

## ENGINEERING INVENTIONS.

Mr. David E. Grove, of Dallas, Texas, has invented a railway ditching machine for opening railway ditches and the removal of the dirt therefrom and loading it on flat cars. The machine is carried forward upon the track, and is provided with a steam engine for operating the ditching machinery and loading the dirt.

Mr. Samuel A. V. Hartwell, of Valley Center, Kan., has patented an improved car coupling having a lever pivoted in the interior of the drawbar, its inner arm being heaviest and resting upon the shoulder of a pivoted trip plate. To the trip plate is attached one end of a chain, the other end of which is attached to a crank on a crossrod pivoted to the drawbar. The ends of the cross rod have crank arms formed upon them, so that the link can be guided from the side of the cars to enter the bumper head of an approaching car.

## MECHANICAL INVENTIONS.

Mr. John S. Griffin, of Cleveland, O., has patented a machine for making harrow teeth and other tools and implements by a drawing operation between rolls. It consists in revolving or rocking cams placed above and beneath the rollers and fitted for vertical movement to insure a true taper on both sides of the blank.

An improved rotary cutter for mortising machines has been patented by Mr. William A. Decker, of Huntington, W. Va. The bit is provided with a shank projecting at right angles and slotted to receive the fastening screw bolt, and has a lip upon its forward end whereby the bit is securely held and can be readily adjusted to cut a large or small mortise.

An improved grinding mill has been patented by Mr. George W. Wilson, of Lauesborough, Minn. The improvement relates to mills for cracking and flouring wheat and other grain, and it consists in the combination with the runner of rolls and drags inserted in radial recesses in the runner between the rolls and provided on their lower edges with inclined teeth.

A reliable and effective means of checking the descent of elevator cars in case of breakage of the suspension rope has been patented by Mr. John Johnston, of New York city. It consists in stop-mechanism operated by a safety rope, combined with the balance weight, so that when the suspension rope breaks the stop mechanism will be operated. By this means the inventor dispenses with extra weights and insures the operation of the stop devices.

An improved flour bolting machine has been patented by Mr. Ammi R. Smith, of Maroa, Ill. The invention consists in the combination of a separating reel, a return reel, and finishing reel, and suitable conveying devices connecting them, all arranged to first separate the bran, shorts, and coarse middlings from the flour and fine middlings, and then to spout the shorts and coarse middlings to the return reel, it being carried thence to the finishing reel.

Mr. Stephen O'Connell, of Billings, Montana Terr., has patented a wagon wrench formed of a rod having its upper part screw-threaded and provided with longitudinal grooves. On this rod one jaw plate is fixed and the other is loosely mounted to move up and down, it being guided in its movements by lugs passing into longitudinal grooves. A nut is loosely held in the movable jaw plate by a U-shaped frame or clip, so that by turning this nut the movable jaw will be moved to and from the upper end of the rod—that is, the jaws will be separated or brought together.

An improvement in brick machines has been patented by Mr. Milton Wright, of Fort Valley, Ga., which consists in the combination with the downwardly projecting end of a stirrer-shaft having a gear wheel attached to it, and the mould-carrying platform having two rack bars with adjacent teeth attached to its bottom, of a pair of gear wheels attached to the ends of a vibrating shaft, a sliding crossbar carrying the said shaft, and a lever pivoted to the crossbar, whereby the continuously-revolving stirrer-shaft can be made to move the mould-carrying platform in either direction.

Mr. Charles Whipple, of Leonardsburg, O., has patented an improved chain pump in which the buckets are suspended from crossbars carried by two endless chains. The chains are drawn around wheels in one direction or the other, and the buckets dip into the water and are then raised. When the rising buckets reach the top of a box or trough at the top of the well, the upper inner edges of the buckets rest against the curved ends of guide rods, and as the chains continuously raise the buckets, the buckets will be tilted and will pour their contents into the trough.

