

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. The publishers of this paper guarantee to advertisers a circulation of not less than 50,000 copies every weekly issue.

The Edison Recording and Alarm Gauge, made and sold at 91 Liberty St., New York, causes a gong to ring in office and engine room when over-pressure occurs; and give written "charts" of all pressure carried, whether of air, steam, or water. Used in breweries, paper mills, hotels, city water works, charitable and educational institutions, and upon steamers, ferryboats, private yachts, and lighthouses. See card, with illustrations, in February number of Export Edition, under "Business Cards."

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

Wanted.—A good second-hand Pile Driving Engine. Address S. L. Wiley, Greenfield, Mass.

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.

For Sale, in one lot, cheap, 200 "Mead" Sewing Machines, without stands. Apply P. O. Box 1595, Montreal, Canada.

For Sale.—The large factory building, at Marion Station, on the Pennsylvania Railroad, in Jersey City, formerly occupied by the United States Watch Co., together with the boilers, engine, shafting. The premises comprise three acres, inclosed by iron fence. Building 250 x 27, wing, 40 x 90. Apply to Jas. A. Alexander, No. 2 Cortlandt St., New York city.

A thoroughly practical mechanic desires to correspond with a firm in want of a draughtsman, who can design, construct, and execute. Has had many years' experience in improved steam power, millwork, and special tools. Address J. C. D., Box 73, New York.

Carre's French Cylindric Carbons for Electric Lights; assorted sizes; imported and for sale by C. Raoux, 226 Front St., New York city.

New Tubular Boiler, about five H. P., for sale cheap. Address W. N. W., Box 73, New York.

Scroll Saws; cheapest and best. D.S. Abbott, Olean, N.Y.

H. W. Johns' Asbestos Liquid Paints are strictly first-class pure linseed oil paints, and contain no water. They are the best and most economical paints in the world for structural purposes. H. W. Johns Mfg Co., 87 Maiden Lane, sole manufacturers.

For Wood-Working Machinery, see illus. adv. p. 125.

Competent man wanted understanding wire rope conveyers for lumber, coal, etc. Address Rathbun & Co., Oswego, N. Y.

Steel Name Stamps, 15 cents per letter; steel figures, \$1 per set. C. L. Anderson, Cleveland, Ohio.

For Mill Machy & Mill Furnishing, see illus. adv. p. 125.

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

New Inventions examined and tested. Designs and improvements. Reports for investors. Recipes and information on all industrial processes. Benjamin's Sci. Expert Office, 37 Park Row, New York.

Latest improved methods for working hard or soft metals, grinding long knives, tools, etc. Portable Chuck Jaws and Diamond Tools. Address American Twist Drill Co., Woonsocket, R. I.

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

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

Chase's Pipe Cutting & Threading Machine. Send for circular. Chase Machine Co., 120 Front St., New York.

Sawyer's Own Book, Illustrated. Over 100 pages of valuable information. How to straighten saws, etc. Sent free by mail to any part of the world. Send your full address to Emerson, Smith & Co., Beaver Falls, Pa.

Engle Anvils, 9 cents per pound. Fully warranted.

Ice Machines selected. Information on all kinds. Benjamin's Sci. Expert Office, 37 Park Row, New York.

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

Special Tools for Railway Repair Shops. L. B. Flanders Machine Works, Philadelphia, Pa.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's adv. p. 125.

The "Fitchburg" Automatic Cut-off Horizontal Engines. The "Haskins" Engines and Boilers. Send for pamphlet. Fitchburg Steam Engine Co., Fitchburg, Mass.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 62.

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

Blake's Belt Studs. The most durable fastening for rubber and leather belts. Greene, Tweed & Co., N. Y.

The Horton Lathe Chucks; prices reduced 25 per cent. Address The E. Horton & Son Co., Windsor Locks, Conn.

\$400 Vertical Engine, 30 H. P. See page 125.

