

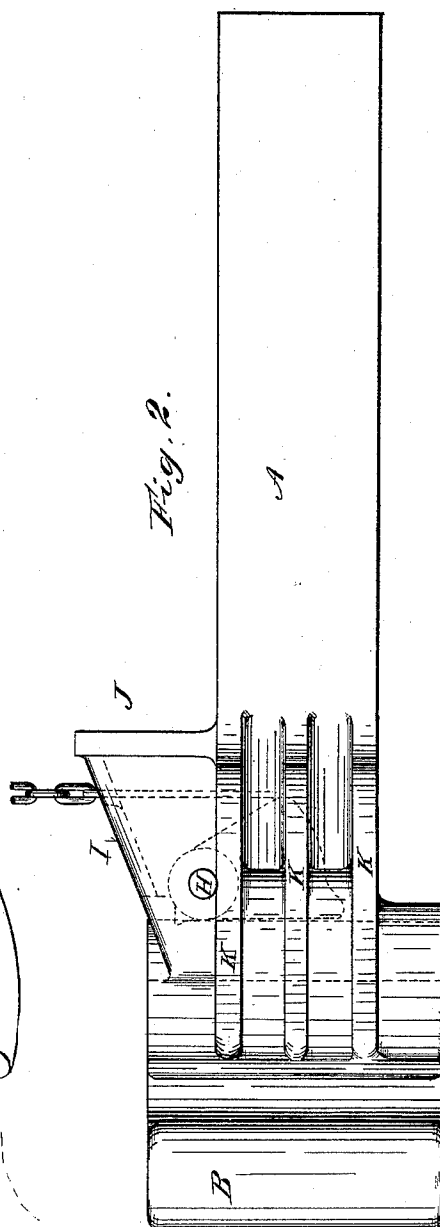
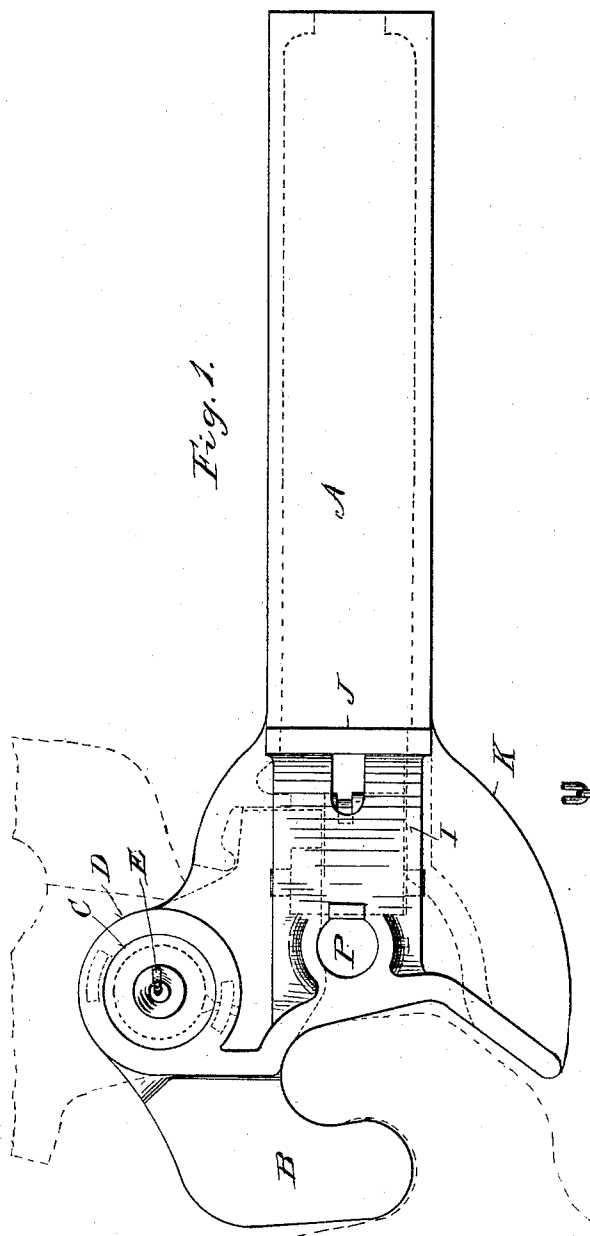
(No Model.)

2 Sheets—Sheet 1.

R. F. LUDLOW.
CAR COUPLING.

No. 473,938.

Patented May 3, 1892.



