

RECENTLY PATENTED INVENTIONS.

Pertaining to Apparel.

TROUSERS-STRETCHER.—E. N. HALLETT, Canton, Pa. This stretcher can be folded for packing for the convenience of travelers, the side bars having recesses in which the stretcher members are pivoted, a central rod being provided, which has means for operating the stretcher members, which have means for limiting their movement away from the side bars.

Of Interest to Farmers.

PLOWING-MACHINE.—D. F. KUSTER and G. J. NIEMANN, Wash. This device may be used for disking and throwing the dirt either to the right or left, thus making it possible to go along the side hill, and when the end of the strip is reached the machine may be reversed and retraced along the same side, throwing the dirt down hill.

PLOW.—H. H. JULICH, Mount Hope, Wis. Among the principal objects of this invention is to provide a share which may be readily and quickly detached from the plow and as readily and quickly replaced, thereby permitting the operator to separate the part of the implement which requires sharpening, and to carry the same to the forge or blacksmith shop.

Of General Interest.

HOLDER FOR CONCRETE-REINFORCING.—J. W. REED, Hammond, Ind. The holder is constructed of a single piece of wire, the same being bent to form an eye to embrace the reinforcing bar, with the end portions of the wire extended from the eye to provide nail prongs, the prongs being offset intermediate their length to provide striking faces, said nail prongs arranged to open the eye when spread apart, whereby the eye may be sprung over the bar.

COMBINED HAMMER AND SIGHT.—A. M. POWELL, Valdez, Alaska. This inventor employs a front sight and a hammer provided with an extended portion having a hole through it and also having a notch disposed adjacent to said hole, the notch and hole being in vertical alignment relatively to each other and to the front sight when the barrel and hammer occupy their normal positions, so that either the hole or notch of the hammer sight may be aligned with the front sight.

QUOIN.—M. MUEHLER, New York, N. Y. In view in this invention are means that prevent the separation of the wedges either by a relative endwise or lateral movement, and also means including a ratchet bar to automatically lock the wedges against endwise movement in a direction to decrease the thickness of the quoin, the rack bar being movable into and out of operation.

HOLDER AND PROTECTOR FOR MUSICAL-INSTRUMENT STRINGS.—O. J. MÜLLER, New York, N. Y. The aim in this case is to provide a holder for the strings, which will operate not only to retain the string in coiled form but will protect it against injury. The string may be readily inspected without removing it from the holder, and is so secured in place that it may be very readily removed when desired.

DISPLAY BOX AND TRAY.—E. M. LEWIS, Moundsville, W. Va. This combination box and tray is for use in packing goods, intended to be displayed by the retailer, in the original boxes as received from the manufacturer. The invention is inexpensive enough to be applied to the cheapest box and at the same time so complete that it may be used with the most elaborate and costly creation of the box makers' skill.

STARTING AND SEPARATING GATE.—R. V. JONES, Seattle, Wash. It is the object in this instance to obviate race starting accidents by providing means for locking each horse in a separate inclosure and starting the horses a sufficient distance apart, in order that they may not trample upon each other, nor allow the jockeys to interfere with one another when the horses start.

METHOD FOR FORMING SHEET-METAL BODIES.—I. N. JONES, Defiance, Ohio. The intention of the inventor is to provide a method for forming the bodies in a very simple and economical manner and without danger of rupturing the sheet metal, and permitting the formation of the regular shaped bodies without the use of expensive machinery.

LABIAL PROTECTING MEANS FOR DRINKING GLASSES, BOWLS, CUPS, SPOONS, AND THE LIKE.—L. JANNEY, 35 Rue des Martyrs, Paris, France. The invention relates to means adapted to prevent the lips from coming in contact with the edge of drinking receptacles. This labial means is substantially constituted by a part of varying shape riding upon the edge of the glass and holding itself on the same, either in virtue of the nature of the substance comprising it or in virtue of its shape or its arrangement.

SAFETY-ENVELOP.—R. HASEL, New York, N. Y. The envelop is of such a character that its various portions possess gummed surfaces, the arrangement of the various gummed surfaces being such that when the envelop is once sealed, the contents cannot be reached except by mutilating several layers of paper, disposed one upon the other and thoroughly bonded together.

