As the canal traverses two extensive lakes on which the use of electric towing locomotives was out of the question, propeller operation had to be resorted to on these sections. Several solutions of this problem were tried; viz., first, an electrical three-screw towing barge deriving its energy either from an accumulator battery carried on board or from two different types of trolley wire; second, an alcohol-operated barge; third, a suction gas boat of the Körting system; and finally, a towing steamer, the boiler of which was fired by means of coal-tar oil.

The economical results of the experimental service failed to warrant the adoption of the electrical barge, in spite of the obvious advantages of electric operation. It is, however, contemplated to continue these trials, and eventually to adopt this interesting system of towing on the two lakes. For the moment, the current consumption is about three times higher than in the case of the locomotives. The alcohol barge was found to be quite impracticable, while experiments begun on the suction gas towing barge had to be temporarily discontinued in view of the inefficient design of the motor. The ordinary towing steamer was, however, found to be quite satisfactory. Its fireplace, designed on the Körting system, consists mainly of a nozzle in which the oil, having been pulverized under pressure, is thrown out in a fine veil. A smokeless combustion and most economical fuel consumption is insured by fitting a preheater, while the boilers are equipped with superheaters. The consumption of heating oil was found to be about 0.5 kilogramme per horse-power-hour.

Alcohol from Corncobs.

The Department of Agriculture is developing a new industry in the production of alcohol from corncobs, which, the Department says, promises to be of much commercial value. Investigations are being made at Hoopeston, Ill., and have proved that the large quantities of corncobs which every year go to waste can be made to produce alcohol in sufficient quantities to justify the erection of a distilling plant in connection with a corn cannery.

So far the Department has succeeded by simple methods of fermentation in getting a yield of 11 gallons of alcohol from a ton of green cobs, and, by similar methods, in getting 6 gallons of alcohol from a ton of green cornstalks. A Department official says that these tests show that there are 240 pounds of fermentable substance in a ton of green field cornstalks, which will yield about half of their weight in absolute alcohol. In round numbers, a ton of stalks will produce 100 pounds of alcohol or 200 pounds of proof spirits. As a gallon of alcohol weighs nearly 7 pounds, there should be 15 gallons of alcohol in a ton of stalks. The addition of the corn on the cob adds further to the possibilities of alcohol obtainable from a ton of cobs, and will have its influence in bringing the quantity to a greater figure.

Radio-Activity and Purity of Springs.

There are known to be springs that, while issuing from fissured and cracked soils and which hence would seem fated to contain microbes, contain scarcely any of the latter; particularly is this true of bacilli *coli communis*, which indicate a contamination by fecal matter and cause typhoid fever. The springs of Avre are to be classed with such water sources, and two chemists, Messrs. Dienert and Bouquet, accordingly investigated the springs. The result of their researches has been communicated to the Académie des Sciences. It would seem that there is some connection between the purity of a spring and its radio-activity. The springs of Avre are all radio-active; the purest of all, that of Breuil, is more radio-active than the others. It may be, therefore, that pure springs owe their poverty in microbes to their radio-activity. Is this the indication of a possible method of purification of waters? At all events, there might be a supplementary means of assuring ourselves of their harmlessness to the public health.

Official Study of Earthquakes.

A state institution for the study of earthquakes was founded last year in connection with the Hamburg Physical Laboratory. The institution has been erected at the cost of a private citizen of the town, and has recently been opened. It corresponds with 245 other institutions of a similar character in various parts of the world, and more especially with the German Imperial Central Earthquake Institution at Strasburg in Alsace.

Experiments are being made at the Auszenjade Lightship with a bell fixed beneath the surface of the water, to ascertain how far sound signals interfere with one another.

RECENTLY PATENTED INVENTIONS.

Of Interest to Farmers.

DRAFT APPARATUS.—H. JOHNS, Troy, Pa. In this case the invention is an improvement in draft apparatus designed for immediate use for all kinds of hitching on farms, in lumber woods, or elsewhere where it is desired to readily connect the timber with the load. The construction is simple, easily applied, and can be adjusted for use in almost every location where a draft apparatus of the sort is desired.

CLEANER FOR DISK HARROWS.—A. C. GAYLORD, Galesburg, Ill. The invention refers particularly to that class of disk harrows in which the disks are arranged in gangs and are provided with individual scrapers by which the earth and trash accumulating upon the disks is removed, its object being to produce a device which shall be efficient and one in which the scrapers can be adjusted to meet varying conditions.

Of General Interest.

RECORD KEEPING SYSTEM.—M. D. POLLOCK, Decatur, Ill. The principal object of the invention is to provide a ledger or permanent record line on a suitable portion of a series of original bills or record slips, said slips serving as the permanent ledger record. A convenient system of filing the record slips is provided in such a way that the desired record which is usually posted in a ledger can be set up in ledger form without rewriting it, and so that it will appear in regular order as posted from time to time. It is, therefore, unnecessary to make any copy of the record in posting, this being done by moving the original bill or record slip from the bill pad to the desired ledger pages or files. An index guide is also provided for each page or file.

