

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.

Chard's Extra Heavy Machinery Oil. Chard's Anti-Corrosive Cylinder Oil. Chard's Patent Lubricene and Gear Grease. R. J. Chard, Sole Proprietor, 6 Burling Slip, New York.

John K. S. Stout, Engineer at Bealeston & Woerz's Empire Brewery, writes to the H. W. Johns Mfg. Co. of this city as follows: "Having used your Asbestos Cement Felting on Boilers, your Single and Double Air Chamber Covering on Steam Pipes, Heaters, and Tanks, and your Special Coverings for Cold Water Tanks and Pipes, I take pleasure in saying that all of them are superior to any other coverings I have ever seen, and are even better than stated by you."

The Celebrated "Schenck" Planers and Matchers, and other Wood-Working Machines. H. B. Schenck, Matteawan, N. Y.

Small Brass and Iron Rivets made to order by Blake & Johnson, Waterbury, Conn.

Clark Rubber Wheels adv. See page 172.

Wanted.—Single or double engine, 1,000 horses power. Description and price to C. W. Copeland, 24 Park Place. Fine Gray Iron Castings to order. A. Winterburn, Foundry, 16 De Witt St., Albany, N. Y.

Recipes and Information on all Industrial Processes. Park Benjamin's Expert Office, 50 Astor House, N. Y.

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., Pitts'g, Pa.

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

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

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

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

Blake's Belt Studs are best and cheapest fastening for all belts. Greene, Tweed & Co., N. Y.

Power, Foot, and Hand Presses for Metal Workers. Lowest prices. Peerless Punch & Shear Co., 32 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.

For the best Stave, Barrel, Keg, and Hogshead 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. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

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

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.

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

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

Sheet Metal Presses, Ferracuta Co., Bridgeton, N. J. Wright's Patent Steam Engine, with automatic cut off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 147. For Separators, Farm & Vertical Engines, see adv. p. 157.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 157.

For Patent Shapers and Planers, see illus. adv. p. 156.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 157.

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.

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.

Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 172. For Yale Mills and Engines, see page 173.

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.

Improved Solid Emery Wheels and Machinery, Automatic Knife Grinders, Portable Chuck Jaws. Importers, that users should have prices of these first class goods. American Twist Drill Co., Meredithville, N. H.

For Standard Turbine, see last or next number.

Burgess' Non-conductor for Heated Surfaces; easily applied, efficient, and inexpensive. Applicable to plain or curved surfaces, pipes, elbows, and valves. See p. 234.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'f'rs, 23d St., above Race, Phila., Pa.

Don't buy until you see the \$4 Drill Chuck; holds 0 to 9-16. A. F. Cushman, Hartford, Conn.

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

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.

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

For Wood-Working Machinery, see illus. adv. p. 190.

Eclipse Portable Engine. See illustrated adv., p. 189.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 183.

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

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

Hydraulic Cylinders, Wheels, and Pinions, Machinery Castings; all kinds; strong and durable; and easily worked. Tensile strength not less than 65,000 lbs. to square in. Pittsburgh Steel Casting Co., Pittsburg, Pa.

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

Elevators.—Stokes & Parrish, Phila., Pa. See p. 189.

Penfield (Pulley) Blocks, Lockport, N. Y. See ad. p. 189.

4 to 40 H. P. Steam Engines. See adv. p. 189.

Lightning Screw Plates and Labor-saving Tools, p. 190.



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) O. V. D.—In replying to your query as to the proper strength for telephone magnets, in last issue of this paper, an obvious error occurs. The magnet should support three or four times its own weight, instead of three-fourths as there given.

(2) W. H. C. asks: 1. What kind of boiler and fuel should be used in close apartment to run a small engine without vitiating the air? A. You can use a tubular (upright) boiler with gas or alcohol lamps, but you should provide a pipe to carry off the products of combustion. 2. Also what is the best book for a student of mechanical drawing to begin with having no previous considerable knowledge of geometry or mathematics? A. Professor MacCord's drawing lessons in SCIENTIFIC AMERICAN SUPPLEMENT will meet your wants.

(3) W. P. asks if quicklime is a proper disinfectant for a cellar where milk is kept. A. Yes.

