RECENTLY PATENTED INVENTIONS.

Electrical Devices.

ASYMMETRIC CELL.—M. BÜTTNER, Wilmersdorf-Berlin, Germany. The invention relates to electrochemistry, and its object is to provide an electric battery using aluminium electrodes and an electrolyte not liable to corrode the electrode or evaporate quickly, and which electrolyte is capable of raising the resistance of the aluminium when the latter is used as an anode and is effective at high temperatures.

Of Interest to Farmers.

WAGON-UNLOADER.—G. E. JACKSON, Sigourney, Iowa. This invention relates to an apparatus whereby the body of a wagon may be lifted from its running-gear and when lifted its contents be dumped in bulk into a hopper or storage receiver. The object is to provide a device for the purpose stated, which shall not only be adapted to be readily moved, but operated in a simple way, as by the horse-power or team pulling the wagon being unloaded.

POTATO-PLANTER.—W. E. BAKEMAN, Snohomish, Wash. One purpose of this invention is to provide a furrow-opener of box-like construction into which seed-potatoes drop in their passage to the furrow, which opener is so shaped that it does not clog or gather sod in soddy ground and so that it will make a V-furrow, thereby lessening the liability of potatoes rolling or bounding out of place. The machine protects seed from injury, reduces liability of planting to uneven depths, and covers potatoes any depth.

HAY-STACKER.—M. BAGLEY, Cambridge, Neb. The stacker is moved where the stack is to be made. Hay is brought to the stacker by a rake or other means and placed upon the sling. The larger winding-drum is shifted to clutch with the ring, and power applied to the sweep. When the load is elevated sufficiently the ratchet-lever is engaged with the flange teeth and the drum shifted out of engagement with the clutch. The smaller drum is then shifted into engagement with the clutch-ring and the continued motion of the drive-shaft swings the lateral arm right or left, depending upon direction in which the rope encircles the horizontal drum. At times the smaller drum may be clutched with the ring to elevate and swing the load simultaneously. Means provide for unwinding the hoisting-rope.

Of General Interest.

DISPLAY-FORM.—W. F. ALLERT, New York, N. Y. This form is for use in stores, store windows, and other places for displaying dresses and other garments to best advantage, the form being arranged to permit of placing the garment in position on the form while sectional movable members thereof are in a limp position to allow of giving the members, such as the arms, legs, or the like the desired pose and to finally secure the members in the adjusted position to properly display the garment in the desired pose.

SUSPENDERS.—G. D. ASHELMAN, Fargo, N. D. The principal objects of the present invention are to overcome objections to existing forms of suspenders by constructing a device in which the different parts conform to the natural curves of the body and the protruding parts are located largely in depressions instead of being located over muscles and other projections of the body.

SYRINGE.—J. C. BLAIR, Louisville, Ky. This syringe has an important advantage over the old form in which the screw is provided with a spherical or bulbous head, and a washer is applied between the nozzle and the elastic bulb, since in this case the concavo-convex disks are practically parallel and a comparatively large extent of surface of the same is clamped between the disks, so that leakage is impossible.

APPARATUS FOR PURIFYING FOUL WATER.—H. DESRUMAUX, 35 Rue Alphonse de Neuville, Paris, France. This invention refers to apparatus in which the mixture of the foul water with the reagents is produced with exactness and is quickly and completely decanted. It comprises in particular a device for distributing the solutions of reagents, which is very simple in construction and which gives an exact proportionality between the quantities of water and the solutions of the reagents.

LAST.—G. ENGELHARDT, Cassel, and C. F. FÖLSCH, Wernigerode-on-the-Harz, Germany. In this patent the object of the inventors is the provision of a new and improved last having a hinged toe portion to permit it to be set at different angles to the main portion and to the walking-line of the foot to insure the production of an accurate foot covering, such as shoes, boots, stockings, and the like.

BUTTON-HOLE PROTECTOR.—A. GANZENMÜLLER, New York, N. Y. The principal objects of the improvement are to provide means for simultaneously unlocking and opening such protector or door without necessitating manipulation for the operation of more than one handle, lever, or other operating device. Further objects are to provide for efficient locking of the structure, and to provide for securing it in any desired number of open or partly-open positions.