Emery Wheels of all kinds, and Machines at reduced prices. Lehigh Valley Emery Wheel Co., Weissport, Pa.

Steam Engines; Eclipse Safety Sectional Boiler. Lambertville Iron Works, Lambertville, N. J. See adv. p. 46.

Patent Steam Cranes. See illus. adv., page 125.

Nellis' Cast Tool Steel. Castings from which our specialties Flow Shares. Also all kinds agricultural steels and ornamental fencings. Nellis, Shriver & Co., Pittsburg, Pa.

Best Turkey Emery in bbls., segs, and cases. Special rates for large quantities. Greene, Tweed & Co., N. Y.

Wheels and Pinions, heavy and light, remarkably strong and durable. Especially suited for sugar mills and similar work. Circulars on application. Pittsburg Steel Casting Company, Pittsburg, Pa.

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

Deoxidized Bronze. Patent for machine and engine journals. Philadelphia Smelting Co., Phila., Pa.

Renshaw's Ratchet (short spindle) uses taper and square shank drills. Pratt & Whitney Co., Hartford, Ct.

Rue's New "Little Giant" Injector is much praised for its capacity, reliability, and long use without repairs. Rue Manufacturing Co., Philadelphia, Pa.

Catechism of the Locomotive, 625 pages, 250 engravings. The most accurate, complete, and easily understood book on the Locomotive. Price \$2.50. Send for a catalogue of railroad books. The Railroad Gazette, 73 Broadway, New York.

Elevators.—Stokes & Parrish, Phila., Pa. See p. 126.

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.

The Twiss Automatic Cut-off; also Vertical and Yacht Engines. N. W. Twiss, New Haven, Conn.

J. F. Tallant, Engineer, Burlington, Iowa, makes a specialty of saving fuel and increasing power of defective boilers and engines.

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.

A No. 6 Root Blower, steel shafts of extra strength, and used less than four months, in good order. Charles L. Oudsluys & Son, 67 Exchange Place, Baltimore, Md.

Portable Forges, \$12. Roberts, 107 Liberty St., N. Y.

For Sale.—Foundry and Machine Shop, third city in State; good business. Box 275, Winona, Minn.

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

Steam Engine for sale very low. See advertisement on another page.

A Rare Chance.—We have on hand a 40 H. P. Horizontal Oscillating Engine, built for special work, but never used. It is first-class in all respects; has patent gears to prevent wear; has balance wheel, but no pulley. Price \$350. Heald, Sisco & Co., Baldwinville, N. Y.

Campbell's Self-acting Window Shade Rollers are the best in the market. Models and terms to the trade. 85 Centre St., New York.

Forsyth & Co., Manchester, N. H., & 213 Centre St., N. Y. Bolt Forging Machines, Power Hammers, Comb'd Hand Fire Engine & 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.

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., & Broz. 531 Jefferson St., Philadelphia, Pa.

To stop leaks in boiler tubes, use Quinn's Patent Ferrules. Address S. M. Co., So. Newmarket, N. H.

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. adv. p. 110.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocum & 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. 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. For best low price Planer and Matcher, and latest improved Sash, Door, and Blind 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.

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

NEW BOOKS AND PUBLICATIONS.

THE ALIENIST AND NEUROLOGIST. Quarterly, Vol. I. No. 1. Edited by C. H. Hughes, M.D. St. Louis: Ev. E. Carver. Price \$5 a year.

This journal of scientific, clinical, and forensic psychiatry and neurology, is intended especially to meet the wants of the general practitioner of medicine. Its fundamental idea is that these departments of medical practice are parts of the trunk rather than special branches of medicine; and it will be devoted to the promulgation, among general practitioners of medicine, of sound teaching respecting the nature and treatment of neuro-psychic and nervous diseases, the proper management and care of the insane, and kindred matters. The initial number shows a good list of contributions by capable writers.

