

(32) C. R. says: Please give me an explanation of the following formulæ:— 144 degree Baumé ÷ 134 = specific gravity, and 144 ÷ 134 = degree Baumé. I see these used constantly in describing the specific gravity of petroleum, but nobody can explain them to me. A. It is merely an arithmetical ratio which represents the relation in which the numbers obtained by the purely arbitrary divisions of the Baumé scale stand to the specific gravities. The second is derived from the first in the following manner:— 144 ÷ 134 = specific gravity. 144 = (specific gravity × degree Baumé) ÷ (134 × specific gravity). 144 = (specific gravity × 134) ÷ specific gravity. Dividing both terms by the specific gravity, 144 ÷ 134 = degree Baumé.

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

F. W. B.—It is *Haltica striolata*, an insect very injurious to young plants. It is of a polished black color, with a broad, wavy, buff-colored stripe on each wing cover, and the knees and feet are reddish yellow. Its length is considerably less than 1/16 of an inch. We think the ravages may be prevented by watering the leaves with a solution of lime, a remedy employed in England for this purpose.—G. N. K.—The sample sent is pure hydrated red oxide of iron, and might answer for making a cheap red paint. But it is without action on either tin or lead, and the explanation of the corrosion is to be found by examining the water, and not from these settings.—J. H. W.—The wood is in the course of that slow change (under water) which would slowly bituminize and mineralize it, and result in the production of a body resembling coal.—G. A. S.—It is silicate of alumina, and is useful for all the purposes to which a fine, soft, polishing powder can be applied.—E. L. P.—It is neither lead nor silver. It is blende, sulphuretted zinc. Follow up the coal outcrop.—G. E. S.—No. 1 is siliceous containing clay mixed with oxide of iron. No. 2 is tourmaline. No. 3 is crystallized quartz.—R. A.—It is composed of copper pyrites, iron pyrites, and sulphide of lead.—I. J. W.—It is copper pyrites.—M. A. H.—It is galena, valuable lead ore.—F. E. P.—It is stibnite, or sulphide of antimony, and contains sulphur 33 per cent and antimony 72 per cent.—H. E. S.—It is common mica, used in large plates in stoves, etc.

COMMUNICATIONS RECEIVED.

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

- On Steam Boiler Explosions. By J. W. D.
On a Preventive of Shipwreck. By J. F. J.
On a Curious Fact in Flower Growth. By W. H. M.
On a Theory of Dissolution. By W. T. D.
On Utilizing Natural Forces. By T. A.
On Extracting the Square Root. By E. C.
On Ship Railways. By J. A.

Also inquiries and answers from the following: F. G. H.—H. W.—J. J.—J. McL.—M. W. M.—J. C. G.—E. F. N.—R. I.—N. W. T.—A. B. F.—H. R.

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 lathes with engine-turning attachments? Whose is the best dividing engine? Why do not makers of gas-making machines advertise in the SCIENTIFIC AMERICAN?" 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 1, 1875.

AND EACH BEARING THAT DATE. (Those marked (r) are reissued patents.)

Table listing inventions and their patent numbers, including Alarm, burglar, J. Andrews (163,960), Amalgamator, W. H. Carson (163,847), Anchor, J. S. Williams (164,065), Bale tie, J. S. Carson (r) (163,983), Baluster, P. J. Hardy (163,983), Battery, flume, D. F. Hawkes (163,867), Bed bottom, spring, J. Wagner (163,902), Bedstead fastening, W. H. Elliot (163,982), Belting, machine, C. A. Jewell (165,002), Billiard table, H. W. Colender (r) (6,469), Binder, temporary, Peirce et al. (164,030), Bird cage hook, extension, V. Balcom (163,909), Bit stock, D. F. Sutton (163,896), Boat-propelling mechanism, T. W. Pratt (164,033), Boiler, wash, W. P. Casperson (163,916), Boot heels, etc., making, J. J. Sawin (163,948), Bridge, metallic arch, J. B. Eads (163,854)

