

## RECENTLY PATENTED INVENTIONS.

## Agricultural Implements.

**CUTTING APPARATUS.**—SAMUEL PIERSON, Hardisty, Oklahoma Territory. This cutting apparatus for mowers and other harvesters embodies improvements in the arrangement and construction of the elements of the cutting apparatus to secure greater efficiency. The inventor has provided an extra long sickle-head and a correspondingly wide shoe, thus affording a large slide surface and reducing the usual excessive friction. The construction and arrangement keep the cutting edges of the knives and guards in true alignment by preventing the wear in the sickle-head and lengthening the period of usefulness.

## Engineering Improvements.

**ROTARY ENGINE.**—GEORGE A. CULVER, Glenwood, Iowa. An abutment is pivoted in the cylinder wall of the engine and is adapted to swing inwardly with its free end against the periphery of the piston. The piston head swings the abutment outwardly in order that it may pass. The abutment is provided with a segmental arm extending outwardly and moving in a cushioned chamber. A steam-chest has a port leading to the cylinder adjacent to the free end of the abutment. A valve operated from the piston-shaft controls the port, and a connection between the steam-chest and cushioned chamber imparts an inward swinging motion to the abutment. When the piston-head swings an abutment out, the corresponding arm is forced against the steam so that the abutment is cushioned.

**STEAM-ENGINE.**—MOSES R. ROBBINS, Victoria, British Columbia, Canada. The invention provides an arrangement by which the usual slide-valve of a steam-engine cylinder is dispensed with and in which the piston is fitted with valve mechanism serving alternately to admit steam to each side of the piston, the piston also serving to control the exhaust-valve by direct contact.

## Mechanical Devices.

**AUTOMATIC FURNACE.**—RUDOLPH RUETSCH, Argentine, Kans. An endless traveling grate has pivoted grate-bars arranged to form a continuous support for the fuel at the upper run and also open spaces between adjacent grate-bars at the lower run for the passage of ashes and coal-dust. The grate is inclined; and the grate-bars are arranged in step-form on the upper run. The fuel on the lowermost grate-bars of the upper run burn briskly while the fuel on the uppermost grate-bars of the upper run is coked by reason of a partial exclusion of air. This coked fuel readily ignites as the grate-bars descend into the fire-box.

**ENGRAVING-MACHINE.**—JOHN F. MURPHY, Bayard, Iowa. This machine provides an ingenious engraving-machine for engraving letters, words, names, or designs from a given pattern on a metal surface. A relatively large pattern is used, and a tracer is made to follow the lines of the pattern and to transmit its motions exactly to an engraving-tool made to engrave the pattern on a reduced scale of any size.

**WRENCH.**—JAMES A. MONTGOMERY, Brookwood, Ala. The wrench has a fixed and movable jaw and a shank threaded for a portion of its length, to receive a sleeve-nut. The movable jaw is constructed in sections, one of which slides on and completely incloses the shank. The shank is engaged by the sleeve-nut, the upper edge of which fits closely upon the lower edge of the section. The combined length of the section and nut is so much greater than the length of the threaded portion of the shank, so that this threaded portion will always be covered, thereby protecting the threads from dust and other foreign matter.

**WOOD-SAWING MACHINE.**—MILTON R. SPENCER and DANIEL W. NEAL, Sisson, Cal. The machine is particularly adapted for sawing felled timber into suitable lengths for railroads. It comprises a base-beam, one end of which can be rigidly connected with a log. On the opposite end of the base-beam legs are mounted to swing and are connected with hook-rods engaged by eyes on the base-beam. The saw is operated by a driving gear on the base-beam, so proportioned that the saw is rapidly reciprocated.

**POST-HOLE BORER.**—HENRY LANDIN, Alger, Ohio. The post-hole borer is characterized by a screw-rod carrying a boring-pod. The screw-rod is engaged by a feeding-nut consisting of two sections mounted to swing relatively to each other. As the screw-rod is rotated the pod is forced into the ground. After a sufficient depth has been attained, the pod is raised, the feeding-nut sections being moved out of connection with the screw-rod. During the boring the loosened dirt will pass into the pod, so that the pod, when raised, may be swung laterally. By releasing its locking mechanism the two sections of the pod will swing apart, allowing the dirt to fall out.

## Railway Appliances.

**AUTOMATIC COUPLING FOR RAILWAY CARS.**—CHARLES TROUP, Watseka, Ill. The present invention relates to an improved attachment for the chain to which the coupling-pin employed in the clasp of automatic pivoted jaw-couplers is ordinarily secured. The inventor attaches the chain to an arm projecting from the end of the car directly over the coupler so as to permit its disengagement in case the draw-bar is accidentally pulled out.

