

Business and Personal.

The Charge for Insertion under this head is One Dollar a Line. If the Notices exceed Four Lines, One Dollar and a Half per Line will be charged.

Agricultural Implements and Industrial Machinery for Export & Domestic Use. R. H. Allen & Co., N. Y.

Manufacturers of Circular Saw Mills, please send Description and Price List to Jos. Minchener, Troy, Ala.

Wanted—Small clean iron castings. Makers, send address, Box 3, No. 160 East 48th St., New York.

For Sale—Two Hydraulic Presses, with double power pumps, new; 12 in. ram, 8 ft. lift, clear space 8 ft., platen 48x32. Also three new Power Elevators, Merrick's make, below cost. John Howard, No. 1740 Ritzenhouse St., Philadelphia, Pa.

For Sale, cheap—The Pneumatic Machinery used in Sinking Piers at South St. Bridge: Compressor, Engine, Knowles Pump, Receiver, Gauges, &c., all perfect and complete. Address F. W. Getz, 420 Library St., Phila.

For Sale—Half or whole interest in a manufacturing business (patented), together with the machinery. Address G. P. T., Box 71, Baltimore, Md.

Steam Engines—25 percent extra power or saving in fuel, guaranteed, by applying the R. S. Condenser. T. Sault, Consult'g Eng'r, Gen'l Ag't., New Haven, Ct.

Wanted—An exclusive Agency for the sale of a first class patented article or machine of practical utility. Address H. C. Goodrich, 206 State St., Chicago, Ill.

Wanted—To Manufacture on Royalty or Buy a good and cheap Corn Sheller. Address Girdwood & McLellan, Asheville, N. C.

Leather and Rubber Belting, Packing and Hose. Greene, Tweed & Co., 18 Park Place, New York.

Wanted—A small machine that will, by touch, register, one at a time, the number of articles handled. Address Edwin A. Simonds, Erie, Pa.

For Sale—Engine 20x36, one 16 ft. Engine Lathe, one large Blower, four dawk Engines, two Steam Pumps. Bull & Co., Indianapolis, Ind.

The Bastet Magnetic Engine for running Sewing Machines, Lathes, Pumps, Organs, or any light Machinery, 1-32 to 1/2 horse power. Agents wanted. Address, with stamp, 1113 Chestnut St., Philadelphia, Pa.

Wanted—A few good Machinists; must be first class performers on following instruments, viz.: E flat Cornet, E flat Clarionette, E flat Tuba, Snare Drum. Address H. B. Smith, Smithville, Burl. Co., N. J.

Wanted—Manufacturer of Iron Tools or Steam Engines, to take part of Salesroom with a long established firm in this city. Expenses light. Address H. P. O. Box 4773, New York City.

Sure Cure for Slipping Belts—Sutton's Patent Pulley Cover is warranted to double the power of any pulley. Circulars Free. Agents Wanted. John W. Sutton, 35 Liberty St., New York.

Scroll Saw Blades, best quality, made to order, and Sheet Steel cut to pattern, by A. Coats, 108 Hester St., New York City. Send for List.

Hotchkiss Air Spring Forge Hammer, best in the market. Prices low. D. Frisbie & Co., New Haven, Ct.

For Sale—At a great Bargain, Grain Elevator, Hay Press, and Warehouse, all in excellent repair and good location. Address C. A. Gleckler, Farmington, Iowa.

Machinist's Tools, second hand, which must be sold in order to close up an old partnership. For pamphlet, giving full description of each tool, address Steptoe, McFarlan & Co., 214 West 2nd St., Cincinnati, Ohio.

Baxter Wrenches fit peculiar corners. Prices reduced. Greene, Tweed & Co., 18 Park Place, N. Y.

The French Files of Limet & Co. have the endorsement of many of the leading machine makers of America. Notice samples in Machinery Hall, Centennial Exposition. Homer Foot & Co., Sole Agents, 22 Platt St., New York.

Vertical Tubular Boilers, all sizes. Send for price list. Lovegrove & Co., Philadelphia, Pa.

Centennial Exhibitors, buy your Belting in Philadelphia, from C. W. Army, 148 North 3d St., and save freight and trouble. Satisfaction guaranteed.

Wanted—Charge of Weaving Department, Cotton or Satinet, by a practical, experienced man. Address A. B. C., P. O. Drawer No. 5, Greenville, N. H.

Wanted—Tubular Condenser. Boston P. O., 3306.

