

(No Model.)

2 Sheets—Sheet 1.

P. C. BROWN.  
CAR COUPLING.

No. 542,603.

Patented July 9, 1895.

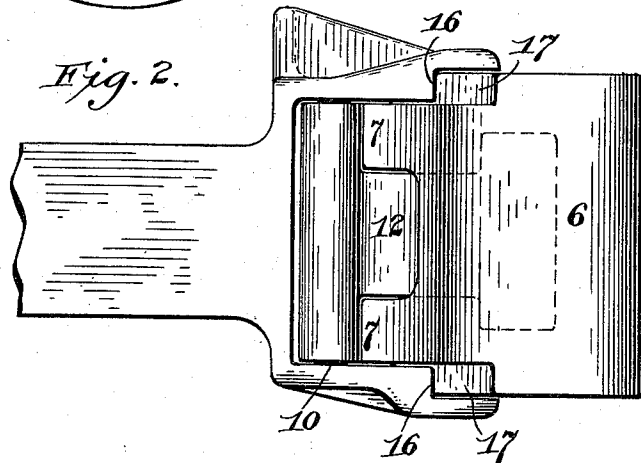
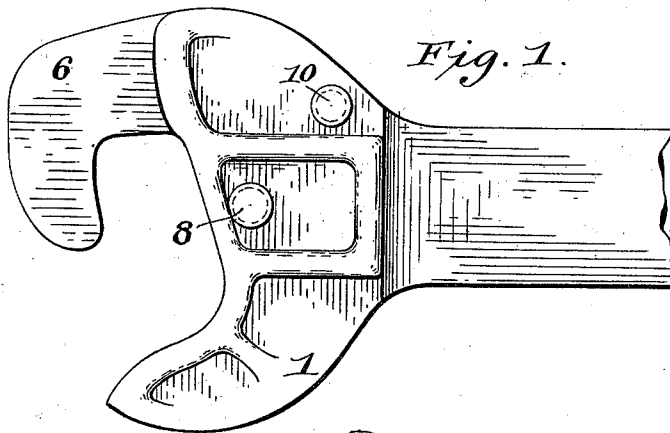
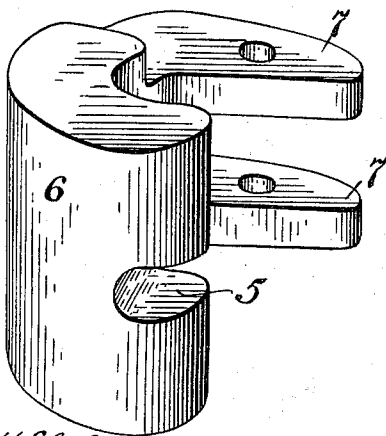


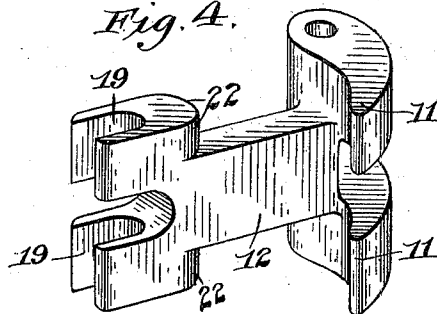
Fig. 3.



WITNESSES

*Attestance.*  
*E. J. Fenwick*

Fig. 4.