VISITOR'S GUIDE TO THE SMITHSONIAN INSTITUTION AND NATIONAL MUSEUM, WASHINGTON, D. C. Edited by W. J. Rhees. Washington: Judd & Detweiler. Paper, pp. 96. Price 35 cents.

Contains an illustrated description of the present building, and a cut of the new building; also a descriptive guide to the cases and objects displayed in several departments of the museum.

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.

(1) H. D. P. writes: In No. 21 of SCIENTIFIC AMERICAN of 1879, you give receipt for making ink to be used with copying pad. In the receipt occurs the symbols (2R B to 3 B). Please explain their meaning in making the ink. I have asked a great many who should know, but they cannot tell me. A. The terms 2B, 3B, etc., are technical expressions descriptive of certain grades or degrees of color, as bluish blue, blue blue, blue, etc.

(2) H. J. D. asks: 1. Will brass make a durable cylinder for a small steam engine (bore 3 inches, stroke 4 inches)? A. Yes. 2. Will Babbitt metal do to pack the piston head, melt and run it in? A. It could be done, but would remain tight but a short time. Cast iron rings would be better. 3. What size should the induction ports be for cylinder 3 x 4 inches? A. 3/4 by 1 1/2 inches.

(3) E. N. J. writes: I am using stationary tubular boiler, 44 inches shell, 48 3-inch tubes, 12 feet long, fire passing underneath and returning through flues; have lined up fire box so that it is at least 4 inches narrower than the boiler. I claim that fire box ought to be at least 2 inches wider than the boiler to get the full benefit of our fuel, wood. Am I correct? If not, why? A. It is not necessary that the grate should be 4 inches wider than the diameter of the boiler, but the fire chamber above the grate should be at least 6 inches wider.

(4) G. H. S. asks if in the celebrated "Krupp one hundred ton steam hammer" the piston and hammer-head weigh together one hundred tons, and if so, is this the usual method of expressing the power of steam hammers. A. We suppose it to be the weight of the "tup," that is, hammer-head, piston, and rod, as the weight of steam hammers is generally spoken of in that way.

(5) C. L. H. asks: Can you give me any further instruction for making ink to use on the copying pad, in your SCIENTIFIC AMERICAN, No. 21? I have made some after that direction, as far as I understood it, and can get only about 10 fair copies; and by using ink furnished with other pads, can get 50 copies. Should be glad to receive any instructions you can give on the subject. A. You have probably used impure or improper aniline violet. Use pure 3 B methyl aniline violet.

(6) W. A. M. writes: I am desirous of building a steam yacht after the model of the one in SUPPLEMENT, No. 179, but propose to make it larger, 45 feet long by 10 feet beam. How many passengers will she carry, and what power engines will be needed? A. 18 to 22 passengers. 9 inch cylinder and 10 inch stroke.

(7) W. T. R. asks: 1. How can I prepare cyanide of silver for making a plating bath to use with a battery? A. Dissolve the silver in a small quantity of warm nitric acid. Evaporate nearly to dryness in a porcelain vessel, redissolve in pure water and add slowly solution (aqueous) of potassium until no further precipitate forms. Better decant the clear liquid, wash and dry the precipitated cyanide of silver. 2. Is chloride of gold used in its purity for a gilding solution? If not, please give directions for preparing it. A. No; use the cyanide of gold and potassium. 3. Will a gravity battery answer as well as a Smee for plating? I have been using it for plating some small articles, but have not had very good success. I prepared the solution by the battery process from silver coin. A. If properly managed, yes. 4. Is silver coin fit to prepare solution from or to use for anodes? A. Coin silver will not answer; it contains copper. 5. How much mercury does it take to operate a Sprengel air pump? A. From 20 to 50 lb. are commonly employed.

(8) W. S. B. asks: Is there any rule that will ascertain the pressure per square foot on a ship at different depths down its side? A. The pressure is 144 lb. per square foot for each 26 inches in depth, nearly. 2. Supposing a hollow tube could be plunged through the bottom of a ship, would the water rise and retain a position in the tube above the outside water level? A. No; it would rise to the height of the level of the water outside.

