an oscillating or reciprocating rotary movement. The invention is especially designed for use in apparatus such as washing-machines, where it is desired to give an oscillating movement to a beater or the like for cleaning the clothes. The invention may be used in churns or otherwise wherever desired.

PUMPING APPARATUS .- F. J. DONOT GHE, Gallitzin, Penn. An improved apparatus is provided in this invention for pumping various liquids, and also gases, more especially to force oil to heavy bearings or to raise water or pump air for use in air-compressors. The chief oper ating agent is a cam-wheel which acts upon devices connected with reciprocating pistons working in cylinders, whereby the liquid or fluid is taken in and ejected alternately. In connection with the apparatus the inventor employs a rotary valve of peculiar construction.

DRILL.-G. W. HAYS, Birmingham, Ala. This contrivance invented by Mr. Hays is an improvement in drills, being in the nature of a hand-drill having its handle-lever provided with pawl-points for operating the drill head or socket, and also furnished with a feed arranged for controlled operation in connection with the hand-lever.

#### Railway Improvements.

 ${\bf RAILROAD\text{-}TRACK} \qquad {\bf SECURER.--J.}$ H. CROWLEY, Duluth, Minn. The design of this invention is to furnish a securer adapted to keep the ralls of a railroad-track from spreading apart or from turning or roiling. In adopting this securer, several advantages are found. namely, in locating spikes so as to minimize the breaking or splitting of ties and in preventing rapid deterioration of the same due to the clustering of spikes; in avoiding danger of spreading ralls, especially around curves; in easily applying the tie-plates of the securer to a track already built; and in cases where it is necessary to shim under the ralls, the shims can be placed under the tie-plates without disturbing the ties.

TIE-PLATE .- J. H. CROWLEY, Duluth, Minn. Mr. Crowley's invention relates to improvements in railway tie-plates or rail-chairs, the object being to supply a tie-plate of simple construction that may be manufactured at a comparatively low cost, and one that may be quickly placed in position, and when in place will be able to prevent spreading or roiling of

#### Miscellaneous Inventions.

METHOD OF PRODUCING WATER-MARKED PAPER .- E. R. and O. F. BEHREND, Erie, Pa. By an improved method these in ventors secure, first, a genuine and indelible watermark which cannot be impaired or effaced by any test known to the trade, including the severe action of caustic soda, which is sufficient to obliterate the mark made by compression of the fibers on many grades of paper, and, second, the rapid and economic production of such watermarked paper with perfectly and sewer or like conduit. sharply defined marks of any figure or pattern.

BRAKE FOR BABY-CARRIAGES.-W. H. RAMSCAR, Cornwall-on-the-Hudson, N. Y. This device is a simple form of brake which is automatically applied and manually released when the handle-bar is grasped, and, further, the construction of the brake provides for its application to any baby-carriage without weakening the vehicle or impairing its appearance The device may be used equally as well on grocers' push-carts and like wheeled apparatus.

Asnières, Seine, France. In the manufacture carrying two disks on the cord, one mounted tween the support or backing and the sensitized film, a layer of suitable material capable of giving to the film a certain plasticity and of operations of developing, fixing and washing.

ment to the side of a corset, so that the hose may be comfortably held up by means of garters and without the aid of clips, thus preventing laceration of the hose. From this position the garter is prevented from slipping and the wearer is assured of perfect safety even when the garter is worn comparatively loose.

WAISTBAND .- L. P. KLEIDERER, Louisville, Ky. This invention relates to improvements in waistbands for trousers and other garments and the object is to provide a band with belt straps formed directly thereon. One novel feature is, that the waistband has adjacent parallel slits, between which, material is folded to form a belt-strap; and another, is in the waistband comprising an outer portion, and a lining; the outer portion having parallel slits. the material between them being folded inward to form a box-plait, and the edges of the outer portion being turned against the lining and gate to move to open position. box-plaited inward of the straps.

provement in fasteners for the shields of the invention, and date of this paper.

conversion of continuous rotary movement into neckties which are provided with a bow of some suitable fabric. The fastener is formed of spring wire and so constructed that it is adapted to be held by attachment to the adiscent edges of turn-down collars.

