

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.

J. J. Callow's new grain'g and letteri'g catal'g, Cleveland, O. Barrel, Key, Hogshead, Stave Mach'y. See adv. p. 38. A nice fitting shoe often makes a pretty foot, but it needs German Corn Remover to make it comfortable.

When your boiler front is covered with mud from the try cocks, it is a sure sign that no time should be lost in applying Hotchkiss' Mechanical Boiler Cleaner. Send for circular. 84 John St., New York.

Men, women, and children use Van Beil's "Rye and Rock" when they are sick.

Write Pulley Block Co.; Trucks and Car Pushers, Lockport, N. Y.

18 ft. Steam Yacht; also 2 H. P. Engine and Boiler. Geo. F. Shead, Waltham, Mass.

Second-hand Engines, Boilers, and Machinery. Send for price list. D. Stevenson, Jr., Harrisburg, Pa.

Blue Process or Heliography Material and Paper, at Keuffel & Esser, N. Y., Importers of Drawing Materials.

Parties owning Patents relating to Light Hardware, that wish the goods manufactured in quantity, or have patterns made for same, will find it to their interest to address Geo. Van Sands, Lock Draw 132, Middletown, Ct.

We unhesitatingly pronounce Messrs. Boomer & Boschert's press for making cider the best made. The price and terms are very reasonable, and they should be introduced in every fruit growing district. Send for illustrated catalogue to the New York office, 15 Park Row.

When you go home late, take a bottle of German Corn Remover to your wife, and it will make her happy; 25 cts.

The Patent for the Self-lighting Gas Burner illustrated in the SCIENTIFIC AMERICAN this week is for sale. Address the inventor.

4 Roll Planer and Matcher; simple and substantial; weight, 3,500 lb.; price, \$500. O. L. Packard, Milwaukee, Wis. Peck's Patent Drop Press. See adv., page 14.

Houghton's Boiler Compound contains nothing that can injure the iron, but it will remove scale and prevent its formation. Houghton & Co., 15 Hudson St., N. Y.

Manufacturers and others, send postal at once to Manufacturers' Gazette, Boston, Mass., for first number free. Ready first week in July.

Terraced Roof'g, Sheath'g Felts. Wiskeman, Paterson, N. J. Long & Allstatter Co.'s Power Punch. See adv., p. 13.

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.

Abbe Bolt Forging Machines and Palmer Power Hammers a specialty. S. C. Forsaith & Co., Manchester, N. H. For Mill Mach'y & Mill Furnishing, see illus. adv. p. 12.

List 26.—Description of 2,500 new and second-hand machines, now ready for distribution. Send stamp for the same. S. C. Forsaith & Co., Manchester, N. H.

Combination Roll and Rubber Co., 27 Barclay St., N. Y. Wringer Rolls and Moulded Goods Specialties.

Punching Presses & Shears for Metal-workers, Power Drill Presses, \$25 upward. Power & Foot Lathes. Low Prices. Peerless Punch & Shear Co., 115 S. Liberty St., N. Y.

Improved Skinner Portable Engines. Erie, Pa.

"Rival" Steam Pumps for Hot or Cold Water; \$32 and upward. The John H. McGowan Co., Cincinnati, O.

The Eureka Mower cuts a six foot swath easier than a side cut mower cuts four feet, and leaves the cut grass standing light and loose, curing in half the time. Send for circular. Eureka Mower Company, Towanda, Pa.

Saw Mill Machinery. Stearns Mfg. Co. See p. 13.

Pure Oak Leather Belting. C. W. Army & Son, Manufacturers Philadelphia. Correspondence solicited.

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

Wood Working Machinery of Improved Design and Workmanship. Cordeman, Egan & Co., Cincinnati, O.

For Machinists' Tools, see Whitcomb's adv., p. 12.

Experts in Patent Causes and Mechanical Counsel. Park Benjamin & Bro., 50 Astor House, New York.

