

RECENTLY PATENTED INVENTIONS. Railway Appliances.

CAR COUPLING.—William H. Harris, Newberry, S. C. This invention relates particularly to twin jaw couplers, the device provided being very simple, and having but few parts, while one of the jaws automatically and safely locks to effect a coupling. The drawhead has a central cavity and side recess, and the coupling jaw has a coupling and locking arm, and when two cars are brought together, the coupling arm of one car contacts with the locking arm of the opposite car. The uncoupling is effected by rocking a shaft journaled at the end of the car, whereby a pivoted catch block is raised, and may be fixed in elevated position if desired.

CABLE TRACTION SYSTEM.—George Muller, Hoboken, N. J. This is an improvement on a former patented invention of the same inventor, providing a system which permits the employment of two cables for each track and reducing the friction to a minimum, the picked up or dropped cable not coming in contact with the other one. The invention consists principally of two sets of pulleys arranged on opposite sides of the cables on an S or similar curve, each set of pulleys comprising two pulleys, one for each cable, and mounted to turn in a yoke adapted to swing.

CABLE RAILWAY CURVE.—The same inventor has likewise obtained a patent relating to cable traction with a duplex cable system as applicable to its use on curves of the roadbed, the improvement providing for the convenient use of either cable on a curve without one cable interfering or coming in contact with the other. Two sets of supporting devices are arranged on opposite sides of the cables to pass one cable over and above the other, and, with two cables entering the curve one above the other, a device is provided for passing and guiding and crossing the lower cable over and above the other, so that on leaving the curve the position of the cables is reversed.

RAIL JOINT.—George G. Stacy, New York City. This invention relates to a former patented invention of the same inventor, providing a cheap, strong and simple joint, which may be easily applied to the meeting ends of rails to hold them so that they cannot move lengthwise or sideways. It consists of angle plates whose vertical portions fit the rail webs, and with outwardly extending notched base flanges, in connection with a base plate to receive the rails and having uprights fitting the notches, the uprights having side arms overlapping the flanges. The joint is a very strong one, practically making the rails continuous.

Electrical.

ELECTRIC RAILWAY TROLLEY AND CONDUITS.—Wilton F. Jenkins, Richmond, Va. Three patents have been granted this inventor relating to railways having underground electric conduits. With in a conduit carrying two conductors or circuit wires, one carrying current to the motor and the other returning it therefrom, means are provided for separating or insulating from each other the wheels or rollers that travel upon the conductors, together with means for insuring a steady and constant contact between the trolley wheels and the conductor, the trolley being loosely connected to the car. One of the patents also provides means for adjusting the trolley to the car in such manner as to permit the connection to be readily made, a drag connection being provided for the trolley which may be reversed without disconnection from the car, while vertical and lateral vibration between the car and trolley will be taken up. Another of these inventions provides a novel construction of the body of the conduit and means for holding the conductors in proper insulated position. The tubular conduit has a continuous longitudinal slot on its upper side and transverse external re-enforcing ribs, terminating externally some distance from the slot and reappearing internally, while adjustable slot plates are applied to vary the width of the slot.

Mechanical.

DIE PLATE.—Lewis C. Wetzel, Bellefonte, Pa. This invention provides a very effective implement, of durable construction, by means of which the desired sized die may be conveniently brought into the proper position for immediate use, a series of different sized cutters being provided in the same tool, while the die stock can be readily opened after the thread is cut to disengage the dies from the threaded bolt.

FLOOR JACK.—Edward A. Bullock, Bellefonte, Pa. This is an implement which may be readily shifted from one joist to another, its grip portion being adjustable to fit joists of varying thickness. It is designed to be quickly and conveniently operated to force the tongue of one floor board into the groove of the next board, making a perfect joint between the two boards, while the last board laid is nailed to place. Its construction is very simple, and one person may operate the device and nail the board to the place in which it is held by the jack.

MATCH AND TOOTHPICK MACHINE.—Joseph Boulard, Newport, R. I. Blocks of wood fed to the machine designed by this inventor are rapidly cut into toothpicks or matches, according as the machine may be adjusted for one or the other kind of work. The machine will also point the splints, deliver them into a carrier, dry them thoroughly, and finally deposit them in a suitable receptacle. In the making of matches it dips the splints in the baths, so that a finished article is made by the machine.

WELL DRILLING MACHINE.—James W. Draper, Frederick Draper and Walter Ellsworth, Alden, Iowa. This is a simple and durable machine of improved construction, designed to be very effective, and to be operated at a high rate of speed. The main driving shaft, journaled in the base of the derrick, imparts motion to a walking beam, by means of which the drilling tools are lifted and dropped, the amount of lift and drop of the tools being conveniently regulated by adjusting clamps on the beam.

