ENGINEERING INVENTIONS.

A rail joint has been patented by Mr. George H. Williams, of Nashville, Tenn. This invention covers a novel construction and combination of parts to secure a perfectly rigid joint, as solid as the rail itself, in which the jarring and jolting of cars passing over the joint is prevented and the wear of the meeting points reduced to a minimum.

A railway tie has been patented by Mr. Joseph W. Smith, of Mount Carmel, Penn. The invention covers a novel construction and combination of parts to provide a secure fastening for the rails, and which, while holding the rails securely in position, will be sufficiently elastic to admit of rapid traveling without injury to the rolling stock or discomfort to passengers.

A car coupling has been patented by Mr. Charles G. Crosse, of Sun Prairie, Wis. The coupling hook is automatically thrown into engagement with a link or bar brought to bear against it, and is uncoupled therefrom by means of a mechanism connected to the hook and extending to the car, the device being also applicable for coupling a pole or shafts to a carriage.

A car coupling has been patented by Mr. Jonathan Hendershot, of Evelyn, West Va. By this invention the drawhead of the car is provided with a vertically swinging member, having at its free end a downwardly projecting coupling lug, which, after the entrance of the coupling link, may be locked against upward movement by a block sliding in the top of the drawhead.

A mechanical movement has been patented by Mr. James F. Hanley, of Charleston, S. C. A double crank shaft is combined with a vibratory lever pivoted coincidently with the centered axis of the shaft, the lever being connected upon opposite sides of the shaft by links and rocking arms, and also connected with a rotary shaft, making a compact, evenly balanced arrangement of parts to facilitate running at high speed, and apply power in both directions.

AGRICULTURAL INVENTIONS.

A cotton chopper has been patented by Mr. William P. Clark, of Elberton, Ga. This invention covers a novel construction and arrangement of parts whereby, as the main wheel revolves while the machine is being drawn forward, a gear is operated to work a chopper with revolving knives, but such gear may be thrown out without stopping the machine, which is simply and strongly built.

A compensating clutch for corn planters has been patented by Mr. John S. Johnson, of Waukon, Iowa. It is an improved gear for connecting the wheels and axles with the seed-dropping device, by which the latter will be governed by the wheel having the slowest movement, and disconnected from the fast moving wheels, thus removing irregularities by slipping in moving over obstructions on the surface of the ground.

MISCELLANEOUS INVENTIONS.

A drawbridge has been patented by Mr. Oscar F. Balston, of Brooklyn, N. Y. It has tubes supported upon the masonry, in combination with a bridge having trucks, making a longitudinally moving drawbridge, in which no central pier will be required, and so that vessels can lie close to the bridge.

A bolt has been patented by Mr. Jonas Potter, of Morrellville, Pa. It has a spring yoke connection, with means for detaching the bolt from its connection, and is designed to dispense with the use of cotter pins or nuts in retaining the bolt in a given position, while the bolt may be quickly and easily detached, even though badly rusted.

A box for the sale of goods has been patented by Mr. Charles T. Rosenthal, of Batesville, Ark. It is made up of and fitted with a series of partitioned receptacles or compartments, arranged in rows, one in front of the other, and designed to be placed in glass-covered show cases, to conveniently hold and display goods.

A feed for stone saws has been patented by Mr. Neil McIntyre, of Brooklyn, N. Y. It is for saws armed with diamonds or other hard stones used as cutting tools, and the invention provides a novel arrangement of continuous feed, whereby the saw is designed to cut equally well upon the forward and back stroke.

A press has been patented by Mr. Lorenzo D. Gordon, of Tenaha, Texas. This invention covers an improvement in lever powers applicable especially for presses for baling cotton, hay, etc., or for expressing cotton seed, castor bean, and lard oil, the contrivance being one which can be worked or applied either horizontally or vertically.

A check hook has been patented by Mr. William R. Moore, of Unionville, Pa. It consists of a peculiarly shaped spring, formed of a single piece of spring wire, applied to the hook by means of the same bolt that secures the hook to the saddle, making a check hook from which the check rein cannot be accidentally disconnected.

A chicken coop has been patented by Mr. George W. Brown, of McNairy, Tenn. The invention covers a novel construction of coops especially adapted for the transportation of fowls, etc., making a light, inexpensive, and strong structure, in which the stock will have plenty of air and can be conveniently inspected.

A punch has been patented by Mr Albert Burrowes, of Toronto, Ontario, Canada. It is for punching oblong apertures in belts to facilitate lacing their ends together, and has a straight shank with a semicircle at one end, which semicircle continues into parallel sides, forming a U-shaped cutting edge at the lower end of the shank.

A water cock has been patented by Mr. Henry D. Medrick, of Port Jervis, N. Y. It is especially adapted for the water supply pipe of a locomotive, and is designed to filter the water before it passes to the injector, and also to provide means for preventing the cock from freezing up in cold weather, and for quickly and conveniently cleaning it.

A washing machine has been patented by Mr. George F. Dunning, of Deep Water, Mo. It is designed to afford a simple and effective machine, to be operated with economy of time and labor, and is arranged to give easy access to all its parts for handling the clothes or washing fluid, and for cleaning the machine when the work is finished.

A liquid measuring faucet has been patented by Mr. Herman M. Nye, of Corydon, Ind. It is a combined supply and discharge faucet, in connection with an intervening reservoir, on which is marked a measuring scale, with various novel details, making a faucet whereby liquids may be measured as drawn from a cask or receptacle.

