

## ENGINEERING INVENTIONS.

A spark arrester has been patented by Mr. John C. Albrecht, of Columbus, Ga. Combined with a draught pipe is a cone with curved volutes, and in its center and underneath it an inverted cone, with spark pockets, and other novel features, the sparks being returned to the fire box, the invention being an improvement on two former patented inventions of the same inventor.

A steam condenser has been patented by Mr. John McIntyre, of New York City. It is cylindrical in form, a central perforated or slotted casing being used in connection with the cooling pipes, with a regulating valve to open or close the perforations or slots, in such way that the cooling effect will be more instant and the temperature of the cooling parts more equal than in ordinary condensers.

A car coupling has been patented by Mr. George W. Giles, of Buffalo, West Va. In connection with a suitable drawhead, a weight and pin are joined by a flexible connection, the weight being adapted to overbalance the pin, and the weight being projected into the path of the drawbar, so that the entering drawbar will raise the weight, and thus permit the pin to fall by its own gravity into coupled position.

A car coupling has been patented by Mr. Wesley E. Roberts, of Hartford, Ky. The coupling link consists of a straight bar, with a wedge shaped pointed lug at each end, a spring being fastened to the under side, and the coupling being effected by an arm dropping in front of the lug after the link enters the drawhead, the device being simple in construction, and one which can be operated from the side or top of the car.

## AGRICULTURAL INVENTIONS.

A mower has been patented by Messrs. James E. Nieth and Charles L. Thomas, of Independence, Iowa. This invention covers a novel construction and combination of various parts of the machine, so that it will operate with less friction than ordinary mowers, while being simple in construction and not liable to get out of order.

A plow has been patented by Mr. Thomas J. Eriom, of Union Church, Miss. It is an improved garden plow, with simple means for adjusting the gauge wheel to regulate the depth of working, and a breast bar for pressure by the operator to increase the propelling power and to give the plowman a better control of the plow, with other novel features.

## MISCELLANEOUS INVENTIONS.

An attachment for elevator doors has been patented by Mr. Edward P. Walker, of Kansas City, Mo. It is an attachment designed to effect by the movement of the elevator car the automatic operation of the doors of the shafts, so that the elevator man is relieved of this duty.

A saw gummer has been patented by Mr. Eli Rogers, of Fulton County, Ind. The invention consists of a cam lever operating a spring arm on which is pivoted a tool holder, making a device which is simple in construction, durable, and effective in operation.

A hame has been patented by Mr. John E. James, of Mossy Creek, Va. It is so made that the shoulder of the horse will not be affected by heavy jars, and the hames may not only be fitted to any length of collar, but the point of draught may be shifted, so that the draught will be brought to the proper point.

A tongue support has been patented by Messrs. Charles W. Van de Mark and Calvin Moore, of Clyde, Kansas. The construction is such that the tongue may be supported so as to relieve the team of its weight, and the devices for supporting it are simple, inexpensive, and not likely to get out of order.

A fence post has been patented by Mr. John J. Kimball, of Naperville, Ill. Combined with side strips are rivets, spacing strips arranged between the side strips, clips formed with apertures, and staples arranged to pass through the apertures, making a cheap, durable, and efficient post for barbed wire fences.

A combined chair and lounge has been patented by Mr. Gustavus Hamel, of De Soto, Mo. The parts are so arranged that the back of the chair may be adjusted to any angle desired, and the attachment constituting the foot rest or foot of the lounge may be disposed beneath the main seat of the chair when not in use.

A harmonic keyboard for violins has been patented by Mr. James F. Poage, of La Plata, Mo. It is designed to enable the performer to produce harmonic high tones without great difficulty, and is attached to the neck of violins of the usual construction, the keyboard being a combination of pivoted finger keys with a pivoted stop plate.

A rein holder has been patented by Mr. William Tension, of Mount Vernon, Ind. This invention covers an improvement in rein holders consisting of a skeleton frame adapted for attachment to a harness or for support upon a horse's back, and used for the purpose of supporting the reins out of the way of the animal's tail.

A collar button has been patented by Mr. Leopold Baer, of San Francisco, Cal. To the center of the button back is secured a tubular shank in which is a spiral spring, there being a knuckle joint by which a tongue may be held in three different positions, the device making a conveniently working button for holding the necktie in place.

A bridle has been patented by Mr. Benjamin S. Seaman, of Corning, N. Y. The cheek plate is formed with studs on which the blind sheet is adapted to be placed, and secured by a key plate constructed to engage with the studs, the cheek loop being secured to the cheek plate with the same stud plate and key plate which hold the blind.

A machine for bending carriage thills has been patented by Mr. Thomas E. Montague, of West Lorne, Ont., Canada. It is for bending wooden shafts or thills for buggies, sulkeys, carriages, and other vehicles, and covers a novel construction and combination of parts and details, whereby thills of greater or less thickness can be bent, the machine operating very rapidly and automatically.