POLISHING WHEEL.—John McClellan, Greenbush, N. Y. A wheel designed for conveniently polishing marble and other material, is provided by this invention. The wheel is attached to an ordinary polishing machine, and the invention consists of an inverted revolvable cup, adapted to contain the grinding material, an adjustable ring on the rim of the cup holding the material in place and preventing the cup from striking the marble.

MECHANICAL MOVEMENT.—Felix Meny, Elizabeth, N. J. Two rock shafts are, according to this invention, controlled from a reciprocating crosshead, provided with slotted arms, or drivers, one delivering the crank pin to the other, to carry it around a half revolution. The reciprocating crosshead has pivoted wings engaging the crank arms of the rock shafts, and adapted to be locked in place, the improvement being designed to facilitate converting reciprocating into rotary motion effectively and uniformly, avoiding dead centers.

Agricultural.

HARVESTER.—Jacob T. Mider, Wathena, Kansas. This invention relates more particularly to harvesters in which the heading and thrashing of the grain is effected as the machine travels over the field, the machine heading, thrashing and separating the grain in a simple, rapid and economical manner. The parts of the machine are so arranged that the several operations are carried on continuously, without wasting, and detachable bins are provided whereby the grain may be gathered in bins ready for shipment.

HAY STACK CUTTER.—John T. Evans and Joseph H. Douglass, Adamsville, Utah. A machine which may be placed above the stack or over piles of hay to be operated upon is provided by this invention. The machine is adapted to be operated by hand, and carried across the stack or stopped at any desired point, for cutting out large or small sections of hay for baling or cutting purposes, or for being fed to cattle and stock. Upon a bed vertically adjustable upon trestles is a traveling carriage, carrying a vertically reciprocating crosshead, to which is secured a knife projecting below the bed, means being provided to simultaneously move the carriage and reciprocate the crosshead.

Miscellaneous.

SELF-RECORDING PLANOGRAPH.—Justo Soler (deceased), Yanko, Porto Rico, W. I. (Perry B. Turpin, administrator). This machine is mounted on three wheels, and adapted to be moved over the ground by hand, a strip or ribbon of paper and a pencil being used to make horizontal angles, lines or curves, and another pencil being used to mark elevations or depressions. The paper is caused to travel under the pencil at a speed bearing a known relation to the diameter of one of the main wheels, thus affording a scale for reading the scroll made by the pencils, which form a figure on the paper similar to the ground measured.

EYEGLASSES.—Adolph H. Hartmann, Brooklyn, N. Y. An attachment for glasses is provided by this invention, to hold the glasses in proper position before the eyes, and prevent them from dropping downward or slipping out of place. It is so made as to conveniently accommodate itself to any shape of nose, and the device may be attached to glasses of any description. It consists of bracket-like strips detachably secured to the frame, each strip having a vertical portion and a foot section, the strips forming auxiliary clamps to engage the nose.

CAUSTIC ALKALIES AND CHLORINE.—Farnham M. Lyte, London, England. This invention provides a conjoint process of continuously producing caustic alkali and chlorine by decomposing an alkaline nitrate by heating it with ferric oxide to evolve nitrous fumes, decomposing the residue by boiling with water into caustic alkali free from iron and a precipitate of ferric hydrate, converting the nitrous fumes into aqueous nitric acid, dissolving plumbic oxide therein, precipitating plumbic chloride, fusing it and decomposing it electrolytically into chlorine and metallic lead, and finally converting the lead into plumbic oxide and the ferric hydrate into ferric oxide, for recommencing the cycle.

LIFE SAVING AND PLEASURE CRAFT.—Arthur B. Shearer, Reno, Nevada. Three separate and distinct boats, connected together and propelled by an electric motor, forms the distinctive feature of this invention. Each boat has a copper bottom, an air and water tight cover for its deck, is divided into compartments, and has a motor which may be operated from the shore or from the deck of the vessel. The boats are joined together with strong braces, covered with steel mesh as a platform for passengers, and here are seats with straps buckled across them, while there are suspended knotted ropes to enable persons in the water to pull themselves upon the craft.

NUT LOCK.—Axel Warenskjold, San Diego, Cal. This is a safety nut for wagon axles, bolts, etc., and is of very simple and durable construction, readily applied, and very effective. It is longitudinally and internally grooved, and has a longitudinally sliding spring-pressed key crossing its bore, the spring pressing the key toward that end of the bore which receives the bolt. The spring and the key are always in position in the nut so that they cannot be lost, and the nut is always ready to be attached.

