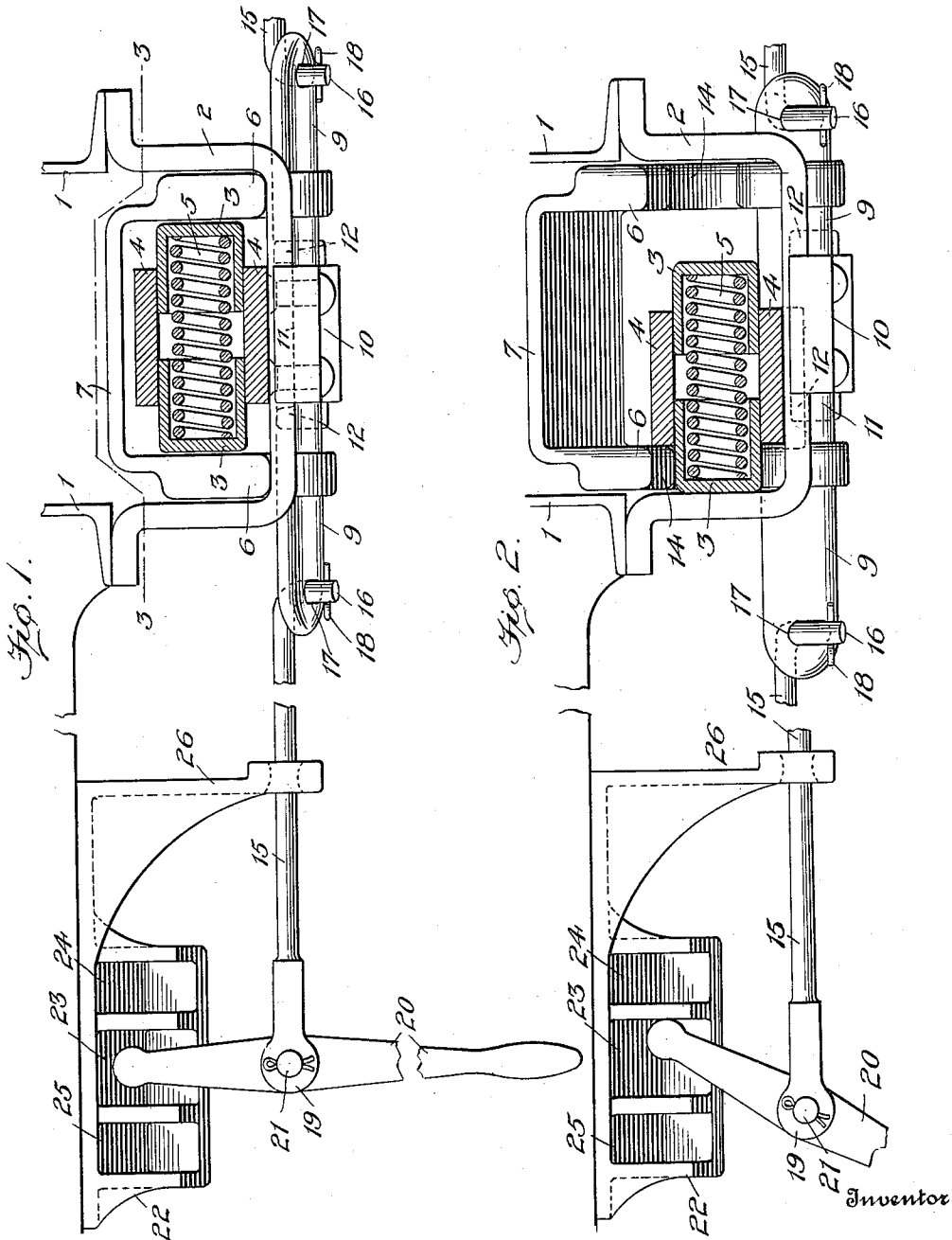


I. H. MILLIKEN.
COUPLING CONTROLLING MECHANISM.
APPLICATION FILED MAR. 26, 1915.

1,154,040.

Patented Sept. 21, 1915.
3 SHEETS—SHEET 1.

