(No Model.)

R. RANDOLPH.

CAR COUPLING.

No. 309,564. Patented Dec. 23, 1884.

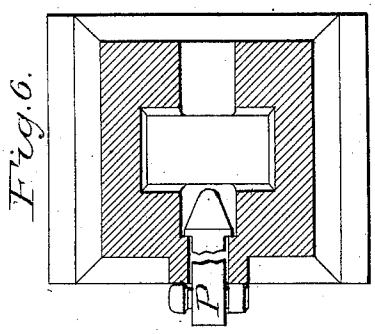


Fig. 6.

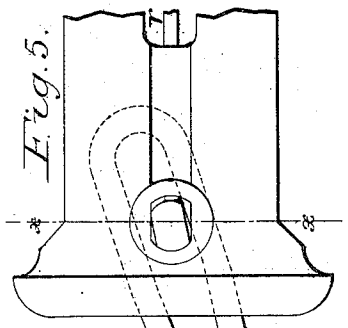


Fig. 5.

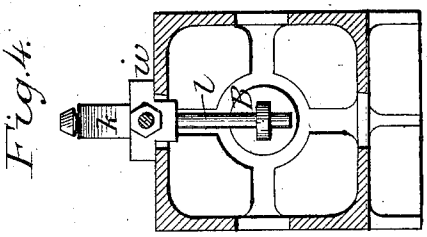


Fig. 4.

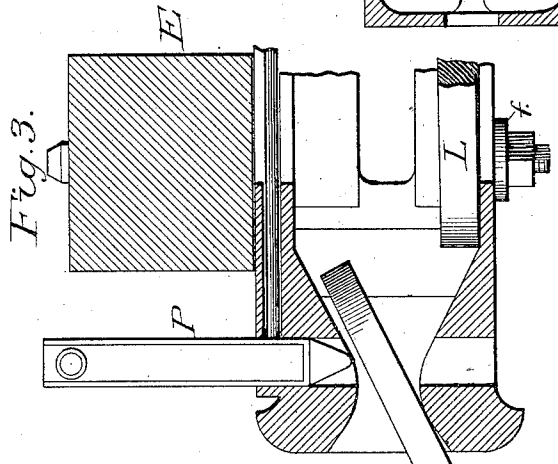


Fig. 3.

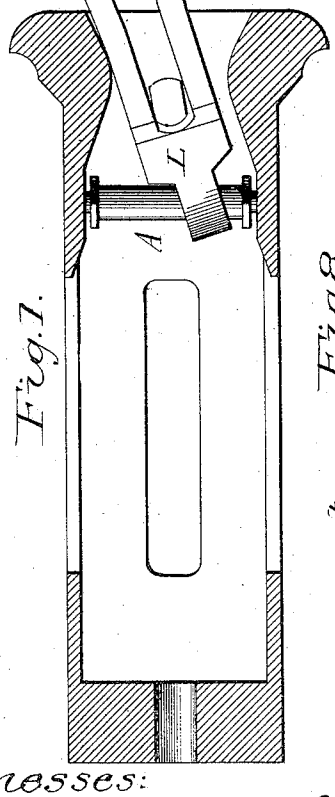


Fig. 1.

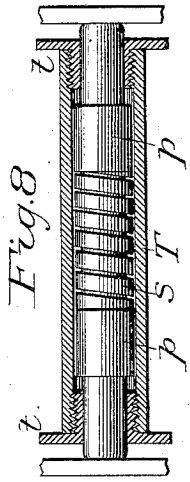


Fig. 8.

