

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.

Eclipse Fan Blower and Exhauster. See adv., p. 220.
Akron Rubber Works, Akron, O. Moulded goods and special work of every description.

The Patents for the Ash Sifter illustrated in another column are for sale, the patentee being engaged in an entirely different branch of business. Address Geo. B. Kelly, 162 Broadway, Cambridgeport, Mass.

Long & Allstatter Co.'s Power Punch. See adv., p. 220.

First-class One and Two Horse Power Vertical Engines, with or without boilers; also Yacht Engines; also complete sets of Castings for same, with cylinder and slides bored, and valve and face planed. Send stamp for photo and price to John Westwick & Sons., Galena, Ill.

Engines and Boilers; 17 x 42, 16 x 48, 15 x 30, 13 x 30 inch Horizontal Engines; 30 and 80 Horse Locomotive Boilers; 25, 40, and 45 Horse Horizontal Tubular Boilers. Second-hand, but guaranteed in good order. Full line second-hand Wood-working Machinery. Send for descriptive list. Belcher and Bagnall, 40 Cortland St., N. Y.

100 Engines and Boilers for sale. Logan Machine Works, Oil City, Pa.

Wanted—Consignments of small Engines and Boilers by responsible machinery firm. Ad. P. O. Box 1012, N. Y.

Save cost of fuel and water, repairs, explosion, burning, foaming, compounds, delays, cleaning, and all other evils of impure water, by using Hotchkiss' Automatic Mechanical Boiler Cleaner. 84 John St., N. Y.

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.

Ask your Druggist for Van Bell's "Rye and Rock," which is the only genuine.

The Mechanical Laboratory of the Stevens Institute of Technology has nearly ready one large Railroad Oil Testing Machine. R. H. Thurston's patents. Price, \$450, without countershaft. Address the Director of the M. L. of the S. I. T., Hoboken, N. J.

The Newell Universal Mill Co., Office 7 Cortlandt St., New York, are manufacturers of the Newell Universal Grinder for crushing ores and grinding phosphates, bone, plaster, dyewoods, and all gummy and sticky substances. Circulars and prices forwarded upon request.

Alden Crushers and Pulverizers manu'd and sold by the Westinghouse Machine Co., Pittsburgh, Pa., U.S.A.

Ten Double-acting Presses, 8 single-acting Presses, 127 Foot Presses, for sale by The George Place Machinery Agency, 121 Chambers St., N. Y.

For best Duplex Injector, see Jenks' adv., p. 204.

Portable Railway Track and Cars of all Descriptions for Railroad Grading, Sugar Plantations, Mines, etc. Send for circulars. F. W. Corey & Co., 162 Broadway, N. Y.

Cope & Maxwell Mfg Co.'s Pump adv., page 188.

For the Cheapest Process of Manufacturing Bricks, see Chambers Bros. & Co.'s adv., page 190.

L. Martin & Co., manufacturers of Lampblack and Pulp Mortar-black, 236 Walnut St., Philadelphia, Pa.

Send to John D. Leveridge, 3 Cortlandt St., New York, for illustrated catalogue, mailed free, of all kinds of Scroll Saws and Supplies, Electric Lighters, Tyson's Steam Engines, Telephones, Novelties, etc.

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

Jenkins' Patent Valves and Packing "The Standard." Jenkins Bros., Proprietors, 11 Dey St., New York.

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

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

The "1880" Lace Cutter by mail for 50 cts.; discount to the trade. Sterling Elliott, 262 Dover St., Boston, Mass.

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.

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

Power, Foot, and Hand Presses for Metal Workers. Lowest prices. Peerless Punch & Shear Co., 52 Dey St., N. Y., National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 40 John St., N. Y.

Corrugated Wrought Iron for Tires on Tractor Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsbg., Pa.

Best Oak Tanned Leather Belting. Wm. F. Forepaugh, Jr., & Bros., 381 Jefferson St., Philadelphia, Pa.

