

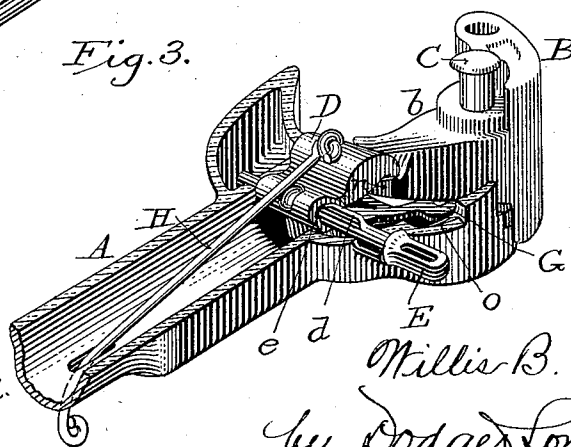
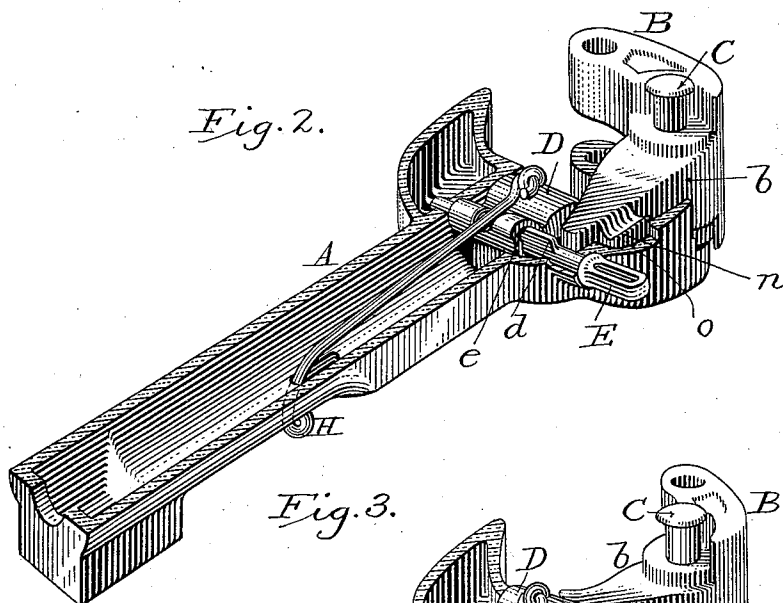
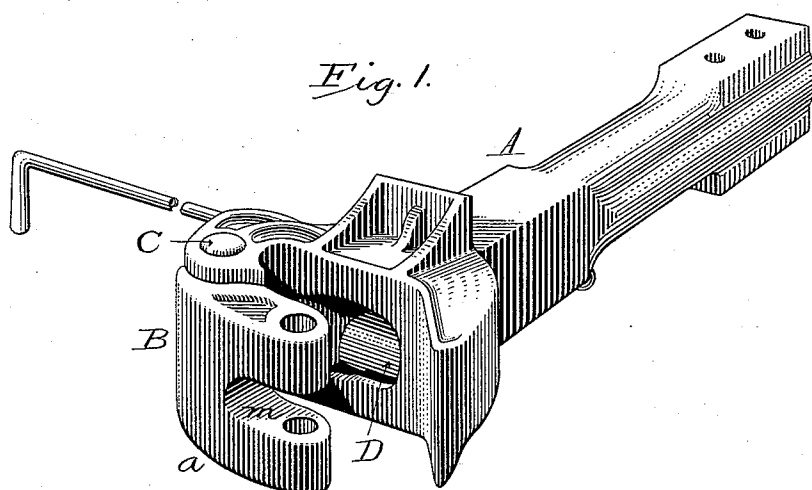
(No Model.)

2 Sheets—Sheet 1.

W. B. BURNS.
CAR COUPLING.

No. 540,850.

Patented June 11, 1895.



Witnesses
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C. B. Bull.

