RECENTLY PATENTED INVENTIONS.

Railway Appliances.

RAILROAD TIE PLATE. — Alexander B. B. Harris, Bristol, Tenn. This tie plate is made so as to form a spiked socket with straight cylindrical outer edges, without any toe or flange at their lower edges, but making the two opposite tongues which lie in the line of the grain of the wood thicker at their lower ends than they are above, while the other tongues are of the same size below that they are above, so that when the spike is driven it expands the lower edges of the two thickened tongues outwardly in the line of the grain of the wood, but does not expand the others, which would produce a strain transversely to the tie and split the latter. The form of spike is changed from an elongated nail to a short and thick plug, which, while having a spiked head, does not penetrate the wood of the tie, but simply serves to expand the pendent tongues of the tie plate in the bored hole of the tie, thus furnishing a very strong body of metal to resist the lateral thrust of the rail and the cutting of the heads of the spikes whenever the car wheels jump the track.

ELECTRIC BLOCK SIGNAL AND TRAIN LIGHTING SYSTEM. — John Calhoun West, Atlanta, Ga. The object of this invention is to provide a railway system so arranged that it is impossible for trains to collide with each other or to be accidentally switched; mechanism is provided for cutting off the steam and applying the brakes of oppositely moving locomotives when they enter the same block, also for applying the brakes when a locomotive enters a block in which there is a train at a standstill or where there is an open switch. The means for obtaining these ends consist, broadly stated, in two main conductors forming parts of an open circuit charged by any suitable source of electricity and extended parallel with each other and along the track of a broken conductor, the brakes of which are one at each block and with which brakes are associated a series of bridge conductors and in mechanism carried by the locomotives of the trains, and comprising means for electrically controlling the throttle and brake valves and suitable conducting devices for co-operation with the conductors of the track. The invention also comprises improved mechanism for lighting trains and head lights.

CAR COUPLING.—Charles H. Smith, Birmingham, Ala. This invention relates to improvements in car couplings of the Janney type. In brief, it consists of a knuckle having an edge wall of the tail piece longitudinally recessed, this recess having a pocket at its end nearest the knuckle pivot, and a keeper bar across the recess and of a curved plate spring having a toe that is interlocked with the pocket and keeper guard, and normally projects the free end of the spring away from the tail piece of the knuckle. It also consists of an upward extension of the drawhead chamber and a curved lifting bar, adapted to work in a slot at the top of the extension, and adapted to engage a gravity block which may be operated from the exterior of the drawhead and controls the swinging movement of the knuckle.

CAR FENDER.—William T. Donohue, New York City. The object of this invention is to provide a fender which will normally be carried in an upright position in front of the dashboard of the car, yet be close enough to the ground at its lower end to strike an object falling in the path of the car, and to devise a means whereby the fender, as it strikes an object, will be immediately placed in operative connection with the axle of the car or other driving shaft and be instantly turned downward to an inclined position or to a position to convert it virtually into a cradle to receive the person. Means are also provided by which, when the fender is lowered sufficiently, the driving connection between the driving shaft and the fender will be severed, the driving mechanism being also automatically set in action by inward pressure on the fender, thus relieving the motorman or gripman of all responsibility of the manipulation of the fender and enabling him to devote all his time and attention to the brakes and driving mechanism of the car.

DRAWBAR FOR RAILROAD CARS.—John Shaw, Woodburn, Ore. The object of this device is to relieve the cars in a train of the pulling and pushing and strains and jerks, thereby freeing the car body of the weight of the train. It consists principally of a frame extending longitudinally on the under side of the car from one end to the other. The said frame is mounted to slide and springs interposed between the frame and the body of the car take up the strain.

CAR COUPLING.—James A. Ward, Delta, Idaho. This device relates to car couplings of the side latching or Janney type. The device is adapted for reliable operation and dispenses with the loose pintle bolt between the knuckle and drawhead, so as to afford a cheap and durable hinged joint between these parts; furthermore, to adapt a car coupling for ready release when in a coupled condition with a similar coupling. The drawhead has a pintle formed on one of its side walls and a reduced or web portion between said wall and the pintle, and of a knuckle having a channel to engage the pintle. This channel has an outward opening of less width than the diameter of the pintle, the inner wall of said outward opening being adapted to engage the inner surface of said reduced or web portion, and define the opening of the knuckle.

Mechanical.

VAPOR ENGINE. — Albert F. Rober, Ilwaco, Washington. This improvement is designed for vapor engines, whereby the air and vapor are mixed in proper quantity and positively fed into the explosion cylinder to insure a positive impulse to the piston at each revolution of the main shaft. It consists principally of a valve casing having a channel connected at one end with the working cylinder and at the other end with a compressed air reservoir, a valve for controlling the oil passing to the said channel, and a valve in said channel and controlled from the main driving shaft to admit the mixture to the cylinder at the proper time.