UMBRELLA-STAND.—T. L. MONAGHAN, New York, N. Y. In the present patent the object of the invention is the production of an umbrella-stand which is simple of construction and which will enable umbrellas to set conveniently therein with the tips uppermost, which facilitates the draining of the water toward the handle.

VALVE ATTACHMENT FOR FOUNTAIN-PENS.—F. O. CONILL, New York, N. Y. The principal object of the invention is to provide a device which can be applied to ordinary pens without changing any of their existing parts, and which can be removed from them to permit the pen to be put together without the valve and not necessitate the use of any additional parts or the modification of the existing parts of the pen.

DENTURE.—R. M. CRAIG, Dennison, Ohio. One purpose of the inventor is to provide a porcelain tooth or facing so shaped that the backing can be quickly and conveniently applied thereto and readily set to the tooth in such manner as to be a fixture therein and wherein the backing when in position will be hidden from sight at the front of the body.

PORTABLE GRAIN-SPOUT FOR ELEVATORS.—G. W. BAIER and C. D. BAIER, Cissna Park, Ill. In this patent the invention is an improvement in the class of grain spouts or conductors which are adapted to telescope and to be adjusted or placed at different angles or inclinations, so as to deliver grain into different bins or receptacles as conditions may require.

WALL CONSTRUCTION.—J. G. VON HOFE, New York, N. Y. This invention has reference to a wall construction especially adapted for use with concrete veneered walls. The principal object of the invention is to provide means whereby building-blocks can be readily and permanently attached to the surface of a wall formed of continuous masses of concrete or other plastic material.

SHELF.—PAUL STEEG, Danzig, Germany. An essential part of the invention consists in the means employed whereby each shelf is clamped at any desired height upon the columns by the weight of the shelves and that of the load resting on the same. The shelves are suspended from above, each one being supported by the means employed for clamping it. By this arrangement the center of gravity of the loaded shelf is situated below the place where the clamp is situated.

JEWELRY-CASE.—H. W. SMITH, Newfield, N. J. This improvement is in cases for holding and displaying necklaces or other chains, the object being to provide a device that will be neat and attractive in appearance and so constructed as to firmly hold on its outer side the portion of a chain to be displayed and having a chamber for receiving the surplus portion of the chain.

APPARATUS FOR THE PRODUCTION OF CARBURETED AIR.—A. PERRIER, 47 Place St. Michel, Marseilles, France. The apparatus is located in a cabinet and comprises a device for forcing atmospheric air into a container, the device being operated from a motor within the cabinet. An air collector relieves the air of impurities and from it the purified air is conducted to a heater within the air tank. Heated air is conducted from the latter to carbureter boxes, and means supply each box with a hydrocarbon fluid with which the air is saturated to form a gas. This fluid is supplied to a distributer, and the gas formed in the boxes is collected in a receiver, whence it is conducted to a gas-holder and thence through a conductor to any place for consumption or utilization.

BARREL-CARRIER.—J. FRAVEL, Dayton, Ohio. The invention pertains to package-carriers; and its object is to provide a carrier arranged for convenient and quick attachment to one or two barrels, to enable a workman to readily carry two empty barrels with the use of but one arm and hand, and to permit two workmen to carry a filled barrel with ease.

JUVENILE SAVINGS-BANK.—W. G. HOLMES, New York, N. Y. The invention has reference to toy money-boxes; and its object is to provide a juvenile savings-bank which is simple and durable in construction and exceedingly ornamental and arranged to stimulate saving by constantly reminding children and other persons of a home that may be owned if money is saved.

Hardware.

DOOR-LOCK.—J. H. SIMMONS, Talmo, Ga. The objects in this invention are to provide a lock that may be adjusted for either the right or left hand side of a door, that may be used as an automatic latch which may be opened by either knob, and that may be used as a lock operated from the inside knob, and locked from the inside of the door without a key, but which cannot be unlocked from the outer side excepting with a suitable key.

Household Utilities.

FLY-ESCAPE.—A. W. SALOKAR, Lewiston, Idaho. In this instance the improvement refers to a device adapted to permit flies readily to escape from a room or other inclosure and to prevent them from entering at the same point. The invention may be attached to a window-screen or applied to any opening independently of a screen.

TABLE-SYRUP.—V. M. BACA, Denver, Col. This new food compound is in the form of a table-syrup designed for use on griddle-cakes and the like; and it consists in a new product of a very palatable character and high dietetic quality and one which also has a certain therapeutic value, there being no hurtful mineral ingredients and no low-grade adulterants.

Machines and Mechanical Devices.

