

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

ELECTRIC RAILROAD.—**Ira Robbins**, Sheffield, Ala. This invention provides a special construction and arrangement of parts for roads which employ a continuous insulated underground conductor for the supply of the current to the motor on the car. Spring-actuated drums, in boxes a proper distance apart beneath the roadbed, each carry a given length of conducting wire connected at one end to a carrier to be drawn along by the car, and connected at the other end to the main conductor, laid the full length of the line, the carrier being disconnected from the car when its section of wire is unwound, when it is drawn back and wound up on the drum by the spring, the car at the same time entering upon another section, and taking its current from the next carrier.

SNOW REMOVING APPARATUS.—**James F. Seery**, Kingsbridge, N. Y. This apparatus for clearing railway tracks and roadbeds of snow is mounted on a platform car, and consists of rotary brushes arranged to sweep the snow upon heated pipes or into a heated chamber, the snow that is piled on the pipes being carried along by auxiliary brushes and distributed over lower pipes, or thrown against pipes located above the lower coils. The snow is thus converted into heated water, which is delivered upon the roadbed in a manner designed to dispose of any snow which may have been left by the brushes.

CAR COUPLING.—**Jeremiah W. Kirby**, Great Falls, Montana. This coupler is of the "hook and catch" class, and is designed to be simple and durable in construction, and easy and efficient in operation. The drawhead has longitudinal recesses in its upper face, separated by a partition, and a transverse rock shaft carries lifting arms resting in the recesses, a coupling hook being pivoted at the rear end of one of the recesses and a catch bar arranged in the other recess. The coupling hooks have beveled heads whereby the cars will be automatically coupled as they come together.

Mechanical Appliances.

BLAST FURNACE BELL AND HOPPER.—**Benjamin F. Conner**, Columbia, Pa. This is an improved mechanism of simple and durable construction adapted to evenly distribute the charging material in the furnace, or to throw portions of it to the center only or to the walls as desired. An upper or outer bell closes the mouth of the hopper, and this bell has a central opening closed by a lower or inner bell, a counterbalanced beam above the hopper supporting the outer bell, while a lever connected with the inner bell is connected with the piston of a steam cylinder, an adjustable arm on the piston rod being adapted to engage the beam, the mechanism supporting and operating the bells independently of each other.

DRUM SHIFTER FOR HOISTS.—**Jefferson U. Elwood**, McKeesport, Pa. This device is adapted to slide the hoisting drum on the main driving shaft of a hoisting machine, to engage the drum with a friction pulley or other device for rotating it. It consists of a frame fitted to slide and having end plates, one of which engages the drum while the other has pins extending from its face and engaged by cam grooves in the face of a collar mounted to turn. The device is simple and durable, does not weaken the shaft in any way, and permits the operator to shift the collar either to the right or left to engage the drum with the friction pulley.

Miscellaneous.

FRUIT PICKER.—**John H. Woodward**, Rochester, N. Y. This is a simple and convenient device designed especially to facilitate the picking of grapes, by means of which the clusters may be readily separated from the vine, and will not be dropped, but will be held until they can be deposited in a suitable receptacle. It consists of a handle bar having a pointed end, a spring-pressed knife sliding on the upper side of the bar and a spring-pressed plate on the under side of the bar, the plate forming a stem clamp adapted to operate in unison with the knife.

PNEUMATIC GAME BOARD.—**Edwin L. McConaughy**, Philadelphia, Pa. This board, which is designed to be held in one hand in playing, is practically triangular in shape, and has a circular central depression, the level surface of the board sloping upward to the edge of the depression. Around the center are shallow cupped depressions, adapted to form resting places for a light ball of cork or other material used in playing the game these depressions being connected by channels cut to form a track. In each of the depressions is a perforation extending obliquely downward through the board, and the ball is propelled by a jet of air from a simple form of bulb or other jet blower, the game requiring that the force of the jet shall be just sufficient to move the ball from one station to another till the central station is reached.

