

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

CAR COUPLING.—Moralis Hall, Greenfield, Tenn. A yielding mounted drawbar has a hook at each end, the hooks extending in opposite directions and the bar being reversible. While in one end of the drawbar is mounted a spring-actuated shaft to which is secured a U-shaped link, there being an auxiliary link on the opposite end of the drawbar, and a bar secured to the link being adapted for connection with a similar link on the drawbar at the opposite end of the car. The device is intended to facilitate the ready coupling and uncoupling of cars of different heights, as well as for use with cars having the ordinary link and pin coupling, and to do this the trainmen do not have to go between the cars.

CATTLE CAR.—Ferdinand E. Canda, New York City. This car is constructed with main overlapping ways or runs and auxiliary ways or runs, with flexible partitions movable in the ways, the main ways forming guides for the main portion of the partitions and the auxiliary ways forming guides to receive the lower ends of the partitions, whereby the car is divided into stalls or compartments when used to transport cattle. The gate is to be moved to a position just beneath the ceilings when the car is to be used for general freight purposes. This improvement is only one of a series of inventions in this line for which patents have been issued to this inventor.

Mechanical Appliances.

WIRE STAPLE MACHINE.—John Howenstine, Fort Wayne, Ind. In a suitable frame is a cutting and forming die block and a mating perforated die plate on which the die block slides, with a main lever and a movable anvil, while there is a staple moving pusher bar to set a formed staple, and a wire-feeding device. The machine is designed to rapidly form staples from a coil of wire and insert them into the material that is to receive them, the staples being set successively as they are formed, and caused to embrace a stay rod of wire to fasten it in place. The machine is especially adapted to insert staples in wooden packing boxes which are stayed by the use of strengthening rods of wire.

BED FOR PRINTING PLATES.—William MacKay, New York City. This invention provides an improved bed for conveniently supporting metallic plates during the process of printing, to securely hold the plate and permit of adjusting it to present an absolutely true surface and insure accurate printing. The bed is provided with a clamp consisting of a jaw having a shoulder on its upper face, a rounded projection on its inner face, and slots in its lower end, while a second jaw is secured on the upper end of the first jaw and has its front edge beveled and provided with a recess in its under face engaging the shoulder of the other jaw.

LEATHER DRESSING MACHINE.—Marius and Victor Martin, Paris, France. An upper and lower cylinder are mounted, one in fixed and the other in vertically movable bearings, a main lever having connection with the upper cylinder, while a screw secured to the main lever is mounted in the frame of the machine and another screw above the main lever limits its movement. The upper cylinder has a roughened face, and has projecting helicoidal plates between which are layers of brushes, the skins being fed flesh side up between the cylinders. The machine is designed for the treatment of skins, wet or dry, and to perform the different processes of skiving, bleaching, scraping, smoothing, glazing, etc.

Agricultural.

POTATO DIGGER.—A. C. Prentice, Winston, N. C., and C. M. Fuller, South Byron, N. Y. Combined with the frame and driving mechanism is a transverse shovel and an endless belt having a series of rearward projecting fingers, the shovel discharging upon the fingers of the lower half of the belt. The machine, after actual trial, is claimed to save one horse power, and the wear of the parts is reduced to a minimum, while the construction is simple and inexpensive. The potatoes are all carried to one side and left in a narrow row, where they may be quickly picked up. By means of a reversible change of gear, every row can be dug, instead of each alternate row, and the potatoes and vines all carried away from the standing vines.

CULTIVATOR.—John N. Stanley, Ozark, Ark. This invention relates particularly to cotton cultivators, the object of the invention being to provide a machine with a number of interchangeable parts, to be used at different stages of the growth of the plant, also furnishing improved means of securing the scrapers to the standard. A threaded bolt connects the main and second beams, in combination with inwardly curved self-adjusting fenders, and the scrapers and covers. The colters are used when the cotton is young, and to cut away weeds, etc., and may be used in place of covers in connection with the scrapers. This cultivator can also be used to cultivate corn.

