

J. M. GOODKNIGHT.
CAR COUPLING.
APPLICATION FILED APR. 18, 1910.

1,010,136.

Patented Nov. 28, 1911.

3 SHEETS-SHEET 1.

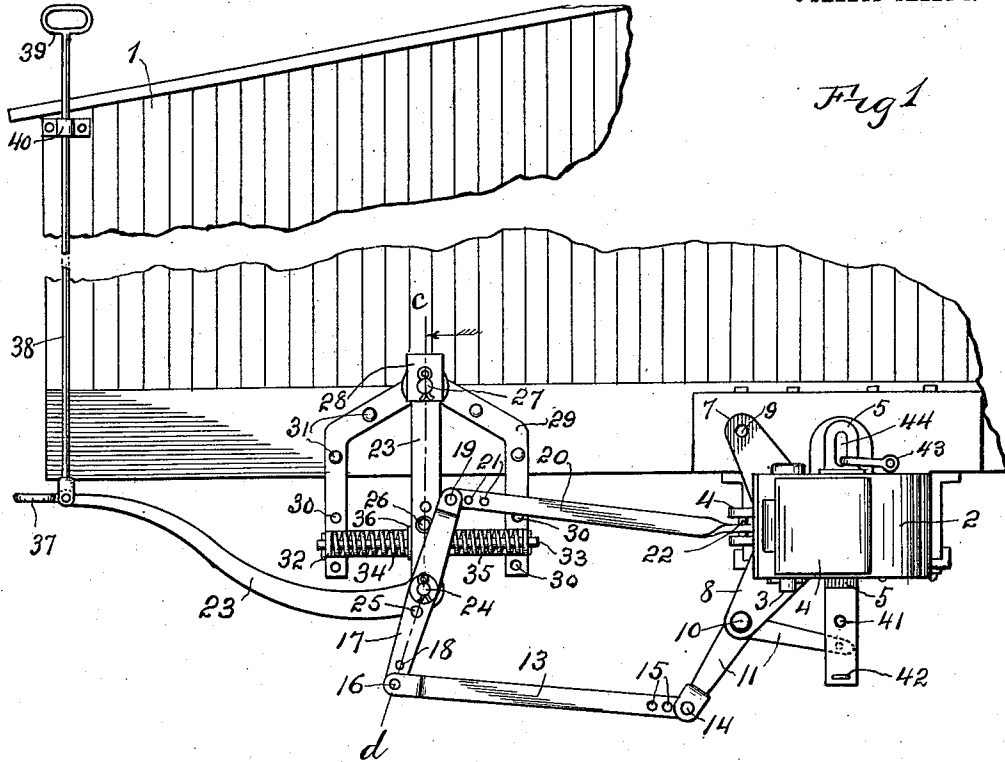


Fig 1

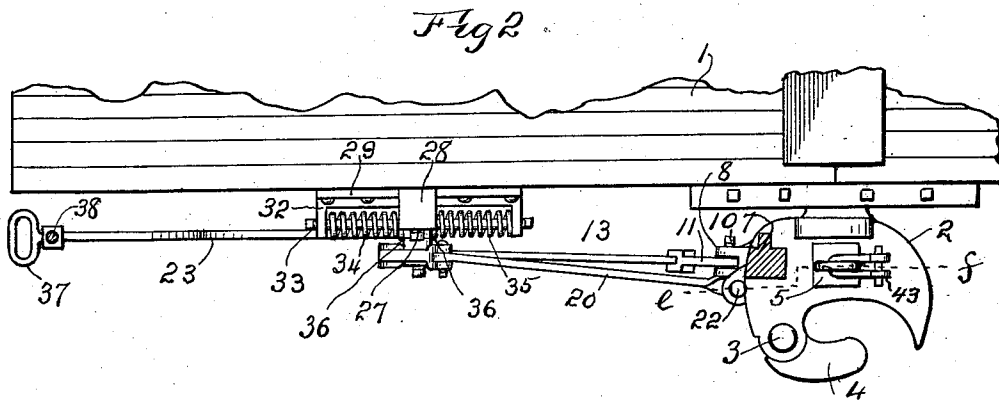


Fig 2

WITNESSES:

