

A. B. says: I claim that a solid column of metal is stronger than a hollow one of the same diameter. My opponent claims it is not. Which is correct? Answer: The solid column is the stronger, the diameters of the two being the same.

J. Y. of Leeds, England.—The Science Record has been published two years. We can send you the two volumes, postage prepaid, for £1.

J. H. H. says in answer to J. S. C.'s query about oil of rhodium: "Oleum rhodii" from rhodium wood (the root), *genista caryiatis*; 80 lbs. of old resinous wood yields 2 ounces of oil. Color of oil, light yellowish, by age turns red. Odor, of roses. Wood used for fumigation. Cordial and cephalic. Imported from the Levant.

W. W. A. replies to T. W. S., who asked how to keep paste from souring: Stir in pulverized alum while cooking, about a teaspoonful to a pint of paste. The alum will also keep the flies out of the paste pot.

S. P., Jr., asks how to proceed with a drive well after driving down a certain distance and not obtaining water. "I have driven down into the ground 22 feet of 1 1/2 inch tubing and attached my pump thereto, but am unable to start her. I do not think that it is for want of water, as water can be obtained here almost at any time at a depth of from 2 to 3 feet from the surface of the ground. I had to dig a hole 4 feet deep in order to put down the set length which is attached to the pump, and before I could screw the set length on to the tubing I had to dip out the water that had accumulated in the hole, which wash half full." Answer: I can best answer this question by relating a little anecdote. "Suppose," said an examiner to a competitive in engineering, "you should build an engine yourself, perform every part of the work without assistance, and know that it was in complete order; if, when put into a vessel, the pump would not draw water, what would you do?" "Go to the side of the vessel and ascertain if there was any water in the river," answered the competitive.

A. K. S. says, in answer to B. A. O.'s queries on page 27, current volume: Girdle trees as early in the season as the oak will peel, in the following manner: Commence three or four feet from the ground, cut the bark entirely around the tree; then strip the tree down to the ground, leaving the bark intact at the base of the trunk. This will kill most kinds of timber so that the stump or roots will not sprout. Honey locust is an exception. I never knew or heard of one of these trees being killed (except by fire) so that it did not sprout from roots. A few times grubbing of the sprouts will end this. In answer to query 4. I would say that iron is a permanent cure for nose bleeding and for boils. The best preparation is the tincture of the muriate (*tinctura ferri murialis*). Take 20 drops in a wineglass of water twice a day for three weeks. The above is a dose for an adult. I have known it to cure several severe cases. A solution of alum sometimes gives a temporary relief.

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

A. R. G.—The substance enclosed is peat, used as a fuel.

M. M. G.—The mineral is felspar.

J. T. C.—No. 1 is felspar, used in the manufacture of pottery and porcelain. No. 2 is copper pyrites, iron pyrites, and galena, all valuable if in large quantities and near to means of transportation. No. 3 is hornblende; of no value; it occurs with copper pyrites, and is known as "dead rock." No. 4 is copper and iron pyrites in quartz rock.

W. M. A.—The specimens you send are kaolin and felspar, the kaolin evidently resulting from the disintegration of the felspar. The kaolin contains too much grit, or undecomposed felspar, to be of use without washing. You may find some, however, as the deposit is so large, that is free from grit. This is easily determined by crushing a small piece between the front teeth. The specimens of felspar are good. It is used by the potters under the name of "spar"; and kaolin is even more extensively applied to the same purpose.

W. C. A.—The sample enclosed is ferruginous sand, consisting of the protoxide and sesquioxide of iron or magnetic iron ore mixed with some silica. It sometimes contains a considerable quantity of titanium. If found sufficiently pure and abundant, it might pay to smelt.

S. K.—1. Quartz, and iron pyrites. 2. Pyrites. 3. Copper pyrites. 4. Galena and quartz. 5. Galena. 6. Pyrites. 7. Quartz. An assay or analysis for silver or gold will cost \$10 for each specimen.