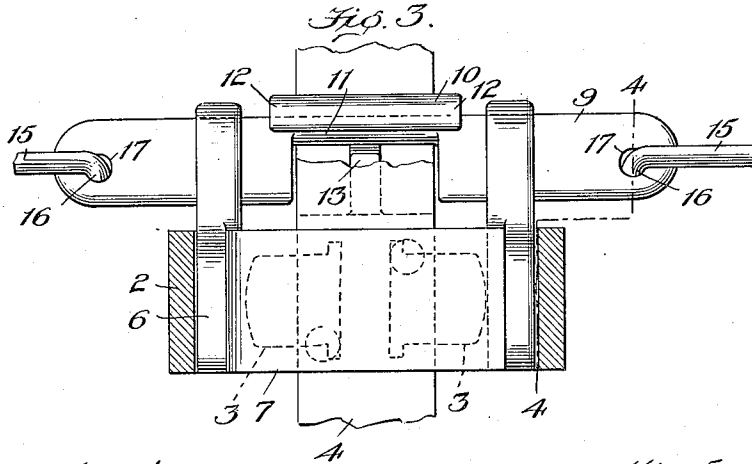
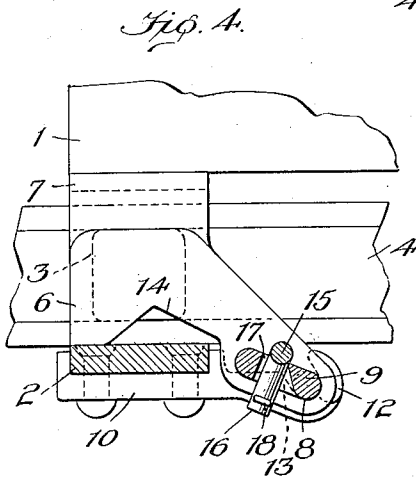
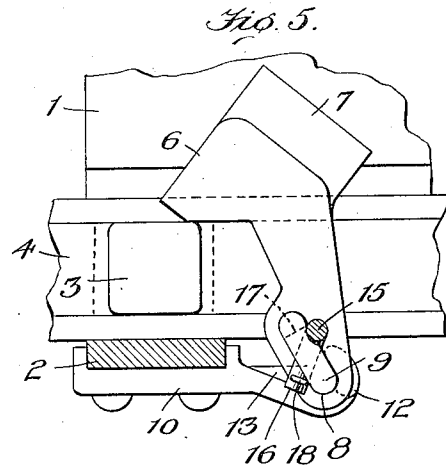
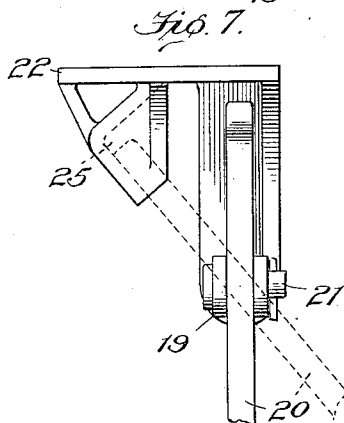
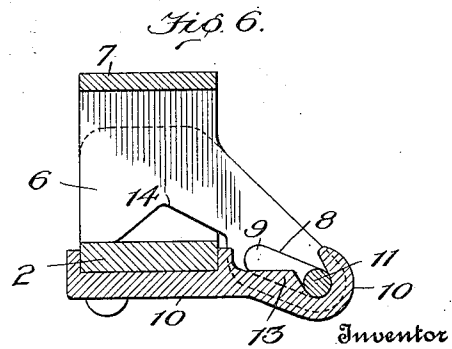


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3 SHEETS—SHEET 2.



