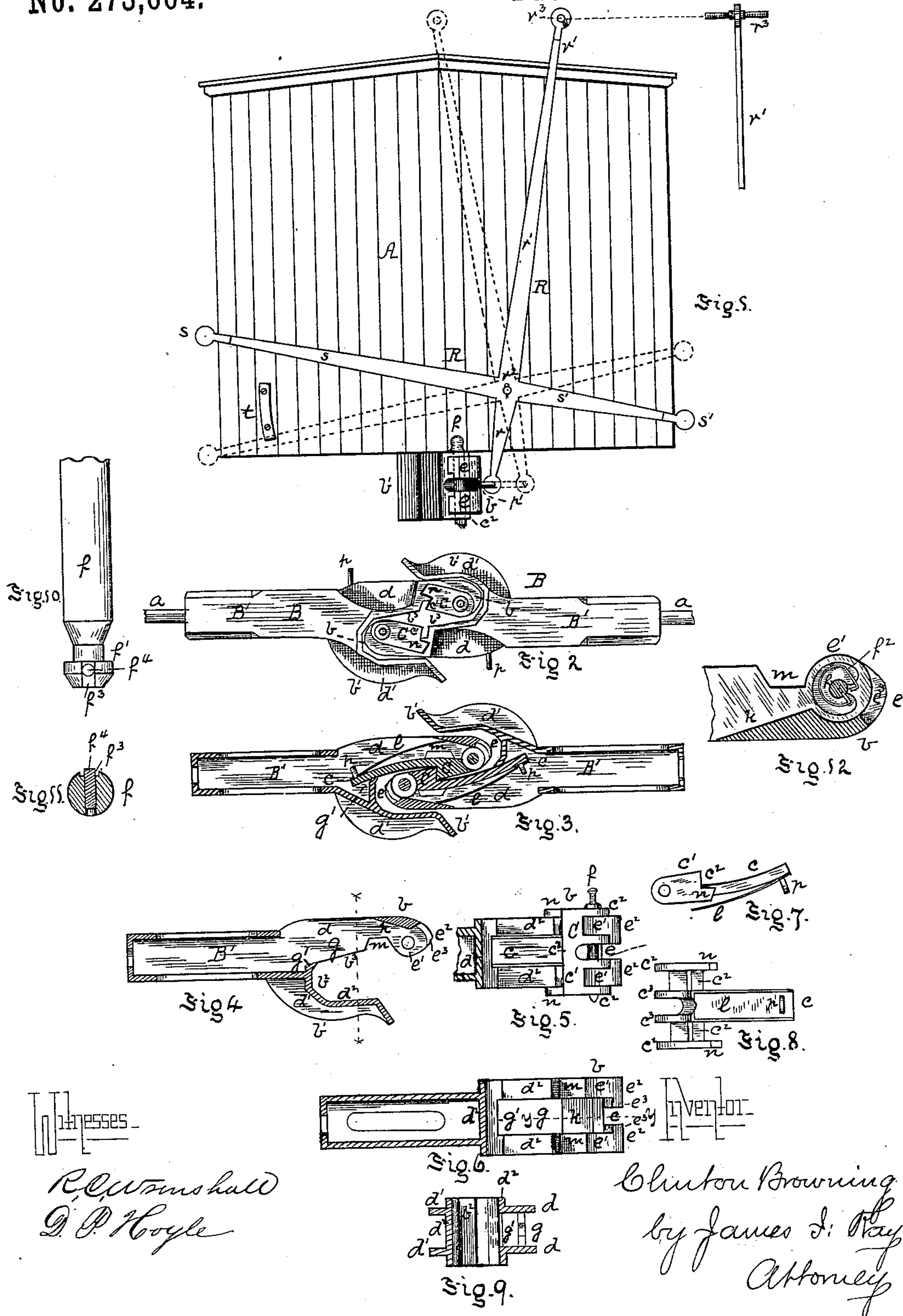


(No Model.)

C. BROWNING.  
CAR COUPLING.

No. 273,664.

Patented Mar. 6, 1883.





# UNITED STATES PATENT OFFICE.

CLINTON BROWNING, OF SHOUSETOWN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO JAMES H. LINDSAY, TRUSTEE, OF ALLEGHENY CITY, PENNSYLVANIA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 273,664, dated March 6, 1883.

