

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.

To Inventors.—Wanted, the most simple and inexpensive process by which coffee can be roasted in lots of 20 to 75 pounds. Heat to be cheaper than that of coal. Address "Opportunity," Box No. 77, Brooklyn, E. D. N. Y.

To learn Inventing, Designing, and Construction of Machinery at school, address Prof. S. W. Robinson, Ohio State University, Columbus, O.

The Obelisk in the Central Park, New York, weighs two hundred tons, or is equivalent to the weight of about eight hundred and twenty millions of Esterbrook's Ladies' Pens.

SOUTHAMPTON, L. I., Aug. 13, 1882.

H. W. Johns Mfg Co., 87 Maiden Lane, New York: DEAR SIRS: Your colors received all right, and are magnificent; never saw anything go on so easily and cover so well. The tints are just O. K., and very delicate. Sincerely yours, A. T. BRICHER.

The American Machine Co., N. E. cor. Lehigh Ave. and American St., Philadelphia, Pa., is prepared to execute contracts for the manufacture of light machinery.

Wanted.—To know Drop Forgings Manufacturers. G. G. Buckland, Tulare, Cal.

See Bentel, Margedant & Co.'s adv., page 157.

Cope & Maxwell Mfg Co.'s Pump adv., page 157.

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

Machine Diamonds, J. Dickinson, 64 Nassau St., N. Y.

The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv., p. 157.

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.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 157. Gould & Eberhardt's Machinists' Tools. See adv., p. 158.

Barrel, Key, Hogshead, Stave Mach'y. See adv. p. 157.

For Heavy Punches, etc., see illustrated advertisement of Hillis & Jones, on page 157.

Red Jacket Adjustable Force Pump. See adv., p. 158.

Vertical Engines, varied capacity. See adv., p. 156.

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

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 158.

For best low price Planer and Matcher, and latest improved Sash, Door, and Blin 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.

The Porter-Allen High Speed Steam Engine. Southwork Foundry & Mach. Co., 430 Washington Ave., Phil. Pa. 4 to 40 H. P. Steam Engines. See adv. p. 94.

Drop Forgings. Billings & Spencer Co. See adv., p. 141. C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 142.

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

The Sweetland Chuck. See illus. adv., p. 126.

Lighting Screw Plates, Labor-saving Tools. p. 126.

Engines, 10 to 50 horse power, complete, with governor, \$250 to \$550. Satisfaction guaranteed. Six hundred in use. For circular address Heald & Morris (Drawer 127), Baldwinville, N. Y.

Mr. T. D. Locking, care U. S. Consul, Panama, U. S. Columbia, will sell the whole or a portion of his patent for umbrellas, illustrated on p. 82, this volume.

Air Pumps for High Pressure, Hand, or Steam Power, at low prices. C. Beseler, 218 Center Street, New York.

See New American File Co.'s Advertisement, p. 110.

Steam Pumps. See adv. Smith, Vaile & Co., p. 109.

Small articles in sheet or cast brass made on contract. Send models for estimates to H. C. Goodrich, 66 to 72 Ogden Place, Chicago, Ill.

Improved Skinner Portable Engines. Erie, Pa.

Combination Roll and Rubber Co., 68 Warren street, N. Y. Wringer Rolls and Moulded Goods Specialties.

Pure Water furnished Cities, Paper Mills, Laundries, Steam Boilers, etc., by the Multifold System of the Newark Filtering Co., 177 Commerce St., Newark, N. J.

"Abbe" Bolt Forging Machines and "Palmer" Power Hammers a specialty. Forsaith & Co., Manchester, N. H. List 28, describing 3,600 new and second-hand Machines, now ready for distribution. Send stamp for same. S. C. Forsaith & Co., Manchester, N. H., and N. Y. city.

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.

Latest Improved Diamond Drills. Send for circular to M. C. Bullock Mfg. Co., 80 to 88 Market St., Chicago, Ill.

First Class Engine Lathes, 20 inch swing, 8 foot bed, now ready. F. C. & A. E. Rowland, New Haven, Conn.

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

Jas. F. Hotchkiss, 84 John St., N. Y.: Send me your free book entitled "How to Keep Boilers Clean," containing useful information for steam users & engineers. (Forward above by postal or letter; mention this paper.)

Steel Stamps and Pattern Letters. The best made. J. F. W. Dorman, 31 German St., Baltimore. Catalogue free.

