

## ENGINEERING INVENTIONS.

A gas engine has been patented by Mr. Johannes Spiel, of Berl n, Germany. It has two explosion chambers united by a tube, so that after the explosion in one chamber the burning gases will ignite the gases in the other cylinder or chamber automatically; a perforated metal ball is also arranged in the bottom of each cylinder, and connected with a water pipe for condensing water into these balls, which water is converted into steam to assist in driving the engine.

## MECHANICAL INVENTIONS.

A hinge mortise and pin has been patented by Mr. Joseph D. Thurston, of South Union, Me. The angle plate has a slot and a bracket, and the sliding plate or pin carrier has a stem extending up through a guide socket of the bracket, the carrier also having perpendicular cutters, with other novel devices to facilitate the making of mortises to receive the plates of butt hinges.

A motor has been patented by Mr. George H. Furman, of New London, Huron County, O. An inner cylinder or drum, having pockets, is combined with an outer drum with pockets, the inner cylinder being attached to a shaft and formed with peripheral inclined pockets, in combination with the independently revolving surrounding cylinder or drum, weights in the pockets causing the shaft to revolve continuously.

## AGRICULTURAL INVENTIONS.

A cotton seed planter has been patented by Mr. Thomas P. Hopper, of Sherman, Texas. This invention covers several novel features of construction, whereby the seed may be fed from the hopper regularly and in uniform quantity, and will be separated before they are dropped to the ground.

A plowshare has been patented by Mr. James C. Pugh, of Ashton, Dakota Ter. The plate forming the cutting edge has its longitudinal center and landside edge thicker than its main part, the plate forming the cutting edge being adjustable, so it can be easily sharpened, and, owing to its shape, the original width of the cut can be maintained.

A low attachment has been patented by Mr. Reuben Jones, of Hogsansville, Ga. A guard is attached to the plow beam, suspended by in s that are adjustable, so that the guard may be held in a higher or lower position, for the purpose of adjusting the depth of furrow or quantity of soil thrown up around young plants.

A grain thrasher and separator has been patented by Messrs. Albert J. and Josiah H. Marshall, of Evansville, Wis. The straw carrier and separator is combined with carrier belts, rocking bars, beater fingers, springs for accelerating the conveying action of the fingers, with other novel features, whereby the work is done quietly and thoroughly, without danger of the carrier being clogged by the straw.

A seed planter has been patented by Messrs. Louis Pietzsch, John J. Armstrong, and Joseph R. Lowrey, of Weimar, Texas. This invention covers improvement on a cotton seed planting machine formerly patented, whereby the dropping apparatus may be arranged for corn and other seeds, and so the machine may be used to better advantage for cultivating the ground.

A potato digger has been patented by Mr. Reuben R. James, of Rising Sun, Ind. This invention relates to plows for turning potatoes out of the ground, curved bars or fingers being substituted for the mould board for raking out the potatoes, and to turn away weeds, vines, etc., while there is an attachment for raking the soil and laying bare any potatoes that may be covered, with other novel features.

## MISCELLANEOUS INVENTIONS.

A derrick has been patented by Mr. Cornele G. Ross, of Rutland, Vt. The invention covers a novel combination of worm and friction gearing, whereby the mast and boom of a derrick can be readily turned either to the right or left, at the same time a load is being raised or lowered.

A pool and billiard cue chalker has been patented by Mr. Emil T. Mueller, of La Crosse, Wis. It is an improved device for holding a piece of chalk for chalking billiard cues, and is adapted to be secured to the side or any other convenient part of the billiard or pool table.

A horse training apparatus has been patented by Mr. Robert R. Parshall, of Westfield, Pa. The invention covers an attachment for harness, consisting of straps, loops, and side pieces, designed more especially to prevent trotting horses from breaking when driven at high speed.

A washing machine has been patented by Mr. Richard E. Harper, of Butler, Mo. In this invention the construction is such that the tub is rotated only when the poulter is lifted out of contact with the clothes, in order not to tear them, and the construction makes a simple and easily operated device.

A bran duster has been patented by Mr. Joseph W. Wilson, of Brookville, Kansas. Revolving brushes, operating in connection with a fan, rub the annular stream of bran passing through the machine against the cloth of a bolt, and there are several other new features and novel combinations.

A neck wear fastener has been patented by Mr. Joseph H. Wright, of New York city. The invention covers a spring wire frame with two upwardly projecting prongs bent downwardly from their upper parts, and then bent laterally in opposite directions, making a fastener which can be easily secured on the shield or de aded therefrom.

A dumping scow has been patented by Mr. Franklin P. Eastman, of New York city. The hinged or pivoted wings are so connected to the side walls of the well of the scow that the angle of inclination may be varied, and its capacity increased or decreased according to the nature of the contents with which it is desired to load the scow.

