

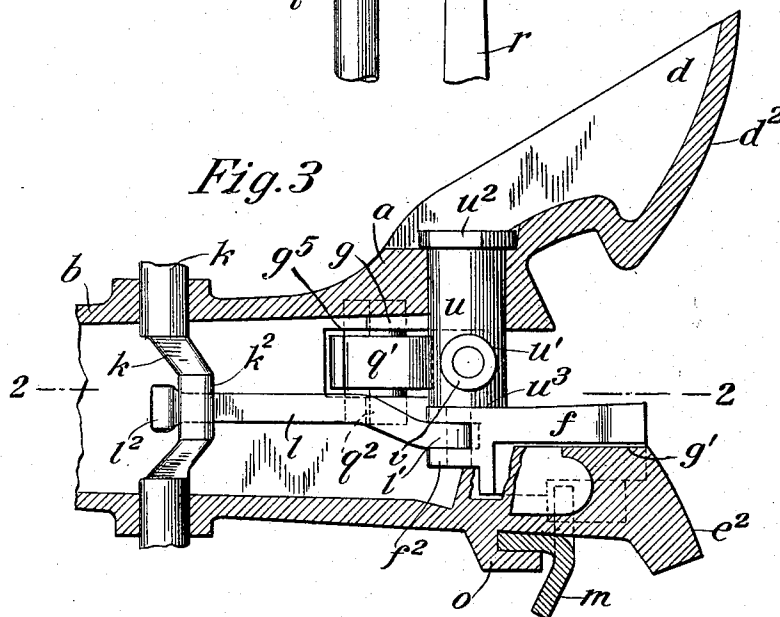
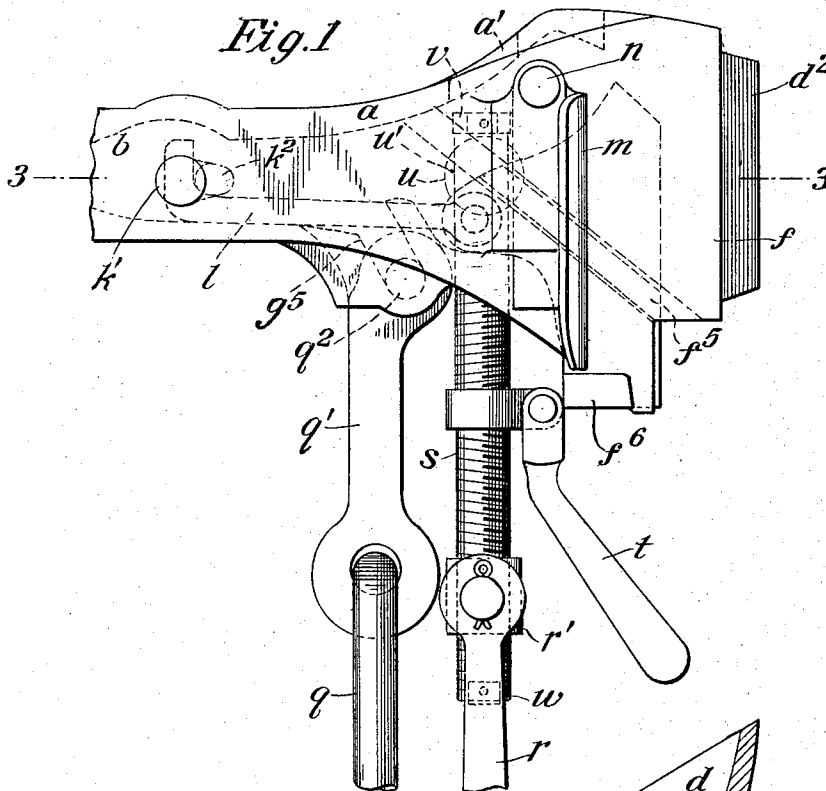
J. WILLISON.
AUTOMATIC CAR COUPLING.

APPLICATION FILED DEC. 31, 1913. RENEWED AUG. 10, 1916.

1,201,668.

Patented Oct. 17, 1916.

2 SHEETS—SHEET 1.



Witnesses:
E. Long
F. M. Venable.

Inventor
John Willison
By his Attorney
Clarence S. Ford

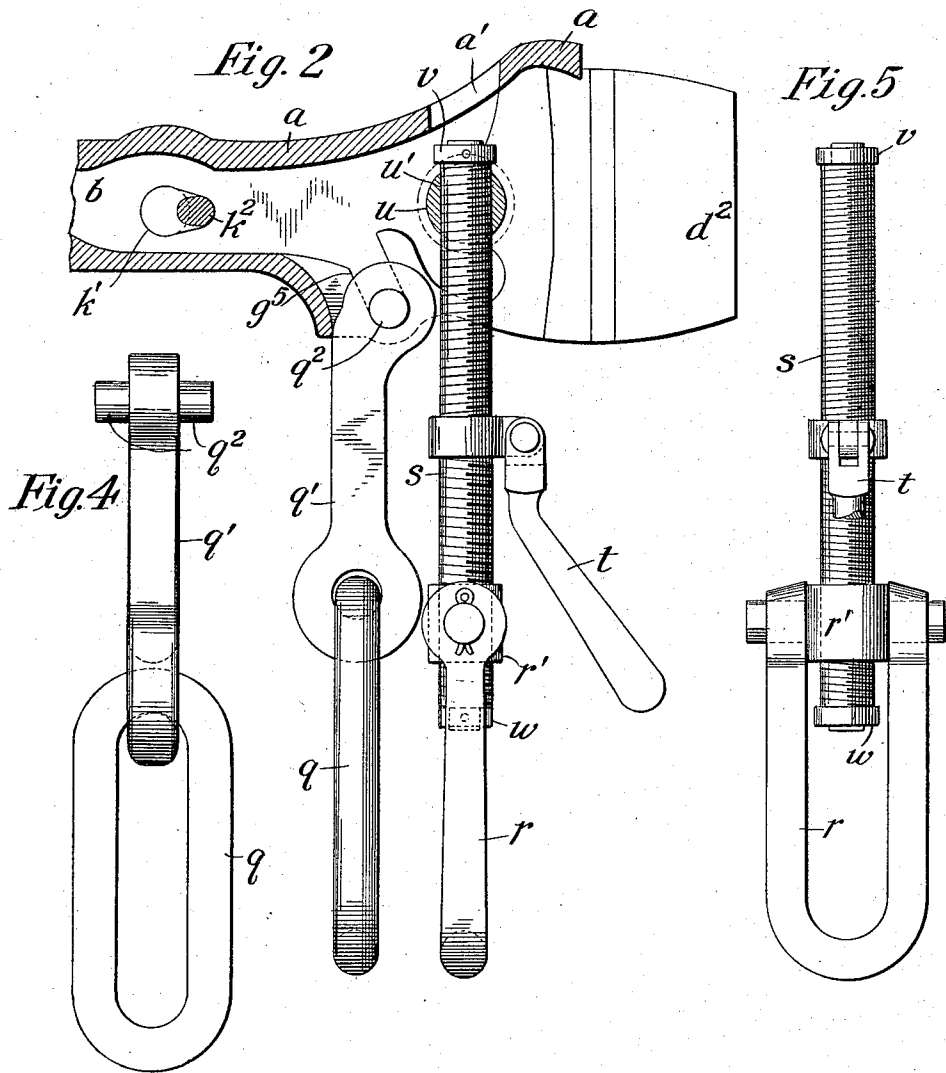
J. WILLISON.
AUTOMATIC CAR COUPLING.

