

## ENGINEERING INVENTIONS.

A rail joint has been patented by Mr. Joseph D. Green, of Marshall, Mo. Two sections are formed to cover the joint, the one with a groove and the other with a rib fitted thereto, the construction being such that these sections can be clamped or locked over the joint and held in place by spikes, by which the base of the meeting rails will be firmly held in position.

A car coupling has been patented by Messrs. James N. Moore and Abraham L. Miner, of Lowell, Ind. The construction is such that when the cars are run together, the link on the adjacent car will strike a beveled end of the drawbar and be guided downward into a notch, when the spring will return the drawbar to its normal position and couple the cars, the device being one which can also be operated from the sides or top of the car.

## AGRICULTURAL INVENTIONS.

A hay sling has been patented by Mr. John M. Hart, of Oswego, Kansas. The invention consists of two bars provided with ropes at their ends and with means for holding them spaced, and with devices for locking and releasing them, to facilitate the unloading of hay or grain from a wagon and storing it in a barn.

A plow has been patented by Mr. Andrew L. Thompson, of Millbrook, Ill. It is so made that when the blades meet large stones, roots, stumps, or other obstructions, a fragile pin will be broken and the blade will be turned back without damage until the obstruction is passed, with other novel details of construction and combination of parts.

## MISCELLANEOUS INVENTIONS.

A scarf holder has been patented by Mr. John E. Eayrs, of Washington, D. C. It consists of an elastic strip with an attaching pin at one end and a key hole slotted clip at its opposite end, there being formed a combined clamp and button, with other novel features, for securing the lower end of the scarf to a shirt front.

A tobacco conveyer has been patented by Mr. Henry B. Light, of Simpson's, Va. The apparatus comprises an inclined cable, a rack having hooks at its upper opposite ends engaging the rope, and lower hooks adapted to receive the tobacco stick, for convenience in transporting tobacco from the field to the barn or storehouse.

A window cornice has been patented by Mr. William C. Doscher, of New York City. The front center piece of the cornice has flanged cleats at its back, and the sides are made in sections to slide in these cleats, so that by extending them or shoving them inward the cornice may be adjusted in length to suit windows of different width.

A curry comb has been patented by Messrs. Charles and Joseph Knopp, of Winona, Minn. This invention covers a novel form of device wherein the comb proper is provided with two operating faces, either one of which may be brought into play, intercoiled wires being used upon the limbs of the animal and toothed flanges of a plate upon the body.

A rotary saw sharpener has been patented by Mr. Robert Gaskin, of Fairville, New Brunswick, Canada. This invention covers an adjustable saw holder mounted on a sliding frame, means for imparting forward and backward motion to the frame, a device for turning the saw automatically the distance of one tooth, and a stationary grinding wheel.

A nut has been patented by Mr. John C. Shellito, of Penn Run, Pa. It is formed with an internal thread and an externally threaded projection, combined with a plug or bolt with an internally threaded socket and an externally threaded projection, the nut being designed more especially for use in connection with hollow axle skeins.

A steam steering apparatus has been patented by Mr. Samuel G. Martin, of New York City. It consists of two lines attached to opposite sides of the rudder and passing over abutments, in combination with a steam cylinder, a piston rod passing entirely through it, and connected at its ends to the lines, to act oppositely and simultaneously upon them.

A planter has been patented by Mr. Millard F. Myers, of Greenville, Ohio. The main object of this invention is to provide a machine particularly adapted for planting potatoes, although it may be used for other planting, and it is so made that two rows may be planted at the same time, or one row, or the device may be employed as a check row planter.

A nut lock has been patented by Mr. Zachariah F. Jones, of Scottsville, Va. It has a locking plate with an opening contracted or reduced in width toward one end, and having a groove formed in its under side, the plate being adapted to be placed on the bolt and moved longitudinally along it, in connection with a securing plate, and other novel features.

A cattle guard has been patented by Messrs. Pleasant P. Linder and Rufus P. Bryant, of Jacksonville, Ala. This invention covers a peculiar construction and combination of parts to provide a guard that will effectually prevent cattle from entering adjoining fields traversed by a railroad, the invention covering a specially contrived counterpoised gate and other novel features.

