

## ENGINEERING INVENTIONS.

An improvement in car platforms has been patented by Messrs. Wm. F. Brown and Charles L. Haight, of Poughkeepsie, N. Y. A hook secured to the bottom of the platform projects upward and on the top of the next platform. There are other special devices, but the idea is that cars in collision will be prevented from rising one above the other, and so telescoping.

A car coupling has been patented by Mr. John Cochran, Jr., of Millwood, Mo. It consists of a rock shaft crossing the end of the car from side to side, from whence the coupling pin is suspended by an arm; a link lifter is also suspended from the shaft, so that by cranks at the sides of the car, or a rod and chain extending to the top, the pin and link can be handled without going between the cars.

An improvement in operating valves of steam engines has been patented by Mr. Charles A. Gayne, of Ashland, Pa. It is intended to increase the regularity of pumping, and by it the pump cylinder is completely filled after each stroke. When used with two large pumps, this valve system will stop the pump automatically as soon as the reservoir is emptied of water, whereas other pumps move off rapidly as soon as they begin to take on air.

A safety switch guard has been patented by Mr. Henry Harmer, of Southampton, Ontario, Canada. The switch operating mechanism is contained within a house or structure, into which the switchman must enter to adjust the switch, but which he cannot leave until, after connecting a switch with a siding, he has reconnected it with the main line; and this invention provides special means for accomplishing this end.

An improved boiler feeder has been patented by Mr. John H. Phillips, of New York city. It is a pump connected with a vessel for receiving water, the latter having a float to throw a lever connected with the slide valve, so the pump will be started as soon as the water in the receiver reaches a certain height. The feeder may be placed at a distance from the boiler, and above or below the water line, and will return all condensed water formed under any head or pressure.

An improved steam boiler has been patented by Mr. Willey J. P. Kingsley, of Rome, N. Y. The tubes which enter the fire box conduct the heat products to the top of the boiler as usual, but there are return tubes between the inner ones and the boiler shell, which extend down through a water leg, and thence lead between the shell and the inclosing wall to the smoke stack, thus greatly increasing the run of the heat along the boiler, and more than doubling the heating surface.

A car coupling has been patented by Messrs. Joseph K. Nyce and Irwin C. Hunsicker, of Skipack, Pa. It provides for a drawhead with longitudinal slots in the sides and bottom, in which side slots a cross bar slides, which has a bottom guide projection into the bottom slot. The ends of the cross piece are adapted to strike against the lower ends of ball-shaped frames pivoted on the drawhead and throw them over hooks on the opposite drawheads, thus automatically coupling them.

An improved automatic car coupling has been patented by Mr. Adoniram J. Chapel, of Arkansas City, Kas. Upon one side of the forward end of each drawhead is formed a projection, the forward end of which is beveled to cause it to enter a recess formed in the other side of each drawhead. The recess is rectangular, and so also is the coupling pin and the hole in which it slides, the upper part thereof being in such position that one-half will be over the recess and the other half in the solid body of the drawhead. The device is intended for both passenger and freight cars.

A patent for an improved steam boiler has been issued to Mr. Albert C. Blatchley, as administrator for Mr. Albert P. Blatchley, deceased, of Deposit, N. Y. This invention relates to sectional boilers, and consists of a special construction of the deflecting plates for effective water circulation, and in the means of securing the same in the end chambers of the boiler, which are connected by longitudinally arranged steam pipes or tubes. There is also a special construction of the side casings to allow of convenient access for cleaning the tubes.

## MECHANICAL INVENTIONS.

An improved treadle power has been patented by Mr. Arthur W. Bush, of Boulder, Cal. A pair of reversely acting pawl arms, and a branching or double connecting rod are so arranged that the dead centers of the crank are avoided, and the stroke of the treadle may be varied at the will of the operator.

A coal and rock drilling machine has been patented by Mr. Thomas Aitken, of Pittston, Pa. The invention consists in an improved means for securing the bar or post which carries the swivel and drill rod, and such construction saves the necessity of a set screw, which is liable to be lost or mislaid.

