

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

CAR COUPLING.—Edward P. Eastwick, Jr., New York City. Two patents have been granted this inventor on an improved coupling device of the vertical plane type, in which the drawbar is provided with an interior buffing plate or surface in the line of buffing force, and adapted to be engaged by a knuckle pivoted in the drawhead, the inner end of which is in engagement with the buffing surface when the knuckle is in its coupled position. The movable buffing plate or surface is provided with means of cushioning, whereby the force of the buffing strain will be mitigated and the shock to the drawbar and the car will be lessened. A headless locking pin is also provided, which will drop to its seat in the drawhead, no matter whether or not the mouth of the opening in which the pin slides be surrounded by snow or ice. An arrangement of openings is provided in the side and end of the drawbar shank through which the tail bolt is passed to obtain proper position and adjustment; and to economize in metal and facilitate annealing in the construction of the knuckle, it has a vertical opening extending from top to bottom, and located adjacent to its pivot point.

CAR COUPLING.—William A. Mayhall, Gloster, Miss. This coupling is designed to be simple, durable, and inexpensive, and capable of coupling with an opposed higher or lower link coupler. The coupling pin when in uncoupled position is held elevated by a spring-pressed latch, and the coupling is automatically effected by the drawheads being brought sufficiently close together to operate the latches, releasing the pin, and through the assistance of a spring-controlled rock shaft connected with it. An operating lever is connected with the rock shaft at the side of the car, the lever hanging down and being at all times out of the way, and the connection of the shaft with the coupling pin is such that the drawhead may move laterally without affecting the connection.

SPARK ARRESTER AND DRAUGHT REGULATOR.—Walter M. Letts, Sedalia, Mo. In the smoke box of the locomotive, in its upper portion, an imperforate partition is arranged to embrace the steam draught nozzle, while a deflector flue is secured to the flue sheet of the boiler and extends forward above the flues to a point adjacent to the partition, the attachments being so constructed and arranged that the sparks and cinders will be retained in the smoke box, and the locomotive may be given any necessary amount of draught.

Miscellaneous.

FORE HEARTH.—Adam J. Schumacher, Butte City, Montana. This invention relates to fore hearths for smelting furnaces, for use in connection with a discharge trough patented by the same inventor. It consists of an inclined tank with outlet spouts in the upper edges of its ends, a lining of refractory material, a transverse water partition dividing the tank into two compartments, and there being a continuous discharge of slag and bullion through the spouts, there being no need of ladles to dip out the bullion. The construction is simple and durable, and the slag is completely separated from the molten metal, there being a formation of a cover from the slag for the molten metal contained in the device.

NEWSPAPER FOLDING MACHINE.—Cyrus N. Walls, Taylorville, Ill. This invention provides a feeding attachment adapted to deliver newspapers to the machine as they come from the press. It consists of a series of movable carrying tapes extending over pulleys at one end of the slotted folding table and over large wheels at its opposite end, a series of diagonal guide tapes having their lower ends carried by rollers arranged within the loops of the carrying tapes. The feeder may be adapted to any kind of folder, and will carry the papers sideways as they come from the press and place them in position to be folded with the aid of any gripping mechanism or any hand-operated machinery.

DUMPING APPARATUS.—Philip Imig, Minier, Ill. This improvement relates more especially to apparatus for use in unloading ear corn or other grain into a crib, providing therefor a track adapted to support a wagon, a movable inclined platform being mounted on the track, and a chute to fit upon the track behind and under the wagon box. It is an extremely cheap and convenient apparatus for application to any grain crib, by means of which a farmer may unhitch his team, run his grain wagon over the crib, and quickly dump the load into any desired part of the crib.

PHOTOGRAPHIC SHUTTER.—Julius R. Albrecht and Emil Ortmann, New York City. A lens shutter and connected operating mechanism are provided by this invention, the shutter being easily regulated and conveniently applied to lens tubes of different sizes, and being adjustable for use in making instantaneous photographs or for time exposures. It can be operated with the greatest rapidity and will show the largest possible opening for a shutter of its size, being operated by the simple pressure of an air bulb.

AUTOMATIC ELECTRIC TIME CHECK.—Charles K. Jardine, Georgetown, British Guiana. This is a device for receiving the checks or tickets of employees in manufacturing establishments, offices, etc., and consists in the combination with a compartment drawer of an electrically operated deflector, for guiding the tickets into one or the other of the compartments of the drawer, according to whether the ticket is dropped into the apparatus early or late. Combined with the deflecting apparatus is an indicating plate to display the words "early" or "late," so that it may be seen by the employee when the ticket is dropped.

