

(No Model.)

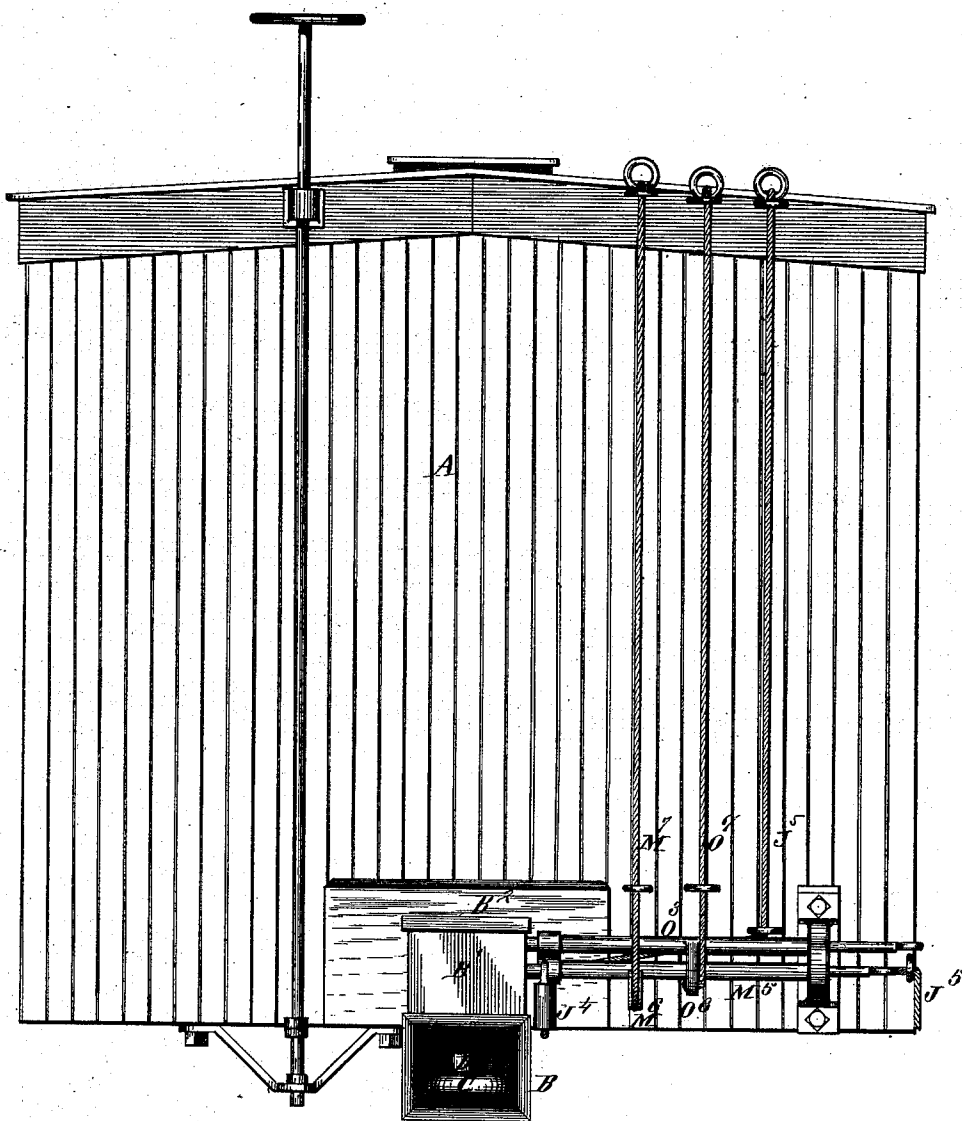
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P. FRANK.
CAR COUPLING.

No. 351,970.

Patented Nov. 2, 1886.

Fig. 1.