## Miscellaneous Inventions.

**GROUNDING-SHOE FOR ELECTRIC WIRES.**—THOMAS H. STOKES, Lincoln, Ill. The grounding device comprises a shoe sharpened at its lower end and having a transverse hole for receiving a grounding-wire. By the use of this inexpensive device the end of a wire may be quickly and easily grounded without first digging a hole in the ground.

**LANTERN-CARRYING ATTACHMENT.**—ROBERT L. SMITH, Palos, Ala. The lantern-carrying attachment can be conveniently secured to the leg of a person on horseback or to the dashboard of a wagon. In order to attach the lantern to the ankle of a horseback rider, sheet-metal loops are rigidly attached to the wire frame of the lantern, and straps are inserted through the loops and are fastened about the ankle.

**ACETYLENE-GENERATOR.**—JOHN W. PAINE and CHARLES B. DODD, Bayard, Iowa. The improvements in this generator are found in the means employed for successively emptying a series of carbid-pockets and in the means for holding the carbid a short distance below the surface of the water during the generating process. Within the generating casing a stand revolves, provided with a series of carbid-pockets. A stand-pipe in the generator supports a stand at its upper end, the movements of which are controlled by an especial form of escapement, in turn operated by the movements of the gasometer-bell, to discharge the pockets in accordance with the consumption of gas.

**FIRE-ESCAPE.**—FRANK VAUGHAN, Elizabeth City, N. C. The inventor has provided a fire-escape apparatus located in a fireproof well forming part of the masonry of the building. The fire-escape consists of cables traveling around upper and lower drums mounted in the well. To the cables, steps are attached, having guide-rollers fitted in vertical guideways. Spring-arms in the guideways at each floor of the building are pressed back by the rollers of the steps, when the steps approach a floor, so as to slacken the speed of the apparatus at the floors. Any of the spring-arms can be thrown into or out of the path of the guide-rollers.

**VEHICLE NUT-WRENCH.**—JACOB E. VANNOTE, Lakota, N. D. This wrench is so constructed that it will receive and clasp spindle-nuts of different sizes, so that they will remain engaged with the wrench when detached and thus be retained for convenient replacement upon the vehicle spindles when desired.

**TRACKING CONNECTION FOR VEHICLES.**—LEIGH WATKINS, Cripple Creek, Colo. The object of the invention is to construct the axle of a vehicle or the adjacent axles of two vehicles so that all the wheels will run in the same track even when turning corners. The wheel-tracking connection employed comprises two rods having clevises swiveled upon their ends and connected with opposite ends of adjacent axles. In hauling freight over rough mountain roads, where the width of the track is limited and frequent curves are necessary, such a device is of considerable service, especially when the team is composed of a large number of animals and many wagons are hauled.

**CHECKING OR UNCHECKING DEVICE FOR HORSES.**—JOSEPH WHITE, Manhattan, New York city. This checking-device is so constructed that it can be operated by a driver while in his seat in order partially or entirely to free a horse's head. The invention will be found particularly useful on trotting-horses, for it is well known that by partly releasing the head of the horse while trotting, he will be enabled to increase his speed. When it is desired to water a horse, the driver, without leaving his seat, can entirely uncheck the horse and again check him after drinking.

**COMBINED ASH-BOX AND DUST-PAN.**—WILLIAM S. ANDERSON, Jasper, Tenn. This device may be used both as a dust pan and as a shovel for taking up and carrying away ashes out of fireplaces and grates. The device comprises a box having one side hinged to drop downward and adapted to act as a shovel or dust-pan. The hinged side is raised and lowered by a crank-shaft.

**BRIDGE FOR MUSICAL INSTRUMENTS.**—JOHN N. BEETEM, Moredale, Penn. The bridge for musical instruments comprises a base or body from which a series of string-supports extend upwardly. A series of feet extend downwardly from the base or body, each directly in line with one of the string-supports. The improved bridge is light, yet strong. Each string is individually supported and therefore vibrates much more readily than when stretched across the old, solidly-constructed bridge.

**STUMP-PULLER.**—SOLOMON J. FLETCHER, Cedar Falls, Wis. This stump-puller consists of a standard having two separate members joined at their upper ends by a head-plate and at their ends by a base-plate, and provided with adjustable fulcrums between the members. A sole-brace lies in the plane of the standard and operating lever, and has at its upper end a tenon extending between the standard members and engaging the head-plate. The shoulders at the side of the tenon engage the edges of the standard at their upper end. A chain is secured by one end to the lever and is secured to the stump. The apparatus is cheap in construction and effective in operation.