Application filed July 17, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CLINTON BROWNING, of Shousetown, in the county of Allegheny and State of Pennsylvania, have invented certain  
5 new and useful Improvements in Car-Couplings; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to what are termed  
10 "self" or "automatic" couplings for railroad-cars, and refers especially to the automatic coupling set forth in Letters Patent No. 254,107, granted to me February 28, 1882. In that patent is shown a coupling formed of a bifurcated or double-jawed draw-head, having pivoted at  
15 the end of one jaw an arm or lever provided with a flat interlocking shoulder and held out by spring mechanism, whereby when a coupling was made the jaw of each draw-head carrying the shouldered lever would enter between  
20 the jaws of the other draw-head, and the lateral shoulders of the pivoted levers interlock, thus forming the coupling. In that patent the interlocking lever was provided with two arms, extending one above and one below the draw-head, and connected to the apparatus for withdrawing the lever, and it was held in its forward or locking position by a spiral spring held between the arms and a bracket on the  
25 car-frame; and one of the objects of my invention is to inclose the operating extension or arm of the interlocking lever and the spring for holding it in its locking position in the draw-head, and thus protect them from injury. In that patent, at the end of the jaw in which  
35 the interlocking lever was pivoted was shown a space for the reception of an ordinary coupling-link, the link being held by the pivoting-pin of the lever; but no means was provided for preventing the entire withdrawal of this  
40 pin, so that the coupling was liable to be disarranged when a coupling was made with the ordinary link; and another object of my invention is to overcome this difficulty and otherwise improve the pivotal connection of the interlocking lever.

My invention also has for its object the improvement in the construction of the said coupling in other particulars, as well as to otherwise improve the coupling-connections.

50 To this end it consists, first, in combining

with the double-jawed draw-head a shouldered interlocking lever pivoted at the forward end of one jaw, and having the operating-arm extending back within the body of the draw-head, and having the spring mechanism for throwing  
55 out the locking lever pressing against this arm and the operating mechanism for retracting it connected to the end thereof; second, in combining with the shouldered lever having the operating-arm within the body of the  
60 draw-head a spring confined between the arm and the body of the draw-head and adapted to hold the lever in its locking position; third, in forming within the jaw of the draw-head a recess to permit the lever to swing back, and  
65 combining therewith the lever having the operating-arm within the body of the draw-head, and flanges extending over the recess in the draw-head to prevent the entrance of the dirt therein; fourth, in the manner of constructing  
70 the jaw of the draw-head within which the shoulder-lever is pivoted for the reception of an ordinary coupling-link; fifth, in means for preventing the entire withdrawal of the pivotal pin when an ordinary coupling-link is secured to the draw-head thereby; sixth, in certain  
75 improvements in the construction of the draw-head to obtain lightness and strength; seventh, in an indicating-lever for operating the coupling from the side or top of the car and  
80 indicating whether the coupling is coupled or ready to couple without an examination of the coupling; and, finally, in other details of construction hereinafter specifically set forth.

To enable others skilled in the art to make  
85 and use my invention, I will describe the same more fully, referring for that purpose to the accompanying drawings, in which—

Figure 1 is an end view of a freight-car illustrating my invention. Fig. 2 is a top view  
90 of two couplings with the locking levers drawn back. Fig. 3 is a longitudinal horizontal section of two couplings connected. Fig. 4 is a longitudinal horizontal section of a draw-head, the locking device being removed. Fig. 5 is a  
95 longitudinal vertical section of one coupling looking toward the locking lever. Fig. 6 is a like view of the draw-head, the locking lever being removed. Fig. 7 is a top view of the locking  
100 lever. Fig. 8 is a back view of the locking



lever. Fig. 9 is a cross-section on the line  $xx$ , Fig. 4. Fig. 10 is an enlarged side view, and Fig. 11 a like cross-section, of the pivoting-pin; and Fig. 12 is an enlarged view from below on the line  $yy$ , Fig. 6, illustrating the spring for retaining the pivoting-pin.

Like letters of reference indicate like parts in each.

In the drawings referred to, A represents an ordinary freight-car, in which my improved coupling is supported by means of the ordinary draw-bar  $a$ , spiral spring, and bracket.