PROPORTIONAL FLUID METER.—Donald McDonald, Louisville, Ky. This is an improvement in meters adapted for measuring water or other liquids as well as gas, and in this meter both the main conductor and the small conductor that leads off to the meter are provided with partitions or diaphragms having perforations through which the fluid passes. The diaphragms are differential, and a pressure regulator and liquid gauge are interposed between and

connected with the meter pipe and another pipe of like diameter, the latter leading off from the service pipe on the outflow side of its diaphragm.

CHECK BIT.—Lester C. Swift, Plano, Ill. This is a double check bit, comprising upper and lower bits and a strip having an eye loosely embracing the upper bit and extending therefrom across the lower bit and rigidly secured thereto, the two bits being connected so as to be held in a fixed position in relation to each other. The bit is adapted to prevent the horse from hogging on the check, and also to prevent tongue lolling and stumbling.

MEASURING REEL.—Herbert L. Stull, Stoddartsville, Pa. This is a device especially adapted for measuring cloth in the web and automatically registering the length of cloth measured. It comprises a case in which is mounted a spool having a measuring cord, an indicating wheel driven from the spool, a dial parallel with the wheel having an aperture through which the numbers on the wheel are successively visible, its face having a spiral line with a scale and an indicating hand. A spring-propelled shaft parallel with the axis of the spool is geared to it by a train of multiplying gearing for rewinding the spool.

TAIL PIECE FOR STRINGED INSTRUMENTS.—Charles J. Cook, Montreal, Canada. This improvement is adapted for use with violins, guitars, banjos, and all kinds of stringed instruments, and consists of a tail piece provided with independent cam levers for pinching or holding the tail ends of the strings of the instrument, instead of securing them by tying knots or otherwise.

SKATE.—Ubel Wierda, Winsum, Netherlands. This improvement provides a detachable blade which is preferably made reversible and formed with two different styles of running edges, and also provides a novel means of holding the blade to the skate body or foot plate, whereby blades suitable for all styles of skating and for hard or soft ice may be interchangeably employed in connection with one common body, and the latter may be fashioned to suit individual tastes as to the means of securing the skate on the shoe or adjusting the blade.

FASTENING DEVICE.—Charles Liebe, New York City. This is an improvement on a former patented invention of the same inventor, providing a fastening device which may be used to attach together two pieces of furniture, to fasten a door, or to fasten adjacent pieces of almost any rigid substance. It consists of a face plate having a slot and mortise with oppositely inclined end walls, a bed plate having a swinging latch entering the face plate slot, while a locking cam lever is pivoted above and swings upon the latch.

ICE CAN.—Charles E. Struck (address Struck & Fischer, 649 and 651 West 42d Street, New York City). This is an ice-making can or vessel having its bottom and two of its adjacent sides jacketed or insulated and its two remaining adjacent sides non-jacketed or non-insulated, whereby the water will be frozen gradually and mainly from one side, the refrigeration being checked on the other side. By this means the impurities contained in the water are prevented from becoming fixed in the main body of the ice and are driven over to the warmest surfaces or corners, where the ice containing such impurities may be afterward readily broken off, leaving a block of pure or crystal ice.

CLOTHES LINE.—David F. Covert, Rapid City, South Dakota. This is a wire clothes line having holders integral therewith for securing the clothes on the line. It is composed of a series of links bent at their ends to form opposing spring loops over the main body part, and terminating in coils adapted to shut over or receive within them the main body part of the links, the line being readily shut up close when not required for use by sliding or folding the links one upon or within the other. The line may be easily lengthened or shortened by adding or removing links, each link being readily engaged by simply lifting the spring loops of the links.

WHIRLIGIG.—Alfred Moe, Jersey City, N. J. This is an advertising device comprising a windmill carrying a series of figures, with means for imparting a rotary movement to the figures independent of the movement of the wheel. The construction is very simple, but the device is capable of imparting unique and apparently erratic movements to various figures to attract attention, and is also adapted for use as a toy.

