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known by two or three trials with the quality of steel that you are using. Hardening from too high heat is too often the sole cause of water cracking.

(4273) L. M. asks how to straighten horn, not in its entirety, but say a piece seven inches long by 2 1/2 inches wide, for inlaying work, and which glue would be the best to use, as I am making the top of a horn table? A. Small pieces of horn can be straightened by heating in boiling water and flattening in a press or between clamps in a vise.

R. J. McK. asks how the bulbs of incandescent lamps may be tinted.—B. J. C. asks how lamps are charged with diamond dust.—R. L. M. asks: What is the process of etching on steel and copper?—P. W. S. asks: How can I clarify molasses?—A. H. A. says: Will you give me simple rules for chemical nomenclature?—C. S. asks: Have you a formula for the paste used in making paper into pads?—W. N. E. asks: Can you give me information about a benzine pencil?—H. J. F. asks how dague-reotypes may be restored.—B. L. P. asks: How is German silver polished?—C. A. W. writes: I am desirous of making a good and cheap boot powder; can you give me a formula for one?—I. T. T. asks: Can you inform me how soap is mottled?—J. D. G. asks for a formula for lacquer for sheet metal, also matt lacquer?—E. B. L. asks a receipt for a first class mayonnaise dressing for salads, etc.—C. E. M. asks: Where can I obtain formulas for the standard perfumes.—R. H. N. asks for formulas of platinum toning baths.—P. C. T. asks: What is the composition of the greasy paints used by the theatrical profession?

Answers to all of the above queries will be found in the "Scientific American Cyclopaedia of Receipts, Notes and Queries," to which our correspondents are referred. The advertisement of this book is printed in another column. A new circular is now ready.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted April 19, 1892, AND EACH BEARING THAT DATE.

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

Table listing inventions with names and dates. Includes: Advertising sign, W. R. Sanford; Aerial ship, W. N. Riddle; Air brakes, compressor for, D. Dunn; Aluminum or other metals, apparatus for producing, P. Herault; Amalgamating apparatus for separating gold and other metals from their ores, G. J. Atkins; Amalgamator, silver ores, A. Janin; Amalgamator, W. E. Darrow; Anchor for brick walls, J. M. Van Why; Animal trap, W. H. Harden; Annunciator, electrical, P. Lane; Armature core for electric motors, D. Pepper, Jr.; Armature for dynamo-electric machines, S. H. Short; Armature for electric generators or motors, S. H. Short; Armature ring, D. Pepper, Jr.; Axle cutter, W. A. Pettingill; Axle, vehicle, Hoefler & Chapman; Axles, adjustable for, I. J. Trench; Bag, See Most prof bag; Bale ties, machine for making, W. A. Laidlaw; Baled material, sampling device for, C. S. Hunt; Baling press, W. A. Laidlaw; Ballasting device, automatic, B. Halstead; Barbers' chairs, swivel stand for, A. Kern; Basket, wire desk, L. G. Beers; Battery, See Electric battery. Secondary battery; Bed bottom, S. Bertenshaw; Bed, folding, L. Sekofsky; Bed protector, J. P. Duvall; Bee escape for hives, G. H. Ashworth; Bicycle pedal, F. Sweetland; Blind stop, Deane & Brown; Blowpipe, J. N. Peebles; Boat, See Life boat; Boiler, G. & J. R. Bolton; Boiler brace, D. A. Wightman; Boilers, construction of, W. S. Shippe; Book, binder, J. U. Morgan; Boot or shoe upper, G. B. Herridon; Boring and shaping machine, W. J. Smith; Boring machine, J. Harris; Bottle and brush, maulage, H. C. Seward; Bottle or similar vessel, J. R. Browne; Bottle stopper, D. H. Halberstam; Box, See Letter box. Music box. Telegraph box; Box covers, machine for making, G. A. Barnes; Box fastener, J. Niess; Brace, See Boiler brace; Bracket, See Shade bracket; Brake, See Car brake. Locomotive brake; Brick and tile cutting machine, R. A. Drawdy; Bridle, L. D. Jones; Brush or broom, E. Ehrenberg; Buckle, suspender, W. A. Springer; Cans, safety gate for, F. C. Cash; Button hook, J. Van Patten; Cable grip, E. R. Guerra; Cable string, J. B. Mahaffey; Cake cutter, F. R. Woodward; Camera, See Photographic camera; Cameras or other purposes, support for, F. Servus; Candlestick, F. V. Evanson; Cane juice, purifying, W. V. Fry; Cans, machine for capping and seaming the ends of, A. D. Coleman; Cap, J. E. McLaughlin; Car, E. A. Kinley; Car coupling, H. R. Dore; Car coupling, C. Geschwindner; Car coupling, W. N. Robinson; Car pilot, railway, H. B. Williams; Car safety, A. N. Lamport; Cars, chain coupling for, J. E. Mullaney; Cars, gearless motor for electric railway, S. H. Short; Cars, gearless propelling mechanism for electric railway, S. H. Short; Cars, holding strap for, H. A. Hartman; Cars, safety gate for, F. C. Cash; Cars, sand box for, H. H. Hennege; Cars, sanding mechanism for, N. Seibert; Carcass spreader, G. T. Plumb; Carding engines, mechanism for grinding the traveling flats of, Dobson & Bromiley; Carpet sweeper, S. H. Raymond; Carrier, See Parcel carrier; Cartridge reloading tool, H. J. Gallup; Cash dish, D. M. Perline; Cash register and indicator, T. Carney; Cash register and indicator, W. G. Douglas; Castings, method of and apparatus for making metal, W. L. Clark; Cattle guard, surface, G. W. Miller; Centrifugal machine, J. Laidlaw; Chain drive, C. E. Hart; Chain elevator, endless, B. Arnold; Check book, E. G. Bards; Chopper, See Cotton chopper; Cigarette machine, H. Bauer; Clamp, See Pen and pencil clamp.

