RECENTLY PATENTED INVENTIONS.

Engineering.

CENTRIPETAL TURBINE. — Leonce A. G. Malliary, Essonnes, France. To construct a turbine of high efficiency, in which the capacity of the buckets shall be always in constant proportion to the capacity of the distributer and the volume of water employed, without altering the inclined guides, is the object of this invention. A distributer having water passages encircles the bucket wheel, and fitting between the wheel and distributer is a cylinder having plates projecting outward within the passages of the distributer, there being also in the wheel a cone having plates projecting out and registering with plates in the passages of the distributer, the cone and cylinder being adjustable. The improvement may be applied to either vertical or horizontal turbines, with or without a cistern or tank.

PROPULSION OF VESSELS.—Frank O. Slanker, Pomona, Cal. According to this improvement a combined rudder and propeller are located at the bow and at the stern of the vessel, to be operated so as to give a maximum of speed and quickness in maneuvering. The rudder consists of a revoluble cylindrical casing closed at the top and bottom, and with side openings at angles to one another, while a partition has openings communicating with the side openings, and the propeller consists of a paddle in each compartment of the casing, the paddles having the same arrangement relative to the side openings and each of the paddles being capable of independent movement. The paddles are not reversed, whether the vessel is going ahead or backward, or in steering, as the direction of the vessel is entirely controlled by the casings.

PICK FOR DREDGERS.—Horace S. Potter, Jersey City, N. J. A pick having a long sectional shank, and which may be folded up out of the way of the working parts of the dredger when not required for use, is provided by this invention, the pick being worked from a point inboard on the dredger, and being capable of a vertical and lateral movement, to dig up a bank adjacent to the excavation when the earth is such that the buckets of the dredger cannot take it up. The pick has a hook like action, entering the earth and drawing it forward within reach of the buckets, and several picks may, if desired, be employed with one head on the outer section of the shank.

Electrical.

DYNAMO ELECTRIC MACHINE.—George L. Campbell, Kinsman, O. According to this improvement, the voltage and current are readily regulated while the dynamo is in operation. The field magnet supports are movable toward and from the armature, the magnets moving with the supports and being pivoted thereto to swing in planes longitudinal with the armature, there being means for holding the magnets in position. The field magnet sections are excited in the usual way, and when near the armature the voltage and amperage are highest, and are reduced by withdrawing the field magnet sections by simply turning a wheel, the current being increased by the reverse operation.

Mechanical.

CLUTCH.—Theodore J. Koven, Jersey City, N. J. This is a clutch which, when used on a drive shaft with a driving pulley, will turn the shaft but slowly at first, the rapidity of revolution being gradually increased to the regular speed. A disk having a recessed hub is mounted to slide on and turn with the drive shaft, and an extension of the loosely mounted driving pulley extends over the hub. Pivoted on the disk is an angle lever of which one member is adapted to enter the recess in the hub of the disk, and is located in the path of the extension from the driving pulley, the other member being curved and adapted to engage a pin which has a fixed relation to the lever, there being also a shifting mechanism whereby the clutch may be carried out of the path of the driving pulley extension.

GRINDING LATHE. — Frank P. and Charles M. Kuhn, Kearney, Neb To grind the sickles or blades of lawn mowers and harvesters, etc., or the blades of other machines, these inventors have devised a machine in which the stone is adjustable to the blades from the front instead of the back or sides, there being fingers or guides to support the blades, and these supports being adjustable to admit of the proper grinding of different shapes of blades to different angles. The guides or fingers also have adjustable shoes with which the blades come in direct contact, the shoe of the lower finger supporting the blade and that of the upper finger preventing it from flying upward from contact with the stone.

DRILL RELEASING TOOL. — Richard Nettell, Calumet, Mich. In drilling machines actuated by compressed air, steam, or other means, this invention provides means by which the operator may easily release and loosen the drill should it become stuck in the work. The tool for doing this has a hook with angular opening at one side and a transverse opening near the hook, a key or wedge in the opening extending partly across the opening of the hook. When the releasing tool engages the shank of the drill, and the shank is fastened in position by driving in the wedge, a drill that is stuck fast may be released by turning on or lifting the handle.

