

### A Notable Feat of Bridge Moving.

A notable engineering feat was performed a few days ago by the substitution of a new 500-ton drawbridge for an old and much lighter one where the Pennsylvania Railroad tracks pass the Passaic River near the Market Street station, Newark, N. J. The actual substitution of one bridge for another was made in eighteen and one-half minutes. The old drawbridge, which was built in 1868, was 213 feet long. The river at this point is 400 feet wide. At both sides of the river stationary spans are at the ends of the draw. The delay of traffic is, of course, most serious on a railroad like the Pennsylvania. It is easy enough to rebuild stationary parts, even where trains run over them every few minutes, but the substitution of one drawbridge span, weighing some hundreds of tons, for another, was a serious and interesting problem. When open the ends of the draw rested on fenders, which protect the structure from injury by passing boats. The engineers lengthened these fenders up and down the river until it was 250 feet long and capable of sustaining the weight of the draw. The new draw was erected on the southern fender, and it rested on eight railroad tracks, which in turn rested on rails. The space between the fenders and the central pier of the draw was filled with piling and capped with rails. Sunday was selected as the best day for doing the work, as then the traffic is the lightest. When the time came for moving, jacks were put under the old draw, and it was lifted clear of its pivot and raised to the level of the new one, and the two were lashed together with wire rope. Powerful hawsers were roved between blocks from the upper end of the old bridge to the drums of two stationary engines, which were started a few minutes after traffic was stopped. In eight minutes the old bridge was clear of its structure and moved onto the upper extension of the fender, and in another ten minutes the pivot of the new bridge was exactly over the socket, and in half an hour more the new bridge had been lowered on this pivot and the gear by which it is worked from an engine overhead had been fitted. The actual substitution of one drawspan for the other was made in eighteen and one-half minutes.

### Repairs to the "Buffalo."

Repairs have been begun on the cruiser "Buffalo" at the Brooklyn navy yard. When they are completed, the vessel will be an excellent addition to the navy. She will be fitted for special transport duty between

New York and Manila. The entire interior of the vessel will be remodeled and many improvements will be added. The engine room will be refitted and regular man-of-war quarters will be added. An ice machine will be introduced, and a larger evaporating plant has been purchased for the vessel. About \$40,000 will be spent in these improvements, so that the ship will be worth at least \$700,000. She will be painted white and fitted with a number of modern guns. We have already, on other occasions, given the history of this vessel.

### Automobile News.

An automobile club is to be formed in Philadelphia. Steam wagons are to be employed in hauling borax in Oregon.

According to The Motor Car Journal, the Austrian Ministry of Commerce is reported to be contemplating the introduction of motor cars for the conveyance of mail bags to and from the railway stations as well as for the delivery of parcels post packages and the collection of letters from the pillar boxes.

The Matin's nine-day automobile race around France terminated at St. Germain on July 24. The winner was M. René de Knyff, a Belgian, who covered the distance (1,428 miles) in 44 hours, 44 minutes, 9 seconds, or at an average speed of about 32 miles per hour. In many parts of France the country was hilly and sometimes mountainous, and the carriages provided with the greatest horse power showed themselves to special advantage in hill climbing.

Mr. and Mrs. Davis have, owing to accidents to the machinery of their automobile, only reached Syracuse. The trip will be continued July 29.

Messrs. Haynes & Apperson, builders of an automobile of the same name, are making a trip from Kokomo, Ind., to Brooklyn. No attempt at fast time is being made and the average speed is fourteen miles per hour.

The automobile show at the Tuileries Gardens, Paris, has been very successful, and the number of vehicles shown has been very large and the exhibits are valued at over half a million dollars. The electric vehicles are particularly in evidence. Many of the French vehicles seating from two to three people rose in price from \$700 to \$1,200.