Inventor
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by Dodge & Sons, Attorneys.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

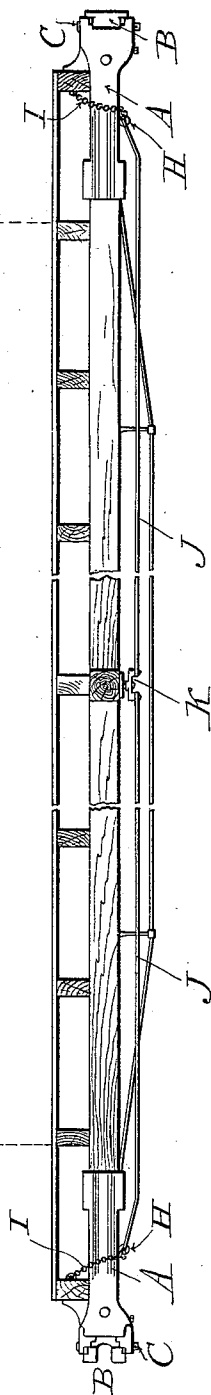


Fig. 6.

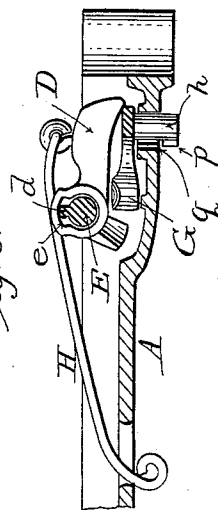
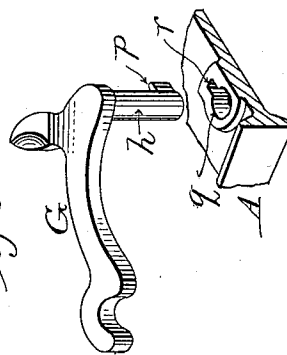


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIS B. BURNS, OF SYRACUSE, NEW YORK.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 540,850, dated June 11, 1895.

Application filed April 13, 1894. Serial No. 507,414. (No model.)

To all whom it may concern:

Be it known that I, WILLIS B. BURNS, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

My invention relates to car couplers, and is designed more particularly as an improvement upon the construction shown in Letters Patent No. 507,781, issued to me October 31, 1893. In such prior construction an L-shaped knuckle was hinged or pivoted in the head of the coupler, one arm of said knuckle extending back into the head and being held by a gravitating locking block pivoted in the draw head and arranged to move vertically. The locking block was carried and actuated by a rock shaft extending outward to one side of the draw-head, and provided with a depending handle or lever, an intermediate lever being arranged between the knuckle and the locking block for the purpose of throwing the knuckle outward or opening the coupler when the locking block should be lifted to unlock the knuckle. Under the present construction I employ the same elements, modified in greater or less degree, and supplemented by certain novel features whereby the operation of the coupler is rendered more certain, the premature closing of the coupler is prevented, the danger of derailment of the car in the event of breakage of the draw head is obviated, and danger to the trainmen through the movements of the actuating handle or lever is precluded.

In the drawings annexed, Figure 1 is a perspective view of a draw-head provided with my improved coupler, it being understood, of course, that two such members are required to constitute a complete coupling device. Figs. 2 and 3 are sectional perspective views showing the coupling closed and opened, and Figs. 4, 5, and 6 are views illustrating certain details of construction hereinafter referred to.

A indicates the draw head, which will or may be varied in form and dimensions, the forward end being forked or made U-shaped ordinarily. In one of the arms of the forked end of the draw head is mounted a knuckle or L-shaped block B, which is arranged to swing about a heavy vertical bolt or pin C, the gen-

eral shape of the knuckle being similar to that disclosed in my prior patent referred to; that is to say, its forward arm *a* is formed with a recess *m* to receive an ordinary link, and is vertically perforated for the insertion of a common coupling pin.

Under former constructions, the knuckle B being entirely free to move inward when open, it sometimes happened that the sudden starting of a car preparatory to making up a train, or the concussion produced by another car coming in contact with one having such coupling, would cause the knuckle to swing inward and to become locked prematurely. To prevent this, the rear or inner arm *b* of the knuckle is now provided on its rear side with a lug or projection *n*, slightly below the upper face of the knuckle, to afford a rest or support for the nose of the locking dog D. The dog being quite heavy, (usually weighing in the neighborhood of fifteen pounds,) and having a slight bearing against the rear side of arm *b* of the knuckle, effectually prevents the accidental or premature closing of the knuckle. The bearing faces of the dog and knuckle are such, however, as to permit the arm *b* to lift the dog when the cars are brought together,—that is to say, the faces are advisably beveled sufficiently to permit the arm *b* to ride under and lift the locking dog when the force applied is sufficient to overcome the weight of the locking block as applied to and through the beveled bearing faces.

