

RECENTLY PATENTED INVENTIONS.

Engineering.

GAS OR VAPOR ENGINE.—Eugene P. Woillard, Sugden, Fla. According to this invention an explosive engine is provided having high pressure cylinders with reciprocating pistons, a low pressure cylinder with a piston rigidly connected to one of the high pressure pistons, the working chambers of the low pressure cylinder and the corresponding high pressure cylinder being between the respective pistons, and the exhaust from the high pressure cylinders discharging into the low pressure cylinder. It is designed to utilize the motive agent expansively to the fullest advantage in a double acting tandem engine having a high pressure impulse in one direction and a low pressure or compound expansion impulse in the other direction, so that every stroke is a working stroke.

STEAM BOILER.—John B. Fleming, Frisco, Utah. Two horizontal shells, with a furnace beneath each, according to this invention, are supplied with feed water from a feed water heating and purifying shell located above and between the boiler shells, there being fire tubes in the heating and purifying shell, and the water being thrown from a pump into this shell in the form of a spray to cause the separation of its impurities. Blow-out pipes are provided for removing sediment or scum from the heating and purifying shell, and when it is not necessary to heat and purify the feed water, the shell may be conveniently cut out of operation by valves provided for such purpose.

DRIVE WHEEL BRAKE RELEASE.—Walter O. Pelham, Denison, Texas. This is an improvement on a former invention of the same inventor, and provides an automatic valve mechanism arranged in the brake pipe and connected with a pipe leading to the locomotive steam chest, the mechanism having a valve adapted to establish communication between the brake pipe and the outer air. The improvement is applicable to air, steam, or vacuum brake systems, the brakes being instantly released at the time the train is in motion and before the braked drive wheels are on the point of sliding on the rails, or before the triple valve acts to release the brakes.

VALVE.—George W. Graffin, Allentown, Pa. A valve adapted to make a tight closure, and so constructed as to permit of conveniently repairing the working parts without dispensing with the services of the valve, has been devised by this inventor. The improvement comprises a valve casing having inlet and outlet and valve seat at the inlet, two valves properly mounted in the casing and adapted to be seated on the valve seat, guideways in which the valves loosely slide, extending from one end of the casing to the other, a slidable stem for each valve and a ball and socket joint for connecting each valve with its valve stem, while a movable abutment in the casing is adapted to be engaged by either of the valves.

Railway Appliances.

CAR AXLE LUBRICATOR.—James S. Patten, Baltimore, Md. This is a device adapted for ready insertion in a car axle box and removable therefrom, and comprises a plate spring of novel construction adapted to support at its rear end a dust guard at the rear end of the box and a wiper bearing on the under side of the axle, the spring also supporting on its central portion a roller which bears upon the axle while its lower edge is always immersed in the oil. The spring is of nearly the same width as the oil chamber, and its front end is bent up to form a hood, preventing oil from reaching the axle box lid. The spring in position normally serves as an oil baffle, in addition to its other functions, but is sufficiently flexible to be readily removed, with its attachments, from the axle box.

RAILWAY TRACK SLEEPER THREAD CUTTER.—Albert Collet, Paris, France. A boring tool devised by this inventor is more particularly intended for screw cutting the holes already made in railway sleepers for fastening screws, although it may be employed for screw cutting cylindrical holes in wood generally. The tool has a cylindrical cavity and an exterior thread, and a removable cutting part is dovetailed into its body and held in place by a metal strap. The tool has a longitudinal hole opening at both ends and a transverse hole for the escape of the chips.

Electrical.

WATER REGISTERING DEVICE.—Samuel J. Evans, Elkhorn, West Va. For indicating and registering the height of water in a tank or similar receptacle, this inventor has constructed a device wherein an electric circuit is closed by means of a float controlled by the water in the tank, a registering mechanism being also operated accordingly at any convenient point. The mechanism is also designed to sound a high and low water alarm, the pointer of the registering device indicating on a dial the raising and lowering of the water in the tank or reservoir by successive steps.