An improved hay or cotton press has been patented by Mr. Hiram Bankston, of Fort Smith, Ark. The invention consists in the employment of a right and left hand screw-threaded shaft or screw carrying nuts or crossbars, to which are applied levers fulcrumed upon articulated or pivoted bars or levers, constituting jointly powerful compound or toggle levers, which act upon a follower or plunger working in a chamber, to the upper edges of which are connected the hinged sides and ends of an extension of the said chamber. Above the aforesaid chamber is arranged a horizontally-sliding head block. A beater capable of operation by suitable means acts upon the contents of the press chamber to pack it previous to being compressed.

## AGRICULTURAL INVENTIONS.

Messrs. Marquis D. L. Hartley and James M. Hartley, of San Diego, Cal., have patented a single tree for use in horticultural operations—such as the cultivation of trees. It may be used without liability of injuring the trees, as is the case with the ordinary single tree.

A boiler or feed steamer that may be applied to an ordinary stove or furnace, has been patented by Mr. Jesse H. McCandless, of Oxford, Ia. This boiler, on account of its triangular shape, has a broad bottom and a large extent of heating surface, and will boil water more rapidly and with less fuel than an ordinary kettle.

## MISCELLANEOUS INVENTIONS.

Mr. William Maynard, of New York city, has invented a filter, consisting of the combination, with a case or chamber, of a rigid porous filtering medium, a filtering medium composed of corundum in the form of a porous conglomerate, and having a hole through the same provided with an elastic stopper.

Mr. James R. Barry, of Brooklyn (Greenpoint P. O.), N. Y., has invented a new combined warbler and cage. The object of this invention is to connect with a cage an instrument for imitating the call or cry of a bird or animal confined in the cage, or for giving any other desired note or sound.

Mr. Frank De Forest, of De Soto, Mo., has patented a fish hook. The invention consists of two hooks pointed in opposite directions, with their points arranged to stand near each other, and are held against being spread apart by the action of the water by the bait. The shanks of the hooks are looped or bent into eyes around a pivot, and their upper ends have passed through them a loop formed on the end of the line.

A novel ferrule for fishing rods has been patented by Mr. Thomas H. Chubb, of Post Mills, Vt. The invention consists in securing ferrules in place by forming an annular groove in the ferrule after it has been arranged in place, indenting the ferrule in the bottom of the groove, and then milling the surface of the groove.

Mr. Francis A. Davis, of New York city, temporarily residing in Hightstown, N. J., has patented an automatic valve for opening and closing waste pipes in such a manner that all escape of sewer gas is prevented by positively acting mechanical devices, the invention being more especially applicable to all kinds of waste pipes leading from dwelling houses.

An improvement in tuyeres has been patented by Mr. August Werner, of Leadville, Col. The object of this invention is to prevent injury to the blast pipe and blower from the backward pressure of gases in the furnace; the invention consists in forming a flexible joint between the nozzle of the tuyere and the blast pipe in such manner that provision shall be made for the escape of gases at the base of the nozzle.

A novel hame fastener has been patented by Mr. John J. Curry, of Plains, Pa. The invention of a bar provided with one or more ratchet teeth, and a bar provided with a pivoted lever engaging with the ratchet teeth and operating as a cam, each of the bars being provided at its outer end with a hook for engagement with the loop or eye of the hame and a bolt for preventing displacement.

A convenient and portable apparatus for roasting coffee, popping corn, or heating or cooking other substances, has been patented by Mr. Hugh P. Buffon, of Fort D. A. Russell, Wyoming Terr. The roaster consists of a long and a short cylinder, the latter sliding within the former, and provided with heads having central journals, the one serving both as a pivot and a handle for the head.

A novel combined coal hod and sieve, patented by Mr. Alexander Watson, of East Pepperell, Mass., will sift ashes and separate them from the cinders without permitting the dust to spread, and without emptying the ashes into a separate vessel or receptacle. The invention is an improvement on the combined coal hod and sieve for which Letters Patent No. 243,018 were issued to the same inventor on the 14th day of June, 1881.

An automatic cut-off for boneblack kilns has been patented by Messrs. Cyrus T. Rayner and Richard Stenhouse, of New Orleans, La. By means of this invention the cut-off of boneblack kilns used in sugar houses is operated by mechanism requiring but little power. The invention consists in a regulating plate and a cut-off roller operated by an endless chain for drawing the coolers at intervals, as required.

