RECENTLY PATENTED INVENTIONS.

Engineering.

STEAM ENGINE PISTON.—Charles G. Evans, Union, Canada. To prevent all leakage of steam past the piston packing and lessen the friction of the packing rings on the cylinder wall is the object of this invention, according to which the piston is provided with a device for expanding and releasing each of the packing rings, followers on each face of the piston being fitted to slide longitudinally and being rigidly connected with each other, the follower on one side being rigidly connected with the expansion and releasing device on the other side, while a device limits the sliding motion of each follower.

MARINE VESSEL.—Gil Espina, Caracas, Venezuela. Hinged centrally to the bottom of the hull of this vessel is a keel adapted to swing laterally when the vessel rolls, there being operatively connected to the swinging keel a transverse walking beam arranged to swing vertically, and this walking beam actuating a propelling mechanism comprising two swinging paddle frames at the sides of the vessel, transverse paddles being pivoted to the frames. The vessel is also provided with masts and sails, and the keel may be raised laterally and held in horizontal position, as may be necessary in passing over bars and other shallow places.

Railway Appliances.

FLUID PRESSURE BRAKE.—Herbert S. Smith, San Jose, Cal. This is a device of simple construction, entirely dispensing with the triple valve, and enabling the engineer to release the whole or any portion of the fluid in the train pipe while still having the initial force to apply the brakes, for which the live fluid in the auxiliary reservoir is used over and over again, the permanent charge in the auxiliary reservoir retaining its initial pressure. The brakes are automatically applied in case the train breaks in part, and the engineer has full control for releasing any portion of the brake force he may desire, retaining sufficient pressure to regulate his rate of speed without the use of the retaining pressure valve attached to the triple valve now generally in use. The hissing sound heard on releasing brakes of the present systems is also avoided, there being no discharge of air under the car.

Electrical.

TROLLEY.—George K. Shryock, Johnstown, Pa. According to this invention two arched spring arms extend up from the ends of the car, making a telescopic connection at the top, whereby the arch may be depressed, and on the extremity of one of the arms is carried a trolley made of spring steel and carrying three trolley wheels, one held vertically under the wire and two diagonally over the wire, thus holding the wire so that it cannot get away. The spring trolley frame allows the two upper wheels to separate automatically when passing cross ties or hangers, or the frame may be expanded by levers from which a cord extends to a convenient point on the car. The device is always ready for use in traveling either forward or backward without any change in its adjustment.

Bicycles, Etc.

BICYCLE TIRE.—John D. Parker, San Diego, Cal. A thin steel ribbon or band, with corrugated and convex outer surface, has been designed by this inventor, to cover the tread of an ordinary pneumatic tire, and thus prevent puncture. At each side in the edges of the band are notches of liberal size, enabling the band to readily fit around the outer side of the tire, and at sufficient intervals are projections to which may be attached straps for holding the band in place, one end of the band also being reduced in width and thickness to pass through a loop on the inner side of the opposite end of the band, and thus make a slidable connection, so that the band may slightly expand and contract with the varying pressure on the tire.

Agricultural.

ORCHARD OR VINEYARD PLOW.—Felix Moore, Hanford, Cal. This plow has an angle iron or steel extension frame which may be attached or detached with four bolts, converting the implement into an orchard or vineyard plow, and it may be adjusted to plow four feet outside of the team without any side draught, enabling the orchardist to plow right under the trees without injuring the limbs or knocking off fruit or blossoms. For plowing in vineyards the plow may be set to walk the team in the center of the rows and plow out the whole land or it may be set to straddle the rows. An adjustable push bar is arranged to conveniently push the pole to the right or left and overcome side draught.

POTATO SCOOP.—William A Reddick, Niles, Mich. In tined scoop blades for handling potatoes, this invention provides an improvement, which consists in so binding the tines at their front ends that they will engage with each other and thus form a continuous edge, on a straight line, the adjoining ends thus fitted together being welded together or not, as desired.

HOE.—John F. Wernicke, Dolton, Ill. This invention provides an improvement in cultivator hoes in which the handles are pushed in front of the operator and have runners or wheels on their lower ends and cultivator blades in the rear of the bearings. The members of the frame are of spring material, and will separate sufficiently not to injure the plants near which the hoe blades may come, there being preferably two blades, one secured to each side portion of the body, and the cutting section of each blade being curved outwardly from the shank. The frame members are brought together or separated as desired by a tension screw.

CHEESE RACK.—John Levey, Lindsay, Canada. This device comprises a frame in which is a series of racks, each having a top and bottom connected by end pieces, journals being secured to the end pieces and gear wheels being carried by the journals at one end of the racks, and the gear wheels meshing with each other, whereby the several racks may be reversed by a hand lever. The device is designed to facilitate the proper drying and curing of cheese with a minimum of hand labor.

