

Business and Personal.

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Agricultural Implements and Industrial Machinery for Export and Domestic Use. R. H. Allen & Co., N. Y.

Latest and Best Books on Steam Engineering. Send stamp for catalogue. F. Keppy, Bridgeport, Conn.

Fire Hose, Rubber Lined Linen and Cotton, finest quality. Eureka Fire Hose Co., 13 Barclay St., New York.

Tool Chests filled with the very best tools are furnished by James T. Pratt & Co., 53 Fulton St., New York. Circulars sent.

Paper Pulley Cover to prevent Belts from slipping—Patent for Sale. Address J. de Vries, 114 Wooster St., New York.

Middleton's Chemical Writing Fluid—Best made in America. Send for Price Lists. Union Chemical Co., Harrisburg, Pa.

English Patent for Sale—New Invention of great utility. Now having large sale in U. S. and Canada. W. H. Hayward, 294 Broadway, New York.

Split-Pulleys and Split-Collars of same price, strength and appearance as Whole-Pulleys and Whole-Collars. Yocom & Son, Drinker St., below 147 North Second St., Philadelphia, Pa.

Rare Chance—Steam Factory for Wagons, Carriages, Agricultural Implements, &c., at Lisbon, Iowa. \$15,000 worth of property for \$10,000. Terms easy. For particulars, inquire of W. G. Power, Mt. Vernon, Iowa.

The Gothic Furnace for Wood and Coal combines many improvements in heating, after 15 years of trial stands unrivalled in economy, durability, purity of air. Send for catalogue. A. M. Lesley, 226 W. 23d St., N. Y.

Hearing Restored—Great invention by one who was deaf for 20 years. Send stamp for particulars. Jno. Garmore, Lock-box 905, Covington, Ky.

Wanted—Situation by a Practical Chemist experienced in manufacture of dyers' chemicals, fertilizers, utilization of ammonia-water. Humboldt Bank, Erie, Pa.

Picture-Frame Machine—Foot or Power. Makes 5 frames easier and better than 1 by old way. New thing. \$50 to \$125. E. L. Eastman & Co., Washington, D. C.

At a Bargain—Centennial Exhibition Shafting. Four lines of 2 1/2 and 3 in., complete. 65 ft., 105 ft., 120 ft., and 170 ft. A. B. Cook & Co., Erie, Pa., or D. 9, 72, Machinery Hall.

Wanted—A first class 2d Hand Foot Lathe, Tools, &c. Screw cutting preferred. W. N. Callender, Albany, N. Y.

Hyatt & Co.'s Varnishes and Japans, as to price, color, purity, and durability, are cheaper by comparison than any others extant. 236 Grand St., N. Y. Factory, Newark, N. J. Send for circular and descriptive price list.

For 13, 15, 16 & 18 in. Swing Engine Lathes, address Star Tool Co., Providence, R. I.

The Scientific American Supplement—Any desired back number can be had for 10 cents, at this office, or almost any news store.

To stop leaks in boiler tubes, use Quinn's Patent Ferrules. Address S. M. Co., no. Newmarket, N. H.

Water, Gas, and Steam Pipe, Wrought Iron. Send for prices. Bailey, Farrell & Co., Pittsburgh, Pa.

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

Shaw's accurate and U. S. Standard Mercury Gauges, Steam, Vacuum, Hydraulic, and Test Gauges, &c., 915 Ridge Avenue, Philadelphia, Pa.

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, New York.

Models for Inventors. H. B. Morris, Ithaca, N. Y.

M. Shaw, Manufacturer of Insulated Wire for galvanic and telegraph purposes, &c., 259 W. 27th St., N. Y.

F. C. Beach & Co., makers of the Tom Thumb Telegraph and other electrical machines, have removed to 530 Water Street, New York.

Pat'd Graining Stencils—J. J. Callow, Cleveland, O.

Lathe Dogs, Expanding Mandrels, Steel Clamps, &c., for Machinists. Manufactured by C. W. LeCount, So. Norwalk, Ct. Send for reduced Price List.

Driving Belts made to order, to accomplish work required. Send full particulars for prices to C. W. Army, 148 North Third St., Philadelphia, Pa.

"Dead Stroke" Power Hammers—recently greatly improved, increasing cost over 10 per cent. Prices reduced over 20 per cent. Hull & Belden Co., Danbury, Ct.

