

acid, 1 part; dissolve by aid of heat, and add 1 part spirits of wine.

(31) W. F. A. asks: 1. Is there any way by which a vein of water can be found in the ground before boring or digging, and is there any truth in a vein of water attracting a forked switch, which is so commonly claimed by old fogies throughout the country? A. A knowledge of geology is often of much value in the selection of a site for a well, but water can only be "found" by boring. "Divining rods," etc., are worthless. 2. Where may I obtain an artesian well boring machine? A. See our advertising columns.

(32) R. W. Y. asks for a recipe for tempering steel springs, flat, spiral, etc.; something that would give a pretty fair idea to work on. Can you recommend a work on making and tempering springs. A. To temper steel springs heat them to a cherry red, quench in clean water, and blaze off two or three times. For works on tempering address any of the industrial publishers who advertise in our columns.

(33) J. J. R.—Make your drills of the best quality of tool steel; harden, and do not draw the temper on the extreme edge.

(34) M. M.—The so-called "heat lightning" is considered as nothing more than ordinary lightnings striking across the clouds at such a distance that the thunder cannot reach the ear of the observer.

(35) S. H. C. B. asks how to make an emery strap. A. Coat the strap with a good quality of glue to which a very small quantity of glycerin has been added; then dust on the emery and roll it into the glue. Can I get a patent on a preparation of medicine? A. A medical compound is patentable if new.

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

J. C. A.—The crystalline substance found in the cave is principally gypsum—calcium sulphate. Used in the manufacture of plaster of Paris, and several cements, by potters, for glazing, etc., and for fertilizing purposes. The earthy substance contains a very notable quantity of potassium nitrate (saltpeter) and a trace of phosphoric acid. The former could probably be economically extracted. This and its value in the natural states as a fertilizer could be determined only by quantitative analysis. —B. R. R.—The red substance consists mainly of fine quartz sand coated with anhydrous iron sesquioxide, to which the bright color is due. It may be freed from the grosser particles by washing. Used extensively as a cheap red pigment and for the adulteration of vermilion, etc. The other sample—ferropyrrite—contains no precious metal. —W. A. G.—The box contains fragments of flint, quartz, and limestone. The flint is associated with argonite and ferropyrrite. The budlike fossil is a fragment of the encrinure moniliformis. See answer to E. B., under head of minerals, p. 107, current volume of the SCIENTIFIC AMERICAN.—J. B.—Nos. 1 and 2 are indurated ferruginous clay. No. 3 is soft clay slate. None of them are of much value.

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COMMUNICATIONS RECEIVED.

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

- Labor Saving Machinery. By O. H. K.
The Musical Cabinet. By Reader.
Indian Arrow Heads. By J. B., Jr.
Band Saw Machines. By W. S.
Where Does the Day Begin? By A. E. O.
Algol. By F. W.
The Poplar as a Lightning Conductor. By J. H. P.
How to make a String Hammock. By J. W. D.
Joseph Henry. By J. F. G. M.
Vulcan. By C. F.
Guns and Projectiles. By J. H. A.

HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Many of our correspondents make inquiries which cannot properly be answered in these columns. Such inquiries, if signed by initials only, are liable to be cast into the waste basket.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were

Granted in the Week Ending

September 24, 1878,

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 various inventions such as Air register, Animal trap, Awning or tent cloth, Axle boxes, Barrel filler, Bath, Bath, deep water, safety, J. J. Bamber, Bath, shower, C. R. Furey, Bed bottom, H. S. Cate, Bell, door, F. W. Brocksieper, Belting, A. Spadone, Binder for letters and papers, W. A. Amberg, Boat attaching apparatus, H. Ashford, Boat or barge, canal, J. A. Preston, Boilers, cover for steam, I. N. Peirce, Book stitching machine, R. L. Brewer, Boot and shoestay, A. Seaver.