GAME BOARD.—George Stackhouse, Pittsburg, Pa. This is a toy in imitation of a ten pin alley with an automaton arranged to bowl, the bowling alley having suitable troughs around its sides and ends for receiving the balls, a tilting returning trough carrying the balls to the point of starting, while an automaton with a swinging arm is connected with the tilting trough and an inclined plane receives and projects the ball. Combined with the alley is a wheel of fortune to receive and project the ball.

DESIGN FOR A HINGE.—Sidney L. Stiles, Wateka, Ill. The leading feature of this design consists in the curve or bend and the edge contour of the leaf.

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.

GEOLOGICAL SURVEY OF NEW JERSEY. Annual Report of the State Geologist for the Year 1891. Trenton, N. J. 1892. Pp. 270.

The drift or Pleistocene formations and the economic geology of the State are the main topics of the geological section of the 1891 report. The glacial deposits, moraines and extra morainic formations are considered at length, and characteristic illustrations are given, in economical geology. The oak and pine land belts are described. Water supply and water power, the latter utilized and unutilized, artesian wells, Passaic River drainage (the works at Little Falls), iron mines and mineral statistics are the principal subjects treated. A useful feature of the report is a list of the publications

of the survey, including Professor Cook's unrivaled series of topographical maps. The maps are supplied at 25 cents per sheet—a strictly nominal price, when the value and accuracy of the series is considered. There are now twenty sheets, each twenty-seven by thirty-seven inches.

BATEAUX ET NAVIRES. By Le Marquis de Folin. Paris: Librairie J. B. Bailliere et Fils. 1892. Pp. viii, 328. Price 75 cents.

This work, with 132 pretty little sketchy illustrations, treats principally of the smaller boats of all nations, in which craft indigenous peculiarities are most largely developed. We note some omissions, however, the United States craft being excluded in great part, while the shores of the European continent are largely drawn on for subjects.

ANLEITUNG ZU DEN LABORATORIUMS-ARBEITEN. By Alexander Lainer. 243 illustrations. 99 pages. Price 3 marks. Halle a. S., Germany: Wilhelm Knapp, publisher.

The handsomely illustrated little book gives full instructions for performing laboratory work, and is more specially intended for the use of professional and amateur photographers, to enable them to carry out experiments and other laboratory work in the most effective manner and with simple, inexpensive apparatus.

WITH EDISON AT SCHENECTADY is the title of a unique volume of photographs illustrating the plant of the general Electric Company at Schenectady. There is portrayed in a graphic manner the interiors of various machine shops. Shows groups of employes at work, and, in fact, shows in as clear a way as possible how the electric machinery is constructed and handled. A feature of the book is the frontispiece. Here are portraits with their autographs of Edison, Insull, Kruesi, Turner, and other Schenectady officials. The book is withal artistic, and will be of interest to any one interested in electricity. The photographs are of the highest order and reflect great credit upon the compiler and publisher, Mr. W. H. Butler, of Schenectady, N. Y., to whom subscriptions should be sent. The price is \$6 for half-seal binding and \$10 for all-seal leather and gold edge cords.

SCIENTIFIC AMERICAN BUILDING EDITION.

JUNE NUMBER.—(No. 80.)

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1. Handsome plate in colors of a residence recently erected at Plainfield, N. J. Perspective views, floor plans, etc. Oscar S. Teale, architect. Cost about \$12,000. An excellent design.
2. Plate in colors of a cottage erected at Bensonhurst, Long Island, N. Y. Perspective elevations and floor plans. Cost \$3,450 complete. P. F. Higgs, architect, New York.
3. Engravings and floor plans of the Crescent Block of six houses erected on Golden Hill, at Bridgeport, Conn. An excellent design. Total cost of six houses \$55,000 complete. Messrs. Longstaff & Hurd, architects, Bridgeport, Conn.
4. A handsome residence at Babylon, Long Island, N. Y., recently erected for F. H. Kalbfleisch, Esq. Cost \$17,500 complete. Two perspective views and floor plans. H. J. Hardenberg, New York, architect.
5. A school house at Upper Montclair, N. J. Perspective view and ground plans. Cost \$12,300 complete, including heating and ventilating apparatus. Geo. W. Da Cunha, architect, New York.
6. Perspective views of several very attractive dwellings located near New York.
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8. The St. James' Episcopal Church at Upper Montclair, N. J. A picturesque design. Cost \$8,000 complete. Messrs. Lamb & Rich, architects, New York. Perspective view and ground plan.
9. A residence at Ludlow, N. Y. Perspective and floor plans. Cost \$8,500 complete.
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11. Proposed railway tower for the Columbian Exposition at Chicago.
12. Sketch of the new City Hall, Philadelphia. — A magnificent structure.
13. Miscellaneous contents: Cork pavement.—Best treatment of hardwood floors.—The twin staircase, illustrated.—The electric stair climber, illustrated.—The sick room temperature.—Stair builder's goods, illustrated.—Ornamental hardwood floors.—Large winding partition doors.—The "Aberene" laundry tub.—House heating and ventilation.—Nolan's hot water and steam heater, illustrated.—The crushing resistance of bricks.—An excellent motor, illustrated.—A successful hot water heater, illustrated.—The lacquer tree.—A self-retaining dumb waiter, illustrated.—Architectural wood turning, illustrated.

