

No. 792,100.

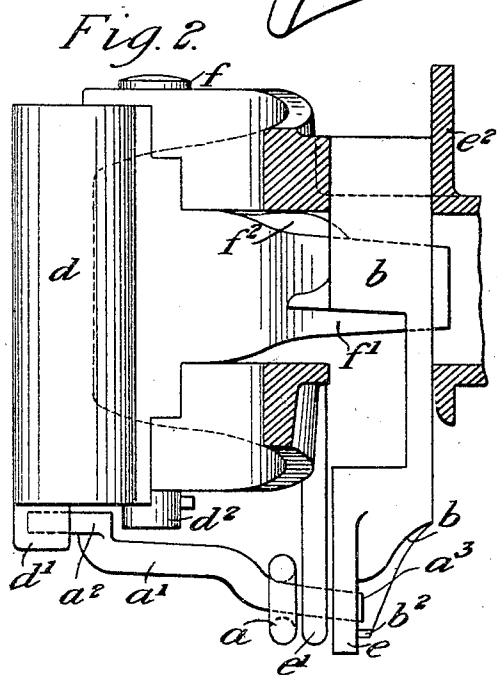
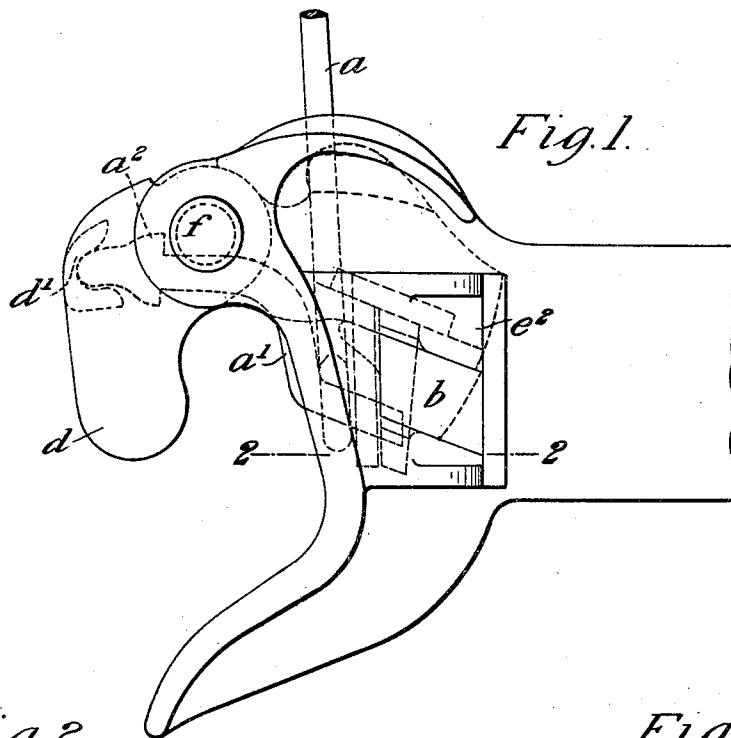
PATENTED JUNE 13, 1905.

J. WILLISON.

# AUTOMATIC COUPLING FOR RAILWAY CARRIAGES.

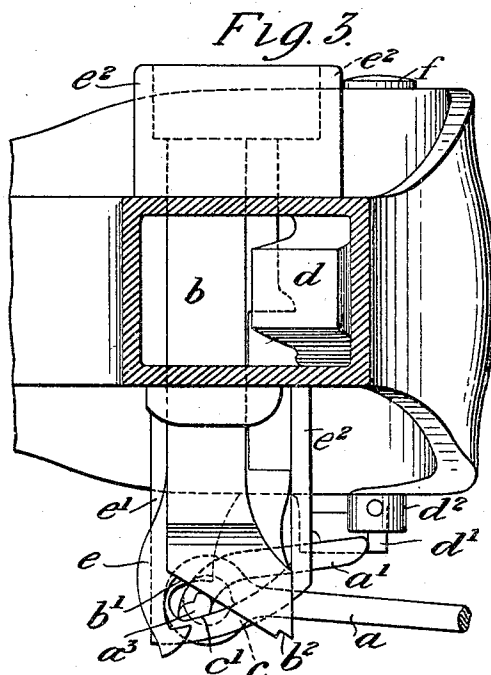
APPLICATION FILED JUNE 30, 1904.