Slave, Barrel, Keg and Hoghead Machinery a specialty, by E. & B. Holmes, Buffalo, N. Y.

For Thrashing Machines, Engines, and Horse Powers, see illus. adv. of G. Westinghouse & Co., page 189.

Wright's Patent Steam Engine, with automatic cut off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg, Mass.

The Sweetland Chuck. See illus. adv., p. 204.

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

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423 Pottsville, Pa. See p. 189.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 185.

The I. B. Davis Patent Feed Pump. See adv., p. 205.

C. B. Rogers & Co., Norwich, Conn. Wood Working Machinery of every kind. See adv., page 205.

Moulding Machines for Foundry Use. 33 per cent saved in labor. See adv. of Reynolds & Co., page 205.

Burgess' Portable Mechan. Blowpipe. See adv., p. 204.

Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Solos' parallel Vise, Taylor, Stiles & Co., Regelsville, N. J.

Margadant & Co.'s adv., page 220.

The American Electric Co., Proprts Mfrs of Thompson Houston System of Electric Lighting the Arc Type.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 221. Totten & Co., Pittsburg.

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, Brooklyn, N. Y.

For Sale.—Two New 66-inch Stevenson Turbine Wheels; composition buckets; 200 H. P.; price, \$1,500. Continental Works, Greenpoint, Brooklyn, N. Y.

Silica Paints (not mixed); all shades. 40 Bleecker St., N. Y.

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

See Special Bolt Forging Machine Notice, page 236.

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

Blake "Lion and Eagle" Imp'd Crusher. See p. 221.

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.

Peerless Colors—For coloring mortar. French, Richards & Co., 410 Callowhill St., Philadelphia, Pa.

The None-such Turbine. See adv., p. 206.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 220.

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 221.

Gear Wheels for Models (list free); Models, Experimental Work, etc. D. Gilbert & Son, 212 Chester St., Philadelphia, Pa.

Blake's Belt Studs are better than lacing or any other fastening for belts. Greene, Tweed & Co., New York.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 221.

Comb'd Punch & Shears; Universal Lathe Chucks. Lambertville Iron Works, Lambertville, N. J. See ad. p. 189.

Best Band Saw Blades. See last week's adv., p. 220.

Reed's Sectional Covering for steam surfaces; any one can apply it; can be removed and replaced without injury. J. A. Locke, & Son, 40 Cortlandt St., N. Y.

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

For Light Machinists' Tools, etc., see Reed's adv., p. 221.

Rowland's Vertical Engine. Wearing parts of steel. Broad bearings. F.C. & A.E. Rowland, New Haven, Conn.

4 to 40 H. P. Steam Engines. See adv. p. 221.

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

Star Glue and Pure Turkey Emery for Polishers. Greene, Tweed & Co., 118 Chambers St., New York.

Penfield (Pulley) Blocks, Lockport, N. Y. See ad. p. 220.

Tyson Vase Engine, small motor, 1-33 H. P.; efficient and non-explosive; price \$50. See illus. adv., page 220.

Use Vacuum Oil Co.'s Lubricating Oil, Rochester, N.Y. Send ten cents for Vick's Floral Guide. See adv., page 204. James Vick, Rochester, N. Y.

Green River Drilling Machines. See ad. p. 204.



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) W. C. asks: 1. Does iron, when subjected to intense cold, become more brittle? A. See answer to C. P., page 106 (3), current volume. 2. Can a perfectly round ball be made to travel in a horizontal curved line? A. Yes. 3. What is the simplest way of making a fire assay of metal specimens? A. It depends upon the character of ore and the metals to be determined. It is probable an article on the subject will shortly appear in this paper. 4. Where can I obtain double sulphate of nickel, also pure nickel? A. Almost any druggist can procure it for you. See our advertisement columns for addresses of dealers in electroplating supplies. 5. What is the best manner of connecting the battery with a silver plate bath? A. See article on page 81, current volume. 6. Can cast iron be welded in a common forge fire without the aid of anything except the hammer? A. Not satisfactorily. 7. Can iron wire (small) be welded to any extent in any manner? A. They may be welded at a bright red heat by cleaning with a little borax glass powder and hammering together.