HARNESS TUG.—Samuel P. Chandler, Lake City, S. C. This is a thill tug, comprising a yielding loop portion, having rigid end sections arranged to be interlocked and detachably connected, so that they may be readily separated to allow of the unhitching of the horse from the shafts. The device is simple, inexpensive and very efficient.

VEHICLE BRAKE.—Ernest W. Broadhead, Dolores, Col. This brake is designed to be comparatively noiseless, the construction being such that the brake shoes will be normally out of engagement with the wheels. A shaft journaled under the vehicle, and having crank arms carrying the brake shoes,

has an upwardly extending arm connected by a link with a foot lever, while a spring around the shaft, having one end secured to an adjustable collar and the other end to the shaft bearing, keeps an even tension upon all the joints of the brake.

VELOCIPED.—Abram C. Shelley, Blythebourne, N. Y. A machine especially adapted for traveling upon water is provided by this invention, its construction also admitting of its quick and easy adjustment for use upon land. The wheels are formed in two sections, one adjustable toward the other, the sections being connected by detachable floats with stiff heads and flexible bodies, and removable paddles being held in the wheels. The machine is designed to ride upon the waves and not plow or sink into them, and combines economy of construction with lightness and strength.

DOOR SPRING.—John A. Cooper, Nashville, Tenn. The spring proper, according to this invention, has a terminal portion or limb at its fast end, adapted to engage in removable manner with fixed holders or staples, a socket or shank piece entering in and engaging the opposite or free end, while a removable wrench, adapted to engage the shank piece, forms a part of the spring fixture. The improvement forms an attachment for convenient application to light or heavy doors, gates, etc., the spring being readily tightened or loosened, or taken off and reversed as desired, without the aid of special tools.

HOLDER OR RACK.—Charles Worden, Rye, N. Y. This is a device more especially designed for conveniently holding brooms, billiard cues, and similar handled articles, automatically clamping the handles and permitting the ready removal of the articles when desired. The device has a series of vertical ribs between which the handle is passed, and a roller travels in a recess in the inner side of one of the ribs, the bottom of the recess being inclined outward and upward from near the lower end of the rib. The article is thus held suspended, and the greater its downward pull, the tighter will the roller press against it to sustain it.

INKSTAND.—Liston B. Manley, Duluth, Minn. This is an improvement on a former patented invention of the same inventor, the inkstand being rendered more simple and more easily manipulated, while being more readily attached to a desk and occupying less room. A standard to be attached to a desk forms a swing support for the entire stand, and the sockets receiving the ink wells are so connected with the adjustable arm that when the arm is carried upward the ink wells will always maintain a horizontal position, the ink wells being movable laterally as well as vertically.

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.

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2. Plate in colors showing an elegant residence at Montclair, N. J. Two perspective views and floor plans. Cost \$17,000 complete. Mr. Frank H. Kimball, architect, New York.
3. Elevation and plans for a house at Arlington, N. J. Cost \$5,500.
4. A beautiful residence at Denver, Colorado. Perspective and floor plans. Cost about \$40,000.
5. Elegant residence at Denver, Colorado. Cost about \$30,000. Floor plans and perspective elevation.
6. A \$1,000 cottage near Tacoma, Wash. Perspective elevation and floor plans.
7. A residence at Bridgeport, Conn., erected at a cost of \$3,000 complete. Floor plans and perspective elevation.
8. A house at Bridgeport, Conn., built at a cost of \$1,800 complete. Plans and perspective.
9. Sketch of an English country residence.
10. Floor plans and perspective sketch of a cottage, estimated to cost complete about \$3,500.
11. A cementine residence at Pittsburg, Pa. Floor plans and perspective elevation.
12. Miscellaneous contents: Asphalt paving in New York.—Bricks of glass.—Dry rot.—The new building laws at Boston.—A substitute for poplar needed.—The palace citadels of Nineveh.—Underpinning by bore-holes.—Ruins of Javanese architecture.—Making water-tight work below water level.—The Goulds power pumps, illustrated.—The Cook plumb and level, illustrated.—Quarter-sawed oak.—Ventilation of churches.—An improved power mortiser, illustrated.—A new dimension saw, illustrated.—An improved fireplace furnace, illustrated.—Fireproof flooring.—Artistic elevator inclosures, illustrated.

