

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 consumption cure of the age is certainly Van Beil's 'Rye and Rock.'

To Marble Workers.—Good opening for a yard; small capital required. Address A. Gregg, San Sala, Texas.

Wanted—A competent Card Room Overseer for 120 Lowell cards. Address, with reference and wages expected, Natchez Cotton Mills, Natchez, Miss.

When your boiler front is covered with mud from the try cocks, it is a sure sign that no time should be lost in applying Hotchkiss' Mechanical Boiler Cleaner. Send for circular. 84 John St., New York.

The city of Natchez is contemplating the erection of water works, and solicits communications and estimates from parties engaged in that line. Address Henry C. Griffin, Mayor, Natchez, Miss., Lock Box 258.

Party owning Sash, Door, and Blind Factory, wishes to add to his manufacture some specialty (a good patent preferred) which will meet with large and profitable sales. Address X. Y. Z., Crown Point, N. Y.

Agricultural Engines for sale cheap by S. J. Benedict, East Randolph, N. Y.

Peck's Patent Drop Press. See adv., page 76.

For Sale.—Turret Lathe, with Chaser Bar. No. 1 and 4 Root Blowers. B. & W., 261 N. 3d St., Phila., Pa.

Tarred Roof'g, Sheath'g Felts. Wiskeman, Paterson, N. J.

Supplement Catalogue.—Persons in pursuit of information on any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

List 26.—Description of 2,500 new and second-hand machines, now ready for distribution. Send stamp for the same. S. C. Forsaith & Co., Manchester, N. H.

Combination Roll and Rubber Co., 27 Barclay St., N. Y. Wrinser Rolls and Moulded Goods Specialties.

Punching Presses & Shears for Metal-workers, Power Drill Presses, \$25 upward. Power & Foot Lathes. Low Prices. Peerless Punch & Shear Co., 115 S. Liberty St., N. Y.

Improved Skinner Portable Engines. Erie, Pa.

The Eureka Mower cuts a six foot swath easier than a side cut mower cuts four feet, and leaves the cut grass standing light and loose, curing in half the time. Send for circular. Eureka Mower Company, Towanda, Pa.

Pure Oak Leather Belting. C. W. Arny & Son, Manufacturers. Philadelphia. Correspondence solicited.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

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

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

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

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

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 10 Cortlandt St., N. Y.

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

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

For best Duplex Injector, see Jenks' adv., p. 60.

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

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, Brooklyn, N. Y. 4 to 40 H. P. Steam Engines. See adv. p. 61.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 78.

Houghton's Boiler Compound contains nothing that can injure the iron, but it will remove scale and prevent its formation. Houghton & Co., 15 Hudson St., N. Y.

Long & Allstatter Co.'s Power Punch. See adv., p. 77.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 77.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 94. Safety Boilers. See Harrison Boiler Works adv., p. 93.

Saw Mill Machinery. Stearns Mfg. Co. See adv. p. 78.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 93. Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 94.

For Machinists' Tools, see Whitcomb's adv., p. 94.

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

Turbine Wheels; Mill Mach'y. O. J. Bollinger, York, Pa. For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N. Y.

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

Ball's Variable Cut-off Engine. See adv., page 108.

Clark Rubber Wheels adv. See page 108.

Brass & Copper in sheets, wire & blanks. See ad. p. 109.

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.

The Twin Rotary Pump. See adv., p. 78.

Wren's Patent Grate Bar. See adv. page 109.

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

Berryman Feed Water Heater. See illus. adv., p. 110.

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

Eagle Anvils, 10 cents per pound. Fully warranted.

Geiser's Patent Grain Thrasher, Peerless, Portable, and Traction Engine. Geiser M'Fg Co., Waynesboro, Pa.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 109. Baxter Wrenches fit peculiar corners. Indispensable to first-class mechanics. Greene, Tweed & Co., N. Y.

For the manufacture of metallic shells, cups, ferrules, blanks, and any and all kinds of small press and stamped work in copper, brass, zinc, iron, or tin, address C. J. Godfrey & Son, Union City, Conn. The manufacture of small wares, notions, and novelties in the above line, a specialty. See advertisement on page 62.

Houston's Sash Dovetailing Machine. See ad., p. 110. Comb'd Punch & Shears; Universal Lathe Chucks. Lambertville Iron Works, Lambertville, N. J. See ad. p. 94.

Pat. Steam Hoisting Mach'y. See illus. adv., p. 110. New Economizer Portable Engine. See illus. adv. p. 110.

Lathes, Planers, Drills, with modern improvements. The Pratt & Whitney Co., Hartford, Conn.

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

The Sweetland Chuck. See illus. adv., p. 109.

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.

The Common Sense Dry Kilm prevents check, warp, or hardened surface. See St. Albans M'Fg Co.'s adv. p. 60.

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

Don't buy a Steam Pump until you have written Valley Machine Co., Easthampton, Mass.

Linen hose, rubber hose, cotton, rubber, and leather belting. Greene, Tweed & Co., 118 Chambers St., N. Y.

