Jan. 4, 1966 Z. CSERI 3,227,289

COUPLER OPERATOR FOR RAILWAY CARS

Filed Nov. 3, 1964 2 Sheets-Sheet 1

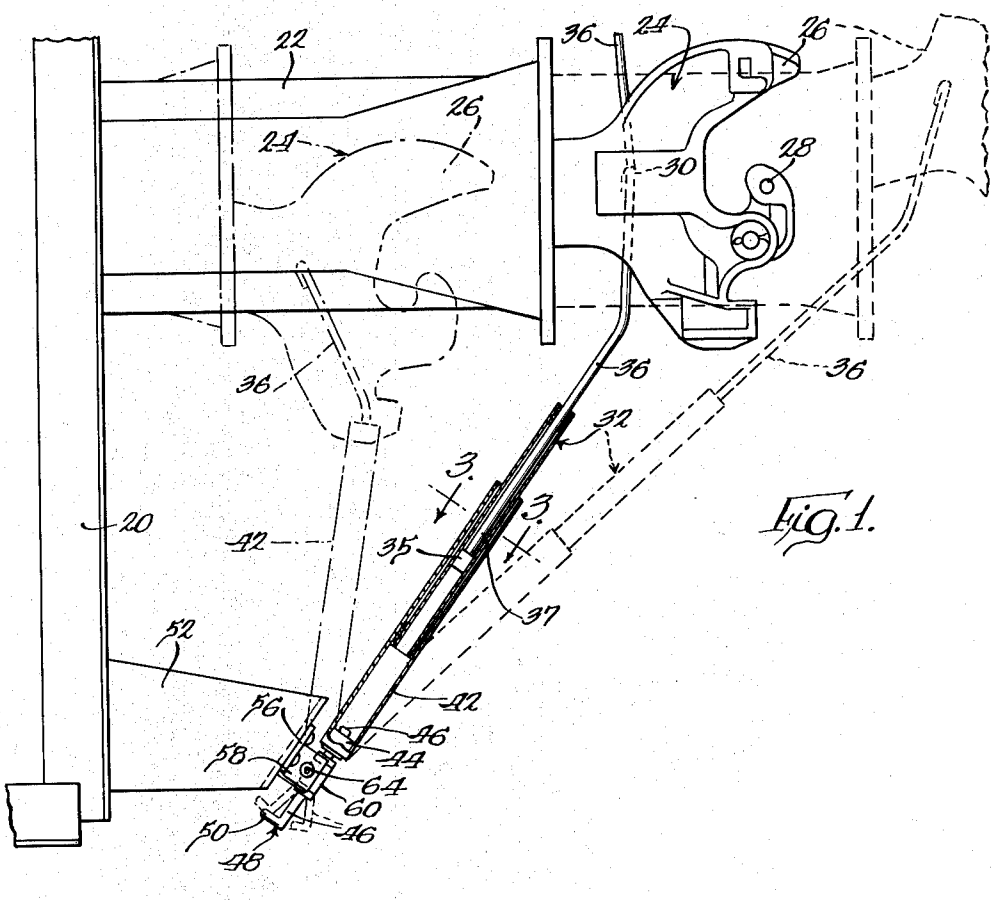


Fig. 1.

Fig. 2.

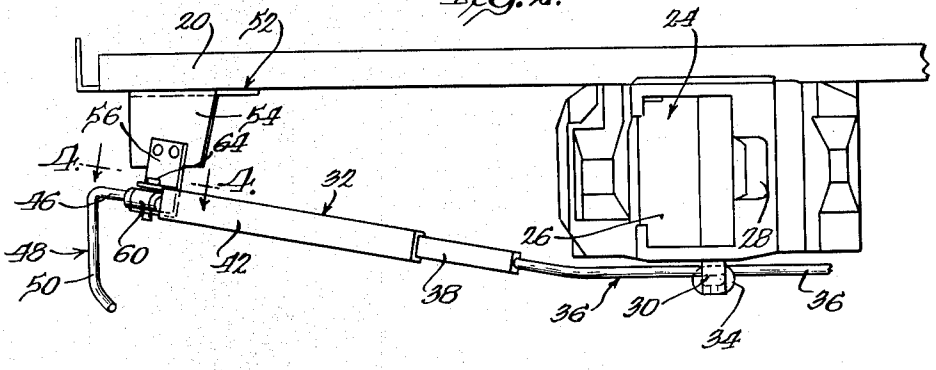
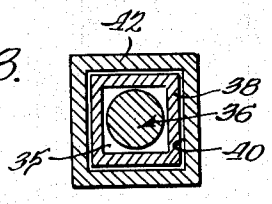