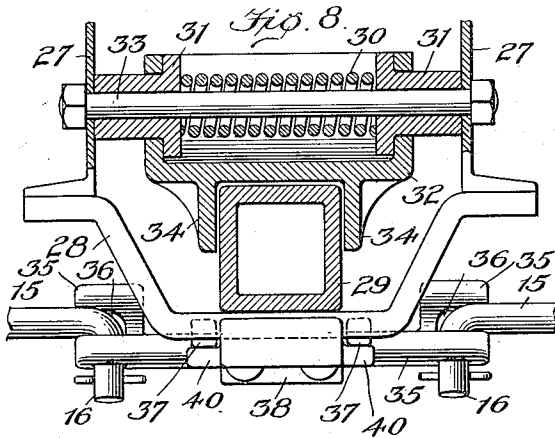
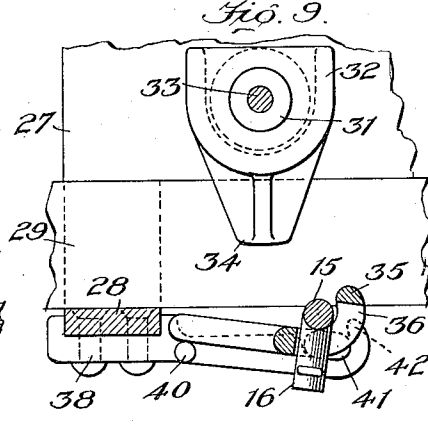
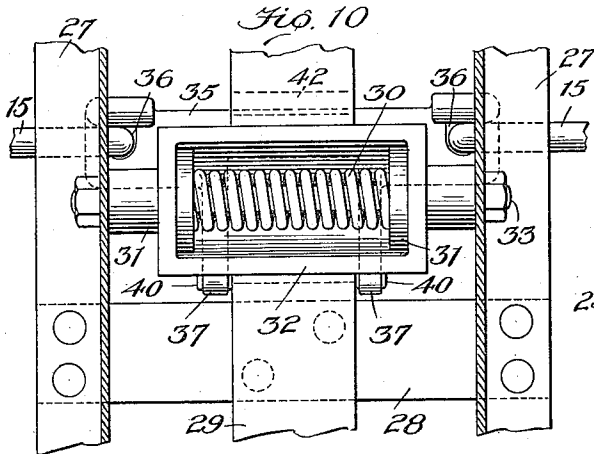
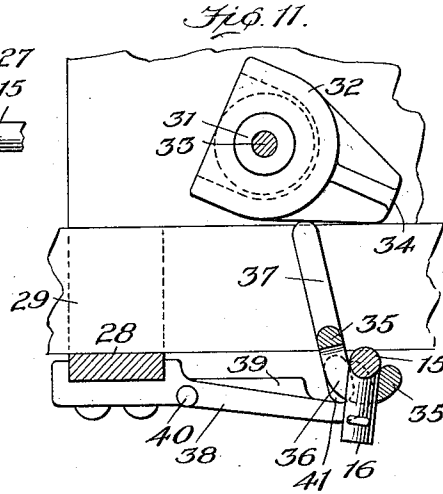
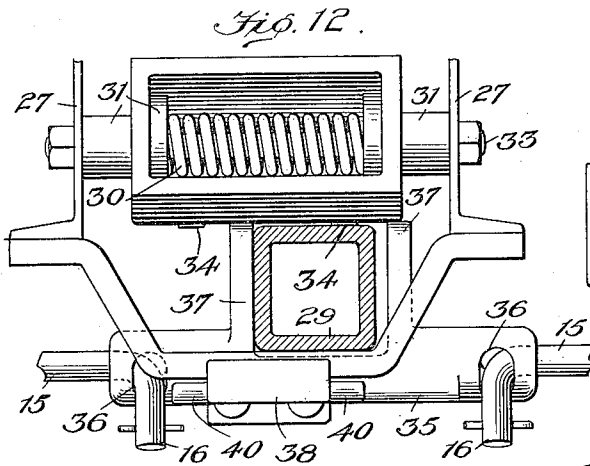
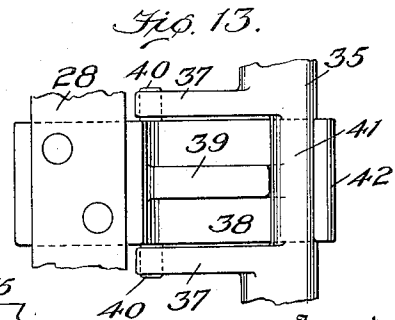
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1,154,040.

Patented Sept. 21, 1915.

3 SHEETS—SHEET 3.



Inventor

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UNITED STATES PATENT OFFICE.

ISAAC H. MILLIKEN, OF ASPINWALL, PENNSYLVANIA, ASSIGNOR TO THE McCONWAY & TORLEY COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

COUPLING-CONTROLLING MECHANISM.

1,154,040.

Specification of Letters Patent.

Patented Sept. 21, 1915.

Application filed March 26, 1915. Serial No. 17,129.

To all whom it may concern:

Be it known that I, ISAAC H. MILLIKEN, a citizen of the United States, residing at Aspinwall, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coupling-Controlling Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the class of car couplers which are applied to railway vehicles so as to be capable of shifting or moving laterally when the cars to which they are attached are passing around a curve, the couplers being normally maintained in centralized position by mechanism which offers yielding resistance to a lateral displacement of the coupler in either direction from the longitudinal axis of the car.

When cars which are equipped with draft appliances of the character indicated are to be coupled while upon a curve, it is desirable and under some conditions necessary that at least one of the couplers which are to be interlocked shall be shifted laterally from its central position to bring it into proper coupling alinement with the mating coupler.

It is, therefore, the object of my invention to provide mechanism whereby the trainman may release the coupler from the control of its centering device and then readily shift such coupler laterally in either direction to the desired position.