The draw-head B has the two jaws  $b b'$ , for the reception of one jaw of the opposite coupling, the jaw  $b$  of the head having the shouldered interlocking lever C, referred to hereinafter, pivoted at the forward end thereof, and the forward end of the clasp-jaw  $b'$  being curved outwardly to act as a guide for the entering jaw of the opposite coupling. The recess  $b^2$  corresponds in shape to that of the pivotal jaw  $b$  and lever C when in position for coupling, so as to receive the corresponding jaw and lever of the opposite draw-head when a coupling is made. The recess  $b^2$  is recessed or cut away opposite the shoulder  $c'$  of the lever C of the incoming coupling, as at  $b^3$ , so as to give free space for the reception of the lever and allow the shouldered lever to enter the draw-head, even when the draw-heads are at different height. This is clearly shown in Figs. 2 and 3, the levers entering the space so formed when locked, as in Fig. 3, and a diamond-shaped space being formed by these recesses and the faces of the levers C when drawn back, as in Fig. 2.

In order to obtain lightness and strength in the draw-head, and avoid such thickness of metal as will render it liable to blow-holes, and enable me to form the recess for the operating-arm  $c$  of the shouldered lever C without seriously weakening it, it is provided with the horizontal strengthening-ribs  $d d'$ , which extend from the extension  $B'$  of the draw-head on the outer side of the jaws  $b b'$ , the ribs  $d'$  extending to the end of the clasp-jaw  $b'$  and following the curve thereof, and the ribs  $d$  extending forward to the part within which the locking lever is pivoted. These horizontal ribs support the vertical walls  $d^2$ , forming the interior face of the coupling around the recess  $b^2$ , and by this construction the body of the coupling is formed of plates which are so thin as to prevent the formation of blow-holes in the casting, and also give the greater strength obtained in the outer more tenacious layers of the metal casting, without the increase of weight or bulk, and obtain a draw-head easily annealed and so strengthened by the outer ribs as to sustain all ordinary jars or blows. For these same reasons the extension  $B'$  within the bracket is formed of these same thin plates, as shown.

The locking lever C is pivoted at the forward end of the jaw  $b$ , and has the upper and lower pivoting-leaves,  $c^2$ , which fit above and

below the jaw, and the inner leaf or leaves,  $c^3$ , fitting between the leaves  $c'$  of the jaw, so that the lever C is securely supported within the jaw by the pivotal pin  $f$ , and the pin is also supported against the drawing strain of the ordinary coupling-link, when employed, as hereinafter described. In order to secure this coupling-link in the drawing-head in coupling with the common draw-head, a recess,  $e$ , is formed in the jaw  $b$  and lever C, between the pivoting-leaves  $c^3$ , and the link is passed within this recess and held by the pin  $f$ , as described in my former patent. As, however, in the construction shown therein the pivotal joint of the lever and jaw was liable to be injured by the bumping of the jaw or a sudden drawing strain on the link, the jaw is provided with a "nose,"  $e^2$ , extending beyond the joint, and having the curved flange or flanges  $e^3$  in front of the inner leaf or leaves,  $c^3$ , of the lever, to protect them from such blows and support them from sudden drawing strain or bending strain of the link when in the recess  $e$ , and by this construction the pin  $f$  is also so braced as to overcome any liability of its bending under drawing jar or strain. The pivotal pin  $f$  is provided at its base with the annular groove  $f'$ , the body of the pin tapering from above to this groove, and an annular shoulder being formed below it, and within the upper pivoting-leaf,  $e'$ , of the jaw is a spring,  $f^2$ , (shown in the enlarged view, Fig. 12,) which presses against the pin, and as soon as the annular groove  $f'$  is drawn opposite it enters the groove, and, holding against the shoulder below, it prevents the withdrawal of the pin, and thus prevents the disarrangement of the automatic coupling. Extending down from the recess  $f'$  is the slot  $f^3$ , which is closed by the pin  $f^4$ , driven into a hole extending through the pivotal pin, and when it is desired to remove the pin  $f$  this pin  $f^4$  is driven farther into the body of the pin  $f$  and the lip of the spring  $f^2$  enters within the slot  $f^3$ , thus permitting the withdrawal of the pin. Instead of this spring  $f^2$  and annular recess  $f'$ , the slot  $f^3$  may extend part way up the pin, and a lug in the pivoting-leaf  $e'$  enter the slot, the slot being closed at the base by the pin  $f^4$ ; but the spring and annular recess are preferred, as the long slot may be injured by the link.

