ENGINEERING INVENTIONS.

A locomotive ash pan has been patented by Mr. William W. Slocum, Jr., of Reed City, Mich. Combined with the ash pan is a compartment formed on the front end and in front of the front part of the fire box, with a damper valve in the top of this compartment, the ash pan being such as can be dumped at the will of the fireman.

A car coupling has been patented by Mr. Thomas B Nutting, Sr., of Morristown, N. J. It is made with drawheads having hooks with shoulders on their rear ends, and hinged to the drawheads by bolts, the hinging bolts having cranks and a bail and chain, so the cars will be coupled automatically when run together, and can be readily uncoupled.

An electric locomotive has been patented by Mr. Joseph Weis, of Jersey City, N. J. The frame carries a boiler and an ordinary steam engine with a large drive wheel, connected by belt with the armature shaft of a dynamo electric machine, which gives motion to an electric motor connected with the drive wheels, the construction and arrangement of parts being of a novel character.

A steam valve has been patented by Mr. William Mitchell, of Altoona, Pa. This invention covers a vibrating cylinder valve of novel construction, the valve being of equal diameter throughout, and adapted to be rocked to cause its passages to coincide alternately with the ports of the casing, the steam pressure being so equalized in the valve that it works with but little friction.

A car truck has been patented by Mr. Charles L. Morehouse, of Brooklyn, N. Y. Short axles are journaled in the side bars, flanged wheels are on the axles, and shafts journaled on the side bars above and at each side of each axle, the object being to provide an anti-friction railway truck so made as to turn curves with great facility and without the slipping of the wheels.

A car coupling has been patented by Mr. Roscoe A. Merrow, of Farmington, Me. The opposite drawheads of the same car are arranged to slide endwise and against buffer springs, and connected by a drawbar, so the coupling bar, drawheads, and cars will be relieved by breaking shocks or strains in coupling or while on the road, there being also a frame and levers by which the cars may be uncoupled from the top or either side.

A steam engine has been patented by Mr. Larkin B. Ellis, of Vernon, Mich. Clamps or pawls, and an endless belt or chain, are used in lieu of the crank for transmitting motion, the clamps being contrived to take hold of and let go the upper and lower ranges of the endless belt according as the motion of the crosshead reverses, to drive the belt or chain continuously in one direction, in order to apply the power with uniform leverage from beginning to the end of the strokes, and avoid the varying leverage of crankgear.

AGRICULTURAL INVENTIONS.

A hay loader has been patented by Mr. Max F. E. Stadtmueller, of Castle Grove, Iowa. At its upper end are curved guide bars and adjustable guide wings, with hinging rod and adjustable bar and keeper, the guard frame carrying rake teeth and connected with the side boards of an elevator, so both guard frame and rake teeth can be readily adjusted.

A hay raker and loader has been patented by Messrs. J. Huff Corcoran and Ludwig Rummel, of Alden, Iowa. Combined with the rake and elevator is a pivotally secured bar having a series of rods supported on the elevator for weighting the hay in the rake and pressing it against the elevator apron, making an attachment for an ordinary farm wagon, to rake and load hay after a mowing machine.

A cultivator has been patented by Mr. Sumner B. Little, of Chapin, Iowa. Combined with the tongue is a tube, adjustable rod, set screw, etc., whereby the tongue can be readily lengthened or shortened; the plow beam and feeder bars are so arranged that the latter can be easily adjusted, and in connection with the draw rods or chains is a spring to prevent the horses and harness from receiving undue jars should the plow strike an obstruction.

MISCELLANEOUS INVENTIONS.

A fence has been patented by Mr. William Cokayne, of Geetingsville, Ind. It rests on transverse bed pieces or sills, requiring no post holes, the bases resting on the ground, into which the stakes are inserted, with which rails, oblique board bases, and wire braces are so used as to make a fence of novel construction.

An extension table has been patented by Mr. Albert E. French, of East Tawas, Mich. The table has a stationary middle part, with a central leg, and extensible end parts, with legs, pockets, and folding hinges, and other novel features, the invention relating to extension tables with folding web sections for forming the top of the table.

A folding coat hanger has been patented by Mr. George H. Donaldson, of Westville Center, N. Y. It has hinged and sliding sections and an adjustable block, so arranged that the whole may be folded to occupy small space in a traveling bag or trunk, and adjusted both in length and slope to fit and keep in shape coats of different sizes and cut.

A metallic roofing shingle has been patented by Mr. Levi H. Montross, of Simcoe, Ont., Canada. This invention covers a special construction allowing for expansion and contraction without making loose joints, while the shingles thoroughly interlock, thereby being held very securely on the roof and forming very close and tight joints.