Fig. 3.



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Fig. 4.

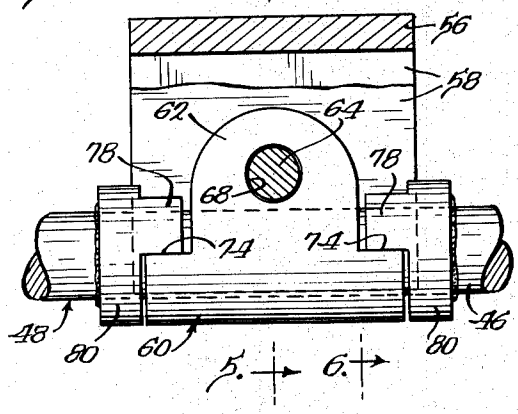


Fig. 5.

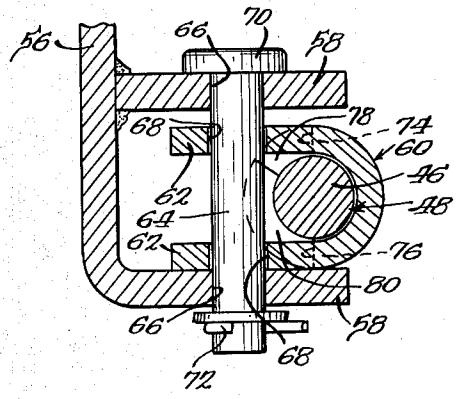


Fig. 6.

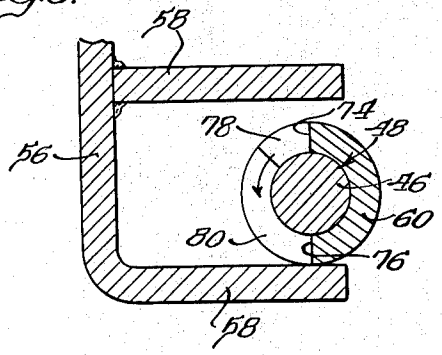


Fig. 7.

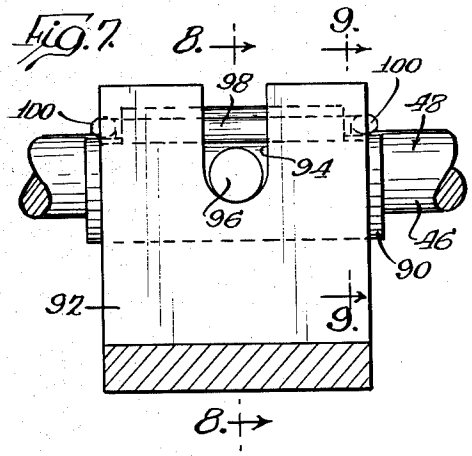


Fig. 8.