INVENTOR

*Philip C. Brown*  
*By Francis M. Wright*  
*Att'y.*

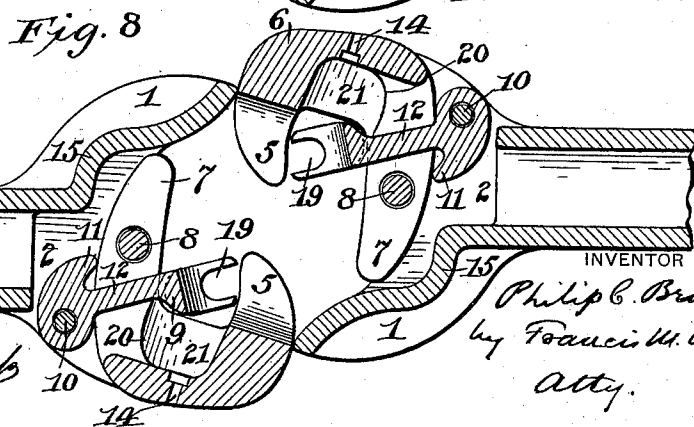
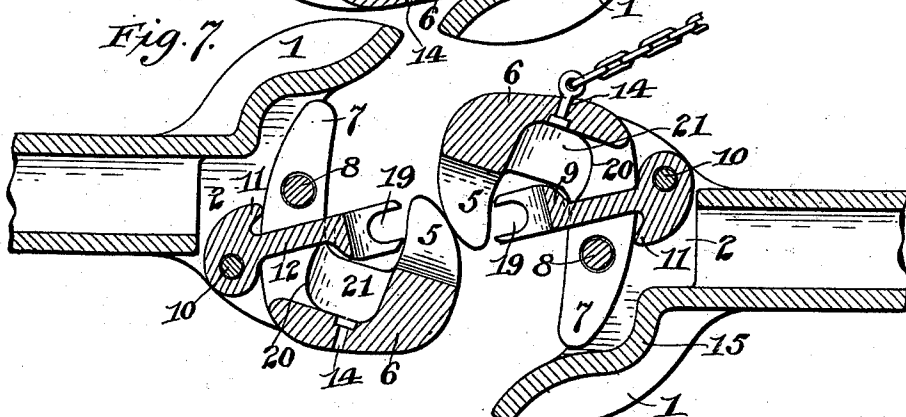
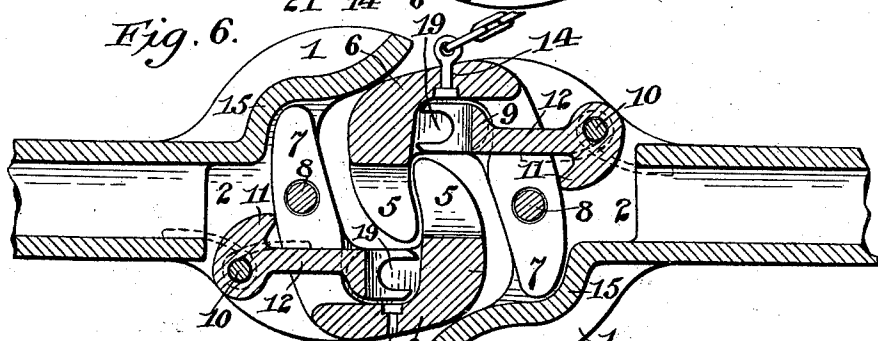
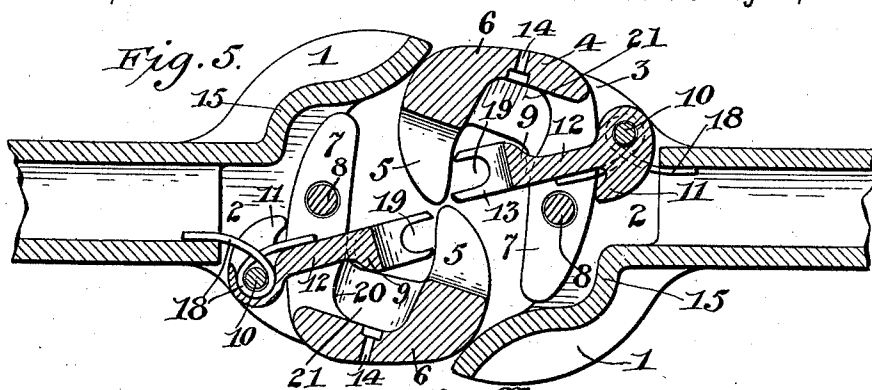
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2 Sheets—Sheet 2.

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*E. J. Fennell*

INVENTOR

*Philip C. Brown*  
*by Francis M. Wright*  
*Att'y.*

# UNITED STATES PATENT OFFICE.

PHILIP C. BROWN, OF WASHINGTON, DISTRICT OF COLUMBIA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 542,603, dated July 9, 1895.

Application filed May 13, 1895. Serial No. 549,177. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIP C. BROWN, a citizen of the United States, residing at Washington, District of Columbia, have invented a new and useful Car-Coupling, of which the following is a specification.