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Notes & Queries

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(4402) P. B. asks: What are the methods of grounding rails of a single-wire trolley road? A. The rails of a trolley road are grounded at intervals by means of wires extending downward from the track to large earth plates. An uninsulated return wire laid in the earth is sometimes used.

(4403) F. W. says: The firm I am with are desirous of drawing water from a creek 600 feet distant from factory, and up an elevation of 24 feet; is it practicable? If so, what size pump will they require to pump say 400 barrels, or 16,000 gallons, in a working day of 10 hours? Would it not be much better to lower the pump in a well say 8 or 10 feet? A. You can draw the water 24 feet with great difficulty, from the separation of the air from the water and the large clearance usual in pumps. Instead of your proposed well, we recommend the raising of your supply level as much as possible by a ditch from up stream, or by sinking the upper part of the suction pipe 5 feet or more, and also the pump to the same level, when there will be no difficulty in drawing a full supply. The suction pipe should have a tight foot valve and be charged with water to start with, and have easy means of recharging. You will require a pump with 8 inch water cylinder running at the piston speed of 80 feet per minute with a 5 inch suction pipe. Size of steam cylinder to meet the pressure pumped against.

(4404) I. M. M. asks: 1. How long does it take for there to be an entirely new brain formed, also body? We mean an entire change of every atom in both brain and body. If physiologists have ever ascertained the length of time, I have not seen it. A.

About seven years has been claimed for an entire change in the material of the human body. 2. Would it do to use sheet iron instead of plastering in a dwelling house? Our idea would be to cover it with two or three thicknesses of paper. A. Sheet iron will make a poor finish for the interior of a house. We cannot recommend it. 3. What power would be required to lift 160 pounds, using an 8 inch and a 4 inch drum on the same shaft, so that the rope winds up on the large drum while it unwinds from the small? I am an invalid and am trying to invent an apparatus to lift me. A. It requires 80 pounds at periphery of the larger drum. 4. How many pounds will a 1/4 inch, also a 1/2 inch rope lift without breaking? A. The breaking strain of a rope 1/4 inch diameter is very uncertain, from the value of material, and make 1/4 inch from 75 to 100 pounds, 1/2 inch from 300 to 400 pounds.

(4405) N. W. asks: 1. What use is made of old steel rails? Can they be rerolled into good new rails? I asked this question about three months ago, but no reply. A. There is a good market for old steel rails for rerolling and for forgings for heavy machinery. 2. Is there any good coking coal or anthracite coal in sufficient quantity for extensive mining purposes in the United States west of the Mississippi River? If so, where located? A. Good coking coal is found in Missouri, Kansas, Indian Territory, Colorado, New Mexico, Montana, and Washington. The coke manufacture is fast increasing in those States. There are small beds of anthracite in Colorado and Arkansas.

(4406) C. W. N. writes: Tell F. W. S. No. 4337 that if he will take an ordinary three-cornered file and grind it to a point, keeping the edges sharp a little way back of the point, he can bore a hole in plate glass with it by simply turning it with a brace and lubricating it with turpentine. Operate as though about to bore a hole in a bit of wood. I have a single gas burner that reaches out into the room from the wall and have made a queer discovery while playing with it. When turning off the gas very slowly the other evening, and when the flame had almost disappeared, only a thin line of blue remaining, it commenced to buzz like a big fly. What was the cause of the noise? Ask your readers the significance of the peculiar shape of the prow of the gondola. A. The gas burner produced what is known as the musical flame. The sound is due to a series of explosions occurring regularly.