Witnesses
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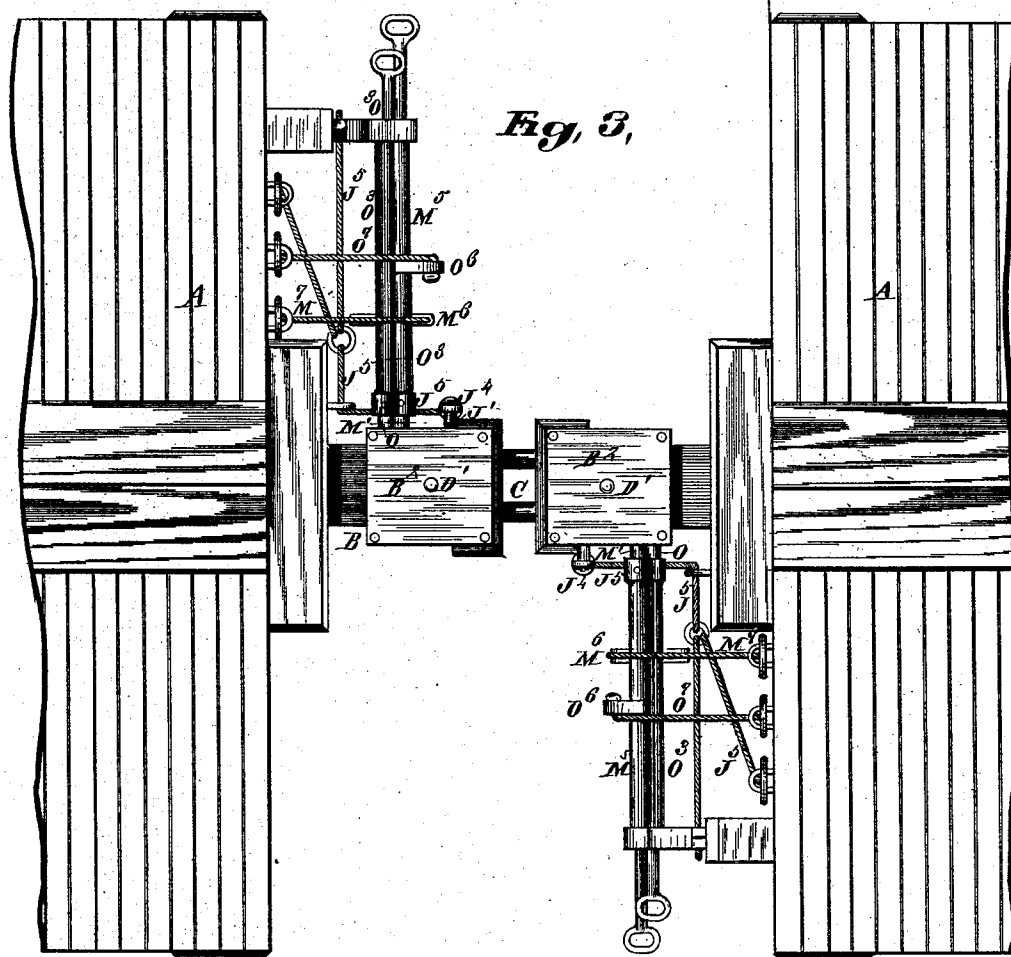
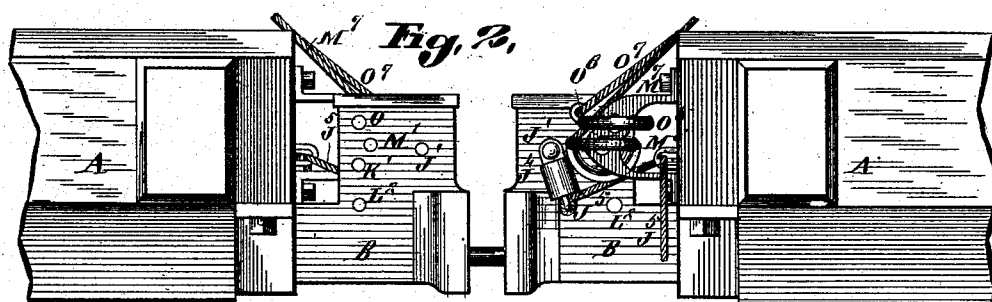
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Fig. 4,