R. Hamilton
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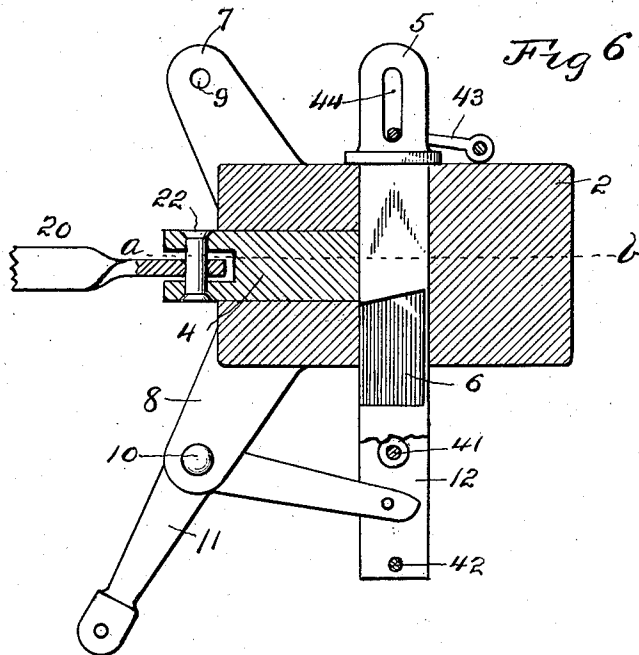
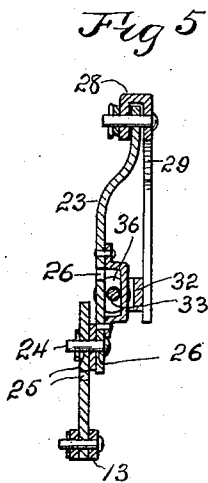
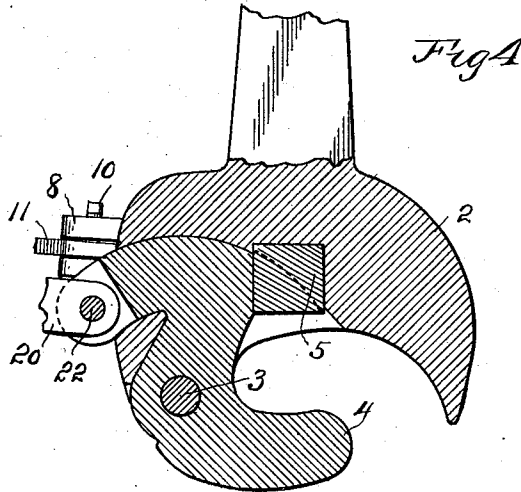
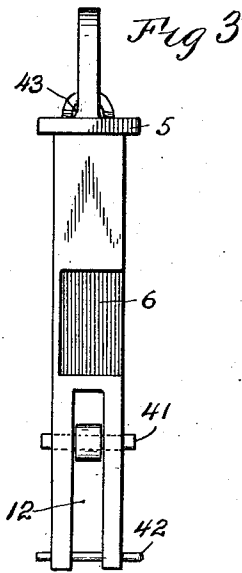
INVENTOR.
John M. GoodKnight
BY
Warren D. House
His ATTORNEY.

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3 SHEETS-SHEET 2.



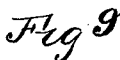
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOHN M. GOODKNIGHT, OF KANSAS CITY, KANSAS.

CAR-COUPLING.

1,010,136.

Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed April 18, 1910. Serial No. 556,135.

To all whom it may concern:

Be it known that I, JOHN M. GOODKNIGHT, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

My invention relates to improvements in car couplers.

The object of my invention is to provide a car coupler which may be easily and safely operated and which may be readily adapted to cars of different type.

My invention is particularly adapted to car couplers of the "Janney" type, in which a vertically movable locking pin is employed to lock a horizontally movable pivoted hook in the closed position on a coupler head.

The novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings, which illustrate the preferred form of my invention—Figure 1 is a front elevation, showing my invention applied to a box car, a portion of the body of which is broken away. In this view the lever is shown in the neutral position and the coupler hook and locking pin in the closed and locked position. Fig. 2 is a top view of what is shown in Fig. 1, the lever lifting rod being shown in cross section. Fig. 3 is an enlarged side elevation of the locking pin detached. Fig. 4 is a horizontal sectional view taken on the dotted line *a-b* of Fig. 6. Fig. 5 is a vertical sectional view, taken on the dotted line *c-d* of Fig. 1. Fig. 6 is an enlarged vertical sectional view taken on the dotted line *e-f* of Fig. 2. Fig. 7 is a view similar to Fig. 1, with the pin and hook operating parts so arranged as to lift the locking pin by means of the clevis attached thereto, some of the parts being inverted relative to the position in which they are shown in Fig. 1. Fig. 8 is a top view of what is shown in Fig. 7. Fig. 9 is a vertical sectional view, taken on the dotted line *g-h* of Fig. 7.

Similar characters of reference denote similar parts.