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

See Bentel, Margedant & Co.'s adv., page 29.

Malleable and Gray Iron Castings, all descriptions by Erie Malleable Iron Company, limited, Erie, Pa.

4 to 40 H. P. Steam Engines. See adv. p. 414.

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 10 Cortlandt St., N. Y.

Turbine Wheels; Mill Mach'y. O. J. Bollinger, York, Pa.

Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd & Son, Pittsburg, Pa.

Best Oak Tanned Leather Belting. Wm F. Forepaugh, Jr. & Bros., 531 Jefferson St., Philadelphia, Pa.

Gardiner's Pat. Belt Clamp. See illus. adv., p. 413.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, importers Vienna lime, crocus, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Presses, Dies, Tools for working Sheet Metals, etc. Fruitana & other C'tools. E. W. Bliss, Brooklyn, N. Y.

For best Duplex Injector, see Jenks' adv., p. 413.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 414.

Clark Rubber Wheels adv. See page 23.

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

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

The Twin Rotary Pump. See adv., p. 413.

50,000 Sawyers wanted. Your full address for Emerson's Hand Book of Saws (free). Over 100 illustrations and pages of valuable information. How to straighten saws, etc. Emerson, Smith & Co., Beaver Falls, Pa.

Elevators, Freight and Passenger, Shafting, Pulleys and Hangers. L. S. Graves & Son, Rochester, N. Y.

Telegraph, Telephone, Elec. Light Supplies. See p. 30.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's adv. p. 23.

For the manufacture of metallic shells, cups, ferrules, blanks, and any and all kinds of small press and stamped work in copper, brass, zinc, iron, or tin, address C. J. Godfrey & Son, Union City, Conn. The manufacture of small wares, notions, and novelties in the above line, a specialty. See advertisement on page 38.

Gear Wheels for Models (list free); Experimental Work, etc. D. Gilbert & Son, 212 Chester St., Phila., Pa. Gould & Eberhardt's Machinists' Tools. See adv., p. 30.

Linen Hose, Rubber Hose, Cotton Belting, Rubber Belting, Leather Belting. Greene, Tweed & Co., 118 Chambers St., N. Y.

Safety Boilers. See Harrison Boiler Works adv., p. 29.

The Medart Pat. Wrought Rim Pulley. See adv., p. 23.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 30.

Comb'd Punch & Shears; Universal Lathe Chucks. Lambertville Iron Works, Lambertville, N. J. See adv. p. 28.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 29.

Hand and Power Bolt Cutters, Screw Plates, Taps in great variety. The Pratt & Whitney Co., Hartford, Ct.

Rollstone Mac. Co.'s Wood Working Mach'y adv. p. 28.

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

The only economical and practical Gas Engine in the market is the new "Otto" Silent, built by Schleicher, Schumm & Co., Philadelphia, Pa. Send for circular.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 30. Totten & Co., Pittsburg.

For Sequira Water Meter, see adv. on page 30.



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.

(1) M. T. asks (1) how liquid gold is made such as is now sold in the picture frame stores. It is put up in small bottles at a high price. It is evidently gold powder in naphtha with some light varnish, enough to hold it. Would like to make it for large use. A. Send a sample of the "liquid gold" referred to. 2. Sulphuric acid has been recommended for bleaching bristles. Would like to know the process—with the usual process of sulphur fumes or without it? A. Sulphuric acid is boiled together with half its weight of sulphur in large stoneware retorts, and the sulphurous anhydride given off is passed into cold water which absorbs it. When nearly saturated with the gas, this liquid sulphurous acid is used for bleaching.

(2) J. W. C. asks: What process will I have to use in order to keep the curl in false hair from being affected by perspiration or weather? A. Flaxseed water is commonly used.

(3) W. T. asks: What is the best solution for making cotton duck for awnings mildew-proof? A. Saturate the cloth in a hot solution of soap (a quarter of a pound to the gallon of water); wring out and digest it for twelve hours more in a solution of half a pound alum to the gallon of water.