A further object of my invention is to so combine the several devices that the centralizing means shall automatically regain control of the coupler when the latter is moved to central position by the passage of the coupled cars over straight track; and a still further object of my invention is to so combine the several devices that the return of the coupler to normal position in the center of the car after it has been released from the centering mechanism and shifted laterally by the trainman operates to restore to normal position the mechanism by which the shifting of the coupler has been effected, whereby if the car should be subsequently uncoupled either on straight or curved track

the devices for effecting the lateral displacement of the coupler will be found in proper operative position to enable the trainman to shift the coupler in either direction.

In the drawings illustrating my invention, the scope whereof is pointed out in the claims, Figure 1 is a view, partly in front elevation and partly in transverse section, illustrating a mechanism embodying my invention, the parts being in normal position corresponding to the central position of the coupler. Fig. 2 is a view similar to Fig. 1, but illustrating the relative positions assumed by the parts when the coupler has been released from its centering mechanism and shifted laterally by the trainman. Fig. 3 is a detail horizontal section on the line 3—3, Fig. 1. Fig. 4 is a detail section on the line 4—4, Fig. 3. Fig. 5 is a view corresponding to Fig. 4, but with the parts in the positions illustrated in Fig. 2. Fig. 6 is a vertical central section of a portion of the devices illustrated in Fig. 3. Fig. 7 is a detail view in side elevation showing the operating lever and the combined fulcrum member and supporting bracket, the position of the lever when cooperating with the fulcrum member being illustrated in dotted lines. Fig. 8 is a view, partly in front elevation and partly in transverse section, illustrating a modification of my invention in which the coupler centering mechanism, instead of being mounted on the coupler, is mounted upon the railway vehicle between the center sills thereof. Fig. 9 is a view, partly in side elevation and partly in vertical section, of the devices illustrated in Fig. 8. Fig. 10 is a plan view of the mechanism shown in Figs. 8 and 9, the parts being in normal position with the coupler in central position. Figs. 11 and 12 are views respectively, similar to Figs. 9 and 10, but illustrating the positions assumed by the parts when the coupler has been shifted laterally after having been released from the control of the centralizing mechanism. Fig. 13 is a detail plan view of a portion of the coupler releasing and shifting mechanism illustrated in Figs. 8 to 12, inclusive.

In the embodiment of my invention portrayed in Figs. 1 to 6, inclusive, of the drawings, 1, 1 indicate the center sills of a car,

and 2 indicates a carrier iron such as is usually employed to support the coupler. The carrier iron or coupler supporting device should be of such nature and size as to permit the coupler to have the desired range of lateral movement. The form of coupler centralizing mechanism which has been illustrated in the principal figures of the drawings is mounted upon the shank of the coupler. It comprises a pair of oppositely disposed flanged spring boxes or followers 3 which are mounted upon the shank 4 of the coupler so as to be capable of moving toward each other, a horizontally extending spring 5, which is interposed between them, serving to normally force them apart until their outer ends bear against laterally immovable abutments that are carried by the body of the car. In this position the coupler is in the center of the car. When the coupler swings laterally by reason of the entry of the car upon a curve one of the flanged spring boxes 3 moves toward the other, thus compressing the spring 5 between them; and when the car leaves the curve, or if the coupler be uncoupled, the expansion of the spring 5 restores the coupler to normal position in the center of the car. While such a centering mechanism, which is a well-known form that is described in detail in the patent of William Kelso, No. 950,485, issued March 1, 1910, has the advantage of securing simplicity in the form and arrangement of the cooperating devices by which the coupler is shifted laterally, it is to be understood that the invention in its broad aspects is not limited to any special form or type of centering mechanism. Between each spring box or follower 3 and the adjacent side of the carrier iron 2 a filler block 6 is normally interposed, as well shown in Figs. 1 and 3. For convenience of manufacture, and to completely insure simultaneous and harmonious action, the fillers 6 are preferably integrally united by means of an arched web 7 which extends over the coupler shank 4. As will be readily understood, when the fillers 6 occupy the position illustrated in Fig. 1 any lateral displacement of the coupler in either direction from its medial position will cause the spring 5 to be compressed between the spring boxes 3, one of said boxes being moved laterally by the shank 4 of the coupler while the other spring box is prevented from retreating because its outer end bears against the adjacent face of the contiguous filler block 6. The subsequent expansion of the spring 5 restores the parts to normal position and the coupler is thus under the centralizing control of the centering mechanism when the filler members 6 are in their normal positions between the spring-boxes and the carrier iron. When, however, as illustrated in Figs. 2 and 5, the fillers 6 are withdrawn from operative intervention between the spring boxes 3 and

the sides of the carrier iron 2, the coupler is released from the control of the centralizing devices and may be shifted laterally in either direction for a distance proportional to the thickness of the filler block without the necessity of overcoming the resistance of the spring 5. It will therefore be seen that the fillers 6 constitute means whereby the coupler may be brought under the control of the centralizing devices or may be released from such control at will.

