

RECENTLY PATENTED INVENTIONS.

Engineering.

INJECTOR.—Joseph H. Killey, Hamilton, Ontario, Canada. This injector is designed for operation by low pressure or exhaust steam, and by high steam pressure in emergencies, having simple parts, easily accessible for cleaning or repairs, and being capable of supplying very hot water to the boiler, the invention covering various novel features of construction and combinations of parts.

Railway Appliances.

CAR COUPLING.—Lewis W. Brewster and Robert Swift, Palmyra, Tenn. A horizontally swinging frame with coupling hook guard is mounted on the bumper, a swinging coupling hook being located within the frame, a spring holding the coupling hook toward the guard arm, while a cam plate is pivoted to the coupling hook with a projecting arm, and a shaft is mounted on the car with a hand wheel at its upper end and a chain at its lower end connected to the arm on the cam plate, whereby the cars may be automatically coupled, and may be uncoupled without the trainmen going between them.

REPLACING FROG.—Joseph J. Ladd, Callao, Peru. This is a light, portable frog, for replacing derailed locomotives and cars, and is designed to be entirely supported by the rails, while gravity will be made available for shifting the car or locomotive laterally.

Mechanical.

CORDAGE SPINNING MACHINE.—Anton Weber and Clement Lambert, Elizabeth, N. J. In this machine the twisting and winding mechanism is of the usual construction, but the invention covers an improvement whereby the operation of the machine is automatically stopped if the cord breaks, and the machine cannot be started until the bobbin upon which the twisted cord is wound is securely mounted upon its spindle.

MECHANICAL POWER.—Lemuel B. Walkins, Washington, La. This is a driving gear mechanism, consisting of wheels having grooved spokes with V-shaped edges, in combination with a connecting rod to which slides are pivoted, these slides working in the grooves in the spokes, the mechanism being designed for use with different machines operated by a crank.

MACHINE FOR SETTING CAR SPRINGS.—James B. Illingsworth, Monroe, La. This invention covers novel features of construction and combinations of parts in a machine designed to greatly facilitate the setting of locomotive springs and passenger and other car springs, and whereby the setting may be accomplished in a positive and accurate manner.

Agricultural.

HARROW ATTACHMENT FOR PLOWS.—John F. Williams, Grand Forks, Dakota Ter. This attachment consists of a toothed bar pivoted by means of a drag bar to form a flexible connection with the plow beam, whereby the harrow may be readily and effectively operated in connection with the plow, and will automatically adjust itself to any irregularity of movement of the plow.

CULTIVATORS.—Charles R. Hartman, Vincennes, Ind. Two patents in this class have been issued to this inventor, one of which embraces special improvements for readily adjusting the shovels from one pitch to another, applicable to all ground-stirring implements, as the depth of the furrow can thereby be regulated at will, regardless of the condition of the soil, or as required for the cultivation of plants in different stages of growth. One of the patents also provides a simple construction by which the cultivator teeth may be set to different adjustments, and firmly held in any suitable adjustment, the improvement being applicable to double shovel plows and similar implements as well as to cultivators, while both patents are in the line of improvements on former patented inventions in this class by the same inventor.

HAY LOADER.—Adolph Lasack, Oxford Junction, Iowa. This invention covers an improvement in hay loaders having side rakes and reciprocating elevating bars, whereby the hay may be effectually gathered from the sides as well as from the rear of the machine, and conveyed from the sides to the body, and from thence to a wagon or other vehicle.

POISON DISTRIBUTER.—Fred Eaton, Conway, N. H. The frame of the device is supported by a carrier wheel and has supporting standards with vibrating levers pivoted thereto, boxes with perforated bottoms attached to the lever arms, and a reciprocating slide, making a convenient garden implement for use in distributing poison on plants.

STRAW CUTTER.—John Topfer, Brooklyn, N. Y. Combined with a box and a knife wheel, and an endless belt in the bottom of the box, is a vertically sliding block near the cutting end of the box, a fluted roller in rear of the block and a plain roller above the fluted one, whereby straw or hay may be conveniently and expeditiously cut to any desired length.

Miscellaneous.

WIRE STRETCHER.—Frederick Stiles, (of Harrell, Burns & Stiles), Burnet, Texas. This invention covers a stretching device for building and repairing wire fences, telegraph lines, etc., and is so arranged that with it one can pick up both ends of broken wire and draw them together, the device embracing a novel arrangement of the detent or pawl in relation to the chain and toothed wheel in the frame with crank handle.

LAMP.—Charles H. Grube, Robinson, Ill. This lamp is provided with a novel form of adjusting screw for raising and lowering the wick, one which is positive in its action and not liable to become dis-

ordered, while the oil is prevented from overflowing, and the wick may be lighted without removing the chimney.

BALING PRESS.—Leigh H. Hallam, Belton, Texas. The press consists of a plunger and plunger rod with which a reciprocating sliding frame is connected, a rotary shaft on which a draught sweep is mounted having an arm actuating the sliding frame, by which a direct stroke is given to the plunger, and the latter permitted to rebound by the recoil of the hay, while the hay is properly held in position.

