

ENGINEERING INVENTIONS.

A fascine for the protection of harbors has been patented by Mr. Jacob Elmer, of Biloxi, Miss. It consists of a tubular body made of saplings bound together and filled with stones, the diameter of the fascine to be from one to three feet, and its length from ten to forty feet, for the protection of harbors and banks of rivers and filling of crevasses.

A spark arrester has been patented by Mr. James N. Weaver, of Sayre, Pa. This invention covers improvements on a former patent issued to the same inventor, and includes certain means whereby cinders or dirt are prevented from being drawn into the valves or cylinders, an even draught on the fire is secured, and an increased length of smoke stack within a given space is obtained, with other novel features.

A car coupling has been patented by Mr. Patrick Ryan, of Guelph, Ontario, Canada. The draw-head has a pivoted coupling hook, with a transverse bar under connected with a bar having the outer end pivoted to the car, and the inner end pivoted to the transverse bar, the inner end of the pivoted bar being connected with a spring for pulling or pressing it upward, and pressing the coupling hook up into the draw-head.

A steam boiler has been patented by Mr. William F. Hatcher, of Chariton, Iowa. This invention relates to improvements in boilers designed to heat houses, the boiler being cylindrical, with an inner concentric shell extending from the bottom of the cylinder to the crown sheet, and extending across the shell at its upper end, thus forming a continuous cylindrical waterspace closed at the bottom and opening at its upper end into the steam and waterspace, and keeping up a constant water circulation.

MECHANICAL INVENTIONS.

A bench hook has been patented by Mr. James McVane, of Boston, Mass. It is constructed with two bolts held to slide vertically on a plate, the bolts having their lower ends pivoted to the ends of a lever pivoted on the plate, whereby one bolt will be raised when the other is lowered; the bolts can be locked in place by a latch, and the hook can be used for holding planks on the bench flat or edgewise.

AGRICULTURAL INVENTIONS.

A grain sower has been patented by Mr. John B. Wright, of Ridge's Creek, N. C. This invention covers a combination of harrow with pivoted beam, supplemental beam pivoted thereto, and carrying the driving wheel, lifting handle, catch and cord, semi-circular hopper, with other novel features of construction.

A plow cleaner for sulky cultivators has been patented by Mr. Charles E. Ridley, of Mapleton, Iowa. A scraper is connected with the plow beam, the arched axle, and the coupling sleeve of the cultivator by bars so arranged that the partial revolution of the sleeve will move the scraper downward and the plow beam and plow plate upward, with other novel features.

A combined cotton cultivator and chopper has been patented by Mr. James W. Roberts, of Moody, Mo. A frame is mounted on wheels, with an axle, and carrying standards and beams connected with the frame by hooks and staples, and by levers for scraping and plowing the plants, with other novel features of construction, to facilitate the cultivation of cotton, and promote convenience in controlling the machine.

A novel quilting machine has recently been patented by Mr. Evans Wood, of Lyons Station, Texas. Combined with a needle frame adapted to carry a series of needles are a feed plate, eccentric shaft, rock shaft, and various special features of construction, it being designed to operate the machine at the rear of a cotton condenser of a cotton gin, so that the thick bat of cotton as it issues from the condenser may be fed between the upper and lower webs of cloth used for making the quilt.

MISCELLANEOUS INVENTIONS.

Improved neck wear is the subject of a patent issued to Mr. Howard Selva, of Brooklyn, N. Y. The invention consists of a neck wear shield with a diagonal or oblique edge, a pin projecting from the edge adapted to hold the free end of the neck band.

A moistening case for cigars has been patented by Mr. Charles N. Swift, of New York city. The invention covers a tobacco case, with a removable perforated bottom, and a removable moistening tray, sliding beneath said bottom, so the cigars can be kept moist by the moisture in the tray.

A grain cutting machine has been patented by Mr. John B. Frost, of Cuyahoga Falls, O. Combined with a revolving hollow feeding drum, with apertures through the rim, is a reversely revolving cutter drum, with cutters and gauges, and various novel features of construction and arrangement.

An earth scraper has been patented by Mr. David Harper, of Jonesborough, Ark. The scraper bowl has a point at one side of its forward end, and the forward edge of its bottom slanting rearward from this point to the opposite side of the scraper bowl, the lower side corners of the scraper being grooved.

