

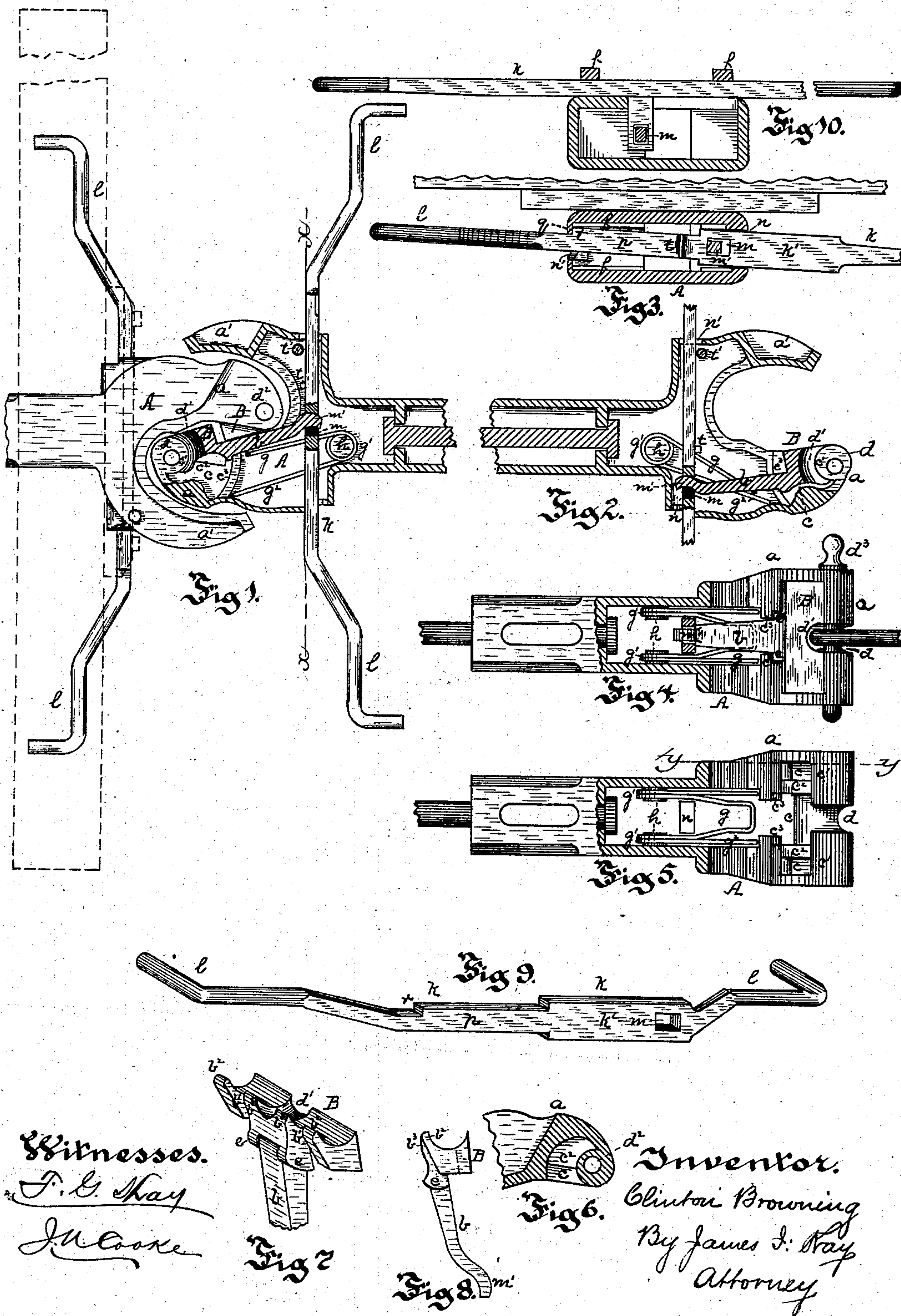
(No Model.)

C. BROWNING.

CAR COUPLING.

No. 295,483.

Patented Mar. 18, 1884.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 295,483, dated March 18, 1884.

