

Business and Personal.

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Notes & Queries

HINTS TO CORRESPONDENTS.
Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(4707) F. L. asks: Can you tell me the weight of the heaviest steam hammer in the world? By this I mean the hammer alone, with nothing connected, such as ram or piston rod. I should also like to know if the power is only used to raise the hammer when working, or is it used also to strike the blow as well? A. The weight of the head alone of the 100 ton Creusot hammer, the largest, is said to be 60 tons, the whole weight of piston rod and piston bringing the weight up to 100 tons. The hammers of this class are rated by the total weight of the moving mass. See interesting details of the great hammers in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 488 and 703.
(4708) C. M. C. says: If we anneal cast steel several times, it will not harden. This I know by experience. Do we add carbon, or diminish? A. In the ordinary method of heating steel many times, enough carbon is supposed to be lost from the surface layer to prevent hardening. There is also a change in the crystalline structure of the steel by which the combined carbon becomes graphitic and thus prevents hardening.
(4709) C. S. asks: Will you please give me information as to cost of patching of shaft of steamship Umbria, as I had a dispute as to its cost. A. The repairs made in New York are estimated to have cost about \$4,000.
(4710) G. B. E. writes: Can you tell me the size, and where the largest telescope lens is? You will confer a very great favor if you can and will answer this for me. A. The largest telescope lens is 40 inches diameter, now in process of finishing at Alvan Clark's Sons, Cambridge, Mass.
(4711) G. F. asks: Will a twist drill cut better with or without oil, and which is the most economical (through cast steel)? A. Twist drills cut best with oil in wrought iron and steel. Dry in cast iron.
(4712) L. M.—The berries of the Phytolacca are not exactly poisonous, but they possess emetic properties that render them unfit for human food.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted February 21, 1893, AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with names and patent numbers. Includes entries like Acid, regaining sulphurous, V. Drewsen; Alarm, See Bell alarm, Burglar alarm; Alkaline metals and metals of the alkaline earths, manufacture of chlorates of the, Gall & De Villardi de Montlaur; Armature cores for electric motors or dynamos, constructing, A. W. Smith; Armature core magnetic, P. H. Hicks; Armature, multipolar dynamo electric machine, G. E. Dorman; Asphaltic mastic, securing, L. Haarmann; Automatic furnace, F. Wild; Axle box, car, Rader & Hunter; Axle box, vehicle, P. Dansereau; Bag, See Moth-proof bag; Bag fastener, J. W. Vaughan; Baling press, J. L. Madden; Band cutter and feeder, J. W. Tripp; Basket, folding, C. C. Egerton; Bed attachment, A. C. Wierenga; Bed bottom, R. P. Cameron; Bed brace, D. P. Poole; Beer, making, C. Rach; Beer, manufacture of, A. Hummel; Bell alarm, electric, G. L. Keenstierna; Bell, door, C. E. Van Wormer; Belt tightener, J. L. Dish; Bicycle gear, B. Gundelach; Bicycle saddle, W. Stears; Binder for sheet music, etc., portable, J. Samsen; Bit, See Bridle bit; Blacking outfit, A. C. Barber; Blank cutting machine, T. F. Tyler; Blind top, L. P. H. Corley; Board, See Kneeding and cooling board; Boiler, See Hot water boiler, Steam boiler; Boiler fire box, steam, M. E. Herbert; Boiler furnace, steam, B. H. Dear; Bolt threading machine, F. S. Cook; Bolt, holder, J. D. B. Corley; Bottle package or packing box, A. H. Meech; Bottle stopper, B. F. McIntyre; Bottle wrapper, A. H. Meech; Box, See Letter box; Bowl, wash, A. P. Creque; Box nailing machine, W. S. Doig; Brake, See Brake; Brick kiln, P. L. Youngren; Brick or tile kiln, L. Falasconi; Brick or tile kiln, E. F. Stephenson; Bridle bit, Sears & Lindsey; Broom corn stems, device for grading, C. R. Lee; Brushes, etc., making metal mounts for, A. Wolf; Brushes, etc., making sheet metal mounts for, J. Lines; Buckle, G. M. Aylsworth; Buggy top, folding, T. P. Chamberlin; Burglar alarm, electric, J. Kamsler; Burner, See Gas burner, Smoke burner; Burner, for heating or heating with natural or artificial gas, G. W. Zeigler; Butter worker, P. Embree; Cable gripper, J. Walsh, Jr.; Cake machine, J. H. Mitchell; Camera, See Photographic camera; Can, W. Pratt; Can, receptacle, F. H. Page; Cant hook, D. W. Reed; Car, A. S. Desha; Car coupling, Baum & Sensabaugh; Car coupling, F. Bender; Car coupling, T. H. Brown; Car coupling, L. Davis, Jr.; Car coupling, J. B. Granger; Car coupling, W. Kelso; Car coupling, W. P. Lamp; Car coupling, S. Shephardson; Car door, A. S. Desha; Car, grove, A. L. Whitcomb; Car straps, apparatus for shipping or unshipping cable, Pendleton & Tiers; Car, hand, W. Randolph; Car motor, street, J. A. Currie; Car platforms, folding gate, for, H. Cochran; Car, stock, J. M. Burton; Car, electric, and controlling apparatus for, J. Capek; Card stacking machine, C. A. Wright; Carpet, stretcher and tacker, combined, E. L. McDivitt; Cartridge filler, L. R. Smith; Cartridge reloader, Chambers & Gruver; Case, See Case; Cash register, T. Long; Case, Casing spear, P. H. Mack; Case, steaming apparatus, J. M. Chambers; Cattle loading and unloading device, P. Friederich; Ceiling wall, F. H. Corley; Chute, coal, J. Forman; Clear case, G. Westacott; Cigar wrapping machine, G. Hesse; Cigarette paper, machine for manufacturing tubes of, P. V. M. Blache; Circuit breaker for motors, automatic, R. T. Clump; Clamp, See Floor clamp, Hose clamp; Clock case sash, A. M. Lane; Cloth folding machine, R. T. Smith; Clothes drier, B. Z. Curtis; Clothes drier, Hines & Gibson; Clothes line, E. Fautley; Coin and slot machine, C. P. Young; Collar fastener, horse, T. Karges; Coloring matter from tustic and preparing same, solid, P. T. Austen; Combing machine, wool, J. & T. Sharpe; Commutating apparatus for dynamo electric machines, J. J. Croft; Commutator for dynamos or motors, J. A. Williams; Concentrating machine, Gould & Firth; Confectionery, machine for coating, D. M. Holmes; Cover, steam, E. P. Doty; Cooking and smoking apparatus, J. S. & C. E. Baker; Cooking utensil, T. J. Clement; Cooler, See Milk cooler; Core spindle, J. McAdams; Corset, E. L. Smith; Cotton bag, for, F. F. Fard; Cotton bales, system of tracks for transferring, W. W. Bierce; Cotton picker, Call & Clough; Cotton press, W. T. Bessonette; Coupling, See Car coupling, Thill coupling; Cover, hood, J. C. G. G. G.; Crayons, machine for making school, L. V. Moulton; Crozing machine, H. Campbell; Cultivator, E. A. Owenshire; Curb box cover, D. O'Neil; Cutter, See Band cutter; Potato cutter; Cutting tool, surface, J. H. Steen; Dental cement, producing, M. Sichel; Dental engines, flexible shaft for, A. W. Browne; Desk, portable, O. H. White; Digger, See Potato digger; Ditching and grading machine, G. W. Dye; Draught equalizer, rons & Hill; Drain pipe, A. W. Croft; Drier, See Clothes drier; Drier, T. & H. Smith; Drill, See Grain drill, Press drill; Drilling machine, J. T. Snyder; Drilling tool, Rogers & Runyan; Dye, M. E. Minore; Dye, violet azo, M. Ulrich (r); Electric elevator, F. E. Herdman; Electric machine, dynamo, W. E. Freeman; Electric indicator, H. J. Haight; Elevator, See Electric elevator; Elevator guard, Elliott; Ellipsograph, H. R. Corkhill, Jr.; Engine, See Rag engine, Rotary engine, Traction engine; Explosive compounds, preparing, B. Lepsius; Extension table, Grant & Harbaugh; Eyeglasses, Richard, F. Blanchard; Fastening device, M. Crews; Feed roller, A. M. Vaught; Fence, J. C. Simmons; Fence, food, J. J. Campbell; Fence, food, G. W. Rainsburg; Fence machine, wire, J. C. Lane; Fence post, J. E. Hodson; Fence wire, J. C. Lane; Fences, apparatus for wiring wood, J. L. Butler;

