

quickly and cover with warm pipe clay for a time. The working parts should be polished perfectly before attempting to replace them in the watch.

(29) W. C. W. asks: What process or preparation will prevent strips of lead from blacking the hands? A. Coat them with a thin covering of varnish or melted paraffin.

(30) B. & B. say: We wish to build a large brick factory, 50 x 100 feet, four stories high, and wish the three upper stories to be damp or sweat proof. What is the best mode of building it? A. Build hollow walls laid up in a good cement mortar.

(31) J. McT. asks: 1. Will concrete do for a cellar wall and foundation for a frame building? A. Yes. 2. Will common lime do to mix it with, or will it require cement, or some of each? A. Pure cement is best.

COMMUNICATIONS RECEIVED.

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

- On Newspaper Subscriptions. By J. H. P.
On Marine Propulsion. By R. F.
On a Discovery in an Ancient Temple. By J. E. W.
On a Body in a Hollow Sphere. By J. W.
On the Material Theory of Light. By G. L. B.
Also inquiries and answers from the following:
J. C. W.—J. G. A.—W. D.—U. R. D.—J. S.—W. M.—G. C.—C. S.—S. P. F.—C. Z.

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Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here.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 makes marbled slate? Whose is the best steam-heating apparatus? Whose sells the most accurate barometers? Why do not makers of agricultural implements 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 July 25, 1876, AND EACH BEARING THAT DATE. [Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

Table listing inventions such as Air brake and signal, Anchor, Arch, hollow tile, Bag holder, Bag holder, G. M. & J. Robinson, Bale hoop iron, B. H. Hayden, Bale tie, J. H. Snyder, Barb former, Wilson & Bartlett, Base ball, W. B. Carr, Basin, wash, H. Berkele, Bath, separator, W. Curran, Bed bottom, spring, B. H. Otis (r), Bed bottom, spring, J. Turner, Bed spring, J. Reardon, Bedstead, H. B. Coyle, Bedstead, sofa, S. Graves, Bell, call, Bradley & Stratton, Billiard table leveler, S. May, Bird cage, G. F. J. Colburn, Bird cage, A. Heinz, Blotter, paper cutter, etc., T. L. Montgomery, Bobbin, T. Mayor, Boiler spark arrester, F. M. Stevens, Bolt, door, F. L. Kieyensteuber, Books, gathering signatures of, E. D. Averell, Boots and shoes, J. Rogers, Boot heel stiffener, J. L. Hatch, Boot, rubber, Hayward & Burlingame, Boots, exhibiting, Brown & Frazier, Boots, uniting uppers and soles of, G. McKay, Bosom pad, A. W. Thomas, Bottle attachment, Hoard & Bastine, Bottling machine, water, G. Wenker, Bouquet holder, G. W. Tucker, Box, packing, S. C. Cary, Brick, fire, J. R. Thomas, Brick bit attachment, T. M. Allen, Brush, J. S. White, Buckle, harness, B. F. Frazier, Bung extractor, F. Mayr, Burial case, T. E. Daniels, Burner and surgical instrument, C. A. Paquelin, Burner, argand gas, M. F. Gale, Bustle, A. W. Thomas, Butter package, M. W. Spaulding, Butter tub, J. E. Higgins, Can, meat, J. Lundgren, Can, milk, J. Smiley, Cans, making metallic, F. Marquet, Car axle lubricator, J. D. Clute, Car coupling, L. P. Bailey, Car coupling, W. N. Hutchinson, Car coupling, J. Maloy,

