

RECENTLY PATENTED INVENTIONS.

Engineering.

AIRIAL RAILWAY.—Ignacio M. de Oca y Mellan, New York City. This invention relates to constructions in which the cars are suspended from a cable and have a trolley which runs on the cable, and provides for the use of double hangers, increasing the safety of the traffic, and for novel movable supports for the cable, whereby the path will be cleared for the hangers as the car passes the supports, without leaving the cable unsupported at any time. The invention also covers improvements in the trolley and novel means for operating the movable supports.

Railway Appliances.

CAR COUPLING.—Andrew D. Alden, Brockport, Pa. This patent is for a coupling of the automatic latching type, and more particularly that form wherein a coupling jaw or knuckle is pivoted to swing laterally in the drawhead to interlock with or be released from a knuckle on a similar coupling. A knuckle pivoted to the drawhead is engaged by the shoulder of a rocking dog having a spiral channel where the knuckle is moved into operative position, a tripping bar sliding in the drawhead under the dog and having a toe adapted to engage the spiral channel and rock the dog to release the knuckle. The drawhead of this coupling is without any opening in its upper side, and hence it is not liable to be obstructed by snow, ice, etc.

BLOCK SIGNAL SYSTEM.—Joseph E. Donbavand, Millville, N. J. In connection with the usual danger and caution signal circuits, this invention provides for the employment of auxiliary signal circuits and signal mechanisms which may be located at various points in the blocks, such auxiliary signaling mechanisms being adapted to be actuated by a train in the rear of the point at which the signaling mechanism is located, so as to indicate the approach of a train. The invention also provides for improvements in the mechanisms as well as in the arrangement of the circuits, rendering the system more simple, inexpensive and positive. It is adapted for employment on both single and multiple track roads.

Electrical.

SHADE HOLDER FOR ELECTRIC LAMPS.—Morris D. Greengard, St. Louis, Mo. To secure the shade in the desired position without the use of screws this inventor has devised an improvement according to which the lamp socket has a shoulder, and the holder has arms with bearing portions at their free ends, while a ring fitted on the socket above the shoulder has cams engaging the bearing portions. The ring may also be provided with spring clasps and slides movable independently of the ring and clasps.

ELECTRIC RAILWAY SYSTEM.—Barton R. Shover, Indianapolis, Ind., and Frank P. Townsend, Asbury Park, N. J. According to this improvement the main electric wire and circuit closing devices are placed in a conduit between the rails, or near one of them, and all parts from which danger by contact would come are placed in a closed circuit, the circuit closers being closed by an electro-magnet carried by the car to convey the current through the car motor. As the car passes along the contact strips are successively elevated, and the working rail sections are so short that there can be no danger from them to one in front or in the rear of a car.

Agricultural.

HAY FORK OPERATING DEVICE.—John F. Tuttle, Springdale, Washington. To dispense with the derrick teams used in connection with thrashing machines for the operation of the fork, this inventor has devised a mechanism, the driving pulley of which is mounted on a tumbling rod, whereby a shaft is operated carrying pulleys of three or more diameters, around either one of which the rope attached to the fork may be run, and easily changed from one to the other. The device does not allow the fork to interfere with the table tenders of the machine, enables the fork to take up a much larger load than heretofore possible, and to be used with more certainty, insuring the safety of the forker.

THRASHING MACHINE FRED.—George W. Rucker, Belle Plaine, Iowa. In feeding attachments for thrashing machines this invention provides an improved device of simple and inexpensive construction, having means for cutting the bundles and feeding the grain to the separator, designed to increase the capacity of the machine and give better results. Within a casing which supports one end of a carrier is a knife drum, below which is a conveyer having its rear end vertically movable, the carrier being at a proper elevation to feed the material into the casing, and being operated by four men, two on either side. The sheaves are straightened out automatically in case they strike on end, and the cut material is fed to the pickers and thence to the separator.

Miscellaneous.

DENTAL TOOL AND PLUGGER.—James W. Dennis, Cincinnati, Ohio. This is an instrument especially adapted for taking up and holding pads or plugs for introduction into cavities in the teeth, particularly those which absorb surplus mercury from amalgam fillings, the tool facilitating the locating of the plug or pad in a tooth cavity without causing pain.

BADGE.—Oliver T. Eads, Harvey, Ill. This is a device to be attached to the coat or vest and representing the head and bust of a man, the arrangement being such that by drawing down upon a string the neck portion will be drawn out or elongated. The device is designed to afford amusement or to serve as a hint to a questioner that further questions are not desired.