NUT LOCK.—Ellsworth G. Nicodemus and Cyrus C. Guisinger, Canal Winchester, O. The bolt, according to this improvement, has a slot on one or two sides in its threaded end, the slots being engaged by lugs on a washer resting against the article to be secured, the washer having a ratcheted upper face. The nut has a passage parallel to the bolt, in which is a spring-pressed pawl adapted to engage the teeth on the outer face of the washer, the handle of the pawl traveling on an inclined top portion of the nut, whereby it may be lifted out of or moved into engagement with the ratchet teeth, the nut in the former case having free movement and in the latter case being locked with the washer on the bolt.

SPRING MOTOR.—Francis A. Burrows, Columbia, S. C. This is a motor for sewing machines and other light machinery, of such construction that the motor is wound up for work by the weight of the operator sitting down, and when the motor ceases to run it may be again set in operation by the operator simply rising from the seat and sitting down again. In a suitable casing is a drive shaft on which is a loose gear wheel, a helical spring having one end fixed to the drive shaft and one end to the gear wheel, while a loose disk on the drive shaft has a flexible connection with a lever carried by the casing, the loose disk having a pawl engaging a ratchet disk.

Agricultural.

PLOW ATTACHMENT.—Patrick E. Graham, Millwood, Minn. This improvement comprises a frame attached to and adapted to travel in front of the plow, and carrying a traction wheel and a separating and distributing wheel, with trailer arm, the attachment being designed to facilitate the separation and distribution of manure or fertilizer in advance of the plowshare, and to hold the manure or fertilizer down at the land side of plow, also holding the manure on the sod while it is being turned into the furrow. The attachment is especially adapted for covering manure, straw, high stubbles, grass, etc., over the ground that is to be plowed, in advance of the plow,

Miscellaneous.

BICYCLE HANDLE BAR.—John A. McCollum and Edwin J. Knoll, Riverside, Cal. This patent is for an improvement in handles whose arms are adjustable, that they may be placed in different positions or angles. Pivotally connected with the stem are lateral arms having gear faces meshing with gear faces on a rack movable longitudinally between the arms, while a forked key is arranged to engage the rack teeth, a spring holding the forks of the key to engagement with the teeth. By means of the key the angle at which the handle bar stands may be conveniently varied as desired.

BICYCLE CANOPY.—Thomas Thompson, Danbury, Conn. To protect the rider from the sun and rain, a readily removable canopy cover has been devised by this inventor, which may be closely folded to be out of the way when not in use. The canopy, of silk or other fabric, is removably secured on a light stretcher frame which is detachably held in position by an upright standard and a novel bracket clamp, the canopy being adjustable to incline to either side of the bicycle for the better protection of the rider, as occasion may require. Provision is also made for the support of a mirror at the front of the canopy, enabling the rider to see objects at either side and in the rear.

HAT MARK.—Joseph S. B. Hartsock, Washington, D. C. This is a cheap attachment to be secured to the sweat band to indicate ownership, and also to indicate the mistake by pricking the forehead of a stranger on whose head the hat is inadvertently placed. It is made of thin stamped metal and attached to the sweat band, in normal position projecting upward therefrom inside the hat, but when the hat is taken off the head and hung on a rack the mark is bent down over the sweat band, and has at its lower edge prickers or prongs insuring attention should the hat be mistakenly placed on the head. This hat mark is also designed to bear the advertisement of the maker or dealer, and be so inexpensive that it will be furnished free with hats purchased.

MATERIAL FOR SHIELDS.—Edward C. Gerstenberger, Brooklyn, N. Y. A composition designed to be bulletproof and waterproof, and which may also be readily shaped, cut and bent into any desired form, has been devised by this inventor, the material being more especially designed for the manufacture of armor, covers and numerous articles. It is made of alternate layers of fabrics, one consisting of hair cloth and the other of sheets of gutta percha silesia, with a minutely divided substance between them, as alum and ground glass, the layers being united by heat and pressure, and any desired number of layers being employed to form a material of the desired thickness.