In France automobile accidents are becoming many and serious, and, unfortunately, the victims are usually the automobilists themselves. The former mayor

of Ay, M. Bollinger, was riding in his automobile down a hill; they were going at a pretty good pace when the brakes failed, and suddenly the carriage, for some unaccountable reason, turned completely over, all the passengers being thrown underneath the vehicle. M. Bollinger was instantly killed and the others were seriously injured. In Belgium a well-known sportsman ran over a child with his motor cycle, broke the child's arm and leg, and he received a fractured skull. M. Pierre Giffard, an authority on the subject, attributes the alarming and constantly lengthening catalogue of accidents to excessive speeds which the drivers give their carriages.

### The Current Supplement.

The current SUPPLEMENT, No. 1231, has many articles of unusual interest, the most important being "Geodetic Work in Spitzbergen," by Prof. J. H. Gore, an illustrated article of great interest. "Microbes in Co-operation" is by G. Clarck Nuttall. "New French Automobile Fire Engine" is described and illustrated with drawings, giving details of the mechanism. The usual "Trade Suggestions of the United States Consuls," "Miscellaneous Notes," "Selected Formulæ" and "Trade Receipts and Suggestions" are published. "Building Railways in the Field by the Railway Corps of the German Army" is an illustrated article showing how soldiers build railways in fields. "The Electric Tramway of the City of Tours" describes the Diatto system. There is also an interesting article on "The Nuraghi of Sardinia and Similar Structures." These are towers which compare in interest with the famous round towers of Ireland. They are of enormous size, and there are more than 3,000 on the island. "Some Experiments in Making Rubber Substitutes" is an interesting technical article.

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### RECENTLY PATENTED INVENTIONS.

#### Electrical Apparatus.

**MEANS FOR PREVENTING SPARKING WHEN MAKING AND BREAKING CIRCUITS.**—ADOLPH MÜLLER, Hagen, Westphalia, Germany. A circuit in which an electromotive force is opposed to that of the current source can be broken without sparking by increasing the opposing electromotive force until it equals that of the source of current before breaking the circuit. This is effected, according to the present invention, by introducing into the circuit, before disconnection, a battery of elements which easily becomes polarized. Such a battery is immediately polarized on entering the circuit to the tension of the current within the circuit; or it immediately increases any opposing electromotive force which may be present in the circuit until that force is equal to that of the source of current.

**INCANDESCENT LAMP.**—ANDREW H. MILLER, Central City, Colo. The filament of this incandescent lamp is in two sections and is associated with such connections as permit it to be cut in and out of circuit in a variety of ways, thus permitting the regulation of the power of the lamp. By means of the invention three distinct adjustments and hence three distinct candle-powers can be obtained. This renders the lamp especially desirable in hotels and hospitals where it is desired to vary the power of the lamp.

#### Mechanical Devices.

**FLOOR-SURFACING MACHINE.**—HENRY McLOUGHLIN, Leavenworth, Kans. In the wheel supported frame of the machine a primary-movement shaft is mounted, having a slidable worm meshing with a worm-wheel. A clutch member fast to the shaft drives the worm. Gearing connects the worm-wheel with the wheels of the frame. In a swinging frame on the main frame cutting apparatus is mounted, driven by gearing from the primary-movement shaft. By means of this machine large areas of flooring can be quickly planed or true-surfaced without excessive labor.

#### Railway Appliances.

**CATTLE-GUARD.**—JOSEPH W. ROSS, South Carrollton, Ky. The cattle-guard is of that form in which a railroad crosses a fence-line and is provided for some distance along its track with an impassable road-bed armed with spikes to prevent cattle from passing. The invention is distinguished from others of the same class by spiked zigzag plates having a bearing on the ties midway between their upper and lower angles. It is stated that thereby a convenient angle is obtained for driving the spikes, and that the ties afford a stiff backing for the plates at a point where they are especially weak and liable to be indented by the hoofs of animals.

**LOCKING DEVICE FOR CAR COUPLINGS.**—GEORGE P. STEWART, Palestine, Tex. Janney car-couplers are subject to accidental release of the knuckle from engagement with the opposite coupling. To prevent this, the inventor employs a transverse rockable lever loosely secured to the lower part of the key to control its upward movement. A pendent weighty dog on the

draw-head is hung above the free end of the lever. The upward movement of the key is prevented until lever and dog have been simultaneously lifted.

