(No Model.) 2 Sheets—Sheet 1.

J. C. DEVLIN.

CAR COUPLING.

No. 478,993. Patented July 19, 1892.

Fig. 1.

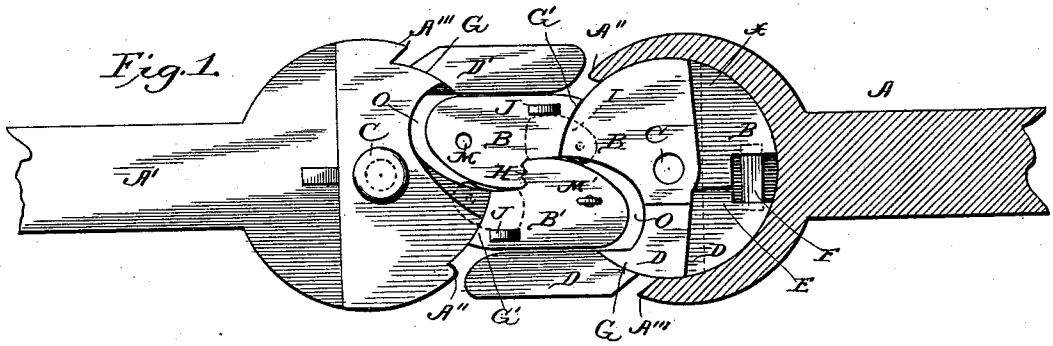


Fig. 3.

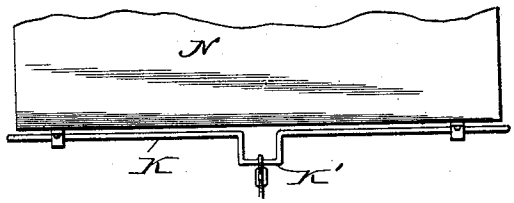


Fig. 2.

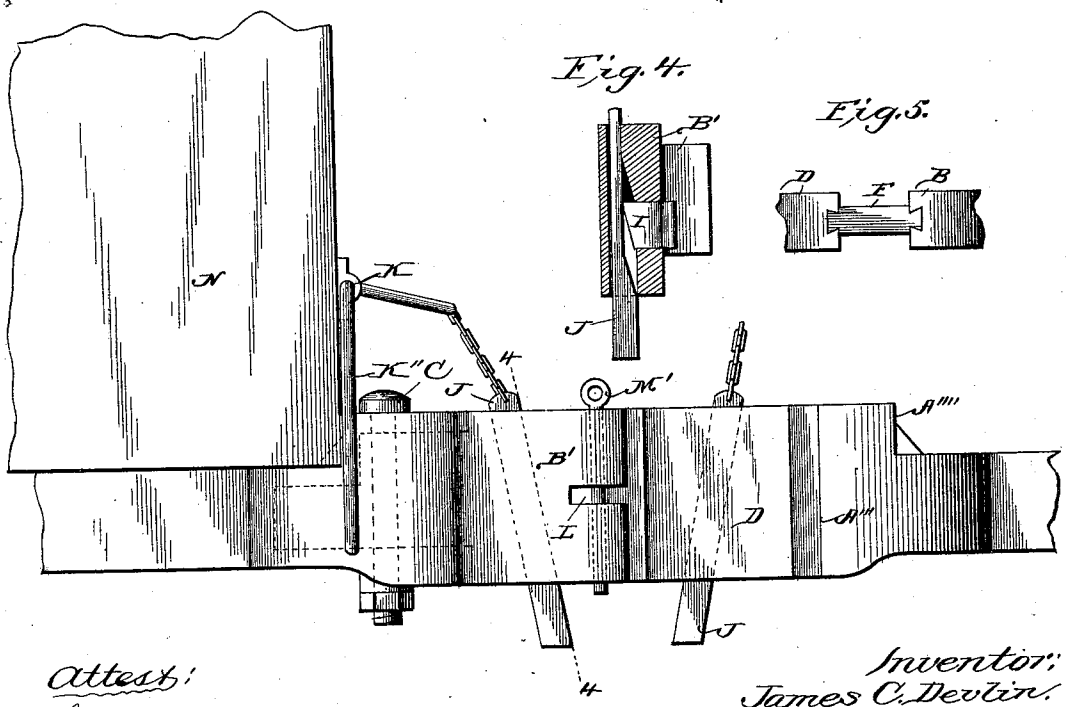


Fig. 4.

Fig. 5.

Attest:
Harry D. Robertson
F. T. English

Inventor:
James C. Devlin.
By. W. A. Lawrence
Atty

(No Model.) 2 Sheets—Sheet 2.