TIME-CONTROLLED LAMP.—T. W. HUNT, Atlanta, Ga. The alarm being set, a plunger is depressed and a slide is moved in until a lug engages the end of a spring. A match is then inserted within the slot in the upper end of a brass tube. The alarm mechanism released, the key rotates, striking the catch, which through its connection with the slide releases the plunger, and the match is driven upwardly through the reduced opening in a tube of smaller diameter than the match head, thus igniting it. A spreader is arranged within the air-tube so that the brass tube is between slits in the spreader's edge. Ignited, the spreader's bent portion deflects the flame outwardly into contact with the wick, thus insuring proper ignition thereof.

EYE-PROTECTOR.—E. MIROVITCH, 53 Rue Notre Dame de Lorette, Paris, France. The object in this instance is to effectually insure protection of eyes against wind and dust and at the same time obtain other advantages calculated to afford greater comfort to the wearer by, on the one hand, constantly maintaining the chambers in which the eyes are inclosed in a hygienic condition, and, on the other hand, affording a field of vision more comformable to the normal conditions of working of the human eye—that is to say, the normal vision.

BLAST-FURNACE.—E. P. MATHEWSON, Anaconda, Mont. One object of this invention is to provide a furnace arranged to render the working of the furnace exceedingly economical in fuel, labor, and water, to allow treatment of large quantities of material at a time, to insure a quick discharge of the molten metal as soon as the latter reaches the bottom of the shaft, and to prevent incrustation at the sides of the shaft.

INDICATOR.—F. P. PFLEGER, El Paso, Texas. The object of this invention is the provision of an indicator more especially designed for use on phonographs, music-boxes, and like instruments and arranged to permit the user of the instrument to quickly adjust the speed-regulating device of the instrument according to the proper time in which a certain piece of music is to be performed.

DISPLAY-FIXTURE.—E. T. PALMENBERG, New York, N. Y. This invention relates to display-fixtures, such as shown and described in the Letters Patent of the United States, formerly granted to Mr. Palmenberg. The object in the present improvement is to provide a fixture having a supporting member adapted to be conveniently moved into a desirable position for properly supporting the goods to be displayed.

Household Utilities.

WINDOW-BLIND SLAT-FASTENER.—M. J. COOGAN, Port Chester, N. Y. In this instance the invention pertains to improvements in window blinds, the object being the provision of a simple and novel means whereby the lower sets of slats will be simultaneously operated and locked in closed position or at any desired opening.

SASH-BALANCE.—H. A. CROMMETT, Patten, Maine. The improvement is most applicable to windows having an upper and a lower sash, one of which may be lowered and the other raised in order to open the window. In one application of the invention the sashes may be arranged so as to balance each other, the slack of cord being taken up by the device. In a second application of the invention independent devices may be used in connection with each sash.

Prime Movers and Their Accessories.

VALVE MECHANISM FOR INTERNAL-COMBUSTION ENGINES.—W. H. SCHOONMAKER, Montclair, N. J. This valve is especially intended as an inlet valve for two-cycle internal-combustion engines; and particularly to be used in connection with a reservoir in which air or a mixture of air and fuel is kept stored under sufficient pressure to give it the necessary mobility through the cylinder and passages leading thereto, and by the provision of two valves, the movement of the fluids may be controlled fully and possibility of back explosions and other disadvantageous results prevented.

AUTOMATIC FRICTION-GOVERNOR IN FLY-WHEELS.—T. L. CUMMINGS, Spencer, Iowa. Mr. Cummings has invented in this instance a new and improved automatic friction-governor in a fly-wheel for threshing-machine self-feeders or for any other machine where it is desired to gage the speed or stop the motion of the machine when the speed falls below that for which it is set.

Railways and Their Accessories.

RAILWAY-TIE.—T. R. HASLEY, Houghton, Mich. The invention pertains to improvements in railway-ties formed of concrete, vitrified clay, or other plastic material that may be molded and have the required hardness and strength, the object being to provide a tie that will be cheap to manufacture, and comparatively light, yet strong, thus rendering it easily handled without danger of breaking.