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

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

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

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

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

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.

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

Presses & Dies (fruit cans) Ayar Mach. Wks., Salem, N. J.

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) R. M. L. writes: 1. In the SUPPLEMENT, No. 182, there is described a small steam boiler constructed of mercury flasks. Now, I want to know what mercury flasks are, what are their size, are they all the same size, where can I obtain them, and about what are they worth? A. Mercury flasks are of wrought iron, welded up. You can see them at any extensive drug store. They are all very nearly the same size, about 5x10. They can be purchased from druggists, and worth about \$1.50 each. 2. I am an engineer, and have charge of a high pressure cut-off engine (30 horse power), supplied with steam by a 2 1/2 inch steam pipe 200 feet long from boilers to engine; it runs under the floor a distance of 96 feet (horizontal), and connects to steam chest by a perpendicular pipe about 5 feet high. Now, what I want to ask is, how to drain the condensed water from this horizontal 96 foot section effectually, as it is very annoying, troublesome, and dangerous. A. You can have a blow valve or cock connected to the lowest part of the pipe, and blow out the water from time to time as necessary; or you can set a receiver for the condensed water below the lowest part of the pipe and pump, or blow the water from the receiver.

(2) G. H. M. writes: 1. I am about to build a light draught steamboat, 60 feet long and 18 feet beam, width of submerged section about 10 feet. Will a 16-horse power engine and a four-foot propeller, with six feet pitch, drive her fourteen miles per hour? A. No, probably not more than ten or twelve miles, and then it must be a good model. 2. What should be the width between the saddle and stern post to leave sufficient space for the propeller? A. Sixteen inches at least—more would be better.

(3) E. W. asks: 1. If a boat that runs ten miles an hour in still water be placed in a five-mile current, will its speed in that current be fifteen miles an hour, or less? A. More. 2. Will it take a boat a shorter time to turn around (either half-way or completely), going against a current, than it will going with it, or will the time be the same in both cases? I maintain that the current would have no effect whatever either to retard or accelerate the boat's turning, but that the time in both cases would be the same as in still water. These questions leave out of consideration the resistance of the air. A. If the boat was exposed to an equal current there should be no difference. 3. If two bullets be fired from the same point in a direction parallel to the earth's surface, one with two or three times the velocity of the other, will they fall to the ground in the same time, or will the one with the less velocity reach the ground first? A. Leaving out of the question the atmospheric resistance, they should fall in the same time.

(4) J. F. B. writes: I have made a coil boiler for a steam launch in the manner described below. I have three coils arranged concentrically. The outside is of 1 1/2 pipe, 30 inches diameter, 5 turns; the next is of 1 1/4 pipe, 14 inches diameter, 5 turns; the next is of 1 inch pipe, 9 inches diameter, 6 turns. The bottom ends of coils are connected to a piece of 1 1/4 pipe, the top of coils to a piece of 1 inch. I shall connect to a piece of 5 inch pipe, 18 inches long, but first I want to know where you would advise pumping, in top or bottom of coils; and shall I connect the 5 inch pipe at top and bottom? Will this furnish steam enough to run a 3x4 engine 250 turns per minute? I will heat water at about 150 degrees before entering boiler. Would it be beneficial or detrimental to feed air in with water? A. For your coil boiler we advise pumping the water in at the bottom turn of the coils. Use the 5 inch pipe for a steam chamber or separator, as coil boilers sometimes throw water over. Place the chamber or separator a little above the coil. Let the steam enter at one end or on top, also connect the lowest part directly with the bottom of the coil, then you will have tolerably dry steam. Take the engine pipe from the highest point and as far away from the inlet from coil as possible. Your boiler has surface enough for 1 1/2 horse power. Your engine, working at 50 pounds pressure, is about 1 horse power. With this form of boiler, on so small a

scale, we doubt of your getting so high a result. One half the above figure might be obtained. Air has been fed or injected for a combined steam and air engine and a saving has been claimed; but it is possible that the cost of condensing air was not considered.

(5) W. J. B. asks: How many pounds of steam will I have to carry to have superheated steam 500° Fah.? A. You will not have superheated steam by simply increasing the pressure. Pressure due to 500° is about 700 lb. You must superheat by passing the steam through or over hot metal or other hot surface.