Table listing inventions with names and dates. Includes: Cleaner, See Slate cleaner; Clock, calendar, A. M. Lane; Closet seats, woodworking machine for shaping, F. F. Richard; Cloth finishing apparatus, Kirk & Lee; Clover huller, casing, Kamm & Williams; Club, electric, W. A. Moore; Clutch, pneumatic, J. Brusie; Coffee mill and storage receptacle, combined self-feeding, F. J. Hollis; Coin-freed seat, automatic, J. & L. Quittner; Collar, horse, B. J. Zahn; Comode, E. Shaw; Commutator brush, G. Meyer; Compasses, blackboard, H. P. Smith; Conveyor, spring, O. L. Jones; Cooker, steam, Sundwall & Blakelee; Cooking utensil attachment, P. Lee; Cold machine, J. J. Moore; Corpses, armrest for, T. Streeter; Corrugating machine, W. J. Plecker; Cotton chopper, D. Balsbau; Couch and cradle, combined folding, W. B. & C. K. Halliwell; Coupling, See Chain coupling; Crate for shipping baskets, G. W. Worden; Cream separator, centrifugal, C. A. Hult; Crusher, See Meat crusher; Crushing mill, F. A. Wiswell; Culinary apparatus, W. E. Lewis; Culti-hall weed, cut-off, Z. Broad; Cultivator, disk, A. G. Hill; Cultivator shovel, C. A. Anderson; Curtain supporter and fittings, G. Smith; Cutter, See Axle cutter. Cake cutter. Meat cutter. Plug cutter; Dandy roll, Richardson & Pool; Decorticating jute, ramie, and other fibrous plants, machine for, F. B. Fremerey; Decorticating ramie, etc., machine for, P. P. Faure; Desk, school, G. A. Masters; Dish machine, washing, L. Bush; Digger, See Potato digger; Distilling apparatus, water, W. Rochlitz; Ditching machine, D. W. Scott; Ditching machine, J. J. Wishard; Dividers, J. W. Beaman; Domestic press, G. W. Selton; Door securer, W. W. Ewing; Drier, See Lumber drier; Drill, See Grain drill; Drill operating device, G. H. Summers et al.; Drying machine, J. K. Proctor; Dust pan and support, combined, M. H. Hull; Electric battery, J. E. Emley; Electric cable, W. H. Sawyer; Electric indicating system and instrument, H. J. Philips; Electric light support, G. M. Kim; Electric lock, Crockett & Allen; Electric machine, dynamo, S. H. Short; Electric switch, E. H. Johnson; Electric switch, H. S. Sorenson; Electric table, E. H. Warran; Electric wire conduit, C. H. Wilson; Electric wire hanger, T. Imeson et al.; Electrical machines, cut-off for, J. P. Woolley; Electrode, P. L. T. Heroult; Electrode for use in electro-metallurgical processes, P. Heroult; Elevator, See Chain elevator; Elevator, V. Veenschoten; Elevator controller, Rowntree & Veeder; Elevator controlling device, H. Rowntree; Engine, See Gas engine; Envelope, saw, W. Cogwill; Exhibitor, ware, F. G. MacWaters; Extension table, F. P. Cobham; Fabrics, machine for cleaning and soaping, E. A. Rusden; Fan motor, R. Strasser; Fan motor, R. Merril; Feed rack, G. J. & F. Tarr; Feed trough, J. S. Anderson; Fence, W. D. & T. J. Snowden; Fence, iron, R. C. Jr. & W. A. Stewart; Fence post and wire stretcher, combined, G. M. Piano; Fence stay, I. K. Hollinger; File and index, continuous revolving, A. J. Rudolph; Filters, collecting tube for, G. H. Moore; Firearm, repeating, F. Rees; Fire