STEAM BLOWER.—George R. Jarman, Durham, N. C. The object of the invention is to provide a new and improved generator which is simple and durable in construction and more especially designed for use on stationary engines or locomotive boilers to produce a forced draught in a very simple and economical manner, to insure perfect combustion and increase the capacity of the boiler. The invention consists principally of a tube in the steam chamber connected with a steam supply and provided with angular ports leading forwardly into the said tube, to cause the steam passing through the said ports into the tube to travel forwardly and draw the air into the tube.

TAP AND DIE HOLDER.—James M. Carpenter, Pawtucket, R. I. This invention relates to a tap and die holder, and is arranged to permit the tap and die to accommodate or adjust itself relative to the work and to compensate for any defect in the die itself and defects in the alignment of the spindle of the machine with the tap or die holders, so as to insure a perfect cutting of the thread. It consists of a hollow head and a hollow die seat having universal movement therein and provided in its bore with an outwardly flaring surface adapted to engage the inner end of the die, and an annular cap removably secured to the seat to move in unison therewith relatively to the head, and provided at its opening with an inwardly flaring surface adapted to engage the outer end of the die.

DEVICE FOR LOWERING BOATS.—John Albert Gamble, Ashville, Ala. This invention provides a simple and durable device by the means of which a boat can be expeditiously lowered and whereby, simultaneously with the lowering of the boat, ladders or steps will be carried down, enabling a person to readily descend from the deck to the boat. Another object of the invention is to hold the boat away from the side of the vessel in a rough sea, thereby preventing the boat from becoming swamped or crushed. The mechanism is so arranged as to allow the boat to freely rise and fall with the motion of the water.

REFRIGERATING APPARATUS.—Hu Maxwell and Robert R. Maxwell, Fresno, Cal. The primary object of this invention is to provide an improved apparatus for refrigerating by evaporation, especially adapted for domestic use. In brief, it consists of two troughs supported one above the other and having an absorbent cloth extending from one trough to the other and forming an inclosure, of which the refrigerator is formed. The cloth is held in the upper trough by a removable top which rests thereon and carries a tank for supplying water to the troughs and cloth. The top also supports the shelves within the refrigerator.

HAND TRUCK.—Harry York and George E. Slaughter, Colton, Cal. This invention provides for an improved method for chocking or braking a hand truck for the purpose of preventing its forward or backward movement while being loaded. It consists of an ordinary hand truck, of a transverse swinging brake bar having parallel arms secured to the frame of the truck, the arms being jointed and attached to the brake bar, a helical spring being employed to maintain the brake bar either in operative or inoperative position. When the truck is lowered to position to be moved the brake is automatically released.

THILL COUPLING.—Charles T. Redfield, Glen Haven, N. Y. This improvement provides a simple and novel construction by which to efficiently secure the thill iron to the clip, to secure the bolt so that it will not turn, to hold the securing nut from turning on the said bolt and to accomplish that result through the aid of a spring, so arranged that it not only co-operates in securing the locking of the nut, but also efficiently serves the purpose of an anti-rattling device. The invention consists in certain novel features and combinations and arrangements of parts in which this object is obtained.

FIRE ESCAPE AND EXTINGUISHER.—Joseph Clabron, Lexington, Ky. The main object of this invention is to provide a combined fire escape and hose holding and manipulating apparatus, and one by which persons may ascend and descend a building and which will be capable of holding a hose in position to throw a stream of water upon the building. The invention consists, broadly stated, in a ladder held to the side of a building and having a peculiarly constructed hoisting apparatus, whereby persons and things may be raised or lowered, and having also a peculiarly constructed hose holding and hoisting device.

RADIATOR. — Augustus Eichhorn, Orange, N. J. This improvement provides a superior steam heater and combines therewith an improved air heating mechanism. These results are obtained, first, by constructing the radiator with two divisions of different radiating capacity, each section being thrown in and out of operation by valves controlling the exit of cold air, and, therefore, the inlet of cold steam; and, second, by a series of plates which inclose the base of the radiator and form a hot air space fed by an air conduit which passes through the floor and into the air space, and which is controlled by register mechanism operative from the exterior of the radiator. Supplementary to the broad idea of this invention, it includes various novel features of construction attending the register mechanism and the plates for forming the air space.

Electrical.

SAFETY APPLIANCE FOR ELEVATORS.—John H. Tennyson, New York City. The object of this invention is to provide a means whereby, upon touching a button in the elevator cage or car or at any predetermined point within one or more electrical circuits, the brake drum of the elevator engine will be instantly applied together with the brake controlling the guiding shaft, and also the supply of steam is cut off from the elevator engine, and the safety clutches or clutches of the elevator car will be immediately brought into action through the medium of the same button or in the customary manner. The above result is accomplished through the medium of simple, durable and economic mechanism, which is applicable to any form of engines or to any type of hoisting or manipulating machinery or elevators.

