

RECENTLY PATENTED INVENTIONS.

Electrical Devices.

ELECTRICALLY OPERATED GUN CONTROL.—J. B. RYAN, Hoboken, N. J. This invention relates to gunnery, the more particular object being to provide means for readily enabling a heavy gun to be maintained as nearly as practicable in proper position to fire at a target, notwithstanding motions of a vessel upon which the piece may be mounted.

Of Interest to Farmers.

BERRY-HOLDER.—W. A. DAY, Bellingham, Wash. In operation the third and fourth fingers of the wearer are inserted in the loop formed by a strap and a strap buckled around the wrist of the same hand. Each hand may be if desired supplied with a holder, and as the berries are picked from the briars by the thumb and first two fingers, they are dropped into the holder, which when full is emptied into a larger receptacle.

Of General Interest.

PROCESS OF MANUFACTURING STEEL.—W. R. WALKER, Chicago, Ill. This is a process whereby a spiegel having especially its manganese and as well its carbon and silicon contents more thoroughly and uniformly distributed therethrough can be obtained without the necessity of melting the spiegel within a cupola. It enables spiegel to be suitable as a recarburizing addition to the charge of a Bessemer converter or like refining chamber, to be produced from low grade ores.

BEEF-TRUCK CRADLE.—C. A. PARKERSON, Jr., New York, N. Y. Means are provided for handling the trucks or travelers used in slaughter-houses, packing houses, and the like, for supporting the dressed meat or other bodies from the overhead tracks, and the invention relates more particularly to a cradle for engaging with the roller of the truck for raising the latter and depositing the same upon the overhead track.

SUBSTITUTE FOR PATENT-LEATHER.—S. NATHAN, New York, N. Y. The improvement is in material adapted to be used as a substitute for patent leather and the process by which the material may be manufactured. It is adapted for use for all purposes for which patent leather is normally employed, but is more particularly adapted for use in the manufacture of ladies' belts and similar articles requiring strength and durability.

APPARATUS FOR DETERMINING SPECIFIC GRAVITY.—F. A. COURTOIS, New York, N. Y. An object of the inventor is to provide an apparatus for determining specific gravities, particularly of liquids, which obviates the difficulties encountered in obtaining the hydrometer readings owing to the presence of the meniscus of the liquid under investigation.

BRUSH FOR WASHING BOTTLES.—C. K. VOLCKENING, New York, N. Y. In operation, the wipers are brought together and the ferrule carrying them is inserted in the bottle. A spindle being turned, studs and ribs are brought into contact with the interior of the bottle, cleaning it thoroughly, the water being forced into the bottle through the educts. The brush withdrawn, the conformity of the bottle neck forces the wipers toward each other, thereby pressing the spring slightly. The brush completely removed, this spring and the wipers regain normal positions.

BREECH-PROTECTOR.—E. L. HANN, Dec'd, Denton, Texas. The objects of the invention are to provide means for protecting the exposed breech ends and other adjacent parts, and for protecting the hands of the person cleaning or handling the same. It comprises a protecting cover, and means for removably attaching it to the breech of the barrel or frame of a gun.

PHOTOGRAPHIC SHUTTER.—H. A. BYERS, Pe Ell, Wash. The invention improves on a patent formerly granted to Mr. Byers, to the extent that the means used for varying the relative exposure of the plate, so that the sky portion and foreground will be exposed to actinic action of rays of light different lengths of time, will be greatly simplified, and wherein speed regulation, with reference to reduced or prolonged exposure of sky or foreground, can be quickly and conveniently made, it being also possible to effect a passage of the shutter across the entire lens at uniform speed to obtain rapid, instantaneous exposure.

Heating and Lighting.

AUTOMATIC LAMP-EXTINGUISHER.—C. OLDER, W. S. GEARHART, and H. E. BILGER, Springfield, Ill. The particular purpose of the invention is to provide an approved construction containing a wick snuffer co-acting in connection with a weight, to extinguish the flame whenever the lamp is thrown over on its side or is inclined beyond certain limits in any direction.

Household Utilities.