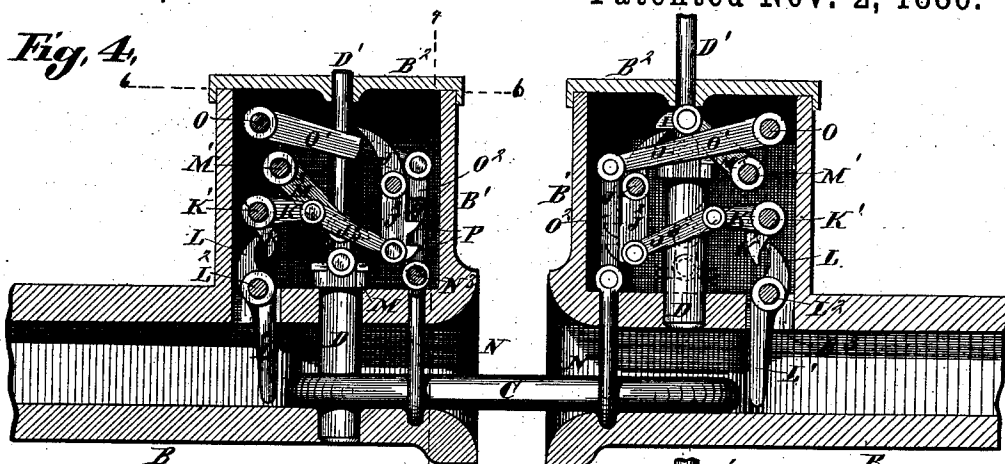


Fig. 5,

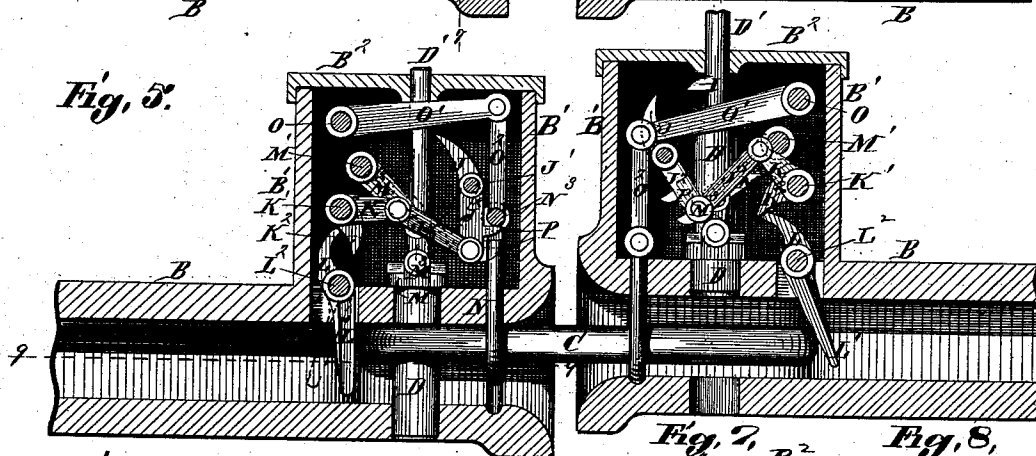


Fig. 6,

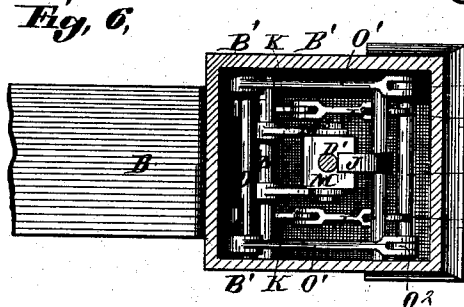


Fig. 9,

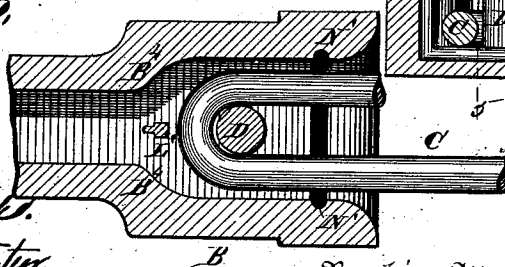
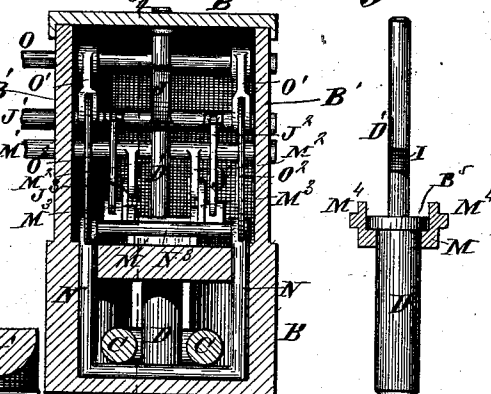


Fig. 7, B' Fig. 8,



Witnesses

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UNITED STATES PATENT OFFICE.

PETER FRANK, OF ST. LOUIS, MISSOURI.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 351,970, dated November 2, 1886.

Application filed August 16, 1886. Serial No. 211,089. (No model.)

To all whom it may concern:

Be it known that I, PETER FRANK, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Car-Couplings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is an end view of a freight-car, showing my improvement applied. Fig. 2 is a detail elevation showing the adjacent ends of two cars with my improvement applied. Fig. 3 is a detail top view of the adjacent ends of two cars, showing my improvement applied. Fig. 4 is a vertical longitudinal section of the ends of two draw-bars provided with my improved coupling, the section being taken on line 4 5, Fig. 7. Fig. 5 is a similar view showing the parts in a similar position, except that they are adjusted to cause the link to enter a draw-bar of a higher elevation than the one in which the link is supported, the section being taken on line 4 5, Fig. 7. Fig. 6 is a horizontal longitudinal section taken on line 6 6, Fig. 4. Fig. 7 is a vertical transverse section taken on line 7 7, Fig. 4. Fig. 9 is a horizontal longitudinal section taken on line 9 9, Fig. 5, looking down. Fig. 8 is an elevation of one of the coupling-pins and a section of one of the lifting-collars.

In all automatic car-couplings heretofore constructed the actuating mechanism has been exposed either to the weather or to the action of the draw-heads upon each other, or both, and no provision has been before made for automatically withdrawing the actuating machinery to a place of safety when out of employment and securing its return to a position always ready for use when required.

