

## ENGINEERING INVENTIONS.

A governor for steam engines has been patented by Mr. Aaron J. Allen, of Hope, R. I. Combined with a governor of the ordinary type is a rotating sleeve, gearing, and sliding clutch, by which the spindle operating the cut-off or throttle is shortened and lengthened to give more or less steam as required by the load, without making any great change of speed.

An electric engine has been patented by Mr. William A. J. Kohn, of San Francisco, Cal. Combined with field magnets, swinging armatures with coils, and a battery connected with the field magnets, another battery is connected with the coils of the armature, and there are devices for automatically closing and opening the circuits of the field magnets and of the armatures, with other novel features.

A boiler feeder has been patented by Mr. Samuel Haigh, of Coquitlam, New Westminster, British Columbia, Canada. This invention relates to the use of water cylinders which are alternately filled and their contents run into the boiler in succession, there being a novel arrangement of floats, rods, and stops for actuating the valve of a steam cylinder in combination with the water cylinders.

## MECHANICAL INVENTIONS.

A lathe for turning spirals has been patented by Mr. Silas Moore, of Cleveland, O. It feeds the work regularly against a revolving cutter, which may be quickly withdrawn and returned, so spirals may be cut either right or left handed, cylindrical, tapering, or wave pattern, and the pitch may be regulated at the beginning of each job by arranging the gear wheels in proper relation to the screw.

## AGRICULTURAL INVENTIONS.

A cultivator has been patented by Mr. Jabez C. Nelson, of Marion, Ala. The tongue has a rounded forward end, a forked rear end, two arched bars attached to it, plow beams secured adjustably to the arms of the arched bars, with other novel features, making a cultivator which can be readily adjusted to a variety of different kinds of work.

## MISCELLANEOUS INVENTIONS.

A table corner has been patented by Mr. Harvey N. Hall, of Evansville, Ind. It consists of a curved clamping iron and a curved stud or block, combined with a table frame and leg, the object being to thus provide firm and durable fastenings for securing table legs to the frames.

A trace carrier has been patented by Mr. Frank O. Derr, of Moulton, Iowa. It is made with side loops for the side straps of a harness, with a cross bar for the back strap, and a rear loop and keeper for the crupper strap, the device being cheap and durable and easily applied to any harness.

A salt boiler or pan has been patented by Mr. John Seely, of Warsaw, N. Y. Steam is used for heating, and wood is the principal material composing the boiler or pan, the construction being such that the different parts may be keyed up at any time to keep it from leaking in case of shrinkage.

A step ladder has been patented by Mr. William H. Klue, of Watsonstown, Pa. Combined with the ladder is a folding table and a drawer for holding small articles; the ladder is automatic in opening and closing, and is strengthened and made more firm than step ladders ordinarily are.

Window and other glass forms the subject of a patent issued to Mr. Michael Magrath, of New York city. The glass has a novel configuration on one of its faces, especially adapting it for fan lights, doors, etc., giving multiplied prismatic effects by the refrangibility of the rays of light upon a wall or other surface upon which the light is made to fall.

A rope clamp has been patented by Mr. Samuel H. Magee, of Galveston, Texas. It consists of a pair of clamping segments, combined with a wedge-shaped plate, for use in place of selvage straps, and purchases in setting up rigging, instead of catspaws, and also for joining two ends of a rope in place of splicing.

A velocipede has been patented by Mr. Lindsey Dickey, of Vibbard, Mo. The velocipede wheel is made with a wheel having an internal gear formed on its rim, spokes projecting from the rim of the said wheel, and a rim on the spokes, making a novel machine which can be driven at a high or low speed and easily steered.

An advertiser and card holder has been patented by Mr. John M. Hubbard, of Lake Village, N. H. A board is divided into spaces by transverse ridges, and on the side edges of the board are two pins for each space, on which are held cards which pass over the spaces and hold cards in place between the ridges, the holder being provided with means for hanging.

A pump has been patented by Mr. Charles H. Bennett, of Blossburg, Pa. This invention relates to improvements in that class of pumps where the piston is reciprocated vertically by the stand pipe through which the water rises, the construction being simple, the pump easily operated, and not liable to get out of order.

A thill coupling has been patented by Mr. George D. Umland, of Osceola Mills, Wis. The invention covers a specially formed block on a carriage axle clip, with other novel features, affording means whereby either a tongue or a pair of thills may be quickly attached to or detached from the axle of a carriage.

A fastening for bag, pocketbook, and purse frames has been patented by Mr. Charles S. Shepard, of Brooklyn, N. Y. A pair of studs is attached to one part of the frame, and studs with knobs to the other part of the frame, and a rod with a knob is hinged to the one pair of studs, shutting down between the knobs of the other pair.

