

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.

Best American Shot Gun made is the "Colts." Far superior to any English guns for the same price. For description, see SCIENTIFIC AMERICAN of May 29.

Lubricene, Gear Grease, Cylinder and Machinery Oils. R. J. Chard, 6 Burling Slip, New York.

Wilson's Business Directory, second edition, and Wilson's Co-partnership Directory for 1880-81, are now ready. Price, \$3 each.

The Oriental Hotel, the largest of all the immense hotels at Manhattan Beach, the Pequot House, New London, Conn., the Old Orchard Beach Hotel, Maine, are now being painted with H. W. Johns' Asbestos Liquid Paints.

Free-stone Quarrying Machinery wanted. Circulars, etc., to Box 2606, P. O., Toronto, Ontario.

Oil Cups, \$1.50 per dozen. Liberal discount per gross. Send ten 3c. stamps for two samples. James D. Foot, 78 Chambers St., New York.

Improved Solid Emery Wheels and Machinery, Automatic Knife Grinders, Portable Chuck Jaws.

Silhouette.—I want a Silhouette Instrument. Address Geo. C. Henning, Washington, D. C.

Suction Fans or Blowers, \$10 to \$30. Send for circular. R. K. Teller, Unadilla, N. Y.

When you can't get the particular pen of Esterbrook's that you want, write to The Esterbrook Steel Pen Company, 26 John St., New York, for it.

Asbestos Board, Packing, Gaskets, Fibers, Asbestos Materials for Steam & Building Purposes.

Information and Recipes on Industrial Processes.—Fruit Drying and Preserving. Inks and Dyes. Ice Making. Cements. Blacking. Waterproofing. Fireproofing.

Air Compressors, Blowing Engines, Steam Pumping Machinery, Hydraulic Presses. Philadelphia Hydraulic Works, Philadelphia, Pa.

Sweetland & Co., 126 Union St., New Haven, Conn., manufacture the Sweetland Combination Chuck.

Power, Foot, & Hand Presses for Metal Workers. Moderate prices. Peerless Punch & Shear Co., 52 Dey St., N. Y.

Corrugated Traction Tire for Portable Engines, etc. Sole manufacturers, H. Lloyd, Son & Co., Pittsburg, Pa.

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

For Middlings, Mill and Mill Furnishing, see adv. p. 348.

Collection of Ornaments.—A book containing over 1,000 different designs, such as crests, coats of arms, vignettes, scrolls, corners, borders, etc.

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.

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

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

Steel Figures, \$1; Letters, \$3 a set. York & S., Clev., O.

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.

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

For Patent Shapers and Planers, see ills. adv. p. 316.

Presses, Dies, and Tools for working Sheet Metal, etc. Fruit & other can tools. Bliss & Williams, B'klyn, N. Y.

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.

Rollstone Mac. Co.'s Wood Working Mach'y adv. p. 300.

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.

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

For Mill Mach'y & Mill Furnishing, see ills. adv. p. 317.

Forsyth & Co., Manchester, N. H., & 207 Centre St., N. Y. Bolt Forging Machines, Power Hammers, Com'd Hand Fire Eng. & Hose Carriages, New & 2d hand Machinery. Send stamp for illus. cat. State just what you want.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 316.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 317.

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.

For Alcott's Improved Turbine, see adv. p. 234.

For Best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Company, Buffalo, N. Y.

For Standard Turbine, see last or next number.

For Power Paper, Lard, Cider Presses, see adv. p. 348.

Burgess' Non-conductor for Heated Surfaces; easily applied, efficient, and inexpensive. Applicable to plain or curved surfaces, pipes, elbows, and valves. See p. 284.

Eagle Anvils, 10 cents per pound. Fully warranted. Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Wanted—The address of 40,000 Sawyers and Lumbermen for a copy of Emerson's Hand Book of Saws. New edition 1880. Over 100 illustrations and pages of valuable information. Emerson, Smith & Co., Beaver Falls, Pa.

Eclipse Portable Engine. See illustrated adv., p. 349.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 349.

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

Telephones repaired, parts of same for sale. Send stamp for circulars. P. O. Box 26, Jersey City, N. J.

For Wood-Working Machinery, see ills. adv. p. 348.

Telephones.—Inventors of Improvements in Telephones and Telephonic Apparatus are requested to communicate with the Scottish Telephonic Exchange, Limited, 94 St. Andrew Square, Edinburgh, Scotland. J. G. Lorrain, General Manager.

Pat. Steam Hoisting Mach'y. See ills. adv., p. 348.

