

RECENTLY PATENTED INVENTIONS.
Pertaining to Apparel.

FORM-GAGE.—EDITH R. SEXTONE, Chicago, Ill. In this patent the invention has for its purpose the provision of a gage suitable to obtain the shape and measure of different sized and proportioned women, for the construction of bust forms and stands upon which to drape their clothing.

ATTACHMENT FOR WEARING-APPAREL.—A. GOLDBERG, New York, N. Y. By means of this attachment the waist dimensions of garments can be altered to adapt them for use by persons having different waist measurements; it obviates the use of a draw string; requires no alteration in the garment to permit its use in connection therewith, and is inexpensive to manufacture.

GARMENT-RACK.—B. HASKOWITZ, New York, N. Y. This rack supports a plurality of garments. Two members are employed, one of which is normally fixed and the other which is normally movable, and these members are so connected together that the movable member may be pulled out longitudinally together with the garments supported thereby and may then be rotated to better display the garments.

HAT-GUARD.—C. H. SHAW, New York, N. Y. This invention is an improvement in hat guards, and the inventor has in view such a device in which the guard string will be automatically drawn within the hat when released and the effective length of the string altered to suit the convenience of the wearer.

Electrical Devices.

ELECTRIC DETONATOR.—G. A. ALLEN, Western Springs, Ill. More particularly the invention relates to detonators of the type operated by aid of electricity, the more particular purpose being to guard the explosive materials and exclude the entrance of moisture, so as to preserve in good condition the priming and other explosive substances contained within the detonator shell.

Of Interest to Farmers.

INCUBATOR.—E. A. MAISCH, Anderson, Cal. In this electrically heated incubator the invention relates more particularly to the construction of the heating coils and the egg-supporting trays. Means provide for an even temperature at all parts of both trays; only a small quantity of current is consumed and the contrivance requires only a simple method of regulation.

BEE DIGGER AND TOPPER.—W. C. MAUER, Greeley, Colo. This improvement is in beet diggers and toppers, and the device is especially adapted for digging and topping sugar beets, which are generally planted in elevated ridges, and at spaced distances apart. Beets below a certain size are culled or rejected and the remainder must be topped at the crown.

Of General Interest.

EXERCISING APPARATUS.—W. P. STULL, McKeesport, Pa. In using the apparatus, it is clasped in the hand with the thumb on one grip and the fingers on the other, and the hand is opened and closed, with the arms pendent, extended, and bent to the shoulder, or with any other movement of the arms, advisable or desirable. At the same time the body may be bent into various positions.

ADVERTISING DEVICE.—J. E. DOWSING, New York, N. Y. In this instance the invention has reference to advertising devices admitting of general use, and more particularly to a type of advertising device suitable for campaign purposes with a view of attracting the attention of the public to a particular candidate.

DOOR-HANGER.—F. J. S. MIELY, Gunnison, Colo. This invention relates to door hangers and especially to such as are employed for hanging sliding doors such as car doors, barn doors, and the like. The object is to provide a track of improved form which will be reliable in operation, and further, to provide improved means for supporting the track.

Hardware.

STRAINER.—T. RICHARDSON, New Orleans, La. This device is for application to faucets for straining water and other liquids and thereby removing wigglers, bugs, and other solid particles. The object of the invention is to provide in such a device a detachable straining element, which is easily applied and displaced for cleansing and other purposes without removing the device from the faucet.

NUT-LOCK.—T. HAND, Walla Walla, Wash. This form of nut lock is much stronger, more rapidly applied and removed and may be manufactured at much less cost on account of its simplicity, there are no key holes or cavities to become clogged, it automatically adjusts itself to a constantly tightening position and may be removed by simply exerting a holding strain on a lug by a crow-bar, pick, or other tool, if the wrench should not be available.

MITER-BOX.—W. E. SHUTTS, Ellenburg Center, N. Y. This inventor provides a box wherein the saw is guided to operate at a variety of angles from the perpendicular, while operating at various angles on horizontal planes. The operative positions may be readily and quickly adjusted, and means provide for regu-

lating the depth or extent of cutting of the blade.

