

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 Machinists' Tools, see Whitcomb's adv., page 28. Two Patents for sale. R. Munroe, Fitchburg, Mass. Best Band Saw Blades. See last week's adv., p. 28. Cylinders, all sizes, bored out in present positions. L. B. Flanders Machine Works, Philadelphia, Pa. The Best Arrangement of Shafting and Frictions for Communicating Power to Sewing Machines in Factories, is made by J. A. Sawyer & Son, Worcester, Mass. Wanted—Manager for Sheet Iron Rolling Mill. State salary, references, experience. John Marshall, Kennett Square, Pa. Hotchkiss' Mechanical Boiler Cleaner, 84 John St., N. Y. simple, effective, inexpensive; attached to over 600 boilers, using good and bad water, doing thorough work. Engineers make ten per cent selling other parties than employers. Circulars free. Within the last ten years greater improvements have been made in mowing machines than any other agricultural implement. It is universally acknowledged that the Eureka Mower Co., of Towanda, Pa., are manufacturing the best mower now in use, and every farmer should write to the manufacturers for catalogue, with prices.

NAVAL CONSTRUCTOR'S OFFICE, } NAVY YARD, NEW YORK, December 9, 1880. } SIR: . . . I would respectfully report that the two boilers . . . have been covered with M. W. Johns Asbestos Non-conducting Covering; the work has been done thoroughly and satisfactorily. Since the completion of the work there has been a saving of coal of about thirty per cent. (Signed), GEO. R. BRUSH, Naval Constructor.

H. W. Johns Mfg Co., 87 Maiden Lane, New York, Manufacturers of Asbestos Paints, Roofing, Boiler Coverings, Steam Packing, Sheathing, etc.

048 Falcon Pen—the best known and most widely used in America. Ask your stationer for Esterbrook's 048 Falcon Pen.

Eureka Vegetable Boiler Scale Eradicator, strictly vegetable, and perfectly harmless to iron. Warranted to remove scale of any thickness, and to prevent scaling from either fresh or salt water use. Circulars and particulars of G. E. Brinckerhoff, 107 Liberty St., N. Y.

The Sweetland Chuck. See illus. adv., p. 12. Moulding Machines for Foundry Use. 33 per cent saved in labor. See adv. of Reynolds & Co., page 12.

The I. B. Davis Patent Feed Pump. See adv., p. 12. Jenkins' Patent Valves and Packing "The Standard." Jenkins Bros., Proprietors, 11 Dey St., New York.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Exporters of Machinery for Plantations. Sugar Machinery, Coffee Huller and Cleaners. Information and estimates on all classes of American machinery and patented devices. Agricultural Implements and Hardware. Jos. H. Adams & Son., 283 Pearl St., New York.

Superior Malleable Castings at moderate rates of Richard P. Pim, Wilmington, Del.

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

The "1880" Lace Cutter by mail for 50 cts.; discount to the trade. Sterling Elliott, 262 Dover St., Boston, Mass.

The Tools, Fixtures, and Patterns of the Taunton Foundry and Machine Company for sale, by the George Place Machinery Agency, 121 Chambers St., New York.

Experts in Patent Causes and Mechanical Counsel. Park Benjamin & Bro., 50 Astor House, New York.

Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsburg, Pa.

Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa.

Power, Foot, and Hand Presses for Metal Workers. Lowest prices. Peerless Punch & Shear Co. 52 Dey St., N. Y. Recipes and Information on all Industrial Processes. Park Benjamin's Expert Office, 50 Astor House, N. Y.

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

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

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

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

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

Downer's Cleaning and Polishing Oil for bright metals, is the oldest and best in the market. Highly recommended by the New York, Boston, and other Fire Departments throughout the country. For quickness of cleaning and luster produced it has no equal. Sample five gallon can be sent C. O. D. for \$8. A. H. Downer, 17 Peck Slip, 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 Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 412. For Separators, Farm & Vertical Engines, see adv. p. 413.

National Institute of Steam and Mechanical Engineering, Bridgeport, Conn. Blast Furnace Construction and Management. The metallurgy of iron and steel. Practical Instruction in Steam Engineering, and a good situation when competent. Send for pamphlet.

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 and Tools for working Sheet Metal, etc. Fruit & other can tools. Bliss & Williams, B'klyn. N. Y. C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 413.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 413.

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

The American Electric Co., Proprietors and Manufacturers of the Thomas Houston System of Electric Lighting of the Arc Style. See illus. adv., page 29.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 413.

For Patent Shapers and Planers, see illus. adv. p. 412.

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.

Clark Rubber Wheels adv. See page 29.