As a convenient means for actuating the filler blocks 6 to release the coupler from the control of the centralizing devices the following construction is preferably employed: The rear end of each filler is slotted, as at 8, to receive a transversely extending bar 9 that is journaled in a bracket 10 which is preferably mounted on the carrier iron 2 and extends rearwardly therefrom beneath the shank 4 of the coupler. The form of the slots 8 and the cross-section of the bar 9 are such that the bar while being capable of a sliding movement in its direction of length through said slots is adapted upon being rotated to correspondingly actuate the fillers 6. The central portion of the bar 9 is recessed, as best shown in Fig. 3, so as to permit it to be turned upwardly to embrace the lower part of the shank 4 of the coupler between its end portions or arms, as illustrated in Figs. 2 and 5. In order to permit the bar 9 to be readily turned its central portion may be fashioned as a cylindrical shaft 11 which is journaled in the bracket 10. The journal bearing portion of the bracket is preferably of hook-like form permitting the shaft to be introduced from above, said hook portion being extended laterally to form stops 12, 12 which are adapted to engage the flattened end portions of the bar 9 to thereby, as shown in Fig. 5, arrest its rotation at such a point that the contrary rotation of the bar and associated movable parts in returning to normal position will be effected by gravity. For the sake of lightness and also to diminish friction, especially when the bar 9 slides in its direction of length in effecting a lateral shifting of the coupler, the forward face of the bearing for the shaft 11 is preferably afforded by an upwardly extending rib 13 which is disposed centrally of the bracket 10. As will be apparent from an inspection of Figs. 4 and 5, when the parts are in assembled relation the coupler serves to prevent the rotatable bar or crank member 9 from becoming disassociated from the journal bearing bracket 10. When the fillers 6 have been raised by the rotation of the bar 9 to operatively disengage the coupler from the control of the centralizing mechanism the subsequent lateral shifting of the coupler will operate to sustain them in released position until the coupler next assumes a central position. In

the specific embodiment of my invention now being described the lateral shifting of the coupler causes one or the other of the spring-boxes 3 carried by the stem 4 of the coupler to move under the adjacent filler member 6, as illustrated in Figs. 2 and 5, the filler members being thus supported in released or raised position until, by the return of the coupler to central position, the supporting spring-box is withdrawn from the path of movement of the filler, when both filler blocks fall to normal position and the coupler is thus automatically restored to the control of the centralizing mechanism. When a coupling is made while the filler members 6 are supported in raised position by the laterally shifted coupler, the impact due to coupling will cause the shank 4 of the coupler and spring-boxes 3 mounted thereon to travel rearwardly, and in order to permit such rearward movement the fillers are accordingly suitably formed or recessed, as indicated at 14.

The rotatable and slidable bar 9 is preferably actuated by a plurality of rods 15 which extend in opposite directions to the sides of the car. Each of these rods is adapted to rotate the bar 9 and to push or pull it in either direction, so that the coupler may be released from the control of the centralizing mechanism and shifted laterally in either direction by either of the rods. In order that the rods may automatically return to normal position when the operator releases them after they have been actuated to raise the filler blocks and shift the coupler laterally, as well as for the purpose of permitting the rods to be rotated independently so that the operator may be relieved of the necessity of uselessly expending any force, and also for the further purpose, as will hereinafter appear, of permitting the coupler to be moved laterally by means of leverage devices that are designed to successively engage a plurality of fulcrum points, the said rods 15 are preferably connected to the bar 9 by having their bent inner ends 16 extend through eyes or apertures 17 near the ends of the said bar, said apertures 17 being of flaring form to thereby permit, as will be appreciated from a comparison of Figs. 4 and 5, either of the rods 15 to remain in normal position when the fillers 6 are raised by the other rod, and also to allow the rod that has been actuated to automatically return to normal position or to be manually rotated as may be required to change the fulcrum point of the operating lever while the filler blocks remain in raised or releasing position. The rods 15 may be conveniently retained in assembled relation with the bar 9 by means of cotter pins 18 which pass through the bent inner ends 16 of said rods.