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 Crewe Engine Works. By J. R.
On Meteors. By S. G.
On the Origin of the Earth and Stars. By C. B. Jr.
On French Telegraphy. By T.
On Retrogression of the Sun. By C. H. B.
On Solar Reaction. By R. B. S.
On Inversion by Vision. By J. M. R.
On a Balloon Safety Valve. By S. W.
On a Suggestion for Balloonists. By J. W. S.
On Boilers and Boiler Owners. By A. J.
On the Zodiacal Light. By J. E. H.
On Fire Arms. By C. P. T.
On the Patent Right Question. By H. A. W.
On Setting Saws. By J. F. T.
On Deviation of the Compass. By J. W. S.
On Tool Holders. By H. W. P.
On a New Mechanical Principle. By D. M. B.
On Turbine Wheels. By J. H.
On Navigation of the Air. By C. B. S.

Also enquiries from the following:
W. E. S.—A. H.—C. M. H.—J. M. A.—J. W.—E. A. H.—A. G.

Correspondents who write to ask the address of certain manufacturers, or where specific articles are to be had, also those having goods for sale, or who want to find partners, should send with their communications an amount sufficient to cover the cost of publication under the head of "Business and Personal," which is specially devoted to such enquiries.

[OFFICIAL]

Index of Inventions

FOR WHICH Letters Patent of the United States

WERE GRANTED FOR THE WEEK ENDING July 15, 1873,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Table listing inventions and their patent numbers, including items like Abdominal supporter, Anger, earth, Baisley & Wilson, Aluminum, electro-deposition of J. A. Jeannon, Bale tie, cotton, R. Cook, Bales, hoop tie for cotton, E. J. Beard, Barrel hoop, H. Willard, Barrel making machinery, H. P. Hall, Bed bottom, T. J. Shears, Bed bottom, J. V. Taylor, Bed bottom spring, Van Wert & Crooley, Boiler, wash, E. H. McDonald, Boot soles to uppers, uniting, W. Strasser, Boots, cutting off pegs in, A. Whitmore, Box match, C. Prahl, Box scraper, A. Tester, Bridges, constructing, T. C. Clarke, Bustle, M. K. Bortree (r), Bustle, A. W. Thomas, Candles, drip cap for, D. M. Ayer, Car awning, street, C. B. Turnbull, Car coupling, E. W. Barker, Car coupling, W. P. Siddens, Car coupling pins, die for, C. H. Williams, Car coupling pins, die for, C. H. Williams, Car, dumping, J. Hughes, Car starter, T. W. Johnston, Car stove, railroad, W. S. Jones, Carding waste remover, G. W. Craner, Carpet rag looper, W. Clapton, Jr., Carriage springs, clip plate for, N. C. Dean (r), Carts, apparatus for loading, J. Byerly, Chair, child's, J. F. Downings, Chair, invalid, T. Armstrong, Churn, reciprocating, Barrett & Fenimore, Churn, reciprocating, L. I. Bodenhamer, Churn, reciprocating, M. W. Staples, Cigar bunches, making, S. Scholfield, Cigar bunches, making, D. A. Wightman, Cigar bunches, making, D. A. Wightman, Cigar