

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.

CHATTANOOGA, TENN., June 19, 1880. H. W. Johns Mfg Co., 87 Maiden Lane, New York GENTLEMEN: The (asbestos) paint I got of you last fall is entirely satisfactory. I want nothing better.

We keep a full assortment of Esterbrook's, Gillott's, Spencerian, Perry's, and Lamar's Pens. Send for price list to J. Leach, 88 Nassau St., New York.

Wanted—Situation as Foreman, with a live Brass Finishing Firm, who wish to make a specialty of globe valves and compression work. Address "H," P. O. Box 351, Brookline, Mass.

Carré's French Cylindric Carbons, for Electric Light and Experiments, imported and for sale by C. Raoux, 236 Pearl St., New York. Price list sent to all applicants.

Apply to J. H. Blaisdell for all kinds of Wood and Iron Working Machinery. 107 Liberty St., New York. Send for illustrated catalogue.

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

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

Our new Stylographic Pen (just patented), having the duplex interchangeable point section, is the very latest improvement. The Stylographic Pen Co., Room 13, 169 Broadway, N. Y.

Shaw's U. S. Standard of Pressure. Mercury Gauges, all pressures, Steam, Hydraulic, and Vacuum. Best for pumping stations and pipe lines. 915 Ridge Ave., Philadelphia, Pa.

Advertising of all kinds in all American Newspapers. Special lists free. Address E. N. Freshman & Bros., Cincinnati, O.

For Sale.—A Baltimore City Fire Department Steam Fire Engine, in complete working order. Address P. O. Box 676, Baltimore, Md.

Metallic Piston Rod Packing Company, 773 Broad St., Newark, N. J. Agents wanted; terms liberal.

Skinner & Wood, Erie, Pa., Portable and Stationary Engines, are full of orders, and withdraw their illustrated advertisement. Send for their new circulars.

Asbestos Board on Chimneys prevents their heat from affecting the temperature of rooms through which they pass. Asbestos Pat. Fiber Co., lim., 194 Broadway, N. Y.

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

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

The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg, Mass.

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

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

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. 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.

Nickel Plating.—Sole manufacturers cast nickel and 28 pure nickel salts, Importers Vienna lime, crocus, etc. Condit, Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

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

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

Forsyth & Co., Manchester, N. H., & 207 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.

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

For Alcott's Improved Turbine, see adv. p. 297.

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

Eclipse Portable Engine. See illustrated adv., p. 413.

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

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 13. Totten & Co., Pittsburg.

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.

Brass & Copper in sheets, wire & blanks. See ad. p. 13.

Linen Hose for Warehouses and Hotels as protection from fire. Greene, Tweed & Co., 118 Chambers St., N. Y. Silent Injector, Blower, and Exhauster. See adv. p. 13.

Special Wood-Working Machinery of every variety. Levi Houston, Montgomery, Pa. See ad. page 13.

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

4 to 40 H. P. Steam Engines. See adv. p. 413.

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

Steam Engines; Eclipse Safety Sectional Boiler. Lambertville Iron Works, Lambertville, N. J. See ad. p. 413.

Air Compressors. Clayton Stm. Pump W'ks, B'klyn, 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.

New Economizer Portable Engine. See illus. adv. p. 13.

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.

Valve Refitting Machine. See adv., page 13.

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

For Superior Steam Heat. Appar., see adv., page 13.

Hand Fire Engines, Lift and Force Pumps, for fire and all other purposes. Address Rumsey & Co., Seneca Falls, N. Y., and 93 Liberty St., N. Y. city, U. S. A.

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

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

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

Sheet Metal Presses, Ferracute Co., Bridgeton, 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.

(1) R. C. writes: In finishing colored gold and gilt work with a scratch brush, electro-platers generally use sour beer, letting it flow freely on to the brush and work. The beer is dirty and bad smelling. Is there any clean fluid which would answer the same purpose? A. Try thin starch water to which has been added a trace of sulphuric acid.

(2) W. H. C. asks: How shall I clean old copper coins without injury to them? A. Dip in strong hot solution of potash or soda, rinse and dip for a moment in nitric acid, after which rinse quickly in running water.

(3) H. P. B. asks how to recover the silver that is contained in a solution of cyanide potassium. A. Place in the open air or under a hood with a good draught; add a small quantity of salt, then dilute sulphuric acid until no further precipitate forms; allow to settle, wash the precipitate with clean hot water; mix it with a small quantity of water acidified with sulphuric acid, and a few fragments of pure zinc; collect and wash the reduced silver, separate the remaining fragments of zinc; dry and melt with a little borax glass.