ANTICREEPING DEVICE. J. R. LEIGHTY, Cumberland, Md. The device comprises an abutment member which presents a broad surface to the side of a tie and a V-shaped extension for embracing the side edge of a rail flange. In connection with the abutment member a clamp is provided consisting of a bar having upwardly and inwardly extending hooks at its ends, the hook of one end engaging the edge of a rail flange, the opposite hook embracing the extension of the abutment member. In use it is intended that any tendency of the rail to creep will rock and tend to shift the clamp, causing the same to have a gripping engagement with the abutment section and the rail flange.

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.

Business and Personal Wants.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. **In every case it is necessary to give the number of the inquiry.**
MUNN & CO.

Marine Iron Works. Chicago. Catalogue free.

Inquiry No. 7738.—Wanted, a tube igniter complete with burner, for gas engine. 3 h. p.

"U. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 7739.—Wanted, parties to make small steel castings in small quantities.

Handle & Spoke Mchy. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Inquiry No. 7740.—For makers of nickel steel wire ⅛ inch diameter, 25 per cent nickel.

WANTED.—Purchaser for Monazite, Molybdenite and Wolfram. Apply Monasite, Box 773, New York.

Inquiry No. 7741.—Wanted, a rapid calculator for tonnage of train.

I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 7742.—For manufacturers of aerated water outfits, etc.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Machine Company, Foot of East 138th Street, New York.

Inquiry No. 7743.—Wanted, graduated scale beams for portable floor and wagon scales.

WANTED.—Ideas regarding patentable device for water well paste or mucilage bottle. Address Adhesive, P. O. Box 773, New York.

Inquiry No. 7744.—Wanted, the name and address of the makers of the Norton Volt Meter.

WANTED.—High-class machinists and tool makers. Good wages. No labor troubles.
Driggs-Seabury Ordnance Corporation, Sharon, Pa.

Inquiry No. 7745.—Wanted, manufacturers of electrical indicating or recording pyrometers, for use with furnace.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery tools and wood fibre products. Quadriga Manufacturing Company. 18 South Canal St., Chicago.

Inquiry No. 7746.—Wanted, the name and address of the makers of the locking device used in loose leaf ledgers.

PATENTS.—Wanted, the service of a patent expert and experienced specification writer. No one need apply who has not had a thorough education along technical lines, and who has not had experience in patent practice. Munn & Co., 361 Broadway, New York.

Inquiry No. 7747.—Wanted, the name and address of the makers of the apparatus used in burning fuel or crude oil in boilers; also the name of the inventor, if possible.

Inquiry No. 7748.—For manufacturers of steel tubing and materials suitable for aeroplane surfaces.

Inquiry No. 7749.—For the makers of the power machines used in loading paper shells for shot-gun use.

Inquiry No. 7750.—For parties to make wooden figures, representing men for playing a game.

Inquiry No. 7751.—For makers of gears and small parts for experimental purposes.

Inquiry No. 7752.—Wanted, makers of standard steam pipe.

Inquiry No. 7753.—Wanted, machinery for turning canvas gloves.

Inquiry No. 7754.—Wanted a machine for popping corn and pressing it into the shape of an ear of corn.

Inquiry No. 7755.—Wanted, a machine for printing burlap bags.

Inquiry No. 7756.—Wanted, a machine for sharpening horse clippers.

Inquiry No. 7757.—For makers of flat steel springs, size 1 inch by 1-16; also of asbestos thread.

Inquiry No. 7758.—For makers of rubber insulated wire.

Inquiry No. 7759.—For makers of small gasoline and oil engines, from 1-6 to 2 h. p. marine and stationary engines.

Inquiry No. 7760.—Wanted, the name and address of makers of pneumatic air hoists, about 2 tons capacity, for attachment to overhead trolley track

Inquiry No. 7761.—For makers or dealers in calcium carbide.

Inquiry No. 7762.—Wanted, canning machinery for butter, in 2 or 3 pound packages.

Inquiry No. 7763.—For makers of light gasoline traction engines, for farm work in the South.

Inquiry No. 7764.—Wanted, machinery for desiccating cocoanuts, also for taking off the outside husk.

Inquiry No. 7765.—Wanted, a 25 h. p. turbine engine; also information as to the engines and pressure used in the Whitehead torpedo.

Inquiry No. 7766.—Wanted, castings for model steam engines.

Inquiry No. 7767.—Wanted, full information as to the complete process of manufacturing toilet paper; also the complete machinery for its manufacture.

