

the narrowness of the ground, could not be detached from the outer wall at all places. Palladio therefore filled up the nine center and the three external columnations, where the statues touch the external wall, with pieces of statuary.

The orchestra is five feet below the seats. The scene, which is sixty feet broad, is an architectural composition of two orders of the Corinthian style superimposed, which are surmounted in turn with a light and well-proportioned attic. On the stylobate of the second story are placed statues, and the intercolumnations are enriched with niches and statues. The panels of the attic are ornamented with reliefs of the "Labors of Hercules," and the center panel over the largest of the three openings in the proscenium, which is arched, with a representation of an ancient hippodrome. Over the arch is the following inscription: "Virtuti ac Genio Olympicorum Academia Theatrum hoc a Fvndamentis Erexit Anno MDLXXXIII. Palladio Archir."

In the lower order the middle interval has a high open arch and the two others, on the side, have square openings through which are seen streets and squares of stately architecture, each ending in a triumphal arch. The position of the diverging avenues will be understood by reference to the plan. The magnificent palaces and private dwellings which are here portrayed furnish a very effective setting for the plays which were performed in the theater. Though the distance to the back of the theater is only forty feet, yet by skillful and ingenious perspective and foreshortening it appears to be four hundred feet distant. For this skillful and ingenious conceit, which is unclassical in spirit, we are indebted to Scamozzi. The existing ceiling,

painted by Picutti, dates from 1828, in imitation of the velarium or awning of the Roman theaters. The old ceiling was removed, as it was falling to pieces. The exterior of the theater is by no means comparable to its internal beauty. It was not built at the expense of the government, but by some private Vicentine gentleman of the Olympic Academy. The Academy was not confined to literary questions. Sometimes the programme included some classical tragedy. They used wooden theaters at first, and Palladio designed one for them in 1562. The Academy wished to found a permanent structure; therefore, Palladio was intrusted with the commission. The theater, begun in 1582, was completed in 1586, and was inaugurated by the performance of the "Edipus Tyrannus" of Sophocles.

The general lines of the interior of the theater are noble and calm. The theater looks as well on paper as in reality; for, like so many of Palladio's buildings built of brick and stucco, which are now in a dilapidated condition, it has an enduring shabbiness. It must be said that in this remarkable building Palladio conciliated the precepts of Vitruvius and the needs of a contemporaneous society and it shows what a hold tradition had on the society of the late Renaissance, who were pleased by the resuscitation of dead forms. M. Eugène Müntz has expressed the conception of the theater when he said that it was a "mirage of a Paolo Veronese in architecture;" and, indeed, with its profusion of statues and niches and columns, it does resemble the works of the great painter of Verona, who, in his great light-filled frescoes and canvases, crowds the space with monumental architecture and fills the buildings with the well-dressed courtiers of Venice, until the whole becomes a gorgeous pageant.

#### The Current Supplement.

The current SUPPLEMENT, No. 1176, is almost entirely devoted to subjects of very present interest.

"The Spanish Battleship 'Pelayo'" describes the one great battleship of the Spanish navy, which is now returning from the Suez Canal to defend the coasts of Spain. The vessel is illustrated by a number of engravings showing the various guns, and even the telephonic installation on the vessel. "The Transport 'Alphonso XIII.'" illustrates a well known Spanish transport ship. "The Loss of the French Steamer 'Bourgogne'" refers to the recent lamentable accident, and illustrates this fine transatlantic steamer. "The Military Medical Services in Cuba" is the subject of a full paper. "The Causes of the Explosive Effect of Modern Small Caliber Bullets" is an important paper by Charles E. Woodruff, M.D., United States Army. This is a particularly important and timely paper, and is fully illustrated.

Other notable papers are "The Bolometer," by Dr. S. P. Langley, and, in "The Right to an Idea," Mr. A. R. Foote describes the subject with reference to the copyright and patent laws. "Historical and Mythological Trees" is a lecture by Dr. A. W. Miller, and is a curious and interesting paper.

AN aerial graphoscope is described in the Journal of the Society of Arts. A lath is rotated about its center in its own plane, and a picture projected upon it by a magic lantern. The apparatus illustrates persistence of vision, and may be used for testing it quantitatively. Three tables of numerical results are given. The inventor suggests that the apparatus may be used for stage effects such as the dagger in "Macbeth."

