RECENTLY PATENTED INVENTIONS.

Electrical Appliances.

ELECTRIC RAILROAD.—CLARENCE A. MYERS, Atlantic City, N. J. In this railroad the electrical conductor is safely carried under ground, overhead wires being completely dispensed with. Provision is also made for returning the current to the central station. The invention provides for a track-rail comprising two sections spaced apart and forming opposite walls of a conduit. The tread of one section is below the plane of the other section-tread. In a groove in the under side of a section-tread an insulating material is arranged which supports the electrical conductor.

ELECTRIC STOP-MOTION FOR LOOMS.—ALEJANDRO STEPHENS, Guadalajara, Mex. This invention seeks to provide a means whereby a loom may be automatically stopped as soon as the fillling in the shuttle is exhausted or the shuttle-thread breaks. With the lay and with a stop-lever an electric circuit is connected. This circuit contains an electro-magnet, a swinging armature-lever carried by the lay and adapted to be moved into the path of a projection on the stop-lever when the electro-magnet is energized, a shuttle provided with two eyes at right angles to each other and with a guide-recess between the eyes, contact-plates in the shuttle, and a loose disk in the recess of the shuttle provided with an aperture to receive the thread by which it is supported away from the contact-plates. The circuit is broken so long as the disk is suspended, but when the thread runs out or breaks and the disk drops by its gravity, then the electric circuit is closed as soon as the shuttle passes between the plates. The electro-magnets are then electrified and attract the armature-lever, so that the lay imparts a swinging motion to the stop-lever to stop the loom in the usual manner.

Engineering Improvements.

ROTARY ENGINE.—FRED. E. BRAINERD, Carbondale, Ill. This engine consists principally of a cylinder connected with a motive-agent supply and provided with an exhaust. In the cylinder a piston is mounted to turn and has a number of heads and a series of abutments arranged in pairs. Each pair has its abutments arranged diametrically opposite each other and connected by a spring. The engine is designed to use the steam in small quantities expansively, but with a continuous pressure on the piston-heads.

ROTARY ENGINE.—SUTTON H. DRAPER, Missoula, Mont. In this engine a piston is provided consisting of a sliding head having a cavity in its outer edge containing a friction-roller. This roller consists of two sections having their ends joined by spiral cam-surfaces, the sections being hollowed and having a spring acting to rotate one section upon the other. A steam-supply and two exhaust-ports are located one on each side of the steam-port, the ports being comparatively long and narrow. An exhaust-pipe connection is provided having a yoke, the legs of which are hollow and taper from a long, narrow section at their base to an approximate circular section at their junction; this junction is located above one end of the ports. A steam-pipe connection is provided consisting of a hollow casting also tapering from a long and narrow section at its base to an approximate circular section at its upper end, the taper being from one end and opposite that of the exhaust yoke, whereby it is enabled to lie between the arms of the exhaust yoke.

Mechanical Devices.

BASKET-MACHINE.—WILLIAM JACKSON, Traverse City, Mich. In general, this machine is characterized by having means for forming staples from continuous lengths of wire and for driving these staples. The means by which this is done coact with a work-holder on which the basket is formed and by which the materials of the basket are held during the operation of bending and driving the staples. On the top of a column a drive-shaft is revolubly mounted. With the drive-shaft a plate is connected to be vertically reciprocated thereby. The staple-forming and driving devices are operated by the plate and are connected therewith. A lever has sliding connection with the plate and is rocked by the movement thereof. Means are provided for driving wire-feeding devices from the lever. To a rock-shaft, arms are attached and control the means for driving the wire-feeding devices. The rock-shaft is thrown by a treadle connected with a rod which is in turn connected with a crank on the rock-shaft.

COMBINED MOWING AND RAKING MACHINE.—JOHN MCCALLUM, Chippewa Falls, Wis. To provide a machine which shall simultaneously mow and rake grass, this inventor has devised novel means to attain the desired end. On a tricycle-frame he mounts a rear main transverse axle on which two traction-wheels are fitted. A dirigible front wheel is provided which is controlled by a handle bar. The operator sits on a saddle fastened to the tricycle frame and operates a pedal-shaft with his feet by means of crank-arms and pedals. Two sprocket-gears of different diameters are fixed on the pedal-shaft and two sprocket-gears are fixed to the axle. One of these gears is connected by a spocket-chain with a gear on the pedal-shaft, while a sprocket-gear on the axle is chain-connected with the other gear on the pedal-sbaft. A rotatable transverse cutter has a sprocket-gear on its shaft, chain-connected with the remaining sprocket-gear on the axle. The rake is mounted behind the cutter and may be raised or lowered from the saddle by means of a lever acting on a rod to which a link is pivoted, the rake being fastened to the link.