An improved spring bed bottom has been patented by Mr. Upton Miller, of Mount Morris, Ill. The invention consists in the combination, with the springs of a bed bottom, of links attached to these springs, and to spiral rings between these springs, and in chains connecting the springs of the pivoted head rest with the springs of the fixed part of the bed bottom.

A machine by which cotton or woolen yarn, silk, worsted, or other vegetable or animal fiber may be bleached, scoured, steamed, dyed, or dried in the cop or on the bobbin, has been patented by Mr. William Maybury, of Garnerville, N. Y. This obviates the necessity of reeling the yarn for these operations, as is now the practice, and saves the labor and waste of dyeing and bleaching the yarn in the skein.

A convenient and ornamental cabinet for containing needles in papers for the use of retail shopkeepers has been patented by Mr. Thomas Harper, of Reddick, County of Worcester, England. A cabinet is provided with receptacles for containing the packages, and fitted with slides whereby the packages can be readily withdrawn one at a time.

An improved draught equalizer has been patented by Mr. Philester G. Rowlee, of Hamilton, Mich. It is employed to work three horses abreast on a tongue or pole where two horses are used on one side of the tongue and one horse on the other side of the tongue, and by means of the device employed the draught will be equalized upon the three horses without perceptible side draught and upon the ordinary length of wagon tongue.

An improvement in gun barrels has been patented by Mr. Robert L. Stevens, of Albany, Oregon. This invention relates specially to shot guns for sportsmen's use, the object being to furnish a gun that can be readily changed for use at long or short range, as required, so that with one gun the user may obtain the same results as with two. The invention consists in a hinged choke muzzle combined with the main barrel, and fitted for instantaneous movement by connections operated at the stock.

An improvement in bee hives has been patented by Mr. Martin Van Ensley, of McMinnville, Oregon. This hive is made so that when honey is to be

removed from the front surplus honey chamber slides are adjusted to close the holes through the honey board. With this arrangement bees cannot enter the comb frames from the brood chamber, and the bees in the frames will pass out through the passages in the bottom of the hive, so that the honey can be removed without disturbing the bees.

Mr. Willis B. Marvin, of New York city, has recently patented an improvement in fireproof safes consisting of a frame fitting over the edges of the walls and having a slot in it, through which the back plate may be inserted, the plate being afterward fastened to the frame by means of screws and rivets, rendering the safe stronger and more secure. The invention also includes improvements in the safe door, which improve its fireproof qualities.

Mr. John J. Thomas, of Salt Lake city, Utah Terr., has patented a tongue support by which the horses may be relieved of the weight of the tongue of the wagon. It consists of a short lever located vertically in front of the axle and sand board, with a strong spring behind the lower end, the upper end having a rod or bar connected to it, and extending along over and beyond the eveners, where a locking device is provided for readily connecting it with the tongue when it is wanted to support it.

An improvement in barbed wire fences has been patented by Mr. Frank M. Harris, of St. Charles, Mo. The object of this invention is to cheapen the construction of barbed wire fence by dispensing with a portion of the posts ordinarily used. The posts are placed a considerable distance apart—say one hundred feet—and a suspension system consisting of a catenary wire supported by the posts to which the horizontal wires are all attached at regular intervals by vertical wires or strips, is substituted for intermediate posts.

An improved eaves trough hanger has been patented by Mr. Joshua Draper, Jr., of Oxford, Ala. This eaves trough hanger is composed of a clasp with a hook on each side adapted to be bent over the edges of the trough, and a flat tapering spike made in one piece with the lower part of the clasp, and in the same horizontal plane therewith, to afford a broad bearing for the trough, the spike being provided with a shoulder or by head, by means of which it may be driven into the wall of a building.

Mr. Charles L. Bates, of New York city, has invented a bell pull, which consists in a bell lever constructed with a base plate having an opening and provided with a segmental ring dange upon its outer side and upon its inner side a bridge carrying a lever pivot having a cap plate screwed upon its outer end. Upon the pivot is placed a hub having a rigid arm and provided with holes to receive a pin attached to the handle arm, so that the said arms can be adjusted in different relative positions.