**SUNSHADE FOR HATS.**—JULIUS GERSTLE, Manhattan, New York city. The sunshade can be conveniently and snugly applied to a hat of any size or any shape. The shade is self-adjustable. A score or memorandum card is so combined with the shade that it can be detached. When the card is removed, the shade will not be rendered unsightly. The device is particularly serviceable at base-ball and foot-ball games.

**HAT-HOLDER.**—FREDERICK W. HODGES, Manhattan, New York city. The inventor has devised a hat-holder adapted to be applied to chairs beneath the seats. The holder is composed of open, wire loops forming spring-clamps to engage the legs of a chair and support the hat. The hat can be removed only from the front of the chair.

**TAILLESS KITE.**—WILLIAM H. HOYT and CLAUSSON S. WARDWELL, Stamford, Conn. To the back of the kite-body a cross-stick is secured. A web extends longitudinally of the kite at its front, which web supports a vertical stick received by a tubular pin. The kite has a longitudinal dihedral angle, the object of which is to displace the currents of air so that they may freely pass from the surface of the kite, laterally of the fin, the fin operating to divide the air-current equally at each side.

**APPARATUS FOR PRODUCING WORT, HOP-BEER, WASHING FILTER-PULP, ETC.**—EMIL KERSTEN, Richmond, Va. The inventor has provided a new apparatus for use in breweries for washing and sterilizing the pulp used in filtering or for mashing and hopping. The apparatus agitates and leaches the pulverized or ground malt with water for producing wort and treats the wort with the hops in such a manner as to produce an unfermented liquor of a high quality and in such a state as to facilitate the fermenting process.

**BREAK-INDICATOR FOR TWISTING-MACHINES.**—GEORGE F. IVEY, Forest City, N. C. In twisting a number of strands together to form a single

strand, should one of the strands break, the others go on and must be pulled off before the missing strand or thread can be properly pieced up, thereby causing much waste. The inventor divides each side of the twister into two or more sections, each section comprising a series of threads or strands to be twisted into a single strand. The circuit controlling devices of the strands in a section are in electrical connection with a needle or other indicator, so that an operator can immediately ascertain in which section a break occurs.

**ROCK-DRILL.**—HENRY KOCH, North Tarrytown, N. Y. The drill is a "rocker-drill" in which the valve is operated directly from the piston. The object of the invention is more effectively to control the feed and exhaust of the steam and to cause the piston to work in such a way as properly to strike the drill upon the work, and to obviate back-suction or "churning" in the cylinder. Exhaust-ports furnish a short passage to the atmosphere, permitting a rapid and effective exhaust and also facilitating entry of air into the cylinder after the piston passes the exhaust-ports. By having the exhaust-port leading directly to the atmosphere, a rapid and easy exhaustion is obtained, as well as free circulation of air, both of which are essential in a truly effective rock-drill.

**WINDOW SHADE FIXTURE.**—MATTHEW A. MARR, Manhattan, New York city. The fixture belongs to that class in which the roller carrying the shade is adapted to be moved up and down. The invention provides a fixture, the brackets and guide-rails of which are so constructed that there can be no lateral play of the brackets. The accidental displacement of the roller from its brackets is also prevented. The roller is provided with a longitudinal spring-yielding bearing to permit its automatic adjustment to possible varying widths between the side rails of a window-casing.

**CANDLESTICK.**—CHARLES E. SHERMAN, Manhattan, New York city. The candlestick is arranged to accommodate differently-sized candles, to permit the candle to burn out completely without danger of setting fire to the surrounding parts, and to collect the drippings without danger of the accumulation of molten wax or tallow upon the matches on the base.

## Designs.

**CUT-GLASS VESSEL.**—THOMAS B. CLARK, Honesdale, Penn. The leading feature of the design is found in a center cut with facets in imitation of a diamond and rising on a plane-surfaced polygonal figure.

**BUTTON.**—JOHN W. SIMMONS, Hagerstown, Md. The button bears the representation of an ant and a human eye. The word "trust" is in practice to be applied to the button directly below the eye, so that the whole device will stand for the words "Anti Trust." The button is to be used for campaign purposes.

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

## NEW BOOKS ETC.

**STEAM ENGINE THEORY AND PRACTICE.** By William Ripper. London and New York: Longmans, Green & Company. 1899. 8vo. Pp. 398. Price \$2.50.

