

ENGINEERING INVENTIONS.

A car starter has been patented by Mr. Phillip Listeman, of Collinsville, Ill. An arm is pivoted approximately concentric with the car wheel, and on its axis this arm having a pawl or clutch arranged to engage the periphery of the wheel, with other novel features, making a device by which the weight of the car may be utilized in starting it.

A car coupling has been patented by Mr. J. Baptist Butts, of Philadelphia, Pa. The draw head has a full bell-shaped mouth, with aperture near the mouth to receive a coupling pin operated in a special manner, the coupling being adapted to couple with any other kind of coupling, whether higher or lower, being also readily operated from the top or sides of the cars, and calculated to couple them automatically.

A wedge for mining coal has been patented by Messrs. James O. Watson and Conrad A. Sipe, of Fairmont, West Va. It consists of a cylinder formed of two independent sections, each with a tapering groove, forming a central rectangular recess, in connection with a rectangular shaped wedge having a longitudinal threaded aperture, with other novel features, whereby the use of powder and other explosives may be done away with in breaking down coal.

MECHANICAL INVENTIONS.

A sawing and grinding machine has been patented by Mr. Thomas E. Goodwin, of Nashville, Tenn. It is a combination machine, consisting of a rectangular frame, with ways, standards, main shaft, fly wheel, treadle, grindstone, and saw, with other novel features, designed to be run either by hand or foot for use as a cross cut or rip saw or as a grinding machine.

A motor has been patented by Mr. Bartholomew McCabe, of Buffalo, N. Y. The object of this invention is to provide simple and efficient mechanism for converting reciprocating into rotary motion, in machines driven by treadles, as well as steam engines, a shaft with ratchet wheel and loose pulleys carrying pawls to engage the ratchet wheel, and cords or cables connected with reciprocating mechanism extending around the loose pulleys, with other novel features.

AGRICULTURAL INVENTIONS.

A hay loader has been patented by Mr. Adolf Lasack, of Oxford Junction, Iowa. It has shifting devices suspended within siderakes, in combination with crank shafts, connections, and gear wheels, whereby the hay is moved steadily and continuously up the elevator as rapidly as it is gathered by the rakes.

A mowing machine cutter has been patented by Mr. William T. Decker, of Lehigh Tannery, Pa. The cutter bar has a series of revoluble studs with eccentric edges, eccentric washers on the studs, the studs being secured in holes in the cutter bar at suitable distances for receiving the cutter sections, the latter having apertures and shoulders for engagement by the fasteners, making an effective device for securing the cutter sections.

MISCELLANEOUS INVENTIONS.

A child's tray has been patented by Mr. Thomas Cousins, of Norwalk, Conn. It is a combination of an upper with an under or subsidiary tray, wherein is a plate in a fixed and protected position, and provision is made to receive a drinking vessel, the under tray receiving anything that happens to be spilled.

A land scraper and leveler has been patented by Mr. Ernst Sell, of Canon City, Col. It is designed to be used in working ordinary roads, in grading roadbeds of railways, and in leveling lands for farming, the invention covering various novel features of construction and combination of parts, and the machine being simple, strong, and durable.

A strike sander for brick machines has been patented by Mr. Henry C. Hill, of Haverstraw, N. Y. Combined with the receiving table and the strike table is a sand trough, enabling the attendant to sand the strike without moving from his place or turning around, it also serving as a convenient receptacle for the strike when the attendant wishes to lay it down.

A combined door plate and letter slip alarm has been patented by Mr. Frederick Sanderson, of Chicago, Ill. It is a device applicable to any door, sounding an alarm at once on the deposit of the mail, and is also adapted to serve as a door plate, the invention covering certain peculiarities of the construction and arrangement.

A fireplace has been patented by Mr. Josiah T. Reaves, of Bently, Miss. This invention covers a protector of back plate and side plates hinged thereto, to protect the brick or stone work from injury from heat or by contact with the fuel or poker, and to improve the heating qualities by facing the fireplace with iron.

A can-filling machine has been patented by Mr. John B. Hodapp, of Mankato, Minn. It is for filling fruit, vegetable, and meat cans, automatically and evenly, pressing down the charge compactly, and delivering the filled cans to their reception table, the invention providing a novel construction and combination of parts in a machine for this purpose.

Shears form the subject of a patent issued to Mr. William E. Lant, of Lancaster, Pa. By this invention shears are made especially adapted for cutting button holes, there being a stop pin for limiting the motion of the shear blades and a gauge for regulating the distance of the button hole from the edge of the garment.

A washing machine has been patented by Mr. James C. McCandless, of Barnard, Mo. It has suspended semicircular rubbers, and when the machine is operated by means of its handle, these rubbers, though moving in opposite directions, have at the same time a rotary reciprocating motion, whereby the washing is speedily and effectively performed.