engine, portable, for igniting fire under steam boiler of steam, G. Case; Fish lines, leader for, A. M. White; Fishing rod holder, T. Lemaire; Flowers, device for preserving dried, F. T. Brown; Fork, See Hay fork; Fruit jar, A. Vogt; Fruit squeezer and strainer, combined, G. Gamlen; Funnel, R. Rahn; Furnace, W. Sloan; Fuse, C. G. Cox, Jr.; Gauge, See Watchmaker's gauge. Weatherboard gauge; Gauge, S. F. Brown; Game apparatus, F. L. Fithian; Game apparatus, F. W. Hale; Game apparatus, E. Busky; Game apparatus, pizza, F. L. Fithian; Garment supporter, E. C. Long; Gas, apparatus for the manufacture of, G. Scharfe; Gas engine, J. A. Charter; Gas from heavy apparatus for separating natural, W. Moore; Gas governors, manufacture of, Dickson & Hopkins; Gas retort, Coze & Leneachez; Gas retort charger, A. Coze; Gas retort apparatus for charging, Coze & Leneachez; Generator, See Steam or hot water generator; Gold and other metals from their ores, electrolytic apparatus for separating, G. J. Atkins; Governor for pneumatic motors, automatic, W. R. D. Jones; Grain binders, compressor and discharging mechanism, for, G. Schubert; Grain drill, Munn & Christman; Grater, nutmeg, F. E. Abbott; Grave marker, J. A. Coffey; Grinding machine, for, C. R. Arnold; Guard, See Cattle guard. Radguard; Gun, magazine, T. J. Thorp; Hair curler, J. S. Wertsbauger; Handle, See Implement handle; Hanger, See Electric wire hanger; Harness ornament, Pfiffner & Kriebs; Harrow, J. H. Hobe; Harrow, A. Wilfert; Harrow, disk, R. W. Hardie; Harrow, sulky spring tooth, T. G. Cook; Harvester, J. E. Deering; Harvest cutter, feed cutter, corn, C. R. Fenno; Harvester, corn, Courtright & Powell; Harvester, corn, F. Steffen; Harvester, potato, G. B. Irwin; Harvester reel, O. Knutson; Hat brims, machine for curling, T. E. Avery; Hat rounding machine, C. H. Reid; Hay rake, J. B. Engstrom; Hay tedder fork, C. & C. Silberzahn; Heater, See Steam heater; Heaters, governor for, C. B. Bosworth; Heating and welding by electricity, H. Howard; Heating pad, electro-therapeutic, F. H. Soden; Hide filing machine, A. E. Whitney; Hinge, H. S. Hart; Hinge, J. Marthaler; Hinge, J. H. Moore; Holder, See Fishing rod holder. Plate holder. Sash holder. Spool holder. Ticket holder. Tool or rest for life holder; Hook, See Button hook. Check hook. Snap hook. Whiffletree hook; Horses, overboot for, R. Coates; Horseshoe with detachable ice calks, Crocker & Bridges; Hunting bicycle, J. U. Morgan; Implement handle, M. E. Carleton; Inhaler and vaporizer, L. B. Hilborn; Injector, steam, G. Marty; Insulated magnetic coils, machine for making, C. E. Tjpe; Iron, See Pipe; Trace iron; Jack, See Lifting jack; Jar, See Fruit jar; Joint, See Rail joint; Knife, See Rotary knife; Knob attachment, C. Marshall; Knobs to shanks, machine for attaching, I. I. Smith; Lacing hooks, machine for making, F. Egge; Lamp, electric arc, T. E. Adams; Lamp, electric arc, O. Patin; Lamp, incandescent electric, A. C. Carey; Lamp, incandescent electric, C. R. Arnold; Lamps, lamp shade and holder for incandescent, G. F. Seavey; Lasting nippers, J. B. O'Neill;

