RECENTLY PATENTED INVENTIONS.

Railway Appliances.

CAR SEAL.—Benjamin J. Sturtevant, St. Paul, Minn. This seal is formed of a flexible shackle to which is detachably secured a hook having a spring-pressed arm, a locket made of earthenware, cement, glass, or similar substance, having on one side a shoulder to engage the arm of the hook. The device affords an inexpensive seal, which must necessarily be broken if the door is opened, thus indicating that the car has been tampered with, while it may easily be applied and removed without the use of special tools, but cannot be opened except by breaking the shackle of the locket.

CAR COUPLING.—Francis A. Johnson, Black Rock, Ark. The drawhead of this coupler has a transveree partition in the front end of its central opening, spring-pressed plates sliding transversely in the rear of the partition, pivoted arms being connected with the plates and a cam actuating the arms to open the plates, while rods are pivotally connected with an arm on the shaft of the cam, hooks engaging the rods to lock them in place. The device is an improvement on a former patented invention of the same inventor, and the essential working parts are inclosed in the drawhead, to be fully protected from rain, snow, ice, dirt, etc., thus insuring the proper working of the device at all times.

CAR COUPLING. — Oliver M. Brimingham, Victoria, Texas. This invention provides a drawhead to which is attached a guiding block in which works a vertically movable sliding frame, the pin being connected with the frame and having a guiding tongue working in the guiding block. The improvement affords means for elevating, holding and releasing the coupling pin, while the drawhead is vertically adjustable in a convenient manner either before, during, or after coupling. The device is designed to be arranged to be operated from either side of the car. [For information relative to this patent address R. Brackin, Inez, Texas.]

DRILL. — Wanton C. Barber, Villisca, Iowa. This is a portable drill of simple and durable construction, especially adapted for use in drilling railroad rails, while capable of satisfactory use on many portions of a locomotive or upon stationary engines. The bed has guides and a shifting lever, a frame sliding on the bed holding a mandrel carrying a drill, while a driving mechanism and feed device are connected with the drill mandrel. Arms extending from the bed have hooks adapted to clamp the tread of a rail, when the web of the rail is to be drilled, and the frame is fed forward by manipulating a lever, and when the drill is in operation it is automatically fed forward while being revolved by the driving mechanism.

Mechanical Appliances.

NAIL MACHINE. — Joseph S. Blackburn and Frank G. Bartholomew, Salem, Ohio. This machine has the usual fixed anvil or die, on which operates the hammer fitted to slide in the usual manner in the frame, but combined with the movable hammer is a spring-pressed arm pivoted on the machine and extending at its free end to the hammer, the latter actuating the arm. With this improvement after the nail is formed with a head and cut by the knives, it is readily broken off the wire and discharged.

CORE SAW. — Edwin B. Roberts, Emporia, Kansas. The body of this saw consists of a cylinder adapted to be clamped to the head of a vertical shaft, the inner faces of the teeth being flush with the interior wall of the body, and each tooth being cut away beneath its gouge-like point from its outer face inward, an inner wall being formed to prevent chips entering the interior of the body, while there are spiral ribs or bands on the outer side of the body flush with the outer sides of the teeth, the upper or working edge of the body being beveled between the teeth. The saw is designed to be driven rapidly for any desired distance into the wood without clogging, the chips passing through recesses of the teeth and head and the spiral bands carrying them to the bottom of the saw.

ORE CRUSHING MILL. — William H. Coward, Bath, England. This invention provides improvements in a formerly patented mill in which an edge runner rolls within a revolving drum furnished with cups, by which the material is repeatedly brought under the action of the edge runner, the efficiency of the mill being increased by an improved mode of mounting the drum, more effectually exposing the crushed material to the winnowing action of the air current. The draught arrangement is such that sieves may be dispensed with over the exhaust aperture, the sieves being liable to become clogged by light particles in operating on micaceous ores.

Agricultural.

CULTIVATOR. — Adam F. Rinehart, near Uniopolis, Auglaize County, Ohio. Pivotally connected at its rear end with the main frame of this cultivator is a swinging frame, with which is connected a lever imparting a lateral movement to the front portion of the frame, while a blade or tooth beam also has a pivotal connection with the swinging frame. Various other novel features are embodied in the invention, forming an implement of simple, strong and inexpensive construction, and of light draught, which can be managed to plow to a uniform depth. The cultivator teeth or blades are under the complete control of the driver, and may be adjusted both vertically and laterally as occasion may demand.