Application filed January 3, 1884. (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 a new and useful Improvement in Car-Couplings; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

My invention relates to couplings employed in connecting railroad-cars, and has reference to that class of couplings shown in Letters Patent granted to me February 28, 1882, No. 254,107, and March 6, 1883, Nos. 273,664 and 273,343, in which were illustrated in different forms bifurcated draw-heads having shouldered interlocking lever pivoted or journaled at the end of one jaw, the lever having an operating-arm extending back and connected at its end with apparatus for withdrawing the lever. In Letters Patent No. 273,664 the interlocking lever is pivoted to the entering jaw of the draw-head by a pin passing through hinging-leaves on the jaw and lever, and an opening is formed in this jaw and a locking-lever for the reception of a coupling-link, the pivoting-pin being also employed in forming a coupling within this link. When the coupling is thus constructed, as the hinging-leaves of the locking-lever form the upper and lower walls of the opening for the coupling-link, and the back wall of said opening is formed in said locking-lever, it is evident that the combined pivoting and coupling pin is liable to be bent or injured both by draft-strain and jar in backing, as the jar on the locking-lever is transmitted through the leaves to the pin, and if the pin is bent the coupling is rendered inoperative. The jar on the locking-lever is also liable to break off the leaves thereof, as its only support is from the pivoting-pin. This coupling also requires careful and exact fitting to operate properly, and is consequently expensive to build. In Letters Patent No. 273,343 some of these difficulties are overcome, as the locking-lever is journaled within the entering jaw without the employment of the pivoting-pin, a journal-face on the locking-lever working against or within one face of a recess within said jaw, back of its solid end,

and in this patent provision was made for the coupling-link by a slot in the clasp-jaw. In the practical manufacture of these couplings it is found desirable to have the link-coupling apparatus in the entering jaw, as it is near the center of the draft, and especially in the freight-couplers, as hereinafter shown. The space occupied by the link and pin in the clasp-jaw is needed for other parts of the coupler. It is also found desirable to employ a spring having a coil therein to project the locking-lever, instead of the ordinary flat spring shown in said patent, as the flat spring is liable to lose its elasticity on account of jar-ring of the cars. The objects of my invention are to improve the construction of these couplers in these particulars, and also to otherwise simplify and improve their construction.

It consists, essentially, in journaling the locking-lever within a recess within the entering jaw against one face or end of said recess, and forming the opening for the coupling-link in the said jaw and locking-lever, and the coupling-pin hole through the jaw and front of the journaling-recess, so that any draft-strain on said pin cannot affect the action of the locking-lever, and the jar in backing, if it comes against the locking-lever, cannot injure it or the journal thereof.

It also consists in certain improvements in the construction of the entering jaw of the draw-head and the locking-lever, to add strength to the jaw.

It also consists in employing a spring having one or more coils therein secured in the draw-head neck for projecting the locking-lever, and in certain improvements in the spring and the means of securing it in place.

It also consists in providing the draw-head with an operating-bar supported on or passing through the draw-head and extending out on each side thereof, and connected with the interlocking lever, so that it may be withdrawn by sliding said bar on or through the draw-head.

It also consists in supporting said operating-bar and the entire mechanism for operating said interlocking lever and for holding it in position to couple or uncouple within the draw-head.

It also consists in certain other improve-



ments in the draw-head and coupling apparatus hereinafter specifically described.

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

Figure 1 is a view of two draw-heads coupled, one being shown in plan view and the other by a horizontal central section, thus illustrating the internal arrangements of the coupling. Fig. 2 is a bottom longitudinal section of one draw-head, showing the interlocking lever in its uncoupled position. Fig. 3 is a cross-section on the line *x x*, Fig. 1. Fig. 4 is a side view, the clasp-jaw being broken away, showing the interlocking lever in the entering jaw. Fig. 5 is a like view, the interlocking and sliding bar being removed. Fig. 6 is a horizontal section of the entering jaw on the line *y y*, Fig. 5. Fig. 7 is a perspective view, and Fig. 8 a side view, of the interlocking lever. Fig. 9 is a perspective view of the sliding bar; and Fig. 10 is a cross-section of the draw-head, showing the sliding bar supported on the top thereof.