Table listing inventions with names and dates. Includes: Latch, B. Piers; Lead trap, J. Dellinger; Leaf turner, C. H. Van Deusen; Leg, artificial, U. Tanner; Lemon squeezer, H. J. Williams; Letter box, house door, F. Anderson; Letter box, house door, O. W. Newcomb; Lifeboat and raft, W. Hickman; Lifting jack, G. F. Brinkman; Lifting jack, C. F. Hornbeck; Lightning arrester, M. M. Wood; Liquids, receptacle for aerates, J. D. Hier; Liquors, cooling and dispensing device for, J. Neumann; Lock, See Electric lock. Nut lock; Lock, J. B. Lighton; Lock, B. Piers; Locomotive brake, W. H. Russell; Locomotive, compound, H. C. Reagan, Jr.; Loom for weaving chenille webs, L. Letalle; Loom for weaving chenille carpets, L. Letalle; Loom shuttle, J. C. Brooks; Looms, electric stop motion for, J. C. Brooks; Looms, shuttle supplying mechanism for, J. C. Brooks; Lubricator, See Shaft lubricator; Lubricator, G. S. Duncan; Lumber drier, J. C. Hay; Mail bag fastener, automatic, G. B. Johnson; Match splints, machine for sticking, J. H. White; Match splints, machine for sticking, J. H. White; Measuring machine, cloth, C. H. Young; Meat crusher, etc., Arnould; Meat cutter, A. Shepard; Mechanical movement, Appleby & Steward; Medicinal food, A. D. McKay; Metal plates, apparatus for picking, Atkinson & Somers; Metallic vessels, breast or top for, H. J. Vogel; Meter, See Water meter; Mill, See Coffee mill. Crushing mill; Mining cars, elevator for, W. Wakefield; Mixing machine, P. Phillips; Moth proof bag, F. O. Paige; Motor, See Fan motor; Motor, G. W. Mings; Music books, etc., rest or support for, Fales & Frendville; Music box, coin-controlled, G. Rahn; Necktie fastener, J. Hayden; Nut lock, W. Mansfield; Nut lock, W. D. Robinson; Odometer and speed indicator, electric, W. A. Phillips; Oil burner, J. H. Russell; Oil purifier, R. Metz; Oils, compound of sulphurated, W. D. Field; Ore separator, S. G. Elliott; Organ, reed, M. Clark; Organs, qualifying box for bass reeds of, F. W. Hecker; Oven, baker's, J. J. Pfenninger; Packing, metallic, W. T. Harris; Packing, piston, Tripold & Davenport; Packing tool, J. F. Lynch; Pad, See Heating pad; Padlock, C. Caldwell; Padlock, combination, E. P. Caldwell; Paint, J. Haake; Pan, See Dust pan; Paper folding mechanism, J. C. Fowler; Paper sheets in quantity, appliance for holding, P. J. Veenschoten; Parcel carrier, S. R. Smith; Pearl ribbons, manufacturing, O. Fritsch; Pegging machine, E. Woodward; Pen and pencil clasp, S. B. Lane; Pen, manifold, A. C. Carey; Pen holder, L. Du Bois; Penholders, erasing attachment for, F. B. Krause; Petroleum burner, F. E. Forster; Phaeton, W. N. Morrell; Photographic apparatus, coin-operated, W. H. C. Heath; Photographic camera, F. Servus; Photographic camera, F. Servus; Photographic shutter, G. F. Green; Photographic shutter, F. Servus; Piano action flange, W. W. Shailer; Piano back, J. W. Reed; Piano frame, W. W. Shailer; Pianofortes, sounding board and resonant chamber for, J. U. Fischer; Piano, upright, J. U. Fischer; Pill