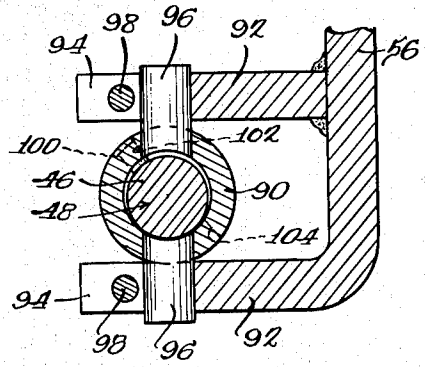
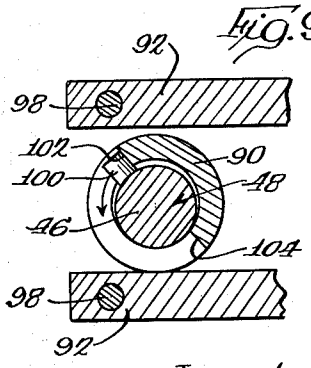


Fig. 9.



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COUPLER OPERATOR FOR RAILWAY CARS

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Filed Nov. 3, 1964, Ser. No. 408,637
5 Claims. (Cl. 213—219)

The present invention relates to improvements in coupler operators for railway cars, and in particular to a novel coupler operator for railway cars equipped with an impact absorbing device wherein there may be substantial relative movement between the center sill of the car which carries the draft gear and the coupler and the car body and frame on which the coupler operator is customarily mounted.

Recent developments in impact absorbing devices have increased their usage rather markedly, and have given rise to some problems in connection with the operation of the couplers, particularly to release the coupler knuckle for uncoupling the cars and to set the knuckle for a coupling operation. Impact absorbing devices of the type referred to herein are described and illustrated in the copending applications of James T. Smith, Serial No. 270,020, filed April 2, 1963, issued into Patent No. 3,176,856, dated April 6, 1965, James T. Smith and Osvaldo Chierici, Serial No. 395,389, filed September 10, 1964, James T. Smith, Serial No. 395,390, filed September 10, 1964, and James T. Smith and Osvaldo Chierici, Serial No. 395,391, filed September 10, 1964. These applications show and describe impact absorbing devices wherein the center sill is movable with respect to the car frame and projects in normal position a distance of about twenty inches beyond the position occupied by the center sill where no impact absorbing device is used. The center sill has a movement of at least twenty inches in both directions, providing a total movement of approximately forty inches of the coupler from fully extended to fully impacted position. Other types of impact absorbing devices provide for movements of from as low as eight inches of the center sill up to about forty inches. These movements are in addition to the normal movement of two and three-quarters inches permitted by the draft gear.

These devices have presented certain serious problems with respect to operating the coupler through suitable linkage by means of a handle at the side of the car, which is the preferred position to relieve the trackman of coming between the cars and of having to operate the coupler or set the knuckle against the heavy hose connections for the air brake lines and the like.

It is therefore the principal object of the present invention to provide a new and improved coupler operator which may be operated from a position at the side of the car and which has a part connected to the coupler accommodating substantial longitudinal and some rotational movement of the coupler relative to the car frame.

Another object is to provide a new and improved coupler operator having one part connected to the coupler and a second part pivotally mounted on the car frame with the two parts nonrotatably telescoped together.

Another object is to provide a new and improved coupler operator for railway cars wherein the operator is mounted for both pivotal and rotational movement on the car to accommodate substantial longitudinal movement of the coupler relative to the car frame as well as the necessary rotational movement to operate the coupler.

Another object is to provide a new and improved coupler having the above advantages, which is simple in construction and economical to manufacture.

Other objects and advantages will become apparent from the following description taken in conjunction with the accompanying drawings, wherein

FIG. 1 is a plan view partially broken into section, showing the coupler operator of the present invention mounted on a railway car, which is partially shown, and connected to a conventional coupler and illustrating in dot-dash and dotted lines typical limits of longitudinal and pivotal movements of the coupler with respect to the car;

FIG. 2 is an elevational view of the coupler operating device, taken from one end of the car, namely, from the right side of FIG. 1;

FIG. 3 is a transverse cross sectional view on an enlarged scale, through a portion of the operator, taken along the line 3–3 of FIG. 1 looking in the direction of the arrows;

FIG. 4 is a partly sectional plan view, showing the mounting of the coupler operator on the car, taken along the line 4—4 of FIG. 2 looking in the direction of the arrows;

