(No Model.) 2 Sheets—Sheet 1.

E. D. WHIPPLE.

CAR COUPLING.

No. 562,871. Patented June 30, 1896.

Fig 1

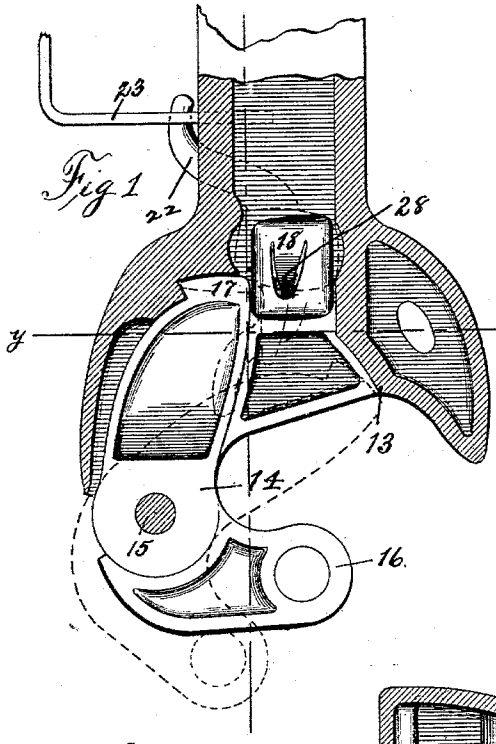


Fig 2

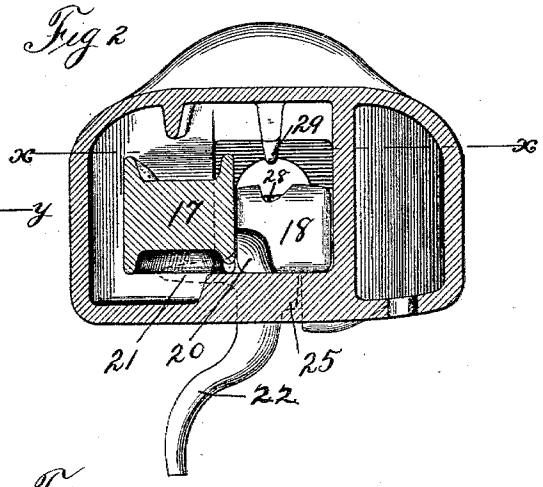
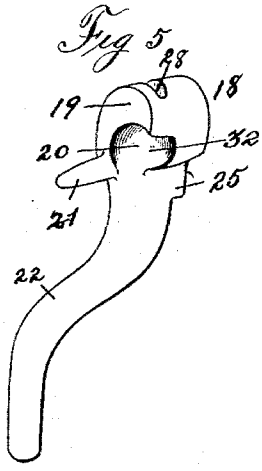


Fig. 3.



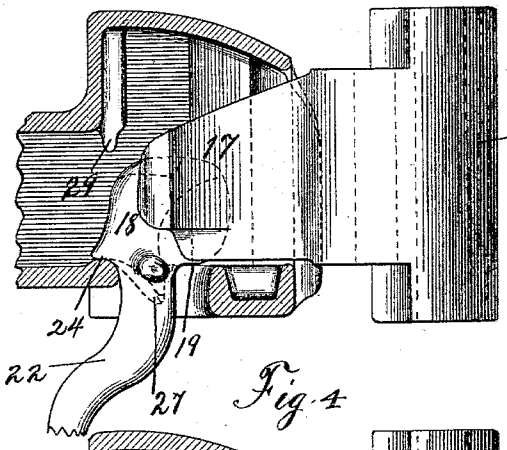


Fig 4a

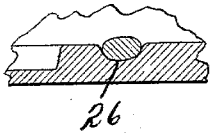
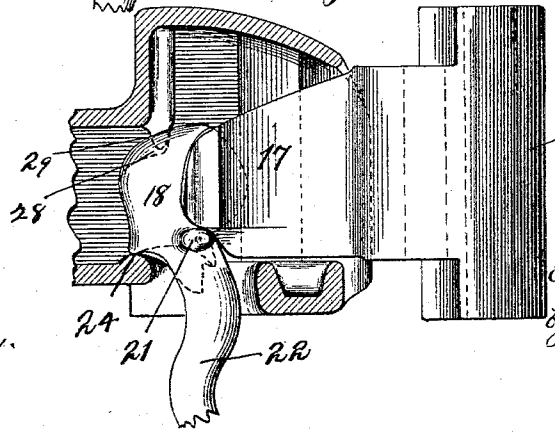