**SIGNAL-LAMP-RAISING DEVICE.**—THOMAS J. WALSH, Walton, Ky. The object of the invention is to provide a simple apparatus to raise and lower signal-lamps at railway-stations, thus obviating the danger incurred in using the customary portable ladders. At the upper end of the signal-lamp mast a lever is pivoted from one end of which a pulling device extends downwardly, and by the other end of which a pulley is carried. A rope is passed around the pulley and connected with the lamp. By this arrangement, a lamp may be raised from the station or office.

#### Miscellaneous Inventions.

**CISTERN.**—WILLIAM J. SLACK, La Grange, Ind. The inventor has endeavored to provide an improved attachment for removing foul water and sediment from cisterns. The attachment is a casting formed with circumferential flanges to adapt it for forming a watertight joint with the wall of the cistern, and with a central depression or cavity which is of conical form to adapt it to collect the sediment. A discharge passage is provided which communicates with the cavity, and which removes the sediment and foul water by siphonic action.

**SWINGING-DOOR ATTACHMENT.**—JOHN H. WHITAKER, Davenport, Iowa. Waiters in restaurants and hotels have a habit of kicking open swinging doors, thereby often upsetting their trays and dishes. The present invention provides an attachment consisting of a bracket secured to and extending outwardly from the door. A padded wheel is mounted to rotate about its vertical axis on the outer end of the bracket, and is arranged for engagement with the body or shoulder to open the door. Owing to the peculiar arrangement of the wheel, there is no danger of the door's swinging back against the waiter before he has passed through.

**INVALID-BEDSTEAD.**—ELMER C. SCRIBNER, Nev-ersink, N. Y. The invention comprehends a novel construction of sectional bottom members having the foot portion formed of two longitudinal frames capable of being raised in unison or independently, and a single crank-operated mechanism, including shifting clutches to move into or out of operative position, whereby either one or both of the foot-frames can be elevated. The longitudinally-tiltable foot-frames are each made of two hinged sections, so that when elevated they may assume an angle shape to accommodate the bending of the invalid's knee.

**CHURN.**—HENRY G. SCHATZ, Commerce, Mo. The churn is provided with a vibrating dasher capable of being regulated to suit different churn-bodies. The dasher-shaft is reciprocated and vibrated by a worm-shaft operated by a handle. An end of the handle is pivoted on one end of a rocking lever, and is adjustable on the lever to shorten or lengthen the stroke of the worm-shaft.

**PROCESS OF MAKING DRY PIGMENTS.**—THOMAS J. O'SULLIVAN, London, Ontario, Canada. This process of producing dry pigment consists in saturating

sawdust with an iron salt, and then drying or burning it. Sawdust being a waste material, it follows that the pigment can be very cheaply made.

**FOLDING BED FOR VEHICLES.**—THOMAS LOTH-ERINGTON, Dallas, Tex. The folding bed is provided with a bottom, and transverse supports for the sides having vertical locking members at their outer ends. Box sides are adapted to rest on the supports and engage the side edges of the bottom and the vertical locking members. Lock bars are removably secured to the sides and adapted to engage the vertical locking members and the underside of the bottom. The vertical locking members and lock-bars have engaging shoulders and lugs. The bed can be quickly and conveniently removed from the running-gear, to permit the bed's being changed from a wagon-box to a tray, or from a coal-car to a flat-car.

**ACETYLENE-GAS LAMP.**—GEORGE W. BAYLEY, Brooklyn, New York city. The lamp comprises an inner and outer casing. The inner casing contains carbide and has a pressure-controlled valve in its bottom for the admission of water. An annular, closed water-reservoir within the outer case is located above the carbide in the holder. A valve in the bottom of the reservoir provides a means for allowing the water to flow into the outer casing before being admitted to the carbide. A vent connects the upper part of the water-reservoir with the gas-space of the lamp.

**SPOUT-GATE AND MECHANISM FOR OPERATING THE SAME.**—HENRY F. KUS, Escanaba, Mich. The invention is more particularly designed for use in connection with inclined spouts for discharging material from a dock into a vessel or from a platform into a car. The gate is mounted to swing vertically between supports at the discharge end of the spout. A locking-frame is mounted to slide in guides on the supports and is connected with the gate, so that when it is raised the gate will be opened.