Trade Marks in England.—By a recent amendment of the English laws respecting Trade Marks, citizens of the United States may obtain protection in Great Britain as readily as in this country, and at about the same cost. All the necessary papers prepared at this Office. For further information, address Munn & Co., 37 Park Row, New York City.

Gas and Water Pipe, Wrought Iron. Send for prices to Bailey, Farrell & Co., Pittsburgh, Pa.

Shingles and Heading Sawing Machine. See advertisement of Trevor & Co., Lockport, N. Y.

Solid Emery Vulcanite Wheels—The Solid Original Emery Wheel—other kinds imitations and inferior. Caution—Our name is stamped in full on all our best Standard Belting, Packing, and Hose. Buy that only. The best is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, New York.

Steel Castings, from one lb. to five thousand lbs. Invaluable for strength and durability. Circulars free. Pittsburgh Steel Casting Co., Pittsburgh, Pa.

Linen Hose for Factories—1, 1 1/4, 2 & 2 1/2 inch. At lowest rates. Greene, Tweed & Co., 18 Park Place.

For best Presses, Dies, and Fruit Can Tools, Bites & Williams, cor. of Plymouth and Jay, Brooklyn, N. Y.

For Solid Wrought-Iron Beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, &c.

Hotchkiss & Ball, Meriden, Conn., Foundrymen and workers of sheet metal. Fine Gray Iron Castings to order. Job work solicited.

American Metal Co., 61 Warren St., N. Y. City.

For Solid Emery Wheels and Machinery, send to the Union Stone Co., Boston, Mass., for circular.

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing Metals. E. Lyon, 470 Grand Street, New York.

Spinning Rings of a Superior Quality—Whitinsville Spinning Ring Co., Whitinsville, Mass.

For best Bolt Cutter, at greatly reduced prices, address H. B. Brown & Co., New Haven, Conn.

Diamond Tools—J. Dickinson, 64 Nassau St., N. Y. Patent Scroll and Band Saws, best and cheapest nuse. Cordesman, Egan & Co., Cincinnati, Ohio.

The Original Skinner Portable Engine (Improved), 2 to 8 H.P. L. G. Skinner, Erie, Pa.

Second hand Iron Working Tools for Sale. For list, apply to New Haven M'g Co., New Haven, Conn.

Our new catalogue of drawing materials will be sent on receipt of 10c. Add. Keuffel & Esser, New York.

Temples and Oilcans. Draper, Hopedale, Mass.

All Fruit-can Tools, Ferracuta W'ks, Bridgeton, N. J.

For Best Band and Scroll Saws, Universal Wood Workers, Planing and Matching Machines, address Bentel, Margedant & Co., Hamilton, Ohio.

Wind Mill Rights Cheap—One county in each State to give for introducing the mill. For terms, &c., address E. S. Smith, Good Hope, Ill.

Wanted—Address of Makers of Papier Maché Ceilings. Address J. Farnsworth, Des Moines, Iowa.

Corner Cutting Machine, Chocolate Mill, Bolt Cutter, Letter Press and Stand—all at Bargains. A. B. Cobu, 197 Water St., New York.

Hamilton Rubber Works, Trenton, N. J., Manufacturers of X pavement Hose, and any size, also Belting, Packing, Car Springs, and Rubber for Mechanical use. Send for price list.

Notes & Queries

C. S. R. will find that celluloid is a substance suitable for his purpose. See p. 23, vol. 33.—C. H. D. will find a good description of soluble glass on p. 148, vol. 33.—F. H. will find a description of the transfer fluid, for transferring engravings to wood, etc., on p. 128, vol. 30.—M. M. will find directions for preserving natural flowers on p. 204, vol. 28.—F. L. W. will find directions for stuffing birds on p. 250, vol. 30.—B. W. B. will find directions for setting carriage axles in this issue.—N. D. will find a recipe for hydrofluoric acid, for etching glass, on p. 203, vol. 33.—M. G. will find an explanation of the difference between the heights of the tides in different localities on p. 65, vol. 28.—D. W. G. will find a formula for safety valves on p. 107, vol. 31.—A. B. F. will find a description of a Bunsen burner on p. 287, vol. 33.—N. S. will find directions for forming a sun dial on p. 409, vol. 29.—F. W. D. will find directions for silverplating without a battery on p. 408, vol. 33. For a similar gold plating, see p. 116, vol. 33. For silverplating with a battery, see p. 133, vol. 30.—G. G. will find a good recipe for black ink on p. 22, vol. 33.—J. F. A. can caseharden his steel cams by the method described on p. 69, vol. 31.—M. S. can prevent an accumulation of rust on his machinery by following the directions on p. 169, vol. 33.—W. E. D. will find a good recipe for gold lacquer on p. 240, vol. 34.—A. S., J. H. T., A. J. W., Jr., J. McC., E. G. P., A. L., W. H., and J. K., who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns, all of whom are trustworthy firms, for catalogues.