An automatic lubricator has been patented by Mr. Joseph Patrick, of Frankfort-on-the-Main, Germany. This invention is based on the fact that metals have different expanding coefficients when heated, providing adjacent surfaces made of different metals, that when in a quiescent state will close the feeding of the lubricant, but when heated will separate on account of their different expanding coefficients.

A gas generator has been patented by Mr. Antonio Ordonez y Ponce, of Matanzas, Cuba. It has a gas preparatory cylinder with oblong screens, and connected with another cylinder, also having revolving screens which mix the gas and air, revolving under

a high rate of speed, for mixing and making gas with hydrocarbons, for all purposes where a high or strong heat is needed.

A continuous recording seal and door fastener has been patented by Mr. George J. Ferguson, of Greenville, Texas. It is a device for fastening the door of a car or other sliding or hinged door, which is accomplished by a single movement of a lever, and in such way that the initial and number of the car, or other name or number, will be impressed on the seal paper slip each time the door is fastened.

A harness saddle has been patented by Mr. Alexander P. Waddell, of Union City, Tenn. It is intended especially for plow or heavy draught horses, and consists of a spring metal tree, with side bars and cross bars, and an intermediate or central cross bar, the pads connected therewith, so that the saddle will fit horses of different sizes, and afford ample ventilation to the back of the animal.

A barrel cover has been patented by Messrs. George J. Broemser and Edward D. Bradshaw, of Little Rock, Ark. The cover is made in hinged sections, through one of which is an opening to which is secured a box intended to exhibit a sample of the contents of the barrel, to facilitate examination and promote the convenience of grocers and others using a variety of goods kept in barrels.

A rein holder has been patented by Mr. Charles E. Austin, of Salmon Falls, N. H. It is made of a plate of elastic metal cut or stamped out to form a base plate, with opposite end tongues and attaching lips or tags, whereby a rein slipped into the holder will be firmly held, or may be clamped flatwise between the elastic tongues and the base plate of the holder.

A weather strip for windows has been patented by Mr. George W. Everett, of New York City. This invention relates to that description of weather strips which consist of flexible strips of rubber, which are attached to the sashes, the parting strips being grooved for the free edges of the elastic strips to fit into and work up and down within, with other novel features.

An adjustable hair spring fastening for watches has been patented by Mr. Louis R. Kaufmann, of Lexington, Mo. This construction is such that in all cases the adjustment is guided and is not a matter of guesswork and repeated trials, the plug or stud not being fixed, but adjustable, so that the lever can be conveniently brought into beat or the spring adjusted with reference to the usual regulator.

A stove has been patented by Mr. Charles Rohlf, of Brooklyn, N. Y. The stove body is made with an open air heating space at the bottom, with slots opening outside of the stove at the top of said space, upright hollow columns communicating with the air-heating space and open at the top, there being suitable dampers to close the slots and the hollow columns.

A turntable has been patented by Mr. Abraham Ayres, of New York City. This invention covers a novel construction of turntable, to facilitate the turning of street cars at the end of the route, the design giving a large leverage when the car is turned, while a truck or other vehicle driven upon the edge of the table will not cause displacement or too much tipping.

A gauge for mouldings has been patented by Mr. William T. Farrell, of Chicago, Ill. Combined with a bevel stock having a socket in its head and a longitudinal slot at right angles to the main slot, formed by the two sides of the stock, is an adjustable sliding stem with a catch, and on its top a disk and pointer, with other novel features, making a device for promoting accuracy in obtaining lines, angles, etc., in working stone.

A reel has been patented by Mr. William Slot, of Brooklyn, N. Y. The reel frame is formed entire from a single piece of metal plate, the cross piece being pressed into concave form, and the arms bent parallel with each other and formed with central holes to form bearings for the spool journals, making an improved fishing reel which is exceedingly cheap and simple.

A trunk attachment has been patented by Messrs. James E. McDowell and Thomas Medford, of Huntington, West Va. To each end of the trunk there is pivotally connected a link, there being formed two cuts in the upper ends of the links, the metal being bent inward to form a projection between the cuts, the device being for connecting the body and tray in a specially convenient way.

A ditching machine has been patented by Mr. Louis Arsene Desy, of Winnipeg, Manitoba, Canada. This invention provides means for guiding the propelling wheels, for raising and lowering the rear end of the machine, thereby gauging the depth of the ditch, means for rotating the excavator from side to side on a vertical pivot, whereby a trench may be dug with a given slant on its side embankments, and the dirt raised and discharged to one side.

