(No Model.) 2 Sheets—Sheet 1.

# M. J. GRADY & R. McMILLAN.

## CAR COUPLING.

No. 563,166. Patented June 30, 1896.

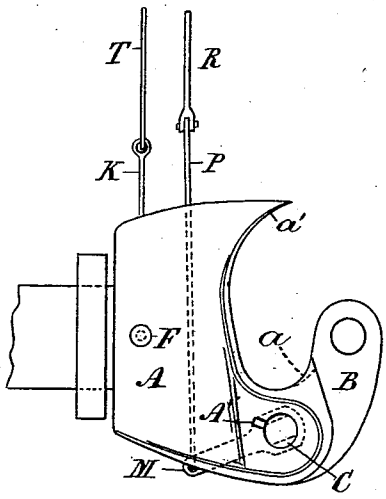


Fig. 1.

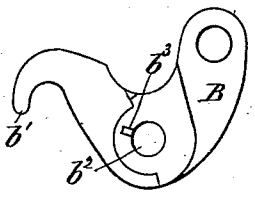


Fig. 2.

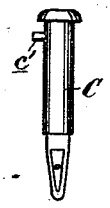


Fig. 3.

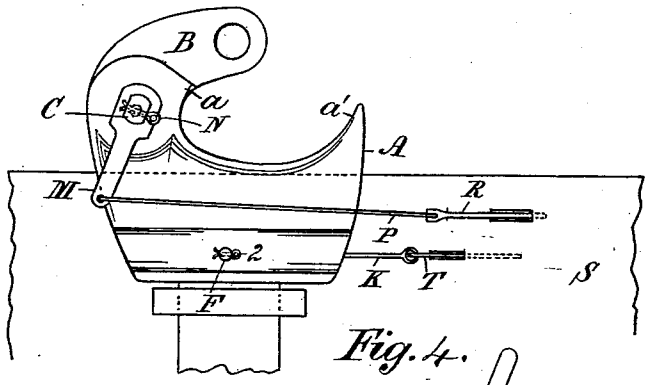


Fig. 4.

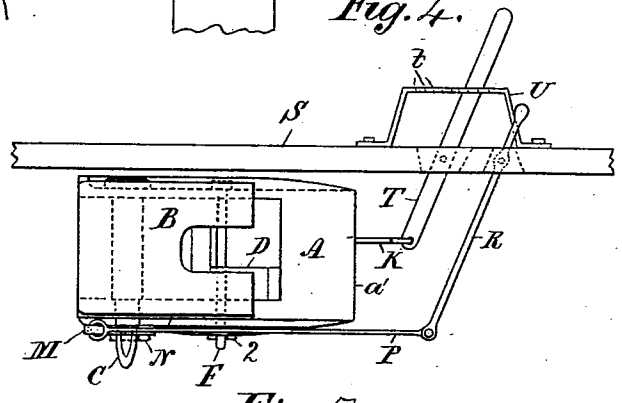


Fig. 5.

Witnesses:
John Grist
A. H. Horsey.

Inventors:
Michael J. Grady
Richard Mc Millan
By Henry Grist
Attorney.

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

(No Model.) 2 Sheets—Sheet 2.

# M. J. GRADY & R. McMILLAN.

## CAR COUPLING.

No. 563,166. Patented June 30, 1896.

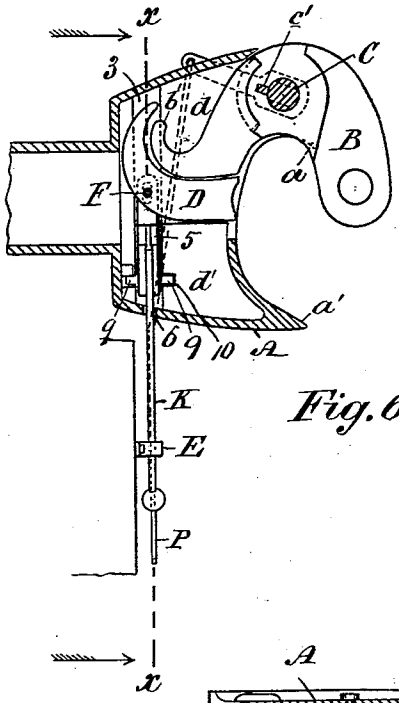


Fig. 6.