J. C. DEVLIN.

CAR COUPLING.

No. 478,993. Patented July 19, 1892.

Fig. 6.

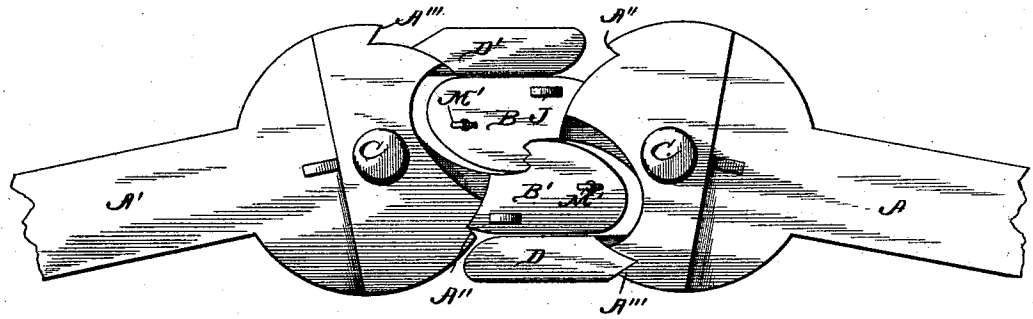
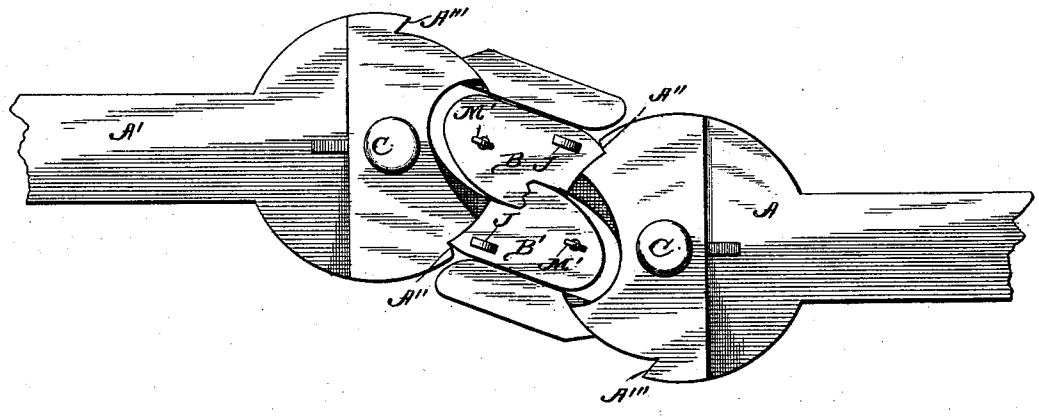


Fig. 7.



Attest:
Harry D. Rohrer.
F. T. English

Inventor:
James C. Devlin.
By W. H. Lamar
Atty

UNITED STATES PATENT OFFICE.

JAMES C. DEVLIN, OF HERNANDO, MISSISSIPPI, ASSIGNOR OF FOUR-FIFTHS TO DON M. DOCKERY, JAMES P. MEREDITH, AND STILLMAN W. McLAUGHLIN.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 478,993, dated July 19, 1892.

Application filed October 10, 1891. Serial No. 408,376. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. DEVLIN, a citizen of the United States, residing at Hernando, in the county of De Soto and State of Mississippi, have invented certain new and useful Improvements in Automatic Couplers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to produce a coupler that will automatically engage its duplicate, that no motion possible to the cars on either straight or curved track can disengage, that will allow free lateral motion like the common link and pin, and that can at the same time be readily uncoupled. These ends are attained by devices and constructions fully set forth herein, and shown in the accompanying drawings, in which—

Figure 1 is a top plan of two engaged couplers, the upper part of one draw-bar being removed to expose parts therein. Fig. 2 is a side view of the same couplers partially separated and with certain uncoupling devices operatively mounted upon a car shown in proper position with reference to its coupler. Fig. 3 is a smaller top plan of the same uncoupling devices. Fig. 4 shows one coupling-jaw broken away along the line 4 4, Fig. 2, to show concealed parts of the disengaging devices, the view being toward the left. Fig. 5 shows the attachment of a certain rubber cushion. (Seen also in Fig. 1.) Fig. 6 illustrates the position of the couplers when the cars are upon the shortest curve over which they can pass without producing lateral strain upon the couplers. Fig. 7 shows their position when two coupled cars lurch laterally to the limit where strain upon the couplers begins.

