

No. 650,116.

Patented May 22, 1900.

H. SABINE.  
CAR COUPLING.

(Application filed Nov. 9, 1899.)

(No Model.)

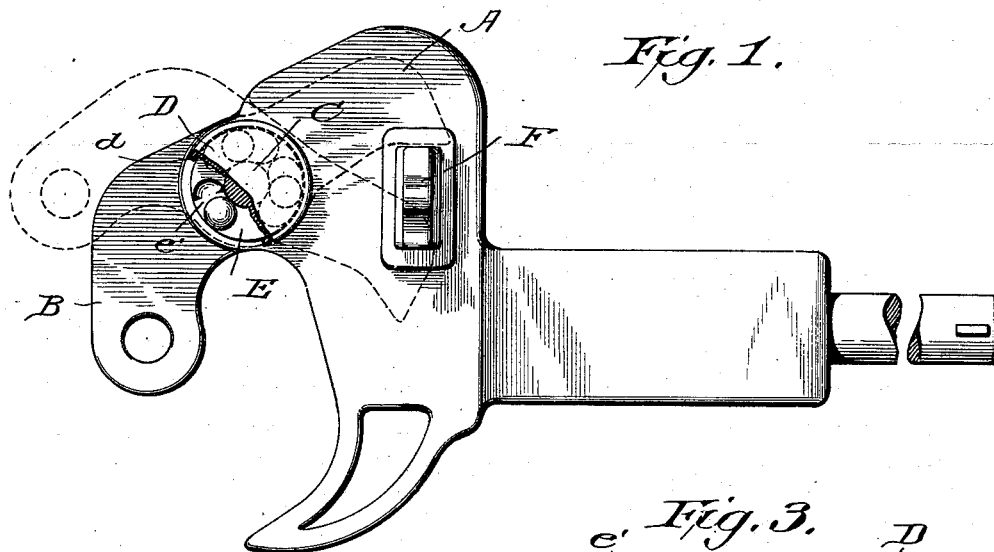


Fig. 1.

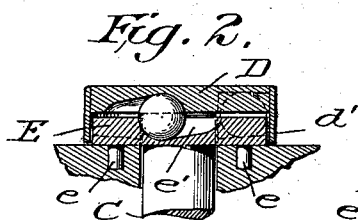


Fig. 2.

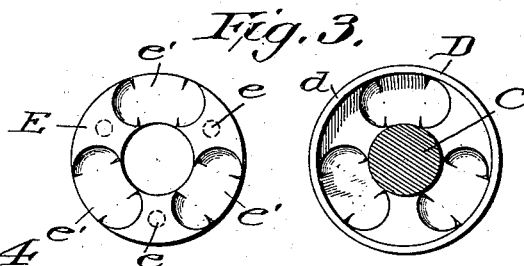


Fig. 3.

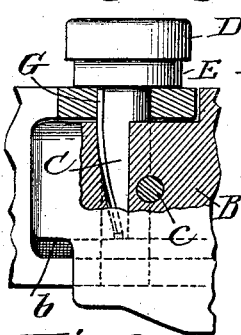


Fig. 6.

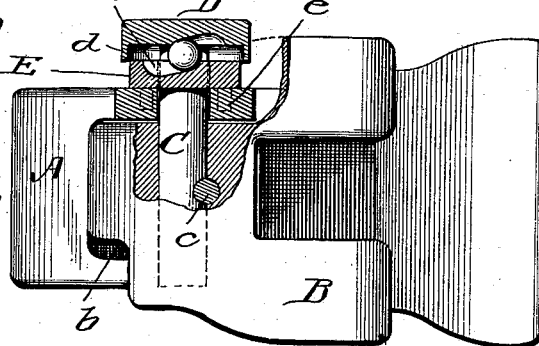


Fig. 5.

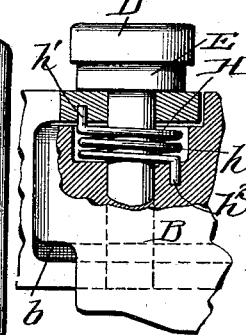
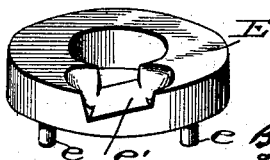


Fig. 7.

Witnesses:  
*Wm. H. Sabine*  
*Walter Reeves*



Inventor:  
*Hylas Sabine*  
By *Baldwin Davidson*  
*Wight*  
Attorneys.

