

(79) R. W. says: I have about 4 gallons of sulphate of nickel and ammonia that I spoiled by putting in a vat lined with pine pitch. The cyanide and ammonia seem to be affected, which spoils the conducting power of the solution. When I put articles in the bath to be plated, they all turn black. Is there any way in which I can recover that solution? A. Various methods have been tried, but they are so tedious and require so much labor that you could not recover the nickel and convert it again into the double sulphate economically, on the small quantity of 5 gallons.

(80) W. H. says: You once gave a recipe for waterproof glue as follows: 12 ozs. glue with sufficient water to dissolve it. Add 3 ozs. rosin, melt down in a carpenter's glue pot, and then add 4 ozs. turpentine or benzine. It does not mix well. I also tried softening the glue in water, then dissolving in linseed oil; but it curdled and its too slow in drying. I should like to have a glue as nearly colorless as possible. A. A glue which is said not to be affected by moisture may be prepared by dissolving 1 oz. sandarac and 1 oz. mastic in half a pint of alcohol, and adding 1 oz. white turpentine. A very thick glue is then to be made, to which some tinstiglas is to be added. The alcoholic solution is to be heated to boiling in a vessel, and poured gradually, with constant stirring, into the warmed glue, until the whole is intimately mixed together. The mixture is finally to be strained through a cloth, and is then ready for use, and is to be applied hot. It dries quickly, becomes very hard, and pieces of wood united with it do not separate in water.

(81) J. H. J. asks: Is there any process by which small iron castings can be changed into malleable iron after they are cast, so that they can be welded or hammered like wrought iron? A. Malleable castings, as made at present, cannot be worked like wrought iron. They are only rendered less liable to crack.

How much coal do ocean steamers, from 3,000 to 4,000 tons, burn in a day? A. From 40 to 60 tons.

(82) H. S. asks: How is the brown imitation of bamboo on fishing rods made? A. By charring the wood, and then polishing.

(83) J. E. E. of Pa. says, in answer to A. A., J.'s query as to filtering water for boilers: Build a circular well of very soft-burnt building brick in the center of your water tank; lay the brick (on edge) in water cement (Portland preferred). Select bricks that are sound, having no holes or cracks through them. Fill your tank outside the well; it will readily soak through the brick. Take your water from the inside of the well for your boilers. Should the pores of the brick occasionally fill up so that the water will not soak through fast enough, use a scrub brush to clean off the outside. This makes a cheap filter for almost any impure water.

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

C. W. J.—Your impressions are very imperfectly made, especially the Roman coin. The one of the date 1311 is a Spanish coin, but doubtless not as old as the Roman. Their age shows nothing very important. Coins older than these are to be found in circulation at this day. They were doubtless brought over long after Columbus discovered America, and obtained in traffic by the Indians; and, being considered of value by them, were buried with them, as was their custom.—J. W. H.—The specimens are magnetic oxide of iron, mixed with some quartz, etc. The pure magnetic oxide of iron should contain over 72 per cent of iron. What it does actually contain, whether it has any constituent which would unfit it for iron-making, and what is the value and extent of the ore, must be ascertained by a technical chemist.

W. W. says: In the locality of Binghamton, N. Y. (lat. 42° 06' N., long. about 76° 14' W.) I prove conclusively that, for a long series of years previous to 1806, the declination of the magnetic needle was eastward, at the average ratio of 3 7/2' per annum, that at that period (variously and indefinitely stated by authors) the eastern motion ceased, while the directive tendency of the needle was 2° 49' west of the pole. Subsequent to that, the declination has been westward, at about the same ratio, showing now an accumulated secular variation of 7° west, as deduced from my last astronomical experiment. Now what I wish to learn is this: Whether the period of revolution of the needle, from east to west and vice versa, is a regular or uniform period, I mean of about the same number of years? If it is, what is the extent of that period? For your scrutiny and criticism, allow me to state that the diurnal westerly motion of the needle is only to be discovered in full force between the vernal and autumnal equinoxes; and that this variation amounts to about half as much in winter as in summer (as several authors of celebrity have stated) seems to be doubtful: as from the most minute observations I have been able to make during the time I have mentioned, the diurnal variation has been found to be 13' or 14'; while between the autumnal and vernal equinox, variation has been nil, or scarcely appreciable. [Will some of our readers who have investigated this subject in particular or have made it a study, please answer this question?—Eds.]—M. V. H. asks: What do sign painters use to produce that brilliancy in gold letters or gold leaf which they apply on shop and store windows?

