

ENGINEERING INVENTIONS.

A railroad switch has been patented by Mr. David H. Foreman, of Lancaster, Pa. This invention provides a safety "facing point" feature, safety trailing actions, and self-locking arrangement, designed to insure absolute safety for fast trains upon a main line, regardless of any lack of duty, confusion, or misinterpretation of signals on the part of the engineer.

A railway cable grip has been patented by Messrs. Henry Dods and Frank Hindes, of Virginia City, Nev. The grip plate is arranged to shift along the car when gripped to the cable, with piston rods and cylinders at each end, and springs on the pistons between the grip plates and cylinder heads, with air cushions, and various novel devices of construction and arrangement.

An automatic car brake has been patented by Mr. Edward Ebi, of Cedar Rapids, Iowa. The tender has a bar held to slide longitudinally under it, with a buffer at the front end of the bar, a hand lever, a locking pawl, and other devices, intended to afford means whereby all the brakes of a train can be applied automatically by the momentum of the cars, at the pleasure of the engineer.

An apparatus for making steel by the Bessemer process has been patented by Mr. Alfred Davy, of Sheffield, York County, Eng. The invention consists in employing, with a portable vessel, stand pipes adapted to discharge air into the metal in the vessel beneath the surface by pipes dipping in from above, thus enabling cast iron foundries to make steel and steel castings without the costly plant now provided for this purpose.

An improved arch for supporting evaporating pans for sugarmaking and other purposes has been patented by Mr. Chauncey C. Alfred, of Fairfax, Va. The invention covers a novel construction and shape of the arch, whereby a more even and perfect distribution of the heat is obtained under the bottom of the pan, the firebox of the arch having a grate arranged within a drawer, so the fire may be readily drawn when the sugar has been sufficiently exposed to the heat.

An apparatus for removing incrustations from water mains and pipes has been patented by Mr. Edward H. Keating, of Halifax, Nova Scotia, Canada. This invention provides a novel construction of compound plowing machines or machine scrapers, to be propelled by natural gravity, force, or power of the water furnished from the reservoir or fountain head, or from ordinary stationary engines, for cleaning out any water pipe or main which may have become foul by incrustations, stones, etc.

MECHANICAL INVENTIONS.

A saw tooth has been patented by Mr. Philip V. Conover, of Uvalde, Texas. This invention covers a novel construction in detachable saw teeth, and in combining with the same a spring bolt, whereby each tooth and its locking key are held securely in position, with facility for detaching as required, and so that any drawing action in cutting the wood tightens the attachment of the tooth.

An attachment for squares for builders' and joiners' use has been patented by Messrs. Andrew G. Olson and John McFarlane, of Duluth, Minn. The invention consists in an adjustable scale or divided measuring attachment for squares, whereby increased facilities are afforded for measuring or laying out rafters or beveling the toes and heels thereof, and also for laying out stairs and other purposes.

AGRICULTURAL INVENTIONS.

A cable railway for plantations has been patented by Mr. George W. Thomas, of Cypré Mort, La. This invention covers an improvement on a portable railway formerly patented by the same inventor, and combines with such railway a system of endless cables for propelling cars, and also for drawing agricultural implements across fields, etc.

A grain drill has been patented by Mr. Francis B. McCabe, of Lewistown, Pa. The invention consists in improved shifting devices for ranking and cleaning the hoes, and means for automatically working them, in the construction of an adjustable lock spring hoe, in a fertilizing feeding device, and in a lifting device for the hoes.

A combined sulky plow and cultivator has been patented by Mr. Thomas Huddleston, of Portage la Prairie, Manitoba, Canada. This invention covers a novel arrangement of parts for such construction of a combined plow and cultivator as may be readily adjusted for any desired kind of plowing, and to promote convenience in adjusting and controlling the machine.

A plow has been patented by Mr. James W. Montgomery, of Thomasville, Ga. This invention relates to plows which may be changed to use either as shovel plows or cultivators, and narrowed or widened to suit the widths of rows to be cultivated, and its object is to adapt the plow stock and beams so the plows may be set at different relations to each other fore and aft, and at different distances apart transversely, etc.

MISCELLANEOUS INVENTIONS.

A sleigh shoe has been patented by Mr. Henry A. Morrell, of Pittsfield, Me. The invention covers a sled runner shoe with one or more longitudinal ridges along the lower side or bottom of the shoe, to prevent the sled from sliding laterally on wads sloping sidewise, and to enable the sled to run with less friction.

An escapement for time pieces has been patented by Mr. August W. Kientoff, of Dallas, Ore. This invention relates to balance wheel or pendulum escapements, and provides a novel construction and arrangement of parts, making an escapement which can also be applied to a common toothed escapement wheel.