IGNITER FOR GAS ENGINES.—Harry S. Dosh, Baltimore, Md. An igniter designed to operate successfully and with certainty and uniformity with a single battery cell has been devised by this inventor. It comprises two electrodes having their ends formed as extended plates, and means for suddenly separating the plates, which lie sufficiently close together to cause by their separation a rarefaction of the gaseous medium between them. The invention thus affords a means of creating in the gas cylinder a partial vacuum or reduced pressure between the spark electrodes and simultaneously transmits through this more tenuous medium of gas and air the electric spark, which permits the use of a very weak battery of a single cell.

ELECTRIC RAILWAY SYSTEM.—Lawrence K. Devlin, Havre, Montana. This invention is for an improvement in systems where the trolley is adapted to run on a sectional contact rail, in a slotted conduit, and normally out of electrical communication with the feed wire, the sections of the contact rail being put in communication with the feed wire by contact devices actuated by the movement of the car. One of the track rails forms one side of the conduit wherein the trolley of

the motor car travels, an inclined slotted rail forming the other side of the conduit, which is slotted at its top and open at its bottom. Track boxes are inserted at suitable intervals between the ends of the slot rail sections, and pivoted projecting levers are connected to the adjacent ends of the respective contact rail sections.

Bicycles, Etc.

MECHANICAL MOTOR FOR BICYCLES, ETC.—Charles P. Labatt, Los Angeles, Cal. A novel foot power device has been devised by this inventor, according to which the driving gear comprises sliding pedal levers in connection with a guide box having a longitudinally extending partition forming two raceways, there being a pivoted spring-pressed tongue at each end of the partition and a stud projecting from the levers and alternately moving through the raceways. The levers have geared connection with the rear traction wheel, and the improvement is also designed to facilitate the driving of small stationary machines of different kinds.

ELECTRIC BICYCLE LAMP.—Malcolm P. Ryder, Westfield, N. J. This invention provides a peculiarly constructed electric generator connected with an incandescent lamp by a novel current collector, the generator being actuated from the tire of the wheel, and being supported to rock on projections from the frame. The current transmitter comprises an elastic-limbed brush held in an insulating holder block by a central screw and a nut held from turning by the flanges of the holder block, the brush having enforced contact with a current collector ring forming part of the generator. The improvement is also adapted for use on vehicles other than bicycles.

Mining, Etc.

CONCENTRATOR AND AMALGAMATOR.—Angus McKellar, Salt Lake City, Utah. To sift fine flour or flake gold from placer gravel, a contracted pan or basin, according to this invention, receives the material from a screening surface, and a hopper beneath takes the material from the pan, while a cylinder with mercury in its bottom is connected by a pipe with the hopper. A valve in the lower portion of the cylinder is connected with a pipe through which the mercury and the material it carries may be withdrawn from the valve casing. The machine is of simple, durable and inexpensive construction, and is designed to automatically and thoroughly remove from the screen and deliver outside of the machine all coarse material.

Mechanical.

MECHANICAL MOVEMENT.—Julius Manigold, Dexter, N. Y. A movable stool and a swinging hand lever are, according to this invention, both mounted on certain means by which the motion from the stool and lever are synchronized and regularly transmitted from the apparatus to a rotary crank shaft or other device to which motion is to be imparted. One seated on the stool grasps a hand pin passing through a lever, and, bearing on the pedals, rocks back and forth, causing the stem on which the seat is mounted to reciprocate vertically and horizontal levers to rock. The power is applied at three points—at the stool, at the pin, and on the pedals, and these several movements act on a lever and link.

Agricultural.

HAY RAKE.—Benjamin Mellinger, Topeka, Kansas. In a horse hay rake this invention provides guards for the ends of the rake to prevent the hay gathered from being spilled at the ends of the row of teeth, a cleaning device being also provided for the teeth, operating in connection with a lever to raise the teeth. The guard comprises a shield formed of adjustable sections attached to and projecting rearwardly from the rake head, spring teeth being rearwardly and downwardly curved from the shield over the space between the end rake teeth and the forward portion of the rake head. A substantially straight and rigid tooth is located at the forward end of the shield.