My invention relates to improvements in car-couplings, being particularly embodied in what is known as the "Janney" or "Master Car-Builders'" type of car-coupling.

The object of my invention has been to provide a car-coupler of the Janney type, which shall not, after uncoupling, require to be reset for further coupling, either by hand or by automatic resetting devices, but which shall be capable of automatically coupling upon impact whether the knuckle be open or closed, or, indeed, in any position whatever that the knuckle can assume, and thus the liability to fracture of the guard-arm and knuckle, which so often occurs with the present forms of Janney couplers when the cars impact one upon the other without the knuckle having been opened or set in position for coupling, will be eliminated, since with my improved form of coupler the knuckle does not need to be opened, but the coupling will be effected equally well when the knuckle is closed; to provide one, moreover, in which the couplers will couple when meeting at an angle or when meeting out of line with each other, so as to effect coupling on a curve; further, to provide a coupler of the Janney type in which the action and pressure of each knuckle on the other will tend to close the latter instead of to force it open, so that no locking mechanism will be required, the knuckles being thus rendered self-locking; to provide a coupler of this type with which there shall be no possibility of rebound, but with which the cars will couple instantaneously, whether impacting at the greatest velocity or at the gentlest rate of approach, and one in which provision shall be made for link-and-pin coupling without impairing the strength of the parts. These objects I have attained in my improved form of coupling; and my invention therefore consists in the novel construction, combination, and arrangement of parts which I have devised for the above ends, hereinafter fully set forth, and particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a plan view of one of my improved couplers, and Fig. 2 is a side view of the same. Figs. 3 and 4 are detail views of the knuckle and guard-lever. Fig. 5 is a central horizontal section of companion draw-heads, showing the position of the parts as the knuckles are passing each other to couple. Fig. 6 is a similar view showing the position of the parts when coupling has been effected. Figs. 7 and 8 illustrate the action of the knuckles in forcing each other open when coupling out of line with each other, the former when the knuckles are nearest to each other and the latter when most remote.

The draw-head conforms in general contour to that of the Janney or Master Car-Builders' type, and its mouth consists of a guard-arm 1, an intermediate portion 2, and a seat 3 for the knuckle. The knuckle 4 is hook-shaped, having a short arm 5, which forms the knuckle proper or locking portion, a bridge 6, and a long forked arm 7. The latter is pivoted to the intermediate portion 2 of the draw-head by a pivot-pin 8, and, as clearly shown in Fig. 3, is forked to permit the passage therethrough of the guard-lever 9. The latter is pivoted on the draw-head at 10, and has a short arm 11, bearing on the rear side of the forks 7 of the knuckle, while its long arm 12 passes between the forks and is adapted to bear on the front or inner surface of the knuckle.

The guard-lever 9 has two functions. In the first place it serves to render the knuckles self-locking, for when coupling has been effected the end of the knuckle—say on the right of Fig. 6—presses against the end 13 of the long arm 12 of the guard-lever of the coupler on the left and thus presses the end of the short arm 11 of said guard-lever against the rear of the knuckle and closes the knuckle. Thus by interposing the guard-lever between the end of each knuckle and the bend or cavity of the other knuckle the result is attained that the lateral pressure of the knuckles, one against the other, instead of opening the knuckles forces them toward each other, and thus a perfectly secure coupling is always attained. The second function of the guard-lever is to aid in opening the knuckles when it is desired to uncouple. To uncouple, the

operator pulls backward upon the knuckle by means of a chain attached to the hook or bridge-portion of the knuckle, preferably by passing it through an aperture 14 in said bridge portion and securing it in the inner side. When the knuckle is pulled backward—that is, so as to swing outward—it presses backward the short end 11 of the guard-lever, thus throwing the long arm of said lever inwardly. The end 13 of said long arm consequently pushes the companion knuckle laterally on its pivot until the parts are in the position shown in Fig. 5 and the knuckles are disengaged from each other and are at liberty to separate. In order to limit the vibration of the knuckle I provide a stop 15, against which the end of the long arm 7 of the knuckle can abut. As shown in Fig. 2, the top and bottom of the draw-head are cast with shoulders 16, against which abut shoulders 17 formed on the knuckle, and thus the outward movement of the knuckle is also limited.