COMMUNICATIONS RECEIVED.

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

- On Tender Bones. By Z. M. P. K.
On Railroad Rolling Stock. By F. G. W.
On Measuring the Width of a Stream. By W. H.
On Creeping Rails. By A. S. M.
On a Novel Projectile. By C. R. S.
On Practical Mechanism. By T. W. P.

Also enquiries and answers from the following:

- S. R.—E. E.—L. F.—C. G.—X. Y.—N. F. P.—D. T. W.—L. M. B.—Q.—F. R. S.—M. A.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good rea-

sons, 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 enquiries analogous to the following are sent: "Please to inform me where I can buy a machine for turning broom handles, also for cutting barrel heads? Where can I purchase the best water wheel? Which work on modern architecture is considered the best? What are the prices of best German silver instruments? Where can I obtain printed sheets of playing cards?" All such personal enquiries 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

August 25, 1874,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Table listing inventions and their patent numbers, including Alloy, anti-friction, M. H. Campbell; Animal fats, etc., treating, Churchill et al.; Auger, earth, J. O. Smith; Axle box self-oiling cup, B. S. Hyers; Baker, J. T. Wilson; Bed bottom, spring, J. W. Case; Bed bottom, spring, Grafton & Crane; Bed bottom, spring, C. Miller; Bedstead, sofa, J. McGrath; Bell ringer, steam, C. H. Hudson; Blackboard rubber, J. B. Walker; Boat-detaching hook, G. Utley; Bobbin, W. Ingham; Boiler leg, Taylor & Quinn; Boot heel rotary tip, G. Shuttleworth; Boot and shoe last, J. K. Felck; Bottle stopper, W. Morgenstern; Bottles, etc., packing for, O. Long; Brick, I. Gregg, Jr.; Bridge, iron truss, Z. King (r); Broiler, J. Willging; Bronzing machine, D. Heston; Brush, paint, F. H. Jordan; Buckle loop, metallic, H. A. Pott; Candle safes, pocket, A. Barbarin; Car axle, J. M. May; Car brake, A. Robb; Car coupling, A. Kimber; Car coupling, H. E. Smith; Car, sleeping, J. T. and D. R. Leighton; Car spring, W. P. Hansell; Car wheel gage, F. Collins; Cars, etc., extra seat for, C. E. Baldwin; Carbon black, making, A. Farrar; Carriage, child's, J. A. and G. W. Conover; Carriage hub, S. Mitchell; Caster, furniture, C. B. Sheldon; Chair, W. W. Crawford; Chicken coop, J. H. Van Arnum; Chuck for holding nipples, A. Saunders; Clothes dryer, C. A. Meekins; Clothes pounder, Sheldon & Reynolds; Coal, etc., screen for, P. and W. B. Hayden; Column, composite, C. E. Hill; Corset, J. L. Follett; Counting apparatus, R. H. Webb; Cultivator, J. Lux; Cultivators, evener for, V. K. George; Curtain fixture, A. H. Knapp; Dentist's use, gold leaf for, C. E. Blake; Drill joint, J. H. Bauser; Eaves trough, C. D. Woodruff; Egg beater, J. F. and E. P. Monroe; Egg carrier, J. Perkins; Electric commutator, W. Robinson; Elevator, hay, W. Adams; Elevator, windlass water, J. Keith; Engine governor, steam, J. Judson; Engine governor, J. D. Lynde; Engine cut-off, D. A. Woodbury; Engine piston, J. M. Palmer; Engine slide valve, O. J. Byrd; Fan attachment, W. S. Burton; Fan, automatic, P. Magnus; Fan, automatic, Smith & Bogy; Fare box, W. S. Clapp; Faucet, L. J. Birgier; Fence, flood, D. T. Deffenbaugh; Fence, iron, J. B. Maurer; Fence, portable, J. Hafer; Fire arm, breech-loading, E. F. Gunn (r); Fire extinguisher, F. Latta; Fire extinguishing machine, A. E. Hughes; Flat iron heater, C. A. Stevenson; Flour bolters, W. F. Cochrane (r); Fork, manure, J. G. and J. G. Rankin; Furnace grate bar, Hanford & Holladay; Furnace, annealing metal, etc., C. Marshall; Furnace blast valve, J. M. Hartman; Furnaces, delivering piles into, S. W. Kimble; Gage, bevel, W. E. Skinner; Gage for shingles, J. M. and C. T. Schramm; Gas, purifying, W. H. St. John; Gas carbureting machine, B. F. Grimes; Gas holder, portable, J. McHenry; Gas purifier, W. H. St. John; Gas, purifying, S. O. Rockwell; Gate, W. Flynn; Gratebar, G. M. Ball; Hame, S. Thornton;