Fig. 2 shows the parts in the position they occupy when the knuckle is closed, which is the position it occupies when two cars are coupled together. As shown in this figure, and also in Fig. 3, the draw-head is provided with a socket or recess *o* to receive the lug *n*, and thereby to permit the knuckle to swing its full distance inward.

Fig. 3 shows the knuckle swung outward and the locking block D resting upon the lug *n*, its nose or forward end bearing upon the beveled or inclined face of said lug at the rear of arm *b* of the knuckle B.

For the purpose of actuating the dog D, that is to say, for raising said dog, and through the connecting lever G, actuating or throwing outward the knuckle B, I provide a stem or rock shaft E which is journaled or seated in suitable bearings in the draw-head, in which

it is free to turn. This rock shaft E is provided with or is extended outward and downward to form an operating lever or handle, as shown in Fig. 1.

5 It is apparent that if the connection between the rock shaft E and the locking block D were a rigid one, the handle or operating arm of said rock shaft would be suddenly thrown forward whenever the knuckle B
10 should be thrown inward and thereby caused to lift the locking block, as in coupling cars. This sudden movement of the handle is liable to cause injury to the trainmen standing near, as has been discovered in the use of prior
15 couplings having such rigid connection between the locking block and the operating lever. To remedy this difficulty, I provide the rock shaft E with a rib or feather *d*, and I form in the locking block D a socket *e* of a width
20 sufficiently greater than that of the rib *d* to permit the rising and falling movements of the locking block D without affecting the rock-shaft E or without bearing against the rib or feather *d*. By this construction the block D
25 is free to be lifted and to descend without causing the sudden movement or "kick" of the operating handle above noted, and thus the difficulty heretofore encountered is obviated. At the same time it is only necessary
30 to move the handle far enough to carry the rib *d* against one or the other wall of the socket or opening *e* to lock the parts together, any further movement of the rock shaft causing a corresponding movement of the locking block.

35 In practice the rib *d* and socket *e* extend only a limited distance into the locking block, the remaining portion of the rock shaft within the locking block serving merely as a pivot therefor and being cylindrical in cross section.

40 In the practical use of modern car couplers it has been found that the draw-heads occasionally break at the point where the forked outer end or jaw portion joins the shank or stem, and there has hitherto been a liability
45 of the detached jaw portion falling upon the track and derailing the car or train. To guard against this, and at the same time furnish a convenient means of raising the latch and opening the coupling, I employ a rod H which
50 is connected at its forward end to the upper side of the latch D while its rear end is carried back into the shank or stem of the coupling and passed through an opening in the lower side thereof, as shown in Figs. 2, 3 and 6.
55 The end of the rod H below or outside of the neck of the draw-head, is bent or enlarged as indicated in Fig. 6, to prevent its being drawn upward through the opening in said neck though free to move longitudinally by reason
60 of the elongation of the opening through which it passes, as also shown in Fig. 6. With the rod H thus constructed and applied, it will serve to support and hold up the forward end or jaw portion of the draw-head, should the
65 latter become broken from the shank, and to sustain it at nearly its normal elevation, or at least, at such height as to preclude its com-

ing in contact with the ties of the track. Moreover, the rod H being unable to move forward out of the neck of the draw head, it
70 will be seen that as the broken portion of the draw head drops away from the neck or shank, its weight being brought upon the rock shaft E, and the block D being jointed or pivotally
75 connected to the rod H, said block will be lifted relatively to the arm *b* of knuckle B and will release said knuckle, thereby permitting the opening of the coupling.

In practice it is deemed desirable to connect the rear end of rod H by a chain I or
8 other suitable connection, with the body of the car, so that in the event of the draw-head becoming detached as by the breakage of the tail bolts, the coupling shall be automatically
85 opened.

