RECENTLY PATENTED INVENTIONS.

Electrical Devices.

ELECTRICAL FUSE.—A. G. FAY, Highland Park, Ill. The fuse is for use in blasting, the more particular purpose being to protect the materials and containing shells of the fuse against moisture. To this end the invention relates to the addition of an outer shell and a filling, the size of the diameter of the outer shell being slightly reduced at one end therefor for sharpening the effect of detonation of the fuse.

Of General Interest.

BOAT.—F. M. THOMPSON, East Liverpool, Ohio. Among the characteristic features of this patent is a vertically rocking rudder or tail-plate, the movement of which causes the prow of the boat to rise and fall in the water to a degree desired. To overcome any suction and break up formation of vacuum at the plate the latter is made hollow and means are provided to discharge air, into and through. Horizontal rudders or vertical axes are provided in front of the plate and in rear of the propellers for steering.

CRATE.—D. F. PAYNE, Corpus Christi, Texas. The invention relates to crates used for shipping, the more particular purpose being to provide a type of crate which may be folded readily when not in use, and provided with top and bottom members detachable from other portions of the crate and adapted to be sprung into position for the purpose of holding them into position.

WINDOW.—H. MORTENSON, New York, N. Y. This invention is an improved window, in which either the upper or lower sliding sash may be turned end for end and brought inward in the lower portion of the window frame, where the outside of the sash is easily accessible for washing or other purposes, and a ventilating space between the sashes provided if desired.

RECORD-HOLDER.—W. T. LONG, Sumner, Wash. The object here is to provide a holder arranged to accurately and securely hold the record in central position, to accommodate records of different sizes, to compensate for variations of the inside diameter of the records, to hold the record against accidental shifting in an axial direction and to allow placing it conveniently in position on the holder or removing it therefrom.

EMBALMING APPARATUS.—J. E. COPPOLA, Mexico, Mexico. An object in this invention is to provide a simple apparatus capable of holding the liquid and compressed air in a reservoir, and devices for connecting the same with trocars or needles for injecting the fluid under pressure into a cadaver.

FLASK FOR FORMING GATED MOLDS.—C. W. BLUE, Montgomery, Ala. This invention provides a construction of flasks wherein the gated molds may be formed in tiers, and the pattern members withdrawn therefrom; provides flasks wherein the cores may be inserted from the outside of the flask and held firmly in position; and provides a flask adapted to be mounted in tiers and arranged to accommodate molds of various sizes.

DRY SEPARATOR.—R. R. SNOWDEN, Houston, Texas. The invention relates to mills, and the object is to provide a separator more especially designed for treating crushed phosphate rock and other materials so that the material in a revoluble screen is subjected to alternate brushing and jarring actions, to thoroughly separate the valuable material from the extraneous matter.

SCREEN.—C. J. JEWETT, Fort Smith, Ark. The invention relates to screens which may be used for clay, coal, or other materials, and an object is to provide a screen with adjustable screen bars, and means to move the bars to predetermined distances from each other. Means prevent the material from becoming clogged between the screen bars.

DAMPER-REGULATOR.—R. P. MITCHELL and R. V. BRAWLEY, Statesville, N. C. A spring is adjusted to retain a disk against predetermined pressure in the boiler. Means permit the cylinder to exhaust, but should the pressure exceed predetermined value, means are provided to close or partially close the damper in accordance with the excess of pressure. A valve is so elevated that a disk closes the inlet opening to the pipe, but when pressure falls, means permit the cylinder to exhaust, the piston to move downwardly, to allow a weight to swing the damper into open position.

PARALLEL-RULER.—F. W. STERLING, Chicago, Ill. The invention appertains to drafting instruments, and its purpose is to provide a new and improved parallel ruler, more especially designed for the use of navigators and other persons, to permit them to accurately and quickly transfer parallel lines when translating courses on a chart.

CIGAR-PERFORATOR.—E. F. HALL, Fowler, Cal. The improvement is in that class of perforators which are provided with a series of opposite points or prickers pivoted and arranged convergently in such manner that when the tip of a cigar is pressed down between them they enter the same and thus form lateral holes which assist in producing an easy draft.