A gas cautery has been patented by Mr. Charles Graefe, of Sandusky, Ohio. This invention re-

lates to cauteries heated by gas, for which the instrument is made with separate tubes, one for the gas and the other for the air, the ends being so bent that the current of air is discharged at right angles, or nearly so, to the flame.

A combined hammer and nail feeding device has been patented by Mr. Emmet Horton, of Dundee, N. Y. It is for use by carpenters, and for shingling, lathing, etc., having a nail receptacle which, by the swinging movement of the handle, is made to feed the nails by gravity, one at a time, to an attachment that places them in position for being driven.

A plaque or panel has been patented by Mr. Edward de Planque, of Hoboken, N. J. It is formed of two layers of canvas or duck united by a mixture of glue, whiting, and finely pulverized wood, the face or panel having a covering of whiting and glue on which the painting or drawing is produced, the plaque being readily pressed into any desired shape.

An ice creeper has been patented by Mr. Peter B. Laird, of Brooklyn, N. Y. It is made of two elastic wires, connected at their middle parts by a collar or band, and bent at their ends to form lugs to clasp the edges of the sole and heel, and points to engage the ice, the device being one readily applied to and detached from the soles of boots and shoes.

An adjusting device for rolling mills has been patented by Mr. John Wood, of Conshohocken, Pa. The invention consists in a wedge operated by a screw, and fitted between the breaker and bolster at one end of the top roll, whereby the adjustment of the roll to the lower one can be accomplished accurately and without loss of time.

A spectacle and eyeglass frame has been patented by Mr. Louis Lazarus, of Allegheny, Pa. The bows are divided to allow of the convenient insertion of new lenses, but have novel attachment of flexible metal tape or springs, which is scarcely perceptible, to hold the abutting ends of the divided bows pressed down upon the lenses.

A millstone dress has been patented by Mr. Robert Wilson, of Greenup, Ky. The millstone has furrows and lands, the latter with their tops rounded from the inner ends to a circle surrounding the eye, and with their remaining portions made flat, so the bran will not be cut or torn, and the stones are kept comparatively cool.

A combined reclining and rocking chair has been patented by Mr. Henry G. C. Lauer, of Iowa City, Iowa. The rockers are upon the rear legs only, and the arms are adapted to slide upon upwardly extended parts of the rear legs, and when used for reclining the chair will remain in any position to which it may be adjusted.

A truss frame for roofs of buildings has been patented by Mr. William P. Buckley, of Oxford, Chenango County, N. Y. This invention covers a special combination of rods with the framework and braces to support the weight of the roof in such manner as to give the greatest amount of strength and security from the building spreading or roof settling.

An ore and salt drier has been patented by Mr. Robert A. Nevin, of San Francisco, Cal. Combined with a rotating drier, ore roaster, and stack, are specially arranged flues and dampers, making an apparatus peculiarly adapted for drying ores preparatory to pulverizing and chloridizing, and also for drying the salt to be used in the chloridizing process.

A press for moulding ornamental tiles or other articles of cement has been patented by Mr. Jean Larmanjat, of Paris, France. By this invention a slight vertical movement is imparted to the mould table by means of counterweighted levers, springs, etc., to prevent the accumulation of dust and grit between the mould carrying table and the press frame, so the table will not become clogged.

A temporary binder for books, magazines, etc., has been patented by Mr. George E. Alvord, of St. Louis, Mo. A hollow body or back carries book covers of the usual form, and has two hooks, one movable and the other fixed, for engaging the leaves, the movable hook being drawn toward the fixed hook by means of a spring, the device being cheap and easily operated.

A staple has been patented by Mr. Abram Nelson, of New York city. This invention covers a new form of hook staple intended especially for binding the strands of wire fences to the post or framing, the body and point being such that it may be driven independently of the grain of the wood, and arranged vertically or horizontally or at any intermediate angle.

A furnace for annealing metals has been patented by Messrs. Edwin M. Herr, of Denver, Col., and George W. Cummins, of Vienna, N. J. This invention covers a novel construction and arrangement of parts for an annealing furnace in which is an air tight chamber with furnace surrounding it, a piston carrier, swinging gates, and other special features, whereby it can be automatically operated.

A brick machine has been patented by Mr. Charles A. Tarragon, of Portland, Ore. It is made with a sliding frame having cross bars and carrying moulds open at the corners and provided with lugs and pins, with which engage double hooks attached to shafts carrying cam plates, with other novel features, to facilitate the removal of bricks from the moulds of brick machines.