Miscellaneous.

DAMPING DEVICE FOR MUSIC BOXES.—Henry Langfelder, Jersey City, N. J. The object of this invention is to provide a new and improved damping device arranged to positively bend the tongue of the comb previously to its being sounded by the pin of the cylinder and the tooth of the star wheel. It comprises a resilient damper for the tongue and a resilient bar engaging the damper extending into the path of travel of projections moving with the tongue sounding mechanism.

TWO COMPARTMENT BOTTLE.—Hugh Gallagher, New York City, assignor to Lillie Deechan, of Brooklyn, N. Y. The object of this invention is to provide a new and improved two compartment bottle, which is simple and durable in construction and is specially designed for containing separately two kinds of tablets, pills, or other articles. It consists principally of a bottle body formed with a neck at each end to receive a closing device, and so formed at or near its middle with inwardly extending projections integral with the body to form two compartments therein.

PNEUMATIC TIRE.—Harry C. Dean, Long Island City, N. Y. This invention relates to tires for bicycles or other vehicles, the object being to make a light, simple and punctureproof tire, either of the single or double tube variety; the tread is provided with an annular shield formed of a series of plates of hard material, these plates being each provided with elongated or slotted openings and rivets, the rivets of one plate working in the slots of adjacent plates. The shield is arranged inside the outer sheathing or shoe of the tire so that it will be protected from wear, while in turn it protects the inner portion of the tire from being punctured.

PAPER TOY.—Edward Tinkham Gibson, Minneapolis, Minn. The invention consists first of a continuous blank of paper from which the front, lateral sides, stage platform and background to the stage of a toy theater may be produced by freeing certain portions of these said parts from the blank of paper by die cuts, bending certain of these said parts on scored or creased lines, and locking the parts together in position; second, of paper "scene shifts," or "scenery," which are used in combination with the theater; and, third, of paper figures representing actors, each of which is provided with a long strip extension projecting at a right angle to the erected figure, and which figures may be caused to move about upon the stage platform by manipulating the said strip extensions from the side of the theater, when the surface of the said strip extension is on the same plane as that of the figure, and manipulating them from the back of the theater when the surface of the said strip extension is bent at its junction with the figure to form a right angle with the surface of the figure.

DESIGN FOR A MIRROR FRAME.—Albert Wanner, Jr., Hoboken, N. J. This design consists of panels having scroll ornaments at certain of the corners, and a leading feature of the design, and one marking a departure in such frames, consists in placing ornaments on the frame outside the panel or panels at the corners.

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.

JAMES CLERK MAXWELL AND MODERN PHYSICS. By R. T. Glazebrook, F.R.S. London, Paris, and Melbourne: Cassell & Company, Limited. 1896. Pp. 224. Price $1.25. (Already reviewed.)

COLUMBIAN KNOWLEDGE SERIES. Edited by Prof. Todd. Number III. Handbook of Arctic Discoveries. By A. W. Greely. Boston: Roberts Brothers. 1896. Pp. x, 257. Price $1.

General Greely presents, in this little work, a most acceptable account of work done by Arctic explorers. No subject at the present time is attracting more attention than Arctic and Antarctic exploration, and this abstract of everything that has been done up to date will, we are convinced, be highly acceptable. We are so inclined to forget what has passed and give undue credit to the present that, if for no other purpose, the book will be useful in showing how successful old time explorers were in reaching high latitudes and how very little has been gained in Arctic exploration. Numerous maps have been given to elucidate the text.

THE PROCESS YEAR BOOK. 1896. Penrose & Company, London, England. E. & H. T. Anthony & Company, New York. Pp. 160. Price $1.

The book is an annual comprehensive epitome of the progress that has been made during the past year in half tone process work and tricolor printing, explaining besides numerous other processes. It is copiously illustrated, some examples showing the remarkable progress that has been made as regards the use of screens and of dry plates. There are several interesting articles on practical subjects by experienced workers and a fund of useful information. That the delicacy and accuracy of the half tone process blocks is fast superseding the steel engraving of former days is very evident from the illustrations found in this book. There is a full exposition on the subject of tricolor printing, a process rapidly growing in favor, and one of interest to printers desirous of extending their business. The book is handsomely printed, and is an excellent example of a substantial English publication.

ANDERSON'S PHOTO-MECHANICAL PROCESSES AND GUIDE TO COLOR WORK. By MacFarlane Anderson. 1896. New York: E. & H. T. Anthony & Company. Pp. 182. Price $5.