FIG. 5 is a cross sectional view showing how the pivotal and rotational movement of the coupler operator is accommodated, and is taken along the line 5—5 of FIG. 4 looking in the direction of the arrows;

FIG. 6 is a cross sectional view showing the rotational movement limiting structure for the coupler operator, taken along the line 6—6 of FIG. 4 looking in the direction of the arrows;

FIG. 7 is a view similar to FIG. 4, showing a modified form of coupler operator mounting;

FIG. 8 is a transverse sectional view similar to FIG. 5, taken along the line 8—8 of FIG. 7 looking in the direction of the arrows; and

FIG. 9 is a fragmentary sectional view similar to FIG. 6, taken along the line 9—9 of FIG. 7 looking in the direction of the arrows.

Referring first to FIGS. 1 and 2, there is shown fragmentarily a railway car frame 20 which normally comprises side and end sills, cross bearers, and cross frame members, and supports the usual cargo containing structure. The frame 20 includes a center sill 22 which is slidable within the center sill of the main frame as shown, for example, in any of the prior aforementioned patent applictions and which is well known in the art.

The center sill 22 mounts a coupler structure 24 of conventional construction, and in the present disclosure the coupler structure illustrated is a type E coupler which has a limited angular movement of 13° 30″ from its normal straight line position as indicated by the dot and dot-dash line positions in FIG. 1. The coupler structure includes a coupler head 26 and a pivotally movable knuckle 28 which is connected to be moved through appropriate internal linkage which has a projecting loop 30 as is well known in the art.

As illustrated most clearly in FIGS. 1 and 2, a new and improved coupler operator 32 is connected to the loop 30 by having a hooked end 34 of a bent rod 36 connected to the loop. End 37 of the bent rod opposite the loop 30 is welded to a block 35 which is turn is welded internally to a hollow extension 38 having a square exterior configuration.

The extension 38 is received in the square central bore 40 of a tubular operator member 42. The extension 38 is sufficiently closely received within interior 40 of the square operator tube 42 as to provide only slidable movemovement therebetween and no relative rotational movement, so that any rotational movement which is imparted to the operator tube 42 is transmitted to the extension 38 and the rod 36, and consequently to the projecting loop 30 of the linkage operating or releasing the knuckle 28 of the coupler 24.

At its opposite end the square operator tube 42 is closed by a plug 44 welded therein which receives and has welded thereto a rod section 46 of an operator handle 48. The handle is provided with a grip portion 50.

The coupler operator is pivotally and rotatably mounted upon the railway car frame 20 by a bracket 52 which has a depending portion 54 and has mounted thereto a supporting bracket 56 which has projecting outwardly from the car frame a channel section comprising a pair of parallel plate portions or elements 58 which are seen most clearly in FIGS. 4, 5, and 6.

The rod section 46 of the operator handle 48 passes between the parallel plate portions 58 of the supporting bracket 56 and is embraced or enclosed by a U-shaped stirrup 60 which has a pair of legs 62 projecting about the rod section 46 and inwardly of the parallel plate portions 58. Ordinarily, the legs 62 of the stirrup 60 are arranged generally parallel to the parallel plate portions 58 of the supporting bracket 56 and a pivot pin 64 projects through apertures 66 in the parallel plate portions 58 and 68 in the stirrup legs 62. The pivot pin 64 has an appropriate large head 70 and is restrained against removal by an appropriately bent cotter pin 72.

It will be observed from FIGS. 5 and 6 that the rod portion 46 of the operator handle 48 extends through the bight of the stirrup 60 to the outside, i.e., with respect to the plates 58, of the pivot pin 64 and is thus rotatable within the confines of a fairly constricted space defined by the stirrup bight and by the pin 64. The handle 48 also may be pivoted about the axis of the pin 64 on the supporting bracket 56. Thus, within the limits to be described immediately hereinafter, the coupler operator 32 has pivotal and rotational movement with respect to its support on the railway car frame.