#### RECENTLY PATENTED INVENTIONS.

##### Bicycle Appliances.

**BICYCLE-SUPPORT.**—WILLIAM METZGER, Highland Park, N. J. This bicycle-support comprises a clip adapted to be secured to the lower brace of the bicycle and has an open, lengthwise slot and rear shoulder. In the slot a head is pivoted which also has an open slot, but running transversely. A pin crosses the latter slot centrally. Two legs are pivoted at opposite sides below and equidistant from the cross-pin, and have notches in their extended upper ends for engaging the same. A spring and locking pin are provided, the pin being adapted to enter coincident holes in the clip and head.

**DRESS-GUARD ATTACHMENT.**—WILLIAM SHIRLEY, Coventry, England. The purpose of this invention is to provide an attachment by means of which a dress-guard may be quickly applied to a bicycle and by means of which the guard may be stretched and readily removed whenever necessary. The device consists of a keeper and a latch adapted for locking engagement with the keeper and having casings formed upon its body. The latch is provided with spring-controlled members having movement in the casings and arranged for attachment to the dress-guard.

**BRAKE.**—JULIUS L. ALLEN, Mendocino, Cal. The brake provided for by this invention is an improvement upon those brakes in which a loose band or sleeve revolves freely around a rigid drum or axle adjustable to apply the brake when necessary. To the fork of the bicycle, clamps composed of elastic bands are applied. Right-angular screw-bolts, whose inwardly projecting portions constitute fulcrum pins on which the brake arms are pivoted, are also provided. A looped spring having eyes for receiving these pins engages the forks and roller drums at its respective ends, and serves to support the roller of the brake out of contact with the tire.

##### Mechanical Inventions.

**PAPER-TUBE MACHINE.**—FREDERICK S. BARUS, Jersey City, N. J. The purpose of this invention is to provide a machine for making paper tubes such as those used in the manufacture of fireworks. The invention consists primarily of a rolling table, a recessed head on the table and a slidable mandrel-frame, carrying a revoluble mandrel adapted to engage the paper in the recessed head. A knife-frame is pivoted in the slidable frame and carries spaced knives for cutting the paper into strips, the mandrel afterward rolling the strips into tubes.

**COIN-CONTROLLED VENDING MACHINE.**—CHARLES E. SNAPP, Groton, Va. This invention provides for a machine which will automatically deliver cigars, packages of cigarettes, and similar articles when a trip mechanism is operated by a coin of a certain denomination, the device being so arranged that no coin or piece of metal other than the proper piece of money can operate the machine. The apparatus is provided with a coin-chute and compartment for holding cigars or other articles. A tiltable table is located below the compartment. A movable coin-carrier and lever mechanism are adapted to be acted on by the coin in passing through the chute so as to release one or more cigars.

**PERCUSSION-DRILL.**—JOSEPH P. HARTMAN, Pueblo, Col. This invention provides for a drill which can be operated by hand or power alike, but is especially designed for use by prospectors or miners working in districts where steam-apparatus cannot be transported. The drill comprises rotatable arms to which hammers are pivoted by their handles and made to come into contact successively with the head of a drill or a socket containing the drill. A circular hammer track controls the path of the hammers. Springs are connected to the hammers and hold them at all times against the track. Means for increasing the tension on the springs at certain predetermined points are also provided.

##### Miscellaneous Inventions.

**VALVE-GEAR FOR PUMPS.**—JOHN DOHERTY, Lockport, N. Y. The valve-gear provided by this in-

vention is especially adapted for use with single pumps. The gear comprises a pivoted lever or dog having its outer end pointed or diamond-shaped and forming inclined cam surfaces, connections therefrom to the steam-valve and a plunger having a roller bearing on the cam-surfaces of the dog and toward its pivot. A pivoted lever has vibratory connection with the pump-rod and has arms embracing the dog. Set-screws extend through the arms, whereby the slack or lost motion between the arms and dog may be regulated. This gear, it is claimed, will enable a pump to be run at as slow a speed as desired without any probability of the pump stopping.

**SASH-FASTENER.**—JOHN GREIFE, Dayton, Ky. This sash-fastener is so constructed as to be readily applied to a window without cutting the casement or sashes, and when in operation is adapted by manipulation of one part of the device to lock both sashes simultaneously. The sash-lock is provided with a rockable friction-block adapted to lock the lower sash. A pivoted bell-crank lever is located above the rockable friction-block. Another friction-block is located on a pusher-bar, which is rockable on a limb of the bell-crank, and is thus adapted for projection toward the upper sash to lock it. Means are also provided to connect the bell-crank and lower friction-block for their simultaneous rocking movement. A projection on the bell-crank supports the upper friction-block when it is rocked away from the upper window-sash.