WITNESSES
H. M. Plaisted.
J. C. Dawley.

INVENTOR
Rodney F. Ludlow,
By H. A. Dawley,
his Attorney.

UNITED STATES PATENT OFFICE,

RODNEY F. LUDLOW, OF SPRINGFIELD, OHIO.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 473,938, dated May 3, 1892.

Application filed June 29, 1891. Serial No. 397,879. (No model.)

To all whom it may concern:

Be it known that I, RODNEY F. LUDLOW, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in car-couplers.

My improvements have reference to a gravitating pawl adapted to form a solid locking device for the knuckle in the draw-bar head, to a carrying-roller and its path adapted to cause normal tendency to swing open, and to other points of detail hereinafter described.

My device belongs to the class of car-couplers in which the coupling-surfaces lie in a vertical plane, and commonly called "vertical couplers."

In the accompanying drawings, on which like reference-letters indicate corresponding parts, Figure 1 represents a plan view of my device; Fig. 2, a side view of the same; Fig. 3, a plan view of the knuckle in its locked position, the upper shell of the head being removed and the parts in section; Fig. 4, a vertical sectional view on the line xx of Fig. 3; Fig. 5, a similar view showing the operation of the knuckle and pawl; Fig. 6, a vertical section on the line yy of Fig. 3; Fig. 7, a plan view of a portion of the lower lip; Fig. 8, a plan view of a special form of pivot, and Fig. 9 a vertical section on line zz of Fig. 8.

The letter A designates the draw-bar itself, the shank being formed in the usual or other convenient style.

The letter B designates the knuckle mounted on the pivot C, extending through lips D D' of the draw-bar head and preferably consisting of a sleeve the central opening of which is drawn in at the bottom to a lesser size, as indicated in Fig. 6. A ring E or other means is conveniently inserted through an opening in the bottom of said pivot to obstruct the withdrawal of the same and serve as a convenient support for a pin-chain. The form of outer end of said knuckle is shown in Figs. 1 and 2, and in Fig. 3 the inner end B' of the

knuckle is shown in its locked position and butting against a back wall or stop F, formed in the said head. The knuckle is kept firmly locked in said position by means of a gravitating pawl G, mounted on pivoted bearing or trunnions H, cast or otherwise secured to said pawl and rotatably mounted in the draw-bar head. A housing or shoulder I for the pawl protects the same, while it also serves as a strengthening-brace for the horn J on the said head. As seen from Figs. 2 and 4, the pawl, when in its locking position, hangs vertically from its pivot and fits solidly against the side wall of the draw-bar, as is shown in Fig. 3, which wall is braced by ribs K, as shown in Figs. 1 and 2.

The dotted lines in Fig. 3 show the position of the knuckle when open, the inner end supporting the pawl in its raised position and allowing it to drop or swing between the knuckle and lock in the action of coupling. A chain or other suitable connection adapted to raise the pawl from said locking position will allow of opening the knuckle when the pawl is raised to the position shown in the upper position within the housing in Fig. 5. The knuckle may thus be drawn backward to its fullest extent to allow of coupling my device with an ordinary link and pin.

In most forms of couplers of this class the knuckle must be pulled open by hand, or otherwise, to allow of coupling cars automatically. The brakeman must first unlock the coupler and then set the knuckle open, thus causing considerable trouble and annoyance. I have provided means whereby the knuckle will automatically open when the gravitating pawl is raised to set free the knuckle. One form of said means is shown in Figs. 4, 5, and 6, consisting of a roller L, mounted in proximity to the pivot C and within the knuckle by means of a pin M, adapted to be inserted in said roller and prevented from dislodgment by the pivot C passing by and thus closing the entrance whereby the pin was inserted. As shown in Fig. 6, the counter-sunk head of the pin prevents it from slipping through its bearings. The knuckle is thus mounted on a roller-support, and an inclined path (shown

by dotted lines in Fig. 4) is formed in the lower lip, and down which path the roller has a tendency to travel when the pawl G is raised and frees the inner end of the knuckle.

