RECENTLY PATENTED INVENTIONS.

Engineering.

CANTILEVER BRIDGE.—Thomas C. Clarke, New York City. By this improvement it is designed to facilitate the construction of bridges of longer span than has heretofore been attempted, and with this view suspender girders are used, the members of which take up the compression which comes from the ties supported by the towers. The stays are also arranged upon converging lines to enable them to resist wind pressure, and an expansion joint is provided by which the bridge members are allowed to expand or contract without interfering with their proper action. The bodily movement of the girders from unbalanced loads is resisted by a peculiar arrangement of the stays.

DAMPER REGULATOR.—John H. Blake, New York City. A regulator to be connected with the boiler, and so affected by the boiler pressure as to automatically regulate the furnace dampers so as to keep an even pressure upon the boiler, has been designed by the inventor. The improvement may also be used for other purposes, such as operating pumps, mechanical stokers, etc. Weights are so arranged that when the pressure in the steam chest becomes too low an indicating piston will be moved to open a port and operate the damper, an excessive pressure opening another port whereby the damper is moved in the opposite direction. A novel mechanism is employed to effect a differential movement so as to move the damper only the required distance to maintain the proper boiler pressure.

Railway Appliances.

NUT LOCK FOR RAILS.—Henry Cohen and John W. Tharp, Memphis, Tenn. The screw bolt uniting two fish plates has a locking plate on its projected end, a radially grooved nut bearing on similar grooves in the plate. In the opposite face of the locking plate is a channel adapted to receive a locking pin, connected with which is a wing plate, the pin being inserted in a hole produced by the junction of the groove in the locking plate and a radial groove in the face of the nut. If the winged pins are made of rigid metal, the nuts may not be moved until the pins are taken out, but the pins are preferably of lead or other soft metal, when a lever wrench will split them and allow the nuts to be unscrewed.

CABLE RAILWAY PULLEY.—Carles A. Johnson, New York City. A main rim of the pulley, having flanges and elongated slots, holds within its flanges an auxiliary grooved rim made in readily removable sections. The pulley is especially designed to carry the traveling cable, and is arranged to prevent the rapid wear of the rim, while a worn-out rim may also be conveniently removed, a new one substituted without discarding the remainder of the pulley or disturbing its position in the journals. The removable sections of the auxiliary grooved rim are made of a hard metal, to prevent rapid wear.

Mechanical.

BENCH VISE.—Thomas B. Jackson, Salem, Oregon. On the under side of the work bench is a guide strip along which moves a sliding shoe connected by a diagonal brace with the lower end of the movable jaw, in which is swiveled the horizontal screw stem. The middle portion of this stem works in a screw-threaded plate in a front standard of the bench, and its inner end swivels in the brace near the sliding shoe. By this construction yokes or slides passing around guides are dispensed with, the shoe moving freely along the guide strip in such manner as to never get cramped or stuck and all the parts being readily accessible.

TENSION DEVICE FOR LOOM SHUTTLES.—Etienne Domenge, Paterson, N. J. In weaving silk it is necessary to regulate the tension of the threads with great nicety, which is the especial object of this improvement. The swinging flies have the usual thread loops, and the springs of revoluble spring drums connect the drums and flies, while spring-pressed studs serve as supports for the drums. Adjacent supports for the studs have squared holes in which enter squared heads on the studs. The device is applicable to the ordinary shuttles and shuttle guards, and facilitates the quick and perfect adjustment of the tension.

HACKLING AND PREPARING FIBERS.—Theodore B. Allen, Brooklyn, N. Y. A machine especially adapted for treating sisal fiber for rope making has been patented by the inventor. It comprises a machine which finally hackles the fiber and delivers it in the form of a large, properly treated sliver, and an initial hackling and combing machine delivering to the final machine, which consists of two ordinary differentially moving hackling chains or belts having the usual drawing and feed rolls. A table is arranged as an inclined trough in connection with the final hackling machine, between it and the combing cylinder, to support the fiber which passes continuously from the cylinder to the feed rolls of the hackling machine.