# UNITED STATES PATENT OFFICE.

HYLAS SABINE, OF MARYSVILLE, OHIO.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 650,116, dated May 22, 1900.

Application filed November 9, 1899. Serial No. 736,384. (No model.)

*To all whom it may concern:*

Be it known that I, HYLAS SABINE, a citizen of the United States, residing at Marysville, in the county of Union and State of Ohio, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

In my United States Patent No. 380,936, of April 10, 1888, I have shown a car-coupling in which each pivoted jaw is supported by a ball or roller arranged in a housing formed by a groove in the draw-head and a groove in a pivoted jaw over the groove in the draw-head. The grooves have the upper and lower walls arranged on inclined planes, the inclination being outward and downward from the longitudinal axis of the draw-head, so that the tendency is for the ball to roll outward away from the longitudinal axis of the draw-head and for the pivoted jaw to swing open. When the pivoted jaw is closed and is held by its locking-pin, the ball is located at the upper end of the inclined plane of the lower groove and at the lower or shallowest end of the upper groove in the jaw. When the locking-pin is removed, the jaw automatically opens by riding laterally with the ball down the inclined plane of the lower groove, and the inclined upper wall of the upper groove also rides over the ball until the jaw is completely swung open.

According to my present invention instead of arranging a ball under the coupling-jaw I arrange one or more balls over the jaw and beneath the head of the pivot-pin. The jaw is rigidly secured to the pin and is supported thereby, being held when closed at a slight elevation above the plane it occupies when it is open. One or more balls are interposed between the head of the pin and the top of the draw-head, and these balls support the pin, which in turn supports the jaw. This construction is very simple and enables me to apply my improvements to car-couplers already in use.

I may depend entirely upon the use of a ball or balls arranged in an inclined groove or grooves to effect the opening of the pivoted jaw, or I may supplement the ball or balls with a spring to assist in opening the jaw.

My improvements are illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a car-coupling embodying my improvements, some of the parts being broken away and some being shown in dotted lines the better to illustrate other parts. Fig. 2 is a detail view, partly in elevation and partly in vertical section, showing particularly the construction of the head of the pivot-pin and the manner of arranging antifriction-balls therein. Fig. 3 shows a plan or top view of the disk or boss on the top of the draw-head in which the balls are supported, and this figure also shows the under side of the head of the pivot-pin. Fig. 4 is a front elevation, with some of the parts broken away, of one of the couplers provided with my improvements. Fig. 5 is a perspective view of a modified form of disk or boss for supporting an antifriction ball or roller. Fig. 6 is a detail view showing how a spring may be employed to open the jaw or to assist in opening it, and Fig. 7 is a similar view showing the use of a different kind of spring for this purpose.

The draw-head A may be of the same construction as that shown in my patent above mentioned or it may be of any approved construction. The pivoted jaw B may also be of substantially the same construction as that shown in my patent or it may be of other similar construction, the exact form of the jaw not being of vital importance. The jaw is pivoted to the head by means of a pin C. This pin is keyed or rigidly secured by means of a key *c* to the jaw B. The jaw is arranged in the housing, as usual, and when the jaw is closed the lower side *b* is raised a short distance above the bottom of the chamber or cavity in the draw-head, as illustrated in Fig. 4. The pin C has an enlarged head D, which fits over a disk E, which may be secured to the head A by means of lugs *e* or in any other suitable way. In fact, this disk may be formed integrally with the head; but I prefer to form it separately for convenience of manufacture.

Instead of forming the head D integrally with the annular flange *d* I may form a flange on the head D by shrinking a band *d'* around the head, as illustrated in Fig. 2. The disk E is formed with one or more (preferably three)

grooves  $e'$ , these grooves being of the form shown in Fig. 3.

The grooves are inclined, as shown in Figs. 2 and 4, so that the balls will tend to pass from one end of the grooves to the other and at the same time will drop from a higher to a lower plane.

The under side of the head of the pin is formed with corresponding grooves or roadways, but reversed, as indicated in Figs. 2 and 4. When the jaw is wide open, the ball occupies the greatest depth of the combined grooves, as shown in Fig. 2, and when the jaw is closed the ball occupies the shallowest depth of the combined grooves, as shown in Fig. 4, the effect being to cause the jaw to turn from the closed position shown in full lines in Fig. 1 to that shown by dotted lines in the same figure.