(4) W. writes: The exhaust pipe from a 200 horse power steam engine has a back pressure valve in it. The escaping steam, after passing the valve, makes a disagreeable noise. How can this be avoided cheaply? A. The noise will be very much reduced by surrounding the outlet or escape, with a wood pipe, 2 feet or 2 1/2 feet diameter or square, and say 12 to 16 feet in length.

(5) W. H. W. asks: 1. Are not the continuous lines of metallic pipes for gas, water, etc., in city buildings a considerable protection from the injurious effects of lightning? A. Yes, they form an excellent and extensive ground. 2. Do they not render any severe injury to the inmates improbable by affording the electricity a ready escape to the earth? A. It is undoubtedly true that accidents have been averted by the presence of the pipes, and it is also true that the pipes afford so many avenues of escape for the lightning that under certain conditions the danger is increased. For example, suppose a person standing in the path of the lightning between the striking point and the nearest pipe, it is probable that he would be selected as a conductor. 3. Will not a metal roof with water conductors leading to drain afford some protection? A. Yes, to a certain extent, but if several good lightning rods were connected with the roof and well grounded by connecting their lower ends with the gas and water pipes, and by extending them eight or ten feet in a trench made in earth that is continually moist and filled with coke packed around the rod, your protection will be as good as it is possible to secure. 4. Would the risk from lightning be materially increased by placing a wooden pole, with an iron pin on top for a weather vane, two or three feet above a low chimney on a city house with gas and water pipes, metal roof, etc., but without a lightning rod? A. The risk would be increased. All elevated points are sources of danger unless provided with a good rod, well grounded.

(6) T. W. O. asks: 1. Can you give me a process of bleaching animal size, such as is used by papermakers? A. Try a small quantity of alum and sulphite of soda (freshly prepared). 2. What will prevent the forming of rosin size. The size is made of rosin and sal soda. A. A trace of fine sperm or olive oil will probably obviate the difficulty. An excess must be avoided.

(7) "Enterprise" asks: What tools, if any, is a machinist supposed to furnish, at his own expense, when in the employ of other parties? A. All of what are usually termed "hand" tools; but if any are lost