ROPE REEL.—John B. Crowder, Tulucah, Ala. To conveniently hold several sizes of rope in stores, etc., this invention provides a reel of simple construction, arranged with means for automatically measuring the rope and registering the quantity as it is wound on the hanking reel from the supply wheel. A suitable tension device for the rope is provided, and an alarm indicator is sounded at every revolution of the measuring wheel, the registering bar being simultaneously moved so that the buyer and seller may see at a glance how many yards have been measured off.

FRUIT CANNER.—Anna C. McCutcheon, Sparta, Mich. According to this improvement, instead of cooking the fruit before canning, the fruit is first put in the cans and the latter are placed in a specially designed steamer, whereby the fruit may be cooked by steam, retaining more perfectly its full flavor and color. The body of the steamer is removably placed in a boiler pan adapted to be set on a stove, and a short distance above the water is a perforated diaphragm on which cans may be set, there being another perforated diaphragm a short distance higher up within the casing, on which cans may be set and to which steam is supplied by a central pipe and branch pipes, maintaining an equal heat in the upper and lower sections.

AIR DUCT CLENCH COUPLING. — Edward J. Mallen, New York City. According to this invention, air ducts and couplings may be made in the shop to be readily erected in place by an inexperienced operator, the couplings being so secure as to prevent leakage and the coupling bracing and strengthening the duct. The coupling consists of a U-shaped channel piece, one side member of which has an outwardly bent parallel tongue, the latter being clamped on the inner face of one member of the duct, the other member of which is flanged at the ends so that the various flanges of a rectangular duct will enter the U-shaped portions of the coupling, when the outer members are bent down to form an airtight connection.

SCRAPER. — William Owsley, Twin Bridges, Montana. A number of scoops or scrapers, according to this invention, are connected in one gang, by means of a spacing bar at the front and one at the rear so that the scrapers act simultaneously in taking up and dumping material, thus cheapening the cost in labor and power in any considerable job of grading or filling. A connected front and rear draught rope or cable serves for moving the scraper forward or backward, by any preferred form of motor.

WAGON BRAKE.—Laurens S. Wheeler, Tyro, Kansas. According to this improvement the brakebeam is held to slide on guide plates just forward of the rear axle, the beam and its shoes being held away from the wheels by springs and drawn rearward into operative position by links pivotally connected to the lower ends of arms on a transverse rolling shaft. The upper ends of the arms are connected by links and rods to the rear axle, and the right hand end of the rolling shaft has an upwardly extending crank arm, from which a rod extends forward, on the outside of the wagon body to a pivotal connection with levers carrying a pawl engaging a curved ratchet bar. The construction is such that the brakes may be easily and quickly applied.

WINDOW CLEANING PLATFORM.—Henry G. Wilmerling, Brooklyn, N. Y. Connected with this platform is a locking bar, and a socketed keeper adapted for attachment to the window sill receives and locks the angular terminal of the locking bar. The improvement provides for the safe cleaning of the outside of windows of tall buildings, and the platform, when not in use, may be folded to occupy but small space, it being also readily moved from place to place.

TICKET HOLDER.—William S. Lodge, Albany, N. Y. To facilitate the display of tickets, cards or signs, on counters, shelves and other places near the goods to which they refer, this invention provides a holder comprising a base and upright bent from a length of wire, the upright consisting of parallel strands against which the signs may be pressed by sliding grippers.

SAFETY BABY HOLDER.—Kate Hatch, Brooklyn, N. Y. To safely hold a baby in baby carriages, chairs, swings, etc., while also permitting the desired freedom of the entire body, this holder is made of netting fashioned to form a pocket open at the front and top, the upper ends of the netting strands being fastened to a belt to be secured around the waist of the baby and their lower ends passed through apertures in a bottom of thin material adapted to be fastened to the carriage bottom, chair, etc.