A fence making machine has been patented by Mr. Luke Huiskamp, of Keokuk, Iowa. This invention relates to that class of machines used to assist the operator in making by hand fences of wire and slats, providing picket spacing, twisting, and tension devices, whereby the various parts of the work are simplified and made easy.

A needle has been patented by Mr. Thomas C. Adams, of Brooklyn, N. Y. It has a transverse slot formed in at one side of the eye, so it may be threaded through this slot by taking the thread between the thumb and finger and drawing it taut, the eye being made to one side, so the metal will have sufficient strength after the slot is formed for all ordinary use.

An automatic fire lighter has been patented by Mr. Charles Hughes, of New York city. Combined with an alarm clock mechanism is a spring-actuated lever adapted to hold a match and a piece of inflammable material, a trigger for locking the lever, and a rod carrying a plate with a piece of sand paper, whereby a fire may be lighted at any desired time for which the watch is set.

A fire escape has been patented by Mr. John Dittrick, of Smith's Falls, Ont., Canada. The invention covers a drum shaft adapted to be moved endwise, with suitable frame, rope, and operative parts, an upright with pulley, and other novel features, making a device readily applied by which a person can lower himself slowly from a building, and will be held away so as not to come in contact therewith.

A roller skate has been patented by Mr. George A. Thompson, of Frostburg, Md. Two sets of metallic brackets and hangers are attached to the foot stock, one set to the heel and the other to the toe, each set consisting of a stationary and movable part, and there are other novel features of construction, to allow the rollers to work freely, while the bearings are solid and there is great flexibility in the working parts.

A riding saddle has been patented by Myra L. Eckles, of Northfield, Minn. This invention has special reference to side saddles for ladies' use, but is also applicable in part to pack saddles and men's saddles, its object being to furnish a saddle more comfortable to the horse, permitting a freer action, and which shall better adapt itself to the shape of the horse in different positions.

A machine for sacking, weighing, and registering grain has been patented by Mr. George H. Caughrean, of Pleasant Hill, Mo. It is made with an elevator, a hopper, a holder to receive the sack, scale beam, and weight, a cut-off with spring and arm for stopping the outflow, a register, and other specially combined features, for use with thrashing machines, corn shellers, mills, and similar purposes.

The construction of skylights, etc., forms the subject of a patent issued to Mr. Alphonse Friedrick, of Brooklyn, N. Y. This invention covers an improvement on a former patent of the same inventor, for strengthening lead sashes used in especially designed windows, consisting of a manner of construction by which the wire frame attached to the sash bars is further strengthened, and the whole window supported by auxiliary frames or bars at the upper side of the sash.

A radiator is the subject of two patents issued to Mr. John Gormly, of Provo City, Utah Ter. It is made of tubes of sheet metal fitted with caps, and of cast metal connections fitted into a hollow base which has inlet and outlet pipes for passing the heating agent, in such way as to be comparatively inexpensive, give a large radiating surface, and promote quick circulation, thus allowing the heating of apartments with less area of tubes than is required in ordinary radiators.

A detachable horseshoe has been patented by Mr. Emil Hunziker, of Jersey City, N. J. It is a heavily calked shoe with a lug on the inner edge of one shank and a cam lever pivoted on a bracket plate on the opposite shank, the shoe being so placed against the ordinary shoe that the lug rests against the inner edge of one shank of the fixed shoe and the cam lever engages the other shank, thus facilitating the fastening and unfastening of heavy calked temporarily secured shoes.

An axle lubricator has been patented by Mr. Joseph M. Denney, of Wartsburg, Washington Ter. Combined with the hub is a screw threaded tube with a fixed collar or enlargement and screw threaded neck, the internal screw threaded portion of the neck being adapted to receive a plug, and its external screw threaded portion being fitted with a cap, constituting a device which excludes dust and facilitates lubricating by thick grease, waste saturated with oil, or other suitable lubricant filled into the tube.

NEW BOOKS AND PUBLICATIONS.

NYSTROM'S POCKET BOOK OF MECHANICS AND ENGINEERING. By John W. Nystrom. J. B. Lippincott & Co., Philadelphia. 670 pages. Price $3.50.

This is the eighteenth edition, revised and considerably enlarged, of a work which first appeared in 1854. The new matter in this edition includes valuable tables and formulæ concerning the transmission of power by belting, ropes, gearing, etc.; and the elements of mechanics are, in general, brought down to a simple form.

FORESTS AND FORESTRY OF POLAND, LITHUANIA, ETC. By John Croumbie Brown. Oliver & Boyd, Edinburgh.

This is the twelfth of a series of manuals by Dr. Brown on Forestry and Forest Culture, the effects of forests on climate and water supply, etc., each one of which contains much valuable information, a large portion of it the result of personal observation and experience.

