

Tesla's Patents Upheld.

Judge William K. Townsend recently gave, at New Haven, Conn., an opinion which upheld the Tesla electrical patents, which had been infringed upon by several parties. The decision was remarkable in view of the fact that it went outside the usual verbiage of the Court which is used in confirming the validity of patents. Judge Townsend said: "A careful study of the evidence shows that Tesla has made a brilliant discovery. It remained to the genius of Tesla to capture the unruly, unrestrained and hitherto opposing elements in the fields of nature and art, and to harness them to draw the machines of man. It was he who first showed how to transform the toy of Arago into an engine of power; the laboratory experiment of Bailey into a practically successful motor; the indicator into a driver. He first conceived the idea that the very impediments of reversal in direction, the contradictions of alternatives, might be transformed into power, producing rotations, a whirling field of force. What others looked upon as only invincible barriers, impassable currents and contradictory forces, he seized and by harmonizing their directions utilized in practical motors in distant cities the power of Niagara."

A New Double Salt of Chromium and Ammonium.

M. Charles Laurent, of Paris, has succeeded in forming a new double salt of chromium and ammonium. He describes his experiments in a paper recently presented to the Académie des Sciences. It is well known that the sulphates of the magnesium series give, with the alkaline sulphates, double salts whose type is the salt of magnesium and potassium, $MgSO_4 + K_2SO_4 + 6H_2O$. The only chromous salt of analogous form known at present is the double sulphate of the protoxide of chromium and of potassium, $CrSO_4 + K_2SO_4 + 6H_2O$; this salt has been prepared by Peligot. The experimenter states that he has been able to prepare another salt of the protoxide, the double sulphate of chromium and ammonium. Experiments with the chromous salts are very difficult to carry out, as in the presence of air these are soon transformed to chromic salts; all the operations must be performed in the presence of an inert gas. In this case carbonic acid gas was used. Bichromate of potassium was taken as the starting point, and from this the chromous chloride

was prepared by the usual reaction; this was transformed to acetate, which is but slightly soluble, by adding acetate of sodium in excess. The chromous acetate, freed by washing from the other salts, is decomposed by the proper quantity of dilute sulphuric acid. After having expelled the acetic acid by ebullition, the proper proportion of sulphate of ammonium is added. The liquid, by concentrating and cooling, deposits blue crystals, which are separated from the mother liquor, always out of contact with air, and dried upon kaolin. This is the double salt of chromium and ammonium; it appears in fine crystals of a blue color, resembling copper sulphate. Analysis gives the formula $CrSO_4 + (NH_4)_2SO_4 + 6H_2O$. Water dissolves this salt in considerable proportions; it possesses the reducing properties of the simple chromous salts, and in the presence of air it is transformed rapidly to the chromic salt. The difficulty of preserving it from contact with air does not permit the exact determination of its crystalline form, but by its formula and external appearance it has a close analogy with the double salts of the magnesium series. This compound, into which the protoxide of chromium enters, shows another point of resemblance between chromium and iron.

Ordnance at the Pan-American Exposition.

The display of ordnance and war articles at the Pan-American Exposition will be a most notable one and will vary from a 12-inch rifle to a pocket emergency ration. There will be field batteries of artillery, camp equipage, machine and rapid-fire guns, torpedoes, small arms, and the shipbuilding industries will be fully represented. In fact, everything will be shown that will tend to interest foreign purchasing officers. This exhibit will be a commercial one and will be entirely distinct from the government display. Nearly all the South American countries have declared their intention to send a special commission to this country to investigate the war goods offered. It is planned to have a tunnel built under the bluff on which the ordnance will be located. Guns will be fired through this tunnel, and the conditions will approximate as much as possible those obtaining on government proving grounds. This is undoubtedly an entirely new venture for an Exposition and cannot fail to prove of the greatest interest. The firing range at Buffalo will be

over the surface of Lake Erie, and it is hoped to make a new record for long range work. The object of the display is to demonstrate to official commissions of foreign countries the great capabilities of American plants to undertake the filling of all military and naval orders of foreign States.

The Building Edition for September.