Fig. 4



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 6

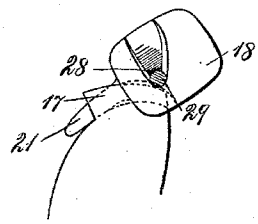


Fig. 8.

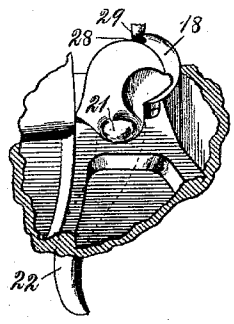


Fig. 7

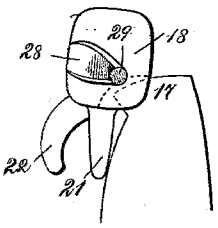


Fig. 9

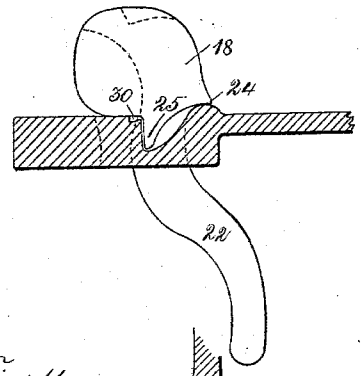


Fig. 10.

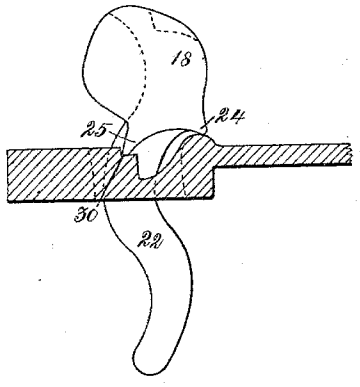


Fig. 11.

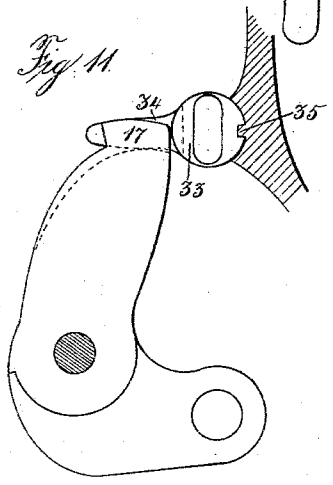


Fig. 12.

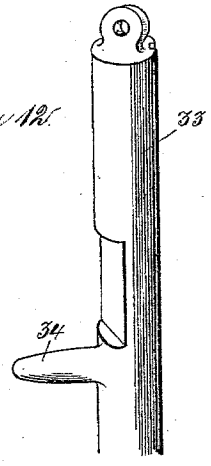
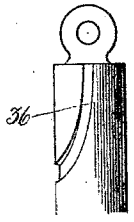


Fig. 13.



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UNITED STATES PATENT OFFICE.

EUGENE D. WHIPPLE, OF CRESTON, IOWA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 562,871, dated June 30, 1896.

Application filed January 28, 1895. Serial No. 536,500. (No model.)

To all whom it may concern:

Be it known that I, EUGENE D. WHIPPLE, a citizen of the United States, residing at Creston, in the county of Union and State of Iowa, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

My invention relates to that class of car-coupler in which is employed a pivoted swinging knuckle, and commonly known as of the "vertical-plane" type.

My invention has for its object the provision of means for causing the knuckle to assume an open position, or in other words causing the knuckle to assume a position in which to engage and couple with a knuckle of a draw-head on another car, this result being initiated by a manual movement of that member serving to lock the knuckle from the side of the car, the means employed being of such a construction and mutual coöperative arrangement as that the knuckle is positively and invariably thrown into the open position aforesaid.