Power & Foot Presses & all Fruit-can Tools. Ferracute Wks., Bridgeton, N. J. & C. 27, Mch. Hall, Cent' 1.

No. 3 Woodworth Planing, Tonguing, and Grooving Machine for Sale Cheap. Address Wm. M. Hawes Fall River, Mass.

Steel Castings, from one lb. to five thousand lbs. Invaluable for strength and durability. Circulars free. Pittsburgh Steel Casting Co., Pittsburgh, Pa.

For Best Presses, Dies, and Fruit Can Tools, Bliss & Williams, cor. of Plymouth and Jay, Brooklyn, N. Y.

Hotchkiss & Ball, Meriden, Conn., Foundrymen and workers of sheet metal. Fine Gray Iron Castings to order. Job work solicited.

For Solid Emery Wheels and Machinery, send to the Union Stone Co., Boston, Mass., for circular.

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Boring metals. E. Lyon, 470 Grand Street, New York.

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

Yacht and Stationary Engines, sizes 2, 4, 6 and 8 H. P. Best for price. N. W. Twiss, New Haven, Conn. Shingle, Heading and Stave Machine. See advertisement of Trevor & Co., Lockport, N. Y.

Wanted—On royalty, by a reliable house, some good practical invention in Cast Iron, Brass, or Machinery, to work as a specialty. Address Foundry, Station B, Philadelphia, Pa.

D. Frisbie & Co. manufacture the Friction Pulley—Captain—best in the World. New Haven, Conn.

The best Sewing Machine in the world—Makes the Lock Stitch, the Chain Stitch, and Embroidery Stitch from two whole Spools. Agents wanted everywhere. G. L. Du Laney & Co., 744 Broadway, New York City.

Patent Scroll and Band Saws, best and cheapest in use. Cordesman, Egan & Co., Cincinnati, Ohio.

Chester Steel Castings Co. make castings twice as strong as malleable iron castings at about the same price. See their advertisement, page 269.

Notes & Queries

F. P. will find directions for writing on glass on p. 203, vol. 33.—S. B. will find directions for dissolving mica on p. 241, vol. 32.—J. A. L., J. O. M., and T. B. will find directions for ebonizing wood on p. 50, vol. 33.—C. R. can calculate the horsepower of his engine by the formula given on p. 33, vol. 33. As to speeds of pulleys, etc., see p. 180, vol. 26.—T. S. should galvanize his castings. See p. 315, vol. 33.—B. B. will find a description of an incubator on p. 277, vol. 32.—A. C. G. should use Indian ink for architectural drawing.—C. P. R. R. will find directions for making rubber stamps on p. 156, vol. 31.—C. H. will find a recipe for a depilatory on p. 183, vol. 34.—M., G. C. M., C. H. L., W. B., H. H., J. L., T. B. C., and many others who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns, all of whom are trustworthy firms, for catalogues.

(1) C. B. W. says: 1. Why is it that there are so many more square inches in the smoke arch of a locomotive than there are in the flues, when the steam exhaust and petticoat pipe are in their places? A. To give the cinders a chance to fall in the smoke box. 2. Would there be the same draft to the locomotive if the arch only had the same square inches in it as there are in the flues when the draft is made by the exhaust steam? A. We think not.

(2) C. W. J. says: 1. My house is in the cottage style, one story high; the main body is 32x14 feet. The roof is a hipped roof, with pediment in front of main roof. The roof is perforated by two terra cotta flues. Would you advise the use of lightning rods? A. Yes. 2. What kind and size rods would insure safety? A. Use iron rods half an inch in diameter, and terminate them in the earth where it is constantly wet. Connect all the rods together at the top of the house and in the earth. Also connect lateral rods at the earth to insure good contact with the ground. 3. The roof around the terra cotta leaks. What kind of cement or plaster would effectually stop the damage and annoyance? A. See p. 183, vol. 33.

(3) H. P. S. asks: 1. What is the hardest metal or composition for rollers, that will not rust or corrode by salt water or dampness? A. The new mixture of metals termed phosphor bronze. See p. 180, vol. 32. 2. What is the hardest and most durable metal to use for rollers, and what is the method of hardening? A. Steel, hardened as described on p. 51, vol. 30. 3. What is the cheapest method of turning or grinding chilled cast iron rollers or boxes? A. See p. 559, vol. II, SCIENTIFIC AMERICAN SUPPLEMENT.