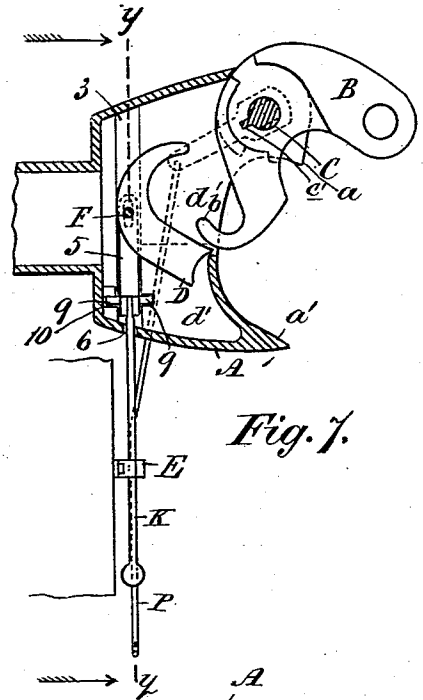


Fig. 7.

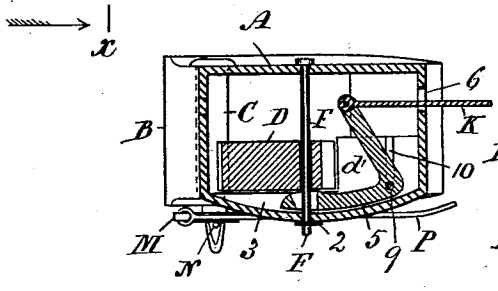


Fig. 8.

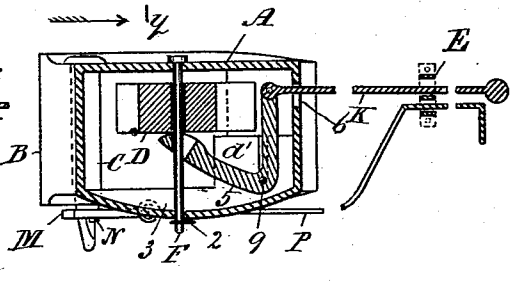


Fig. 9.

Witnesses:
John Grist
A. St. Storey.

Inventors:
Michael J. Grady
Richard McMillan
By Henry Grist
Attorney.

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

# UNITED STATES PATENT OFFICE.

MICHAEL JOHN GRADY AND RICHARD McMILLAN, OF KINGSTON, CANADA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 563,166, dated June 30, 1896.

Application filed April 30, 1896. Serial No. 589,637. (No model.)

*To all whom it may concern:*

Be it known that we, MICHAEL JOHN GRADY and RICHARD MCMILLAN, of the city of Kingston, in the Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Car-Couplings; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of a draw-head embodying our improvement. Fig. 2 is a top view of the knuckle detached to show the radial recess in the pintle-hole. Fig. 3 is a view of the pintle or pin to show the radial fin or stop-pin fitting into said recess. Fig. 4 is a plan of the draw-head inverted to show clearly the lever connected to said pintle for operating the knuckle outwardly. Fig. 5 is a front elevation of Fig. 4 to show hand-levers fulcrumed to the end platform of a passenger-car. Fig. 6 is a horizontal section of our improved coupling as applied to a freight-car, the knuckle shown in the position as when coupled. Fig. 7 is a like section showing the knuckle in position ready to couple. Fig. 8 is a section on line $x x$, Fig. 6; and Fig. 9 is a section on line $y y$, Fig. 7.

Our present invention relates to improvements in a car-coupling for which we obtained Letters Patent of the United States dated November 12, 1895, and numbered 549,566; and our invention has for its object to operate the V-shaped knuckle by a lever to open outwardly, to receive the knuckle of the opposite draw-head, thereby dispensing with the inclined face-striking lug within the draw-head.

Our invention consists in connecting the pin or pintle of the knuckle to the knuckle itself by a radial fin or stop-pin projecting from said pin and attaching to the pin a lever operated by a pull or push rod extending to the side of freight-cars or to a lever fulcrumed to the end platform of passenger-cars, to swing the knuckle outwardly into position for coupling by the partial axial rotation of the pin or pintle, and the heel of the knuckle when the locking-block is lifted moves said block, so that one end will be turned to rest in the recess in the side wall of the draw-head ready to couple, and when the knuckle is struck by the knuckle of the incoming draw-head the locking-block is reacted and falls to effect coupling.

A is the body of the draw-head having arms $a a'$, at the front, which receive intermediately the approaching coupling. The draw-head has an internal cavity $d$ in front, and the top of one side is extended horizontally to make a shelf or recess $d'$ to lodge the locking-block or keeper D at the raised or unlocked or uncoupled position.

