ENGINEERING INVENTIONS.

A car coupling has been patented by Mr. Calvin Keeler, of Hobart, N. Y. Combined with a drawhead is a lever pivoted thereon, having on its swinging end a fork for holding a pin, with a cam lever pivoted on the forked lever and serving to adjust the link.

A spring frog has been patented by Mr. David H. Lovell, of Renovo, Pa. It has the top of the siding rail and of the spring rail a short distance below the top of the main line rail, and with the frog point beveled, the object being to prevent the breaking of the spring rail by badly worn wheels.

A railroad tie has been patented by Mr. John Gearon, of Alta, Iowa. This invention provides for covering a roadbed with a series of united U-shaped metal ties placed alternately with the shanks projecting upward and downward, the shanks of one tie passing into the recess of the other tie, preventing the growth of weeds, and water from flowing into the roadbed.

A valve gear for steam pumps has been patented by Mr. Abraham Hill, of Marlborough, of Wilts County, England. This invention substitutes for the eccentrics in double cylinder engines a gear whereby the valves will be caused to open and shut quickly, the gear being operated from the piston rod crossheads, the crosshead of each engine working the valve of the other, while the valve gear, being independent of the crank shaft, is unaffected by any play of the latter.

AGRICULTURAL INVENTIONS.

A farm gate has been patented by Mr. William C. Hamner, of Morganfield, Ky. It has a bar extended from its rear end, on which are levers connecting with the gate latch, with various novel features of construction, whereby the gate can be opened and closed at some distance from either side by a pedestrian or one in a vehicle, the gate locking and unlocking automatically.

A combined harrow and replanter has been patented by Mr. David A. Spitler, of Flora, Ind. Its construction is such that when the harrow is being drawn along to kill weeds and loosen the soil, a place being reached where the seed has not germinated, such hill can be quickly and conveniently replanted, the necessary attachments therefor being carried above the ground when not in use.

A fertilizer distributer has been patented by Mr. Alexander Lively, of Sardis, Ga. The box or body consists of sections having meeting edges formed on diverging lines, with batten bars pivoted to and connecting the sections, the adjustment of the sections permitting a greater or less quantity of fertilizer to be distributed by each revolution of an agitator wheel which operates between the lower edges of the sections.

A low binding grain harvester has been patented by Messrs. J. Calder Cunningham and George A. Cunningham, of Washington, Jackson County, Kan. It is made with a long and a short horizontal endless apron, and a driving mechanism connected with the platform frame to receive the cut grain and deliver it at the outer end of the harvester at a level with the platform, with other novel features, whereby grain can be bound without being elevated above the level of the platform.

MISCELLANEOUS INVENTIONS.

A traveling cap has been patented by Mr. Anthony Ward, of Brooklyn, N. Y. It is made of two pieces, the crown and body portion, the latter being provided with visor, cape, and cape lining, all from the same piece of material, to make a winter traveling cap, with very little waste in cutting out.

A pump has been patented by Mr. Hiram Field, of Smithville, Ontario, Canada. It has both lifting and forcing actions, and has large capacity for a given size of barrel, while giving a continuous, even volume of liquid, being especially adapted to lift and force liquids from deep wells and mines.

A wire fence post has been patented by Mr. Eugene Brisbin, of Weston, O. It has a base with central aperture for the post and end apertures for rods which act as braces, with prongs to force through the base into the ground, making a post which is light, strong, and durable.

A baling press has been patented by Mr. George Ertel, of Quincy, Ill. Its construction is such as to regulate automatically the weight of the finished bales, while it smoothes their surface and provides for their being quickly and easily tied, the press being especially adapted for baling hay, straw, cotton, and similar material.

A hose reel has been patented by Messrs. Andrew Schmidt and Charles Revercomb, of Winnipeg, Manitoba, Canada. Combined with a bent axle, carrying wheels, and thills supported on springs secured to the axle, is a reel with mechanism for operating it from the wheels, so that the hose may be automatically wound by running the cart backward over the line.

A tray for developing photographic plates has been patented by Mr. Richard E. Atkinson of New York city. The photographic plate itself is made to constitute the bottom of the tray for retaining the developing fluid, a rubber or other flexible packing being used to make a tight joint for the edges of open frames or sections which close upon the plate or film.

A siding for buildings has been patented by Mr. Albert C. Daugherty, of North Belle Vernon, Pa. This invention consists in making the sidings of uniform thickness throughout, the outer sides of the tongued edges being cut away to form a watershed to each course, and the tongued edges having inclined surfaces through which to nail the siding to the studding.

A salt drier has been patented by Mr. Joseph A. Cook, of Auburn, N. Y. It is a jacketed trough, surrounded by steam, and with an inner heating drum with flanges, which operate, as the drum is revolved, to agitate the salt and to move it along in the trough to the discharge pipe, the apparatus being also applicable for drying sugar and other fine substances.