INK ERASER.—Charles W. Johnston, Louisville, Ky. This eraser consists of a thick plate or block-like piece of steel, having a rounded and convex erasing surface, with a file-cut dress, one of the sides or edges also having a further double convex surface of smooth finish, to be used in glazing or smoothing the paper afterward.

CONVEYER.—Charles N. Newcomb, Omaha, Neb. This invention covers a novel construction and combination of parts in conveyers adapted to carry parcels or loads from one point to another upon the same level, and provides for the transportation by gravity of a load suspended from a cable, from end to end of the cable, the empty carrier or another load being returned.

PAPER HOLDER FOR TYPE WRITERS.—William B. Northrop, Charleston, S. C. This is an attachment to be adjusted to any machine to permit the use of any width and length of paper, holding the print clearly in view, and providing for automatically feeding the written paper away from the impression roller, the device being simple and inexpensive.

ENVELOPE.—John O. Donnell, Louisville, N. Y. This invention covers a triple-sealed safety envelope, which cannot be opened as can the ordinary envelope by a pencil or other instrument, and which is designed to protect letters, or the envelopes containing them, from being surreptitiously opened and resealed.

SCIENTIFIC AMERICAN BUILDING EDITION.

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1. Elegant plate in colors, showing elevation in perspective and floor plans of a field stone residence, costing about nine thousand five hundred dollars. Page of details, etc.
2. Plate in colors of a cottage costing three thousand two hundred dollars. Perspective elevation, floor plans and details.
3. Engraving of the new Federal building to be erected at Worcester, Mass. Cost two hundred and fifty thousand dollars.
4. A cottage of moderate cost lately erected at Bedford Park, New York. Perspective and floor plans.
5. Plans and perspective of a convenient stable erected at Bedford Park, N. Y.
6. A handsome residence lately erected at Chattanooga, Tenn., from designs by Blotherwick & Penn, architects. Cost ten thousand dollars complete. Plans and perspective elevation.
7. A residence at Florence, Northampton, Mass. Cost ten thousand dollars complete. Perspective and floor plans.
8. Engraving of a half-timbered house at Chester, England.
9. View and plans of a fine barn lately erected near Providence, R. I.
10. A modern residence at Belle Haven Park, Greenwich, Conn. Perspective and floor plans.
11. A handsome house in the colonial style lately erected at "Reholds Terrace," Orange, N. J., at a cost of fifteen thousand dollars complete. Chas. A. Gifford, of London, architect. Perspective elevation and floor plans.
12. A cottage at Bedford Park, New York. Cost eight thousand five hundred dollars. Plans and perspective.
13. Engravings of the great Eiffel tower at the French exhibition.
14. St. Cloud Presbyterian Church, Orange, N. J. Potter & Robertson, architects, New York. Perspective elevation and floor plan. Cost seven thousand five hundred dollars.
15. Miscellaneous Contents: Brick piers.—Home decorations.—Delights of color.—Foundations in alluvial deposits.—Portland cement and sea water.—The effect of moisture on wood.—The weeping larch, illustrated.—Nashville's estimating rules.—Selected lumber.—The science of dry rot.—Sewage a protection against the tereedo.—Ornamental borders, with illustrations.—Hot air *vs.* steam.—The new Catholic cathedral at Pekin.—Advantage of sanitary measures.—Which are the hardwoods?—An ideal living room.—A water motor for elevators, illustrated.—Granite rust.—Ventilating grates, illustrated.—French building laws.—Mahogany.—Artistic wood work, with illustrations.—Stains for mortar and plaster.—An enduring tin roof.—Wood filling and finishing.—Shell fish marbles.—Fire-resisting ceilings.

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Notes & Queries

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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.

(913) W. B. P. asks: Can you tell me how paint can be made to dry, made of Venetian red, naphtha, and Smith's Ferry (mineral) oil? What will give a gloss? What proportions should I use for dipping paint? A. Your only relief is to mix a quantity of linseed oil with the paint, and you will probably have to abandon entirely the use of petroleum. The proportions for different uses you must determine by experiment. Everything depends on the quality of the pigment and whether it is ground with the oil or not.

(914) S. K. K., of Bombay, writes: 1. I have successfully constructed the dynamo described in SUPPLEMENT, No. 600, and the motor described in SUPPLEMENT, No. 641, and I now desire to make a dynamo for the electro deposition of copper. How shall I proceed to construct a machine that will yield a large current with a low electromotive force? A. An electroplating machine of the size of the eight-light dynamo may be made by modifying that dynamo in the following way: Make the commutator cylinder and the brushes of double the present width. Increase the diameter of the commutator cylinder 1/2 inch, and use only half the number of commutator bars. Wind on the armature the same quantity of the same size wire, but

