

ENGINEERING INVENTIONS.

An improved method of hardening steel has been patented by Mr. Ludlem B. Rockwell, of Sunbury, Pa. The articles used consist of cyanide of potassium, prussiate of potash, sal ammoniac, sulphate of iron, and bluestone, applied after a special manner during the tempering operation.

A car coupling has been patented by Mr. George H. Livingston, of Antes Fort, Pa. The invention covers a transversely movable drawhead and means for shifting it, with means also for moving the drawhead vertically, and means for moving and shifting the buffers.

A feed water return trap for steam heating apparatus has been patented by Mr. Denning P. Keating, of Ward's Island, New York city. This invention provides a novel construction and arrangement of parts to form a practical automatic device for returning the water of condensation of steam radiators back to the steam boiler.

A valve gear has been patented by Mr. Joshua P. McCook, of Richmond, Va. This invention covers a special construction of automatic valve gear, whereby the admission of steam is regulated according to the load, a peculiarity being a spring arrangement for normally holding the driving wheel in position in contact with the fly wheel or crank shaft.

A car coupling has been patented by Mr. James A. Arment, of Dodge City, Kansas. The drawhead has the ordinary link socket, with a vertically swinging self-coupling hook in a recess on one side, and a catch device for the hook of the opposing drawhead, with other features, by which the cars are coupled by two hooks, one on each car, both being detached by one movement of the lever or hook.

A running gear for railway cars has been patented by Mr. Charles E. Candee, of New York city. This invention consists in improved journal boxes wherein friction rollers are employed, and in connection therewith a novel construction of axle, to reduce friction and wear to a minimum, and so the axle, rollers, and wheels can be readily and independently removed when worn out.

An automatic safety lock for locomotive furnace doors has been patented by Mr. Lewis B. White, of New York city. A casing is pivoted above the fire door, with a spring, and an arm for closing and locking the door, which casing can be locked to hold the arm raised by a bolt which is connected with a ball for automatically withdrawing the bolt when the locomotive collides with objects, or runs off the track.

A railway track clearer has been patented by Mr. Lewis Larchar, of Marble Rock, Iowa. A stock, having a pivotal and spring connection with the engine or car, is provided with a foot block carrying the clearer plates or cutters pivoted to the stock, to swing forward and backward, the block being held in normal working position by springs at its opposite faces; the block may also be made to swing laterally or held raised from the track.

A hand power mechanism has been patented by Mr. Eli Z. White, of Carrollton, Miss. It is made with a drive wheel mounted on a main shaft, which carries a loose rock lever, which in turn connects by rods with reversely set cranks of two shafts carrying drive wheels which act on the drive wheel of the main shaft, the crank shafts being mounted yieldingly, the whole making an inexpensive mechanism for driving railway hand cars or vehicles, or for operating light machinery.

AGRICULTURAL INVENTIONS.

A steam plow has been patented by Mr. Benjamin S. Benson, of Baltimore, Md. This invention combines a plow gang, a cutter bar, and a traction engine, the plow gang being arranged to neutralize the thrust of the plows and steer them, and for giving a free, independent, up and down motion to each plow in adapting itself to hollows and ridges on the surface of the ground.

MISCELLANEOUS INVENTIONS.

A clothes sprinkler has been patented by Clara O. Bilinski, of Diamond Lake, Ill. This invention covers a special construction and combination of parts to provide a simple, inexpensive device for sprinkling clothes for laundry and household purposes.

A heat insulating compound has been patented by Messrs. Carl Grunzweig and Paul Hartmann, of Ludwigshafen, Germany. It consists of asbestos, fossil meal, clay, soluble glass, disintegrated cork, and water, in certain proportions and prepared for use in a specified manner.

A ventilated barrel has been patented by Mr. Thomas L. Lee, of Memphis, Tenn. It has a middle inside hoop, and plain straight staves of uniform width sprung around it, to form the bulge, the staves being spaced and nailed to the middle hoop and the nails clinched.

A show case has been patented by Mr. Adam K. Bowman, of Greensburg, Pa. It is an upright case with glass doors, and having removable partitions and brackets, in which assorted yarns and similar goods may be conveniently stored and exposed for sale.

A music leaf turner has been patented by Mr. James P. Batchelor, of Hutchinson, Kan. This invention covers a special construction and combination of parts in a device, whereby the leaves of either book or sheet music may be turned by the performer without interfering with the rendering of the music.

A cement composition for moulding brick has been patented by Messrs. Richard B. Eason and John J. McGivney, of New York city. The composition is composed of gypsum and ashes, treated in a specially described manner, to make a cement for use as a plaster, or to be moulded into brick or other forms.

A metal punch has been patented by Mr. Gilbert McDonald, of Augusta, Kansas. This invention relates to a former patented invention of the same inventor, and consists of the employment of a

segmental ratchet arrangement to be operated by a pawl and lever for forcing downward the cutting or punching tool.