A pillow sham holder has been patented by Mr. Jonathan A. Pierce, of Austin, Minn. This invention provides a simple and inexpensive device for holding pillow shams in place over the pillows of a bed, and for holding the shams in raised position while the bed is in use, or when being made up for the day.

A cuff retainer has been patented by Agnes L. Franklin, of Frankfort, Ky. This invention consists of a pointed stud attached to the sleeve button, and capable of engaging the edge of the sleeve under which the cuff is worn, the object being to provide a simple and convenient device for retaining cuffs in place upon the wrist.

A middlings purifier has been patented by Mr. David L. Ellis, of Brookville, Pa. This invention

consists in certain novel features of construction in the grading reel, in the screens, in the arrangement of the air passages, in order to give a machine of large capacity on little floor space, and save grading machines, spouting, and other now needed appurtenances.

An automatic register for grain, feed, and other substances has been patented by Mr. John Wherry, Jr., of Putnam, Ill. This invention is to improve registers formerly patented by the same inventor, and by novel features of construction renders the meter less liable to become choked or clogged, and consequently more reliable in operation.

A shaft buckle for harness has been patented by Mr. Felix A. Bennett, of Prather, Ind. It is a device for single harness contrived to be hitched in the trace and buckled around the shafts in a manner to provide simpler and more substantial means for connecting the shafts, traces, back strap, and belly band than is afforded by other means now in use.

An adjustable desk and seat has been patented by Mr. Herman W. Groehl, of Vincennes, Ind. This invention covers peculiarities of construction whereby school seats and desks, office desks, etc., can be adjusted higher or lower, as desired, and locked in position, the seat being adjusted independently of the desk, and the desk independently of the seat.

A stop watch has been patented by Mr. Samuel C. Scott, of Brooklyn, N. Y. The invention consists in an adjustable hollow arbor, attached to one part of the arm of the lever for operating the chronograph mechanism of a watch movement, the arbor to receive the square winding arbor of the watch, the shoulder of which winding arbor operates the said lever.

A hand power lifting and force pump has been patented by Mr. Olof Patterson, of New Boston, Ill. This invention covers a novel construction to facilitate the raising of water from any depth, with a minimum of power, and to reduce the wear on the working parts and the amount of attention necessary for keeping an efficient pump in order.

A saddle for horse collars has been patented by Mr. Christopher G. Calo, of Newark, N. J. The invention consists in a saddle constructed to fit upon the top of a horse collar, with side loops to receive thill or tug straps, so the thills or tugs can be supported from the collar, and with other novel features to simplify the construction and cheapen the manufacture of harness.

A garbage separator has been patented by Mr. George T. Waldeck, of New York city. The invention provides a reciprocating screen with a chute, a water tank with a chute, and drums journaled in the tank, an elevator belt, and operating devices, constituting an apparatus for separating ashes, cinders, and other powdered refuse from bones, rags, and coarse garbage.

An ear guard has been patented by Mr. William T. King, of Grand Rapids, Wis. The invention covers a combination of plug to fit into the ear, a pad to rest on the face, braces, and a spring hook, to protect the ear from being injured by loud and sudden sounds, such as the firing of artillery and the noise of mills, as well as to protect the ear from wind or cold, from insects, etc.

A car heater has been patented by Mr. Richard H. Brown, of Omaha, Neb. In combination with a stove extending above and below the car floor, there is a tank below the floor and a coil within the stove connected with the tank, with other arrangements for making a low pressure steam heater, designed to prove more efficient and safer than heaters now in use.

A carpet stretcher has been patented by Mr. William Hill, Jr., of Limestone, N. Y. The stretcher has a toothed head pivoted to a lever, in combination with a pivoted bar, having a pivoted dog, and other novel features, so the operator may fasten the stretcher with the carpet held in position and tack down the carpet leisurely before proceeding to stretch a second piece.

A carpet stretcher has been patented by Mr. Charles A. Cooper, of Chicago, Ill. The invention consists in a metal plate or drag with teeth at one end, the other end being connected by a loop with a slotted lever, a curved projecting from the plate on the opposite side from the teeth; the teeth enter the carpet from the under side, and therefore cannot injure the face of the carpet.

A process of moulding plastic substances has been patented by Mr. Chester A. Weller, of New York city. This invention provides a specially contrived press for moulding clay, artificial stone, etc., having a cylinder with an opening in its bottom, a spindle carrying screw blades journaled therein, a sliding platform under the cylinder, a mould plate hinged to the platform, with other novel features.