A harness pad has been patented by Messrs. Oscar L. Dorr and Thomas J. Tamplin, of South Walpole, Mass. This invention consists in an imitation sheepskin pad, in which the wool of the sheep or other animal is incorporated with a fabric backing or holder in place of the skin, so the filling can be frequently renewed.

An indicator for public assemblies has been patented by Mr. Harry S. Grimes, of Portsmouth, O. It consists of an endless apron of flexible material over top and bottom rollers, having grooved guide plates to receive sheets on which are letters, the operator thus publicly exposing messages to be read at fairs, meetings, and assemblages.

An indicator for merchandise has been patented by Mr. John Wayer, of Syracuse, Ind. The invention consists in a casing having openings and containing slides carrying numbers, the slides being locked in place automatically by suitable springs, making an indicator to number articles of each different size or number contained in the receptacle.

A luggage carrier for tricycles has been patented by Mr. Charles R. Zacharias, of Newark, N. J. This invention provides means for readily attaching a luggage carrier to the tube containing the steering rod of the vehicle, and its adjustment to or detachment therefrom as required, and so the carrier when not in use may be conveniently attached to be out of the way.

An automatic feed device has been patented by Messrs. William Schwarting and John F. Traster, of Wolcott, Iowa. The invention consists in an attachment for hoppers which, being connected to the feed gate and pressure board, effects the regulation of the feed to the grinding rollers, and wherever material is to be supplied from a feed hopper.

An automatic governor has been patented by Mr. William J. Radloff, of Rudd, Iowa. It is designed more particularly to regulate the wind gates or slides of thrashing machine cleaners, and consists in improved mechanism for use in connection with centrifugal ball governor levers to automatically open and close the wind gates, and regulate the wind currents.

A tongue support has been patented by Mr. Nathaniel Johnson, of Harrisburg, Ill. This invention covers improvements on a former patent issued to the same inventor, and consists in combining with the axle curved hounds having their front ends connected with or made integral with longitudinal hounds, between which the rear end of the tongue fits.

An adjustable bench hook has been patented by Mr. Harry Cooper, of San Antonio, Texas. It is made with a plate carrying a sliding bar, to which is adjustably secured a hook, the sliding bar and hook being locked in place by a clamp and cam attached to the plate, and the plate and its attachments are locked to the bench front by a stationary lug attached to the plate.

A mixing machine has been patented by Messrs. John McKeage and William Wells, of Brooklyn, N. Y. The machine is intended for mixing flour, grain, and similar substances, and the body is so shaped that it is revolved with a peculiar wabbling gyratory action, causing the material inside to be tumbled from side to side and end to end, thus becoming thoroughly mixed.

A brick machine has been patented by Messrs. Charles A. Carpenter and Joseph Hill, of Keokuk, Iowa. This invention covers an improved mechanism for filling the moulds, shifting them to the pressers and partly pressing the clay, another pair of pressers completing the pressing, then shifting them to a discharger, and discharging them, all being done automatically.

A cotton gin feeder has been patented by Mr. Thomas F. Swinnie, of McFarland, N. C. This invention provides a mechanical cotton gin feeder to obviate the necessity of manual labor, a mechanical elevator and a self-adjusting mechanical rake being located relatively to each other in a novel way in connection with a removable sided independent box, with various other novel features.

A combined hat and coat hanger has been patented by Mr. William R. Cole, of Pottsville, Pa. It is constructed to form a long and separately pivoted pendant button hook attachment or coat hanging hook and is a compact device, few parts serving to form the coat hanging hook, the hook by which the device is suspended, and the spring bar holding hook or clamp.

A floor jack has been patented by Mr. Emmett J. Lobdell, of Northville, N. Y. A movable head carries a rack with which engages a dog or pawl pivoted to a lever, itself pivoted to the outer end of the head, and there is a thrust block adapted to be fastened in position and attached to the lever by a pin and slot connection, thus making an inexpensive and effective jack for closing the joints of flooring, etc.

A fire grate has been patented by Mr. James D. Richards, of Patriot, Ind. This invention combines, with the walls and front bars of the grate, the bottom bars made longitudinally adjustable, two rock shafts connected to or engaging with them, and a bar for so connecting the rock shafts that either will oscillate the bottom bars, the grate being specially adapted to control and economize hot air and thus save fuel.

A stem winding watch has been patented by Mr. George F. Johnson, of Aurora, Ill. The invention consists in a novel construction and combination especially of the setting lever and locking bar, and spring controlling the latter, whereby the spring operates to hold the setting lever in position, both when drawn out and pressed in, and prevents it when closed from dropping, and by striking the cover of the watch case interfering with the closing of the case.