WIRE SPLICER.—John D. Thomas, Scranton, Pa. A device to facilitate the quick and effective splicing of broken trolley wires without solder is here provided, thereby saving time and preventing delays on the road. It consists of a spindle-shaped tube in the sides of which are apertures where are fitted serrated wedges or dogs, adapted to force the wire with great pressure against the inner surface of the opposite side of the tube.

Miscellaneous.

SAFETY DEVICE FOR ELEVATORS.—Frank H. Shurtz and Henry G. Swan, San Francisco, Cal. The elevator cage has lugs traveling in a vertical guide at each side of the shaft, pivoted angular blocks being located one above another for the entire height of each guide. The blocks are engaged by a chain supported by a spring-pressed bolt, and means are provided for automatically releasing the bolt from the chain in case of accident to allow the blocks to drop into the path of the lugs of the cage, whereby the cage will be instantly locked in place. The blocks may be readily reset and the attachment readjusted without the help of skilled labor.

FIRE GRATE.—Abraham Stroh, Freeland, Pa. This is a grate adapted for use with boilers and stoves of every style, its construction being such that the grate openings can be set or varied to have any desired air space opening, providing for the burning of the smallest or largest size coal or other fuel. It has stationary skid bars with lateral members and rider bars with lateral members held between the skid bars, the riders having longitudinal movement between the skid bars. Every piece of the grate is free to move loosely, so that there will be no crowding or straining, and the several parts can be easily assembled, and any portion readily renewed, if it should wear out or be broken.

FUSE LIGHTER.—William C. Matthews, Denver, Col. This device consists of a metallic tack, dipped in a mixture of gunpowder, glue, and water, which, when dried, forms on the tack a combustible body, or the mixture may be moulded around the tack, the whole being then covered with paraffine as a protection from moisture. The point of the tack is left exposed, and this point is thrust into the end of a fuse to be lighted, the match being applied to the head coated with a quick combustible.

GRAPPLE.—John C. Manning and Albert C. Wilson, Marshfield, Oregon. This invention consists of a pair of tongs with upwardly and outwardly curved handles connected by links, the middle link being attached to the hoisting rope. The device is of simple and durable construction and adapted to firmly grapple and hold an article while lifting or moving it from place to place.

FENCE POST.—William M. Black, Urbana, Ohio. This post is ordinarily all of metal, although portions may be made of wood, the body being U-shaped in cross section, with the lower end bolted to anchor tie plates. It is especially designed for use as a corner post or gate post, and may be adjusted in the direction of any side, and when used in a wire fence may be braced against any tension, the adjusting mechanism also facilitating the bringing of slackened wires of the fence under proper tension.

INTERIOR HOUSE FINISHING.—George Knower. Chelsea, Wis. This invention provides battens of peculiar construction, for use in connection with a padding of paper material, in making arched wooden ceilings, etc., so that on the shrinking of the lumber the padding and battens keep the joints closed and water and air tight. The improved ceiling is readily put up, is not expensive, and may be made highly ornamental.

WAGON BRAKE.—James Vanderveer, Middle Village, N. Y. This is a strong, simple and inexpensive device, readily applicable to any form of vehicle, but especially suited for farm and other wagons which carry heavy loads. Combined with the brake lever are toggle levers, one of which is pivotally connected with the brake lever, while a link pivoted to the toggle levers at their junctions is pivotally connected with a hand or foot lever. A shifting lever secured to the axle of the vehicle prevents any strain on the body of the wagon or the springs when the brake is applied.

QUILTER FOR SEWING MACHINES.—William H. Chapman, Bradford, Ark. An attachment readily applicable to an ordinary sewing machine is supplied by this inventor, being a simple and inexpensive quilting frame, enabling the quilt to be conveniently handled and turned in any direction, so that seams may be run straight or in such curves as desired. It comprises a track, carriage and quilting frame, with horizontally arranged link connection between the carriage and frame to support the latter and permit it to turn freely, springs normally holding the frame in alignment with the carriage.