In order to accelerate the closing and interlocking of the knuckles I employ with each guard-lever a spring 18, preferably spiral, which tends to press the long arm of the guard-lever outward and the knuckle inward, and so to neutralize the inertia of the parts. This spring I preferably inclose in an enlargement of the bore of the lever, through which passes the lever-pivot, and around said pivot, and one end of the spring bears against the draw-head and the other against the long arm of the lever, and thus the spring always tends to throw the lever outward.

The operation of the device will now be readily apprehended. When the couplers come together and the knuckles contact with each other, each knuckle will press the other outwardly on its pivot. The knuckles thus force each other apart to their full extent until they arrive at the position shown in Fig. 5, when they pass each other and interlock, as shown in Fig. 6. Thus the couplers will couple equally well when the knuckles are closed as when they are open to their full extent, since they are so pivoted and so conformed that their mutual impact will force them open, so that they can pass each other and interlock. This construction, moreover, admits of coupling within very great limits of lateral variation of the respective couplers. This is clearly illustrated in Figs. 7 and 8, which show the couplers considerably out of line with each other, one figure showing the variation on one side of the normal and the other on the other side. In either case the pressure of the colliding parts will be in such a direction as to force the knuckles into the locking position. This feature of my invention is of great importance, because it permits of coupling on quite a sharp curve.

In order to be able to couple with a link and pin when necessary, I provide a recess 19 in the end of the long arm of the guard-lever, forming a pin-hole for coupling with a link

and pin. This construction possesses an important advantage over the customary construction in couplers of the Janney type, which consists in making a pin-hole in the end of the knuckle. The latter construction has been found to be attended with serious disadvantages. It was not permissible to make the hole of ample size for a coupling-pin, for it would too much weaken the end of the knuckle, already very liable to be broken by impact of the cars. The consequence is the hole is made so small that only the smallest size of pin, and one that is not bent in the slightest degree, will fit, and the search for such a pin in a railway-yard often causes great delay. Moreover, the pin used, being small, is apt to become bent, and when bent can only be extracted with great loss of time and labor. With my construction, however, the largest size of pin can be used without impairing in the least the strength of the knuckle.

In order to divide up the strain upon the draw-head, I construct the lever 9 with shoulders 19, which, when the lever is thrown outward, fit within internal shoulders 20 in the recess 21 of the knuckle, which recess receives the end of the long arm 12 of the lever. By this construction it will be seen that the strain is partly taken through said shoulders 20 and 19 to the pivot-bolt 10.

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

1. In a car coupling, the combination, with the drawhead having a guard arm, of a horizontally swinging knuckle pivoted in the drawhead, having a buffer surface so sloped that the direction of pressure at the point of contact of two such knuckles impacting when both closed and with the drawheads in alignment, will pass outside the pivotal axes of the knuckles, whereby the pressure will open the knuckles from their closed position, and having another portion projecting out of the mouth of the drawhead except when the knuckle is in its closed position and arranged to subsequently receive an impact from said opposite knuckle to throw the knuckle inwardly and effect a coupling, substantially as described.

2. In a car coupling, the combination, with the drawhead having a guard arm, of a horizontally swinging knuckle pivoted in the drawhead, having a buffer surface so sloped that the direction of pressure at the point of contact of two such knuckles impacting when both closed and with the drawheads in alignment, will pass outside the pivotal axes of the knuckles, whereby the pressure will open the knuckles from their closed position, and having another portion projecting out of the mouth of the drawhead except when the knuckle is in its closed position and arranged to subsequently receive an impact from said opposite knuckle to throw the knuckle in-

wardly and effect a coupling, and independent means for so throwing said knuckle, substantially as described.

3. In a car coupling, the combination, with the drawhead having a guard arm, of a horizontally swinging knuckle pivoted in the drawhead, having a buffer surface so sloped that the direction of pressure at the point of contact of two such knuckles impacting when both closed and with the drawheads in alignment, will pass outside the pivotal axes of the knuckles, whereby the pressure will open the knuckles from their closed position, and having another portion projecting out of the mouth of the drawhead except when the knuckle is in its closed position and arranged to subsequently receive an impact from said opposite knuckle to throw the knuckle inwardly and effect a coupling, and a spring for so throwing said knuckle, substantially as described.

