

## ENGINEERING INVENTIONS.

A railroad switch has been patented by Messrs. George Bennett, George Dike, and William W. Rich, of Lincoln, Neb. This invention relates to the class of triple or "three-throw" switches, and has but a single spring, being extremely simple and comparatively cheap, while embracing novel features, which assure easy working with little chance of derangement.

## MISCELLANEOUS INVENTIONS.

A combined ice pick, chisel, and mallet has been patented by Mr. Henry M. Dixon, of New York city. The invention consists in the construction and combination of the various parts of the implement, so that it can be conveniently used in either capacity.

A snap hook has been patented by Mr. George A. Shamberger, of Mound City, Mo. It has a swinging tongue, with notch and arm, in combination with a pawl, and with a thumb piece and spring, and is so made that the tongue cannot be pressed open except by the action of the operator, the tongue, when left free, seating itself and becoming locked.

A hand grenade has been patented by Messrs. Charles W. Fowler and Edward H. Shelman, of Brandenburg, Ky. It is for fire extinguishing purposes, and is adapted to receive a detachable handle, and a handle for holding and applying it for use, so that it may be carried to otherwise inaccessible points, and there broken.

An abdominal bandage has been patented by Messrs. Wilhelm and Julius Teufel, of Stuttgart, Germany. It has an elastic cord girth attached to the front part of an abdominal belt, and the bandage may be closed at the sides of the body instead of the back or front, with various novel features to adapt it for effective use for various maladies.

A scythe fastening has been patented by Messrs. Henry B. Robertson and Charles Danker, of Havensville, Kan. It consists of a snath iron attached to the handle and provided with a wedge shaped opening of a square scythe heel, with set screws to fasten and adjust the scythe blade to the snath iron, by which the operator can adjust the scythe to any desired angle.

An illuminated clock hand and dial has been patented by Mr. Alfred Speer, of Passaic, N. J. Combined with each of the hands of the clock is a series of lights to be carried by the hands, together with reflectors, arranged to throw the light outward from the hands, in such way that the position of the hands may be accurately located at a long distance from the clock.

A feed bag for animals has been patented by Mr. Franklin P. Eastman, of New York city. It has an outer compartment for holding and feeding the grain to a central or inner compartment that receives the animal's nose, the arrangement being such that the central part can never be more than partly full of grain, and the animal will have plenty of breathing space.

A miner's candlestick has been patented by Mr. Thomas Cox, of Gloster, Montana Ter. This invention covers improvements on a former patented invention of the same inventor, bettering the mechanism for preventing the candle from slipping out of its holder; the candlestick has a bar with pointed end, which may be thrust into the heading, or a hook by means of which it may be suspended when desired.

A die for lead presses has been patented by Mr. John Hooper, of New York city. The die plates are adjustable, being offset at their meeting edges to form, when placed together, a narrow slot, whose length may be increased or diminished by sliding the die plates in opposite directions in the bed plate, so that sheets of lead of different widths may be made with the same set of die plates or keys.

A cylinder printing machine has been patented by Mr. Jacob C. Rairigh, of Brockwayville, Pa. It has a traveling cylinder arranged to roll over the frame and carry the paper over the type supported by the bed, together with novel means for inking and distributing the ink, for operating the paper nippers, and for lowering the bed on the return movement of the cylinder, and raising it afterward.

A motor has been patented by Mr. Isaac St. Clair Goldman, of Pasadena, Cal. It consists of two endless traveling chains or belts and a power wheel held loosely in and engaging both, and adapted to rise and fall in and between the chains or belts, whereby the power transmitted to one belt by a prime mover will be transmitted through the wheel and the other belt to a driving mechanism.

A wrench has been patented by Mr. Willis H. Bradley, of Rockford, Ill. It is so made as to be readily adjustable for either a large or small nut, and after the nuts have been removed from the axle they will be retained within the recess of the wrench, so that the whole device may be laid upon the floor or ground without bringing the nut in contact with sand or grit.

A collar or cuff button or stud has been patented by Mr. Read Benedict, of West New Brighton, N. Y. It is a button with a shank formed with outwardly inclined sides or edges near the head of the button to spread the button hole, so the head of the button may be easily slipped out, the shank being made flat to permit the button hole to close under the head of the button, with other novel features.

