

ENGINEERING INVENTIONS.

A balanced slide valve has been patented by Mr. Ashbel Welch of Lambertville, N. J. This invention covers a simple, practical, and economical arrangement whereby all sticking of the valve is prevented, the cylinder may be relieved of water of condensation, and the uniform wear of the valve face and seat is assured.

A car coupling has been patented by Mr. Edward L. Raynsford, of Susquehanna, Pa. The coupling hook and drawbar are supported by a bearing plate kept in place by a collar and provided with cross head ends sliding in bearings attached to the car frame, the whole making an improved device to promote convenience and safety in coupling and uncoupling.

A coal chute has been patented by Mr. Joseph E. Clifton, of Geneseo, Ill. The invention covers an improved arrangement of the latch for fastening up the balanced apron of the coal chute, also of a brace attachment to the door in connection with the balanced apron, and an attachment to facilitate and insure the latching of the door, etc., the whole making an improved arrangement for coal chutes used for coaling locomotive tenders.

A car brake attachment has been patented by Messrs. Eli M. Holcomb, of Bay Springs, and Frederick E. Miller, of Eveline, Mich. The invention consists in the combination with a ratchet wheel and a beveled pawl pressed against the wheel of a vertically movable plate with a downwardly projecting wedge and a prong surrounded by a spring, which presses the wedge plate upward, the parts being protected from rain and snow, and the device enabling the brake to be quickly released.

A marine engine governor has been patented by Messrs. Alexander H. Bell and Aspinwall Fuller, of New York city. A two part spherical valve seat is placed in the shell, provided with flanges to keep it in place, and with perforations for the passage of steam and the valve stem, a spherical valve with perforations for the passage of steam and a weighted valve stem to control the valve, with a stuffing box and flexible connecting base to prevent steam from escaping around the valve stem.

MECHANICAL INVENTIONS.

A lifting jack has been patented by Mr. Erick J. Qvarnstrom, of Norway, Mich. The invention consists of improvements in the construction of screw jacks arranged to shift the hoisting screw after the load is raised, to move the load while supported on the screw, to simplify the parts, and make jacks that are substantial and reliable.

A vise attachment has been patented by Mr. Charles H. Eddy, of Auburn, N. Y. The under side of the vise has two jaws, one stationary and the other adjustable, both connected by a swiveled adjusting bolt, and with their inner surfaces suitably made to bite or hold on the opposite sides of the rim of the wheel it is desired to attach the vise to.

An oil cup feeder has been patented by Mr. James E. Worswick, of Montgomery, Ala. The motion of the machine where the lubricator is fixed causes a feeding pin to reciprocate in a tube, where it is loosely arranged, there being a removable collar at the upper end of the tube, and a removable perforated disk within the collar to form a bearing for the upper end of the pin.

A lumber trimming machine has been patented by Mr. Edward Heyde, of East Saginaw, Mich. It is an improved apparatus for raising and holding in position any one of a series of cutting off saws arranged in a bench, over which boards are carried to have the ends trimmed square and to specified lengths, the saws being arranged for trimming to several different standard lengths.

A motor has been patented by Mr. Jacob Heckenively, of Eureka, Kan. A weight is so suspended from a drum that, in descending by gravity, motion is given to a train of gears, which drive a shaft carrying a cam wheel, with which a machine may be connected by a pitman, a governor device pressing a brake lever against the cam wheel to control the speed of the motor.

A lubricator has been patented by Mr. Henry R. A. Boys, of Barrie, Ontario, Canada. The invention consists of an arrangement of an oil feeding cylinder and piston and a gauge cylinder and piston, so the outward movement of the piston to feed the oil from the oil cylinder shall cause a corresponding outflow of the gauging liquid from the gauge cylinder to measure the rate of feed of the oil.

A pressure regulator has been patented by Mr. Francis J. Freese, of Manchester, N. H. The object of the invention is to make an improved device for automatically regulating the pressure of liquids, gases, steam, etc., a plunger moving in a specially constructed cylindrical casing, so as to enlarge or diminish the openings by which the flow of gas, steam, etc., will be automatically controlled.

An oil cup has been patented by Mr. Perry Small, of Guaymas, Mexico. It is an improved oil cup with glass drip chamber, the latter being made by a partition plate, which is integral with the glass cup, the frame surrounding the cup having openings above and below the partition plate, and having at its upper end a suitable cap, the whole being simple, cheap, and not liable to get out of order.

AGRICULTURAL INVENTIONS.

A potato digger has been patented by Mr. Hans Nelson, of Waupaca, Wis. A scoop is connected with the rear end of a downwardly and inwardly curved beam, with which is combined a clearer, and clearer vibrating cams or wings on the axle of supporting wheels, the scoop being readily adapted to work deeper or shallower in the ground, as may be desired.