The shoulder  $c'$  on the locking lever C extends vertically across the coupling, and has a flat inner face,  $c^2$ , adapted to engage with the like face of the opposite lever, and the operating-arm  $c$  extends back in the body of the draw-head in a slot,  $g$ , formed between the ribs  $d d'$ , the rear end of this slot forming a shoulder,  $g'$ , by which the forward movement of this arm is checked, thus limiting the forward throw of the locking lever and giving a further support to this lever, so that while the pressure or strain against the shoulders of the lever is in a diagonal line to the draft, and from one pivotal point to the other, as described in my former patent, as the arm  $c$  presses against the shoulder  $g'$  the



heavy strain is taken off the pivotal joint and thrown back into the body of the draw-head.

In the jaw *b*, back of the pivoting-joint, and extending forward from the slot *g*, is the inclined face *k*, and secured to the back of the arm *c*, at the end thereof, is the flat spring *l*, which extends forward, so that its free end presses against this inclined face *k*, being confined between the face *k* and arm *c*, and thus throws the arm *c* forward against the shoulder *g'* and holds the locking lever in its locking position, but is compressed between this face *k* and the arm *c* when the lever is withdrawn. The spring to cause the interlocking of the levers *C* is thus held within the draw-head, and the separate bracket for this purpose shown in my former patent is dispensed with. In order to permit the locking lever *C* to be drawn back sufficiently to uncouple, the jaw *b* is recessed back of the pivoting-leaves *e* for the reception of the shoulder *c'* of the lever, as shown at *m*, and to prevent the entrance of dirt within this recess when the lever *C* is thrown forward, and the consequent clogging of the parts, the upper and lower pivoting-leaves, *c*<sup>2</sup>, of the lever are provided with the flanges *n*, thus covering the recesses at all times.

The locking lever *C* is withdrawn by means of a lever secured to the car platform or body, and connected to a hook or loop, *p*, at the end of the operating-arm *c* by means of a rod or chain. When the automatic coupling is employed on freight-cars I employ what I term an "indicating-lever," whereby the brakeman can discover whether the coupling is made or the draw-heads are ready to couple without passing along the train and examining every coupling. This lever *R* is cruciform in shape and is pivoted to the body of the car at *r*<sup>2</sup>, where the arms cross. It has the arm *r* extending from the pivot *r*<sup>2</sup> down to the coupling, and is connected to the loop *p* of the operating-arm *c* by a rod or chain, *p'*, the arm *r'* extending upward a short distance above the car-top to operate the coupling from the top of the car, and the arms *s s'* extending one on either side of the car-body, to operate it from the side of the car. The arms *s s'* do not extend farther out than the overhanging roof of the car, so that they are not liable to come in contact with an object while passing, and so break or injure it.

On the body of the car is the stop *t*, under which the arm *s* of the cruciform lever catches when it is desired to hold the locking lever back in uncoupling the cars, or for other reason. When the lever is released from this stop *t* the spring *l* within the draw-head draws the cruciform lever back to its normal position.

It will be seen by examining Fig. 1 that as the lever is swung on its pivot *r*<sup>2</sup> the ends of the arms *r' s s'*, which extend beyond the car-body, are moved in a short segment of a circle, and their positions are thus changed, as shown in dotted lines, the arm *s* being at its lowest position and the arm *s'* at its highest po-