An axle gauge has been patented by Mr. Rufus A. Simpson, of Ferndale, Cal. This invention covers a special construction and combination of parts in a gauge for accurately measuring the set and gather of a wagon wheel, and for use in indicating accurately the exact set and gather for iron and steel axles.

A smoking pipe has been patented by Messrs. James W. Owens and Oscar McClure, of Washington, Mo. This invention relates to corn cob pipes, and covers the filling of the interstices of the corn cob with a peculiar composition, so that the pipe will not be permeable by nicotine, will not become discolored, and will have other advantages.

A brick has been patented by Mr. Arthur Sherry, of Learned Station, Miss. The bricks are made in square form with interior openings, so the bricks when laid can be bound together by a clay, mortar, or cement composition placed in the openings, the edges of the bricks being chamfered or rabbeted to protect the pointing from the weather.

A necktie and collar fastener has been patented by Mr. Frank D. Adams, of Auburn, Cal. This is a device to be used for preventing a necktie from working up out of place upon a collar, and consists of a pointed spring wire, with its body in the form of a letter S, and its ends so bent that it may be readily applied to keep collar and necktie in position.

An improved ring handle has been patented by Mr. Charles A. Cook, of New York city. Combined with a screw spindle, with a cap spun on its head, is an escutcheon plate through which the bolt is passed, the escutcheon having a raised part fitting in the open end of the cap, making a handle simple in construction and which cannot turn on its spindle.

A cheese cutter has been patented by Messrs. Monroe W. Chapel and Eugene A. Reynolds, of Grand Blanc, Mich. This invention covers a rotatable block with a standard, a peculiar spring, and a knife actuated in a novel way, making an improved device for cutting sector-shaped pieces from a head of cheese conveniently and rapidly.

A mole ditcher and tile layer has been patented by Mr. Andrew S. Hughes, of Ackley, Iowa. This invention embodies in one machine a capacity for both ditching and tile laying, for drain tile, regulating the beam so as to make a uniform level or grade of the bottom of the ditch on both ascending and descending ground, with other novel features.

A plating basket has been patented by Mr. Arthur Murphy, of Taunton, Mass. It is a vessel with projections on the upper surface of its bottom, connected by wires, which then pass through channels in the bail or handle, with a hook on the handle by means of which the vessel may be suspended in a plating solution from a suitable conductor.

A quarter boot has been patented by Mr. Thomas Golden, of New York city. This invention relates to devices attached to quarter boots of horses to prevent slipping, and covers a peculiarly shaped clip with points on its inner face and claws on its ends; in combination with the front strap of the quarter boot, to firmly engage the hoof of the horse.

A check hook for harness has been patented by Mr. Joseph Darling, of Karns City, Pa. This invention consists principally of a check hook adapted to slide through the saddle tree or back pad, and having a strap or cord attached to it for operating the hook to uncheck or check up the horse, so the driver can do it without leaving the carriage or vehicle.

A wardrobe bed has been patented by Mr. Ernst Doring, of New York city. It is constructed with an upright case and the bed frame connected by a bar having end shoulders, with other features, so that the fulcrum point will be changed automatically as the bed frame is raised and lowered, and the bed frame will be prevented from going too far in either direction.

A stationary automatic ice planing and ridging machine has been patented by Mr. Stephen L. Smith, of St. Louis, Mo. It consists in a combination of supporting bars, knives, and brooms, with the slide-way over or through which the ice cakes are moved, and means of adjusting the parts, to cut off snow, slush, etc., and to ridge the cakes to prevent their freezing together.

A spring check hook for harness has been patented by Mr. William Black, of Morris, Pa. This invention relates to that class of check rein hooks wherein a coiled spring or elastic connection for the check rein is employed, the use of the spring allowing considerable freedom to the head of the horse, while by its use there is less liability of the horse breaking the check rein.

A combined wrench and gauge for gas service pipe cocks has been patented by Mr. Alfred G. Bayles, of New York city. It has a longitudinal slot in its handle with a pin secured adjustably therein to adapt the wrench to serve as a gauge, the slotted handle having a scale of division marks so the gauge pin can be readily set to prevent the cock from being opened beyond a fixed point.

A grader has been patented by Mr. Henry Hill, of Britt, Iowa. This invention covers a novel construction and arrangement of parts of a machine to plow up the earth and carry it the required distance to one side of the furrow, or load it into a wagon, and is designed especially for making roads by moving the earth from the ditch at each side to the center of the road.

An apparatus for charging liquids with gas has been patented by Mr. William Maynard, of New York city. Combined with a furnace for producing fumes or gases is a funnel, with pipes for conducting gas and water into it, the water gyrating along the sides of the funnel very rapidly, thus hydrating or purifying the gas, and drawing it downward into a gas receiver placed below the box.

A method for the production of rosaniline coloring matters has been patented by Mr. Emil Erlenmeyer, of Frankfort-on-the-Main, Germany. It

consists of oxidation of various combinations or mixtures of methylated amines or anilines or rosanilines with primary, secondary, or tertiary amines in such a way that the methyls of the former compounds are applied under the influence of oxidizing media, etc.