Main table of contents listing various mechanical and industrial inventions with their respective page numbers. Includes items like Boots, Boring machine, Bottle stopper, Box and sifter, Boxes from veneers, Bracket, Brake, Car, H. Empey, Brick machine, I. Morley, Bronzing machine, J. T. Ashley, Buckle, G. P. Goff, Buckle, elastic, E. S. Wardwell, Burial casket, W. J. Noble, Butter cutter, I. M. Rhodes, Button and stud, Wall & Newman, Butonier, G. D. Stevens, Calcining machine, A. Brooks, Cane and seat, J. W. Smith, Car coupling, G. Edmonds, Car coupling, Greenleaf & Adams, Car coupling, J. D. Ross, Car door opener, street, J. Hutton, Jr., Car, freight, R. Hudson, Carriage boot, C. W. Brown, Carriage, child's, J. F. Downing, Carriages, shifting rail for, P. B. Fuller, Cartridge belt, Platz & Rogers, Cartridge, metallic, Leet & Chapin, Casting car wheels, B. Burgess, Casting, compressing ingots while, W. R. Jones (r), Casting shaft couplings, W. H. Elmer, Chronometers, balance for, H. H. Heinrich, Cigar mould and press, F. C. Miller, Clasp, J. R. Schoals, Clay, etc., making plates of, L. Brandeis, Clay for furnaces, etc., preparing fire, T. Fletcher, Clock striking mechanism, H. W. Porter, Coal scuttle, G. Smith (r), Cock, stop, J. Hills, Coffee and tea pot cleaner, W. W. Hinkle, Coffee hulling and cleaning machine, P. McAuliffe, Cooker, steam, C. W. Sterick, Corn from the cob, cutting green, T. Powell, Corn marker, J. W. Thompson, Corset, J. Bowers, Cotton opener and lapper, Whitehead & Atherton, Cultivator, C. T. Barton, Cultivator and corn plow, T. Daniels, Curtain roller and bracket, W. B. Noyes, Dam and pier, R. S. Littlefield, Drill, grain, T. D. Gere, Drill, rock, E. S. Winchester, Earthenware, applying colors to, A. A. X. Okolowicz, Electrical alarm striking device, J. A. Swift, Elevator, hydraulic, G. H. Bailey, Engine and pump, direct acting, Carr & Arthur, Engine, rock drilling, W. H. Elliot, Engine, rotary, J. Darling, Engine, steam fire, Hill & Moorlen, Engines, annex for fire, J. H. & T. E. Connelly, Engines, emptying valve for paper pulp, J. Carroll, Fats, treating animal, H. Mige (r), Faucet for beer barrels, C. C. Redmond, Faucet, registering liquor, W. Williams, Felly joint holder, C. Adams, Fence, food, H. D. Merrill, Fence, wire, M. Kelly, Fertilizer, A. F. Crowell, File, letter, H. D. Woodbridge, Fire extinguisher, oil tank, J. H. & T. E. Connelly, Fishway, M. McDonald, Flour bolt, B. D. Sanders, Footpower, A. J. Hood, Fork, carving, D. Williams, Fuel burner, G. S. Bosworth, Furnace and stove, hot air, J. Carlton, Furnace door, J. Morrison, Furnace, glass melting, H. Kirk, Furnace, etc., steam boiler, W. S. Hutchinson, Gas lighting apparatus, C. D. P. Gibson, Gas retorts, stand pipes of, D. R. Shiras (r), Gas test meter, D. M. Small, Gate, farm, J. Cobbs, Governor, marine engine, J. A. Svedberg, Grain separator, L. Morgan, Grate bar, J. Ashcroft, Grate bar, square revolving, J. Ashcroft, Hame, J. H. Martin, Hames connection, C. B. Bristol, Harvester cutter and guard finger, Grover & Beach, Heating and cooking furniture, R. S. Mains, Heating apparatus, T. Connelly, Hinge and corner iron, trunk, G. Kast, Hinge for metallic boxes, D. M. Somers, Hinge, spring, D. W. Housley, Honey extractor, centrifugal, C. F. Muth, Horse collar and hame, W. B. Guernsey, Horse power, J. Miller, Horseshoe bar, L. G. Claude, Horseshoe blanks, bending, J. H. Snyder, Hose nozzle, G. F. Palmer, Hub, vehicle wheel, W. H. Armor, Ice machine, J. Gamgee, Ice machine condenser, J. Gamgee, Injector, Sellers & Bancroft, Injector, M. D. Strickland, Inkwell, A. Abbe, Ironing and finishing machine, Bailey & Perrenot, Jewel casket, A. Conrad, Jewelers' findings, making, G. H. Fuller, Knife, cigar maker's, F. W. & C. Hoffmann, Lamp, H. L. Ives, Lamp burner, J. G. Hallas, Lamp burner, J. P. Smithers, Lamp, electric, H. S. Maxim, Lamp post, street, J. G. Miner, Lamp regulator, electrical, H. S. Maxim, Lamp, self-lighting, H. W. Covert, Lamp, student, S. C. Catlin, Lamp wick, L. Hellman, Lantern, A. W. Paull, Lantern, A. W. & J. F. Paull, Lighting rod, L. D. Vermilya et al (r), Lubricating car wheels, P. Byard, Meat cutter, L. L. Gilliland, Millstone displacer, J. B. Cromwell, Millstone driver, W. S. Bacon, Millstones, staff for testing, J. W. Herchelrode, Millstones, cleansing, H. B. Varns, Millstones, dressing, B. D. Sanders, Mining coal, machine for, J. Blyth, Motion, converting, M. Kaerfer, Motion, converting, W. Meyers, Mower, lawn, C. A. Wright, Nail plates, pile for making, F. J. Hearne, Needle eyes, machine for polishing, A. H. Smith, Oil cup, A. D. Kilborn, Packing, J. O'Meara, Packing, asbestos, A. D. Furse, Packing for stuffing boxes, W. Jagger, Packing for stuffing boxes, metallic, W. Brown, Painter for awnings, C. E. Wheeler (r), Paper box, W. Meschenmoser, Parcels, conveyor for small, A. Liase, Pavement, wood, W. H. Stow, Pen, fountain, G. B. 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