(9) J. K. writes: A states that the pressure of air necessary to keep the water from entering a diving bell is no greater at a depth of 500 feet than it is when the bell is only at a depth of 50 feet in the water. B states that on the contrary the greater the depth to which the bell is sunk in the water, the so much greater pressure of air is required to counterbalance the upward pressure of the water. Please state which is right, A or B. A. A is wrong. The pressure of air must be at least equal to the pressure due to the depth of water. B is right.

(10) W. E. K. asks how to take a large coal oil spot out of a carpet. A. Try benzole and woolen cloths.

(11) M. W. asks: 1. Is there any rotary engine equal in point of power to the best type of reciprocating engines? If so, who is the inventor and where is it manufactured? A. No. 2. Suppose a reciprocating engine turns 100 revolutions per minute, does it give any clearance? A. It must have some clearance to allow for the spring and play of the parts.

(12) H. D. writes: 1. I have an engraved copper plate which I wish to electroplate with steel. Can I do it, and how? A. Consult Gore's and Napier's Electro-metallurgies. 2. Can a Smee battery be used for the purpose? A. Yes.

(13) J. T. A. writes: There is a difference of opinion between a man and myself about a small steam boat as regards the government law. He says a small steam boat under five tons capacity has nothing to pay. I say they have to pay license and also inspection. A. You are right.

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

M. F.—1. Mica schist with hornblende. 2. Syenite. 3. Zinc. 4. Red jasper. 5. Quartz, felspar, and chalcocopyrite. 6. Quartzose rock. 7. Sandstone. 8. Muscovite. 9. Sandstone. 10. Granite. 11. Quartz and trap. 12. Mica schist. 13. Limestone. 14. Chalcocopyrite in talcose slate. 15. Gneiss and mica schist.

COMMUNICATIONS RECEIVED.

How to File the Champion Saw. By J. A. H. On Limestone Built Cities. By J. S. Five Sundays in February. By H. G. A. On Inventors. By H. S. B.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were

Granted in the Week Ending

January 27, 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 various inventions and their patent numbers, including items like Bedstead fastening, Beehive, Key, Belting machinery, Brassy (r), Blacking box, Blast furnace, Blower or exhauster, Jet, Boiler furnaces, Boot and shoe tree, Box for holding embroideries, Bretzel machine, Brush, rotary, Brushes, manufacture of rubber backs for wire, Buckboard, Joubert & White, Butter washer, cooler, and worker, Car brake and starter, Car, dumping, Car, oil tank, Car, stock, Cars, mechanism for making ladder irons and hand holds for freight, Carpet tacker, Carriage top brace, Caster, F. S. Clarkson, Caster, W. C. Codrington, Caster, O. Pederson, Caster, furniture, Casting, flexible core for, Cement and artificial stone, making, Cereal, prepared, Chain, log carrying or bull, Chain, ornamental, Chandelier, extension, Cheese bandage, Churn dasher, Clear press, Coat hook, Cock, automatic cylinder, Crayon compound, Cultivator, Currycomb, Curtain fixture, Door hanger, Drums, jacket for shipping, Elastic rollers, composition for, Electric machine, dynamo, Electrical switch pin, Exercising machine, Farm gate, Faucet, Feed water heater for steam boilers, File, bill, Firearm lock, Flush tank, Folding chair and settee, Grain binder, Grain binder, A. S. Hoyt, Grain separator, magnetic, Grazing post, Grinding mill, millings, Gear, stop-motion, Goods exhibit, roll, Guard finger, Harness gag runner, Harrow, rotary, Harvesting, W. F. Olin, Harvesting, hand binding, Hay rake, Hinge, awning blind, Hoop coiling machine, Hoop lock cutter, Hop picking machine, Horse power, Hydrant, s. A. Jenks, Hydraulic motor, Indicator lock, Inking apparatus, Jewelry, etc., ornamentation of.