

RECENTLY PATENTED INVENTIONS.

Engineering.

ROTARY ENGINE.—**Horace J. McLoed**, Louisiana, Mo. This invention provides an engine having high and low pressure cylinders, each containing a piston with radially movable wings, and with steam passages leading from one to the other. The pistons are carried on hollow shafts, one shaft serving as a steam supply and the other as a steam exhaust, the first piston having passages leading from the steam supply to the periphery of the piston, and also a passage leading to the remaining piston, whereby the latter may be driven by the exhaust steam from the first piston.

HOT WATER AND STEAM BOILER.—**Eugene S. Manny**, Montreal, Canada. This invention affords a vertical sectional boiler of simple and inexpensive construction, adapted for use as a hot water or steam boiler, and designed to secure a perfect circulation of both heat and water. The water sections are located between the fire pot and dome, and the intermediate and lower sections have central fire openings over the fire pot, with return and offtake openings for the products of combustion at their sides, the crown section being provided only with offtake openings for the products of combustion communicating with those of the lower water sections and with the dome.

Railway Appliances.

CAR COUPLING.—**Christopher Dutchburn**, Highfield, Canada. According to this invention pins and links used as a coupling are operated by means of rock shafts mounted at the ends of the cars and extending to the sides, obviating the necessity of trainmen passing between the cars. A ledge extends out from one side of the throat of the coupling head, and a plate sliding horizontally through the coupling head supports a pin out of the throat, while a wing pivoted to the outer side of the coupling head is attached to the plate, the ledge overhanging the wing, and a spring pressing the wing to hold the plate inward. A transverse shaft carries cams to lift the links, the pushing of a link into an opposing coupling allowing the pin to drop into engagement therewith.

Electrical.

TELEGRAPHIC SIGNAL.—**James Nicolson**, Buenos Ayres, Argentina. To simplify telegraphic messages, especially in long distance submarine work, and also to facilitate heliography, and render mistakes less likely in connection with special code words, this inventor has patented a system according to which the vowels and accented vowels are made by an uneven number of elementary motions, or dots and dashes, and the consonants by an even number. The inventor has likewise copyrighted, in this country and England, a code book especially advantageous for transmitting cipher dispatches.

Mining, Etc.

MINING DRILL AND CHANNEL CUTTER.—**John P. Paynter**, Topeka, Kan. This invention covers an improvement on a former patented invention of the same inventor, providing a new drill and cutter arranged to cut a narrow opening or slot in a seam or underneath the coal, and remove the cuttings from the seam, to enable the miner to easily wedge or break down the coal above. The frame of the device travels on a single track, and is adapted to swing sidewise and up and down with the track as a fulcrum, in combination with an air-operated motor and flexible connections, while the frame carries an outwardly extending cutting arm having radial teeth, behind which is a spoils conveyor.

CATCHING WASTE PRODUCTS FROM LEAD SMELTERS.—**John B. Sergeant**, Joplin, Mo. Leading from the lead smeltery to the smoke stack, according to this invention, is a special form of trail or conduit in which is introduced a perforated pipe arranged to eject a spray of cold air into the gaseous current through the trail for cooling the gaseous products of the smeltery and causing them to settle and precipitate. The cooling of the fumes and waste products in the manner provided for is designed to condense and throw down all the metallic substances while allowing the gases to escape.

Mechanical.

WRENCH.—**Jacob S. Haye and Francis M. Humphrey**, Pendleton, Or. This wrench has a tubular shank provided with gudgeons and with longitudinal spring tongues having teeth or projections at their free ends, while a longitudinally sliding handle section is provided with a shaft having rows of serrations, and so journaled that it may be turned to set the serrations into and out of engagement with the spring tongues, thereby facilitating the adjustment and locking of the sliding jaw in any desired position.

COMBINED WRENCH AND NIPPERS.—**John Rosendahl**, Delhi, Minn. For use especially in connection with carriages and other vehicles, this tool is made with two levers to swing toward and from each other, and carrying racks which serve to actuate a ratchet wrench, and also have edge portions which form nippers. The two levers are pivoted on a frame in which is mounted a shaft carrying a gear wheel meshing with the rack bar carried by each lever, while a second gear wheel, loose on the shaft, meshes with a ratchet disk fixed to the shaft, there being a revolvably mounted wrench head driven from the second gear.

TOOL HANDLE.—**Hugo A. Zeckendorf**, Tucson, Arizona Territory. This invention provides a handle designed to be self-locking when placed on the tool, the handle being more firmly locked on the tool, such as hammer or ax, according to the more violent use of the tool. A transverse opening is made from side to side in the eye of the tool, and the handle is made with a tapering slot from its outer end, forming a wedge-shaped socket with larger inner end, in which a wedge is inserted when the handle is placed on the tool, the wedge being secured in place by keys passed through the transverse opening.