(4) S. S. writes: 1. A has a mill, the machinery of which is propelled by an overshot wheel with a vent or aperture of 144 inches under a head of water of 2 1/2 feet, or 30 inches; he wishes to remove the overshot wheel and put in a turbine wheel, having 34 inches vent under a head of 20 feet water. Which of the two will discharge the greater amount of water in a given time, and how much, say, in one minute? A. The opening for the overshot wheel with a coefficient of discharge of 0.68, the overshot 318 gallons per minute, and the turbine 234 gallons per minute. 2. I have no work which treats of such questions. Please commend one, if you know of one such. A. D'Aubisson on Hydraulics.

(5) W. & D. ask: What is the best composition to renew the worn surface of gum belts? A. Manufacturers of rubber belts recommend "a composition of equal parts of black lead and litharge mixed with boiled linseed oil, and japan enough to make it dry quick." It is to be put on with a painter's brush.

(6) W. B. asks: Does it make any difference where the exhaust pipe enters the cylinder of an engine? If so, where is the right place? A. If a horizontal engine, it is generally preferred to have it enter as near the lower side as possible, as it will then drain the cylinder of any water of condensation.

(7) W. P. L. writes: I have a stream of water which will supply 20 cubic feet a minute, with a

fall of six feet. Could I obtain sufficient power from it with any kind of wheel, to run a wood-turning lathe for turning small stuff without damming the water? What power would it supply? A. Your fall of water, if properly applied to a good water wheel, would give you about one-fifth of one horse power, which would do your work, but not without some kind of a dam, or its equivalent, to control the water.

(8) S. L. Z. asks: 1. What starch is used in laundrying new-made shirts, how applied, and how ironed? A. Use corn starch, boil to smooth paste, cool, and starch the goods; dry quickly. Before ironing, dampen down in thin, raw (unboiled) starch water. A little gum arabic or pure white wax is often added to the boiled starch to afford fine gloss. Iron in the usual way, with a common sad iron; then dampen slightly with a clean cloth and the starch (raw) water, and polish briskly with a polishing iron. 2. Where can I apply for information in regard to unclaimed estates in Germany? A. Probably German Consul General U. S. could assist you.

(9) "Fax" asks: What will effectually keep off mosquitoes? A. Try an infusion of pennyroyal in water, or an infusion of quassia chips.

(10) O. L. W. asks: 1. How is a vacuum in steam engine produced? A. By condensing the steam in the containing vessel. 2. How to line up a cross head and shaft of an engine? A. To explain this would require too much of our space. Consult "Roper's Hand Book of Land and Marine Engines," page 127. 3. The rule for figuring the horse power of an engine? A. Square the diameter (in inches) of the cylinder, multiply the result by 0.7854, then multiply this product by the average pressure of steam per square inch on the piston, and this product by the number of feet the piston travels per minute, and divide by 33,000. The quotient is the nominal horse power, from which deduct 20 per cent for friction. 4. How can we tell when the center of the piston is in the center of the cylinder? A. By measuring with proper gauges.

(11) O. N. B. writes: 1. A while ago, having found several scratches on my window, I wished to get them out; so taking some flour of emery and rubbing it down, I succeeded in getting out the scratches, but did not succeed in leaving the window as I wished. Now, the thing I wish to know is, what will restore the glass to its former polish? Have tried rotten stone and oil, but no effect was produced. A. Use finest rouge or putty powder, moistened with water. 2. Wishing to make some mucilage, and make it as cheaply as possible, I write to you to find out how to do it. A. Dissolve a sufficient quantity of gum dextrine or gum arabic in hot water, and add a few drops of clove oil to prevent mouldiness.

(12) J. V. R. asks: Would an electro-magnet wound with two smaller wires be as efficient as one wound with one wire just equal in weight of metal to the two smaller—in each case the magnets to be of the same size and contain the same relative weight of metal? A. No, as it would be impossible to wind the two wires as compactly as the one larger one; however, there would not be a great deal of difference.

(13) J. S. P. asks for a composition for rendering light canvas waterproof, which will not crack the canvas. A. Saturate the fibers with soap by boiling in strong soapsuds (castile or curd soap); press out the excess of liquid, and steep for twenty-four hours in a strong aqueous solution of alum; rinse in water, and repeat if necessary.