The object of my invention is to provide a car-coupling that will be automatic in its operation, that will be protected from being broken and from being exposed to the weather, one that will operate perfectly under all circumstances, one that will not be liable to get out of order, and which may be used without going between the cars to couple or uncouple them; and to this end my invention consists in features of novelty, hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents the

adjacent ends of two cars. In Figs. 1 and 3 box-cars are shown, and in Fig. 2 a flat car is shown. In the former case the mechanism constituting the coupling may be provided with cords or rods extending either to the top of the car or to the sides, or both, as hereinafter described, so that it can be operated without entering in between the cars, and in the latter case such rods or cords would extend to the sides of the car, so that the mechanism constituting the brake could be operated without passing in between the cars.

B represents the draw-bars, which are secured to the body of the cars in any well-known or usual manner.

C represents the coupling-link, and D the coupling-pins. Each draw-bar is provided with a housing or case, B', having a removable cap, B², within which the mechanism constituting the automatic coupling is located, and which protects this mechanism from exposure to the weather and from being struck by objects which might cause a breakage or dislocation of the parts.

Each pin is provided with an extension, D', that protrudes through the cap B² of the housing. Upon this extension is formed or secured a projection or lip, I, as shown in Figs. 4, 5, 7, and 8. This lip or projection is engaged to support the pin by a dog or pawl, J, secured to a rock-shaft, J', journaled in the sides of the housing B', and held to engagement by the shape of said pawl and by a counter-weight on arm J'. This rock-shaft is operated to disengage the hook J from the lip I, to allow the pin to fall by gravity, by means of an arm, J², on the shaft J', connected by means of a link, J³, to an arm, K, on a rock-shaft, K', journaled in the walls of the housing B'. This shaft K' is provided with a cam, K², with which engages the upper end, L, of a trip-lever, L', supported on a rock-shaft, L², journaled in the walls of the housing B', this lever extending down through an opening, B³, in the top of the draw-bar, its lower end fitting in the central part of the throat of the draw-bar.