My invention has certain other objects in view; and it consists in certain arrangements, combinations, and subcombinations which will be particularly described and pointed out in my claims, reference being now had to the accompanying drawings, in which—

Figure 1 is a sectional view through a draw-head on the line *x x* of Fig. 2. Fig. 2 is a sectional view on the line *y y* of Fig. 1. Fig. 3 is a sectional view showing the locking-block engaged with and locking the knuckle. Fig. 4 is a view showing the locking-block retracted into an unlocked position and in engagement with the lever-arm of the knuckle in that position assumed by the parts preliminary to effecting an opening of the knuckle. Fig. 4ª is a detail sectional view showing the recess for holding the projection from the locking-block. Fig. 5 is a perspective detail view of the locking-block. Fig. 6 is a detail view of the end portion of the lever-arm of the knuckle and the locking-block, in plan, showing the manner in which the knuckle, when opened by means other than a movement of the locking-block, is capable, by engagement with said block, of rotating the same and passing into an opened position. Fig. 7 is a like view showing the lever-arm of the knuckle in a position beyond the locking-block. Fig. 8 is a detail view illustrating the position of the locking-block relative to the draw-head when the same has assumed a position in readiness to be engaged by an inward movement of the knuckle. Fig. 9 is a detail view of the locking-block shown thrown forward into its locking position, the same illustrating the construction of said block upon the side thereof opposite to that engaged by the knuckle lever-arm. Fig. 10 is a like view illustrating the position assumed by the locking-block when the same is thrown into an unlocked position during the existence of a coupling. Fig. 11 is a view, partly in section, showing a modified form of locking and lever-opening device. Fig. 12 is a detail view of the locking-pin. Fig. 13 is also a detail view of the locking-pin and showing the spiral groove therein.

The draw-head of the coupler is designated at 13, having therein a cavity or hollowed-out portion within which the moving parts are located.

The knuckle is designated at 14, and is held pivotally upon the draw-head by means of the usual knuckle-pin 15.

The engaging jaw of the knuckle is designated at 16 and the knuckle lever-arm at 17.

The locking-block 18 is of a construction which will be hereinafter particularly described and claimed, but I do not desire to be understood as limiting myself in all of my claims to this particular character of locking-block, for, as shown in Figs. 11, 12, and 13, it is evident that a different character of locking-block may be employed to accomplish the same or approximately the same ultimate result. I have therefore designated this locking-block in certain of my claims as a "movable member."

The locking-block shown in Fig. 5 has a knuckle-engaging head 19, a cut-out portion or cavity 20, and a projection 21, extending from the side of the locking-block just below the cavity 20. Formed with the head 19 of the locking-block is an operating-arm 22, which is engaged by the lever 23 when the same is manually operated from the side of the car.

The locking-block 18 is disposed within the interior of the draw-head and is held in its locking position by the forward part of the head 19 and the shoulder 24, resting upon the

bottom wall of the draw-head, the holding-stop 25 on one side of the locking-block, and the projection 21 on the other side being, respectively, within the recesses on either side of the opening which the operating-arm 22 extends. This operating-arm 22 is so bent as to provide a crank which serves to partially rotate the locking-block 18 in a manner to be described.

The upper portion of the head 19 of the locking-block 18 has a recess 28 therein, and a pivot-pin 29, projecting downward, is secured to the upper wall of the draw-head, which pin is adapted to engage within the recess 28 during certain stages of operation.

