

## RECENTLY PATENTED INVENTIONS.

## Pertaining to Apparel.

**COMBINED SOCK AND GARTER.**—L. O. GIBCHELL, New York, N. Y. This garment fastener comprises a combined sock and garter arranged to insure correct support of the sock on the leg, and to allow ready closing and opening of the garter, the latter being for this purpose permanently attached to extension flaps formed integrally on the upper end of the sock at the sides thereof.

**RACK.**—G. H. MCGREGOR, New Glasgow, Nova Scotia, Canada, and A. S. RUDLAND, New York, N. Y. One object of this invention is to provide a simple and inexpensive and compactly-built rack for displaying and preserving articles such as garments and the like, which can be easily taken apart and packed into a small space, and in which the articles can be protected from dust, moisture and so forth.

## Electrical Devices.

**BINDING-POST.**—L. STEINBERGER, New York, Mr. Steinberger's invention comprehends a post having a central stem encircled by a spiral spring of metal, and adjacent to the ends of this spring clamping plates arranged in pairs, the plates of each pair being pressed together by the action of the spring and the outer edges of the clamping plates being slightly curved to facilitate the entrance of the wire therebetween.

## Of Interest to Farmers.

**SELF-BINDER ATTACHMENT.**—E. PENNINGTON, Westhope, N. D. The inventor has means for depositing the bundles of grain delivered from a self-binder in shocks while the machine is in motion. An object is to provide means whereby the bundles of grain as they are delivered from the self-binder may be held together in shock form and at the will of the operator deposited in shocks.

**CORN-PLANTER.**—G. M. GORMAN, Anamosa, Iowa. The inventor employs a marking device for seed-planters, whereby the rows of hills are maintained in parallel lines and equidistant; and provides a mechanism for accurately operating the marking devices, which mechanism may be raised and lowered out of and into operative contact with the ground, conjointly with the planting device.

**FRAME.**—L. B. STETSON, Bellevue, Wash. This invention relates more particularly to adjustable frames, such as are adapted to be used in the cultivation of plants, such as tomato vines and the like, and which consist of uprights adapted to be driven into the ground, and having arms pivotally secured thereto, means for holding the arms extended, and supports removably arranged on the arms of the uprights.

**GRAIN-CUTTER.**—L. CLARK, Greenfield, Ind. The cutter is for use in connection with binders. The object of the inventor is to provide a combined cutter and binder, whereby the grain may be bound into bundles while in upright position, as it is cut from the ground. Means provide for dividing the grain as it is about to be cut and supporting said grain after it is cut, in upright position, and transporting it to a binder mechanism while still in the upright position.

**CORN-RACK.**—J. S. WINTON, Milford, Iowa. In the present patent the invention is an improved rack and belongs to that class of such devices in which a number of corn-ear impaling pins project from a support and sustain the ears in spaced relation and at known points during the period of curing, storing and testing.

**EGG-TESTER.**—EVELYN LEISS, Bronxville, N. Y. By this device eggs may be conveniently inspected at the outside of the usual egg-testing box. The box has egg-seating openings in the top and is provided at the side with a door having a mirror on its inner face, the door being hinged to swing downwardly and outwardly to a position to reflect the light passing through the openings.

## Of General Interest.

**WELL-TUBING AND MEANS FOR CONNECTING SECTIONS THEREOF.**—G. A. PITTMAN, Dewese, Neb. The object here is to provide a tube of any length, from vitrified clay, formed in sections before baking the same, and also provide clamping means for joining the tube sections together endwise, thus producing a practical lining which may be placed in a well bore or removed therefrom with the same means used to insert and remove iron lining tubes.

**ARTIFICIAL HAND.**—W. A. HENNESSEY, Ashland, Wis. In view in this invention are the following objects: To provide means whereby the fingers of an artificial hand may be caused to fold and to grip an object, to lift the same; to provide means whereby the fingers of an artificial hand may be maintained in a released position; and to simplify the construction so that the hand may be automatically operated.

**DRY YEAST COMPOUND.**—J. E. YOST, Arkansas City, Kan. The more particular purpose of the invention is to provide a carrier for certain yeast compounds originally prepared in the form of a liquid and afterward dried. The product consists of vegetable pith, and a yeast compound, the pith being in the form of small particles and the compound being coated specifically upon the particles.