(1) P. M. H. A. K. asks: How many horse power will it take to run a 60 inch circular saw through a 2 feet log of hemlock or oak? A. Ordinarily about 10 horse power to every 1 inch of feed in each revolution of the saw. In order to give anything like a correct estimate, the amount of feed to each revolution, the number of teeth, and speed of the saw should be given. Sixty inch saws are run to cut all the way from 5,000 to 40,000 feet of oak and hemlock per day.—J. E. E., of Pa.

(2) A. B. W. asks: 1. Of what size and of what kind of glass should a lens be to take a photograph 2 feet square, the object to be about 18 to 20 feet from the glass, and the focal distance 2 or 3 feet? A. You should have a photographic view camera of 2 feet focal length. The size of the glass may be two or three inches diameter. 3. Could such a photograph be taken easily? A. Not very. 3. Please give me a process for taking negatives on glass. A. Consult some text book on photography.

(3) F. F. says: I see in the SCIENTIFIC AMERICAN SUPPLEMENT mention of a meteor which passed near Boston on February 5. The article says that, "after traversing a path which consumed a second in time," it gradually slackened speed, and finally became motionless. At the speed at which it must have been moving, how could it have become motionless? A. The article says that the meteor moved from east to south, which implies a change in its line of motion, so that, when the direction was in the line of sight, it became motionless to the observer. This was probably caused by the body being deflected by the resistance of our atmosphere.

(4) N. A. E. asks: How can I use crayons on drawing paper without leaving streaks? A. An even tint can be produced by using the tip of the finger, or a small pointed piece of india rubber, or a paper or leather stump, to be bought of a dealer in drawing materials.

(5) X. Y. Z. asks: What are coprolites? A. They are the fossil excrements of extinct animals, and are found in immense beds in some countries. They are valuable as manure.

(6) H. T. asks: Is it possible that a direct-acting steam pump can work with a variable cut-off so that the steam expands down to 15 lbs.? A. We know of no direct acting pump having a variable cut-off.

(7) J. W. asks: 1. Will a cupola 6 inches in diameter be large enough to melt and run into one piece 20 lbs. of cast iron? A. No. 2. What is the largest amount it will run into one piece? A. It might run 10 lbs. 3. The bottom of the coal and iron door is 3 feet 2 inches above the bottom of the cupola; is this high sufficient? A. Yes, for the diameter of the cupola.

(8) G. W. C. asks: 1. Is there such a thing as a drill for drilling square holes? A. No. 2. Is there any probability of one being invented? A. No.

(9) C. S. C. asks: 1. Is tool steel the best for making tuning forks? A. Yes. 2. What temper is required? A. Temper it to a blue. What grade of soft iron is best for electro-magnets? A. Ulster or Norway iron is best.

(10) B. S. says: I have a portable engine, and the boiler is cracked. The crack is about two inches long; it is situated just above the grates, near the mud valve, and it leaks slightly. Is there

any way of stopping the leak without having the boiler patched? A. Cement may be used. See p. 331, vol. 32. The best plan is to patch the boiler.

(11) F. L. asks: What is the safe working pressure for a boiler made of wrought iron gas pipe, of 2 inches internal diameter? A. You can carry 100 lbs. per square inch.

(12) G. C. W. asks: Will white lead harden under water? A. No.

(13) A. asks: 1. Will copper, when melted, flow as freely as lead? A. No. 2. Will copper give as good an impression of the mold as lead? A. No. 3. Will a black lead crucible stand sufficient heat to melt copper? A. Yes.

(14) W. M. B. asks: Would the wear from friction on a pulley be greater in using a wire band than with a leather belt? A. Yes.

(15) F. D. L. asks: Is there any flux, welding compound, or means whereby a steel face can be united to the jaws of a cast iron vise by putting the steel in the mold, and pouring thereon molten iron? A. Steel faces are welded to cast iron in the way you mention, without the employment of any flux.

(16) W. S. F. asks: Is there any other way of making steel name stamps than with a chisel? A. We know of no way of making them save with chisels and files, but they could no doubt be stamped with suitable dies.

