RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

SUGAR-CANE CARRIER.—José Eligio Tallet, Matanzas, Cuba. This improvement in devices for handling and dumping sugar-cane comprises a series of slings or cables adapted to pass beneath the cane. One end of each sling is detachably secured to a supporting-frame, the other end permanently fastened. A tripping device is connected with the detachable connections and is operated by a member when the frame is lowered. Only one end of the slings is released; and when the frame is hoisted and removed, the slings are automatically drawn from beneath the cane. Thus the removal of the slings by hand is obviated.

PLOW-CLEVIS.—William G. Landers, Rehoboth, Ga. The clevis has its end bar provided with a vertical slot to receive a thill-iron. At one side in rear of the end bar is a vertical keeper-slot. A cross-bolt is passed through this keeper-slot, is connected with the opposite side of the clevis, and adapted to secure a link passed through the slot in the end-bar of the clevis. The improvement does away with an extra lap-ring or connecting-bolt, thus shortening the distance between the plow-beam and singletree and causing the plow to run more steadily.

HAND-PLANTER.—Charles Newman, Springfield, Mo. The hand seed-planter has a wedge-shaped point open on the rear side and normally closed by a spring jaw. The point is connected with a tube provided with a seed-hopper. An adjustable spring-foot is attached to the point and connected by rods with the spring-jaw. The operator walks in a straight line across the field, and alternately raises and lowers the planter at each step. The wedge-point thus enters the soil once at each step; and as the tube is inclined forward, the spring-foot is caused to open the point to discharge a due quantity of seed.

Electrical Apparatus.

PYROXYLIN AUTOMATIC ELECTRIC FIRE-ALARM.—Jehan de Froment, Notre Dame de Lourdes, Manitoba, Canada. Fires in buildings usually begin in woodwork in contact with defective conductors. A chimney, for example, in crumbling away, exposes the underlying woodwork to the flames. The inventor winds a pyroxylin thread around the chimney (or other inflammable part of a building) or between the floors at a few inches from the chimney. Pyroxylin (which burns several times more rapidly than gunpowder) ignites at the contact of the least spark, releases a spring, and sounds an electric-alarm. The pyroxylin, owing to its low thermostatic power, burns only at the actual fire. The inventor has publicly tested his system both in New York and Canada with very gratifying results.

Engineering Improvements.

IGNITER FOR EXPLOSIVE-ENGINES.—Fred J. Macey, Ontonagon, Mich. It often happens that the firing-pins or contact-points of vertical explosive-engines become coated either with dirt or with oxid, so that the spark is not properly produced. To overcome this objection, the inventor mounts one firing-pin movably with respect to the other. A rod carries the movable pin and has a spiral groove. A movable support for the rod has a pin or projection engaging the spiral groove in the rod. The support can be moved so that the movable firing-pin will be turned upon its axis after contact with the other firing-pin. The turning movement is sufficient to rub off any dirt or oxid on the ends of the pins, so that the spark is produced with absolute certainty whenever the pins touch.

ROTARY BALANCED VALVE.—William B. Orr and Charles K. Booth, Macon, Ga. This rotary balance-valve comprises an incased steam-chest provided with a valve-seat in which the valve turns. The valve has side parts opening into the steam-chest, an exhaust-port, and cylinder-ports. A top or cap is provided for the valve-seat. The valve which turns in the seat has an exhaust-cavity, side cavities, and a top cavity. Transverse spring-pressed packing-plates in the valve are in contact with the under side of the cap and are arranged between the side and top cavities. A valve thus constructed cannot leak.

SLIDE-VALVE.—George W. Carpenter and Robert Watson, Nanaimo, British Columbia, Canada. The invention provides a simple slide-valve which can be cheaply made and readily attached to any ordinary cylinder, and which acts as an automatic drain for the cylinder to clear it of condensed steam. The slide-valve used consists of oppositely-arranged, open-ended valve-cylinders fitted in the cylinder-covers. Hollow valve pistons slide in the cylinders and contain inlet and exhaust-ports arranged to register alternately with ports in the cylinders. The pistons are formed with annular flanges at their outer ends, engaging the outer ends of the valve-cylinders when the pistons are moved inwardly. The pistons are longer than the cylinders so as to project inside the main cylinder when slid inwardly. The valve-pistons are instantly released from pressure at the end of the main piston's stroke; while the piston just opening to the steam is assisted to its place by the steam, thus avoiding all jar.