An improved screw machine has been patented by Mr. Georg Heyne, of Offenbach-on-the-Main, Germany. The invention covers various combinations of devices for holding, feeding, and cutting the rods or other pieces from which the articles are to be made. It makes an apparently complicated piece of mechanism, but works simply and almost automatically.

A tire tightener has been patented by Mr. Harvey B. May, of Oregon City, Ore. The wheel rim is stretched by a screw jack device between the hub and the rim, and there are attachments to hold the spokes in the hub, preventing them from being drawn out of their sockets when the rim is stretched, and so they may be thereafter as firmly fixed as ever.

An improvement in water wheels has been patented by Mr. Lorenzo B. Swartwout, of Three Rivers, Mich. The buckets are not cylindrical, but have an inverted bell shape, and the lower ends of the partition walls are concave, or inclined in the reverse direction of that in which the wheel is to rotate. Each bucket is beveled at the outer end, so the beveled parts of the bucket walls are at right angles to the fixed wings in the throat in the curb of the wheel.

A machine for curling hat brims has been patented by Mr. John Wilson, of Newark, N. J. This machine presents a new combination of parts in an apparatus for turning over the edges or curling the brims of hard felt hats before shaping them. By its use the sides or crown of the hat or its lining are not exposed to any injurious effects of the escaping steam, and there is no necessity for any adjustable interior hub clamping device, the brim of the hat being held down to its place on the steam by a hollow weight, cover, or shield.

An improved machine for shelling green peas and beans has been patented by Mr. Giuseppe Paci, of New York city. The peas or beans to be shelled are placed in a hopper, and the machine is operated by turning a crank handle, when the top, or cover, of the machine, to the underside of which is affixed a ring or disk, pressed down by spiral springs, is turned in one direction, and a suitable screen is revolved in an opposite direction. There are special devices for conveying the peas or beans into hoppers or receivers according to their size, the pods being discharged from the machine, and a current of air from a blower carries off the fine particles.

A cartridge loading machine has been patented by Mr. Frederick A. Winter, of Thomson, Ga. An intermittently rotating disk has cells for holding the cartridge shells combined with a novel feeding device for shifting it around as the cartridges are charged; also a device for pressing in the wads and bullets, with attachments for crimping when paper cartridges are used; also attachments for capping and uncapping, and one for holding the powder and shot flasks in connection with the cartridge holding disk.

## AGRICULTURAL INVENTIONS.

An improved check row corn planter has been patented by Mr. Walter W. Church, of Carthage, Mo. The check marker shaft is made to revolve continuously; it has arms with crocheted ends sufficiently long and deep in the crotch to enable the shaft to be turned a quarter revolution by one arm, so that continuous rotation will be had with four arms, one arm being engaged while another is disengaged. By this contrivance also the motion for the dropper slide may be had from the check marker shaft.

A combined harrow and cultivator has been patented by Mr. Lewis A. John, of Dunlap, Kas. The object is to make an implement that will be simple, strong, durable, and easily handled, for use in tilling the soil around corn, cotton, and other standing crops. The plows may be swung freely, by the handles, to either side, or closer together or farther apart, as the crop may require, or be lowered or raised vertically for different conditions of crop or soil, enabling the workman to heap up about the plants just the right quantity of earth, which has been previously loosened by the harrow.

A grain header has been patented by Mr. John A. Russell, of Salina, Kas. In the ordinary header the sections are linked together in a rotary motion for running on a drum, with guides to take up the slack, means for operating, and an extension carrier for delivering the grain from the elevator to a wagon alongside of the header. The continuous movement of the sickle in one direction is calculated to make it cut better and easier than the reciprocating sickles.

An improvement in steam plows, to increase the traction and facilitate the steering, has been patented by Mr. Francis Pidgeon, of Saugerties, N. Y. The plow frame can be propelled forward or backward. There are sets of plows at each end of the frame, and the plows at the forward end are lifted from the ground as the plow advances; the wheels on either side are operated independently of the wheels on the other side by separate pistons and cylinders. Bars on the sides worked by a chain around an upright shaft, allow of one side or the other of the frame to be readily advanced to facilitate turning.