The September number of the BUILDING EDITION OF THE SCIENTIFIC AMERICAN has the usual choice selection of houses of various prices, and among the other interesting features are "The Scoville Memorial Library at Salisbury, Conn.," "A Group of Artistic Door Knockers," measured details of interior fittings, "Fireproofing Wood," and other subjects of equal interest.

The Current Supplement.

The current SUPPLEMENT, No. 1289, has many papers of unusual interest. "The Proposed Abandonment of the Port Royal Naval Station" is an elaborately illustrated article dealing with the subject which is now agitating naval circles. "American Engineering Competition," the ninth number of which is published in the present issue, deals with locomotives. "The Fleet of Allied Powers in Chinese Waters" occupies an entire page. "Mechanical Stoking" begins a series on this subject. "Artillery School at Jüterbog" describes some very curious experiments which are carried on at this school. "Exchange Value of Meteorites" is by L. P. Gratacap. "The Automobile Wagon for Heavy Duty" is by Arthur Herschmann, and is fully illustrated.

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RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

POULTRY NEST AND HOVER.—JOHN N. GREEN, Newtown, Ky. This portable poultry-coop is made entirely of metal, whereby the construction is less cumbersome and heavy than heretofore. The inventor has provided good ventilation. One of the novel features of the invention is a door of greater length than width. When placed in vertical position, the door prevents the hen from leaving the coop, but allows the egress of the chicks through a small opening. When placed in horizontal position, the door prevents all egress, but permits thorough ventilation.

CACTUS-BURNER.—LEWIS N. SNOWDEN, Tilden, Tex. The device is used to destroy the "spines" of the cactus or prickly-pear, so as to render it more useful as a food for cattle. Gasoline or other volatile fuel is used, which is thoroughly vaporized and burnt. The burner-nozzle is so arranged that a regulated draft is created to form a hollow or annular flame which is spread over the vaporizing-coil. The down-draft blows out of the nozzle tip any impurities or scales which are liable to collect therein. A hood confines the flame to the vaporizing-coil until every part has been thoroughly heated.

SEAT ATTACHMENT FOR HARROWS.—OTTO W. SKORKOWSKY, Harrah, Oklahoma Territory. It is the object of this invention to provide an improved wheeled attachment for harrows or like implements, whereby the driver's seat is carried and adapted for adjustment, so as to counterbalance the draft appliances. The improved attachment comprises two bars hinged together at their front ends and fixed to an axle which is formed of two lapped parts adapted to slide on each other. Through the axle and the seat-supporting bar, a bolt is passed, which serves to secure the axle parts and seat-bar in any adjustment.

Electrical Apparatus.

CABLE-HANGER.—CLEMENT E. BEARD, Columbus, Ohio. This hanger for telegraph and telephone cables comprises two members pivotally connected with each other and provided with prongs for engaging the cable. Hooks engage the hanger-support; and these hooks are arranged to overlap when the hanger is closed. The hooks can not open accidentally; nor is the cable or its envelop liable to be marred.

ELECTRIC MOTOR.—EDWARD A. HENRY, Crestline, Kans. The motor is particularly adapted for operating vibrating fans or other devices requiring little power. In this motor the armature oscillates, for which reason the inventor was chiefly concerned with devising some simple form of controller which would periodically change the direction of the current. The current is fed by an angle-lever, the two arms of which alternately engage two contact-plates connected with the armatures. The current changes in direction as the armatures reach the end of their travel.

ENGRAVING-MACHINE.—CHARLES CHEVALIER, Brooklyn, New York city. Heretofore the design to be engraved upon a watch-case, for example, has been raised or produced in metal on a pattern-disk, necessitating considerable work in routing out the metal around that surface which represents the design. According to the present invention, the design is cut into the metal or made in intaglio; and the cut surface is filled with wax,

or with other non-electric conducting material; or the design is drawn or painted on the pattern-disk with a material which is a non-conductor of electricity. When an electric tracing-finger engages with the filling in the design, the circuit is broken and the cutting-tool carried away from the surface.

Engineering Improvements.