(17) H. D. S. S. asks: Is there a machine shop in the country that has the capacity of building two locomotives a day? A. We know of none.

(18) P. E. L. asks: Can cone friction couplings be used on a shaft running at 140 revolutions per minute, transmitting 30 horse power, one part of the coupling to have a lever attached to throw the same in and out of gear while running? A. Yes. Friction pulleys will answer the purpose well.

(19) W. H. C. asks: By what process may cast steel be annealed so that it can be easily cut with a chisel? A. Heat it slowly to a cherry red, and let it cool off, well covered with slaked lime.

(20) J. S. M. asks: 1. Is the pump on an engine to force the water into the boiler? A. Yes. Where is it generally situated? A. Beside the boiler. 2. By what means is it worked? A. By an eccentric, cam, or crank.

(21) E. G. asks: How can I keep cider sweet for the market? A. If after the first racking the fermentation still continues, it is better that the operation should be repeated as often as any scum rises to the surface. The final racking should be performed in fine weather. When the bottles are filled they should be set by, uncorked, until morning, when the corks must be driven in tightly, and secured by wire and melted rosin or any similar substance.

(22) B. asks: What is the best method of calcining borax? A. Put it in a capacious cast iron pan over a moderate fire.

(23) F. B. M. asks: How can white lead paint be made from old lead pipe? A. Roll the lead out into a thin sheet and place it in an earthen pot with a little vinegar in the bottom. Then bury the pot in fermenting stable dung or spent tan bark. The acetic acid of the vinegar corrodes the metal, forming a superficial coating of acetate of lead. The carbonic acid set free by the decomposing vegetable matter displaces the acetic acid, combining with the lead and forming the carbonate (white lead). The acetic acid thus released attacks more metal, which is again carbonized, and thus, with a small charge of vinegar, the operation is continued a long time, and a large quantity of lead changed into carbonate.

What is the weight of a medium-sized locomotive? A. About 30 tons, with the tender.

(24) J. C. R. asks: How can I mold chalk? A. Ground chalk, if moistened with a little gum water, may be pressed into a mold in a compact mass, by means of hydraulic pressure.

(25) G. M. Jr., asks: What is the process of making deodorized alcohol or cologne spirit from common alcohol? A. Alcohol employed in perfumery should be free from all smell of fusel or other oils. Atwood's (patent) alcohol is deodorized by distillation over permanganate of potassa. Spirit of wine, brandy, and alcohol distilled over soap lose their empyreumatic odor and taste entirely. At about 215° Fah., the soap retains neither alcohol nor wood spirit. The empyreumatic oil which remains in combination with the soap which forms the residuum of the distillation, is carried off at a higher temperature by the watery vapor, which is formed during a second distillation, the product of which is a soap free from empyreuma, and is fit to be used again for similar purposes. The concentration of the alcohol increases in this operation more than when the soap is not employed, because this compound retains the water, and the alcoholic vapors which pass over are more concentrated. Thirty-three pounds of soap are enough for one hundred gallons of empyreumatic brandy; and direct experiment has shown that, under the most favorable circumstances, the soap can retain 20 per cent of empyreumatic oil. The soap employed should contain no potassa; it should be hard or soda soap, and ought to be completely free from any excess of fatty acids or fluids, otherwise it may render the product rancid or impure. Common soap, made with soda and oleine, has satisfied all the conditions in practice. If this soap is employed, it is better to add a little soda during the first distillation.

(26) C. A. asks: 1. Would a horizontal engine 2x3 inches propel a boat, large enough for 2 persons, up stream? A. You could use this engine in a boat 20 feet long. 2. What size of boiler would she want? A. Make one 2 1/2 feet in diameter and 4 feet high. 3. What speed would she make? A. Probably 5 or 6 miles an hour.

(27) A. L. asks: How can I vulcanize caoutchouc? A. Parke's method is now generally adopted. The caoutchouc is immersed in a mixture of 30 parts of bisulphide of carbon and 1 part of chloride of sulphur. It is next placed in a room heated to 70° Fah.; and when all the sulphide of carbon has been volatilized, the process is so far complete that it is only requisite to boil the material in a solution of about 18 ozs. of caustic potassa to 2 gallons of water, the vulcanized caoutchouc being next washed to remove excess of alkali.

(28) C. S. A. asks: Please explain how the jetties at the mouth of the Mississippi river are made. A. See p. 273, vol. 32.

