

(71) W. & R. ask: What is a good and cheap oilment or varnish to prevent rust on polished iron and steel exposed to dampness, or to a sea voyage? A. Tallow and white lead. A. Is there known a process which facilitates the union of steel to iron cast around it, that obviates the necessity of pouring the iron very hot and in large quantities, as now generally done, to the frequent injury of the steel? A. Dry the mold and cast endways.

(72) J. H. W. says: A drop of turpentine in a grain of chlorate of potash, with the addition of a drop of strong sulphuric acid, produces immediate combustion. Can I obtain similar results by the mixture of any solids? A. Sugar may be made to replace the turpentine in this experiment; but there is nothing that will replace the oil of vitriol, unless it be the anhydrous sulphuric acid, and this is not a pleasant substance to handle.

I. Ganot's "Physics" states: "For physiological or chemical effects, the wires on the bobbins (of a magneto-electrical machine) should be fine, and each from 500 to 800 yards long. For physical effects, on the contrary, they should be thick, and only from 25 to 35 yards in length." I want to produce the longest spark; which arrangement, other portions of the machine being similar, will accomplish my object? A. The fine wire will produce a current of the highest tension, and consequently the longest spark. 2. Can I increase the spark by passing the induced current of one of the above machines (constructed for medicinal purposes) through an induction coil, or would such an arrangement only add to the resistance? A. It is requisite that the inducing current in a Ruhmkorff coil should be one of quantity; and as the current referred to in the preceding question does not possess this essential attribute, it is useless for this purpose.

1. Does mercury evaporate? A. Yes. 2. Which would be more durable as a valve seal, subject only to climatic changes of temperature, mercury or glycerin, the seal being in a position difficult of access for adjustment or inspection? A. Although both have objectionable features, the mercury would probably answer your purpose best.

I wish to construct a small but powerful battery, to be placed in a position difficult of access, but arranged with cord and pulley in such a way that I can lift the electrodes out of solution when not in use, and produce strong electric action immediately on replacing them. Under such conditions, I wish to employ such materials as will be most constant. The battery will not be used more than five or six times in a day, and then for only a few seconds. What form would best answer the purpose? A. Arrange a number of large plates of zinc and carbon alternately, and connect for quantity, that is, all the zincs together to form one pole, and all the carbons to form the other. Place in a lead-lined wooden trough, containing a cooled solution consisting of one part by weight of bi-ohromate of potash in ten parts of hot water and five parts of oil of vitriol. The plates are readily arranged so as to be lifted together out of the solution.

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

E. B.—It is clay with yellow ocher; it contains oxide of iron, but only in small quantity.—A. L. H.—All the specimens are oxide of iron, except No. 2, which is asphalt.—P. D.—They are cubical crystals of iron pyrites.—J. T. W.—Silver was not detected in the sample forwarded. It would be necessary to take a larger sample to subject it to careful assay.—F. H. D.—Quartz.—J. M. R.—It is slate, with a small percentage of bituminous matter. Not valuable.—F. H. F.—It is wulfenite or molybdate of lead, and contains 51 per cent lead and 39 per cent molybdic acid.—D. L.—No. 1 is a rock containing sand, clay, and oxide of iron. No. 2 and 3 are dolomite, No. 2 containing some clay.—C. H. W. Jr.—No. 1 is quartz with carbonate of copper. No. 2 is galena.—E. F. R.—The water holds a considerable amount of oxide of iron in solution, which on contact with the air is separated, and gives the iron stains shown on your paper. It is probable that the water is impregnated with matter from a cesspool, as it contains a large amount of organic matter.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

- On the Use of Superphosphates. By T. B. S.
On the Altitude of Thunderclouds. By —.
On the Grasshopper Plague. By J. S.
On Astronomy. By J. R.
On the Potato Bug. By J. C. B.
On a Cold Water Engine. By R. J. W.