A grain header and harvester has been patented by Mr. Peter E. Drouet, of New Orleans, La. The front board of the cart is made in adjustable parts, the side bars are pivoted at their rear ends on a

bar to which are secured the scraper roller, comb, reel, and driving mechanism, and as the machine is drawn forward the grain is removed from the heads of the stalks and received in the cart body.

A tongue rest, for supporting the tongue of a harvester and self-binder, has been patented by Mr. John Fisher, of Riley, Ind. In combination with the tongue is an upright frame in which is a slide with an inwardly projecting rod, around which a spiral spring is coiled, the whole making a device to relieve the horses from holding up the tongue and the weight thereon.

MISCELLANEOUS INVENTIONS.

A catamenial sack of improved form and construction has been patented by Mr. Charles H. Levy, of New York city. The frame can be made of metal, rubber, or bone, covered, and the pocket and pouch of rubber, leather, or waterproof fabric.

A telephone call and switch box has been patented by Mr. Edwin H. McFall, of Memphis, Tenn. This is a novel arrangement of switch and circuit in telephone boxes, having the object to maintain closed circuit at all times on lines connecting three or more instruments.

A hoisting device for vessels has been patented by Mr. Richard H. Purnell, of Roseale, Miss. This invention relates more particularly to a special form of brake for use in combination with hoisting devices used on steamboats for lifting and adjusting the gangway or stage planks.

A velocipede has been patented by Mr. Charles M. Schaffer, of Louisville, Ky. The wheel and frame are made with one open side, to facilitate ingress and egress and give better views of surroundings, to facilitate mounting and starting, and to improve the appearance of the machine.

A leather and cloth varnish has been patented by Mr. Walter C. Gifford, of Brooks, Mich. It is waterproof and gives a polish, the composition consisting of alcohol, gum shellac, white resin, oil of turpentine, kerosene oil, oil of cinnamon, and lamp black in certain specified proportions.

A mucilage cup or holder has been patented by Mr. Stephen S. Harman, of New York city. The invention consists principally of a handle or stick fitted in the cover, provided at its lower or inner end with a sponge fitted in a socket, or otherwise attached to the stick or handle.

A reflector holder for lamps has been patented by Mr. Daniel R. Williams, of Dallas, Texas. Different forms of clamp and clasp are so made that the reflector may be held in any desired position, and may be turned around the lamp as desired, while yet it will be firmly held.

A device for attaching and detaching horses has been patented by Mr. Cicero C. Ferrill, of Shubuta, Texas. It is intended to make it possible to dispense with the ordinary harness except a collar and a pair of hames, and for this purpose the thills have ferrules and spring actuated pins, and the hames have specially contrived loops and guards.

A watch protector attachment has been patented by Mr. Julius C. Grimmell, of Brooklyn, N. Y. The invention consists in a casing with two swinging stirrups, thrown from each other by springs, and from the free ends of which a hooked fork is suspended, the stirrups preventing the withdrawal of the watch from the casing.

An extensible clasp for books has been patented by Mr. Jacob Monch, of Offenbach-on-the-Main, Germany. The clasp is formed of two plates, one adapted to slide under the other, the lower one having a diagonal slot, into which a stud of a nut or block passes, so the clasp can be easily lengthened or shortened according to the thickness of the book.

A fountain pen has been patented by Messrs. Albert J. Kletzker, of New York city, and Charles H. Court, of Jersey City, N. J. The pen has a point section with an aperture below the pen, the aperture being closed by a loosely fitting plug with a tongue, and adapted to be vibrated by the pen during writing, and thus cause a flow of ink.

A saddle seat has been patented by Mr. Peter B. Hirsch, of Denver, Colo. This invention consists in dispensing with the bridge plate and the layers of leather, and employing in lieu thereof a single plate of metal shaped in dies to the desired form, and thus "building up" on the saddle tree a seat of such shape as wished.

A thill coupling has been patented by Messrs. Lorenzo D. Rundell and Perry Van Valkenburgh, of South Westerlo, N. Y. The invention consists of an axle clip with two projecting jaws or lugs, each having inwardly projecting flanges on the ends, a fork being secured on the inner end of the thill, and having a recess in each side edge of the front prong.

A pocket knife has been patented by Mr. George Freund, of Durango, Colo. It is designed for miners' use, to facilitate the cutting and capping of a fuse; the knife has a notch in the handle case and one in the blade, the latter having a screw thread formed on its bottom to press a screw thread in the end of a fuse placed in the notch in the handle.

A clothes hanger has been patented by Mr. Louis Barkany, of Baltimore, Md. The hanger consists of a notched arm with a cross bar hinged at its free end, and a prop supporting the arm, the arm and prop being pivoted to a support, the contrivance being especially adapted to hold clothes open, while it can be folded compactly when not in use.

An umbrella and parasol rib has been patented by Mr. Asher T. Meyer, of New York city. The rib is made hollow, and reinforced at its outer end by a bar, with a head and flattened portion, and having an eye passing through both the rib and bar, the object being to simplify the construction of the lower or outer end of the parasol rib.