## MISCELLANEOUS INVENTIONS.

A fire escape has been patented by Mr. William Wightman, of Denver, Col., which prescribes the construction of vertical chambers within the building walls, each chamber connecting with a separate story and at the bottom with the outside of the building.

An improved wrench has been patented by Mr. James Davidson, of Central City, Colo. It is a socket wrench provided with expansion jaws, and a loose sleeve to contract the jaws upon the nut or article, so as not to wear the angles of a nut or cock when applied, the clamps being made to gripe tightly.

A music holder has been patented by Mr. William R. Hoffman, of Oregon, Mo. It consists in a combination, with opening and closing music holders, made to shut and keep closed by a spring applied to a clamping and pivoted section or clamp, of an attached catch for holding the holder open, whereby great facility is afforded for putting in and taking out the music.

An improved twine holder and lifter has been patented by Mr. A. B. Tomlin, of Fort Collins, Colo. In combination with a twine holder is a pivoted ring with one part weighted, and a rod or wire projecting from the part opposite the weighted part. This rod or wire being provided with a loop or eye for lifting or raising the free end of the twine, so it will be out of the way when not in use, but can be easily reached.

A tobacco cutter, or pocket tobacco receptacle and cutter, has been patented by Mr. Joseph W. Coe, of Rockland, Me. It is for cutting plug tobacco for the use of smokers. The plug may be placed within a box of size adapted to hold an ordinary plug, and then, by turning a cap, one set of cutters shaves off the tobacco, while other cutters working in a cross direction divide it up finely, and it drops in the cap provided therefor.

A glass butter jar, box, and cover has been patented by Mr. William W. Weston, of Honesdale, Pa. A glass jar is placed in a box with suitable packing, the jar having a wooden or glass cover on which a diagonal crosspiece rests, through the ends of which screw-threaded rods pass, which are secured in the bottom of

the box, thus holding the cover firmly on and the jar in place in the box.

An improvement in fireproof floors and ceilings has been patented by Mr. Andrew J. Campbell, of New York city. A joggle arch is used in which are three pieces, the floor beams, struts, and joggle pieces, the struts preferably hollow to save weight, and all of fireproof material. The floor is inexpensive, as the pieces can readily be moulded, and platforms or centering are not necessary in their erection.

An improved inside window shutter or blind has been patented by Mr. William Teuteberg, of Omaha, Neb. This invention relates to inside window shutters or blinds adapted to be raised and lowered by means of cords. It is a simple and cheap arrangement whereby slats, as provided, may be raised or lowered to any desired position, or the angle of the slats be changed at pleasure.

An improvement in watch bows has been patented by Mr. Rome B. Richmond, of Macon, Ill. It consists of a watch case or locket pendant with a hook above or below the bow aperture on each side, combined with a bow having a semicircular or eccentric transverse ridge a short distance from each end. No screw is required to hold the bow in place, and the construction is simple and durable.

An improved rag joining knife has been patented by Mr. James A. Fulwiler, of Lexington, Ill. The blade is sharpened at one end, and has an inclined notch passing toward the point of the knife from the blunt back, for engaging the rags and drawing one through the other in forming the loop or joint, the slot being so arranged in relation to the sharp point and edge as to join the rags firmly and smoothly, with but short ends.

A combined copy holder and book rest has been patented by Mr. Gustave Weinschenk, of Cambridge, Mass. The device includes a clamp with proper attachments, so that, when fastened to a desk or chair it will hold books or manuscripts open for perusal; it is so arranged as to accommodate a greater or less thickness of a book or manuscript, and has a line bar, or marker, making it especially desirable for holding the compositor's copy in type setting.

