

RECENTLY PATENTED INVENTIONS.

Agricultural.

GANG PLOW.—Frederick W. Gordon, Valley View, Tex. This invention comprises a frame, a plow disk carried by the frame and a wheel forward on the frame. Means are provided whereby the position of the wheel with reference to the frame may be varied. A guide wheel is placed rearward in the frame. The frame is connected with two rigidly joined beams, a spindle projecting rearward from each beam and a disk for each spindle. The disks are set at an angle to the frame and have novel adjusting devices.

Bicycles, Etc.

BICYCLE OR TRICYCLE SHOULDER ABUTMENT.—William F. Williams, London, England. The object of this invention is to provide a point of resistance for a rider's shoulders, so as to enable the muscles of the body to supplement the action of the legs. The abutment, moreover, insures an erect carriage and promotes chest development. The device comprises a post mounted on a bicycle, a socket pivoted to the post, a rack sliding in the socket, a pinion mounted on the socket and engaging the rack, a forked frame having a knuckle-joint connection with the rack and a shoulder support attached to each arm of the frame.

FLUSH JOINT FOR TUBULAR FRAMES.—Frederick C. Avery, Toledo, O. This flush joint consists of a receiving member having a continuous circular kerfed seat cut entirely through the cylindrical side of the tube at two opposite points, and having uncut bridge pieces at intermediate points with acute angular grooves in them; in connection with the tubular entering member having its ends beveled upon the inner side and inserted throughout its entire circumference into the circular kerfed seat of the receiving member for the purpose of rigidly connecting at various angles the tubular frames of bicycles, their handle bars, seat posts, etc.

BALL BEARING.—Frank Gustavson, Wabasha, Minn. This ball-bearing comprises a hub having cups therein, each provided with flange or collar extending inwardly from the raceway and cupped or decreased in diameter at its inner end, whereby an oil-receiving cup is formed, an axle having cones thereon co-operating with the cups to form ball raceways, balls between the cones and the raceways of the cup and a tube surrounding the axle with its ends entering the oil-receiving cup and constituting an oil reservoir.

Electrical.

ELECTRICAL FOOT GEAR.—José Gallegos, Guatemala, Guatemala. This novel foot gear is provided with a static electrical generator for frictional contact with the human body, consisting in a closely formed fabric composed of strands covered with glass beads, the beads lying close to one another and forming the surfaces of the fabric.

ELECTRICAL DENTAL ENGINE CONTROLLER.—James J. Coachman, Rio Janeiro, Brazil. The controller for which this patent was granted comprises a base, a pedal mounted to swing on the base, a series of contact strips on the bases, contact points carried by the pedal and engaging the strips, a resistance having connection with a contact on the pedal, a spring yielding contact carried by the pedal and having connection with the pivot of the pedal, the pivot being in the electrical circuit, a pole-changing lever, solenoids for and operating the pole-changing lever, a circuit closer operated by the movements of the pole-changing lever, and another circuit-closing lever having pins extended upward through the base. This apparatus is designed to provide a simple means whereby small electric shunt-wound dental engine motors can be started, run forward or backward, and stopped instantly when so required.

Miscellaneous.

SHRAPNEL PROJECTILE.—Michel Darmancier, St. Chamond (Loire) France. This projectile is provided with a cavity, the walls of which are provided with longitudinally extending grooves, a tube running centrally through the cavity and having grooves in its outer surface, the lower end of the tube having a disk with a serrated periphery conforming to the grooves in the walls of the cavity and balls arranged within the cavity and lying in the grooves. A fuse holder is secured to one end of the projectile to close the cavity and has connection with the central tube. The invention is designed to insure the freedom of the projectile from premature deformation when normally discharged, excluding all agglomerant substances which are ordinarily employed in shrapnel projectiles.

WORK HOLDER.—Canly D. Eames, Worcester, Mass. This novel work holder comprises a bow and clamping devices depending from ends of the bow, and composed of spring loops forming clamps which are arranged at right angles to the bow and are open at their bent lower ends to permit the convenient insertion and removal of the work held stretched parallel to the bow proper. The device is designed to enable the operator to hold the fabric conveniently while sewing thereon and relieving the fingers of the hand holding the material, of the tiresome strain resulting from holding the material in position by hand.