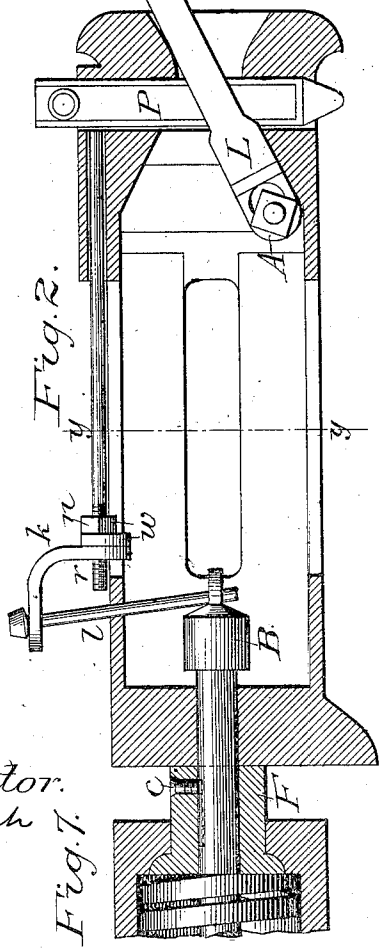


Fig. 2.

Fig. 7.

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UNITED STATES PATENT OFFICE.

RICHARD RANDOLPH, OF ROCKVILLE, MARYLAND.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 309,564, dated December 23, 1884.

Application filed August 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, RICHARD RANDOLPH, a citizen of the United States, residing at Rockville, in the county of Montgomery and State of Maryland, have invented a new and useful Self-Coupling Draw-Head, of which the following is a specification.

My invention consists in the improvement of the draw-head, link, and pin of railroad-cars so that they shall be permanently attached to each other, and in the addition of a device for the automatic coupling of two such draw-heads after an adjustment by an operator. I accomplish these results by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a horizontal longitudinal section of the casting for the draw-head with a top view of the link L and its attachment A, showing their position when there is a maximum horizontal deviation of the two draw-heads to be coupled, and showing the form of the link, the loop of which is smaller at the back end than at the front, to prevent the pin being raised through this end when the other end is connected with another draw-head, which might bring the force of the engine against the attachment that is intended only to resist the force of a man, also showing the diminished interior width of the casting at the place where the attachment is to operate, as afterward to be described.

Fig. 2 is a vertical longitudinal section of the casting with a side view of the link and its attachment, showing their position when there is the maximum vertical deviation of the two draw-heads; also with a side view of the apparatus, *l*, *k*, *w*, *n*, and *r*, for clamping the pin P and holding it in an elevated position until released by the pressure between the two draw-heads; also with a side view of the draw-bolt B, having a projection from its head, which operates the clamping apparatus, and showing the play between the head of the bolt and the casting. The projection of the casting from the under side at the back end is for the operation of any of the automatic brakes that may be adopted.

Fig. 3 is the front end of the same section as in Fig. 2, showing the casting drawn forward, as allowed by the play between it and the head of the draw-bolt, and resting upon the plate *f*, by which it is suspended from the end sill, E, of the car, also showing the pin as held in the elevated position by the pressure of the rod *r* of the clamping apparatus shown in Fig. 2, and the position of the link L as stored within the casting when not in service.

Fig. 4 is a transverse section of the casting and of the rod at the line *y y* in Fig. 2, showing the back end of the casting on the inside and the bearing of the head of the draw-bolt; also a front view of the clamping apparatus, showing the projection from the head of the bolt through which passes the lever *l*, and the washer *w*, which sustains the apparatus upon the casting.

Fig. 5 is a top view of the front end of the casting, showing the form of the pin-hole at upper side and that of the upper end of the pin within the hole; also the ridge in the middle which protects the rod *r*, that plays through it longitudinally.

Fig. 6 is a transverse section of the casting at the line *x x* in Fig. 5, showing the lateral contraction of the pin-hole at the top, and with a front view of the two ends of the pin, showing how it is confined to the casting by the shoulders on the sides of the pin at the lower end and by the small bolt riveted through the upper end after it is inserted from below.

Fig. 7 is a longitudinal vertical section of the front end of Butler's patented spring-buffer, showing the front follower-sleeve, F. Into this sleeve I insert a small screw, *c*, which projects slightly into a groove of corresponding depth made in the draw-bolt B, the groove corresponding to the forward play of the bolt through the sleeve, the object being to insure the play between the head of the bolt and the casting required for deflecting the lever *l* backward.

