

No. 650,117.

Patented May 22, 1900.

H. SABINE.  
CAR COUPLING.

(Application filed Nov. 9, 1899.)

(No Model.)

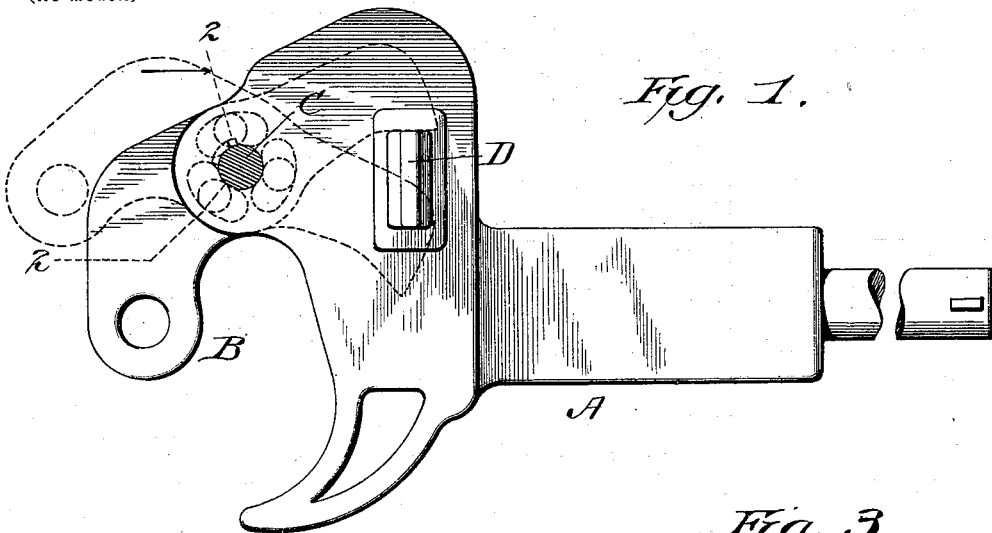


Fig. 1.

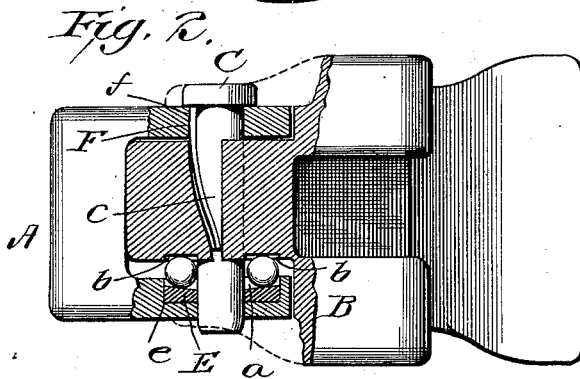


Fig. 2.

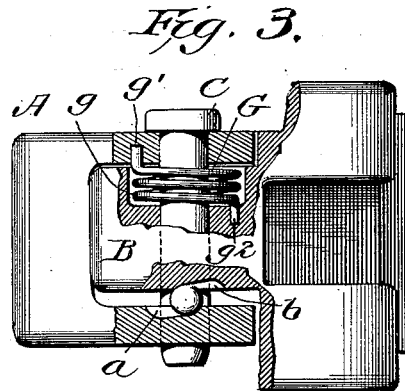


Fig. 3.

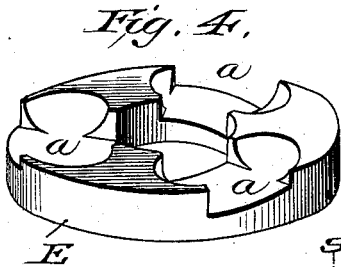


Fig. 4.

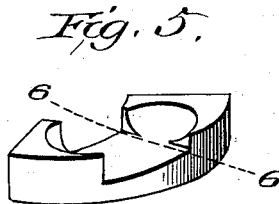


Fig. 5.

Fig. 6.

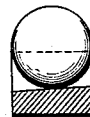


Fig. 7.

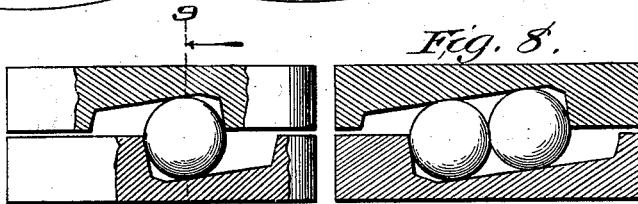


Fig. 8.



Fig. 9.

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# UNITED STATES PATENT OFFICE.

HYLAS SABINE, OF MARYSVILLE, OHIO.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 650,117, dated May 22, 1900.

Application filed November 9, 1899. Serial No. 736,385. (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 the pivoted jaw over the groove in the draw-head. The grooves have their 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.

