

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**DRAINING ENGINE CYLINDERS.**—Clayton A. Dunham, Clarinda, Iowa. An automatic drain for relieving steam engine cylinders of water of condensation, without permitting much escape of steam, is shown by this patent. A pipe is connected at its ends with the ends of the steam cylinder, there being connected with the pipe a piston valve discharging into a drain cup, and the latter having an expansion plug normally open for the escape of water of condensation, and adapted to close by the action of steam. The device also gives immediate escape for an excessive amount of water, should it enter the cylinder from any cause besides mere condensation. The drain is applicable to all classes of reciprocating engines, and is designed to be of great service on elevator pumps and electric light engines, and readily applicable to marine or locomotive engines.

## Railway Appliances.

**CAR SHIFTING DEVICE.**—Thomas C. Anderson, Tarentum, Pa. This is an improvement more especially designed for use in railroad yards, to facilitate making up trains without the use of turntables and the numerous side tracks and switches now employed. A bridge pivoted at one end is mounted to swing horizontally, the bridge having a track connected at the fulcrum end of the bridge with a main track and adapted to connect at its free end with a series of side tracks. The bridge track is connected with the main track by a flexible connection, so that the tracks will be continuous, and the bridge in its movement travels on segmental tracks, the bridge being swung as desired by a continuously traveling cable.

**AUTOMATIC SWITCH.**—William Liekstrom, New York City. For cable and other street railways this invention provides means by which a car of one line may automatically throw the switch at a junction point, and then, after passing over it, automatically throw the switch back again. A shifting lever is connected to the switch, and a spring-held link pivoted to the lever forms one end of a toggle joint acting to hold the lever in either extreme position, while levers pivoted on each side of the switch have each an arm adapted to be placed across a slot in a slotted rail and connected to the switch-operating mechanism. An arm fixed to the car enters the slot and engages the levers to throw the switch.

## Mining, Etc.

**AMALGAMATOR.**—Francis B. Austin, Tempe, Arizona. This invention provides a simple apparatus designed to take up the finer particles or flour of gold in a sluice, the larger particles being amalgamated in a mercury pan. The sluiceway has in its bottom an opening in which is a pan of insulating material with transverse copper plates, some of them extending to the bottom of the pan and others nearly to the bottom, there being a carbon plate in the bottom of the sluiceway above the pan, and the plate being connected with the positive pole of an electric generator, whose negative pole is connected with the mercury in the pan. The plates are easily removed for cleaning them of the amalgam, etc.

## Bicycles, Etc.

**CONVERTIBLE BICYCLE.**—Michael T. Smith, Niles, Mich. A machine which can be readily transformed from a tandem to a single seated bicycle, and vice versa, is provided by this invention, which comprises the construction of the forward tubes of both the front and rear sections in such a manner that the fork can be removed and replaced without disturbing the ball bearings of either section or removing the handles. The front section carries coupling devices adapted to be attached to the rear section, and a supplemental upright tube also adapted for connection with the rear section. Either section is designed to be sold independent of the others, and the front section is adapted to be attached to any of the single seated bicycles of similar construction now in use.

**BICYCLE SPEED INDICATOR.**—Barton W. Scott, San Jose, Cal. That the rider of a bicycle may see at a glance at what rate of speed he is traveling, this inventor has devised a speed indicator which consists of weights mounted to swing and driven by the motion imparted to a friction wheel held in contact with the forward wheel of the bicycle, a mechanism being set in motion by the centrifugal action of the weights to indicate the speed of the vehicle. A pointer on a dial indicates on an outer graduation the speed in minutes and seconds per mile, and on an inner graduation the number of miles per hour traveled is indicated. The device is supported by a suitable clamp from one of the arms of the front fork.

**BICYCLE BRAKE.**—Preston Helmon, Charleston, S. C. A quick acting brake, rendering it possible to make a very short stop, consists, according to this invention, of a curved brake shoe arranged in front of the rear wheel, there being at the top of the shoe a short metal cross bar from which cords extend through guides beneath the saddle to the handle bar. When the cords are released the brake shoe drops to the ground and the rear wheel runs upon and bears against it, or the suddenness of the stop may be regulated by holding the brake by the cords and letting it down gradually.

## Miscellaneous.

**EXPANSIBLE BINDING FOR BOOKS.**—Charles T. Rosenthal, Batesville, Ark. This invention comprises a back made in two parts sliding one on the other, and means to secure or release the leaves by such movement. Binding strips are attached to one of the sliding back members, and a bar carrying a spring is attached to the other ends of the binding strips, a notched bar being attached to the spring at right angles, while a lever pivoted to the book cover has a notched segment engaging the notched bar. The improvement is designed more particularly for use in binding account books, so that one or more sheets may be extracted or

inserted when desired, although the mechanism may be readily employed for binding periodicals.