**FOLDING CRATE.**—F. C. MARY, Chehalis, Wash. The object of this improvement is to provide a crate or like receptacle, having its parts arranged for convenient erection or folding into a flat package and locking the folded parts in place. It relates to crates, such as shown and described in the Letters Patent of the U. S., formerly granted to Mr. Mary.

**SELF-CLOSING BOTTOM FOR WELL-STRAINERS.**—J. A. POLLARD, Oakland, Miss. In the present patent the invention relates to self-closing bottoms for well-strainers, which are adapted to be attached to a well-strainer of any suitable type and to be lowered into a well, together with a strainer, by means of a force pipe, the latter being afterward removed.

**SYRUP-PERCOLATOR.**—F. DE CLERCQ, New York, N. Y. The aim of the invention is to produce a percolator in which sugar can be readily dissolved without coming into contact with the air, and from which the syrup may be readily withdrawn from the syrup compartment beneath. A further object is to provide a filtering bottom for the sugar compartment.

**DRAG.**—J. BLADHOLM and A. BLADHOLM, Marshall, Minn. The invention is an improvement in drags for smoothing and shaping roads, etc., and has in view such a device embodying elements of strength and durability, and primarily built of standard cross-sectional forms of rolled steel, the drag being capable of being drawn either in alignment with the road or at an angle thereto, and operating to shear the dirt off rather than tear it apart.

**ENVELOP.**—L. C. VAN RIPER, New York, N. Y. The envelop is provided with an ungummed flap which may be held within a pocket, or removed therefrom in order to allow the contents of the envelop to be inspected by the postal authorities. It is provided also with an ordinary gummed flap, intended to be sealed in order to give the envelop the appearance of a sealed envelop and yet allow the same to be sent through the mail at the postage rates required for unsealed matter.

**TELLTALE-BOTTLE.**—A. MIDBO and G. GULBRANDSON, New York, N. Y. This bottle is adapted to indicate if the original contents have been removed and the object of the invention is to produce a closure for a bottle or jar, which cannot be placed in its former condition after the bottle has been opened. By this means the reselling of the bottle filled with a spurious substance is prevented.

**PROCESS FOR TREATING CERTAIN ORES.**—H. A. AUERSBACH, New York, N. Y. In this instance the invention relates to the electrolytic separation of metals from their ores, and admits of general use, but is of special value in connection with the production of metallic lead from galena and other plumbic ores. The method has no direct relation to any particular form of apparatus.

**AERIAL VESSEL.**—J. SUTER, Jersey City, N. J. The aim in this invention is to provide a vessel or aeroplane, arranged to present a large sustaining surface, and provided with means for conveniently causing the vessel to rise, descend and travel in the desired direction, the vessel being also capable of traveling on water or land.

**CONCENTRATOR AND AMALGAMATOR.**—J. I. E. NELSON, Bettles, Alaska. This apparatus is designed for the recovery of refined gold which with the foreign matter is held in suspension in a stream of water caused to drop perpendicularly into a mixer from which regulated outlet ports lead. The material to be treated contacts with quicksilver to effect the amalgamation and is forced upward against the downward current, the purpose being to effect a thorough amalgamation with expedition.

**CONCRETE DAM.**—H. A. ICHE, Church Stretton, Shropshire, England. The reinforced concrete dam is of cellular construction, capable of compensating for expansion and contraction due to climatic changes, and open on the upstream side of the dam to form pockets for reception of water, to utilize the latter to give stability to the structure and producing direct tensile instead of transverse and compression stresses, thus insuring the desired resistance and providing at the same time suitable spillways for surplus water.

**WATER-WHEEL.**—J. L. BELL, Galena, Ill. The purpose in this improvement is to provide a water-wheel adapted to be partially immersed in a stream in a horizontal position, and wherein the rotor comprises a plurality of vertically movable vanes, which by the movement of the rotor are moved out of and into the water.

**METAL FRAME FOR GLASS PANES.**—A. BUSSE, New York, N. Y. The intention here is to provide a frame in which no bulging or upsetting of the metal is necessary at the front of the frame, to bring the flanges or heads of the bars into the same plane in order that the glass panes may bear flat against the inner faces of both the mullions and transoms.

**BLOCK-MOLD.**—E. MAX, New York, N. Y.—The inventor provides a casting mold arranged to permit of conveniently closing or opening the mold for placing the plaster material therein, and for removing the block after it has been formed and the material has set and hardened. The mold is provided with removable partitions for forming a large number of blocks simultaneously, the interior faces of the mold members being provided with registering of adjacent ribs, to provide each block or slab with a continuous groove along its sides.