A compact, well printed handbook containing explicit directions for the working of several different processes, including photo color printing work, with illustrations of apparatus, screens and specimens of different styles of half tone engravings, by a writer of experience and ability. It is a book that will be appreciated by all process workers and others desirous of acquiring a knowledge of the practical operations necessary in the manufacture of half tone process blocks.

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.

(6874) R. W. S. says: Can you send me paper describing method of obtaining the enamel or glazed effect obtained on photo. work? A. Apply the prints face down while wet to the smooth varnished side of a ferrotype plate, squeegeeing it by rolling a rubber roller over the back, having blotting paper between the print and paper. When dry it will have a high polish and drop off the sheet. The polish is called glace finish. To mount such prints without losing the gloss, make the following mounting solution: Soak 1 ounce refined gelatine in cold water for an hour, then drain off and squeeze out the water as much as possible; put the gelatine in a jelly pot and place the latter in a pan of hot water on the fire; when the gelatine has melted stir in slowly 2½ ounces pure alcohol, and bottle for use. This glue will keep indefinitely, and can be melted for use in a few minutes by standing the bottle in a basin of hot water. As it contains a very small percentage of water, it hardly affects the gloss of the prints and dries almost immediately.

(6875) G. L. writes: Will you please answer through your valuable paper or otherwise the following questions: 1. What is the essential difference in quality between magnet and annunciator wire? A. It is a difference in the insulation, the annunciator wire having paraffin in the insulation, while magnet wire has a thin insulation of cotton alone. 2. Will magnet wire wound on fields of dynamo be improved if paraffined? A. It is good practice to do so—shellacking is perhaps preferable. 3. What formula for electropoion fluid do you give, so as to give a Grenet battery 2 volts and 2½ amperes? A. One gallon sulphuric acid and three gallons of water are mixed. In a separate vessel six pounds potassium bichromate are dissolved in two gallons boiling water. Mix, and use only after cooling. There are many variations on the above. 4. If I increase the plates of a Grenet cell, what advantage would I get? A. It tends to increase amperage and to lower resistance. 5. What would be the effect if I run too high an amperage through a wire? A. It would melt the wire, often explosively. 6. What is the safe carrying capacity of No. 18 wire? Of No. 5 wire? A. 25 amperes and 52 amperes respectively. If exposed to the air, they will carry more than this. 7. Where can I get resin oil, or how can I make it? A. Apply to a dealer in chemicals. Try Queen & Company, Philadelphia. 8. Can you give address of some electrical college? A. Columbia University, New York. 9. Could a voltmeter be made by passing the current through a platinum wire, and would it expand in proportion to the current? A. A voltmeter can be so made. The Cardew voltmeter is an example. Your problems are incorrectly solved. The metal seems to be zinc—analysis would be needed to determine it.

(6876) F. G. D. says: Through your valuable column would you give me a practical method to manufacture brass signs with the acid process. Also a good filling for the same. A. Paint the sign with asphalt varnish, leaving the parts to be etched unpainted, raise a border around the outside, made of soft beeswax

or asphalt, to hold the acid. Use nitric acid diluted with five times the quantity of water. Pour the dilute acid on to the sign about ¼ inch deep. When the letters are cut deep enough, which must be found by trial, the acid may be poured off and the plate cleaned by heating and wiping, and finally with turpentine. For filling cement for signs: Melt together in a clean iron pot 2 parts each of best asphaltum and gutta percha; stir well together, and then add 1 part of gum shellac in fine powder. It may be used hot and mixed with smalt, vermilion, or other pigment, if desired.

(6877) J. L. L. says: I beg to ask you to be so kind as to send me here the number of your journal in which the bleaching of beeswax is treated. A. Pure white wax is obtained from the ordinary beeswax by exposure to the influence of the sun and weather. The wax is sliced into thin flakes and laid on sacking or coarse cloth, stretched on frames, resting on posts to raise them from the ground. The wax is turned over frequently, and occasionally sprinkled with soft water, if there be not dew and rain sufficient to moisten it. The wax should be bleached in about four weeks. If on breaking the flakes the wax still appears yellow inside, it is necessary to melt it again, and flake and expose it a second time or even oftener, before it becomes thoroughly bleached, the time required being mainly dependent upon the weather. There is a preliminary process, by which, it is claimed, much time is saved in the subsequent bleaching. This consists in passing melted wax and steam through long pipes, so as to expose the wax as much as possible to the action of the steam; thence into a pan heated by a steam bath, where it is stirred thoroughly with water and then allowed to settle. The whole operation is repeated a second and third time, and the wax is then in condition to be more readily bleached.

(6878) Dr. H. S. asks: Can you tell me how to precipitate the silver and gold in a cyanide solution of gold and silver? A. Precipitate your metals by a battery. You can use as electrode electric light carbons, uncoated or with coatings dissolved off by nitric acid.

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June 2, 1896,

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