In the drawings referred to, A represents the draw-head, which is formed bifurcated, having the entering jaw *a*, clasp-jaw *a'*, and recess between them to receive the entering jaw of the opposite draw-head, the forward end of the clasp-jaw being curved outwardly to act as a guide for the entering jaw of the opposite draw-head. The jaw *a* carries the locking-lever B, the said lever being journaled in the recess *c*, which is formed in the entering jaw back of the nose thereof, the said recess *c* having the convex face *c'*, around which the interlocking lever is journaled, and the said interlocking lever having the operating-arm *b*, which extends back within the draw-head, and by means of which the interlocking lever is operated. These parts are described and shown, substantially, in my Letters Patent No. 273,343, dated March 6, 1883. The entering jaw in that patent, however, was formed with a solid end, so as to impart strength to the coupling, and the concave face of the interlocking lever was made continuous and provided with a central lip, by means of which the lever was held within the recess.

In the coupling as now constructed, in order to arrange means for securing the ordinary coupling-link in the entering jaw *a*, I have formed in the nose of said entering jaw the opening *d*, the said opening extending across the nose thereof and into the face of the locking-lever B, as at *d'*, and through the nose of said entering jaw is the vertical coupling-pin hole *d''*, through which the pin *d'''* extends in connecting the link therewith. As the nose of the entering jaw may be weakened to some extent by the said opening *d*, I have formed the ribs *c''*, extending across the recess *c* in said jaw, these ribs serving to strengthen the nose of the jaw and compensate for the weakening thereof by the formation of the opening *d*. As the formation of this coupling-pin

opening *d* requires the changing of the holding-lip of the interlocking lever, I have formed the said lever as shown in perspective, Fig. 7, being grooved on the back, as at *b'*, so as to fit around the ribs *c''* in the recess *c*, and provided with the lips *b''* at the ends thereof beyond the concave face, and the lips *b'''* on either side of the opening *d'* in the face thereof, for the coupling-link before referred to. By this construction the interlocking lever is held in the recess *c* of the jaw, its concave face fitting against the convex side of said recess, and its lips *b'' b'''* extending up into extensions of said recess *c*, and thus holding the interlocking lever within the recess.

In the side of the recess *c*, opposite the journaling-face thereof, are formed the curved faces *c''*, which are substantially part of the circle drawn from the center of the movement of the interlocking lever, and the said lever is provided on each side of its operating-arm *b* with the shoulder *e*, which fits against the said curved faces *c''*, and thus hold the interlocking lever within the recess *c''*, except when the lever is thrown sufficiently forward to draw the shoulders *e* out of the recess, when the lever *b* may be withdrawn from the entering jaw, as is described in the said Letters Patent No. 273,343. The opening *d* in the entering jaw is made on the inside thereof, and where it extends into the interlocking lever, as at *d'*, the opening therein is formed concave, so that the coupling-link may extend into the interlocking lever, and in case of jar on said link the pressure will come centrally on the lever and be transmitted through the shoulders *e* and curved faces *c''* to the draw-head without in any way affecting the pivotal or journal connection of the lever within the entering jaw; and when the draft-strain comes against such coupling-link the pin holding it within the jaw is separated from any pivotal connections of the interlocking lever. It is evident that the operative part of my improved coupling can be in nowise injured by such draft-strains or by blows on the nose of the entering jaw.

In the patents obtained by me March 6, 1883, the spring employed for projecting the interlocking lever was what is termed a "flat spring," this spring being employed in order to secure it within the draw-head. This form of spring is, however, liable to lose its power, especially in parts subject to the jar or vibration of the cars, and I have devised a means for securing within the draw-head a rod-spring which is not subject to the objections before referred to. This spring *g* is secured in the neck of the draw-head and teats or lugs *h*, and is provided with the coils *g'*, which fit over these lugs and thus hold the springs to place. The spring employed is shown substantially in Figs. 1 and 5, and it has ends extending from said coil and resting against the body or walls of the draw-head at any suitable point, in order to have a hold for the spring. From the opposite side



of the coils the bar extends up back of the operating-arm *b* of the interlocking lever, and is connected by the cross-piece which bears against the back of said operating-arm. By this construction the spring *g* presses against the back of the lever and projects it, and the spring is much more elastic and less liable to breakage than the flat spring, as shown in the said patent, as when any pressure comes upon them it is taken by the coils of the spring, and for this reason the spring is found much more durable and less liable to lose its power on account of the jarring or vibration of the coupling. It also does away with the necessity of the longitudinal face in the entering jaw, against which the end of the spring pressed, as shown in said patents, and enables me to form the said jaw much stronger, as well as overcomes the necessity of planing said horizontal face, which was difficult on account of its position in the draw-head.