Mr. Charles A. Schnell, of Troy, O., has patented a fire escape which consists of a hook combined with a pole formed of a series of sections provided with socket rings at the upper ends and with shoulders and catches at the lower ends; the hook carrying a guide rope, upon which a car is moved by means of a cord passing through a pulley on the hook. The hook is engaged with a window sill by means of the pole, the latter then being detached. The car is worked by means of a windlass on the wagon upon which the escape is moved about.

An improved chair which can conveniently be converted into a desk has been patented by Mr. Vestal W. Woodward, of Indianapolis, Ind. The chair has a revolving seat, arm rests, and a movable back containing pigeon holes, and provided with a pivoted leaf covering the pigeon holes. The back is also provided with racks fitting in grooves in the side braces of the chair, and engaging with cog wheels on a transverse shaft provided with a crank. When the chair is to be converted into a desk, the back is moved from the chair by turning the crank, and the pivoted leaf is lowered to rest on the arm rests.

A novel rein holder has been patented by Messrs. C. M. Howell and C. W. Burdick, of Lansing, Mich. This invention consists of a clip spring differing in form according to the form of the dash board to which it is to be attached, but adapted to attach to the dash board by clipping on to the top, the spring having a bar of suitable form attached to it so as to be supported a little above the top of the dash board, and extending each way along the dash board a suitable distance from the attaching spring. To this bar other springs are attached and supported over and along the top of the dash board, so as to pinch and hold the reins between them and the dash board when the reins are slipped under the springs.

Mr. Gill W. Metcalfe, of Baltimore, Md., has invented an automatic cut-off for gas burners, to be attached to gas burners for automatically turning off the gas, if from any accidental cause the gas should be blown out or the flow stopped. It is an improvement upon the form of device for accomplishing the result in which a bent bar is arranged in close proximity to the gas flame, and is held when expanded by the heat in a position where it strikes an arm on the gas cock, and holds the latter open against the tension of a spring or weight, and which bent bar, when it cools and contracts from the extinguishment of the flame, passes to a position where it releases the gas cock and allows the latter to close from the action of the weight or spring.

An improved desk, which can be adjusted in height and inclination, and on which a person can write very conveniently without bending forward, has been patented by Mr. Samuel A. Cummings, of Madison, Wis. The desk has a swinging or pivoted writing board provided at its upper edge with a bolt adapted to be passed into one of a series of apertures in a curved bar attached to an arm projecting from a box resting on the plate to which the writing board is pivoted. This plate is mounted vertically adjustable on a standard secured to a flat base. The lower edge of the writing board can be brought very close to the body, and the legs and knees of the writer can be passed under the writing board, so that the person need not bend forward while reading or writing.

[OFFICIAL.]

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FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

November 7, 1882.

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

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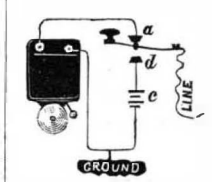
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Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.  
 Names and addresses of correspondents will not be given to inquirers.  
 We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.  
 Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.  
 Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.  
 Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.  
 Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.  
 (1) W. P. S. asks how to arrange two electric bells on one wire, half mile apart, with open circuit batteries, so that they will work. How many

cells of Law battery will I require? A. The annexed engraving shows the arrangement of bell battery and key at one end of the line. Both ends are arranged in the same way. The fixed end of the key is connected



with the line, and the back of the key rests normally against the top contact, a, which communicates with the ground through the bell magnet. The bottom contact, d, of the keys connected with one pole of a two cell battery, c, the other pole of the battery being grounded. When an electrical impulse is sent from the distant station, it passes through the key, the top contact, a, and the bell magnet to the ground. When it is desired to call the distant station, the key is pressed down and the current passes from the battery, c, through the contact, d, and key to the line, ringing the bell at the distant station.