or tablet machine, W. T. Sears; Pipe, See Blow pipe. Tobacco pipe; Piston, balanced, W. J. Thomas; Plaiter blade, C. C. Emmons; Plane iron, E. A. Schade; Planter, corn, J. E. Bering; Planter, seed, A. Neely; Planter, seed, A. Neely; Planter, seed, A. Neely; Planter check row mechanism, J. W. Barlow; Plate holder, F. Servus; Plug cutter, U. H. Lefel; Post, See Fence post; Potato digger, W. & J. Reuther; Press, See Baling press. Domestic press; Pressure regulator, H. Giesenberg; Printing machines, inking apparatus for, C. B. Cottrell; Propeller, J. T. Baldwin; Propeller, H. Petersen; Protector, See Belt protector; Pulley, H. H. Kendrick; Pulley, grip, J. M. Dodge; Pulley, self-locking, B. R. Sockman; Purifying solids, manure, etc., machine for, B. F. Knapp; Pump, F. B. Riggin; Rack, See Feed rack; Railings, bracket and supporting device for, A. E. Briggs; Rail joint, J. Nelson; Railway, See Locomotive; Railway signal, U. S. Jackson; Railway signal, electric, J. M. Brasington; Railway switch, C. E. Carey; Railway switch stand, Newell & Mohle; Railway system, multiple arc, S. H. Short; Railway tie, C. E. Carey; Carl & Phillips; Conduit and trolley for electric, C. E. Carey; Railway tie and chair, C. P. Howell; Railways, converter system for electric, M. W. Dewey; Rake, See Hay rake; Rand guard, J. L. Packard; Reel, See Harvester reel. Wire supporting reel; Refrigerating apparatus, D. L. Holden; Refrigerating machine, D. L. Holden; Register, See Cash register; Register, See Sales of tickets, etc., apparatus for; Register, G. P. Gott; Regulator, See Pressure regulator. Teetherregulator. Watch regulator; Rheostat, A. C. Carey; Ring, See Armature ring; Ring forming apparatus, H. V. Bernhardt; Rod, See Spray rod; Roof, portable, E. Rankin, Jr.; Rotary, knife, C. Zies; Roundabout, W. E. Meissner; Saddle, E. F. Haas; Sash balance, J. E. Steppard; Sash balance, C. E. Whipple; Sash cord, L. Binns; Sash fastener, G. Gibson; Sash holder, J. G. & W. B. Allbright; Sash holder, C. Scheibel; Saw filing machine, G. N. Clemson; Sawing machine, C. E. Stevenson; Sawmill carriage, J. P. Hanson; Scalper and grader, combined, J. B. Martin; Seat, See Coin-freed seat. Wagon seat; Secondary battery, H. E. Dey; Seeding machine, A. Lindgren; Separator, See Cream separator. Ore separator; Sewing machine for finishing buttonholes, Phelps & Thomson; Sewing machine grinding attachment, H. W. Hook; Shade bracket, window, J. R. Ligon, Sr.; Shaft bending machine, vehicle, T. E. Montague; Shaft lubricator, upright, W. G. Stevenson; Sheet metal pipe, machine for making asphalted, J. P. Culver; Ship's log, R. P. Hall; Signal, See Railway signal; Signaling system, H. A. Chase; Slate cleaner, A. Thurber; Slate, double, S. Marks; Slate muffer, E. L. Krans; Smoke consumer, W. H. Burden; Snap hook, E. Filkins; Snap hook, E. L. Howe; Soldering cans, process of and machine for, C. H. Emery; Sole, F. Ephraim; Spindle bearing, W. B. Douglas; Spool holder, J. M. Pierre; Spooling machine, J. W. Foster;