Table listing inventions such as Car coupling, H. Pitcher, Car for railways, sliding, J. Westcott, Car seals, machine for making, H. Guels, Car wheel, J. W. Emerton, Car wheel, A. S. Levaque, Car window, W. L. Everit, Car window, A. B. Pullman, Carbureter, McMillen & Minor, Carpet stretcher, L. W. Rivers, Carriage top bow iron, G. H. Ely, Carriages, etc., tool for capping, I. & Z. Zamboni, Chair, folding, J. E. Wakefield, Chimney, metallic, P. S. Smout, Churn, Patterson & Williams, Churn, S. B. Robison, Clock, F. Kroeber, Clothes dryer, C. E. Ball, Clothes dryer, D. J. Clark, Clothes dryer, R. A. & F. D. Winters, Clothes pin, G. W. Newbegin, Clothes pounder, C. A. Dodge, Compass, drafting, H. Morgan, Cooking utensil, A. Arvidsson, Cooking utensil, F. Myers, Copy holder, C. R. Brainard, Corn husker, hand, J. Peters, Corpse cooler, Truesell & Townsend, Corset, J. D. Banfield, Cotton chopper, T. C. Burnham, Cotton feeder and cleaner, G. F. Colquitt, Culinary apparatus, J. W. Johnson, Cultivator, O. Kugler, Cultivator, D. F. Vickery, Cultivator, sulky, S. A. Buchanan, Cultivator, wheel, W. N. Riddle, Curry comb, W. E. Lawrence (r), Curtain fixture, N. Campbell, Curtain fixture, F. A. Vredenburgh, Curtains, suspending, D. Calhoun, Cutter head, M. Buck, Dental flask, W. E. Buckman, Derrick, field, J. Q. Grinnell, Desk, school, C. J. Higgins, Dock block, F. S. Burr, Drill chuck, G. B. Cubberley, Drills, etc., twist, G. B. Cubberley, Earth-boring machine, Price & Morgan, Elevator, T. K. Austin, Elevator bucket, H. A. Duc, Jr., Elevator, passenger, C. H. Mitchell, Engine for compressing air, C. Moore, Engine, cut-off gear, F. Douglas, Engine valve motion, S. H. Wheeler, Engine valve regulator, H. S. Cole, Envelopes, J. Chapman, Fan, automatic, Fitzhugh & Renner, Fan, automatic, L. E. Haack, Felly plate, S. Sneed, Fence, portable, E. F. Bunn, Fence post, H. Reynolds, Fence post, L. L. Sherman, Fence wire, barbed, G. W. Allen, Fifth wheel platform, A. H. Beach, Filter, funnel, Paul & Ramer, Fire arm, breech-loading, C. Foehl, Fire escape, M. Durand, Fire escape, T. McClunne, Fire kindler, R. C. Lewis, Flower stand self-watering device, J. B. Kniest, Forge, smith's, D. Ebbinghaus, Fruit, preserving, L. Bradley, Furnace, R. L. Walker, Furnace, gas-burning, R. S. Robertson, Jr., Fuse lighter, J. W. Platt, Galvanizing machine, G. R. Acheson, Game counter, A. D. Hoffman, Garbage receptacle, A. Schmitz, Gas, matter for making, S. Green, Gas faucet, W. A. Wales, Gas retort cap, J. Baltimore, Gas shade holder, Watson & Macqueen, Gas stove, J. A. Frey, Gate, farm, R. Whitlock, Gates, hanging, E. Shopbell, Generator, steam, W. E. Haxton, Glass-melting pot, A. Harcum, Glove, J. Peters, Governor, W. A. Hathaway, Grain binder, J. O. Schuster, Grain binder, E. R. Whitney, Grain cradle fingers, shaping, A. Denney, Grinding ring, H. Packer, Grinding rollers, machine for, J. M. Poole (r), Harvester, corn, E. Atkinson, Harvester elevator, E. McFadden, Haap and latch, N. S. Minnis, Hatchets, etc., welding heads on, H. C. Reynolds, Hay for fuel, etc., twisting, J. S. Foster, Heater and feeder, M. Cabbell, Heater trough, D. W. Marmion, Hinge, A. Barker, Hinge for trunk trays, J. Heiser, Hinge, trunk, J. Heiser, Hitching device, Craine & Gaylord, Hog cholera, remedy for, W. J. Woods, Hoisting machine, J. Bates (r), Hook, snap, N. E. Cissna, Hook, snap, L. W. Timmens, Horse-power machine, chain, Ellis et al., Horses, attaching, J. K. Craig, Horse-fastening attachment, W. B. White, Horseshoe nail, P. Wineman, Horseshoes, making, Archer & Turner, Hose connection, H. Kessler, Hydrant, H. E. Clover (r), Ice implement, A. E. Hanford, Insect powder gun or ejector, C. T. Jewett, Ironing apparatus, R. H. Gardner (r), Ironing board, E. Albert, Ironing board, C. H. F. Kruse, Kiln, brick, W. S. Colwell, Kilns, furnace for brick, W. S. Colwell, Knife and screw driver, putty, C. C. Bartlett, Knitting machine, M. Marshall, Knitting machine stop, Williams & Irons, Knob spindles, fastening for, H. W. Trefethen, Lamp, J. H. Irwin, Lamp, blast, R. Lavender, Lamp, miner's, J. C. Moore, Lamp, street, J. S. Woods, Lapping machine, Schofield & Wilde, Lard, etc., from coolers, drawing, D. Pinger, Latch, gate, S. O. Hall, Latch, gate, C. J. Wallis, Latch, knob, C. S. Jennings, Limekiln, Farrell & Lien, Line fastener, C. Hoag, Lock and latch, H. R. Towne, Lock, combination, I. D. Sibley, Lock, combination, J. H. Woodrum, Lock, latch, D. K. Miller,