A hoisting and lowering apparatus has been patented by Mr. Augustus Ise, of Evanston, Wyoming Ter. It has a pulley block, a top pulley to run upon a horizontal line or rail, a central pulley, and two guide pulleys, with other novel features, being designed more especially for elevating and lowering goods, but also adapted for use as a fire escape or for transferring goods and persons from one place to another in a building.

Practical Chemist.

A young American gentleman, educated at some of the best institutions in France and Germany, is desirous of obtaining a permanent situation in some large manufacturing establishment in this country. He has been employed for the last three years in large works in Moscow, Russia, and is now temporarily engaged as the chemist in a large New England establishment. Fancy woolen and calico print manufacturers would find this party skilled in the production of new colors. His address may be had at the office of this paper.

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.

Wanted—A partner to manufacture Reeder's "Automatic Folding Seats," or would sell patent. For cuts, etc., address J. A. Reeder, Ramer, Tenn.

Veneer Machines, with latest improvements. Farrell Fdry. Mach. Co., Ansonia, Conn. Send for circular.

Who wants to know something of newly patented elevated cable railway? Send for circular to N. Kirchner, No. 6 So. Del. Ave., Philadelphia, Pa.

Blake's Improved Belt Studs are the best fastening for Leather and Rubber Belts. Blake's name on box to be genuine. Greene, Tweed & Co., New York city.

Link Belling and Wheels. Link Belt M. Co., Chicago.

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Anti-magnetic shields—an absolute protection from all electric and magnetic influences. Can be applied to any watch. Experimental exhibition and explanation at "Anti-Magnetic Shield & Watch Case Co.," 18 John St., New York. F. S. Giles, Agt., or Giles Bro. & Co., Chicago, where full assortment of Anti-Magnetic Watches can be had. Send for full descriptive circular.

Woodworking Machinery of all kinds. The Bentel & Margedant Co., 116 Fourth St., Hamilton, O.

Quild & Garrison's Steam Pump Works, Brooklyn, N. Y. Pumps for liquids, air, and gases. New catalogue now ready.

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The Knowles Steam Pump Works, 44 Washington St., Boston, and 98 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pump Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

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

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. \$100 "Little Wonder." A perfect Electro Plating Machine. Sole manufacturers of the new Dip Lacquer Kristaline. Complete outfit for plating, etc. Hanson, Van Winkle & Co., Newark, N. J., and 92 and 94 Liberty St., New York.

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

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

Curtis Pressure Regulator and Steam Trap. See p. 45.

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.

Walrus, Bull Neck, and Buffalo Leather for polishing emery, glue, composition. Polishers' Supplies. Greene, Tweed & Co., New York city.

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.

Mr. O. Frink, 234 Broadway, New York, publishes a neat little pamphlet describing the common forms of hernia or rupture, and explaining how all cases can be quickly cured by FRINK'S RUPTURE REMEDY. A copy will be mailed, in a plain, sealed envelope, to any address upon request.

Best Automatic Planer Knife Grinders, Pat. Face Plate Chuck Jaws. Am. Twist Drill Co., Laconia, N. H.

Billings' Patent Screw Plates. Drop Forgings, all kinds. Billings & Spencer Co., Hartford, Conn.

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Friction Clutch Pulleys. D. Frisbie & Co., N. Y. city.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv., p. 28.

Catarrah Cured.

A clergyman, after years of suffering from that loathsome disease, catarrah, and vainly trying every known remedy, at last found a prescription which completely cured and saved him from death. Any sufferer from this dreadful disease sending a self-addressed stamped envelope to Dr. Lawrence, 212 East 9th St., New York, will receive the recipe free of charge.

Planing and Matching Machines. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn.

Iron and Steel Wire, Wire Rope, Wire Rope Trams. Trenton Iron Company, Trenton, N. J.

Lick Telescope and all smaller sizes built by Warner & Swasey, Cleveland, Ohio.

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 Written Information on matters of personal rather than general interest cannot be expected without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(1) F. F. writes: I still fail in lacquering polished brass. It has a dull appearance after lacquering, not clear and bright, like the new gas fixtures we have from New York, etc. What is the cause? A. The dullness arises from the want of heat to melt the lacquer after the brush has gone over the piece. The heat should be raised by putting the piece back into the oven for a few minutes, and allow the heat to increase to above 212° or until the surface looks clear. The lacquer should not be too thick; it should be thinned down with 95 per cent alcohol to a semi-transparent or amber color as you look through it in the bottle. A steam coil is probably the best means of heating the work. A stove oven is good if it is large enough to hold the work. A few trials with thin lacquer and continuing the heat after lacquering will give you entire success. Muddy lacquer should not be used for metal.