(2) T. F. asks (1) for test for pure cream tartar and soda. A. Dissolve a sample of the tartar in hot water and note whether any impurities remain behind. Acidify with a little nitric acid, and add solution of barium sulphate. A precipitate indicates the presence of sulphuric acid—probably as sulphate or soda or potassa. Weigh out 188 grams of the dry sample, dissolve in hot

water, filter, and add a filtered solution of lead acetate. Filter, dry the precipitate at 212° Fah., and weigh it; it should weigh 355 grains, corresponding to about 80 per cent tartaric acid. 20 grains commercial bicarbonate of soda should just neutralize 18 grains pure tartaric acid. It should dissolve completely in 40 parts of water, and the solution should remain unaltered on adding solution of pure corrosive sublimate, platinum chloride or sulphate of magnesia. 2. How is powder bluing made for washing? A. a. Use aniline blue in powder. b. Triturate thoroughly fine prussian blue with about one-twelfth its weight of ferro-cyanide of potassium and a little water; mould and dry. c. Nearly neutralize indigo sulphate paste with soda, and dry. d. Purify finest blue ultramarine by elutriation. 3. What are the pictures called oilgraphs, and how made? A. The picture or design is made translucent by saturating it with castor oil, then fastened between two glass plates.

(3) H. H. F. asks for full practical information on enameling on wood in black, like parlor organ stops and knobs. A. Seed lac and pale resin, each 2 oz.; alcohol, 1 pint. Warm the wood in an oven, apply the varnish quickly and evenly; let dry, give another coat, and when dry rub down with pumice stone. For a black body, dissolve 4 oz. shellac in 1 pint of alcohol, and mix up to color with ivory black in impalpable powder; give the work one or more flowing coats of this, and heat in an oven (gradually) to about 400° Fah. for half an hour. After cooling somewhat give a flowing coat of pale spirit-copal varnish, harden again in the oven, and polish with felt and tripoli, finishing with a trace of oil. For white ground mix washed flake white with one-sixth its weight of starch, grind very finely, and temper with mastic varnish. Harden by heat, and lay on 5 coats of the following: Seed lac, 2; gum anime, 3; coarsely powder, dissolve in 1 quart of alcohol, and strain. Harden and polish as before, using putty powder.

(4) R. S. T. asks: What will give ink a fine gloss? A. Add a little nitric acid to any good gall iron ink and increase the amount of gum arabic and sugar sufficiently. Or add gum arabic to a strong hot aqueous solution of soluble nigrosine.

(5) E. V. writes: I have a large quantity of frosted silver to keep clean. Could you recommend something in the way of a bath to keep it in good order? A. Tiy a solution of 1 oz. cyanide of potassium in 1 pint water (cyanide is very poisonous, and must be handled accordingly). Rinse thoroughly in running water and then in hot water. The heat imparted by the latter will cause to dry at once when taken out.

(6) C. M. K. asks: What effect would tartaric acid have on the system when used as a beverage? A. In small quantities it is a comparatively harmless refrigerative. In large quantities, or in a concentrated form, it is, in common with other acids, a corrosive poison.

(7) J. H. C. asks (1) how to make the cable insulating material used in making electrical condensers. A. The following composition is used for the purpose: Linseed oil, 2 parts; cotton seed oil, 1; heavy petroleum, 2; light coal tar, 2; Venice turpentine, 1/2; spirits of turpentine, 1; gutta-percha, 1; sulphur, 2; heat the oils separately to about 300° Fah.; cool to 240°, and mix in the other materials, the sulphur last. Heat to 300° Fah., for about an hour or until the mixture becomes pasty, and on cooling is soft and elastic. 2. How many feet of No. 35 copper wire is used in a Brush or Edison electric machine to produce a light of eight candles? A. No. 35 wire is too fine for a Brush or Edison machine. The size of the wire will depend on the size of the machine and upon the manner in which it is to be used.