A check file has been patented by Mr. Thomas A. O'Keefe, of Brooklyn, N. Y. It consists of a series of boards with their front edges beveled, and having numbers, letters, or other marks, the boards being united by upright pieces to form steps, and with pins projecting from their upper surfaces, making an improved file for filing check books or checks.

A banjo has been patented by Mr. Chas. E. Dobson, of New York city. It is made with the forward edge of its rim spun over a wire ring, the spun-over edge and rim having numerous perforations parallel with the axes of the rim and ring and registering with each other, in order to improve the sweetness and clearness of tone of the instrument.

A wagon brake lever has been patented by Mr. Columbus F. Moore, of Waveland, Ind. It consists of a tooth rack operated by pinion that is carried by a jointed rod or shaft, with a novel pawl-operating attachment, with other novel features, for better operating the ordinary form of brake for wagons or other vehicles.

An automatic signal buoy has been patented by Mr. Henry McLaughlin, of Bangor, Me. This invention covers a special construction of a buoy carrying a gong and balls, with guides to direct the balls to strike the gong under the action of the waves or the current, or a similar gong-sounding mechanism may be used on a small raft or boat, etc.

Artificial stone forms the subject of a patent issued to Mr. George Blum, of Orlando, Fla. By this invention an improved artificial stone is made of slaked lime, sulphur, sulphuric acid, common salt, or other saline matter, and sand, mixed in stated proportions, and made in a special machine, which subjects them to a pressure of one ton per brick.

An ax helve wedge has been patented by Mr. Henry F. Sawyer, of Providence, R. I. It is made with two wedge-like prongs tapered flatwise to a point, and separated at their inner edges to give space for the passage between them of a screw, so that when the screw is removed the wedge may be easily pried from the end of the helve.

An automatic attachment for gas stoves has been patented by Mr. John N. Ives, of Brooklyn, N. Y. This invention covers a novel construction of an automatic device for operating the cock in the gas service pipe of gas stoves, to partially cut off the flow of gas to the stoves when no object to be heated is in the stove, thus effecting a saving of gas.

A barbed fence wire has been patented by Mr. James E. Hunt, of Chicago, Ill. A short piece of wire, with its ends pointed to form barbs, is passed through a loop of a fence wire, and wrapped one or more times around the loop, in such way that the pointed ends will project in opposite directions, the short barbed wire being securely held by the way it is twisted.

A ratchet drill has been patented by Mr. Jules Magnette, of Long Island City, N. Y. Combined with the screw socket of the ratchet wheel and the feed screw, having a novel point and head, are intermediate telescoping screws and their stop pins, making a drill which can be readily fed forward, and in which the feed arrangement can be extended or contracted as required.

A waterproofing cloth has been patented by Mr. James H. Sheldon, of Zanesville, Ohio. The method of waterproofing consists in saturating the cloth in a hot solution of gum arabic, table salt, and alum, in soft water, then handling and airing, then saturating in a warm solution of Spanish whiting and prepared chalk, with handling according to a specified manner.

A hame fastener has been patented by Mr. Marsh Noe, of Davenport, Iowa. It has a special form of tumbler and fastening hook, which mutually lock, while there is a stop applied to the hook to avoid accidental unlocking of the hames, and a tongue or guide is applied to the lower ends of the collar to cause a proper registering of the collar and hames when brought together for fastening.

A bouquet holder has been patented by Marietta Flint, of New York city. It is an ornamentally shaped receiver, fitted with an internal holder, the receiver having sponge or other absorbent material in the bottom, and the holder being so fitted as to hold the flowers while providing against water flowing out, there being a hinged pin for attaching the receiver to a garment, a hat, or bonnet.

A land roller has been patented by Mr. Joseph Hafner, of Fowler, Mich. It is for rolling land to crush lumps left by the harrow and bed the seed, but is adapted also for rolling lawns or leveling roads, and its construction is such that the weight of the machine frame and the driver, as well as that of the rollers, will be most concentrated where the land is the highest or the lumps largest.

An axle gauge has been patented by Mr. Hector McQuarry, of Allandale, Ontario, Canada. This invention relates to gauges to determine the bend to be given to an axle so that the lower supporting spokes of the "dished" wheel turning thereon will be always plumb, and the wheel may have the required "gather," the invention being an improvement on an axle gauge formerly patented by the same inventor.

An ore concentrator forms the subject of two patents issued to Mr. William Hooper, of Ticonderoga, N. Y. Combined with a vertical shaft, a driving mechanism, a stirring tub, and a perforated water pipe, is an annular series of radial flaring sluices adapted to have a rotary movement, whereby the head ends of the sluices will be brought successively beneath the feed and the water supply, with other novel features, for separating automatically the floating values, tailings, middlings, and concentrates, and delivering them into separate receivers.