**COMPOUND BOAT.**—J. D. WHITE, 50 Clarendons, London, England. The main object in this case is to provide a compound boat which shall combine great stability with small displacement, and in which each of the several hulls shall have sufficient freedom to roll, pitch, and adjust its heading, so as to avoid those excessive strains which have hitherto hindered the development of boats of this type.

**SMOKING-PIPE.**—E. B. WHITNEY, Oakland, Cal. Mr. Whitney's invention is specially constructed for cooling smoke, insuring deposit of nicotine therefrom, and for facilitating cleaning, when required. A comparatively long circuitous passage is provided for the smoke, so that it is cooled more than would be practicable if it had a direct passage.

## Hardware.

**DEVICE FOR HOLDING WIRE SCREEN.**—W. A. SMITSON, and A. GERMAN, Elwood, Ind. An object of the invention is to provide a device which may be located on a counter, or similarly accessible place, upon which rolls of screen of various widths and sizes may be mounted and from which the strips may be unwound as desired, measured, cut off and rolled up for immediate delivery.

**SNOW-SHOVEL.**—G. C. PORT, Ebsenburg, Pa. In this invention the purpose of the improvement is to provide a strong shovel of easy and cheap construction, and with an adjustable handle, so that either edge of the shovel may be used merely by changing the position of the handle, which is rotatable.

**FAUCET.**—T. O. THOMPSON, Zacapa, Guatemala. The purpose of the invention is to provide novel details of construction for a faucet, which adapt it for a secure but removable attachment thereof upon the side wall of a plate metal receptacle, for a removal of the contents of the receptacle from time to time as occasion may require.

**NUT-LOCK.**—W. W. SENN, Munson Station, Pa. This invention can be used to lock the nut positively on the bolt and the locking devices can be readily adjusted to unlocked position to permit the turning of the nut on the bolt without injury thereto when desired to turn the nut farther on the bolt, or off the bolt, if so desired.

**DOOR-STOP.**—W. LA BAW, Asbury Park, N. J. The invention has reference to door-stops, such as are adapted to be revolvably secured to the floor for holding the door in an open position, and each of which consists of a wedge-shaped body pivoted to the floor at its thinner end, so that it can be swung into a plurality of positions.

**SAFETY-GUARD FOR LOCKS AND LATCHES.**—G. E. HOSCH, New York, N. Y. The more particular purpose here is to provide a guard having substantially the form of a plate provided with means whereby it may be fastened upon a door-jamb, or the like, for the purpose of preventing the bolt of the lock or latch from being forced back, from the outside of the door, with the aid of a knife, screw-driver, or other instrument.

**DINNER-PAIL.**—W. A. EDWARDS, Pine Bluff, Ark. An object in this case is to provide a device in which articles such as soup and coffee can be heated with very little trouble and in which the remainder of the victuals can be warmed without any danger of burning. Means provide for carrying liquid fuel for heating purposes.

**SHUTTER-OPERATOR.**—A. WEBER, Long Branch, N. J. One object of the inventor is to so construct the device that it may be more easily applied to a window-sill and casing, and a further object is to so construct the device that it will operate upon the exterior rather than the interior surface of the blind or shutter. The invention relates more particularly to that type of operator illustrated in a former patent granted to Mr. Weber.

**RATCHET-DRILL.**—G. W. FIGG, Los Angeles, Cal. The object of the improvement is to provide a device simple and serviceable in construction and inexpensive to manufacture, which is constructed to obviate the danger of the supporting point and its advancing member being unscrewed too far and thus causing an injury to the device.

**PERMUTATION-LOCK.**—G. H. HAMILTON, Portland, Ore. In view in this invention is a construction embodying a latch spindle having the customary knob and revoluble independently of the latch operating mechanism, the spindle being provided with a push bar to lock it to said mechanism, and also having a spring pawl to lock the bar in innermost and retracted positions, controlled by a permutation mechanism mounted on the spindle at the outside of and adjacent to the outer door knob.

**LADDER.**—J. VAGHI, Bethel, Conn. The inventor provides a ladder more especially designed for use on buildings, provides a safe escape in fire and allows firemen to quickly reach the upper stories, the ladder having its side bars formed of lazy tongs, and the rungs forming pivots on which the members of the tongs are fulcrumed, the ladder when folded taking little room, and in use is locked in extended position and spaced a sufficient distance from the face of the building to allow ascent and descent of persons.

