RECENTLY PATENTED INVENTIONS.

Bicycle-Appliances.

VELOCIPEDE-PEDAL.—Eugene Germaine, Paris, France. The main object of this invention is to provide improved means for attaching the pedal to the axle, so that connection and disconnection can be quickly and readily effected. The pedal is provided with a novel arrangement of axle, cones, removable cross-piece, and spring-pressed telescoping ball-cups. The particular arrangement of parts described causes the balls to be forced into contact with the cones, and enables the pedal to be readily connected and disconnected.

BICYCLE-LAMP BRACKET.—Charles E. Whitmarsh, Brooklyn, New York city. With ordinary fixed lamp-brackets, it often occurs that when the bicycle is in a leaning position, the lamp will smoke or the oil will run out. The inventor overcomes this difficulty by providing an arm upon which the lamp is secured, suspended from a pivot, so that the center of gravity of the lamp is beneath the pivot, thus causing the lamp always to maintain an upright position.

Electrical Apparatus.

ELECTRIC CURRENT CONTROLLER.—James B. Breeding, San Antonio, Tex. This inventor has provided a device by means of which an incandescent electric lamp may be caused to burn with varying brilliancy, and by means of which the use of fine wires is avoided, thus preventing the controller's being burnt out. A number of resistance-blocks arranged in the form of a cylinder, are connected in series, and are disposed between insulated caps. A rod extends longitudinally through the blocks, but is insulated therefrom, and forms part of an electric conductor. A contact carried by one of the caps, is adapted for electrical connection with the blocks; and a conductor leads directly from the blocks. The position of the contact with relation to the other parts determines the amount of current fed to the lamp.

Mechanical Devices.

ROAD-GRADING AND DITCHING MACHINE.—James W. Cornett, Gaveston, Tex. The machine comprises a plow provided with a moldboard having its outer end formed with an upwardly-turned flange, and having an inclined chute upon which the moldboard delivers. A wheeled carrier is located at one side of the plow, and supports an elevator-frame, having its inner end pivotally connected with the moldboard of the plow below the chute. An elevator-belt is mounted in the frame and is operated from the wheel of the carrier. The machine is arranged to remove the plowed up soil a distance from one side of the machine and to permit the working-parts to be thrown out of gear, while the machine is being moved from place to place.

WINDMILL.—Louis K. Hong, Parkland, Wash. The windmill is constructed of iron and steel, and is, therefore, light, yet strong and rigid. A governor is provided which causes the wheel to maintain a uniform speed of rotation. By means of a combination of double gears and shafts, the rotary motion of the windwheel shaft is transmitted to the line or driving-shaft, side-drafts being prevented. The windwheel is balanced and held squarely to the wind by a rudder-vane so constructed and so attached to the turn-table as to prevent all swaying to and fro when at rest or at work.

PHOTOGRAPHIC PROJECTING MACHINE.—William V. Miller, Bayonne, and George P. Rice, Rutherford, N. J. In chronophotographic apparatus, as hitherto constructed, no little difficulty has been encountered in overcoming the vibration of the film, due largely to the placing of the film-feeding wheels above and below the slide-opening. The inventors of this improved apparatus overcome this vibration by using a feed-mechanism, comprising two spaced and intermittently rotating wheels mounted on independent shafts and engaging the film on opposite sides of the slide or exposure-opening. The film is hence not loose at the opening, but is locked at this very point by the feed-mechanism during the period of rest, and is bodily moved at this point by the same means during the period of feeding. As the feed-mechanism is rigidly locked with the film, there can be no vibration to mar the effect.

TYPE-WRITING MACHINE.—Coral N. Westwood, Nanaimo, British Columbia, Canada. It is the purpose of this invention to provide improved means for column, line, and back spacing in type-writing machines. The invention is embodied in mechanism attached to the right-hand side of the machine, and so connected with the rotary platen and its reciprocating carriage as to adjust one or both as required for effecting column, line, or back spacing. The connections in question consist of a transverse shaft, a ratchet-disk mounted thereon and a pawl engaging the disk. The shaft and disk can be shifted to release the disk from engagement with the pawl. The platen-frame can be connected with the shaft, so that the latter turns as the former slides. A stop-mechanism is applied to the shaft, for arresting its rotation as the frame reaches the desired point.

Railway-Appliances.

TRAIN-DISPATCHER'S INDICATOR.—Robert F. Adams, Horse Creek, Ala. This inventor has provided an indicator for the use of train-dispatchers, which is a miniature representation of a railroad with its stations and trains, and reproduces objectively the positions and movements of the various trains at different points along the road. This way of locating a train is an improvement over the more uncertain and difficult method of consulting figured charts.

FOLDING CAR-STEP.—Nelson Gray, Louisville, Ky. The improvement devised by this inventor provides a folding car-step which can be inverted, and which is provided on its under side with a platform-section, constituting an extension of a car-platform when the steps are inverted and out of position. Lock-devices for the operating-lever and for the latches which secure the step section in folded position, are also provided. At the outer end of the platform a gate is mounted, which is automatically opened and closed by the movements of the folding step-section.