TRUING DEVICE.—GEORGE WAGNER, St. Paul, Minn. To provide an improved truing device which shall be simple and durable in construction, and which shall be of especialservice in the truing of bicycle wheels, this inventor employs two threaded spindles longitudinally aligned with each other, and adapted to engage the respective ends of the wheel-hub. Braces are carried on each spindle and strained thereby. These braces have attaching devices at their outer ends to engage the rim of the wheel.

Miscellaneous Inventions.

DUST-PAN.—HAMILTON WEIR, La Porte, Ind. The dust-pan provided by this invention can be made from a single plate of metal struck up and secured in shape without soldering. The blank from which the pan is formed consists of a base-plate having lateral wings to form the sides of the pan. These wings are extended rearwardly to form the sections of the back of the pan, and the rear extension running from the base-plate between the back extensions to form the foot-piece. The blank is provided with connecting tongues and is slotted to receive these tongues, so that the parts may be united without soldering.

NEWSPAPER OR BOOK PROTECTOR.—WILLIAM H. BURLAND, Punta Gorda, Fla. This invention seeks to provide a device which, when applied to a book or a magazine, will protect those portions of the leaves which are ordinarily exposed, and which, when applied to a newspaper, may be made to protect either an end or a side edge, or all the open edges. The inventor extends sundry of the book or newspaper leaves beyond the other leaves at the three free edges of these other leaves, forming projecting margins. These margins are long enough to overlap, and are adapted for sealing engagement, so as to conceal the contents of the book completely.

WAGON STEERING AND DRIVING MECHANISM.—LEIGH WATKINS, Denver, Col. In this invention various improvements are to be found, which enable the axles of one or more wagons to be connected so that the wheels may be used as traction wheels. Various devices have also been provided by which the steering of the wagons may be accomplished in such a manner that the wheels of successive wagons connected together will all follow the same track. The wagon-gearing has axles mounted to swing horizontally. Segment-gears are attached to the axles and extend horizontally toward one another. A horizonal shaft has a gear slidably keyed upon each end and meshing with the segment-gears, and also has a similar segment gear, gear-wheel and shaft upon the outer side of the axle by which two similar wagons may be connected and simultaneously controlled. The wagon-steering device comprises axles mounted to swing horizontally, and connections between adjacent axles upon different wagons consisting of the segment-gears fixed to the axles, longitudinal shafts, gears upon each end of the shafts and meshing with the segment-gears. and hand-controlled means for turning one of the axles.

SEAL-LOCK.—ELVIN H. MORSE, Colorado Springs, Col. The purpose of this invention is to provide a simple, inexpensive self sealing bolt for use on ballot-boxes, hinged doors and the like, which cannot be opened without first breaking the seal and which cannot be picked. The lock and seal comprise a spring-pressed bolt, a keeper-plate adapted to be loosely connected to a hinged lid or the like, and a seal-plate extended at right angles from the keeper-plate and adapted to engage against the outer surface of the lid or like.

GATE.—WILLIAM A. WHITCOMB, Downs, Ill. The gate patented by this inventor is so constructed that it may be opened by persons seated in a vehicle or upon a horse, thus avoiding the necessity of dismounting. To the gate a rod is connected, and to the gate-post a cross-bar is rigidly secured. On the cross-bar a rod is pivoted. On the gate-post a lever swings to which a rod is likewise pivoted. Each rod has a clevis, the clevises being pivoted to each other. A weighted rod is mounted to swing on one clevis and bears against the pivot of the clevises. By pulling upon an operating lever, the gate is opened and closed without descending from the carriage.

GATE.—PROSPER COUPAL, Bourbonnais, Ill. The purpose of this invention is to provide a gate of the sliding type which may be opened or closed from either side by persons on horseback or in vehicles. An arm is pivotally connected with the rear end post of the gate and with the upper portion of a frame. To the arm a latch-bar is pivoted and upon the latch-bar a latch-head is pivoted. A keeper for the latch-bar is carried by the frame. At opposite sides of the frame, pulley-blocks are located. Chains are attached to the latch-head and are carried each through a pulley-block. Other chains are attached to the latch-bar at the rear of the pulley-blocks, the latter chains being likewise carried in opposite directions through the pulley-blocks. By pulling upon a chain, it is possible to disengage the latch-head from the keeper, and by carrying the latch-bar rearward, the gate is made to travel on a track carried by the frame previously mentioned, thus opening it.

