

(58) J. B. C. writes: Can you tell me through the SCIENTIFIC AMERICAN: 1. I wish to use a liquid electrical conductor that shall be better than acidulated water and not as good as mercury. A. We know of no solution that will meet your wants. 2. Also a solid conductor that shall have much more resistance than carbon. A. Try charcoal or a mixture of charcoal and clay. 3. How can gold be given different colors, as in the letters of a monogram? A. This is done on cheap jewelry by means of thin lacquers colored with the anilines. The finer grades of work are made from pieces of gold of different colors soldered together. 4. How is silver oxidized, as in jewelry? A. Silver may be oxidized by dipping it in a solution of sulphate of potash.

(59) A. H. writes: If a train of cars traveling east at the velocity of a cannon ball should have on board a loaded cannon the mouth of which is pointed west, about how far would the ball in the cannon travel west if the cannon be discharged? A. The ball would fall to the ground at the point of firing under the conditions you mention.

(60) D. F. D. asks: 1. What kind of cement or preparation will cause lead to firmly adhere to a smooth iron surface? A. For joining metallic surfaces where soldering is inconvenient, recourse may be had to a composition formed in the following way: Pure and finely divided copper, such as that obtained by the reduction of copper sulphate with zinc clippings, 20 to 36 parts, according to the degree of hardness desired in the cement, dissolved in a sufficient quantity of sulphuric acid to make a thick paste; with this is incorporated, by trituration in a mortar, mercury, 70 parts. The mass is soft, but hardens at the end of some hours. For use it is heated to 100° C. and powdered in an iron mortar to 150° C. It adheres strongly on drying, and is harder in proportion as it contains more copper. 2. In what way can a cement be prepared, say, thirty minutes, sufficiently hard to be used as a mould for metal. A. A cement which may be used to unite all metals consists simply of a mixture of commercial glycerine and finely powdered litharge. By mixing glycerine and litharge a paste is obtained which will harden in from ten to thirty minutes, according to the amount of litharge used. We would recommend you to try the last receipt for forming moulds, described in second question.

(61) W. H. L.—The size for preparing wood work for gilding is as follows: To half a pound parchment shavings or cuttings of white leather, add 3 quarts water; boil it in a proper vessel till reduced to nearly half the quantity; then take it off the fire and strain it through a sieve. Be careful in the boiling to keep it well stirred, and do not let it burn.

(62) M. M. B. asks how to redye sealskins. A. All of these sealskins sold in this market are prepared and cured in London, where the process is kept very secret, and no knowledge can be obtained on the subject. Some information is given on page 5510 of SCIENTIFIC AMERICAN SUPPLEMENT, No. 345, under head of "How Seal Skins are Dressed."

(63) J. A. C. asks: Which would be the best way to raise water from a drain mouth where a common outlet is not to be had? Would an Archimedean screw have any special advantage over a pump in a lift of 4 or 5 feet? Would a centrifugal pump be better than a common lift pump? Power to be a windmill. A. The best is the most simple and common lift pump (attached to wind mill). You can make one of wood or obtain one through the hardware trade from Chicago.

(64) A. N. Works asks how they can galvanize small castings without much cost. A. First dip your castings in a pickle of equal portions of sulphuric acid and water, and finally immerse in a bath of equal portions of tin and lead. We recommend you to read the article on "The Galvanizing Process," page 2798 of SCIENTIFIC AMERICAN SUPPLEMENT, No. 176.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

W. E. L.—Unfortunately in unpacking the specimens Nos. 1 and 2 became mixed. No. 3 is a black shale containing pyrite. No. 4 is a decomposed silicate, which is more or less weathered. None of the specimens sent, in our opinion, are of any value as far as their metallic constituents are concerned.—D. A. O.—The specimen is undoubtedly a fire clay, but its value can only be determined by chemical analysis. This would give the percentage of the worthless constituents. The expense would be \$25.00.

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INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted October 23, 1883.

AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.]