WINDOW-VENTILATOR.—G. W. STEIN, Chicago, Ill. The inventor provides a device in which good ventilation is secured, while at the same time the vent lating opening is shaded without the necessity of using a projecting awning or other similar device. He provides a device which while permiting good ventilation prevents the rain or snow from entering while the device is in use.

Hardware.

WRENCH.—W. A. PRATT, Stamford, Conn. This wrench is adapted for screwing up or unscrewing caps or jars and other packages, and for loosening the caps from the rubber or other packing rings, it being adjusted for gripping objects of various sizes, and having handled V-shaped jaws pivotally connected with each other at their ends and a supplementary jaw adjustably and removably attached to one of the jaws to co-act with the opposite jaw.

WOODWORKER'S PLANE.—J. H. BROWN, Boston, Mass. The intention here is to provide for a plane that facilitates the exact adjustment of the cutter bit laterally and longitudinally in the throat of the plane stock, enable the quick and exact graduation for size of the throat opening in the stock, provide means for clamping the cutter bit when adjusted in the throat opening.

TUBE-CUTTER.—O. R. YOUNG, Riverhead, N. Y. The invention is useful for various different purposes, and particularly in facilitating the removal of defective tubes in a boiler or similar tubular structure. In a boiler access cannot easily be had to the exterior of the tube and some difficulty is experienced in removing the tube unless it be cut in two from the interior.

COMBINATION TOOL.—W. J. TWEEDALE, Saginaw, Mich. The intention in this case is to provide a wrench of ordinary construction, with attachments whereby it may be used as a pipe wrench or a drill, or a turning lathe, and for many other purposes. The handle may slip out of the extreme end of the shank so as to give room between the jaws for the drill bit.

Heating and Lighting.

CORE-OVEN.—J. J. JOHNSON, Newark, N. J. The invention relates particularly to core ovens used for drying or baking cores used in molding. The object is to produce an oven which will be simple in construction, the temperature of which can be nicely regulated, and which will have a construction which will enable the oven to be kept constantly filled.

ILLUMINATING SIGN.—J. F. DRUAR, Buffalo, N. Y. This invention relates to advertising signs such as those hung out in front of stores or shops to indicate the business done therein. An object is to provide an illuminated sign which can be read at night from a considerable distance with ease and which can be equally as well read in the daylight.

Machines and Mechanical Devices.

COMPUTING-PUMP.—S. G. WISE and J. E. TROYER, JR., Gas City, and J. E. SMISOR, Marion, Ind. The invention refers to computing pumps, and more particularly to pumps designed to be used in dispensing and selling fluids such as oil and the like. When one gallon of fluid is pumped by the pumping mechanism, one gallon is registered by the computing mechanism. When one gallon has been forced through the casing, the dial has made a complete revolution.

VENDING-MACHINE.—F. A. SLICHTER, Kansas City, Mo. The aim of the inventor is to provide a machine more especially designed for use in stores and other places, and arranged to allow convenient delivery of the merchandise in predetermined quantities, without danger of packing and obstructing the rapid flow of the merchandise, such as seeds of various kinds.

AIR-SHIP.—A. E. G. LUBKE, San Francisco, Cal. An object here is to provide a ship having an aeroplane and a balloon or gas bag connected therewith, together with an improved steadying means. A further object is to provide a balloon composed of one or more separate gas bags inclosed within a shell or chamber having means for regulating temperature. The propellers may be caused to rotate horizontally or vertically.

FEED MECHANISM FOR BORING-MACHINES.—A. FREY, Schöftland, Switzerland. The inventor provides a mechanism capable of being quickly changed for use as a hand feed or an automatic feed, and arranged to permit convenient changing of the gearing so that the feed mechanism for feeding the boring tool may be run at any desired speed according to the nature of the rock to be bored.

Prime Movers and Their Accessories.

ROTARY ENGINE.—F. O. BIBLE, Wilkinsburg, Pa. In this case the inventor's desire is to produce an engine in which the various parts are designed to permit of exact adjustment for controlling the motive fluid to permit of utilizing the expansive force of the fluid to a greater or less degree, and has had in view the construction of an engine which will permit of the use of as many cylinders as desired.