(4) H. P. & S. say: We have one high pressure engine of 14 inches bore and 36 inches stroke, with the ordinary slide valve. It makes 48 revolutions per minute, driving our whole works with 45 lbs. of steam. Every time the engine exhausts, there is a drag to it, and a kind of a sucking noise which we cannot stop. The valve has got about 1/8 inch lead, and takes her steam alike at both ends, and the crank passes her centers easily. The slide valve sets square on its face and perfectly tight; we have tried it, and it will not leak a drop of water. How can we stop this drag on our exhaust? A. There is probably not enough steam lap on the valve to give a free exhaust, in which case the lead may be made 1/8 inch.

(5) J. D. H. says: What is the cause of the long lines found cut in the piston of a steam engine as well as in the cylinder? A. Abrasion or cutting, from grit in the lubricant, bad fitting, or other cause.

(6) A. F. & Co. say: We are running an old fashioned 10x24 inches engine, with steam chest on top of cylinder. It cuts off the steam at 4 inches from the end of stroke, is making 112 revolutions per minute, and drives 2 runs of 4 feet stones, grinding 5 bushels wheat per hour, and driving the necessary machinery. We carry 80 lbs. of steam on a 4 x 12 feet tubular boiler. Intending some time to put in an extra run, can we increase the power of an engine by putting in a longer valve, so as to cut off the steam, say at 3/8 stroke? We have ample room in steam chest and can lengthen stroke of valve both by the eccentric and the rod shaft. A. You would not increase the power by cutting off earlier in the stroke.

(7) M. J. T. asks: What metal is susceptible of the highest polish? A. Steel.

(8) N. E. L. says: 1. What is Mr. Corliss' improvement on the steam engine? A. Corliss connected the governor to cut-off valves placed close to the bore of the cylinder, and thus governed the engine by cutting off the steam earlier or later in the stroke, according as the amount of the load diminished or increased, and by this means effected a saving in fuel. 2. Was he the first man to use steam expansively? A. No. 3. What percentage does the Corliss save by placing the valves near the ends of the cylinders? A. This depends upon the length and size of the ports of which comparison is made. 4. What percentage of fuel ought I to save by an expansion valve? A. It depends upon the degree of expansion used and other circumstances. 5. I am going to take off my plain slide valve, give my eccentric a longer throw, add more lap to the valve, and let steam follow about one third. The engine is a 4 horse portable. We run two lathes, emery wheel, etc. A. A plain slide valve will give a very distorted action if given lap sufficient to cut off the steam at one third of the stroke as you propose. See p. 373, vol. 31.

(9) J. W. D. E. asks: If 50 lbs. tractive force will be sufficient to draw a certain load

along a level railway track at the rate of 5 miles per hour, what will be the increase of force necessary to draw the same load at an increased speed of 10 miles per hour? A. About 12 lbs. The power required will of course be more than twice as great, since there is an increased resistance to be overcome at a double rate of speed.

(10) H. A. H. says: 1. I have constructed a galvanic battery, but it will not work. I took a two gallon stone jar, and in the jar I put a zinc cylinder; inside of that I put a flower pot (for a porous cup) and inside of the flowerpot I put a piece of copper. I then attached a copper wire to the zinc cylinder, and one to the copper in the flower pot; then I made a solution of sulphate of copper and put it into the flower pot next to the copper, and a solution of common table salt and put it into the jar next to the zinc cylinder; then I connected the two wires at their other extremities, but I get no sign of electricity. Please let me know what is wrong. A. The battery you describe would produce a current, although not a very strong one. 2. Can I make Leyden jars out of glass beer bottles if I cut the necks off? A. Yes, by covering the inside and outside with tin-foil.

(11) W. H. J. asks: Will you please explain how a pair of car wheels get around a curve? A. argues that the inside wheel slips and the outside wheel slides. B. argues that only the inside wheel slips. C. argues that only the outside slides. Who is right? A. It might be possible for either action to occur in certain cases. Generally, on moderate curves, we think C's view is the most correct.

C. W. J. asks: How can I preserve guava and citron?—C. H. T. asks: Can you tell me of some way (other than by grinding or filing) by which the black caused by hardening can be removed from the steel, leaving the steel gray?—C. H. L. asks: How can I make a good flavoring for cigars?—P. S. K. asks: How can I make Belfast ginzer ale?