**KEY-FASTENER.**—P. J. RYAN, Spokane, Wash. The aim of this invention is to provide for preventing rotation of the key in the

lock from the outside or from the opposite side of the door, and to provide a device devoid of complicated parts, which may be easily inserted or removed from the key, and which when not in use may be folded for carriage in the pocket.

## Heating and Lighting.

**HEATER.**—G. W. BOWMAN, and J. A. BECRAFT, Palisades, Colo. The invention relates especially to such heaters as are used out-of-doors. The object is to produce a heater of simple construction having a form which especially facilitates a good draft and the rapid ignition of the fuel when the fire is started. It is adapted to be formed of sheet metal.

**GAS-ESCAPE.**—H. H. FULTON, Oroville, Cal. The design is to provide an appliance for the escape of gases from gas, vapor and similar heaters, the appliance being applicable to windows of various sizes and easily set up and removed. The invention consists of an extensible window-stopper, a pipe carried by and projecting outwardly from the stopper, with which the flue of the gas or oil heater connects, and a hood spaced from and covering the outer end of the pipe.

**SWITCH FOR INCANDESCENT LAMP SOCKETS.**—W. A. McDONALD, Grampian, Pa. Of the several objects of this invention the main is to provide a switch for an incandescent socket which may be easily operated, requiring a great deal less force to manipulate it than the ordinary key, and which can be operated by one hand without straining the suspending cord.

**COMBINED VENTILATOR AND SMOKE-CONSUMER.**—J. WOOD, Noroton, Conn. The invention pertains to stoves and furnaces, the more particular purpose being to provide an appliance for regulating the draft, facilitating the combustion of the smoke, ventilating the room through which the smoke-pipe passes, collecting unburned cinders from the smoke and enabling these cinders to be readily ejected.

**MINER'S LAMP.**—J. VAN LIEW and A. M. VAN LIEW, Houghton, Mich. The lamp is adapted to burn wax, oil or other suitable fuels, and the invention refers more particularly to the construction of the wick tube and burner. The device is provided with a form of combustion chamber whereby a uniform supply of air will reach the flame, thus obviating the production of smoke and other noxious gases.

## Household Utillies.

**CONVERTIBLE COUCH AND BED.**—L. B. JEFFCOTT, New York, N. Y. This article can be conveniently converted from a couch into a double bed and vice versa, and when in the form of a couch the two bed sections are spaced apart to accommodate the bed sections, and when these are extended they range one along side the other to form a double bed. For this use is made of a frame on which one bed section is pivoted, and the other is adapted to be raised into an active position or lowered into a folded position.

**FOLDING BED.**—L. B. JEFFCOTT, New York, N. Y. This bed is arranged to permit of conveniently and quickly folding it longitudinally into a small space, and with the bedding between the head and foot of the bed, and to allow its extension for use without danger of collapsing. For this purpose, each of the side rails is formed of bars pivotally connected with each other and with the ends at the head and foot, so that the bars swing longitudinally on folding or extending the bed.

**SUSPENDED CLOTHES-RACK.**—B. B. BOWORTH, New York, N. Y. This invention refers to elevating racks or driers adapted to support clothes or similar articles to dry. The aim is to provide a device extremely light and simple in construction, with improved means for elevating the supporting frame and for maintaining it in a horizontal position.

## Machines and Mechanical Devices.

**TENSION DEVICE FOR WARPS-BEAMS.**—G. KELLER, New York, N. Y. An object of this inventor is to provide a tension device, strong and durable and which is adapted to replace the weights usually employed at the present time to keep the warp threads under tension, while at the same time utilizing the disk or drum provided upon the warp-beams in connection with the weights.

**NEEDLE-CAM FOR STRAIGHT INDEPENDENT-NEEDLE KNITTING-MACHINES.**—B. POPP, Couvet, Neuchâtel, Switzerland. The invention relates to knitting machines of the straight independent-needle type and more especially to the so-called locks. In the needle cam of the present invention pronounced disadvantages are overcome by preventing the needles when they are in the needle channels from an unintentional movement beyond the permissible limits.

**VERTICAL ROUNDABOUT.**—W. A. SULLIVAN, New York, N. Y. The more particular purpose in this patent is to provide a roundabout, including large beams journaled upon a frame and adapted to turn bodily end over end, its motive power being wholly or partially controlled by the slow descent of passengers or of heavy passenger carriages.