Miscellaneous Inventions.

LETTER-FILE.—Samuel M. Brydges, Nelson, Canada. This letter-file is made so that it can be opened after the manner of a book. The back of the file is a trough, the sides and one end thereof being rigid. A hinged member serves to close the other end of the back and is mounted to swing on the back. Side portions are connected with the back to swing thereon; and a transverse pin is secured in the back. Letter-holding strips are provided, which are slotted to engage the pin, the hinged member of the back serving normally to prevent end displacement of the letter-holding sheets.

SAFETY ATTACHMENT FOR ELEVATORS.—George Fox, 2d, Manhattan, New York city. In the construction of an elevator according to this invention, channel-beams are provided, adapted to form at the outer faces of the sides guideways for the cage to travel in, and to form at the inner faces of the sides contact-surfaces. Cams are carried by the cage and are arranged to move normally free between the sides of the channel-beams and to impinge thereon in order to stop the cage in case of an accident. As the inner faces of the sides of the channel-beams are not lubricated, it is evident that the cams brake the cage on which they are carried. The cams may be operated either manually or automatically.

ACETYLENE-GAS GENERATOR.—James H. Dysart, Alexandria, and Paul M. Dysart, Pittsburg, Pa. This acetylene apparatus consists of a generator and two gasometers connected by pipes. The generator is provided with a floating carbid-chamber, which, by means of a lever, automatically controls the flow of water. One of the gasometers is also connected with a valve in the water supply pipe in order to regulate the flow of water. When, therefore, the pressure of gas becomes excessive, these automatic means will temporarily shut off the water until the pressure has become normal.

CLOTHES-LINE SUPPORT.—Thomas Varcoe, Lead City, S. D. The support has a head which comprises a pillar or body portion carrying a fixed jaw coacting with a movable jaw having a slotted shank. A pin is carried on the pillar or body-portion and enters the slot of the shank. A latch holds the movable jaw in closed position. A line once imprisoned between the jaws will be so sustained that whatever may be the burden imposed upon it, it will be impossible for the clothes to be brought into contact with the ground.

TRUNK.—Harrison M. Turner, Birmingham, Ala. To provide a means whereby a series of drawers may be arranged within a trunk, so that they may be lifted easily and compactly to the top, and held so as to be conveniently accessible, is the purpose of the present invention. The means in question consist of lazy-tongs attached to the body and to the drawers-receptacle, and operated by means of a handle. A locking-device secures the tongs in distended position.

PHOTOGRAPHIC-PLATE HOLDER.—Henry H. Altschwager and Louis E. Joy, Minneapolis, Minn. This improvement relates to a peculiarly constructed plate holder, the back of which is hinged like a door and supports on its interior side a movable sensitive plate frame, operated by a pinion whose shaft extends through the door at the back and ends in a knurled knob, whereby the sensitive-plate-holding frame may be rotated in the holder and moved vertically and horizontally. Directly in front of the plate is a kit having a small rectangular aperture, and in front of this is a small slide. When the holder is clamped to the rear of the camera, the small slide is drawn and an exposure is made on one corner of the plate. Then the slide is shut and the plate in its frame inside the holder is moved forward horizontally one notch by rotatmg the pin, when another picture can be made. Diamond-shaped negatives are made by having the plate moved at an angle to the vertical lines of the rectangular opening in the kit. There is a suitable indicator and locking device on the outside of the knob to show the operator how much of the plate has been used. It appears to be a very useful and practical arrangement for the easy production of small negatives with one lens.

HAND PUMP FOR EXTRACTING KEROSENE OR OTHER LIQUIDS FROM TINS.—William John Rawling, Adelaide, Australia. This is a simple tube pump intended for use in commercial oil-cans in which oil is exported. It has on the upper end soldered to the tube at right angles a spike which is used for first puncturing a hole in the top of the can. Then the barrel of the pump is pushed through the hole until a spiral or other device soldered to the waist of the barrel is reached; a turn or two of the barrel works the spiral into the hole under the top of the can, holding the barrel firmly so that the lower end comes nearly in contact with the bottom of the can. A plunger-valve of simple construction attached to the usual reciprocating pump-rod is employed. There is also a fly-valve in the bottom of the barrel. A spout with a teapot-shaped nozzle prevents drip and causes the oil to run back into the can after the pump is stopped. When the can is emptied the pump can be readily removed and applied to other cans.

Designs.

SEWING-MACHINE HEAD.—Spencer A. Stone, Chillicothe, Mo. The machine-head consists of a human leg and foot, the thigh being flexed at a right angle to the lower leg.

WICK-TRIMMER.—Sumner A. Hovey, Stoneham, Mass. The trimmer consists of a body which is adapted to fit over the wick-holder of a student's lamp, and which is provided with circularly-disposed knives. By rotating the body-portion, the knives will trim the wick uniformly.