SUPPORT FOR FEED-BAGS.—TIMOTHY MULCAHY, New York City. To provide a device adapted for attachment to the forward ends of vehicle shafts or thills, and so arranged that a feed-bag or pail of water may be held within convenient reach of the animal in the shafts, is the purpose of this invention. The support for the feed-bag consists of an arm formed at one end with a socket, the opposite end being flattened in a horizontal plane and formed with a vertical longitudinal slot. A fastening device is provided for securing the socket-end of the arm to the shaft. The holder for the pail or bag is ring-shaped and provided with a projecting lug adapted to extend over the flattened slotted portion of the arm. Means are provided for securing the lug adjustably to the slotted portion of the arm.

PROCESS OF PYRITIC SMELTING AND APPARATUS THEREFOR.—GUSTAF M. WESTMAN, New York City. The purpose of this invention is to provide a new and improved process for treating sulphureted ores containing precious metals so that the metal is taken up by the iron or copper matte, while the zinc and lead sulphurets are converted into oxides at such a temperature as to become volatilized and discharged from the furnace as a gas, together with sulphurous acid. Finally the zinc and lead oxides are precipitated in a condenser, the remaining gases being treated in a lead chamber to form sulphuric acid. The regenerator and hot-air chamber used are connected with a shaft furnace having a side channel communicating with the conductor and extending vertically downward. The mouth is located within the ore-chamber and directly over the rear side of the bottom thereof, which slopes from that point.

SKIRT-PROTECTOR.—AUGUST ALLGOEVER, New York city. To provide a skirt-protector so constructed that its lower portion shall be prevented from straightening out of the desired position, this inventor uses a flat flexible core and a body having an upright portion and a portion folded about the core whereby lateral shoulders are formed at substantially right angles to and upon opposite sides of the body portion. One shoulder is wider than the other, the core being extended into each shoulder. The second shoulder it is, which offsets the flattening out of the protector or binding when rolled up for transportation or storing.

PUZZLE.—NED B. CRARY, Canisteo, N. Y. This puzzle comprises a base having vertical spaced projections and a series of balls connected by ligaments and adapted to pass between certain of the projections. The flexible ligament adds to the difficulty of causing the balls to traverse the desired path. The pins are so spaced that the larger of the movable balls cannot pass between each two but only between a certain two in each row of vertical projections.

SKEIN-HOLDER.—MARY A. ARROWSMITH, Freehold, N. J. This skein-holder comprises radiating figures provided with a clamping or securing mechanism, and having a flexible connecting-web stopping short of the outer ends of the fingers. By means of this device skeins may be readily wound into balls or may be conveniently held while the yarn is being consumed.

ARM-REST.—LEWIS BARR, Dayton, O. This device comprises essentially a frame having feet or arms extending across at each end and a longitudinal guideway within which slides one of two blocks pivoted to each other. Upon the other block slides a plate, which is preferably concaved upwardly and adapted to act as a support for the fore-arm, this plate being provided upon its under surface with a longitudinal guideway engaging the upper of the blocks or slides. This construction thus permits universal movement in any direction within its limit.

SLING-TRIP.—EMA CANCIENNE, Albemarle, La. This sling-trip comprises a handled bar, pairs of loops mounted to turn at the ends of the bar, hooks fixed on the bar between the members of the loops to hold them against lateral movement on the bar, and chains, of which one is permanently connected at one end to the loops and the other adapted to be hooked at one end to the hooks so that upon turning the bar the hooks release their chain.

SASH-FASTENER.—GEORGE FELTHAM, Waycross, Ga. The object of this invention is to provide a sash and fastener arranged to exclude dust and the like from a room, and to lock both sashes securely in any desired position without danger of the fastener being unlocked or opened from the outside. The fastener comprises a casing adapted to be secured to the lower sash, a laterally-movable bar in the casing, a pivoted head on the outer end of the bar and adapted to engage the upper sash, and a spring for holding the head in position when not in use.

WINDOW-GUARD.—JOHN L. SCHARFF, Reading, Pa. In this invention a device is provided which may be secured between the vertical portions of window-frames and at the outer side of a window, so that persons cleaning the window may be supported and prevented from falling. To a post a bridle is attached. A hook member has connection with the bridle by means of a loop therein. A lock slides on the hook member and has an elongated eye through which the loop of the bridle is passed. Two posts are employed, and being flexibly joined by lines and held by the bridles, combine great strength and convenience of adjustment.

CURTAIN-HOLDER.—ULYSSES S. PARISH and FLAVEL A. RUDOLPH, Carmi, Ill. According to this invention, a support is slidably mounted on a vertically extending supported rod. A spring-pressed locking-catch is pivotally mounted on the support and engages with the rod to lock the support at various positions on the rod. A cord is attached to the catch and serves to move it against its spring and to permit the vertical movement of the support. On the support a frame is carried from which the curtain is hung. With this device a curtain is prevented from moving sidewise, especially so when the curtain is narrow and does not overlap the sides of the window-frame.