HAIRPIN.—Frank J. Prokop, Dolgeville, N. Y. This invention relates especially to pins having ornamental heads, or to be worn as ornaments in the hair, and is made in two sections, a stem or shank section and a shell casing or receiving section constituting the lower portion of the pin. The pin may be readily placed in the desired position in the hair and then locked in such position.

CALCULATOR.—Wesley A. Copeland, Cyrus Roberts, and Thomas J. McCrary, Alvord, Texas. In this device a bar on which is a series of numbers slides in a frame or base which is also provided with a series of numbers, there being a sliding lever or pusher for moving the sliding bar. The sliding bar is provided with a longitudinal serrated plate, and the lever or pusher movably secured to the frame is adapted to be swung into engagement with the serrated plate. On the base block is a series of peg holes in which amounts exceeding 100 in a single column are to be noted by means of pegs or pins, thus facilitating the adding of long columns of figures.

EVAPORATING LIQUIDS.—Leon F. Hauptman, New Orleans, La. For quickly absorbing moisture from saccharine liquids, etc., this inventor has devised an apparatus in which a series of inclined plates is arranged in a casing to form chambers having communication with one another, there being a liquid receiver at the end of each plate and means for heating liquid in the receivers, and heated air being forced through the apparatus in a direction opposite to that in which the liquid is flowing.

HOT AIR HEATER.—Adam W. Ringland, Toledo, Ohio. In order to utilize the fuel in a hot air furnace to the fullest advantage, the fire box, according to this improvement, is made with a combustion chamber extending the length of the heater, and having side walls curved inward toward each other, so that their convex sides are contiguous, there being also an interior hot air chamber separated from an exterior hot air circulating chamber, an inlet flue leading into the exterior chamber having a valved connection with the interior chamber. The fire box construction allows for a large grate surface, and its inwardly curved walls present increased radiating surface and allow for larger air spaces behind them.

STRAW BURNING STOVE.—Walter P. Hitchings, Waubay, South Dakota. The fire pot of this stove is composed of angular bars partly beneath the feeder and partly beneath the griddle holes, the inclined rear side of the fire pot being separated from the oven wall and arranged over the entrance of the base flue. A flue passes in front of and beneath the oven, and the heat may be utilized to great advantage in heating pots and pans set in the holes, as well as for heating the oven without scorching articles placed therein.

PASSENGER REGISTER.—William H. Cling, Charleston, S. C. This is a device for registering those entering a car, theater, etc., by means of a plate which is depressed by the stepping on it of those passing in. It comprises a box with spring-supported cover, pendant from which is a hook pawl adapted to engage a ratchet wheel on a shaft, there being also on the shaft removable tape-carrying reels, the tape having printed figures in consecutive order. By inspecting the tape at any time it is readily ascertained how many times the cover has been depressed, or how many people have stepped on it in passing.

VEHICLE STORM GUARD.—Sylvanus Norton, Sinclairville, N. Y. This is a device for attaching the hoods, storm guards or aprons to the dash of a vehicle, consisting of a strap with a clamping device at one end and a take-up lever connected with the opposite end, a second clamping device being connected with the take-up lever. After the guard is attached to the hood, dashboard and body of the vehicle, the latter is practically a closed vehicle, and when the guard is not required to close the entire front it may be used as a pocket, protecting the lower extremities of the occupant.

SHOW CASE.—Frank Gurley, High Point, N. C. This inventor has devised a show case from which dust or litter may be readily swept out, the bottom strip of the door frame at one side having a recess extending down to the floor and cut transversely through the strip to the level of the floor, a block fitting the recess beneath the door.

ICE CRACKER AND SHAVER.—Frederick E. Steere, Lynchburg, Va. This is a simple machine for use in connection with the sale of beverages, facilitating the shaving or cracking of ice as desired. The ice is placed in a hopper through which a plunger carrying a disk with spikes on its face may be moved to force the ice against rotating teeth to break up the ice in small pieces, or a disk carrying knives may be advanced beyond the teeth; when the ice will be shaved instead of being cracked, a crank being turned in both cases.

UMBRELLA.—Rufus Waples, Jr., Philadelphia, Pa. This invention is for an improvement in what are known as umbrellas and canes—the umbrella proper being applied to and removed from a handle which may be an ordinary cane. The ribs are arranged to expand in two opposite sets connected together and the braces are arranged in similar sets connected together, the ribs being arranged in groups to avoid multiplicity of joints, and the ribs and braces being in certain respects constructed and connected alike. The handle may be made hollow to form a sheath for the collapsed and folded umbrella portion, or the latter may be applied to an ordinary cane or staff.