NUT LOCK.—Charles J. McCue, La Veta, Col. A nut having grooves in opposite side edges at its inner face is provided with a fastening device comprising upper, lower and end members, the upper member being provided at its free end with a head to engage with an end face of the nut and a flange projected at right angles to pass over the top of the nut and engage with the end face of the nut, the flange thus serving as a fastening and also serving to indicate the member to be at the top of the nut. This nut lock is especially applicable to railway rails to be used in conjunction with the fish plates thereof. The lock is simple, can be quickly attached to any nut, and is designed to prevent the nut from being turned or moved by the traffic on the rail.

ACETYLENE GAS GENERATOR.—William McGraw, Mount Airy, O. This acetylene gas generator is provided with a casing in which a carbide con-

tainer is located, having a series of cells. Water cells placed above the carbide cells are designed to discharge water therein, and communicate one with another. Means are provided for automatically governing the flow of water through the bottom opening of the cells, and a cylinder receives the gas, from which cylinder a burner pipe extends.

SAW SET.—Henry Neidhart, Brooklyn, N. Y. A saw-setting mechanism, comprising a pressure lever, is connected with a rock shaft, an arm being mounted on the shaft. A block is adjustable on the arm, a rod is adjustable through the block and a spring connection is located between the arm and block. Connections between the rock shaft and pressure lever are provided whereby the shaft will be rocked by a downward movement of the lever.

LIFE-BOAT.—James Mitchell, Sr., Arrow River, Canada. This boat comprises a hollow inclosed figure having a rope guideway at each end of the boat, communicating with the interior and adapted to receive a suspending rope, and means for automatically closing the rope guideways upon the removal of the rope. The suspending rope having been severed from the interior, the boat drops into the water on an even keel.

AIR GUN.—Elmer E. Bailey and Thomas A. Monk, Philadelphia, Pa. The magazine of this air gun is provided with an apertured disk at its front end, and the lock frame has a socket in its front extension. The firing tube is held at its front end in the disk and is provided with an enlarged head which fits in the socket. The head is made of hardened metal and its longitudinal passage is tapered, there being an angular shoulder formed at the inner end of the passage, which shoulder abuts on the firing tube and is of less diameter than the latter. This serves to reduce the shot used in the gun to a uniform size, so that they may properly fit the tube. An air-jet tube, a piston attached thereto, a piston rod, air cylinder and means for reciprocating the piston are also provided and combined in a novel manner.

HORSESHOE.—Neil L. Olson, Butte, Mont. This horseshoe, having thickened toe and heel portions and sockets therein, the socket or sockets in the toe portion ranging at an incline approaching an angle of 45 degrees to the plane of the shoe and provided at the inner ends of the sockets with seats for the calk keys, the calks having stems fitted to the shoe sockets and grooved and notched heads, and the keys having at their inner ends portions to engage the seats of the shoes and at their outer ends heads to enter the notches or sockets in the calks.

PLACKET PROTECTOR AND SKIRT SUPPORTER.—W. H. Carr and J. G. Wolf, New York City. Two members pivoted together comprise this placket protector and skirt supporter. The lower ends of the two members overlap each other and the upper ends have an interlocking engagement. To the upper end of one of the members a hook is adjustably secured. This device is designed to hold the placket opening of a dress closed and may also be utilized for supporting the dress skirt from the belt.

PNEUMATIC STACKER.—William H. Cook, Winfred, South Dakota. This pneumatic straw stacker is designed to take the straw from an endless elevator apron and to carry it along by the force of a blast of air to the desired point. The device comprises an endless elevator apron, a pneumatic pipe conveyor and a rotary fan delivering a current of air into the same, the fan having a ratchet clutch connection with its driving mechanism to permit the fan to continue its revolution unimpeded by the retardation of the driving mechanism.

GAGE ADJUSTING TIE PLATE.—Alex. B. Harris, Bristol, Tenn. In this invention various features of construction and arrangement of plates and spikes are designed to permit railroad rails to be adjusted laterally to correct any deviation from the proper and standard gage. The plate itself is of an improved construction. The rail and tie fastening comprises a tie plate having on its under side integral spike tongues and two expanding plug spikes, one having a straight shank and the other having a recess just beneath its head that reduces the thickness of the spike, the two spikes being arranged to go on opposite sides of the rail and to be interchangeable to correct the gage of the rail.

BOTTLE.—William A. Fries, Sr., Brooklyn, N. Y. This non-refillable bottle has a neck portion provided with an interior annular shoulder and an interior annular channel, a valve casing consisting of a lower tubular portion having a flange at its upper end and a valve seat, an upper portion provided with outlet ports and having lugs, the lower ends of which are inclined outward and downward to engage against the bottom walls of inclined notches formed in the top of the flange of the tubular portion, a ball valve in the casing adapted to engage in the valve seat, a cork bushing surrounding the tubular portion of the valve casing, the bushing being somewhat longer than the tubular portion and resting on a shoulder formed in the neck of the bottle, and locking means carried by the upper portion of the valve casing and adapted to engage in the annular channel in the neck of the bottle.