A cartridge loading board has been patented by Mr. Henry W. Howe, of Lawrence, Kan. It has any desired number of holes for receiving shells, and at the bottom side the holes are countersunk to receive the flanges, a hinge being on that side to close against the head of the shells, which are held by holding spurs made wedge-shaped and flat, preventing the shells from turning during crimping without injuring the rim. A cartridge shell creaser has also been patented by the same inventor, more particularly intended for loading apparatus of the foregoing kind, but the creaser, either with or without an attached trimmer, may be used separately or in connection with a hand brace or other means for turning it, so that shells may be creased, trimmed, and crimped without removing from the loading board.

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## Notes &amp; Queries

## HINTS TO CORRESPONDENTS.

Names 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 in this department, each must take his turn.

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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) C. F. G.—Coke, or mixed coke and anthracite, or mixed coke and bituminous, are only injurious to boilers by the amount of sulphur contained. The heat is always supposed to be controllable. For locomotives we should not hesitate in using coke mixed with good bituminous coal.

(2) R. W. C.—There has been no vessel yet built or afloat that can withstand the destructive effect of the best guns now made. You will find most interesting accounts of the direction that active warfare may take in the future by reading the articles on the American cruisers in SCIENTIFIC AMERICAN SUPPLEMENT, No. 432. Also on Rifled Ordnance, SCIENTIFIC AMERICAN SUPPLEMENT, No. 437. On French Iron Clads, No. 442. Also a most interesting account, illustrated and tabulated, of the heavy guns of 1884, in SCIENTIFIC AMERICAN SUPPLEMENT, No. 450.

(3) L. E. I. asks: What size propeller wheel should a boat 25 feet keel 6 feet beam and carrying a 4 horse power engine, use? A. 24 inch 3 blade wheel.

(4) D. B. G. writes: Butterine is made from the best creamery butter and from the finest leaf lard deodorized and thoroughly mixed, a slight amount of butter color being added. It gets its flavor entirely from the butter used. Is there anything that will give this butter flavor, except butter? If so, is it safe to use it? A. Nothing but butter will give the desired flavor. It is safe enough to use oleomargarine, but the trouble is it is generally sold for what it is not—at a high price for deodorized lard, but a lower figure than good butter can be sold at.

(5) A. W. A.—The weights of the largest guns now being made are about 119 tons, 15 1/2 inches bore and 46 feet long, made by Krupp in Germany. The largest cast iron guns made in the United States are the 20 inch 100 ton guns cast at Pittsburg. In May, 1884, the heaviest gun yet made was cast at the South Boston Iron Works—12 inch rifled, 30 feet long, weighing 212,000 pounds finished.

(6) J. W. R. asks the proper way to test gum fire hose. A. Use any pump capable of making the pressure with a pressure gauge attached, fasten a 1/2 hose coupling to the pump, and to the other half fix a valve for letting out the air; attach the hose to the coupling in the usual way, pump in the water, and let out the air at the opposite end. Pump up by gauge to the required test.

(7) J. W. H.—The compound engine consists of two cylinders, or a combination of a high pressure and low pressure engine in one—the second and larger cylinder taking the exhaust from the first cylinder at about 5 pounds pressure working, as a low pressure engine with condenser and air pump. A triple expansion engine is a new experiment, consisting of three cylinders—a very high pressure in the first, exhausting at a medium pressure to a second, and from the second exhausting at a low pressure to the third cylinder which works under the same conditions as the large cylinder, in the compound type. Extraordinary claims have been made for economy in this class of engines, but possibly without due consideration to weight, complication, and friction. They are yet to be proved a success.

(8) A. H. L. asks: 1. What is the chemical constitution of carbide of iron, or spongy iron, used for filtering? A. Metallic iron. 2. How is it made commercially, and where can it be bought in large or small quantities? A. The carbide of iron is said to be prepared by heating hematite with sawdust. You will find in SCIENTIFIC AMERICAN SUPPLEMENT, No. 124, a description of just how "spongy iron" is made in England, but ordinary fragments of metallic iron are all that is necessary. 3. What literature is there on the subject? A. See the articles on "Filtration" in Cooley's Cyclopaedia of Practical Receipts; also "Spongy Iron and Putrescent Organic Material," SCIENTIFIC AMERICAN SUPPLEMENT, No. 87; "Experiments with the Silicated Carbon and Spongy Iron Filters," SCIENTIFIC AMERICAN SUPPLEMENT, No. 165; "Filtering and Purifying of Waters," SCIENTIFIC AMERICAN SUPPLEMENT, No. 195; "The Utility of Water Filters," SCIENTIFIC AMERICAN SUPPLEMENT, No. 209, etc.