COMBINED MATCH-BOX AND LIGHTER.—CHARLES WILSON, Newport, Ky. In this invention, an outer casing is provided with an apron at its lower end and with a slot in one side for the introduction of a match. The casing has an opening at or near the center of the front wall for the material to be lighted. An inner casing of asbestos is provided, which at the back and sides, forms a series of pockets with the back and sides of the outer casing. The inner casing forms a chamber communicating with the slot in the side of the outer casing and the openings in the front wall thereof. When a cigar is to be lighted, an end of the cigar is introduced within the chamber and a match is passed through the slots and struck on the interior roughened surface of the inner casing. The flame being protected, the cigar or pipe can be thoroughly lighted.

HEATING-DRUM.—CLAYTON M. RICHARDSON, Toronto, Canada. To provide a device capable of being used in the same compartment with a stove, this inventor has patented a drum which is so constructed that it may be large or small as desired. The device comprises a series of compartments, one above the other, and connected together. The compartments are subdivided by vertical partitions, with the exception of the lower compartment. Air-pipes extend through the lower compartment and through the next compartment above, and have their outlets between compartments so as to discharge heated air under the bottom of the compartments.

ELASTIC TIRE AND RIM FOR WHEELS.—ARTHUR C. MOORE and GEORGE RODWELL, London, Eng. This elastic rim for wheels, it is claimed, possesses the qualities of lightness, elasticity and strength, and consists essentially in the combination with a jointless inner rim of approximately U section with outwardly directed flanges, of an outer rim constructed of two annular members, together forming an outer annular member of approximately U section, with inwardly directed flanges adapted to embrace the sides or flanges of the inner rim, and of an intermediate pneumatic chamber whereby the required resiliency is obtained without liability of puncturing, the air-chamber being wholly inclosed and protected by the outer member of the metallic rim.

Designs.

TIP FOR HAY-FORKS.—GEORGE F. CAREY, New York city. The tip designed by this inventor has an upper cylindrical portion which extends with its sides on parallel lines for a considerable distance compared with the length of the tip and unites with the converging lines, which extend on straight lines, forming a tapering portion brought to a sharp point, the entire surface of the tip being smooth and presenting a cavity at the free end of its cylindrical portion.

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Notes & Queries

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References to former articles or answers should give date of paper and page or number of question.
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(7470) H. C. asks how many cubic feet of air a person breathes per minute and in how small a space that amount of air can be confined, or in how small a space can enough air be confined to last a man ten or twelve hours, and how much would that amount of air weigh? A. An average man or woman requires not less than 3,600 cubic feet of fresh air per hour, continuously supplied during that period, when asleep or in repose; about 4,950 cubic feet per hour when engaged in light work; 10,000 cubic feet per hour if engaged in heavy work—this exclusive of the air consumed by lights and heating appliances. Neither is this applicable to all individuals, since some require more than others, depending upon lung area and expansion. In close rooms, 6,000 cubic feet of air per hour (100 feet per minute) is generally required, allowing for lights and heat, stoves, etc. A single candle, to give its full light, requires 100 cubic feet of air per hour. In sickness these figures should be increased at least one-third. Air cannot be confined for purposes of respiration, for it is contaminated with carbonic oxide with every expiration. Certain air storage tanks, which may be utilized for a brief period by divers, provide for air expansion, but the expiration is not into the tank, but outside thereof; consequently, if the air were not compressed, it would not serve the purpose of respiration, as there would be no expansion. Your final query is answered by the foregoing. To place any individual in a perfectly airtight room would be to insure his or her death by asphyxiation, if therein long enough; in time all the vital constituents of the air would be consumed and replaced by deadly carbonic oxide. Proper ventilation is the first essential of proper respiration. Air presents different weights at different temperatures and elevations.

(7471) C. S. B. says: Can you furnish, through your Notes and Queries in the SCIENTIFIC AMERICAN, a receipt for making a salad dressing of the mayonnaise variety, but having keeping qualities that will render it suitable to be put up in bottles, and kept as a stock article?

A. Powdered turmeric	1	oz.
Powdered tragacanth	1	"
Olive oil	8	"
Eggs	8	"
Water	5¾	pts.
Ground mustard	1½	oz.
Salt	8	"
Acetic acid (glacial)	2	"
Tincture of capsicum (Or according to taste.)	½	"
Sugar	1	lb.

Mix the first three ingredients in a mortar capable of holding one gallon, then add the eggs, which have been whipped previously, and incorporate thoroughly until an

(Continued on page 95)