Table listing inventions with patent numbers and names of inventors. Includes entries like: Adjustable elevator, G. Milliken; Aging liquors, process of and apparatus for, H. Glass; Air compressor, G. R. Cullingworth; Air compressor, hydraulic, W. A. Babcock; Air compressors, inlet valve for, G. R. Cullingworth; Air compressors, outlet valve for, G. R. Cullingworth; Air compressors, pressure regulator for, Cullingworth & Potter; Air compressors, safety governor for, G. R. Cullingworth; Air compressors, water pump attachment for, C. W. Potter; Alcohol, process of and apparatus for purifying, J. Bendix; Ammonia from its solution in the manufacture of ice, etc., process of and apparatus for separating, G. O. Rinman; Animal shears, Gleason & Holt; Animal trap, J. H. & T. D. Morris; Automatic switch and cut-out, C. G. Perkins; Axle, car, A. Walton; Bag or satchel lock, R. Flocke; Baling press, P. K. Dederick; Band cutter, J. Allen; Bankbook, distributor's, E. T. Moulton; Bearing, anti-friction, J. G. Avery; Bed bottom, spring, E. W. Grafton; Bed lounge, F. Rentschler; Bell, L. E. Clark; Bell gearing, A. H. Kennedy; Berths, counter balance for folding steps for, Castle & Skatts; Blankets, putting up, D. A. Swaney; Blast furnace, P. L. Weimer; Board, See Bosom board; Boat knees, etc., joint for, J. W. Sanborn; Boiler furnaces, locomotive and other, J. A. Gano; Bolting reels, apparatus for feeding flour to, E. L. Conklin; Book clasp, A. C. Hafely; Boot and shoe jack, P. D. Crull; Bosom board, A. P. Ryan; Bottle covering, S. Oakman; Bottle stopper, F. H. Lowerre; Bottle stopper fastener, J. T. Walker; Box, See Journal box; Box fastener, T. H. Brown, Jr.; Bran compressor, J. L. Kail; Brake, See Car brake, Wagon brake; Brick, apparatus for tempering and preparing clay for making, W. W. Winn; Brush handle, S. B. Stanton; Buckle, F. Armstrong; Buckle, trace, D. T. Harbison; Bung extractor, Macher & Lins; Bustle, A. Kelley; Button setting instrument, Pratt & English; Cable grip, etc., endless, A. Haman; Caisson gate, G. F. Schild; Calculating machine, I. E. Tallman; Calendar, H. S. Hack; Calendar, H. H. Ham, Jr.; Camel for lightening vessels, J. J. Peetz; Can. See Milk can, Oil can, Paint can; Can testing machine, Norton & Hodgson; Cane, electric, A. & A. Roovers; Cane stripper and header, Coburn & Thompson; Car brake, E. Katzenmayer; Car brake, W. C. Travis; Car coupling, F. Attock; Car coupling, R. Bigney; Car coupling, C. Clarke; Car coupling, J. B. Draper; Car coupling, C. J. Fortson; Car coupling, E. N. Gifford; Car coupling, T. H. James; Car coupling, C. Luther; Car coupling, E. F. Walker; Car coupling and buffer, C. C. & C. Balderston; Carbon filaments, apparatus for treating, C. G. Perkins; Carpet fastener, Nickerson & Dufrane; Carrier, See Cash and parcel carrier, Parcel carrier; Cartridges, charge retainer and concentrator for, R. W. Morgan; Cash and parcel carrier, automatic, C. Grant, Jr.; Chopper and cultivator, combined, E. A. Daniel; Chuck, planer, W. Porter; Clasp, See Book clasp, Garment supporter clasp; Clasp, J. E. Bedford; Cleaner, See Cotton cleaner, Slate and window cleaner, Steam boiler cleaner; Clock gravity escapement, D. Shive; Coal elevator and conveyer, R. B. Little; Coke oven, L. Semet; Coke oven door and frame therefor, Herron & Wray; Collar, W. Cohlman; Collar, A. C. Fellows; Colter, rolling landside, G. B. St. John; Compressing pulverized material, C. Hemje; Cooler, See Lard cooler; Cork and screw nozzle, combined, E. Norton; Corn cutter, green, E. M. C. Anderson; Corn husker, T. P. Fletcher; Corn silker, green, C. P. Balle; Cotton cleaner and gin feeder, Z. F. Nance; Cover for chamber pails, etc., H. Stone; Creel for spooling and warping machines, G. L. Tarr; Crochet needle, J. H. Doolittle; Cultivator, J. G. Trump; Cultivator tooth, reversible, G. D. Rowell; Curtain loop or holder, S. A. Chapman; Cutter, See Band cutter, Corn cutter, Sewing machine thread cutter, Stalk cutter, Vegetable cutter, Weed cutter; Cutting blanks, machine for, J. R. Williams; Dental plate, V. Van Vleck; Designs, representing and multiplying monumental and other, F. M. Nichols;