Inquiry No. 7768.—For manufacturers of colored souvenir post cards.

Inquiry No. 7769.—Wanted, spring motors, also small wheels, such as watch wheels, made to order.

Inquiry No. 7770.—For makers of small spring motors.

Inquiry No. 7771.—For manufacturers of garbage crematories.

Inquiry No. 7772.—Wanted, power for factory knitting machines, for hosiery.

Inquiry No. 7773.—For makers of cog wheels.

Inquiry No. 7774.—For parties making small castings, and who enamel them.

Inquiry No. 7775.—For dealers in selenium cells and thermo-pile.

Inquiry No. 7776.—For manufacturers of electrical goods, such as pens, search-lights, etc.

Notes and Queries.

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(9876) J. J. G. asks: Will you kindly explain to me a phenomenon which I have noticed during the eclipse of the sun? At the time the sun is crescent shape, the light falling on the floor after having passed through a window-pane assumes the form of a multitude of crescents. I have never seen an explanation of this phenomenon. I have never seen even an indirect reference to it in any work on physics; but in a work published in 1852 by John Johnston entitled "Johnston's Natural Philosophy," at page 257, in discussing the passing of light through a small aperture a quarter of an inch square, this statement is made: "If these experiments are made during an eclipse of the sun the images will always be of the same form as the disk of the sun toward us." This is the nearest to a reference I have ever noticed. It may be that I have simply overlooked the reference, but it does not take up the question I asked of you, namely, why the light under these circumstances passing through a large glass window will throw thousands of such images on the floor. A. When the light from the sun passes through a small aperture and falls on the floor or any other flat surface nearly or quite perpendicular to the path of the rays of light, the disk seen is circular, since it is an image of the sun. The shape of the aperture through which the light comes does not affect the shape of the disk of light on the screen. The aperture may be triangular, square, round, irregular, or any other shape; the disk of light on the screen is circular when the sun's disk is a circle. The experiment may be performed with a gas burner, a small hole in a cardboard, and a white screen held in the path of the light beyond the cardboard. A very perfect image of the gas flame, inverted, will be found on the screen. The images cast through small apertures are of the same shape as the objects which cast the images. When the sun is in an eclipse the crescent-shaped sun may be seen repeated many times on the ground under trees, or on the floor of a room where the light enters through the crevices between the slats of blinds or other small openings. Ordinarily in the same situations circular disks, images of the sun, are formed. In the case mentioned above, the window must have been rather dusty, so that the window became a series of small apertures in its effect upon the sunlight, and crescent images were seen. We should always see images of the sun on the floor but for the fact that they usually overlap each other. They are always there and may often be distinguished along the edges of a place where sunlight falls on the floor of a room. This matter is rarely mentioned in textbooks of physics now-a-days. The textbooks rarely give interesting applications of principles to occurrences in nature, but limit themselves quite too much to abstract statements of principles. Many textbooks are dry as dust for this reason. The case of images of the sun in an eclipse is to be found in Deschanel's "Natural Philosophy" under "Shadows." It would be a great improvement if all textbooks of science directed the attention of the student more to concrete applications of his study to be seen in nature, often close at hand, as in this particular case.

(9877) J. A. B. asks: 1. What are the underlying principles of cloud electricity, that is, where do the clouds obtain their electrical energy, and how? A. The mode of the production of electricity in the atmosphere is not yet well understood. No theory completely explains all the facts. 2. What is the cause of lightning and thunder? A. Lightning is due to an electric discharge between two oppositely electrified masses of clouds. Thunder is the sound produced by the shock of the air rushing back again into the space through which the lightning has just passed. 3. Why are not all clouds accompanied by lightning? A. All clouds do not produce lightning because they are not highly enough electrified to pierce the air between them and the earth. 4. Do all clouds possess electricity? A. All clouds are electrified, so is the air all the time. 5. Are lightning clouds laden with electricity before there is any lightning flash, or is lightning caused by the friction of the clouds? A. Thunder clouds are more highly electrified than other clouds. Light from the electric discharge is due to the heating of the air through which the lightning flashes. 6. What are clouds? A. Clouds are composed of drops of water in