CHURN.—Jakob Widder, New York City. Within the cylindrical casing or body of this churn is a fixed hollow cone at the top, between which and another similar cone at the bottom of the casing the dasher is reciprocated, the dasher also being conical and perforated. The dasher rod is surrounded at its upper end by a helical spring, so that the dasher is normally held up within the upper cone. As the dasher is reciprocated, the cream is violently compressed between the cones and forced through the perforations of the dasher as so many streams or currents, causing the quick formation of butter.

Miscellaneous.

BRICK DIE.—Clarence M. Steele, Statesville, N. C. A die designed to form the greatest variety of lays with the least friction is afforded by this invention, the die having polished metal surfaces through which the clay is forced, forming it into bars for making brick. The die is composed of two die sections, a partition and a cylindrical shell or casing, the latter having a steam inlet and an outlet, with valves controlling the supply of lubricant. The circular shell bears all the outward strain upon the dies, and the several parts may be easily dressed out and polished, and securely put together with only two bolts and cap screws.

BRISTLE WASHING MACHINE.—Charles E. Tyler and James Dempster, Halifax, Canada. To clean a large number of bundles of bristles simultaneously and to permit of removing a washed bundle of bristles and replacing it by an unwashed bundle during the washing operation, this machine is made with a reciprocating comb and a disk capable of movement over the comb, and adapted to carry the bristles and bring them into the path of the comb teeth. The comb is mounted to slide on the bottom of a liquid receptacle, and the comb teeth pass in every direction through the bristles in each bundle.

PISTON FAUCET.—Edwin R. Greene, Providence, R. I. A faucet for drawing beer, ale, etc., and arranged to prevent a large amount of liquid from

standing in the faucet, has been devised by this inventor. The faucet barrel is made with a cap inclosing its outer end, the cap having an inwardly extending cup-shaped bearing through which the piston rod extends to the inner end of the faucet barrel. A collar near the outer end of the rod rests against the cup-shaped bearing when the piston is flush with the inner end of the barrel, the barrel of the faucet being then completely emptied when the faucet is closed.

POCKET KNIFE.—Alexander Normand, Klerksdorp, South African Republic. This knife has interchangeable blades to permit the user to readily and quickly remove one blade and substitute another, or to place in the handle a tool particularly adapted for the work in hand. The handle has two pivots especially adapted to facilitate making changes of blades or the insertion of a tool, one of the small tools provided for use with the knife having an adjustable wrench head.

BOOK SUPPORTER.—Henry L. Pinney and Franklin Lenzner, Cass City, Mich. A device for supporting books which may be attached to arm chairs without marring them, and adjusted to different heights, positions or angles, consists, according to this invention, of an adjustable pivoted arm which carries a board for the support of a book, with means for adjusting it to any angle, and a leaf holder consisting of wires pivoted near the upper edge of the board. The device may be conveniently swung in or out, closer to or further away from the reader, and will hold the book from an almost flat to a nearly vertical position.

HARNESS SHAFT TUG.—William Fawcett, Brooklyn, N. Y. The frame of this tug is formed of a single piece of metal, curved at its lower portion to form a shaft support and bent over with a loop and pin, there being an adjacent loop to engage the belly band. The inner portion of the frame forms a buckle, with two pins, one above the other, one of which engages a movable tongue. The tug can be very cheaply manufactured and is quickly attached to the saddle strap of the harness.

DRESS SKIRT LIFTER.—Esther Manning, No. 273 Seventh Avenue, New York City. This simple device enables a woman to elevate the bottom of her dress skirt at all points, where others have been made to lift the rear portion only of the skirt. The device consists of tapes extended one from each breadth seam of the skirt and extended through guide rings along the seams and terminating in two tapes which are projected through the placket, whereby the several tapes may be simultaneously drawn to lift the bottom of the skirt. The device has met with ready sale—a fact which proves its utility.