Table listing inventions with names and patent numbers. Includes entries like Fiber, machine for cleaning vegetable, T. Villamor; Film camera, J. Storm; Film measuring and cutting device, F. J. Harrison; Filter, F. A. Bunnell; Filter, J. E. Hill; Fire escape, L. H. Athey; Fire hose nozzle, spraying device for, J. Steele; Fire trap, F. H. Corley; Floor clamp, A. J. Greeley; Flour bolt, M. W. Clark; Flushing tank, L. M. Krouse; Fly screen, W. P. Hellings; Fly switcher for horses, C. Hayner; Foot warmer, electrical, W. E. Ulmer; Form, dust, Bettengen; Furnace, apparatus for condensing, F. Mueller; Furnace, See Automatic furnace, Boiler furnace, Gas furnace; Furnace, S. P. Hutchinson; Furnace, C. Streufert; Furnaces, apparatus for moistening the air in hot air, J. A. Jeffery; Furnaces, coupling device for trays for annealing, J. M. Chatfield; Gauge, See File gauge, Saw tooth gauge; Garden tool, M. Powers; Garment, supporter, F. E. Holt; Gas engine, L. I. Mitchell; Gas engine igniter, C. W. Weiss; Gas furnace, J. H. Tufts; Gate, See Sliding gate; Gate, C. H. Russell; Generator, F. M. Reed; Gold from its ores, extracting, C. Moldenhauer; Gold, recovering, J. Blair; Governor safety stop, engine, J. Barclay; Governor, steam engine, R. Allison; Grain drill, E. H. Grafunder; Grain separator, F. F. Landis; Grain spout, F. B. Giesler; Grease trap, N. J. & P. J. Barry; Guard, See Elevator guard; Gun case, C. N. Markie; Gun, magazine, Krag & Jorgensen; Hame, W. M. Hannigan; Hanger, See Hat hanger, Lamp hanger; Harness, F. C. Kimball; Harrow, F. H. Corley; Harrow, teeth, holder for, H. W. Eisenhart; Harrow tooth holder, A. B. Farguhar; Harvester sheaf register, J. P. Rohm; Hat hanger, F. L. Johnson; Hay rake and tedder, combined, J. M. Spangler; Haystack, horse, J. A. Smith; Hay stacker, W. J. Smith; Headlights, signal attachment for locomotive, B. H. McCain; Heater, See Milk heater, Steam heater; Heater, W. J. Jackson; Heel, See Heel; Hook, See Cant hook; Hoops, manufacture of, E. J. Cochran; Hose clamp, J. Nase; Hose patch, Otis & Harper; Hose reel, W. A. Kirby; Hot air boiler, M. E. Herbert; Ice creper, J. F. Comfort; Incubator, D. Wheat; Index, mechanical, A. E. Carlson; Indicator, See Electrical indicator, Low water indicator; Kiln, See Brick kiln, Brick or tile kiln; Knending and cooling board, C. Bingham; Knife, See Pocket knife; Labeling machine, A. M. Donally; Lamp cut-out, incandescent electric, T. A. Edison; Lamp, duplex electric, B. B. Ward; Lamp, electric, H. Harper; Lamp, electric arc, J. Thompson; Lamp hanger, electric incandescent, S. O. Larkins; Lamp, hanging, J. E. Bohner; Lamp, incandescent gas, Jackson & Daniels; Lamp, incandescent, C. W. Bodini; Lamp, incandescent conductors for incandescent T. A. Edison; Lamps, pole standard for arc, F. D. Gould; Last, H. R. Silliman; Lathe, wood turning, J. Scott; Lawn rake, J. Nase; Letter box, J. W. Barrett; Letter box, F. G. Kollenber; Light, See Skylight; Lightning conductor and arrester, A. B. Lyman; Lock, See Valve lock; Lock, W. Dreyer; Locomotive sand box, L. T. Slaughter; Locomotive, draught regulator for, F. Stratner; Loom, G. S. Cox; Looms, Jacquard harness evening mechanism for, R. T. Markee; Low water indicator for boilers, W. H. Rodgers; Lubricator, R. F. Zurlinden; Lubricator, J. U. Zurlinden; Magnetic tool, J. F. Standford; Map, educational, M. M. Gillam; Marker, land, G. W. & E. E. Gooch; Masonic tool, J. G. Fauds; Metal compounds, electric reduction of refractory, T. L. Willson; Milk cooler, Beck & Reilly; Milk heater, Jonsson & Berg; Mill, See Rolling mill, Windmill; Mop, J. P. Satterwhite; Mosquito net, W. L. Johnson; Moth-proof bag, C. A. Ives; Motor, See Car motor; Muellae bottle tip, W. H. Underwood; Nest, hen's, J. L. McKnight; Non-heat conducting composition, R. V. Mattison; Non-heat conducting composition for coating boilers, R. V. Mattison; Non-heat conducting composition for covering boilers, etc., R. V. Mattison; Nut lock, E. Poole; Oil cap, J. U. Caulfield; Oil, for, J. P. Caulfield; Packing, hydraulic, H. V. Loss; Padlock, F. W. Schultze; Pan, See Dustpan; Paper, apparatus for making bundles of toilet, O. H. Hicks; Paper, for, E. S. Sauer; Paper feeding attachment, N. Lux; Paper making machine, A. N. Klidder; Pencil sharpener, A. H. Fancher; Pencil sharpener, W. G. Price; Pendulum ball, A. M. Lane; Penholder, G. W. Hillinger; Phonograph, H. H. Healy; Photograph exhibitor, J. Dewe; Photographic camera, A. Klay; Photographic objective, A. B. Parvin; Picker, See Cotton picker; Pictures on textile fabrics, making colored, A. O. W. Smith; Pinch bar, Combs & Frates; Pipe, See Drain pipe; Pipe cores, apparatus for moulding, L. W. Anderson; Pipe coupling or fitting, G. W. Harrington; Pipe, tool for cutting lead-lined iron, G. W. Harrington; Planing beam, G. W. Ream; Planing machine sheathing lath attachment, T. H. Brown; Planter, R. Murphy; Planter, potato, Ihle & Rothe; Plastic material, machine for moulding oval or other shapes from, Hunter & Clark; Plow, Gladney & Mayfield; Plow and harrow, combined, E. D. Moser; Plow, garden hoe, C. C. Stockard; Plug or stopper for lavatory apparatus, J. W. Hale; Plumber's trap, N. Barry, Jr.; Pocket knife, H. M. Brigham; Post, See Fence post; Potato cutter and planter, J. J. Simon; Potato digger, A. B. Bryant; Potato digger, E. A. Hoffmann; Potato digger, H. Krebs; Precious metal recovering, W. P. Miller; Press, See Balling press, Cotton press; Press drill, J. L. Ashurst; Pressure regulator, C. R. Ord; Pressure regulator, J. Schneible; Printing press delivery apparatus, S. D. Sandel; Printing screen for photomechanical, L. E. & M. M. M. M.; Pulp screen, E. Schuler; Rag engine, H. Meurte; Rails for use on common roads, steel, G. M. Ramsey; Railway conduit, F. B. Rae; Railway crossing, F. W. Brann; Railway crossing, J. R. Pfanz; Railway heating apparatus, N. W. Williams;