PLANE.—**John N. Schneider**, Mendota, Ill. In hand planes this invention affords a tool in which

the bit is automatically retired from its cutting position during the back stroke, a novel mechanism being also provided for the adjustment of the bit, which may be regulated while in use without removing the hands from the handle. The bit stock is pivoted in the plane stock, and the handle is designed by its rotation to regulate the adjustment of the bit stock, and to automatically throw the bit into operative or inoperative positions as the pressure is directed to propel or retract the plane.

LUBRICATOR.—**Carl Geier**, Oberlangenbielau, Prussia, Germany. To supply a lubricant to machinery in motion, making the supply dependent on the speed of the parts, is the object of this invention, which provides means for regularly supplying the lubricant, and to operate an alarm when the supply in the storage tank has become nearly exhausted. Within a lubricator tank connected by suitable channels with the machinery to be lubricated is a float, the latter being so arranged in connection with a hammer and bell that, as the float nears the bottom of the tank, the hammer will be caused to continuously strike the bell.

Agricultural.

GRAIN LIFTER FOR MOWING MACHINES.—**Wilhelm Jager**, Kankendorf, Germany. To secure the reliable and uniform operation of the cutters of mowers and harvesters, this invention provides devices to raise the stalks to an approximately upright position, in case they have been bowed down by rain or wind, thus enabling them to be cut as near the ground as possible. On the stubble side of the cutter is a lifting arm extending lengthwise of the machine, and rakes to gather the cut grain are pivotally connected to supports adapted to travel over the arm, chains connecting the free ends of the supports to the rakes to limit the movement of the supports.

Miscellaneous.

INDICATOR FOR OIL WELLS.—**Oliver H. Burdett**, New Athens, Ohio. For use in weak wells, and more especially for indicating the direction of an oil pool from the well, to enable the operator to drill a second well accurately into the oil source, this invention provides devices to be let into and removed from the first weak well to indicate the direction of flow of the oil. The indicator comprises a perforated casing in which are arranged one or more vanes to be acted on by the flow of the oil, the casing also holding a compass and means for locking the vanes and the needle of the compass in position.

FENCE.—**Emil M. Korika**, Adrian, Mich. According to this improvement, while the horizontal or strand wires are securely fastened to the posts or pickets, ample provision is made to allow for the expansion and contraction of the strand wires without damage to the posts. The strand wires are formed with three bends at each post, and a lock made of a single piece of spring wire is bent to form end loops and transverse hooks, the strand wire extending through the loops, around the post and around the hooks, thus allowing the strand wire to readily expand and contract without affecting its fastening to the post.

TRACTION WHEEL.—**Adam and John Smith**, Blissville, Ill. For traction engines or similar vehicles this invention provides a wheel with mud shoes and a simple means for automatically moving the shoes into position relatively to the rim of the wheel to serve as teeth in mud or soft roads, the shoes being movable into the rim of the wheel while traveling over hard roads or bridges. The shoes are pivoted in recesses extending through the rim of the wheel, rock shafts mounted in frames secured to the spokes of the wheel having connection with the shoes, while holding arms extended from the shoes are adapted to be engaged by tappet fingers to move the shoes in or out.

LIFEBOAT.—**Edwin Verburg**, Grand Rapids, Mich. The hull of this boat has the usual lifeboat form, with water tanks along its sides and air chambers at the stern and stern, and is provided with a sectional centerboard; but, instead of being propelled by oars, the boat is provided with a screw propeller which rotates in an opening at the rear of the centerboard, the propeller shaft having a universal joint connection with a driving shaft on which is a bevel gear engaging with bevel gears on a countershaft, to propel the boat forward or backward, there being at each side of the trunk a series of connected crank shafts operated by foot pedals similar to those of a bicycle. Provision is made for eight operators, four on each side, and all facing the direction in which the boat is to be propelled.

BOX FORMER.—**John C. Titus**, Norfolk, Va. This invention covers an improvement in machines for making boxes for holding berries, grapes, etc., providing novel constructions and combinations of parts to permit the proper presentation of opposite end and side portions of the box to the stapling devices. The former is made with a slideway having opposite end bearing portions, and the center is arranged to slide along the center portion and turn in the end portions, the former having a plate with end-bearing portions and a connecting slot, the center turning and sliding in the slot to bring the respective portions of the box in proper position to the staple-setting devices.