**SPEEDOMETER.**—H. C. BERRY, Toledo, Ohio. A shaft is journaled at one side of the center of gravity of the speedometer, the shaft being adapted to be secured to a rotating piece of machinery, and by means of a pawl and ratchet

wheel and a chain of gearing it is adapted to rotate a shaft on which a governor is mounted to revolve therewith, the governor having a collar slidably mounted on the shaft which operates levers which draw tape wound on a drum secured to the indicator wheel shaft.

**MIXING-MACHINE.**—W. McRAE, Eastman, Ga. This invention relates to mixing-machines of the rotatable box type, and the improvements are designed more particularly for a machine for the mixing of guano or commercial fertilizer. The machine comprises a rectangular box mounted for rotation about one of its diagonals as an axis, and a series of stationary paddles mounted within the box on a shaft disposed on the diagonal.

**APPARATUS FOR THE CONTROL AND THE REGISTRATION OF THE OPERATIONS PERFORMED BY DISTRIBUTING-MACHINES.**—G. I. F. SOULAGE, 44 Rue de Chaussy, Paris, France. The present invention has reference to a device for use in controlling and registering the operations performed by distributing-machines of all kinds and more particularly to machines for distributing railway tickets. The object of the inventor is to add up the amounts of the individual sums borne by the tickets issued.

**SYNCHRONIZING APPARATUS.**—P. PRE-  
RINI, 224 Via Cavour, Rome, Italy. The object of this invention is to provide an electro-mechanical apparatus for synchronizing automatically the movement of a cinematograph with that of one or more talking machines. The talking machine is actuated by a source of power quite distinct from that which causes the rotation of the cinematograph, and preferably by the power derived from a clock-spring previously wound.

**GLASS-MOULDING MACHINE.**—W. J. MILLER, Coffeyville, Kan. In operation when the mold reaches the charging position, a gatherer places a charge in the mold, and starts the table operating mechanism. The table is at once partially rotated to bring the charge into position for pressing, and the pressing operation is continued a predetermined time according as the pointer is adjusted with reference to the scale. When the piston reaches the lower end of the cylinder of the timing device, it shifts the valve controlling the forming plunger cylinder, and this plunger is raised.

**BAND-SAW WHEEL.**—C. A. PUTNAM, Tupper Lake, N. Y. Details of construction are provided whereby the width of the faces of the pair of band-saw wheels may be decreased, to compensate for decrease in width of the saw, due to successive cutting away of the saw blade in sharpening the teeth, the saw teeth being thus projected beyond the sides of the wheels, and the band of the saw adapted for close contact with the faces of the wheels, that is essential for the rotatable movement of blade without slipping while in operation.

**PULP-SHAPING MACHINE.**—A. KOMP, New York, N. Y. Mr. Komp finds that he is enabled by his invention to overcome some former objections by using in the place of the rubber covering of the die, a thin resilient cover, preferably of sheet metal, which is detachable with the article produced. This cover gives a smooth finish, requiring no further work for its completion. Means provide for locking one of the dies successively closer to the other die after each movement of the latter, whereby the pulp may be subjected to repeated and increasing pressures.

#### Prime Movers and Their Accessories.

**VALVE FOR ENGINES.**—O. PEARSON, Worcester, Mass. The valve stem is mounted in a valve cage having openings for admission of gas, and outside this cage is mounted the spring for normally maintaining the valve in closed position. A rock shaft is mounted on the wall of the valve cage and one arm from this shaft engages the valve stem and the other arm is operatively connected with the spring. The spring, rock shaft and other supports are entirely outside of the valve cage and out of the path of the incoming air or gas.

#### Railways and Their Accessories.

**COMBINED SIGNAL AND AIR-BRAKE.**—A. M. JONES, Hagerstown, Md. The invention pertains to means for automatically operating the brakes and for sounding an alarm. An object is to provide devices by which the brakes may be automatically set and the alarm sounded, said devices being located alongside of the track upon which the train is running.

**RAILROAD SWITCH.**—G. D. WORLEY, Texarkana, Ark. In this instance the object is to provide novel details of construction for a railroad-switch, which co-operate with a fixed frog point and pivoted wing rails therefor, so as to enable the effective control of the switch and dispense with guard rails usually used in connection with a switch of the type indicated.