**BOOK ATTACHMENT.**—Farrand C. Prindle and Clarence E. Yost, Hornellsville, N. Y. This invention relates to books with stub leaves, such as check books, etc., and provides an attachment by which the leaf may be readily blotted and torn out without the usual separate blotters and cutters. It comprises a blotter having at one end a stiff binding forming a cutter, and an elastic lateral connection between the binding and the back of the book, to permit of drawing the cutter to the inner edge of the leaf to be torn out.

**PREVENTING COUNTERFEITING.**—Frederic L. Dietz, Portland, Oregon. To prevent the counterfeiting of negotiable paper, checks, etc., this inventor provides a book of blanks, to be torn from stubs along perforated lines near the top and at one end, and the checks or other negotiable paper having special marks or characters corresponding to marks or characters on a tally sheet to be kept by the bank. The book and the tally sheet are also similarly numbered, so that the teller of a bank may readily refer to the tally sheet on presentation of a check. The book is so bound that a check and its stub cannot be fraudulently removed.

**PICKING CURLED HAIR.**—Edgar Beers, Brooklyn, N. Y. This patent is for a machine to pick the curled hair from the rope and finish it, discharging the finished product as sheets adapted for use by the upholsterer. The rope passes between feed rollers, playing past the bite of which is a reciprocating comb bar carrying teeth inclined to the direction of movement of the bar, the teeth, as they move in one direction, drawing out and loosening the hair, while they clear themselves from the rope when the bar moves in the other direction. It is desirable usually to pass the product twice through the machine, and two machines are preferably arranged to work together, one to work directly on the ropes and the other on the product of the first machine.

**DUMPING WAGON.**—Thomas Hill, Jersey City, N. J. According to this improvement hollow pedestals are attached to the rear ends of the frame sills and also to the axle of the wagon, each pedestal being inclined downward and rearward on its upper side, and each having in such inclined portion a guide slot into which extends a shaft mounted to rotate on the wagon body, the shaft rotating in bearing blocks on the body. After the front end of the body has been raised the body moves downward, with the roller shaft rotating on the inclined portion of the pedestals. The wagon has few parts and is not liable easily to get out of order.

**BEER COOLING DEVICE.**—Conrad Heller, Brooklyn, N. Y. According to this invention, a cooling chamber is placed between the beer barrel and the faucet, the chamber containing a vessel connected at top and bottom to the faucet and the barrel, while the pipes connecting the vessel with the faucet and the barrel are coiled about the cooling vessel before being led away. The cooling vessel and its surrounding coils are placed in the bottom of a small ice box and kept surrounded with ice. The device is intended to insure that all beer drawn at the bar shall be cool, no matter how fast it is drawn, and to do this more economically than by cooling the whole barrel from the outside.

**FILTERING APPARATUS.**—Pierre Droe-shout, Paris, France. For filtering liquids, such as cane juice, etc., this invention provides a longitudinally movable filtering bed, and devices for drawing the liquid through the bed. A heating box is arranged at one end of a frame supporting a series of receivers connected with suction pumps, auxiliary suction devices being connected with the receivers, while a filtering bed in the form of an endless band passes over the heating box and the receivers, the band passing over a fluted roller. The endless band filtering bed passes over a washing tub arranged in the frame, a pipe discharging washing liquid onto the bed, and a suction pump being connected with the washing tub.

**DOOR SECURER.**—Peter Dunwald, Rio, N. Y. This device consists of a V-shaped spring plate, having on one of its members at its outer end saw teeth or serrations projecting rearwardly toward the apex of the plate, while centrally of the leaves of the plate, near the apex, are registering apertures adapted to receive a key. The key engages the inside of the door and part of the casing, when the device is placed between the door and its casing, in closing the door from the inside, and the teeth engage the casing to prevent the door being opened from the outside. The device is very simple and may be conveniently carried by a traveler for use in stopping at hotels, etc.

**NON-REFILLABLE BOTTLE.**—Harry L. Beekman Lee, Albany, N. Y. This invention provides a bottle and stopper which makes the bottle useless after once being emptied, and which is proof against refilling by immersion, pumping or other means. The bottle neck has on its inside inner and outer flanges between which is held a stopper or plug carrying valves and safety devices, and this plug fits snugly in the throat of the neck of the bottle, and when once seated therein is permanently retained, so that it cannot be removed except by breaking the bottle. The valve allows the contents of the bottle to flow out when the bottle is inverted, and closes automatically when the bottle is on its base.

**DISH MOP.**—George W. Taylor, Marblehead, Mass. To facilitate dish washing, this inventor provides a short-handled mop having an inner bunch of threads grouped around the handle, and a fringe having a band of dependent threads, the band encircling and binding the bunch of threads in place on the handle, and the fringe threads extending alongside the bunch threads and being bound thereto.