(2) G. F. C.—You may polish brass pipe readily by hand. Use the finest flour of emery paper, with a little oil, until the surface comes to an even finish. Then rub with rotten stone and oil on a piece of soft leather, and finish with dry whitening and a rag. All parts must be clean and free from oil when ready for lacquering. Use thin shellac varnish; thin with 95 per cent alcohol, and let it stand a few hours to settle, when the pure lacquer may be poured off. Warm the brass work to the temperature of boiling water, and apply the lacquer with a camel's hair brush.

(3) W. F. H. writes: I am thinking of becoming an electrical engineer, but want some information and advice as to the opportunities in that line for a young man. A. The opportunities for a young man to acquire electrical engineering experience are as good as in most professional business. If you are not posted in electrical work, you will have to begin at the bottom and work up. Wishes do not make a profession. You will have to study hard and work harder to gain a paying position. There are many electricians and electrical supply establishments in the great city near which you live, where you may readily find with a little intelligent and persistent inquiry, acquire a knowledge of what is required and how to go to work, but first get books from your library or the Philadelphia libraries, and glean some information as to the general principles of electrical work. You will find much that is interesting in back numbers of SCIENTIFIC AMERICAN SUPPLEMENT.

(4) J. M. E. writes: Say 1 pound weight will turn a sewing machine after it has been started, how heavy must a weight be, attached to necessary gearing, to run the sewing machine one hour and 6,000 revolutions, the weight having 30 inches fall? A. The descent in feet per minute of the weight required to move the machine at the required velocity should be multiplied by the whole time in minutes, and this product divided by the distance in feet of the required fall of the weight, for the answer as to the whole weight in pounds; to this must be added enough to overcome the friction of the necessary gearing. So that if it takes 1 pound descending  $2\frac{1}{2}$  feet to maintain 100 revolutions per minute, then  $2\frac{1}{2}$  feet  $\times$  60 = 60 pounds  $\times$  1 = 60 pounds, to which must be added the weight to overcome friction of gear. In case the initial weight is more than 1 or a unit, the quotient should be multiplied by the initial weight.

(5) A. W. W. asks how flowers can be preserved in their natural colors. A. Dip the flowers in melted paraffine, withdrawing them quickly. The liquid should be only just hot enough to maintain its fluidity, and the flowers should be dipped one at a time, held by the stalks and moved about for an instant to get rid of air bubbles. Fresh cut flowers, free from moisture, make excellent specimens in this way.

(6) E. E. T. asks what size should an air pump be for a marine engine 5 x 5, with surface condenser. A. One-eighth the capacity of the steam cylinder, or 12 cubic inches.

(7) W. E. L. asks: Why is it that a steam whistle, when steam is first turned on, strikes the pitch an octave above its natural or fundamental note? A. This is not a general phenomenon of whistles. The eccentric pitch is due to the position of the valve and amount of water or air preceding the steam, or the wetting of the bell by the water first ejected.

(8) J. P. McL.—For drying hickory for mallets: Heat in a steam box until the sap is boiled out, then transfer to a dry room or box heated to nearly 200°, and allow to cool slowly.

(9) J. F. H. asks if old daguerreotypes that have faded can be restored. A. They cannot be fully restored, but they may be improved by flowing over them a weak solution of hyposulphite of soda or cyanide of potassium to clean them, afterward gilding them as described in the article on the subject on page 47, current volume of SCIENTIFIC AMERICAN.

(10) D. A. D. and S. H. ask for the recipe for a blackboard preparation. A. Take  $\frac{1}{2}$  gallon shellac varnish, 5 ounces lampblack, 3 ounces powdered iron ore or emery; if too thick, thin with alcohol. Give three coats of the composition, allowing each to dry before putting on the next; the first may be of shellac and lampblack alone.

(11) J. B. B. asks: 1. Is there any radical difference between an electric dynamo and a motor? A. There is generally no radical difference. A good dynamo generally is a good motor. 2. Would not any dynamo be converted into a motor by exciting the field magnets with an independent current? A. The terminal binding screws should receive the battery connection. Simply exciting the field magnets will not effect the result.

TO INVENTORS.

An experience of forty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

January 25, 1887,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing various inventions and their patent numbers, including Alarm, Amalgams by electrolysis, Animal exterminator, Arch or beam, Automatic brake, Axle nut, Baling press, Bandage and truss, Bar, Bath, Bath tub, Bearing, Beer, Bell and burglar alarm, Berth, Blasting cap, Bicycles, Bit, Board, Boiler furnace, Bolt, Book transfer, Boot or shoe tip, Boots and shoes, Box, Brake, Branding or marking animals, Brick kiln, Brick machines, Car brake, Car coupling, Car motor, Car railway, Car starter, Car street, Carriages, Castor, Chain bolt, Chair, Chuck, Churn, Cigar ash guard, Cigar lighter, Clamp, Clock alarm, Cloth clamp, Clothes sprinkler, Collars and cuffs, Coloring matter, Comb.