APPLICATION FILED DEC. 31, 1913. RENEWED AUG. 10, 1916.

1,201,668.

Patented Oct. 17, 1916.

2 SHEETS—SHEET 2.



Witnesses:
J. E. Long
F. M. Murrah

Inventor
John Willison
By his Attorney
Clarence D. Ford

UNITED STATES PATENT OFFICE.

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

AUTOMATIC CAR-COUPLING.

1,201,668.

Specification of Letters Patent.

Patented Oct. 17, 1916.

Application filed December 31, 1913, Serial No. 809,603. Renewed August 10, 1916. Serial No. 114,295.

To all whom it may concern:

Be it known that I, JOHN WILLISON, a subject of the King of Great Britain, and a resident of Derby, county of Derby, England, have invented new and useful Improvements in Automatic Car-Couplings, of which the following is a specification.

This invention relates to automatic car couplers of the kind described in my co-pending application, Serial No. 114,292, filed August 10, 1916, and it consists in improvements having for object to furnish such a coupler with a safety coupling chain and with a screw coupling device so that a car provided with the improved coupler may be coupled to cars that have ordinary draw hook couplings.

The invention will be explained with reference to the accompanying drawings, wherein it is shown, by way of example, as applied to the automatic coupler described in my co-pending application Serial No. 114,294, filed Aug. 10, 1916, which is an improvement on the coupler shown in the previously cited specification.

In the drawings, Figure 1 is an elevation of the improved coupler showing the safety coupling and the screw coupling device in the positions they occupy when not in use, Fig. 2 is a longitudinal section on line 2—2 of Fig. 3, Fig. 3 a sectional plan on line 3—3 of Fig. 1; Fig. 4 a front view of the safety coupling and Fig. 5 a similar view of the screw coupling device.

In the drawings the parts of the coupler head of the locking block and of the lock set device which are herein referred to and correspond to similar parts shown and described in the above cited specifications have the same reference characters applied to them as in those specifications and therefore need no further explanation now.

In the accompanying drawings, the safety coupling chain is shown as comprising a link q carried by one end of an arm q' which at its other end is provided with a pair of trunnions q^2 mounted to rock in open bearings q^5 formed on the side walls of the locking block recess g of the coupler head a . The openings or mouths to the bearings q^5 are upwardly directed.

The screw coupling device comprises the shackle r swiveled to the nut r' cooperating with the screwed rod s , to which is attached

the operating handle t of suitable form. The rod s is adapted for screwing through the threaded aperture u' of a pin u rotatably mounted in a side wall of the coupler head. The pin u has an enlarged head u^2 and has a length such that the face u^3 of its inner end will when the pin is in proper position act as a guide to the locking block f in its to and fro movements. The position of the aperture u' is such that when the several parts of the coupling are assembled, with the end of the pin u acting as a guide to the locking block and the pin head u^2 seated against the outer face of the wall of the coupler head, then the side of the screwed rod s , threaded through the aperture u' , will be in contact with the inner face of the said wall, or very nearly so. In this way, the pin cannot move in either direction longitudinally and is thus retained by the pin head and the screwed rod in proper working position.

In the top wall or roof of the recess in the coupler head is a hole a' for use in the operation of assembling the parts of the coupler. The position of this hole is such that when the pin u is turned for the purpose its aperture u' can be brought into coaxial relation with the hole a' . The hole a' is sufficiently large to allow the end of the screwed rod to pass through in order that a collar v may be affixed to the end and the rod and collar then withdrawn within the coupler-head. The collar v is for the purpose of preventing the corresponding end of rod s being withdrawn through the aperture of pin u in order that the screw coupling may remain suspended from the pin u . A similar collar w is fixed to the other end of the rod s in usual manner to prevent the rod being withdrawn completely through the nut r' while the screw rod s is being turned by means of the handle t in order to slacken the coupling between two cars.

The operation of assembling the several parts of the automatic coupling and its accessories is effected as follows:—The trunnions q^2 of the safety coupling are first mounted in the bearings q^5 . The pin u having been passed through the side wall of the coupler head, the rod s before or after the nut r' with its shackle r has been screwed on to its end, is then threaded through the aperture of the pin u to such

extent that its end, after the pin *u* has been suitably turned for the purpose, projects through the aperture *a'* in order that the collar *v* may be fixed thereon. This done
5 the rod with its collar is drawn within the coupler head to its full extent, that is until the collar *v* engages the pin *u*.

The bearings *g*⁵ are so shaped and formed that when the screw coupling device has
10 been threaded through the pin *u*, will serve to prevent the withdrawal of the safety coupling from the bearings *g*⁵.

The locking block *f* together with the mechanism *k, l* for operating same and the
15 lock set device *m* can now be mounted in operative position.