KEYHOLE GUARD.—George Hisgen, Fort Plain, N. Y. This is a strong and simple lock attachment to lock the key or bolt in place, and at the same time form a guard for the keyhole to prevent opening the door by unauthorized persons. It has a slide with V-shaped offset, an arm engaging either the bolt and passing over the keyhole or engaging the key, there being a guideway for the slide, and a knob to move it with its offset and arm into or out of the door lock casing.

ICE CREAM FREEZER.—James K. Patterson, Crete, Neb. The cream cylinder of this device has at one side a pivoted scraper, and below is a pivoted cream pan projecting beyond, a hopper delivering to the projected end. With a refrigerating compound in the cylinder and cream in the hopper, the cream is deposited upon the cylinder as the latter is revolved, where it is immediately crystallized and removed by the scraper.

HAMMOCK SUPPORT.—Nelson G. Reynolds, Bangor, Mich. This support has oppositely arranged diverging legs and braces when in position for use, the legs having at their upper ends hooks from which the hammock is suspended. The device may be folded into very small compass when not in use, and is very strong, light and easily operated.

BRACE FOR USE IN EXCAVATIONS.—George S. Miller, Council Bluffs, Iowa. This device comprises two bars, one having a head and the other a series of apertures, a yoke being pivoted on the head, and a stop pin passing through one of the apertures, a link locking the two bars together. The improvement is designed to afford a simple and sure means of supporting planks in excavations, such as ditches, canals, etc., the brace being readily extensible for varying widths.

SUSPENDER END.—William Bloomberg, New York City. This is an improvement in straps adapted to be secured to the buckles to carry button pieces to connect with the drawers, the suspender end strap being made with an integral tongue to fasten the device to support the drawers, the strap and tongue being readily applied to the suspenders, and being very cheap and durable.

DISHCLOTH HOLDER.—Clara Abell, Baldwinsville, N. Y. This is an elongated wire frame, with tin backing, there being a spring coil or double loop at one end of the frame and hooks at its opposite end, thus forming a light and convenient device for holding the cloth when used in washing articles, without danger of scalding the hand by the hot water.

DOLL.—Frederick B. Schultz, New York City. This is a simply and strongly made jointed doll, in which springs are arranged in the body and connected by swivels with chains for holding the parts together, whereby the several parts may be turned without danger of disconnecting or breaking the jointing devices.

FINGER OR TOE NAIL CUTTER.—Edmund T. Mason, New York City. This is a manicure device which may be readily manipulated by one hand to cut and shape the nails. It may be conveniently carried in the pocket or suspended from a watch chain.

SPITTOON CARRIER.—Gerard B. Nagle, Revelstoke, Canada. A pair of tongs is pivoted on the end of a handle of suitable length, on which also is arranged an opening and closing device connected with the tongs, that the latter may be conveniently used to clasp the spittoon, when it may be readily lifted and carried away for emptying or cleaning.

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.

PHARMACEUTICAL PREPARATIONS, WITH THERAPEUTIC NOTES, FORMULÆ, DOSES, ETC. Philadelphia: John Wyeth & Brother. 1893. 8vo. Pp. 224.

This little book, though published in the interests of the trade, contains a vast amount of information which cannot but be of value to all physicians, pharmacists and chemists. The reading pages are written by practical chemists and the subject is frequently illustrated by graphic symbols, formulas, etc. Some of the new remedies are described by well-known physicians. Messrs. Wyeth are to be congratulated on the production of such a creditable work.

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SCIENTIFIC AMERICAN BUILDING EDITION.

SEPTEMBER, 1893.—(No. 95.)