Table listing inventions such as Lock, seal, G. B. Phillips, Lock, time, Overmyer & Huston, Locks, time attachment for, J. L. Hall, Locks, time attachment for, Hall & Gross, Locomotive tenders, coaling, Fuller & Merriam, Locomotives, condenser for, H. Hughes, Loom, S. T. Thomas, Magnet and relay, electro, R. E. House, Magnet, electro, R. E. House, Mandrel, expanding, S. P. M. Tasker, Meat chopper, N. A. Olsson, Mill, grinding, E. & D. Moore, Mill, grinding, J. A. Moore, Mill, grinding, F. Steimmig, Millstones, staffing and dressing, Sewell et al., Molding plastic material, W. H. Smith, Nail-plate cutter, G. P. Clapp, Nuts, manufacture of, J. Sutter, Oil cloth, saturated felted, C. A. Sitzler, Ovens, nickel, treating, Mason et al., Oven, hot blast, W. Crossley, Packing, deep well, F. Martin (r), Pall and tub ear, G. W. Stark, Pall, milk, N. McKusick, Pantaloon, shaping, C. H. P. Kruse, Paper boxes, cylindrical, H. Kellogg, Paper cop tube, J. McCausland, Paving block, H. E. Merrill, Photographic picture case, T. F. Adams, Photographs, vignetting, L. D. Jenkins, Piano, violin, G. Greiner, Pinchers, wire fence barb, C. Kennedy, Pipe-mounting, tobacco, J. J. Lang, Planing and sawing lumber, W. H. Parcher, Planing feed and pressure roller, Brown et al. (r), Plow, gang, S. Kirkpatrick, Plows, cleaning, J. H. Storm, Pockets for garments, safety, R. Phillipson, Postage stamp, P. H. Vander Weyde, Powder can and cartridge case, P. A. Oliver, Press, horse power, Z. B. Sims, Press, hydraulic, Hyatt & Crane, Press, lard, P. Pemberton, Pulley block, J. & C. J. Herweg, Pump, S. S. Robinson, Pump, pitcher, S. L. Bignall, Railway drawbar and buffer, N. B. Eccleston, Railwayfrog, D. W. Payne, Railway frog, T. E. Vickers, Railway rail, street, C. T. Hopkins, Railway rails, machine for slitting, J. Reese, Railway switch, B. R. Murphy, Rake, R. P. Walker, Rake, lawn, C. Hertzig, Range, T. A. Carrington, Range, heater, C. A. Smith, Register, J. A. Sternberg, Rein holder, J. W. Miller, Ring blanks, forming metal, J. Aat, Roof, battened, C. W. Sykes, Sash fastener, C. W. Salaace, Saw-sharpening machine, M. Covell, Scales, weighing, H. Willard, Scoop and sieve, L. Kehm, Screwdriver, A. Stoner, Screws, cutting dies in, T. J. Sloan, Separator, grain, W. Holladay, Sewing machine binder, J. Van Leunen, Sewing machine, glove, Gullranesen et al., Sewing machine spinner, J. E. Snapp, Shackle, hand, A. P. Baldwin, Shafts, divided collar for, J. Yocum, Jr., Shooting gallery, parlor, H. J. Kintz, Sifter, ash, J. E. Eastlack, Sleigh, Erickson & Newstrom, Soap, S. Strunz, Spinning frame and twister, T. Mayor, Spinning machinery, ring, T. Mayor, Spoke-setting machine, A. F. Flint, Spoon and fork, L. S. White, Stables, releasing device for, A. Chapman, Stamp, perforating and cancelling, C. Armstrong, Steamer, culinary, L. C. Light, Still, steam, A. F. W. Neynaber, Stone-sawing machine, W. C. Huffman, Stool, adjustable, T. Miller, Stove, C. R. Sipes, Stove covering, A. J. Vandeventer, Stove, gas, J. A. Frey, Stove, heating, Little & Nation, Stump extractor, Burroughs & Story, Tackle block, Simpson & Pope, Tank, oil, J. M. Bean, Telegraphs, R. E. House, Telegraph, fire alarm, H. W. Spang, Telegraph sower, R. E. House, Telegraph wires, joining, R. E. House, Telegraph code, R. E. House, Telegraph symbols, measuring, R. E. House, Thimble, G. H. Finger, Tires, casting, N. Washburn, Tobacco pipe mounting, J. J. Lang, Tool handle socket, C. A. Hardy, Toy bell, L. D. Butler, Toy marble rake, Gurny, Piper & Waite, Trap, animal, Bates & Borgersrode, Umbrella, cane, C. W. Carson, Vehicle propeller, T. H. Neal, Vessels, raising sunken, E. E. Tasey, Washing machine, J. H. & J. H. Harnly, Washing machine, B. J. Murray, Washing machine, W. H. Tutt, Washing machine, W. H. Willis, Washing machine, A. B. Wroth, Watch escapement, F. H. Voigt, Water wheel, T. J. Alcott (r), Weather strip, E. C. Underwood, Weather strip, W. P. Widefield, Weeding implement, D. N. Ford, Whiffletree connection, Ingersoll & Fisher, Windmill brake, Bignall, Whittlesey & Goodhue, Wool-washing machine, Pendleton & Proctor, Wrench, B. F. Joslyn, Wringer, J. W. Hall, Wringer rolls, with rubber covering, H. W. Burr, Yarn, spooling, J. B. Bancroft, Yeast compound, A. C. W. Gschwind,

SCHEDULE OF PATENT FEES.