**LOCOMOTIVE ASH-PAN.**—T. W. ANDERSON, Fort Smith, Kan. The main purpose of this invention is to provide means whereby the pan may be dumped and in which the warping of the pan proper does not necessarily interfere with the workings of the dumping mechanism. The pan joints are protected from heat, thus reducing the danger of fire from glowing coals, which are dropped through open joints along a track.

**CAR-FENDER.**—J. J. KELLY, New York, N. Y. This invention pertains to car-fenders such

as are attached at the forward end of street or trolley cars for saving persons from being run over. The cradle is normally disposed in an inoperative position under the forward end of the car, but comprising a trip frame which when touched by the body, automatically releases the cradle so that it advances so as to present its forward edge under the body. The motorman can directly release the cradle.

**AUTOMATIC SWITCH FOR RAILWAYS.**—F. R. Y. TORRES and F. S. DE LA P. Y. MARTINEZ, Habana, Cuba. The switch co-operates with means carried by the car, which enables the operator of the car to throw the switch to open or closed position in advance of the car. In this way the car operator can advance the car on the main track or turn it into the siding or switch without leaving his platform.

#### Pertaining to Recreation.

**ARTIFICIAL BAIT.**—M. A. BURTHE, University, Va. The object here is to provide a bait, designed to resemble a small animal, such as a frog, cricket or grasshopper, and so constructed that the resistance of the bait as it is drawn through the water, will cause a movement of portions of the mechanism, resembling the movements of the members of the animal which the bait represents.

**AMUSEMENT DEVICE.**—R. H. ALEXANDER, Paterson, N. J. This device is of the rotary type and adapted to give simultaneously a reversing circular travel, a counter-whirling rotary motion, and a billowy rocking motion. It is adapted to give a variety of circular billowy motions, calculated to please the occupants.

**OPTICAL-ILLUSION APPARATUS.**—E. P. HOYT, New York, N. Y. A mirror is employed in this device and in connection therewith, an approximately horizontal screen, so positioned relatively to the mirror that it will serve to screen one's hand while writing or drawing on a sheet of paper or pad beneath the screen, the mirror being so positioned that the reflection of the hand and the writing or drawing will be seen.

**SINKER.**—G. W. TEASDALE, New York, N. Y. Mr. Teasdale's patent relates to sinkers admitting of general use, and particularly to the type used in connection with a line for purposes of fishing. The sinker comprises a body near the ends of which are slots for use in holding a cord, and a spring winding mounted on the body and provided with portions extending into the slots for the purpose of gripping the cord therein.

**BASE-BALL-GAME APPARATUS.**—J. W. E. DEAN, New York, N. Y. In this patent the inventor has reference to certain improvements in apparatus for playing a game closely analogous to the ordinary game of base-ball, but played by operating dummy players mounted on a suitable support representing the field and diamond.

**SOUNDING TOY.**—W. BARTHOLOMAE, New York, N. Y. This invention relates to a device for making a noise. More particularly stated, it comprehends a sounding body, a clapper for striking the same, and a star wheel for actuating the clapper, these parts being of approved construction so as to give the complete device a maximum of efficiency.

#### Pertaining to Vehicles.

**MOTOR CYCLE.**—J. E. ALLEN, Trenton, N. J. The inventor's intention is to provide improvements in motor cycles, whereby the main frame is spring-supported at both wheels, to reduce the shock and jar, incident to riding over rough places, to a minimum, the construction of the frame permitting the use of long and strong elliptical springs and bringing the rider's seat as low down as possible.

**AUTOMOBILE-AXLE.**—M. D. TINDAL, Columbia, S. C. More especially the improvements relate to axles used in automobiles and similar motor vehicles, which permit the turning of the wheels on vertical axes in response to the movements of the steering mechanism. The vertical turning axis may be located in the plane of the wheel itself instead of being outside of the plane as common in ordinary construction.

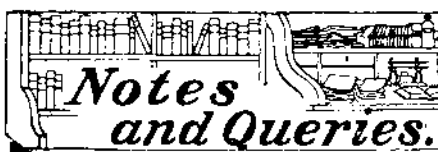
**TRUCK.**—C. J. INGARD, San Francisco, Cal. The object in this case is to provide a truck which may be used to store lumber on board ship and other places, the truck being so constructed that by lifting one end of the load and depressing the other end the truck with its load may be swung to the desired direction in which the load is to be moved.

