

## RECENTLY PATENTED INVENTIONS.

## Agricultural Implements.

**REVERSIBLE PLOW.**—ANTHONY SMITH, Trenton, N. J. This inventor has provided an improved reversible plow which comprises a frame provided with a horizontal bearing, and with a locking device. A double plow is mounted to turn and slide longitudinally in the bearing, and is arranged to be shifted in and out of engagement with the locking device by a longitudinal sliding movement.

## Bicycle-Apparatus.

**LOCK.**—GUST JOHNSON, Willets Point, New York city. An arm is pivoted to the upper back braces of a bicycle frame, and a chain is attached to the outer end of the arm, and adapted to pass about the wheel-rim. A lock secures the free end of the chain. A catch on the pivot end of the arm engages and holds the loop of the chain when the lock is not in use.

**GEAR.**—WILLIAM H. SYMONDS, New York city. In this bicycle-gear, the driving or traction wheel is turned by a crank-and-link movement from the crank or primary movement shaft. The gear embodies a link or pitman attached to one of the pedal-cranks and running to a crank on a shaft axially coincident with the traction-wheel. This shaft has a novel multiplying-gear by which the traction-wheel is driven at the requisite speed.

**DRIVING-GEAR.**—EDGAR COURTWRIGHT, Tacoma, Wash. This invention seeks to provide a driving-gear for tandem-bicycles, which shall do away with the circular motion of the usual crank driving-gear, and which shall also do away with the second chain and its sprockets. To these ends the inventor employs a combination of triangular levers to which the pedals are attached, with the usual sprocket driving-gear and chain.

## Electrical Contrivances.

**TELEPHONE GRAVITY-SWITCH.**—CHARLES T. MASON, Sumter, S. C. The switch devised by this inventor is an improvement in that form of gravity-switches in which a lever having a forked end sustains the telephone-receiver, the removing and replacing of which is made to adjust the circuits through the agency of the three point-contacts, so as to be in position either for receiving a call or for talking. The contacts are in this invention always under tension, thus insuring the effective working of the switch at all times.

**SAFETY-LAMP FOR MINERS.**—CARL FRANCKE, Berlin, Germany. Owing to the brevity of the "life" of incandescent lamps of small candle-power, the introduction of electrical safety-lamps in mines has not been attended with the success which was at first expected. The present invention endeavors to remedy this fault by providing the miner's lamp with two or more incandescent bulbs, supplied with current from the same accumulator or storage battery. One of the bulbs is designed to serve as the main light and the other as a reserve or emergency light.

## Engineering Improvements.

**ROTARY ENGINE.**—WILLIAM O. BROWN, Savannah, Ill. The improved rotary engine provided by this invention comprises a cylinder; a steam-tight casing on one side of the cylinder; a piston mounted to rotate in the cylinder, and having a spirally-disposed channel, the ends of which terminate inwardly of the piston ends; an abutment-wheel having shaft-bearings in the casing; and projections or blades adapted to engage in the channel. The blades are movable through a slot formed in a wall of the cylinder.

## Mechanical Devices.

**MOTOR-FAN.**—FRANKLIN LENZNER, Cass City, Mich. This fan is particularly designed to be placed over a bed in a sleeping-chamber during warm weather. On a casing two fan-blades are secured. Two arms are attached to the blades, each arm having a serpentine or undulatory portion. A gear-wheel is mounted in the casing and is engaged at opposite points by the serpentine portions. By means of the gear the fan-blades may be extended and contracted.

**CANDY-MACHINE.**—ALEXANDER G. McCAUSLAND, Brantford, Canada. A machine for delivering plastic candy-stock in drops upon a paper whereon the stock is dried, has been patented by this inventor. The candy-stock is forced from a reservoir by air-pressure produced by a pump, and is deposited upon a web of paper unwound from a roll driven by sprockets and chains. The paper passes over an extension-table and is cut in desired sizes by two blades.

**COPYING-PRESS.**—OSCAR J. TAEUBER, La Crosse, Wis. A roll of copying paper is carried in a casing provided with a tank containing water. The copying paper is passed into the tank in order to be impregnated with water. The paper in this wet condition is pressed against the original by means of three rubber rollers. When a great number of copies are to be taken from a single original, the reproductions will be produced on a continuous web of paper, which may be cut into sections by means of a special knife secured to the casing.