DUMPING VEHICLE.—John M. Goodwin, New York City. This dumping vehicle comprises valves in its bottom portion, a shaft upon which the valves are mounted to swing, struts on the lower sides of the valves, rotary shafts below the valves, detents on the shafts to engage with the struts and support the valves, levers loosely mounted on the shafts, means for locking the levers to the shafts, a vertically movable piston, a cylinder in which the piston operates, and a connection between the piston and the levers. A novel mechanism is provided for operating the valves of the vehicle.

TOOL FOR BORING TAPERING HOLES.—Irving W. Mason, Aberdeen, Wash. This drilling tool for boring tapering holes comprises a tapering center or spindle adapted to be held in a fixed position and formed with a screw rod, a bit having a body into which the rod screws, the bit being also provided with flexible arms, and cutters held on the free ends of the arms and engaging the tapering surface of the spindle.

GAME APPARATUS.—Henry T. Pycroft, Parnell, New Zealand. A game board having vertical, horizontal and diagonal lines intersecting one another, the diagonal lines crossing one another at right angles in the squares formed by the vertical and horizontal lines, is provided with marks having characters indicating the starting points for the men or counters, being produced on sundry of the points of intersection of the lines at each end of the board. Marks also serve to regulate the movement of the men or counters being produced on other points of intersection of the lines.

CURTAIN TASSEL ATTACHMENT.—Henry T. Pycroft, Auckland, New Zealand. A shade attachment is provided with a series of rings secured to one another to form a globular structure. A hook is attached to one of the rings and a plate is bent over one of the rings at a point removed from the hook, the plate having two portions lying against each other, the portions being perforated to receive a cord. The device is designed to prevent the shade cord and tassel from being accidentally wound around the roller by the action of the spring.

EVAPORATING APPARATUS.—Walter H. Underwood, Hutchinson, Kansas. The invention for which this patent was granted consists principally of a feed pipe discharging brine or like liquids over the dome of the fire box so that the discharged brine washes the salt off as it falls on the dome before it can burn thereon. The invention further consists of a fire box, an evaporating chamber around the fire box, a heating chamber around the evaporating chamber and curved flues in the evaporating chamber connecting the fire box with the heating chamber to increase the heating surface of the flues, and thus permitting expansion and contraction of the same and dislodging the salts which may have accumulated on the flues.

HOLDER FOR HATS.—Franz Wagenblast, New York City. This holder for hats comprises a bar or plate having on its front face lugs at one end and a hook at the other end. A hat ring is provided with oppositely projecting arms, one of which is hinged to the lugs of the bar or plate, the other being provided with an offset. A lock locks the offset arm of the ring to the hook of the bar or plate. With this device the hat can be hung up and securely locked in place so as to prevent its removal by unauthorized persons. The device is especially serviceable in public places.

MOP WRINGER.—Hermann A. Wolf, New Haven, Conn. A body portion open at the front is provided with supporting ledges, upon which ledges a perforated mop receptacle is arranged to have bearing. A stop is carried by the mop receptacle, which stop extends over the bottom of the receptacle and is adapted for engagement with a mop head. This mop wringer is designed to be readily applied to a bucket, and by means of which the mop may be quickly and easily compressed so as to force all or most of the water from the mop.

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

NEW BOOKS, ETC.

GLASS BLOWING AND WORKING. For Amateurs, Experimentalists and Technicians. Based upon a Course of Lecture Demonstrations given under the auspices of the Technical Education Committee of the Middlesex County Council. With Colored Frontispiece and Numerous Illustrations. By Thomas Bolas. New York: Truslove & Camba. Pp. 212. Price \$1.

Anything from the pen of Thomas Bolas is usually not only interesting but eminently practical, and we have no hesitation in saying this is the best book on glass blowing for amateurs that has ever come under our notice. By following the directions and using proper materials any amateur ought to be able in a short time to make such glass apparatus as he needs, even though he does not become an expert glass blower. The illustrations, which number 104, while not particularly well executed, are clear and give the amateur an excellent idea of how the work is done. At the end is a bibliography of glass which is of great interest, and while probably not complete, still gives the titles which are most easily acceptable.