The couplers are duplicates, and therefore one only need be described in detail.

In the figures, A is a draw-bar to be attached to the car in any suitable manner. Its end is enlarged and has a partial cylindrical internal cavity open only upon the side opposite the car. Within this cavity is secured a coupling-jaw B, having its pivotal pin C in the axis of the cavity and fitting vertically the space between the upper and lower walls of the cavity. The draw-bar, as shown in Figs. 1 and 2, is increased in vertical depth from a point a little back of the pin C to its free end. The internal cavity is correspondingly enlarged above, but below the increase is simply a thickening of the lower wall, the jaw B being straight upon its lower surface. By this increased depth there is formed a broad shoulder to meet the end timbers of the car externally, while within a shoulder (indicated in dotted lines in Fig. 2 and in position by a dotted line of Fig. 1) serves as an additional support to transmit to the draw-bar end-thrusts upon the jaw. The jaw B does not fill laterally the entire cavity, but extends from one side only a little beyond the center or beyond the pin C. The remainder of the space is occupied by a keeper D, which fits the cavity like the jaw and is held in place by the curvature of the wall on the one side and upon the other by an offset or lug E, which projects into a space formed by cutting away the jaw a little in the rear of the pin C. In front of this lug the lateral edges of the jaw and keeper are straight and normally in contact; but in the rear of the same they diverge slightly for some distance and then separate abruptly to give room for a rubber cushion F, whose ends fit, respectively, into dovetail depressions in the rear faces of the two, as appears from Fig. 5. From the open side both jaw and keeper project from the cavity in a general direction parallel to the draw-bar's axis, and both are vertically thickened to be flush with the upper and lower faces of the enlarged end of the draw-bar, thereby forming shoulders G G′, that work against the end faces or edges of the cavity-walls. The two hooks B B′ when engaged have the relative position shown in Fig. 1, the engaging faces being preferably perpendicular to the axis of the draw-bars and provided with vertical obtusely-V-shaped ribs H, that mesh with each other. In passing into engagement the rounded end of each jaw forces its way between the other jaw and the corresponding keeper, the latter yielding by sliding around in its portion of the cavity and the former swinging upon the pivot C to a slight degree and both returning to position as soon as the engaging faces of the hooks are passed beyond each

other under the elastic force of the cushion F. Since the cavity is cylindrical, the motion of the keeper is virtually a swinging about the pin C, although it is not pivoted at all and is connected with the jaw only by the rubber F.

When the jaws are to be disengaged, the couplers must first be slacked or pushed toward each other. A small bar I, pivoted at one end in a recess in the inner face of the jaw, is then swung against the opposite jaw, forcing a lateral displacement sufficient to allow the jaws to pass freely out of engaging position. The bar is swung by means of a wedge J, Figs. 1, 2, and 4, passing through the jaw in a vertical plane, but inclining at the top toward the car. This wedge is raised by a chain connecting its upper end with an arm K′ of a rod K, mounted transversely upon the end of the car and provided at each end with a handle-bar K″, depending below the bottom of the car. Evidently when the handle is swung forward the wedge must be raised, forcing the jaws apart. The inclination of the wedge allows the use of a shorter arm K′, but is not enough to materially retard the falling of the wedge when the raising force ceases to act, both wedge and bar fitting loosely in place, so as to offer little frictional resistance. Either wedge acting without the other releases the coupling, and either may be operated from either side of the car. It has not been deemed necessary to illustrate devices for operating the coupler from the top of the car nor for retaining the part raised thereby when it is desired to render the coupler temporarily non-automatic, for such devices are very common and are plainly applicable to this coupler without invention.