**LOCK.**—JOSEPH R. VEDDER and JOSEPH J. TRUESSEL, Cincinnati, O. The present invention provides a lock, comprising a block mounted to rotate in a cylinder, the block having a twisted keyway in which a twisted key may be inserted. To facilitate the drawing out of the key, a swivel-head, mounted on a stem extended from a fixed head, is provided. Since the tumblers can be reached only in an indirect way, it is evident that the lock can be opened only by the twisted key.

## Miscellaneous Inventions.

**TRUSS.**—STEPHEN A. D. HARDY, Nevada, Mo. The invention seeks to provide a truss which shall be capable of being variously adjusted, as changing conditions may require. On the belt of the truss a pad is secured on which an adjustable yoke is pivotally supported. A perineal strap is also provided, which has a lever on its end, with a hook adapted to engage the yoke. A hook on the belt engages the pad.

**RIFLE.**—CHARLES F. GAY, Spokane, Wash. This new and improved rifle is arranged to permit one to

place the rifle-sections in position in the sluice-box or flume, without the necessity of driving nails, screws, or the like, into the bottom of the sluice-box or flume. Leaking of the bottom is thus obviated. The invention, in order to attain the desired end, consists of a rifle made in independent sections removably held on the bottom of the sluice-box or flume.

**DEVICE FOR PREVENTING REFILLING OF BOTTLES.**—JOHN L. ADAMS, New York city. This device comprises a hollow, valved shell adapted for insertion into a bottle's neck, and having in its exterior a recess with an inclined surface, the lower or inner end of which is nearer the periphery of the shell than its upper or outer end; a rolling, locking device, such as a ball, held in the recess against the inclined surface, and arranged to project from the periphery of the shell; and a spring engaging the upper or outer surface of the locking device to force it in longitudinally of the shell toward the narrow end of the recess.

**BORING TOOL.**—THOMAS RUSSELL, Grand Rapids, Minn. The purpose of the present invention is to provide an auger with means for directing heat to the cutting end, so that the tool may readily bore through frozen ground. To this end the tool is made hollow, and connected by means of a valved, flexible pipe with a boiler or with a hot air-supply.

**THRILL-COUPLING.**—ALFRED BIXBY, Richmond, Ky. The coupling is composed of an axle-portion having a middle hook and a circular bearing on each side of the hook and a shaft-portion having a slot to receive the hook. Lugs fit into the side bearings, whereby a part of the draft-strain is carried by the side bearings. The coupling is designed to afford a strong antirattling-bearing of large surface, subject to little wear.

**NOZZLE.**—JAMES WRIGHT, Roslyn, Wash. To provide means for the protection of firemen when endeavoring to extinguish a fire, this inventor has devised a nozzle-attachment by which a small stream or spray may be discharged upon the man holding the hose. The nozzle has at one side a valve-casing with a port leading to the bore of the nozzle, and its outer end arranged, as already mentioned, to direct a protecting stream upon the hose-man.

**JAR.**—ANDREW J. HARTMAN, Allentown, Pa. The jar-closure provided by this inventor has a clamping-plate with side flanges bent laterally at certain points to form engaging studs. A clamping lever is pivotally mounted on the clamping plate and has a bent portion capable of springing into contact with the engaging lugs.

**WINDOW-SUPPORT FOR CLOTHES-LINES.**—JAMES GORMLEY, New York city. This invention is an improvement in clothes-line devices, and consists of a pivoted arm attached to the casing outside of the window, which arm is capable of being swung within the window-opening when the lower sash is raised. The lines being thus placed in position, the clothes may be conveniently attached thereto without danger to the person hanging out the clothes.

**GUTTER FOR GREENHOUSES.**—GEORGE M. GARLAND, Des Plaines, Ill. A valley-gutter has been devised, which is constructed to combine a stop for the glass and a drip-conductor. The devices for fastening the gutter to the supports are below the weather-face of the gutter, thus avoiding perforations of the weather-face. Waterproof connections are provided for the members of the gutter.

