RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

CULTIVATOR.—LOUIA W. GRAUERHOLZ, Kensington, Kans. The purpose of this invention is to provide a machine especially adapted for the cultivation of corn, which machine is so constructed that two rows of corn may be cultivated at one passage of the machine across the field. The invention enables any desired number of plows to be carried by each cultivator-beam, or permits the use of a single set of plows, if desired. The plows may, furthermore, be adjusted relatively to the ground and may be speedily returned to the soil, should they meet with an obstruction, the return taking place almost instantly after the obstruction has been passed.

Bicycle Appliances.

BICYCLE-ATTACHMENT. — JOSEPH W. SATTERTHWAITE, Mingo Junction, Ohio. The attachment forming the subject of this invention may be secured at the front of the bicycle, and comprises a frame capable of being removed and secured to the bicycle handle-bars and steering-head. The frame has a support upon which a child or any other load may be carried.

SOCIABLE BICYCLE.—WILLIAM F. WILLIAMS, London, England. This bicycle has a single central main frame on which a transverse laterally-adjustable frame, which supports seats for passengers or receptacles for goods, is mounted to slide. A rack-bar couples the saddle-supports so that these supports may be moved together. A self-locking pinion effects the lateral adjustment of the saddles and retains them in position. A supporter is provided to hold the bicycle in an upright position when the riders are mounting or dismounting. The weight of the riders and load may be adjusted so as to balance unequal weights.

Engineering Improvements.

ROTARY ENGINE.—WILLIAM MOHR, Kurtz, Ind. The rotary engine of this inventor comprises a continuous cylinder having a steam-chest and a separate exhaust-chamber. A rotating piston extends with its rim into an annular slot in the cylinder-wall, and is provided with oppositely-arranged ports, one of which is the inlet-port. A piston-head is carried by the piston and extends into the cylinder. In the cylinders abutments slide. A reversing valve on one face of the piston is arranged to uncover one of the piston-ports to the steam-chest, to allow the steam to pass through the uncovered port into the cylinder. The reversing valve, moreover, is formed at its inner face with a cavity for connecting the covered-up piston-port with an exhaust-port formed in the piston and leading to the exhaust-chamber.

Railway Appliances.

SWITCH.—GEORGE A. and THOMAS F. PENROSE, Meredith, Ark. The switch of these inventors has switch-points operated by an ordinary switch-stand, but constructed without the usual frog, the switch having, instead, means for lifting the wheels of the car from one rail to another. With the main and switch rails are connected a swinging wheel-lifting rail, forming a continuation of one of the switch-rails and overhanging the adjacent main rail. Two guard-rails are mounted to swing on independent axes adjacent to the wheel-lifting rail, the connections converging and extending to a common point on the wheel-lifting rail, at which point the connections are pivoted to the wheel-lifting rail, whereby the movement is directly transmitted to the wheel-lifting rail. A train passing over the tracks will be caused to take the switch by the action of two switch-points, the one serving to slide the train laterally toward the switch and the other serving to lift the corresponding wheels up from one rail to the other.

Mechanical Devices.

MACHINE FOR CONSTRUCTING IRRIGATING OR OTHER FLUMES.—JOSEPH H. MARTIN and DAVID ORMAND, Riverside, Cal. In this machine are provided a mold for the flume, a hopper connected with the flume, a paddle mounted in the hopper and adapted to distribute the concrete delivered by the hopper in the mold, and a plunger mounted to slide in the body and in the mold-section, and operated by a lever to pack the concrete firmly together after it has been delivered by the hopper. The plunger's being resisted by the concrete already packed will cause the whole machine to be moved on.

MORTISING OR GANG-DRILLING MACHINE.—ABRAHAM VAN WAGNER, New York city. It has been the object of this inventor to provide a device so small in cost and yet so effective in operation, that small shops unprovided with the usual large, costly mortising machines, may be enabled to produce work far more quickly than has heretofore been done by hand. The device comprises a frame consisting of legs secured to a table. The edges of the top member have guides which receive bars carrying the operating mechanism. Upon the top member an adjustable knee adapted to support the work, is secured. In order that the drills may be raised, a lever is provided, pivoted upon a bracket and connected with two links. The drill sockets are made to turn all in one direction by means of a series of pinions rotated by a gear-wheel. The machine is operated by foot-power.