Use the Vacuum Oils. The best car, lubricating, engine, and cylinder oils made. Address Vacuum Oil Co., No. 3 Rochester Savings Bank, Rochester, N. Y.

Skinner's Chuck. Universal, and Eccentric. See p. 106.



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) C. & Co. write: 1. We have a 6 horse boiler which we use to run off our newspaper one day each week. Which would be best for the boiler, to blow it off each week, or to permit it to stand with the usual amount of water in it? Should it stand empty or filled? A. If you use fresh water, keep the water in the boiler, and after steam is blown off close all openings till you wish to use it again. 2. Which is the best method of preserving small rubber hose when not in use? A. Keep it in water.

(2) X. F. asks how to clean a rusty gun and make it shine brightly. A. Plug the barrel, and rub and scour with fine emery moistened with dilute sulphuric acid (acid 1, water 5), then with emery and oil, and finally with a woolen rag and oil. 2. What is a good and durable wash, silver or nickel, for a gun? A. We know of no practical way of putting on a good coating of nickel or silver by wash. 3. Give me a recipe to silver or nickel-plate a brass telegraph instrument. A. See articles on these subjects on pp. 153, vol. xliii., and 81, vol. xlv. 4. What is a good thing to clean and polish up brass? A. Scour with a little oxalic acid, then with a little fine emery and oil.

(3) J. L. M. asks how to construct a box for holding electroplating solution and articles while being plated. How large should the box be to be supplied with electricity from one-half pint bichromate battery? How must I connect the wires of the battery with the box? A. It depends upon what solution the bath consists of. See instructions for making tanks, etc., for electroplating baths in articles on nickel plating and electro-metallurgy, pp. 153, vol. xliii., 81, 33, 116, and 133, vol. xlv., SCIENTIFIC AMERICAN.

(4) J. B. A. asks: What mixture shall I use to stain a white ash fishing pole a very dark brown. It has already had a coat of varnish? A. Boil 1/2 lb. Vandyke brown, and 2 oz. carbonate of soda in 12 oz. of water, and add 1/2 oz. of bichromate of potassa; or use a weak aqueous solution of permanganate of potassa in water. It is better to remove the varnish first with sandpaper, and varnish after staining.

(5) F. V. asks: 1. Is there anything I can mix with aniline that I can paint on pearl with that will penetrate as a die and leave the color in the button? A. There is no available mordant. You can use gum water, or colorless French spirit copal or damar varnish as a vehicle. 2. Can you tell me how to etch pearl? What is a good cement to fasten cut steel on pearl and glass? A. You will find the information on pearl and pearl inlaying which recently appeared in this paper. 3. I have some cut steel that has rusted after being fastened on pearl. Can you tell me of something that will take the rust off and not hurt the pearl? A. Use a little oil and emery flour. 4. Is there any way to soften pearl to make it cut easy? A. No. 5. Is there any way to paint with nitrate of silver so it will not spread

after putting it on? I also find some difficulty in making the silver go on only in spots; it acts as water does on a greasy surface. A. You can mix the silver solution with a little gum water to prevent spreading.

(6) R. E. M. writes: I have been told by engineers that beef tallow used in a steam engine cylinder would cause the follower and piston heads to wear in holes. We use tallow in our cylinder, and cavities large enough to lay the finger in have appeared in the follower. Do you think it is from the above reason, and why does tallow have this effect? What is the best lubricant for steam cylinder, and where can it be obtained? Is beeswax or black lead good to use in a cylinder? A. Tallow, when submitted to the action of live steam for a time, is partially decomposed, and several fatty acids are liberated which corrode the hot metal. If the cylinder requires it use best mineral sperm oil ground to a thin paste with finest graphite. See Lubricators, page 4, current volume. For addresses of dealers in cylinder oils see our advertising columns.

(7) C. E. R. asks how to make a good green writing ink. Have tried the receipt in SUPPLEMENT, No. 158, and get only a pale yellowish green. A. Make a strong solution of one of the aniline coal tar greens in water.

(8) A. C. B. writes: I wish to set an engine, and think of setting on a concrete foundation. Sand and gravel are not more than forty feet distant; Stone for building purposes about a mile and a half. Will concrete make as good a foundation as stone? If so, what cement is best, and how prepare and proceed? Engine is 7 3/4 x 18 inches, and runs 300 revolutions per minute, running circular saw. A. We recommend you to use stone; concrete, if not of the very best, will be apt in time to give way under the action of the engine.

(9) R. A. R. writes: 1. I am building a grain elevator, in which the grain will be lifted to a height of about 45 feet from the pit, and it is desirable that the elevator head should be, as nearly as possible, perpendicularly over the foot. Would a slope of two or three feet in that height be sufficient? And would it discharge properly with that slope if run at from 150 to 180 feet to the minute? A. No; buckets would not deliver. Speed of buckets should be at least twice 180 feet per minute. 2. What width of rubber or leather belting would be required to drive the above, the belt running at 180 feet to the minute, over a 16 inch pulley on elevator shaft at top, and driven by a 3 foot pulley at bottom (distance between the pulley shafts 30 feet), the power being one horse? A. 8 inches wide; the upper pulley should be nearly or quite 4 feet diameter. 3. Which would be the best for the last mentioned belt, rubber or leather? A. Rubber. 4. How many bushels per hour should one horse be able to elevate to the height mentioned, making a fair allowance for friction, etc.? A. About 1 1/2 bushels per minute, at a speed of 530 feet.

