

(No Model.)

T. WELCH.
CAR COUPLING.

No. 577,700.

Patented Feb. 23, 1897.

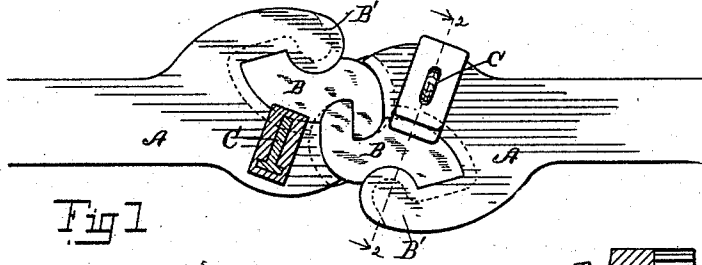


Fig. 1

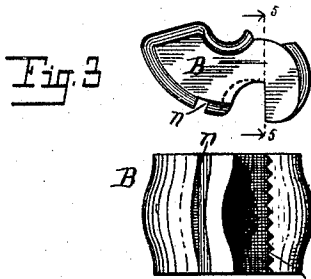


Fig. 3

Fig. 4

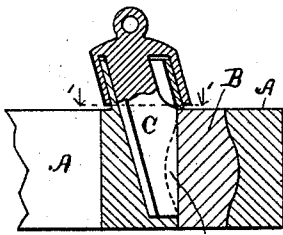


Fig. 2

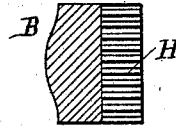


Fig. 5

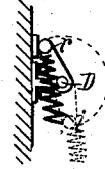


Fig. 7

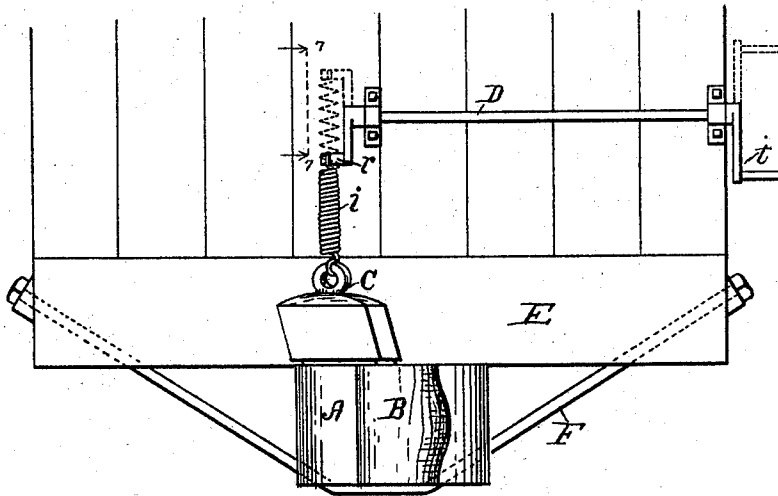


Fig. 6

Witnesses:
Walter S. Wood
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Inventor.
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Att'y.

UNITED STATES PATENT OFFICE.

THOMAS WELCH, OF PAW PAW, MICHIGAN, ASSIGNOR OF ONE-HALF TO
THE SHEFFIELD CAR COMPANY, OF THREE RIVERS, MICHIGAN.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 577,700, dated February 23, 1897.

Application filed May 20, 1893. Renewed May 18, 1896. Serial No. 592,070. (No model.)

To all whom it may concern:

Be it known that I, THOMAS WELCH, a citizen of the United States, residing in the village of Paw Paw, in the county of Van Buren and State of Michigan, have invented a certain new and useful Car-Coupler, of which the following is a specification.

My invention relates to car-couplers, and more particularly to automatic vertical-hook car-couplers.

The objects of my invention are, first, to provide a car-coupler that shall consist of only the hooks and the draw-bars, with a locking device; second, to provide a vertical-hook car-coupler that shall couple cars together when the draw-bars are not of the same height; third, to provide a coupler that shall lock vertically as well as transversely; fourth, to provide a means of operating the locking device that can be put in operation at any time whether there is tension on the coupler or not. I accomplish these objects by the devices shown in the accompanying drawings, in which—

Figure 1 is a top view of my invention with one of the keys in section, as on line 1 1 of Fig. 2. Fig. 2 is a sectional view on line 2 2 of Fig. 1, looking in the direction of the arrows. Fig. 3 is a detail top view of one of the hooks B removed from the draw-bar A. Fig. 4 is a side elevation of the same. Fig. 5 is a sectional view on line 5 5 of Fig. 3. Fig. 6 is an end view of a car with my coupler attached, showing the means of operating the same. Fig. 7 is a view on line 7 7 of Fig. 6, looking in the direction of the arrows, showing the construction of the operating-lever.

Similar letters of reference refer to similar parts throughout the several views.

The draw-bars and hooks at each end of the car are exactly identical, so that when two cars come together the hooks will be facing each other.

Instead of hanging the hooks on pins, which is the usual way in this class of couplers, I shape the head of the draw-bar so that there is a curved slide to receive the hook B. The hook B slides around the portion B' as though it were a pivot-pin. The curved surfaces of the hook and the guide are of irregular cross-section, the middle portion of the hook ex-

tending out into a corresponding depression in the guiding-surface. This prevents a vertical play of the parts and also any displacement of the hook B up or down. It is not necessary that the outward projection be curved. Any other shape will do as well so long as the displacement is prevented.