Designs.

MUSTACHE GUARD. — Charles Weller, Newark, N. J. This device has an oval-shaped body, with opposing side edges transversely curved in an outwardly direction, there being upwardly extended hooks at each end of the body.

CLOCK FACE.—Charles A. Cornibert, Woodside, N. Y. According to this device, shells are represented laid on a circular tray to correspond to the numerals of a watch, the shells carrying figures representing the hours, and a knife and fork representing the hands.

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 AND PUBLICATIONS.

THE EARTH AND ITS STORY. By Angelo Heilprin. New York and Boston: Silver, Burdett & Company. Pp. 267. Price $1.25.

The subject of geology is apt to be considered a dry and rather repellent one for the elementary student, because its beginnings have hitherto been of the rather uninteresting order. After a student knew his natural history, chemistry, mineralogy, and palæontology, he could begin to appreciate the geologist's science, all-embracing in its scope. Just because it included so much it was rather an object of dread. In Prof. Heilprin's work we have a genuine revelation, for geology is at once popularized and made a unit of; it is no longer given as a dry and difficult conglomeration of abstruse sciences, but is shown as a most interesting whole; as something to be studied and enjoyed by all; as a subject of really literary treatment, and one illustrated strikingly for the observer at home as well as abroad, and not only afar off but in easily accessible regions. The impression produced on the mind of one who has studied geology in the old school is that here the classic labors of Dana, beloved by all geologists, are worthily supplemented by Heilprin's work; which to the old time student is in the nature of a revelation. The topics are illustrated by reproductions of natural scenery from accessible places, Maryland, New Jersey, Pennsylvania and the like, as well as the wilder regions of the West and of distant Europe. Travelers in Switzerland will find that country laid under tribute, and for them the work would have a distinct value. But the same is to be said for travelers elsewhere, for this book will enlighten observers everywhere. Thus the pretty view of Interlaken tells the story of how Lakes Thun and Brienz were once one; lake terraces are shown in the view of the vicinity of the Great Salt Lake in this country; and glacial action is illustrated in a most striking series of views from both hemispheres. One charm of the book is that while the world is laid under tribute for the illustrations, they are selected from comparatively well known regions, making geology a science of the present time and place, not of the remote only. The palæontological plates, some engraved and some processed, are excellent. Perhaps a little fuller definition or explanation of some technical terms might be wished for. As an example, we would cite the term "strike;" this might be advantageously defined for the benefit of the beginner. This is about the only criticism which a somewhat close examination of the book has suggested to the writer The work is one which once begun will be read to the end.

THE SURVIVAL OF THE UNLIKE. By L. H. Bailey. New York: The Macmillan Company. Pp. 515. Price $2.

A collection of evolution essays suggested by the study of domestic plants is here presented, with a large amount of speculation, the exposition of some original methods of research, and quite a collection of facts relating to plants and animals which the author claims to have heretofore been "almost wholly overlooked by students and philosophers." The "nature of the divergence of the plant and the animal" is the starting point from which the writer proceeds to discuss the leading problems associated with the variation and evolution of cultivated plants.

"FIELD FLOWERS." Chicago: Published by the Eugene Field Monument Fund Committee. Price $1.

This is a unique publication, designed as a souvenir of one of the sweetest poets of the present generation, the late Eugene Field, and for the purpose of creating a fund the proceeds of which will be equally divided between the family he left and the building of a monument to his memory. The pages are illustrated by original drawings of a large number of eminent artists, and the text of the matter consists of selections of the writings of Eugene Field. It is an exquisitely beautiful and tasteful little monograph. Subscribers to the book are asked to send ten cents extra for postage.

THE STUDY OF ARCHITECTURE: AN OUTLINE OF THE STYLES IN ALL COUNTRIES. By Charles Thompson Matthews, M.A. New York: D. Appleton & Company. 1896. Pp. xvi, 468, 235 illustrations. 12mo, cloth. Price $3.