PNEUMATIC BILLIARD TABLE.—This is another patented invention of the same inventor, providing a game board with pockets or cavities consisting of cupped depressions formed in its surface, while the balls, of cork or similar material, colored as may be desired, are propelled by air jets from a jet blower. The blower is formed with a small nozzle adapted to fit in one of a series of apertures formed in the cushion wall around the board, and the game consists in propelling the balls to obtain the highest number of pockets with a certain number of air puffs.

METAL LATHING.—**Charles H. Curtis**, Niles, Ohio. This lathing is constructed of sheet metal having a series of openings running laterally and obliquely through it, leaving oppositely arranged hoods on reverse sides of the sheet, whereby a large body of mortar connects the outer surface portion of the plaster with the clinching portion, and but a small portion will pass through and fall behind the lath. The construction is designed to give special stiffness to the lath, on account of the corrugations being reversed, while the lath has superior locking qualities and is easily handled without cutting the hands, a sheet being

adapted for putting on in any position, having no up or down, right or left, or front or back. The inventor has associated himself with the Niles Iron and Steel Roofing Co., of Niles, Ohio, who will manufacture this lath in addition to their line of roofing, corrugated and V-crimp iron, etc.

DUMPING WAGON.—**Thomas Hill**, Jersey City, N. J. Two patents have been granted this inventor for improved dumping wagons. In one of these wagons, on each of the side pieces of the wagon frame is secured a supporting rail of novel shape, the rail having a front and rear downward incline, with a higher central level portion in which are two recesses or sockets. On each side of the body of the wagon are two straps, each carrying a roller which rests and rides on the rail, their position being such that, when the body is at rest on a level, the forward rollers will be at the bottom of the front incline of the side rails, while the other rollers will rest in the sockets on the higher level of the rail, but when the body is pushed back the rear rollers roll down the rear incline and the forward rollers roll up and become seated in the sockets of the central higher portion of the side rails, whereby the wagon body is tilted rearward. According to the construction provided for by the other patent, the frame of the wagon curves downward at its back end, and on each side is a plate or rail forming a track, having a projection or stop at the rear end of its curved or inclined portion. On each side of the wagon body, somewhat nearer the front than the rear, is a strap to which is pivoted a roller carrier or carriage, the rollers running upon the side rails and carrying the body, which is tilted for dumping by being pushed backward till the rollers are arrested by the stop at the lower back end of the curved or inclined portions of the rails.

PLATFORM WAGON.—This improvement is covered by another patent to the same inventor, for a wagon more especially adapted for carrying heavy goods, the object being to lessen the cost of construction of such wagons, while making them lighter and better fitted to withstand the roughest usage. The main frame of the platform consists of two independent sections of angle iron, one of which, having opposite upper and lower flanges, forms the front and sides, and the other forms the back, which is bolted to the under side of the former. There is boarding in and between the flanges of the angle iron sections forming the front and sides, and re-enforcing strips within the channel between the boarding and the upper flange.

DISPLAY STAND.—**Ernest A. G. Kurth**, New York City. This stand can be readily taken apart and packed in a small space, and quickly built up, and is preferably adapted for the display of toys and other small articles, being also suitable for use as an ornamental center piece for a table. In the center of a circular base a polished brass disk is located, spanned by a yoke, and in apertures arranged in a circle around the base are inserted rods attached at their upper ends to a central connecting sleeve, and forming a cage-like figure, in which is a central vertical shaft, the lower pivot point of which turns on the polished disk. The shaft extends above the cage, where it has a hub with apertures in which are inserted curved arms adapted to receive articles for display, and the shaft also carries a fan wheel adapted to be rotated by currents of warm air ascending from lighted candles held in light rod brackets on the sides of the cage, whereby a portion of the stand will be kept constantly revolving.