ENVELOP MOISTENING, SEALING, AND STAMP-AFFIXING MACHINE.—HARVEY P. JONES, Chicago, Ill. On the water-tank of this machine is arranged a guided moistener to dampen the envelop-flap. After having been moistened, the flap is sealed by a device consisting of two yieldingly mounted plates, located between side bars. Springs bear between the plates and the side bars; and a presser mounted to swing between the plates presses the flap against one of the yielding plates to seal the envelop. After the envelop has been sealed, a stamp is moistened by a special device and applied.

PRINTING AND FOLDING MACHINE.—JOHN A. PYRON, Chester, Ill. This machine consists essentially of a printing mechanism and a folding mechanism. The printing mechanism consists of a plunger by means of which the printing is accomplished. The type having been inked, the plunger is raised, and a piece of paper placed in position. After having been imprinted, the paper is acted upon by a folding strip controlled by a spring-roller. Plates located in various positions act on the paper to assist the folding strip in folding the paper in any desired shape. Although the machine is designed to print and fold labels used on mail-pouches or sacks, it may also be used in printing and folding circulars and the like.

TRACTION-WHEEL. — JEREMIAH J. GILLINGER, Quitman, Mo. In this traction-wheel, the opposite hubs of the main wheel are connected with a shaft extending through and between the hubs and carrying a fly-wheel between the shaft and main wheel. The power may be derived from electricity, gasoline, or any other motive agent.

Miscellaneous Inventions.

DEVICE FOR REMOVING DRILLS FROM WELLS.—FRANK M. KISER, Parkersburg, West Va. This invention provides a device designed to assist in the recovery of drilling tools when they have become bound in wells by the caving of the walls. The device used for this purpose comprises a bowl attachable to the bottom of the well-casing. The bowl has an interior cone surface at its bottom acting in connection with a clutch-dog. This dog is forced between the tool and the wedge-surface so as to bind the two together in order to enable the tool to be raised.

PRAYING OR CONFESSIONAL STAND.—HERMAN F. NEHR, New York city. The stand of this inventor is so constructed that the praying bench may be adjusted expeditiously and conveniently to suit all requirements. The reading desk may be adjusted to or from the occupant of the stand. The body-portion of the stand, or that portion which supports the praying bench, may be raised or lowered. The front and rear supports for the stand are arranged so that they may always be maintained in a vertical position or parallel with one another. An attachment for the reading desk is provided whereby a screen may be elevated from the desk at the front for confessional purposes, and held in its elevated position. When the screen is not required, it may be stored in a suitable receptacle beneath the reading desk.

CALENDAR-TELLURIAN. — GRANT B. NICHOLS, Wapakoneta, Ohio. This calendar-tellurian comprises a backboard or table having a series of marked apertures representing the elliptical path of the earth around the sun. The apertures correspond in number with the days of the year. A ball or globe representing the earth is held on a pin standing for the earth's axis and is adapted to be set in one of the apertures. An electric lamp carried by an inclined support is secured to the board at the center of the earth's orbit and represents the sun. Pointers are mounted to turn upon the central portion of the support and point to the name of the month and the day of the month, the names and days corresponding with sections of the earth's orbit. The calendar is arranged to indicate the month, the day of the month, the exact position of the earth relative to the sun on each day of the year, and the position of the earth in the zodiac. By means of the lamp, day and night may be correctly represented on the ball standing for the earth.

CARBURETER.—ELIJAH D. PARROTT, Golden Dale, Wash. A gasoline supply-tank is provided in this apparatus from which there leads a gasoline supply-pipe. An air supply-pipe is connected with the gasoline-pipe. A burner heats the pipes. Water is used to cool the gas. An air-pump forces the gas into the gasometer. Throughout the generating process, the gas is maintained of the same strength. The gasoline is uniformly consumed according to the number of lights in use. Frost cannot form on the inside of the generating apparatus, and freezing of the gas-mains between the lights and the carbureter is prevented.

JACK.—GEORGE A. and THOMAS F. PENROSE, Meredith, Ark. The purpose of this invention is to provide a jack designed for use on railroads to shift rails longitudinally in order to equalize the joints. The jack has two clamps, each with a key for fastening them to adjacent rails. A bar is pivoted on one of the clamps and is fitted to slide in the other. A lever is fulcrumed on the clamp in which the bar slides. A link is pivotally connected with the lever. A grip engages the bar in such a manner that, when standing at an angle thereto, it grips the bar, and, when moving at a right angle, the grip slides on the bar. A foot on the link holds the grip in a slidable position.