MEAT SHAVER.—Caleb R. Turner, Brooklyn, N. Y. To facilitate the shaving or slicing of meat in a neat and expeditious manner, this inventor has perfected a device of simple and durable construction, arranged to properly feed the meat to the slicing or shaving knife, and permit the operator to regulate the feed for thinner or thicker slices. It has an L-shaped trough to receive the meat, and a standard at the front end carrying a pivot for a knife frame to be swung by a handle to draw the cutting edge of a segmental knife across the meat, a longitudinal carrier or pusher moving the meat forward bodily or pushing it in the trough toward the knife. By the shifting of a nut, less or more feed may be given to the carrier, and a gate at the front end of the trough protects the operator from getting his fingers under the knife.

COVER FOR WASHTUBS, ETC.—Mark Delaney, Union Hill, N. J. This cover is preferably made of five parts, two cleats or side bars, two leaves having each a longitudinal groove in its inner side edge, these grooves receiving, when the leaves are brought together, a central lag screw or connecting bar for the side bars or cleats. Tongues on the end portions of the leaves fit in grooves on the inner side edges of the cleats or side bars, and a cover is thus made which is adapted to withstand to a maximum degree the effects of steam, dampness and water without warping.

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.

THE ENTROPY TEMPERATURE ANALYSIS OF STEAM ENGINE EFFICIENCIES. With a blank diagram arranged for easy application to any concrete case. Prepared by Sidney A. Reeve. 1897. New York: Progressive Age Publishing Company. Pp. 20. Price \$1.

A work of twenty octavo pages devoted to an explanation and mathematical analysis of engine efficiency on the lines of heat energy as representative in the Carnot cycle. The diagrammatic display of the details of engine efficiency so gratifying to the eye is made the principal object in the illustrations in the booklet and the full working chart of volume and temperature curves accompanying the work. A schedule blank is also detailed on the diagram sheet in the order of observation and as a guide to uniformity in the work of engine testing. An excellent study sheet for expert work.

THE AERONAUTICAL ANNUAL, 1897. Devoted to the encouragement of experiment with aerial machines, and to the advancement of the science of aerodynamics. Edited by James Means. Boston, Mass.: W. B. Clarke & Company. Pp. 178. 8vo. Paper. Price \$1.

The Aeronautical Annual is always a welcome visitor, and the third volume of this really important publication surpasses in interest those which have preceded it. It is got up in the same handsome style and is profusely illustrated. The contributors include Dr. S. P. Langley, Octave Chanute, Otto Lilienthal, Hiram S. Maxim and others. The progress in aeronautics in 1896 was very marked, the development being chiefly along three lines: first, the development of the self-propelled aerodrome; second, the development of the motorless air sailer; third, the development of the motor. Each of these de-

partments has now a well defined point of vantage which is accessible to every intelligent experimenter who is inclined to carefully study the ground already traversed, so as to thoroughly understand the results reached. Among the interesting articles in the present number are "The Aerodrome in Flight," "Recent Experiments in Gliding Flight," "The Best Ship for Wings," "The Way of an Eagle in the Air," "Screw Propellers Working in Air," "Blue Hill Measurements of the Velocity of Flying Ducks," etc., and biographical notices of Samuel Pierpont Langley, Ph.D., LL.D., D.C.L., and Otto Lilienthal.

THE STEAM ENGINE CATECHISM. A series of direct practical answers to direct practical questions, mainly intended for young engineers and for examination questions. By Robert Grinshaw. Eleventh edition. New York: Norman W. Henley & Company. 1897. Pp. 194, 219. Price \$2.

This work is now in its eleventh edition, which is a satisfactory indication of the value with which the book is held. The popular question and answer form is retained, and the questions are answered in a remarkably lucid manner. The tables of calculations are very clear. The work is provided with an excellent index.