The means which are preferably employed

for both rotating the rods 15 and pushing or pulling them are of the following nature: The outer end of each operating rod 15 is bifurcated or formed with a jaw 19 which receives a lever 20 that is pivotally secured thereto by means of a pin 21. When the fillers 6 are in normal position the levers 20 hang vertically, their long arms extending downwardly in a position where they may be conveniently reached by the operator and their shorter arms extending upwardly and standing opposite the corresponding central pockets of members 22 which are rigidly mounted on the end of the car at opposite sides thereof to afford a plurality of fulcrum for their respective levers 20. If the coupler is to be moved laterally from its central position the longer arm of one of the levers 20 is grasped by the trainman and raised or turned upwardly and forwardly until, as indicated in dotted lines in Fig. 7, the shorter arm of said lever enters the middle pocket 23 of the corresponding fulcrum casting 22. This movement of the lever 20 causes a rotation of the adjacent rod 15 and connected bar 9 sufficient to withdraw the filler blocks 6 from their normal positions opposite the ends of the spring-boxes 3, thereby releasing the coupler from the control of its centralizing mechanism, as previously explained. By the rotation of the bar 9 the shoulders thereof which form the lateral walls of the centrally disposed recess therein are moved upwardly into overlapping relation with the shank 4 of the coupler, as illustrated in Figs. 2 and 5, so that if the bar 9 be subsequently slid in either direction such movement will be communicated to the stem of the coupler and the coupler will be correspondingly shifted laterally. With the lever 20 occupying the raised position described the sliding movement of the bar 9 necessary to shift the coupler in the required direction may be imparted to said bar through either rod 15 by pulling or pushing upon said lever as the required direction of movement of the coupler may necessitate. The force exerted by the operator to move the coupler laterally is increased in transmission to the coupler by means of the lever 20, the end of the shorter arm of the lever 20 fulcruming upon one or the other of the vertical walls of whichever pocket 23, 24 or 25 the lever may extend into at the time. Should extreme lateral movement of the coupler be desired or should the leverage obtained when the lever 20 is extending into the middle pocket 23 be insufficient to permit the trainman to readily shift the coupler to the desired position, the coupler may be shifted laterally a portion of the required distance while the lever 20 is in the middle pocket, after which the upper end of the lever may be trans-

ferred to the appropriate one of the adjacent pockets, 24 and 25, thus obtaining better leverage for effecting further movement of the coupler. The rotation of the rod 15
 5 necessary to allow the lever 20 to be transferred from one pocket to another while the filler members 6 are in raised or releasing position is permitted by reason of the movable character of the connection of the rod
 10 with the bar 9, as heretofore explained.

Brackets such as 26 are preferably employed to support the operating rods or members 15 from the car body in such manner that they may be capable of freely turning and sliding as may be required. These
 15 brackets may be conveniently made integral with their adjacent fulcrum members 22, as shown in the drawings, and such construction is preferred.

The construction illustrated in Figs. 8 to 13, inclusive, is an exemplification of my invention wherein the yielding means for centralizing the coupler are mounted upon the railway vehicle instead of upon the coupler
 25 itself. In this form of construction, 27 indicates the center sills and 28 the carrier iron for supporting the coupler 29 so that it may be capable of the desired range of lateral movement. The centralizing mechanism, which is located between the center
 30 sills 27, involves a transversely extending spring 30 which bears at opposite ends upon followers or flanged thimbles 31 that are slidably mounted on a movable frame 32. The portions of the followers 31 which project
 35 from the frame 32 are cylindrical to thus form journals upon which the said frame may rotate. The outer ends of the followers normally bear against the inner
 40 sides of the respective center sills 27; and the entire centering mechanism is preferably supported by a bolt 33 which extends through the center sills and through the followers 31, supporting frame 32 and spring
 45 30. The frame 32, in addition to functioning as an element of the centralizing mechanism, also performs the office of a clutch whereby the coupler 29 may be operatively connected to or released from the control of
 50 the centralizing devices. To this end this frame is preferably provided on its lower side with a pair of downwardly extending arms 34 which are spaced apart a distance sufficient to receive the shank of the coupler
 55 29 between them. When, as shown in Figs. 8, 9 and 10, the clutch arms 34 of the frame 32 embrace the stem of the coupler 29, lateral movement of the coupler in either direction from its central position will impart
 60 a corresponding movement to the frame 32, thus causing the spring 30 to be compressed between the flanged thimbles or followers 31, one of said followers being moved laterally by the frame while the other remains
 65 stationary by reason of having a bearing

upon the adjacent center sill 27. In the position of the frame 32 illustrated in Figs. 11 and 12 the clutch arms 34 no longer embrace the stem of the coupler 29 and the latter, being therefore operatively disengaged
 70 from the centralizing mechanism, may be shifted laterally without compressing the spring 30. When the coupler is shifted laterally after being released from the centralizing mechanism one of the clutch arms 34
 75 rests upon the upper surface of the coupler stem 29 and the frame member 32 is thus supported in releasing position. As soon, however, as the coupler returns to its central position its support is withdrawn from the
 80 frame member 32 and thereupon the latter immediately swings downward so that its clutch arms 34 embrace the stem of the coupler 29, the coupler being thus automatically restored to the control of the centralizing
 85 devices.

