RECENTLY PATENTED INVENTIONS.

Engineering.

REFINING ZINC.—George M. Holstein and John D. James, Pulaski City, Va. A process of and apparatus for refining zinc spelter and separating therefrom the lead, patented by these inventors, is based on the specific gravity, the melting points, and the volatilizingpoints of the two metals, andprovides therefor special furnaces and retorts. The furnace fires are designed to be so regulated as to keep the retorts as nearly as possible at the temperature at which zinc volatilizes, lead requiring a slightly greater heat to volatilize, and the lead in melting collecting at the lower part of the retort, this part of the retort being exposed to the air, which chills the metal and diminishes ebullition. The volatilized zinc passes over a bridge into a condenser.

ZINC REFINING FURNACE.—George M. Holstein, Pulaski City, Va. For better carrying out the above process this invention provides a furnace designed to save fuel, the front ends of the retorts being made lower than their back ends, to cause the lead to flow to the front, where there is an externally exposed dam, the molten metal flowing out only through a tap hole, and the condensers being arranged to open only in the top part of the front ends of the retort. All the operations are conducted from the front, and the lead may be drawn off from time to time without stopping thefurnace. Zinc drose, galvanizers' waste, or other forms of zinc or zinc trimmings may be treated in the furnace.

Railway Appliances.

CAR FENDER.—John F. Girtler, Brooklyn, N. Y. In this device a main frame, which may be readily applied to and removed from the dashboard, supports a swinging platform adapted to rock forward and rearward, a spring-pressed guard being normally locked in place by the platform. When a person is struck by the moving car, and falls back upon the platform, a guard frame is swung up by springs, to prevent the person falling out of the fender. The entire fender may be readily swung up into folded position.

CAR FENDER AND BRAKE.—George W. Beard, Baltimore, Md. This fender is located entirely beneath the car platform, the front edge of which is cushioned by a hollow elastic tube, and the fender has a front or tripping frame, which, on coming into contact with an obstruction in the path of a moving car, adjusts the fender in position to catch and retain a person caught. The fender is also pivoted to a vertically movable frame provided with brake shoes, the fender and brake being automatically lowered by the action of the tripping frame, although they may be lowered at will by pressure upon a treadle on the car platform.

CAR DOOR.—John J. Mulligan, Vicksburg, Miss. This invention provides a light and water proof freight car door, preferably made of metal, which may be conveniently slid over the door opening to closed position, the door being guided and having only a sliding movement, while it is provided with a lock and automatically locks itself when closed.

CAR WINDOW VENTILATOR.—Charles Whitlow, Washington, D. C. This is a device which may be readily applied to or removed from either end of a window, and so adjusted as to admit air in any desired quantity, the incoming air being protected by external hoods. The device may be compactly stored when not in use, and has independently adjustable ventilating sections so guarded as to avoid excessive draught upon the rear section of the ventilator.

RAILWAY FROG.—Edward N. Grigware, Caseville, Mich. This invention relates to devices for shifting or setting the frog similarly to the tongue of the switch, that the joint between the main line rails and siding may be closed as completely as possible. Pivoted to a base plate attachable to the rails is a frog having its opposite ends adjacent to the rails, sheet metal stops with bent up central portions being secured to the base plate on opposite sides of the frog. The device is simple and inexpensive, and the parts are not liable to become deranged or broken by hard usage.

FISH PLATE LOCK.—Albert E. Treitowsky, St. John, Canada. This is an improvement whereby one of a pair of fish plates is provided with lengthwise keyhole slots to receive the bolts that attach it to the rails, being locked in place when engaged by the bolts by a removable device. The locking device consists of a curved spring having a portion which engages the bolts and another portion which engages the wall of the slot, a prong or finger of the spring entering the slot and engaging the slidable splice.

Electrical.