> FOOT-REST FOR CAR-SEATS.—L. son, Brooklyn, N. Y. A simple form of footrest for car-seats is provided by the present invention which employs an improved mechanism for hanging the foot-rest between the side frames of the seat in such manner that the foot-rest will be automatically shifted relative to the position of the back and seat through the movement of the back.

> CIGARETTE OR CIGAR BOX.—8. GOLD FADEN, Brooklyn, N. Y. The box is so constructed that after being emptied or partly emptied cigarettes or cigars cannot be replaced therein, thus not only protecting the purchaser from buying inferior goods other than those indicated by the box label, but also protecting the manufacturer from false representations of goods contained in the box.

BRUSH .-- H. F. EBERT, Brooklyn, N. Y. The invention provides certain useful improvements in brushes whereby the bristles are securely fastened in position in the socket and are not liable to break when the brush is in use. At the same time the cord or flexible binder is prevented from becoming loose or broken, thus Metal Stamping Co., Niagara Falls, N. Y. insuring long life to the brush.

SLIVER-CAN.-J. B. CROUCH, Mayodan, N. C. Mr. Crouch's invention relates to improvements in sliver-cans adapted for use in connection with various kinds of spinning machinery. It provides a novel construction by which waste of the mass in the receptacle is overcome and the sliver remaining in the receptacle after the charge shall have been nearly exhausted may be more readily spliced than heretofore.

FOLDING BOX .- W. E. BURTON, York, N. Y. The object of the invention is to provide an improved folding box made of paper or light material which is simple and durable in construction, very ornamental in appearance, and having its body or cover made from a single piece of paper adapted to be shipped flat to take up little room, and arranged to allow of quick and convenient conversion into the box body or cover without the aid of skilled labor.

LATCH.-J. W. CONNOLLY. Toledo. Ohio. Mr. Connolly's invention relates to door latches, its object being more particularly to produce a simple and efficient latch which can normally be released from only one side of the door, but which can be so arranged that it may be released from either or both sides of the door.

DEVICE FOR REMOVING SNOW .- J. Sul-LIVAN, New York, N. Y. The purpose of the invention is to provide a durable, economic and portable device for removing snow, the device being used in connection with a stream of running water from any convenient source of supply and having its outlet end adapted to enter any opening communicating with a

DESIGN FOR A STOVE-LEG.—G. H. DROEGE, New York, N. Y. The design consists of a main scroll extending from one side of the leg to the other near the top and enclosing a central ornamentation, a central scroll panel, and intermediate scrolls. The main portion of the leg below the main scroll is decorated with a longitudinal box fluting.

TOY .- H. V. Lough, North Plainfield, N. J. This toy belongs to that class in which a disk is made to revolve alternately in opposite di-MANUFACTURE OF PHOTOGRAPHIC rections by alternately tightening and loosen-FILMS .- L. M. J. ARMANDY, 3 Rue Brantôme, ing a twisted cord. Means are provided for of these films for photographic purposes the ob- to turn loosely upon the other, also means ject of the inventor is to provide improved for checking the loosely mounted disk at each means whereby such films may be readily detached from their support or backing. The invention consists, essentially, in arranging be other, and each disk is differently colored to produce a kaleldoscope effect as the toy is operated.

CALCULATOR .- T. FREGOSO, Hermosillo, being readily dissolved out, during the ordinary Mexico. This measuring instrument is more especially designed for surveyors, and is ar-GARTER-SUPPORTER .- MARY L. BUCKAU, ranged to permit of accurately finding, without New York, N. Y. The aim of this invention is calculation, rectangular coordinates to any dis-New York, N. Y. The aim of this invention is calculation, rectangular coördinates to any distribution. Autogas used properly will carry vehicle twice as to furnish a garter to or from which a suptances with any angle in the sexagesimal or far as any other battery of same weight. William port may be quickly and handily attached or centesimal system, to solve right angle tridetached. The support is adapted for attach angles, and oblique angle triangles by giving immediately and accurately three required or unknown measurements, and when the other three measurements are known to reduce stadia' distances to the horizon and to find the difference of elevation between any two points.

PENCIL-HOLDER. — E. E. Long, Angeles, Cal. The improved holder will detachably hold a pencil at a given point, so that it will always be accessible for use, as for example, the device may be used in connection with a writing pad or tablet. The holder may be easily attached or removed without injury to the device.