Table listing inventions and their patent numbers, including Buckle for suspenders, A. Shenfield (r) (6,474), Burner, gas, W. J. Herrlott (163,929), Burner, lamp, A. Kimber (164,006), Butter package, J. C. Tilton (163,899), Button holes, cutting, J. D. Westgate (163,904), Car brakes, F. L. Kirtley (164,007), Car coupling, B. S. Kearney (163,931), Car coupling, J. McNabb (164,017), Car coupling, O. L. Taylor (163,897), Car coupling, automatic, J. Miller (164,020), Car heater and ventilator, J. Amory (163,908), Car, refrigerating, R. Armiger (163,961), Car starter, A. H. Smith (164,019), Car starter, F. Stafford (163,895), Carpet stretcher and tack driver, G. A. Alger (163,907), Carriage top slat iron, F. B. Plumb (163,885), Casting articles of cement, L. A. Tartière (164,057), Chain links, device for welding, P. H. Standish (163,949), Chair, adjustable and reversible, Voth & Hyatt (163,953), Chair, folding, J. E. Waketield (164,060), Chair, folding, J. A. Ware (164,061), Chronometers, etc., regulating, L. Eaton (163,981), Chuck for metal drills, G. M. Pratt (164,032), Churn, re-impacting, Price & Hoover (164,034), Clock, penulium, V. Himmer (163,868), Clothes dryer, W. Bloomer (163,972), Clothes cryer, E. S. Heath (163,928), Coat patterns, laying out, Z. Bauer (163,911), Coconut, preparing, A. P. Ashbourne (163,962), Columns, etc., construction of, P. J. Hardy (163,984), Columns, construction of marble, P. J. Hardy (163,985), Compasses, mariner's, D. Baker (163,836, 163,837, 163,838, 163,839, 163,840), Cooler, beer, A. Roos (164,040), Cooler, milk, R. Smith (164,048), Corset, H. G. Emery (163,983), Culinary steamer, H. M. Welch (164,063), Cultivator, A. Dart (163,921), Doll, paper, W. H. Hart, Jr. (163,866), Drills, chuck for metal, G. M. Pratt (164,032), Elevator, water, Hoag & Junkerman (163,999), Emery to metal, applying, S. G. Morrison (163,880), Engines, injector for steam, G. H. Little (163,876), Exercising apparatus, G. W. Wood (163,957), Exhaust, variable, Leseur & Michel (163,934), Fabrics, tenting, W. H. Palmer, Jr. (164,026), Feather renovator, H. E. Rowe (163,889), Fence, barbed wire, Watkins & Scutt (163,955), Fence, farm, W. E. Cary (163,848), Fence post, J. E. Warren (163,954), Fifth wheel, C. B. Wood (164,067), Fire kindler, W. C. Philbrick (r) (6,472), Fish hook, E. L. Dunlap (163,990), Flour dressing machine, G. Smith (164,050), Fruit dryer, H. E. Aldwell (163,998), Furnace, air-heating, S. W. Davenport (163,978), Furnace grate bar, J. Clark (163,975), Fuses, slow match for lighting, A. S. Wall (163,903), Game apparatus, C. L. Browne (163,845), Gas regulator, D. P. Mayhew (163,937), Gas retort, J. C. Tiffany (164,058), Grading apparatus, E. Church (163,849), Graining roller, A. J. Taplin (164,056), Gun feed case, D. C. Farrington (163,922), Hame and horse collar, E. Stroud (163,930), Hand rail, P. J. Hardy (163,996), Harrow, A. Ross (164,042), Harrow, corn, J. McCormick (164,013), Harvester, S. S. Stultz (164,055), Hat, A. A. Richardson (164,036), Hat fastening, C. R. Blackwood (163,913), Heater and condenser, J. E. Coughlin (163,917), Hoe, H. D. Mills (164,021), Hoe, D. and E. Moore (164,023), Hold-back, J. V. Phillips (163,884), Horseshoe, C. Hartmann (163,997), Horseshoe bar roll, H. H. Gilmore (163,864), Horseshoe caik die, J. Palmer (163,882), Horseshoe die, W. Russell (164,044), Horseshoe bending machine, A. Barton (163,841), House, wooden, M. Rogers (163,888), Ice, storing and removing, A. Hunt (164,001), Index, C. H. Bradley (163,973), Indicator, station, C. A. Blomquist (163,844), Indicator, station, S. P. Littlefield (163,936), Injector, W. P. Patton (163,027), Insect powder injector, A. Meyer (163,877), Iron and steel, making, J. B. Pearce (164,029), Jack, lifting, J. C. Bird (163,969), Journal, stud, or crank pin, O. E. Seymour (163,892), Knitted trimming, G. M. Genshym (163,985), Ladder, extensible, W. B. Elliott (163,856), Lamp, C. McKinnon (163,016), Lathe cutter holder, J. R. Mitchell (163,878), Laundry polish, C. L. Holland (163,869), Leather work, etc., forming staples, T. K. Reed (164,010), Letter and picture block, D. Birmeil (163,912), Letter box, A. Rosenstjerna (164,041), Locomotive cylinder cock, C. H. Hopkins (r) (6,464), Loom for tubular fabrics, J. E. Gillespie (163,925), Loom heddle frame, H. Parsons (r) (6,466), Marble, artificial, Cowman and Barber (163,977), Marble for building purposes, P. J. Hardy (163,990), Mats, making wooden, J. M. Hall (163,986), Match box, E. S. Burchett (163,846), Measure and funnel, J. D. Humphrey (164,000), Mirror, A. Huber (163,930), Motor, electric, C. J. B. Gaume (163,924), Muclage holder, H. T. Cushman (163,919), Music holder, sheet, B. J. Beck (163,966), Music recorder, automatic, G. Landrien (163,932), Music stand, folding, E. A. White (163,905), Package holder, G. Lewinson (163,935), Painting, base