Miscellaneous.

SURVEYOR'S INSTRUMENT.—Solomon Davis, New York City. This is an improvement in instruments employed for measuring distances and magnitude or height of distant objects of triangulation, which is effected without laying off a base line, and more easily and expeditiously than by the ordinary method. Two instruments are employed and a portable base line of known length, which connects them and forms the base of the triangle the length of one side of which is required. Both instruments are supported on tripods, and one, having the features of the ordinary surveyor's level, is used to determine the angles of the triangle, while the other is a distance instrument, similar in many respects to an ordinary azimuth or compass.

THERMOMETER.—Joseph Kent, 98 Hation Garden, London, England. The glass thermometer stem, having a bore for the mercurial column,

is, by this invention, provided with a second open bore, in the rear of the first bore, for the reception and protection of a scale-marked strip, preferably made of enamel, to be secured in position by sealing it to the glass. The improvement is more especially designed for clinical or chemical thermometers, where the external markings of the scale are liable to be defaced or destroyed by the acids used in cleaning, etc.

ADDING MACHINE.—William F. Lawrenz, Duluth, Minn. This is an improvement for use on cash registers and indicators, and is mounted in a casing formed integrally with the register and indicator, or separately, and attached to the frame of the register. It is adapted to register the exact total amount of money in the till or drawer, or when differently set to register the amount of money registered by the cash register each day, week, or month, giving thus the exact amount of sales for the period for which the machine is set. The machine is simple and durable in construction, and the levers which actuate the cash register and indicator simultaneously through suitable connections actuate the adding machine.

CASH CARRIER.—Samuel J. Besthoff, New York City. This is a self-propelling cash car of simple and durable construction, in which the propelling mechanism is wound up and put in operative position by manipulating the cash receptacle of the car or its cover. The car has a swinging door over its cash compartment and a spring-actuated mechanism combined with a pawl and ratchet winding mechanism, operated by the binged end of the door. If the mechanism should be overwound by the frequent opening and closing of the cover before the car is placed on the track, means are provided for relieving the superfluous tension and reducing the speed of the car as desired.

DUPLICATING MACHINE.—Robert Morgeneier and Jasmin P. Bergeron, Winona, Minn. This is a machine designed to facilitate the reproduction, in unlimited number and at small cost, of the most elaborate and delicate carvings and sculptures, as well as natural casts or patterns therefrom, the machine being so made that patterns or models of any proper material will not be damaged by it. A tripping mechanism is arranged in connection with a series of guide fingers of a reciprocating standard, drills or bits with means for revolving them being arranged in connection with the fingers, while there are holders for the pattern and for the material in which the reproduction is to be effected, and means for imparting a corresponding movement to the pattern and the material, the movements being practically universal.

PHOTOGRAPHIC NEGATIVE MARKER.—Benjamin A. Blakemore, Staunton, Va. This is a device to enable photographers to number or otherwise distinctively mark their negatives as they take them, thus avoiding uncertainty in afterward identifying the negative, which is frequently confusing when a considerable interval elapses between the time of sitting and the development of a plate. The invention consists of a stencil plate bearing a number, name or other marking to be applied to the sensitized plate and photographed on the plate simultaneously with the exposure for the sitting.

INCUBATOR.—Frank Frey and Abraham M. Wayne, Quincy, Ill. This invention provides a novel construction designed to facilitate the automatic regulation of the temperature of the incubator by means of a balance thermometer and other peculiar features, and whereby a constant and perfect circulation of water in the heating chamber is obtained. The body of the incubator is made impervious to moisture and cold, and the trays are so made that the heat will reach almost the whole surface of the eggs, the position of the latter being changed expeditiously and conveniently, without liability to breakage. The pans for the interior of the hatching chamber are designed to absorb any surplus of moisture, while also serving to direct the heat in currents to the trays.