MODEL ENGINES AND SMALL BOATS. New Methods of Engine and Boiler Making. With a Chapter on Elementary Ship Design and Construction. By Nevil Monroe Hopkins. Fifty Illustrations. New York: D. Van Nostrand Company. 1898. Pp. 74. Price \$1.25.

This little book will be welcomed by all amateurs who are fond of using tools. The directions are very practical and the illustrations are from clear working drawings. The book describes the building of small engines and boilers, including water tube boilers and the building of small model ships. We recommend this work to the amateur. Mr. Hopkins will be remembered as the author of an interesting article published in the SCIENTIFIC AMERICAN for September 11, 1897, on "How to Build a Small Alternating Current Dynamo Without Castings."

WHAT IS FIRE PROTECTION? A Study. By Edwin O. Sachs. Second edition. Pp. 37.

THEATER EXITS. A Paper by Alfred Darbyshire. With a Description and Plan of Sir Henry Irving's "Safety Theater." London. 1898. Pp. 13.

These are publications of the British Fire Precaution Committee, and are two of the first pamphlets in the series. Several other important papers are promised.

TRANSACTIONS OF THE ASTRONOMICAL AND PHYSICAL SOCIETY OF TORONTO. For the year 1897. Including eighth annual report. Toronto. 1898. Pp. 154. Price \$1.

COMMUNICATION ON CIGARETTES

FROM

PROF. J. W. MALLETT, OF THE UNIVERSITY OF VIRGINIA.

TO THE EDITOR OF THE SCIENTIFIC AMERICAN:

DEAR SIR:—The recent publication in your journal of the results of an examination by me of some brands of cigarettes in general use has led to my receiving a number of letters of inquiry, some in reference to the mode of making the examination, some in regard to the names of the brands examined, and others expressing some surprise at the results reported and seeking confirmation of the statements which have been published.

The examination in question looked simply to ascertaining whether the cigarettes tested did or did not contain any traces of foreign adulterating materials alleged to be sometimes introduced by the manufacturers.

The methods of testing were simple, well approved and easily applied, and the results were clear and positive. In such matters a competent chemist reaches conclusions which admit of no doubt or uncertainty, and the results reported are not opinions, but scientifically ascertained facts.

It is the more remarkable that there should be any hesitation in accepting these conclusions, and that any credit should be given to the reckless assertion sometimes made as to the general adulteration of cigarettes with opium, etc., since numerous other analyses have before now been made by other trustworthy chemists, and in all cases the same general result has been recorded. I know of no scientific evidence to the contrary.

It is, moreover, apparent to any unprejudiced person, competent to consider the facts, that such adulterations as have been alleged could only be made out of sheer perversity and would be in plain contravention of the business interests of the manufacturers.

Ignorance of easily ascertainable scientific facts is, however, common enough, as is often illustrated by the brown, oily material formed in the smoking of tobacco being pointed out as nicotine, though in reality this is merely the tar produced by the action of heat on the woody fiber of the leaf.

Nicotine when pure is a colorless fluid of somewhat oily consistence and strong, peculiar, penetrating odor, but it darkens on exposure to air and light, becoming first yellow and then brown, so that it looks, in this darkened condition, something like the tarry matter which soils a smoker's fingers or a handkerchief through which tobacco smoke is exhaled, or is often noticed as deposited in the stem of a pipe. This tarry deposit has nothing essential in common with nicotine, and contains but traces of this alkaloid, when any at all. A part, but only a small part (about one-seventh in the experiments of Melsens), of the real nicotine of tobacco is volatilized without decomposition; the remainder is burned and destroyed in the process of smoking.

The sensational statements occasionally made in regard to arsenic, copper, etc., as present in the paper wrappers would be at once seen to be grossly improbable if it were but remembered that the wrapper of a single cigarette weighs little more than half a grain, and that in such a minute quantity of thin, delicate, white paper there could be introduced but infinitesimal amounts of such foreign adulterants without their presence becoming perceptible to common observation by the senses, aside from the positive scientific evidence that they are not present.

The simple facts are, that such cigarettes as I have examined, representing a large part of those in general use throughout the United States, are made from pure, light-yellow tobacco of the high grade produced on certain special soils, prominently in certain of the southern counties of Virginia and the adjacent portion of North Carolina, with wrappers of the best quality of harmless vegetable fiber paper, and are entirely free from the adulterants which it has been asserted are present, with no evidence in favor of such assertion, and in absolute contradiction of the scientific evidence actually available.

I am, sir,

Your obedient servant,

(Signed) J. W. MALLETT,
Charlottesville, Va.

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

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