Table listing patent fees such as On each Caveat, On each Trade mark, On filing each application for a Patent (17 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 (3 1/2 years), On application for Design (7 years), On application for Design (14 years).

THE VALIDITY OF PATENTS.

The inexperienced purchaser of a patent does not generally appreciate the importance of having its claims examined, and their validity and scope defined by some person experienced in such matters, before parting with his money. It is not unusual for the assignee, just as he is commencing the manufacture of articles under his recently purchased patent, to find that it is an infringement upon some previously issued patent, and that he has not only made a worthless investment, but that he is likely to get mulcted in damages if he proceeds with his manufacture. Cases are continually coming to our knowledge wherein parties have made purchases in good faith, and paid considerable sums of money on the assurances of the patentee and a mere glance at the patent, presuming that all that the drawing of the invention showed was protected by the claims, when, in fact, the point covered was almost infinitesimal. Another manner in which purchasers are sometimes deceived is that the claims, although broad enough and worded properly to cover the invention, contain a single element protected by some prior patent, which covers the very part in the new machine which is necessary to insure its efficiency. The Howe sewing machine patent illustrates this. It protected but little that any of the manufacturers cared to use, except the one small part essential to all sewing machines; and all manufacturers had to pay Howe a royalty, and he derived from that apparently trivial item an immense income.

We therefore recommend any person who is about to purchase a patent, or about to commence the manufacture of any article under a license, to have the patent carefully examined by a competent party, and to have a research made in the Patent Office to see what the condition of the art was when the patent was issued. He should also see that the claims are so worded as to cover all the inventor was entitled to when his patent was issued; and it is still more essential that he be informed whether it is an infringement, as above suggested, or not. Parties desiring to have such searches made can have them done through the Scientific American Patent Agency, by giving the date of the patent and stating the nature of the information desired. For further information, address MUNN & CO., 37 PARK ROW, New York.

Advertisements.

Inside Page, each insertion --- 75 cents a line. Back Page, each insertion --- \$1.00 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.

GALLAHUE'S Little Giant Engine. The most durable, Cheap, Compact, Economical Engine offered to the public. Price 4 Horse Power, \$275. Price of Engines separately: 4 Horse Power, \$125; 6 Horse Power, \$140; 8 1/2 to 10, \$200. Send for illustrated circular. A. C. GALLAHUE & CO. Morrisania Station, N. Y. City.

BIG PAY to sell our RUBBER PRINTING STAMPS. Terms free. TAYLOR & CO. Cleveland, O.

WANTED—To Manufacture some Patented Article, either wood or metal, of acknowledged merit, on royalty—when exclusive right for the northwest can be had. Address R. M. P., Rockford, Ill., Box 862.

A MACHINE FOR RUNNING MACHINERY by Weights.—The inventor requires means to procure a Patent and place it in the market. Parties with means, please address JOHN N. PARRISH, Wethersville, Baltimore county, Md.

UNITED STATES PATENT ASSOCIATION. A meeting of this Society will be held at the Hall of the Franklin Institute, in the City of Philadelphia, on Thursday, September 7th, at 11 o'clock, A. M.

DRAIN PIPE MACHINERY—Models at Centennial Exhibition, Machinery Hall, Port A. 55. Litigation decided in our favor. Address J. W. STOCKWELL & CO., Portland, Me.

Steel Castings, From 1/2 to 10,000 lbs. weight. An invaluable substitute for expensive forgings, or for malleable iron castings requiring great strength. Send for circular and price list to CHESTER STEEL CASTING COMPANY, Evelina Street, Philadelphia, Pa. \$57.60 AGENTS' PROFITS per week. Will prove it or forfeit \$500. New articles are just patented. Samples sent free to all. Address W. H. CHIDESTER, 218 Fulton St., New York.

A PRACTICAL ENGINEER & DRAUGHTSMAN, over 10 years' experience in Designing all kinds of Steam Engines, Boilers, Brewery and general Machinery. In Making Estimates, Specifications and Contracts, desires a Situation as Draughtsman Address RUDOLF FAHR, 262 Croghan St., Detroit, Michs

COMPRESSED AIR MOTIVE POWER.—For particulars of the most recent practice, send 20 cents for SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 1 and 2, containing 5 engravings of the "Compressed Air" Locomotives now in use in St. Gothard Tunnel Works, with dimensions, etc.