A cultivator bar and cultivator clip has been patented by Messrs. William Zehner and Martin A. Eisenhour, of Plymouth, Ind. The bar is detachable and adjustable, with the clips holding the cultivator teeth bolted to the upper side of the bar and in the line of draught; a universal clip is produced adapted to suit various forms of spring teeth, spike teeth, and cultivator teeth, and it may be secured to either side of the bar.

A window washing machine has been patented by Mr. Richard H. Schenck, of New York city. Connected with a standard adapted to be fitted to a raised sash is a combination lever which holds a head block in such way that it can be brought to any desired position against the outside of a window, and raised or

lowered by a cord passing to the hand of the operator, to facilitate cleaning the outside of windows from within an apartment.

A metal faced fabric or material for interior decorations has been patented by Messrs. Theophilus and James Millot, of New York city. It is made by precipitating upon a previously prepared glass plate a thin sheet of metal, then applying a thin coating of glue, gelatine, or other sticky substance on the metal or on the material to which the transfer is to be made, in such way that the thin film of metal can readily be stripped off upon the article or fabric to be coated.

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If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN patent agency, 361 Broadway, New York.

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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.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

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.

(1) W. H. K. asks: How many pounds pressure to a square inch is required to compress two cubic inches of air (at the sea level) into one cubic inch? A. A pressure of fifteen pounds to the square inch in addition to the atmospheric pressure.

(2) S. K. M. asks: 1. How many Grenet battery cells, each having two carbon plates exposing a surface 3 by 1 inch, and one zinc of the same size, will work two gallons of nickel plating solution? A. Half a dozen such batteries should give fair results. 2. About what proportion, by weight, of nickel salts will water at 60° Fah. dissolve? A. Use for plating 10 parts by weight of distilled water and 1 part by weight of double sulphate of nickel and ammonium. 3. Can nickel plating be done easily and well by amateurs? A. It is far from easy for an amateur to nickel plate satisfactorily. We recommend as text-book, Electrolysis, by Fontaine, which we can send for \$3.50.

(3) J. B. A. asks: 1. If a rifle ball is discharged perpendicularly, will the ball descend to the earth with the same force that it had when it left the gun? A. It will not, owing to the resistance of the air. 2. If a body is dropped from a very great distance (say from a balloon), is there no limit to the velocity of the body? Is it not possible for it to drop so very fast that the resistance of the air prevents it going any faster? A. If the body did not burst into fragments or become otherwise destroyed, there is a maximum of velocity that it could not exceed.

## TO INVENTORS.

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## INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

August 24, 1886,

AND EACH BEARING THAT DATE.