(14) J. B. M. writes: 1. Suppose in a cylinder, with two pistons at liberty freely to move, we interpose a block between the two pistons and exhaust the atmosphere between the pistons, what is the pressure on the block as compared with what it would be if the block be placed between a stationary cylinder head and one movable piston and the air exhausted? A. There is no difference. 2. And in each case how is the amount of pressure to be estimated, taking no account of friction, weight, or inertia of the piston? A. In either case multiply the area of one piston in square inches by 14.75, the result is total pressure in pounds.

(15) B. W. M. writes: I wish to do my own insurance, and want to know what machinery I would need to throw an eighty foot stream of water, what size hose and nozzle, how much horse power, etc.? I have a twenty-five foot deep well, and my buildings will be seventy-five feet deep, fifty feet front, and about twenty-five feet high. A. Use one nozzle, 1 1/2 inches diameter, or two of 3/4 inch diameter; hose 2 1/2 inches diameter. A steam pump, with 10 inches diameter steam cylinder, and 6 inches water cylinder, by 12 inches stroke, would suit; or if you use a "hand" fire engine, get one of the largest class, with 8 inches diameter pumps. When in full work they require about forty men on the brakes.

(16) R. E. M. asks: 1. Does a cylinder become smaller in the bore by the expansion upon becoming hot? The cylinder is 10 inches bore, about 1 1/4 inches in thickness. A. No. 2. Can you inform me where I can get a good reliable book, at a moderate cost, giving directions for hammering saws? A. You will find a good article on the subject on p. 259, Vol. 36, SCIENTIFIC AMERICAN.

(17) W. L. I. writes: I have an engine cylinder, 9 1/2 x 18 inches, and 7 foot drive wheel. Is a 1 1/2 inch steam pipe large enough to give full power to engine? A. No, it should be at least 2 1/4 inches diameter.

(18) E. J. O. writes: Having read your article on elevators in the SCIENTIFIC AMERICAN of June 5, it occurs to me that the differential block and chain might be applied to hoisting and descending; it would doubtless be safer than anything now used, and would require but a small engine to work at. I presume if some one or more of our elevator makers had the matter brought before them through proper channels they might be induced to try the experiment. A. We have no doubt such an application of the differential block might be made successfully.

(19) E. S. M. asks: How much pressure can one man give with a jack screw, lever four feet long, and screw four threads to the inch? A. 192 times the amount of pull on the end of the lever, less about thirty percent for friction.

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

C.—The samples probably contain no gold; a fire assay is the only way of settling this point beyond doubt.—A. A. R.—It is a ferruginous (iron impregnated), silicious clay, containing a small quantity of carbonaceous matters. Of little value.—A. M. C.—They consist chiefly of iron sulphure (pyrites). Of little value.—H. F. C., Jr.—quartz and mica.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending June 8, 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. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

Table listing various inventions and their patent numbers, including items like Adjustable bracket, Air cylinders, Air engine, Air engine heater, Album, Alloy, metallic, Animal trap, Annunciator drop, Ax, Axle box, Bale tie, Baling press, Barbic machine, Bed lounge, Beehive, Beveled gears, Binder for books, Binder, temporary, Bird cage, Blast furnace, Bol or strap fastener, Boot and shoe heel linings, Boot and shoe soles, Bottle stopper, Bottle stopper, J. Allison, Bottling machine, Bracket hook, Bridge gate, Bridle binder, Brush holding cap, Buckle, Burglar alarm, Burial case, Button, separable, Calculator, Caloric engine, Can opener, Car basket rack, Car brake, Car coupling, Car coupling, E. H. Moorman, Car coupling, G. W. Putnam, Car, stock, C. H. & W. G. Webster, Carpet stretcher, Carpet stretcher, Smith & Winters, Carriage clips, die for swaging, Carriage curtain fastener, Carriage dash frame, Carriage dashes, fastening attachment, Cartridge, B. E. Valentine, Cartridge crimping machines, Casks and bottles under pressure, Chair seat and back, Chamber muffler, Chart, dressmaker's, Cheese safe, Churn, Clock case, Clock case, Davies & Somers, Clutch, friction, Coal washing machine, Coffee pot attachment, Collar and cuff, Cooking apparatus, Cork cutting machine, Cotton chopper, Cotton condenser, Crib, child's, Curbing and guttering for sidewalks, Dental plugger, Desk, table, Diving bells, arm and attachment, Door and window fastening, Door hanger, Dust pan, Easel, A. R. Beal, Edge trimming tool, Electric machine, dynamo, Electric machines, brush for magneto, Electrical machines, commutator for magneto, Electro-magnetic motor brake, Elevator, Elevator for loading and unloading vessels, Embalming and preserving animal substances, Embroidering machine, Envelope letter sheet.