PAINTERS' BLIND HOLDER.—John W. Woodward, South Royalton, Vt. For holding blinds and similar articles while being painted, this inventor has devised a light and simple construction by which a blind of any length may be held and turned to any desired position to facilitate work on it. It has two restles adjustably united by a connecting bar, and each restle having an adjustable upright in which is a longitudinal screw turned by a crank arm, while a T-shaped arm centrally pivoted to the connecting bar is adapted to be held in engagement with the side edge or the bottom of the blind.

CURTAIN FIXTURE.—Emsley L. Slight, Ennis, Texas. This invention relates to fixtures in which a spring roller is carried in sliding supports that move up and down on vertical guide strips attached to the window frame, and provides a novel form of sliding head with grooved ways or runners moving over stationary vertical guide strips, there being devices for retaining the journals of the roller in the head and springs to hold the head to any adjustment on the guide strips. With this improvement the curtain may be readily adjusted to

shut off the light from either the top or bottom of the window, or any intermediate portion.

HINGE.—Tyree Rodes, Nashville, Tenn. This is a hinge especially adapted for gates, and the patent is for an improvement on a former patented invention of the same inventor. The hinge is made of a piece of stout wire whose middle portion has several coils forming an eye, while its ends are wavy and somewhat divergent and terminate in spurs, being designed for convenient attachment to the gate between braces or end pieces, whereby the body or shanks of the hinge are covered up, leaving the eye only exposed.

SPECTACLES.—John T. Meredith, Shawnee, Ohio. These spectacles have auxiliary temples fitted to slide on the straight temples, and having an outer curved ear portion, with means for locking the sliding to the straight temples. The auxiliary temple, when pushed in, assumes an almost straight position, but readily curves around the ear when pushed out to securely hold the spectacles in place.

HEADS AND MASKS.—Isidor Roescher, New York City. An eye and tongue support for artificial heads and masks or vibratory supports for dolls' eyes and tongues, has been patented by this inventor, in which the supports are so concealed and so attached that the least movement affords vibrations which appear at the openings provided. The artificial eyes and tongue are connected with separately arranged springs within the mask, so that they will not interfere with the action of each other.

Designs.

DESIGN FOR SCRUBBING BRUSH.—Samuel K. Hawkins, New York City. This brush is made in an approximately S-like curve, with pointed ends, and the upper edge is chamfered all around.

SASH WEIGHT.—Robert R. Breu, New York City. This is a weight having at one end specially advantageous recesses surrounding the aperture for the attachment of the sash cord, so that it may be readily secured to the weight without liability to friction against the sides of the pocket in which the sash runs.

BACK BAND HOOK.—Hiram E. Wetherbee, Greenville, Miss. This design is for a substantially flat plate in which are elongated parallel openings with adjacent perpendicular serrations, there being a broad hook surrounded by an opening about centrally of the plate.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co. for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

PLANTS AND THEIR CHILDREN. By Mrs. William Starr Dana. New York, Cincinnati, Chicago: American Book Company. Price 65 cents.

Not every book of nature study can be so heartily commended as Mrs. William Starr Dana's "Plants and Their Children." Some educators have gone into raptures over the beauty of flowers, and neglected the study; others have missed the beauty in sordid pursuit of fact; it has remained for Mrs. Dana to hitch her wagon to a star, to teach at once science and poetry. The study of flowers is inherently attractive. It is the study by which the child is most readily attracted, from which he is least liable to be discouraged. That he is so often discouraged speaks ill of his teachers. The flower, says Mrs. Dana, attracts the bee by sweetness and beauty. In the same way it attracts the child. Others may be led into botany through the study of cells and slimes. He leaves these to his elders. One entrance appeals to him, that which leads through flowers, and the wise teacher will lead him in by that. Once in, it will take more than a few technical terms to frighten him from this fascinating flowerland. Yet this book, carefully as it shuns the less attractive aspects of the subject, is not unscientific. It leads intuitively to the prime principles. It tells of the formation of the seed, the storing of food, the growth of the infant plant, but all with a living interest, not sentimental, but poetic with the comprehensive poetry of Thoreau and Emerson. The book teaches the child to see. It teaches the observant, expectant mood of the scientist, a mood consonant with the most spiritual religion. The illustrations, by Alice Josephine Smith, are most adequate. The book is in every way most attractive. It is easy to foresee the pleasure that the children will find in it. Mrs. Dana is widely known as an authority on the subject of plants and plant life, and her first publication along these lines, "How to Know the Wild Flowers," attained an enormous circulation. We commend the book alike to those who have made such subjects a study and to such as are not sufficiently observing to have become enamored of the plant life about them, or who have not come under the spell of Mrs. Dana's charming style.

LEE'S HOME AND BUSINESS INSTRUCTOR. Chicago: Laird & Lee. Pp. 372. Price, cloth, 50 cents and 75 cents.

