

Business and Personal.

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Steam Pumps. See adv. Smith, Vaile & Co., p. 236.

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Saw Mill Machinery. Stearns Mfg. Co. See p. 221.

Supplee Steam Engine. See adv. p. 221.

The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv. p. 237.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frible's ad. p. 237.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 238. 4 to 40 H. E. Steam Engines. See adv. p. 238.

Ball's Variable Cut-off Engine. See adv., page 252.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'Frs, 23d St., above Race, Phila., Pa.

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For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N. Y.

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Wm. Sellers & Co., Phila., have introduced a new injector, worked by a single motion of a lever.

Common Sense Dry Kiln. Adapted to drying of all material where kiln, etc., drying houses are used. See p. 205.

Improved Skinner Portable Engines. Erie, Pa. Patent Key Seat Cutter. See page 252.



HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

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.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

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.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) G. B. M. asks: What solution is used by manufacturers to fasten the caoutchouc on clothes wringers? A. See receipts for marine glue, page 2,510, SUPPLEMENT No. 158.

(2) C. D. R. writes: 1. I am interested in a water ditch for placer mining in the State of Oregon, and I have a question that I have failed to have answered satisfactorily as yet; but I am informed that you have a book that will give me the necessary information. If so, I want it. A. Beardmore's "Hydraulic Tables" will give information on these subjects. 2. I wish to run 150 to 200 inches of water, miner's measure (that is, water running through a 2 inch orifice with 6 inches from the center of the orifice to the level of the water, called a pressure of 6 inches), through a pipe from the side of one hill across a depression to another hill. The water leaves the pipe 20 feet lower than it enters, and has to move 3,200 feet in the pipe, and passes down hill 1 1/2 feet, and up hill 115 feet; thus there is 20 feet pressure. Now, what size pipe will it require to convey across this depression 150 inches of water; also, what sized pipe for 200 inches, and how heavy iron should it be made of? The friction is the thing that bothers. Will it make any difference to make the first half, or the half in which the water goes down hill, a little larger than the other half? A. A miner's inch is equal to the discharge of 1,562 cubic feet per minute under a head of 6 inches over the top of opening, 1 inch square; hence two miner's inches=3,124 cubic feet per minute. According to calculation a 3 1/2 inch diameter pipe, under the conditions given, will discharge 3,7 cubic feet per minute. Your pipe should be same diameter the whole length; and put together so as to have a smooth, even bore, otherwise the pipe should be larger. If the discharge opening is 2 inches square, it is four miner's inches, not two; in which case the pipe should be 3 1/2 inches diameter.

COMMUNICATIONS RECEIVED.

On a Maple Sugar Bush. By H. H. On Railroad Ties. By W. A.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending April 4, 1882.

