(No Model.)

T. WELCH.

CAR COUPLING.

No. 577,801. Patented Feb. 23, 1897.

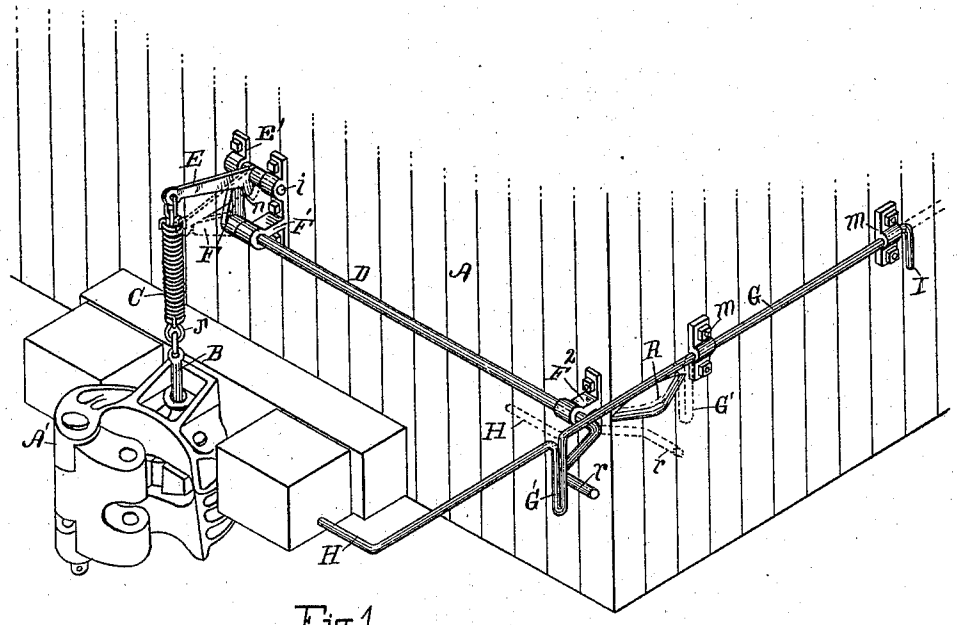

Fig. 1

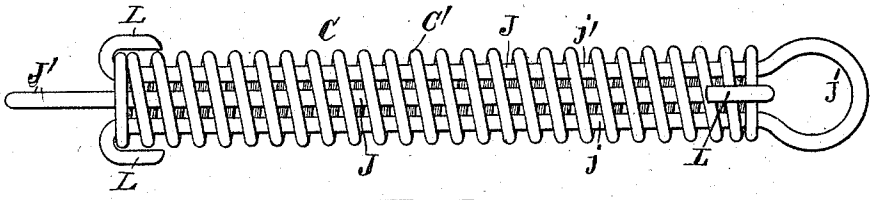

Fig. 2

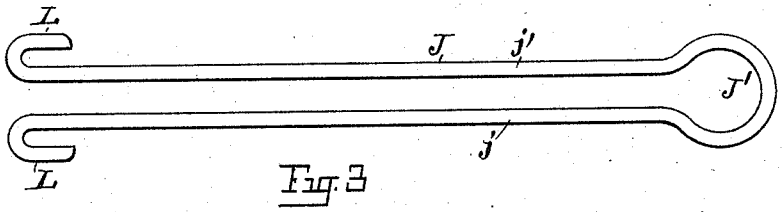

Fig. 3

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UNITED STATES PATENT OFFICE.

THOMAS WELCH, OF PAW PAW, MICHIGAN.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 577,801, dated February 23, 1897.

Application filed February 5, 1896. Serial No. 578,079. (No model.)

To all whom it may concern:

Be it known that I, THOMAS WELCH, a citizen of the United States, residing at Paw Paw, county of Van Buren, State of Michigan, have invented a certain new and useful Improvement in Car-Coupling; and I 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, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain new and useful improvements in car-couplers, and has reference more particularly to devices for properly operating and controlling the coupling mechanism.

The objects of my invention are, first, to provide means for operating the coupling-pin or locking device of a car-coupler which can be put in operation at any time, whether there is tension on the coupler or not; second, to provide means whereby the coupling mechanism can be set so that when cars are brought together they will operate the coupling mechanism and accomplish the coupling automatically, and whereby when it is not desired to couple the cars the coupling mechanism can be set so that it will not engage when the cars come together. I accomplish these objects of my invention by the devices hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 presents a perspective view of a portion of one end of a railway-car with my improved devices attached thereto. Fig. 2 is an enlarged detail view of the spring connection between the lever or rock-bar and the lock or coupling-pin. Fig. 3 is a detail view of one of the wire loops J.

Similar letters of reference refer to similar parts throughout the drawings.