Table listing inventions and their patent numbers, including Harvester, H. F. Long; Harvester binder, B. F. Witt (r); Heater, washstand, Herlehy & Johnson; Heater, steam air, J. T. Bon; Hemp brake, Dean & Forward; Hook, sister, T. Witmer; Horseshoe, L. W. Griswold; Hose coupling, H. Wolf; Hose couplings, band for, E. Rath; Hose spanner, D. U. Beecher; Hydrant cover, J. McKnight; Hydronette, etc., W. B. Robbins; Indicator, low water, C. N. Myers; Injector, steam, J. Trees; Insect destroyer, W. G. Swartz; Iron and steel, annealing, J. E. Atwood; Iron plater, straightening, H. J. Merrens; Jack, drilling, Metcalf & Regan; Jack, hydraulic, E. Biddle; Journal box, etc., self-oiling, Chapman et al.; Keyhole guard, E. Moat; Knitting machine, stop for, R. and F. J. Cooke; Knob or closet pin, C. H. Thurston; Lamp bracket, C. H. King; Lamp, cooking, G. P. Houston; Lamp lighter, J. C. Gould; Latch, locking, Sherman & Hamann; Lathe dog, J. H. Stimpson; Locks for sliding doors, D. H. Deterer; Lock, seal, J. Sweeney; Loom, R. W. and G. P. Andrews; Lubricator, Reed & Osborn; Marble sawing machine, L. B. Clogston; Medical compound, J. P. Edinger; Meter, fluid, B. Huber; Milk cans, washing, G. L. Chadborn; Mill roll shaft box, W. Garrett; Millstones, tool for dressing, J. Norman; Miter box, E. Knock; Mitering machine, T. E. King; Molding machine, W. F. Wolf; Nail plate feeder, J. Cornforth; Nut lock, W. Duncan; Nuts, die for making, J. H. Sternbergh; Oakum, making, T. H. Dunham; Ordnance projectile, R. P. Parrott (r); Organs, pneumatic action for, T. Winans; Overalls, J. Greenbaum; Paper box, T. J. Waters; Paper, perforating, W. Braidwood; Petroleum, refining, R. D. Turner; Plano, C. Boerner; Piano strings, covering, C. Rienwarth; Pipe cut-off, J. Hambliter; Planing machine, W. C. Margedant; Planter, corn, Askew & Sangster; Planter, corn, G. W. Brown; Planter, corn, Miller & Wright; Planter, corn, H. Oison; Planter, corn, J. Selby; Planter, corn, H. A. Thomas; Plate lifter, O. I. Foster; Plating, nickel, I. Adams, Jr.; Plow, R. W. Banks; Plow, Fulk & Good; Plow clearer, Deal & Hobbs; Plow, rotary, Jones & Yard; Plow, sulky, M. Grove; Press, cotton, P. Byrne; Printing roll, F. E. James; Propeller, screw, J. M. Dodge (r); Pump, W. Adair (r); Pump, J. P. Flanders; Pump cock, B. S. Church; Purifier, middings, G. W. Dellinger; Railway wheel fender, Fulk & Good; Railway cattle guard, Ruh & Wenger; Railway rail, compound, I. Thomas; Railway switch, B. Bacon; Rake, horse hay, A. P. Massey; Rein holder, A. K. Smith; Sash holder, J. M. Horne; Scales, platform, W. B. Wood; Screw cutting die, A. Saunders; Seed drill, E. Mosher; Sewing machine, G. Frame; Sewing machine hem stitcher, E. L. Howard; Sewing machine ruffer, W. H. Lewitt; Shackle for blocks, elastic, J. Edson; Sheep-shearing machines, M. C. Davis (r); Shoe, woven, E. B. Phillips; Shutter fastener, C. S. Van Wagoner; Sled, T. G. Boon; Sleigh, Sumner & Small; Sluiceway, adjustable, J. L. McDonald; Smoke stack and spark arrester, J. W. Neamth; Soda water bottle stopper, H. S. Carley; Soda water retort, O. Knapp; Soldering iron tip, J. Sears; Stair rod holder, I. Banister; Steam and water power, A. Huffer (r); Steel for agricultural implements, J. E. Atwood; Stockings, darning, O. S. Hosmer; Stove foot, E. Smith; Stove grate, G. R. Moore; Stove, heating, J. E. Kendall; Stove, heating, S. Cook; Stove, magazine, E. Smith; Swine, marking and ringing, A. C. Decker; Swing, J. R. Davis; Telegraph, duplex, C. H. Haskins; Telegraph in sulca tor, H. Brooke; Toy pipe, soap bubble, A. Barbarin; Trap, animal, A. Davis; Trap, animal, J. Dildine; Trap, mouse, O. S. Watrous; Trap, pigeon, H. Knapp; Truck, F. J. & G. M. Clark; Trunk fastening, W. J. Henry; Tyre tightener, S. H. Hodge; Valve, balance slide, A. J. Stevens; Valve, safety, P. Mooney; Vehicle running gear, C. M. Murch; Vehicle spring, S. E. Foster; Vehicle, traction, C. V. B. Reeder; Velocipede, P. J. Marqua; Ventilator register, H. A. Gouge; Vessels, propelling, E. Matteson; Vessel, wave power utilizing, P. S. Devlan; Wagon, etc., dumping, G. Peterman; Wagon body, B. Rankin; Wagon running gear, W. L. Booth; Wagon tongue support, E. Jerrill; Warping machine stop, T. C. Entwistle; Watchmaker's tool, J. C. Link; Watchman's time check, C. Pfisterer; Water wheel, F. W. Tuerk, Jr.; Water wheel, current, D. Bowles; Whitetree, A. J. Dibble; Windmill, R. E. Mason; Wrench, pipe, C. H. Fulmer;