A combination tool has been patented by Mr. James Angus, of St. Catharines, Ontario, Canada. The body of the tool is of malleable iron or steel, and it is made of few and simple parts, to be used as a saw set, stove cover lifter, pot hook, can perforator and can opener, screw driver, corkscrew, tack puller, wrench, and a sad iron holder or plate stand.

A method of and apparatus for producing animated pictures of natural scenery and life has been patented by Mr. Augustin Le Prince, of New York City. It consists of a photo-camera and stereopticon adapted to show pictures in the order and time in which they were taken, in quick succession, on a finely ground plate glass, to produce the effect of the objects themselves in motion.

A carburetor has been patented by Mr. Frangois J. Lothammer, of Paris, France. Combined with a compressed air reservoir and its supply pipe is a carbureting chamber within the reservoir, a valved pipe leading from the reservoir into the chamber near its bottom, a hydrocarbon receptacle surrounding the chamber, a heating chamber, and various other novel features.

An automatic device for shutting water cocks, etc., has been patented by Mr. James W. Brook, of Lynchburg, Va. This invention covers a novel combination and arrangement of parts whereby dripping water, as it freezes in cold weather, will operate a balanced mechanism to close a valve in the service pipe, or the device may be used to open or close a window and regulate ventilation.

A folding fire escape has been patented by Mr. Ira B. Stillman, of Wellsville, N. Y. It is a sectional folding ladder, the side lengths made of short lengths of wire cord connected by rivets, the rivets constituting the rounds of the ladder, the upper sections of the ladder having means for connection with the building, while the lower round is preferably formed from a bolt, the whole being adapted to pack in a very small space.

An automatic cut-off for water tanks has been patented by Mr. James Pocknell, of Jersey City, N. J. It consists of a bucket on one end of a bell crank lever, in which discharges the overflow pipe of the tank, another weighted bell crank lever being connected therewith, the weight adapted to actuate a lever connected with the valve of the steam supply for the pump, or with a shifting lever connected with the driving belt of the pump.

A safety inkstand has been patented by Mr. Louis B. Prahar, of Brooklyn, N. Y. This invention relates to inkstands wherein the bottle is inclosed by an inner and outer case, each having a cover, and provides for forming the springs and strips carrying the hinges as part of a metal frame shaped to embrace the inner casing, to act on its opposite sides, whereby the inkstand can be made almost entirely by machinery, and will be practical, durable, and comparatively cheap.

An envelope for newspapers, etc., has been patented by Mr. Robert W Macgowan, of New York City. The invention consists in making two rows of perforations in the wrappers for articles put up in roll form, as newspapers, engravings, etc., the rows of perforations converging to make a central tapering strip which is readily torn out when started at one edge, thus easily loosening the wrapper without risk of the paper or article contained being torn or injured in removing the envelope or wrapper.

NEW BOOKS AND PUBLICATIONS.

HOME EXPERIMENTS IN SCIENCE FOR OLD AND YOUNG. By T. O'Conor Sloane, A.M., E.M., Ph.D. Illustrated by 97 engravings. Philadelphia: H. Carey Baird & Co. 1888. Pp. 261. Price, $1.50.

Those of our readers who have followed the series of articles published in our columns during the last year, by the author of the above work, will doubtless be glad to find them arranged in book form. But while the papers in question form the basis of the work, they are very far from constituting the whole. Much new matter is added, the experiments are placed in systematic order, and the work is brought into such shape that it is really to some extent a manual of physics. In the opening portion the manufacture of apparatus is spoken of. The subjects of wood, metal, and glass working are treated, with the limitation of processes to what the unskilled worker can do, as one great object of the book is to bring experiments within the reach of the teacher, amateur, and youth. The subject of experimental science in general, its place and its importance, is also treated of. Then the main portion of the book begins with a chapter on mechanics. This is replete with experiments and examples of the laws of force, impact, centrifugal force, elasticity, momentum, etc. The principal laws of mechanics being disposed of, the divisions of physics are attacked. Gravitation, hydraulics, and pneumatics comprise the next series of experiments, with many instances of the application of laws, and practical remarks. Atoms and molecules are treated by themselves, and introduce the subject of molecular physics. Here Professor Osborne Reynolds' new and celebrated experiments in dilatancy are described *in extenso*, so that any child of intelligence can perform them sucessfully. Capillarity is fully treated, some entirely new examples and experiments being presented. The illustration of the constitution of a water drop, and the formation of bubbles of metallic mercury, are two specially interesting experiments. Soap bubbles come next, and an exhaustive series of illustrations of the phenomena of films, all performed with almost no apparatus, except a few pieces of wire, affords probably the fullest treatment of the subject accessible. Formulæ for various soap bubble solutions are collected and given here. Heat, sound, and light follow, with a quantity of experiments, and a chapter on scientific lecturing closes the work. In this last portion the suggestion is made that science lectures should be made a feature of home amusement, so as to take the place of charades and dramatic performances. This certainly opens up a new field for the energies of the young lover of science. The work is beautifully bound in ornamental cloth gilt, and is very fully illustrated with nearly one hundred cuts, and has an extensive table of contents and index. It is emphatically what its title indicates, a manual of experiments. The publishers send free to all who apply by letter, a large illustrated circular, giving the full scope of the work, with samples of the cuts. It will be supplied by mail post free to any address by Munn & Co. or by the publishers on remittance of the price.