(4407) O. S. J. asks: Are there any cheap substances which might be used for bleaching bagging, which do not require to be washed out afterward? Permanganate of potassium is said to be used, and the color of the manganese oxide discharged by means of sulphurous acid. A. Gaseous chlorine largely diluted with air might do the bleaching. It should be followed by treatment with gaseous sulphurous oxide. 2. Are there any cheap preparations besides rubber and gutta-percha which when applied to bagging would make it waterproof and at the same time flexible? A. To make it really waterproof under the conditions stated, India rubber is about the only effectual application. 3. I should also like to know of a substance like the above, but white. A. Palmitate of aluminum has been recommended for waterproofing, but seems to have met but limited application.

(4408) E. R. J. asks: By what formula may I find quantitative analysis of a silver 25 cent piece, knowing the qualitative contents of the alloy, without the slightest injury, or altering of, by cutting or scratching the silver piece? I worked out a very simple specific gravity and algebraic formula, but lost it years ago. A. If only two constituents and of known specific gravity are in the coin, proceed as follows: Weigh the coin in air and then in water. Let a = weight in air in grammes. b = " " water " c = specific gravity of silver. d = " " copper. x = weight of silver in coin. Then we have x = (aca-dcb-ac) / (d-c)

(4409) E. E. L. asks: What can I add to crude coal tar naphtha that will effectually disguise its odor or will deodorize it, and will not be expensive? A. Deodorization will be difficult. One method is to distill, rejecting the first and last portions of the distillate. Another is to treat it with a mixture of oil of vitriol and potassium bichromate, decant, wash and distill if necessary.

(4410) J. P. says: Please let me know what is the velocity of light and the velocity of electricity? Which travels faster, as I would like to know on account of a dispute which arose on that subject? Could you let me know how it is proved, and by whose theory? A. Light has a velocity of about 187,000 miles per second. Electricity is supposed to be a phase of ether disturbance and its velocity as a current is the same as that of light. It however takes some time for a current to attain full strength at the end of a length of conductor, and hence arise the different estimates of its so-called velocity. See Ganot's "Physics," \$5 mailed, for experiments and theory.

(4411) W. D. H. asks how draughtsmen make white letters on black ground. A. Take flake white and mix with water to the thickness of ink. Use with a pen.

(4412) A. L. W. asks: Which will bear the most weight, a hollow bar of round iron or a solid bar, each of the same size in diameter? If the hollow iron is the strongest, why is such the fact? A. The solid bar of iron is the strongest and will bear the greatest load. Pipe is only strongest for equal weights. The additional size required for equal weight gives a pipe greater stiffness and stability for almost any use.

(4413) I. L. W. says: I desire to obtain a rule which is simple and practical, without recourse to trigonometry, for the measurement of the pitch of a propeller wheel of the screw pattern. I am unable to find two rules alike, or two persons who use like rules, or who obtain exactly the same results in similar cases. A. To measure the pitch of a propeller screw approximately and near enough for all practicable purposes

for small boats, take a carpenter's rule and lay one leg on the outer edge of the propeller blade and move the other leg parallel with the shaft and with this angle strike off two lines which shall represent the angle of the blade. Then multiply the diameter of the screw by 3.1416, which will be the circumference of the revolving blades. With this distance, measure at right angles to the line representing the shaft, to meet the angular line representing the track of the blade. The distance from this line along a line of the axis to the angular intersection first drawn is the pitch of the screw.

(4414) W. L. K. asks: Is there a way to print in bronze, or gold gilt direct, without having to use a brush or bronzing pad? I see a great deal of such work which looks as though it had been printed direct from type or rule. What puzzles me the most is to know how to print badges and do a nice job. A. We know of no way to print in bronze or gold gilt without using the bronzing pad. Most badges are printed in gold leaf on a bookbinder's press. You can make a fair-looking job by printing with a good quality of gold ink.

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INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted May 31, 1892, AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions and their patent numbers, including items like 'Addressing machine, G. S. Couch', 'Alarm, automatic, burglar alarm', 'Basket, bottle, C. A. Knight', etc.

Table listing inventions and their patent numbers, including items like 'Cock or tap, Andre & Durand', 'Compressor, roller, J. L. Myers', 'Condensing apparatus, steam, W. E. Prall', etc.

Table listing inventions and their patent numbers, including items like 'Lasting machine, C. P. Lawrence', 'Lath, A. & F. E. Richardson', 'Leaf stripping machine, J. L. Myers', etc.