APPLICATIONS FOR EXTENSION.

Applications have been duly filed and are now pending for the extension of the following Letters Patent. Hearings upon the respective applications are appointed for the days hereinafter mentioned:

- 30,719.—PAPER FOLDING MACHINE.—C. Chambers, Jr. November 11.
31,330.—COLLARS FOR CARRIAGE WORK.—M. Seward. January 20.

EXTENSIONS GRANTED.

- 29,917.—DRAW BRIDGE.—L. Schneider & J. A. Montgomery.
29,920.—MORTISING MACHINE.—H. C. Smith.
29,923.—PLANING MACHINE.—H. D. Stover.

DESIGNS PATENTED.

- 7,709.—HARNES ROSETTE.—J. V. Waldron, N. Y. city.
7,710.—STOVES.—T. F. Hamilton, Geneseo, Ill.
7,711 to 7,714, inclusive.—TASSEL DROPS.—R. K. Slaughter, Brooklyn, N. Y.

TRADE MARKS REGISTERED.

- 1,945.—BAKING POWDER.—Cloud & Co., Evansville, Ind.
1,946.—MEDICINE.—Frese & Co., Hamburg, Germany.
1,947.—CLOCKS.—F. Kroeber, Hoboken, N. J.
1,948.—GIN.—M. Lileman & Co., New York city.
1,949.—PLOWS, ETC.—A. Speer & Sons, Pittsburgh, Pa.

SCHEDULE OF PATENT FEES.

Table listing patent fees: On each caveat \$10; On each Trade Mark \$25; On filing each application for a Patent (17 years) \$15; On issuing each original Patent \$20; On appeal to Examiners-in-Chief \$10; On appeal to Commissioner of Patents \$20; On application for Reissue \$30; On application for Extension of Patent \$50; On granting the Extension \$50; On filing a Disclaimer \$10; On an application for Design (3 1/2 years) \$10; On application for Design (7 years) \$15; On application for Design (14 years) \$30.

CANADIAN PATENTS.

LIST OF PATENTS GRANTED IN CANADA AUGUST 22 TO 31, 1874.