The operating-arm *b* may be connected to the regular lever on the car platform or body, as shown in the patents above referred to, and operated thereby. Where, however, the coupling is employed for freight-cars, I prefer to employ operating mechanism which is supported by the draw-head, so that the entire operating apparatus of the coupling may be located in or on the draw-head, and the necessity of connection with the body of the car be done away with. This I have accomplished by the employment of the sliding bar *k*, which slides in journals or guides *f* at the back of the draw-head, and which is connected with the operating-arm *b* of the interlocking lever, so that the said lever may be withdrawn by sliding said bar in or on the draw-head. The exact construction of said bar is shown in Fig. 9, the said bar having the arms *l* extending out toward the sides of the car, and the bar being preferably made of such length that it can be reached by the brakeman from the side of the car without the necessity of entering between the cars, and yet is not so long as to extend into the road of the brakeman in other operations. I prefer to have it of such length that the handles are about an arm's length from the sides of the car, and that the arms *l* are under the body thereof and so protected from injury, as is shown by dotted lines, Fig. 1.

The bar is provided with a hole, *m*, into which the lug *m'* on the end of the operating-arm *b* fits, this being found by me the most simple and durable connection between sliding bar and the interlocking lever, though of course any equivalent connection—such as a hinge or link joint—may be employed. The guides *f* through the draw-head correspond in width to the body *k'* of the bar, and the opening at one end of the draw-head, as at *n*, is sufficiently large to permit the entrance of said body *k'*; but the opening at the other end of the draw-head is smaller than the body *k'*, the bar being formed narrower, as at *p*, and this narrow part being adapted to slide through said opening *n'*. As the opening *n'* is smaller

than the guides *f* through the draw-head, it is evident that the walls thereof form the shoulder *q*, and the said bar, beyond the narrow part *p*, is provided with the locking-shoulder *r*, which engages with said shoulder *q*, and is thus adapted to hold the interlocking lever in its uncoupled or locked position. This can be accomplished because that the body *k'* of the bar is drawn almost out of the draw-head, and by pressing down on the handle beyond the body the shoulder *r* may be thrown up and catch against the shoulder *q*, the base of the opening *n* acting as a fulcrum for the bar. The shoulder *r* is made on the upper edge of the bar, as if on the under face thereof it might be liable to engage by gravity with its locking-shoulder in the draw-head whenever the bar was drawn sufficiently out. When constructed as shown, however, it will only engage with its locking-shoulder when raised up, as above described, and it is held in connection therewith by the pressure of the spring. The bar has the lug *t* thereon, which comes against the pin *t'*, and thus limits the forward motion of the bar in projecting the interlocking lever. These stops *t t'* are necessary because in connecting the operating-arm *b* of the lever *B* with the sliding bar it is necessary that the bar slide forward through the head in order to permit the lug *m'* to enter the hole *m*.

The construction shown is considered the most simple and compact for the purpose desired; but the bar *k* might be mounted on top of the draw-head and the operating-arm be connected therewith through a suitable slot therein, as shown in Fig. 10, or other equivalent arrangement of the parts adopted, the essential point being that the bar shall be supported by the draw-head and be independent of the body of the car.

In connecting the parts the coupling-spring *g* is first secured in place, being compressed until the coils *g'* fit over the lugs *h* within the neck of the draw-head, being held on said teats by the tension of the spring. The sliding bar *k* is then passed through the opening *n* through the coupling until its body *k'* fits within the guide *f* thereof, and the interlocking lever is then introduced, the lug *m'* being inserted in the hole *m*, and the body of the lever being inserted in the recess *c*, so that the journal-faces above referred to come against each other. The sliding bar is then drawn back so as to draw the locking-lever into its uncoupled position, and the pin *t* is inserted, when the coupling is ready for operation. The pressure of the spring *g* on the operating-arm *b* carries it and the sliding bar forward until the lug *t* on the bar comes against the pin *t'*, and the parts remain in this position ready for coupling, so that when the two coupling-heads are brought together the faces of the interlocking levers, pressing upon each other, cause them to be pressed back into the recesses in the entering jaws, and as soon as the faces of the interlocking lever pass each other the



springs throw the levers forward so that their shoulders engage to form the coupling.

When it is desired to uncouple the cars, the brakeman catches the handle on one or the other side of the draw-head, and by drawing or pushing on the bar causes it to draw aside the interlocking lever, and the shoulders  $q$   $r$  are engaged, as above described, thus holding the interlocking lever back, so that when the cars are drawn apart the corresponding lever in the opposite draw-head will be pressed back by the entering jaw and pass out of the draw-head.