4. In a car coupling, the combination, with the drawhead having a guard arm, of a horizontally swinging knuckle pivoted in the drawhead, having a buffer surface so sloped that the direction of pressure at the point of contact of two such knuckles impacting when both closed and with the drawheads in alignment, will pass outside the pivotal axes of the knuckles, whereby the pressure will open the knuckles from their closed position, and a lever pivoted upon the drawhead and projecting out of the mouth of the drawhead to close said knuckle by impact of the opposite knuckle, substantially as described.

5. In a car coupling, the combination, with the drawhead having a guard arm, of a horizontally swinging knuckle pivoted on the drawhead, a lever arranged to be actuated by the entering end of the similar knuckle of the opposite drawhead to throw the knuckle inward and effect a coupling, and means, independent of said entering end, for actuating said lever, substantially as described.

6. In a car coupling, the combination, with the drawhead having a guard arm, of a horizontally swinging knuckle pivoted on the drawhead, a lever arranged to be actuated by the entering end of the similar knuckle of the opposite drawhead, to throw the knuckle inwardly, and a spring for so throwing said knuckle, substantially as described.

7. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the drawhead, a guard lever interposed between the opposite drawhead, and actuated by the latter knuckle to close the other, and means, independent of the entering end, for closing said knuckle, substantially as described.

8. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the drawhead, a guard lever interposed between said knuckle and the entering end of the similar knuckle of the opposite drawhead, and actuated by the latter knuckle to close the other,

and a spring for closing said knuckle, substantially as described.

9. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the drawhead, a movable guard arranged to be actuated by the entering end of a similar knuckle of the opposite drawhead, said guard having an operative connection with the first knuckle whereby the latter will be moved inwardly or closed by the impact of the opposite knuckle, and independent means for so closing said knuckle, substantially as described.

10. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the drawhead, a movable guard arranged to be actuated by the entering end of a similar knuckle of the opposite drawhead, said guard having an operative connection with the first knuckle whereby the latter will be moved inwardly or closed by the impact of the opposite knuckle, and a spring for so closing said knuckle, substantially as described.

11. In a car coupling, the combination, with the drawhead provided with a guard arm, of a horizontally swinging knuckle pivoted thereon, a movable guard interposed between the knuckle and the entering end of the similar knuckle of the opposite drawhead, and operatively connected with the knuckle so that an outward movement of the guard will produce an inward movement of the knuckle, and independent means for so moving said knuckle inwardly, substantially as described.

12. In a car coupling, the combination, with the drawhead provided with a guard arm, of a horizontally swinging knuckle pivoted thereon, a movable guard interposed between the knuckle and the entering end of the similar knuckle of the opposite drawhead, and operatively connected with the knuckle so that an outward movement of the guard will produce an inward movement of the knuckle, and a spring for so moving said knuckle, substantially as described.

13. In a car coupling, the combination, with the drawhead having a guard arm, of the knuckle pivoted on the drawhead, and a guard lever pivoted on the drawhead, whereof one arm is arranged to be actuated by the entering end of a similar knuckle of the opposite drawhead, and the other arm engages the first knuckle to throw it inwardly, substantially as described.

14. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the drawhead, and a guard lever pivoted on the drawhead, whereof one arm is arranged to be actuated by the entering end of a similar knuckle of the opposite drawhead, and the other arm engages the first knuckle to throw it inwardly, substantially as described.

15. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the

drawhead, a guard lever pivoted on the drawhead, whereof one arm is arranged to be actuated by the entering end of a similar knuckle of the opposite drawhead, and the other arm engages the first knuckle to throw it inwardly, and independent means for actuating said knuckle inwardly, substantially as described.

16. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the drawhead, a guard lever pivoted on the drawhead whereof one arm is arranged to be actuated by the entering end of a similar knuckle of the opposite drawhead, and the other arm engages the first knuckle to throw it inwardly, and a spring for so throwing said knuckle, substantially as described.