Having thus described the nature of my said invention and the best means I know
20 of carrying the same into practical effect, I claim:—

1. In an automatic coupler of the vertical plane type comprising a coupler head having a gravity-actuated lock mounted in a cavity thereof for normal intercoupling operations, a screw coupling device mounted
25 in said cavity and bearing against the lock, said device being comprised of a trunnion mounted in said cavity, a rod having a threaded engagement with said trunnion
30 and with a connection for a coupling link,

the said screw coupling device hanging normally below the coupler head.

2. In a car coupler of the vertical plane type, a coupler head having a cavity therein, a gravity-actuated lock mounted in said
35 cavity, and a screw coupling device mounted on a trunnion in said cavity, the said screw coupling device being adapted to depend from said trunnion vertically when in operative position and to be rotated about said
40 trunnion into horizontal position for connection with an opposing car.

3. In a car coupler of the vertical plane type, a coupler head having a cavity therein, a gravity-actuated locking block operating
45 in said cavity, and a screw coupling device mounted on a trunnion in said cavity and comprising a threaded rod having a threaded engagement with said trunnion
50 and with a connection for a coupling chain, a recess in said cavity for reception of a link of a supplemental chain, the said screw coupling device and supplemental chain being adapted to hang loosely from the coupler head when in inoperative position.

JOHN WILLISON.

Witnesses:

JOSEPH MILLARD,
W. I. SKERTEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

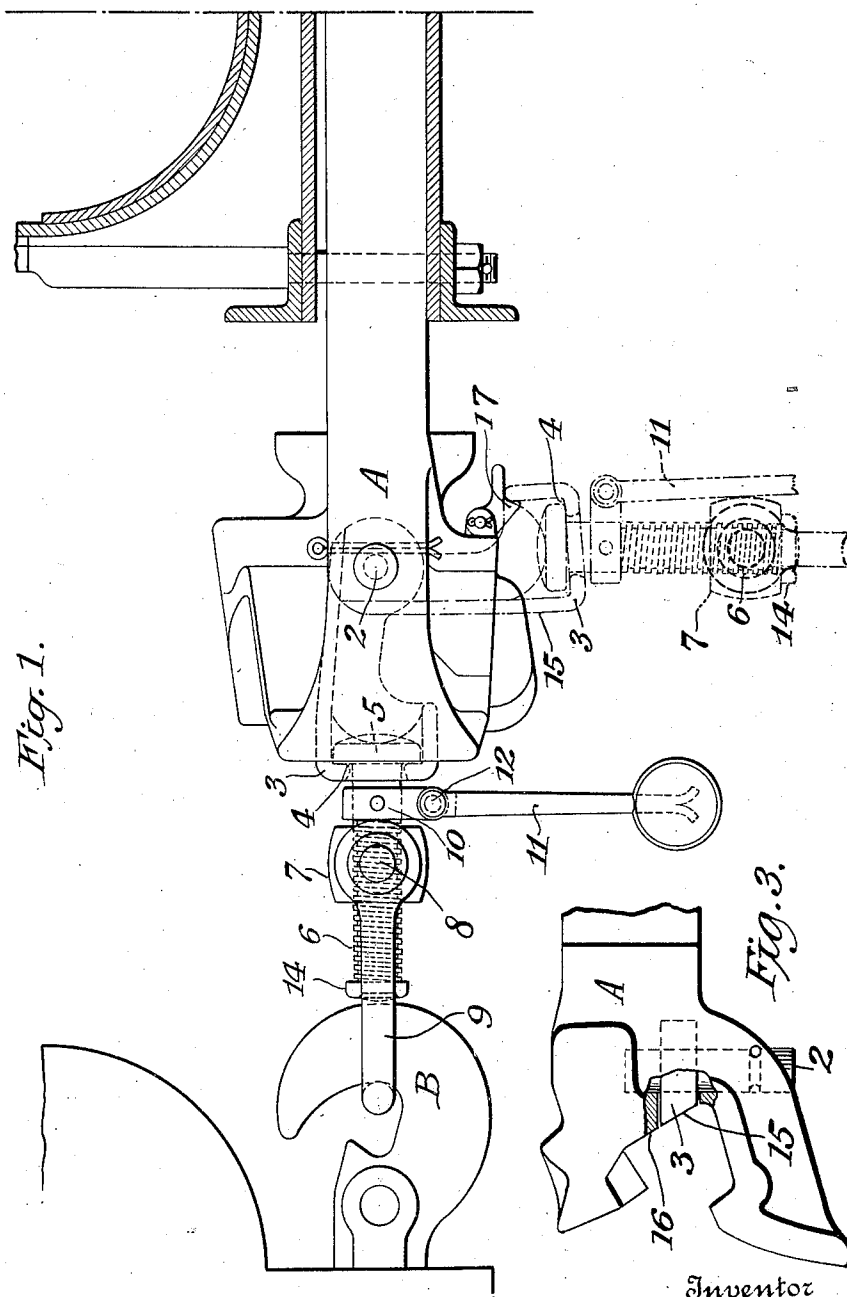
Jan. 18, 1927.

J. WILLISON

1,614,513

TRANSITION DEVICE FOR CAR COUPLERS

Original Filed March 7, 1922 2 Sheets-Sheet 1



Inventor
John Willison
By his Attorney
Clarence Kerr

UNITED STATES PATENT OFFICE.

JOHN WILLISON, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY, OF CLEVELAND, OHIO, A
CORPORATION OF OHIO.

TRANSITION DEVICE FOR CAR COUPLERS.

Application filed March 7, 1922, Serial No. 541,758. Renewed June 1, 1926.

Fig. 1 is an elevation of my improved transition device; Fig. 2 is a plan thereof; and Fig. 3 is a detail of the contour face of the coupler to which the transition device is attached.

transition device, until the buffers are in contact, as is shown in Fig. 2.

My invention relates particularly to transitional coupling mechanism and is designed to provide means for permitting car couplers to be coupled with cars equipped with couplers of other types, such as of draw hook connection type. To this end I have provided a transitional or supplemental coupling device which can be carried by the automatic coupler and may be easily brought into and out of operative position, so that the coupler may be ready for coupling with an automatic coupler of the same type or with a draw hook arrangement, or any other form of car coupler. My improved device is also equipped with adjusting means whereby the effective over all length of the transitional device may be varied to take up slack between the cars. My invention also consists in the various features which I shall hereinafter describe and claim.