KNIFE GUARD.—**Charles S. Wright**, Skaneateles, N. Y. This is a device especially designed for the use of retail dealers in cutting cheese. A circular plate or table, of sufficient size to hold the cheese, is pivoted on a suitable support, and centrally over the plate is secured an inverted U-shaped frame, adapted to extend centrally over the cheese. This frame is centrally connected with a bent and slotted knife guard extending at right angles from it, and having a suitable foot by which it is secured to the base. When the cheese is in position on the central plate it may be easily brought into position to cut a slice of any desired size, and when the cut is made the knife is guided at both ends to cut evenly through the cheese, so that there will be no crumbling or waste.

CANE JUICE STRAINER.—**Walter C. Hazlip**, Brusly Landing, La. This strainer may be operated by hand or power to effectually separate fragments of sugar cane and other refuse from the cane juice as it flows from the crushing rolls of a sugar mill. It consists essentially of an oblong juice-receiving box, on which is mounted a main strainer frame apertured on one side for the discharge of surplus juice, a reciprocating rake being actuated in the strainer, while a screen frame receives the overflow, and there is another screen frame lower down in the box.

WIRE STRETCHER.—**John W. Peterson**, Slater, Iowa. This is a simple and inexpensive device for stretching barbed or other wire, and facilitate the proper fastening of the wire to the fence posts. It consists of a bar having a fixed head at one end and a clamp and a fixed head at the other end, a lever and a hook sliding on the bar, with another clamp working oppositely to that of the fixed head, and other novel features, whereby the wire may be quickly and thoroughly stretched and held for attachment to the post, the device being also adapted for splicing wire.

CIGAR BOX TRIMMING MACHINE.—**Henry Leiman**, New York City. In this machine saw shafts are journaled in upper and lower adjustable brackets, the saws mounted on the shafts having lateral and vertical inclinations, in combination with a gauge bar, carrier, and other novel features, whereby the operation of trimming cigar boxes will be almost completely automatic, the mechanism of such machines being so simplified that the services of two unskilled laborers will be all the help required, their work being to feed the boxes to the machine, from which the box passes having all of its projecting edges made flush with its top, bottom and sides.

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.

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.

For Sale.—One 15 H. P. double cylinder, double drum, friction horizontal hoisting engine, with boiler and fixtures. New. Address W. P. Davis, Rochester, N. Y.

Patent Dealers. Street & Fishburn, Dallas, Texas.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

For best hoisting engine. J. S. Mundy, Newark, N. J.

Wanted.—Reliable firm to manufacture stamped metal novelty for cash. Address Box 1001, Bay City, Mich.

The price of the Brown & Sharpe No. 3 Universal Cutter and Reamer Grinder is \$200. Former price, \$260. Brown & Sharpe Mfg. Co., Providence, R. I.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

"How to Keep Boilers Clean." Send your address for free 96 p. book. Jas. C. Hotchkiss, 112 Liberty St., N. Y.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Laight and Canal Sts., New York.

Centrifugal Pumps for paper and pulp mills. Irrigating and sand pumping plants. Irvin Van Wie, Syracuse, N. Y.

Rubber Belting, all sizes, 7 1/2 per cent from regular list. All kinds of rubber goods at low prices. John W. Buckley, 156 South Street, New York.

Wanted.—A copper vacuum pan, 5 to 8 feet diameter. Address, giving full particulars and lowest price, Cash, box 773, New York.

For Sale.—All rights for tested stairs climbing wheel chair for people who cannot walk. Patent allowed. Address J. B. Bray, Waverly, N. Y.

Guild & Garrison, Brooklyn, N. Y., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps, acid blowers, filter press pumps, etc.

Split Pulleys at Low prices, and of same strength and appearance as Whole Pulleys. Yocum & Son's Shafting Works, Drinker St., Philadelphia, Pa.

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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. **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.