Mechanical Devices.

BOAT DRIVING-GEAR.—John A. Freund, Brooklyn, New York city. The purpose of this invention is to provide an effective means for manually driving propellers in small boats. The mechanism consists of a hand-lever to the lower end of which one end of a link is pivoted, the other end of the link being pivoted excentrically on a gear wheel meshing with a bevel-pinion on the propeller-shaft. The boat can be driven in either a forward or backward direction by the mechanism. The inventor prevents the gear's moving in the wrong direction by means of a double pawl.

WAVE-MOTOR.—Samuel P. Swearingen, Pasadena, Cal. The wave-motor comprises a frame above the water, a float, and a set of arms pivoted to the floats and frame and permitting each float to swing in the direction of movement of the waves. A shaft journaled on the frame carries a ratchet-wheel, which is engaged by pawls on two levers pivoted concentrically with the shaft and extending in opposite directions. Links or bars are connected with the outer ends of the levers and with the float. The device can be used for any purpose for which power is desired.

PAPER-COATING MACHINE.—William H. Waldron, New Brunswick, N. J. The machine is designed to be used either as an adjunct to a paper-making machine arranged to coat paper uniformly on both sides. A delivery device is used consisting of a trough under which the paper passes and in which a roller is contained. An apron, in peripheral contact with the roller, extends outside the trough into close proximity to the upper surface of the paper. The paper is passed around a transverse roller in horizontal alinement with the delivery device and is horizontally returned over the delivery device. The paper is passed underneath a second delivery device, located immediately above the first.

BASKET-STAPLING MACHINE.—John C. Titus, Norfolk, Va. Berry-baskets are formed by taking two pieces of veneer creased transversely to form the bottom and sides; and these two pieces are laid across each other upon a square former with tapered sides. A thin strip is arranged on the inside and another on the outside clamp, the edges of the basket between them. The fastening of these strips to the edges of the basket is the work which the present machine is intended to perform. The former heretofore has been turned by hand successively to present each one of its four sides to the staple-driving devices. The invention provides automatic mechanism whereby the basket-former not only is presented to the staple-driving device, but the basket and former are turned around automatically to present each side. When the four sides are finished, the working mechanism of the machine is automatically stopped; and the driving-wheel runs free while the attendant is fitting the parts of a new basket to the former.

SEWING-MACHINE MECHANISM.—Murney Dendurent, Robinson, Kan. This invention simplifies and improves the feed and shuttle actuating mechanisms so that they contain fewer parts, run more easily, are more readily accessible, and are more quickly assembled and adjusted than heretofore. The improved construction also reduces the cost of manufacture, renders the machine more durable, and involves no complicated parts to gather dust and lint.

Railway-Appliances.

CAR-COUPLING.—Odaville Yates, Dalles, Ore. The coupling belongs to that class employing a side latching-knuckle and a gravity-block designed to hold the knuckle in closed adjustment, to be released by manipulating an attached lever. It is claimed that this improved coupling will effectively couple with a mating member, that it affords means for the safe release of coupled connection from either side of a car, that it may be set to couple by impact, and be locked from release whenever it may be desired.

RAILWAY SIGNAL APPARATUS.—Charles R. Gurr and Herbert Tomlins, 51 Cambridge Road, Hammersmith, London, W., England. The apparatus compensates for variations of length of the wire connections through which the signals are operated and renders impossible the partial or imperfect operation of the signals. The wire connections are kept under constant tension and are at all times free to expand or contract, being normally disconnected from the hand-levers by which the signals are operated. The coupling-up of a hand-lever with the corresponding connecting wire is automatically effected at the moment when the signal is to be lowered; and the connection between the wires and the lever ceases when the signal is returned to "danger."