Referring to the drawings, A indicates a coupler of the automatic type and B a coupler of the draw hook type. Pivottally hung from a pin 2 mounted in the coupler head A is a draft member 3. The draft member at its forward end terminates in a socket 4 within which seats the head 5 of an outwardly extending screw member 6. Threaded upon the screw member 6 is a nut 7 provided with trunnion extensions 8 which extend through the eyes of a clevis or shackle 9. Rigidly attached to the screw member 6 between its head 5 and its screw portion is a collar 10, from which a weighted handle 11 hangs by the pivot 12. 13 are the buffers which maintain the cars a predetermined distance apart.

When a coupling is desired between couplers of different types, as between the coupler A and the coupler B, the transitional device (which when not in use hangs in the dotted line position shown in Fig. 1) is swung up and the shackle 9 is hooked over the hook of the coupler B. The handle 11 is then rotated to screw up the nut 7 to the right, as shown in Fig. 1, thus shortening the effective over all length of the tran-

In order to uncouple, the screw is turned by means of the weighted handle 11 in the reverse direction until the nut 7 is run out against the collar 14 on the outer end of the screw member 6, the round head at the opposite end of the screw permitting turning in the socket 4. This gives sufficient slack so that the shackle can be raised up over the point of the draw hook B. The whole device then swings down about the pivot 2 into inoperative position underneath the coupler, as is shown in dotted lines in Fig. 1. When in this position the forward face 15 of the draft member 3 lies flush with the contour face 16 of the coupler, the face 15 being formed so as to match the contour face 16 of the coupler, as is shown in Fig. 3. When in this inoperative position the handle 11 swings about its pivot 12 by which it is attached to the collar 10, so as to hang down in a more or less vertical position, and the device may be held in this position by means of a latch 17 which engages the inner edge of the socket portion 4 of the draft member 3. This latch 17 merely keeps the transitional device from swinging forward from inoperative position and interfering with an opposing coupler when of like type.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any mechanical equivalents of the features shown and described, or portions thereof, but recognize that various structural modifications are possible within the scope of the invention claimed.

What I claim is:

1. Transitional coupling mechanism for coupling together couplers of different types, comprising a draft member pivottally connected to one of said couplers and arranged to swing freely in a vertical plane, a bail member and means connecting said members whereby their effective length may be varied; said draft member when in use extending forwardly between the jaws of said coupler and being maintained in a position out of the vertical only by its connection with the opposing coupler, said draft mem-

ber being freely movable from an operative to a non-operating position to allow said car coupler without alteration of parts to couple with a similar coupler.

5 2. Transitional coupling mechanism for coupling together couplers of different types, comprising a draft member pivotally connected to one of said couplers and arranged to swing freely in a vertical plane, the said

coupler having a buffing face and a slot extending longitudinally and rearwardly from the buffing face within which the draft member is pivoted, the draft member having means for closing the forward end of said slot when the coupler is used for like-to-like coupling and the member is in non-operating position. 10 15

JOHN WILLISON.

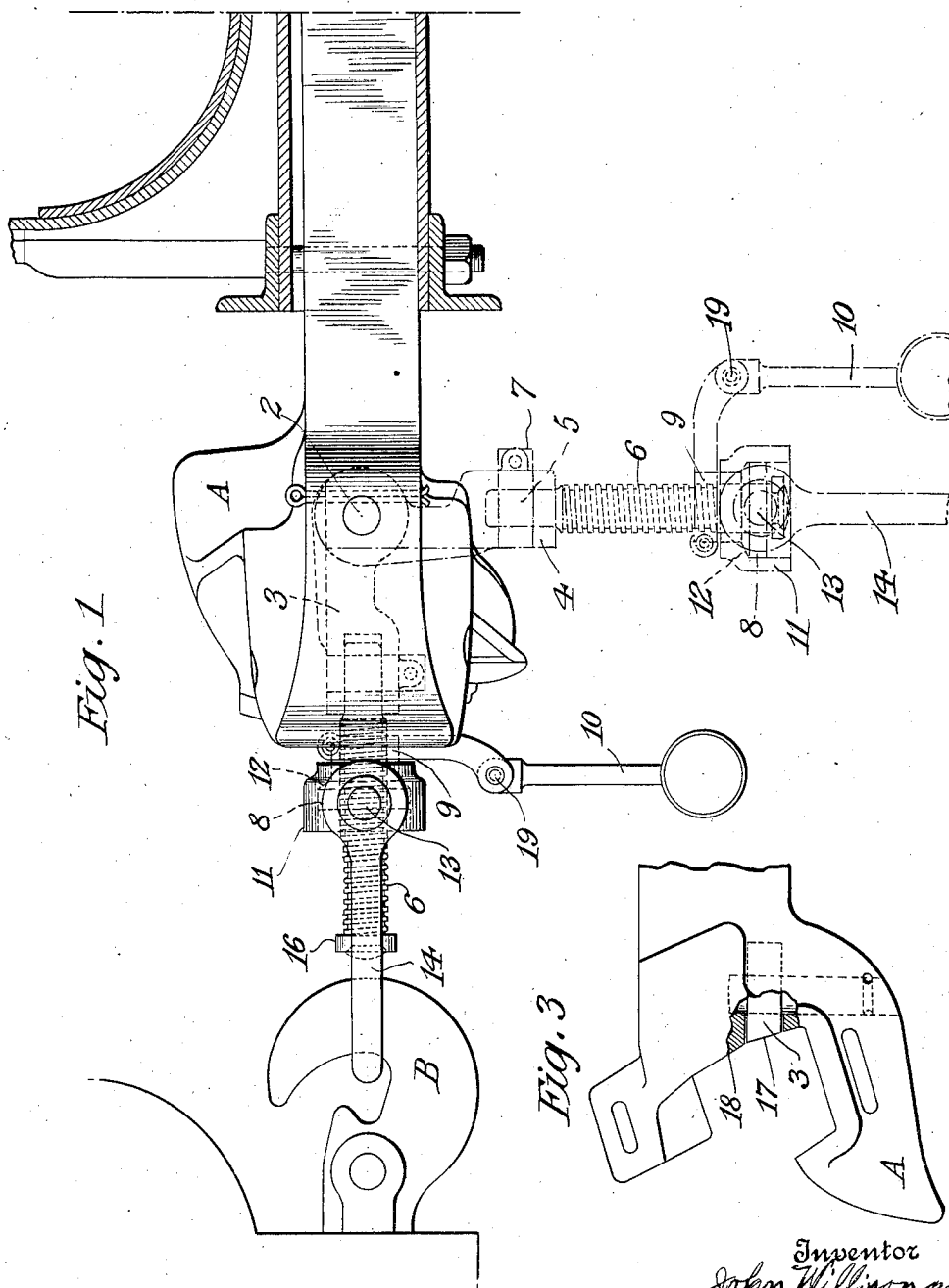
Jan. 18, 1927.