Railways and Their Accessories.

SAFETY SWITCH-LOCK.—A. HADDOCK and A. SCHMITT, New York, N. Y. An object here is to provide a lock which can be used in connection with various switch systems and block signal systems without interfering with the operations thereof, and which serve to lock a switch either open or closed as set by the switchman, so that the switch cannot be accidentally displaced while a train is approaching the switch or passing over the same.

LOCOMOTIVE-HEADLIGHT.—I. L. WADE and W. L. SMITH, Roanoke, Va. In the present patent the invention is an improvement in that class of locomotive headlights which are pivoted and so connected with the front truck as to be turned with the latter in passing around curves. The headlight, yoke and arms may be readily detached when required.

SNOW PLOW.—C. A. BELLRUD, Fairdale, N. D. The object here is to produce a snow plow which will effectively operate to cut the snow from the railroad track and eject it at the side. In its general construction the plow comprises a pair of cutter wheels which are mounted at a forward point, and behind these cutter wheels an apron is provided which assists in throwing the snow rearwardly into a drum, from which it is discharged laterally, or at right angles to the track.

Pertaining to Recreation.

SOCKET POST FOR SUPPORTING CROQUET ARCHES.—H. B. COLLIER, Prairie Grove, Ark. The purpose of this inventor is to provide novel details of construction for a socket post, which adapt it in pairs for a secure embedment in the ground at suitable points in upright positions, and for the convenient insertion of the limbs of a croquet arch therein to, and thus afford stable support to the arch in a vertical plane and permit the removal of the arch.

Pertaining to Vehicles.

AUTOMOBILE-PROTECTOR.—D. F. ARMSTRONG, Groton, Conn. The invention relates more particularly to protectors such as are adapted to be arranged on the steering posts of automobiles to protect the drivers. It can be easily secured to the steering column of an automobile, and fitted with either a transparent or a translucent shield to protect the driver.

WHEEL.—L. Y. LEÓN, San Juan, Porto Rico. The invention relates to wheels for general use, the more particular purpose being to provide a wheel suitable for a road vehicle, and having a considerable degree of resilience due to the type of springs employed within the wheel and to the manner in which they are mounted and kept in position.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

Kindly write queries on separate sheets when writing about other matters, such as patents, subscriptions books, etc. This will facilitate answering your questions. Be sure and give full name and address on every sheet.

Full hints to correspondents were printed at the head of this column in the issue of March 13th or will be sent by mail on request.

(12127) A. C. Co. asks: We would like to get an approximate idea of the amount of coal burned by the average ocean-going vessel of 700 tons net registry, drawing from 9 to 15 feet, that is to say, the amount of coal per hour burned in producing a speed of from 10 to 15 knots. A. It is impossible for us to give a reply to your question equally accurate and general for all cases, for the reason that coal consumption per horse-power varies so much with the efficiency of both engines and boilers, and horse-power for a given speed varies so much with the lines of the boat. For instance, a 700-ton yacht with fine lines might be driven at a speed of 10 knots with half the horse-power required to give the same speed to a cargo boat of the same displacement; and, as the boiler and engines of the yacht might easily have 50 per cent higher efficiency (say 30 per cent efficiency as compared with 20 per cent) the yacht might make the same speed as the cargo boat with one-third of the latter's coal consumption. Again, every steamship has its maximum economical speed; and whereas a given quantity of coal may drive it a little greater distance at a lower speed, any attempt to drive it at a higher speed will cause an increase of coal consumption out of all proportion to the increase of speed gained. There might therefore be a great difference between coal consumption at 10 and at 15 knots, and a boat of which the former was the economical speed might be unable to achieve the latter with any reasonable coal consumption, if at all. Although you only ask for an approximate idea, we must therefore make this reservation to show you how widely an average figure may vary from that of your particular case. If you gave tonnage, economical speed, and horse-power, we could give a fairly close figure for average lines, but knowing neither lines nor horse-power, the chances of wide disparity are multiplied. With the foregoing reservation, we may say that the average coal consumption of three nominal 10-knot boats of 700 tons displacement in actual service, within our knowledge, is 9 tons per day. The horse-power of these ranges from 400 to 600 and averages 500, which represents 1.5 pound of coal per hour per horse-power, which is good marine practice for any except the most efficient multiple-expansion engines. Only one of those boats has ever been, or could be, driven at 15 knots, and that was as an experiment, and necessitated a consumption of 3,750 pounds of coal an hour, or nearly five times the economical consumption.