1 denotes the car body of an ordinary freight box car, to which is secured and preferably laterally movable at its forward end, a coupler head 2 of the ordinary "Janney" type and having pivoted thereto by a vertical knuckle pin 3 a horizontally movable coupler hook 4, adapted to engage

a corresponding hook upon an opposing coupler. The coupler head 2 is provided with a vertical hole extending therethrough, in which is vertically slidable a locking pin 5 adapted, when in the lower position shown in Figs. 1, 4, 6 and 7, to be in the path of movement of the rear end of the hook 4, thereby holding the said hook in the closed position. The pin 5 is provided with a notch 6 so disposed that when the pin is raised to the proper position the notch 6 will be opposite the hook 4 and will permit said hook to swing therethrough to the open or unlocked position.

For lifting the pin 5 so as to release the hook 4, I provide on the coupler head 2, an upwardly extending projection 7 and a downwardly extending projection 8, each of which is provided with a transverse hole 9 adapted to receive a horizontal locking pin 10, on which is pivoted a bell crank lever 11.

When the bell crank lever 11 is pivotally supported upon the projection 8 one end of said lever is mounted in a vertical slot 12 provided in the lower end of the pin 5. The other end of the lever 11 is pivoted to a link 13 by means of a horizontal pin 14, which is adapted to be inserted in any one of the transverse holes 15, which are disposed in a longitudinal row at one end of the link 13. The other end of the link 13 is pivoted by means of a horizontal pin 16, to one end of an upwardly and downwardly extending bar 17, which is provided with a plurality of holes 18, adapted to receive the pin 16. The other end of the bar 17 is pivoted by means of a horizontal pin 19, to a link 20, which is provided with a longitudinal row of holes 21, adapted to receive the pin 19. The other end of the link 20 is pivotally connected by means of a vertical pin 22 with the rear end of the hook 4.

The bar 17 is pivoted at a point intermediate the pins 16 and 19, to a bell crank operating lever 23, by means of a horizontal pin 24, which is adapted to be mounted in either of two holes 25, provided in the bar 17, and in either of two holes 26, provided in the operating lever 23. The inner end of the lever 23 is pivotally mounted on a horizontal forwardly and rearwardly extending pin 27 which extends through the two vertical arms of a U-shaped portion 28 of a U-shaped support 29, the arms of which are provided with a plurality of holes 30, adapted to receive horizontal bolts 31

for securing the support 29 to the end of the car body 1. Secured to the forward side of the support 29 is a horizontal U-shaped plate 32, through the forwardly extending horizontal arms of which extends a horizontal rod 33, upon which are mounted two coil springs 34 and 35, which are disposed at opposite sides of the lever 23 and bear at their inner ends respectively against two washers 36, which rest respectively against opposite sides of the vertical portion of the lever 23. The outer ends of the springs 34 and 35 bear against the arms of the plate 32. The tension of the springs 34 and 35 is such as to normally hold the lever 23 in what may be termed the neutral position shown in Figs. 1, 2, 7 and 8, in which position the hook 4 and pin 5 will be in the locked positions shown in Figs. 4 and 6.

The outwardly extending arm of the lever 23 is preferably provided with a hand hold 37, by which the lever may be swung upward and downward by a person standing on the ground beside the car. For swinging the lever 23 from the roof of the car body 1, I provide a vertical rod 38, the lower end of which is pivotally connected to the lever 23, near the hand hold 37, and the upper end of which is provided with a hand hold 39, by which the rod 38 may be moved upward or downward by a person standing upon the top of the car body 1.

40 denotes a bearing secured to the end of the car body 1 and in which the rod 38 is loosely slidable.

Through the slitted portion of the pin 5, above the lever 11, extends a horizontal pin 41, by which the lever 11 lifts the pin 5 when said lever is pivoted to the projection 8, as shown in Figs. 1 and 6. The pin 41 also serves as a stop for limiting the upward movement of the pin 5.

In operating my invention, when the parts are assembled as shown in Figs. 1 to 6, with the lever 11 supported by the projection 8 of the coupler head 2, the outer end of the lever 23 is forced downward, thus swinging the lever toward the coupler head 2 and thereby swinging toward said coupler head the lower end of the bar 17. At this time the link 20 and coupler hook 4 prevent any forward movement of the upper end of the bar 17, the coupler hook 4 being held by the pin 5. As the lower end of the bar 17 moves toward the coupler head 2, the link 13 will swing the lever 11 so that the portion of the lever in the slot 12 will move upward and will strike the pin 41, thus lifting the pin 5 to a position in which the notch 6 therein will register with the coupler hook 4. Continued movement of the lever 23 toward the coupler hook 2 will, through the intermediacy of the bar 17 and link 20, swing the coupler hook 4 to the open position for the purpose of coupling or un-