or destroyed on the work they are chargeable, also all necessary repairs while used on the work are chargeable.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH Letters Patent of the United States were Granted in the Week Ending August 24, 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 inventions with patent numbers and names, including: Adjustable chair, J. M. Taggart; Air engine, A. K. Rider; Awning window, J. E. Dwinelle; Bale tie, H. Riesel; Basket, folding, C. J. Underwood; Beer, etc., apparatus for preserving, P. Kingsland; Boot and shoe, S. E. Thecker; Boot and shoe jack, Z. Beaudry; Bottle for aerated liquids, siphon, J. Matthews; Bottle stopper, A. Albertson; Bottle stopper, A. C. Schulz; Bottle stopper and fastening, W. H. Bate; Box clamp, S. Murry; Brick press box, G. H. Thompson; Broom, Schosson & Markham; Buckle, J. F. Molloy; Button, W. W. Covell; Button, C. L. Hazard; Caloric engine, J. Hook; Car brake, automatic, Card & Randolph; Car brake coupling, W. N. Haring; Car dust guard, F. M. Stevens; Car platform, R. W. Cowell; Car, stock, W. S. Hunter; Car wheel, H. C. Smith; Cars, means for coupling, W. N. Haring; Carbureting air or gases for illuminating purposes, apparatus for, W. West; Carpet cleaner, T. Ferry; Cartridge loader, J. L. Osgood; Castings, apparatus for producing chilled, W. A. Reid; Chain, drive, E. L. Howe; Chair and stool, G. K. Reist; Check book, pocket, C. B. Perrico; Chimney cap, N. U. Walker; Churn, Heck & Reed; Churn, J. M. Mattoon; Churn motor, S. T. Carter; Churn power, C. Howard; Cider mill, J. Mercier; Clothes pounder, D. M. Skinner; Coal washing machine, A. C. Jorcan; Coffee and tea pot, steam, S. Jones; Coffee roaster, C. L. Hall; Condenser tube, surface, H. See; Cooker, steam, I. B. Olmsted; Copying pad, M. Alisoff; Cork grinding machine, F. Latta; Corset, S. B. Ferris; Corset spring, M. K. Bortree; Cotton cleaner, W. Herrmann; Cultivator, H. Ives; Cutlery handles, attaching, Tramball & Blaydes; Damper, cooking stove, I. A. Sheppard; Desk and seat, school, Turner & Logan; Diamond polishing machine, A. Hessels; Door alarm, J. Simon; Door plate, card receiver, and indicator, combined, W. P. Marshall; Drain tile gate, F. Barst; Electric current, apparatus for measuring the, J. R. Finney; Electrical switch board, E. T. Gilliland; Elevator gate, automatic, G. Ackermann; Exercising machine, J. R. Judd; Extension table, J. J. McKnight; Fanning mill, H. H. Seelye; Fat from animal substances, apparatus for obtaining, V. Gastard; Feed, automatic boiler, N. Curtis; Fifth wheel platform, A. H. Beach; Filter, N. Downes; Filter, McCauley & Cady; Filter, water, J. Wilsey; Firearms, safety lock for, F. Crutchley; Fire escape ladder, R. Harris; Fire extinguisher, H. S. Parmelee; Fishing lines, sinker and weight for, T. M. Foote; Floating elevator, P. H. Gill; Folding chair, J. E. Wakefield; Foot rest and boot jack, combined, L. C. Boyington; Game counter, N. C. Cooley; Gas from hydrocarbon liquid and water, apparatus for making illuminating, E. E. Holmes; Gas generators, acid chambers, and fountains for mineral waters, lining, J. Collins; Gate, R. M. Grier; Gate, W. Robinson; Gate hanger, J. C. Baumgartner; Grain band cutter, M. G. Hubbard; Grain binder knot tier, F. W. Randall; Grain drier, W. Eberhard; Grater, vegetable, Fine & Locke; Grinding mill, A. Voelk; Grits, etc., apparatus for separating and cleaning, T. Bühlmann; Gun, machine, E. G. Parkhurst; Harness box loop, J. C. Brightman; Harness pad, R. G. Leighton; Harrow frame clamp, A. Wilcox; Harvester, S. D. Bates; Hay and straw press, L. Kirk; Hay raker and loader, D. W. Bovee; Head rest, F. M. Hibbard; Heating furnace, W. C. Miller; Hedge trimmer, D. W. Burroughs; Heel, shank, and counter supporter, H. Flindt; Hinges, manufacture of, C. Lanz; Hooks, manufacture of screw, W. H. Richards; Horse power, W. H. De Loach; Hose carriage, J. S. Campbell;