NEW BOOKS AND PUBLICATIONS.

THE MANUFACTURE OF LEATHER. By Charles Thomas Davis. Henry Carey Baird & Co., Philadelphia. 8vo, 324 pages. \$10.

This is probably the most complete work on the subject, but it is all the more important that it is an American work, for the only two volumes in the language that ever pretended to cover the whole trade have been long out of print, while in both French and German there are several treatises of considerable merit. This volume of Mr. Davis' is designed to cover a "description of all the processes for tanning, tawing, currying, finishing, and dyeing of every kind of leather, including the various raw materials and the methods for determining their values, the tools, machines, and details of the art," etc., together with a list of American patents pertaining to the business. It is illustrated by 302 engravings, and has 12 samples of dyed leather.

THE ARCHITECT'S AND BUILDER'S POCKET BOOK. By Frank Eugene Kiddle. John Wiley & Sons, New York. Price \$3.50.

The 586 pages of this handsomely printed pocket book are crowded with useful information, designed to make a complete and handy reference volume for those engaged in practical work. Briefly but comprehensively treating of the mathematics of building, it then more elaborately covers questions as to the strength and stability of foundations, walls, buttresses, piers, arches, posts, ties, beams, girders, trusses, floors, roofs, etc., and gives a great amount of condensed information on carpentry, masonry, draining, painting and glazing, plumbing, plastering, roofing, heating and ventilation, and kindred topics. The author is a civil engineer as well as a distinguished architect, yet the book is not intended to cover the more intricate problems of building, naturally belonging to the civil engineer, but rather as a valuable aid and companion in the regular work which builders are ordinarily called upon for. The book is illustrated with 408 engravings, mostly from original designs.

Received.

INTEREST TABLES OF THE MUTUAL LIFE INSURANCE COMPANY, OF NEW YORK. By William H. C. Bartlett, Actuary.

NEW YORK PRODUCE EXCHANGE ANNUAL STATISTICAL REPORT, FOR 1883. By E. H. Walker.

THE CHILDREN OF THE BIBLE. By Fanny L. Armstrong, with introduction by Frances K. Willard. Fowler & Wells Co., New York.

SMOKING AND DRINKING. By James Parton. Fowler & Wells Co., New York.

NOTES ON THE OPIUM HABIT. By Asa P. Meylert. G. P. Putnam & Sons, New York.

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.

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Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 422

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 438.

Curtis Pressure Regulator and Steam Trap. See p. 14.

Woodwor's Mach'y, Rollstone Mach. Co. Adv., p. 14.

Drop Forgings, Billings & Spencer Co., Hartford, Conn.

Brass & Copper in sheets, wire & blanks. See ad. p. 438.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 20,000 Crank Shafts and 5,000 Gear Wheels now in use, the superiority of their Castings over all others. Circular and price list free.

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

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Renshaw's Ratchet Drills. No. 1, \$10; No. 3, \$15. Cash with order. Pratt & Whitney Co., Hartford, Conn.

Shipman Steam Engine.—Small power practical engines burning kerosene. Shipman Engine Co., Boston. See page 23.



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 referred to may be had at the office. Price 10 cents each.

Minerals sent for examination should be distinctly marked or labeled.

(1) J. T. L. asks a receipt to convert a white rubber coat to a black. A. It is impossible. The black color is due to substances added to the rubber during the process of manufacture.

(2) J. H. asks: What acid or combination of acids will eat hard brass away quickly? A. Nitric acid or nitro-muriatic acid.

(3) E. F. asks if there is any way by which a violin can be improved in tone so as to be able to make it worth more, and would like to know if varnishing a violin affects its tone any. A. The tone of a violin improves with age and by continual playing. We should not advise its varnishing, as it is not likely to improve the tone.

(4) F. S. D. desires a recipe for making a mucilage for library labels. A. Try the following:
Gum Arabic.....2 parts.
Water.....5 "
Acetic acid.....1 "
Dissolve over a water bath by means of heat, and add one pint spirits of wine.

(5) F. A. W. writes: Will you give me a simple test to determine the presence of glucose in cane sugars? A. Dissolve some of the suspected sugar in water, and add Fehling's solution; if grape sugar is present, a precipitate of the red oxide of copper will form, while with cane sugar no effect is observed.

(6) C. T. asks how to ebonize white-wood. A. Dissolve 4 ounces shellac with 2 ounces borax in half a gallon water. Boil until a perfect solution is obtained, then add half an ounce of glycerine, after which add sufficient aniline black soluble in water, and it is ready for use.

(7) J. H. writes: I wish to paper some rooms in my house. The roaches are inclined to eat the paste; will you tell me how I can keep them from doing so? A. Use an ounce of poke root boiled in a pint of water, and mix the extract with the paste.

(8) P. & Co. ask for a receipt for suitable ink used with a stylographic pen, and that will copy; it requires to be very limpid and fluid. A. The inks used with the stylographic pen are generally aniline