CULTIVATOR.—Dillyard Hicks, Waldo, Fla. This implement is adapted to have attached thereto plows of any make, such as scooters, shovels, sweeps etc., and is designed to be economically manufactured. Two parallel cross beams extend diagonally across and are secured to the draught beam, one of them carrying cultivator blades, while from the rear one curved braces project forwardly and downwardly, engaging at their lower ends the supports of the cultivator blades. Vertical brace bars are provided whereby the cross beams are sustained against lateral strain and the main connections between the cross beams are preserved against undue tension.

HAY LOADER. — Henry Briscoe, Morrisonville, Ill. This machine, besides the carriage and framing, has an elevator with a rake frame held in inclined position, so that as the machine moves forward the teeth rake up the hay, which is delivered into an upper trough, from which it is discharged by means of a transverse carrier into a wagon moving alongside of the machine. The rake teeth may be conveniently raised or lowered, and the carrier has a hinged outer section which can be readily adjusted as desired.

Miscellaneous.

GALVANIC BATTERY.—Fernaud Gendron, Bordeaux, France. This is an improved primary battery, so formed that the output of the battery is regulated automatically according to the work demanded of it, to the greatest amount of work the battery will do. It consists of a series of cells containing exciting and depolarizing liquids in combination with an electric motor actuated by a portion of the battery elements, pumps driven by the motor producing a circulation through the cells, while there is an automatic regulator of the number of cells in use. The battery is preferably formed in three tiers, comprising six tanks for liquids and twenty-four elements, the nature of the elements having no bearing on the invention provided the exciting liquid and the depolarizing liquid be separated from one another in the cells.

CASH RECORDER. — Milo L. Morgan, New York City. This is a device for use in connection with a cash drawer and the top of a table or desk, a tape from a roll of paper having a section exposed for writing upon each time the drawer is opened, so that an entry may be made thereon each time a sale is effected. The paper is held at all times stretched smooth in position for use, there being a rigid connection between a trip lever actuated by the drawer and the feed wheel, the device affording the means of readily making up accounts at the end of a business day.

SPECTACLE CASE FASTENING. — Fredric W. Steadley, Carthage, Mo. This device is formed with a plate having a central aperture in which is swiveled an eye with elongated bearings in which turns and slides the rigid member of a safety pin, for fastening the device to the clothing. The fastening is designed to readily adjust itself to the body of the wearer when bending over, stooping, etc., the securing pin having a free movement relative to the case.

CAN COVER. — Orson D. Phillips and George H. Littlewood, Lisle, N. Y. This improvement provides a locking device, especially adapted for use with milk cans, etc., and adapted as a fixture to the can body, which may be engaged with the lid to quickly and conveniently clamp the body of the lid to the body of the can, and hold them locked together. The device is preferably made of spring wire, bent in essentially circular shape, but with a coil, eyes, and loops, with which is connected a link, on which a lock may be placed if desired, the link serving as a lever to draw the ends of the device together and as a bolt to maintain the ends in such position.

LOAD BINDER. — Harry M. Bradley, Canon City, Col. This device consists of a bar having teeth on its upper and lower edges and provided at one end with means for attaching a cord or wire thereto, a slotted lever receiving the ratchet bar being provided with a bolt extending through the slot to engage one set of teeth of the bar and a pawl engaging the other set of teeth, while a hook is provided to receive a cord, wire, or cable. The device is designed to afford a simple, cheap, and efficient means by which a load of any kind may be tightly bound, while it is also well adapted for use as a wire tightener, post puller, lifting jack or wagon jack, etc.

VEHICLE SPRING.—Thomas S. King, Cincinnati, Ohio. This spring is made from a single strip of metal, bent to the desired shape, and joined at its ends in the flat portion of the spring by riveting or other suitable fastening. The upper and lower sections are integral, but elongated bends at the end portions form rounded ends, the drawn-in portions of which come together when the spring is much compressed, whereby the spring is shortened and stiffened, although when a light load is on, the entire length of the sections and the end portions are in full play.

STOVE PIPE DRUM. — Moses P. Farnham, Germantown, Cal. This is an end-closed stove or furnace pipe drum having upright partitions of different heights establishing flues between them, with a central through draught pipe having upper and lower draught openings and an intermediate damper, while the lower head of the drum has a soot or ash clearance hole exterior of one side of the through draught pipe, and a door is arranged to form a clearance outlet for two adjacent flues. The invention is an improvement on a former patented invention of the same inventor, the drum being adapted to facilitate various heating purposes.