(2) A. P. asks: How can I bore a quarter inch hole in the top of a glass globe most easily, with least danger of cracking? The globe is one such as is used to cover statuary, etc. A. To drill a quarter inch hole in your glass shade make a hole in a piece of wood or metal of the size that you desire to drill in the glass. Fasten it with beeswax upon the glass for a guide. A piece of brass or copper tubing, quite thin, is supplied with emery (No. 100) and water, and twirled between fingers, or with a bow string, this will cut a hole in a few minutes. You can feed the emery and water a little at a time through the tube. The sketch will give you an idea as to the principle.



(3) J. B. V. writes: You will grant a favor to a reader of your valuable paper by telling me how to polish a mosaic (Florentine) table which is a little discolored by dampness and effects of handling. The stone is black slate, with flowers, etc. A. Use oxide of tin or putty powder wet with water, enough to make it a thin paste. Rub the table with a cloth cushion with considerable pressure, using the putty paste rather freely; add a little water to keep the surface wet. When the desired polish is obtained, which you will see by wiping clean in spots, wash the table with clean water, and wipe with a soft linen cloth.

(4) D. H. L. inquires as to the process of painting on glass, in imitation of gold and silver leaf, the same as is used on druggists' and business signs? A. Yellow ochre mixed in oil is sometimes used, but gold leaf or paint is much superior. Gold or silver leaf is applied to a very thin solution of gelatine brushed over the glass. The portion of leaf forming the letter is backed up with paint. The surplus leaf is washed off when this paint is dry.

(5) S. B. asks: What is the best cement for mending broken minerals, fossils, pottery, arrow-heads, etc.? A. Starch, one quarter ounce; white sugar, one ounce; gum arabic, one-quarter ounce. Dissolve the gum in a little hot water, add the sugar and starch, and boil until the starch is cooked.

(6) J. M. G. writes: If a vessel is filled with saturated steam and closed tight, and a fire put under, will the superheating increase the pressure per square inch? A. Yes; about one-fourth-and-eightieth part for each degree the temperature is increased.

(7) W. W. writes: 1. I have made me a rocking valve engine, single-acting, of 3 inch bore and 8 inch stroke, with a balance wheel weighing 10 pounds, being 10 inches in diameter; but I think that is too small a balance wheel. A. Your fly wheel should be three times as large as it is. 2. I would like to know what horse power I can obtain from it at about thirty-five pounds of steam as it is, and with a proper balance wheel, of which I would like to have you give me the dimensions and weight. Please give me the rule to find the horse power of single-acting engines? A. Calculate the power of your engine as an ordinary double-acting engine by the rule in SUPPLEMENT, 253, and take one-half the result for a single acting engine. 3. How many square feet of heating surface would it require for a tubular boiler to run such a steam engine as I have described? A. The quantity of heating surface will depend upon the velocity of your engine. 4. My engine has but one cylinder: would it be strong enough to run the dynamo electric machine described in SUPPLEMENT, 161? A. With sufficient steam supply, yes. 5. Does such an electric machine give electricity of intensity or quantity? A. It depends on the winding of the armature. Coarse wire gives quantity, and fine wire intensity. 6. How much is a volt in electricity? A. A volt is substantially equivalent to one cell of Daniell battery. 7. Would putting a little oil on the rubbing surfaces of the springs of an electric engine do any hurt? A. Yes. Oil is an insulator and would have to be pressed from beneath the springs to get the current through.

(8) A. E. 19 inquires: Will you inform me what is used by the American ladies to bleach a brown hair to a light golden color? A. Peroxide of hydrogen as recommended in SUPPLEMENT, No. 349, is now used with success.

(9) K. E. H. asks: What is the most rapid way of making a barrel of sirup of wild cherry without heat? A. Take five Troy ounces of the bark in coarse powder and thoroughly moisten it with water; allow it thus to stand for twenty-four hours, and then pack it tightly in a percolator and add more water until a quart has passed; to this add twenty-eight ounces of sugar, and dissolve it by agitation. This process affords a fine sirup with all the virtues of the bark unimpaired by the injurious action of heat.

(10) J. H. asks: What is the fastest time on record from New York to Queenstown and by what vessel was it made? A. Steamer Alaska—6 days 22 hours.