Miscellaneous.

TYPEWRITING MACHINE. — John C. Landis, Middletown, Pa. This is a machine with which any convenient number of letters may be printed by pressing a single key, accurate spacing being effected whether one, two or more letters are printed at one stroke of the key. The machine has supplementary type bars, each having a multiple number of type characters, designed to enable the operator to more readily attain a high speed, there being also an automatic return of the carriage after a line has been written, the speed of the carriage during its return being fully under the control of the operator. The platen is automatically turned during such return movement, to change to the next line, the space between lines being conveniently regulated.

CASH REGISTER. — William J. Ensworth, Erie, Pa. This cash register is adapted to all classes of mercantile service, and embodies a register to show the amount of each individual purchase and a recorder to show the sum of all the purchases. Key levers are provided to actuate the register and recorder, and the cash drawer is projected outward automatically upon the manipulation of any one of the key levers. The machine having, therefore, all the advantageous elements of the present high-priced apparatus, has over them the superiority of extreme simplicity and consequent cheapness.

VEHICLE SHAFT COUPLING.—William A. Jackman, Cheyenne, Wyoming. This invention provides a coupling whereby the forward section of the shaft may be readily and conveniently detached from or attached to a rear section, or a pole may be substituted for shafts. The rear section is formed with a socket in which enters a tongue formed on the forward section, a lock nut being held to travel in the rear section and into the tongue. When the sections have been connected, the joints are practically imperceptible, and the shaft presents the ordinary outward appearance.

DOOR CHECK. — Franklin C. Fisher, Cascade, Col. Devices for keeping the door or gate closed or for holding it open are embodied in this invention, according to which two members are employed, one formed of a curved steel or other spring plate, one end of which is adapted to engage the second member, which is formed of a plate bent to have a round side, with or without a shoulder or plane portion to be engaged by the free end of the spring plate. The device is designed to afford a superior latch for doors and gates of all classes.

TAPE REEL.—John G. Eddy, Brooklyn, N. Y. An improvement in the barrel or post of a tape reel, as provided by this invention, consists essentially in forming the reel hollow and longitudinally slotted, the folded end of the tape to be inserted in the slot and secured to the barrel by a pin or staple within the fold of the tape. The ends of the barrel are fastened to the crank head by projecting pins which enter and are bent down upon a slot in the crank head, there being a washer on the opposite end of the barrel.

FORM CABINET.—Arthur F. Crandall and George W. Byrnes, Beresford, South Dakota. For conveniently holding and keeping classified blank legal instruments, these inventors have devised a cabinet having a pad raised at one side and a number of pad-securing devices at an opposite side, such devices being approximately in the same plane, the cabinet being capable of holding the pad with one edge rested on the pad support and the opposite edge held to prevent edgewise movement, whereby any of the blank forms may be readily detached.

AUTOMATIC BLAST GENERATOR.—Aaron M. Sidwell, Jr., Henderson, Texas. This is a device for the use of jewelers, dentists, etc., to produce a steady and uniform blast which may be increased or diminished as required. A weighted air chamber, with contracted upper end, is arranged to have a regulated downward movement, by means of weights, in a water tank, thereby compressing the air in the air chamber, from which a pipe leads to a blowpipe, the air chamber being conveniently elevated to its starting position each time the air is exhausted.

LETTERING DEVICE. — Lucian Rust, Dunkirk, N. Y. To facilitate making letters, this inventor provides a device in which a circular lettered scale is laid with radial points corresponding with the ordinates of the principal points of the letters, and a sliding bar is provided with a registering bar and a ruling arm, the whole adapted to be moved so that a mark on the registering bar will coincide with the mark to represent the character being formed. The device may be adjusted to form letters of any size and of normal proportions, or with either the horizontal or vertical dimensions increased from the normal.

HANGER FOR VEHICLE BRAKES. — Stanton D. L. Ross, Post Falls, Idaho. This hanger is made in two sections, and is of such construction that the brake lever may occupy a decidedly different position when in use from that it has when not in use, the lever being movable to a position that will remove the brake shoes so far from the wheels as to render it impossible for mud or snow to accumulate between the wheels and the shoes. The hanger is also designed to serve as a bolster guide, preventing the front bolster from swinging either forward or backward.

LOCK HINGE.—August Reutsch, Brooklyn, N. Y. This is a hinge more especially designed for use on shutters, being adapted to securely hold the shutter either in open or in angular positions. It is of very simple and durable construction, can be cheaply manufactured, and may be readily arranged to move the shutter into various positions and lock it when desired.