Milling, Profiling, Cam Cutting, Revolving Head Screw Machines. Pratt & Whitney Co., Hartford, Conn.

C. J. Pitt & Co., Show Case Manufacturers, 226 Canal St., New York. Orders promptly attended to. Send for illustrated catalogue with prices.

4 to 40 H. P. Steam Engines. See adv. p. 348.

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

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

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.

Elevators.—Stokes & Parrish, Phila., Pa. See p. 348.

Mackenzie Cupola and Blower. The very best apparatus for melting iron; and with water bath for smelting lead, silver, or copper ores. Send for pamphlet. Smith & Sayre Manuf. Co., 21 Courtlandt St., New York.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 365. Totten & Co., Pittsburg.

Penfield (Pulley) Block Works. See ills. adv. p. 348.

NEW BOOKS AND PUBLICATIONS

THE SUGAR BEET. An illustrated quarterly paper, devoted to the cultivation and utilization of the Sugar beet. Philadelphia: Henry Carey Baird & Co. Price 50 cents per annum.

It is seldom that a new industry, or even an old and well established industry, is favored with so handsome and able an exponent. The Sugar Beet would seem to be indispensable to every one interested in the raising of beets and the production of sugar from them.



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.

When we 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. O. D. asks: 1. Will a pump working water from a heater into a boiler work in air if the supply is not sufficient to keep the pipes full? A. Yes.

(2) A. P. W. asks: 1. Would a cylinder, 3 inches diameter, 4 1/2 inches stroke, run a side wheel boat, 12 feet long, 3 feet wide, working direct from the shaft (oscillating cylinder)? A. Yes, probably at a speed of about four miles per hour.

(3) J. W. C. writes: I have a battery of 32 cells (about one pint each) composed of carbon and zinc, but I cannot find the proper solution to make it work properly. I have just amalgamated the zinc very carefully, and used a solution made of the following: 1 gallon sulphuric acid, 3 gallons water, then dissolved 6 lb. of bichromate of potash in 2 gallons of boiling water, mixing the whole, and using when cold.

(4) H. C. B. writes: 1. I have constructed a pantograph as described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 158, page 2506. I have no trouble in copying any drawing, either enlarged or reduced in size, but I have not been able to make a drawing the same size as the original. Will you have the kindness to tell me how to arrange the tracing point and pencil, so as that I can make a copy of the same dimensions as the original? A. Change places with the pivot and tracing point; that is, put the tracing point in the center of the middle bar. The tracing will be inverted.

(5) T. M. asks: 1. What is the velocity of steam under some certain pressure? A. Velocity flowing into the atmosphere at 90 lb. pressure above atmosphere, 1,400 feet per second; 50 lb. pressure above atmosphere, 1,429 feet per second; 70 lb. pressure above atmosphere, 1,444 feet per second.

(6) H. D. writes: I have a side wheel steamboat here that is geared up; the wheels are 10 feet diameter, buckets 11x30 inches, dip 14 inches; the engine is geared up to make 4 1/2 revolutions to the wheel's one; the large gear wheel has wood teeth. There seems to be a good deal of back lash and noise. I want to stop it, or help it, if raising up the buckets would make any difference.

(7) E. G. S. asks how to test his steam boiler by hydraulic pressure. A. Fill the boiler entirely full of water by any convenient means, then with a force pump increase the pressure to the desired degree. Use a pressure gauge on the boiler to indicate the pressure produced within the boiler.

(8) A. K. E. writes: 1. I desire to make an induction coil 8 inches long with 3/4 inch iron wire; core in center wound round with about 7 layers of No. 18 cotton covered wire; and have a large spool to slide over this wound up with about 18 layers of No. 36 silk covered wire, and use a single Grenet battery such as is used in all electrical medical machines.

(9) A. S. P. asks for M. Pellet's method of producing blue lines on white by photoprocess. A. Chemically pure ferricyanide of potassium, 1 oz.; citric acid, 20 grains; dissolve in 5 ounces soft water. Immerse the paper in this, dry in the dark, expose under a negative, develop in a dilute aqueous solution of ferric chloride, wash in plenty of water.

(10) J. T. W. writes: 1. I have just read your article in the SCIENTIFIC AMERICAN SUPPLEMENT descriptive of the steam yacht Flirt. As you kindly consent to supply further information upon application, I make bold to submit a few queries. The text says: "The furnace is cylindrical, 11 inches diameter, and 16 inches long. The upper end of grate is about 11 inches from top of furnace."

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending May 4, 1880, 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.