CHECK SPRING.—**Fred B. Walker**, San Antonio, Texas. To prevent sudden pulls on a horse's mouth and also to lessen undue tension on the several parts of the harness, this inventor provides a check spring formed of a single piece of wire into a spring coil, one end having an eye for attaching the check rein and the other end an eye for connection with a terret. The end of the terret eye terminates in a loop which extends through the coil and straddles the shank of the rein eye, to limit its outward movement, the return member of the loop having its end extended over the terret eye to form a guard therefor.

CUTTING AND STAMPING CIGARS.—**Bernard Sheldon**, Brooklyn, N. Y. To print or stamp upon a cigar and cut off its ends, according to this invention, the cutting and stamping mechanism are connected and operate together, the cigar being held firmly on the table by a clamp, but so as not to injure the cigar. The type with which the cigar is stamped extends

through an opening in the table, the covering being automatically carried over the opening when the clamp is released, preventing any trimmings from the cigar falling on the stamp.

CORSET CLASP.—**William W. Lasker**, Brooklyn, N. Y. To facilitate fastening the front meeting edges of corsets, according to this invention, one of the stays is made with beaded lugs and the other with clasp sections comprising pairs of guide plates, movable through which are clasp bars, the plates having slots to receive the heads of the lugs, and the bars being moved automatically when the stays are forced together with the lugs in the slots. The clasp cannot be accidentally released, but facilitates the ready fastening and unfastening of the corset.

POCKET BOOK.—**Frederick Hasselberger**, Newark, N. J. This pocket book, when opened, has a flat-bottomed compartment, thus rendering coins placed in it more accessible. The side walls are composed of or contain stiffening material, and the lining is so fitted that when the pocket book is opened the bottom portion of the lining rises toward the top to form a broad, level surface.

TEA OR COFFEE POT.—**Leonard L. Dick**, Boston, Mass. The covers and handles of tea and coffee pots are, according to this invention, made adjustable, to be locked in position when in use, and therefore less liable to breakage than is ordinarily the case. At the side of the pot are vertically arranged lugs with holes therein to receive the top and bottom of the handle, a spring holding the handle in such locking engagement, and on the under side of the cover are spring-pressed bars passing through slots in the cover and adapted to engage a flange in the under side of the top opening of the pot.

STORE OR COUNTER STOOL.—**Albert R. Milner**, Canton, O. According to this invention, a bracket secured to the base of a counter is provided with an opening in which is pivoted the lower end of a curved arm, to the top of which is attached a stool, adapted to be swung out a suitable distance to afford a comfortable seat in front of the counter, or to be swung inward under the front edge of the counter to be out of the way when not in use, a stop in the bracket limiting the outward movement of the stool arm and a spring holding it turned under the edge of the counter.

CRATE.—**John F. East**, Norfolk, Va. For the ventilation of berry and other crates, especially those handled in refrigerator cars, this invention provides a ventilated elastic bottom having side bars projecting downward and forming an air space, the bars being recessed or rabbeted to receive the uprights and rails, and the bottom strips being spaced apart corresponding with the spaces between the cups in the crate, while the base bars are seated in the sill bars. The crate is designed to be as strong as the ordinary heavy solid bottom crate.

INVALID'S CHAIR.—**Juana G. Yznaga**, Brownsville, Texas. This chair has arms projecting forwardly over the seat, pillars resting on the seat supporting the outer portions of the arms, while a table composed of end and top plates is attached to the chair in a manner adapted to support dishes, books or any kind of work. A drawer is also provided for the reception of small articles, and posts extended upward from the table and connected by a cross bar form a rest for books and also a support for skeins of yarn to be wound. A foot rest attachment is readily added or removed.

Designs.

THILL COUPLING PLATE.—**Charles T. Redfield**, Glenhaven, N. Y. The body section of this plate is curved and has an opening containing a tongue, there being end members at an angle to the body, one of the members being longer than the other and having a reverse curve.

PUZZLE BOX.—**Ernest F. Eimberg**, Chicago, Ill. This design comprises a rectangular base with a border at its edges, and with partitions of peculiar form and disposition, forming irregular mazes.

COVERS FOR POCKET BOOKS OR CARD CASES.—**John Mehl, Jr.**, Jersey City, N. J. Five design patents in the same line have been issued to this inventor, the first one of which is for depressed or intaglio delineations, forming a diamond panel at the center of the cover, with quadrantal corner panels, and segmental panels and small diamond panels between the corner and the central panels. The second design comprises embossed angular corner panels and groups of radiating depressed or intaglio lines, the lines of each group being converged at different panels. A third design has two embossed corner panels, each with straight outer edges and an inner edge formed with scallops meeting at the center of the panels. Another design has embossed corner panels with straight outer edges at angles to each other and a waved inner edge connecting the outer edges, the waved edge of each panel being decorated with a bead. Still another design has an embossed panel at the end of the cover, the inner edge of the panel having a bead and compound curved lines extending to opposite sides of the cover.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co. for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS, ETC.