TELEPHONE SYSTEM.—Wallace A. Houts, Parker, South Dakota. A call box is provided with a revoluble wheel and a revoluble indicator, according to this improvement, a spring having its ends secured to the wheel and the indicator being wound up by the rotation of the indicator relatively to the wheel, the wheel operating a circuit-breaking mechanism. The improvement is designed to diminish the employes of a central office, and provide a simple and efficient call box and automatic switch, whereby any call box may be operated to work the switch and conneet one telephone with any other of the series in the system.

BATTERY.—Charles J. Hirlimann, Fort Lee, N. J. The jar of this battery has interior flanges, and the zinc element extends around the interior of the jar, while the carbon element comprises two cup portions having perforated walls, there being a flange on the upper portion of the carbon element adapted to rest on the flanges in the jar, and there being two ears on the carbon element to which line wires may be connected. The carbon element presents a large surface to the action of the exciting medium, presenting practically a two-cell battery in one jar no larger than the ordinary single cell jar.

FUSE HOLDER AND LIGHTNING ARRESTER.—Harry A. Lewis, Norristown, Pa. This is an improvement in devices for automatically cutting out the line of an electric circuit when the current is excessively increased. A fusible wire is made to form part of the line, this wire being designed to be burned out with too great current, and the invention provides means for easily inserting and removing the fuse block and an automatic device for grounding the excessive current, the improvement embracing two slotted binding posts in the slots of which are spring-clamping devices, a fusible wire connecting the posts.

ELECTRIC RAILWAY.—Augost Casazza, Hoboken, N. J. This invention is for a conduit line road in which the line wire is made up of a series of independent insulated sections, an automatic switch bringing the several line sections in and out of the circuit as the car passes along the track, so that the line wire is practically dead and harmless. The switches are operated by an independent local circuit, preferably energized by a storage battery on the car, so that they may be worked without reference to the line circuit, the entire system being designed to be certain of operation, durable, and little likely to get out of repair.

SIGNALING AND SWITCHING.—John D. Taylor, Chillicothe, Ohio. This is in part an improvement upon a former patented invention of the same inventor, providing improved mechanism for operating the rail switch, arranging the circuits so that an accidental cross will not lead the current to a switch or signal where it is not wanted, providing for reversing the switch-operating motor to avert the possibility of failure of arrest of its operation at the right point, and reducing the number of wires to operate a switch and signal plant.

Mechanical.

PAPER MAKING MACHINERY.—Alfred H. Smith, Wilmington, Del. This invention provides an improved guide for the felts and wires of paper-making machines, comprising reciprocally balanced rollers adjacent to the guide roller and connected with its sliding bearing, the auxiliary rollers receiving the sides of the felt or wire, so that on the oblique travel of the latter either roller is overbalanced, and the bearing is shifted to change the position of the guide roller to correct the movement of the traveling wire or felt. The improvement affords a very sensitive apparatus to correct the tendency of the felt or wire to run to one side.

DISTRIBUTING GEAR.—James T. F. Conti, Paris, France. For controlling the supply of steam, compressed air, etc., in operating accessory apparatus simultaneously with the action in the motor cylinder, this invention provides a series of valves arranged in circular series and provided with segments, a lever mechanism comprising a segmental arm being movable into engagement with the several valve segments, and there being means for imparting a rotary movement to the arm, and a stop to prevent its complete rotation.

ELEVATOR POWER WHEEL.—George S. Fouts, San Jose, Cal. This invention is an improvement on a former patented invention of the same inventor, and comprises a revolving drive wheel pulley having movable clamping sections operated by cam surfaces normally held from turning with the wheel, the cam surfaces being capable of a partial revolution, and being adapted to be set to release the clamping sections at different portions of the circumference of the pulley.

Agricultural.

