adv., p. 174.

Steam Pumps. See adv. Smith, Vaile & Co., p. 172.

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

NEW BOOKS AND PUBLICATIONS.

PHILIPP REIS, INVENTOR OF THE TELEPHONE. A biographical sketch, by Silvanus P. Thompson, B. A., D. Sc., Professor of Experimental Physics in University College, Bristol, Eng. Published by E. and F. N. Spon, London and New York.

This volume is in memoriam of Philipp Reis, of Freidrichsdorf, Germany, where he lived as a teacher when in 1860 he constructed his first telephone. This and subsequently constructed instruments, all made by himself, he exhibited before a number of societies from 1861 to 1864, and finally died of consumption in 1874, without having seen his invention applied to any useful purpose. Yet so much faith did Reis have in his discovery that a year before he died he said that he had showed the world the way to a great invention which must now be left to others to develop. The author and compiler of the volume points out by parallels that the subsequent Bell telephone was substantially that of Reis, who had produced audible articulate sounds by similar means fourteen years before Mr. Graham Bell's claims were made. In concluding the sketch of the work of Reis, Professor Thompson says: "If mere mechanical imperfections do not make an invention any the less a true invention, it would be dishonest to deny to Philipp Reis the honor of the invention of which he openly stated the successes and the imperfections." The volume is illustrated by explanatory engravings showing the original Reis telephones with all their details of construction.

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) G. C. D. & Co. ask: Can you inform us of any substance to make the surface of imitation morocco cloth waterproof so that rain will not leave spots on it or tarnish it? A. See article on Waterproofing Cloth in SCIENTIFIC AMERICAN SUPPLEMENT No. 317.

(2) L. E. R.—The following is a receipt for marine glue which we think will suit your demands: Dissolve by heat one part of pure India rubber in naphtha; when melted, add two parts shellac; melt until mixed. Pour while hot on metal plates to cool; when required for use melt and apply with a brush. Liquid glues such as the following:

- White glue.....16 ounces. Dry white lead.....4 " Soft water.....2 pints. Alcohol.....4 ounces. Stir together and bottle while hot.

(3) J. S. F. B.—Sir Humphry Davy used a voltaic battery of not less than 100 double plates for his separation of hydrogen. Any such battery can be used for this purpose, and you will probably require a large number of the smaller sized cells.

(4) W. F. B. asks for a good ink eraser. A. Oxalic acid is frequently used for this purpose. It is dissolved in water and blotting paper dipped into it, and this slightly moist applied to the ink spot. Or cover the spot with tallow and then apply sodium pyrophosphate until both tallow and ink have disappeared. See SUPPLEMENT No. 157.

(5) T. H. C.—SUPPLEMENT No. 158 gives a number of recipes for glues of various kinds; among others a good waterproof glue will be found.

(6) J. D. H.—SCIENTIFIC AMERICAN SUPPLEMENT, No. 350, contains an article on sirups made from different fruits which we think will cover your wants. SUPPLEMENT No. 196 gives formulæ for making artificial fruit essences. In Dick's Encyclopædia of Practical Recipes and Processes will be found all the information you need.

(7) A. L. B.—A good deep black is obtained by working for an hour in a solution of 8 ounces iron sulphate (copperas) and two fluid ounces iron nitrate, and after washing out, work in the decoction of logwood and chamber lye; lift and add 2 ounces more of iron sulphate in solution; work fifteen minutes, wash, and dry. An article on silk dyeing on p. 2878 of SCIENTIFIC AMERICAN SUPPLEMENT No. 181 will be found to contain valuable matter.

(8) M. M. S. asks (1) how to clarify cotton seed oil to give it a clear yellow color. A. The crude oil is heated to about 90° Fah. by means of steam coils, and a cold solution of sodium hydroxide (caustic soda) is slowly added while the whole is vigorously agitated. One gallon of the alkaline liquor usually suffices for twenty

gallons of oil, but sometimes more is needed to bring it to a light straw color. The mixture is then allowed to settle and the supernatant oil separated and filtered. 2. How to bleach vegetable wax, containing a great deal of stearine; how to take out the stearine so as to make it fit for wax or paraffine candle making. A. The wax is first heated at 180° C. until water and light oil are evaporated. The mass is then cooled to 100° and mixed while stirring with 10 per cent sulphuric acid of 66° B. It is next heated to 180° C., until a sample of the mass filtered through bibulous paper furnishes transparent white drops. It is again cooled to 100° and 20 per cent dry and finely sifted sediment of potassium ferrocyanide are added, with which it is again heated to 180°, until effervescence ceases. The mass is poured into tin sheet coolers, pressed in a stearine hot press, and the press residue filtered through an unsized filter heated with steam.