A process and composition for aniline and dressing old leather and leather articles has been patented by Mr. Edwin W. Hewitt, of Louisville, Ky. A solution is used of sumac, American water pepper, dog fennel, lye, and carbonate of soda, made and used in a specified way, and the leather is afterward dried, oiled, and finished.

A combined knife and fork has been patented by Mr. Albert H. Forsyth, of Worcester, Mass. This invention covers novel means for fastening the knife and fork to their handles, the blade of the knife and the prongs of the fork being passed into recesses in the handles so they can be readily carried, and there being no rivets visible, as they are within the handle.

A hand bag has been patented by Mr. Robert Weintraud, of Offenbach-on-the-Main, Germany. The invention provides a device for holding a purse, pocketbook, or like article, so that they can be easily taken from the bag for use, and cannot become detached and get mingled with other articles when the bag is closed.

A hydraulic jack has been patented by Mr. Thomas A. Watson, of Brooklyn, N. Y. The invention covers improvement in the pump cylinder, so the backflow passages for the liquid are removed from the face against which the plunger or piston acts, with improved arrangements for the valves of the ram and the pump plunger, with other novel devices.

A trunk has been patented by Messrs. John T. Dupont and William J. Cooke, of New York city. By this invention the front wall of the trunk is removable, and trays are arranged to slide horizontally in the trunk, and with this advantage is secured other novel features of construction; besides, the trunk is strong and durable, and easy to open and close.

A stem holding device for watches has been patented by Mr. George T. Bigham, of Bellefontaine, O. The invention consists mainly of a collet or ring within the pendant, through which the stem having an inner shoulder is permitted to turn freely, the collet having one or more screws or pins arranged to enter the hole or holes in the pendant in which the ends of the bows fit.

A detachable book cover has been patented by Mr. James Gordon, of Stratford, Ontario, Canada. Combined with the covers of the holder is a binder formed of two relatively fixed plates between which a strip is clamped, and by which the binder is fastened to the covers, and a pivoted movable clamping plate, to bind the book or articles to be held firmly but removably to the covers.

An educational device has been patented by Mr. Hugh V. Dunn, of Scott's Depot, West Va. On a frame is arranged a series of standards, operated by levers and finger board, by which can be displayed to a class of children the alphabet and various words, or the multiplication table and simple problems, so the attention of the children will be easily secured and their lessons quickly learned.

A permutation lock has been patented by Mr. Charles Tregoning, of Lead City, Dakota Ter. The invention provides means whereby two disks may be operated by one visible dial, and means whereby a series of dials may all be liberated at once to be set relatively to each other, the arrangement of two disks to be registered by one dial preventing any one seeing the combination while the lock is unlocked.

An electric temperature regulator has been patented by Mr. Charles A. Tucker, of Islip, N. Y. A window frame with slats is so connected with a pivoted lever carrying an armature, an electro magnet, and battery, and the mercury tube of a thermometer, that the window slats will be opened when the temperature rises to a certain point, and closed as the temperature falls.

A fence has been patented by Mr. John D. Davis, of Wilmington, Del. It is a durable and ornamental fence for grounds, verandas, etc., made mostly of merchant iron, not altered in shape except by perforations, forming our tenons to a panel, and flattening the pickets to shape the heads, the ornaments being cast in form to apply to the fence without machine work, and no screws or bolts being used.

A fireplace stove has been patented by Mr. James D. Richards, of Patriot, Ind. The roof of the stove is formed of a ceiling plate loosely supported on walls, the plate being adapted to slide forward and backward, and by proper adjustment the draught may be made to pass up in front of the plate or behind it, with other novel features to economize hot air and save fuel, as well as to facilitate thorough ventilation.

An apparatus for cooking or steaming fruits, vegetables, etc., has been patented by Mr. James L. Smith, of Milford, Del. There is an elevated cooking or steaming vessel, the cover of the furnace having inwardly projecting flanges, on which the coil is supported in a horizontal position, and pipes connecting the ends of the coil with the steaming vessel, with other novel features.

A hose coupling has been patented by Messrs. Robert A. Brauer and Thomas Roche, of Oshkosh, Wis. It is formed of a female and male part of which the former has a pin hook with a staple, and the male part has a notch with a hook adapted to pass into the staple; there are also beveled projections on the hose coupling sections to protect the locking devices.

Improved shelving forms the subject of a patent issued to Mr. John Zerr, of Keokuk, Iowa. Legs having apertured cross bars have shelves held thereon by screws passed through the ends of the shelves into the cross bars, the shelves preferably having angled plates secured on their ends, and being also supported by intermediate legs between the legs supporting the ends of the shelves.