ICE-CREAM PACKER.—E. C. A. JOHNSON, Virginia, Minn. The device is readily applied for use in holding a receptacle for ice cream in proper position in a cabinet, bucket, or tub during the packing of the receptacle with ice and salt, and to so construct the device that the ice and salt received thereby will be conducted to the space between the receptacle for

cream and the cabinet, without danger of the packing entering the receptacle.

FLY-PAPER HOLDER.—J. O. FORKER, New York, N. Y. The special purpose here is to provide a base which may be used alone, for holding a sheet of paper and preventing the adhesive material from flowing, or which may be used in conjunction with a cage of coarsely woven wire, which latter protects the paper from above. The cage is so constructed that when detached from the base it may flatten out to occupy the minimum space.

COOKING UTENSIL.—F. R. MAZZA and C. M. DALY, New York, N. Y. The invention relates more particularly to that type of vessel in which there is provided an overhanging flange or projection beneath which the handle may be inserted for lifting the vessel. The object is to provide means adapted to co-operate with the handle, so that the vessel may be inverted without its becoming separated or detached from the handle.

Machines and Mechanical Devices.

STUMP-SAWING MACHINE.—E. B. WEBSTER, La Crescent, Minn. The objects of the improvements are to provide facilities for positioning the saw with respect to the object on which it is directed; to provide means for expediting the erection and removal of the device and the power transmission therefor; and to insure durability of the working parts and the entire structure in proportion to the weight thereof.

FRICITION-CLUTCH FOR HOISTING-DRUMS.—F. N. WHITCOMB, Barre, Vt. In this case the invention relates to certain improvements in hoisting drums, and particularly to the means of operating the clutch thereof. The invention involves the structural details of this operating member and the means for controlling the same.

TRIGGER MECHANISM.—E. F. HEDRICK, Fort Bayard, New Mex. This patent discloses a mechanism in connection with the sears and trigger whereby provision is made for locking the trigger as may be desired for using the trigger mechanism in plain trigger position or so as to arrange the mechanism for set trigger position. The devices include safety means for effectually locking the parts in their adjusted positions.

Railways and Their Accessories.

AIR, STEAM, AND SIGNAL COUPLING.—E. B. WITTE, Trenton, N. J. The invention relates to improvements in couplers for use in connection with air brake systems, train signals, and steam heating systems, and involves means whereby when a car is detached from the train, the valves of the car will close to retain sufficient air in the cylinder and pipe line of the car to hold the brakes in release position and permit the car to move by its own momentum to the desired point.

CAR-STAKE.—A. B. LITTLE, Atlanta, Ga. The invention contemplates a stake preferably constructed throughout of malleable iron and forming a permanent part of the car, which may be readily changed from a rigid upright position to a removed depressed position or vice versa as desired, thus effectively retaining the load and permitting its discharge without undue inconvenience.

CATTLE-GUARD.—A. M. HOWERY and J. B. CLARK, Eastbank, West Va. The purpose of the invention is to provide a construction for a cattle guard, that will effectively prevent the crossing of a railroad track by cattle or other animals that avoid traverse of insecure supporting surfaces.

Pertaining to Recreation.

JUMPING-ROPE HANDLE.—C. H. SAPPER, Highlands, N. J. In this instance the invention relates to jumping rope handles, and has for its object the provision of the handles of a jumping rope with music boxes, so constructed as to be operated by the user when the rope is in use. A further object is to provide reversible means for operating the boxes.

ROLLER-SKATE.—J. L. PLIMPTON, Boston, Mass. The invention relates to guidable curved-running roller skates formerly patented by Mr. Plimpton in the U. S. and England. In this class the rollers are applied to the stock or foot-stand of the skate so that the said rollers may be cramped or turned, so as to cause the skate to run in curved lines, either to the right or left by the turning, canting or tilting laterally of the stock or foot-stand.

Pertaining to Vehicles.

TIRE-PROTECTOR.—H. M. LEESE, Washington, D. C. In the present patent the invention is an improvement in tire protectors having for its object the provision of new tires and tires that have become worn and which can be readily applied to and removed from the tire. The wheel to which the tire is adapted may be of an ordinary construction.

SHOCK-ABSORBER FOR VEHICLES.—E. E. LANTZ, Paris, France. Inconveniences like the hard riding of a carriage; the shearing of the suspension springs; the frustration of their useful effect; the necessity for continually adjusting the suspension by reason of the wear of the frictional parts, the impossibility of applying them to heavy vehicles, etc., are avoided in this shock-absorber. It is adapted

to all kinds of vehicles and can be regulated for all suspension springs whatever be their strength.