There seems to be a steady demand for elementary books on architecture, four having appeared in a short time. Mr. Matthews has given a sketch of architecture from the time of the pyramid of Cheops to the modern skeleton frame steel building in Chicago. Of course, when such an extensive territory is to be covered, only a limited amount of space can be given to each style; still it really seems as though more than fourteen pages might have been given to the Italian Renaissance, furnishing as it did so many of the motifs of the architecture of to-day. There is a mere mention of Arnolfo di Lapo, whose relation to the First Renaissance is the same as that of Bramante to the High Renaissance. The section on American architecture is excellent, as is that devoted to ancient architecture, which fills half the book. The illustrations are well chosen, though it would have been as well if their source had been indicated. Many of them are poorly reproduced. The work will doubtless prove interesting to many who do not care to purchase the larger works of Fergusson, Lübke, Sturgis, etc.

THE ARCHITECT'S DIRECTORY, 1896-1897. New York: W. T. Comstock. Price $1.

A useful list of architects in practice in the United States and Canada, to which is added a list of dealers and manufacturers of building materials.

THE STORY OF AMERICAN COALS. By William Jasper Nicolls. Philadelphia: J. B. Lippincott Company. Pp. 405.

The writer, a member of the American Society of Civil Engineers and author of the Railway Builder, after fifteen years of employment in the coal fields of Pennsylvania, endeavors in this work to supply a complete epitome of facts for all who are seeking information on the origin, development and business in coal. The book has a good index, and is well printed. The subject is treated of in four main divisions—the origin, including the geology, geography, and classification of coals; the development, covering mining operations; transportation, and consumption. The average price of coal at the pit mouth, in England, in 1894 is said to have been $1.60 per ton, while the average price for the same kind of coal in Pennsylvania in 1894 was but 74 cents, the Pennsylvania miners working only 165 days in the year, and averaging about four tons daily at 35 cents a ton. The author does not explain why, with this low cost of production and the high selling prices, as compared with those in England, our coal operators and coal railroads are "losing money," while the English coal operators and carriers are making a steady profit.

QUINCE CULTURE. By W. W. Meech, A.M. New York: The Orange Judd Company. Pp. 180. Price $1.

This is an illustrated hand book designed to facilitate the propagation and cultivation of the quince, with descriptions of its varieties, insect enemies, diseases, and their remedies. The author has made the cultivation of the quince a specialty through many years, and the work, therefore, has exceptional practical value.

THE FISHERIES, GAME AND FORESTS OF NEW YORK STATE. Report of the Commissioners. Albany, N. Y.

A beautifully printed quarto, with exquisite colored and gelatine illustrations, and many fine half tones, is the form in which is presented the First Annual Report of the Commissioners of Game and Forests of New York State, for the period commencing with its organization, April 25, 1895, to September 30, 1895. The book is a highly creditable specimen of printing from the Wynkoop Hallenbeck Crawford Press, New York and Albany. The commissioners are Barnett H. Davis, president, Palmyra; Henry H. Lyman, Oswego; William R Weed, Potsdam; Charles H. Babcock, Rochester; Edward Thompson, Northport; and Franklin B. Mitchell, secretary, Albany, N. Y., and in their direct service are a State fish culturist, a superintendent of hatcheries, a superintendent of forests, and game protectors and foresters. The report also furnishes a valuable compilation of the fisheries, game and forest law of the State. The report of the superintendent of hatcheries shows that during the year prior to September 30, 1895, there had been planted in the waters of the State 196,247,840 fish of various kinds, 17,397,040 fish fry and eggs being contributed by the United States Fish Commission. This is more than three times the quantity distributed in 1891, and greater by sixty millions than the entire fish plant for the year ending in September, 1894. The law prohibits the Commission from distributing fish or fry to private owners in the Adirondacks or elsewhere, so that the entire benefit of the fish plant will accrue to those who angle in the preserved waters of the State. The colored illustrations reproduce with great accuracy and finish of execution various pecimens of game fish.