BEAN-CHUTE.—R. A. HAENKE and H. O. HAENKE, Mount Pleasant, Mich. The invention

relates particularly to the provision of hinged side doors for relieving pressure within the chute and allowing the lateral discharge of the beans as the bin is filled, the doors and spring attachment thereof being so applied as to offer no material obstruction to the withdrawal of the chute from the bin, when it has been filled.

DENTAL TOOTH-CLAMP.—G. A. HARPER, Shreveport, La. In this dental appliance the improvement is in the nature of a clamp for application to a tooth and having means for holding cotton rolls or napkins, such as used by dentists in keeping moisture away from a tooth while filling the latter, and also means for supporting a mirror.

Hardware.

SCALE.—S. C. COOPER, Nunda, N. Y. In this patent the invention refers to measuring instruments, and the intention is to provide a new and improved weighing scale, arranged to permit the minute adjustment of the poise to insure accurate weighing and to allow convenient reading of the result.

SEAL ATTACHMENT FOR LOCKS.—C. H. JOHNSON, Petaluma, Cal. The invention is intended for use especially on locks used on suit cases, trunks, boxes for legal papers, jewel boxes, and the like. By the use of this device a seal may be placed over the lock and the same covered up and protected, so that the lock itself cannot be unlocked without breaking the seal.

Heating and Lighting.

STEAM-GENERATOR.—F. N. TILTON, Hartford, Conn. The object in this case is to provide a new and improved generator having no sharp bends and but few and straight joints between the pipe coils, the latter being arranged to permit ready assembling and to allow convenient access to any one of the coils.

Household Utilities.

SASH HOLDER AND LOCK.—T. KEPHART, Sinnamahoning, Pa. For the purposes of this invention use is made of upper and lower runners fixed on a window frame, and spring lever devices held on the sashes and adapted to engage the runners, to hold the sashes open by frictional contact, the said lever devices and runners having interlocking means for locking the sashes in a closed position.

Machines and Mechanical Devices.

HOISTING APPARATUS.—H. W. BACH-ELDER, Schenectady, N. Y. Means are in view in this improvement for swinging the boom, comprising two drums driven one from another to rotate in opposite directions, actuating means for the drums, and means for simultaneously connecting the actuating means with one of said drums and disconnecting the actuating means from the other drum.

DRUM BATCH-MIXER.—W. R. TUTTLE, Nunda, N. Y. The object of this invention is to provide a mixer which may be charged and discharged more quickly and thoroughly than those now in use; one which will thoroughly mix and knead concrete and other materials, and one which has its members so constructed and disposed that the greatest strength and efficiency will be obtained.

AUTOMATIC PRESSURE CONTROL.—J. H. SMITH, Rochester, N. Y. In this invention use is made of a cut-off valve located at the hydrant and having its outlet connected with the hose, so that on closing the nozzle gradually or abruptly, a corresponding automatic closing of the cut-off valve takes place, and on opening the nozzle a corresponding opening of the valve is had.

SHAFT-COUPLING.—F. B. RICHARDSON, Slidell, La. This device while joining two shafts together with the utmost security, may be easily stripped from one of the shafts and permit of the latter's withdrawal through a bearing or other constricted place. This is accomplished by constructing the coupling with a split collar and binding the two halves or portions thereof firmly together, when the coupling is assembled by an intermediate ring.

CLAY-GATHERING MACHINE.—C. E. OLDEN, Mason City, Iowa. By use of this device dry clay may be collected without the necessity of digging the same and throwing the clay into wagons by hand. The clay may be scooped up into a proper receptacle and the latter can be emptied by means of levers and an appropriate clutch mechanism, thereby facilitating the unloading process.

PHONOGRAPH.—F. E. HOLMAN, Silverton, Ore. A record surface is provided in this case, of a flexible nature, and having a relatively great length, may be inserted or removed, and in which the bearing members for the cylinder are pivoted to admit the removal or replacement of the record. The record is applicable to the cylinder type, in which the virtual diameter of the record is greatly increased, while the actual is not.

Prime Movers and Their Accessories.

ROTARY ENGINE.—G. SCHULZ, New York, N. Y. The more particular purpose of the inventor is to provide a type of rotary engine in which an explosive charge is first compressed by the immediate and direct action of the engine, and it is then exploded so that advantage is taken of its expansibility.