5 The proximity of the roller L to the axis of the pivot C permits of a comparatively short incline to cause a sufficient opening of the knuckle by the downward inclination of the knuckle. Sufficient play or clearance is allowed between the lower lip and the bottom of the knuckle to permit of the downward inclination of the knuckle as it swings outward. If desired, however, the inner end of the knuckle itself may be inclined forward, as shown in Figs. 8 and 9, the pivot C being placed perpendicularly to said inclined portion of the knuckle and the corresponding inclined space between the lips of the draw-bar head, whereby the knuckle will swing outward on its roller-support and inclined path therefor, as shown by the dotted lines in Fig. 8. It will be seen from these latter figures that the outward end of the knuckle remains unchanged, the coupling-surfaces still lying in the vertical plane and only the inner parts of the knuckle and its mountings being inclined to the horizontal. The inclination of the pivot C from a perpendicular position to cause said action and the direction of inclination of the axis of said pivot are toward the point to which it is desired that the center of gravity of the pivoted knuckle shall swing. For instance, if the form of said knuckle is such that its center of gravity lies along the line *v*, radiating from the axis of the pivot, the inclination of said pivot outward, as shown in Figs. 8 and 9, will cause this line *v* to take the position *v'*, and so lie in a vertical plane passing through the inclined pivoted axis. This outward position is also the lowest position of the center of gravity of said knuckle. Therefore it will be seen that the knuckle is opened by gravitating influences in both forms. The form shown in Fig. 4 is turned vertically as it swings outward, while the form shown in Figs. 8 and 9 swing on an inclined axis instead of a perpendicular one. It will be seen that the knuckle pivoted (shown in Figs. 8 and 9) causes the outward swing of the knuckle in this form without necessary assistance from the roller, while in the other form the roller and inclined path cause said outward swing by a similar gravitating action of the knuckle. When the link and pin are used to couple this device, the knuckle is swung outward to the position shown in dotted lines in Fig. 1 to give room for the entrance of the link of the draw-bar.

In order to throw the knuckle fully outward and allow of coupling with the ordinary link-and-pin coupler, the lower lip of the head is provided with a notch O, in which the roller may lock itself when the knuckle is swung out of its operative position. In the form of knuckle shown in Fig. 4 the roller must be lifted out of its inclined slot to ro-

tate to the notch O. Any other means may be employed to lock the roller in its extreme position.

In order to facilitate raising the pawl when the knuckle returns from its extreme position and the inner end B' has been swung outward beyond the pawl, the said inner end of the knuckle may be rounded off, as shown in Figs. 3 and 5, the latter figure showing the operation of raising the pawl as the knuckle swings into its locking position.

In order to automatically couple when my device is used with a link-and-pin coupler after the knuckle has been rotated to its operative position, a projection G' on the side of said pawl is adapted to support a coupling-pin within the pin-hole P, adjacent to the pawl. The entrance of the coupling-link will raise the pawl G, thus rotating the said projection G' and leaving the pin-hole clear for the entrance of the coupling-pin to the inserted link.

The dotted lines in Fig. 4 show the coupling-pin supported in its pin-hole and the link about to raise the pawl G and free the said pin from its support G'. It will thus be seen that my device is adapted to couple with either link-and-pin or vertical-plane couplers.

I do not in this application lay claim to an inclined surface and a wheel adapted to travel thereon and a swinging knuckle, as such features of themselves are shown, described, and claimed in my application, Serial No. 407,023, filed September 28, 1891, for improvements in car-couplers.

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

1. The combination, with a draw-head having a housing in the upper part thereof, of a locking-pawl pendent in said housing and adapted to be swung back and forth, a knuckle pivoted in said head and adapted to raise said pawl within said housing as the knuckle is swung to its inner position and having a normal tendency to swing outward, and lifting means connected to the rear of said pawl to raise it within said housing and allow the outward swing of the knuckle, whereby the pawl will return to its pendent position after the passage of the knuckle and may be raised from said position to allow of opening the same.

2. The combination, with a draw-head having ears at one side thereof, of a knuckle pivoted between said ears and having a vertical play or movement, the lower ear of said head being provided with an inclined path at one side of the pivot and a corresponding notch or depression at the other side of the said pivot, a roller carried by said knuckle and adapted to cause the outward swing of the same by traveling down the inclined path and supporting the knuckle as it is swung outward to its extreme position and also acting to lock the same by engaging with the oppo-

site notch or depression, and locking means to lock said knuckle in its inner position.

3. In a car-coupler, the combination, with a draw-bar and a knuckle pivoted therein and arranged to be swung on its pivot to one side of the draw-bar to give room for a link to enter the draw-bar, of a pawl pivoted in the draw-bar head and having a projection

to support a pin, the said draw-head having pin-openings. 10

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

RODNEY F. LUDLOW.

Witnesses:

OLIVER H. MILLER,
WARREN M. MCNAIR.