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

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

Table listing inventions such as Air and gas burner, Air compressor, Air machine, Alkali, Arm, Auger, Bag fastener, Baling band, Balloon, Ballot box, Bar, Battery, Bed bottom, Bed, folding cot, Beer cooler, Bicycle, Binder, Board, Boiler, Boiler furnace, Bolts, Boneblack, Bookbinding, Boot and shoe soles, Bottle stopper, Bottle wrapper, Boxes, Bracket, Brake, Brick machine, Bricks, Bridge, Brush, Buckle, Buckle, trace, Building ventilator, Burglar alarm, Burner, Butter case, Button, Button, cuff, Calipers, Can capping machine, Candlestick, Capsules, Car brake, Car brake, automatic, Car brake, railway, Car coupling, Car coupling, S. Bray, Car coupling, T. J. Hilliard, Car coupling, G. Hollister, Car, dumping, I. B. Robbins, Car heater, D. M. Kirkpatrick, Car spring, J. B. N. Berry, Carburizing air, process of and apparatus for, Carpet sweeper, Carriage child's, Carriage jack, Cartridge, Cartridge primer, Case, Caster, salt, Chain, Chain, drive, Chain, drive, W. D. Ewart, Chain, drive, E. L. Howe, Chain, drive, C. H. Low, Chair, Cherry seeding machine, Christmas tree, imitation, Churn, W. C. Burrows, Cider press, Cigar coloring and flavoring machine, Cigar coloring and flavoring machine, L. Spindler, Clip, Clutch, friction, A. M. English, Coffee, preparing tablets of, A. Von Hofmann, Coffee, process of and apparatus for roasting, Coffin, W. A. Ritchey, Collar cap, horse, A. Waugh, Compound engine, J. B. Root, Corset, M. P. Bray, Cotton gin, R. M. Brooks, Cotton gin, W. L. Crowson, Cotton, etc., machine for hulling and ginning, W. L. Crowson, Cross section rod, S. B. Fisher, Crusher, Crushing ores, etc., machinery for, F. J. & W. H. Hoyt, Cultivator, L. P. Hiatt, Cultivator, L. Luppen, Cultivator, G. Moore, Cultivator, C. W. Post, Cultivator spring, J. M. Long, Cultivator tooth, J. S. Rowell, Curtain bracket, H. C. Clement, Dandy roll stand, adjustable, R. Hutton, Dental drill, C. M. Richmond, Dental plugger, E. E. Eblin, Die, See Threading die, Dish, covered, E. A. Parker, Disintegrating grain, etc., machine for, F. Taggart, Door, G. W. Howell, Door check, I. P. Poulson, Door check, W. E. Sparks, Dramatic effects, apparatus for producing illusory, J. W. Kneill, Drier, See Fruit drier, Drill, See Dental drill, Wheat drill, Drill holding device, J. C. Titus, Drying and pulverizing offal, etc., apparatus for, J. F. Gubbins, Electric circuits, signaling on, D. H. & L. C. Rice, Electric generator and motor, J. H. Bunnell, Electric light regulator, N. S. Keith, Electric machine, dynamo, F. Von Hefner-Alteneck, Electrical distribution, system of, E. Thomson, Elevated way, N. Newman, Elevator, See Pneumatic elevator, Water elevator, Elevator bucket, Calkins & Woodhill, Elevator safety brake, automatic, C. S. Longstreet, Engine, See Compound engine, Steam and hot air engine, Steam engine, Fanning mill, P. Poynier, Fat from slaughter house scraps, etc., extraction of animal, A. J. Huet, Faucet, L. Bergen, Faucet, D. Morrison, Faucet for regulating the overflow from basins, F. A. Bishop, Faucet, beer, J. Mappes, Feed water heater, R. P. Valentine, Fence post, E. P. Phillips, Fencing strip, barbed metal, W. E. Brock, Fertilizers, apparatus for desiccating animal matter for, H. Breer, Field roller, A. R. Moore, File, permanent letter, J. F. Adams, Firearm, magazine, Spencer & Roper, Fire escape, J. Kellner, Floor cloth, manufacture of, C. F. Leake, Floor for rolling mills, glass houses, etc., W. Rogers, Flour, manufacturing, F. Taggart, Flour packer, Barnard & Leas, Flue cap for stove pipes, F. E. Heinig, Flue stopper, F. G. Arter, Fruitbasket, C. E. Bartram, Fruit drier, J. M. Burghardt, Funnel, O. T. Petzold, Furnace, See Boiler furnace, Retort