17. In a car coupling, the combination, with the drawhead, of the swinging knuckle pivoted on the drawhead, and a guard lever pivoted on the drawhead in the rear of the knuckle and having an arm interposed between said knuckle and the entering end of the similar knuckle of the opposite drawhead and actuated by said end, said lever also having an arm engaging the first knuckle to throw it inwardly, substantially as described.

18. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the drawhead, and a guard lever pivoted on the drawhead in the rear of the knuckle and having an arm interposed between said knuckle and the entering end of the similar knuckle of the opposite drawhead and actuated by said end, said lever also having an arm engaging the first knuckle to throw it inwardly, substantially as described.

19. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the drawhead, a guard lever pivoted on the drawhead in the rear of the knuckle and having an arm interposed between said knuckle and the entering end of the similar knuckle of the opposite drawhead and actuated by said end, said lever also having an arm engaging the first knuckle to throw it inwardly, and independent means for actuating said lever, substantially as described.

20. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging knuckle pivoted on the drawhead, a guard lever pivoted on the drawhead in the rear of the knuckle and having an arm interposed between said knuckle and the entering end of the similar knuckle of the opposite drawhead and actuated by said end, said lever also having an arm engaging the first knuckle to throw it inwardly, and a spring for so throwing said knuckle, substantially as described.

21. In a car coupling, the combination, with the drawhead provided with a guard arm, of a knuckle pivoted thereon, and a lever pivoted on said drawhead, one arm of said lever

being moved inwardly, and thus pressing outward on its pivot the entering end of the similar knuckle of the opposite drawhead, by the outward movement of the knuckle actuating another arm of said lever, substantially as described.

22. In a car coupling, the combination, with the drawhead provided with a guard arm, of a horizontally swinging knuckle pivoted thereon, and a lever pivoted on said drawhead, one arm of said lever being moved inwardly, and thus pressing outward on its pivot the entering end of the similar knuckle of the opposite drawhead, by the outward movement of the knuckle actuating another arm of said lever, substantially as described.

23. In a car coupling, the combination, with the drawhead provided with a guard arm, of a horizontally swinging knuckle pivoted thereon, a lever pivoted on said drawhead, one arm of said lever being moved inwardly, and thus pressing outward on its pivot the entering end of the similar knuckle of the opposite drawhead, by the outward movement of the knuckle actuating another arm of said lever, and a spring resisting said movement, substantially as described.

24. In a car coupling, the combination, with the drawhead having a guard arm, of a horizontally swinging knuckle pivoted on the drawhead, and a lever vibrating oppositely to said knuckle and arranged to be actuated by the entering end of the similar knuckle of the opposite drawhead to throw the knuckle inward and effect a coupling, substantially as described.

25. In a car coupling, the combination, with the drawhead having a guard arm, of a horizontally swinging knuckle pivoted on the drawhead, a lever vibrating oppositely to said knuckle and arranged to be actuated by the entering end of the similar knuckle of the opposite drawhead to throw the knuckle inwardly and effect a coupling, and means independent of said entering end, for actuating said lever, substantially as described.

26. In a car coupling, the combination, with the drawhead having a guard arm, of a horizontally swinging knuckle pivoted on the drawhead, a lever vibrating oppositely to said knuckle and arranged to be actuated by the entering end of the similar knuckle of the opposite drawhead to throw the knuckle inwardly, and effect a coupling, and a spring for so throwing said knuckle, substantially as described.

27. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging U-shaped knuckle pivoted through its rear arm upon the drawhead, its bend receiving the nose of the opposite similar knuckle, and operative mechanism for inwardly swinging said knuckle arranged to be actuated by the transverse inward movement of the opposite knuckle, substantially as described.

28. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging U-shaped knuckle pivoted through its rear arm upon the drawhead, its bend receiving the nose of the opposite similar knuckle, operative mechanism for inwardly swinging said knuckle arranged to be actuated by the transverse inward movement of the opposite knuckle, and a spring for so swinging said knuckle, substantially as described.

29. In a car coupling, the combination with the drawhead having a guard arm, of the horizontally swinging U-shaped knuckle pivoted through its rear arm upon the drawhead, and a guard lever interposed between said knuckle and the entering end of the similar knuckle of the opposite drawhead, and actuated by the latter knuckle to close the other, substantially as described.