When the draw-heads come together in coupling, any shock on the entering jaw is supported by the heavy nose thereon, as well as by the ribs  $c^2$  across the the journaling-recess  $c$ , and thus prevented from injuring the journal-connection of the interlocking lever.

When a common coupling-link is employed, the draft-strain is communicated through the coupling-pin to the nose, where the bending of the pin or injury to the nose cannot affect the journaling of the interlocking lever, and if in backing any jar is communicated to the draw-head it is simply transmitted from the link through the interlocking lever to the draw-head without injuring the lever in any way.

The spring is entirely coupled in the draw-head, out of the way of the operative parts, and on account of the coiling thereof has much more elasticity than the ordinary flat spring, and it is not affected by the jarring of the cars.

The coupling can be separated without danger to the brakeman, and yet all its operative parts are supported in or on the draw-head and independent of the car-body.

The parts are few, there being but five parts in all, and they are of such shape that they require no special fitting or furnishing.

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

1. The bifurcated draw-head having the entering jaw provided with an opening for a coupling-link, and a coupling-pin hole in the nose thereof, in combination with an interlocking lever journaled in said jaw back of said coupling-pin hole, and independent thereof, substantially as and for the purposes set forth.

2. The bifurcated draw-head having the entering-jaw provided with the opening  $d$ , and recess  $c$ , having the journaling-face  $c'$ , and ridge  $c^2$  extending across said recess, in combination with the interlocking lever journaled in said recess across said face  $c'$ , and having grooves  $b'$  fitting over said ribs, substantially as and for the purposes set forth.

3. The bifurcated draw-head having the entering-jaw  $a$ , provided with the opening  $d$ , and the journaling-recess  $c$ , having the curved faces  $c^2$ , in combination with the interlocking lever journaled in said recess, and having the opening  $d'$  and shoulders  $e$ , substantially as and for the purposes set forth.

4. The combination of the bifurcated draw-head, the interlocking lever journaled in the entering jaw, and having the operating-arm  $b$ , and the spring  $g$ , having one or more coils,  $g'$ , and secured within the draw-head and pressing against said arm  $b$ , substantially as and for the purposes set forth.

5. The combination of the bifurcated draw-head provided with teats or lugs  $h$  in the back thereof, the interlocking lever journaled in the entering jaw thereof, and provided with the operating-arm  $b$ , and the spring  $g$ , having the coils  $g'$ , fitting over said teats and extending back of said operating-arm, substantially as and for the purposes set forth.

6. In combination with a bifurcated draw-head and an interlocking lever journaled therein, and operating-bar supported in or on said draw-head and extending out on each side thereof, and connected with said interlocking lever, substantially as and for the purposes set forth.

7. In combination with the bifurcated draw-head and an interlocking lever journaled therein, a sliding bar passing transversely through said draw-head and extending out on either side thereof, and connected with said interlocking lever, substantially as and for the purposes set forth.

8. In combination with the bifurcated draw-head and interlocking lever journaled therein, and having the arm  $b$ , the sliding bar  $k$ , extending transversely through said draw-head, and having the slot  $m$ , in which said arm  $b$  fits, substantially as and for the purposes set forth.

9. In combination with the bifurcated draw-head and interlocking lever journaled therein, the sliding bar  $k$ , extending transversely through the draw-head and connected with the lever, and provided with suitable stop apparatus engaging with the draw-head to hold the lever in its uncoupled position, substantially as and for the purposes set forth.

10. In combination with the bifurcated draw-head having the shoulder  $q$  thereon, and the interlocking lever journaled therein, the spring  $g$ , and sliding bar extending through the draw-head and connected to the lever, and having the shoulder  $r$  on the upper edge thereof, substantially as and for the purposes set forth.

11. In combination with the bifurcated draw-head and interlocking lever journaled therein, and having the arm  $b$ , the sliding bar  $k$ , extending through the draw-head, and having the slot  $m$  and lug  $t$  and the pin  $t'$ , substantially as and for the purposes set forth.

In testimony whereof I, the said CLINTON BROWNING, have hereunto set my hand.

CLINTON BROWNING.

Witnesses:

JAMES I. KAY,  
J. N. COOKE.