WAIST-BELT.—SAMUEL BIENENZUCHT, New York city. A waist-belt has been patented by this inventor which, while consisting of a series of links, permits the use of a yielding and a rigid material for alternate links. A yielding binding is used for the links, which binding is provided with integral eyes adapted for flexible connection with eyes formed upon the rigid links. The belt, though partially made of metal, will adapt itself to the figure as perfectly as a belt made entirely of softer material.

OIL-CAN. — ARTHUR C. HERSBERGER, Poolesville, Md. The body of this can has a neck, the upper end of which is engaged by the bottom plate of the spout, a washer being used to prevent the leakage of oil. At opposite sides of a downwardly extended peripheral flange of the plate, eyes or links are attached, to which a fastening device, consisting of a loop, is secured. By manipulating the loop, the spout-plate may be drawn tightly against the neck or removed laterally to permit the can to be filled. The invention does away with the old operation of unscrewing the parts in order to fill the can and is, hence, of especial service when used in connection with farm-machinery.

CHURN.—LEROY DRAKE, Shelton, Neb. This invention is an improvement in those churns which are made to rotate or oscillate, whereby the cream is alternately thrown from one end to the other and is caused to pass through a fixed, reticulated diaphragm for the purpose of quickly breaking the oily globules and inducing the formation of butter. The inventor of the present churn has devised an improved attachment for such churns, which attachment is in the nature of a collapsible diaphragm comprising two reticulated semi-circular parts flexibly connected. The diaphragm is firmly yet detachably held by means of a locking bar

NUT-LOCK.—SILAS CHAMBERS, Sterling City, Tex. In the nut-lock forming the subject of this patent, a simple washer or locking-plate is provided, which consists of a tongue formed with inner and outer wings, both of which are provided with openings for the operating tool whereby the tool may bear in both openings at the same time. The invention's especial merits are the ease of application and operation of the locking devices.

AMALGAMATOR. — MINNIE H. MACCLAY, Louisville, Ky. With a fixed frame, an ore-feed block having a vertical passage, and a float-gold arrester arranged in the passage and comprising a metal frame, are connected an oscillating mercury-box arranged beneath and partly inclosing this block and adapted to co-operate with the block, to scour and grind the ore. Hangers are provided for the box, and have knife-edge supports.

BOTTLE-CAP. — LOUISA G. FLANIGAN, Baltimore, Md. This invention furnishes a cap formed with a circumferential inturned flange around its upper and outer edge, which is adapted to receive the end of a tool to pry off the cap and which also makes a strong reinforced edge or crown for the bottle-mouth. With the cap is connected a disk or plate secured beneath the inturned flange and having a projecting thumb-piece or lug by which the use of a separate tool on removing the cap is not required.

PICKER-STICK ATTACHMENT. — FRANCIS M. HUTCHINSON, Mayfield, Ky. The picker-stick attachment for looms provided by this inventor has a pivoted casing adapted to receive a picker-stick. A loop is formed on the casing for the passage of a return strap. A hook formed on the casing above the loop receives the outer end of the return-strap. The picker-stick can be readily inserted in the casing and fastened therein after the desired adjustment is made.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for 10 cents each. Please send the name of the patentee, title of the invention, and date of this paper.

NEW BOOKS, ETC.

MANUAL OF THE CANVAS CANOE. Its Construction. By F. R. Webb, "The Commodore." New York: Forest and Stream Publishing Company. 1898. Pp. 115. Price $1.25.

We are always glad to review a book which gives practical directions for making things, and the present volume gives explicit directions for making an excellent canoe at an expense of $12 to $15. Full specifications and elaborate working drawings, numbering seventy in all, are given. The canoe proper is not only described, but the subject of repairs, camp equipment, conveniences, camp cooking, etc., are also treated. This excellent little book will be hailed with delight by all amateur boat builders.

HITTING VERSUS MISSING WITH THE SHOTGUN. By S. T. Hammond. New York: Forest and Stream Publishing Company. 1898. Pp. 170. Price $1.

This book might be termed "The Hammond System of Shooting," for Mr. Hammond enjoys among his field companions the repute of being an unusually good shot and one who is particularly successful in that most difficult branch of upland shooting, the pursuit of ruffed grouse or partridge. This prompted the suggestion that he should write for others an exposition of the methods by which his skill was acquired. The result is the original manual before us. We term it original because the chapters will show the author was self-taught; the expedients and devices adopted and the forms of practice followed were his own. The volume will be warmly welcomed by sportsmen.

COMMERCIAL RELATIONS OF THE UNITED STATES WITH FOREIGN COUNTRIES DURING THE YEARS 1896 and 1897. In two volumes. Volume I. Issued from the Bureau of Foreign Commerce, Department of State. Washington: Government Printing Office. 1898.