A sleigh knee has been patented by Mr. Laurent Jacques, of Lake Linden, Mich. Combined with a sleigh knee or leg are hook rods held in grooves in the side of the leg end, passed through the cross piece and having nuts screwed on the upper ends; rods projecting upward from the runner pass through longitudinal grooves in the front and rear sides of the leg and through the cross piece.

An earth scraper has been patented by Mr. William H. C. Goode, of Sidney, O. By this invention about one-half the material of the ordinary back plate is saved by curving up the rear end of the bottom along the curved rear edges of the sides, and the back is thus made curved from bottom to top without the necessity of forming the sides in separate pieces from the bottom.

A combined rule and square has been patented by Mr. George D. Umland, of Osceola Mills, Wis. The invention consists in attaching to or forming on the end of the jointed rule a metallic abutment block, which, when the outer section is folded inward, laps over the knuckle joint at the middle of the rule, and forms a stop, against which the other section of the abutment when it is exactly at right angles.

A transmitter for telephone time systems has been patented by Mr. Charles W. Ruehle, of Detroit, Mich. The invention consists in combining with a

clock movement a circuit controlling apparatus to send electric signals at one second intervals, an intermittent device for discontinuing them at fixed periods, and stopping and starting mechanism for determining time of sending signals and limiting their duration.

A side spring carriage has been patented by Mr. Antipas P. Marshall, of Lancaster, N. H. By this invention the springs have their ends extended or spread out laterally relatively to the main portions of the springs, and the links are of correspondingly increased width, with shackles to conform, thereby giving bearings of increased width, to prevent side spring carriages from swaying or swinging sidewise.

A device for casting printers' leads has been patented by Mr. Arthur H. McClure, of Buffalo, N. Y. The invention covers a simple hand apparatus, in which two frames are hinged together, with plates on their inner faces, one of which is adjustable, to make leads of different sizes required, whereby printers may conveniently use old leads or type metal to recast into new sizes of leads as they require them.

A lifting jack has been patented by Mr. John W. Clarke, of Hallowell, Me. With an adjustable or extension standard is combined a lever for operating the lifting block, and straps or cords in adjustable connection with the lever and block, making a double adjustment, giving great lifting power with little weight, and the construction admitting of the jack being used from either the front or back of a carriage wheel.

A sun dial has been patented by Mr. Hugh G. Christian, of Chagrin Falls, O. This invention combines two half ring dials with longitudinal lines and transverse slightly curved lines, with two balls, the dials being supported on pivots, and having means for adjusting them for different latitudes, one scale and one dial being for each half of the year, and the dial being calculated to give the time by five-minute marks.

A permutation padlock has been patented by Messrs. Charles E. and Albert G. Smith, of Washington, Ga. By this invention the sliding bolt is provided with a thumb piece projecting through the case for operating it, there are oppositely revolvable disks with recesses in their adjacent peripheral edges, so when brought into alignment with each other and the bolt, the bolt may be thrown or retracted, with other novel features.

A lifting jack has been patented by Mr. Gardner Hunting, Jr., of East Hampden, Me. An axle support is connected with a standard by pivoted links and levers, the lower ends of connecting bars being pivoted to the latter, the bars having their upper ends pivoted on the axle support, so the support will be raised and locked in place by swinging the lever down against the standard, thus making a simple, light, and strong jack, without screws, catches, or springs.

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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 due 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, and requests for **Prompt Answers by Letter**, should be accompanied with 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) G. W. C. asks how to make a copying pad for copying letters. A. A recent formula for this purpose is the following:

Good ordinary glue	100 parts.
Glycerine	50 "
Barium sulphate (finely powdered)....	25 "
Water	3 75 "

(2) D. W.—The use of diluted salt water is regarded as a most excellent tonic for the eyes; as to whether its use will permit the laying aside of glasses is a consideration which depends upon so many circumstances that we cannot answer it. Certainly, however, it can be said that, if the glasses are worn for weak eyes, quite likely they may be given up.

(3) E. A. K. asks if there is any kind of sheet iron or steel which will stand the heat of molten cast iron better than wrought iron. A. There is none.

(4) F. Q. asks the temperature of an egg to hatch. A. The temperature in incubators is steadily maintained at 102° to 104° Fah.

(5) E. J. K.—To soften paint brushes that have become hard, soak them twenty-four hours in raw linseed oil, and rinse them out in hot turpentine, repeating the process till clean; or wash them in hot soda and water and soft soap.