WHITTAKER'S MECHANICAL ENGINEER'S POCKET BOOK. By Philip R. Bjorkling. New York: The Macmillan Company. Pp. 377. Price \$1.75.

A great fund of carefully selected information likely to be at any time needed by the mechanical engineer is here presented in neat and compact form, printed in good sized, clear type, and well arranged for ready reference, a material aid to which is furnished in a good index. An engineer who wishes to keep up with the times will find in this hand book much matter relative to the more recent practice in his profession, as well as the standard tables and formulae always needed for reference.

"A BRIEF FOR THE CIGARETTE."

BY CYRUS ALDRICH.

The paper cigarette, against which so much has been said and written, has an able champion in W. H. Garrison, whose address on the subject before the Medico-Legal Society at its last meeting attracted considerable attention. The current issue of the Medico-Legal Journal contains the full text of this paper, entitled "A Brief for the Cigarette," and in it Mr. Garrison has brought a strong array of facts to shatter, what he termed, the "unreasonable prejudice which at present exists against the paper cigarette," and was certain that the investigations of professional men of science would only emphasize the results at which he had arrived.

The annual output of cigarettes for 1897, he said, was four thousand millions, and if it is the malign and wicked thing which its opponents claim it to be, its manufacture and sale should be suppressed as dangerous to the public health.

Apparently all the agitation against the fragrant cigarette was born in prejudice like that of other similar fiction, "chloroforming" or "poisoning from canned meat."

Prof. H. W. Wiley, chief chemist of the United States Department of Agriculture, at Washington, analyzing that brand of American cigarettes which is used by more than one-half the cigarette smokers of the country, finds that a cigarette is made of 1-0926 grains of tobacco enveloped in a wrapper of paper weighing 0.038 grain. In other words, one pound of tobacco will furnish fillers for 416 cigarettes and one pound of cigarette paper will serve to envelop 12,000 of these fillers. One twenty-sixth of an ounce of tobacco in a paper one by three inches in size and weighing seven one hundredths of an ounce is a cigarette. Just tobacco and paper!

What kind of tobacco? Prof. Willis G. Tucker, of the Albany Medical College, and analyst of the State Board of Health, says in his ninth annual report:

"Cigarettes are generally made from tobacco of good quality. Sensational statements that they are prepared from the filthiest tobacco and dirtiest refuse are not worthy credence, and can be easily refuted."

Prof. Wiley says that in many samples purchased in the open market he failed to find any trace of arsenic or opium or any of its active principles. Prof. Tucker prepared for his work of analysis by searching the medical text books and journals, and couldn't find even a statement that these foreign substances were employed. Dr. F. G. Payne, State Chemist of Georgia; Prof. Robert and Albert M. Peter, of Lexington, Ky.; Prof. James Dewar, of Cambridge; William Odling, of the University of Oxford; and C. Mymott Tilly, of "Forensic Medicine," London Hospital, join with those named in pronouncing the American cigarette free from opium or arsenic.

Then comes the third bugaboo—that of inhalation of the smoke; which called forth an answer from Sir Henry Thompson, who said that the cigarette was the least injurious form of smoking, and Meyer Dutch wrote that "the inhaled smoke rarely passes beyond the bronchi, very little ever entering the air vesicles."

This science lays another robust falsehood in the dust. The cigarette smoker may henceforth enjoy his rings of smoke in peace of mind.

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 the following week's issue.

Marine Iron Works. Chicago. Catalogue free.
"U. S." Metal Polish. Indianapolis. Samples free.
Gasoline Brazing Forge, Turner Brass Works. Chicago
Yankee Notions. Waterbury Button Co., Waterbury, Ct.
Handle & Spoke Mch. Oberlathe Co., Chagrin Falls, O.
Power Hammers manuf'd by Jenkins & Lingle, Bellefonte, Pa.

Ferracute Machine Company, Bridgeton, New Jersey. make a specialty of Minting Machinery.

Improved Bicycle Machinery of every description. The Gayvin Machine Co., Spring and Varick Sts., N. Y.

Concrete Houses—cheaper than brick, superior to stone. "Ransom," 377 Monadnock Block, Chicago.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y.

Notes & 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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

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

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(7331) D. H. A. writes: Please explain the derivation of one volt = 10⁸ dynes, one ohm = 10⁹ ergs, and one ampere = 10¹⁰ abs. unit. Now, don't refer

me to Hopkins' "Experimental Science" or Thompson's "Dynamo Electric Machinery," as I have both, and they both fail to give an explanation. Don't