Books Received.

AMERICAN ELECTRICAL DIRECTORY FOR THE ELECTRIC LIGHT AND TELEPHONE INTERESTS OF NORTH AMERICA. By E. J. & W. H. O'Beirne. Star Iron Tower Company, Fort Wayne, Ind.

WATER WORKS STATISTICS OF GREAT BRITAIN, 1885. By Charles W. Hastings. Scientific Publishing Company, London, Eng.

GAS WORKS STATISTICS OF GREAT BRITAIN, 1885. By Charles W. Hastings. Scientific Publishing Company, London, Eng.

GAS AND WATER COMPANIES DIRECTORY OF GREAT BRITAIN, 1885. By Charles W. Hastings. Scientific Publishing Company, London, Eng.

NEW YORK STATE DAIRY COMMISSIONER'S FIRST ANNUAL REPORT, 1885. Weed, Parsons & Co., Albany N. Y.

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.

Patent Office Reports, complete to 1871, for sale. Also about 20 years' file SCIENTIFIC AMERICAN, cheap. Address "Johnson," 157 Park Place, Brooklyn, N. Y.

The best Power Hammer in the market is made by Beaudry & Cunningham, Boston, Mass.

H. Clay Scott, Minneapolis, Minn., has patented an indestructible Asbestos Wick and Burner. A grand success, and must supersede cotton wick burners. Wick never burns. No trimming; no dirt; large, beautiful light. State and country agents wanted. Write for descriptive circulars.

Blast Forges for heating irons for Drop Forgings. Beecher & Peck, New Haven, Conn.

Several large Paper Mills have adopted Volney W. Mason & Co.'s Friction Pulleys for driving their machines. Providence, R. I.

Wood Working Machinery. Full line. Williamsport Machine Co., "Limited," 110 W. 3d St., Williamsport, Pa.

Hull Vapor Cook Stoves.—Best in the world; sell everywhere. Agents wanted. Send for catalogue and terms. Hull Vapor Stove Co., Cleveland, Ohio.

Peerless Leather Belting. Best in the world for swift running and electric machines. Arny & Son, Phila.

"How to Keep Boilers Clean." Send your address for free 88 page book. Jas. C. Hotchkiss, 86 John St., N. Y.

The most complete catalogue of Scientific and Mechanical Books ever published will be sent free on application to Munn & Co., 361 Broadway, N. Y.

Shafting, Couplings, Hangers, Pulleys. Edison Shafting Mfg. Co., 86 Goerck St., N.Y. Send for catalogue and prices.

Air Compressors, Rock Drills. Jas. Clayton, B'klyn, N.Y.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn.

Every variety of Rubber Belting, Hose, Packing, Gaskets, Springs, Tubing, Rubber Covered Rollers, Deckle Straps, Printers' Blankets, manufactured by Boston Belting Co., 226 Devonshire St., Boston, and 70 Reade St., New York.

Write to Munn & Co., 361 Broadway, N. Y., for catalogue of Scientific Books for sale by them.

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

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

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

For Power & Economy, Alcott's Turbine, Mt. Holly, N.J.

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

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.

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

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

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 compressers, address Geo. F. Blake Mfg. Co., 44 Washington, St., Boston; 97 Liberty St., N. Y. Send for catalogue.

Supplement Catalogue.—Persons in pursuit of information of 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.

Send for catalogue of Scientific Books for sale by Munn & Co., 361 Broadway, N. Y. Free on application.

Catalogue of Books, 128 pages, for Engineers and Electricians, sent free. E. & F. N. Spon, 35 Murray Street, N. Y.

Knots, Ties, and Splices. By J. T. Burgess. A Handbook for Seafarers and all who use Cordage. 12mo., cloth, illustrated. London, 1884. Sent, postage prepaid, on receipt of 50 cts., by Munn & Co., New York.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 398.

Anti-Friction Bearings for Shafting, Cars, Wagons, etc. Price list free. John G. Avery, Spencer, Mass.

Pat. Geared Scroll Chucks, with 3 pinions, are sold at same prices as common chucks by A. F. Cushman, Hartford, Conn.

Cyclone Steam Flue Cleaners are the best. Crescent Mfg. Co., Cleveland, O.

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. 414.

Catechism of the Locomotive, 625 pages, 250 engravings. Most accurate, complete, and easily understood book on the Locomotive. Price $2.50. Send for catalogue of railroad books. The Railroad Gazette, 73 B'way, N. Y.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 348.

Stephens' Patent Bench Vises are the best. See adv., p. 348.

"*To Mechanics.*"—When needing Twist Drills, ask for "*Standard*," or send for catalogue to Standard Tool Co., Cleveland, O. See page xv., Export Edition.