The devices which are operable from the sides of the car to release the coupler from the control of the centralizing mechanism and to shift the coupler laterally may be of
 90 the same character as those heretofore described. Rotatable and slidable operating rods 15 which extend to the sides of the car and which are equipped with levers 20 that cooperate with fulcrum members 22 having
 95 attached rod supporting brackets 26 are preferably employed. These parts and their mode of operation have already been described. The bent inner end 16 of each rod 15 is movably connected to a slidable and
 100 rotatable bar 35 by passing through an opening or aperture 36 in said bar, said openings, as shown more particularly in Figs. 9 and 11, being of flaring form to thereby permit either of the rods 15 to actuate
 105 the bar 35 independently of the other rod and to permit of the lever 20 being transferred from pocket to pocket of the fulcrum casting 22 when shifting the coupler laterally, as previously explained. The bar
 110 35 is provided with a pair of arms 37 which are spaced apart to form a recess for receiving the stem 29 of the coupler when the said bar is rotated to effect the release of the coupler from the centralizing mechanism. As
 115 will be understood upon reference to Fig. 11, when the bar 35 is rotated in the proper direction its arms 37 move upwardly upon opposite sides of the coupler, engaging the corresponding clutch arms 34 of the frame
 120 member 32 and rotating such frame member upwardly until it is disengaged from operative connection with the coupler. The coupler may then be shifted laterally by the trainman without the necessity of overcoming
 125 the resistance of the spring 30. By pulling or pushing upon one of the rods 15 the bar 35 is correspondingly shifted and through the engagement of one or the other of its arms 37 with the side of the coupler
 130

shank 29 the coupler is likewise shifted. Upon the release of the operating lever 20 after such a coupler shifting operation the bar 35 and rod 15, as well as the lever 20 itself, will swing downwardly under the influence of gravity, but the frame member 32 will be supported in releasing position by engaging the upper surface of the coupler stem 29. The bar 35 may be, and preferably is, slidably and rotatably mounted in a bracket 38 which is of substantially the same form as the bracket 10 heretofore described, such bracket 38 being attached to the carrier iron 28, being of hook-like form and being provided on its upper surface with a centrally disposed rib 39 corresponding in form and function to the rib 13. Stops or lugs 40 which project from opposite sides of the bracket 38 and which are adapted to engage the arms 37 of the bar 35 serve to limit the downward swinging movement of said bar, while the engagement of the flattened face of the journal portion 41 of the bar 35 with the hook portion 42 of the bracket serves, as will be seen from Fig. 11, to arrest the rotation of the bar 35 in the opposite direction at a point which will insure the operating devices gravitating or swinging downwardly as soon as the trainman releases the operating lever.

I claim:

1. In mechanism of the character indicated, the combination with a laterally movable coupler, of yielding means for centralizing said coupler, releasable means for operatively connecting said coupler and centralizing means, and means operatively connected to said releasable means and to said coupler and adapted both to actuate said releasable means to free the coupler from the control of said centralizing means and to shift said coupler laterally.

2. In mechanism of the character indicated, the combination with a laterally movable coupler, of yielding means for centralizing said coupler, releasable means for operatively connecting said coupler and centralizing means, and rotatable and slidable means operatively connected to said releasable means and to said coupler and adapted by one of said movements to free the coupler from the control of said centralizing means and by the other of said movements to shift the coupler laterally.

3. In mechanism of the character indicated, the combination with a laterally movable coupler, of yielding means for centralizing said coupler, releasable means for operatively connecting said coupler and centralizing means, means for actuating said releasable means to free the coupler from the control of said centralizing means, and means whereby said releasable means after having been actuated to release the coupler from the control of the centralizing means

are prevented from returning to normal position until the coupler is in central position, said releasable means and said means for actuating the same being operatively connected so as to be relatively movable in a manner permitting said actuating means to move toward normal position independently of a corresponding movement of said releasable means.

4. In mechanism of the character indicated, the combination with a laterally movable coupler, of yielding means for centralizing said coupler, releasable means for operatively connecting said coupler and centralizing means, a rod operatively connected to said releasable means and to said coupler and adapted to actuate said releasable means to free the coupler from the control of said centralizing means and to shift said coupler laterally, a lever pivotally connected to said rod, and a fulcrum member having a plurality of fulcrum points with which said lever is adapted to be successively brought into engagement, said rod and said releasable means being operatively connected so as to be relatively movable in a manner permitting said lever to be shifted from one fulcrum point to another while said releasable means occupies a position in which the coupler is released from the control of the said centralizing means.