A pendulum scale has been patented by Mr. Henry C. Keeler, of Ogden, Utah Ter. This is an improved form of weighing scales in which pendulums with removable weights may be substituted for the bal-

ancing ball and weight, or the construction may be such that one of the beams and dials may be graduated for the scoop and the other beam and dial for the platform.

A flying target has been patented by Mr. Charles F. Stock, of Peoria, Ill. Combined with a fragile ring, having a flange on its lower inner edge, is an infrangible carrier ring, to be inserted within the fragiling ring, and held there by the flange, so the fragile portion will break more easily than solid targets, and there will be no failure to indicate a well directed shot.

An automatic winding signal for spring clocks has been patented by Mr. Edward Jungerman, of Gettysburg, Pa. The invention consists in combining with the main spring of a clock a shoe or yielding bar, which, when the spring expands from uncoiling, is struck by the spring and made to bring a signal into view, on the face of the clock or elsewhere, to give notice that the clock should be wound.

A hame clip has been patented by Mr. Charles W. Massenheimer, of Allentown, Pa. The invention consists principally in making the clip with a hook and hinged tongue or section, the hook being made integral with the side plates of the clip, the side plates being joined with a solid shoulder or bridge at their forward ends, so the traces may be easily attached and detached without ripping the tug.

A lumber rack has been patented by Mr. Joseph A. Aycock, of Whitesburg, Ga. The rack is formed of a series of vertical sticks held movably between top, bottom, and intermediate pieces of a frame, between which vertical sticks the planks or pieces of lumber are held a distance apart equal to the thickness of the stick, thus permitting the air such access as will season the lumber in a short time.

A churn has been patented by Mr. Anson M. Otis, of York, Neb. The churn body has a projecting screw at the center of its bottom, and a stationary shaft with a radially expanding and contracting dasher connected by hinged bars, a sliding tube, and a pitman with a crank shaft, gear wheels, and a hand crank, so the dasher is expanded and contracted radially by the revolution of a crank shaft.

A wiping and polishing apparatus for plate printing machines has been patented by Mr. Alexander Reid, of Brooklyn, N. Y. Combined with the reciprocating bed of the press is a roller having slots, webs, paying off spools, receiving spools, and means for rotating the spools and vertically reciprocating the roller, the whole being an improved device for wiping off surplus ink and polishing the plate before taking an impression.

A mercury vacuum pump has been patented by Mr. Charles G. E. Neveux, of New York city. A bulb is made near the top of one of two vertical pipes united at their upper end, this bulb having valves arranged to connect it with the vessel to be exhausted; then by a special construction the mercury can be made to drive all the air out of the bulb, when the valves will so open as to connect with the air vessel to be exhausted, and this operation can be repeated several times with little trouble, there being no loss of mercury, and the whole construction being simple and rapidly worked.

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HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$3, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at the office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) T. M.—It is almost impossible to identify a fiber botanically without specimens of its leaves and flower. We presume that the fiber comes from a variety of nettle called ramie (*Urtica neva*).

(2) W. A. C. asks for a correct analysis of suint. This is a fat, greasy, substance which is washed off of sheep's wool while getting it ready for manufacturing. A. Suint, according to Fuchs, consists of:
Potassium sulphate..... 25 per cent.
" carbonate..... 44.5 "
" chloride..... 30 "
Organic matter..... 500 "

The amount of potash salts depends upon the soil on which the food of the sheep grows. Other things being equal, it has been found that the merino wool contains the greatest amount of potassium salts, ranging as high as 30 per cent.

(3) F. S. S. asks: What is the difference between common bone black (animal charcoal) and Ivory black? A. Properly speaking, ivory black should be derived from burning ivory chips or dust, in distinction from bone black, which is obtained from bones; but we believe the commercial article in most instances is simply a better quality of bone black.

(4) A. O. writes: I had the handles of a fine alabaster vase broken in several pieces. Will you please inform me of a cement or glue that will unite the pieces? A. Use the following: Add half a pint vinegar to half a pint skimmed milk. Mix the curd with the whites of five eggs well beaten, and sufficient powdered quicklime sifted in with constant stirring, so as to form a paste.

(5) Mrs. L. F. D.—Brass work can be polished by rubbing the metal with finely powdered tripoli mixed with linsed oil and applied with a rubber made from a piece of an old hat or felt. Or else a mixture of glycerine, stearine, naphthaline, or creosote mixed with dilute sulphuric acid can be used.

(6) L. M. W. writes: I have a very expensive linoleum carpet on my office, which is mopped every day, but soon becomes dingy. What can I varnish or coat it with which will stand a good deal of wear, and look bright all the time? A. Rub the oil cloth every two or three months with boiled linsed oil; rub it well in with a rag, and polish it with a piece of silk. Or else as it becomes hard rub it well with a small portion of a mixture of beeswax softened with a minute quantity of turpentine, using for this purpose a soft furniture polishing brush. In cleansing the oil cloth do not use soap or hot water.