

or emery powder being used with it. The roughly formed pieces are then smoothed with a piece of whetstone and water. The polishing is effected by friction with whiting and water, and finally with a little olive oil laid on and well rubbed with a piece of flannel until the polish is complete. In this process the amber becomes hot and highly electrical; as soon as this happens, it must be laid aside to recover itself before the polishing is continued, otherwise the article will be apt to fly into pieces.

(3658) H. D. G. writes: Suppose I have twenty sulphate of copper cells of battery connected in series to charge ten secondary cells, such as are described in SCIENTIFIC AMERICAN, vol. 62, No. 10; the secondary cells being charged. How many six-candle power lamps could be lighted, wired in parallel, by switching, independent of each other, both the gravity and storage battery into the lamp circuit? A. To charge 10 cells of storage battery simultaneously will require 40 cells of gravity battery. The gravity battery cannot be used in connection with the storage battery for operating lamps. Its resistance is too great and it yields only a comparatively small current. Ten cells of storage battery should operate from fifteen to twenty six candle power lamps.

(3659) T. R. writes: I want to build a cistern for drinking water. Can you tell me what will keep the water from tasting of the cement the first year? A. If you use genuine Portland cement, you will not be troubled with the limy taste except for a short time after the cistern is built.

(3660) W. E. B. asks how fire eaters perform their feats. A. The old method was to place a bit of lamp wick soaked in solution of potassium nitrate and dried in a ball of oakum. The wick was lighted before placing in the oakum. This was taken into the mouth. If blown through, it produced the fire eater's appearance. When the mouth was closed, the appearance of fire ceased, but the wick remained ignited. On again blowing air out through the mouth, the fire eating again was produced. The present system is to take a wad of cotton dipped into benzine in the mouth. On blowing out through the mouth, the mixture of benzene vapor and air can be ignited, producing a flame six inches long. A tube or funnel can be used to blow through, but if properly done it is not necessary.

Replies to Enquiries.

The following replies relate to enquiries recently published in SCIENTIFIC AMERICAN, and to the number therein given:

Referring to query No. 3541, a very simple and effectual method of cleaning the bones of small animals is to put them near an ant hill, and in a day or two the ants will have removed every trace of flesh and will even polish the bones. Care must be taken that they do not remove small parts. I once obtained the bones in the head of a rattlesnake in perfect order by these means.

TO INVENTORS.

An experience of forty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

November 3, 1891.

AND EACH BEARING THAT DATE.

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

Table listing inventions and their dates, including: Adding machine, H. H. Rumble; Airship, J. Arbutin; Alkalinizing apparatus, G. F. Kenchan; Alkalinizing apparatus, F. M. Lytle; Aluminum sulphate to sulphide, reduction of, P. A. Emanuel; Animal trap, G. H. Wells, Jr.; Autographic manifold and registering machine, Dick & Eastin; Awning, window, W. H. Newton; Barrel stand, S. Lewis; Basket, M. S. Caldwell; Battery, See Secondary battery; Beam end protector, W. Kenish; Bearing and supporting device, Hooper & Hollingsworth; Bedstead, M. C. Taylor; Bell, electric alarm, C. A. Hale; Belt fastener, G. F. Kenchan; Belt fasteners, process of and die for making, G. P. Kenchan; Block, See Ceiling block, Hoisting block; Board, See Centerboard; Boiler, See Steam boiler; Boiler attachment, steam, J. Gregory; Boiler cleaner, J. L. & W. E. Alexander; Boiler feeding, automatic vacuum regulator for, F. G. Fowler; Boiler or other furnace, steam, E. De Strens; Book, A. Abbott; Book binder, G. H. Burton; Book, check, E. North; Book, election tally sheet, Brown & Short; Book rest, J. Brown; Book stock account, L. A. Warner; Bottles, etc., closing device for sodawater, J. Nadler; Box, See Button box, Letter box; Box board machine, M. Gariand; Box fastener, F. A. Bauer; Box pull, Evans & Kunert; Bracket, See Electric wire support bracket; Brake, See Water brake; Brick machine, J. Q. Adams; Brick or tile machine, J. Gorch et al.; Bromine compound, Fischbeck & Koechling; Brush, electric hair, A. Stanton; Buckle, V. S. Keppel; Buckle, suspender, H. Ginzburg; Buckle, suspender, D. T. Smith; Buoy, L. Humbert; Button box, W. E. Dow; Button, Morton & Pearce; Cable gripper, G. S. Duncan; Calendar, J. Cussans;