Commercial relations of the United States with foreign countries is a very important subject at the present time, in view of the fact of our present export trade, which is constantly increasing. The volume is filled with important information and tables. The statistics are carefully classified and are thoroughly reliable.

THE STATISTICAL YEAR BOOK OF CANADA FOR 1897. Thirteenth Year of Issue. Issued by the Department of Agriculture. Ottawa: Government Printing Bureau. 1898. Pp. 554.

The annual volume issued by the Department of Agriculture, termed the "Statistical Year Book of Canada," contains a short history of Canada, and then treats of its constitution and government, land regulations, events of the past year, agriculture, minerals, trade and commerce, currency and banking, railways and canals, post office, finance, insurance, education, Indians, patents, vital statistics, criminal statistics, and the organization of the present government. It is a valuable manual for all who are interested in any way in Canada.

We have just received the Fiftieth Anniversary number of our excellent contemporary, "The Independent." Having had a Fiftieth Anniversary ourselves three years ago, we know how pleasant it is to celebrate the half century of a successful newspaper. "The Independent" is always a welcome visitor to office or home. It is a clean and fearless journal and gives to the reader nothing but matter of the highest class It is published in convenient magazine form, and the price for a single copy is 5 cents, and the subscription price is $2. The present anniversary number contains valuable articles by R. S. Storrs, Francis J. Higginson, Richard H. Stoddard, William Hayes Ward, Thomas Wentworth Higginson, Theodore L. Cuyler, Elizabeth Stuart Phelps, Edward Everett Hale, Cesare Lombroso, John La Farge, Justin McCarthy, Maurice Thompson and others. It would hardly be possible to obtain a more representative collection of writers. We heartily congratulate our contemporary on its Fiftieth Anniversary.

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

About Elgin Watches.

Thirty-four years ago, it required no common courage for a body of men to invest their capital and devote all their energies to the founding of a watch factory in the then unknown village of Elgin, Ill., with any hope that its product should become more than locally popular.

The Elgin National Watch Company, established at that time and under these conditions, has long since demonstrated the wisdom and foresight of its founders.

Its reputation for making watches of the highest quality at consistent prices has gone round the world, and for many years its output has been sold in advance of manufacture.

Modern methods, inventive genius, making at their factories the machines with which watches are made, employing skilled experts—these are some of the facts that have made possible an output of nearly 8,000,000 complete and perfect timepieces from this great factory in the space of a third of a century.

A factory properly ventilated and lighted, congenial surroundings in home and factory life at Elgin have all conduced to the success that has ever marked the Elgin National Watch Company.

The Chicago Times-Herald, in its issue of September 5, 1898, speaking of the employes at the Elgin factory, mentions "the high character and intelligence of the operatives and their confidence in their employers, based upon long years of fair treatment," and adds, "It is perhaps not too much to say that the employes of the watch factory, both skilled and unskilled laborers, are the equal in every respect of any factory operatives in the country. Certain it is that they are far superior to ordinary factory workmen. One can tell their quality in a moment if he but takes the trouble to watch the stream of men and women moving toward the main gateway at the hour of commencing labor. The close and friendly relations which for so many years have existed between employers and employed have made the factory able to point with pride to a record of thirty-four years without either strike or serious industrial complication of any nature."

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(7529) F. E. J. asks: 1. Can an electric arc be produced in a vacuum? A. We reply in general, an electric arc cannot be produced in a vacuum, if by it you mean an arc light such as is used for lighting; but in the low vacuum of a Geissler tube an arc of purple light may be produced several feet long. In the vacuum of a Crookes or X ray tube no electric discharge can take place, and a tube may be so perfectly exhausted that no discharge will pass between terminals only ⅛ inch apart. 2. Will it burn as bright as though produced in air? A. No. When the vacuum, is low enough for an arc to form, the light of it is of a purplish tint and is visible only in the dark. 3. Would ordinary glass answer for a globe for an electric arc in vacuum? A. Ordinary glass is used for the bulbs of Geissler tubes; but glass without lead for X ray tubes. 4. Would it require more power to produce an arc in a vacuum than in the open air? A. Certainly; more power is required to drive the electric discharge across a given gap as the air is removed from it, until the point is reached when the discharge ceases to pass the gap at all. Moore's system of lighting employs the discharge through vacuum tubes. It is not extensively in use as yet.

(7530) H. B. C. asks: 1 What kind of varnish can I use to coat a wading suit with? It must be perfectly watertight and flexible. A. Dissolve 1 ounce