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

Silent Injector, Blower, and Exhauster. See adv. p. 29.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'f'rs, 23d St., above Race, Phila., Pa. See Bentel, Margeant & Co.'s adv., page 29.

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

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.

Frank's Wood Working Mach'y. See illus. adv., p. 30.

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

Blake's Belt Studs. The strongest fastening for Rubber and Leather Belts. Greene, Tweed & Co., New York.

Eclipse Portable Engine. See illustrated adv., p. 30.

Peerless Colors—For coloring mortar. French, Richards & Co., 410 Callowhill St., Philadelphia, Pa.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 29.

Cotton Belting for Elevators; Carrying and Driving Belts. Greene, Tweed & Co., 118 Chambers St., N. York.

Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 29.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 29.

Comb'd Punch & Shears; Universal Lathe Chucks. Lambertville Iron Works, Lambertville, N. J. See ad. p. 413.

Reed's Sectional Covering for steam surfaces; any one can apply it; can be removed and replaced without injury. J. A. Locke, Agt., 32 Cortlandt St., N. Y.

Pays well on small investments.—Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions and parlor entertainments. Send stamp for 116 page catalogue to McAllister, M'f'g Optician, 49 Nassau St., New York.

For best low price Planer and M'cher 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.

Penfield (Pulley) Blocks, Lockport, N. Y. See ad. p. 29.

Tyson Vase Engine, small motor, 1-33 H. P.; efficient and non-explosive; price \$50. See illus. adv., page 28.

Use Vacuum Oil Co.'s Lubricating Oil, Rochester, N. Y.

Wiley & Russell M'f'g Co. See adv., p. 412.



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 a 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., referring to the reply to A. R., December 18, writes: Here is a plan for removing foreign substances from the eye, which has given relief in a number of cases not only from cinders but other substances. Holding the eyelash, draw the upper lid down as far as possible over the lower lid. In nine out of ten cases the lower eyelash will brush off the cinder.

(2) W. R. S. asks: 1. Will it require more fuel to evaporate a certain quantity of cane juice by steam than by heat applied directly to the bottom of the evaporator? A. No. 2. Would evaporating by steam make a lighter sirup than and be preferable to heat applied directly to the evaporator? A. It would, unless great care were used in direct firing under the kettles. 3. What should be the heating surface of a boiler to insure the evaporation of two hundred and fifty gallons of cane juice to a dense sirup in one hour? How high a pressure would be required to secure rapid evaporation? What form of boiler would be best adapted to this purpose? A. 750 to 800 feet heating surface; the higher the pressure the more rapid the evaporation. Any good boiler will answer, but if you use a tubular boiler, increase the heating surface 20 per cent. 4. What size steam pipe should be used? A. Two and a half to three inches diameter.

(3) J. C. R. writes: I see an inquiry about cutting screws with foot lathe slide rest (No. 11 in Notes and Queries, SCIENTIFIC AMERICAN, No. 25), and would say that I have had my slide rest arranged for this purpose for years. The screw of slide rest projects beyond the bed plate of the rest about one inch, and is supported by a bearing screwed to the bottom plate of slide rest. A brass plug is screwed over end of screw; one end carries a gear, while the other end runs in bearing. There is a wheel on mandrel, which runs wheel on end of slide rest screw to cut right hand

thread; to cut left hand screw I use an intermediate wheel. The slide rest bed is fourteen inches long, if the screw to be cut is too long or far off for the wheel on the screw of the rest I put it on a hollow shaft attached to the lathe so as to be turned by wheel on mandrel. I pass a rod through the hollow shaft and connect one end of it with the slide rest screw so as to be firm, then it is fastened in the hollow shaft by a binding screw, so as to revolve.

(4) W. A. writes: 1. I want to know the simplest accurate way to find the horse power of a boiler. A. From twelve to eighteen square feet of heating surface is allowed per horse power, the larger proportion for tubular boilers. 2. Manufacturers generally give the size of boiler, flues, and fire box. Do you allow the same number of square feet to horse power for grate as fine surface? A. The grate surface should be equal to one-twenty-sixth to one-thirtieth the heating surface. 3. Does dividing the square of the diameter of the cylinder by four give you the horse power of an engine? If not, how do you find it out? A. We refer you to SUPPLEMENT, No. 253, for rule for calculating power of steam engines.

(5) Rev. A. R. H. asks whether it would be profitable to establish, in connection with one of the creameries, a manufactory of milk sugar, provided the whey could be bought in quantities of 6,000 quarts daily, at a half cent a quart. A. We see no reason why, with good management, the industry should not prove profitable under such favorable circumstances. If properly conducted you can obtain nearly 3 per cent of refined sugar, which will bring at least 35 cents a pound.

