

(No Model.)

2 Sheets—Sheet 1.

J. A. FRENZEL.  
CAR COUPLING.

No. 428,389.

Patented May 20, 1890.

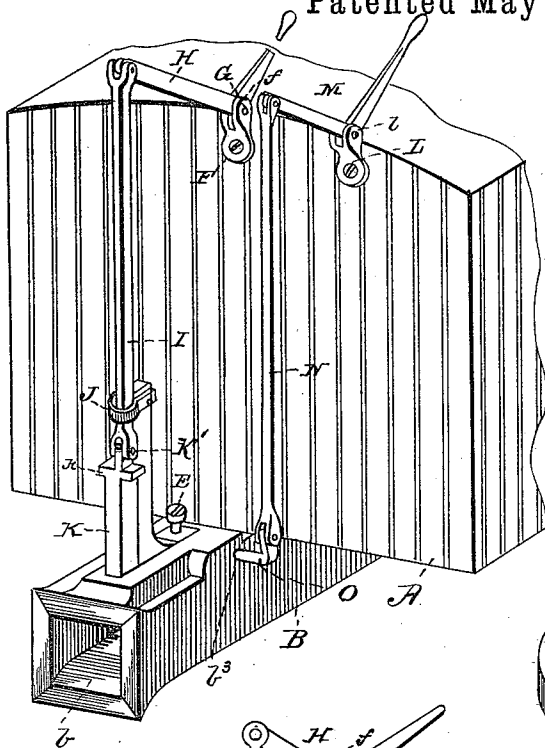


Fig. 1.

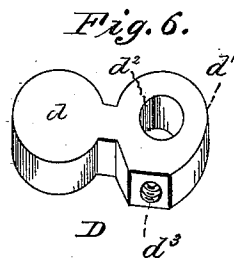


Fig. 6.

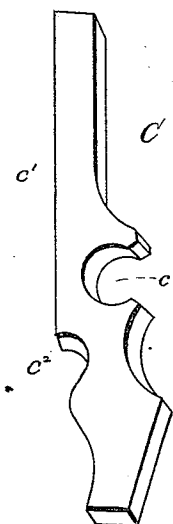


Fig. 5.

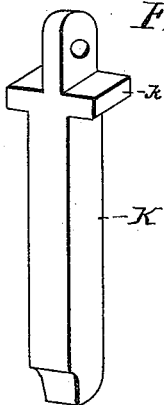


Fig. 4.

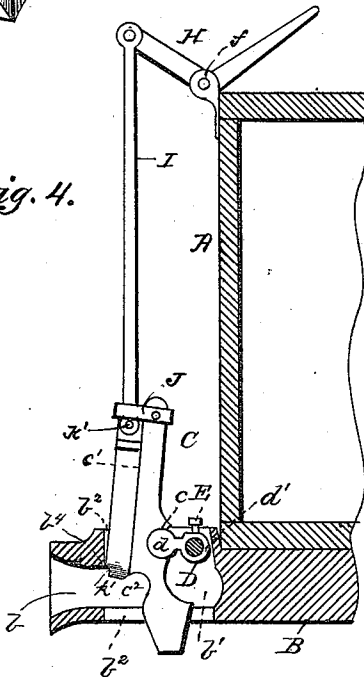


Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 428,389, dated May 20, 1890.

Application filed March 14, 1890. Serial No. 343,854. (No model.)

*To all whom it may concern:*

Beitknown that I, JOHN A. FRENZEL, a citizen of the United States, residing at Wausau, in the county of Marathon and State of Wisconsin, have invented certain new and useful Improvements in Car-Couplings; and I do 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, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of automatic car-couplings which embody a gravity coupling-pin adapted to be engaged automatically by the link when it enters the draw-head; and the object of my improvement is to provide a simple coupling of this class which will possess advantages in point of inexpensiveness, durability, and general efficiency, and in which all liability to danger from going between cars is entirely obviated.

A further object is to provide for the convenient and ready coupling with cars having the ordinary pin-and-link mechanism, and to provide for the regulation of the link, whereby it may be elevated or lowered to effect automatic coupling with cars upon which the draw-heads are at different heights.

In the drawings, Figure 1 is a perspective view of the end of a car having my improved coupling, showing the coupling-pin and link-regulating lever in a raised position. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a cross-sectional view. Fig. 4 is a detail view of the coupling-pin. Fig. 5 is a detail view of the link-regulating lever. Fig. 6 is a detail view of the cam; and Fig. 7 is a perspective view of the end of a car, showing a modified form of the levers, whereby they are operated from the side of the car.

Like letters of reference refer to like parts throughout the several views.