CULTIVATOR.—Harm H. Franzen and Rudolph Haschemeyer, Golden, Ill. This is a machine which, in addition to the beam and cultivator blades, has an auxiliary cultivator rotatably mounted and driven by contact with the ground, being attached to the beam in a manner to pass between the hills. The ordinary cultivating blades operate in the usual manner as the machine advances, cultivating the ground at each side of a row of hills, while the other or weeding cultivator cultivates the ground crosswise adjacent to each plant to eradicate all weeds, it being designed to cultivate a field at one passage of the machine.

TRANSPLANTER.—Joseph S. Ober, Ridgeley, Md. This is a pneumatic device, in which a transplanting cylindrical shell, with sharpened lower edge, adapted to be forced down around and over the plant, is connected with and formsa part of an air pump, the pulling up of the piston of which forms a partial vacuum to assist in withdrawing the plant from the earth, while the forcing down of the piston compresses the air and tends to force the plant from the shell without injury to its foliage.

Miscellaneous.

BICYCLE AIR PUMP.—Willis H. Ostrander, Boston, Mass. This is a pump which cannot be detached from the bicycle, its barrel being formed of one of the tubular brace bars of the frame, while the piston rod is guided at its upper end in a branch of a hollow saddle post, the operating handle being arranged to lie normally below the saddle. An elastic tube, normally held along the brace bar, is connected with the discharge end of the pump, and has at its outer end a nipple adapted to be inserted in the air valve of the tire.

STREET CLEANING MACHINE.—Clinton Beckwith, Herkimer, N. Y. This is a machine to be operated by power for simultaneously sprinkling the street, taking up and removing the dirt, disinfecting it, and discharging it at intervals. The machine has an inclined elevator or carrier trunk or casing whose lower end has a rearwardly diverging mouth into which is discharged an air blast and aqueous spray through a wide spreading nozzle impinging against the road bed, the same blast also blowing a disinfectant into the trash. The air blast may be used either with the water spray and disinfectant or alone.

TURPENTINE HACK.—Edward Blount, Quitman, Ga. This is a tool of scoop-like shape with curved cutting edges for making the requisite cuts in trees, and the tool is formed, according to this improvement, with a shank which permits its ready attachment to and removal from the handle. The hack is thus made reversible, so that one edge can be used after the other, and less frequent sharpening will be required.

BALL FOUNTAIN PEN.—Sirus E. Kochendarfer, Hollidaysburg, Pa. This is a tubular marker or pen for marking boxes or packages, the cap at one end of the tube holding the marking fluid having a drawn-in flange within which fits an outwardly projecting ball, against which bears a spring-actuated presser. An annular pad held by the presser prevents the too free passage of the marking fluid to the sphere, which forms the marking device, and yet permits the pressure upon the sphere to regulate the amount of marking fluid supplied.

ALBUM.—Felix Reifschneider, Brooklyn, N. Y. This invention relates especially to photograph albums which have removable leaves, and provides for the leaves lying flat when the album is opened. Inexpensive and durable devices are also provided for removably securing the leaves in the binding, whereby one or more of the leaves, or all of them, may be readily placed in position in the album or removed therefrom.

PERFUMING DEVICE.—Frederick G. Fisher, Battle Creek, Mich. For perfuming and scenting the air of rooms, this invention provides a simple and inexpensive mechanism for utilizing the perfume in the most economical manner, the perfume being held in a pivotally mounted receptacle from which it is discharged in a continuous and regulated manner, according to the adjustment, by a specially arranged clock mechanism. The perfuming device may be constructed as a separate instrument, but is preferably embodied in a time piece.

BINDING FOR BOOKS.—Carl A. Evertz, Brooklyn, N. Y. This is a binding especially designed for employment upon heavy sheets or leaves, such as the thickened leaves of sample books, albums, scrap books, etc., the leaves being provided at the bound edge with a reinforce or hinge strip of cloth or similar material, and the reinforce being attached to the next adjacent leaf or sheet, to dispense with the sewing or kerfing.