(6) J. R. H. says: I would like to know the kind of machinery used for making oil from cotton seed and the manner in which it is done, the cost of fixture, and the amount of oil per bushel of seed. A. The seed is passed through a hulling machine, usually consisting in a set of rollers geared so that the surface of one travels faster than the other. This crushes the seed and loosens the hull, which is separated by sieves. The decorticated seed is then ground in a mill, then submitted to hydraulic pressure. Before pressing the meal it is usually heated in a steam jacketed vessel provided with a mechanical stirrer, to facilitate the expressing of the oil. According to Sims' process the oil is extracted from the meal by liquid solvents, bisulphide of carbon, or hydrocarbon oils; 56 lb. hulled seed yield about 2 galls. oil. The huller, mill, and press are the principal pieces of machinery required. Address the dealers who advertise in our columns.

(7) J. T. McC.—Brass work may be brightened with a little oxalic acid dissolved in water and applied with a cloth or brush.

(8) M. Y. D. asks how vanilla bean must be prepared for flavoring ice cream. A. Macerate the pulped bean and percolate with alcohol; dilute the strong extract with water, and filter, if necessary, through white paper.

(9) C. R. M. and others ask how to engrave glass by means of the sand blast? A. Sand driven by an air blast of the pressure of four inches of water will completely grind or depolish the surface of glass in ten seconds. If the glass is covered by a stencil of paper or lace, or by a design drawn in any tough elastic substance, such as half dried oil, paint, or gum, a picture will be engraved on the surface. Photographic copies in bichromated gelatin from delicate line engravings have been thus faithfully reproduced on glass. In photographic pictures in gelatin, taken from nature, the lights and shadows produce films of gelatin of different degrees of thickness. A carefully regulated sand blast will act upon the glass beneath these films more or less powerfully, in proportion to the thickness of the films, and the gradations of light and shade are thus produced on the glass. In the apparatus used air rises through a curved tube, carrying the sand up with it, which is thrown into the air tube by an endless belt of scoops arranged in the lower part of the angular box. The sand is carried up by the air and brought over and down the front air tube, where it discharges with great force upon the surface of the glass, which is contained within the front box and is carried by a belt gradually forward under the blast.

(10) R. A. C. asks how to prepare wax for waxing floors. A. Two oz. of pearl ash, 16 oz. of wax, and about half a pint of water are heated to boiling in a dish, which is frequently agitated, until a thick fluid mass is formed, from which, upon removal from the fire, no watery liquid separates. Boiling water is now cautiously added to the mass, until no watery drops are distinguishable. The dish is again set on the fire, but its contents are not allowed to boil (otherwise myricin would separate out), eight or nine pints of water being added, little by little, with constant stirring. Coloring matter may be added if desired.

(11) A. V. asks how to harden thin steel plates, so as to avoid springing and cracks. A. Fill the holes with fire clay and wire to keep it in place. Heat evenly and slowly in a furnace. Lift the dies from a furnace with the face vertical, and plunge vertically into water heated to about 50° and containing about a half pound salt per gallon. Hold them still at the bottom of the water until cooled.

English Patents Issued to Americans.

From December 10 to December 14, 1880, inclusive. Brake, G. Westinghouse, Jr., Pittsburg, Pa. Electric drill, C. E. Ball, Philadelphia. Furnace and boiler for heating purposes, S. W. Underhill, Croton Landing, N. Y. Gas regulator, H. Barlow, New York city. Hoisting apparatus, F. G. Johnson, Brooklyn, N. Y. Horn blowing apparatus, W. B. Barker, Hoboken, N. J. Horseshoe nail machine, A. Coleman, Providence, R. I. Lamp, W. B. Robins, Cincinnati, Ohio. Mould forming apparatus, S. J. Adams, Pittsburg, Pa. Ore crusher, F. A. Luckenbach et al. New York city. Railway vehicles, J. W. Chisholm, Brooklyn, N. Y. Shaft coupling, T. R. Almond, New York city. Sweat band, T. W. Bracher, New York city. Telegraph, H. Van Hovenburgh, New York city. Telegraphy, S. L. M. Barlow, New York city. Telephone, S. L. M. Barlow, New York city. Telephone, T. A. Edison, Menlo Park, N. J. Vegetable fibers, preparation of, J. G. Stephens, Jersey City, N. J.