J. WILLISON ET AL

1,614,514

TRANSITION DEVICE FOR CAR COUPLERS

Original Filed Sept. 11, 1922 2 Sheets-Sheet 1



Inventor
John Willison and
David Robinson
 By their Attorney
Clarence D. Fenn

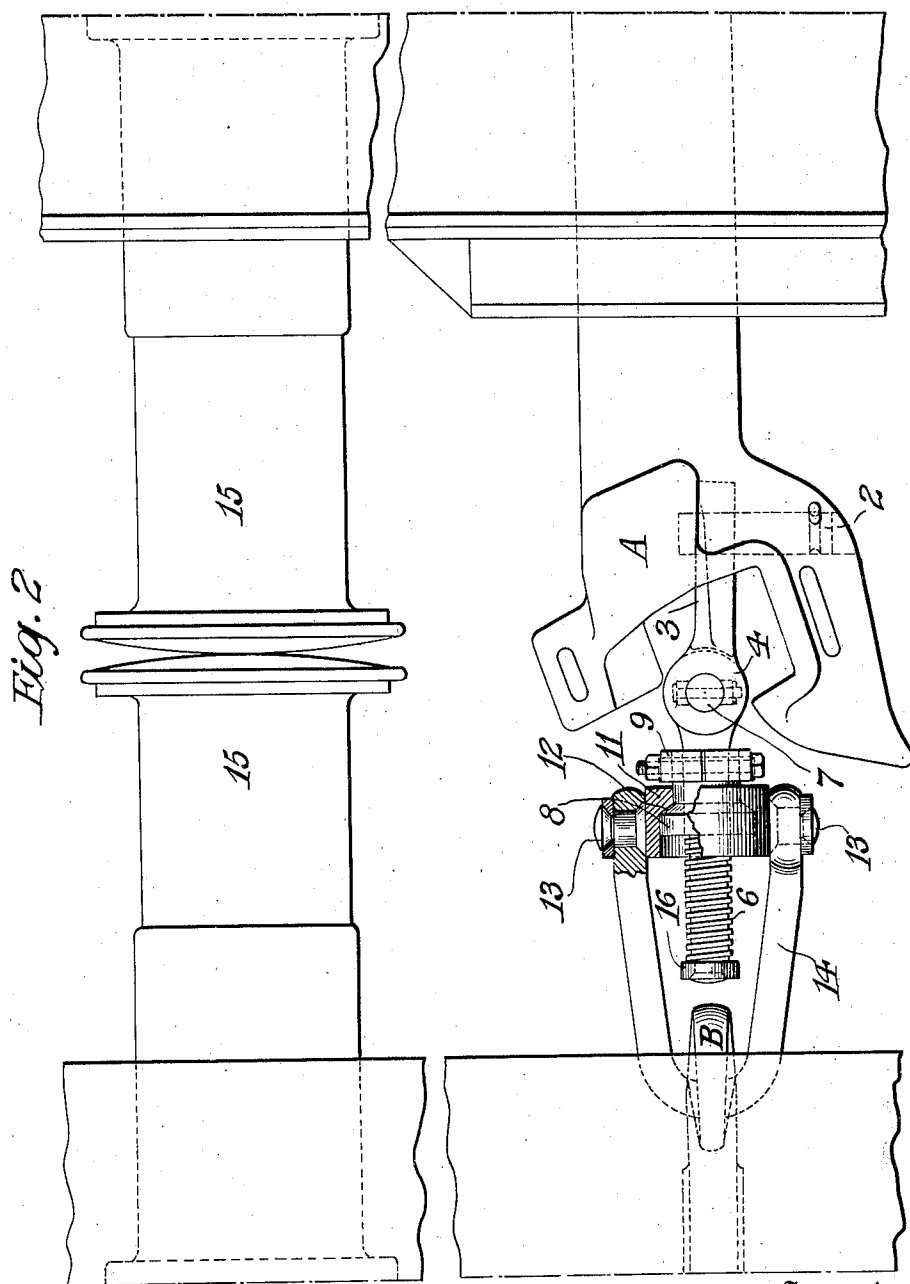
Jan. 18, 1927.

1,614,514

J. WILLISON ET AL

TRANSITION DEVICE FOR CAR COUPLERS

Original Filed Sept. 11, 1922 2 Sheets-Sheet 2



Inventor
John Willison and
David Robinson
By this Attorney
Clarence Dyer

UNITED STATES PATENT OFFICE.

JOHN WILLISON AND DAVID ROBINSON, OF CLEVELAND, OHIO, ASSIGNORS, BY MESNE ASSIGNMENTS, TO NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

TRANSITION DEVICE FOR CAR COUPLERS.

Application filed September 11, 1922, Serial No. 537,293. Renewed June 1, 1926.

Fig. 1 is an elevation of our improved transition device; Fig. 2 is a plan thereof; and Fig. 3 is a detail plan of the contour face of the coupler to which the transition device is attached.

Our invention relates particularly to improvements in transitional coupling mechanism and is designed to provide means for permitting automatic car couplers to be coupled with cars equipped with couplers of other types, such as of the draw hook connection type. We provide a transitional or supplemental coupling device which can be carried by the automatic coupler and may be easily brought into and out of operative position, so that the coupler may be ready for coupling with an automatic coupler of the same type or with a draw hook arrangement or any other similar form of car coupler. Our improved device is equipped with adjusting means whereby the effective overall length of the transitional device may be varied to a large extent for ease in coupling and uncoupling and to take up the slack between the cars. Our invention also consists in the various features which we shall hereinafter describe and claim.