A nut lock has been patented by Mr. Jeremiah C. Butler, of Lexington, Mo. The construction is such that the key may be drawn off the bolt by the nut, and need not be bent out straight into the keyway of the bolt to prevent its locking portion engaging in the recesses of the nut as the latter is being turned off the bolt, the key needing only to be bent very slightly for adjustment into locked or unlocked position.

A trousers stretcher has been patented by Mr. Charles E. Ray, of San Francisco, Cal. The trousers are clamped below the waist band and at the bottom, the clamp at the waist band attached to a spiral or rubber spring, secured in fixed position at one end, while to the clamp at the bottom is attached a strap by which tension can be placed upon the trousers, and permanently maintained.

A log dog has been patented by Mr. Eugene H. Allman, of Mobile, Ala. It is made of heavy wrought iron, with a flat body portion, and having end points or fangs, and is applied to the chain by shouldered clips, all extra chains and dogs being dispensed with by its use, and when used on endless chains it being only necessary to point the logs in the logway, when the dogs take hold and bring them up.

An electrical weighing scale has been patented by Mr. Willis M. Hunt, of Glen Gardner, N. J. Combined with feeding hoppers arranged above the scale pan are valves operated by connection with the foot lever for discharging the hoppers, and combined therewith is an electro-magnetic holding and releasing device, which automatically stops the feed when the scale beam is tipped.

A boot or shoe stretcher has been patented by Mr. Lloyd Nottingham, of Norfolk, Va. Centrally pivoted levers have apertures in their lower end to receive pins with rounded outer ends, and above the pivotal point is an adjusting screw to separate the levers in stretching the boot or shoe, the levers being held apart by locking pieces, the device being simple, strong, and easily operated.

A combined bench and ironing table has been patented by Mr. Daniel H. Weller, of Boyertown, Pa. Combined with a reversible board with covered socket boxes are supports hinged to the legs of a bench, with other details, to make a desirable piece of furniture to serve the two purposes of a seat and a table to iron upon, with compartments for keeping the cloths used in ironing.

A window frame and sash has been patented by Mr. John E. Jones, of New York City. The construction is such that the sashes when closed are to all intents and purposes air tight, and wear and friction are removed from the packing strips, so the sashes may be raised and lowered without injury to the packing, the invention being an improvement on a former patented invention of the same inventor.

A tug fastener has been patented by Mr. Daniel T. Chambers, of Mansfield, Ohio. It is in the nature of a divided button, one portion integral with a shank that goes in the end of the single tree, and the other formed of two limbs, one completing the periphery of the button and the other extending up parallel with the shank and forming a part of the neck beside the button on which the trace is contained.

A tug fastener for single trees has also been patented by the above inventor. It consists of a tilting latch hinged upon a horizontal axis at or near the end of the single tree, with one hub adapted to lie longitudinally with the single tree and the other to project upwardly at about a right angle thereto, making an easily operated device for fastening the traces to a single tree.

A plaster fastener has been patented by Messrs. Forest M. Lamson, Alpheus M. Laning, and George W. Hogben, of Ripon, Wis. It consists of a metallic washer formed of thin sheet metal, slightly convex, and provided with a countersink in the center, formed by the process of stamping, the device being intended to secure plastering loosened by shrinking of the lath, etc., before it becomes cracked and disintegrated.

A combined towel, hat and paper rack has been patented by Mr. Elbridge L. Scribner, of Amesbury, Mass. (P. O. Box 98). It is a simple, inexpensive, and efficient device, consisting of a frame formed of end pieces of wood, connected by wooden slats on the back, and supporting three rods of metal or wood for receiving the articles to be held, the lower rod being designed for receiving a roller towel, and the upper rod being offset or cranked for convenience in placing articles on the lower rods.

## NEW BOOKS AND PUBLICATIONS.

MINERAL RESOURCES OF THE UNITED STATES, CALENDAR YEAR 1885. Washington: Government Printing Office, 1886. Pp. 576.

This is a carefully compiled volume, giving the statistics for mineral products in the United States. Coal, coke, petroleum, and natural gas are first treated of; the metals, from iron to zirconium, come next. Under aluminum the work of Col. Frishmuth, of Philadelphia, and of the Cowles Smelting Company, of Cleveland, are noted. In view of the demand for zirconium pencils for the oxyhydrogen light, the section on the sources and preparation of the oxide, by Mr. David T. Ray, is of special interest. Other subjects treated are structural materials, abrasive materials (burr stones, etc.), precious stones, fertilizers, glass materials, and, under many other headings, a complete review of the titular subject appears. We also note a section of much interest on mineral paints, by Mr. Marcus Benjamin, F.C.S. In it the preparation of barytes as an adulterant for paints

is described at some length. In some instances an elaborate explanation of the classification of paints adopted is given. In other cases it is entirely omitted. The first system is certainly preferable. A very full index closes the work. It can be had on application to the Director of the United States Geological Survey, Washington, D. C., the cost of printing and binding (40 cents) being at the same time remitted.