[OFFICIAL.] INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending December 14, 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 holders, including: Addressing machine, W. W. Ames; Amalgamating mortar, J. S. Buck; Animal trap, W. J. H. & T. D. Morris; Anti-chafing device, E. Wells; Axle arms for wagons, apparatus for dressing, R. R. Miller; Axle box, S. Marsh; Axles, machine for shaping the arms or spindles of, J. Kritch; Bale band tightener, L. Miller; Baling press, M. Loeser; Band cutter, J. L. & W. E. Alexander; Barrel drying apparatus, E. & B. Holmes; Bed spring, E. L. Bushnell; Bedstead, wardrobe, S. Winslow; Beehive, D. D. Powles; Beer cooler, J. G. Müller; Billiard table, W. Espig; Bit brace, G. L. Holt; Bit brace, S. Rightmyer; Blacking and burnishing the edges of seam stays, machine for, Nichols & Lancaster; Boilers, water indicator for, J. Bridges; Book, copy, E. P. Newman; Boots and shoes, shank stiffener for, A. Leonard, Jr.; Box fastener, H. F. Billings; Bridge links, device for manufacturing, R. W. Rogers; Bridle bit, C. E. Wallin; Button and stud, H. McDougall; Car brake, E. I. Hockaday; Car, stock, D. N. Brownell; Car, stock, J. Montgomery; Cars, spring frame for freight, J. J. Shirley; Carriage, folding top, E. P. Hincks; Cartridge shells, implement for extracting, J. F. Marvin; Casting hollow ingots, mould for, L. S. White; Chair, settee, and vehicle seat, S. C. Hopkins; Chuck, planing machine, B. F. Stephens; Churn head, revolving, J. McDermid; Cider press and mill, combined, W. H. Harman; Cigarette, J. R. Sutton; Clock, calendar, J. E. Young; Clothes wringer, A. Barker; Clutch, friction, W. Oesterlein; Coach pad, E. R. Cahoon; Coffin, W. M. Orr; Coke oven, Markle & Smith; Collar, horse, Finney & Daily; Comb, H. Dawn; Comb teeth, machine for cutting and finishing, T. Schnitzlein; Combs, etc., of horn and shell, construction of, H. P. Prevar; Cooker and drier, steam feed, T. E. Daniels; Cooking apparatus, steam, S. Silsbee; Corn husking and shuck making machine, J. L. L. Knox; Cornice, window, J. W. Campbell; Cotton gin feeder, W. L. Crowson; Cotton press, N. Stedman; Cultivator, J. W. Swickard; Cultivator, wheel, Pendley & Moss; Cultivator, wheel, J. Van Buren; Curtain fixture, J. M. Osgood; Curtain fixture, spring, P. Osgood; Damper, boiler, W. S. Puckett; Damper regulator, automatic, H. Lyons; Damper, stovepipe, Clark & Lambert; Dental amalgam filings, R. S. Williams; Distilling and rectifying apparatus, E. Fox; Door spring, F. W. Smith; Dredge, steam vacuum, A. C. Whittier; Dredge, steam vacuum, C. Whittier; Dyestuff or coloring matter, manufacture of, A. Baeyer; Ear drum, artificial, H. P. K. Peck; Eaves trough hanger, J. H. Serverding; Eggs, tray for packing, N. Schroder; Electric lighting switch, W. E. & W. Sawyer; Electric machine, dynamo, W. Sawyer; Electrical indicators, automatic transmitter for, C. H. Pond; Elevator, B. F. Walters; Elevator safety stop, J. G. Gerding; Ellipsograph, A. T. Lundqvist; End gate, T. Dwyre; Envelope machine, E. Pittmann; Excavating and dredging machinery, J. T. ParLOUR; Eyeglasses, F. Hopkins; Fan, H. Silberman; Fare register, J. B. Benton; Faucet and waste valve, T. Hanson; Feed box for animals, automatic, Blaisdell & Wright; Fence post, W. De Lany; Fibers etc., animal, Finn & Archer; Thompson; Fishing lines, float and sinker for, T. H. Chubb; Fishing rods, metallic reel seat for, T. H. Chubb; Fishing rods, reel fastener for, T. H. Chubb; Flower pot, J. A. Conway; Fog horn for vessels, R. Chester; Fruit, etc., apparatus for bleaching, O. F. Tiffany; Fruit drier, T. E. Curtiss; Fruit gathering apparatus, L. D. Clairoux; Fumigating compound, A. E. Arnold; Furnace, J. Sawyer; Gas, apparatus for generating hydrocarbon illuminating and heating, W. P. Patton; Gas burner indicator, J. Manuel; Gate, J. V. Baird; Gate, E. J. Hart.

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