Referring to the drawings, A indicates a coupler of the automatic type and B a coupler of the draw hook type. Pivotally hung from a pin 2 mounted in the coupler head A is a draft member 3. The draft member 3 at its forward end terminates in jaws 4, between which the apertured end 5 of a screw member 6 is pivotally secured by means of pin 7. Threaded upon the screw member 6 is a nut 8 about whose extension 9 is rigidly clamped an operating handle 10. Taking about the nut 8 is a collar 11 having a shouldered engagement at 12 with nut 8, which provides a pulling bearing and at the same time leaves the nut free to turn within the collar 11. The collar 11 is provided with trunnion extensions 13 which extend through the eyes of a clevis or shackle 14. 15 are the buffers which maintain the cars a predetermined distance apart.

When it is desired to couple cars provided with couplers of different types, as the coupler A and coupler B, the transitional device (which when not in use depends vertically from the pin 2 in the dotted line position shown in Fig. 1) is swung up

and the shackle 14 is hooked over the hook of the coupler B. Then in order to take up the slack between the cars the handle 10 is rotated to screw the nut 8 to the right along the screw member 6, as shown in Fig. 1, which carries with it collar 11 by reason of its shoulder engagement at 12, thus shortening the effective over-all length of the transition device, until the buffers 15 are in contact as shown in Fig. 2.

In order to uncouple, the handle 10 is rotated to screw the nut 8 to the left along the screw member 6, thereby increasing the length of the device between the member 3 and the shackle 14. Sufficient slack is thus secured to raise the shackle up over the point of the draw hook B, thereby uncoupling the cars. By reason of the arrangement of nut 8 and collar 11 which surrounds the nut, it is possible to increase the effective length of the device to a considerable extent, as the nut may be turned out along the screw 6 until it comes up against the face of stop 16 on the end of the screw member 6. This gives sufficient slack so that the shackle may easily be raised up over the point of the draw hook B. The whole device then swings down about the pivot 2 into inoperative position underneath the coupler, as is shown in dotted lines in Fig. 1. When in this position the then forward face 17 of the draft member 3 lies flush with, and forms a continuation of, the contour face 18 of the coupler, as is shown in Fig. 3. When the device is in inoperative position, the handle 10, by means of its pivot 19, hangs down in a vertical position.

We have found that our improved device gives ample clearance between the hook B and the end of the screw member 6 and at the same time provides sufficient travel of the nut along the screw by reason of the fact that the screw 6 and collar 11 have a telescopic engagement except when the screw is drawn as far as possible to the left.

The pivotal connection between the jaws 4 and the screw member 6 provides lateral flexibility between the coupler head A and screw member 6 which is of great advantage when the cars are being pulled around a curve.

The shoulder engagement of collar 11 and nut 8 whereby the collar is free to turn about the axis of screw member 6 is of great

advantage both in coupling operations and in providing flexibility in draft.

The terms and expressions which we have employed are used as terms of description and not of limitation, and we have no intention, in the use of such terms and expressions, of excluding any mechanical equivalents of the features shown and described, or portions thereof, but recognize that various structural modifications are possible within the scope of the invention claimed.

What we claim is:

1. A transitional coupling mechanism for coupling together couplers of different types, comprising a draft member pivoted to a car coupler for movement in a vertical plane, a screw shaft secured to the draft member by a laterally flexible connection, a shackle adapted to engage a coupler of the hook type, and a screw mechanism for varying the effective over-all length of the said coupling member, said coupling being freely movable from an operative to a non-operative position to allow said car coupler without addition or subtraction of parts to couple with a like-to-like coupler.

2. A transitional coupling mechanism for coupling together couplers of different types, comprising a draft member pivoted to a car coupler, a screw shaft pivotally secured to the draft member, a collar about the screw shaft carrying a shackle, a nut in engagement with said collar, and means for rotating

the nut to vary the effective over-all distance between the end of the shackle and the draft member to permit coupling and uncoupling operations with the shackle.

3. A transitional coupling mechanism for coupling together couplers of different types, a draft member pivoted to a car coupler, a screw member secured to the draft member and having a nut thereon, a collar and a shackle attached thereto, said collar having a telescopic engagement with said nut, and means for moving the said collar along the screw member to vary the effective over-all length of the device.

4. A transitional coupling mechanism for coupling together couplers of different types, a draft member, a screw member secured to the draft member and having a nut thereon, a collar carrying a shackle in engagement with said nut and being free to turn about the axis of the screw member, and means for moving the collar along the screw member to vary the effective over-all length of the device.

5. A transitional coupling mechanism for coupling together couplers of different types comprising a shackle carrying a collar, a screw member, and a nut for operatively connecting said collar to said screw member, and means for attaching said screw member to said coupler.

JOHN WILLISON.
DAVID ROBINSON.

Feb. 17, 1925.