Miscellaneous Inventions.

DEVICE FOR LIFTING PLATES.—Frederick S. Snyder, Whitehall, N. Y. The device is particularly intended for handling pie-plates without danger of burning the fingers, and is composed of a piece of wire bent to form three arms adapted to grasp the edge of the plate. The device is quickly applied to plates of different sizes, for it is automatically adjusted by pressing two of the arms with sufficient force to lift the plate.

THEATER APPLIANCE.—Ida May Fuller, Forest City, Iowa. By means of this invention it is possible to produce the novel theatrical effect of a fierce fire in which a dancer is apparently moving. The flames are composed of individual tongues, any of which, when separated from the others, automatically returns to an upright position in the fire. The coloring of the illusory flames can be quickly and conveniently changed at will by means which are invisible to the spectators. A smoke effect can also be produced by the same means employed in producing the flames.

STEAM-HEATING PLANT.—James D. Robertson, La Salle, Ill. The purpose of the invention is to provide a steam-heating plant by means of which towns may be supplied with steam for heating or for power. The plant has a generator from which a main leads throughout the system, returning to a point near the generator and into a receiver near the boiler. A valved blow-off pipe passes from the receiver for the purpose of maintaining a contant circulation throughout the system.

VEHICLE-WHEEL.—Lyman H. Zeigler, Millbank, S. D. The purpose of the invention is to produce a wheel which will have a certain elasticity, so that it can yield slightly when brought into contact with inequalities in the road. The inventor has, therefore, devised a wheel comprising a hub and a rim having connecting tension spokes composed of hub and rim sections. Each section is formed of a V-shaped rod having its ends secured to either rim or hub, the complimentary sections being interlocked. Springs exert a sidewise strain upon the spokes.

STRINGED MUSICAL INSTRUMENT.—Andrew E. Bark, Kalispell, Mont. This invention provides an improvement in instruments, such as citherns, whereby the pitch of all strings in a group can be raised or lowered in accordance with the music to be played. Fixed bridges are employed, over which groups of melody and accompaniment strings extend. Two transverse bearings are arranged adjacent to one bridge, and a third bearing is mounted adjacent to the other bridge. For each group of strings a movable bridge is provided, mounted to rock in a bearing. Each of the movable bridges at one end serves to change the pitch of all the strings in the group. Movable bridges at the other end serve to decrease the pitch of some of the strings of the group, thereby changing the chord represented by the group.

MUSIC-HOLDER.—Patrick Bennan, Jackson, Mich. The holder is simple in construction, compact in form, and can be readily carried in a portfolio. On a support a shaft is mounted, provided with retaining-arms at its ends. A finger projects from the shaft and receives one end of a spring coiled around the shaft. A spring-controlled bolt, normally extending below the finger, is arranged for locking engagement with the upper surface of the finger. The bolt serves to regulate the tension of the spring. The device can be used with books or sheets of music.

WAGON-BOX HOLDER.—William A. Crotts, Partridge, Kan. The wagon-box holder comprises a rack-bar secured to the side of the box. A spring-yielding dog is mounted to swing on a standard of the wagon and is adapted to engage a tooth of the rack-bar. A cam-lever holds the dog in engagement with the rack-bar. The box is held from jumping relatively to the bolster. As the top of the bolster or the bottom of the box wears away, the spring-yielding dog will permit the box to move down, so that it can engage a new tooth in the rack-bar.

STRAIGHTWAY VALVE.—David J. Crozier, Brooklyn, New York city. The valve-body has a straightway passage provided with a perpendicular conform valve-seat and an extension-chamber above the valve-seat. The flanged gate-vale fitting in the seat can be partly or completely elevated. By providing two opposite pairs of notches in the flanges of the valve-gate the gate may be partially turned at different times to alter its position in the seat, thus preventing the gate from wearing away on the sides exposed to the action of the liquid or gas. The regrinding of the valve-gate in its seat can be readily effected while the valve-body is in place by the removal of the extension-chamber from the valve-body and the subsequent unscrewing of the valve-stem from the valve-gate.