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

Adjustable chair, E. T. Starr..... 348,173  
Advertising optical apparatus, A. Duboce..... 347,926  
Air tight jar, J. B. Wilson..... 348,084  
Alarm. See Burglar alarm.  
Alarm lock, W. P. & J. C. Matson..... 348,026  
Anchor, R. R. Spedden..... 347,972  
Animal releasing device, A. Jacobson..... 347,807  
Animals, ear tag for marking, W. C. Weedon..... 347,850  
Annunciator, electrical, G. E. Painter..... 348,045  
Awning, S. Lloyd..... 348,024  
Axle bearings, shell for, A. E. Francis..... 347,931  
Bag, satchel, etc., J. Wolf..... 348,085  
Barrel, J. R. Allgire..... 347,880  
Barrel, tumbling, J. Henderson, Jr..... 348,011  
Bed bottom, knockdown, R. W. Woodman..... 347,980  
Bedstead, T. Allen..... 347,912  
Belt fastener, D. Wilson..... 347,857  
Bicycle pedal, D. J. Strickland..... 347,977  
Bird cage screen, A. B. Hendryx..... 348,012  
Blank forms, case for holding, H. J. Hoffman..... 348,015  
Board. See Press board.  
Boiler. See Steam boiler.  
Boilers, water heater for, T. Clifford..... 347,772  
Bolt, J. A. Coultaus..... 347,996  
Bolls and shafts, adjustable lock for, C. C. Hig- ham..... 347,798  
Boot and shoe crimping machine, R. Marshall..... 348,135  
Brake shoe, F. H. D. Newhard..... 348,041  
Brick kiln, W. H. Wickers..... 347,907  
Brick machine, P. L. Simpson..... 348,064  
Bridge, C. F. T. Kandler..... 348,020  
Bridle blinder, W. W. Beach..... 347,862  
Broiler, reversible, C. C. Campbell..... 347,932  
Broom handles, manufacture of, H. C. Albee..... 347,981  
Broom holder, S. L. Bligh..... 348,106  
Brush, revolving tooth, F. W. Tornberg..... 347,900  
Bucket, well, C. J. Fellrath..... 348,118  
Buckets, strap ear for well, W. H. Parrish..... 348,046  
Buckle, I. H. Osborn..... 347,955  
Burglar alarm and door fastener, combined, W. Sprague..... 347,974  
Button for gloves, etc., E. Pringle..... 347,887  
Cable lifting mechanism, J. J. Endres..... 347,785  
Cable road rail, J. J. Endres..... 347,782  
Calipers, micrometer inside, J. T. Usher..... 347,844  
Can opener, F. Sharp..... 347,834  
Candy shaping machine, automatic, G. C. Snyder..... 347,971  
Capsule machine, J. Krehbiel..... 347,941  
Car brake, G. L. Adams..... 347,911  
Car brake, F. H. D. Newhard..... 348,088 to 348,040  
Car brake, T. Suchland..... 347,841  
Car coupling, J. H. Buser..... 347,919  
Car coupling, F. J. Schupp..... 348,061  
Car, freight, A. N. Montee..... 347,885  
Car gripping and braking devices, mechanism for operating cable, J. J. Endres..... 347,781  
Car, railway, Richards & Hale..... 348,058  
Car starter and brake, S. L. Norris..... 348,169  
Car wheel, G. W. Miltimore..... 347,950  
Car wheels and other bodies, machine for dress- ing and hardening, G. W. Miltimore..... 347,949  
Car wheels, machine for dressing, G. W. Milti- more..... 347,951  
Cars by gas motors, propelling, J. A. Wetmore..... 348,080  
Cars, grip for cable, J. J. Endres..... 347,788  
Cards, automatic grinder for woolen and cotton, J. C. Wall..... 347,847  
Carpet lining, J. M. Baker..... 347,763  
Carriage seat iron, H. B. Crandall..... 347,775  
Carriages, top for children's, A. T. Vannerson..... 348,074  
Carrier. See Wick carrier.  
Cart and sugar cane planter, combined, E. & B. Holmes..... 347,800  
Cartridge, shot, W. E. Boyd..... 347,988  
Case. See Piano case. Shipping case. Show case. Violin case.  
Caster, C. V. Pleukharp..... 348,052  
Casting, material for use in moulds for, K. W. Blackwell..... 348,105  
Casting stereotypes, machine for, O. Morgen- thaler..... 347,818  
Centerer, Deno & Reardon..... 347,925  
Cereals, machine for making sheets of ground, J. F. Gent..... 347,790  
Chair. See Adjustable chair. Surgical chair.  
Chair and step ladder, combined, O. J. Marsh..... 347,883  
Check rower tension device, Ryder & Rosevelt..... 347,832  
Check rowers, anchor for, A. T. Crow..... 348,152  
Christmas tree candle holder, H. Gehrich..... 347,973  
Churn, I. Bogart..... 347,916  
Churn, Foreman & Walls..... 348,002  
Churn, J. J. Pugh..... 347,827  
Churn, H. J. Wagner..... 347,978  
Churn, A. Walters..... 347,849  
Cider press, J. E. Jones..... 348,019  
Cleaner. See Tube cleaner.  
Coffins, ornamental nail for, O. McCarthy..... 348,030  