A window shade bracket has been patented by Mr. John F. Miller, of Newton, Kansas. Combined with a bracket arm is a slide, and another slide held on the outer end of the first one, at right angles to it, the transverse slide having an arm for holding one end of the roller, constituting a device by which any roller

can be used on any window, the roller projecting more or less over the side of the window casing.

A sackin, weighing, and registering machine has been patented by Mr. George H. Caughrean, of Raymore, Mo. It is a combination machine with a vibrating frame having platforms and sack holders, connecting rods, levers, and a slotted scale bar with adjustable slots and a traveling weight, whereby the weight of the filled sacks will reverse the cut-off, taking the products as it comes from thrashing machines, corn shellers, etc.

A button hole cutting attachment for button hole stitching machines has been patented by Mr. Arthur Felber, of Brooklyn, N. Y. The invention consists principally in applying a narrow blade to the needle bar for cutting the button hole through the material, the blade being arranged in line with the needle and adapted to be held out of contact with the goods except when making the edge stitch in stitching the first side of the button hole.

A cartridge loading machine has been patented by Mr. Bryant W. Annin, of Hannibal, Mo. The invention covers a rotating disk with apertures to hold the cartridge shells in upright position, an adjustable loading gauge with receptacles for ammunition, a movable canister adapted to fit upon the gauge, a ramming device, with various other novel features, whereby a large number of shells can be loaded simultaneously and expeditiously.

A fisherman's minnow bucket has been patented by Mr. George W. Barton, of Bethlehem, Ky. A central guide rod is secured to the bottom of the bucket, and a false bottom is adapted to slide on this rod, and with a handle having spring catches engaging with the guide rod, so the minnows in the bucket may all be raised to the surface of the water and caught in the hand without rolling up the sleeves and feeling in the water for them.

Metal roofing forms the subject of a patent issued to Mr. John H. Dellmon, of Pine Bluff, Ark. This is a novel construction of sheet metal roofing, the strips or sheets of metal being turned and bent on their opposite side edges, so that when fitted to each other and supported they will expand and contract without breaking the metal, there will be no leakage at the seams, and the roofing will lie close to the sheathing on which it rests.

An automatic power windlass has been patented by Mr. Reuben G. Cheney, of Atchison, Kan. This invention relates to windlasses where a shaft and clutch are constantly revolved in one direction, a spool being fitted loosely on the shaft, to engage the clutch at the will of the operator, and by this improvement the spool is engaged with the clutch by a positive motion that will not cause too sudden a shock in starting and to disengage it at the proper time, adjusting the device when thus disengaged.

## NEW BOOKS AND PUBLICATIONS.

MINE VENTILATION. By Eugene B. Wilson. John Wiley & Sons, New York.

The author treats concisely of the practical as well as the theoretical in mine ventilation, with perhaps rather more use of figures than most miners will appreciate, although the book is stated to be rather for the use of miners than for engineers.

## 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 next issue.

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## Notes &amp; Queries

## HINTS TO CORRESPONDENTS.

Name 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 mail, each must take his turn.

Special Information requests on matters of personal rather than general interest are requests for Prompt Answers by Letter, should be accompanied with a remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service without remuneration.

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

Minerals sent for examination should be distinctly marked or labeled.

(1) N. S. C. asks a recipe for making a waterproof blacking which will give a fine polish without rubbing, and will not injure the leather. A well known waterproof blacking has the following composition:

Beeswax	18 parts.
Spermace	6 "
Oil of turpentine	66 "
Asphalt varnish	5 "
Powdered borax	1 "
Vine twig black	5 "
Prussian blue	2 "
Nitro benzol	1 part.

Melt the wax, add powdered borax, and stir till a kind of jelly has formed. In another pan melt spermace, add the asphalt varnish, previously mixed with oil of turpentine; stir well and add to the wax. Lastly add the oil or previously rubbed smooth with a little of the mass. Perfume with nitro benzol. 2. Also a good black varnish which will dry instantaneously. A. A good varnish is prepared by mixing a filtered solution of 80 parts of shellac in 15 parts of alcohol with 3 parts of wax, 2 parts of castor oil, and a sufficient quantity of pigment. The mixture is evaporated in a vacuum to a sirup. The sirup is applied to the leather with a brush moistened with alcohol or with a colorless alcoholic varnish.

(2) H. K. asks how to make a black hectograph. A. Dissolve one part nigrosine in about five parts water and one of alcohol, and add one part of glycerine. It is impossible to obtain a satisfactory impression or as large a number of copies with the black ink as with the purple colored one.

(3) D. D. S. wants a process for making iron castings malleable. A. Iron castings cannot be made malleable. The making of malleable iron castings is a special process, in which the carbide is nearly burned out before the metal is poured.

(4) F. H. W. asks what he can put on sheet brass with a brush that will protect it from nitric acid. A. Melted paraffine.