The coupler operator 32 has a rotational movement limited to that necessary to operate the knuckle 28. At both of its ends as it embraces the rod section 46 of the operator handle 48 the stirrup 60 is provided with stop faces 74 and 76 which are spaced apart 180°. These stop faces are adapted to be engaged by lugs 78 carried on rings 80 which are welded to the rod section 46 so that the opposite faces of the lugs 78 will engage either the stop faces 74 or the stop faces 76, depending upon the direction of rotation of the operator handle 48. For example, the lug 78 is shown in engagement with stop face 74 in FIG. 6. The arrow indicates that its next movement is in the counterclockwise direction so that it will engage the stop face 76. Inasmuch as the stirrup 60 is substantially nonrotatable with respect to the bracket 56, the cooperation of the lug 78 with the stop faces 74 and 76 provides a very definite limitation upon the extent of rotation of the handle and therefore the amount of movement required to operate the coupler 24.

The assembly of the coupler operator 32 is very simple and portions of the assembly may easily be done when mounting the operator on the railway car. It is probable that the manufacturer would supply the bracket 56, the bent rod 36 to which the extension 38 is welded, the tubular operator 42 having the handle 48 welded thereto, the stirrup 60, pivot pin 64, and the necessary bolts and cotter pins. The handle 48 will, of course, have welded thereto the spaced rings 80 with the stop lugs 78. The bracket 56 is secured by bolts or welding to the bracket 54, and the hooked end 34 of the rod 36 is engaged in the loop 30 of the coupler's internal operating linkage. The square extension 38 is slid into the tubular operator member 42, and the handle 48 has its rod portion 46 positioned between the parallel bracket plates 58. The handle is properly oriented, and the stirrup 60 slid over the rod portion 46 between the rings 80 to the position shown in FIG. 4. The pin 64 is inserted through the aligned apertures 66 and 68 in the parallel plate portions 58 and stirrup legs 62, respectively, and is locked against accidental or inadvertent removal by the cotter pin 72.

The coupler 24 is released or set by rotating the handle 48 in the appropriate direction. The rotational movement is transmitted through the tubular operator member 42, the square extension 38, and rod 36 to the loop 30. When the car is being coupled into a train in the switch or classification yards, the impact between cars drives the movable sill 22 inwardly of the car frame at the end of the car receiving the impact and moves it outwardly at the other end. These movements are accommodated in the coupler operator 32 by telescoping the extension 38 into the tubular member 42 as shown in the dot-dash lines of FIG. 1, and by pulling it outwardly as shown by the dotted lines. The limited pivotal movement of the coupler 24 is similarly accommodated. The lug bearing rings 80 on the handle rod portion 48 cooperating with the stirrup 60 prevent the coupler operator from axial movement relative to the bracket 56 regardless of whether the action on the operator is a pull or a push.

FIGS. 7, 8, and 9 illustrate a modified form of pivotally mounting the coupler operator to the supporting bracket 56. In this instance the rod section 46 of the operator handle 48 rotatably extends through a sleeve 90 which lies between parallel plate portions 92 of the bracket 56, the plate portions corresponding generally but not identically with the plate portions 58. The plate portions 92 are both formed with reentrant slots 94 from their outer edges toward the main body of the supporting barcket 56 to accommodate pivot studs or trunnions 96 which are fixed in the sleeve 90 as shown best in FIG. 8. The studs 96 are rotatably locked in the reentrant slots 94 by retaining pins 98 which are pressed into holes in the plate portions 92 and bridge across the slot 94 to the outside of the studs 96 and after the studs 96 have been slid into the slots 94. In this way the sleeve 90 is pivotally mounted within the space between the plate portions 92 on an axis normal to the axis of the sleeve 90 and the rod portion 46.

The relative rotational movement of the operator handle 48 with respect to the sleeve 90 is limited by a pair of studs 100 fixed in the rod portion 46 which move in recesses at either end of the sleeve 90, the ends of the recesses being defined by the faces 102 and 104 spaced apart 180° and corresponding to the stop faces 74 and 76 of the previously described form. The rotation afforded to the operator handle 48 is almost 180°, thereby permitting sufficient movement to operate the coupler during coupling and uncoupling operations.