Also inquiries and answers from the following: A. F. K.—N. H. W.—J. C. T.—R. J.—N. F. R.—A. N.—J. T. B.—R. H. S.—J. F. W.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are sent: "Who sells sundials? Where can salicylic acid be obtained? Where are small printing presses sold? Whose is the best paint for ship's bottoms?" All such personal inquiries are printed, as will be observed, in the column of "Business

and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week ending June 15, 1875, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Table listing various inventions and their patent numbers, including items like Alarm register, Auger, Bag, Band, Bank check, Barrel, Bars, Bath tub, Beams, Bedstead, Belting, Bit, Blackboard eraser, Blind, Blind stop, Boiler, Boiler feeder, Boiler, portable, Boiler, sectional steam, Boiler stand, range, Boiler crown sheet, Boot tree, Boots, Brake and elevator, Bridge, truss, Bridle bit, Broom, Brush, fount, Brushes, moid for bristles, Buckle, trace, Bural casket case, Burner, gas, Burner spring, lamp, Bustle, Camphor, permanent flour, Can, oil, Kettle and Clark, Candle holder clamp, Cap, mask, Car coupling, Car coupling, H. B. E. Von Elsner, Car mover, Car starter, Car wheel, Car window, Carbueter, J. H. Bean, Carbueter, J. C. Henderson, Card, playing, Carding and combing cylinder, Carriage fifth wheel, Chain siffler die, Chair, convertible, Chair, recumbent, Chemise, C. Westcott, Churn dasher, Churn, rotary, Churns, stand for barrel, Cloth-entering machine, Clothes pin, Cock, stop, Coffee steeper, Cooler, milk, Cooling apparatus for rooms, Crochet machine, Cultivator, Cultivator axle die, Cultivator, rotary, Curtain fixture, Curtain roller, extension, Curtain roller, operating, Dentifrice, composition for, Doll, W. Miller, Drawing and spinning hemp, Drill for drilling metal, Drill, rock, G. H. Reynolds, Drill tripod, Eaves trough, making, Elevator, D. S. Bailey, Elevator, grain, Engine valve gear, Exercising machine, Eyeletting machine, Fabric, napped, Faucet, H. Gnosell, Faucet, R. L. Hallett, Feed water regulator, Fence, portable, Fence, portable, J. L. Welshans, Fence, wire, J. Haish, Fence, wire, L. and J. C. Merrill, Fertilizer crusher and distributor, Fertilizer distributor, Fifth wheel, Fire brick for furnaces, Flour sieve, Forge, portable, Furnace, H. M. Smith, Furnace, hot air, Furnace, steam boiler, Gas, making vapor, Gate, automatic, Gate, farm, T. Snider, Generators, circulation in steam, Glass, etc., mold for, Glove, W. Meyer, Grain drill and planter, Grate bar, J. A. Sinclair, Grates, shutter for, Grinding machine, Hair-weaving loom, Halter strap holder, Hammer, drop, Harrow, J. Roth, Harvester, L. and J. Miller, Harvester crank and pin, Harvester cutter, Hat bodies, Head light, locomotive, Heel polishing machine, Hinge, S. T. Davis, Hinge, lock, J. Alkman, Hive, mold for shaping combs, Hoisting machine, Honey extractor, centrifugal, Horse detacher, Horse power, Horse power link, Hub borer, Hydrant, W. Scott, Insect-destroying composition, Ironing apparatus, Kettle, tea, Knit fabric, Knit fabric, F. A. Calley, Ladder, extension, Lamp shade, Lamps, formation of glass, Lap board, Lathe beds, adjusting, Leather washers, Lighter, portable, Lighting and heating houses, Lime, dissolving phosphate of, Liquor tester, filter, etc., Lock, combination seal, Lock for sliding doors, Locomotive, head light, Loom, hair weaving, Loom shuttle, Mail bag catch, Mask cap, Measure rotary, Mechanical movement, Motor, C. Van De Mark, Nut lock, J. C. Wright, Oiler, R. B. Perkins, Ordnance, breech-loading, Organ reed, J. E. Norton, Organ stop knob, Organ valve, Nordstrom & Hutchings, Paint compound, I. L. Merrell, Palate, artificial, J. Peyer, Pan-forming machine, Paper bag, E. Langgesser, Paper bag, E. Mill, Paper bag machine, Paper box, E. D. F. Shelton, Paper feeding machine, Paper-making cylinder, Pencil case, magic, Pencil sharpener, Photographs, lubricator for, Piling, driver for sheet, Pins and dowels, making, Pipe tongs and cutter, Planer wood-holding device, Planter, corn, Plow, C. Meyers, Plow Irons, roll for welding, Plumber's joint, Polishing or sad iron, Potato bug destroying machine, Press, W. H. Penniston, Press, cotton and hay, Printer's side stick and quoin, Printing, producing plates for, Printing press, C. Wells, Pruning shears, Pump, E. F. Adsett, Pump and check valve, Pyrophore, G. E. F. Kastner, Radiator, steam, Rails, utilizing ends of, Railway axle box, Railway rail chair, Railway rail joint, Railway switch, Railway time signal, Rake, F. W. Hawkins, Range boiler stand, Range, portable, G. W. Wolfe, Relishing machine, Roll for welding plow Irons, Rooms, cooling apparatus for, Roof, M. A. Shepard, Sad iron heater, Sash fastener, Sash fastener, A. C. Manning, Sash fastener, ventilating, Sausage machine, Saw buck, Hayton & Hurlburt, Saw frame, W. Hankin, Saw sharpening machine, Scraper, E. Dickinson, Screw cutting die, Sewing machine, C. S. Cushman, Sewing machine motor, Sewing machine shuttle, Shafts, etc., fastening pulleys to, Shearing machine, metal, Sheet metal, corrugating, Ships, etc., discharging water from, Shirt collar, Wall & Ludington, Shoe sole edge trimmer, Shoe tip, C. T. Grilley, Shutter, fireproof, Shutter worker, T. J. Carroll, Shutter worker, W. M. Lanphere, Sidewalks, distributing ashes on, Siding, machine for cutting, Sign, H. J. Blowney, Signaling apparatus, switch, Slag, granulating, Soap-cutting machine, Soap, transparent, Spark arrester, Spinning jack stop, Spinning regulator, Spinning ring, Spinning, etc., holding driver, Stool, rotary, Stove, base-burning, Stove, heating, M. Pierce, Stove reservoir, C. Truesdale, Stove, reservoir cooking, Sugar-cutting machine, Switch rod, safety, Table, extension, W. Maus, Table, extension, J. Poolman, Tank regulator, Target, T. B. Connery, Tiling, manufacture of, Time-recording instrument, Tool receptacle, W. H. Hoffman, Toy pistol, R. W. Churchill, Toy wagon, F. W. Porter, Treadle, S. Elliott, Tubing, metal, Valve gear, Wannock & Koepfner,