The best Steam Pumps for Boiler Feeding. Valley Machine Works, Easthampton, Mass.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names 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 in this department, 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 referrep to may be had at the office. Price 10 cents each.

Minerals sent for examination should be distinctly marked or labeled.

(1) H. N. S. writes: A. claims that a rope passed over a horizontal bar, with one end fast to the floor, and suspended from the other end a weight of ten pounds, will produce the same weight or pressure on the bar as though from each end of the rope was suspended 10 pounds. Is he right, or what would the weight be upon the bar with one end fast and from the other the 10 pounds suspended? A. 20 pounds. A. is right.

(2) H. G. W. writes: 1. I have two cells of Bunsen battery in which I use 4 parts of bichromate potash solution to 1 part sulphurous acid in porous cup, and 1 part sulphuric acid to 8 of water in jar with zinc. I do not get as much current as I want to. How can I increase it? A. You can increase the current only by adding more cells. 2. Would it be better to make two Grenet cells? A. It depends altogether on the use to which you intend to apply the battery; if you want a battery for temporary use on a circuit of small resistance, we think the Grenet form will be best. 3. Can I melt brass in a Hessian crucible over an open coal fire? A. Yes; place a little borax in the crucible for a flux, and close the mouth of the crucible with a large piece of charcoal. 4. Where can I find directions for making moulds and casting in brass? A. We can furnish you works on moulding and casting; you will also find much information in the back numbers of the SCIENTIFIC AMERICAN and SUPPLEMENT. 5. Can I make moulds of plaster Paris? A. Not for brass. 6. Where can I find a description of M. Trouve's chromic acid battery? A. In the back numbers of the SUPPLEMENT.

(3) G. E. W. asks how to build a stone dam 70 feet long by 10 feet high. A. Dam should be 8 feet wide at bottom, 4 feet at top, sloping back; floor may be made of rough logs under the spill, to break the fall of water. Portland cement is the best, 1 barrel to 3 barrels sand; mix as required in small batches for the best results. We think a wooden trunk the best. Make it square or octagon as convenient, 20 inches diameter; build end into the masonry a few feet, well cemented, and terminate in a stone facing on upper side. Make a coping of large stone sloping back on the spill, and flank with abutments of large stone. Fill in behind the dam with gravel and marl even with top of coping, sloping back at least 30 feet, covering the filling with broken stone.

(4) N. D. writes: I have a large, nice refrigerator for family use. We use in it a large cube of ice of 100 pounds, but the temperature will not go below 48° or 47°, and the ice melts rapidly, 200 pounds a week. Ought not the refrigerator to be ventilated as ice houses are? A. You probably have too much ventilation already, possibly the refrigerator is not properly insulated; 200 pounds a week is too much ice for a family refrigerator. Cannot tell what is the matter out of sight.

(5) A. F. G.—There is very little difference in the absorption of power by belts or gearing in a well devised plant.

(6) C. A. S.—The black finish made on parts of brass goods is by a dip in a solution of chloride of platinum, made by dissolving platinum in nitro-hydrochloric acid to saturation. It will bear very little burnishing or polishing. We think it derives its finish by lacquering.

(7) Mrs. R. W. W. asks: What will be the effect on the health or nerves of adults and school children living in the mountains seven hundred feet above the valley, if they every morning go to the valley, returning at night? A. No evil whatever need be apprehended. The change of atmospheric pressure is altogether too slight to produce any appreciable effect on the nervous system of any person in an ordinary state of health.

(8) A. P. McD. asks how to make hard solder, such as is used by manufacturing jewelers, that will flow with the lowest degree of heat; also process for tempering brass. A. Solder for silver to melt at low temperature: Silver 1 part, tin 1 part. Low solder for gold jewelry: 3 parts gold, 2 parts silver, 1½ parts copper, ½ part zinc. Know of no way to temper brass except by hammering, rolling, or burnishing.

(9) J. M. W.—Boiler tubes made within the last 15 years do not last as long as the earlier make. The quality has been gradually decreasing by the competition in trade, so that they may be said to be an alloy of iron and slag. The best plan is to put in steel tubes. We do not know of any harm in burning paper to dry printers' forms; steam is better in the form of a steam slab.

(10) G. C. K. desires information as to how to make a cheap filter. A. The mixture of charcoal and gravel is fully equal to anything that can be used for filtering. If you prefer, the gravel can be substituted by spongy iron (metallic iron). See "Experiments with the Silicated Carbon and Spongy Iron Filters," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 165.

(11) E. C. T.—The bones sent belong to "Didelphys Virginiana," Virginian opossum.

© 1885 SCIENTIFIC AMERICAN, INC