GATE. — George W. Pettit, Amma, West Va. A gate more especially designed as a farmyard or garden gate has been devised by this inventor, the gate being self-closing, of simple and durable construction, and arranged to move upward on opening to free the bottom of the gate from snow and mud. The gate is also arranged to prevent animals from unlatching and opening it, having two latches arranged approximately at right angles to one another and keepers adapted to be engaged by the latches.

NON-REFILLABLE BOTTLE. — Arthur Pew, Macon, Ga. This bottle has on opposite sides of its neck perforated lugs in which a cross bar is arranged across the stopper, a fender block with metal fastening pins being secured in the stopper to project beyond the lugs. The bottle may thus be so sealed that the contents cannot be removed and the bottle be refilled with other or inferior goods without making such opening apparent, as the lugs must be broken off before the bottle can be uncorked.

CAROUSEL.—Peter J. Spracklen, Kenton, O. The motive power of this carousel is afforded by the persons riding, through pedals or other devices, a frame carrying seats being made to swing around a central standard, as the frame is arranged to receive a rocking movement by the operation of the pedals, and such movement communicating a rotary movement through pawls and ratchet wheels on the central standard.

Designs.

MONUMENT. — Edwin O. Townsend, New York City. This monument comprises a diamond or octahedron figure supported by a polygonal column, decorated at the top by scroll figures and foliated figures, the column resting on a subbase supported by a main base.

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 AMERICAN SYSTEM OF SHORTHAND. THE MANUAL OF PHONOGRAPHY. By Benn Pitman and Jerome B. Howard. Three hundred and fifty-fifth thousand. Cincinnati: The Phonographic Institute Company. 1897. Pp. 200. Price $1.

This latest edition of the well known "Benn Pitman System" of phonography presents certain advantages over former editions of the work which consist in a somewhat modified and improved order of presenting the several appendages, in the earlier introduction of logograms, and in the addition of a new and copious set of dictation exercises. It is provided with several appendices, one of which presents a scheme of phonographic notation by means of common type, and another an extended alphabet giving sounds that are foreign to the English language. This alphabet will certainly be a great help to those who wish to write other languages without having to study an entirely new system. The book is provided with an index, the plates are very clear, and the text seems to set forth very carefully all that a student of the system will need, so that it will doubtless prove a valuable aid in the acquirement of a system of shorthand.

PRACTICAL NOTES ON URINARY ANALYSIS. By W. B. Canfield, A.M., M.D. Detroit: G. S. Davis. 1896. Pp. 106. 16mo. Illustrated. Price 25 cents.

The importance of urinary analysis is patent to all physicians, but the busy practitioner has no time to search through manuals and make elaborate tests. The writer of the present work has endeavored to show the tried and reliable tests for urinary derangements, and, to all appearances, he has succeeded admirably.

THE MACHINERY OF THE UNIVERSE. Mechanical conceptions of physical phenomena. By A. E. Dolbear. Published under General Literature Committee. London: Society for Promoting Christian Knowledge. New York: E. & J. B. Young & Company. Pp. 122. Price 80 cents.

This is an amplification of a lecture by Prof. Dolbear before the Franklin Institute, in Philadelphia. For thirty years or more the expressions "correlation of the physical forces" and "the conservation of energy" have been common, yet few persons have taken the necessary pains to think out clearly what mechanical changes take place when one form of energy is transformed into another. Little attempt has been made to explain how all phenomena are the necessary outcome of various forms of motion. The present work attempts to present in a concise form the salient facts of the machinery of the universe.

OUR COAL RESOURCES AT THE CLOSE OF THE NINETEENTH CENTURY. By Edward Hull. London: E. & F. N. Spon. New York: Spon & Chamberlain. 1897. Pp. xii, 157. Price $2.50.

This work gives valuable information regarding English, Welsh and Scottish coal fields with special reference to the quantity of coal available. There is also an interesting table giving the quantity of coal mined in the years 1870 to 1896, showing that the increase in 1870 over 1896 was 85,000,000 tons. There is a chapter on foreign coal fields and a forecast of the future. The author is the late director of the Geological Survey of Ireland.

EVERYONE'S GUIDE TO PHOTOGRAPHY. Containing instructions for making your own appliances and simple practical directions for every branch of photographic work. By E. J. Wall. Second edition. New York: Spon & Chamberlain. 1897. Pp. 246. Price 50 cents.

This small book is filled with practical hints for the amateur photographer. The formulas appear to be common sense and the descriptions are very clear. Even the new Roentgen photography is referred to, but this section of the book is of little value, as it is confined to the merest statement of the broad principles of new photography.

