

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.

For the best Stave, Barrel, Keg, and Hoghead Machinery, address H. A. Crossley, Cleveland, Ohio.

Machinist's Tools, Steam Pumps, Centrifugal Pumps, Iron and Woodworking Machinery, Engines, Boilers, and Supplies. O. L. Packard, 87, W. Water street, Milwaukee, Wis.

Wanted—Machine Shop to make Engines, in quantities, by contract. E. E. Roberts, 107 Liberty St., N. Y.

Solid and Opening Die Bolt Cutters, Screw Plates, and Taps. The Pratt & Whitney Co., Hartford, Conn.

The genuine Asbestos Roofing is the only reliable substitute for tin; it costs only about one half as much, is fully as durable, is fireproof, and can be easily applied by any one. H. W. Johns Manufacturing Co., 87 Maiden Lane, New York, are sole manufacturers.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 15,000 Crank Shafts, and 10,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

For Sale.—Two Windmill Patents, and set of patterns for same. None better. F. C. Maxwell, Columbus, O.

For Sale.—Flexible Lumber Patent for Cylinder Lagging. Geo. C. Setchell, Norwich, Conn.

Wanted.—Second-hand Magic Lantern Slides. Give quantity, quality, size, and price. Address Lantern, Baltimore, Md.

Wanted.—Particulars and Proposition for Ice Machine. Box 170, Charleston, Kanawha, Co., W. Va.

For Sale Cheap.—The entire patent for best Egg Beater ever put on the market. See illustration in SCIENTIFIC AMERICAN of February 21, 1880. Address H. C. Mann, Frankford, Pa.

Wanted.—Circulars, with prices, from Manufacturers of Small Drop Hammers, that will strike one or more blows and then stop, and always up, with adjustment for heft of blow, and that will give from one to two hundred blows a minute. Must be open on one side for large work. Address Wilcox, Treadway & Co., Cleveland, O.

Steam Engines, Boilers, Portable Railroad Sugar Mills. Atlantic Steam Engine Works, Brooklyn, N. Y.

For Sale.—Four Boilers, 100 horse power each, return drop flue: A 1 condition; \$1,500 each. 1 Berryman Heater, 42 x 96; A 1 condition; \$400. D. L. Einstein, 16 White St., New York.

For Iron Gas Pipe, see adv. on inside page.

Vertical and Steam Yacht Engines. T. B. Pemberton, 276 Water St., New York.

Wanted.—A competent Die Sinker. Steady employment. Address E. P., Box 773, New York.

Collection of Ornaments.—A book containing over 1,000 different designs, such as crests, coats of arms, vignettes, scrolls, corners, borders, etc., sent on receipt of \$2. Palm & Fechteler, 403 Broadway, New York city.

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

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 40 John St., N. Y.

Wanted.—An Oil Mill of the most improved pattern, for the manufacture of cotton seed oil from the seed of the Sea Island cotton. State price and terms. Address Spirit of the Times, Jasper, Fla.

Wanted.—A few sober, industrious Machinists and Molders. Address H. B. Smith Machine Co., Smithville, Burl. Co., N. J.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 126.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 125.

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

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

Sheet Metal Presses. Ferracute Co., Bridgeton, N. J.

Special Wood-Working Machinery of every variety. Levi Houston, Montgomery, Pa. See ad. page 45.

Nickel Plating.—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.

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

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

Presses, Dies, and Tools for working Sheet Metal, etc. Fruit & other can tools. Bliss & Williams, B'klyn, N. Y. Bradley's cushioned helve hammers. See illus. ad. p. 110.

Forsait & Co., Manchester, N. H., & 213 Centre St., N. Y. Bolt Forging Machines, Power Hammers, Comb'd Hand Fire Eng. & Hose Carriages, New & 2d hand Machinery. Send stamp for illus. cat. State just what you want.

Electrical Indicators for giving signal notice of extremes of pressure or temperature. Costs only \$20. Attached to any instrument. T. Shaw, 915 Ridge Ave. Phila.

Instruction in Steam and Mechanical Engineering. A thorough practical education, and a desirable situation as soon as competent, can be obtained at the National Institute of Steam Engineering, Bridgeport, Conn. For particulars, send for pamphlet.