Collar, horse, P. Sheehan..... 347,967  
Converters, working, B. Bayless, Jr..... 347,913  
Cooler and filter, M. McVoy..... 348,082  
Coupling. See Car coupling. Hose coupling. Thill coupling.  
Crusher and pulverizer, W. L. Card..... 347,869  
Cultivator, wheel, I. J. Hunt..... 347,906  
Cup. See Dental impression cup. Shaving cup.  
Cut-off regulator, E. F. Williams..... 347,979  
Cutter. See Meat cutter. Tobacco cutter.  
Cutting machine, J. Schlichting..... 347,962  
Cylinder engine, vibrating, J. S. Barden..... 348,097  
Dam, mill and fish, L. Jones..... 348,127  
Damper regulator and alarm, thermo electric, A. M. Butz..... 347,866  
Damper regulator, steam actuated, R. J. Hoffman..... 347,799  
Dental bridge, C. P. Grout..... 347,934  
Dental drill, S. J. Lea..... 348,131  
Dental impression cup, E. T. Starr..... 347,976  
Dental plugger, H. C. Register..... 347,828  
Desk or portfolio, lap writing, G. Hood..... 348,124  
Detector. See Mechanical detector.  
Dock, dry, J. E., Jr., & A. H. Simpson..... 347,895, 347,896  
Door, T. S. White..... 347,852  
Door check and holder, C. M. McCarty..... 348,031  
Doubletree, E. R. Procter..... 347,826  
Dress form, T. R. Fischer..... 347,930  
Drill. See Dental drill. Grain drill. Rock drill. Seed drill.  
Drilling machine, D. Slate..... 347,969  
Drying, process of, T. G. Walker..... 347,846  
Dyed, machine for separating and drying warps after being, W. Kerr..... 348,130  
Dyeing, apparatus for, E. Rau..... 347,859  
Edger, gang, Smith & Myers..... 348,065  
Egg carrier, J. Shibley..... 347,835  
Electric circuits, fusible cut-out for, C. G. Per- kins..... 348,048  
Electric light hanger, incandescent, H. P. Brown..... 347,767  
Electric machine regulator, dynamo, R. M. Hunter..... 347,987  
Electric motor regulator, O. B. Shellenberger..... 347,964  
Electric motor regulator, C. J. Van Depoele..... 347,903  
Electric pile, J. B. Neyraud..... 347,823  
Electrical resistance, artificial, H. P. & F. H. Brown..... 347,768  
Electricity on vehicles, storing and utilizing, C. E. Buell..... 347,768  
Electro dynamic motor, C. J. Van Depoele..... 347,902  
Elevator cup or bucket, Seavey & Goodall..... 347,963  
Elevator safety brake, T. W. Eaton et al..... 347,778  
Elevators, operating, G. H. Reynolds..... 348,066  
Engine. See Cylinder engine. Gas engine. Pump- ing engine. Steam engine.  
Equalizing ventilator, G. A. Bell..... 348,102  
Eyeglass frame, G. Johnston..... 348,018  
Fan, rotary, P. Murray, Jr..... 347,952  
Farm gate, C. J. Bottenfield..... 348,148  
Feed bag for horses, H. Fink..... 347,929  
Fence, W. E. Bunch..... 347,855  
Fence post, D. S. Pancoast..... 347,956  
Fence, wire, O. Moseley..... 348,085  
Fertilizer distributor, W. G. Hurley..... 347,876  
Fertilizer distributor, J. M. Lindsey..... 348,023  
Fertilizer distributor, Startzman & Crain..... 347,838  
File, letter and document, E. E. Baker..... 347,762  
Fire extinguisher, automatic, D. Rosebush..... 348,140  
Fire extinguisher, chemical, R. A. Ballou..... 348,095  
Fire extinguishers, faucet for chemical, R. A. Ballou..... 348,066  
Fire pot, G. H. Hess..... 348,013  
Fires in malt and grain mills, mechanism for ex- tinguishing, C. J. Hexamer..... 347,797  
Folding box, G. Adler..... 347,761  
Forge for welding and forging iron, steel, and other metallic bodies, furnace, A. C. Huide- koper et al..... 347,875  
Frame. See Eyeglass frame.  
Fruit, fruit pail for gathering, F. A. Brundage..... 347,918  
Furnace, J. Eppley..... 348,116  
Garment pattern, C. S. Pusey..... 347,888  
Garment supporter, W. E. Clarke..... 347,871  
Gas engine, G. Daimler (r)..... 10,759  
Gas pressure regulator, C. Ruprecht..... 348,172  
Gas, process of and apparatus for manufacturing heating, A. W. Wilkinson..... 348,178  
Gas purifiers, elevating device for covers of, G. W. Nock..... 348,157  
Gas regulator, J. Stubbe..... 347,840  
Gate. See Farm gate. Sliding and rolling gate.  
Gate, S. Stephens..... 347,898  
Generator. See Liquid pressure generator. Steam generator.  
Gold, etc., machine for concentrating, A. D. Clarke..... 347,771  
Gold separator, W. L. Card..... 347,867  
Grain binder, E. W. Jenkins..... 347,988  
Grain binder, R. W. Maske..... 347,815  
Grain drill, W. D. Arnett..... 347,982