Referring now more particularly to Fig. 3, it will be observed that the knuckle lever-arm 17 is engaged by the locking-block 18 and the knuckle 14 is held thereby in a closed locked and coupled position. When the lever 23 from the side of the car is manually operated to throw the operating-arm 22 of the locking-block 18 forward, the head 19 of the locking-block is thereby thrown back, by reason, initially, of the pivotal movement of the shoulder 24 on the wall of the draw-head 13, the holding-stop 25 and the projection 21 are raised out of the recesses 26 and 27 and the locking-block elevated until the pivot-pin 29 engages within the recess 28. When this engagement of the pivot-pin 29 in the recess 28 is effected, in the further movement forwardly of the operating-arm 22 the locking-block is caused to describe a partial rotation upon the pivot-pin by means of the crank formed in the said arm 22, and the projection 21 engages and rides upon the wall of the draw-head, and bearing against the end portion of the lever-arm of the knuckle exerts a continued pressure upon said arm, and by reason of and during said partial rotation of the locking-block causing the knuckle to swing into an open and unlocked position, as shown by the dotted lines in Fig. 1. The locking-block being in the position as shown in Fig. 8, the projection 21, resting on the wall of the draw-head, if the knuckle be engaged, say, for instance, by an opposing draw-head, and swung into its locking position, the lever-arm 17 in its inward travel engages the projection 21 and partially rotating the locking-block 18 in a direction opposite to that just described thereby causes the locking-block to assume a locking position, since the same falls forward when the extreme free end of the knuckle lever-arm in its inward movement has passed by the locking-block through the cavity 20 in said block. Should the locking-block, however, be in a locking position and the knuckle open, in the inward movement of the knuckle lever-arm 17 the head 19 of the locking-block is engaged by said lever-arm and moved backwardly on the pivotal shoulder 24 until the arm passes by the locking-block, when the same falls forward, and, engaging with the lever-arm locks the knuckle.

The holding-stop 25, when the locking-block 18 is in a locking position, is within the cavity 27, Fig. 9, and this holding-stop moves within this cavity, the head 19 of the locking-block 18, however, resting upon the bottom wall of the draw-head and the shoulder 24 holding the locking-block in a forward and locking position.

When it is desired to unlock and release the knuckle, the jaws of two opposing couplers being engaged, for the purpose of "kicking" or for like purposes, the operating-arm 22 is manually moved forward in the same direction as when it is desired to open the knuckle, and the projection 21 then engages against the knuckle lever-arm 17, and since the latter cannot be moved into an open position, by reason of the resistance of the engaged opposing coupler, the locking-block is simply moved backward into its unlocked position and the holding-stop 25 is then brought into engagement with the notch 30, and the locking-block is thereby held in an unlocked position until the knuckle is opened.

Referring now to Figs. 6, 7, and 8, when the knuckle commences its opening movement the knuckle lever-arm 17 engages the side face 32 of the cavity, Fig. 5, and in the continued outward swing of the lever-arm bears against said face and partially rotates the locking-block on its pivot-pin 29 until the said block is in such a position as that the knuckle lever-arm 17 may move past the locking-block, Figs. 7 and 8, into its open position. It is evident that when the locking-block is in this position the knuckle lever-arm 17 in its inward movement engages and causes the same to assume a locking position, as already described.

In Figs. 11, 12, and 13 I have shown a modified form in which a locking-pin 33 is employed adapted to be raised and lowered manually from the side of the car by the well-known means, and from which pin extends the projection 34. Secured to and projected from the side wall of the draw-head is an engaging stud 35, engaged within the curved or spirally-formed groove 36 in the locking-pin 33. It is evident that when the pin 33 is raised that it is caused to partially rotate by means of the stud 35, traveling within the groove 36, and in the rotation of the pin 33 the projection 34 is caused to engage the lever-arm 17 and force the knuckle into an open position.

It will be observed that the operating-arm 22 of the locking-block is not in fixed relation to the manually-operated levers 23 from the side of the car, and that yet the devices employed are capable of opening the knuckle when the levers 23 are operated. This is a decided advantage, since the use of linking connections between the manually-operated levers and the movable member which acts immediately upon the knuckle are avoided, which linking connections, being rigidly secured, when broken render the device useless. I do not of course desire to limit my

invention to this feature only, as the same constitutes a part thereof.

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

1. In a car-coupling of the vertical-plane type the combination with a pivoted knuckle of mechanism for causing the same to assume an open position, consisting of a movable member, an extension carried by said member pivoted on a horizontal axis and capable of a movement forward and backward thereon and means for causing the movable member to describe a partial rotation on a vertical axis and thereby cause the extension carried by the movable member to engage the knuckle and force the same into an open position.