**WASTE-PIPE PLUG.**—JOSEPH H. LITTLE, Manhattan, New York city. The present invention provides a chainless plug having a link attached thereto converging in a portion of its length and then diverging and having inwardly-turned hooks. In applying the plug, the link will be forced downwardly over a member of the strainer. The hooks will be spread apart so as readily to pass the member of the strainer. When water is to be retained the plug is inserted. When it is desired to draw the water the plug is pulled up until the contracted portion of the link comes above the strainer, the hooks preventing the total detachment of the plug.

**FIRE-ESCAPE.**—CHRISTOPHER PEEL, Manhattan, New York city. An upright ladder on the building is connected with foldable guard-walls above the ladder and adjacent to the windows of the building. The walls each have a foot-board foldable over an aperture thereof and adapted for projection beneath a window when the guard-walls are adjusted outwardly from the building wall.

**BOILER-ATTACHMENT.**—CHARLES W. SOMMER, Aberdeen, Miss. The attachment is especially designed for the collection and removal of sediment. The attachment comprises a pipe-line beneath the boiler, communicating at one end with the steam-space and having a blow-out at the other end. Hollow supports sustain the

pipe-line and establish communication between the lower portion of boiler and pipe-line. A branch communicates with the pipe-line and extends upwardly into the boiler and has openings adjacent to the crown sheets. When sediment is forced through the pipe-line, a suction is created in the supports, so that any sediment remaining in the bottom of the boiler is drawn through into the pipe-line and forced out by the steam.

**GAME.**—WILLIAM A. WISSEMAN, Manhattan, New York city. The game simulates the battle of San Juan Hill and involves a fort or block-house over which a hostile flag is flying, the construction being such that by manipulating a number of balls so that they will enter the block-house, the supposed hostile flag will be automatically caused to disappear and an American flag raised.

**ROTARY BRUSH.**—PETER K. WESTERGAARD, Orangeburg, N. Y. The brush is designed for the use of barbers and stablemen to remove impurities from the hair or scalp. The rotary brush is mounted in a frame and is secured to a vertical standard. On the standard a hand-wheel is journaled by which the brush is turned through the medium of bevel-gears. Beneath the brush a receiver is mounted which collects the impurities removed from the hair or skin.

**HUB FOR VEHICLE-WHEELS.**—CASIMIR C. BAL-LIN, Rue de Chateaudun 5, Paris, France. The invention is chiefly characterized by the interposition between the wheel-nave proper, which carries the spokes of the wheel, and the revolving socket supported on the axle, of an elastic non-metallic pad or cushion, the soft body of which diminishes the force of the jolts. This pad is formed of two series of caoutchouc balls arranged concentrically around the central socket and in the first place tightly packed in a chamber or race. The pad is made in sections for permitting the movements of compression at the moment of the shock to be effected by simple displacement of the elastic material itself and not by rubbing on the walls which inclose it, as is the case with a continuous ring.

**FIRE-ESCAPE.**—JOSÉ DELGADO Y AGUILAR, Brooklyn, New York city. A strong yet simple device has been provided by this inventor for permanent attachment to the outside or inside of a building, which attachment affords a rapid means of escape from burning buildings irrespective of the number of floors. The invention consists of a simple arrangement of a bracket carrying a pulley around which an endless rope runs. At the lower end of the device a controller is provided which regulates the speed of the descent.

**LIGHTING ATTACHMENT FOR VAPOR-LAMPS.**—JAMES A. YARTON, Omaha, Neb. The invention relates to improvements designed for attachment to oil-gas burners of that kind in which a generator is heated by the flame of the burner; and it comprises essentially a carburetor of special construction which is designed to furnish a limited quantity of gas applied to heat the generator to working condition before the ordinary or service generator is brought into use.

**HORSESHOE.**—WILLIAM CAHILL, San Francisco, Cal. The horseshoe is especially designed for use on racing-horses. A light-metal plate is adapted to be attached to the horse's hoof to hold in place an elastic pad,