It is sometimes desirable to open the couplings at both ends of the car simultaneously, and for this purpose I connect the rods H of the two draw-heads at opposite ends of a car by means of rods or connections J, to radial
90 arms of a lever, rock shaft or rocking device K, located at any convenient point between the ends of the car, as indicated in Fig. 4. When such connections J are employed it will
95 not be essential to provide the chains or connections I, though they may be used if desired.

The rocking device K will of course be provided with a hand piece by which to actuate it.

As above stated, I employ a lever G between the locking dog or latch D and the knuckle B, for the purpose of transmitting motion from the locking block to the knuckle, to open or throw outward the knuckle, essentially as in my prior patent above referred to.
100 Instead of bolting or riveting this lever to the draw-head as formerly, it is provided with a stem *h* having a projecting stem or lug *p* at its lower end, and the draw-head is formed with a hole or opening *q* with a lateral offset or enlargement *r*, through which the stem *h* and its lug or projection *p* may be passed.
105 The offset or enlargement *r* and the lug or projection *p* are so located with reference to each other and to the lever G that said lever must be thrown to an abnormal or inoperative position to permit the passage of the lug through the opening. Hence, when the lever
110 is moved to its proper position, the lug and the offset or enlargement of the opening will not register, and the lever cannot be lifted or removed from its seat.

When the parts are assembled, the knuckle B and the locking block D being both above
115 the lever G, preclude its being lifted from its seat even apart from or independently of the action of the lug *p*.

From what has above been stated with regard to the rods H, it will be observed that they serve a two-fold purpose: first, that of actuating the locking blocks D whether through the agency of an attendant or through automatic action in the event of breakage of

the draw-head, and also as a means of sustaining and carrying the broken or detached front end of the draw-head in the event of such breakage. In this latter particular the rods H differ from all prior connections of which I am aware, between the locking devices and the shank or body of the draw head, or the car.

Flexible connections such as chains, sliding bars free to tip within or to draw upward and forward into the body of the draw-head will not uphold the broken end of the coupling and preclude its falling upon the ties or roadbed, though serving to automatically uncouple the cars or to preclude the complete withdrawal of the broken draw-head where the tail bolts give way.

While not intending to claim broadly a connection between the locking block and the car or the shank of the draw-head, it is my purpose to claim a connection substantially such as described, adapted to sustain the broken portion of the draw-head above and clear of the track or roadway, this being a novel feature, so far as I am aware.

Having thus described my invention, what I claim is—

1. In combination with a draw-head, a knuckle mounted in the draw-head, arranged to swing about a vertical pivot, and provided with a lug or projection on its inner arm slightly below the upper face of said arm,—and a gravitating locking dog pivoted in the draw-head in rear of said arm and adapted to rest upon the lug thereof when the knuckle is opened or swung outward,—substantially as set forth.

2. In combination with a draw-head and the knuckle and lever; a vertically-swinging latch or locking dog provided with an enlarged socket *e*; and an actuating rock shaft E provided with a rib *d* to work within said socket.

3. In combination with a draw-head, and the coupling devices carried thereby; the rod H for operating said coupling devices, extending into the shank or stem of the draw-head; and a flexible connection between the rod and the car.

4. In combination with a draw-head and the knuckle and lever; the pivoted dog or latch; and the rod H connected to the latch and extending into and through the stem or shank of the draw-head.

5. In a car coupler, the combination with the draw-head, knuckle, and locking block; of a retaining device attached at one end to the locking block and adapted to rock the same upon its pivot, and attached at the other end to the neck of the draw-head, substantially as described and shown, whereby it is adapted to sustain the head or jaw portion of the draw-head in the event of breakage from its shank.

6. In combination with a car and its two draw-heads, each provided with a knuckle and a locking block, a retaining device extending from each locking block into and through the neck of the draw-head, a lever or rocker located at a point intermediate of the ends of the car, and connecting devices extending from said lever to the retaining devices of the locking blocks, substantially as described and shown, whereby the retaining devices are prevented from being withdrawn from the draw-heads, and are enabled both to actuate the locking blocks and to sustain the draw-heads in case of breakage.

In witness whereof I hereunto set my hand in the presence of two witnesses.

WILLIS B. BURNS.

Witnesses:

PATRICK F. DWYER,
ALBURY W. DOWSLAND.