My present invention seeks to improve the construction and operation of the devices shown in my patent above referred to, so as to render the coupling more easy and certain in its operation and more durable.

In my patent I have shown one segmental groove in the draw-head and one corresponding segmental groove in the jaw. This is found to be sufficient for a steel coupler when the center of gravity is near the pin which pivots the jaw to the draw-head; but in other cases I find it desirable to use two or more grooves and balls in the draw-head and in the jaw around the pin. Three grooves in the draw-head and three corresponding grooves in the jaw are found to give good results, and I may place one ball in each groove, or two or more balls may be arranged in each groove. These grooves may be segmental, of the form shown in my patent before mentioned, or the upper and lower walls of the grooves may be

doubly inclined—that is, inclined tangentially with reference to the pivot-pin and also inclined downwardly from their outer ends inwardly toward the pin—so that each ball will have three bearing-points—namely, against the upper and lower walls of the grooves and also against the pivot-pin. By this arrangement the jaw is supported truly and turns readily and water or dust incident to the use of the devices will readily flow off.

Instead of forming the grooves directly in the draw-head I find it sometimes advantageous to simply cast a recess in the draw-head and place in this recess a ring or block in which the grooves are formed. This block may be made in one piece in annular form, or it may be made in sections fitted together and placed in the recess. This block, whether made in one piece or formed in sections, may be made from the hardest steel and placed loosely in the recess. The recess in the draw-head may readily be made during the process of casting the draw-head. I also find that while the coupler-jaw will automatically open where balls are arranged in the particular kinds of grooves described in my patent it is sometimes desirable to supplement the action of gravity by the use of a spring so arranged as to tend to open the jaw. A spring of sufficient strength may be used to open the jaw when the jaw rests on balls arranged in one or more grooves the lower wall or walls of which are on a level plane; but I prefer to make the lower walls of such groove or grooves incline in accordance with the general plan above specified.

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

Figure 1 shows a plan view of one member of a car-coupler embodying my improvements, the jaw being shown closed by full lines and open by dotted lines. Fig. 2 is a view, partly in front elevation and partly in section, of such a coupler. Fig. 3 is a similar view of a modification. Fig. 4 is a perspective view of an annular block or ring formed with grooves and adapted to be placed in a recess in the draw-head under the jaw and around the pivot-pin. Fig. 5 is a perspective view of a grooved section of a ring which may be employed. Fig. 6 shows a transverse section on the line 6 6 of Fig. 5. Fig. 7 is a detail view,

partly in section and partly in elevation, showing the manner of forming the grooves and arranging the balls therein. Fig. 8 is a similar view showing a modification. Fig. 9 shows a transverse section on the line 9 9 of Fig. 7.

The draw-head A may be of the form shown in my before-mentioned patent, or it may be of any other similar suitable form. The knuckle or jaw B is pivoted to the draw-head by means of a pivot-pin C. The inner end or tail of the jaw is free to swing in a cavity or housing in the draw-head and is held locked when closed by means of a locking-pin D.

I form in the lower side of the jaw B, around the pin C, a series of grooves *b*. The upper walls of these grooves are inclined, as shown, for instance, in Fig. 3, in substantially the same manner as those shown in my patent, and the draw-head is formed with a series of grooves *a* around the pin C, below the grooves *b*, and these grooves are formed in the manner illustrated in Fig. 3, which is substantially the manner in which the grooves are formed in the couplers shown in my patent; but it will be observed that a plurality of grooves are employed, there being three grooves in the draw-head and three in the jaw illustrated in Fig. 1, and there is one ball in each groove. I do not, of course, limit myself to the particular number of grooves employed nor to the particular number of balls in each groove, as two or more balls may be employed, as indicated in Fig. 8. By the use of a plurality of grooves and balls the jaw is more evenly supported and friction and wear are very much reduced. Fig. 3 does not illustrate the precise form of the grooves which I prefer. The additional feature of the preferred form of grooves is illustrated in Fig. 6, where it will be seen that the groove, in addition to being on an inclined plane tangentially with reference to the pin, is also inclined radially with reference thereto and downwardly from its outer end inward. By this construction the ball is made to bear against the pin and will thus bear at three points—namely, against the pin and against the upper and lower walls of the grooves in which the ball is arranged. The inclination given to the groove also affords a means for allowing water and the like to escape.

Instead of forming the grooves *a* directly in the draw-head I may form the grooves in a ring or block E, and this ring or block may be arranged in a recess *e*, formed in the draw-head around the pin C, and beneath the jaw during the process of casting the jaw. The ring or block E may be made of hardened steel, which will wear better and will afford smoother surfaces for the balls to ride on. The block E may be made of one piece, or it may be made in sections in the manner illustrated in Fig. 5, these sections being fitted together in the recess *e* around the pin C.