**SYRINGE.**—Lemuel Hines, Springer, New Mexico. This is a syringe especially designed for injecting medicines into hard and resisting tissues, as the gums, etc., and wherever there is much obstruction to the flow from the needle. Instead of using pressure with the thumb, as in the ordinary syringe, the piston is operated by a screw and is forced forward by turning as a thumb screw, each turn being designed to eject about a minim. By means of a detachable nut on the head

of the barrel, the syringe may be charged as quickly as the ordinary hypodermic syringe, and it may, if desired, be used in the same way, with thumb pressure. The plunger and packing do not rotate with the piston, but only receive the push and pull motion.

**SYRINGE.**—Hermann W. Luer, Paris, France. As a new article of manufacture, this inventor has devised a syringe having no detachable parts, as glands, stuffing boxes, etc., and which may readily be kept perfectly clean and antiseptic. It comprises a glass cylinder or barrel, with reduced outlet end and an annular flange at the other end, while operating in the cylinder is a glass plunger whose body portion is practically as long as the cylinder, the interior of the cylinder and the exterior of the plunger throughout their length being ground, and making a practically air and liquid tight connection between the plunger and barrel.

**SPRING GUN.**—Charles Harold, New York City. This is a toy gun or pistol having a stop extending within the barrel and operated by the trigger. The barrel has a slot in each side, and an ejecting device consisting of springs at each side, having their ends connected, one connection being made with the muzzle end of the barrel and the other with the end of the ejecting device arranged to travel in the slots of the barrel, and for engagement with the trigger.

## Designs.

**TILE.**—Arthur H. Bonnell, Brooklyn, N. Y. This is a tile with edges alternately concave and convex, the radii being approximately alike and the segments of the convex portions having a common center. There are three convex and three concave edge portions on each tile.

**SPOON.**—Celestin G. Tingry, Portland, Oregon. The handle portion of this spoon at its outer end represents an elk's tusk or tooth, and adjacent thereto is a clock dial, the hands pointing to "11," while in the bowl is shown an elk in the act of drinking.

**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 DARJEELING HIMALAYAN RAILWAY.** Illustrated guide for tourists. First edition. London: MacGibbon, Dale & Company, Limited. 1896. Pp. 46.

This pamphlet gives some interesting illustrations of the trains on the Darjeeling Himalayan Railway, showing the bridges, the path through the trackless forest, the interesting slopes and the vegetation which is to be found in this strange part of the world. The pamphlet is very handsomely got up.

**STEPHENSON'S ILLUSTRATED PRACTICAL TEST, EXAMINATION AND READY REFERENCE BOOK.** For stationary, locomotive and marine engineers, firemen, electricians and machinists to procure steam engineer's license, also working chart for setting out the forms of gear teeth so that any two wheels of a set may work together. Chicago: Laird & Lee. 1896. Pp. 128. Price \$1.

This is a manual intended to enable engineers to obtain licenses. Like many other works on the same subject, it is arranged in the form of questions and answers. The diagrams of dissected pumps are excellent.

**WIRING TABLES AND HOW TO USE THEM.** By Thomas G. Grier, Chicago. Pp. 75. Price \$1.

This is a book designed to facilitate the work of electricians, the calculations made in the tables covering the demands usually arising in practical wiring when it is necessary to determine the sizes of wires for the distribution of electricity. The book has a chapter on electro-motive force and current and one on methods of wiring, besides its numerous tables.

**CARPENTRY AND BUILDING.** Series No. 1. Cottage designs, with constructive details by various architects. A practical book for builders and those intending to build. A series of twenty-five designs of cottages, most of which have already been erected, ranging in cost from \$600 to \$1,500, together with the details of interior and exterior finish, all drawn to convenient scale, and accompanied by brief specifications. New York: David Williams. Price \$1.

**SULLA PROPAGAZIONE DELL'ELETTRICITA' NEI GAS ATTRAVERSATI DAI RAGGI DI RONTGEN.** Memoria del Professor Augusto Righi. Bologna: Tipografia Gamberini E. Parmegiani. 1896. Pp. 73.

This book, which is a treatise on Roentgen ray phenomena, is to be accepted as a welcome contribution from Italy, a country now very active in scientific matters, especially in those touching on electricity.

**METALLURGY OF CAST IRON.** A complete exposition of the processes involved in its treatment, chemically and physically, from the blast furnace through the foundry to the testing machine. Cleveland, Ohio: By Thomas D. West. Fully illustrated, first edition. 1897. Pp. x, 573. Price \$3.