2 SHEETS—SHEET 1.



*Witnesses*

L.A. Connor  
H.M. Corwin



*Inventor*

John Willison  
by Baskwell & Byrnes  
his Attorneys

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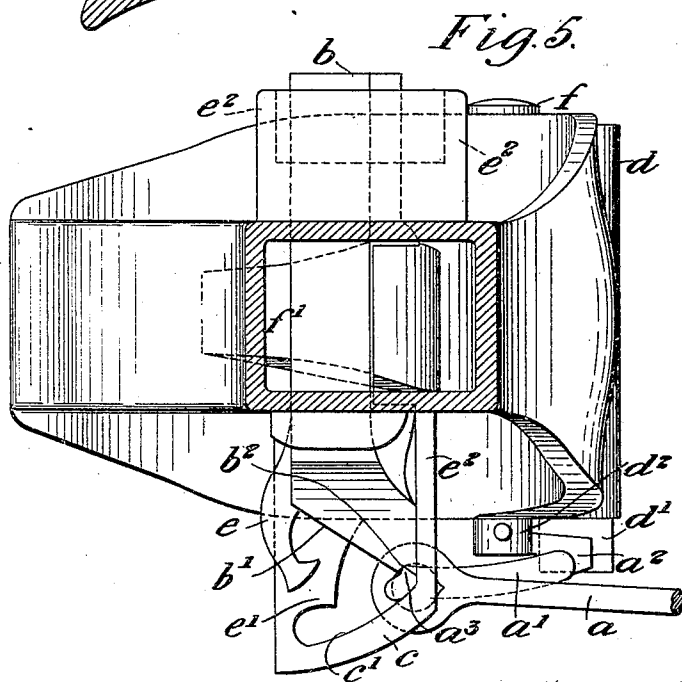
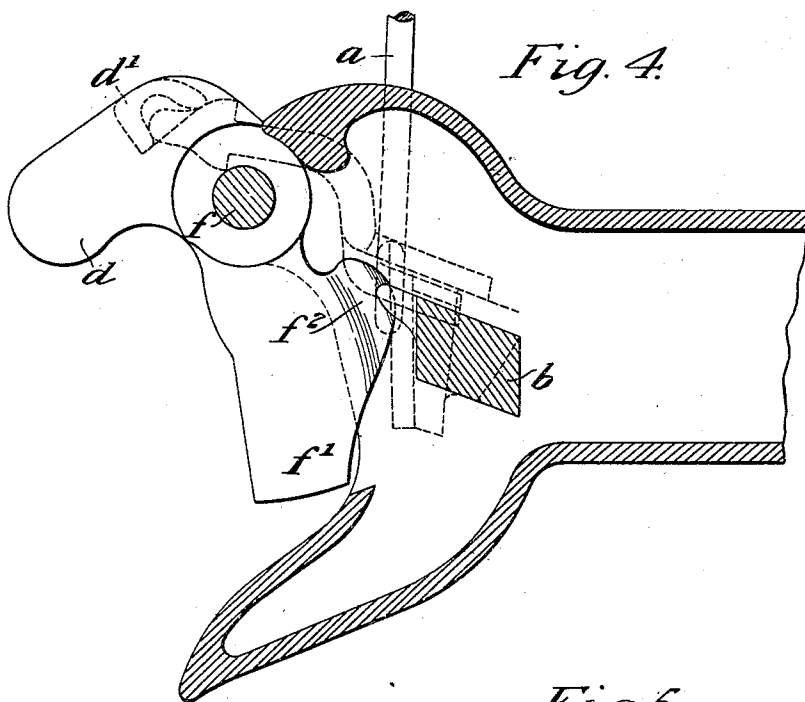
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2 SHEETS—SHEET 2.



Witnesses

*L. A. Conner*  
*H. M. Conner*

Inventor

*John Willison*  
by *Randell & Lyman*  
his Attorneys

# UNITED STATES PATENT OFFICE.

JOHN WILLISON, OF DERBY, ENGLAND, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## AUTOMATIC COUPLING FOR RAILWAY-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 792,100, dated June 13, 1905.

Application filed June 30, 1904. Serial No. 214,742.

*To all whom it may concern:*

Be it known that I, JOHN WILLISON, a subject of the King of Great Britain and Ireland, residing at 158 Clarence road, Derby, in the county of Derby, England, have invented certain new and useful Improvements in Automatic Couplers for Railway-Carriages, of which the following is a specification, for which I have applied for a patent in Great Britain, dated September 14, 1903, No. 19,753.

This invention relates to an automatic coupler for railway-carriages in which a vertically-pivoted coupler-knuckle can be locked in the closed or coupled position or unlocked and relocked by means of a rod which operates the locking-block of the coupler. The locking-block is also combined with a lever, by means of which the coupler-knuckle may be brought to the open or coupling position by a further movement of the operating-rod, or the opening of the knuckle may be effected by a direct connection between the knuckle and operating-rod. The locking-block may itself be locked in the locking position by means of a finger on the operating-rod engaging in a recess or over a ledge on the locking-block when the rod and block are in their lowest position.

In the accompanying drawings, Figure 1 is a plan of an automatic coupler constructed according to this invention, showing the knuckle closed and locked; Fig. 2, a section on line 2 2 of Fig. 1, and Fig. 3 an end elevation of the coupler in the same position, and Fig. 4 a sectional plan, and Fig. 5 an end elevation of the coupler when in the open or coupling position.

The outer end of the operating-rod  $a$  is supported in a bracket at the corner of the carriage, and the inner end is pivotally attached to a rod or bar  $a'$ , the rear end of which passes under the locking-block  $b$  and over the inclined surface  $c'$  of a piece  $c$ , which is fixed to the coupler-head and extends transversely underneath it. The forward end of the bar  $a'$  of the rod is stepped in a pocket  $d'$ , attached under and moving with the coupler-knuckle

$d$ , and a shoulder or projection  $a^2$  near the forward end engages with a stop  $d^2$ , which may conveniently be the lower projecting end of the knuckle pivot-pin on the under side of the knuckle and in rear of the pocket  $d'$ , which prevents the forward end of the bar becoming retracted or unstepped.