Main index table listing inventions and their dates, including: Calendar, E. L. Pease; Camera, See Photographic camera; Can filling machine, I. W. Langford; Car coupling, E. G. Adams; Car coupling, J. W. Elliott; Car coupling, M. P. Foley; Car coupling, G. Rohrbach; Car coupling, H. Schaeffer; Car coupling, N. Sedor; Car, hand, J. W. Ballard; Car, hand, C. Roberts; Car heater, J. F. McElroy; Car roof, Couch & Otterson; Car step, H. Lutz; Car, street, F. B. Brownell; Car trolley, electric, R. D. Nuttall; Car, See Fruit carrier, Pneumatic carrier; Cart, road, J. A. Brown; Cart, road, H. & W. C. Smith; Cartridge, F. Ambjorn; Case, See Clock case, Umbrella case; Cash register, H. A. Bierley; Casting apparatus, V. Ambler; Ceiling, Ekstrom; Centerboard, C. Hanson; Chain, conveyer, C. H. Taylor; Chair and life-preserver, combined, I. S. Allen; Check, baggage, C. F. Goldbeck; Chimney top, E. Finch; Cement, brush, F. Blackwell; Churn, J. T. Mark; Cigar tip cutter and match safe, combined, J. H. Foote; Clamp, See Trolley wire clamp; Clay to make ballast, etc., feeding apparatus for use in burning, H. G. Butler; Cleaner, See Boiler cleaner; Clock case, G. Wexler; Closet, See Dry closet; Clothes drier, A. Anderson; Clothes line hanger, Hansen & Saner; Clutch, friction, F. M. Baras; Clutch, friction, H. P. Christie; Coffee or tea pot, J. W. De Atley; Coin actuating mechanism, J. Evans; Coin-controlled machine, V. O. Strobel et al.; Coin-controlled mechanism, V. O. Strobel et al.; Compressor, steam, F. L. McGahan; Condenser, steam, F. L. McGahan; Condensing exhaust steam, apparatus for, F. L. McGahan; Conduits, threading rod for underground, F. G. Bolles; Cotton chopper, J. A. Pierce; Cotton conveyer, pneumatic, J. B. Clopton; Cotton gin condenser, J. G. Goldthwaite; Coupling, See Car coupling, Hose coupling, Pipe coupling, Thill coupling; Coupon, Reed & Condon; Crane, hydraulic, J. DeLa; Cultivator, C. E. Bement; Cultivator, listed corn, W. F. Hickman; Cultivator or barrow tooth, C. D. Wiseloge; Cultivator, walking and riding, E. W. Coulomb; Curtain pole, supporter, E. Martel; Cut fabric and hemming the same, J. J. Henderson; Cutter, See Cigar tip cutter; Dental engine, Miller & Wells; Dental engine hand piece, O. Booth; Dental engine hand piece, J. O. Keller; Dental engine, J. H. Delo; Do or check, W. Gillilan; Draught equalizer, Fizzell & Peck; Draught equalizer, H. H. & C. H. Harnden; Drawer, C. L. Cook; Dredge lifting device, J. C. & S. Lake; Drill, See Hand drill; Drill press, W. E. Gung; Drilling apparatus, M. C. Bullock; Drilling apparatus, Douglas & Bullock; Drilling machine, D. Delo; Drilling machines, hydraulic feed for, M. C. Bullock; Driving gear, frictional, L. W. Hardy; Dry closet, E. C. Condit; Drying machine, centrifugal, T. Long; Dye, black, C. A. Rudolph; Dye, brown, C. A. Rudolph; Easel attachment, G. W. Westerfield, Jr.; Eaves trough hanger, W. J. Plecker; Electric current meter, J. W. T. Olan; Electric elevator, Blades & McKee; Electric gate, L. Gillette; Electric fuse cut-out, E. W. Rice, Jr.; Electric light or other lines, method of and apparatus for constructing, H. Lempe; Electric lights, stay for suspended, F. A. Johnson; Electric lighting apparatus, H. B. Meach; Electric lighting apparatus, H. B. Meach; Electric lighting system, F. M. Garland; Electric motors, controlling device for, F. O. Blackwell; Electric switch, M. Hoopes; Electric switch, R. M. Hunter; Electric wire support, G. P. Kenchan; Electric wires, cross tree for suspended, J. Levy; Electrical conversion and distribution, method of and apparatus for, N. Tesla; Electro magnetic motor gearing, C. E. Chinnock; Electro magnetic separator, Moffatt & Chichester; Elevator, See Electric elevator; Elevator, P. H. Brodreser; Elevator, J. Hangock; Embroidering machines, tambour frame for, H. 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Finley; Floors or walls, construction of, P. H. Jackson; Folding table, A. Claypool; Forged wheel and making the same, S. M. Vauclain; Forging die, wheel, S. M. Vauclain; Frame, See Quilting frame; Fruit carrier, A. Edgar; Fruit gatherer, Reno & Whyne; Furnace, See Boiler or other furnace; Furnace, C. M. Duke; Furnace, John F. Moran; Furnace doorway, H. Finney; Furniture, boxing thimble for packing, W. H. Ivers; Gauge, See Sawing machine gauge; Garment hook, F. R. De Long; Garments in position to be put on, device for holding, O. Gruender; Garter fastener, J. C. Knowles; Gas generator, A. Kison; Gas motor, Niel & Janot; Gate, See Electric gate, Railway gate; Gearing, sprocket and chain, J. P. & R. F. A. Helmold; Generator, See Gas generator, Steam generator; Glass, apparatus for rolling plate or sheet, J. W. Bonner; Glass, rolling plate or sheet, J. W. Bonta; Glove, I. W. Lamb; Gold and silver ores, apparatus for treating, A. B. Paul; Gold from refractory, or other ores, amalgamating and extracting, W. Crookes; Grain conveyer, pneumatic, P. B. Duckham; Grinding pan, W. G. Stevenson; Guard, See Railway cattle guard; Guitars, combined bridge and tail piece for, A. H. Hines; Gun carriages, recoil check for, G. G. Greenough; Gyrocompass, J. P. G. C. Henderson; Hanger, See Clothes line hanger, Eaves trough hanger, Pipe hanger; Harmonium, R. Essig; Harrow, J. T. Yerb; Harrow, disk, C. Williams;