THE MONEY QUESTION. A HANDBOOK FOR THE TIMES. By Henry V. Poor. New York: H. V. & H. W. Poor. 1897. Pp. 202.

DAS STABILITATSPROBLEM DES SCHIFFBAUES. Von L. Gumbel. Berlin: Verlag von Georg Siemens. 1897. Pp. 49.

HOW TO BUILD A HOME. The house practical, being suggestions as to safety from fire, safety to health, comfort, convenience, durability and economy. By Francis C. Moore. New York: Doubleday & McClure Company. 1897. Pp. 158. Illustrated. Price $1.

One builds a home, as a rule, once in a lifetime, and unless the owner is an architect or builder by profession, he is liable to make mistakes and overlook many things which conduce to the comfort and safety of the occupants. There are apt to be oversights of little details which, while trifling in themselves, render certain rooms uncomfortable. The writer of the present work has made a study of construction for more than a quarter of a century, and has been careful to preserve memoranda of details which commended themselves to his consideration. It occurred to him it would be well to give others the benefit of what he learned, and the result is a compact little book, brimful of helpful suggestions. Thus, opening the book at random, we find a table of the capacity of cisterns, in United States gallons, calculations being made for each 12 inches of depth. Now a table of this kind, while accessible to the architect, would trouble a layman to obtain. The subjects of hardware, sash weights, etc., all come in for a share of attention, as well as the more important constructive features of the house. Sample specifications for an entire house are also given, and a complete index enables the reader to turn at once to anything in the book. It is a work which can be confidently recommended to all who are thinking of building a house and to all architects. It is very attractively bound in imitation of bark.

THE FOUNDERS OF GEOLOGY. By Sir Archibald Geikie. London: Macmillan & Company (Limited). New York: The Macmillan Company. 1897. Pp. x, 297. Price $2.

This is an important work by the Director-General of the Geological Survey of Great Britain and Ireland. They are lectures given at the Johns Hopkins University, republished in book form. No more appropriate theme could have been selected for these lectures than the story of the evolution of geology. The period selected is from the middle of the last and the close of the second decade of the present century, an interval of about seventy years. This period is full of peculiar interest in the development of science, for it witnessed the laying of the foundations of geology. The chapters, or rather lectures—six in number—deal with the cosmogonists, the rise of volcanic geology, history of the doctrine of geological succession, rise of the modern conception of the theory of the earth, the rise of stratigraphical geology, and the transition or Greywacke formation, resolved by Sedgwick and Murchison into Cambrian, Silurian and Devonian systems. The influence of Lyell and Darwin is also considered.

BEET SUGAR ANALYSIS. A complete system of instruction for analysis in beet sugar factories. By Elwood S. Peffer. Chino, Cal.: E. C. Hamilton. 1897. Pp. 224. Price $2.50.

In our issue of July 31, 1897, we described the very interesting and important plant of the Chino Valley Beet Sugar Company. We now take great pleasure in reviewing the excellent book by Mr. Elwood S. Peffer, of the Chino Valley Company. Beet sugar has certainly a great future ahead of it, and with the establishment of the industry reference books will become a necessity, and the present manual was written in the hope it would prove of value in the very important matter of chemical control of the factory. It is intended primarily as a complete school for a beginner, but the experienced chemist will find in it much to interest him. All of the descriptions of the various processes and tests are written in a remarkably clear manner. Examples are given of the various calculations. On the whole, we are inclined to regard this book as a most important contribution to beet sugar literature.

INTRODUCTION TO THE STUDY OF ECONOMICS. By Charles Jesse Bullock. New York, Boston, Chicago: Silver, Burdett & Company. 1897. Pp. 511. Price $1.40.

This book is designed as an introductory text book for economical science. The first three chapters aim to familiarize the student with an orderly treatment of some leading facts in the economic history of the United States before the study of economic theory is commenced. Throughout the book economic principles are discussed with special reference to American conditions, and their workings are illustrated with frequent allusions to American experience. The chapters treat of the growth of fundamental industries, manufactures and transportation, the consumption of wealth, the theory of exchange, money, money and credit, monopolies, international trade, the wages system, socialism, functions of the government, etc.

THE PRACTICAL RUNNING OF AN ICE AND REFRIGERATING PLANT. Illustrated by Paul C. O. Stephansky. Boston: Angel Guardian Press. 1897. Pp. 116. Price $2.

This book is specially written for the purpose of educating the engineer more thoroughly in the practical running of an engine and refrigerating plant. The many points, with illustrations shown therein, will, after a careful study, enable the reader to embrace the many opportunities offered for the practical running of machinery of this kind. It is with this object in view that the author has undertaken this work. To all appearances it is a thoroughly practical and useful work.