An improved flood fence has been patented by Mr. Henry D. Merrill, of Springfield, Ill. It is constructed with mud sills staked to the bottom of the stream, and connected at their down stream ends by pairs of posts, with upwardly inclined down stream ends of break bars, the fence to turn down into a horizontal position to allow ice, logs, and other rubbish to pass over, and the fence to return to an erect position as soon as the water subsides.

An improved bag holder, for keeping a bag open while it is being filled, has been patented by Mr. Daniel F. Smith, of Republic, O. By a suitable arrangement of standards in connection with a platform, levers, and cross bars, the bag is supported and held open by an elongated elliptical spring band or hoop. This spring band is secured in position, and when the bag is filled the free ends thereof are drawn together and the bag will be released.

Mr. Washington I. Lee, of Peekskill, N. Y., has patented an improved baking pan, for baking bread, meats, etc., in a more perfect manner. The pan is of sheet iron in the usual shape, and to the bottom and ends a sheet iron strip or thin cast iron plate is riveted, to support the pan so that the bottom will not come in contact with the hot stove plate and the contents of the pan will not be burned. A specially contrived and supported hinged cover is also provided for.

A yellow coloring matter which dyes a very bright yellow, has been patented by Mr. Ivan Levinstein, of Manchester, Eng. It is made by the action of nitric acid upon the mono and disulpho acids of nitroso-alpha-naphthol, or upon a mixture of the same, whereby, according to a specific process, a yellow precipitate is formed resembling earthy lumps; it can be pulverized by pressing between the fingers, is odorless, and has distinguishing acid properties.

An improved butter tub has been patented by Mr. Henry F. Coombs, of Charlottetown, Prince Edward Island, Can. The staves are thicker at one end than the other, and narrower at the thin end than at the thick on one face; and wider at the thin end than at the thick on the other face, the tub is smaller at the top than at the bottom outside, and larger at the top than at the bottom inside, so the tub cannot lose its hoops by their dropping off at the bottom, and the butter may be removed in bulk in the usual way.

A cutter and holder for fruits and flowers has been patented by Mr. Peter McDonald, of Yonkers, N. Y. To the upper end of a pole of desired length is fixed a concave sharp edged blade; to the shank of this blade is pivoted another, and to the rear of both are projecting plates or lugs, with rubber blocks extending to near the cutting edges, so that when the blades are brought together to cut the stems of fruit or flowers, the rubber blocks will grasp and hold the same until lowered.

An improved water heater has been patented by Mr. John B. Webster, of Los Angeles, Cal. It is intended to be principally an oil burner, and around the water chamber are suitable flues to facilitate obtaining the utmost heat. The reservoir is suitably connected with, but removed from the burner. The whole apparatus is constructed of sheet metal, with tight joints, and is intended to furnish a portable heater which can be readily used for heating water out of doors or wherever wanted.

An improvement in transplanting implements, designed to facilitate the handling and resetting of plants, has been patented by Mr. Frederick Visscher, of Mount Sterling, Ky. A half conical bowl or vessel, that may be opened across its center by two handles or levers, is designed to hold the plants; at the bottom in a downwardly tapering root receptacle, forming a pintle or prong projecting from the bottom of the bowl. The plant, placed in the bowl, with its roots thus surrounded, the implement can readily be forced into the soil to the depth desired, and then the parts of the bowl and pintle be readily separated and withdrawn by means of the handles.

A transplanting implement has been patented by Mr. Frederick Visscher, of Mount Sterling, Ky. This invention is designed to facilitate packing the earth around plants that have been transplanted, and where the earth lies loosely around the roots. Two handles are so pivoted as to form levers, at the lower ends of which are semicircular frames holding teeth; these, when opened, are to be forced into the ground around the plant, and as the handles are drawn together they pack the earth around the roots of the plant.

An improved cupelling furnace has been patented by Mr. Bernhard Roesing, of Friedrichshutte, Upper Silesia, Germany. Instead of the ordinary porous material of which these are made for drawing off the inferior metals, the inventor substitutes a firm metallic cupel, to which motion can be readily communicated as desired, without interrupting the process of cupellation, and the products of oxidation—litharge, etc.—may be withdrawn, absorption in any degree not being intended. The cupel is covered with a lining of refractory material, to avoid overheating of the cupel or too great cooling off of the molten lead.