**GRAIN-REEL FOR REAPING MACHINES.**—MARSHAL G. and PETER P. KEEN, Keensburg, Ill. The object of this invention is to provide a reel which shall take less space than ordinary reels, and which shall describe a complete circle in its movements. A simple arrangement is provided whereby the reel may be adjusted relatively to the cutters. The reel is so constructed that it may be folded down closely upon the platform for convenient storage and transportation. On the reaper-frame toggle-links are mounted to swing. Means are provided for swinging the links relatively to the platform and one relatively to the other. A tubular shaft is carried by the upper link. A reel-shaft extends through the tubular shaft. Means are provided for rotating the reel shaft. On this shaft sprocket-wheels are mounted which are engaged by sprocket-chains. For the sprocket-wheels guideways are provided comprising downwardly diverging side portions and a bottom portion suspended in the arc of a circle. To the chains reeboards are attached.

**BALL-BEARING.**—JOHN R. SAUCIER, New Iberia, La. The object of this invention is to provide a ball-bearing more especially designed for use in the step for the vertical shaft of a heavy machine rotating at a high rate of speed, the arrangement being such as to dispense with the use of high-grade lubricants and at the same time permitting the shaft to run with great speed, without overheating the bearing. The bearing comprises a cup-shaped casing formed at its inside with a support on which an oil box is hung within the casing. A button is set in the bottom of the box and is formed on its top with a circular groove. The lower shaft rests on a second button above the first named button. The second button is provided in its under side with a circular groove registering with the groove in the other button. Balls fill the grooves to separate the buttons.

**FOUNTAIN ATTACHMENT FOR PENHOLDERS.**—CARL J. RENZ, New York city. The object of this invention is to provide an attachment adapted for application to any penholder, the attachment being a substitute for the clamp usually provided to hold a pen in the holder. When not in use the attachment may be reversed and the pen introduced entirely in the holder. The attachment comprises a body, a fingered tip at the forward end of the body, having transverse cells in its upper face, and a spring secured to the under side of the body and having its forward end curved upwardly and extending in close proximity to the under face of the tip to hold the attachment firmly in the holder.

**DEVICE TO PREVENT COWS FROM KICKING.**—CHRISTOPHER A. EIDSMO, Pleasant, South Dakota.

This device consists of a body constructed of two pivotally connected members, one member being provided with a lower and with an intermediate open clamping-band, both adapted to embrace the leg of the cow, so as to prevent flexure of the leg. These bands face in opposite directions. The other member is provided with an upper open clamping-band facing in the same direction as the lower clamping-band. Means are provided for locking the two members of the body in place.

**CLOTHES-LINE BRUSH.**—DARIUS F. GALLAGHER, New York city. The purpose of this invention is to provide a brush more especially designed for use on clothes-lines, so as to clean the line automatically when the latter is in motion. The brush has a spirally bent back and bristles extending from the inside of the back to engage the surface of the clothes-line, to clean it when pulling the line through the brush in an axial direction thereto.

**GARBAGE APPARATUS.**—IRA C. GOODRIDGE, Rochester, N. Y. With this apparatus, garbage can be readily passed from the kitchen to a suitable removable receptacle in a casing in or on the outside wall of the building, so as to facilitate the emptying of the contents of the receptacle into a cart. The apparatus comprises a receiver within a room of the building and is provided with a lid. A casing is located outside of the building and below the floor of the room in which the receiver is placed. This casing is provided with a door. A pipe leads from the receiver out through the wall of the building and then down into the casing. A plunger in the portion of the pipe leading through the side of the building enables the garbage to be forced into the receptacle.

**HAT GUARD.**—WILLIAM LORD, New York city. The prime object of this invention is to provide a guard which shall be entirely concealed when not required. The hat-guard has a plate secured by one end only to the sweat-band, so that the main portion of the plate will be free to permit a cord to be wrapped around it, the plate being provided at its other end with a transversely extending socket. A cord is secured to the end of the plate opposite that having the socket. A bar on the free end of the cord permits the latter when not in use to be wrapped around the plate and one end of the bar to be inserted in the socket.

**COMBINED CHAIR AND BED.**—BERNARD MURTAGH, Hewlett's, N. Y. This combined chair and bed has a base with front uprights and a back having a hinged connection with the base. Detachable arms are provided having rearwardly extending tongues for entering openings in the uprights. There is also a slot and key connection between the rear ends of the arms and the back. When the piece of furniture is to be used as a chair, the arms hold the back in a vertical position. When the article is to be used as a bed, the arms are removed and placed in the base chamber.