A device for protecting balance wheels of watches has been patented by Mr. Everton J. Arrick, of McConnellsville, G. This invention is mainly designed for use in watch repairing, and consists in a flanged holder for balance wheels, which will admit of necessary work or repair without removing the staff from the wheel, and of the wheel being chucked in the lathe at either end of the staff, free from all risk of damage to the rim of the wheel while in the lathe.

Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

Parties desiring to sell or exhibit goods or patents at the Fall Exhibition, Boston, address Chas. Babson, Jr., 24 Congress St., Boston, Mass.

Machine Shop outfit for sale. 7" Pond Planer; 3 Lathes, 13" x 20", 12" x 24", and 6" x 16"; 30" Blaisdell Drill Press, 2 Lathe Chucks, Bolt Cutter, Boring Machine, Forge, 2 Wood Lathes, set Pipe Tools, Taps, Reamers, Mandrels, set of Lathe, Planer, and Blacksmith's Tools, Shafting, Pulleys, Hangers, Steel, Iron, etc., comprising the shop. A1 F. O. B., New England, \$1,000; rare bargain. S. C. Forsaith Machine Company, Manchester, N. H.

1 1/2 in. Steam Whistles, by mail, 55 cents. A. G. Brooks, 31 N. 3d St., Philadelphia.

Sturtevant Blowers, Lidgerwood Hoisting Engines, New York Safety Steam Power Co.'s Engines, Water's Governors, Duplex Pumps, are for sale by Henry I. Snell, 135 N. 3d St., Phila., Pa.

For Steam and Power Pumping Machinery of Single and Duplex Pattern, embracing boiler feed, fire and low pressure pumps, independent condensing outfits, vacuum, hydraulic, artesian, and deep well pumps, air compressors, address Geo. F. Blake Mfg. Co., 44 Washington St., Boston; 37 Liberty St., N. Y. Send for Catalogue.

Soapstone Packing, Empire Gum Core, and all kinds Rubber Packing. Greene, Tweed & Co., New York.

Quinn's device for stopping leaks in boiler tubes. Address S. M. Co., South Newmarket, N. H.

Cyclone Steam Flue Cleaner saves Fuel, Labor, and Repairs. "Investigate." Crescent Mfg. Co., Cleveland, O. Hercules Water Wheel—most power for its size and highest average percentage from full to half Gate of any wheel. Every size tested and tables guaranteed. Send for catalogue, Holyoke Machine Co., Holyoke and Worcester, Mass.

If you want the best cushioned Helve Hammer in the world, send to Bradley & Company, Syracuse, N. Y.

Mills, Engines, and Boilers for all purposes and of every description. Send for circulars. Newell Universal Mill Co., 10 Barclay Street, N. Y.

50, 60, and 75 H. P. Corliss Engines; second-hand; in good order. Henry I. Snell, 135 N. 3d St., Phila., Pa.

Wanted.—Patented articles or machinery to manufacture and introduce. Lexington Mfg. Co., Lexington, Ky.

Brush Electric Arc Lights and Storage Batteries. Twenty thousand Arc Lights already sold. Our largest machine gives 65 Arc Lights with 45 horse power. Our Storage Battery is the only practical one in the market. Brush Electric Co., Cleveland, O.

For Freight and Passenger Elevators send to L. S. Graves & Son, Rochester, N. Y., or 46 Cortlandt St., N. Y. "How to Keep Boilers Clean." Book sent free by James F. Hotchkiss, 86 John St., New York.

Stationary, Marine, Portable, and Locomotive Boilers a specialty. Lake Erie Boiler Works, Buffalo, N. Y.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

The Hyatt filters and methods guaranteed to render all kinds of turbid water pure and sparkling, at economical cost. The Newark Filtering Co., Newark, N. J.

Railway and Machine Shop Equipment. Send for Monthly Machinery List to the George Place Machinery Company, 121 Chambers and 103 Reade Streets, New York.

Steam Boilers, Rotary Bleachers, Wrought Iron Turn Tables, Plate Iron Work. Tippet & Wood, Easton, Pa. "The Sweetland Chuck." See ad. p. 44.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn. For Power & Economy, Alcott's Turbine, Mt. Holly, N. J.

If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN Patent Agency, 361 Broadway, New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every description. Send for catalogue.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. Complete outfit for plating, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Supplement Catalogue.—Persons in pursuit of information on any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y.

Electrical Alarms, Bells, Batteries. See Workshop Receipts, v. 8, \$2.00. E. & F. N. Spon, 35 Murray St., N. Y.

Curtis Pressure Regulator and Steam Trap. See p. 78. Munson's Improved Portable Mills, Utica, N. Y.

Woodwork's Mach'y. Rollstone Mach. Co. Adv., p. 77.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 77.