BALE TIE FASTENER.—Edmund A. Jablonsky, Brooklyn, N. Y. The bale tie bands or hoops, according to this improvement, are connected by end loops with hooks adapted to be hooked one upon the other, the hooks having at their hook ends laterally projecting lugs adapted for engagement by the prongs of an unfastening lever, whereby a bale may be conveniently opened without cutting or destroying the tie fastener.

COVERING FOR RUNWAYS, ETC.—Frank J. Lennon, New York City. In the runways of stables, by which horses pass from one floor to another, and for other similar uses, this invention provides a floor covering designed to afford a secure foothold and prevent slipping. It is formed of narrow elastic strips of rubber or similar material, put on in tubular or looped form, and with their edges overlapping, thus protecting the fastening devices by which the strips are held in place.

SCREEN.—George D. Henry, West Grove, Iowa. This screen contains a removable panel constituting a fly trap, while not interfering with the external appearance of this section of the screen, the trap also having a bait holder which will be inaccessible to the flies and a concentrating chamber into which most of the flies will find their way, provision being made for readily emptying the trap of the flies caught.

FOLDING COT.—Edwin F. Tilley, New York City. This is a cot which may be easily folded into compact form, to take up the least possible space. It consists of a mattress frame to which end posts are connected by links, the frame having extended angle irons formed with notches in each portion to receive two parts of the respective posts, the dual connection affording a more secure and rigid structure.

BROOM.—James Bowell, Port Arthur, Canada. As a new article of manufacture, this inventor provides a broom of broom corn and a fabric web, the latter extending lengthwise and from side to side about centrally of the broom, and being held in such position by the binding wires or threads. The broom is thus designed to sweep the finest dust, and the fabric forms a backing for the layer of broom corn at either side, the efficiency and wear of the broom being thus greatly increased.

WINDOW SASH.—Charles C. Miller, Brooklyn, N. Y. To prevent rattling of the sash in its casing, on account of atmospheric changes, this inventor provides a yielding attachment for the side rails, and to which the weight cord is attached. It comprises a metal boxing adapted to slide in the casing and a metal shell secured to the side rail of the sash, while springs secured to a reinforce strip in the shell bear against the inner surface of the boxing. The shell and boxing are so connected that the sash may be readily removed when desired.

FOLDING BABY CARRIAGE.—George Mayer, New York City. This carriage is designed to fold both longitudinally and laterally, and to be of more simple construction and more easily operated than baby carriages heretofore made. The axles are formed of jointed sections, and a coupling extending from one axle to the other is capable of folding laterally with the body portion of the vehicle, the end portions of the body being also jointed and mounted to swing forwardly and rearwardly.

WASHBOARD HOLDER.—James A. W. Sears, Escanaba, Mich. This holder has telescopic sections adapted for adjustment upon each other for any width of washboard, there being at the end of each section clamping devices for fitting the holder upon the washboard and attaching it to a tub of any diameter, in such manner that the washboard may be conveniently swung into and out of the tub as desired.

PUZZLE.—Stephen A. Bartlett, Demarest, N. J. This puzzle is designed to imitate "Chickens in the Garden," and comprises a suitable base on which is a circular casing in which is arranged a series of channels around a goal, a pen, and gates swinging open in one direction controlling the ends of the channels. The balls are made to travel in the various channels by tilting the base, and considerable skill is called for to thus assemble the balls at the goal.

Designs.

PAPER CUTTER.—James Slater, New York City. This design is for a paper cutter shaped to simulate the heel, instep, and pointed sole of a slipper, with a high and small heel and highly arched instep.

BRUSH CORE.—Henry M. Livor, New York City. This design has a cylindrical core, with a helical groove in its cylindrical surface, the groove having at intervals widened and deepened portions.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

LA MECANIQUE GENERALE AMERICAINE. By Gustave Richard. Paris: J. B. Bailliere et Fils. 1896. Pp. 630. 4to. 1441 illustrations. Price $2.40.