Railways and Their Accessories.

RAILROAD-TRACK-RAIL HOLDER AND BRACE.—J. T. WEST, Bowling Green, Ky. The holder provides means for securing a rail upon a cross tie, by the lateral insertion of a spike through a depending member of each rail holder into the side of a cross tie whereon the rail is seated. It is adapted for bracing the head of a track rail against laterally-applied strains.

CAR-COUPLING.—W. S. LENNON, Tucson, Ariz. The invention relates to automatically operated car couplers. This automatic coupler may be operated without requiring the brakeman to pass between the cars. The coupler is ice and sleet proof, and it may be easily coupled without excessive jamming when the cars are on a curve.

Pertaining to Vehicles.

VEHICLE-WHEEL.—T. HÜBSCHER, Weehawken Heights, N. J. This wheel is designed to offer little resistance to the air. The rim with the tire may be readily detached and replaced, and the wheel presents few parts or, which dust and dirt may collect, and the tire bolts, air valve, and other parts of the inside of the wheel are protected from the weather.

COMBINED STEERING AND DRIVING AXLE.—J. W. BUCHAN, Eastman, Ga. In this patent the aim is to furnish a device which combines the features of a steering and driving axle, and which is further provided with means whereby the wheel can be adjusted on the supporting sleeves of the steering knuckles as the bearings become warm.

DUMPING-WAGON.—T. WRIGHT, Jersey City, N. J. The invention pertains to dumping wagons and carts such as used by coal dealers in delivering coal. The object is to produce a wagon having improved mechanism for raising the body into an elevated and inclined position for dumping the load. The means are capable of raising the body to an unusually high elevation.

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



Kindly write queries on separate sheets when writing about other matters, such as patents, subscriptions, books, etc. This will facilitate answering your questions. Be sure and give full name and address on every sheet.

Full hints to correspondents were printed at the head of this column in the issue of March 18th or will be sent by mail on request.

(12140) J. C. R. writes: We have in trigonometry minus as well as plus angles. (A minus angle being one generated by a line moving about a point in a clockwise direction.) Also, in regard to functions of plus angles (those angles generated by a line turning about a point in an anti-clockwise direction) we have the following: I. quadrant; sin. and cos. both plus. II. quadrant; sin. plus, cos. minus. III. quadrant; sin. and cos. both minus. IV. quadrant; sin. minus, cos. plus. What I wish to know is, what are the signs of the respective functions of minus angles in the four quadrants, and the reason why? A. There are several uses for the signs plus and minus. First to show the nature of a quantity, as positive or negative; second, as signs of the operations of addition and subtraction; third, to denote the direction of motion, as in the case of the angles produced by the rotation of a radius, which you specify; fourth, to indicate the direction in which a quantity is changing or moving, as in denoting north latitude by plus and south latitude by minus; or the degree of the thermometer above zero by plus and below zero by minus. The functions of an angle in trigonometry are similarly denoted. A line drawn upward from a horizontal diameter or to the right of a vertical diameter is plus, while one drawn downward from a horizontal and to the left from a vertical diameter is minus. With this rule or usage in mind there is no difficulty in giving the signs of all the functions in all the quadrants.

(12141) C. D. says: I inclose a clipping concerning the Star of Bethlehem. Similar items have been going the rounds of the papers. What foundation is there for their statements? I can find no such star, nor can I find anything in the reference books concerning the Star of Bethlehem. I had supposed that the so-called Star of Bethlehem was one of our own planets, probably Venus, and must some time have seen a statement to that effect, but I can find no authority for it now. A. There is no star known to astronomers as the "Star of Bethlehem." Nor is there any star known which returns every 500 years. The statements you send us in the clipping are the fanciful emanations of some fantastic brain. It is barely possible that on a hazy night the planet Mars, which has been recently very brilliant in the evening sky, may have been seen to change in brightness and color as the haze passes over it, partly obscuring it. Such performances as the clipping describes cannot possibly have been seen in

any heavenly body. There is no scientific knowledge regarding the "Star of Bethlehem," as described in the Bible. The Bible says all that anyone can say about it.

(12142) J. W. says: I am going to construct a wireless, and wish to know the necessary apparatus for a 100-mile wireless sending and receiving apparatus. Would be very grateful for any information regarding same. A. You will find a full description, with drawings and all specifications, for a wireless telegraph outfit to transmit 100 miles, in our SUPPLEMENT No. 1,605, price ten cents.