Continuation of the main index table listing inventions and their dates, including: Harvester, corn, N. C. Bader; Harvester, straw binding, C. E. Donnellan; Hat blocking and trim pressing machine, W. H. Pittella; Hatch door, J. J. O'Brien; Heater, See Car heater, Feed water heater; Heater or radiator, A. J. Thompson; Heel lifts, machine for skiving, J. R. Scott; Hinges, manufacture of, T. Corscaen; Hoisting apparatus, S. Kaye; Hoisting block and tackle, V. R. McCabe; Hoisting machine, M. C. Bullock; Holdback, vehicle, O. Cumiskey; Holder, See Leaf holder, Mop or brush holder, Paper holder, Pen holder, Sleeve holder, Spool holder, Tool holder; Hook, See Garment hook, Snap hook; Horseshoe, J. R. Jeter; Horseshoe nail clincher, W. D. Misener; Hose coupling, Baltimore & Gold; Hydraulic, W. Errington; Ice creper, W. Kratz; Ice making and refrigerating apparatus, F. B. Hill; Identification card, H. Pincus; Indicator, See Station indicator; Inhaling apparatus, A. J. 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Chapman; Lamps, protecting the bulbs or globes of electric or other, Duval & Nelson; Lamps key socket for double filament incandescent, W. J. McCutcheon, Jr.; Lamp, pencil carbon holder for electric, H. E. Chapman; Lathe, J. L. Jeter; Lathe filing rest, E. Rivett; Lathes, wrist pm turning attachment for, T. W. Broomell; Lathing, metal, C. B. Sill; Lathe holder for tool or music rests, J. Clark; Lathe, mangle, C. M. Spaulding; Lemon squeezer, Erick & Anderson; Letter box, E. Card; Lever power mechanism, J. Kerwin; Lifter, See Jar lifter; Lifting jack, A. J. Logan; Light, See Spot light; Lock, See Nut lock; Locomotive engine, A. J. Huber; Loom picker staff operating mechanism, J. A. Tucker; Lumber, apparatus for handling and loading, C. A. Taylor; Measure, rotating grain, J. W. Kershaw, Jr.; Metal goods, machine for finishing, C. S. Moseley; Metal working apparatus, laminated die, hammer, etc., for electric, H. 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Tannenbergh; Photographic camera, magazine, W. Trueman; Photographic printing machine, D. C. Hoover; Photo letter, E. F. Porter; Photography, flash light for, E. M. Pine; Piano action regulator, W. D. Gibbs; Pipe bending machine, J. F. Doyle; Pipe coupling, W. Carey; Pipe hanger, J. W. Birkett; Pipe, steam, for boilerhouse; Planter, L. C. Evans; Planter, corn, J. Seelbach, Jr.; Plate, cup, and saucer holder, J. H. Yund; Playing duplicate whist, apparatus for, Paine & Sebring; Pliers, J. S. Whiteside; Plow, sulky, W. Soby; Plow, sulky, C. E. Tower; Plow, three-wheel, M. Sattley; Pneumatic carrier, G. Miles; Polish rod adjuster, E. W. Bisett; Power press, F. Grotenath; Press, See Drill press, Power press, Sheet metal drawing press; Printing press ink fountain protector, T. D. Hooper; Printing presses, automatic feeder for, J. H. Baird; Projectile, A. Martin; Propeller and steerer, combined, W. 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Pink; Regulator, See Feed water regulator, Piano action regulator, Speed regulator, Temperature regulator; Riveting attachment, loop, W. C. Trask; Rock core drilling apparatus, S. W. Douglass; Rolling machine for wire rods and strips, T. V. Allis; Rolling mill for rods or wire, T. V. Allis; Roller, G. W. Conch; Rosin, compound of, G. E. Armstrong; Rotary engine, A. Beard; Rotary engine, J. Sperry; Sash, combined balance and swinging, A. Wein-gartner; Sash, roller, W. R. Fox; Sash window, A. A. Iske; Sawmill carriage offset, Vorstman & Niedecken; Sawing machine, circular, Beauregard & Gooding; Sawing machine, saw, C. Weber; Scalper and grader, F. G. Boynton;