Table listing inventions with patent numbers and names, including: Hose pipe, J. Bestwick; Hot air furnace, Goodenow & Owens; Insulating compound, W. W. Jacques; Iron, manufacture of, Hamilton & Griffith; Iron, uniting wrought and cast, M. Burns; Jewelry, A. W. Magerhans; Knitting machine feed mechanism, circular, J. Bayfield; Lace fastening for gloves, etc., A. G. Fay, Jr.; Lamp, F. G. Farnham; Lance, bomb, E. Pierce; Latch, W. E. Hall; Latch, W. E. Sparks; Letter box, W. W. Barnes; Lock case, E. Parker; Lock nuts, machine for slitting, A. Johnson; Lubricating can, illuminated, W. Cooke; Lubricator, S. H. Jenks; Lubricator, R. Whitehill; Mail and traveling bag fastening, G. Wood, Jr.; Mail bag fastening, H. Heitze; Medical compound, J. A. Pratt; Milk can, W. H. Burnett; Mill for grinding corn in shuck, I. A. Hedges; Mineral waters, apparatus for generating gas for, J. Collins; Monkey wrench, W. H. Glover; Motion, device for converting, T. Donato; Nail driving machine, J. J. Burk; Nailless box, Maloney & Compton; Oil can, P. Wall; Oil vapor, apparatus for fractionally condensing, H. Frasch; Package wrapping machine, I. M. O'Donel; Paper and cloth, coating, A. Sackett; Paper collar, A. Shedlock; Paper machines, felt cleaning apparatus for, Holloway; Paper, etc., machinery and apparatus for glazing or for coloring and glazing the surface of, J. Jeffs; Paper strip from which to manufacture paper bobbins, D. M. Church; Pen fountain, J. H. Connell; Photographic camera, I. H. Stoddard; Pianoforte hammer, C. F. T. Steinway; Picture frame, L. Brower; Pillows, beds, etc., material for stuffing, R. Stillwell; Pipes, expansion connection for, J. O. Davis; Planing blind slats, machine for, G. W. Austin; Planter and fertilizer distributor, seed, R. M. Alexander; Planter, corn, D. Golden; Planter, corn, W. H. Johnson; Planter, corn, J. H. Neale; Planter, corn, T. S. Richards; Planter runners, machine for bending and shaping corn, M. Runstetler; Planter runners, machine for upsetting blanks for corn, M. Runstetler; Planter, seed, M. Ward; Plow, Miller & Lighthall; Plow, W. V. Turner; Plow, ditching, J. C. McClurkin; Pneumatic engine, O. S. Presbrey; Pocket, F. J. Rosenberg; Portable house, E. Lee; Portfolio, C. J. Brown; Powder flasks, charger for, G. A. & G. D. Capewell; Printer's galley, Bateman & Hooper; Printing block, composition, J. E. Jefferies; Propeller shaft, screw, J. Fisher; Pulp, etc., conversion of marine plants into, E. V. J. L. Gorges; Pump, W. D. Trahern; Pump bucket, chain, W. P. Harrison; Pump valve, H. R. Barber; Pumps, detachable bracket for steam, E. E. Miller; Radiator, T. Fairbanks; Radiator, E. E. Gold; Railway brake, automatic, A. S. Vogt; Reflector, M. C. Meigs; Refrigerator, D. S. Reed; Register foot rest, B. Y. Conklin; Rolling hoop iron and tube skelps, roll for, N. King; Rotary engine or pump, S. D. & J. Barrow; Rudder, U. B. Scott; Rudder for vessels, F. G. Mareglia; Sash fastening, L. D. Cleaveland; Saw, drag, N. L. Brown; Saw teeth, device for swaging, F. M. Ricketts; Sawing machines, frame for scroll, H. L. Beach; Scale beam, multiplying, C. E. Allen; Scarf, neck, A. E. Convers; Scarf ring, G. H. Folts; Scraper and grader, road, A. H. & C. H. Kimball; Scraper, grader, and leveler, road, E. J. Howland; Screw and bolt lock, J. A. Kernochan; Seeder and fertilizer, H. R. Hawkins; Sewing machine, C. F. Harlow; Sewing machine, welt guide for, T. B. Young; Shoe, W. H. Bussey; Shoe heel protector and supporter, rubber, G. Desbrough; Shot case for displaying, L. V. Curry; Slate cleaner, G. Elsey; Sleigh, B. Burr; Smoke bell, A. C. Kendel; Snap hook, G. D. Mosher; Soda water dispensing apparatus, A. D. Puffer; Spark arrester, D. R. Proctor; Spinning or twisting yarns or strands of cordage, nier of, W. C. Boone; Spokes, gauge for sawing, J. Dewitz; Starching machine, E. B. Blackwell; Steam boiler, S. D., & J. Barrow; Steam boiler, portable, J. R. Mitchell; Steam engine, W. S. Fiske; Steam engine, portable, H. K. Kriebel; Steering apparatus for vessels, power, A. J. Stevens; Steering mechanism, steam, C. R. Simey; Stereotype plates, machine for trimming, W. J. Johnson; Stone crusher, C. G. Buchanan; Stove, air heating, J. Batchelder, Jr.; Straw cutter, T. Hartley; Sugar moulding machinery, W. H. Westler; Tannic acid, obtaining, J. Holtz; Telegraph conductors, underground conduit for, S. E. Coddling; Telegraph, railway car, J. R. Finney; Telegraph railway car, T. A. B. Putnam; Telegraph repeater, F. Catlin; Telephone, J. P. McDermott; Telephone, J. M. Stearns, Jr.; Telephone transmission, G. L. Anders; Thermal motor, F. Reinhold; Thill coupling, W. C. Shipherd; Thill coupling, E. Soper; Torch, J. A. McPherson; Toy, E. L. Curial;