GAME BOARD.—Jacob M. Henriquez, Coro, Venezuela. This is a board adapted for playing a variety of games. The base of the board is divided into compartments, and there is in it a tilting table which actuates a rocking slide board, there being a vertical tubular conduit on the base, with branch receiving pipes at its upper end and branch delivery pipes at its lower end, and a central vertical diaphragm in the conduit at the junction of the delivery pipes. Balls dropped through the upper branch pipes are designed to tip the tilting table and dislodge a counter from the slide board.

TOY PUZZLE. — Hans I. F. Schulze, New York City. This toy is designed to exemplify the problem of standing an egg on end, and consists of an egg-like hollow body formed in two sections, its chamber divided into two compartments by a horizontal partition, there being another apertured horizonal partition in the lower chamber, and the body containing a movable weight. By properly manipulating the toy the weight or ball may be made to travel down inside to the pointed lower end, when the egg-like body will be balanced upon this end.

NOTE.—Copies of any of the above patents be will furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention and date of this paper.

NEW BOOKS AND PUBLICATIONS.

THE LUMBERMAN'S HANDBOOK OF INSPECTION AND GRADING. By W. R. Judson. Chicago: *The Lumberman.* 1891. Pp. 263.

This excellent work covers the ground of quality and inspection of lumber in different parts of the United States, with many useful notes on dimensions, cutting up of lumber, and other allied topics. The book represents the fourth edition. It will be very acceptable to all those concerned with wood and lumber.

THE PHOSPHATES OF AMERICA. By Francis Wyatt, Ph.D. Second Edition. New York: The Scientific Publishing Co. 1891. Pp. 187. Illustrated. Price $4.

Much interest has been created in the subject of phosphates by the recent discoveries of the phosphate beds of Florida. Dr. Wyatt, in this very elegantly made volume, treats of phosphates from the mine to the farm. Their extraction, chemical treatment, analysis and the allied industries receive due consideration. The illustrations, many by process from original photographs, are exceedingly attractive and add greatly to the value of the book. Curiously enough, although it is the second edition, it is destitute of a table of contents. It has, however, an excellent index.

MODERN AMERICAN RIFLES. By A. C. Gould ("Ralph Greenwood"). Illustrated. Boston: Bradlee Whidden. 1892. Pp. xii, 338. Price $2.

This excellent book goes over the whole range of rifle practice, hunting and target practice, both civilian match and military shooting. The different forms of rifle sights, the general construction of the piece, the rifling, projectiles, cartridges, and ammunition, are all elaborately treated with many illustrations. Even to those who use the arm but little, the practical discussion of its many points possesses much interest, and we believe that this work will be widely appreciated.

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 the following week's issue.

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.

(3987) C. W. L. writes: In your issue of December 26 you give a translation of a method of cutting a five-pointed star, taken from *L'Illustration*. There is an error in the method as indicated which will result in a star deficient in a portion of one point. The cutting line should not run to point E, as there given, but to point, B, falling on line C E. The greatest economy of paper will result when the paper has the proportion of about one to two, and the point, B, is made to be on the upper edge, A, the other conditions remaining as before.

(3988) L. A. J. asks: Two bullets of same weight, fired with the same charge of powder out of the same rifle, and under the same conditions; one from, and in the direction of, a train moving at the rate of 40 miles an hour; the other from the rifle when stationary: 1. Will either bullet be carried further than the other? A. Yes. 2. If so, which one? A. The one from moving car.

(3989) H. M. C. asks: 1. Which one of the following batteries is the best for running small motors—the Edison-Lalande, the Fuller, or the bichromate plunge? Is there any one better than these? A. Where compactness and portability are required, the bichromate battery is probably the best. 2. How many cells would be required to run a six volt one-sixth horse power motor to its full capacity? A. Four to six good sized cells. 3. About how fast would such a motor drive a sixteen foot boat, rather lightly built? What would be the proper size propeller? A. Probably three to four miles per hour. 4. Is there any action in the Fuller battery when the circuit is open? A. Practically none.

(3990) C. A. Z. says: 1. I have noticed that different coins have not the same initials inscribed on them. Some have the letter O, others the letters C C, and again the letters S S are found on others. Could you tell me to what cities these letters refer? A. The coinage of the Philadelphia mint has no designating letter. O is New Orleans mint; C C, Carson City mint; S, San Francisco; C and D on old coinage is Charlotte and Dahloneg mint, now discontinued. 2. Could you tell me the value of a cent of 1802 and of