STEAM-JET FLUE-CLEANER.—HOOKER I. COGGESHALL, Wortendyke, N. J. Steam of high pressure is passed through a blower-pipe into the conical head of the cleaner and highly heats the head. The pressure of the steam causes a current of air to be drawn between spiral-wings over the head and mingled with the steam-jet. As the air-current mingles with the steam, the combined jets coat to loosen and blow out the scale.

VALVE.—DAVID GILCHRIST, Concord, N. H. This valve, for use on expansion steam-engines, consists of a steam-chest connected with the ports of both the high and low pressure cylinders. A main valve, reciprocating in the steam-chest, is arranged to control the admission of the steam to the high-pressure cylinder. An intercepting-valve under control of the engineer, and operating in unison with the main valve, regulates the exhaust of both the high-pressure and the low-pressure cylinder and the admission of the live steam to the low-pressure cylinder.

VALVE.—ALBERT P. BROOME, York, Penn. The valve, although capable of general application, is especially designed for use in connection with a steam-heating system previously patented by Mr. Broomell. In this steam-heating system it is desirable to open a vent to the air when the steam is shut off from the radiator. The valve forming the subject of this patent is adapted to vent to the atmosphere when it is adjusted to close or shut off the port leading to the supply.

Mechanical Devices.

LOCK.—WALTER E. EMERY, West Chicago, Ill. This lock is especially adapted for use in connection with switches to hold the switch-point secured, but it may be also used in various other connections. The lock has a bolt adapted to be thrown by the key. A tumbler serves to hold the bolt in closed position and is also adapted to be thrown by the key to release the bolt. A chock-bar serves to hold the bolt in open position during certain periods of the operation of the lock. A keeper-plate fastened adjacent to the chock-bar limits its movement.

ATTACHMENT FOR EMBROIDERING MACHINES.—JOSEPH GRUBMAN, Brooklyn, New York city. The machine is of the Bonnaz or other type; and the attachment thereto stitches braid, chenille, tape, cord, bands, or the like upon the fabric to be embroidered in such a manner as to produce ruching or fluting effects. Mechanically considered, the attachment consists of a sleeve mounted to turn on a reciprocating needle-bar, on which sleeve a carrier is pivoted. A reciprocating nipple and a cam are mounted to turn on the sleeve and actuated by the reciprocating nipple to impart an intermittent rotary motion to the cam and cause a swinging of the carrier.

STAGE-MACHINERY.—CLAUDE L. HAGEN, Manhattan, New York city. The apparatus is to be used in connection with the reproduction of horse and chariot races on the stage. It embodies means for mounting

and driving one or more traveling aprons at the rear of the stage, so as to represent the background of the scene, which gives the spectators the impression that the horses are moving forward. The apparatus was very successfully used in the play "Ben Hur," produced in New York city, and was fully described in the SCIENTIFIC AMERICAN for August 25, 1900.

APPARATUS FOR REMOVING MATERIAL FROM BELOW THE SURFACE.—HERBERT F. MUNN, 56 Beaver Street, Manhattan, New York city. Upon the deck of a vessel a compressor is mounted, which forces air downwardly through a pipe leading to the gold-bearing sands in a river-bed. The nozzle of this air-pipe is hinged so that it can be controlled from the deck of the vessel. The compressed air forces the sand through a second pipe adjacent to the first and discharging in a tank on the vessel. The arrangement has decided merits. In the first place, the gold-bearing sand is directly reached without removing the worthless superimposed strata; and, in the second place, the hinged nozzle can be readily controlled properly to discharge the loosened material into the second pipe.

DEVICE FOR FILLING AND SHAPING CUSHIONS.—FANNIE L. MYERS, 47 Great Jones Street, Manhattan, New York city. Toilet or pin-cushions are held in a mold or shaping-block and the filling quickly packed therein to such an extent that it cannot shift and that a firm exterior surface is obtained of the desired shape.

DRIVING APPARATUS.—WALTER J. LE BARRON, Barre, Vt. The apparatus is designed to utilize the power of the wind for driving various devices, but is best adapted to marine propulsion. The novel features of the invention are to be found in a friction-gearing interposed between the wheel and the part to be driven. The windwheel turns a rotatable plate which is engaged by a friction-wheel. By sliding the friction-wheel toward and from the center, the speed of transmission is varied.