(3497) **W. F. E. asks:** Can a practical and temporary storer or preserver of power be made with compressed air? If so, is there any limit to the amount of force that can be thus stored and used again at will? Are there any successful working appliances on this cold-compressed air plan? At what, and where? If not practical, why? Also are there any practical means of storing for a short time great quantities of mechanically developed electricity? A. Air under pressure can be stored for future use and is used in this way for mine haulage. It is limited to the size of storage tanks. Electricity is also, practically speaking, stored in the storage battery system. Has been described and illustrated in SCIENTIFIC AMERICAN and SUPPLEMENT.

(3498) **F. J. S. asks:** What pressure will a two by three foot upright boiler safely stand, one-half inch iron? What horse power and what size propeller will a boat five feet by twelve require to make a speed of four miles an hour? At what speed should a screw propeller (12 inch) be run for the best results? A. Small engines should have 22 cubic inches of cylinder space to a nominal horse power. Boilers should have not less than 14 square feet of heating surface to a horse power. Your boiler should be good for 100 pounds steam pressure. The boat requires 2 horse power engine and boiler. 12 inch screw should run 300 revolutions per minute.

(3499) **S. A. K. asks:** Can you tell me how to melt pure rubber and how to harden it again? A. You can soften rubber by heat and then it can be pressed into shape. It cannot be melted and hardened again. We recommend "Rubber Hand Stamps and the Manipulation of India Rubber," \$1 by mail.

(3500) **J. A. S.**—For violin varnish.—Dissolve 12 parts sandarac gum, 6 parts shellac, 6 parts mastic, 3 parts elemi in 150 parts 95 per cent alcohol, in a bottle heated in a water bath. Then add 6 parts Venice turpentine. Stir and allow the contents to settle in the corked bottle. Then pour off the clear varnish for use.

(3501) **W. P. asks:** Can you inform me where I can find a magnetic needle for finding gold or silver deposits, and if there is such a thing? If so, the probable cost of one? A. There is no needle or other device for finding gold and silver. The ordinary dipping magnetic needle is used to indicate bodies of iron ore in the ground near the surface.

(3502) **F. F. S. asks** what the laundry people use to give the collars, shirts, etc., the gloss that is on them. A. 1. Starch, 1 ounce; paraffine, about 3 drachms; white sugar, tablespoonful; table salt, table-

spoonful; water q. s. Rub up the starch with soft water into a thick smooth paste. Add nearly or quite a pint of boiling water, with the salt and sugar dissolved in it, and having dropped in the paraffin, boil for at least half an hour, stirring to prevent burning. Strain the starch and use while hot. Sufficient bluing may be added to the water, previous to the boiling, to overcome the yellowish cast of the starch, if necessary. Spermaceti may be used in place of paraffin. Starched linen can only be properly finished by hard pressure applied to the iron. 2. Glosed shirt bosoms.—Take 2 ounces of fine white gum arabic powder, put it in a pitcher and pour on a pint or more of water, and then, having covered it, let it stand all night. In the morning, pour it carefully from the dregs into a clean bottle, cork and keep it for use. A teaspoonful of gum water stirred in a pint of starch, made in the usual way, will give to lawns, white or printed, a look of newness, when nothing else can restore them, after they have been washed.

(3503) **G. B. asks** how to color leather black. A. Patent leather black.—Mix together 1/2 pound each of ivory black, purified lampblack and pulverized indigo, 3 ounces dissolved gum arabic, 4 ounces brown sugar and 1/2 ounce glue, dissolved in 1 pint water; heat the whole to boil over a slow fire, then remove and stir until cool, and roll into balls. 2. Vinegar black.—This is the most simple and useful coloring liquid for the trimming shop for blacking leather straps. To make the simplest, and without doubt the best, procure shavings from an iron turner, and cover them with pure cider vinegar, heat up and set aside for a week or two, then heat again and set in a cool place for two weeks, pour off the vinegar, allow it to stand for a few days, drain off and cork up in bottles. This will keep a long time, and while producing a deep black on leather, it will not stain the hands. 3. 4 oz ounces bruised gallnuts and 17 1/2 ounces green nushells are boiled in 25/25 ounces rainwater; when the mixture has boiled one hour; the liquor is strained through a cloth; the leather to be colored is first stained with the solution of iron filings, common salt and vinegar, as given under purple, before the above decoction is applied.—From "Scientific American Cyclopaedia of Receipts, Notes and Queries." In press.