ARCHITECTURAL DRAWING FOR MECHANICS. By I. P. Hicks. A comprehensive treatise on architectural drawing for building mechanics, showing the learner how to proceed step by step in every detail of the work. New York: David Williams. 1897. Pp. 94. Price \$1.

This is a comprehensive treatise on architectural drawing for building mechanics, showing the learner how to proceed step by step in every detail of the work. Even a superficial examination of this work will satisfy the reader that it is written by one who thoroughly understands the needs of the beginner in architectural drawing, and especially the building mechanic. It is not intended for architects proper, but it is for the use of builders and those who execute the designs of architects. The popularity with which the author's other work, entitled "Builders' Guide," has been received has brought many letters of inquiry, which have been convincing proofs of the wants and needs of the mechanic for a work of the kind on architectural drawing. It can be commended most warmly.

THE INDUCTION COIL IN PRACTICAL WORK, INCLUDING ROENTGEN X RAYS. By Lewis Wright. London: Macmillan & Company, Limited. New York: The Macmillan Company. 1897. Pp. 172. Price \$1.25.

A work by such an eminent physicist as the author of "Light" and "Optical Projection" will certainly command attention. It is written simply and solely as a practical help to the efficient and safe use of an induction coil, with especial reference to the extensive use in surgical and physiological work with Roentgen rays. This new field of experiment has brought many into personal contact with coils who have never had any acquaintance with such instruments before. Not a few of such have actually stated their need of such information as it is here attempted to supply, and it is thought that some will like to have an outline of the many experiments in which the induction coil bears a part. The work is illustrated with well selected engravings.

EIGHTEENTH ANNUAL REPORT OF THE MANAGERS OF THE BINGHAMTON STATE HOSPITAL, AT BINGHAMTON, N. Y. For the year ending September 30, 1896. Transmitted to the State Commission in Lunacy. Albany, N. Y. 1897. Pp. 190.

HOUSE PLANTS AND HOW TO SUCCEED WITH THEM. By Lizzie Page Hillhouse. New York: A. T. De la Mure Printing and Publishing Company. Pp. 220. Price \$1.

For dwellers in cities, and especially those who live in flats or apartments, this little book affords a good deal of practical information which will enable the house-keeper to raise and care for many beautiful plants, and give one, even in such limited space, some of the delights of the country and of out of door life. The text is fully illustrated.

EUROPEAN ARCHITECTURE: A HISTORICAL STUDY. By Russell Sturgis. New York: The Macmillan Company. Pp. 578. Price \$4.

Of books on architecture there are many, but of treatises which a reader of good intelligence, not himself an architect, can consult with profit and satisfaction, there are comparatively few, and of these we know of no one so comprehensive, so free from prejudice and narrow ideas, and which discloses such ample knowledge and sound judgment, as this volume of Mr. Sturgis. Historians as careful and learned as Mr. Freeman examine as closely into all distinguishable details of the earliest structures, many of them prehistoric, as they do into the roots of words in all languages, in endeavoring to throw light upon those far-back times in which were planted all over Europe, and particularly in all regions near the Mediterranean, the evidences of races antecedent to, but powerfully affecting, those which came later upon the stage, of whom we have more or less complete authentic data. But it is not every author who has the qualifications to correctly read the ancient landmarks, as they mark the history of the races of the earth; and when the architect seeks to piece them into studies of the origin of different orders of architecture, and thence trace out their later development, one does not have far to go, in most cases, before feeling that he has left the solid ground of established fact and is in an atmosphere of doubt and conjecture. In this work of Mr. Sturgis, however, the prefatory pages on archaic and prehistoric building, and the succeeding chapters on Grecian and Roman architecture, show us, as a connected whole, and more clearly than we have elsewhere seen it set forth, how it is that "somewhere in Grecian lands, about seven hundred years before our era, a beginning of ar-