Hydraulic Jacks and Presses. Polishing and Buffing Machinery. Patent Punches, Shears, etc. E. Lyon & Co., 470 Grand St., New York.

Mica in sheet and scrap for sale in quantity to suit. Parties using Mica in any form please send for samples. Atlantis Land and Mining Co., Box 2762, Leadville, Col.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 141.

Telephones repaired, parts of same for sale. Send stamp for circulars. P. O. Box 205, Jersey City, N. J.

Eclipse Portable Engine. See illustrated adv., p. 94.

Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Large knife work a specialty. Also manufacturers of Solomon's Parallel Vise. Taylor, Stiles & Co., Riegelsville N. J.

Silent Injector, Blower, and Exhauster. See adv. p. 141.

The Paragon School Desk and Garretson's Extension Table Slide manufactured by Buffalo Hardware Co.

Planing and Matching Machines, Band and Scroll Saws, Universal Wood-workers, Universal Hand Jointers, Shaping, Sand-papering Machines, etc., manuf'd by Bentel, Margedant & Co., Hamilton, Ohio. "Illustrated History of Progress made in Wood-working Machinery," sent free.

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

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

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

For Superior Steam Heat Appar., see adv., page 142.

Cut Gears for Models, etc. Models, working machinery, experimental work, manufacturing, etc., to order. D. Gilbert & Son, 212 Chester St., Phila., Pa.

Holly System of Water Supply and Fire Protection for Cities and Villages. See advertisement in SCIENTIFIC AMERICAN of last week.

The E. Horton & Son Co., Windsor Locks, Conn., manufacture the Sweetland Improved Horton Chuck.

The best Truss ever used. Send for descriptive circular to N. Y. Elastic Truss Co., 683 Broadway, New York.

Power Hammers. P. S. Justice, Philadelphia, Pa. p. 77.

Inventors' Institute, Cooper Union. A permanent exhibition of inventions. Prospectus on application. 733 Broadway, N. Y.

For Reliable Emery Wheels and Machines, address The Lehigh Valley Emery Wheel Co., Weissport, Pa.

Millstone Dressing Machine. See adv., page 142.

Comb'd Punch & Shears; Universal Lath Chucks. Lambert Iron Works, Lambertville, N. J. See ad. p. 108.

Improved Steel Castings; stiff and durable; as soft and easily worked as wrought iron; tensile strength not less than 65,000 lbs. to sq. in. Circulars free. Pittsburg Steel Casting Company, Pittsburg, Pa.

Electro-Bronzing on Iron. Philadelphia Smelting Company, Philadelphia, Pa.

New Economizer Portable Engine. See illus. adv. p. 108.

Wm. Sellers & Co., Phila., have introduced a new injector, worked by a single motion of a lever.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 141. Totten & Co., Pittsburg.

For Shafts, Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N. Y. Wm. Sellers & Co.

Engines repaired without loss of time. L. B. Flanders Machine Works, Philadelphia, Pa.

Notes & Queries. 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) P. G. asks: 1. With what substance are the porous cups of a Leclanche battery filled? A. With granular black oxide of manganese. Some makers fill them with equal parts of black oxide of manganese and retort carbon. 2. How is hard rubber polished? A. It is first filed or turned into shape, then smoothed with emerypaper, then with powdered pumice stone applied with a felt wheel or felt rubber. The final polish is given by fine whiting and water applied with a brush.

(2) L. C. C. asks: How many horse power do you think would be required to propel a yacht at a speed of ten miles per hour, length 25 feet, breadth 6 feet, built after the "Sharpie" model, total weight of vessel and cargo 4,000 lb.? A. From six to eight horse power.

(3) M. F. R. writes: I think of building a small boat, and would like you to tell me what size single engine and boiler I should get. Length of boat 32 feet, 7 feet beam. It is not to be a flat bottom, and I want to put on a stern wheel, as our river will not admit of a screw. What size wheel shall I use, and how wide should the paddles be? A. About 7 inch cylinder and 18 inches stroke; wheel 7 feet diameter and 9 inch bucket; vertical tubular boiler 34 inches diameter and 6 feet in height.