In assembling the parts the balls are inserted through the pin-hole before the pin is

dropped. After they are in place the pin is dropped, so that the parts will assume the position indicated in Fig. 2. If preferred, a block or ring similar to that shown in Fig. 4 may be placed in a recess in the under side of the jaw and the parts assembled in the manner illustrated in Figs. 7 and 8. Figs. 7 and 8 illustrate more clearly the form of the grooves, which may be made directly in the draw-head and the jaw or in separate blocks in the manner above specified. Fig. 7 shows the grooves of proper size for a single ball, while Fig. 8 shows them of proper form to receive two balls. Obviously they may be constructed to receive a larger number of balls, if desired.

It will be observed that the form of the lower wall of the groove in the draw-head is that of a short section of a spiral curve, giving the ball a three-point bearing and keeping the ball close to the pin. This form of groove is particularly desirable where steel or chilled iron is employed. Where soft metal bearings are used, the grooves need not have the double incline referred to.

Fig. 9, in addition to showing the radial inclination of the groove, shows that the ball may be inserted from the inside, but owing to the shape of the groove is prevented from dropping out or moving too far outward radially.

I deem it desirable sometimes to supplement the action of the balls in the inclined grooves by a spring arranged to open or assist in opening the jaws. In Fig. 2 I have illustrated an arrangement suitable for this purpose. In this instance the spring-metal rod F is passed through a recess *f* in the draw-head and into a recess *c* in the front portion of the jaw. The arrangement is such that when the jaw is closed the spring F is put under tension and will be held under tension as long as the locking-pin D holds the jaw; but when the locking-pin D is removed the spring relaxes and swings the jaw open. The spring may be of sufficient force to open the jaw when it rests on balls that are arranged in a groove or grooves the lower wall or walls of which are on a level plane; but I prefer to arrange the balls on inclined planes.

Instead of employing a spring of the form shown in Fig. 2 I may use a spring such as shown in Fig. 3. In this instance a coiled spring G is arranged in a recess *g* in the top of the jaw B, around the pin C. One end of the spring is secured at *g'* to the draw-head, while the other end is secured at *g''* to the jaw, the arrangement being such that when the jaw is closed the spring is compressed and tends to open. Balls are arranged beneath the jaw, and these may rest either on inclined planes or on level planes.

I claim as my invention—

1. A car-coupling, comprising a draw-head, a jaw, a pin pivoting the jaw to the draw-head, a ball for supporting the jaw interposed between the jaw and draw-head and arranged

in an elongated groove in the draw-head which extends to and opens into the pivot-pin opening therein, the major axis of said groove being arranged tangentially with reference to a circle drawn from the vertical axis of the pivot-pin.

2. A car-coupling comprising a draw-head, a jaw, a pin pivoting the jaw to the draw-head, a ball interposed between the jaw and the draw-head, and arranged in a groove in the draw-head, the lower wall of which is inclined tangentially relatively to the pivot-pin, and also radially with reference thereto.

3. A car-coupling comprising a draw-head, a jaw, a pin pivoting the jaw to the draw-head, a ball interposed between the under side of the jaw and the draw-head, and arranged in grooves in the draw-head and in the jaw, said grooves being inclined tangentially with reference to the pivot-pin and also radially relatively thereto.

4. A car-coupling comprising a draw-head, a jaw, a pin pivoting the jaw to the draw-head, a grooved block arranged in a recess of the draw-head around the pin and below the jaw, and one or more balls arranged therein.

5. A car-coupling comprising a draw-head, a jaw, a pin pivoting the jaw to the draw-head; a grooved block made in sections; arranged in a recess in the draw-head surrounding the pin, and balls arranged in said grooves and bearing against the jaw, the pin and the lower walls of the grooves.

6. A car-coupling comprising a draw-head, a jaw, a pin pivoting the jaw to the draw-

head, a spring placed under tension when the jaw is closed and tending to open the jaw, and balls interposed between the jaw and the draw-head and arranged in inclined grooves on different sides of the pin and extending from the pin outward so that the balls bear against the pin as well as against the jaw and draw-head.

7. A car-coupling comprising a draw-head, a jaw, a pin extending through pin-holes in the draw-head and jaw, a ball interposed between the jaw and the draw-head and arranged in a groove in the draw-head which extends from the pin-hole outwardly so that the ball may be inserted through the pin-hole into the groove and may bear against the pin as well as against the jaw and draw-head.

8. A car-coupling comprising a draw-head, a jaw, a pin extending through pin-holes in the draw-head and jaw, a ball interposed between the jaw and the draw-head and arranged in a groove in the draw-head and a groove in the jaw, both of which grooves are inclined both radially and tangentially and which extend from the pin-hole of the jaw outward, whereby the ball may be inserted through the pin-hole into the grooves and may bear against the pin as well as against the draw-head and jaw.

In testimony whereof I have hereunto subscribed my name.

HYLAS SABINE.

Witnesses:

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ROBT. MCCRORY.