(6) F. C. E. asks: 1. In a bichromate cell, how far apart should the two 6x9x1/4 plates be? A. One-fourth or three-eighths inch.

(7) J. A. I. writes: I am firing a return flue boiler, and the flues are said to be heavily coated with scale, and the water keeps very clear. Will black oil remove or dissolve the scale, and what effect does it have upon the boiler, if any? I have heard it would clean off the scale. A. We think the oil will remove the scale, but the boilers will probably foam badly during its use. Two or three blocks of oak timber put in the boiler will also effect the result. In either case it depends upon the character of the scale. Use the oil cautiously—small quantity at first.

(8) E. O. asks how to prepare a cement for filling faults in castings. A. Iron filings, free from rust, 10 parts; sulphur, 0.5; sal ammoniac, 0.8. These are mixed with water to a thick paste, which is rammed into the "faults." This becomes strong when the iron filings are rusted. The parts which have to be cemented are treated before the operation with liquid ammonia, so as to be perfectly free from grease.

(9) A. M. asks how to make soft peppermint drops. A. The following, which we take from the Confectioner and Baker, will give the information you desire: Take a convenient quantity of dry granulated sugar; place it in a pan having a lip from which the contents may be poured or dropped; add a very little water, just enough to make the sugar a stiff paste, two ounces of water to a pound of sugar being about the right proportion; set it over the fire and allow it to nearly boil, keeping it continually stirred; it must not actually come to a full boil, but must be removed from the fire just as the bubbles denoting the boiling point is reached begin to rise. Allow the sirup to cool a little, stirring all the time; add strong essence of peppermint to suit the taste, and drop on tins, or sheets of smooth white paper. The dropping is performed by tilting the vessel slightly, so that the contents will slowly run out, and with a small piece of stiff wire the drops may be stroked off on to the tins or paper. They should then be kept in a warm place for a few hours to dry. If desired, a little red coloring may be added just previous to dropping, or a portion may be dropped in a plain white form, and the remainder colored. There is no reason why peppermint should alone be used with this form of candy, but confectioners usually confine themselves to this flavor. Any flavor may be added, and a great variety of palatable sweets made in the same manner. If desired, these drops may be acidulated by the use of a little tartaric acid and flavored with lemon, pineapple, or banana. In the season of fruits, delicious drops may be made by substituting the juice of fresh fruits, as strawberry, raspberry, etc., for the water, and otherwise proceeding as directed.

(10) H. J. C. writes: I have made a machine after the drawings in SUPPLEMENT, No. 161, and it works; but not as well as I think it should. Running at 1,500 revolutions per minute: 1. How many incandescent lamps, Edison style, will machine referred to run, and what size of wire should machine be wound with for that purpose? A. It will run two Edison three candle power lamps. Magnet should be wound with No. 16 wire, and the armature with No. 18. 2. What size of wire should machine have for one lamp? A. The same size will do. 3. How many incandescent lamps can be run by one horse power? A. Mr. Edison runs 10. 4. Will an alternating current injure an incandescent lamp? A. We believe the lamps are sooner destroyed by an alternating current than by a continuous direct current. 5. How many hours will an Edison incandescent lamp last when run by an alternating current? A. We know of no experiments in this direction. 6. Is there any gain by winding one half of armature with one size of wire for charging its electromagnets, and the other half for outside use? A. Yes; if you make your armature double, i. e., of two armatures, placed end to end, and increase the width of the field magnet.

(11) J. M. P. says: In reading the SCIENTIFIC AMERICAN of December 1, 1877, an account of the Pictet ice machine, you mention an article called anhydrous sulphurous oxide. Would be pleased if you would inform me where I can obtain it. I have tried a great many drug stores of this city, but so far could not obtain it. A. We are informed that the Pictet Artificial Ice Company of this city are the only importers of anhydrous sulphurous oxide; sold by them as the refrigerating agent in their ice making machines. It is manufactured in Paris; furnished in carboys holding about 200 pounds each, and imported to order. Can be procured only from the Pictet Artificial Ice Company, who will not sell less than one carboy, value \$205.

(12) J. R. writes: We are using two cylinder boilers at a steam saw mill. My sons and myself differ in opinion in regard to feeding the same with water, the head and force of water being nearly or quite sufficient to feed boilers without using inspirator. My sons contend for the use of steam to heat and feed by use of inspirator. I contend that it would save steam by letting the cold water flow directly into boilers. A. It will be better for your boilers to feed with the inspirator if you cannot otherwise heat the feed water. There will be no loss.