Table listing inventions with patent numbers and names of inventors. Includes entries like: Desk, office, C. H. Tyler; Detachable book, H. E. Foster; Die press connecting rod, J. M. Seymour; Direct-acting compound engine, F. W. Jenkins; Disinfecting apparatus, J. S. Wood; Door hanger, S. M. Stevens; Door pull, sliding, T. Lyons; Doors, stay roller for sliding, W. M. Brinkerhoff; Drawer, furniture, T. W. Moore; Dress shield, I. B. Kleinert; Drilling machine, T. J. & F. T. Currier; Drilling machine, J. Richards; Drilling machine, E. J. Worcester; Drum for hot air furnaces, radiating, Miller & Mager; Electric conductor, F. Jacob; Electric currents, system of generating and distributing, C. J. Van Depoele; Electric cut-out, automatic, C. G. Perkins; Electric lighting system, J. A. McCoy; Electric machine regulator, dynamo, C. J. Van Depoele; Electric machines, safety-switch for dynamo, C. J. Van Depoele; Electric switch and cut-out, C. G. Perkins; Electric switch board and signaling apparatus, T. W. Lane; Electric transmitter, S. D. Field; Electric wires, gutter, curbstone, and sidewalk conduit for, E. Clark; Elevating devices, friction brake for, J. A. Everts; Elevator, See Adjustable elevator, Coal elevator, Hod elevator, Pneumatic elevator; Elevator, W. Duteuple; Elevator bucket, R. B. Little; Elevator safety appliance, J. Hodges; Engine, See Direct-acting compound engine, Rotary engine; Engine reversing gear, Hatch & Riesenbergs; Eraser, slate and blackboard, M. E. Ingram; Ether, apparatus for administering, S. Cooper; Evaporator, W. A. Herrng; Extracting juices from animal and vegetable substances, apparatus for, Desgoffe & DiGiorgio; Extractor, See Bung extractor, Stump extractor; Faucet, W. A. Babcock; Fence, barbed wire, J. E. Evans; Fence, wire, J. C. Ford; Fence, wire, J. Stubbe; Fence wire, barbed, C. B. Brainard; Fence wire, barbed, H. B. Scutt; Fence wire, ornamental, W. R. Reynolds; Fences, erecting wire, J. & W. M. Brinkerhoff; Fences, implement for wiring hedge, W. Young; Fiber cutting machine, E. W. Ross; File blanks, machine for stripping, A. Weed; Firearm, magazine, P. Boch; Fire escape, I. Buckman; Fire escape, W. S. Cassidy; Fire escape, M. J. Cook et al.; Fire escape, D. P. Edgar; Fire escape, C. J. Lung; Fire escape, L. Sawtell; Fire extinguisher, automatic, Walworth & Hall; Flour dressing machine, M. Crawford; Flower pot holder and shield, W. A. Birch; Flushing tank, automatic, M. Sexton; Folding table, M. Maples; Foot warmer, D. Shirley; Forge blacksmith's, W. Shaw; Fruit bleacher, A. Brockway; Furnace, See Blast furnace; Gaiter, congress, N. R. Packard, 2d; Game apparatus, T. H. Ward; Garment supporter, B. J. Greely; Garment supporter clasp, S. Wales; Gas lights, lighting and extinguishing, D. C. Baughman; Gas, manufacturing illuminating, T. G. Springer; Gas, process of and apparatus for manufacturing, Granger & Collins, Jr.; Gate, See Caisson gate, Railway gate; Gate, W. N. Bowers; Gate, L. E. Smith; Generator, See Steam generator; Glass caster stand and mould, D. C. Ripley (r); Glass pot, T. A. Zellers; Gloves, shoes, etc., fastening for, G. A. Lange; Grain separator and cleaner, H. Parish; Grinding and polishing wheel, J. H. Madden; Grooving boards for boxes, machine for, G. Wilson; Guard, See Life guard; Gun, magazine, J. H. Bullard; Hame, P. Hayden; Hame, R. L. Whitzel; Handle, See Brush handle; Hanger, See Door hanger; Harrow, A. A. Werts; Hat and other head wear, R. G. Salomon; Hatchway protector for elevators, R. T. Bean; Headlight signal, locomotive, C. Anderson; Heating fire-back and frame, two-room, J. H. Burnam; Hides, machine for stretching and drying, L. Dederick; Hod elevator, endless, O. N. Eaton; Hoe, H. & L. Iwan; Holder, See Flower pot holder, Pencil holder, Hook, See Detachable hook, Snap hook; Horse detacher, E. R. Herring; Horse power, J. H. Edward; Horse power speed regulator, J. A. Rouse; Horses, overshoe for, B. Greenaway; Horseshoe, T. Hend; Horseshoe nail blanks, finishing, W. W. Miner; Horseshoe nail blanks, machine for finishing, J. B. Wills; Hose jumper, W. B. Thomas; Hub attaching device, J. W. Nunn; Incandescents, apparatus for carbonizing, C. G. Perkins; Incandescents, apparatus for treating, C. G. Perkins; Indicator, See Interest indicator, Station indicator; Insulating covering for telegraph wires, metallic, E. Clark; Insulating material, C. J. Van Depoele; Insulator, electric wire, J. F. Martin; Interest indicator, H. E. Jenne; Intestines, machine for cleaning, F. E. Davis; Iron, See Soldering iron; Iron, apparatus for treating molten, R. H. Gordon; Iron from blast furnaces, analyzing pig, S. A. Ford (r); Iron, process of and plant for producing cast, J. Reese;