This is a well printed and arranged little handbook in which is compactly set forth many valuable points on penmanship, letter writing, bookkeeping, banking, everyday law, mercantile and technical terms, social forms and speeches, etc. It is somewhat unique in its arrangement and quite original in its treatment of the various subjects, and must be a valuable aid to self-instruction by the young, as well as a handy volume in many ways to have around.

The October number of the Street Railway Journal is more than double its normal size, as the enterprising publishers decided to issue a souvenir number on account of the St. Louis Convention of the American Street Railway Association. The transportation facilities in the city of St. Louis are fully treated and a colored map is provided. The number is filled with interesting matter and is beautifully printed on coated paper. The advertisements, which fill 248 pages, are printed in colored inks. We congratulate our contemporary on the production of a number which is unique in the history of trade journalism. It is published at New York and Chicago.

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion: about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

Marine Iron Works. Chicago. Catalogue free.
"C. S." metal polish. Indianapolis. Samples free.
Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.
Handle & Spoke Mchry. Ober Lathe Co., Chagrin Falls, O.
Yankee Notions. Waterbury Button Co., Waterbury, Ct.
For good letter copies see "Rubber Tipped" adv., p. 340.
Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Spring & Varick Sts., New York.

Would manufacture metal specialties of undoubted merit. Cycle parts preferred. G. W. Cilley, Norwich, Ct.

Carpenters.—Make more money. Go into concrete construction, Ransome system. 768 Monadnock Bldg., Chicago

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.

Send for new and complete catalogue of Scientific and other books for sale by Munn & Co., 361 Broadway, New York. Free on application.

Notes & Queries

HINTS TO CORRESPONDENTS.

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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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.

(6991) W. A. B. asks (1) how to magnetize a piece of thin iron. A. Starting at one end, rub it across the pole of a strong magnet; a dynamo field magnet is excellent. Remove it in a sweeping curve and repeat the rubbing, always in the same direction but changing sides. 2. Do you know of any work published on magnetism that an ignoramus can understand? The encyclopedias have lengthy articles on the subject, the more of which I read the less I know. A. We recommend "Magnetism," by Houston & Kennelly, price \$1, which is a very good work and can be readily understood by those not especially trained in electro-technics, also "Lectures on the Electromagnet," by Thompson, price \$1; "Electromagnet and Electromagnetic Mechanism," by same author, price \$6. Much of the above has been given in the SCIENTIFIC AMERICAN SUPPLEMENTS.

(6992) O. F. McG. asks: Will you please inform me through your valuable columns how the electrotonic fluid for putting in batteries is made? A. Various formulæ are used. The following is Tiesandier's:

Water.....	100 parts by weight.
Potassium bichromate.....	16 " " "
Sulphuric acid 66°.....	37 " " "

The mixing of the acid and water is supposed to produce enough heat to insure solution of the bichromate. Do not use until cold.

(6993) C. A. P. writes: All things being equal in both cases (that is, speed, load propelled and distance traveled), would the strain on the bicycle chains differ if one bicycle is geared at 70 and one at 80 inches? Would there be any difference in the strain on the chain if the front and the hind gears are transposed, other conditions being equal? A. For equal work as you state, the strain on the chain increases with the increase in the gear; 80 gear exerts a harder pull on the chain than 70 gear. By transposing the gear, the strain would be less on the chain by the difference in the relations of the sprockets.

(6994) G. H. W. asks: How many of the caustic potash batteries described in "Experimental Science" will it take to light a six candle power incandescent lamp, and also what voltage lamp should be used? Will you also inform me how much black oxide of copper should be added to the jar? A. Thirty or forty cells would be requisite. Use about a half inch layer of copper oxide to each jar.

(6995) W. W. P. writes: I am heating with steam from a small upright boiler, and as the steam coils are on a level with, or possibly lower than, the bottom of the boiler, I have practiced the wasteful plan of running the condensation into the gutter instead of returning it to the boiler. I have heard, however, that there is a method by which the condensation can be returned to the boiler in cases like mine. Will you please advise me through the columns of your journal? A. The water in the coils can be returned to the boiler under the conditions you name, by a return steam trap. This apparatus is well known in the steam fitting trade.

(6996) T. S. B. writes: We have a 20 inch by 48 inch Corliss engine with Bulkeley condenser. We take the condensing water from the Hudson River, with a Worthington duplex steam pump; the steam cylinders are 7 inches diameter, the water cylinders 9 inches, and 10 inches stroke, each piston running about 30 strokes per minute. Steam pressure from 80 to 90 pounds, the gage on pump discharge pipe indicates 40 pounds. The distance the water is carried, about 200 feet; the elec-