SPINDLE-UPSETTING DEVICE.—S. L. BLAKE, Paducah, Ky. The purpose of the invention is to provide a construction for a device adapted to stave up or upset a vehicle axle spindle, by longitudinally applied compression, whereby a worn spindle may be restored to its original diameter and close fit within a box in a wheel hub when it is rotatably secured upon the spindle.

PORTABLE FARE AND TICKET RECEPTACLE.—E. J. VARGYAS, New York, N. Y. The receptacle or box is mainly designed for the use of conductors of street cars and other vehicles, and is arranged to provide compartments for the reception of the fare received to allow of conveniently making change, to register the number of fares received, and to provide for the issuance of trip or transfer tickets.

ELASTIC-TIRE WHEEL.—A. D. FOUCART, Muncy, Pa. The invention is an improvement in means for securing pneumatic and solid rubber tires to the rims of wheels, particularly such as are intended for use on automobiles, bicycles, and traction engines. The means employed enable the tire to be readily applied or detached and yet hold the same securely.

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.



Full hints to correspondents were printed at the head of this column in the issue of November 14 or will be sent by mail on request.

(11066) The S. P. P. Co. says: We are building a two-revolution printing press, one that has a printing capacity of 2,000 per hour. We are thinking of babbitting the main driving-shaft bearing. Will you write us a letter advising as to the durability of babbitt bearings? A. Without any especial knowledge of the mechanics of printing presses, we cannot see any objection to the use of babbitt for the purpose you mention. The practice of lining journal boxes with a metal that is sufficiently fusible to be melted in a common ladle is not always so much for the purpose of securing anti-friction properties as for the convenience and cheapness of forming a perfect bearing in line with the shaft without the necessity of boring. Boxes that are bored, no matter how accurately, require great care in fitting and attaching them to the frame or other parts of a machine. In this respect it is a good and economical practice to use babbitted boxes, but the shaft should not be used for the purpose of casting the bearings, as the hot metal is apt to spring it, and a mandrel of the same size as the shaft or very slightly larger should be used. Care should be used in the selection of the babbitt, according as the bearing is to carry heavy, slow-running shafting, light, high-speed shafting, or any other combination. Very few metals sold as babbitt are made up according to the original formula, which consisted principally of tin and some copper and antimony, and many are simply refuse from type foundries and similar sources cast into fancy ingots and given an attractive name with no reference to their wearing qualities. For wearing properties, with a moderate speed, nothing is better than pure zinc, of which the only disadvantage is that its shrinkage in cooling inclines it to leave the box, so that it is generally mixed with another metal. Tin counteracts this shrinkage, and an alloy of eight parts zinc and two parts block tin has excellent wearing qualities for speeds not over 400 R. P. M. and withstands very heavy loads without crushing. Lead and antimony combine well in any proportions without reducing the anti-friction properties of either; an alloy of 80 parts lead to 20 parts antimony runs freely in the melted state, has practically no shrinkage on cooling, is much harder when cold than most bearing metals, and there is nothing better as an anti-friction metal for high-speed boxes. Care should be used in pouring it, and it should never be heated hotter than will scorch a dry pine stick. Reliable makers of bearing metals will quote you material especially suited to the speed and weight of your shaft.

(11067) H. T. C. writes: I have read the letter of G. L. P., No. 10994, and your reply with a good deal of interest. If G. L. P. will figure out the areas of the triangles and polygons that he has himself marked out, he will see that the areas of the two triangles ABE and EBF are 12 square inches each, making 24 square inches, and the areas of the polygons $EFGHC$ and $GFDDH$ are 20 square inches each, making 40 square inches, or a total of 64 square inches, which is just the same as the 8×8 inch square was to begin with. It seems absurd for anyone to say that changing the positions of several pieces of paper will make any one of the pieces grow larger, but this is evidently just what G. L. P. did say. How he can make the pieces grow larger after cutting them up than they were before is of course due to the sleight of hand you mention;

only in his case, instead of making the audience believe he has been cutting off a man's head, he makes them think, by his bad drawing, that he has gained one square inch in the process of cutting up.