The lower end of the locking-block  $b$  is formed with a surface  $b'$  oppositely inclined to the surface  $c'$ , on which the rear end of the bar  $a'$  is supported, and rests when the coupler is locked on the bar  $a'$ , attached to the operating-rod. In this position also the bar  $a'$  is partially encircled by the hook-shaped piece  $e$ , depending from the locking-block, and a similar piece  $e'$ , fixed to the coupler-head, so that the lock is locked in this position as long as the operating-rod is not moved. When the rod  $a$  is pulled outward, the bar  $a'$  travels up the incline  $c'$  and at the same time by engagement with the incline  $b'$  causes the locking-block to rise in vertical or approximately vertical guides  $e''$ , formed in or attached to the coupler-head. The rear end of the bar  $a'$  has on that part of its surface which engages with the inclined surface  $b'$  of the locking-block a small ridge or angular projection  $a^3$ . When this ridge  $a^3$  has cleared the incline  $b'$ , the locking-block drops slightly, but is still supported on the bar  $a'$ , and therefore is prevented from returning gravitationally to its initial position. When the parts are in this position, Fig. 5, the rear end of the bar  $a'$  abuts against one of the lock-guides  $e''$ , depending from the coupler-head or other suitable attachment thereto, which prevents it moving farther in an outward direction. Also the ridge or angular projection  $a^3$  engaging in a notch or suitably-inclined surface  $b^2$  on the tail of the lock prevents the rod or bar  $a'$  from returning by gravity down the incline  $c'$  to its initial position. The lock is now in the lock-set position, and the tail  $f'$  of the coupler-knuckle, which in the locking position of the locking-block abuts against the locking-surface of the latter, is now free to pass under the block  $b$ , which is undercut for that pur-

pose. The coupler-knuckle can therefore now be turned outward on its pivot  $f$ , which is fixed or supported vertically in the coupler-head. The upper surface of the tail or alternately the undercut surface of the locking-block adjacent to the upper surface of the tail is formed with a sloping protuberance  $f''$ , so placed that when the knuckle has been turned outward through part of its range this protuberance engages with the undercut surface of the locking-block and raises the latter so as to clear the rod  $a'$ , which is therefore free to slide down the surface  $c'$  toward its lowest position. The locking-block is now supported in its upper or unlocking position by the tail of the knuckle, Figs. 4 and 5, until the latter is returned to the coupling position, when the lock being no longer supported by either the knuckle or the operating-rod drops to its lowest position and again locks the coupler-knuckle and itself.

The whole process of unlocking the coupler and opening the coupler-knuckle may be performed by means of the operating-rod  $a$ . During the first part of the outward movement of the rod the locking-block is raised, as already described, to the unlocking position and the rear end of the rod  $a'$  brought into abutment with the coupler-head or an attachment thereto. No further outward movement of the rear end of the bar  $a'$  being possible, a further pull by the operating rod or handle  $a$  on the bar  $a'$  turns the latter outward about its rear end as a fulcrum, and its forward end being stepped in a pocket attached to the coupler-knuckle forward of its pivot-pin the coupler-knuckle is rotated outward about its pivot  $f$ , thus setting the coupler in the open or coupling position.

I claim—

1. In a car-coupler, a pivoted knuckle, a vertically-moving locking-block adapted to engage the front of the knuckle-tail and having an inclined end, an oppositely-inclined surface on the coupler-head, and an operating-rod adapted to move between said inclined sur-

faces to lift the locking-block; substantially as described.

2. In a car-coupler, a gravity-closed locking-block having a hook member adapted to engage the operating-rod to secure the block in its closed position; substantially as described.

3. In a car-coupler, a gravity-closed locking-block having an inclined lower surface and a recess in said surface and an operating-rod for raising said locking-block, said rod having an angular projection adapted to engage said recess to support said locking-block; substantially as described.

4. In a car-coupler, a gravity-closed locking-block, means for raising and thereafter supporting said block in its elevated position, a pivoted knuckle, and coacting surfaces on said block and knuckle adapted to release said block-support; substantially as described.

5. In a car-coupler, a vertically-pivoted coupler-knuckle, a locking-block arranged to slide in substantially vertical guides and having an inclined under surface, a movable bar under the locking-block and having its forward end pivotally mounted in the coupler-knuckle forward of the axis thereof, and its rear end supported on a surface oppositely inclined to the under surface of the locking-block, means for moving the rear end of said bar outward in contact with both inclined surfaces, so as to raise the locking-block to the unlocked position, means for retaining the locking-block in its elevated position, means operated by the movement of the coupler-knuckle to allow the movable bar to return to its lowest position, and means for locking the locking-block when the coupler is in the closed position, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN WILLISON.

Witnesses:

C. K. EDDOWES,  
F. A. ROLLASON.