fillers, arranging, S. Scholfield, Cigar machine, C. J. Delbridge, Cigar machine, T. Ernst, Cigar machine, S. Scholfield, Cigar machine, S. Scholfield, Cigar machines, roll for, D. A. Wightman, Cigar trimmer, S. Scholfield, Cigar wrapping machine, S. Scholfield, Clamp, J. E. Sinclair, Clay articles, mold for, C. A. Fischer, Coke from lignites, etc., H. Engelmann (r), Cooler, milk, J. F. Hawkins, Cooler and show case, water, P. J. Hancur, Cooling storage rooms, J. Ring, Cotton gin, M. E. Pratt, Coverlet, C. K. Pevey, Crane, R. Briggs, Cultivator, J. Caylor, Curtain fixture, L. J. Earll, Curtain fixture, F. Walker, Cutter head, J. F. W. Erdmann, Cutter, rotary, Mellor & Orum, Cylindrical burring machine, J. K. Proctor (r), Dental gold, manufacture of, R. S. Williams, Desk school, A. F. Wilber, Dish heater, S. S. Fitch, Ditching machine, H. Gonellaz, Doors, construction of, W. W. J. Toussaint, Dressing machine, H. Gonellaz, Dress facing, W. H. Gallup (r), Drilling machine, metal, J. C. Keller, Drills, feeding mechanism for rock; J. Doty, Egg and cake beater, J. W. Condon, Egg carrier, J. A. Bean, Engine, compound steam, Cooper & Emery, Engine, rotary steam, C. Grotz, Eye glass, S. Greacen, Eye wash, R. C. Fisher, Fare box, R. D. O. Smith, Fare box, J. F. Winchell, Fence, iron, B. G. Devoe, File, paper, J. F. Winter, Filter, J. M. Everts, Fireproof shutter, I. S. Mettler, Flat iron heater, Wright & Sursa, Floor, L. S. Wood, Fruit jar, E. G. Haller, Furnace for roasting ores, shaft, T. McGlew, Furnaceslag, cooling and removing, A. Kloman, Gage, dial for pressure, J. Annin, Gaiters, goring, J. Walden (r), Gas and water main coupling, W. Kilburn, Gas from oils, making, S. H. Goldthorp, Gate automatic, W. I. Wooster (r), Gate, change, A. W. Wood, Gate, farm, T. Steers, Generator, steam, I. Barton, Grain binder, J. F. Gordon, Grindstone, J. F. S. H. Green, Harness saddle, S. E. Tompkins, Harness saddle, S. E. Tompkins, Harness saddle, S. E. Tompkins, Harvester, E. M. A. Wry, Harvester, corn, G. M. Tope, Harvester knives, grinding, J. M. Connel, Harvester knives, grinding, J. M. Connel, Hat stretching machine, R. Eickemeyer, Hinge compound, H. Loth, Hinge, table, J. W. Palmer, Hoisting machine, P. W. Mellen, Hook, siding, J. F. Elliott, Hoop tie for cotton bales, E. J. Beard, Hose coupling, S. Ingersoll, Hose reel, T. J. Mayall, Hose, manufacture of, T. J. Mayall, Houses, construction of, T. W. H. Moseley, Houses, construction of, T. W. H. Moseley, Inhaler, N. I. Donaldson, (r), Inhaler, Hunter & Woods, Ink for stamping purposes, J. B. F. Jud, Insect destroyer, J. A. Finney, Iron and steel, Bolton, Jr., & Pedder, Ironing board, E. Bassett, Journal box lining, S. Gwynn, Journal box lining, S. Gwynn, Knitting machine, C. Callahan,