A pump has been patented by Mr. Robert F. Dobson, of Darlington, Wis. It has a single valve, vertical tube, a horizontal tube connected to the lower end of the vertical tube, an air chamber connected to the horizontal tube, and a piston in the vertical tube, the parts being so connected and arranged that the pressure will be equal on both faces of the piston, and the pump can be worked with great economy of power.

A machine for forming veneer drums has been patented by Messrs. Wilson Godfrey and George W. Halstead, of Brooklyn, N. Y. Three sheets of veneer are first glued together, the grain of the central sheet crossing that of the other two, to prevent splitting and cracking, the united sheet being then turned over a former and the edges united, and while upon the former the sheets are compressed while the glue is warm, the machine enabling the lapped edges to be firmly clamped while on the former and then withdrawn from the forming cylinder.

## NEW BOOKS AND PUBLICATIONS.

A TREATISE ON SIMPLE AND COMPOUND OPHTHALMIC LENSES. By Charles F. Prentice. New York. 1886. Pp. 41.

This work is a simple and clear presentation of its subject. Graphic methods are principally used, the object being to keep the matter within the range of the layman. The different kinds of lenses are illustrated by drawings, giving the lines of refraction and the establishment thereby of the foci. The subject of cylindrical lenses, and of the effects of combining two cylindrical surfaces, one for front and one for back of the same lens, with axes either parallel or perpendicular (crossed cylindrical lenses) to each other, is very excellently illustrated by graphic methods. The drawings are reproductions of Mr. Prentice's pen work. A concluding section on asymmetrical lenses closes the text. Finally, two tables of crossed cylinders and their spherocylindrical equivalents, very elaborately worked out, are given.

PRACTICAL ELECTRICITY. By W. E. Ayton, F.R.S. Cassell & Co.: London, Paris, New York and Melbourne. 1887. Illustrated. Pp. xvi. and 516.

This work professes to be a laboratory and lecture course for first year students of electrical engineering. It is intended as a manual for practical experimentation in the science. It starts with a consideration of the electric current, its direction and its measurement. Under this head such subjects as calibration of galvanometers and measurement of distribution of magnetism in a permanent magnet are treated of, as well as the generalities of the matter. Galvanometers are described more at length in a special chapter. Electromotive force, difference of potentials, quantity and density, and their measurement are fully defined and described. Under potential the influence of the shape of the conductor is elaborately treated. Resistance receives a full chapter, the measurement of it being given in detail, along with the subject of heating of conductors and work of currents. Current generators come next. In this section the author introduces a new abbreviation, P. D., for difference of potentials—a very good suggestion, and resembling Daniell's abbreviation E. M. D. P. Insulation, quantity, and capacity, commercial instruments, such as ammeters, voltmeters, and a chapter on power and its measurement, with what has gone before, make up the bulk of the work. Some specimens of instructions for experiments and a very full index complete the book. It is designed for use by students examined by the City and Guilds of London Institute. This gives it a slightly local flavor, but it is a most admirable work, and well worthy of its distinguished author. The illustrations are numerous and particularly good.

\* \* Any of the above books may be purchased through this office. Address Munn & Co., 361 Broadway, 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.

Power users should read and builders of power app. should advertise in *Power*, 113 Liberty Street, N. Y.

Nafis' useful invention—The improved cask or tub. See *Sci. Am.*, Mar. 12, 1887. Patent for sale. Address G. R. Nafis, 266 Monroe St., Brooklyn, N. Y.

Manufacturers and capitalists desiring to become interested in a tested patent to prevent water freezing in pipes will address U. S. Automatic Water Cut-off Co., Atlanta, Ga.

Wanted—A competent man to take entire charge of a factory where metal is cut, stamped, spun, and drawn into various forms. Only parties of practical experience and undoubted mechanical ability need apply. Answers must contain full details, with name and references, otherwise they will have no attention. Address L. P. O. box 2,304, N. Y. city.

Wanted Magnets—Sizes,  $\frac{3}{4}$  inch wide, 1-50 inch thick, 12 or 15 inches long bar; bent into a horseshoe-shaped magnet, with a power of lifting, at least, its own weight twelve times. Parties wishing to furnish the same address C. Johnsen, Brooklyn P. O., N. Y.