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) M. P. B. asks: 1. In which numbers of the SUPPLEMENT are directions for gold plating? A. Nos. 112, 160, 310. 2. Suppose a piece of steel is hardened and drawn to a blue, then repolished, and drawn to a blue a second time. Will the second drawing alter the temper? A. Hardened steel will lose temper by redrawing to a blue each time. If drawn to blue, it may be redrawn to a straw or orange several times without losing hardness. 3. Can a watch that has become magnetized be demagnetized? A. Yes; see SCIENTIFIC AMERICAN SUPPLEMENT, No. 419. 4. Please give directions for etching on hardened steel. A. For etching on steel, cover the surface with asphalt varnish or paraffine mixed with lampblack or asphalt, draw the design with a hard point, and etch with a dilute mixture of nitric acid and water; or, paint the design for bright lines with thin asphalt, and brush and cover all other parts not required to be etched with the varnish, and dip the article in the acid bath.

(2) L. J. S.—Run your leather belts with the grain (or hair) side next the pulley. A little good Labrador oil with a small proportion of tallow makes an excellent dressing, but not much should be used, and what is put on should be allowed to be well taken up by the belt after the latter has been thoroughly sponged off—enough to make it slightly damp. This tends to keep up the life of the leather, and restore it to the condition in which the best belt makers furnish it. The use of beeswax to make a belt pull is a temporary and unworkmanlike expedient for a dirty, overworked, or undersized belt for the power required. Rubber belts need no dressing.

(3) M. W. asks how to recrystallize rock alum. A. Dissolve in water and evaporate slowly until the mass is just about to crystallize; then add a little more water, and place the vessel containing the solution near the heat, and crystallization will probably take place over night.

(4) H. V. P. writes: I have a glass vessel which has been used for an aquarium. It is coated with a film of a milky appearance and lead colored spots. Can you inform me how I can remove them? A. Use hydrochloric acid, diluted with water. Sulphuric acid and potassium bichromate will eat away any organic matter.

(5) F. B. asks: 1. What is the horse power (nominal) of an engine that has a cylinder 16 inches diameter, 18 inches stroke, average pressure 75 pounds steam, 150 revolutions? A. 80 horse power. 2. What causes the water to flow through the injector into the boiler, when the pressure on the boiler check valve is the same as on the injector? A. See SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 212, 356, also a little work on the theory of injectors, 50 cents, which we can furnish.

(6) J. J. H., Jr.—The straight link connection for an engine does not meet the requirement of a perfect link movement, and of course is of no advantage.—Cold rolled shafting is made from ordinary round iron, a little larger than the required size, cleaned from scale, and rolled to a finish below the red heat.

(7) G. W. D.—Plating with celluloid or zylonite is a very difficult process, and many of the details of such manufacture are patented. The articles require to be heated to melt the celluloid and make a contact while the thin celluloid sheet is

pressed to the surface. The surface of the celluloid when cold requires finishing and polishing much in the manner of ivory. It easily takes fire, and is considered a dangerous article to handle near fire.

(8) A. B. S. asks: Can a flue plate on a tubular boiler that has a crack between two flues (distance between flues about ⅜ inch) be repaired, without taking out the flue plate, and if so, how should it be done? A. There is no satisfactory way of repairing a cracked tube sheet. A hole may be drilled and patches bolted on both sides with iron putty for a temporary expedient.

(9) A. E. asks: Which is most economical to use on a 30 horse power engine—a 6 foot or a 7 foot balance wheel; and what is the difference in cost of these wheels, each having an 18 inch face? A. So small a difference will have very little effect. Evenness of motion depends upon weight and diameter of balance wheel. The larger size will give a better effect with the same weight. Apart from the convenience of belting, there is economy in a large balance wheel.

(10) C. A. S. asks: What will remove limestone from steam copper coil? Coil is used in heating water, and deposit is on outside. A. Hydrochloric acid 1 part, water 3 parts. Swab the coil with the mixture, let it stand an hour or two, and wash with a stiff brush and water. Parts that do not come off the first time, treat again.

(11) E. A. C. asks for a marking ink for wooden packages. A. Dissolve asphalt in naphtha or oil of turpentine to a thin fluid. This dries quickly, and the markings are nearly indestructible.

(12) C. A. H. asks a formula for making a cement to cement glass lenses to iron block while grinding. Now use a cement of pitch, resin, and wood ashes, but it often breaks delicate lenses, or during the process of grinding loosens itself from the glass. A. 10 parts resin, 2 parts shellac, 1 part rouge; melt, mix, and add enough turpentine to make it tough, so as not to splinter under pressure from the thumb nail, at the working temperature of the room.

(13) R. & Co. ask (1) how pulverized steatite (soapstone) is applied for finishing walls or ceilings. A. The material is ground with linseed oil, same as any dry pigment is mixed with oil to produce a paint. It is said that by its use the parts coated become fireproof.

(14) L. K. asks what the size is made of that is used to put on flock. A. The size used for flock work is made from glue, but you will find it best to purchase the article from some ink manufacturer. Details of preparation, obtained from long experience, make it possible for these makers to produce a better size than can be made by a private individual.

(15) A. L. S. asks: How many distinct substances are known to science, and how many are used as medicines? A. There are about 67 distinct elements known to science; of these, perhaps 50 are used in medicine.

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March 16, 1886,

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