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

- On Rambling Notes. By L.
On Disinfectants, etc. By H. J.
On a Point on a Connecting Rod. By W. H. P.
On a Solar Phenomenon. By S. J. W.
On a Soil Pipe. By J. D. S.
On Squeaking Boots. By P.
On Spiritualism. By B. J. L. M.
On Workmen and their Instructors. By S.
On Patents. By G. W. H.

Also inquiries and answers from the following: V.—E. A. D.—A. J. C.—C. C. R.—C. C.—W. C. F.—J. R. N.—W. W.—J. B. ●

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are sent: "Who makes rain gages? Who sells the improved hydraulic ram, described on p. 259, vol. 31? Who sells ice-making machinery? Who sells propellers suitable for boats 12 feet long? Who sells machines for bending, punching, and rounding band iron? Who sells oilstones? Who sells surface butt hinges, suitable for cupboard doors? Who sells small knife blades? Who sells matches for use in the open air? Who sells folding tents?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH Letters Patent of the United States were

Granted in the Week Ending

September 19, 1876,

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, 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 such as Air pump, Animal substances, Arrow gun, Artificial coal, Artificial marble, Artificial marble burial case, Atomizer, Automatic air compressor, Ax polls, Baby jumper, Barbed fence wire, Barrel, Barrel-filling machine, Bed bottom, Bee hive, Bellows valve, Blocksheave, Blotting pad, Blower fan, Blowing machine, Boring machine, Bottle stopper, Brush, Buckle, Buckskin, Bung extractor, Burial case, Button, Can, shipping, Cans, Car and carriage step, Car brake, Car brakes, Car brake, automatic, Car brake hanger, Car bumper, Car coupling, Car coupling, F. H. D., Car coupling, J. H. Parmelee, Car coupling, E. O. Richard, Car coupling, Soule & Daymon, Car coupling, J. H. Wood, Car replacer, Car truck, Carbuiretter, Carpet fastener, Carpet sweeper, M. R. Bissell, Carpetsweeper, E. W. Smith, Cart saddle, Cartridge shells, Casing for lead pipes, Cast off for sails, Chain pump, Channeling boot soles, Check hook for harness, Cheese manufacture, Chimney, Churn, Churn motor, Cigar mold, Clasp for blanket straps, Clay grinder, Clover, hulling and thrashing, Coffee and tea pot, Collar button, Compression faucet, Connection for lead pipes, Cooper's croze, Corn planter, Cotton bales, Cotton press, Cover for sap pails, Crosscut saw handle, Cultivator, E. A. Aderholt, Cultivator, H. C. Briggs, Cultivator, E. W. Joy, Curry comb, Cutting textile materials, Damper regulator, Detachable meat hook, Die for ornamenting leather, Die for cutting fence bars, Dropper for fertilizers, Dumping wagon jack, Electrical circuit, Electromagnetic signal, Elevator, Explosive composition, Farm fence, Fastening soles of boots, Fifth wheel, Filter, feed water, Fire, extinguishing, Fire kindler, Fire place grate, Flask for molding, Flume, Fluting iron, Foll condenser, Folding chair, Folding seat, Folding table, Forging bolt blanks, Fountain nozzle, Frame for show cards, Friction feed clutch, Fruit jar rack, Furnace grate, Furniture caster, Garden implement, Gas burner, Gold foil condenser, Grate bar for furnaces, Grinding machine, Gun cleaner, Hame for harness, Hand cultivator, Hand signal for railroads, Harrow, Harvester, Hat box, kneeling stool, Hay rack, Hides during tanning, Hinge, Hinge joint, Holdback attachment, Hook water conductor, Hoop machine, Horse hay rack, Horse power, Horse rake, Horseshoe nail die, Horseshoes, making, Hose coupling, Hot air stove attachment, Hydraulic nozzle, Injector, Iron wire, straightening, Ironing apparatus, Jointing, saws, machine for, Kiln, G. Mendheim, Knife, fork, and steel rest, Land drag and clod crusher, Lantern, J. Krummenauer, Lantern, S. H. Miller, Lasting machine, Lime and cement, making, Lockwork for clocks, Magneto-electric machine, Malt drying kiln, Mandrel or core for casting, Measuring chain, Mechanical movement, Metals in forges, Middlings separator, Milk cooler, Mine gases, testing.