(4) P. & E. ask how to convert rancid butter into a sweet pure article fit for table use. A. 100 lb. of the butter is mixed with about 30 gallons of hot water containing 1/2 lb. of bicarbonate of soda and 15 lb. of fine granular animal charcoal, free from dust, and the mixture is churned together for half an hour or so. The butter is then separated; after standing, warmed and strained through a linen cloth, then resalted, colored, and worked up with about half its weight of fresh butter.

(5) W. J. asks: What is the best and cheapest way to make liquid laundry bluing? 1. A. Dissolve indigo sulphate paste in cold water and filter. 2. Dissolve good cotton blue (aniline blue 6 B) in cold water. 3. Dissolve fine Prussian or Berlin blue with one-eighth part of oxalic acid in water; or use ferrocyanide of potassium (one-twelfth part) in place of oxalic acid.

(6) B. W. G. asks: What is the best gum composition for emery wheels? Are there any works that treat on the manufacture of emery wheels? A. Vulcanized caoutchouc is one of the best binding materials; glue, shellac, vitrified borax, water-glass, and zinc oxide, litharge and glycerine, and vulcanized mixtures of gutta percha, bitumen, and oil, etc., have also been employed with some success. We know of no book giving much information on the subject. Consult "Knight's American Mechanical Dictionary."

(7) C. S. W. S. writes: Wrinkles have formed over the whole surface of my diploma (parchment). How can I remove without injury to that which is written and printed thereon? A. Place the paper face downward upon a clean piece of blotting paper. Beat up to a clear froth, with a few drops of clove oil, the whites of several fresh eggs, and with the fingers

spread this over the back of the sheet and rub it in until the parchment becomes uniformly soft and yielding. Then spread it out as smoothly as possible, cover it with a piece of oiled silk; put on it a piece of smooth board, and set it aside in a cool place, with a weight on the board, for twenty-four hours. Then remove the board and silk, cover with a piece of clean fine linen cloth, and press with a hot smoothing iron (not too hot) until all signs of wrinkles have disappeared. The heat renders the albumen insoluble and not liable to change.

(8) R. H. S. asks how to bronze iron castings (by dipping). A. Clean the castings by pickling them in sulphuric acid diluted with about 10 parts of water, and scouring with sand; then dip them momentarily into a solution of 3 oz. of sulphate of copper and 5 oz. sulphuric acid in a gallon of water. Rinse in cold water immediately after dipping, and dry in sawdust. See copper plating and brass plating, pp. 33 and 3, vol. xlv.

(9) C. E. asks if there is any other way to melt glue than by first soaking it in water? A. Glue can be dissolved in acetic and in dilute nitric acids, but these solutions are not applicable for ordinary gluing. Glue can be dissolved directly in hot water, but it requires some time to obtain a solution free from lumps, so that it is preferable to soften the glue first in cold water. 2. Is there a way to bleach glue, that is, to make dark glue of a lighter shade? A. Glue may be bleached to a considerable extent by means of sulphite of soda or sulphurous acid and alum. If the color is due to carbonaceous matter, as is sometimes the case, it cannot be bleached.

(10) J. M. D. writes: I have some old zinc from Smee cells, which I would like to melt and cast into zincs for gravity cells. Can you tell me of some simple method of melting so as to save the mercury with which they are covered? A. The only practical way is to distill off the mercury by heating the zinc scrap in a retort. An iron retort is usually employed, but the following simple substitute can be made to answer: Select a large clay flower pot and tray (of the same material) free from cracks or holes. Rub uniformly over the inside bicarbonate of soda (baking soda) made into a thick paste with a little molasses, then put it into the oven and let it get thoroughly hot. Fill the pot with the zinc, broken into small pieces, invert the tray over it, as a cover, and then turn the pot bottom upward and fill in between the rim of the pot and tray with a stiff luting of clay moistened with a strong solution of sal soda. A short bent iron tube is then luted into the hole in the bottom (top) of the pot, and when the luting has dried the pot is gradually heated by immersing it in hot charcoal or otherwise, the open end of the delivery pipe dipping just below the surface of a dish of water, at the bottom of which the distilled mercury collects. The mercury all distills over below a red heat; any portion of it that lodges in the delivery pipe can be washed down after the pipe has cooled.