Drop Forgings. Billings & Spencer Co., Hartford, Conn. Brass & Copper in sheets, wire & blanks. See ad. p. 93.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 20,000 Crank Shafts and 15,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Hoisting Engines, D. Frisbie & Co., Philadelphia, Pa.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 94.

Heavy English Walrus Leather, for polishers, Greene, Tweed & Co., 118 Chambers St., New York.

Knurling Tool, self-centering, for lathe use. Pratt & Whitney Co., Hartford, Conn.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 93.

For Sale.—Patent Self-ventilating Funnel. Best thing out for making money. G. M. Wickliffe, Brook Neal, Va.



HINTS TO CORRESPONDENTS.

Name and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.

References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or mail, each must take his turn.

Special Information requests on matters of personal rather than general interest, and requests for Prompt Answers by Letter, should be accompanied with remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each. Minerals sent for examination should be distinctly marked or labeled.

(1) G. C. R. desires a formula for making mastic preparation for covering brick work outside. A. Mastic cements are generally mixtures of 100 parts each sand, limestone, and litharge, with 7 parts linseed oil. These ingredients carefully mixed and well worked together will have the consistency of moist sand, but little coherence. When pressed, however, the mixture gradually acquires the hardness of ordinary sandstone. A waterproof mastic cement consists of 1 part red lead to 5 parts ground lime and 5 parts sharp sand with boiled oil. Or, 1 part red lead to 5 of whiting and 10 of sharp sand mixed with boiled oil.

(2) P. C. G. asks how to make a good gold writing ink. A. Gold ink is prepared by taking equal parts of honey and gold leaf; triturate until the gold is reduced to the finest possible state of division, agitate with 30 parts of hot water, and allow it to settle. Decant the water and repeat the washing several times; finally dry the gold and mix it with a little gum water for use. 2. How to make rubber stamp inks. A. Rubber stamp inks are simply solutions of aniline colors mixed to a proper consistency with glycerin.

(3) J. W. C. asks: How can I blue malleable iron similar to the blue of steel squares, nails, tacks, screws, and other articles? A. After polishing heat them over a charcoal fire until the blue color comes, then cool them in dry sand or ashes. A pan of hot sand is good to heat in if the articles are small enough.

(4) E. N. P. asks: What is the stuff that is used to nickel plate with by just rubbing the mixture over it. It only plates brass, copper, zinc. A. The solution is probably a silvering solution, such as made by preparing a solution of one part potassium cyanide in six parts water; to this there is added a concentrated aqueous solution of silver nitrate (free from acid) until the precipitate is redissolved. The foregoing solution is then mixed with fine chalk and applied after previously having cleaned the objects. Nickel cannot be applied in the manner described in your letter, and it may be possible that you have in mind the Stolba process which is described in our answer to query 28, in the SCIENTIFIC AMERICAN for May 24, 1884.

(5) W. H. S. asks: What sort of a crucible will answer wherein to melt gold? Will a small one of sand do? A. The ordinary sand crucibles, such as used by jewelers.

(6) S. L. W. asks: Does increase of leverage necessarily decrease speed? A. Yes. This is one of the essential laws of mechanics.

(7) T. H. S. asks if a driving belt composed of a band of thin steel covered with leather would possess the properties of a leather belt, in addition to that of not stretching which the steel would afford. A. A leather lined steel belt would no doubt be very rigid. The mechanical difficulties attending its application and its cost would probably negative its value. The property of staying in its place upon the pulleys is due greatly to the elasticity of leather belts. The rounded face of the pulley could not easily control a rigid flat belt.

(8) W. R. B.—The pitching of a ball in a curved line is a well attested fact. But the pitching alternately around 4 posts as sketched by you is extremely doubtful. See SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 402, 410, for a discussion of this subject.

(9) M. E. L. asks how to obtain more knowledge concerning liquid carbonic acid as a motive power, as a sequence of the labor of Dr. Raydt. A. We have no further information on this subject than we have already printed. Dr. Raydt's experiments possibly open up a new field, but all previous attempts to utilize carbonic acid in place of steam have been failures.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

July 29, 1884,

AND EACH BEARING THAT DATE.

[See not at end of list about copies of these patents.]

Alarm. See Burglar alarm.	
Annealing box, J. & T. McNeil	802,688
Auger bit, H. L. Shaler	802,595
Auger, hollow, S. H. Newcomb	802,765
Auger, post hole, Mottram & Mundy	802,764
Automatic register for grain, seed, etc., J. Wherry, Jr.	802,697
Awning, M. F. Wiedemann	802,809
Axle, tubular, E. Peckham	802,864
Baling press, cotton, C. Baumgarten	802,880
Battery. See Secondary battery.	
Bedstead, sofa, W. Ott	802,863
Beehive, B. Franklin	802,834
Beehive, I. A. Livingston	802,854
Beer cooling apparatus, P. McCauley	802,757