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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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## 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) L. M. W. asks (1) a receipt for marsh mallows, as made by confectioners. A. Dissolve one-half pound of gum arabic in one pint of water, strain and add one half pound of fine sugar, and place over the fire, stirring constantly until the sirup is dissolved, and all of the consistency of honey. Add gradually the whites of four eggs well beaten. Stir the mixture until it becomes somewhat thin and does not adhere to the finger. Flavor to taste and pour into a tin slightly dusted with powdered starch, and when cool divide into small squares. 2. The title of a good veterinary journal. A. American Veterinary Review, New York. 3. The formula for a spavin cure? A. Take of sweet oil 4 ounces, spirits of turpentine 2 ounces, oil of stone 1 ounce. Mix and apply three times per day. 4. A receipt for a wash that will prevent rabbits from injuring the bark of fruit trees. A. We know of nothing good for this purpose.

(2) A. L. K. asks how common fat can be rendered into tallow in an open kettle. A. Keep the tallow melted for some time, along with about two per cent of sulphuric acid largely diluted with water, employing constant agitation, and allowing the whole to cool slowly; then remelt the cake with a large quantity of hot water, and wash well.

(3) W. C. B. asks about the process and kind of machinery used in preparing raw sienna for paint. A. The raw sienna is thrown directly on the hearth of a reverberatory furnace and kept thoroughly raked until it assumes a proper color. Very little, if any, sienna is known to be burnt in this country.

(4) W. M. M. asks for some transparent paint suitable to paint on tracing muslin. A. You must use a transparent varnish such as the following: Dissolve 30 parts of copal and 2 parts of camphor in 120 parts of oil of turpentine and 30 parts of oil of lavender. Use lakes, gamboge, Prussian blue, and the other transparent colors, mixed with the vehicle.

(5) S. S. asks a receipt for black heads. A. Cover the parts afflicted with a pomade consisting of kaolin 4 parts, glycerine 3 parts, acetic acid 2 parts, with the addition of a small quantity of ethereal oil. See SUPPLEMENT, No. 542.

(6) W. L. asks (1) a cure for frost bitten feet. A. For frost bites, rub the affected parts with pure oil of peppermint. It will also prevent the after effect of chilblains. Care should be taken to use only the pure oil, and not the essence of peppermint, as the essence will not have the desired effect. 2. How plate glass is made. A. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 340.

(7) A. T.—Hard rubber is a very good insulator; gutta percha is also very good, and can be softened by boiling water and given any desired shape.

(8) J. H. S. wants a good receipt to prevent hair coming out. A. Scald black tea, 2 ounces, with 1 gallon of boiling water, strain, and add 3 ounces glycerine, tincture cantharides  $\frac{1}{2}$  ounce, bay rum 1 quart. Mix well and perfume. This is a good preparation for frequent use in its effect both on the scalp and hair, but neither will be kept in good condition without care and attention to general health. See articles in SUPPLEMENTS, 102, 388, 396.

(9) A. H. asks the size of steel wire rope necessary to suspend a weight of 16,000 pounds, each end of the rope being fastened 1,600 yards apart, the weight to travel from one end to the other on the rope. A. The scheme of so long a span carrying a load is impracticable. A span of 4,800 feet will nearly absorb the margin of safety by its own weight, depending upon the amount of deflection that could be allowed in the catenary curve. The largest steel cables that are made,  $\frac{2}{3}$  inches, weigh 13 pounds per foot, or over 31 net tons for your span; with a deflection of one twenty-fifth, or nearly 200 feet, the tension would be  $\frac{3}{4}$  times the weight, or 254,800 pounds, while the ultimate strength is but 400,000 pounds.

(10) G. A. L. asks: Why will a brake on the hind end of a train of cars hold more than a brake set ahead of it on train? A. We do not know that it is so. It is possibly a fancy.

(11) A. K. H. asks: Will hot air cool off by sending it rapidly through a wooden tube 300 or 400 feet long? If so, how much? A. Yes, slightly. An iron pipe is better if you wish to cool the air. How much the air will be cooled will depend on initial temperature and the temperature of the conductor and surrounding air.

(12) H. H. writes: I have large quantities of iron and steel to pickle, or, in other words, to clean. I use oil of vitriol, which is expensive and dangerous. Is there an acid that would be cheaper and at the same time as effective? A. We know of nothing cheaper or better than sulphuric acid for pickling castings. The most economical method, as practiced here, is found in the hot bath, a tub lined with lead, or if of small requirement a stone pot. Water 5 to 8 parts, acid 1 part. Boil the work in the acid bath for a few minutes, then rinse in hot water. There is no danger