## NEW BOOKS AND PUBLICATIONS.

HOW TO MAKE CANDY, N. P. Fletcher & Co., Hartford, Conn.

A manual of plain directions for the manufacture of the more popular forms of confectionery.

A PROSPEROUS PERIODICAL.

The special illustrated edition of *Building* for November is a noteworthy specimen of the result attending well directed effort in the newspaper line. Although this journal has only reached No. 2, vol. II., it has passed the experimental stage and now stands on a firm basis. It is devoted to architecture, as its title implies, and in its editorial and general columns treats pertinent subjects in an instructive manner, aiding its explanations by at active illustrations. It is published by William T. Comstock, 6 Astor Place, this city.

EXPLOSIVE MATERIALS. A series of lectures before the College de France, at Paris, by M. P. E. Berthelot. "Science Series," D. Van Nostrand & Co., New York.

This little book, the work of translating which from the French has been done by Marcus Benjamin, Ph.B., F.C.S., notes the constitution, explains the action, and marks the differences between the leading kinds of explosives, more particularly those which have come into prominence during the past twenty years for industrial purposes. The lecturer comes to his subject as an accomplished chemist, but the language is free from technicalities, and the explanations cannot fail to be readily understood by any one of ordinary intelligence. In regard to dynamite, gun cotton, nitroglycerine, the results of many experiments are detailed, developing facts concerning their operation which are not readily susceptible of demonstration in the ordinary uses of these explosives. In addition to the above the book contains a short historical sketch of gunpowder, translated from the German of Karl Braun, and a valuable bibliography, or list of works relating to the constitution and preparation of explosive substances.

MECHANICS OF ENGINEERING AND OF MACHINERY. By Dr. Julius Weisbach. Revised and enlarged by Gustav Herrmann. Translated by J. F. Klein, D. E. Illustrated. Vol. III. John Wiley & Sons. Price \$5.00.

This book is part I, section I, of volume III., and treats of the Mechanics of the Machinery of Transmission. The remaining two parts will treat of the Mechanics of Machinery for lifting and transporting solid and fluid materials and for changing the form and size of materials. The introduction is a thorough and practical discussion of kinematics. The first chapter considers journals, shafting, couplings and bearings, giving the various forms, relative dimensions, etc., and discussing friction and lubricants and lubricators. The second chapter is on gearing, every form of which is treated, while the remaining chapter considers rods and their guides. It is impossible, in a notice of this kind, to convey any idea of the scope of this work; it would be difficult to find a problem properly coming within its province that is not fully explained. The book has been a recognized authority for years, and is specially designed as a text book for technical schools and colleges and for the use of engineers.

GRAPHIC AND ANALYTIC STATICS IN THEORY AND COMPARISON. By Robert Hudson (Graham). C. E. Crosby, Lockwood & Co., London.

The book aims to place the theory and relations of graphic and analytic statics in a clear light and to show their practical application to the treatment of stress in common forms of iron and wooden frameworks. The fundamental principles of graphic statics are treated in Part I., each proposition being proved, step by step, by the sole aid of geometry, no serious gaps being consciously left in the demonstrations. Part II. deals with the dual treatment of roof and bridge structures by graphic and analytic methods. A special feature of this part is the treatment of a given roof or bridge by two methods which mutually check each other. The roof or bridge is taken truss by truss, and the reciprocal diagrams given in separate form, of the independent trusses. The same framework is then treated as a whole. One article explains the graphic and analytical methods of sections in application to the same example. Part III. shows the graphic and analytic treatment of direct stress; extension under stress; resultants and centers of stress; centers of gravity; moments of all kinds and straight beams and girders of various forms both in a state of equilibrium and under loads. At the end of each chapter there is a set of practical problems. The last chapter is devoted to wind pressure, giving the general theory, velocity and pressure, and action on roofs and braced piers.