coupling. The spring 35 preferably is not of sufficient strength to force the lever 23 to the initial or neutral position, shown in Fig. 1, when the coupler hook 4 is in the open position. The coupler hook 4 may be moved to the closed position, shown in Figs. 2 and 4, by having it struck with an opposing coupler, or it may be moved to the initial position by forcing upward the outer end of the lever 23. When this has been done the pin 5 will drop to the positions shown in Figs. 1 and 6, thereby again locking the coupler hook 4 in the closed position. To insure the pin 5 moving downward, it has extending through its slotted portion, below the lever 11, a transverse pin 42, adapted to be struck by the lever 11. It will be noted that, as shown in Figs. 1 and 6, when the lever 23 is in the initial or neutral position shown in Fig. 1, the lever 11 will not be in contact with either of the pins 41 or 42 but will be intermediate of said pins. This arrangement of the parts is to prevent any lateral movement of the coupler head 2 toward or from the lever 23, accidentally causing the raising of the pin 5 so as to release the coupler hook by any swinging of the lever 23 which might be imparted to it from the coupler head 2 by the links 13 and 20, lever 11, hook 4, and bar 17. This is avoided by providing the two springs 34 and 35, to normally force the lever 23 to the neutral or initial position shown in Fig. 1, and by providing sufficient space between the pins 41 and 42 for the vertical movement of the lever 11.

When for any reason it is desired to connect the lever 11 with the upper end of the pin 5, as, for example, when the coupler head 2 is mounted on a freight car or when the coupler head is mounted relatively high on the body of the car, the parts are arranged as shown in Figs. 7, 8 and 9. As will be noted in said figures, the support 29 is inverted relative to its position in Fig. 1, as are also the bars 17 and the lever 23. The positions of the links 13 and 20 are the reverse of those in Fig. 1 and the lever 11 with the pin 10 is mounted in the projection 7. The positions of the springs 34 and 35, are also reverse of the positions shown in Fig. 1 of said springs. The lever 11 is loosely connected to the upper end of the pin 5 by a clevis 43, which is pivotally connected to said lever and is vertically slidable in a vertical slot 44, provided in the upper end of the locking pin 5.

In the operation of the invention, when the parts are arranged as shown in Figs. 7 and 8, to swing the hook 4 to the open position, the lever 23 is upwardly swung, thereby moving the upper end of the bar 17 toward the coupler head 2, and thus swinging the lever 11 through the link 13 so as to raise the clevis 43, thereby lifting the pin 5 to the

unlocked position, in a manner similar to that which has already been described. When the pin 5 has been raised to the unlocked position, continued upward movement of the lever 23 will cause the lower end of the bar 17 to move toward the coupler head 2, thereby swinging the coupler hook 4 to the open position through the intermediacy of the link 20.

The springs 34 and 35 operate in the manner already described, to always bring the lever 23 to the neutral position shown in Fig. 7, when the coupler hook 4 is in the closed position, irrespective of any lateral movement of the coupler head 2, sufficient play being afforded by means of the loose fitting of the clevis 43, in the locking pin 5, to permit of a limited vertical movement of the lever 11 without disturbing the pin 5.

From the above description it will be understood that the operation of the parts as arranged in Figs. 7 and 8, is substantially the same as when they are arranged in the manner shown in Figs. 1 and 2, the principal difference in mode of operation being that the lever 23 is swung upwardly to lift the pin 5 as the parts are arranged in Figs. 7 and 8, while it is downwardly swung to lift the locking pin when the parts are arranged as shown in Figs. 1 and 2.

By providing a plurality of holes 15, 18, 21 and 25, in the members 13, 17 and 20, the pivotal connection between those parts and between the lever 23 and the bars 17 may be adjusted readily to suit the required conditions in any particular case.

I do not limit my invention to the structures shown and described, as many modifications, within the scope of the appended claims, may be made without departing from the spirit of my invention.

Having thus described my invention, what

I claim and desire to secure by Letters Patent is:—

1. The combination with a coupler head, of a coupler hook pivoted thereto, a pin for locking the hook in the closed position, a lever, a member pivoted intermediate of its ends to the lever, means connected to said member at one side of the pivotal point for swinging said hook, and means connected to said member at the other side of its pivotal point for moving said pin to release the hook.

2. The combination with a coupler head, of a coupler hook pivoted thereto, a vertically movable locking pin for holding the hook in the closed position, a lever, a bar pivoted intermediate of its ends to and carried by said lever, a link connected to one end of said bar and to said hook, a lever pivoted to said coupler head for lifting said pin to release said hook, and means connected with the last named lever and the other end of said bar for transmitting motion from one to the other.

3. The combination with a coupler head, of a coupler hook pivoted thereto, a pin for locking the hook, an invertible supporting device, a lever pivoted to said device, and invertible therewith, a member pivoted intermediate of its ends to said lever, means connected to one end of the member for swinging the hook, and means connected to the other end of said member for releasing the pin from the hook.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

* JOHN M. GOODKNIGHT.

Witnesses:

WARREN D. HOUSE,
E. B. HOUSE.