STARTING-GATE .- P. McGINNIS, London, Can. The invention relates to improvements in starting gates for racetracks, the object being to provide a gate of simple construction having a locking means so arranged as to be quickly and positively released to permit the

NOTE -Conies of any of these patents will be NECKTIE-FASTENER.-J. H. FRANZ, Bal furnished by Munn & Co. for ten cents each. tlmore, Md. Mr. Franz's invention is an im Please state the name of the patentee, title of

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min the information of works and we want in the theorem of paths of the control o Fuse or junction box, electrical, M. H. Johnson 718,632
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Fuse, safety, J. Sachs 718,797
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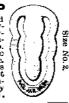


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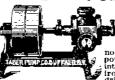
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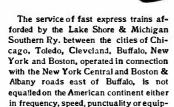
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#### NEW BOOKS, ETC.

DIAMOND MINES OF SOUTH AFRICA. Some Account of Their Rise and Development. By Gardner F. Williams, M. A. New York and London. The Macmillan Company. 1902. Pp. 681. Price **\$**10.

Mr. Williams' position as General Manager of the De Beers Consolidated Mines, Ltd., has placed him in a position to gather the most varied and most useful information on the subject of diamond mining. Mr. Williams, however, is something more than an engineer who understands modern conditions in the fields. He is a historian as well; for he treats in a scholarly way the ancient mines of Africa as well as the modern. The chapters on the "Ancient Adamas" and "In Traditional Ophir Land" are as entertaining as many a They have a distinct literary charm. Considered purely as a book, from the publishers' standpoint, we cannot help remarking that this is one of the handsomest volumes that has ever come into our hands. The silk binding, the admirably executed photogravures, and the clear printing could hardly be excelled.

MANUAL OF RAILROADS. Poor's Thirty-fifth Annual Number. New York: H. V. & H. W. Poor. 1902. Pp. 1640.

No reference book is more frequently consulted and none more firmly relied upon by railway officials than Poor's Manual. From its pages we glean that the length of railroads completed in December 31, 1901, reaches the astounding figure of 198,787.30 miles, and that the net increase of mileage of all the railroads in the United States for the calendar year 1901 was 4,453.71 miles. The earnings were \$529,294,727. The operating expenses of this vast railway system amounted to \$1,092,154,-The number of passengers carried was 600,485,790, and 1,084,066,451 tons of freight were moved. Much of the information contained in the comparison of railway statistics published in the special Transportation number of the Scientific American was gathered from Poor's Manual.

GALVANIC BATTERIES. Their Theory, Construction and Use. Comprising Primary, Single and Double Fluid Cells, Secondary and Gas Batteries. By S. R. Bottone. Whittaker & Co. 1902. 16mo. Pp. xvi, 376. Price \$1.50.

The purpose of this book is to show the suitability of the many batteries which have been brought before the public since the original discoveries of Galvani and Volta. The work contains a description of almost every known battery of any practical use, together with data as to E. M. F., internal resistance and adaptability to particular requirements. The theory of the battery is carefully treated; and formulæ showing the reactions that take place in different types of cells are given.

Dr. Prof. O. Comes, Portici, Italy, sends us a chrenological table for tobacco in Asia. The table gives a history of tobacco from 1492 to 1897. Its conciseness and apparent trust-Worthiness are its chief merits.

OPERE DI GALILEO FERRARIS. Vol. I. Ulrico Hoepli. 1902. Pp. xxiii, 492.

AMERICAN ANIMALS. A Popular Guide to the Mammals of North America North of Mexico. With Intimate Biographies of the More Familiar Species. By Witmer Stone and William Everett Cram. New York: Doubleday, Page & Co. 1902. Pp. xxiii, 318.

Mr. Stone has endeavored to produce a work sufficiently free from technicalities to appeal to the general reader, and at the same time to such scientific information relating to our North American mammals as would be desired by one beginning the study. At the end of the volume will be found a key to identify unfamiliar animals. As a guide to study there has been appended a bibliography of the principal works on North American mammals. A. Radclyffe Dugmore has provided the illustrations. His brush and his camera have given us many a charming picture. We are glad to note that Mr. Carlin's admirable photographic work has also been drawn upon in illustrating the book.

LE FORZE IDRAULICHE. Dell'talia Continentale. Ed Il Loro Impiego lano: Ulrico Hoepli. 1902.

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