(4) A. L. K. writes: We have here in this city three telephone lines running parallel for four or five hundred feet. Two of them use the Bell telephone, and one the Edison. Now, when they are using the Edison we can hear every word said by listening at either of the other lines, and they are not within two feet or more of each other; that is, the lines do not

run any nearer than that. Can you give the reason? A. The effect noted by you is due to electrical induction. An intermittent or vibratory electric current passing over a line will induce a current in a parallel line, even if the two wires be several feet apart. This phenomenon is beautifully illustrated by Hughes' induction balance and sonometer, fully described in SUPPLEMENT, No. 196.

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

H. J. F.—1. Quartz, decomposed hornblende and feldspar. 2. Coccolite in quartz. 3. Mispickel and mica slate. 2 and 3 may carry a small amount of silver. —J. C. D.—It is metallic antimony, worth about 18 cents per lb. in large quantities.

COMMUNICATIONS RECEIVED.

New Copying Process. By E. P. T. On Sun Spots. By E. E. B. Another New Copying Process. By E. P. T.

[OFFICIAL.]

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending February 3, 1880, AND EACH BEARING THAT DATE. [Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, or any patent issued since 1867, 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.

Table listing inventions with patent numbers and names of inventors. Includes items like Addressing machine, Air compressor, Animal trap, Arrow rest, Audiphone, Axle box, Axle lubricator, Bag tie, Ball trap, Barrel lifter, Bed bottom frames, Beer, Berth, Binder, Bird cage, Blind, Blotter, Boot tree, Bottle stopper, Bow, Brake pipe, Bucket, Buckle, Building, Burglar alarm, Butter, Button, Car, Car coupling, Car heater, Car ventilator, Carbonates, Carpet pads, Carpet sweeper, Caster, Casting metals, Catarrh, Chandelier, Chimney top, Chock, Chuck, Churn, Cigar packing, Clamp, Clay, Clock, Clothes hook, Clothes wringer, Coach, Coffee roaster, Compass, Cooking device, Corset, Cotton opener, Cotton picker, Crushing, Cultivator, Cymbal, Dental plugger, Desk, Door check, Door hanger, Dovetailing machine, Draught or tug link, Drawer front, Dredging machine, Egg beater, Emery cloth, Extension table, Faucet attachment, Faucet, Feeding trough, File for packages of letters, Fire extinguisher, Fire extinguisher, chemical, Fireplace, Gate, Gearing for changing the speed of rotating shafts, Gimlets, Glass or chinaware utensils, Grain drier, Grain drill, Grain separator, Grinding mill, Hammer, Hammock support, Hatchway doors, Heel leveling and surfacing machine, Heel piles, Heel slicing machine, Hitching post, Hop press, Horseshoe nails, Hydrant, Ice machines, Incubator, Inkstand, Insect trap, Jewelry charm, Jewelry manufacture, Journal and bearing, Knitting machine, Ladder, Lantern, Lantern, hand signal, Last, Latch, Lathes, Leather, Leveling instruments, Lifting jack, Lighting device, Liquid cooler, Loom, Loom reed, Loom temple, Lounges, Measure, Metal worker's tool, Millstone dressing machine, Moulding and perforating plastic substances, Moss, Motion transmitter, Musical chart, Musical instruments, Nickel, Nursery chair, Oil apparatus, Oil cake, Oil condensing and separating apparatus, Oiler and oil bottle, Oscillating engine, Oven slide, Overalls, Paper box, Paper cabinet, Paper folding machine, Paper pulp, Paper pulp machinery, Pen, Pianoforte action, Pipe, Piston head, Pitcher, Pitman, Plaiting machine, Planter and fertilizer, Planter and fertilizer distributor, Planter, corn, Planter, sod, Plow, Plow attachment, Plow, reversible, Plow, rotary gang, Plow, sulky, Plow, sulky, Lindergren, Plow, sulky, B. F. Litzenberg, Plow, sulky, J. B. Neff, Poke, animal, Pole, carriage, Polishing machine, Polishing small articles, Post office box door, Potato digger, Pressure regulator, Printing machine, Printing machine, rotary, Propeller, Pump, Pump, vacuum, Radiator, Radiator, steam, Rag engine, Railway switch, Railway switch, Rattan, Refrigerator, Refrigerator building, Rocking chair, Rocking chair, folding, Roller gates, Rope twisting machine, Rotary engine, Saddle tree, Saddle tree, harness, Salt, manufacturing, Salt wells, Salve, Sawmill dog, Scaffold, portable window, Scales, balance, Seal lock.