Heating and Lighting.

BOILER-TUBE CLEANER.—J. D. THOMPSON, Eureka, Cal. The object here is to provide a cleaner for tubes, which is adapted for directing a jet of steam through the boiler tubes from their rear, it being possible to use the cleaner without dismantling the boiler or furnace in any manner and without drawing the fire from the furnace.

ELECTRICALLY-OPERATED WATER-HEATER.—J. A. HUNNEWELL, Lowell, Mass. The more particular purpose of the inventor is to provide a type of heater containing a minimum of parts, the latter being so arranged that water passes through a long tube containing a heating coil, the cold water entering at one end of this tube and the hot water being drawn from the opposite end of the same.

VACUUM AIR-VALVE.—C. A. DUNHAM, Marshalltown, Iowa. This invention pertains to certain improvements in vacuum air valves intended for use in connection with vacuo-vapor heating systems, or for any class of heating work in which it is desired to vent air from the mains, returns, or other portion of the system in which low pressure steam is used.

Household Utilities.

WINDOW-SHADE SUPPORT.—C. C. BROWN, Revelstoke, British Columbia, Canada. The object of this invention is to provide a new and improved window shade support, arranged for convenient up and down adjustment on the window, to allow moving the shade roller to any desired height, and to permit convenient manipulation of the window shade.

FLUSH-TANK.—B. WALKER, JR., Austin, Texas. The improvement refers to flush tanks, and the aim is to produce a tank having a valve of simple construction which will operate to close automatically after the water of the tank has run off. A further object is to provide an improved construction for controlling the main lever of the tank which operates the flush valve.

FOLDING CRIB OR BED.—E. GUNDELACH, New Rochelle, N. Y. The intention in this case is to provide a crib or bed, which is simple and durable in construction, exceedingly strong and cheap to manufacture, and arranged to permit of conveniently folding it into a comparatively small bundle for transportation or storing purposes.

JAR-OPENER.—J. H. SMITH, Rochester, N. Y. The object of the invention is to provide an opener for jars containing fruit, vegetables, and other food stuffs, and arranged for convenient application to pry the closure open, with a view to break the vacuum in the jar and the adhesiveness of the closure to the jar, thus permitting convenient removal of the closure.

Machines and Mechanical Devices.

REINFORCEMENT FOR BOOK-LEAVES.—F. H. CRUMP, Los Angeles, Cal. The main purpose here is to strengthen the binding edges of loose sheets to such an extent that the sheets may be moved upon the posts or other binding mechanism without mutilation. Another purpose is to provide a binding edge which will be of the same thickness, after reinforcement has been applied, as the main body of the sheet.

SPEEDOMETER.—E. SCHNEIDER, XV. Stagliasse 8, Vienna, Austria. The speedometer, according to this invention, is connected to an ordinary clock work, which couples a spindle to an indicator device intermittently for a definite period of time, so that the index of the indicator is set in accordance with the speed of the spindle at the time.

COIN-SORTER.—T. F. GALLIGAN, Providence, R. I. This apparatus is for use in automatically separating coins according to their several denominations. It has coin delivery openings successively decreasing in size, from the top to the bottom passage, according to the size of the coins, a coin carrier in each passage, means for sweeping the coins into the pockets of each carrier and means for revolving the carriers to finally carry those coins remaining in the pockets over the several denomination outlets whereby the coins drop through by gravity.

SAUSAGE TWISTING AND LINKING MACHINE.—W. J. COLLINS, New York, N. Y. An object in this case is to provide a simple and efficient machine which can be driven from any suitable source of power, and which forms sausage links of uniform length. The links may be also formed of different lengths without danger of tearing or injuring the same, and the machine twists the casing so tightly that it cannot subsequently untwist.

TRIGGER MECHANISM.—E. R. WILLIAMS, St. Joseph, Mo. The purpose of the inventor is to provide a mechanism provided with a very sensitive auxiliary trigger on the usual or main trigger, to securely lock the main trigger and hammer in firing position, and to permit an easy and quick release of the hammer for firing purposes.

Prime Movers and Their Accessories.