B is a V-shaped knuckle having a curved heel $b$, and hinged to arm $a$ by a pintle C, passing through the elbow and through jaws on the arm.

D is a curve-shaped keeper or locking-block in the cavity $d$, and in thickness less than one-half the height of the cavity, and said block is pivotally secured in the draw-head by a guide-pin F, passing loosely through the block and through the top and bottom of the draw-head.

The pin F extends below the bottom of the draw-head to a sufficient distance only to apply a cotter-key 2 to prevent it rising when the block is lifted, and the draw-head internally is provided with a transverse depression 3.

5 is an elbow-lever within the cavity of the draw-head and is fulcrumed at the elbow by trunnions 9, bearing in vertical grooves 10 in the walls of the draw-head. One arm of said lever rests in the depression 3 and under the locking-block D, so that said block will be flat against the bottom of the draw-head to engage the knuckle B in coupling. The lever 5 is connected to a pull-rod K, which extends through a slot 6 in the side of the draw-head, and is provided with a stop or bend to engage a staple E, fixed to a freight-car to hold the rod stationary when said lever is operated from the ground, but when used on passenger-cars said lever 5 is connected to a lever T, fulcrumed to the end platform.

When rod K is pulled, lever 5 lifts the keeper or locking-block D to a plane with the recess $d'$, and the knuckle swings outwardly by the pull of the opposite coupling. In uncoupling, the curved heel $b$ will swing one end of the locking-block into the recess to lodge the block in the raised position, ready to be dislodged to effect coupling.

When the knuckle of the approaching draw-head strikes the face of knuckle B, the knuckle swings inwardly and the curved heel *b* engages the curved heel of the locking-block and dislodges it from the recess *d'*, so that when the two couplings are in coupling-position the locking-block D falls by gravitation below the plane of the recess and intervenes the heel of the knuckle B and the internal side wall of the cavity *d* of the draw-head, and thereby locks the knuckle so that it will retain the knuckle of the opposite draw-head interlocked and coupled.

To swing knuckle B outwardly into position for coupling, the pin-hole $b^2$ is provided with a radial groove or depression $b^3$, and the pintle C is provided with a fin or stop-pin C', which seats in said depression after passing through a radial slot A', extending from the pintle-hole through the top of the draw-head, so connect the pintle and knuckle to move together. The lower end of the pintle is flattened or squared and on it fits the eye of a lever M and is held from dropping by a cotter-key N, passing through the pintle. P is a pull or push rod connecting the operating end of said lever to the lower end of a vertical lever R, fulcrumed to the end platform S of a passenger-car, so that when the locking-block is lifted to uncouple, as aforesaid, by operating the lever T, lever R will, when moved by the hand or foot, cause a partial rotation of the pintle and swing the knuckle B outwardly to receive the knuckle of the approaching draw-head.

U is a standard fixed to the platform of a car close to lever T, and said standard is provided with a notch at *t*, with which the lever engages when so placed by hand to retain the locking-block D at the raised position to permit knuckle B to swing inoperatively or without coupling.

Prior to coupling, lever T is placed at the locked position to lift the locking-block D level with the recess *d'*. Lever R is then moved to swing knuckle B outwardly and move one end of the locking-block into the recess. Lever T is then loosened and the knuckle of the approaching draw-head interlocks and swings knuckle B inwardly, its heel moving the locking-block to effect gravitation and falls between the wall of the draw-head and the knuckle to effect coupling.

We claim as our invention—

The combination with the draw-head having an internal side recess *d'*, of the curved and gravitating locking-block D, sliding on a vertical guide-pin F, passing through the draw-head, an elbow-lever 5, fulcrumed within the cavity of the draw-head and connected to a pull or push rod K, to lift said locking-block, a V-shaped knuckle B, provided with a curved heel *b*, engaging said locking-block and having a pintle-hole provided with a depression or recess $b^3$, a pintle C, having a fin or pin C', fitting into said recess, a lever M, connected to the lower end of said pintle and a pull or push rod P, attached to said lever, whereby the heel of the knuckle moves the locking-block to effect coupling, and the knuckle swings outwardly by the operation of the rod to a position for coupling, as set forth.

MICHAEL JOHN GRADY.
RICHARD McMILLAN.

Witnesses:
E. OFFORD,
I. B. McIVER.