The hooks and keepers are cut away at O, so that the hooks may pass farther than is necessary for coupling, or, in other words, so that there may be slack between the cars, as with the common link-and-pin coupler. This slack is sufficient in any heavy train to allow more than a complete stroke of the engine-piston between the starting of the first car and the last, whereby an engine will start a train that it could not otherwise put in motion, and whereby destructive strains are avoided, even when the engine is strong enough to exert the power required to start a long train coupled rigidly. With the "master car-builder" type of coupler, as well as with many others, passing around a curve or lurching of the cars from irregular height of the rails causes frequent accidental uncoupling, and in all cases produces serious pressure of the flange of the wheel against the side of the rail, and of course at the same time a great lateral strain upon the coupler. This pressure occasions material loss of power, unnecessary wear of both flange and rail, and increased chance of a broken flange or rail displacement. All these evils are completely avoided by the devices herein set forth, for upon a curve the couplers may make any angle with each other up to the point where the shoulders A A′ are met by the jaw and keeper that lie nearest the center of curvature (see Fig. 6) without any lateral strain whatever. So if one or both cars lurch laterally there is no strain until both shoulders A′ (see Fig. 7) are met in like manner. Now the metal may be cut away to allow any desired lateral motion; but with the shoulders located as in the drawings the limits where lateral strain begins cannot be reached upon any curve that it is practicable to use nor in any lurching that leaves both cars upon the rails. In short, up to these limits no possible motion of the cars has any tendency to uncouple the cars or to transmit lateral strain from one car to the next. Uncoupling is effected only by moving the jaws and corresponding keepers in opposite directions, while at the same time the jaws themselves move relatively in opposite directions. Now every possible movement of the car moves the jaw and its connected keeper in the same direction, and if either jaw tends to move away from the other the keeper connected with that jaw forces the other jaw to follow; nor can this action of the keepers be hindered by motion of the cars themselves, for as both jaws and keepers are in effect pivoted the only lateral force that can be exerted by the cars is the immaterial amount needed to overcome the friction of the jaws and keepers in their bearings.

In any ordinary positions of the cars, whether upon a curve or not, they may be uncoupled with perfect facility.

In practice the vertical depth of both jaws and keepers is sufficient to permit perfect working upon cars having any ordinary difference in height; but for greater difference or for use with other cars not provided with the coupler the common link and pin may be employed. To this end the jaw is slotted at L, Fig. 2, and perforated at M for the insertion of a pin M′. When the link is used, the jaw swings about the center C until the pin is in the line of draft, as shown at the right in Fig. 6.

It is of importance that the shock when cars are pushed violently together is not borne by the pin C, but is transmitted directly to the draw-bar, and it is further to be noted that this pin, though shown as retained by a nut, may as further security be headed or riveted, it being the intention that neither it nor any other part shall be readily removable, since upon many roads it is very desirable that strikers or others mischievously inclined shall not be able to cripple a train by quietly uncoupling or by uncoupling and removing beyond reach detachable parts, as is often done with pin-and-link as well as with other couplers.

What I claim is—

1. The combination, with a draw-bar, of a jaw pivotally mounted thereon and adapted to engage its duplicate upon another car and a keeper mounted to swing laterally with said

jaw and independently away from the same, and devices offering yielding resistance to such independent motion.

2. The combination, with the draw-bar having the partial cylindrical cavity in its enlarged free end, of the jaw and keeper projecting from said cavity and swinging freely from side to side therein, and devices offering yielding resistance to the increase of the distance between said jaw and keeper, said draw-bar being provided with shoulders limiting the swinging of the jaw and keeper to either side.

3. The combination, with the draw-bar and a laterally-swinging hooked jaw mounted therein and adapted to engage a like jaw of another coupler, of a wedge sliding in the jaw first named transversely to the plane thereof to force the engaging jaw out of engagement, substantially as set forth.

4. The combination, with a hooked jaw of a coupler, of a rearwardly-inclined uncoupling-wedge sliding in the jaw transversely to the plane thereof, substantially as and for the purpose set forth.

5. The combination, with the hooked jaw adapted to engage the like hook of another coupler, of the bar pivoted in the jaw to swing into or across the hook for uncoupling, the rearwardly-inclined wedge sliding in the jaw and adapted to force the swinging of said bar, the shaft having the handles and intermediate crank, and a chain connecting the free end of the crank to said wedge to raise it.

6. The combination, with the draw-bar having the cylindrical cavity in its enlarged free end, of the jaw pivoted in the axis of said cavity, fitting against its side and rear walls and projecting at the front as a hook, and the keeper lying alongside said jaw, fitting the cavity in like manner and separated from the jaw at the rear of the cavity by the rubber cushion, substantially as and for the purpose set forth.

7. The combination, with the draw-bar having in its enlarged free end the cylindrical cavity, whose horizontal walls terminate in curved shoulders whose center is the axis of the cavity and whose vertical walls end in vertical shoulders, of the hooked jaw and keeper mounted in said cavity to swing about its axis and provided with shoulders to meet the shoulders above named, the cushion interposed between the rear ends of the jaw and keeper, and means for forcing out of the jaw's hook the hook of another coupler.

8. The combination, with a draw-bar, of a hooked jaw and a keeper mounted therein to swing from side to side together and adapted to receive the like parts of another coupler and devices to exert a yielding pressure tending to keep the free end of the keeper at its minimum distance from the hook.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES C. DEVLIN.

Witnesses:
WALLACE GREENE,
PAUL E. JOHNSON.