COMPOSITION OF MATTER FOR REPAIRING TIRES.—Oliver P. Michael, Marion, Ind. The composition consists of Spanish whiting, Swedish black, glue, and oil of cinnamon. After being introduced into the tire by way of the air-valve and by use of a pump, the composition will readily close a puncture.

APPARATUS FOR PITCHING INTERNAL SURFACES OF CASKS OR BARRELS.—Carl A. Neubecker, Offenbach-on-the-Main, Hesse, Germany. This invention relates to a device for injecting hot, fresh pitch into barrels, so that the old coating is removed and a new one laid on. Difficulties have heretofore been encountered in transferring the pitch from the boiling-pan into the barrel in a suitable manner. The inventor, to overcome these difficulties, employs a heated tank containing the pitch, in which tank a receptacle is placed, through the bottom of which the pitch can flow. Compressed air is employed to force the pitch in the receptacle (simultaneously closing the ball-valve in the bottom) into a discharge-pipe by which it is sprayed into the barrel. The device is not so readily overheated as the pumps at present in use; nor is it so complex in construction.

Designs.

PILLOW-TOP.—Raffaelo Astarita, Manhattan, New York city. We have previously had occasion to mention several artistically-designed pillow-tops of this inventor. The present design, representing an automobile coaching party, shows the same taste and skill as its predecessors.

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.

Chemistry, its Evolution and Achievements. By Ferdinand G. Wiechmann, Ph.D. New York: W. R. Jenkins. 1899. 16mo. Pp. 176.

In a series called "Science Sketches" we find the work noted above. The aim of the author is to enlist the interest of non-professional readers in an exact science. It is scientific without being superficial and is withal interesting. It is a book we can commend to all lovers of chemistry, and teachers of that science should require a portion to be read each day in the class-room.

The Locomotive. New Series. Vol. XX. Hartford, Conn.: Hartford Steam Boiler and Inspection Company. 1899. 8vo. Pp. 194.

"The Locomotive" is always a welcome visitor to the editor's table giving as it does a vast amount of information relating to steam, to boilers, and to science in general. It is admirably edited by J. M. Allen, editor, and A. D. Risteen, associate editor. Among the articles we note "Magazine Science" which we have already commented upon in the Scientific American.

Die Medial-Fernrohre. Eine neue Konstruktion fuer grosse astronomische Instrumente. Von L. Schupmann, Professor an der technischen. Hochschule zu Aachen. Leipsic: B. G. Teubner. 1899. 28 illustrations. 8vo. Pp. 145.

Prof. Schupmann has written a book, which although too technical for the general reader, is nevertheless extremely interesting because it describes his very ingenious method for correcting the unavoidable secondary spectrum in large astronomical refracting telescopes, for producing a more sharply defined image than has hitherto been attainable, and for reducing the length of the tube so necessary in telescopes. He employs a single convex objective, closely to the focus of which a totally-reflecting convex prism is placed. The positive chromatic aberration of the objective is corrected by a concave mirror surface in front of which are placed two concave lenses. The light reaches this correcting device after its pencils have been united in the focus of the objective. The system is essentially different from that now in use and is characterized by a simplicity and ingenuity which augurs well for its general adoption.

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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.

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Notes & Queries

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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.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(7831) X. X. X. asks: 1. I have 9 small storage batteries in series each 2·2 volts and which must not be charged faster than ½ ampere. What resistances will I need and how shall I connect to charge them from a 110 volt direct incandescent lighting circuit? A. You must provide for a drop of 90 volts in the resistance. This will require 180 ohms, when ½ ampere is flowing. 2. By what rule can the resistance of incandescent lamps be found when voltage and candle power only are given? A. Assume say 3½ to 4 watts per candle. If 16 candle power this will give about 55 watts which at 110 volts requires ½ ampere. Now substitute in Ohms law, ½=110 ÷R. Hence R=220 ohms resistance of lamp when hot.

(7832) X. Y. Z.—It depends upon circumstances. Write in full over your signature.

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