Now, it will be understood that when the coupling-link C enters the throat of the draw-bar and comes against the lower end of the trip-lever L' it forces it from the position shown on the right-hand side of Fig. 4 to the

position shown on the right-hand side of Fig. 5, and through means of the described connection the dog or pawl J will be disengaged from the lip I, allowing the pin to descend, and as it falls it enters the coupling-link, thereby coupling it to the draw-bar. The pin is thus automatically dropped to coupling or using position.

In order that the link C shall not move the parts too far, which might result in a breakage, and in order to prevent any danger of its passing the lower end of the trip L', the throat of the draw-bar is contracted at B', (see Fig. 9,) forming shoulders, against which the end of the link would impinge, preventing its farther movement into the draw-bar. In case the link C is in place and the cars are not moving, the pin can be dropped by operating the dog J by hand, instead of by the action of the pin, by simply rocking the arm J' on one end of the shaft J' outside of the housing, so that the dog J can be operated by such turning of the shaft J' by taking hold of this arm J'; and in order that it may be operated from the side or top of the car a cord or rope, J², may be connected thereto and extended to the top or side of the car within handy reach of the brakeman or other person.

In coupling a car the pin D is raised or elevated from the position shown on the left-hand side of Figs. 4 and 5 to the position shown on the right-hand side by means which I will now describe.

M represents a collar surrounding the upper end of the pin D, and having a socket to receive a flange, B², on the upper end of the pin. To this collar is connected a rock-shaft, M', by means of arms M² and links M³, these arms and links acting to lift the collar, and consequently the pin, when the shaft M' is turned. The shaft is journaled in the sides of the housing B', as shown most clearly in Fig. 7. The collar M is provided with ears M⁴, to which the lower ends of the links M³ are secured. It will thus be seen that by turning the rock-shaft M' in the proper direction the collar M and pin D will be raised from their lower to their upper positions, as shown in Figs. 4 and 5. The shaft is provided with an extension, M⁵, extending to the side of the car, and by which it can be turned without going between the cars; and by providing the extension M⁵ with a crank or segment, M⁶, to which is connected a rope, cord, or rod, M⁷, reaching to the top of the car, the pin can be raised from the top of the car, if desired. It will be seen that the collar M is not held from vertical movement on the pin D, so that as soon as the pin is raised and the power that raised it removed from the extension M⁵ the collar M and the arms and links that form a connection between it and the rock-shaft M' will return to their normal position, as shown by dotted lines on the right-hand side of Fig. 4. This leaves the pin suspended alone, so that when the dog J is disengaged from the lip I the pin will be free to fall, and its movement

will not be retarded by the mechanism by which it is elevated. As the pin is elevated the dog J is moved back by bearing against the inclined upper surface of the lip I, and as the lip I rises above the dog the latter moves in beneath the lip, holding the pin in suspension, as already described.

I have now described the manner of lifting and dropping the pin of one draw-bar, and the mechanism of the other draw-bar is identical with this. I have spoken of the arms J², K, and M² and the links J³ and M³ as there being one of each; but, as is shown and preferred, there may be two of each, one on each side of the pin—that is, the shaft J' has preferably two arms, J², the shaft K' preferably two arms, K, and consequently there would be two links, K², connecting these arms, one for each pair. The same is true of the arms M² and links M³.

It frequently happens that one draw-bar, or the draw-bar of one car, is at a lower elevation than the draw-bar of the car to which it is to be coupled. To meet such cases I have provided a stirrup or U-shaped frame, fitting and working in a groove, N', in the draw-bar, to lift the coupling-link. This frame or stirrup is placed within and back some distance from the mouth of the draw-bars, so that it is not liable to be struck or injured by the heads of the draw-bars when they come together, and it may be raised from the position shown on the left-hand side of Fig. 4 to the position shown on the left-hand side of Fig. 5. It is thus raised by means of a shaft, D, journaled in the sides of the housing B', to which are secured arms O', connected by links O² to the respective ends of the stirrup N.