for, Thielepape and Kroeschell (163,898), Paper box, L. A. Kettle (164,005), Paper, planishing, W. E. Lockwood (r) (6,470), Paper pulp wood grinder, J. O. Gregg (163,926), Paper pulp wood grinder, A. M. Zimmer (163,958), Pencil attachment, slate, J. Poznanski (163,886), Pessary, J. Keane (163,871), Piano attachment, A. Steinway (164,052, 164,053, 164,054), Pictures, apparatus for view, E. S. Ritchie (163,946), Pipes, stopping leaks in, J. B. Peake (164,028), Planter, hand corn, J. Beers (163,967), Plow, H. Olson (164,025), Plow iron, Moore and Curkendall (164,022), Plow, reversible, J. McCabe (164,014), Pot scraper, U. Cramer (163,918), Poultry coop, F. M. Blanc (163,971), Press, cider, H. Sells (164,045), Press, cotton, E. Van Winkle (163,900), Printers' leads, cutting, Hawkins and Dodge (163,998), Pump, chain, C. Fishbaugh (163,859, 163,860), Pump for deep wells, J. T. Whipple (r) (6,477), Railroad crossing signal, King and Nunn (163,875), Railroadral joint, W. M. Spacht (164,051), Railroad signal circuit, etc., H. W. Spang (r) (6,476), Rake, horse, J. Pennypacker (r) (6,471), Roof, cement, I. Mills, Jr. (163,938), Rope traction way, endless, A. S. Hallidie (163,865), Sash balance, T. I. Dale (163,930), Sash balance, E. Johnson (164,003), Sash balance, T. J. W. Robertson (164,038), Saw filing machine, W. B. Bizzell (163,970), Saw for sawing stone, S. G. Morrison (163,879), Saw sharpening machine, P. D. Burgher (163,974, 164,068), Sawing machine, scroll, H. L. Beach (163,843), Scraper, road, E. A. Beach (163,842), Seeds, moistening, A. B. Lawther (163,933), Sewer trap, J. Naughten (164,024), Sewing machine, C. F. Posworth (r) (6,463, 6,467), Sewing machine cover, G. Rehuss (164,043), Sewingmachine embroiderer, I. M. Rose (r) (6,473), Sewing machine straw, Smith & Ricker (164,047), Sewing machine tension, J. Reece (164,035), Sheet iron, manufacture of, J. Ellis (163,857), Ship's berth, swinging, T. P. Ford (163,861), Ship's berth swinging, W. Von Auer (163,901), Shirt bosom, S. S. Fleishman (163,884), Shoe dressing, J. I. Eastman (163,955), Signal, etc., electric, W. J. Phillips (164,031), Skate, P. Rodier (164,039), Slate-cutting machine, T. W. Parry (163,944), Slate framer, W. A. Miller (164,019), Smoking tube, J. C. Cook (163,976), Smoothing and fluting iron, W. D. Mayfield (164,012), Spinning frame bobbin, T. B. Wattles (164,062), Spring machine spindle, A. M. Wade (164,059), Spinning ring and ring rail, G. Richardson (163,887), Spool, N. I. Allen (163,959), Square, adjustable, C. B. Kirkpatrick (164,008), Steam brake, T. Wilson (164,066), Steering gear for vessels, D. Scattergood (163,890), Stereotype block, A. N. Kellogg (163,873, 163,874), Stereotype plate holder, A. N. Kellogg (163,872), Stone-cutter's gage, E. R. Batchelder (163,910), Stone for building, P. J. Hardy (163,992), Stone to walls, applying, P. J. Hardy (163,989), Stove, J. Spear (164,046), Stove attachment, cooking, F. Enos (163,858), Stove, cooking, D. E. Paris (r) (6,465), Stove, heating, P. J. Hardy (163,987, 163,988), Stove, heating, L. B. Stuart (163,951), Stove, magazine fireplace, J. J. McCormick (163,852), Stove pipe lid holder, Denman & Barfoot (163,883), Stove, reservoir cooking, D. E. Paris (163,883), Street mains, laying, A. O'Neill (163,942), Table and desk, combined, T. W. Moore (163,939), Table extension, T. White (164,064), Table, ladies' work, C. R. Snyder, (r) (6,475), Tar, treating, T. H. Dunham (163,979), Telegraph, duplex, M. Gally (163,923), Telegraphs, station for submarine, R. F. Bradley (163,915), Thrashing machine band cutter, E. L. Beard (163,964), Tide power, T. Beche (163,965), Torpedo for oil wells, J. Taylor (163,952), Toy, cartesian, A. Demuth (163,851), Track clearer, S. G. Smith (163,893), Truck scraper, S. A. Otis (163,943), Trunks, spring buffer for, E. N. Geer (163,863), Tubing, drawing and welding, G. Matheson (164,011), Type setting machine, A. C. Richards (164,037), Vessels, construction of, J. W. Norcross (163,941), Vessels, mast and sail for, J. W. Norcross (163,940), Vessels, steering gear for, D. Scattergood (163,890), Wagon axle, E. Balkema (163,963), Wagon bodies, stud for, C. Spencer (163,894), Wagon, side bar, M. Donnelly (163,853), Walls of buildings, covering for, P. J. Hardy (163,991), Wash bench and wringer, C. F. Hornbeck (163,870), Washing machine, Addison & Yates (163,906), Washing machine, Jones & Kidd (164,004), Washing machine, J. W. Melick (163,018), Washing machine, E. J. Robinson (163,947), Washing machine, J. Seaman (163,891), Water wheel, O. J. Bollinger (163,914), Water wheel, J. P. Collins (163,850), Water wheel gate, J. M. Hart (163,927), Weed turner, Mowry & Chance (163,881), Wells, torpedo for oil, J. Taylor (163,952), Whiffletree, T. T. Furlong (163,862), Whiffletree hook and clip, I. N. Pyle (163,945), Whiffletree trace fastening, J. L. Wingate (163,956)