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(4516) J. B. B. asks: 1. Does a boat run faster when she is loaded by the head or stern is a question under discussion. One claim is that when loaded by the head the position of the boat makes her run down hill, and when loaded by the stern she has to run up hill. Others claim that if loaded by the stern she is made to float higher and requires less displacement, and if loaded by the head she is forced down into the water. A. Boats for speed as built after modern practice have their lines formed for the greatest speed or least resistance on a specified water line, with their keels generally sloping to a greater draught near the stern. Loading by the stern or head interferes with the speed by changing the form of the immersion lines. In sailing craft loading by the stern is required to a certain amount to counteract the tendency to dip the stem by the action of the wind on the sails.

(4517) W. H. B. asks: 1. Is lead or iron ballast better for a sailing yacht than stone? If so, has it been proved? A. Lead or iron is the best ballast for sail yachts, because of its density allowing a given weight to lie closer to the keel and thereby give greater stability to the vessel. 2. What would it cost to build a steam yacht 12 feet keel? Will a cylinder 2x3 inches drive the boat at a fair speed? A. Do not know the cost. The 2x3 inch cylinder will run the 12 foot boat at a fair speed. 3. Do you illustrate all the new war ships launched? A. We have illustrated many of the new war ships of the United States Navy.

(4518) L. L. H. says: We have a 1½ inch pipe laid from our factory to a river, which is 47 rods away and is about 26 feet lower than the factory. The pipe enters a bank as it nears the factory and runs into a large well 12 feet below the surface of the ground. The well is 26 feet deep and the pipe turns from where it enters the well and goes to the bottom, then turns up again in a U form to a height of 6 feet. Here we have a Vanduzen steam jet pump which drew the water from the river for about three or four months after it was first laid, but since then has given us considerable trouble. I would like to know if you think a piston pump would

work any better than the jet. We use the city water works for cleaning out the pipe when it gets dirty. There are no elbows in the pipe except where it turns down in the well; all other turns were made by bending the pipe. Do you know of any way that we can convey power to the river, such as compressed air or some other way, by which we can force the water up to factory without too much outlay? A. The obstruction in the pipe that prevents the jet pump from working satisfactorily, would also interfere with the action of a pump. If the pipe is of wrought iron, not galvanized, it is liable to rust and form nodules on the inner surface throughout its length, which decreases the area and increases the friction. By raising the pipe at the river end and connecting with the water works pipe at the factory end, giving the full pressure on the pipe would show by the stream at the river end whether the pipe is permanently obstructed. If found to be obstructed, the pipe should be taken up and cleaned by pushing a smaller pipe through with a sharpened coupling on the end, a little smaller than the bore of the 1½ inch pipe. If there should be a full, strong flow from the pipe, the next possibility will be air leaks. To ascertain the fact, arrange the steam jet so as to discharge from an open pipe and start the jet. If there is air in the pipe or airleaks, the discharge will sputter, or become intermittent, possibly stop altogether. This is supposing that the start is made with the pipe fully charged with water. There is also a possibility that the separation of the air from the water by the partial vacuum in the siphon suction pipe may cause some trouble by accumulating at the apex and separating the water in the pipe. By your statement, your siphon has a probable lift of 26 feet or nearly its limit, and it may be that this is the source of your trouble. You can transmit power to drive a pipe pump by a wire rope system from a pulley in the factory to a pulley at the river with a couple of supporting pulleys at proper distances to keep the wire rope from vibrating.

(4519) G. J. asks: 1. Is there in existence a perfectly working long-distance pneumatic tube system? A. No; probably a mile or less. 2. What is the longest electric railway in existence? A. 5 or 6 miles. 3. What are the prospects of a near adoption of electricity on the steam railroads? A. The prospect is very distant. The system of wiring would be too intricate for the immense traffic and yard switching of our great railways.

(4520) Reader writes: Some years ago I saw at this place an exhibition wherein apparitions were made to appear on the stage by what was said to be the manipulation of mirrors under the stage of the theater. A form of a woman would appear, first in a transparent mist, and then would assume a perfectly lifelike appearance. A. The illusion to which you refer is produced by a plate glass mirror erected upon the stage at such an angle as to reflect the image of the figure below the front of the stage, a strong light being thrown upon the figure. This illusion is known as "Pepper's Ghost."

(4521) W. G. S. asks: For bathing purposes is artesian well water healthful or unhealthy? A. Artesian well water is healthy for bathing as much so as for household purposes. The wells that furnish hard water do not afford the satisfaction to bathers as the soft water wells. A little ammonia in the hard water makes a satisfactory and healthy bath. The mineral constituents of the hard water from artesian wells are principally lime and magnesia, with their various combinations. Some wells furnish water of decided sanitary properties.