**MARINE VESSEL.**—GRAHAM FRASER, New Glasgow, Canada. To provide a vessel especially designed to carry ore, coal, grain, and the like, is the object of the present invention. The ship has two parallel longitudinal bulkheads on opposite sides of the longitudinal center of the vessel, and transverse bulkheads spaced apart and extending from one side of the vessel to the other and intersecting the longitudinal bulkheads to form outside and middle compartments in the hull. Doors lead from the outside compartments to the middle compartments between the bulkheads. Alined hatches for each set of compartments are located adjacent to one another in a transverse direction.

**WAGON-BOX.**—THOMAS FORSTNER, Sigel, Minn. This collapsible wagon-box consists of bottom boards having interlocking connection; side boards adapted to rest upon the outermost bottom boards; and guides for the side boards, limiting their inward movement. A clamp consisting of a bottom member extends beneath the bottom boards and upwardly at the outside of the side boards. Each upper member of the clamp is provided with a bent locking bar journaled therein and adapted to engage the inner surfaces of the side boards when turned down.

**VEHICLE-STANDARD.**—JOHN F. COOK, Leon, Iowa. The standard is provided with a socket formed with a base adapted to rest on the top of a bolster. A depending flange integral with the base is adapted to engage the sides and ends of the bolster. Strengthening ribs integrally connect the base with the socket. An upright or stake is removably placed in the socket.

**SAWMILL-DOG.**—ALBERT D. LANE, Montpelier, Vt. The object of this invention is to provide a dog for holding timber upon the carriage so that the stick may be cut down to a very narrow thickness. The dog may be disengaged by the attendant without approaching the saw and without marring the last board. The dog slides on a guide and has two teeth disposed longitudinally of the carriage. One of the teeth is sharpened and the other blunted, the sharpened tooth being the longer. The dog is received by a vertical guide movable across the carriage.

**PLACKET-FASTENER.**—MARGARET B. MILLER, Malone, N. Y. This placket-fastener comprises two resilient members jointed together at their lower ends and having at their upper ends, one a clasp-hook opening toward its opposing member, and the other an elastic pad completely inclosing it and adapted to be received into and frictionally held by the clasp-hook.

**CARTRIDGE.**—JOSEF MUTHERR, Nuremberg, Germany. The cartridge patented by this inventor is designed to have only a priming powder, such as is used in Robert ball-caps. The cartridge is formed with a shoulder and in its base, powder is filled. A disk bears on the powder. A bar located in the cartridge extends transversely thereto and has its ends bearing on the shoulder whereby the bar is held in place. The bar

bears on the disk and forms an anvil on which the charge is fired.

**CYLINDRICAL, BALANCED GATE-VALVE.**—THERON A. NOBLE, Seattle, Wash. Within the reduced inlet end of a cylindrical valve-casing, a valve-seat fits with its cylindrical inlet portion: the seat is formed at its lower end with a flange so that it may be secured to the casing. The valve-seat extends directly up into the casing and is formed with two annular valve-seats on which a cylindrical gate-valve can be seated. The gate-valve is located directly above and in alignment with the inlet-opening of the valve-casing. The valve can be raised and lowered.

**SIPHON DELIVERY DEVICE FOR LIQUIDS.**—FRIEDRICH L. A. RIEMANN, Altona, Germany. Hitherto it has been the practice in drawing off liquids by siphoning to start the flow by suction through the mouth—a dangerous practice with corrosive liquids. The inventor overcomes this objection by providing the legs of his siphon with suction-devices consisting each of a stuffing box screwed into a cap, and of a rod provided with a piston.

**UMBRELLA-ATTACHMENT.**—FRANK SEARLE, Ennis, Mont. The umbrella of this inventor is so constructed that when removed by the wind from the hand it will be closed by the action of the handle or canopy in coming into contact with an object. A rod is mounted to move longitudinally within the stick and connects with a holder carried by the stick, whereby a runner moving on the stick is released. A cap on the stick is mounted to move freely on the stick, and by its means the rod releases the holder to close the umbrella, when the cap has struck the ground.