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.

INDEX OF NOTES AND QUERIES. No. 4268 Vessel, the largest. 4269 Spunk. 4270 Tempering tools. 4272 Horn, to straighten.

(4268) R. M. asks: 1. I noticed by some of the papers published in this section of the country, a test for gold ore to detect the presence of gold, as follows: If free oxidized ore, pulverize it and place in a cup. Cover with a solution of iodine and let it stand for about two hours, then try filter paper in it. If it gives a purple color after being burned, it contains gold, and the deeper the color of the paper the richer the ore. Is there anything in the above? Is iodine a solvent for gold? What chemical action takes place? A. The iodine dissolves the gold, and the burning forms a species of "purple of Cassius." 2. What other solvent besides aqua regia is there for gold? A. Chlorine, iodine, bromine, and probably fluorine.

(4269) H. B. asks (1) what Salix nigra is and what are its properties. A. The bark or root of Salix nigra, black willow, has been used in medicine as a feebly tonic and anti-periodic. 2. Also is there any such thing as magnetic oil of amber, its properties and where can it be got? A. The name is senseless; it may apply to some proprietary preparation. 3. What is the name of the largest vessel ever afloat, and how much water did it draw? Was it not the Great Eastern? A. The Great Eastern of all modern vessels. See our SUPPLEMENT, Nos. 584, 680, 830, for articles about this ship. She drew 28 feet.

(4270) F. T. M. writes: I want to find out about the preparation of agaricus (spunk or madon); can you recommend me to an authority? A. It is said to be made from dried mushrooms, Boletus foenecarius and others, and to adapt it for use as tinder it is soaked in solution of potassium nitrate or chlorate. For a very full account we refer you to the United States Dispensatory, ed. 1886, page 1562.

(4271) "Young America" is mistaken when he states that a platinum rod is required in the dry battery described in "Experimental Science."

(4272) A. E. P. asks: I should be glad to know through the medium of your paper if there is any known remedy for "water cracks" in steel tools tempered in water, especially in the case of rock drills. A. There is no remedy for water cracking of steel in hardening by any special application. The trouble generally originates in the work of forging. Rock drills have corners that become overheated by the carelessness or hurry of the blacksmith. When this has been once done to a drill point, the structure of the steel is changed and the only restorative is to cut off a piece and draw to shape again. Great care should also be taken when heating to harden; a slow fire and time for the heat to become even through the metal should be taken. Dip in water or salt water at as low temperature as the steel will harden. This can be readily