instead of carrying it several times around the armature core, arrange the eight wires in parallel so as to form in each coil of the armature a multiple conductor of very low resistance, beginning at one commutator bar and terminating at the next. Wound in this way the armature will have in each division one coil of one convolution and only half the number of coils used in the 8-light machine. The field magnet may remain as it is, but it must be connected as a shunt to the armature, and a switch must be provided which will throw all the wire in series, or two in parallel or four in parallel, or the wire of both legs of the magnet in parallel, according to the current required. In view of the large number of wires to be connected with each bar of the commutator, it would be well to provide the bars with radial arms for receiving the conductors. There would be an advantage in winding the armature with a smaller number of coarser wires, say half the number of No. 17, or quarter the number of No. 14, the conductivity being the same in each case. 2. Can I charge storage batteries with such a dynamo? If so, how? A. Yes; by connecting them up in parallel. For information on storage batteries we refer you to Reynier's "Voltaic Accumulator," price \$3. 3. What is the *modus operandi* of refining sugar by electricity? A. We believe the electric sugar refining process has proved a failure. The details of the process have not been made public.

(915) C. E. L. writes: 1. In your No. of April 27 you give, "bicarbonate of ammonia and sulphate of soda in strong solution" as the best solution for hand grenades to extinguish fire. How long will this compound keep without losing its properties as an extinguisher? A. Indefinitely, if the bottle is well corked. 2. To how high a temperature could water be raised in flat sheet iron or cast iron vessels before doing damage, if strongly braced? What number of pounds pressure would the temperature indicate? Of course I desire the results in iron of different thicknesses. A. It depends on the bracing; no general answer can possibly be given. The iron begins to soften as it approaches red heat at about 750° Fah. 3. What are the elements in sorghum molasses that boiling removes before the sirup loses its greenish color and becomes clear? And what, if any, chemicals will remove the same? A. It contains nitrogenous impurities and salts of organic acids of which little is known. Lime is used in its defecation.

(916) E. C. A. says: Will you please inform us grape growers of Oswego County, N. Y., through your paper, what to put on our vines to rid us of the pest (bug) which we inclose? A. The specimens were the common grapevine flea beetle, *Haltica chalybea*. The principal damage done by this insect is in the early spring, when it issues from its hibernating quarters and gnaws the buds of the grapevine. Taken at this time it can be destroyed by the spraying of the vines in the heat of the day with a dilute kerosene emulsion or with one of the arsenical solutions, which however should not be used in stronger proportion than 1 ounce to 10 or 15 gallons of water. They are also readily jarred from the vines and can be caught upon cloths saturated with kerosene. This last method was practiced with great success some years ago in a large vineyard near Washington.

(917) D. C.—High pressure engines are those that run by steam direct from the boiler and exhaust into the air. Low pressure engines are those that run with a vacuum on the preceding side of the piston, and are "condensing" in the manner of forming the vacuum by injecting cold water into a receiver of the exhaust steam. Eccentrics are the cam pieces on the shaft for moving the valve. See a good work on the steam engine, such as the American Steam Engineer, by Edwards, which we can mail for \$2.50.

(918) W. P. P.—For the information you desire regarding electric motors we refer you to "Dynamo Electric Machines," by Hering, price \$2.50, or Thompson's "Dynamo Electric Machinery," price \$5. For full information on storage batteries we refer you to Reynier's "Voltaic Accumulators," price \$3.00. We can mail you the above named books on receipt of price.

(919) H. S. asks for a recipe for coloring wool cloth black, jet black, and the process. A. Perhaps the easiest way is to use aniline black or nigrosine dissolved in water into which the goods are dipped. Or a bath of logwood extract may be employed, followed by a bath of copperas. The latter black is best over some ground, such as indigo. The cloth in the latter case should be well washed after drying. Or try following: Work for one hour in a bath containing 8 ounces bichromate potash, 6 ounces alum, 4 ounces fustic to the gallon; lift and expose to the air for a short time, wash well, and work for an hour in a bath of 4 pounds logwood, 4 ounces barwood, and 4 ounces fustic to the gallon; lift and add to bath 4 ounces copperas in solution; work half an hour in this.

(920) H. R. asks for some preparation that will clean the green mould off brownstone. A. Scrub it with sand and water; we know of no other effectual way. To insure prompt attention, your letter should have been signed in full.

(921) "Scientist" asks for the best way to liquefy the T. & M. blacking. I have used vinegar, but it dries too quickly on leather. A. To prevent too rapid drying use a little molasses, sugar and water, or glycerine. Determine the exact amount by trial and be careful not to use too much.

(922) A. F. asks if there is any process for preserving fruit in its natural state. A. On a small scale some attempt may be made by tightly wrapping the fruit in tinfoil. Otherwise it must be canned or preserved in sirup or alcohol.

(923) B. L. asks: Will you kindly tell me how to mix the ingredients for cologne, the recipes of which were given in one of your recent issues? Also how much alcohol is used in making hellebore? A. Mix in a large bottle so as to shake well, and if necessary distill. Use strongest alcohol. For 26 quarts of alcohol 85° use 19 to 40 ounces extract of hellebore.

(924) E. S. F. asks for a receipt for making kumys or koumiss. A. Mix 100 parts condensed milk with 1,000 of water, add 1 part lactic acid, 1/4 part