**WHEEL.**—C. C. FOSS and C. L. WHITE, Quitman, Ga. These patentees have produced a wheel of the type in which metallic springs are arranged between the inner and outer rims. The invention resides in the special form of the springs which comprise heart-shaped bodies, the apex of which connect with one rim the other rim receiving a standard extending to the opposite end of the spring.

#### Designs.

**DESIGN FOR A HAMMOCK.**—D. W. SHOYER, New York, N. Y. The design in this case shows the hammock body ornamented by a series of grotesque images, faces, symbols, etc., which is very unique and effective.

**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 13th or will be sent by mail on request.

(12152) E. A. L. says: Kindly explain why hot water freezes more quickly in winter time than cold water. The writer set out two pans of water last winter, one of boiling water and the other of hydrant water, and the boiling water froze more rapidly than the other. A. The only physical difference we know between water which has been boiled and water which has not been boiled is that the former has lost its dissolved air by boiling. For this reason it may cool and freeze more quickly.

(12153) C. K. asks: In what year does the first point of Aries (I mean by that the point where the ecliptic cuts the celestial equator in spring) enter the sign of Aquarius? A. We have no star map which definitely locates the eastern limit of the constellation Aquarius, so that its distance from the present location of the first point of Aries can be determined. This distance in degrees, divided by 50.2 sec., the constant of precession, will give you the time required before the first of Aries will enter the constellation Aquarius. The answer to your question as you ask it is that the first point of Aries will never enter the sign Aquarius. Each sign occupies two hours, or 30 deg., on the sky, and they are always in the same order, moving backward together, around the sky, carrying the pole of the heavens around the pole of the ecliptic. The astronomers at the Naval Observatory, Washington, D. C., will have the data you require.

(12154) S. F. says: Will you please let me know if a small wireless outfit will work satisfactorily from the top of an ordinary dwelling, say 60 feet from the sidewalk? About two blocks distant in one direction is a large building twelve stories high, and in the neighborhood a couple of other high buildings. A. A wireless telegraph station will work very well in the city situated as you describe. Many young men are working with their friends under these conditions. The station on the top of the Waldorf-Astoria is sending many messages a day far out to sea to friends on steamers.

(12155) J. H. T. asks: Will you please explain in your notes how mathematical instrument makers fill the graduations (on a circle for instance) with the black paint, and what is the black paint used? A. A very good paint for filling the graduations of a rule or a thermometer is made by rubbing lampblack into shellac till the proper consistency is obtained. It should be thicker than for use with a brush. It is then rubbed on and in with a cloth. After the shellac has set, the excess can be taken off with a cloth wet with turpentine.

(12156) G. E. H. says: The commercial dry cell which contains the two elements, a zinc rod and a carbon stick, consists of such ingredients as powdered manganese dioxide and gas carbon and ammonia chloride. Now, what I am anxious to know is this: What chemical reactions are involved when a dry cell is in operation? What ultimate chemical changes have taken place in each ingredient when the cell is exhausted? That is to say, what new compounds have been formed in the cell? A. The chemical reactions in a dry cell are the same as in any cell in which the same materials are used. The manganese dioxide is changed to manganic oxide by giving off oxygen to unite with hydrogen to form water. The ammonium chloride is decomposed, and the resulting products are quite complicated. The ammonia is absorbed by the water till it is saturated, zinc chloride is formed. Double salts of zinc and ammonium crystallize upon the zinc. An excellent chapter on dry cells is contained in Cooper's "Primary Batteries," which we can supply for \$4 postpaid.

(12157) R. P. D. says: Kindly give a process for preserving fruit for exhibition purposes. One that will not bleach, shrivel, or change the appearance is highly desired. I have tried an aqueous solution of salicylic acid and sterilized by heat, but the color was almost removed and the skins cracked. Some real estate agents want to show what can be raised in the way of fruits on irrigated lands. Would not petroleum benzene do the work? A. Try the following; fruit or vegetables are just dropped into it (cold of course) and sealed to bear transportation: Sulphurous (not sulphuric) acid, 1 part; alcohol, 1 part; water, 4 parts.

(12158) L. C. J. says: 1. Can an angle be trisected? If so, what is the rule? A. Some angles can be trisected, 90 deg. for example. All angles cannot be, and there is no rule for doing it. 2. If a horse is hitched close to the load, is it easier for him to pull than if he is hitched farther from it? If so, what is the cause? A. It is a common belief

that a horse can draw a load more easily when the trace is short. The only reason we can see for it is that the horse tends to lift the front of the load slightly when hitched near the cart, and thus makes it easier to overcome the inequalities of the road. These questions have been frequently answered in our Notes and Queries.