MEMBER FOR MATCH LIGHTERS. William M. Larsen, Decorah, Iowa. The leading feature of the design consists of a member having a roughened surface, lugs, and a beveled flange. Over the lugs and over the flange another member is adapted to fit; and between the two members the matches are held. By pulling out a match, the phosphorus head is rubbed against the roughened surface, thereby causing the head to burn. It is therefore evident that the action of drawing out a match is immediately followed by the lighting of the phosphorus.

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(7652) J. F. W. C. asks: Who was the inventor of, or the first that made malleable iron? A. The process of converting cast iron into malleable iron was known in 1722 and described by Reaumur. Patents were issued for the process to Lucas, in England, in 1804, and again to Brown and Lennox, about 1850. Malleable iron was made at Elizabethtown, N. J., in 1835.

(7653) F. L. M. writes: Three men want to carry a log 18 feet long, of equal weight throughout, one man at the end, the other two to use a cross stick. How far from end should this stick be placed so that all would carry an equal weight? A. The stick should be placed 4½ feet from the end of the log in order that the two men holding it should carry each ⅛ of the weight of the log, and the man at the other end should carry the same weight, ⅛ of the log.

(7654) L. C. L. writes: 1. I intend making a small magneto-electric machine. Can I wind the armature with double-covered wire? If so, what size is best? A. For your small magneto use any size from No. 24 to 30 single cotton-covered wire as may be convenient. 2. How long will a concentrated solution of metol-quinol developer keep its strength if kept in a well corked bottle? A. We cannot tell you how long a solution of metol-quinol developer will keep in a well corked bottle. To find out you have only to put some in a bottle, put the cork in firmly and await the result. 3. Do negatives on celluloid films require varnishing? If so, what is the best composition? A. Gelatine negatives do not require varnishing, though they may be varnished with any good negative varnish. 4. What proportion of zinc and lead will make an alloy hard enough to use for the cylinder casting of a small steam engine? A. No alloy of zinc and lead is very hard.

(7655) D. A. McD. writes: I have some small pieces of marble ¼ inch thick around my fireplace; they were cemented to the brick to make nice finish. They have come loose and need cementing again. Can you tell me what kind of cement to use that will hold the pieces in place and the fire will not cause to come loose. A. Soak plaster of Paris in a saturated solution of alum in water; bake in an oven; reduce it to a powder; mix with water and apply; it sets very firmly.

(7656) L. J. M. asks for a receipt to make hard putty such as carriage painters and jewelers use. A. Try the following: Boil 4 pounds of brown umber and 7 pounds of linseed oil for two hours; stir in two ounces of beeswax; take from the fire and mix in 5½ pounds of chalk and 11 pounds of white lead; the mixing must be done very thoroughly.

(7657) J. M. F. writes: Among those who live by the sea the belief is very prevalent that the tide influences the wind, and that a wind is more likely to rise or fall or change on high or low tide than at other times of the day. Is this a fact? And if so, what is its physical cause? A. The belief is no doubt well founded, for the displacement of the air over the sea near the shore by the rising tide naturally tends to move it toward the shore and over the land, while the falling tide draws the air from the land to fill the displacement made over the sea. The effect is very small with ordinary tides, but should be very perceptibly felt on the shores of the Bay of Fundy, where the tidal range is from 30 to 60 feet.

NEW BOOKS, ETC.

Liquid Air and the Liquefaction of Gases. Theory, History, Biography, Practical Applications, Manufacture. By T. O'Conor Sloane, Ph.D. New York: Munn & Company. 1899. Pp. 365. 12mo. Illustrated. Price $2.50.

No subject, save perhaps wireless telegraphy, is attracting as much attention at the present time as liquid air. Heretofore the literature upon the subject has been entirely in the form of articles in the scientific and technical journals and papers in the proceedings of learned societies. It has been reserved for Dr. T. O'Conor Sloane, the well known writer on physics, to bring together the theory and the facts concerning the liquefaction of gases in the form of a book, and he has performed his task with great ability, and the volume has been entitled "Liquid Air and the Liquefaction of Gases." It deals with the theory, history, biography, applications and manufacture of liquid gases. First the subject of physics is taken up, and this is followed by chapters on Faraday, Pictet, Cailletet, Von Wroblewski, Olszewski, Dewar and Tripler. In these chapters the author has successfully blended biographical notes with a succinct account of the physics and chemistry of the subject. Then follow descriptions of various forms of apparatus for making liquid air, experiments tried with liquid air, and some applications of low temperature. The entire history of the liquefaction of gases from the earliest times to the present is adequately treated, and this is supplemented by an illustrated description of experiments that have excited the wonder of audiences wherever liquid air has been experimented with. The book is handsomely illustrated, including portraits of pioneer investigators, and further details concerning it will be found in another column. The publishers of the Scientific American feel, in offering this book to the public, that it is issued at a most opportune time.

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APRIL 25, 1899.

AND EACH BEARING THAT DATE.

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