Accordingly in the drawings, A represents the body of a car.

A′ represents an approved form of coupler, preferably a vertical-hook bar-coupler, having a knuckle hinged to swing laterally.

B represents the coupling-pin or locking device.

C represents my improved spring.

D represents a rock-bar provided with an arm F at one end thereof.

E represents a lever fulcrumed, as shown at *i*, in brackets E′ F′, engaged on the end of the car. The arm F of the rock-bar acts upon the under side of the lever E. Brackets F′ F², attached to the end of the car, form bearings for said rock-bar D. This rock-bar is provided with a crank-arm *r* at the outer end thereof, by which the rock-bar is actuated.

G is a rod supported horizontally in suitable guideways *m m* on the side of the car, said rod being provided with a downwardly-projecting arm G′, which may be formed by looping the bar G as shown. One extremity of the rod G is turned at an angle to the body of the rod, as shown at I, to limit the movement of said rod through said guideways. The opposite end of the rod G is bent inwardly to form an arm H.

R represents a cam-block on the side of the car adjacent to the rod G, over which the arm G′ of said rod may pass in order to partially rotate said rod and permit the arm G′ as it strikes the cam-block to pass over the crank *r* of the rock-bar to its place to the rear of said cam-block.

The spring C is constructed to act as a compression-spring and preferably consists of a coil C′, through which extend the straight arms *j j′* of the two loops J, said loop being preferably made of wire bent to form said arms, and an eye J′ at each end of said loop. The arms *j j′* are bent at their free extremities to form hooks L L. The two loops J J are preferably identical in form. The loops J J are engaged with the coil C′ by closing together the corresponding hooks L L, when the respective loops may be slipped through the coil C′ and in opposite directions the one with the other, the hooks L L of the two loops J J engaging over opposite extremities of said coil. The two loops J J being thus engaged with the coil C′ provide eyes J′ J′ at opposite extremities of the spring, by which the spring may be readily connected with the coupling-pin or locking device B and with the lever E. It will be obvious that when stress is put on the spring the hooks L L over the opposite ends of the coil C′ will cause the compression of the spring. It will be noted

that this construction makes a very cheap and convenient spring which can be easily removed and readily attached, requiring no welding or opening of links or any preparation for engaging the spring in place, while also it makes a very strong connection of the locking device with the lever E. Extension-springs have been found to be impracticable in this connection, inasmuch as they have been found not to lift quickly enough, and becoming too much extended they are found to be weak and very liable to break. They also lose their elasticity and are found to be more expensive for the reason that the coils must be closer together, the spring therefore being of greater weight. A compression-spring, however, is found to remedy these defects, inasmuch as the application of tension compresses the coil, and such a spring has been found by adequate tests to lift as quickly as a chain, while it does not lose its elasticity and is never liable to break. For these reasons a compression-spring has been found to possess special advantages for drawing the locking devices or coupling-pins.

It will be seen that when the cars stand so as to exert a strain upon the locking device more power will be required to disengage the locking device than where the cars stand in such a manner that the locking device is without strain thereupon and is perfectly free to be lifted. In such a case a compression-spring is essential. The compression-spring is of such a suitable heft that it need not be compressed in exerting the locking device when there is no strain thereupon, the spring being compressed, however, when there is a strain thus upon the locking device to be overcome, owing to the straining position of the cars. It will be obvious that when the spring is so compressed and the strain upon the locking device is relieved the recoil of compression-spring will draw the lock.

In operating my improved device, if it is desired that the car shall couple with an adjacent car, the coupling mechanism is set in the position indicated in full lines in Fig. 1, the rod G being drawn well forward, with the arm H projecting inward. When an adjacent car approaches, obviously it will strike the arm H, forcing the arm G in the opposite direction along the side of the car, the arm G′ engaging the crank-arm *r* of the rock-bar, thereby throwing the arm F of the rock-bar forward into position indicated by the dotted lines and allowing the pin or locking device B to drop. The arm G′, striking the cam-block R, partially rotates the rod G, thereby swinging the arm G′ past the crank *r* and allowing the arm G′ to drop down close to the side of the car to the rear of the cam-block, as indicated in dotted lines. When it is desired to couple a car, the brakeman simply swings the rock-bar D into position indicated by the full lines in the drawings, thereby raising the spring C, and with it the pin or lock B, to the position shown. The rod G is also drawn forward, as indicated in full lines, and when the car approaches or is approached by another car contact is made with the arm H, whereby it is pushed toward the car to which it is attached, causing the arm G′ to strike the crank *r*, as above described, and causing the pin or lock B to fall, the rod G being moved to the position indicated by the dotted lines, the cam-plate R raising the arm G′ and disengaging said arm from the crank *r*.