#### NEW BOOKS, ETC.

**THE CONQUEST OF THE AIR.** By Alphonse Berget. New York: G. P. Putnam's Sons, 1909. 8vo.; 295 pp.; 100 illustrations. Price, \$3.50.

This book is a popular work, which will serve to introduce the layman to the subject of aeronautics. It is divided into two parts, the first of which deals with dirigible balloons, and the second with aeroplanes and other forms of heavier-than-air flying machines. The book is interestingly written, and while it does not go into great detail, it gives the essential facts regarding airships and aeroplanes of the past and present. The first section of the book goes very thoroughly into the subject of the dirigible balloon and its history. Numerous fine half-tone cuts illustrate the work, and there are also nearly a score of diagrams for elucidating various principles.

**AERIAL NAVIGATION OF TO-DAY.** By Charles C. Turner. Philadelphia: J. B. Lippincott Company, 1910. 12mo.; 327 pp.; 70 illustrations and diagrams. Price, \$1.50.

This is another popular book upon aeronautics. Besides mentioning and describing various of the leading dirigibles and aeroplanes, the author goes into the history of ballooning and of aviation. The principles of mechanical flight and of aerostatics are discussed, and the usefulness of flying machines and dirigibles for war and commerce is thoroughly gone over. The author recognizes that a new industry has been born and discusses its effect upon society. There are chapters upon aerial law, charts and landmarks, long-distance flying, and lessons in flight. The sensations experienced during flight and the limitations that surround it, are also mentioned. The book contains an appendix of various useful tables giving the specific gravity of woods and of gases, and the weights and properties of some of these woods; the weights of various birds in proportion to their wing area; thermometer conversion tables, and Chanute's table of lift and drift. There is also a glossary of aeronautical words and a table of French aeronautical terms and their meanings. The book will be read with interest by the beginner in the new science of aviation.

**MASTER PAINTERS OF BRITAIN.** By Gleeson White. New York: John Lane Company, 1909. 4to.; 390 pp. Price, \$3, postage 35 cents.

The sumptuous volume before us is filled with excellent reproductions in half-tone of the best examples of the master painters of Britain. The selection is a most admirable one. British art has been both very bad and very good, and it is very easy to perpetuate the indifferent pieces. Among the notable engravings which are scattered through the book we note the following, which are particularly interesting: "The Death of the Earl of Chatham," by John S. Copley; "The Death of Nelson," by Benjamin West; "Stirling Castle," by Nasmyth; "The Inside of a Stable," by George Morland; "The Windmill," by John Crome; "The Hay Wain," by John Constable. Then follow reproductions of some of the works of Watts, Sir Noel Paton, Dante Gabriel Rossetti, and Sir John Millais. One of the works of the latter, entitled "Chill October," shows his first great landscape, which was received in 1871 with an outburst of popular appreciation and amazement that a figure painter should attempt pure landscape, for in those days the idea was very strong that a man should be a specialist, and not try to express himself in different branches of art. To give even the names of the other interesting pictures would be simply to give an index of the illustrations of the book. There is hardly a bad selection in the whole work. The engravings are admirably reproduced and the text is adequate.

**TABLES OF THE PROPERTIES OF STEAM AND OTHER VAPORS, AND TEMPERATURE-ENTROPY TABLE.** By Cecil H. Peabody. New York: John Wiley & Sons, 1909. 8vo.; 133 pp. Price, \$1 net.

These tables for the use of students of engineering and for engineers in general were published twenty-one years ago; and now that the properties of steam have been redetermined by new and refined methods, they have been entirely recomputed, and there has been added a temperature-entropy table especially adapted to steam-turbine calculations. The certainty and precision of the new determination of the properties of both saturated and superheated steam, and the concordance of computations with the experimental data, are such that the tables may be used with confidence, and may be expected to have permanence.

**OUTLINES OF CHEMISTRY WITH PRACTICAL WORK.** By Henry John Horstman Fenton. First Part. Cambridge, England: University Press. New York: G. P. Putnam Sons. 8vo.; 367 pp. Price, \$3.

Anything which emanates from the University Press is sure to be of the highest possible scientific value. The book before us is