(9) N. A. W. writes: I have frequently stained pine table tops with permanganate potassium, but an acid discolors them. If I stain with an acid, an alkali will also discolor them. Will you please give in correspondents' column of SCIENTIFIC AMERICAN a recipe nonpoisonous, cherry and blackwalnut stain? A. Use alkanet root dissolved in vinegar, with the solution and dip the wood in two or three times according to the shade desired. Blackwalnut may be produced by mixing a little dragon's blood with the above according to the shade desired.

(10) E. E. W.—Bird lime is made by boiling the middle bark of the holly seven or eight hours in water; drain it and lay it in heaps in the ground covered with stones, for two or three weeks, till reduced to a macilage. Beat this in a mortar, wash it in rain water, and knead until free from extraneous matter. Put it into earthen pots, and in four or five days it will be fit for use. An inferior kind is made by boiling linseed oil for some hours, until it becomes a viscid mass.

(11) H. J. writes: 1. I have an engine 3 1/2 x 5 inches. Steam is supplied by a tubular boiler 3 feet long by 19 inches in diameter and containing 19 flues. Would the above machinery propel a flat bottomed skiff 22 feet long 6 feet beam and 18 inches deep? A. Your boiler will be rather small; the engine should be geared 4 or 5 to 1. 2. What diameter of paddle wheel should I have, and what length and breadth of bucket? I intend to gear the engine so that it will run 3 revolutions to the paddle wheel shaft's 1. A. Wheels we think should be 5 to 5 1/2 feet diameter by 18 inches or 20 inches width. 3. Also, about how great a weight would a boat of the above size sustain in the water? It is intended to carry a party of four on a fishing excursion on a slack watered river where there is little or no current. A. We cannot tell weight the boat will carry, as we know nothing of the model, but undoubtedly will carry 4 or 6 persons.

(12) J. R. C. asks: Can you tell me what acid or preparation is used to prepare a transfer on zinc so as to be able to print from it the same as from a lithographic stone? A. A description of the zinc process will be found on page 1310 of the SCIENTIFIC AMERICAN SUPPLEMENT No. 83. See also page 2276 of the SCIENTIFIC AMERICAN SUPPLEMENT No. 143, for description of process used. Nitric acid is the agent generally employed.

(13) H. C. A. asks (1) whether it requires a battery for the telephone described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 142, or not? A. No battery required. 2. Which direction should the wire be wound around the spool? A. It is immaterial. 3. How can I make a cheap electric call bell for telephone? A. See SUPPLEMENT No. 162.

(14) W. L. S. writes: In No. 160 of the SUPPLEMENT gives the directions for making an induction coil; the size there given says, make the primary with No. 16 cotton covered wire, the secondary with No. 36 naked, and tin core with No. 18 iron wire. Now I want to make one just twice as large; should I use the same wire as the small one above? A. Wire of the same size will answer.

(15) H. S. T. writes: 1. I have a forty-five horse power tubular boiler, new; my engineer almost every morning, after raising from twenty to forty pounds steam, opens the blow-off cock and blows out about a barrel of water. He claims that the boiler will make steam faster and help to keep the boiler clean. By doing this is steam generated faster? I claim it is injurious to the boiler, as the pumps are worked as soon as the engineer has blown off. A. The best time to blow off a boiler is at night, or at the time of stopping work for the day. Then the dirt is thoroughly stirred up from the day's steaming, whereas in the morning it is settled upon the tubes and bottom of the boiler. At night when the engine stops the water can be blown down nearly to the tubes with safety, as that is the time for banking or drawing the fires. The pumping up can be done slowly without straining the boilers by suddenly cooling the bottom. Blowing off each day is too often unless the water is very foul with mud, clay, or lime. Twice a week with good water is sufficient. The boiler should be opened and cleaned out once in one or two months according to the quality of the water. 2. What is the best way to keep a three inch saw mandrel from heating? I use the best of oil and the boxes are not tight. They do not cut at all, but seem to get hot only when sawing a log. A. The pressure is greater upon the journals when the saw is cutting. Possibly the journals are not long enough. None but the best cold pressed lard oil should be used upon such journals. The combination oils that have petroleum in them are not good for high speed journals.

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

N. L. P.—The specimen contains pyrite (iron sulphide), a mineral which sometimes carries gold with it. It is also called fool's gold on account of its yellow color.—G. W. M.—The specimen is pyrite (iron sulphide), and generally carries gold. An assay will be necessary to determine its value.—T. A. C.—Hematite is the mineralogical name of the articles you refer to. It is a peculiar variety found in England only.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

September 4, 1883.

AND EACH BEARING THAT DATE.

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

Table listing various inventions and their patent numbers, including items like Air cushioning device, Amalgamating pan, Amalgamator, Androides or automaton shoe factory, etc.