Table with columns for invention name and page number. Includes entries like Axlebox, car, G. W. Cushing; Axle nut wrench, Chipman & Reynolds; Belt for transmitting power, A. S. Gear; Bird cage, A. H. Alverson; Birds, etc., substance for mounting stuffed, E. L. Ormsbee; Blow pipe, C. R. Stuntz; Boiler fire box, J. Mailer; Book, W. A. Cooke, Jr.; Book, autograph, R. Schuerch; Boot and shoe, J. C. Daggett; Boot and shoe, G. Taylor; Boot and shoe heel stiffeners, machine for moulding, C. E. Kennard; Boot and shoe lasting machine, O. Redmond; Boot and shoe sole channelling and pricking mechanism, M. A. C. Holmes; Bracelet, D. S. Cooke; Bracelet, A. W. Magerhans (r); Bridge gate, A. F. Petersen; Bridle brow band, J. F. Sullivan; Broom, J. Jr., & L. Wagner; Brush for greasing griddles, E. Ford; Burial case, W. Patterson; Button, H. H. Schmitt; Button and stud, sleeve, O. T. Smith; Calendar, clock, J. F. Henderson; Car brake, Collins & Longton; Car brake and starter, C. A. Howe; Car coupling, W. Harkins; Car door, freight, J. H. Wickes; Car door, grain, J. Kiley; Car door hanger, E. E. Pratt; Car step, B. F. Shelbarger; Carding machines, device for operating the doffer-combs of, J. Barker; Carpet linings, etc., fabric for, W. S. Hunt; Carriage, T. J. Wright; Carriage curtain fastener, G. L. Crandal; Carriage curtain fastening, J. B. Kendall; Carriage wrench, E. A. Robbins; Cartridge, A. Tillmes; Cartridge implement, E. A. Folsom; Chuck, G. B. Kirkham; Chuck for turning lathes, C. Racine; Churn, J. W. Neal; Churn power, G. W. Sampson; Churn, revolving body, H. N. Frentress; Cigar lighting stand, J. Kintz; Cloth shearing machine, D. C. Sumner (r); Coffee pot, J. F. Henderson; Coffin handle socket, C. F. Mosman; Coffin handle tip, C. F. Mosman; Collar, A. N. Luchs; Condenser tube, surface, C. B. White; Corset, J. Bowers; Corsets, manufacture of, A. D. Laws; Cotton and hay press, G. W. Soule (r); Crown sheet attachment, J. N. Weaver; Cultivators, shield or fender for corn, G. B. Snow; Curtain cord tightener, W. Klemm; Curtain fixture, G. Baldwin; Curtain fixture, W. Campbell; Curtain fixture, H. Herit (r); Cut-off valve, steam engine, W. Wright; Cutting and clinching tool, comb'd, P. D. Graham; Cutting board or table, S. H. Hodges; Ditching machine, U. Blickensderfer; Door mats, manufacture of, W. E. Lawrence; Doubling, etc., strands of fibrous material, machine for, J. E. & E. Atwood; Drive wheels, machine for inserting rubber in the peripheries of, W. T. Henry; Drying and preserving by cold air, apparatus for, L. G. Volkmar; Egg tester, D. D. France; Electric circuits, automatic tension changer for, C. A. Randall; Electric light, T. A. Edison; Electric lights, safety conductor for, T. A. Edison; Electric track circuits, connector for, Gasset & Fisher; Excavating machine, T. Dill; Fare register, J. B. Benton; Fare registers, operating connection for, J. B. Benton; File, bill or letter, D. H. Iseninger; Fire alarm, telephonic, T. A. Watson; Firearm, breech-loading, C. W. Snider; Fire escape, R. H. Tucker; Fireplace heater, R. & J. Logan; Flock cutting machines, feeder for, F. St. George; Fork guard, J. F. Dodge; Fuel, feeder for pulverized, McAuley & West; Furnace grate bar, B. P. Perry; Game apparatus, M. T. Foote; Gas pressure regulator, J. M. Foster; Gate, H. H. Franks; Glass press, J. Haley; Grain elevator, W. W. Stoll; Grain meter, D. Collins; Grate bar, Rogers & McIntire; Grave protector, M. Irion; Grinding mill, Branch & Golucke; Harness, C. S. Piersons (r); Harvester, A. Philippi; Harvester, W. T. Utley; Hat bodies, apparatus for felting, J. T. Waring; Hat bodies, process and apparatus for felting, J. T. Waring; Head light, locomotive, W. Westlake (r); Heat regulator, L. C. Baldwin; Heating and puddling furnace, J. Lukens; Hinge for earthenware or glassware, J. N. Taylor.