(3504) **A. J. B. asks** for a harmless hair dye. A. The following is a receipt for hair dyes taken from the "Scientific American Cyclopaedia of Receipts, Notes and Queries." In press. Walnut skins beaten to a pulp, 4 ounces; rectified alcohol, 16 ounces. For a black dye the following is excellent. Iron sulphate, 10 grains; glycerin, 1 ounce; water, 1 pint. The hair must be thoroughly washed with this, dried and brushed once daily for three days, then the following should be applied on a small tooth comb, but it should not be allowed to touch the skin if the other preparation has done so, as a temporary stain would result. Gallic acid, 4 grains; tannic acid, 4 grains; water 1 1/2 ounces. After the application of the first preparation the hair should be allowed to dry, and then be brushed. Subsequently both formulas may be used once daily, at an interval of an hour or so, until a black color is produced.

(3505) **E. K. asks** for the general method of tanning fur skins. A. After cutting off the useless parts, and softening the skins by soaking in warm water, take away the fatty part from the inside, after which soak the skins in tepid water for two hours. Mix equal parts of borax, saltpeter, and Glauber salts (sulphate of soda) in the proportion of about 1/2 ounce of each, for each skin, with water q. s. to make a thin paste. Spread with a brush over the inside of the skin, applying more on the thicker parts than on the thinner. Double the skin together, flesh side inward, and place in a cool place. After standing twenty-four hours wash the skin clean, and apply the following mixture in the same manner as before: 1 ounce sal soda, 1/2 ounce borax, 2 ounces hard white soap, melted slowly together without being allowed to boil; fold together again and put in a warm place 24 hours. After this dissolve 3 ounces alum, 7 ounces salt, 1 1/2 ounces saleratus, in sufficient hot rain water to saturate the skin; when cool enough not to scald the hands, soak the skin in it for 12 hours, wring out and hang up to dry. When dry, repeat the soaking and drying 2 or 3 times, till the skin is sufficiently soft. Lastly, smooth the inside with fine sand paper and pumice stone.—From "Scientific American Cyclopaedia of Receipts, Notes and Queries." In press; ready December 1, 1891.

(3506) **A. L. N. writes:** Please inform me through your valuable paper the difference between open and closed circuits, also the difference in battery for open and closed circuits? A. In an open circuit the current flows over the wire only when the circuit is closed temporarily, as in ringing a bell or in operating a telegraph sounder, whereas in a closed circuit the current flows continuously over the wire except in the intervals produced in the regular signaling or telegraphing. For an open circuit, a battery which will not deteriorate under the conditions of use is employed, such as the Leclanche and many of its modifications. For a closed circuit a battery is employed which will maintain a continuous current so long as the battery is supplied with materials and kept in order. The gravity battery is the most generally used on circuits of this class.

(3507) **J. F. C. asks:** Give a practical receipt for keeping beef from spoiling for a long time in warm weather, without drying it. A. Canning and cold storage are the only means of preserving meat that we can recommend. The use of preservatives, such as salicylic acid, sulphites, boric acid, etc., is to be deprecated. The short article you refer to is not very accurate, but presents rather the popular aspect of the case.

(3508) **C. M. H. asks:** 1. Give rule for obtaining any desired speed with and without counter shaft. A. Rules for speed.—Multiply the diameter of the driving pulley by its speed and divide the product by the diameter of the driven pulley for its speed, or the required speed for the diameter. If a counter shaft is used, proceed in the same manner for its speed, and use its driving pulley as above for the final speed, or size of last pulley. 2. Give rule for obtaining any desired speed by gears. A. For gearing use the principle as above stated, but measure the gears by the number