30. In a car coupling, the combination with the drawhead having a guard arm, of the horizontally swinging U-shaped knuckle pivoted through its rear arm upon the drawhead, a guard lever interposed between said knuckle and the entering end of the similar knuckle of the opposite drawhead, and actuated by the latter knuckle to close the other, and a spring for so closing said knuckle, substantially as described.

31. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging U-shaped knuckle the rear arm of which engages the drawhead to transmit the pull thereto through said rear arm, and ejector mechanism, actuated by the outward movement of said knuckle, for moving outward the other knuckle, substantially as described.

32. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging U-shaped knuckle the rear arm of which engages the drawhead to transmit the pull thereto through said rear arm, and a lever, actuated by the outward movement of the knuckle, and engaging the end of the opposite knuckle to eject it from the drawhead, substantially as described.

33. In a car coupling, the combination with the drawhead having a guard arm of a horizontally swinging knuckle centrally pivoted therein and a lever actuated by the inward pivotal movement of the opposite similar knuckle, to move its knuckle inwardly, substantially as described.

34. In a car coupling, the combination with the drawhead having a guard arm of a horizontally swinging knuckle centrally pivoted therein and a lever actuated by the inward pivotal movement of the opposite similar knuckle, to move its knuckle inwardly, and independent means for so throwing said knuckle, substantially as described.

35. In a car coupling, the combination with the drawhead having a guard arm of a horizontally swinging knuckle centrally pivoted

therein and a lever actuated by the inward pivotal movement of the opposite similar knuckle, to move its knuckle inwardly, and a spring for so throwing said knuckle, substantially as described.

36. In a car coupling, the combination, with the drawhead having a guard arm, of the horizontally swinging U-shaped knuckle pivoted through its rear arm upon the drawhead, and an arm swinging on the drawhead extending across the rear arm of the knuckle and having in its end a recess to receive a pin for link and pin coupling, said recess being wholly open on the side next the knuckle whereby the strain upon the pin is wholly borne by said knuckle, substantially as described.

37. In a car coupling, the combination, with a drawhead and a horizontally swinging knuckle pivoted thereon, said knuckle being slotted to permit the passage therethrough of a link, of a pin support movable relatively to the knuckle, said knuckle being recessed to receive the pin support when not in use, substantially as described.

38. In a car coupling, the combination, with a drawhead and a horizontally swinging knuckle pivoted thereon, said knuckle being slotted to permit the passage therethrough of a link, of a pin support movable relatively to the knuckle, and when in position to receive the pin permitting the whole strain of the pin to bear against the rear of the knuckle, said knuckle being recessed to receive the pin support when not in use, substantially as described.

39. In a car coupling, the combination, with a drawhead and a horizontally swinging knuckle pivoted thereon, said knuckle being slotted to permit the passage therethrough of a link, of a pin support on the drawhead independent of the knuckle, said knuckle being recessed to receive the pin support when not in use, substantially as described.

40. In a car coupling, the combination with the drawhead, of the horizontally swinging knuckle pivoted on the drawhead, a guard lever interposed between said knuckle and the entering end of the similar knuckle of the opposite drawhead, and actuated by the latter knuckle to close the other, said lever being recessed to form a pin-hole for a link and pin coupling, substantially as described.

41. In a car coupling, the combination of the drawhead, the knuckle 4 pivoted thereon, and the guard lever 9, also pivoted on the drawhead, said knuckle and lever having opposite vibratory movements, substantially as described.

42. In a car coupling, the combination of the drawhead, the knuckle 4 pivoted thereon, the guard lever 9, also pivoted on the drawhead, said knuckle and lever having opposite vibratory movements, and the spring 18, actuating said lever and knuckle, substantially as described.

43. In a car coupling, the combination of

the drawhead, the knuckle 4, having the forked arm whereby it is pivoted on the drawhead, and the guard lever 9 passing through said fork, substantially as described.

- 5 44. In a car coupling, the combination of the drawhead the knuckle 4, having the forked arm whereby it is pivoted on the drawhead,

the guard lever 9 passing through said fork, and the spring 18 actuating said lever and knuckle, substantially as described.

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Witnesses:

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