Table listing various inventions and their patent numbers, including items like Walls of buildings, Wash bench, Washing machine, Water filter, Water wheel, Weatherboard gage, Weather strip, Weather threshold, Wells, pumping, Whiffletree, Wind wheel, Windmill, B. Weirich, Wooden planing machine, Wrench, I. W. Heysinger,

DESIGNS PATENTED.

Table listing various designs and their patent numbers, including items like Hat block, Glassware, Medal, Knife handle, Mugs, Head light, Drinking fountain, Range plate, Range, Coffin handles, Chain pump curb, Game board, Oil cloths, Carpets,

SCHEDULE OF PATENT FEES.

Table listing patent fees for various categories: On each caveat, On each Trade mark, On filing each application for a Patent (7 years), On issuing each original Patent, On appeal to Examiners-in-Chief, On appeal to Commissioner of Patents, On application for Reissue, On filing a Disclaimer, On an application for Design (5 1/2 years), On application for Design (7 years), On application for Design (14 years).

CANADIAN PATENTS.

LIST OF PATENTS GRANTED IN CANADA, June 15, 1875.

Table listing various Canadian patents and their numbers, including items like Animal poke, Broom handle painting machine, Harvester rake, Floating docks and pontoons, Compound paint, Colored relief letters, Apparatus for the combustion of fuel, Pocket door fastener, Hame fastening, Rail joint and nut lock, Pawl and ratchet mechanism, Chain pump, Metallic seal, Seeding machine, Lubricating compound, Fertilizer holder and distributor, Slat iron for carriage top, Anti-incrustation battery for boiler, Lever mortise lock, Egg beater churn, and ice cream freezer, Sheet metal screw-threaded collars, Boot and shoe tip, Pea cleaner and pneumatic chaff carrier, Welding process and composition, Passage ticket, Manufacturing tobacco, Whiteley, Springfield, O., U. S. Mower and reaper.

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