Table listing inventions and their patent numbers, including items like Knitting machine, O. F. Tripp, Knives, forks, etc., cleaning, E. Marwedel, Lamp, J. M. Clark, Lamps, supplying oil to street, R. V. DeGuinon, Last block fastener, D. Huard, Lemon squeezer, J. H. Mead, Lock, hasp, J. Kinzer, Logs, machine for turning, E. Tarrant, (r), Loom, G. Crompton, Lubricator, steam cylinder, L. F. Smith, Man hole covers, securing, J. J. Craven, Meat chopper, H. P. Rankin, Meat and vegetable cutter, Hall & Ellis, Medical compound, T. T. Wright, Mirror holder, W. Simpson, Miter box, G. M. Stevens, Miter machine, D. Bull, Motion, transmitters, W. H. Benson, Movement, intermittent rotative, R. C. Reynolds, Mowing machine, C. Colahan, Nozzle, steam, W. Ebbitt, Numbering heads, C. W. Dickinson, Organ, reed, R. Burdett, (r), Packing, piston rod, W. W. Vanderbilt, Paint for oil barrels, etc., W. L. Elkins, Pavement, W. Kilburn, Pavement, laying cement, A. F. Shyrma, Pen, fountain, J. Goodyear, Pencil case, S. S. Rembert, Pencils, machine for finishing, T. H. Muller, Petroleum, refining, S. Van Syckle, Pipes, lining cement, M. Stephens, (r), Pipe, smoking, W. H. Morris, Pitcher, molasses, D. C. Ripley, Planter, potato, C. Svendsen, Potato screen, G. Clafin, Powder keg, Green & Wilson, Jr., Press, cotton, J. P. Pridgeon, Printing press, C. B. Cottrell, Printing press, feeding paper to, Stoddard et al., Pruning shears, G. Vanfossen, Pump, lining wooden, R. W. Wheeler, Pump, double acting force, J. P. Flanders, Pump plunger and pump, N. P. Sheldon, Railway rail joint, J. Bishop, Railway signal, electric, F. L. Pope, Railway signal circuit closer, D. Rousseau, Railway switch, A. C. Garratt, Railway switch, M. & J. W. Fels, Railway switch, B. Hall, Railway switch, F. P. Hanchett, Railway tie, G. R. Richardson, Rivets, manufacture of hollow, M. Bray, Roof truss, iron, A. Gottlieb, Roofing composition, C. Mueller, Roofing, metallic, C. Lewando, Rubber into strips, cutting, T. J. Mayall, Saddle tree, S. E. Tompkins, (r), Sash cord guide, C. B. Clark, Sash holder, Devol & Okey, Saw, pulley for band, Roche & Orton, Scaffold, adjustable, J. S. Tilley, Scraper, Mayfield & Payne, Scraping hogs, McNeill & Dalton, Screw cutting machine, Jaycox & Webster, Sealing cans, solder for, E. Morris, Seat, revolving, G. F. Dawson, Seeding machine, H. F. Stinde, Sewing machine, T. L. Melone, Sewing machine stand, H. Loth, Sewing machine table, J. Benner, Sewing machine table, J. Benner, Sewing machine table, J. Benner, Sewing machine treadle, W. D. Wood, Sewing machine balance wheel, D. G. Williams, Sewing machine extension table, J. Gordon, Sewing machine threader, M. A. & J. T. Williams, Sharpening machine, Kealey & Rigney, Shoe, ladies' gaiter, H. C. Letsinger, Shoe, rubber, Hyatt & Canfield, Sifter, A. Bardell, Soap, manufacture of, F. M. Pleins, Soda, extracting nitrate of, R. F. Fairlie, Spade and fork, H. Stone, Spike, G. N. & G. N. Sanders, Jr., Spinning ring, J. B. Bancroft, Steel for punching, etc., treating, G. W. Billings, Steel plates, O. Bolton, Jr., Step and step box, J. Watson, Stereotype molds, making, R. A. Hill, Stone and glass polishing, J. Meisse, Stove, heating, J. L. Ring, Spinning ring, J. B. Bancroft, Stove pipe shelf, D. R. Moore, Stove pipe shelf, W. Patterson, Stove, summer, W. A. Barlow, Tassel for umbrellas and canes, W. Harnach, Telegraph, pneumatic, A. Jaynor, Thill coupling, C. F. Kidder, Tobacco transplanter, C. E. Bates, Toy, automatic, H. L. Brower, Toy automaton, R. J. Clay, Toy catapult, W. S. How, Toy money box, T. A. Taylor, Trap, ant, L. Rubarth, Trap and seed safe, animal, S. V. Greer, Trap, hog, A. B. De Vore, Umbrella, A. & L. Herzberg, Vessels, oscillating cabin for, W. Weisker, Wagon weighing attachment, J. W. Hill, Walls, gage for erecting plank, T. W. H. Moseley, Washing machine, J. W. Conroy, Watch escapement, D. J. Mozart, Water closet, J. H. Stevens, Water elevator, S. Bennett, Water, elevating, Blanchard & Prall, Water supply valve, P. Harvey, Well, driven, G. W. Storer, Windmill, W. W. Marsh & O. E. Miles, Windmill, J. F. Stewart, Window sash and frame, D. Mackay, Window screen, J. A. Thompson,

6,773.—JEWELRY BOX.—E. C. Moore, Youkers, N. Y.
6,774.—FAN.—J. T. Brundage, Niagara Falls, N. Y.
6,775.—DRAWER PULL.—O. F. Fogelstrand, Kensington, Ct.