Table listing inventions with names and patent numbers. Includes entries like Railway signal flag, E. S. Piper; Railway switches, trip for automatic, Morris & Nee; Railway metallic, A. W. Straub; Railway train arrester, automatic, J. Frysinger; Railway trolley, electric, A. Dickinson; Rake, See Hay rake, Lawn rake; Reapers, endless sickle for, T. H. Brown; Recorder, See Time recorder; Reel, See Hose reel, Twine reel; Reel support and wire stretcher, combined, T. Fitzgibbon; Refrigerator, M. M. Harris; Register, See Cash register, Harvester sheaf register, Hot air register; Regulator, See Pressure regulator; Riffe, F. Simonson; Roller, See Feed roller; Rolling mill, F. I. Freeman; Rolling mill plant, W. Garrett; Rotary engine, F. Meyer et al.; Rotary separating machines, revolving head, C. A. Wessinger; Saw, drag, Clay & Rucker; Saw, pruning, F. P. Brewer; Saw tooth gauge, J. F. Brower; Scouring, polishing, and buffing machine, combined, M. W. Walsh; Screen, See Fly screen, Pulp screen; Screen, F. Wagner; Seeder, O. Erickson; Seeder, E. D. Mead; Separator, See Grain separator, Steam separator; Sewing machine ruffing attachment, L. C. Wing; Shafts and their couplings, machine for grinding pulley, P. Medart; Shears, C. Hamann; Sheave or wheel, rope, J. W. Kerr; Sheave, purchase block, J. C. Keefe; Shaping machine, F. A. Walsh; Sheet metal vessels, machine for making, F. A. Walsh; Sheet metal working machine, F. A. Walsh; Ships' bottoms, covering for, F. D. Mott; Shoe, W. P. Bradford; Skylight, J. G. Pennycook; Sliding gate, G. C. Reshour; Smoke burner, J. B. Barnes; Soldering machine, can, A. W. Livingston; Sole slotting machine, W. P. Bradford; Spectacle eye shield, J. D. Warren; Spinning spindle, T. Wrigley; Stand, See Umbrella stand; Stamping machine, C. F. Stone; Stave crozing machine, H. Campbell; Steam boiler, C. P. Adams; Steam boiler, sectional, N. A. Boynton; Steam heater, C. E. Wakeman; Steam separator, A. J. Wright; Steam separator, safety, J. W. Wright; Stone dressing machine, Lind & Gustafsson; Stone gathering machine, C. J. Clark; Stop device, T. A. Edison; Stopper, See Bottle stopper; Strainer and elevator, sugar cane juice, J. C. Riley; Strong, A. H. Seebach; Suspender end cast-off, G. E. Adams; Suspender fastening device, J. F. Molloy; Switch, See Telephone switch; Table, See Extension table; Tag, Buck & Barnes; Tank, See Flushing tank; Tank, construction of, W. Forgie; Telephone call apparatus, automatic individual, J. Sack; Telephone switch, magneto, W. Humans; Thill coupling, R. Fawcett; Thill coupling, A. Hummer; Thill coupling, C. P. Reshour; Timepieces, compensation balance for, J. Bliss; Time recorder, workman's, F. H. Bolte; Tongs and wrench, pipe, H. Hammond; Tongue, vehicle, W. A. Hanna; Toy, W. V. Snyder; Traction engine, G. D. Lowry; Tractor, See Tractor; Trap, See Fish trap, Grease trap, Plumber's trap; Tricycle, W. V. Snyder; Trolley wire coupling, W. H. Keckley; Trough stretcher and shaper, H. F. Feather; Truck, J. Cornelius; Truck for street cars, supplementary, B. Price; Tub, See Wash tub; Turnstile, registering, C. P. Gott; Turntable, G. Van Wegenen; Twine reel and roller, J. B. Holmes; Twine reel and cop winding, C. G. Klein; Type setting machinery, J. A. Kay; Typewriting machine, J. S. Copeland; Umbrella, folding, E. C. Phillips; Umbrella stand, H. C. Merker; Undergarment, J. A. Scriven; Valve, direct acting, R. A. Burnham; Valve, fluid pressure, G. Manning; Valve gear, D. F. Lepley; Valve lock, G. M. Tower; Valve, relief, W. P. Phillips; Valve, rotary, F. W. Bruce; Vehicle, two-wheeled, E. F. Morse; Vessels, suspensory, C. Haubert; Veterinary appliance, W. Bryden; Veterinary surgical instrument, F. J. Hegart; Wagon attachment, J. S. Piper; Wagon body, Long & Henry; Washer, See Phosphate washer; Wash tub, J. E. Emig; Water supply system, C. E. Emig; Well bailer, H. G. Smith; Wells, special point for tubular, F. A. Barrett; Wells, stand point for tubular, F. A. Barrett; Wheel, G. P. Fisher; Wheel, E. L. Howe; Windmill, R. H. Coslin; Windmill, T. O. Perry; Wire articles, machine for forming, L. H. Porter; Wire stretcher, T. Weese; Wood, vulcanizing and drying, C. Howard (r);