Table listing Canadian patents: 3,776.—T. A. D. Forster and E. L. Stowell, Philadelphia; Philadelphia county, U. S. Improvements on tooth paste, called "The Sphinx Tooth Paste." August 22, 1874.
3,777.—W. Robertson, Yorkville, York county, Ont. Improvements on cloth shrinking and drying machines, called "Robertson's Cloth Shrinker and Dryer." August 22, 1874.
3,778.—L. Richards, Philadelphia, Philadelphia county, Pa., U. S. Implement for cutting and gaging butter and lard, called "The Complete Butter and Lard Cutter and Gage." August 22, 1874.
3,779.—J. Johnson, Brooklyn, Kings county, N. Y., U. S. Improvements in ball casters, called "Johnson's Universal Caster." August 22, 1874.
3,780.—W. H. Weagant, Morrisburgh, Dundas county, Ont. Improvements on window blinds, called "Weagant's Improved Window Shade." August 22, 1874.
3,781.—E. Osborn, Spencer, Tioga county, N. Y., U. S. Improvements on running gear for wagons, etc., called "Elijah Osborn's Cross Platform Gear for Wagons, etc." August 22, 1874.
3,782.—H. B. Sherwood, Mill Point, Hastings county, Ont. Improvements in tool handles for files, chisels, drawing knives, etc., called "Sherwood's Improved Tool Handle." August 24, 1874.
3,783.—H. P. Becker and N. Underwood, Jr., Dixon City, Lee county, Ill., U. S. Improvements on machines for scouring and polishing grain, called "Becker's Grain Scouring and Polishing Machine." August 22, 1874.
3,784.—W. H. Taylor, Baldwinville, Onondaga county, N. Y., U. S., and C. Potter, Schenectady, Schenectady county, N. Y., U. S. Improvements on harness pad trees, called "Taylor's Harness Pad Tree." August 24, 1874.
3,785.—D. W. Bailey, Watertown, Middlesex county, Mass., U. S. Improvement in concrete, adapted to roads, walks, floors, water works, etc., called "Improved Composite Concrete and Mode of Applying the Same." August 24, 1874.
3,786.—T. Sparham, Brockville, Leeds county, Ont. A fireproof paint, called "Sparham's Fireproof Paint." August 24, 1874.
3,787.—O. Thompson, East Flamborough, Wentworth county, Ont. Improvement in railway car couplers, called "Thompson's Railway Car Coupler." August 22, 1874.
3,788.—E. L. Fenerty, Halifax, N. S. Improvements on the heel fastenings of his improved skate fastenings under letters patent No. 180, bearing date Dec. 15, 1869, called "Canadian Club Skate." August 24, 1874.
3,789.—J. Sharp, Horton, Renfrew county, Ont. Improvements on spinning fibrous materials, called "Sharp's Improvements in Spinning." August 24, 1874.
3,790.—G. R. Prowse, Montreal, P. Q. Improvements on the construction of fire extinguishers, called "Prowse's Improved Fire Extinguisher." August 24, 1874.
3,791.—G. K. Smith, Waterloo, Black Hawk county, Iowa, U. S. Improvements in the composition and process of making a metal for casting plows, called "Smith's Composition for Plows." August 24, 1874.
3,792.—S. Moore and H. Rogers, Sudbury, Mass., U. S. Useful manufacture of preparation of leather or leather board for use in making shoes or various other articles, called "Resinated Leather or Leather Board." August 24, 1874.
3,793.—K. Corbet, Owen Sound, Grey county, Ont. Improvements in the art or process of raising, heating, and distributing hot water simultaneously, called "Corbet's Process of Raising, Heating, and Distributing Hot Water." August 24, 1874.
3,794.—William Harkness, Providence, Providence county, R. I., U. S. Improvements on apparatus for and methods of making illuminating gas, called "Harkness' Gas Apparatus." Aug. 24, 1874.
3,795.—H. W. Spratt, 4 Lee Road, Lee Parish, Kent county, Eng.—Improvements on voting apparatus, called "The Voting Machine." Aug. 31, 1874.
3,796.—T. Rowan and J. R. Reid, Glasgow, Lanark county, Scotland. Improvements on floor cloths, called "Rowan & Reid's Carpet Floor Cloth." Aug. 31, 1874.
3,797.—I. E. Moyer, Clifton, Welland county, Ont. Composition of matter to be used as a liniment for the cure of rheumatism, sprains, etc., called "Moyer's Star Liniment." Aug. 31, 1874.
3,798.—C. Hoffman, New York city. Improvements on grates, called "Hoffman's Furnace Grate." Aug. 31, 1874.
3,799.—J. Thompson, Bramley, Simcoe county, Ont. Improvements on gates, called "Thompson's Improved Gate." Aug. 31, 1874.