The operation of the second described form is substantially the same as that of the first form.

From the foregoing description it will be seen that applicant has provided a novel coupler operator which accomplishes the objectives set forth for it in the opening paragraphs of this specification.

While preferred embodiments of this invention have been shown and described, it will be apparent that numerous variations and modifications may be made without departing from the underlying principles of this invention. It is therefore desired, by the following claims, to include within the scope of the invention all such modifications and variations by which substantially the results of this invention may be obtained through the use of substantially the same or equivalent means.

What is claimed as new and desired to be secured by United States Letters Patent is:

1. A coupler operator for railway cars having a center sill carrying the coupler and which is slidable relative to the car frame, comprising in combination, a first rod having a hooked end adapted to be connected to the coupler release link, an extension for said first rod welded to the other end thereof and having a noncircular cross section, a tubular operating member having an open end and an internal cross section shaped complementary to said noncircular cross section of said extension and into which said extension telescopes in a slidable but nonrotatable manner, an operating handle having a rod sec-

tion welded to the opposite end of said tubular operating member, a support bracket formed with a channel section fixed to the railway car frame, said channel section having a pair of facing spaced parallel plate portions between which said handle rod section extends, a member positioned within the space between said parallel plate portions and embracing said handle rod section and with respect to which said rod section may be rotated, means mounting said embracing member to said pair of parallel plate portions for pivotal movement on an axis normal to said parallel plate portions, and cooperable stop means on said handle rod portion and said embracing member to limit the rotational movement of said handle rod portion.

2. A coupler operator for railway cars having a center sill carrying the coupler and which is slidable relative to the car frame, comprising in combination, a first rod having a hooked end adapted to be connected to the coupler release link, an extension for said first rod welded to the other end thereof and having a noncircular cross section, a tubular operating member having an open end and an internal cross section shaped complementary to said noncircular cross section of said extension and into which said extension telescopes in a slidable but non-rotatable manner, an operating handle having a rod section welded to the opposite end of said tubular operating member, a support bracket formed with a channel section fixed to the railway car frame, said channel section having a pair of facing spaced parallel plate portions between which said handle rod section extends, a U-shaped stirrup positioned within the space between said parallel plate portions and embracing said handle rod section and with respect to which said rod section may be rotated, means mounting said embracing member to said pair of parallel plate portions for pivotal movement on an axis normal to said parallel plate portions, and cooperable stop means on said handle rod portion and said U-shaped stirrup to limit the rotational movement of said handle rod portion.

3. A coupler operator as claimed in claim 2, wherein said cooperable stop means comprise stop faces on said

U-shaped stirrup member, and a ring carrying a lug engageable with said stop faces secured to said handle rod portion.

4. A coupler operator for railway cars having a center sill carrying the coupler and which is slidable relative to the car frame, comprising in combination, a first rod having a hooked end adapted to be connected to the coupler release link, an extension for said first rod welded to the other end thereof and having a noncircular cross section, a tubular operating member having an open end and an internal cross section shaped complementary to said noncircular cross section of said extension and into which said extension telescopes in a slidable but non-rotatable manner, an operating handle having a rod section welded to the opposite end of said tubular operating member, a support bracket formed with a channel section fixed to the railway car frame, said channel section having a pair of facing spaced parallel plate portions between which said handle rod section extends, a sleeve positioned within the space between said parallel plate portions and through which said handle rod section rotably extends, means mounting said sleeve to said pair of parallel plate portions for pivotal movement on an axis normal to said parallel plate portions, and cooperable stop means on said handle rod portion and said sleeve to limit the rotational movement of said handle rod portion.

5. A coupler operator as claimed in claim 4, wherein said cooperable stop means comprise spaced stop faces at either end of said sleeve, and a stop pin carried by said handle rod portion engageable with said stop faces.

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