Referring to the drawings, A designates the end of a car, to which the draw-head B is secured in any desirable manner. This draw-head is provided with the usual flaring mouth or link-opening  $b$ , converging toward its inner end, and communicating at this point with a rear recess  $b'$ . It is also provided at its top and bottom with longitudinal registering-

openings  $b^2$   $b^2$ , through which the coupling-pin and link-regulating lever pass. The link-regulating lever above referred to is indicated by the letter C, and is provided upon its rear face with a recess  $c$ . The upper portion of the front edge of this lever, it will be observed, is perfectly straight, as shown at  $c'$ , and terminates at its lower end in a concavity or recess, forming a shoulder  $c^2$ , which when said lever is operated acts upon the link and assists in adjusting the same.

Fitting in the rear recess  $c$  of the link-regulating lever is the forward rounded portion  $d$  of a cam D. The rear rounded portion  $d'$  of this cam is provided with a transverse perforation  $d^2$ , registering with similar perforations  $b^3$   $b^3$  in the sides of the rear recess of the draw-head, and also provided with a vertical screw-threaded aperture  $d^3$ , which receives a set-screw E, working through the upper longitudinal slot of the draw-head.

Secured to the upper portion of the front of the car-body is a bracket or arm F, said arm having its upper end bifurcated, as indicated by the letter  $f$ . In this bifurcated portion is pivoted, upon a transverse bolt G, a bell-crank H, the lower member of said bell-crank being pivoted to the upper bifurcated end of a lower lever I, the lower end of said lever also being bifurcated and passing through a forwardly-extending sleeve or guide J, secured to the link-regulating lever. In this lower bifurcated end of the lever I is pivoted the upper end of a coupling-pin K by means of a transverse bolt K', having extended ends, said pin working in the link-opening  $b$  of the draw-head and through the longitudinal openings  $b^2$  thereof. This pin is also provided with the usual flanges or enlargement  $k$  at its upper end, which engages the top of the draw-head and limits the downward movement of the pin. It will further be seen that the pin at its lower end is notched or cut away, as indicated at  $k'$ . This notch serves to engage a corresponding projection or shoulder  $b^4$  in the forward end of the longitudinal slit of the draw-head, the engagement, however, only occurring when the coupling-pin is in its raised position, and serving to retain the same in said raised position. The upper front portion of the car-body has also secured thereto a second bracket or arm

L, having its upper end bifurcated at  $l$ , in which bifurcation is pivoted a bell-crank M. The lower member of this bell-crank has also pivoted thereto a vertical lever N. A transverse shaft O passes through the perforations  $b^3$   $l^3$  in the sides of the rear recess of the draw-head and also through the registering transverse aperture  $d^3$  of the cam. This shaft has one of its ends bent forwardly at right angles, said bent end being secured to the lower end of the vertical lever N.

The set-screw E, passing through the vertical aperture  $d^3$  of the cam, serves the function of holding the transverse shaft O firmly in position, and also provides for the ready removal of said shaft when necessary.

Fig. 7 of the drawings illustrates a modified form of my device. In this form of the invention no change is made in the construction of the draw-head, coupling-pin, and link-regulating lever. Instead of employing the vertical levers, however, which provide only for the operation of the device from the top of the car, I connect to the upper end of the coupling-pin lever the forwardly-extending portion of a rod P, the other portion of said rod being retained in suitable bearings Q Q, secured to the front of the car. The outer extremity of this rod terminates in a bent portion, which serves as a handle and allows the pin to be operated from the side of the car. It will also be noticed that in this form of the device, instead of connecting the end of the transverse shaft O to the lower end of the vertical lever N, the outer end of said shaft is simply extended laterally and bent at right angles, thus also providing for operating the same from the side of the car.

Having thus described the construction of my improved car-coupling, the operation of the same is as follows: When the link enters the draw-head, the coupling-pin and link-regulating lever being in the position illustrated in Fig. 1, it will strike against the lower portion of the link-regulating lever and throw the upper end forward. This necessarily has the effect of also throwing the upper end of the coupling-pin forward, at which moment both the coupling-pin and link-regulating lever will fall by gravity, and the pin thus secure the link within the draw-head. When it is desired to uncouple the cars, all that is necessary to be done is simply to throw the upper member of the bell-crank lever H rearward, which will have the effect of raising the coupling-pin, and with it the link-regulating lever, by means of the sleeve thereof being engaged by the extended ends of the transverse bolt K', the upper ends of both being then forced rearwardly by the action of the recess  $c$  of the link-regulating lever upon the cam D. When in this latter position both of the parts referred to are firmly locked or held in their raised position, and can only be displaced by the action of the link, as hereinbefore described.