2. In a car-coupling of the vertical-plane type, the combination with a pivoted knuckle of mechanism for causing the same to assume an open position consisting of a pivotally-mounted movable member, pivoted on a horizontal axis and capable of a movement forward and backward thereon an extension carried by said member and means for causing the movable member to describe a partial rotation on a vertical axis and thereby operating the extension to engage the knuckle and force the same into an open position.

3. In a car-coupling of the vertical-plane type, the combination with the pivoted knuckle of mechanism for causing the same to assume an open position consisting of a pivotally-mounted movable member, means for causing the latter to rotate about a horizontal axis extended transversely of the draw-head an extension carried by said member and means for causing the movable member to describe a partial rotation on a vertical axis and thereby operate the extension to engage the knuckle and force the same into an open position.

4. In a car-coupling of the vertical-plane type, the combination with a pivoted knuckle of mechanism for causing the same to assume an open position consisting of a pivotally-mounted movable member, an extension carried by said member, manually-operated devices for actuating the movable member to cause the same to partially rotate on a vertical axis and thereby operate the extension to engage the knuckle and force the same into an open position.

5. In a car-coupling of the vertical-plane type, the combination with the pivoted knuckle of a rotatably-movable locking member, means for causing the latter to rotate on a horizontal axis extended transversely of the draw-head a fixed pivot therefor, an extension carried by said movable locking member and means for bringing the said movable locking member into engagement with the fixed pivot and for partially rotating said member thereon whereby the extension engages the knuckle and forces the same into an open position.

6. In a car-coupling of the vertical-plane type, the combination with the pivoted knuckle of a rotatably-mounted locking member, means for causing the latter to rotate about a horizontal axis extended transversely of the draw-head a projection carried thereby and a recess therein, a fixed pivot adapted to be engaged within said recess and means for causing a partial rotation of the locking member when the engagement aforesaid is effected whereby the projection forces the knuckle into an open position.

7. In a car-coupling of the vertical-plane type, the combination with the pivoted knuckle of a swinging rotatably-mounted locking member, means for causing the latter to rotate about a horizontal axis extended transversely of the draw-head, a projection carried thereby, a fixed pivot adapted to be engaged with said locking member, an operating-arm actuated by levers from the side of the car to preliminarily bring the locking member into engagement with the fixed pivot and also effect a partial rotation of the locking member on said pivot whereby a projection carried by said locking member engages against and forces open the knuckle.

8. In a car-coupling the combination with a pivoted knuckle of a rotatably-mounted locking member, a shoulder thereon constituting a pivot for said member to swing back and forth, a fixed pivot normally disengaged from the locking member when the latter is in its locking position and means manually operated whereby the locking member is swung backward and at the same time upward to engage with the fixed pivot thereby to partially rotate the locking member and cause an extension carried thereby to engage and force open the knuckle.

9. In a car-coupling the combination with a pivoted knuckle of a rotatably-mounted locking member adapted to be moved back and forth, a fixed pivot normally disengaged from the locking member when the latter is in its locking position, a recess within said locking member and manually-operated means whereby the locking member is swung backward and upward to engage the recess of the locking member with the fixed pivot thereby to partially rotate the locking member and cause an extension carried thereby to engage and force open the knuckle.

10. In a car-coupling the combination with a pivoted knuckle of a swinging locking member having a shoulder on the rear portion thereof adapted to engage the wall of the draw-head and hold the locking member in its locking position.

11. In a car-coupling the combination with a pivoted knuckle of a swinging locking member having a shoulder on the rear portion thereof adapted to engage the wall of the draw-head and hold the locking member in its locking position and a holding-stop also adapted to engage the wall of the draw-head and hold the locking member in an unlocked position.

12. In a car-coupling the combination with a pivoted knuckle of a swinging locking member, a projection extending therefrom and an operating-arm formed integral therewith and of a crank shape, manually-operated means for moving forward said operating-arm and thereby raise and move backward the locking member, a recess in said locking member adapted to engage a fixed pivot projected from the draw-head when the locking-block is raised whereby in the continued forward movement of the operating-arm the locking member describes a partial rotation causing the projection carried thereby to engage the knuckle and force the same into an open position.

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

EUGENE D. WHIPPLE.

Witnesses:
C. C. BULKLEY,
C. W. GRAHAM.