sition when the lever is held by the stop *t* and the locking lever *C* is drawn back, and the arm *s* being at its highest position and the arm *s'* at its lowest position when the locking-lever is coupled or ready to couple, so that the brakeman, by looking at the ends of the levers extending beyond the cars, can discover whether the cars are uncoupled or coupled, or whether, when they are separated, the cars are ready to couple. Instead of the arms *s s'* extending beyond the sides of the car, they may be bent downward, so that when in their lowest positions they extend beyond the bottom of the car-body, and thus indicate the condition of the coupling. The arm *r'* above the car also indicates in the same manner the condition of the coupling, as it extends beyond the car-body at about the center of the car when held by the stop, and at one side of the car when free and coupled or ready to couple, so that the brakeman can also discover the condition of the couplings by looking along the top of the cars. The arm *r'* of the lever is provided with a cross bar, *r*<sup>3</sup>, to enable the brakeman to give the lever a slight turn, and thus throw it out of connection with the stop. When the automatic coupling is employed with flat cars this arm *r'* will of course be dispensed with. The ends of the levers *r' s s'* may be painted a bright color, so as to be easily distinguished from a distance.

The operation of my improved car-coupling is as follows: When a coupling is to be made the indicating-levers *R* should be released from their stops *t*, thus allowing the springs *l* within the draw-heads to throw the interlocking levers *C* forward into locking position, and this is indicated to the brakeman by the position of the arms of the levers *R*, the levers *s* being in their highest position and the levers *s'* in their lowest position when looking along the side of the cars, and the levers *r'* being one toward one side and one toward the other when looking along the top of the cars. One car is then backed against the other and the coupling connects automatically, the jaw *b* of each draw-head entering within the jaws of the opposite draw-head and the inclined faces of the locking levers *C* pressing each other back until they pass, when the levers are thrown out by the springs *l* within the heads and the shoulders *c'* of the levers interlock, thus forming the coupling. When the lever *C* is pressed back the flat springs *l*, secured at the ends of the operating-arm *c*, travel up the face *k* in the draw-head, and are confined between this inclined face and the back of the operating-arm, and as soon as the pressure is removed from the faces of the lever by pressing against this inclined face it throws out the lever into locking position, the mechanism for projecting the lever being thus located entirely within the draw-head. When the lever *C* is pressed back it enters the recess *m* in the jaw *b*, and thus can swing back sufficiently to permit the passage of the lever *C* in the opposite draw-head, and this recess *m* is protected from the entrance of dirt or



other substances by the flanges  $n$  on the locking lever. The inclined faces of the shoulder  $c'$  of the incoming lever  $C$  fits into the recessed face  $b^3$ , formed for its reception, so that it is thrown by its spring beyond the shoulder of the opposite lever, and that space is formed for its reception, even when the draw-heads are at different heights. When draft comes on the coupling the drawing strain is from the pivotal joint in one jaw to that in the other, and is therefore diagonal of the line of draft. As, however, the operating-arm  $c$ , extending back within the draw-head, presses against the shoulder  $g'$ , the tendency of the strain on the shoulder  $c'$  of the lever is to swing the lever on the pivot-pin and draw the arm  $c$  against the shoulder  $g'$ , and it thus gives a more direct strain on the draw-head, and to a great degree relieves the strain on the pivotal joint and throws it back into the body of the draw-head.

When it is desired to uncouple the cars the brakeman, either from the sides or top of the car, by means of the lever  $R$ , draws back one of the interlocking levers  $C$ , as shown in Fig. 2, and secures the lever by its stop  $t$ ; and when the cars are drawn apart the face of the lever  $C$  which has been withdrawn acts as an inclined surface to push back the lever  $C$  in the opposite draw-head and permit its withdrawal. This can be done while the cars are in motion or when they are stopped, and the interlocking lever can be held back, as above described, so that the cars can be uncoupled and the draw-heads remain within each other, it not being necessary for the brakeman to wait until the cars are drawn apart. When the locking lever is held back, as above described, the cars can be brought together without coupling, this being often of importance in backing onto switches. The condition of the couplings between the various cars of the train is indicated to the brakeman from the sides or top of the cars by the positions of the arms of the indicating-lever, and no time is required for the examination of each coupling.

When the draw-head is to be coupled by a link to a common draw-head the pivoting-pin  $f$  is drawn up until past the recess  $e$ , the spring  $f^2$  entering within the annular groove  $f'$  at the base of the pin and preventing its entire withdrawal, and the link is held within the recess  $e$  by the pivoting-pin. The nose  $e^2$  at the end of the arm  $b$  receives all the blows in making a coupling or backing the train, and the curved flanges  $e^3$  protect the leaves  $c^3$  of the locking lever from such blows or any bending strain of a link in the recess  $e$  of the arm.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The improved draw-head herein described, having the jaws  $b$   $b'$ , the horizontal strengthening-ribs  $d$   $d'$ , and the inner wall, formed of the plate  $d^2$ , supported by said ribs, substantially as and for the purposes set forth.