This capital work at last gives American practice in blast furnaces and cupola work. Our space is entirely inadequate to review it. We can simply state that it seems fully practical, very exhaustive and is very fully illustrated. An interesting chapter is given at the end called "A Hundred Items to be Remembered." These items are given in so trenchant a form as to form a

capital feature of the work, covering, as the author states, broad experience, extensive research and careful conclusions. A very systematically and excellently arranged index is not the least feature of its merits.

**THE OPTICAL DIRECTORY FOR THE YEAR 1897.** Being a list of all manufacturers and dealers in optical goods in the United States. Frederick Boger, Maiden Lane, New York City. Pp. 95. Price \$1.

**ELEKTRICITAT DIREKT AUS KOHLE.** Von Etienne de Fodor. Wien, Pest, Leipzig: A. Hartleben's Verlag. 1897. Pp. x, 304. Price \$1.20.

Electricity direct from coal would seem hardly a sufficient subject for a treatise of this length, but it is evident that a considerable amount of work has been done on this subject, which now may rank almost as the ignis fatuus of the electrical inventor. It really seems surprising that enough has been done to lead to so exhaustive and well thought out a treatise as the following one, the list of names alone occupying an index form of two pages. We think a perusal of the book would be useful to all prospective inventors.

**LABORATORY PRACTICE FOR BEGINNERS IN BOTANY.** By William A. Setchell. New York: The Macmillan Company. London: Macmillan & Company, Limited. 1897. Pp. xiv, 199. Price 90 cents.

This excellent text book attempts a somewhat difficult task—the production of a systematic laboratory course in botany. It is precisely by reduction of study to a system that a pupil is often rescued from a slough of despond and made to feel inspiration, with the skeletons given him on which to build up what he has acquired. Its 199 pages of laboratory practice are varied by a very full series of appendices, which latter really form an integral portion of the work. A very exhaustive index, some 15 pages in length, is an excellent example of what the index to a scientific book should be and adds very largely to the value of the work.

**BEARINGS AND LUBRICATION.** A handbook for every user of machinery. By A. J. Wallis Taylor, C.E. New York: D. Van Nostrand Company. Pp. viii, 208. Price \$1.50.

This work is very complete. It treats on a most important subject, one which has received in the past very little attention from engineers. If an engineer has plenty of steam, he is apt not to care how badly packed is his stuffing box; and as long as his bearings do not hammer, the friction too often is something which he never thinks about. Such books as the one in review are of special importance as calling the engineer's attention to the logical treatment of wasted energy with a view to its reduction to a minimum. The work has an adequate index and is finely illustrated.

**ANNALS OF THE ASTRONOMICAL OBSERVATORY OF HARVARD COLLEGE.** Vol. XXXVI, Journal of the zone observations of stars observed with the meridian circle during the years 1875 to 1885, under the direction of Joseph Winlock and Edward C. Pickering, successive directors of the observatory. By William A. Rogers. Printed from funds resulting from the will of Josiah Quincy, Jr. Waterville, Me.: Printed at the office of the Waterville Mail. 1896. Pp. 299.

**ANNALS OF THE ASTRONOMICAL OBSERVATORY OF HARVARD COLLEGE.** Vol. XXVIII, Part I. Spectra of bright stars photographed with the 11 inch Draper telescope, as a part of the Henry Draper memorial, and discussed by Antonia C. Maury, under the direction of Edward C. Pickering, director of the observatory. Cambridge: John Wilson & Son, University Press. 1897. Pp. 128.

**GUIDE DE POCHE.** Franco-American Illustré des Etats Unis. 1897. Pp. 267. Price 50 cents.

This guide book to America would seem adapted to be of considerable use to the French visiting America. The attempt to cover the United States in so small a book, however, seems to be a somewhat daring one. It is largely made up of addresses of French-speaking persons or firms in different cities, and may be, in spite of its somewhat limited size, quite comprehensive.

**POPULAR SCIENTIFIC LECTURES.** By Ernst Mach. Translated by Thomas J. McCormack. With forty-five cuts and diagrams. Chicago: The Open Court Publishing Company. 1896. Pp. 313. Price 35 cents.

In these lectures quite a number of subjects are considered, largely in physics, mechanics and physiology. The lecture on the "Conservation of Energy," although a subject which seems rather a trite one at the present day, is really quite interesting from the number of historical data embodied, and because of its tracing the development of the doctrine from the earliest days of modern physics.

**THE EVOLUTION OF AUTOMATIC MACHINERY.** As Applied to the Manufacture of Watches at Waltham, Mass., by the American Waltham Watch Company. By E. A. March. With half tone illustrations. Chicago: George K. Hazlitt & Company. 1896. Pp. 150. Price \$2.

The American watch is the production of automatic machinery, and the title page of this book indicates its contents sufficiently to make it evident how interesting it would be to those interested in the latest developments in the manufacturer's art as applied to the watch. The finest products of the automatic system of watch making