**SAFETY DEVICE FOR ELEVATORS.**—RAFFAELE PAROSELLI, Jersey City, N. J. The purpose of this invention is to provide a device which shall stop an elevator quickly in case of breakage of the cables. A mechanism is also provided whereby the car may be safely lowered to a landing should it stop between floors. The car or cage is formed in two parts adapted to have vertical movement. A locking device is normally adapted to restrain the movement of the parts in one direction. Clutch-dogs are provided which are adapted to engage the elevator guides by the relative movements of the parts of the cage. The suspension device of the car has a limited yielding action. A trip for the locking device is actuated by the recoil of the suspension device when the strain on the latter is relieved. The lowering device comprises a governor fixed at the top of the elevator well and has a wheel adapted to receive a flexible conductor passing over the wheel and adapted to be connected to the car to support it. Means are provided for freeing the car and for locking it in the well at will. By positive means the belt is prevented from slipping on the wheel.

**MAGAZINE PISTOL.**—WESLEY H. TRIPPET, Redlands, Cal. This firearm is provided with a magazine adapted to contain cartridges, the magazine being

mounted to turn under the barrel. The rim of the magazine is inclined to the axis of the magazine and provided with bores whereby, when the magazine is turned, the bores are successively brought in alignment with the barrel of the weapon at the rear end. An external guard for the magazine holds the cartridges in place.

**CONVERTIBLE VEHICLE AND ROCKER.**—CHARLES W. WEDDELL and JAMES K. WATERS, Thurmont, Md. In this invention a novel device is provided whereby a child's wagon is adapted to be converted into a rocking chair. The front axle of the wagon is designed to be swung by the occupant of the vehicle. The vehicle body is provided with a removable bottom, below which another bottom is located having two spaced elongated apertures near its forward end. A wear-plate on the body is adapted to receive the threaded body of a screw-bolt. A wear-plate is also secured on the front axle in loose contact with the upper wear-plate and has a curved slot through which the screw-bolt passes. This slot has a length adapting the two wear-plates to be slidable one on the other and to limit the swinging movement of the front axle.

**MOP.**—HERRMAN A. WOLFF, New Haven, Conn. The purpose of this invention is to provide a mop which shall not scratch polished surfaces and which shall have its mopping material so arranged as to act like the bristles of a brush. The mop has a body-plate provided with a marginal flange and slots in its surface within the flange. Strips of absorbent material are passed downwardly through adjacent slots, crossing the webs between the slots. The end strips are carried upward over the ends and side portions of the flange of the body plate adjacent to the ends. A clamping plate having roughened ends is fitted to the slotted portion of the body-plate. Fastening devices secure the clamping plates and body together. A handle is fitted into a socket of the clamping plate.

**PESSARY.**—ANNA M. LONGSHORE-POTTS, London, England. With the neck of the cup of this pessary, having its end screw-threaded and provided with a bore square in cross-section, is connected a stem having a square head fitting in the bore of the neck and provided with a reduced extension beyond the head. A spring in the bore of the neck has one end secured to the extension of the stem. A screw-cap is fastened on the end of the neck and through it the stem loosely slides.

**THATCH-ROOFING.**—CHARLES N. BUSHNELL, Oquawka, Ill. The purpose of this invention is to provide a cheap form of thatch-roofing which is made complete and furnished in rolls and only requires to be laid on the rafters and then attached. The portable thatch-roofing consists of wisps of straw or like material fastened together by wires transversely to the length of the wisps. The body part of the wisps is arranged two-ply or with one wisp in one layer opposite the space between two wisps of the other layer. The butt ends of the wisps are arranged in overlapping shingle-like layers.

**POST-OFFICE BOX CABINET.**—JACOB C. KEITH, Ellwood City, Pa. This invention is an improvement in post-office-box cabinets, and seeks to provide a simple and novel construction by which the box doors may be opened from a keyboard under the control of an official or may be opened by a proper manipulation of the lock by the holder of the box, the purpose being to put the box under the control of the person who rents it and yet permit the box to be easily opened for such a person, should he not have the key of the lock or should he have forgotten the combination, if combination locks are used. The invention consists, in connection with a box-door, of means by which the holder of the box may release the bolt of the door, together with catches for engagement by the bolt, and a keyboard and means operated therefrom for freeing the catch and bolts from engagement.

**NOTE.**—Copies of any of these patents will be furnished by Munn & Co. for 10 cents each. Please send the name of the patentee, title of the invention, and date of this paper.