AIR COOLING APPARATUS.—George W. Smith, Mount Vernon, N. Y. In a storage chamber is an ice box having a central chamber and an outer surrounding wall spaced to form a passage, a pipe connecting the central chamber and the space, while a blower is provided to effect the circulation of air. The invention is designed to provide a cold air producing apparatus which will be economical in the consumption of refrigerating material, and reliable in operation, whereby the interior air of a sealed chamber used for cold storage may be maintained at a low temperature for the preservation of articles of food and drink.

ARTIFICIAL OYSTER BED.—Achille M. Willis, Rediviva, Va. The bed proper preferably consists of an outer metal frame, across which extends a network of wires to support a spawn-supporting mat, which may be of pine brush, shavings, etc., to which the spawn will adhere, or loam or mud may be used instead for the bed if deemed desirable. Connected with the bed and leading upward therefrom to a float is a chain or other suitable connection, left sufficiently slack to allow for the tides and to prevent accident. These beds are designed to be arranged in sets to cover the bottom, seed oysters or other edible mollusks being placed on them before lowering, while the floats are numbered or otherwise designated to enable the owner to keep account of the condition of the several frames. These beds may be used at depths too great for ordinary oyster dredging, a windlass being employed on the boat to lift them.

BICYCLE.—Walter Stillman, Jr., Closter, N. J. This is an improvement in that class of safety bicycles which are driven by shaft and gear instead of a chain and sprocket gear. The driving mechanism is simple and durable, and may be readily applied to any form of bicycle or tricycle. Provision is made for taking wear on the bevel gears, and a guard effectually covers the mechanism. The frame of the machine has not so many sections as is now customary, because the adjustment of the driving mechanism is contained in itself and does not need the co-operation of the frame, which may be made more solid and durable.

SHOVEL.—William Wright and John M. Barrett, Warrior Station, Ala. This shovel is for re-

moving ashes and cinders from stoves and grates, and is designed for use alternately to sift the unburned or partly burned coal from the ashes and for the removal of the latter. It is a simple and inexpensive utensil, having an elongated blade, with parallel side flanges and open ends, a sifter being formed in one end portion, while a pivoted spring-limbed handle is adapted to lock longitudinally of the blade and removably lock above either end.

BREAST COLLAR FASTENER.—James J. Turner, Casey, Ill. This fastener is adapted to work in front of the horse's neck or breast, and unite the two forward ends of a transversely divided breast collar. It is constructed of two independent sections having oblique-faced inner meeting ends and loop pieces on their outer ends, one inner end having hook-shaped recesses and the meeting end of the other section having curved hooks adapted to engage with the recesses in the adjacent section.

UMBRELLA OR PARASOL.—Charles H. Ely, Atlantic Highlands, James W. Danser, Freehold, and Frank B. Rue, Atlantic Highlands, N. J. This invention provides a novel form of construction for umbrellas, etc., using a paragon frame, to form a knockdown umbrella which may be conveniently carried in a valise or satchel. The outer sections of sectionally constructed ribs are fitted to slide on the inner sections, a runner carrying braces being pivoted at their inner and outer ends, while longitudinally adjustable rods are applied to the braces, and cams controlled by the rods are adapted to lock or release the sliding sections of the ribs relative to the stationary or inner sections.

TROUSERS.—Isaac L. Morris, New York City. This garment has slits or openings at the side forming front and rear sections, the front section having a fly and fastening straps and the back section being adjustably made to fit a narrow or wide back, and provided at its edges with straps and adjustable fastenings, whereby the trousers may be fitted to a person having a wide back and a small stomach or to one having a narrow back and a large stomach.

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SCIENTIFIC AMERICAN BUILDING EDITION.

AUGUST NUMBER.—(No. 70.)