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2. Plate in colors showing the Queen Anne residence of W. H. McKnight, at Springfield, Mass., erected at a cost of $11,500 complete. Perspective views and floor plans. An attractive design.
3. A colonial dwelling erected at Rutherford, N. J. Perspective view and floor plans. A model design. Cost $3,476 complete. Mr. H. G. Ten Eyck, architect, Newark, N. J.
4. A cottage erected at Bridgeport, Conn., at a cost of $2,775 complete. Floor plans, perspective view, etc. Mr. A. M. Jenks, architect, Brooklyn, N. Y. An excellent design.
5. Engraving and floor plans of a Queen Anne dwelling recently erected for W. Q. Taylor, Esq., near Boston, Mass. Samuel J. Brown, architect, Boston, Mass.
6. A cottage at Allston, Mass., erected at a cost of $2,500. Floor plans and perspective view. A pleasing design. Mr. A. W. Pease, architect, Boston, Mass.
7. Floor plans and perspective elevation of a cottage at Allston, Mass., costing about $2,000. Mr. A. W. Pease, architect, New York.
8. A tasteful design for a smithy or blacksmith shop.
9. Illustration of a new English villa at Worcester.
10. View of an Italian courtyard.
11. The Fifth Avenue Theater, New York. View showing a section of the proscenium arch and a portion of the family circle, also an engraving of the old Fifth Avenue Theater, burned in 1891.
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Patent Electric Vise. What is claimed, is time saving. No turning of handle to bring jaws to the work, simply one sliding movement. Capital Mach. Tool Co., Auburn, 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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Minerals sent for examination should be distinctly marked or labeled.

(5377) E. F. P. writes: 1. I read that 1,800 volts were used in the execution of a New York murderer. According to that, it would be fatal to grasp the terminals of a battery of 1,800 Daniell cells joined in series. Would it? Again, as the voltage of a cell is independent of the size of the plates, if each of the above mentioned cells was no larger than a lady's thimble, the series should be equally fatal. Would it be? If not, why not? A. A constant voltage has very little effect on the human system. Sudden changes in potential in dynamo circuits, perhaps partly in themselves and partly by the production of induced currents, are the fatal elements. The batteries described would have very little effect, and would be perfectly safe. 2. I have a six-cell plunge battery that must have a voltage of nearly 12. Why do I experience no sensation whatever when I grasp its terminals? A. See answer 1. 3. Can a good D'Arsonal galvanometer be made to show the induction currents generated by moving a coil of copper wire through the field of a permanent magnet? If so, how should things be arranged so as to show the effect to an audience? A. Use very fine wire, so as to get as many turns as possible, and connect its ends to the galvanometer. Sweep the coil rapidly across the field close to the magnet poles. Be careful not to shake the galvanometer. 4. What advantage, if any, can be obtained by using a storage battery if (a dynamo being unobtainable) it must be charged by means of a primary battery? Would it not be better always to use the primary battery direct? A. A small primary battery can charge in a given number of hours a storage battery, so that a very heavy current can be taken therefrom for a less number of hours. It is virtually a concentration of many hours' action of the primary into a few hours' action of the secondary battery. 5. In computing the energy of a moving cannon ball or railway train I am directed to use the formula $K=\frac{Wv^2}{2g}$. Now, why use $2g$, since that quantity is exclusively an element of the laws of falling bodies? Isn't it possible to compute the energy of the ball or train referred to by a process entirely independent of gravity considerations? A. Energy is always referred to gravity considerations, and is expressed in foot pounds or other unit of vertical height and weight. The formula given reduces energy of motion to energy of position; position referring to height or advantage of position with respect to gravity.

(5378) E. W. L. writes: I am making a pocket battery, ¾ inch in diameter inside and 3 inches long, to hold 1 ounce of electropoion fluid. I want to know which is the cheapest and best way to protect the zinc so that it will last longer. I want it to heat a No. 40 platinum wire to incandescence, the wire having a small loop, and about ¼ inch long, the length to be heated being ⅛ inch. It is not to be heated steadily, but for a few seconds at a time, and will the battery do it and how long? The size of zinc and carbon is to be ⅛ inch in diameter and 3¼ inches long. A. Amalgamate the zinc with mercury. A very small quantity will suffice. The battery will exhaust itself when not in use. It