In order to adapt my invention for ready

and convenient coupling with cars upon which the draw-heads are at different heights, I provide the transverse shaft O and its connecting-levers. If the pin is in its lowermost position and securing the link and it is desired to change the position of the link to effect the above function, the appropriate bell-crank lever is moved forward, which will have the effect of turning the shaft O in a similar direction. As this shaft is turned of course the cam is likewise turned, and said cam, acting in the rear recess of the link-regulating lever, will cause the same to move downward. As it is thus moved the front shoulder  $c^2$  of the concavity or recess bears upon the rear of the link and elevates the front thereof. In this manner the link can be adjusted to almost any height of draw-head. Of course the same operation can be effected by the construction exemplified by Fig. 7 of the drawings, the object of the construction shown by said figure being to provide means for operating from the side as well as the top of the car.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a car-coupling, the combination, with a draw-head provided on its upper and under sides with longitudinal registering slots, of a link-regulating lever working in said slots, said lever provided upon its rear edge with a recess and on its front edge with a shoulder, and a transverse shaft having a suitable operating-rod and formed or provided with a cam working in the rear recess of the link-operating lever, said shaft passing through transverse apertures in the draw-head and through the registering transverse aperture of the cam, substantially as set forth.

2. In a car-coupling, the combination of a draw-head provided on its upper and under sides with longitudinal registering slots, a link-regulating lever working in said slots, said lever provided upon its rear edge with a recess and on its front edge with a shoulder, a double-headed cam having its forward head working in the rear recess of the link-regulating lever and its rear head provided with a transverse aperture, and a transverse shaft provided with a suitable operating-rod and passing through transverse apertures in the draw-head and through the registering transverse aperture of the cam, substantially as set forth.

3. In a car-coupling, the combination of a draw-head provided on its upper and under sides with longitudinal registering slots, a link-regulating lever working in said slots, said lever provided upon its rear edge with a recess and on its front edge with a shoulder, a double-headed cam having its forward head working in the rear recess of the link-regulating device and its rear head provided with a transverse and vertical aperture, the latter being screw-threaded, a transverse shaft provided with a suitable operating-rod and pass-

ing through transverse apertures in the draw-head and through the registering transverse aperture of the cam, and a set-screw working in the vertical screw-threaded aperture of said cam, substantially as set forth.

4. In a car-coupling, the combination, with a draw-head provided upon its upper and under sides with registering longitudinal slots, of a coupling-pin working in said slots, an operating-lever pivoted to the upper end of said pin, a link-regulating lever, said lever provided upon its rear edge with a recess and on its front edge with a shoulder, and a transverse shaft having a suitable operating-rod and formed or provided with a cam working in the rear recess of the link-regulating lever, said shaft passing through transverse apertures in the draw-head and through the registering transverse aperture of the cam, substantially as set forth.

5. In a car-coupling, the combination, with a draw-head provided upon its upper and lower sides with registering longitudinal slots, of a coupling-pin working in said slots, an operating-lever pivoted to the upper end of said coupling-pin by a transverse bolt having extended ends, a link-regulating lever provided on its rear edge with a recess and on its front edge with a shoulder, a sleeve or guide secured to the link-operated lever, adapted to be engaged by the extended ends of the transverse bolt, and a transverse shaft having a suitable operating-rod and formed or provided with a cam working in the rear recess of the link-regulating lever, said shaft passing through transverse apertures in the

draw-head and through the registering transverse aperture of the cam, substantially as set forth.

6. In a car-coupling, the combination, with a draw-head provided with a link-opening converging toward its inner end and communicating with a rear recess, and also provided upon its upper and lower sides with longitudinal registering slots, of a coupling-pin working in the link-opening of the draw-head, a vertical lever pivoted to the upper end of said pin, a bracket secured to the car-body, a bell-crank lever pivoted in said bracket, the lower member of said bell-crank articulating with the upper end of the coupling-pin lever, a link-regulating lever working in the rear recess of the draw-head, a sleeve secured to the link-regulating lever and surrounding the lever of the coupling-pin, a transverse shaft formed or provided with a cam working in the rear recess of the link-regulating lever, said shaft passing through transverse apertures in the draw-head and through the registering transverse aperture of the cam, a rod or lever pivoted to the outer bent end of said shaft, a bracket secured to the car-body, and a bell-crank lever pivoted to the upper end of the vertical rod or lever which engages the transverse shaft, substantially as set forth.

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

JOHN A. FRENZEL.

Witnesses:

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FRANK W. YOUNG.