(12143) J. L. B. says: What chemicals can be compounded that will expand in cold weather and contract in hot weather? What minerals will expand in cold weather and contract in hot weather? A. You will find in Carhart's "University Physics," Vol. 2, page 24, the statement that Rose's metal contracts after the temperature reaches a certain point. This is an alloy composed of bismuth 2 parts, lead 1 part, and tin 1 part. He also states that iodide of silver contracts regularly from 10 deg. C. to 70 deg. C., and that it reaches its point of maximum density at 116 deg. C. These statements we give you as they are given in the book referred to, which we can send you for \$1.75 postpaid. Besides these we know no others.

(12144) J. L. B. says: I desire to construct storage cells in Crowfoot jars, using commercial sheet lead $2\frac{1}{2}$ to 3 pounds per square foot. About how many ampere minutes could I expect from each square foot of the oxidized plate if the cell is otherwise properly constructed? Would it be advisable to make the plates rough by deep scratching? What is the best concentration of acid to use? A. You will find in several of our SUPPLEMENTS plans and full descriptions of storage batteries of different forms. We beg to refer you to Nos. 845, 1195, and 1433, which we will send for ten cents each. You should not use smooth sheet lead. The time of forming and the cost will be greatly increased. We cannot tell what ampere minutes you will get per square foot. The composition of the electrolyte is given in the descriptions in the SUPPLEMENTS referred to above.

(12145) A. R. J. says: Kindly describe in your columns the process of making 72 deg. and 76 deg. gasoline. Does it have to be charged with a natural or manufactured gas, or does the product itself contain the gas that makes it suitable for explosive motors? A. Gasoline is produced by the simple distillation of crude petroleum, of which it constitutes about 1.5 per cent. It is the third product to come off at about 140 deg. to 158 deg. F., the only lighter distillates volatilizing at a lower temperature being rhigolene, which comes off at 113 deg., and chymogene, from 113 deg. to 140 deg., of both of which the percentage is extremely small. The next heavier product is benzine or naphtha (which comes off all the way from 158 deg. to 248 deg.). Commercial gasoline, however, contains a good deal of the latter and runs up in gravity to 0.66 or 0.67, true gasoline being from 0.636 to 0.65. Gasoline is not charged with any other gas; the explosive gas used in gasoline engines is a mixture of gasoline and air, gasoline being very volatile, i. e., evaporating rapidly, its vapor being absorbed by air as water is by a sponge, and the mixture being explosive. The mixture of gasoline vapor with air is known as carburetion.

(12146) J. B. says: A train starts from rest and reaches its highest speed, say 60 miles per hour, in 5 minutes. At the end of this time steam is immediately shut off and the train allowed to coast until it comes to rest. How long will it take to come to rest, coasting on a level track, and friction alone retarding it? I maintain that the problem as it stands cannot be answered. Am I correct? A. Your problem is not solvable. Neither the weight of the train nor the coefficient of friction are given. Moreover, the data you give are not concerned in the solution of the problem you state. It matters not how long or by what force the train reaches its velocity. "When steam is shut off, a train has a velocity of 60 miles per hour. In what time will the train come to rest on a level track?" That is all you state toward the problem. It is insufficient. An engineer may assume data, but these are not given in the problem as stated.

(12147) N. P. W. says: Two cylindrical columns of wood, iron, or concrete have the same length and the same diameter and are identical in every respect save that one is hollow while the other is solid. A claims that the hollow column will be stronger (with reference to any force tending to break or buckle it), and B claims that the solid one will be stronger. Will you please oblige a subscriber by explaining in your query column plainly enough for the proverbial "wayfaring man" to understand it, which is right and why? A. B is right. The solid column will be the stronger, whether composed of wood, iron, or concrete, or whatsoever material, or whether resisting compression, tension, torsion, or any other strain. A's contention arises from a not uncommon misunderstanding of the well-known rule that a tube is stronger than a solid rod of the same weight, i. e., that a rod of one inch diameter will stand less endwise compression or torsion than the same weight or volume of metal would stand if made into a hollow column or tube of the same length and, say, two inches outside diameter.