A valuable book admirably illustrated by diagrams and engravings. The author has treated a hackneyed subject in a masterly manner. It should be in the library of every mechanical engineer. It is handsomely printed and bound.

**FOWLER'S MECHANICAL ENGINEER'S POCKET BOOK FOR 1900.** Edited by W. H. Fowler. Manchester, England: Scientific Publishing Company. 18mo. Pp. 500. Price 60 cents.

This is one of the largest books for the money we have ever seen. Engineer's pocket books are notoriously expensive, and perhaps justly so, but the work before us, notwithstanding its low price, deserves a place in the library or on the drawing table of every mechanical engineer.

**THE USE OF THE SLIDE RULE.** By F. A. Halsey. New York: D. Van Nostrand Company. 1899. 18mo. Pp. 84. Price 50 cents.

Any book which will lighten the labor of the draughtsman will be welcomed. It is a curious fact that many go on in the old beaten track for the want of a little book like this when the slide rule, when once mastered, will be found to largely reduce the drudgery of calculation.

**THE BIRD STONE CEREMONIAL.** By Warren King Moorehead. Being an Account of Some Singular Prehistoric Art Facts Found in the United States and Canada. Saranac Lake: Published by the author. 4to. Pp. 31. 53 engravings.

The author is a well known archeologist, and the publication of a monograph of this kind is a definite contribution to the literature of the science. The subject is an interesting one and is admirably treated.

**THE COST OF LIVING AS MODIFIED BY SANITARY SCIENCE.** By Ellen H. Richards. New York: John Wiley & Sons. 12mo. Pp. 121. Price \$1.

Standards of living, household expenses, food, clothing, etc., are all considered. It is an adequate treatment of an important subject, concerning which the literature is limited.

**BUILDING CONSTRUCTION FOR BEGINNERS.** By J. W. Riley. London and New York: The Macmillan Company. 1899. 16mo. Pp. 255. Price 60 cents.

The student will often be benefited by the study of a very elementary book of this kind. Of course American readers have no interest in the Department of Science and Art, which in Great Britain gives examinations in such subjects, but the questions may prove useful.

## Business and Personal.

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(7825) L. H. S. asks: 1. What is lowest temperature found, and in what found? A. The lowest temperature registered in the open air by any thermometer on the earth is -90 degrees Fah. The lowest gained in the laboratory is 434 degrees below zero Fah., by Prof. Dewar, of London. He did this by evaporating frozen hydrogen in a vacuum. This point is 25 degrees above absolute zero. 2. What is the highest known temperature? A. The highest temperature attained is that of the electrical furnace, probably 6,000 to 7,000 degrees. 3. What is meant by absolute zero? A. Absolute zero is not an arbitrary assumption. Any text book of physics will make that clear. It was determined by the fact that all gases expand and contract alike at the freezing point, at the rate of  $\frac{1}{273}$  part of their volume for one degree. Since this contraction is due to loss of heat, it follows that when a gas has contracted 459 parts, it can contract no more; all its heat would be gone. This temperature is the "absolute zero." In Centigrade degrees this point is 273 degrees below the ordinary zero.

(7826) F. W. G. asks: What is meant by an ampere hour? A. An ampere hour means a current of one ampere flowing for a time of one hour.

(7827) A. L. H. asks: 1. If two men on opposite sides of the earth at the equator looked along two parallel lines when the sun was midway between the lines, could either of the two men see the sun? A. Yes, both would see the sun in the same place. It would be rising to one and setting to the other. The distance of the sun is so great that the curvature of the earth makes no difference in his position. 2. Why is it that rubber being a non-conductor of electricity will attract objects? A. Because rubber is a non-conductor it can retain the electricity which is generated upon it, and this electricity will then attract light bodies. If it were a conductor the electricity would flow off as fast as it was generated and no electrical manifestation would be possible. It is only upon non-conductors that electricity can be made to remain. Conductors are insulated in order to retain the electricity upon them.

## INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

FEBRUARY 6, 1900,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Acetylene generator, H. Gerdes	642,600
Acid alkylated rhodamin sulfonic, Boedeker & Hoffmann	642,893
Acid, making hydrocyanic, J. Bueb	642,782
Advertising calendar and lead pencil, combination, N. Wettsue	642,829
Air distributing apparatus, J. Curley	643,086
Air humidifying apparatus, J. J. Mann	642,992
Alkali albuminate, making, O. Siebold	642,852
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