the air. These drops always fall, as do any other drops, but they may evaporate and disappear before they reach the earth. They may be kept up by currents of air under the clouds, raising them and keeping them from coming through to the earth. Otherwise it would rain every time a cloud passes overhead. 7. Steam circulating in pipes condenses and again becomes water They why is it that steam escaping into the cold atmosphere rises and finally becomes invisible? Why don't it condense and fall back to the earth in the form of water? A. Clouds are not vapor or steam, but actual drops of water. Steam when it comes out of a pipe and is seen as a cloud is no longer steam but drops of water. If these drops disappear, it is because they evaporate into the air. They often fall as water, wetting the ground below. You would profit by reading some good book on meteorology. Walde's "Meteorology" is good. We can send it for $1.75 by mail

NEW BOOKS, ETC.

THE MODERN WOOD FINISHER. By F. Maire. Chicago: The Western Painter, 1904. 16mo.; pp. 159. Price, 50 cents.

The author has written a series of articles on wood finishing in all its branches. These embody his observations of the practice of wood finishing as it exists in all the leading furniture factories and large paint shops in the country. There exists a great deal of ignorance among the craft of the simplest principles of wood finishing. To all such, and also for those who forget and need a work of this kind as a manual of reference, this little volume will prove useful.

SYNCHRONOUS AND OTHER MULTIPLE TELEGRAPHS. By Albert Cushing Crehore, Ph.D. New York: McGraw Publishing Company, 1905. 8vo.; pp. 124. Price, $2.

The subjects included in this book are divided into three parts. The first part is devoted to the general subject of methods of obtaining independent telegraph circuits by the use of direct and alternating currents on the same wire. The arrangements of circuits throughout the book, almost without exception, have been successfully operated either in the laboratory or under service conditions. Parts second and third relate to methods of obtaining circuits by means of the synchronous rotation of two bodies at distant points, the second part concerning the means of obtaining the synchronous rotation, and the third part the means by which the rotation may be utilized for securing independent telegraph circuits. The book is written to assist the reader to obtain a clear conception of the subject from a practical and experimental point of view.

PROCEEDINGS OF THE AMERICAN FOREST CONGRESS. American Forestry Association. Published for the Association by the H. M. Suter Publishing Company, Washington, D.C., 1905. 8vo.; pp. 474. Price, $1.25.

This book is a record of the meeting of the American Forest Congress, held in Washington, 1905, the object of the congress being to establish a broader understanding of the forest in its relation to the great industries depending upon it; to advance the conservative use of forest resources for both present and future needs of these industries, and to stimulate and unite all efforts to perpetuate the forest as a permanent resource of the nation. The volume is divided into seven parts, under the following heads: Forestry as a National Question; Importance of the Public Forest Lands to Irrigation; the Lumber Industry and the Forests; Importance of the Public Forest Lands to Grazing; Railroads in Relation to the Forest; Importance of Public Forest and Lands to Mining; National and State Forest Policy.

RAILWAY PROVIDENT INSTITUTIONS IN ENGLISH-SPEAKING COUNTRIES. By M. Riebenack. Philadelphia, Pa.: Pennsylvania Railroad Company, 1905. 8vo.; pp. 349.

This book, which is written by the Comptroller of the Pennsylvania Railroad Company, embodies the substance of two reports which the author submitted during the year 1904 to the International Commission of the International Railway Congress at Brussels for use at the session held at Washington May 3 to 13, 1905. It deals with most important economic conditions, and gives a mass of detail relative to insurance and relief provisions, hospital service, saving funds, co-operative capital stock purchasing schemes, Y. M. C. A. railway branches, literary study, etc. The book is a highly commendable one, and must have been a most difficult one to compile.

STEAM BOILERS: THEIR HISTORY AND DEVELOPMENT. By H. H. Powles, A.M.I. C.E., M.I.M.E. London: Archibald Constable & Co., Ltd. Philadelphia: J. B. Lippincott Company, 1905. 4to.; pp. 336, 15 plates. Price, $6.50.

The development of steam power has depended greatly on the work of the boiler designer and boiler maker. In the early days of steam, attention was mostly given to its use, not to its manufacture, hence the progress of boiler work was slow in the early stages, and the users of steam power had to be content with very primitive steam generators. With materials of such high perfection as can now be