COMBINED TIMER AND DISTRIBUTER.—G. T. BROWN, New York, N. Y. This invention is for use in connection with multi-cylinder

internal combustion engines for controlling the passage of the spark at the igniter. The casing is supported rigidly so that there can be no movement whatsoever, and upon the central shaft the inventor provides a helical contact member movable longitudinally of the shaft and rotatable therewith. The pitch of the helix and position of the helical member on the shaft determine the time of closing of the electric current.

STARTING-CRANK FOR INTERNAL-COMBUSTION ENGINES.—J. A. LAWSON, New York, N. Y. This invention pertains to improvements in cranks for internal combustion engines, and more particularly to an improved means whereby the crank may be locked to the shaft by the mere act of grasping the handle of the crank, and whereby the releasing of the handle will release the grip of the crank upon the shaft.

COMBINED TURBINE MUFFLER AND FLY-WHEEL.—J. A. LAWSON, New York, N. Y. Mr. Lawson not only utilizes the pressure of the gas, but he prevents the high temperature of the gas from injuring the wheel rotated thereby. This wheel is so constructed as to operate as a fly wheel, and furthermore he utilizes the wheel in creating a partial vacuum at the exhaust valve or valves of the engine during the cranking or starting of the engine.

Pertaining to Vehicles.

HANDLE-BAR FOR BICYCLES.—J. R. LOGAN, Fresno, Cal. The intention in this case is to provide a bar for bicycles which serves as a receptacle, in which the hose employed in connection with a pump for inflating the tires may be stored. By stowing the hose, it is always at hand ready for use, and by utilizing the bar, a receptacle is provided, which is not in the way and adds but little cost to the handle bar.

WEAR-STRIP FOR CART AND WAGON BODIES.—J. T. HAMILTON, Council Bluffs, Ia. The invention relates to vehicles used for carrying grain and similar material which may leak out at the rear of the vehicle body. The invention strengthens the parts at this point, renders them more durable, and operates positively as a preventive of the waste of grain by leakage.

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.

(12129) F. A. McD. says: There has recently been brought out an electrolytic alternating current rectifier, consisting mainly, I understand, of aluminium electrodes immersed in a solution of aluminium chloride. If you have ever published any account of the construction of this apparatus, or know of any such description having been published, I would be pleased to have you advise where I may find the same. A. You will find the electrolytic rectifier described with plans for its construction in SUPPLEMENT Nos. 1478, 1644, 1679, and in the SCIENTIFIC AMERICAN, Vol. 97, No. 8, and Vol. 101, No. 7. We send these papers for ten cents each.

(12130) C. C. says: I have quite a lot of dry batteries. They have gone dead. Is there any way they could be charged or worked over to put some life into them? A. Nothing can be done for dead dry cells to revive them "as good as new." Sometimes holes are punched in them and they are put into jars as wet cells, getting some current out of them. Sometimes the top is cut out and fresh solution of sal ammoniac is put in. The strength and life of the renewed cell are not enough to pay for the labor and cost.

(12131) J. R. says: Will you kindly tell me how much per house-power is the selling price of electricity when it is generated and sold to consumers. I ask this question for the purpose of framing a lease for a water power which we are trying to have improved.

A. The price of electricity in this city is 10 cents per kilowatt hour, either for power or lighting purposes. The kilowatt is the more usual unit of measurement because it may be more conveniently estimated simply by multiplying the voltage of the current by the amperage, e. g., 10 amperes of 250-volt current gives 2,500 watts or 2½ kilowatts; 746 watts, or ¾ of a kilowatt nearly are equivalent to one horse-power, or one kilowatt = 1 1/3 horse-power. The price varies in different parts of the country, being higher at remote coal-burning plants where fuel is expensive, and lower at hydro-electric generating stations where power costs nothing. The highest price we know is 22 cents per kilowatt hour, and the lowest 5 cents, the New York price above quoted being about the average and a fair price to estimate upon.