**CRUTCH.**—RICHARD SCHWARTZ, Brooklyn, New York city. The foot-section of this crutch is provided with a removable block or plug of yielding material, which block is used as a tip in fair weather. When, however, the ground is slippery, a spur-section may be used as a tip, which spur, when in use, will automatically at each step remove any material which may cling to the section.

**CONSTRUCTION OF ASPHALT PAVEMENTS.**—JOHN L. ADAMS, New York city. The present invention provides a means for laying an asphalt pavement capable of withstanding the wear of heavy vehicles better than pavements laid in the usual manner. The pavement is so constructed that it can be taken up in blocks and relaid. A novel anchoring device is provided which tends to hold the blocks in position and to prevent their being forced up at the sides or ends.

## Designs.

**CORN-CAKE.**—GEORGE H. CROSS, St. Johnsbury, Vt. The design provides a corn-cake having a flat base and a semicircular upper surface.

**COMBINATION SQUARE.**—BURNSIDE E. SAWYER, Fitchburg, Mass. The chief characteristic of this square is found in a web having a circular central opening, the edge of the web around the opening being raised.

**CAP FOR TEETH.**—ALLEN W. SMITH and HENRY McDOWELL, Parkville, Brooklyn, New York city. These inventors have devised a gilt tooth which can be slipped over an eye-tooth so that the eye-tooth shall have the appearance of being made of gold.

**PUZZLE-BOX.**—CHARLES J. STABERG, Brooklyn, New York city. This design consists of a box having an entrance door, and the figure of a pawnbroker behind a counter painted on the bottom of the box. Any small object can readily be made to pass the door by manipulating the box. Once in the box, it is most difficult to remove the object by means of the door, and therein consists the puzzle.

**FABRIC.**—WILLIAM H. MAYER, New York city. The leading features of this design consist of fanciful flowers formed with leaves radiating from common centers representing clusters of elliptically-shaped leaves at an angle to the radial leaves.

**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.

## NEW BOOKS, ETC.

**WHAT SHALL OUR BOYS DO FOR A LIVING?** By Charles F. Wingate. New York: The Doubleday & McClure Company. 1898. Pp. 287. Price \$1.

At the present time this is a most pertinent question, and a question we are often asked and which is most difficult to answer. Mr. Wingate, who is well known as an expert in his line, has written interestingly of the inclination, qualifications, physical equipments, moral training, and overwork in children; public or private schools, what to read, the country boy, the city boy, learning a trade, college education, journalism, legal profession, the art of public speaking, medicine, engineering profession, business, etc. While it is not likely that any one person is able to speak in a qualified manner of all the professions named, at the same time there are many generalities concerning them which parents always wish to know and which are very difficult to obtain, and to such persons this book is admirably adapted. We have not seen any book in a long time which compares even remotely with it. Books of this kind are too often written by theorists and moralists who have had no practical experience whatever in the great world.

**FLASHLIGHTS ON NATURE.** By Grant Allen. Illustrated by Frederick Enock. New York: Doubleday & McClure Company. 1898. Pp. 312. Price \$1.50.

The author has a large range of activity, which varies from European guides to curious articles on Italian painting, and from interesting articles on natural history to theological questions. In the present volume, at any rate, the author is certainly at home. The chapters dealing with "Cows that Ants Milk," "Plant that Melts Ice," "A Woodland Tragedy," "Marriage Among the Clovers," "Those Horrid Earwigs," "First Paper Maker," "Abiding Cities," "A Frozen World," "British Bloodsuckers," "A Very Intelligent Plant," "Foreign Invasion of England," are excellent and interesting con-

tributions to natural history, and we can heartily recommend the book. The illustrations of Mr. Enock are the best we have ever seen of natural history subjects. He has often watched for twelve hours at a time to observe some rare chrysalis at the exact moment of bursting, and his drawings, made under the microscope, constitute a pictorial series of unusual value.

**COMPRESSED AIR PRODUCTION, OR THE THEORY AND PRACTICE OF AIR COMPRESSION.** By W. L. Saunders. New York: Published by Compressed Air. 1898. Pp. 58. Price \$1.

These articles have been reproduced from the paper called Compressed Air. The book is filled with illustrations, diagrams and tables, and will doubtless prove of value to those who are interested in the use of compressed air.