(4522) E. G. A.—The following is a receipt for herb beer: Pour boiling water on 2½ ounces sassafras; 1½ ounce wild cherry bark; 2½ ounces allspice; 2½ ounces wintergreen bark; ½ ounce hops; ½ ounce coriander seed; 2 gallons molasses. Let the mixture stand 1 day. Strain, add 1 pint yeast, enough water to make 15 gallons. This beer may be bottled the following day.

(4523) C. C. asks how to harden a chisel for chipping casehardened iron. A. Heat the chisel after sharpening to a low cherry red and then plunge it in a saturated solution of chloride of zinc. The chisel must be rehardened whenever it is sharpened.

(4524) F. S. B. writes: 1. It is said that if balls of wax and lead are dropped from the top of a building, they will fall together. Do you think this is wrong? A. There would be a difference, but it would be almost imperceptible. In a vacuum, both bodies would fall in the same time. 2. How do scientists explain that capillary attraction is not a case of work being done without an apparent loss of energy? A. In rising in a moist tube water obeys the force of cohesion exercised over space, which represents the expenditure of energy. To extract the water from the tube, an exact equivalent of work would have to be done. Potential energy is represented by the separation of the water in mass from the water wetting the walls of the tube, or by the separation of the water in mass from the dry walls of the tube, if we assume a dry tube to be used, and adhesion to be one of the actuating forces.

(4525) W. E. P. asks: How should the 8-light dynamo be connected for the best results, when used for charging storage batteries, and how many will it run; batteries to be connected in series, and using a 1-horse power Shipman engine for power? Dynamo is now connected as shown in Fig. 1 (large cut) in SUPPLEMENT 600. A. The 8-light dynamo should be connected in series for use in charging storage cells. You should connect your cells in series. The dynamo will charge from 10 to 20 cells. The rapidity of charging diminishes with the increase in the number.

(4526) J. M. writes: 1. Please give some antiseptics for a gelatine emulsion for dry plates? A. SUPPLEMENT No. 541 contains full instructions for making emulsions. 2. Where may the wooden valves used in the air pump, Experimental Science, p. 92, be bought? A. These valves are not on sale. They are easily made, and with very little effort you can make them yourself. 3. How could the motor, on p. 498 of the same book, be best converted into a dynamo, and what would be the power of the same? Also name books con-

taining instructions for making simple dynamos, without the need of lathes or special tools. A. Make the field magnets of cast iron, and wind the field magnet and armature with No. 20 or No. 22 wire. 4. I have a lantern which is identical with the one described on p. 594, but have not changed it in any way. It shows colored slides quite well, but will not show a good picture off a photo, slide. How could I change it? A. Modify the lantern in the manner described in Experimental Science, that is to say, replace the front lens of the objective with a meniscus of the same focus.

(4527) J. F. R. asks: Is it safe to fasten a lightning rod to a wooden house with staples, without insulator glasses? A. Yes.

(4528) W. C. Moore writes: I inclose, you will find, a leaf of a plant found in west North Carolina the natives call "gall of the earth" or "rattlesnake's king," the milk white juice of which is said to be an immediate and sure cure for rattlesnake bites. I have made some notes on the subject. So please let me know if it is generally known to the scientific world, and what its analysis is, and I will be pleased to furnish you specimens and what information I can procure. Answer by Prof. C. V. Riley: The leaf accompanying Mr. Moore's letter is what is known as rattlesnake root, *Prenanthes altissima*, Hook. It is referred in the botanies to the genus *Nahala*, and is popularly known as white lettuce, rattlesnake root, etc. There may be some foundation for the belief your correspondent refers to, and the common name of the plants of the genus would indicate such a property. I cannot find, however, any authorities which accord to it this power of curing rattlesnake bites. It is used as an astringent in dysentery, and an analysis of the plant which has been made indicates that it contains tannin and various inert properties.

(4529) G. C. H. writes: I send you by mail to-day, under a separate cover, two bullets which were picked out of the snow after a target shoot February 22. The projectiles were fired from the best breech loading target rifle with heavy charges of powder, and, after flight of (200) two hundred yards, passed through a paper target backed by one thickness of cotton cloth (sheeting), then entered the snow, penetrating but a few inches, and were picked up with the points marked as you now see them. The feature to which I specially desire to call your attention is this peculiar marking upon the point. It is a reproduction of the surface of the cloth, in which you can trace every thread of the fabric. It is possible that the tremendous velocity of the bullet made the impact equivalent to the blow upon a stationary and immovable object, or that a small piece of the cloth may have been punched out, and, going forward with the bullet, was impressed between the bullet and the snow. The matter may be sufficiently interesting for you to express an opinion upon. A. Your first explanation appears reasonable.

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August 30, 1892,

AND EACH BEARING THAT DATE.

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