furnace, Smelting furnace, Furnace front and door, T. Henderson, Gauge, See Pivot gauge, Game board, W. B. Silver, Gas, process of and apparatus for manufacturing, J. W. Hodges, Gasalier, J. H. Seaman, Gate, See Sliding gate, Gate, R. J. Colvin, Gear, platform, A. H. Beach, Generator, See Electric generator, Glove or shoe clasp, F. J. Herrick, Gluing barrels, method of and apparatus for, G. H. Hopper, Governor, engine, R. P. Bolton, Governor, steam, J. J. Hahn, Grain binder, P. F. Hodges, Grain binder cord tyer, J. H. Dean, Grain, ores, etc., apparatus for pulverizing, F. Taggart, Grain separator, H. A. Barnard, Grain separator, Herberg & Claussen, Grappling iron, Michael & Masten, Grinding iron, J. J. & B. Clark, Grinding mill cooling mechanism, J. Fitzgerald, Gun, breech-loading bomb, E. Pierce, Handle for pocket knives and other implements, B. A. Fiske, Harness, C. F. Wiesenmeyer, Harrow, Burger & Simpson, Harrow, L. Luppen, Harrow and roller, combined, J. Harvey, Harvester, corn, G. W. Irwin, Hat hanging machine, Plumb & Marchant, Hat sweat and other corded edged fabrics, Hosmer & Lathrop, Hay knife, G. F. Weymouth, Hay stacking apparatus, G. Richardson, Heater, See Feed water heater, Reater, E. E. Gold, Heating apparatus, N. W. Williams, Heel plate, revolving, J. L. Thomson, Hinge, Pfantuz & Franck, Hinge, spring, C. B. Clark, Hoisting apparatus, safety device for, A. C. Ellithorpe, Holsting machine, A. Dobbie, Hoder, See Pen holder, Shoe holder, Horses, check for, M. M. Nathanson, Horseshoe, H. Bland, Horseshoe fastening device, G. Bryden, Hydraulic press, C. Kimplen, Indicator, See Station indicator, Ingot mould shield, J. Pedder, Injector, steam engine, S. Borland, Insecticide compound, W. B. Nettle, Insulator for electrical conductors, A. C. Lewis, Iron, See Grappling iron, Jack, See Carriage jack, Jewelry setting, H. B. Smith, Joint, See Railway joint, Key for bolts, etc., B. W. De Courey, Knife, See Hay knife, Knitting machine, J. Denton, Knitting machine, H. J. Griswold, Knitting machine, W. D. Huse, Knitting machine needles, manufacture of, S. Peberdy, Knob attachment, O. M. Hilden, Label for animals, P. P. Johnston, Lacing for wearing apparel, bags, and other articles, J. Nathan, Lamp, W. T. Murphy, Lamp bowls, centering and attaching sockets to, A. G. Paul, Lamp burner, E. L. Bryant, Lamp, electric, N. S. Keith, Lamp, electric, C. D. Jenney, Lamp, electric, J. J. Wood, Lamp, hanging, E. C. Lawrence, Lathe for turning irregular forms, E. Myers, Lead, apparatus for the manufacture of red, N. B. Gregg, Lever, interlocking, H. F. Cox, Lifting jack, J. O. Joyce, Lightning arrester, A. R. Prescott, Link bending machine, metal, Evans & Green, Links, manufacture of open, D. Huits, Load binder, S. S. Conklin, Lock, See Nut lock, Nut and bolt lock, Locomotive fire box, Kearney & Hawley, Loom shedding mechanism, R. B. Goodyear, Loom shuttle, S. A. Dudley, Lounges, folding leg fixture for extension, J. Graeser, Lubricator, W. K. Rhodes, Malt drying apparatus, G. F. Burkhardt, Measuring beat supplied from steam, E. F. Osborne, Measuring machine, leather, W. A. Sawyer, Mill, See Fanning mill, Grinding mill, Roller mill, Millstone, R. Moody, Mower and reaper knives, machine for sharpening, C. W. Henshaw, Mower, grass, E. Beckwith, Mowing and reaping machine, A. Rank, Mowing machine, W. F. Cochrane, Music scale and chord indicator, C. H. Hatschel, Musical instrument, mechanical, J. H. Chase, Needle bars, device for the compensation of wear in, R. H. St. John, Nut and bolt lock, B. Marks, Nut lock, S. M. (churchill), Nut lock, S. Gissing, Nut lock, A. L. Lincoln, Opera chair, Johnson & De Souchet, Optometer, G. D. Edmondson, Ore crusher, A. N. Cameron, Ore separating machine, centrifugal, G. Glass, Oven, M. L. Hull, Overshoe fastening, J. L. Joyce,