DESIGNS PATENTED.

- 8,353.—SILK FABRICS.—J. Coignet, New York city.
8,359 to 8,363.—INKSTAND SUPPORTS.—C. Kitchelt, New York city.
8,364.—FAN.—N. Metz, New York city.
8,365.—MEDAL.—J. H. Schreiner, Philadelphia, Pa.
8,366.—MEDAL.—I. Townsend, Philadelphia, Pa.
3,367.—COOKING RANGE.—N. Vedder et al., Troy, N. Y.
8,368.—VASE.—J. W. Fiske, New York city.
8,369.—FORK HANDLE.—J. F. Fradley, Brooklyn, N. Y.
8,370.—SPOON HANDLE.—J. F. Fradley, Brooklyn, N. Y.
8,371.—LAWYER'S BADGE.—S. L. Harmon, Batesville, Miss.
8,372.—TEA POTS, ETC.—J. D. Rice, Philadelphia, Pa.

APPLICATION FOR EXTENSION CONVERTING MOTION.—A. J. Hathaway, August 4.

SCHEDULE OF PATENT FEES. On each Caveat. \$10. On each Trade mark. \$25. On filing each application for a Patent (7 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 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, June 5 to June 9, 1875.
4,791.—G. H. Palmer, Monmouth, Ill., U. S. Army equipments. June 5, 1875.
4,792.—N. Lounrin, Montreal, P. Q. Historical centograph. June 5, 1875.
4,793.—A. J. Small, Woodstock, N. B. Barrel lifter. June 5, 1875.
4,794.—J. E. Finley, Memphis, Tenn., U. S. Churn dasher. June 5, 1875.
4,795.—J. J. Roberts et al. Steam packing ring. June 5, 1875.
4,796.—T. S. Dickerson, Chicago, Ill., U. S. Making gas from petroleum, etc. June 5, 1875.
4,797.—C. Hutchings, Kansas City, Miss., U. S. Rein holder. June 5, 1875.
4,798.—E. E. Gold, New York city, U. S. Hot air furnace. June 5, 1875.
4,799.—J. B. Robert, Montreal, P. Q. Lime kiln. June 5, 1875.
4,800.—A. J. B. Berger, Easton, Pa., U. S. Burglar-proof lock. June 5, 1875.
4,801.—D. B. Pond, Woonsocket, R. I., U. S., et al. Washing machine. June 5, 1875.
4,802.—Wm. Abernombie, Hamilton, Iowa, U. S., et al. Polishing machine. June 5, 1875.