This work has special reference to the machinery and industry represented at the Columbian Exposition of 1893. The illustrations are very largely obtained from trade catalogues. It will without doubt serve a useful purpose in giving French manufacturers a better idea of our machinery and manufactures.

HOW TO SHOOT A REVOLVER. A simple and easy method of becoming an expert revolver shot. By Major William Preble Hall, U.S.A. Washington: The Army and Navy Register. 1895. Price 50 cents.

The author has a well deserved reputation as one of the best revolver shots in the United States, having won six of the medals the government awards each year to the best revolver and carbine shots in the cavalry. This little pamphlet is certainly deserving of a large circulation, for it has been proved repeatedly that the average soldier and policeman, the police especially, are extremely bad shots with a revolver.

TRANSACTIONS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Vol. XVI. New York: Published by the Society. 1895. Pp. 1209. 8vo. 326 illustrations, portrait.

This portly volume gives, in addition to the proceedings of the various meetings of the society, a series of most valuable papers, which are freely illustrated, read by members of the society. Among these papers are articles on improved forms of steam separators, centrifugal governor, drawing office appliances, some tests of the strength of spruce columns, stresses in the rims of pulleys and fly wheels, rail pressures of locomotive guiding wheels, rustless coatings for iron and steel, the theory of the moment of inertia, the development of electric tramways, a portable disinfecting plant, a new shaft governor, new forms of friction brakes, pipe covering tests, efficiency of boilers, etc.

SHOP KINKS AND MACHINE SHOP CHAT. A series of over five hundred practical paragraphs in familiar language, showing special ways of doing work better, more cheaply and more rapidly than usual. By Robert Grimshaw, M.E., etc. New York: Norman W. Henley & Company. 1896. Pp. 393. With 222 engravings. Price $2.50.

This work, by the well known and popular author, Robert Grimshaw, is one of those that seems to possess the capability of taking the ordinary workman, to a certain extent, out of himself, and of causing him to leave the grooves of conservatism and to originate his own methods. The book, in other words, is of the suggestive order. In its well printed pages we find described any number of excellent methods and hints for the machinist presented in the lively style which has become identified with the author. Many illustrations are given and each hint consists of a paragraph with full type headings, so that anything can be readily found. But one portion of the work which we must commend especially is the index, to which some thirteen closely printed pages are given, making a most complete reference table for the somewhat varied matter contained in the book. The illustrations, of which there are 222, are fresh and new, and excellent examples of the illustrator's art. As an excellent example of the author's style, his dash and the personal element strongly presented, we refer to the concluding sectionunder the heading "Emergencies." But it is not fair to note only a single section; everywhere throughout the book will be found excellent suggestions put in the same practical and graphic style. Correct treatment of files, a new style of center gage, illustrated, the evils of the set screw, good and bad types of boiler calking tools, straightening bent taps, are samples of the matter treated. The book will meet with appreciation from all interested in mechanics.

BICYCLE REPAIRING. A manual compiled from articles in the Iron Age. By S. D. V. Burr. New York: David Williams. 1896. Pp. 166. Price $1.

This excellent and fully illustrated work is peculiarly timely. It describes various repairs which have to be executed on bicycles, incidentally, of course, touching largely upon the construction of the modern cycle. The author's well known standing as an engineer and writer has been supplemented in the production of this work by suggestions and information from manufacturers of bicycles. With a view to future editions, an invitation is extended to all who are interested in the subject to send in furtber information and suggestions. It must not be supposed that the work is intended only for bicycle repairers; it will be of considerable interest and value to the owners of bicycles, enabling them to execute their own repairs or possibly to intelligently supervise their execution by others. The intelligent cyclist wants to know his wheel, and wants to feel that he can recognize its needs in case of accident or of adjustment. This book in popular style will put him in possession of precisely the points he requires, and will help him to know whether repairs have been executed properly and what is a reasonable charge for the same.