TRADE MARKS REGISTERED.

1,361.—LICORICE PASTE.—D. V. Argumbau, N. Y. city.
1,362.—QUILL BOBBINS.—D. Bass, Jr., Woonsocket, R. I.
1,363.—COFFEE.—Dilworth Brothers, Pittsburgh, Pa.
1,364.—PACKAGES OF WHISKY.—Howe & Co., Cincinnati, O.
1,365.—CIGARS, ETC.—F. S. Kinney, New York city.
1,366.—SADDLE TREES.—S. E. Tompkins & Co., Sing Sing, N. Y.
1,367.—RAZORS, ETC.—Friedmann & Co., New York city.
1,368.—VARNISH.—L. L. Mandel, New York city.
1,369.—HOMEOPATHIC GLOBULES.—Smith & Co., Cinn., O.
1,370.—CYLINDER SPOVE.—Southard & Co., N. Y. city.

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 an application for Design (7 years) \$15, On an application for Design (14 years) \$30.

CANADIAN PATENTS.

OFFICIAL LIST OF PATENTS GRANTED IN CANADA FROM FEBRUARY 14, 1873, UP TO AND INCLUDING APRIL 7, 1873.

Patents taken by citizens of the United States are marked U. S.

[NOTE.—Under the new patent law, now in vogue, American citizens may patent their inventions in Canada on favorable terms. For full particulars, address Munh & Co., Office SCIENTIFIC AMERICAN, 37 Park Row, N. Y.]