Fig. 8 is a longitudinal section and view of parts of the attachment A to the link, drawn on a scale two and one-half times greater than that of A. The parts represented in section are the tube T and the taps *t t*, which are screwed into each end of the tube, and which have square collars projecting beyond the tube, to retain it within the slotted eye at the back end of the link, and which present shoulders on the inside of the tube, to prevent the escape of the pistons or plugs *p p*, which are forced apart by the spiral spring *s s* between

them, and which play through the taps, but which are limited in their play by the shoulders upon their inner ends. The tube, with its contents, is attached to the link by the hand introduced into the casting through the opening in the under side, when the other openings are closed by the timbers, and then screwing in the taps with a wrench. When two draw-heads are to be coupled in one, the pin is raised and the hand inserted through the mouth and the link drawn fully forward with the pin restored to its position. The attachment will be drawn forward with the link without friction until it reaches the point where friction is required. This is where the interior width of the casting is reduced sufficiently to compress the spring within the tube to an extent which produces the required friction between the sides of the casting and the outer ends of the plugs, the tube being nearly at right angles to the sides, a position into which it can easily be forced by the manipulation of the link. Then the link will remain in any position in which it may be set, to correspond with the deviation of the draw-heads, and which may be determined by the eye. The friction of the attachment will also provide a sufficient resistance to overcome any legitimate resistance to the link at its front in gliding into the opposite draw-head, but will yield without injury to any other obstruction, and the link will retreat out of harm's way. The pin of the other draw-head is then raised to the full extent, and the link, if protruding, pushed back into the casting, which is now drawn forward until a pressure is brought upon the buffer spring from behind. This deflects the lever *l* in Fig. 2, which transmits the pressure from the upper end of the lever through the knee *k* and the rod *r*, which is screwed into the knee, and thence at the front end of the rod to the pin. This pressure is sufficient to hold the pin in the elevated position, and the pressure will be maintained by the friction of the casting as it rests upon the plate *f* in Fig. 3. As soon as a pressure is exerted between the two draw-heads in their approach the lever is pushed back, carrying with it the rod. Thus the pin is released at the moment the link is in the proper position to receive it in falling. In the lever and the rod there is sufficient elasticity to yield to any play that may remain between the casting and the head of the bolt after the rod is made to clamp the pin. This residuum of play is reduced to a minimum by revolving the rod in the proper direction, screwing it through the knee *k*, and the adjustment is maintained by the jam-nut *n*.

The features of this mechanism which I claim to be new and useful, and for which I apply for Letters Patent, are—

1. The shoulders at the lower end of the pin, in combination with the contraction at the upper end of the pin-hole and at the back end of the link, for the purpose of preventing the pin from being drawn upward entirely through either the back end of the link or the casting.

2. The combination of the attachment A with the link working in the slotted eye, as described, for the purpose of preventing the link being drawn entirely from the casting.

3. The elastic arrangement inside of the tube T of the attachment, consisting of the two pistons *p p* forced apart by the spring *s* between them, and retained by the taps *t t* so as to produce a friction at the ends of the attachment against the sides of the casting, for the purpose of affording a certain amount of resistance to either the vertical deflection or backward movement of the link.

4. The combination of the vertical lever *l* and the horizontal rod *r* with the head of the draw-bolt in such a manner that the rod is pushed forward by the lever when the casting through which it passes is drawn forward with respect to the draw-bolt to which the lever is attached and pushed back by the contrary movement, for the purpose of clamping the pin with the front end of the rod by the forward position of the casting, and of releasing it when the same is pushed back to the extent of the play provided between the casting and the follower F, in contact with the buffer-spring by means of the small screw *c* in the follower and the corresponding groove in the draw-bolt, as described.

RICHARD RANDOLPH.

Witnesses:
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W. B. WICKES.