We desire the services of a thoroughly competent man to take the place of our present secretary, who is obliged to retire on account of ill health, and to assist in general management. Experience and first-class business qualifications will be required, and to the right person excellent inducements will be offered. Great Western Mfg. Co., mill furnishers and manufacturers of general machinery, Leavenworth, Kans.

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.

The Knowles Steam Pump Works, 113 Federal St., Boston, and 93 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

For the latest improved diamond prospecting drills, address the M. C. Bullock Manfg. Co., 158 Lake St., Chicago, Ill.

Link Belting and Wheels. Link Belt M. Co., Chicago. The *Railroad Gazette*, handsomely illustrated, published weekly, at 73 Broadway, New York. Specimen copies free. Send for catalogue of railroad books.

Protection for Watches. 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. B. Giles, Agt., or Giles Bro. & Co., Chicago, where full assortment of Anti-Magnetic Watches can be had. Send for full descriptive circular.

Manufacturers quarry and stone working machinery, tools, and supplies generally, send catalogues and price lists to T. L. Fosstick & Co., Ingleton, Colbert Co., Ala.

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

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

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. Timber Gaining Machine. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn.

Wanted—Manto run air furnace. St. Louis Malleable Iron Co., St. Louis, Mo.

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

Manufacturers bucket machinery and tools, light iron and brass hooping, pail ears and bail wire, rivets and tacks, and woodenware manufacturers supplies generally, send catalogues and price lists to T. L. Fosstick & Co., Ingleton, Colbert Co., Ala.

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

Drop Forgings. Upward of 3,000 different articles. Billings & Spencer Co., Hartford, Conn.

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

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

Hoisting Engines. D. Friebie & Co., New York city.

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

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

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

## Notes &amp; 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) H. P. S. writes: I have in use a number of paper lamp shades for coal oil lamps; they are yellow and sooty on the inside, but otherwise good, though they do not reflect the light enough. Is there any white composition with which I can paint the inside so as to increase the reflection? A. Try pasting new paper over their interiors, or give them a coat of alcoholic solution of shellac, and paint with zinc white. The purchase of new shades is probably your best plan.

(2) F. R. L. asks: Can a good carbon for zinc carbon batteries be made from coke? If so, how? A. The coke must be ground to fine powder, mixed with sirup or coal tar, pressed into moulds, and baked. One or two dippings in coal tar or sirup while hot, followed by baking, will improve it. 2. Can half a pint bichromate cell run an electric bell 50 feet from touch button? A. Yes; but for intermittent use you should select Leclanche or some similar open circuit battery.

(3) F. H. asks: What size pipe and how high would I have to run it to get from 80 pounds to 90 pounds pressure from a cask, the same being full of water and the pipe tightly fitted in the top? A. 180 to 200 feet would be needed.

(4) F. E. S. writes: In leveling the foot of iron bridges, iron turnings have been and are used, and sal ammoniac is put into the turnings to rust them and make them more compact. Will the sal ammoniac rust the bottom of the bridge or plate, or does it exhaust its power on the turnings, with which it acts as a cement? A. If there is not an excess of sal ammoniac, no harm can occur to the foot plates beyond a slight surface rust.

(5) R. D. S. asks: Would there be any power gained by using two windmill wheels of the same size, one directly behind the other, the slats in the rear wheel being the reverse of those in the front, thus giving it a reverse motion, and both wheels working upon the same pinion on the upright shaft? A. Theoretically there is power thus gained, but the mechanical difficulties have heretofore been a serious obstacle to their use, simplicity of construction being of the utmost importance to the successful running of windmills.

(6) J. B. asks how the cushions of a steam launch are made to answer as life preservers. A. By making them of finely divided cork in waterproof canvas covers.

(7) H. C. S. asks: Is there any rule to estimate the cost of distilled water at a given price for coal? Form of boiler and steam pressure both immaterial. A. The best regenerative system of distillation produces from 13 to 14 pounds of water per pound of coal, to which must be added interest on plant, labor, and repairs.

(8) J. J. K. asks: How I can remove the ink on postal cards? I have quite a number that I had printed and never used. A. There is no satisfactory process of accomplishing this. It can only be partially done with a good deal of difficulty.

(9) E. E. H. asks (1) what substance is used by plumbers for covering lead pipe and sheet lead, to prevent the solder from sticking to it. A. Lamp