(8) J. S. asks: What is put in the starch to make collars and cuffs stiff and also to give them a gloss? A. Moisten the surface of the starched articles with a rag dipped in a mixture of raw starch (unboiled starch mixed with a little warm water) to which has been added a small quantity of gum arabic and well beaten white of egg. Use a polishing iron.

(9) M. C. M. asks: 1. Is there a cure for hydrophobia? If so, what is it and where can it be had? A. See articles on this subject, pp. 299 (No. 19), 797 (No. 50), 957 (No. 60), and 1006 (No. 63), SCIENTIFIC AMERICAN SUPPLEMENT and pp. 120 and 320, vol. xxxix., 129, vol. xxxv., 274, vol. xxxvi., and 326, vol. xxxvii., SCIENTIFIC AMERICAN. 2. What will make a good black japan for small castings and how used? A. Asphaltum, 1/2 lb.; melt and add hot balsam of capivi, 1 lb.; mix well and thin with oil of turpentine. Give three coats, and dry in an oven at between 250° to 300° Fah.

(10) R. A. & J. S. ask: What is the best way to repair a rent in a rubber gas bag? A. Use a benzole solution of caoutchouc or marine glue. See receipts in SCIENTIFIC AMERICAN SUPPLEMENT, No. 158.

(11) F. J. H. asks: With a ten foot pulley as driver on to a six foot pulley as driven what distance between centers will produce the best result in belting in transmitting power? A. There is no definite rule, but the shafts should be so far apart as that the belt would have a decided "sag" on both parts. We think from six to eight times the diameter of the smallest pulley would operate very well.

(12) E. S. W. asks: Is there any rule for sparring and putting a center board well in a three-mast schooner, also what is the rule for stationing the masts in a narrow flat two mast schooner? Is there any architectural work in use in which I could find these things? A. We know of no published work which will give you the information. Your masts for schooner should be so placed that the center of effort of the sails shall be a little forward of the center of length on water line.

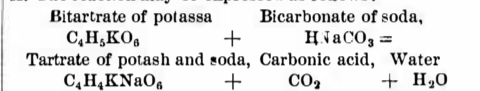
(13) H. & W. ask: Would the heating of carriage tires in boiling water expand sufficiently to be placed on the wheel? If so, it would be a great benefit, as the heat would be equal all round, and no burning of the rim, also the contraction equal. A. The slight expansion caused by the heat of boiling water would be of no use. The iron requires to be heated above the temperature of melted lead to grip the tire properly on chilling. The best method of heating tires that we

know of is the gas heating apparatus illustrated on p. 66, vol. xlii., SCIENTIFIC AMERICAN.

(14) A. W. W. writes: 1. I want to find a composition or substance which has the property of being pliable and of taking and retaining a clear impression, but which can be again worked over and used. A. Gutta percha alone, or tempered with a little pitch, will probably answer your requirements. It is easily softened by gently heating in water or otherwise. Gelatine-glycerine moulds may also prove serviceable. See answer to A. T. G. (14), p. 106, current volume. 2. What kind of ink is used for inking ribbons of hand stamps? It seems to not dry while upon the ribbon. A. Dissolve a sufficient quantity of good aniline violet, blue or red, in warm glycerine by digestion and trituration.

(15) S. H. writes: In calculating the horse power of an engine we are directed to multiply the square, diameter, etc., by the speed of piston in feet per minute, etc. A light engine runs at a higher speed than one carrying a load. How am I to allow for this? It is self evident that as the load varies so will the speed of the piston. Though the engine may be working up to the same pressure, yet the result of the calculations, owing to the varying load, would greatly differ. A. The pressure on the piston is determined by the work the engine is doing, not by the pressure in the boiler. Then, of course, the less work or load the less pressure on the piston and the engine working at less horse power.