Table listing designs and trade marks, including: Atomizers, glass and nozzle for, A. M. Shurtleff; Chambray cap, H. T. Wilhelm; Easel, C. H. Maish; Medal, G. A. Schlegler; Paper weight, J. V. W. Vandenberg; Pendant, J. V. W. Vandenberg; Sign light, H. R. Boelcher; Spoon, C. F. Groethem; Spoon, H. Mercer; Spoon, J. E. Officer; Type, font of printing, C. H. Beeler; Type, font of printing, E. Pechey; Alternative compounds, J. W. Rankin; Anesthetic, M. W. Cobb; Antiseptic for internal and external use, New Orleans Medicine Co.; Beer, American Brewing Company; Beer, lager, Albany Steam Bottling Works; Bitters, J. Crossman; Bitters, liniment, cough balsam, sarsaparilla, chills, and corn remedy, and hair tonic, D. F. Coles Drug and Manufacturing Company; Buttons, Jet, L. Prange; Cigars, J. B. Brueger; Cocoa, baking, H. H. Pierce; Corsets, H. Schweinburg; Cosmetic, B. Westervelt; Cough drops or tablets, P.rien & Gray; Evaporated cream, S. Charles Evaporated Cream Company; Flour, wheat, Northwestern Consolidated Milling Company; Gold, silver, and plated flat and table ware, W. H. Saxton, Jr.; Gum, chewing, F. H. Fleer & Co.; Hair, preparation for curling the, P. B. Keys; Hosiery, F. Victor & Achelis; Iron and steel, manufactures of, Diamond State Iron Company; Jewelry, and flat and table ware, gold, silver, and plated, Curtis & Wilkinson; Leather dressing, J. J. & W. W. Georges; Lotion for the complexion, M. N. Roberts; Meats, sugar-cured, Clark & Stuyvesant Grocery Company; Medicinal plaster, unguent, or compound, H. N. Keith; Metals, including aluminum, bronze, and magnesium, valuable, Therless Aluminum Synd.; Outergarments, J. S. Mossler & Bro.; Petroleum, refined, Arkell & Douglas; Radiators, steam or hot water, A. A. Griffin Iron Company;