1,526,689

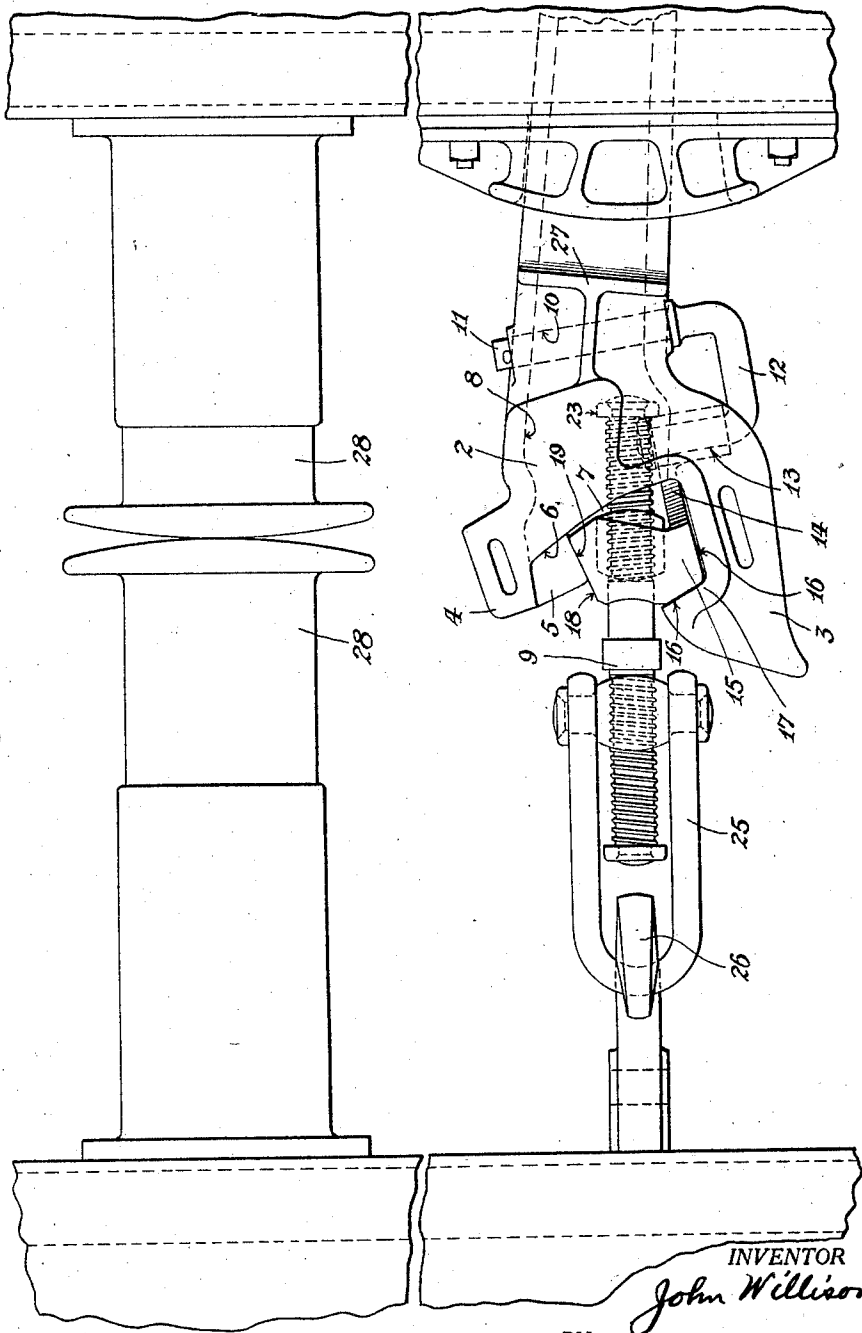
J. WILLISON

TRANSITION DEVICE FOR CAR COUPLERS

Filed June 9, 1923

2 Sheets-Sheet 1

Fig. 1.



INVENTOR

John Willison

BY

Clarence Kerr
ATTORNEY

Feb. 17, 1925.

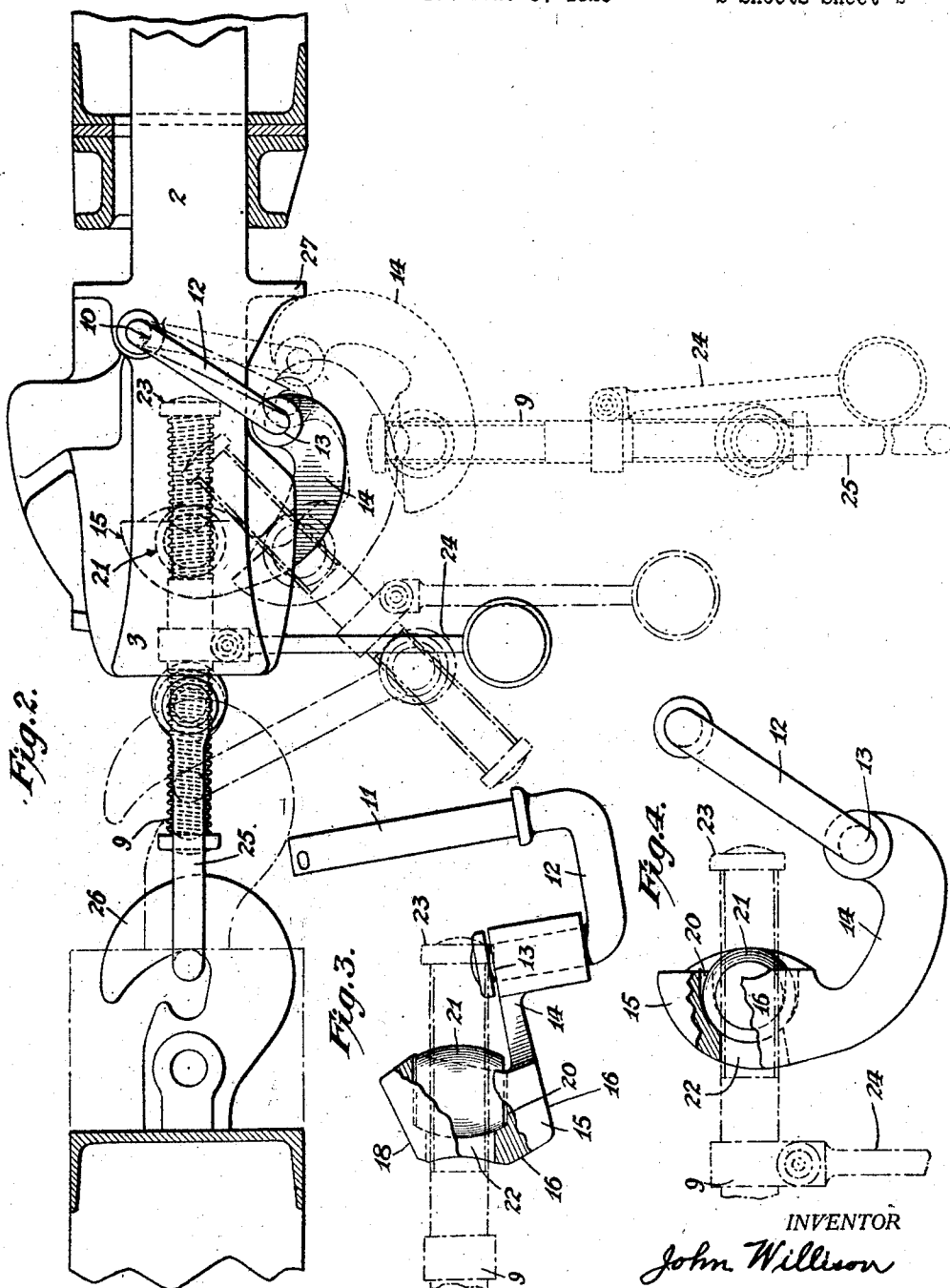
1,526,689

J. WILLISON

TRANSITION DEVICE FOR CAR COUPLERS

Filed June 9, 1923

2 Sheets-Sheet 2



INVENTOR
John Willison
BY
Clarence R. Kerr
ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN WILLISON, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY, OF CLEVELAND, OHIO,
A CORPORATION OF OHIO.