The shaft O is provided with an extension, O³, which extends to the side of the car, and which, like the extension M⁵ of the shaft M', may be provided with a crank or segment, O⁶, to which is secured a cord, O⁷, extending to the top of the car, and by which the rock-shaft O can be turned to lift the link from the side or top of the car. When the link is thus raised, it is supported in its raised position at any desired height by means of one or more catches or projections, P, on the outer face of the arms J², with which engages a rod or bar, N³, that connects the upper ends of the U-shaped bar N. (See left-hand side of Fig. 5.) The rod N³ may be caused to engage either of the projections P, so that the link C may be held at the desired elevation. On the left-hand side of Fig. 5 the upper projection, P, is shown in engagement with the rod N³, so that the link C is held at its highest elevation. The lower faces of the projections P are made rounding, so that when the link is raised the bar N³, coming against the bottoms of these projections, will cause the lower ends of the arms J² to swing inward, allowing the bar N³ to pass, and the arms will then swing back by gravity, causing the projections P to engage beneath the rod N³.

When the heads of the draw-bars come together in coupling the cars, the U-shaped yoke

N is dropped automatically by disengaging the projections P from the bar N³. This is done by the link C coming against the lower end of the lever L', the extension or dog L coming against the cam K² on the rock-shaft K. It will now be seen that when the link C comes against the lower end of the lever L the parts will be moved from the position shown in full lines on the left-hand side of Fig. 5 to the position shown in dotted lines, thus releasing the stirrup N and allowing it to drop to its lower or normal position, so that the throat of the draw-bar is left clear and not obstructed by the stirrup while the cars are in motion or the next time the cars are to be coupled. In connecting two cars (where the draw-bars are at a different elevation) the link would first trip the device supporting the pin D, as shown on the right-hand side of Fig. 5, and then, being prevented from moving farther inward into the head of that draw-bar by the contracted throat D', it would be forced back into the throat of the other draw-bar, operating that, as shown by dotted lines on the left-hand side of Fig. 5, thereby releasing the stirrup.

Although on the right-hand side of Fig. 5 the dog J is shown as disengaged from the projection or lip I, yet the pin is shown in its raised or upper position, to better convey the idea intended to be illustrated in this figure. In practice, of course, the pin would drop as soon as the dog J is disengaged from the lip I.

I claim as my invention—

1. In a car-coupling, the combination of the pin, collar engaging the pin, rock-shaft, connection between the rock-shaft and collar, and means for supporting the pin, the whole being constructed substantially as described, whereby when the pin is raised the collar may return to its normal position, leaving the pin suspended, substantially as set forth.

2. In a car-coupling, the combination of the pin, collar engaging the pin, rock-shaft, arms on the rock-shaft, links connecting the arms to the collar, and means for sustaining the pin, the whole being constructed substantially as described, whereby when the pin has been raised the collar may return to its normal position, leaving the pin suspended, substantially as set forth.

3. In a car-coupling, the combination of the pin, collar engaging the pin, rock-shaft, connection between the rock-shaft and collar, extension on the pin, lip or projection on the extension, and a dog for engaging the lip, the whole being arranged substantially as described, for the purpose set forth.

4. In a car-coupling, the combination of the pin having an extension provided with a lip or projection, collar engaging the pin, links secured to the collar, rock-shaft, arms on the rock-shaft to which said links are secured, and a dog for engaging the projection on the extension of the pin, the whole being arranged substantially as described, whereby the dog supports the pin after the collar has returned

to its normal position, substantially as set forth.

5. In a car-coupling, the combination of the pin, collar surrounding the pin, rock-shaft, connection between the collar and rock-shaft, extension on the pin, lip or projection on the extension, dog for engaging the lip, rock-shaft to which the dog is secured, arms on the rock-shaft, links connecting the arms to arms secured to a second rock shaft, cam on last-mentioned rock shaft, and pivoted lever engaging said cam, substantially as and for the purpose set forth.