(12132) C. R. says: Allowing that a man weighing 300 pounds and 3 ounces weighed 300 pounds by spring balance—3 ounces being lost in centrifugal force at sea level, equator—what would he weigh at the North Pole, with 13 miles less of earth under him? I say 295 pounds, as there is less matter to attract. What would he weigh at the top of a mountain 5 miles high, equator? Would he weigh less than 300 in or over the deepest (5 miles) ocean, equator? That is, does the water attract as vigorously as earthy matter? Will the SCIENTIFIC AMERICAN get a sea captain to try a common ball with spring balance at sea level, New York, and then over the deepest ocean abyss? A. The weight of a person at different places on the earth is calculated by the application of Newton's law of gravity. The weight is directly proportional to the attracting mass, and inversely proportional to the squares of the distances between the centers of gravity. The results obtained show that a body will weigh about 1/190 part more at the poles than at the equator. (See Young's "General Astronomy," Chapter V.—The Earth as a Globe. We can send the book for \$3, postpaid.) The centrifugal force at the equator is 1/289; hence, a man or other body really weighing 300 pounds would seem to weigh a trifle less than 299 pounds at the equator, because of centrifugal force. The loss given by you as 3 ounces is too small. At the poles a man whose real weight is 300 pounds at the equator would weigh 301.5 pounds. The earth's mean diameter may be taken as 7,917.6 miles, as given by Young in his latest book. The oblateness of the earth is usually taken as 26 miles. From these figures you will see that the equatorial radius is 3,965.3 miles and the polar radius is 3,952.3 miles. You may disregard the fraction and use only the whole numbers. At the pole there is a little less matter to attract a body, and for this reason it would weigh a little less, but at the same time it is brought nearer the center of the attracting body. It is 3952/3965 as far from the center, and hence the attraction (3965/3952)² times as great, and the weight is increased to the same degree. The weight on the top of a mountain 5 miles high at the equator would be (3965/3970)² times the weight at the sea level. We do not know what change of weight there would be over the deepest ocean. Pendulum experiments to determine this are not easy on a ship, nor is accurate weighing very easy on shipboard—certainly not the accurate weighing of a large weight. Balances for weighing heavy articles are not sensitive enough to determine the weight to a small fraction of a unit. We may say that the water attracts less than the rocks of the earth, since it is less dense than the rocks. We must leave you with these explanations to figure out the results, since we do not solve problems for correspondents, as you will see by referring to our Hints to Correspondents.

(12133) H. L. T. says: Some years ago I heard of an instrument used by architects to determine the extent of the sun's shadow for any given condition, at any particular season of the year. Could you inform me who manufactures or sells this instrument? I have made inquiries from a number of the prominent supply houses without success. A. We do not know any instrument especially for determining the sun's shadow. This can be drawn by a protractor when the altitude of the sun above the horizon has been determined. To find the altitude of the sun for any day at noon, when the shadows are shortest since the sun is highest, you should have the latitude of the place and the declination of the sun. Subtract the latitude of the place from 90 deg. To the remainder add the declination from March 21st to September 21st. From the remainder subtract the declination from September 21st to March 21st. This gives the angle of altitude of the sun at noon above the southern horizon. With this angle, the shadow cast by any object can easily be drawn.

(12134) F. Electric Company says: Can you favor us with receipt of formula for the silvering of lens mirrors, such as are used for marine searchlights on projectors? A. You will find in our SUPPLEMENT No. 1,671, price ten cents, full and accurate directions for silvering glass for mirrors. The method is the one now in general use by precipitating silver upon the glass from a solution. With cleanliness and care, good results are not difficult to obtain.

(12135) J. D. asks: Are you aware of any plan being discovered how the pyramids of Egypt were built? A. We believe that authorities upon Egyptian antiquities are agreed as to the probable method of handling the stones of the pyramids and the much larger statues and obelisks which were moved hundreds of miles and set up in place. Man power alone can have done the work, and it does not seem necessary to suppose any unknown modes were used for doing the work. With men enough, all can be accounted for. Frescoes exhibit such work going on. Some have thought that earth was filled in to form an inclined plane as the pyramid was raised to the higher portions, and the stones were then slid up this plane, which was removed after the building was completed. In modern times such stones have been moved long distances by man power. The base of the statue of Peter the Great in St. Petersburg was