5. In mechanism of the character indicated, the combination with a laterally movable coupler, of yielding means for centralizing said coupler, releasable means for operatively connecting said coupler and centralizing means, a rotatable and slidable rod extending toward the side of the car and operatively connected to said releasable means and to said coupler and adapted by a rotary movement to actuate said releasable means to thereby free the coupler from the control of said centralizing means and also adapted by a sliding movement to shift the coupler laterally.

6. In mechanism of the character indicated, the combination with a laterally movable coupler, of means for shifting said coupler laterally, said means being slidable to effect the lateral shifting of the coupler and being adapted through rotary movement to be operatively connected to and operatively disengaged from said coupler and when so disengaged being unaffected by lateral movement of the coupler when said coupler is displaced from its central position by reason of the passage of the car around a curve.

7. In mechanism of the character indicated, the combination with a laterally movable coupler, of yielding means for centralizing said coupler, and means for shifting said coupler laterally and for releasing the same from the control of said centralizing means, said means for shifting the coupler laterally and for releasing it from the con-

5 trol of the centralizing means being adapted to be operatively connected to and operatively disengaged from said coupler and when so disengaged being unaffected by lateral movement of the coupler.

8. In mechanism of the character indicated, the combination with a laterally movable coupler, of means for shifting said coupler laterally, said means being adapted to be operatively connected to and operatively disengaged from said coupler and when so disengaged being unaffected by lateral movement of said coupler and after having been actuated to shift the coupler laterally being automatically returned to normal position when the coupler returns to central position.

9. In mechanism of the character indicated, the combination with a laterally movable coupler, of a rotatable and slidable member adapted to shift said coupler laterally in either direction from its central position, said member being rotatable to operatively engage said coupler and being thereafter slidable to shift said coupler laterally.

10. In mechanism of the character indicated, the combination with a laterally movable coupler, of a bar having a recess adapted to receive the stem of said coupler, said bar being rotatable to a position in which the said stem extends into said recess and while in such position being adapted to have a sliding movement to thereby effect a lateral shifting of the coupler.

11. In mechanism of the character indicated, the combination with a laterally movable coupler, of yielding means for centralizing said coupler, pivoted releasable means for operatively connecting said coupler and centralizing means, and means for rotating said releasable means to free the coupler from the control of said centralizing means, said means for rotating the releasable means being adapted by a sliding movement to shift said coupler laterally.

12. In mechanism of the character indicated, the combination with a laterally movable coupler, of means for shifting said coupler laterally, said means involving a bracket which is mounted upon the car so as to be unaffected by lateral movement of the coupler, and a member slidably mounted in said bracket and adapted to be operatively connected to and operatively disengaged from said coupler and when so disengaged

being unaffected by lateral movement of the coupler.

13. In mechanism of the character indicated, the combination with a laterally movable coupler, of a carrier iron for supporting said coupler so as to permit it to move laterally, yielding means for centralizing said coupler, and filler members adapted to overlap the sides of the coupler and to operatively engage the means for centralizing said coupler, said filler members being movable to release said coupler from the control of said centralizing means.

14. In mechanism of the character indicated, the combination with a laterally movable coupler, of a carrier iron for supporting said coupler, yielding means for centralizing said coupler, a bracket mounted on said carrier iron, a bar which is slidably and rotatably mounted in said bracket, said bar being provided with shoulders which are adapted to engage the opposite sides of the coupler to thereby enable said bar to shift the coupler laterally, rods movably connected to said bar and extending toward opposite sides of the car, levers movably secured to the respective rods, and a plurality of means respectively affording a plurality of fulcrum points for the corresponding levers.

15. In mechanism of the character indicated, the combination with a laterally movable coupler, of yielding means for centralizing said coupler, releasable means for operatively connecting said coupler and centralizing means, and means operatively connected to said releasable means and to said coupler and adapted to actuate said releasable means to free the coupler from the control of said centralizing means and involving power increasing devices operable to effect a lateral shifting of the coupler.

16. In mechanism of the character indicated, the combination with a laterally movable coupler, of means for shifting said coupler laterally, said means involving power increasing devices and being slidable to effect the lateral shifting of the coupler and being adapted to be operatively connected to and operatively disengaged from said coupler and when so disengaged being unaffected by lateral movement of the coupler when said coupler is displaced from its central position by reason of the passage of the car around a curve.

In testimony whereof I affix my signature.
ISAAC H. MILLIKEN.