A key C is adapted to enter a notch *n* in the side of the hook B to lock it in position and prevent it swinging out. The faces H of the hooks are made with projections and depressions, so that when the two are brought together and locked there can be no displacement or movement between them in any direction either up or down or sidewise. This, in combination with the truss-rod F under the draw-bar, will serve to support an adjoining car in case of a broken truck or wheel, and so lessen the damage, and will also make a car with no load or a light load assist in carrying a car with a heavy load.

The key C is adapted to drop into a recess in the draw-head and engage notch *n* in the hook B. The lock C will settle into the notch and take up all slack motion, which cannot be done where the hooks are pivoted on pins. The top of pin C is fitted with a cap which projects down over an upwardly-projecting socket from the draw-bar and prevents water or snow entering the joint and becoming frozen, and so makes it impossible to unlock the coupler.

The lock C is attached by spring *i* to the arm *r* on rock-shaft D. The rock-shaft D runs from the center of the car to the out edge and is operated by crank *t*, or by any other means. The object of spring *i* is to enable the operative to turn the arm *r* of the rock-shaft D past the center, as shown in Fig. 7, so putting stress on the spring, and when the train slacks the recoil of the spring will release lock C and the car will be uncoupled. This enables an operative to uncouple the train at any time without waiting for the train to slack. This portion of my device can be made to operate the pin of an ordinary link-and-pin coupling. A weight can be adjusted to answer the same purpose as the spring. The cap on pin C can be dispensed with and the coupler still be effective. This coupler will work with any other vertical-

hook coupler now in use. The hooks of other couplers can be provided with the horizontal grooves H and be made to lock effective to prevent vertical movement or displacement.

5 The front end of the hook of my improved car-coupler is curved so that when it comes against the corresponding hook of an adjacent car it will be thrown open, and the back part is curved so that when it comes in contact with the draw-head, which is curved to receive it, it will be thrown shut and the lock C will drop into place and lock the whole in position. It is thus clear that my coupler is automatic. The hooks B having vertical 10 faces H, if the draw-heads are of different height, as long as part engages the car is safely coupled and locked vertically.

The details of my improved coupler can be greatly varied and still embody my invention. The advantages of employing spring 20 or the mechanical equivalents are that no matter how tight the lock may be held the person uncoupling is in no danger of breaking the connection that operates the lock. In other kinds of couplers a chain is usually 25 provided. When the train is not slacked, it is a frequent occurrence for the brakeman or other person to break the chain or other connection to the lock which extends out to the side of 30 the train. He is then compelled to procure some instrument and enter between the cars to unlock the coupler. This is very dangerous and is completely avoided by using my spring or its equivalent. Again, my spring 35 or its equivalent connecting device may be put in operation and the brakeman leave for another car, knowing that as soon as the train slacks the coupler will be unlocked. In this way a single man can do vastly more work in 40 making up trains than where couplers are operated in the old way.

By using a rock-shaft D with an arm *r*, adapted to pass the center of support, or any other lever operating similar to arm *r*, I 45 avoid all necessity for catches, traps, or cumbersome mechanism for holding the coupler unlocked. When it is desired to couple, all that is required is to push the lever back by the center of support. The lever or rock-shaft is capable of use when not in combination with a spring.

A car-coupler that locks vertically is far more safe than one that does not. The hook-couplers that do not lock vertically are very 55 likely to separate when the train is moving rapidly over a rough road-bed or overgrades.

Cars thus separated from trains have caused a large proportion of the disasters on railways. By adopting my plan of coupling this will be entirely prevented. Where cars are 60 not of exactly the same height, the vertical lock is of still greater value in preventing a separation of a train. In passenger-trains the vertical lock is also preferable. Where it is not used, two adjacent cars bound and move 65 in opposite directions, making it very dangerous for a person to pass from one car to another. With the two vertically locked securely together no such danger is experienced.

70 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hook car-coupler, the combination of the hook, B, with the draw-bar, A, having 75 curved portions, B', the key, C, with a cap fitting over an upwardly-projecting socket in the draw-head and adapted to engage a notch, *n*, a spring, *i*, and rock-shaft, D, having arm, *r*, adapted to put stress on the spring, *i*, and 80 pass the center against the car, substantially as described, for the purpose specified.

2. In a vertical-hook car-coupler having oppositely-facing irregular jaws sliding in curved recess in the draw-head, a locking 85 device, in combination with a spring actuated by a lever that passes its center of support to put stress on the spring to unlock the coupler when the car slacks and hold it 90 unlocked until required for use, substantially as described for the purpose specified.

3. In a vertical-hook car-coupler, the combination of oppositely-facing hook-jaws adapted to hook into each other; a lock for said jaws when closed; an arm attached by 95 suitable connections to said locks adapted to swing over past its center of support to unlock the coupler and hold it so until required for use; a rock-shaft attached to said arm, and a lever to the other end of said rock- 100 shaft to the outside of the car to operate said arm and swing it past its center, so that it may be operated from the ground, for the purpose specified.

In witness whereof I have hereunto set my 105 hand and seal in the presence of two witnesses.

THOMAS WELCH. [L. S.]

Witnesses:

W. G. HOWARD,
E. S. ROOS.