(16) A. E. F. asks: 1. Can you give me a good receipt for a baking powder? A. Bicarbonate of soda, 20 oz.; bitartrate of potassa (cream of tartar), 45 oz.; fine starch, 35 oz. Dry each separately and mix thoroughly. It must be kept from moisture. 2. What change takes place when it is mixed, in bread making? A. The reaction may be expressed as follows:



(17) D. H. D. asks: 1. What is the composition of an amalgam for the rubber of an electrical machine? A. Mercury, 4 parts; zinc, 8 parts; tin, 2 parts. Melt the zinc, add the tin, stir it well and pour it, not too hot, into a wooden box coated internally with chalk and into which the mercury (heated) has first been poured. The cover is put on and the box violently shaken until the amalgam becomes cool. It is then finely pulverized in a mortar, and is mixed with a little lard and applied to the cushions. Care should be taken not to inhale the fumes of the mercury. Amalgam that will answer nearly if not quite as well as the above may be made by mixing fine zinc and tin filings with mercury in the proportions given, and allowing the mixture to stand for a day or so before rubbing it up in a mortar. 2. Should the rubber of the exciting plate of a two plate Holz machine be coated with the same amalgam as an ordinary friction machine? A. No.

(18) W. A. P. asks: 1. How long a line will a telephone made as described in SUPPLEMENT, No. 142, work over? A. Five miles or more. 2. In making the magneto-telephone call, as per SUPPLEMENT, No. 162, how much wire and what size should be wound on the bobbins? A. six to eight layers of No. 36.

(19) L. M. writes: 1. I am making a dynamo-electric machine, as described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 161. Now, what I want to know is whether the wire (No. 14) with which the connections under the base are made must be cotton covered or whether naked wire would do? A. This is im material, so long as there are no crosses; but for safety it is better to insulate with rubber tube. 2. I have turned the armature three-thirty-seconds of an inch smaller than the cylindrical cavity in the electro-magnet is bored out. Is that too small? should the armature fit closer? A. Your armature is too small. It should fit as closely as possible without touching. 3. Would a piece of hard wood (maple), well coated with shellac, answer for the commutator? A. Yes.

(20) I. B. C. asks: Cannot a platinum wire of the same length be substituted for the smaller carbon of George M. Hopkins' transmitter, illustrated in SCIENTIFIC AMERICAN, of March 19, 1881, with an improved result? A. We believe this has been tried, and preference given to the carbon.

(21) C. R. writes: We heat the liquors in our tannery by passing the exhaust from our engine, through a copper pipe, which lies in the bottom of a long dall, through which we run the liquor. Occasionally there occur, as it were, explosions which burst the copper pipe with a tremendous force. Would you tell me how this could be avoided? A. We think your trouble must be from a bad arrangement of the pipes, allowing water to accumulate; or it may possibly occur from a leak in the pipes.

(22) C. W. S. writes: I have been much pleased with and instructed by the article upon "Amateur Mechanics" in your issue of March 5, 1881, and I should feel greatly obliged if your correspondent "M" would further explain some of the details of the attachments therein described and illustrated: 1. The size or sizes best adapted for the cutter heads, Nos. 3 and 4. A. This will depend on the size of the lathe and the speed at which it may be driven. If the lathe is capable of being driven fast enough to turn small wooden articles a head 1 1/2 inches square will be right. 2. The length and size of the bar No. 5 for fluting, and the material of which it should be made? A. The size and length of the twisted bar will depend entirely on the kind of work to be done. For small work the bar may be of iron a quarter of an inch thick and three quarters of an inch wide. 3. How can the taper bole be bored for the mandrel from the underside of the top end of the frame No. 7 for moulding? The lower end or arm being directly in the way, I can see no other way but to make one of the arms separate, and then secure it to the frame after the hole is drilled and reamed. A. The holes in the top and bottom of the frame are first bored straight through, then a tapered reamer having a shank small enough to pass down through the screw holes at the bottom of the frame is inserted, and a bushing filling the screw hole and forming a bearing for the