(12128) N. V. V. says: Being a constant reader of the SCIENTIFIC AMERICAN, I take the liberty to ask you the following question: If it takes 10 tons of coal to run a locomotive 100 miles in 10 hours, how much coal would it take to run the same engine the same distance in 5 hours? I claim that, as based upon the mechanical rule, what you gain in speed you lose in power, it ought to be about the same amount. A. It is impossible to answer your question exactly without a great deal more detail as to the locomotive, the load hauled, etc., but speaking generally, the fuel consumption is likely to increase out of all proportion to the speed, if the latter is increased above the economical speed of the engine. Each engine has a certain maximum speed at which it can haul a given load economically; and whereas with a given quantity of coal it can haul the same load a greater distance at a lower speed, at a higher speed the coal consumption increases very much more rapidly than the speed. For instance, an engine burning 1,930 pounds of coal per hour at a speed of 40 miles per hour uses 3,400 pounds per hour in hauling the same train 60 miles per hour, nearly doubling the coal consumption for a 50 per cent increase of speed, and 3,920 pounds at 70 miles per hour. These are figures from an actual test, the coal consumption varying directly with the horse-power expended. In your case, however, 10 miles an hour is not likely to be the economical speed of the locomotive and it is probable that it could cover 100 miles in 5 hours with the same or very little more coal than it would take to cover the same distance in 10 hours.

NEW BOOKS, ETC.

ASTRONOMY OF THE BIBLE. An Elementary Commentary on the Astronomical References of the Holy Scripture. By E. Walter Maunder, F.R.A.S. New York: Mitchell Kennerly, 1909. 34 ill.

Mr. Maunder's attitude toward the celestial miracles of the Bible does not differ essentially from that of the average non-astronomical Christian. He frankly regards the Bible as an inspired utterance. Although he does not hesitate to present the scientific theories which have been advanced to account for such miracles as Joshua's Long Day, the Dial of Ahaz, and the Star of Bethlehem, he is more prone to consider them as divine portents rather than as ordinary astronomical occurrences. He constantly reminds us that the Scriptures were not intended to teach us the physical sciences, for which reason, in his opinion, it is almost futile to offer scientific explanations of Biblical miracles. In the case of the Star of Bethlehem, for example, Mr. Maunder is inclined to accept the miracle; and although he presents the usual theories of a conjunction of planets, a comet, and a nova, to account for the apparition, he regards the Star of Bethlehem as a specially devised miracle for the guidance of the Magi.

STATISTICAL AND CHRONOLOGICAL HISTORY OF THE UNITED STATES NAVY, 1775-1907. By Robert Wilden Nesser, Fellow of Yale College. In two volumes. The Macmillan Company, 1909. Quarto; 650 pp. Price, $12 net.

In spite of the many books that have been written on the history of the United States navy, it is the opinion of the author that the record is yet incomplete. Hence he has undertaken the task of historian upon a scale of research and completeness that leave nothing to be desired; going back as far as possible to the original authorities, and—a most important feature—giving these authorities in the text. The completed work will be divided into five parts. The first three parts, here offered, are complete in themselves, and contain data concerning every engagement, capture, expedition, or other achievement of the navy prior to January 1st, 1907. The remainder of the work may be considered as supplementary. This is a monumental work carried out with great fidelity.

NELSON AND OTHER NAVAL STUDIES. By James R. Thursfield, M.A. New York: E. P. Dutton & Co. 374 pp. Price, $4.

Unlike so much of the literature of the life of Nelson, the present work was written by a civilian. The fact of his reviewing the life of a naval officer from the outside, as it were, gives a new point of view, and serves to bring into relief certain features which are apt to be overlooked by the professional naval writer. Although the battles of the Nile and Copenhagen receive adequate notice, the Battle of Trafalgar naturally takes the first place. Mr.