Table listing Canadian patents and their numbers, including items like Axle blank finishing tool, H. E. Forrest, U. S., Barrel hoops, C. W. Rider, U. S., Bed, lounge and chair, J. Kinney, Blind, metallic, W. H. Rodden, Blind slat tenoning machine, A. Cant, Boot sole finisher, B. S. Bryant, U. S., Bridges, truss, C. G. Simpson, Burner, a vapor, R. W. Park, U. S., Cant hook machine, W. P. Kilgore, U. S., Car brake, J. Heberlein, Car brake, steam and air, O. W. Ketchum, Car coupler, L. Forrest, Car coupler, G. W. Putnam, U. S., Car coupler, W. P. Scott, Car coupler, J. F. Holman & E. Henwood, Car coupler and buffer, W. P. Scott, Carriage shaft attachment, G. B. Stock, Carriage, hand propelling, J. A. Fourrier, Carriage pole and thill shifter, J. Macbeth, Castor, furniture, F. G. Ford, U. S., Cheese box, A. H. Moore, Churn, H. J. Wattles & A. D. Cable, U. S., Churn attachment, J. Bates & T. McKenny, Clasps for tubes, E. A. Day, U. S., Clothes, cutting, J. A. Johnston, Clothes rack, G. A. Kennedy, Cooking range, portable, J. Magee, U. S., Corn planter, A. C. Kent, U. S., Creeper, ice, E. B. Colby, U. S., Curtain fixtures, O. Buckley & L. L. Sawyer, U. S., Cutting textile material, A. Warth, U. S., Dye salts, etc., T. Steers, Jr., Dyspepsia compound, V. Brosseau, Fire extinguisher, J. Gardner & W. F. Beasley, U. S., Fishing, bait for, W. Harper & W. Smith, Fish spawn hatcher, M. G. Holton & S. Green, U. S., Gas, heating and lighting, C. W. & A. H. Harrison, Gas lighting apparatus, J. P. Tirrell, U. S., Gas generator, hydrogen, H. P. Allen, U. S., Gas illuminator, A. Cuppers, U. S., Gas, manufacture of, W. D. Ruck, Gas, process and machine for, T. H. Hicks, Gate, farm, J. E. Fraser, Grain cleaner, A. Hunter & E. H. Osborne, U. S., Grain cleaner, A. Hunter & E. H. Osborne, U. S., Graphite covering, A. Hitchcock, U. S., Grate bar, J. W. Stanton, U. S., Harrow, J. V. Hough, Harvester, self binding, J. F. Gordon et al., U. S., Harvesting machine grinder, J. H. Curran, U. S., Hat, felt, J. T. Waring, U. S., Heating air and gas, T. Whitwell, Hoes, M. Cookerly, U. S., Horse hoof spreader, T. Armstrong, Horse power, endless chain, G. C. Hodge, U. S., Horse rake, O. P. Austin, U. S., Horse shoe, J. Galipo, Iron and steel process, C. W. Siemens, Iron cr., smelting, P. E. Jay, Jack, lifting, F. S. Smith, U. S., Kitchen small conductor, J. Newhall, Knitting machine, J. S. Shafler & J. C. Ford, U. S., Lamp, T. H. White & E. Knight, U. S., Lamp, R. Hitchcock, U. S., Lantern, kerosene, J. H. Stone, Lounge, b and chair, J. Kinney, Leather, dressing for, F. G. Bell, U. S., Lock, time, J. Burge, U. S., Locomotive smoke consumer, R. Hawkes et al., U. S., Lyes, treatment and re-use of, C. M. Tessieu du Motay, Maple sap evaporator, H. Paguazo, Melodeons, A. F. Yarwood, Milk weighing can, P. W. Strong, Nail cutting machine, J. Lawrence, U. S., Nail machine, horse shoe, H. A. Wills, U. S., Nutmeg grater, T. J. O'Sullivan, Oils and varnishes, clarifying, F. Kersting et al., Organ, L. K. Fuller, U. S., Organ, reed, L. K. Fuller, U. S., Paper pulp propeller, T. Nugent, U. S., Paper, manufacture of, G. Noble, Petroleum, distilling, E. F. Prentiss & H. F. Howell, Potato digger, P. M. Bawtinhmer, Pot tilter and holder, J. Grant, Power, transmitting motive, A. D. Fox, Printing, adjusting cards, etc. for, G. W. Verrall, Pulley hub, friction, H. Cox, Pulp, reducing wood to, W. M. Howland et al., U. S., Pump, E. Graser, U. S., Railroad car spring, P. G. Gardner, U. S., Railroad chair, A. Van Guysling, U. S., Railroad rail and fastening, M. F. McIntyre, U. S., Railroad chair and supporter, A. Van Guysling, U. S., Railroad cars, safety shoe for, S. W. Emory et al., U. S., Railway car wheel, W. Wilmington, U. S., Rail scabbard, etc., J. Starr,

APPLICATIONS FOR EXTENSIONS.

Applications have been duly filed, and are now pending or the extension of the following Letters Patent. Hearings on the respective applications are appointed for the days hereinafter mentioned:
25,673.—SEW LASTING MACHINE.—J. Purinton. Sept. 17
25,692.—BOOTING MACHINE.—K. Vogel. September 17.
25,701.—SKELETON SKIRT.—J. Draper. September 17.
25,733.—DOUBLE FRICTION COUPLING.—J. Hendy. Sept. 21.
25,734.—MAKING BARRELS, ETC.—G. W. Banker. Sept. 21.
25,797.—HARVESTER.—E. Ball. October 1.
25,807.—HEM FOLDERS.—L. Clark. October 1.
25,862.—WEEDING HOES.—J. M. Adams. October 1.

EXTENSION GRANTED.

24,328.—PUMPING ENGINE.—H. R. Worthington.

DESIGNS PATENTED.

6,771.—BURIAL CASE.—B. F. Heimbach, Allentown, Pa.
6,772.—BURIAL CASE.—B. F. Heimbach, Allentown, Pa.