When it is desired to bunch the cars together without coupling them, the lock or pin B is raised, as shown in full lines in the drawings, and the rod G is moved to the position indicated by the dotted lines, so that when two cars come together the arm H will be out of the way and will not be struck to operate the rock-bar in the manner hereinbefore described.

It will be seen that by use of this device it will not be necessary to stand by the coupler to either lock or unlock the same. He can simply set the coupling mechanism to accomplish either result hereinbefore mentioned, as may be desired, and the desired operation will be accomplished with certainty. Having set the coupling mechanism at one end of a car, as above mentioned, the brakeman may pass on to the next, and so on, or to any other duty, without delay.

My improved spring is so constructed as to be extremely durable, and it can readily be substituted in place of the ordinary chains already in use in almost any style of coupler, while it may be constructed also much more cheaply than a chain or other connecting devices heretofore used, and can be applied by any person quickly and is not liable to get out of repair. However, should it become worn it can be readily renewed.

Having thus described my improved car-coupling device, I desire to state that it can be considerably varied in its details without departing from the principle of my invention. Other styles of compression-springs can be employed, although the one I have herein shown and described is much superior to others. The compression-spring may also be used in connection with other forms of operating-levers.

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

1. The combination with a vertical-hook car-coupler, having a knuckle hinged to swing laterally, of a locking device, mechanism for disengaging said locking device, a compression-spring connecting said mechanism with said locking device, and means actuated by contact with an adjacent car to automatically release the locking device to effect the coupling, whereby a strain upon the locking device will compress said spring, and whereby, when said strain is relieved, the recoil of the

compressed spring will lift the locking device and disengage said device from said coupler, for the purpose set forth.

2. The combination with a vertical-hook car-coupler, of a locking device, mechanism for disengaging said locking device, and means actuated by contact with an adjacent car whereby the locking device may be automatically released to effect the coupling when it is desired to couple, and means whereby the locking device may be retained in inoperative position when it is not desired to couple, at the will of the operator, for the purpose set forth.

3. The combination with a vertical-hook car-coupler, of a rock-bar, a locking device connected with the rock-bar, and means whereby the rock-bar may be automatically operated when desired by contact with an adjacent car to effect the coupling, for the purpose set forth.

4. The combination with a vertical-hook car-coupler, having a knuckle hinged to swing laterally, of a locking device, a rock-bar, a compression-spring connecting the rock-bar and locking device, and means to automatically operate the rock-bar to effect the coupling, whereby a strain upon the locking device will compress said spring, and whereby, when said strain is relieved, the recoil of the compressed spring will lift the locking device and disengage said device from said coupler, for the purpose described.

5. The combination with a vertical-hook car-coupler, of a rock-bar, a locking device connected with the rock-bar, and means whereby the rock-bar may be automatically operated when desired, by contact with an adjacent car to effect the coupling, and means whereby the rock-bar may be rendered inoperative by the approach of an adjacent car when it is desired, for the purpose set forth.

6. The combination with a vertical-hook car-coupler, of a rock-bar, a locking device connected with the rock-bar and a removable rod G to actuate the rock-bar, for the purpose set forth.

7. The combination with a vertical-hook car-coupler, of a rock-bar provided with a crank-arm at its outer end, a locking device connected with the opposite end of the rock-bar, and a movable rod G provided with an arm G′ arranged to strike the crank-arm of the rock-bar, for the purpose set forth.

8. The combination with a vertical-hook car-coupler, a locking device connected with the rock-bar, a movable rod G provided with an arm G′ to actuate the rock-bar, and means to throw the arm G′ out of contact with the rock-bar, for the purpose set forth.

9. The combination with a vertical-hook car-coupler, of a rock-bar provided with a crank-arm at its outer end, a locking device connected with the opposite end of the rock-bar, a rod movable longitudinally of the car provided with an arm G′ to actuate the crank-arm of the rock-bar, and with an arm H to contact with an adjacent car, and means to throw the arm G′ out of engagement with the crank-arm of the rock-bar, for the purpose set forth.

10. The combination with a vertical-hook car-coupler, having a knuckle hinged to swing laterally, of a locking device, mechanism for disengaging said locking device, a compression-spring connecting said mechanism with said locking device, and means actuated by contact with an adjacent car, whereby the locking device may be automatically released to effect the coupling when it is desired to couple, and means whereby the locking device may be retained in inoperative position when it is not desired to couple, at the will of the operator for the purpose set forth.

11. The combination with a vertical-hook car-coupler, having a knuckle hinged to swing laterally, of a rock-bar, a locking device, a compression-spring connecting the locking device with the rock-bar, and means whereby the rock-bar may be automatically operated, when desired, by contact with an adjacent car to effect the coupling, for the purpose set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

THOMAS WELCH.

Witnesses:
N. S. WRIGHT,
O. B. BAENZIGER.