(11068) C. C. S. asks: 1. Is it known what the air 20 miles from the earth is composed of? A. It is not known with certainty what the constituents of the air are at 20 miles above the earth's surface. No balloon has attained that altitude to collect air. 2. Is it possible to make the same on the face of the earth? A. If the composition of the air at any place were known, a compound exactly like that could be made in the laboratory. There are no unknown substances in the air unless in most minute quantities, so minute that they have not been detected by the most delicate analysis up to the present time. 3. Would it take more or less power to sustain the same given weight at a height of two miles from the earth's surface than it would to sustain the same weight at a height of but twenty feet? A. The sustaining power of the air is much less at two miles above the earth than at sea level. At three miles above sea level the sustaining power of the air is only half that at sea level. It will therefore require more outside power to sustain a body at two miles above than at the surface of the earth. The sustaining power of the air is proportional to its density. A cubic foot of air at normal pressure and 32 deg. Fahr. weighs 1.225 ounces and can sustain that part of the weight of a cubic foot of anything. The rest of the weight of a cubic foot of anything must be sustained by some other power than the air.

(11069) E. L. S. asks: It being conceded by most astronomers that the earth and the other planets are bodies thrown off by centrifugal force from the sun, explain how it was that they took up an orbital motion at any fixed distance from the sun. In other words, as there was evidently a centrifugal force sufficient to cause them to leave the original mass, and as the gravitational force exerted upon them by that mass decreased as the square of their distance from it, why should they have ever come to rest in a prescribed orbit? What gave them their orbital motion, since a body acting under centrifugal force leaves the source of that force at a tangent and progresses in a straight line? A. The simplest case of tidal evolution is that of the moon and the earth. If that can be satisfactorily explained, the more complicated cases of the planets and the sun may perhaps be accounted for. When the moon separated from the earth, the rotation of the combined masses was supposed to be made in about five hours, so rapidly that the moon was in unstable equilibrium regarding the earth. In this condition it had little or even no weight toward the earth, and the sun pulled the moon off from the earth by a tidal action. The moon was going around the center of gravity of the earth and itself in about five hours according to this hypothesis, and the solar attraction caused it to move away from the earth while still it revolved around the earth. Its orbit in space then was a spiral, and it moved away from the earth, not in a straight line at all, but in a curve of which the center of the earth was one point or center of revolution. This interesting hypothesis is well stated in Moulton's "Introduction to Astronomy," which we send for \$1.60.

(11070) W. W. C. asks: 1. What are the granules used in a regular telephone transmitter? I tried carbon, but it worked to little advantage; it had a loose rattling sound. A. The granules used in a telephone transmitter are of carbon graphite. They can be bought of different sizes from dealers in electrical goods. You cannot make them, unless you have some means of shaping them and polishing them after they have been made spherical. It is cheaper to buy the granules. 2. Can a plug gage of a given size be made to go into a cylindrical gage of the same size? If so, how? A. A plug gage can be made to go into a hollow gage by heating the hollow gage, thus expanding it somewhat. If they were of the same size, the plug could not be driven cold into the hollow gage without considerable force. 3. Is it absolutely necessary that a tungsten electric light hang vertical? If so, why? A. Tungsten lamps have thus far been hung vertically downward because the filament has been so flexible and brittle. Lately the makers of the lamp have advertised that they might be placed in horizontal sockets. We have our doubts as to their durability in any position excepting the vertical position.

(11071) A. G. asks: 1. Can the Southern Cross constellation be seen in this latitude 24 deg. north? If it can be seen, then in what month of the year? If it cannot be seen here, then what is the farthest north it can be seen? Is there another constellation somewhat similar to the Southern Cross? What is its name, and in what latitude seen? A. Alpha Crucis, the brightest and also the most southerly of the stars of the Southern Cross, attains an altitude of about 4 deg. above the horizon in latitude 24 deg. north. On a clear evening about April 1 it will be on your meridian at midnight. There are many configurations of stars similar to those of the Southern Cross. It consists of four stars in the form of a four-sided figure, the sides unequal, a trapezium, and would not suggest a cross at all excepting for one's fancy. Only one of these stars is of the first magnitude, and two are of the second magnitude.