(10) C. asks: 1. When a belt between two pulleys runs true and even on one of the pulleys and has a tendency to run off the other, the presumption is that the shaft of the latter is not level, and if so, will the belt run off the higher or the lower edge of the pulley? A. The two edges of the belt run at different velocities and the belt travels toward the side running at the highest velocity. 2. Why is it that the same belt has sometimes a tendency to run off the same side of both pulleys? A. Probably because the two sides or edges of the pulleys have different diameters. 3. Is there any cheap publication which gives all necessary information respecting belting, its strength, the best methods of lacing, etc.? A. "Cooper's Use of Belting," price about \$3.50.

(11) C. M. K. asks: Can you give me some good and cheap plan of making a "bar photometer" for testing the candle power of gas or other light? A. See photometers and photometry, in Nos. 64, 30, 44, 8, 43, 236, 234, and 253, SCIENTIFIC AMERICAN SUPPLEMENT.

(12) L. C. (Razan) says in regard to silver-plating large articles with a small bath: I have often silvered, with a sponge, very large objects for which I had no vessel big enough, and the matter is very simple. I take the anode (copper wire) and wind it around a wooden stick, connecting the object (as cathode) with the negative (zinc) pole. The two are then brought into contact and kept moist with a sponge dipped in the plating bath. In this way plate either brass, German silver, or Britannia metal, to any thickness desired.

(13) W. L. writes: I have noticed in several answers to correspondents and in at least one article in your valued paper an allusion to what they call the whitewash on the "White House." As I know something of that preparation I think it proper that I inform you and your many readers. About the year 1836, John Ogden Dey, Esq., a maternal uncle of mine, visited Washington. He was a man of very observant habits, and in his inspection of the White House and the old Capitol building (the central part of the Capitol as it now stands) he found that the stone of which it was erected was being acted on severely by the weather, the outside of the stones had splintered by exposure and contraction and the disintegrative effect of the atmosphere to such an extent as to seriously threaten its permanency. He sought the Committee on Public Buildings and proposed to remedy the evil, not with stucco, but with a cement wash. After a full interchange of opinion he was empowered to send the material and instructions to Washington, which he did; and it was not long thereafter, and has stayed there ever since, protecting the building material effectually. The information was given without fee or reward. The old man has passed away long since, and, in justice to his memory, as well as to inform the public, I have penned this. The material used was "Onondaga Hydraulic Cement," from State of New York, mixed with a small amount of glue and with milk, the exact proportions I do not now remember. I have seen several brick houses covered with this cement that has stood all kinds of weather for years. Some I have in mind were washed thirty-five years ago, and still retain the full coat and look as well as when put on. The cement has to be applied soon after it is mixed, and put on as thick as the brush will carry it. Sometimes two or more coats are required.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH Letters Patent of the United States were Granted in the Week Ending July 19, 1881. 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, including items like Abdominal supporter, Advertising device, Alloys for anodes, Animal trap, Anvil, Auger, Axle vehicle, Badge, Bale tie, Baling press, Baling press, Beads, Bed bottom, Bed, Bedstead, Binder, Blast furnace, Blow pipe, Board, Boiler, Boiler feeder, Boiler furnace, Bolting chest, Bolting chest, Book rest, Boot treeing machine, Boot tree's rub stick, Box, Box for rucking, Boxes, Bracelet, Button, Button and stud, Button, Button, Calendar, Can, Can filling machine, Car brake, Car coupling, Car coupling, Car coupling, Car door lock, Car, freight, Car heater, Car motor, Car propulsion, Car seats, Car starter, Car, stock, Car wheel, Carbureting apparatus, Carburetor, Card filets, Carding machines, Carpet lining, Carpet roll core, Carriage seat, Carrousel, Case, Cash register, Caster and corner clamp, Centrifugal machine, Chain, Chain, Chair, Check register, Chest, Chimney draught mechanism, Churn, Cider press, Cigar machine, Cinder and dust arrester, Clasp, Cleaner, Clock escapement, Clocks, Clutch, Clutch, Clutch, Cock and faucet, Coffin handle socket, Coke oven door, Collar coupling, Collar fastening, Corset, Corset, Cotton gin, Cotton press, Coupling, Crate for the transportation of fruit and live stock, Cultivator, Dental chair, Desk and folding wardrobe bed, Doring, Die, Dish washer, Ditching machine, Ditching machine, Door hanger, Dredging machine, Dropper, Dye tub, Egg poacher, Electric lights, Elevator and carrier, Emery or grinding wheels, Engine, Envelope machine, Evaporator and drier, Excavating machine, Explosive blasting material, Extractor, Eyeglasses, Fanning mill, Fence wire, Machine for twirling, H. N. Frentress