Referring to Fig. 1, when the locking-pin F is removed, the weight of the jaw B being transmitted through the pin to the balls will cause the balls to pass from the upper ends of the grooves  $e'$  to the lower ends thereof, and the pin will be caused to rotate about its axis and carry with it the jaw. This movement is a very rapid and easy one, there being but little friction. In my former patent there was a certain amount of friction between the jaw and the pin; but in my present coupler the pin and jaw are secured rigidly together and practically the entire friction comes on the supporting-balls.

It is not necessary that more than one groove or roadway should be employed in the head of the pin and one groove or roadway in the disk or boss; but three grooves or roadways, with a corresponding number of balls, are preferably used, so as to reduce the friction and distribute the wear.

I have shown only one member of the car-coupler. The other member may be made in precisely the same way as that illustrated and above described. The coupling operates efficiently and the jaw cannot remain closed as long as the locking-pin F is withdrawn. Whenever the pin F is withdrawn, the jaw must occupy its open position, but may be easily turned to its locked position, as the balls or rollers reduce the friction to a minimum.

The lower wall of the groove  $e'$  is preferably made to incline in two directions—that is, in one direction tangentially to the pin C and also from its outer end downward toward the pin—so that the ball will tend to bear against the pin and will thus bear at three points—namely, on the pin proper, on the head of the pin, and on the boss E. A single ball may be arranged in each groove or each groove may be made to accommodate two balls.

While the arrangement thus far described is found to be operative and efficient, it may be desirable to supplement the action of the ball or balls by a spring. The employment of springs in car-couplers is not usually desirable, but I have so arranged the spring which I employ that no great strain comes

upon it. It is completely housed and performs its function without interference with other parts of the coupler and without danger of deterioration.

In Fig. 6 I have shown a torsional spring consisting of a spring metal rod G, secured at its upper end in a recess in the draw-head and extending down into a recess in the jaw B alongside of the pin C. The spring is so arranged as to tend to hold the jaw open. When the jaw is closed, the spring is under tension. When the pin F is removed, the spring relaxes and causes the jaw to swing open, the balls at the same time riding in the grooves to accomplish the same end.

In Fig. 7 I have shown a spiral or coiled spring H in place of the spring G. In this instance the spring H is arranged in a recess  $h$  in the jaw B, one end of the spring being attached at  $h'$  to the draw-head and the other end being attached at  $h''$  to the jaw. The spring may be made sufficiently strong to open the jaw without arranging the balls in grooves having inclined planes. The balls may be arranged on level planes, and yet so reduce the friction as to make it possible for the spring to open the jaw; but I prefer to arrange the balls in grooves having inclined planes, even when springs are employed.

I claim as my invention—

1. A car-coupling, comprising a draw-head, a jaw, a pin to which the jaw is secured and which is provided with an enlarged head, a ball arranged in a groove in the head of the pin, and in a groove below the pin-head, substantially as described.

2. A car-coupling, comprising a draw-head, a jaw, a pin secured to the jaw and having an enlarged head provided on its under side with a groove, the upper wall of which is arranged on an inclined plane, and a ball or roller arranged in said groove, and also in a groove having a reversely-inclined plane below the head of the pin.

3. A car-coupling, comprising a draw-head, a jaw, a pin secured to the jaw and having an enlarged head, a ballway in the head of the pin, a ballway in the disk or boss below the head, and a ball in said ballway.

4. A car-coupling comprising a draw-head, a jaw, a pin secured to the jaw and having an enlarged head, a ballway in the head of the pin having an inclined upper wall, a ballway in the disk or boss below the head and having an inclined lower wall and a ball in said ballways.

5. A car-coupling, comprising a draw-head, a jaw, a pin secured to the jaw and having an enlarged head provided with ballways having walls arranged on double inclined planes, a disk having ballways or grooves, with the walls arranged on double inclined planes, removably secured to the draw-head below the head of the pin, and balls arranged in said grooves.

6. A car-coupling, comprising a draw-head, a jaw, a pin to which the jaw is secured, and

which is provided with an enlarged head provided on its under side with a groove the upper wall of which is arranged on an inclined plane, and a ball or roller arranged in said  
5 groove and also in a groove the lower wall of which is arranged on a plane which is inclined tangentially to the pin, and also is inclined from its outer end inwardly and downwardly toward the pin.

10 7. A car-coupling, comprising a draw-head, a jaw, a pin to which the jaw is secured, and

which is provided with an enlarged head, a ball arranged in a groove in the head and in a groove below the head, and a spring connected with the draw-head and with the jaw, 15 substantially as described.

In testimony whereof I have hereunto subscribed my name.

HYLAS SABINE.

Witnesses:

ROBT. MCCRORY,  
W. M. WINGET.