DESIGNS.

Table listing designs with names and numbers. Includes entries like Badge, H. F. G. Fuchs; Ball ear, W. C. Windle; Buckle front, C. B. Harris; Button, W. D. Dainey; Dish, C. E. Haviland; Dish, cover, C. E. Haviland; Globe holder, E. J. McEvoy; Flush fabric, J. Schofield; Spin trap, W. H. Graham; Spoon, F. H. Kelley; Toy savings bank, H. Dillingham; Woven fabric, W. T. Smith;

TRADE MARKS.

Table listing trade marks with names and numbers. Includes entries like Ale, Christian Feigenpan; Beer, lager, Henn & Gabler Brewing Company; Beer, lager, E. Tosetti Brewing Company; Burlap bags, John C. Graff in Company; Canned fruits and vegetables, Hoopston Canning Co.; Chemical substances and mixtures, certain named, T. G. Smith; Coal, Newell Coal Company; Currycombs, Holgate Brothers Company; Gloves, J. & M. Lehman; Hats and caps, H. M. Silverman Company; Knitted undergarments, A. N. Loeb & Co.; Liquid fermented and spirituous, Brockbank & McElor; Medicinal cough drops, N. W. Stiles; Metal polishing compound, A. L. Jaeger; Papers, water proof, F. W. Bird & Son; Soap, toilet, Stearns & Gordon; Stays or corsets, R. R. Appleton; Suspensories, C. Haubert; Tubs, pails, buckets, keels, measures and kanakins, Mann Bros.; Undergarments, A. N. Loeb & Co.; Underwear, W. Benger Soehne; Whiskies, J. O'Neil & Co.; Wood preservative, Mica Roofing Co.;

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished for this office for 25 cents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York.
Canadian patents may now be obtained by the inventors for any of the inventions named in the foregoing list, at a cost of \$40 each, if complicated the cost will be a little more. For full instructions address Munn & Co., 361 Broadway, New York. Other foreign patents may also be obtained.