6. In a car coupling, in combination with the coupling link, pin having an extension provided with a lip, and mechanism for elevating the pin, constructed to return to its normal position while the pin remains elevated, a dog for engaging the lip on the extension of the pin, and mechanism through which the dog is operated by said link, substantially as set forth.

7. In a car-coupling, in combination with the pin having an extension provided with a lip and mechanism for raising the pin, a dog for engaging the lip on the extension of the pin, rock-shaft to which said dog is secured, arms secured to the rock-shaft, a second rock-shaft provided with arms, links connecting said arms, cam on last-mentioned rock-shaft, and pivoted lever engaging said cam, and acting in conjunction with the coupling-link to release the pin and allow it to fall into using position, substantially as set forth.

8. In a car-coupling, in combination with the pin provided with an extension having a lip and a dog for engaging the lip and holding the pin in an elevated position, rock-shaft to which the dog is secured, arms on the rock-shaft, projections on said arms, a stirrup or frame encircling the coupling-link, cross-bar on said stirrup for engaging the projections on the arms, and means for disengaging the projections from the cross-bar on the stirrup, consisting of a pivoted lever, cam, rock-shaft to which the cam is secured, and connection between the rock-shaft and arms having the projections, substantially as set forth.

9. In a car coupling, in combination with the coupling-pin and coupling-link, the stirrup encircling the coupling-link and provided with a cross-bar on top, links connected to the stirrup, arms connected to the upper ends of the stirrup-links, rock-shaft to which the arms are secured, and by which they are operated to elevate the coupling-link, and a draw-bar provided with a groove, in which said stirrup fits and works, substantially as set forth.

10. In a car coupling, in combination with a draw-bar having a groove in its throat, a coupling-pin and coupling-link, the stirrup fitting in the groove of the draw-bar encircling the coupling-link, and located entirely within the throat of the draw-bar a distance back from the face of the draw-head, and mechanism for operating the stirrup to elevate the

coupling-link, substantially as and for the purpose set forth.

11. In a car-coupling, in combination with the coupling-link and coupling-pin, a stirrup encircling the coupling-link, provided with a cross-bar at top, links secured to the stirrup, arms secured to the upper end of the stirrup-links, rock-shaft to which the arms are secured, and by which they are operated to lift the stirrup, swinging arms provided with projections to engage the stirrup, rock-shaft to which the arms are connected, cam on the rock-shaft, and pivoted lever bearing against the cam, and which is operated by the coupling-link to release the stirrup and allow it to descend to its normal position, substantially as set forth.

12. In a car-coupling, in combination with the coupling-pin, mechanism, substantially as described, for elevating the pin, and a housing secured to or formed upon the draw-bar for inclosing said mechanism, and in the sides of which the rock-shafts of said mechanism are journaled, substantially as and for the purpose set forth.

13. In a car-coupling, in combination with the coupling-pin and coupling-link, mechanism, substantially as described, for lifting and releasing the pin, mechanism, substantially as described, for raising the link, and the housing secured to or formed upon the draw-bar for inclosing said mechanism, and in the sides

of which the rock-shafts of said lifting and releasing mechanism are journaled, substantially as and for the purpose set forth.

14. In a car-coupling, in combination with the coupling-pin, mechanism, substantially as described, for lifting the pin, mechanism, substantially as described, for releasing the pin automatically by the entrance of the link, mechanism, substantially as described, for lifting the coupling-link, mechanism, substantially as described, for releasing said link-lifting mechanism automatically by the entrance of the link, and draw-bars having contracted throats acting to prevent the link from entering the draw-bars too far, for the reasons specified.

15. In a car-coupling, in combination with the coupling, mechanism, substantially as described, for lifting the pin and then automatically returning to its original position, mechanism for lifting the coupling-link, substantially as described, and placed within the draw-bars and housing, both sets of mechanism placed as described and capable of acting automatically, separately or together, and all returning automatically to their normal position as soon as used, substantially as described.

PETER FRANK.

In presence of—

GEO. H. KNIGHT,
JOE WAHLE.