TRANSITION DEVICE FOR CAR COUPLERS.

Application filed June 9, 1923. Serial No. 644,330.

To all whom it may concern:

Be it known that I, JOHN WILLISON, a subject of the King of Great Britain, residing at Cleveland, Cuyahoga County, Ohio, have invented new and useful Improvements in Transition Devices for Car Couplers, of which the following is a specification, reference being had to the accompanying drawings, in which--

Fig. 1 is a plan of a car coupler having my improved device attached thereto coupled with a coupler of the draw-hook type and showing the position of the couplers when under draft; Fig. 2 is an elevation thereof showing in full lines the position of the transition device and the couplers when under draft, in dot-dash lines, the position of such mechanism when the cars are buffed together, and in dotted lines the position of the transition device when not in use; Fig. 3 is a detail plan of a portion of the transition device, and Fig. 4 is a side elevation thereof.

My invention relates to transitional coupling mechanism and is particularly designed to provide means for permitting cars equipped with automatic couplers to be coupled with cars equipped with couplers of other types, such as of the draw-hook and side buffer type. To this end I have provided a transitional or supplemental coupling device which can be carried by the automatic coupler and may be easily swung into and out of operative position so that the coupler may be ready for coupling with an automatic coupler of the same type or with a draw-hook arrangement or other form of coupler. My improved mechanism is arranged to be supported beneath the coupler head when not in use and to be swung between the jaws of the coupler into operative position, and is to be connected with a coupler of the draw-hook or other type by a device such as a screw coupling member. My invention also consists in the various features which I shall hereinafter describe and claim.

Referring to the drawings, 2 indicates a coupler of the rigid jaw type shown in my United States Patent No. 1,201,665, dated October 17, 1916, having jaws 3 and 4 and a lock 5 normally projecting forward of the intermediate buffing face 6 of the car coupler. The coupler in addition to the cavity 8 in which the lock 5 operates has a recess 7

extending rearwardly from the buffing face 6 near the axis of the coupler to admit the rear end of the screw coupling member 9 thereinto when the transitional member is under draft tension.

The coupler 2 to the rear of its head has a transversely extending horizontal aperture 10 which forms a bearing for the arm 11 of the transitional supporting member 12. The support 12, which is shaped somewhat like the letter J, extends downwardly and forwardly and has a portion 13, which returns under the coupler 2 and has pivotally mounted upon it the carrier 14, the upper end of which terminates in a draft arm 15. The draft arm 15 has angled faces 16 which bear in the crotch 17 of the jaw 3, while its opposite face 18 is intended to bear against the side face 19 of the lock 5 when in operative position.

The draft arm 15 has formed on its rear side a socket 20 for the threaded nut 21, which is rotatably mounted therein on its horizontal axis. The draft arm 15 is also apertured at 22 on its forward side to permit insertion of the screw coupling member 9 through the draft arm 15 and into the threaded nut 21. When the member 9 has been so inserted a washer 23 may be riveted to the end of the screw 9 to keep it from being turned completely out of the threaded nut 21.

The screw coupling member 9 has attached thereto the usual operating handle 24 and shackle 25 by which a coupling may be effected with a coupler of another type, such as the draw-hook 26.

When the transitional member is not in use it depends beneath the coupler from its arm 11 out of the way of any coupling operations, as is shown in dotted lines in Fig. 2, and is held from swinging loosely thereunder by the forward side of the buffing flange 27, against which it is normally held in bearing by gravity. When it is desired to use the transitional device with a coupler of the draw-hook type, the device is swung forward and upwardly and the shackle 25 passed over the hook 26 of the opposing coupler. The screw handle 24 is then rotated to take up the slack in the transitional member, which brings the draft arm 15 into bearing between the jaw 3 and the lock 5 of the coupler 2, and the

buffers 28 under a slight initial stress, as is shown in Fig. 1.

When under draft the pulling stresses are transmitted from the hook 26 to the shackle 25, and then through the screw member 9 and nut 21 to the draft arm 15, and through that arm to the pulling jaw 3 and lock 5. When the cars approach each other in buffing the resulting slack permits the transitional device to drop down out of the way of the hook 26, as is shown in dot-dash lines in Fig. 2, so that it will not be damaged in buffing.

My improved transition mechanism provides an extremely simple and rugged connection which utilizes screw connections and couplers of existing form and hence provides an extremely economical arrangement for transition service.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any mechanical equivalents of the features shown and described, or portions thereof, but recognize that various structural modifications are possible within the scope of the invention claimed.

What I claim is:

1. In coupler mechanism, the combination with an automatic coupler of a supplemental coupling member pivoted to the coupler and depending therefrom when in lowered position, and when in operative position having an extension terminating in a draft arm engaging pulling faces of

said coupler, said draft arm also supporting a screw and shackle connection for coupling with a coupler of a different type.

2. In a coupler mechanism, the combination with an automatic coupler of a supplemental coupling member pivotally mounted on the coupler head and having a draft arm, the draft arm having on one side a pulling bearing on the pulling jaw of the coupler and on the other a bearing from which pulling strains are transmitted to the coupler, and an extensible and contractable coupling member mounted on the draft arm for connection with a coupler of a different type.

3. In coupler mechanism, the combination with an automatic coupler of a supplemental coupling member pivotally mounted on the coupler and having a draft arm having pulling bearings on the coupler, a rotative bearing carried by the draft arm having mounted therein a member capable of movement relative to the draft arm to provide and take up slack in a connection with another coupler.

4. In coupler mechanism, the combination with an automatic coupler of a supplemental coupling member pivotally mounted on the coupler and having a draft arm having pulling bearings on the coupler, a rotative bearing carried by the draft arm having mounted therein a screw member capable of axial movement relative to said bearing and carrying a shackle for connection with another coupler.

JOHN WILLISON.