Are they now at work on the tunnel between New York and Jersey City? A. Yes.

We have some glasses that were dipped into water with milk on them; the hot water seemed to set the milk, leaving a milky stain on the glasses, that we cannot wash off. How can we make the glasses look clear again? A. Try a little common washing soda.

How is dry steam made? A. By using a well constructed boiler or a superheater.

(29) D. R. asks: 1. In tinning brass, which is the best method, by cream of tartar boiling or by protoxide of tin solution? A. The cream of tartar method is in more general use. 2. What is the time required to do it? A. It varies from 10 minutes to half an hour, and sometimes longer. 3. In polishing smooth sheet brass to a high finish, how shall I prepare my wooden wheel after the leather is applied to the rim? A. Glue emery to the cutting wheel; and for polishing, use a brush wheel and a rag buff to finish with.

(30) J. M. asks: 1. How much incline per foot should an electro-copper plate have to insure success in arresting very fine gold dust? A. Amalgamated copper plates, set in sluices for obtaining very fine gold, are put at an incline of from 1 to 1 1/2 inches per foot. 2. Do strata of red sand found in aluminum or modified drift generally contain gold dust? A. We believe so.

(31) W. J. G. asks: 1. Does it make any difference in the expansion and contraction of mercury, in a thermometer, whether the tube is sealed or not? A. Yes. 2. How can I regulate automatically the heat in a close box, so that I can secure a certain temperature? A. It can be done by heating the box with steam or water at a fixed temperature.

(32) R. C. asks: At how many revolutions per minute could I run with perfect safety a grindstone 6 feet in diameter and 8 inches wide on the face? A. It would not be well to run the stone faster than 75 or 80 revolutions per minute. This is on the supposition that the stone is as strong as a built-up millstone.

(33) J. G. R. says: I have an engine of 1 inch cylinder and 2 1/4 inches stroke, and want to build for it a boiler which will make steam rapidly and which will stand about 25 to 30 lbs. pressure. Of what size, material, and form should it be? A. Make a cylindrical boiler 10 inches in diameter and 2 feet long. Copper is a good material; it should be about 1/2 of an inch thick, with heads from 3/4 to 1/2 inch thick.

(34) M. E. J. asks: Supposing a ball of immense weight to be rolled around on the surface of the earth, would it affect the center of gravity? If it did, suppose a ball of the same weight could be fired from a cannon around the earth without touching the surface, would that affect the center of gravity in the same way? A. The effect you mention would be produced in both cases.

(35) J. M. Y. asks: At what speed should water move in a draft tube under a water wheel to give the most power to the wheel? A. If you make the draft tube with the same area of supply, and allow it to dip into the water a few inches at the bottom, you will have a satisfactory arrangement, provided the tube is airtight. It is very important to attend to the latter point.

(36) J. F. B. asks: 1. Can water be raised 10 feet high by a wheel 10 inches in diameter, 3 inches wide, the floats being fastened on a square shaft? A. You will have no trouble in raising the water to that height, with 100 to 150 revolutions a minute. 2. What should be the size of the pipe in which it is to be raised? A. A two inch pipe will answer very well.

(37) C. D. B. asks: If I let steam into a vessel of boiler plate, 2 feet in diameter and 6 feet long, to the pressure of 100 lbs. to the square inch, how long will it take for the same to lose its pressure? A. If the air surrounding the boiler is still, the radiation will take place at the rate of between 3 and 4 units of heat per hour for each degree of difference between inside and outside temperatures.

(38) S. P. S. asks: 1. How high may I carry the water in a boiler constructed with an inside case, without danger of filling the inside case? I wish to generate steam at the rate of 1 cubic foot per minute for each linear foot of the boiler, and the water is 6 or 7 inches wide at the water line. Will the water collect in the steam room to any great extent if the water line is kept 4 inches below the top of the case? A. You will have to make some experiments to determine this matter definitely. We imagine, however, that you will find it necessary to carry the water at least 6 inches below the top of the case. 2. We have an engine which runs at 120 revolutions per minute, with a fly wheel 8 feet in diameter, the rim being 14 inches wide and 3/4 thick at edges, and 1 1/4 inches thick in the middle. We need to stop it some times quickly, and as the bottom of the wheel is close to the ground, I propose to use a brake. What pressure is it safe to put upon the wheel? A. You will probably find it safe to apply pressure equal to the tension of a belt on the fly wheel when the engine is doing its greatest amount of work, and this will be more than sufficient for your purpose.