2. In combination with a double-jawed draw-head, a shouldered interlocking lever pivoted

at the end of one jaw, and having an operating-arm extending back within the body of the draw-head, spring mechanism pressing against said arm for holding the lever in its locking position, and apparatus for withdrawing the lever, attached to the end of said arm, substantially as set forth.

3. In combination with a double-jawed draw-head, a shouldered interlocking lever pivoted at the end of one jaw, and having an operating-arm extending back within the body of the draw-head, a spring confined within between said arm and the body of the draw-head, and apparatus for withdrawing the lever, connected to the end of said arm, substantially as set forth.

4. In combination with the double-jawed draw-head having the slot  $g$  and shoulder  $g'$  at the end thereof, the shouldered interlocking lever  $C$ , pivoted at the end of the jaw  $b$ , and having the operating-arm  $c$ , fitting within said slot and against said shoulder, substantially as and for the purposes set forth.

5. In combination with the double-jawed draw-head having the slot  $g$  and face  $k$ , the shouldered interlocking lever  $C$ , having the operating-arm  $c$ , fitting within said slot, and the flat spring  $l$ , secured to said arm and adapted to press against said face  $k$ , substantially as and for the purposes set forth.

6. In a double-jawed draw-head, the jaw  $b$ , having nose  $e^2$ , pivoting-leaves  $c'$ , and curved flange or flanges  $e^3$  for protecting the pivoting leaf or leaves  $c^3$  of the interlocking lever, substantially as set forth.

7. In combination with the double-jawed draw-head having the nose  $e^2$ , pivoting-leaves  $c'$ , recess  $e$ , and curved flanges  $e^3$ , the interlocking lever  $C$ , having the pivoting-leaves  $c^3$ , fitting between the leaves  $c'$ , back of the curved flanges  $e^3$  and on either side of the recess  $e$ , and the pivoting-pin  $f$ , substantially as and for the purposes set forth.

8. In a car-coupling, the combination, with a double-jawed draw-head having a recess for the reception of a coupling-link in the pivoting-jaw thereof, an interlocking lever pivoted in said jaw, a pin for pivoting said lever and securing said link, and means, substantially as described, for preventing the entire withdrawal of the pin, as and for the purposes set forth.

9. In combination with the jaw  $b$  of the double-jawed draw-head, the pin  $f$ , having the annular groove  $f'$  and slots  $f^3$ , closed by a pin, and the spring  $f^2$  within the jaw, substantially as and for the purpose set forth.

10. In combination with the double-jawed draw-head having the recess  $m$  in the pivoting-jaw  $b$ , the interlocking lever  $C$ , having the operating-arm  $c$ , extending within the draw-head, and the leaves  $c^2$ , having the flanges  $n$ , extending over said recess, substantially as and for the purposes set forth.

11. In twin couplings, the combination of the pivoted interlocking levers  $C$ , having the shoulders  $c'$ , with the double-jawed draw-heads  $B$ , where the pivoting-jaws  $b$  of said draw-



heads are recessed or cut away, as at  $b^3$ , for the reception of the face of the shoulder  $c'$  of the lever in the opposite draw-head, substantially as and for the purposes set forth.

5 12. In combination with a car-coupling, the cruciform indicating-lever R, pivoted on the end of the car, and having the arm  $r^4$ , connected to the coupling, and the arms  $r's s'$ , extending beyond the top and sides of the car, substantially as and for the purposes set forth.

10 13. In combination with a car-coupling, the stop  $t$  and the cruciform indicating-lever R,

having the arms  $r r' s s'$ , where the arm  $r$ , above the car, has the cross-bar  $r^3$ , substantially as and for the purposes set forth.

14. In combination with the double-jawed draw-head, the interlocking lever C, spring  $l$  for projecting said lever, and cruciform indicating-lever R, pivoted on the end of the car, substantially as and for the purposes set forth. 20

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Witnesses:

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H. C. FISH.