- 4,803.—F. E. Town, Boston, Mass., U. S. Gang saw mill. June 5, 1875.
4,804.—L. Bradford, Plymouth, Mass., U. S. Machine for making boot shank pieces. June 5, 1875.
4,805.—G. E. Dayton, New York city, U. S. Metallic skylights. June 5, 1875.
4,806.—J. B. Smith, Amable, Ont. Car coupler. June 5, 1875.
4,807.—Wm. Randall, Salem, Mass., U. S. Boiler injector. June 5, 1875.
4,808.—Wm. Hardy, Ancaster, Ont. Horse collar. June 5, 1875.
4,809.—D. Mackinnon, Stratford, Ont. Pen and ink holder or reservoir. June 5, 1875.
4,810.—Wm. Buck et al., Brantford, Ont. Heating stove. June 5, 1875.
4,811.—B. Atwood, Stanstead, P. Q. Mowing machine. June 5, 1875.
4,812.—Wm. Challenger, Mitchell, Ont. Trace buckle. June 5, 1875.
4,813.—H. N. Colby, New York city, U. S. Wire stove shelf. June 5, 1875.
4,814.—L. Maltus, Hamilton, Ont. Car fare box. June 5, 1875.
4,815.—J. Stauffer et al., Toronto, Ont. Sash fastener. June 5, 1875.
4,816.—V. R. Taylor, Syracuse, N. Y., U. S., et al. Black smith's tweer. June 5, 1875.
4,817.—A. Robbins, Yarmouth, N. S. Waterproof process for tanning. June 5, 1875.
4,818.—J. L. Isaacs et al., St. Louis, Mo., U. S. Universal ladder. June 5, 1875.
4,819.—H. Foster, Westerly, R. I., U. S. Railroad snow plow. June 5, 1875.
4,820.—B. Ackerman, New York city, U. S. Preparation of fertilizer. June 5, 1875.
4,821.—D. E. Roe, Ayer, Mass., U. S. Fly trap. June 5, 1875.
4,822.—H. Martyn, Boston, Mass., U. S. Metal pan and mechanism for its manufacture. June 5, 1875.
4,823.—J. Scott, Jr., Hamilton, Ont. Composition stamp. June 5, 1875.
4,824.—J. Sale, Jr., Toronto, Ont. Pocket book or purse. June 5, 1875.
4,825.—W. D. Westman, Toronto, Ont. Rip and scro saw. June 5, 1875.
4,826.—J. Z. Walling, Red Wing, Minn., U. S. Horse trot training apparatus. June 9, 1875.

Advertisements.

Back Page - - - - - \$1.00 a line. Inside Page - - - - - 75 cents a line. Engravings may head advertisements at the same rate per line, by measurement, as the letter press. Advertisements must be received at publication office as early as Friday morning to appear in next issue.

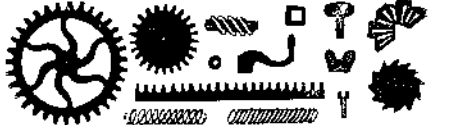
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FLORIDA The Florida Agriculturist. Weekly. \$3 a year. Send 10c. for specimen. Proceedings Florida Fruit Growers' Association—meeting of 1875—25c. Address WALTON & Co., Jacksonville, Fla. Say where you saw this.

ADMINISTRATOR'S SALE. To Patent Dealers and others.—Will be sold at Public Auction, at Toledo, Ohio, June 26th, the Patent Right of "Rocking Chair Par." patented July 21st, 1874. States sold separately. Parties wanting the best selling article out, be on hand.

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GLASS MOULDS, for Fruit Jars, Lamps Bottles, Ink Stands, etc., made by H. BROOK 15 years Cor. Wm. and Centre Sts., N. Y. For any thing new in glass, you will require a mould (or die). Every description of moulds for glass, rubber, zinc, etc. Send model or drawing; inclose stamp.

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PERFECTION OF SPEED ON WATER WHEELS under extreme changes of labor. The Rotary Hydraulic is the only Governor that can secure it. SILVER MEDALS awarded. Sent for test with unlimited warranty. J. S. ROGERS, Tr., 19 John St., Boston.