**SKETCH OF THE EVOLUTION OF OUR NATIVE FRUITS.** By L. H. Bailey. New York: The Macmillan Company. London: Macmillan & Company, Limited. 1898. Pp. 472. Price \$2.

The tasteful volume before us is a most interesting one and the subject is treated in an entirely new manner. It attempts to expound the progress of evolution in objects which are familiar and which have not yet been greatly modified by man; it is an effort to make a simple historical record from unexplored fields; and desires to suggest the treasures of experience in a narrative which are a part of the developments of agriculture and from which the explorer must one day bring material for history and inspiration for story. It is ten years since these studies were begun. Some of the material has been published in our Agricultural Department Bulletins and also in different journals. The prosecution of these studies has demanded the consultation of original sources of information, which has required much travel on the part of the author, including visits to European herbaria. The book may also be termed a contribution to the study of evolution in plants. Prof. Bailey is to be congratulated upon the satisfactory completion of an excellent work, both from a literary and scientific standpoint.

**MAGNETS AND ELECTRIC CURRENTS. An Elementary Treatise for the Use of Electrical Artisans and Science Teachers.** By J. A. Fleming. London: E. & F. N. Spon, Limited. New York: Spon & Chamberlain. 1898. Pp. 408. Price \$3.

Prof. Fleming is a well known English authority on electrical matters, so that a work from his pen is of more than usual interest. A number of years ago the author published a reprint of a course of lectures under the title of "Short Lectures to Electrical Artisans." This book ran through many editions, and owing to the progress in electrical science, an entirely new edition has been required and the present volume may be considered to take the place of it. The chapters deal with magnets, force of magnetic flux, electric currents, electromotive force, the measurement of electric currents, electro-magnets, inductions, alternating currents, electrical measuring instruments, the generation of electrical currents. Mathematics have been very carefully avoided in this book, and the work cannot fail to have a large circulation among students interested in electricity. It is illustrated by some 135 engravings.

**TOPOGRAPHICAL SURVEYING. Including Topographical Surveying.** By George J. Specht. New Methods in Topographical Surveying. By Prof. A. S. Hardy. Geometry of Position Applied to Surveying. By John B. McMaster. Co-ordinate Surveying. By Henry F. Walling. Second Edition, revised. New York: D. Van Nostrand Company. 1898. Pp. 210. Price 50 cents.

The essays republished in this volume have already won the approval of practical surveyors, having appeared as original contributions in The Engineering Magazine. This book is issued in answer to an increasing demand for a good guide to modern methods of surveying areas, and the articles were brought together to form a single volume. The methods of surveying described in this little volume are according to the latest practice of topographical engineers. As it is issued at such a low figure, and in view of the excellence of its contents, there is no doubt that it will command a large sale.

**MATTER, ENERGY, FORCE, AND WORK.** By Silas W. Holman. New York: Macmillan Company. 1898. Pp. 257. 12mo. Price \$2.50.

The author is the Emeritus Professor of Physics in the Massachusetts Institute of Technology. The purpose of this book is to present a fundamental review of four of the chief concepts of physics which shall be helpful to students and teachers of natural science as well as to many who have less direct concern in them. The attempt is made to lead up to the concept in a plain and logical way, and thus to arrive at a set of definitions which shall be at once clear and distinct. The author has acquitted himself of this difficult task with great credit. We have rarely seen a more clear and lucid explanation in any of the concepts of modern science. Comment is made on the various current definitions, but the book is constructive in spirit, not critical, and it is the more valuable on this account.

**SOAPS. A Practical Manual of the Manufacture of Domestic, Toilet, and Other Soaps.** By George H. Hurst. Illustrated with 66 engravings. London: Scott, Greenwood & Company. 1898. Pp. 385. Price \$5.

It has been some little time since a new work upon soap-making has appeared. The present volume appears to be much more modern and up to date than any of the others with which we are acquainted. It is a practical work by a practical man. Especial attention is given to machinery and processes of soap-making rather than to formulas. This is what is needed, as the formulas are far more readily obtainable than information regarding the method of using the same. The book is well illustrated by engravings showing machinery used in soap-making according to English practice.