GAGED FEEDING-JOGGER.—ROSS H. PRATT, Portland, Ore. The feed-board or platen is provided with a gage for engaging one side of a sheet; and on the feed-board a pivoted angular jogger-arm is mounted opposite the gage and provided at one end with a jogger for engaging the opposite side of the sheet to move that sheet against the gage. The jogger is automatically moved outward, and is moved inward by a spring. The sheets are held in proper position between the jogger and the gage, while moving off the feed-board; and in case of a platen-press the sheets are brought in proper position, so that each receives the color impression at the proper place.

Railway Contrivances.

DETECTOR-BAR.—WILLIAM H. HIGGINS, Jersey City, N. J. Detector-bars are employed to detect the presence of engines or cars upon a railway-track and to prevent the movement of a switch under the engine and cars. The present invention provides such a bar of any desired length. The lower portion of the bar is furnished with any desired number of motion-plates, the lower surface of which has movement in guides or clips to impart the desired motion to the detector-bar; while the upper surface of the motion-plates serves as guides for the bar, acting in conjunction with guide-surfaces carried by the clips in which the detector-bars have movement.

PNEUMATIC SAFETY-GATE.—WILBUR F. HORN, Carlisle, Penn. The inventor has devised improvements in railroad safety-gates, whereby the gates are operated by the direct power of currents of air, gases, or vapors issuing from or entering the gates on opposite sides of their axes. These currents are produced by pressure appliances automatically actuated at a distance by the railway rolling-stock.

Miscellaneous Inventions.

ADJUSTABLE SCREW-JACK.—JOHN C. F. LONG and JAMES N. BISH, St. Mary's, Ohio. This adjustable screw-jack is especially intended for service in oil-wells in raising and lowering sucker-rods, polish-rods, valves, etc. It contains a hollow screw-rod, with a head having an offset thereon for keeping the screw-rod from turning. Also a set-screw in the head, a nut screwing on the screw-rod, a swivel mounted to turn on the nut and furnished with a head having a bore adjusted on a line with the bore in the head of the nut, and that in the screw-rod. A set-screw is in the swivel-head, with means for holding the swivel against any displacement in the head of the nut.

TOOTHPICK.—GEORGE W. SCHELLENBACH, Joplin, Mo. The toothpick has a hollow tubular body such as a quill. One end is closed and the other is formed with a point. Adjacent to this point and within the hollow body, there is a quantity of flavoring or medicinal substance, held in place by cotton wadding or other packing. When using the pick these ingredients which may be gum-camphor, licorice-root, cinnamon-bark, sirup, honey, or the like, are brought into use. The purpose of the device is to provide a substitute for cigarettes, chewing-tobacco, etc., for the use of which there is a strong inclination after eating.

TOY DRUM.—MORTON E. CONVERSE, Winchendon, Mass. The body of the drum has metallic heads with circular flanges extending toward each other and surrounding the ends of the body. Annular flanges project outwardly from the inner ends of the cylindrical flanges. Hoops surround these cylindrical flanges and rest on the annular ones. The construction of the toy enables the parts to be separated with facility and nested so as to take very little space in transportation, and to be readily put together and secured in their proper positions for use.

NUT-LOCK.—HORATIO E. DOWNING and HARRY L. DORSETT, Seward, Oklahoma Territory. To hold a nut securely so as to prevent any turning after it is screwed up to the desired place, the inventors have provided the nut with a recess extending along the bore of the nut, the bottom of the recess inclining inwardly and downwardly. A tapered locking-slide having an inner sharp corner and fitted to be driven home in the recess, forces the corner inward into the threads of the bolt. A cover removably held on the nut holds the locking-slide in place.

GARMENT-TRIMMING.—RICHARD G. MARSH, Manhattan, New York city. The fabric folds upon itself and forms a plait, the folded parts being stitched together by a wave-like line of stitching. The portion between the stitching and the folded edge on being removed forms a scalloped edge for the plait outlined by the stitching. This serves to hold the plait in position over the body portion of the fabric. There can be any