(13) J. B. F. asks to how make a solution to temper marble tools that they will stand to cut Italian marble. A. The ordinary solution for hardening stone-cutting tools is salt and water, about one quart of salt to a pail of water. Harden at as low a heat as possible. Make your tools of what is called "chisel steel." It is a lower and tougher grade than the fine grained "tool steel." Acids, mercury, ice, or any fluids

that have density, or coldness, have been used and recommended for hardening various kinds of steel, and for various purposes. If your steel is drawn at its proper heat, and also hardened at its lowest possible hardening heat in salt water, and the temper drawn as little as possible, and if it does not fly or chip, you will have the best chisel that can be made for any kind of work. The great fault of blacksmiths is, that they first burn the steel, then harden at too high a heat, and spoil the tool by over-tempering.

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

T. S. M.—The green soapstone-like stone is marmolite, of little or no value unless obtainable in large clear boulders. It can then sometimes be worked to advantage for sundry ornamental purposes. The other sample is imperfectly crystallized pectolite. It is of little use or interest except to mineralogists.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending August 15, 1882, AND EACH BEARING THAT DATE.

Table listing various inventions and their patent numbers, including items like Air compressor, Amalgamating apparatus, Amalgamator, Axle, vehicle, Bale ties, machine for finishing the blanks of wire, E. S. Lenox, Basket stove jointer, W. E. Hinchey, Bathers, safety apparatus for sea, L. D. & J. B. Smith, Bed, sofa, A. Kulch, Bed, spring, E. P. Fowler, Bedstead, cabinet folding, W. A. Morrison, Bedstead, folding, Adgate & Hickman, Belt fastener, A. Dahn, Belt tightening machine, F. N. Gardner, Bier, G. W. Moorman, Block, See Toy building block, Blower, fan, J. W. Collins, Board, See Washboard, Botler, See Steam boiler, Boilers, apparatus for removing scale from, W. Ord, Bolt outer, carriage, J. S. Bright, Boot or shoe channeling machine, T. Nolan, Boot, button, G. C. How, Boot or shoe, S. K. Hindley, Boot strap fastener, W. Smith, Boots or shoes, manufacture of, H. R. Adams, Bottle stopper, D. S. Cooke, Bottle stopper, A. E. Rich, Box, See Paper box, Brake, See Car brake, Power brake, Brake lever, J. Jensen, Brewing malt liquors, J. F. Gent, Brick, fire, W. G. Beyerly, Brick kiln, S. J. Plant, Brick machine, E. Fales, Buckle, suspender, C. L. Hosford, Burner, See Lamp burner, Bush and bung for barrels and kegs, A. Kirchner, Button, cuff, J. W. Miller, Cable way grip apparatus, H. Casebolt, Candles, apparatus for manufacturing, A. Rengert, Cans with meat, fish, etc., mashing for filling, A. Crosby, Car brake, P. Lord, Car brake, H. F. Notbohm, Car brake, automatic, A. J. Berg, Car coupling, E. E. Frantz, Car coupling, C. Hendricks, Car coupling, T. F. McNair, Car coupling, N. Mereness, Car coupling, F. Seewald, Car coupling, D. W. Woods, Car door lock, J. H. Fisher, Car heater, J. M. Thayer, Car starter, T. Owens, Car stock, S. P. Talman, Car, tamping, W. E. Davies, Car ventilator, H. A. Gouge, Car wheel, G. W. Miltimore, Car wheels, making, G. W. Miltimore, Carburetor, H. C. De Witt, Carpet stretcher, G. W. Barton, Carriage spring, C. M. Brown, Carriage top, E. Myrick, Cart, road, J. B. Callan, Cart, road, W. Chegwin, Case, See Jewel case, Mail shipping case, Packing case, Shot case, Show-case, Chain swivels, making, J. E. Walcott, Channels, apparatus for deepening, G. Peterson, Check holder and check for baggage, C. S. Russell, Chuck, J. Wertheim, Chuck, drill, J. H. Hoague, Chuck, lathe, C. Parham, Churn, C. J. Brown, Churn, B. S. Miles, Cigar perforator and cutter, combined, F. Jacob, Clock movement, H. Camp