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1. Handsome plate in colors of a row of wooden houses designed by Munn & Co., architects, and erected for Mr. J. H. Shafer at Newark, N. J. Perspective and floor plans. Cost of four houses from \$16,000 to \$18,000.
2. Colored plate of the beautiful and substantial stone residence of S. Clark, Esq., on Riverside Park, New York. Mr. Henry Kilburn, architect. Two perspective elevations and floor plans.
3. A cottage recently erected at Upsal Station, Pa., at cost of \$6,500 complete. Floor plans and perspective elevation.
4. A picturesque cottage erected at Newark, N. J., at a cost of \$4,963.72 complete. Perspective and floor plans.
5. A round end house after the style of old English homes, erected at Wayne, Pa. Cost \$3,463 complete. Plans and perspective view.
6. Designs for circular stables.
7. View of an iron earthquake church at San Sebastian, Philippine Islands.
8. An attractive residence erected at Brookline, Mass. Cost \$10,518 complete. Plans and perspective elevation.
9. Design for the thirteen story Pabst Building at Milwaukee, Wis. The probable cost of the building is \$500,000.
10. The collapse of the Y. M. C. A. building at Montreal.
11. Illustration of an easily made piazza.
12. The St. Jerome Chapel, Hotel Des Invalides, Paris.
13. A \$1,500 cottage erected at New Dorp, Staten Island. Perspective view and floor plans.
14. St. John's M. E. Church, recently erected at New Rochelle, N. Y., at a total cost of \$63,580. Plans and perspective.
15. A cottage erected at Roseville, N. J. Cost \$2,800 complete. Floor plans and perspective view.
16. A very convenient and attractive cottage recently erected at New Dorp, Staten Island. Cost \$4,950 complete. Perspective and floor plans.
17. A very attractive block of five new dwellings on Seventy-seventh Street, New York City. Plans and perspective elevation.
18. Miscellaneous contents: A millionaire's residence.—An improved hot air furnace, illustrated.—Iron and steel roofing.—Improved woodworking machinery, illustrated.—Architect of the Woman's Building at the Columbian Exhibition, Chicago.—The plain design is the best.—Inside sliding blinds.—An improved tenoning machine, illustrated.—The Cudell trap.—Lightning rods.—Properly anchoring beams in walls.—A proposed universal building law.—Windmills to supply water for houses, etc.—Graphite grease.

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(3211) E. B. asks: 1. What is the E. M. F. of one cell of Leclanche battery (porous cup Leclanche)? A. 1.47 volts. 2. How many amperes or what fractional part of an ampere will one cell produce? A. About 1/4 ampere. 3. What is the internal resistance of one cell? A. 5 ohms.

(3212) W. J. A. B. asks: 1. When, where, and by whom was the first dynamo made? A. In 1866, William Varley filed in the British Patent Office a provisional specification for a dynamo electric machine, but this was not published until July, 1867. In February, 1867, Dr. C. W. Siemens read a paper before the Royal Society on the dynamo. Sir Charles Wheatstone read another paper on the same subject at the same meeting, so that it is difficult to state who was the first inventor of the dynamo. 2. When, where, and by whom was the first arc (electric) light made? A. Sir Humphry Davy showed the arc light for the first time in 1810, at the Royal Institution. 3. When, where, and by whom was the first incandescent light made? A. The first incandescent lamp was patented by King, in England, in 1845. 4. Which is cheaper, and how much, horse power, cable, storage battery, or trolley power, for street cars? A. As the conditions vary so much in different places, it will be impossible to give a very satisfactory answer to this query. It is probable, however, that under favorable conditions the cable system is less expensive than either of the others. 5. What is the greatest speed ever attained by an American locomotive with a train? And an English ditto? A. On American railways, 36 miles in 30 minutes, 107 miles in 97 minutes, are two of the best examples of fast running. The average rate of high speed has reached 69 miles an hour; 75 miles and over have been made under the best conditions. It is stated on good authority that there is very little difference in the speed of the fastest trains here and in Europe. 6. What is the greatest diameter of a driving wheel of a locomotive ever built? A. On one of the early engines used on the Camden & Amboy Railroad the driving wheels were 8 feet in diameter. In Europe, large wheels are still in use to some extent, but here large wheels have been abandoned, and 6 feet is the largest. 7. How can