STAIR-ROUTING MACHINE.—S. P. WOOLF, Omaha, Neb. Supporting-frames being clamped upon a stringer, the carriage is adjusted, and the brace-chuck applied to the upper end of an inclined shaft. Pressure of the shoulder against end of the chuck tends to drive the bit forward, exerting a downward force thereon to hold it more firmly in the groove it cuts. In a five point bit, the cutters slant from the bottom upward and incline toward the shaft and the lower edge of each cutter is a point standing at approximately a right angle with the cutter. Points cut the grain of the wood in advance of cutters and when one cutter just leaves work the succeeding one is at full cut, the third just entering.

ART OF MAKING BUTTONS.—W. S. WATSON, Memphis, Tenn. A circular or other kerf is formed in the shell and simultaneously the shell bounded by the kerf is dressed to form the face of the button. The kerf is of depth equal to or greater than thickness of button. After these operations a portion of the back of the shell is ground away or otherwise removed, forming a cavity therein extending along a plane surface and extending through to the kerf first made. Thus the button is simultaneously separated from the shell and the back of the button dressed. The button is now formed excepting the thread-holes, which are drillable at any time and in any desired manner.

JOURNAL-BEARING.—F. LATULIP, Syracuse, N. Y. Rubbing surfaces of mica set edgewise to the revolving surfaces are employed. Mica has been heretofore employed but not with satisfaction on account of difficulty of retaining and holding in place the thin laminæ of mica whose smooth surfaces slip upon each other. The invention consists in the arrangement of the blocks of mica sheets and treatment of same designed to secure coherence of the sheets and unity of the blocks as a composite structure.

PACKING APPARATUS.—A. L. HOLTON, Norfolk, Va. The invention relates particularly to apparatus such as covered in Mr. Holton's former patent, and comprising a counting device and means operated from the same for delivering separating-strips to separate a pile into desired divisions; and the present invention relates to certain parts designed to secure the delivery of the strips in a purely mechanical way and without the necessity of any electrically-operated devices.

SHIFTING DEVICE FOR TYPE-WRITING MACHINES.—J. B. SKEEN and J. M. GRAFTON, San Francisco, Cal. This invention relates to a device to be applied to type-writing machines which have a single keyboard requiring the operation of one or more shifting-levers in order to provide for printing the upper and lower case characters. The device operates these levers by a simple movement of the knee, thereby leaving the left hand free for manipulating the keys and securing those advantages at small expense and little attention to the operating parts.

Pertaining to Recreation.

AMUSEMENT DEVICE.—E. H. LANIER, Memphis, Tenn. In operation the cars are pushed out of the chute and start toward the bottom of a platform and are engaged by obstructions and deflected here and there, meeting other obstructions, until they reach the bottom. The circular form of the cars and peculiar arrangement of wheels permit the cars to revolve or run in any direction without overturning. Padding prevents injury to the occupants, and the incline angle permits the cars to descend gently, so that contact with the posts will be gentle, but still sufficient to cause the car to rebound with its passengers.

AMUSEMENT APPARATUS.—F. W. THOMPSON, New York, N. Y. An object of this inventor is to provide a device in the form of an inclined chute or slideway down which a person may slide with increasing momentum from top to bottom, with pleasureable excitement without danger of injury. Another object is to construct a slideway of a material having inherent and lasting slipperiness or smoothness, thereby obviating the use of polishing substances.

GAME.—O. HENRICHSEN, New York, N. Y. The purpose of the invention is to provide a game by which many and varied situations may be brought about with respect to one or more movable objects employed in playing the game, and, furthermore, to so carry out the main features as to render the game of physical benefit, the tendency being to expand the lungs when the player is in action.

Pertaining to Vehicles.

WHIFFLETREE-HOOK.—J. G. MYERS, Mancos, Col. The snap-hook comprises a tongue having at its butt the eye for a bolt connection, at its point end a laterally-extending and transversely-curved head-plate, and in advance of its butt-eye an upwardly-projecting lug and the hook pivoted at its butt-end to the lug, extending thence forwardly over the head of the tongue and turned beneath the head with its point bearing in the hollow.

CUSHION-TIRE FOR VEHICLE-WHEELS.—L. H. BARRY, Durango, Mexico. The inventor employs a wheel rim or felly of special construction in direct association with the outer face of which he employs a set of directly-adjoining metallic springs together with means for securing the same to the rim. Connected to the springs are metallic springs of another set also of special construction and directly adjoining each other, combined with which are means for connecting them together continuously about the circumference of the rim by which to derive the direct cushioning effect as well as a uniform tread.

Designs.

DESIGN FOR RUBBER MATTING.—A. J. WHISLER, Goshen, Ind. Mr. Whisler has designed a rubber matting, involving parallel rows which are striped diagonally in reverse direction, giving the pleasing effects of contrasting shades, and having longitudinal ornamental borders at its opposite edges.

DESIGN FOR A FINGER-RING.—J. L. HERZOG, New York, N. Y. This inventor has secured a design patent for an ornamental finger-ring. In the front of the ring the heads of two animals with wide open mouths touch. On their lower teeth rests a precious stone. The band of the remaining part of the ring is plain.

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.