(11) H. S. asks for a recipe for a deep navy blue dye. A. See wool dyeing, in SUPPLEMENTS, Nos. 55, 74, 75, 76.

(12) W. E. asks for the best method of extracting tan from hemlock so as to get the essence for exportation. A. The crushed bark is put into upright copper cylinders called extractors, with removable brass bottoms, and submitted to the action of boiling water and steam. The liquid is then drawn off and passed into the next cylinder in the series, and so on to the last; there are usually three or more working "in battery." The partly exhausted bark is then treated once or twice again with fresh hot water, and is finally dropped out by opening the bottom of the extractor and fresh bark put in its place. The liquid is concentrated by boiling it down in a copper vacuum pan or in a series of vacuum pans.

(13) W. D. H. asks: With what preparation can drawing paper be covered, without discoloration, so that I can paint on some portions of the sheet with oil colors without having the oil spread or sink? A. Dissolve a quarter of an ounce of fine, clear gelatine in 6 oz. hot water, strain, and apply to the paper, and let it get dry before painting.

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

M. M.—The quartzose rock contains much sulphide and carbonate of copper and is quite rich in silver. An assay would be requisite to determine its value.—M. W. C.—It is coal.—W. C. R.—Quartz crystals—no value.—W. A. M.—It is an ore of copper—a mixture of copper sulphide and carbonate, with some iron and probably a little silver. A fire assay would be requisite to determine the presence or absence of the latter.—S. L.—It is galena—sulphide of lead—the principal ore of lead.—W. S.—A siliceous clay containing a large quantity of iron oxide (which imparts the color) and probably a little mercury—worth an assay. Such ferruginous clays, when properly ground, bolted, and (lightly) calcined, make good cheap paints.—S. H. H.—An analysis would be necessary to determine the value of your ore. It appears to be of good quality and worth working.—R. C.—Chiefly clay and carbonate of lime, with a little lead carbonate and quartz—sand.—J. S. D.—An argenteiferous galena containing a little antimony.—J. R.—The phosphorescent powder does not compare favorably with that of the French manufacturers. It contains a slight excess of sulphur and moisture. Try drying it thoroughly and mixing it, while hot, with a small quantity of anhydrous lime soap. See late numbers of the SCIENTIFIC AMERICAN for formulae and notes on this subject.—J. G. B.—An alloy consisting chiefly of antimony with a small percentage of lead. Not native.—B. G. N.—1. Argillaceous lime rock veined with quartz; 2. Ferruginous quartz rock; 3. Conglomerate; 4. Flint; 5, 6, 7, 9, 10, and 12, quartz pebbles; 8 and 11, rose quartz pebbles.—A. F. C.—A fine siliceous clay—it might be useful to porcelain manufacturers.—J. M. P.—The clay is very impure, contains a large per cent of silica, and is not valuable for porcelain making.—S. E. M.—The batting is sized with an aqueous solution (hot) of British gum and soap appropriately colored with a little logwood and chrome.

COMMUNICATION RECEIVED.

On the quantity of solar heat. By C. F.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

June 14, 1881.

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 of any patent issued since 1866, will be furnished from this office for one dollar. In ordering please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, 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 inventions and their patent numbers, including items like Anchor, J. J. Moule, Animal trap, Fort & Scott, Axle box, car, A. G. Paul, Jr., Axle boxes, and guard for car, H. Roth, etc.