Dec. 27, 1966 L. F. MANYEK 3,294,253

COUPLER OPERATING DEVICE

Filed Nov. 5, 1963 4 Sheets-Sheet 1

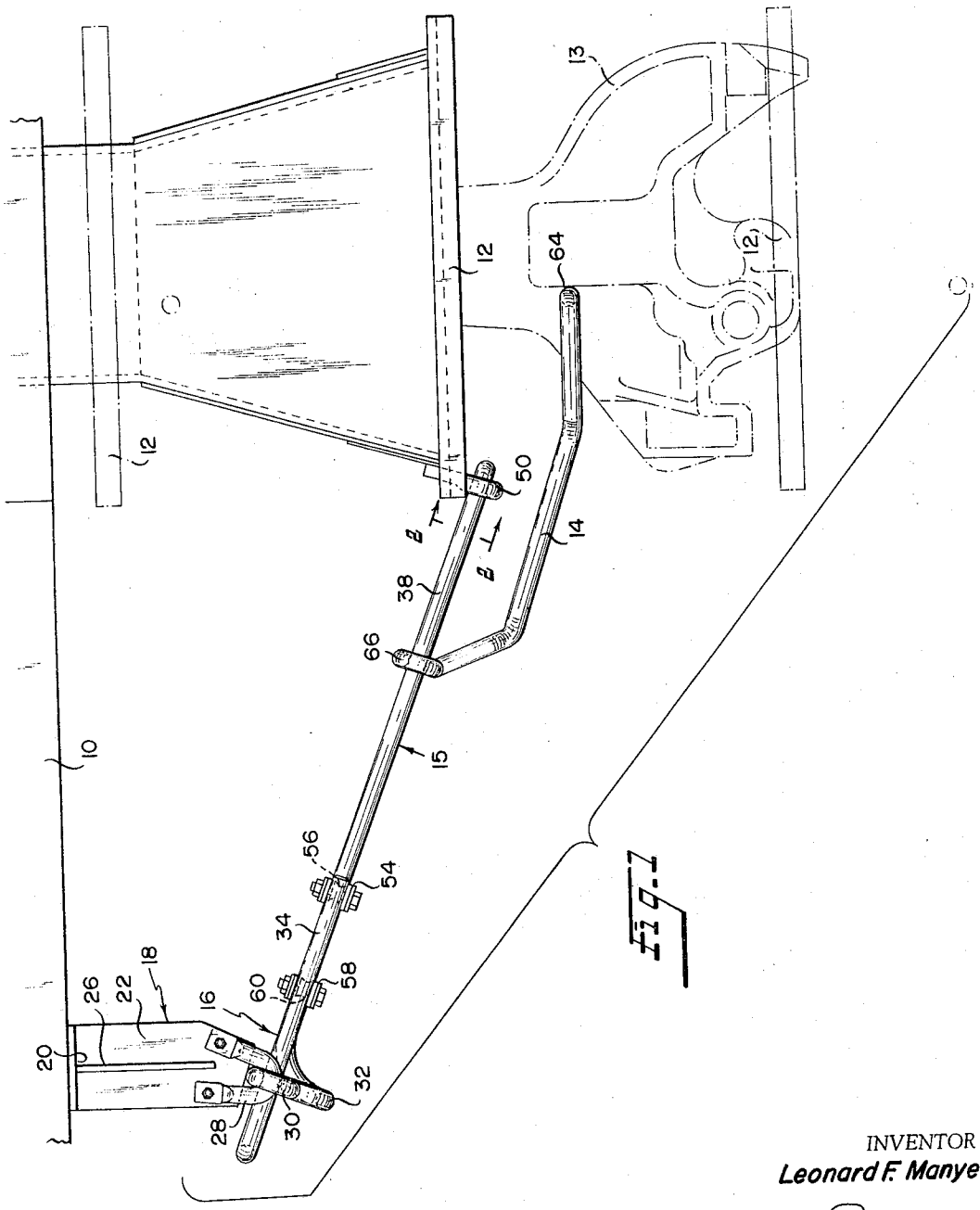


FIG. 1

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4 Sheets-Sheet 2

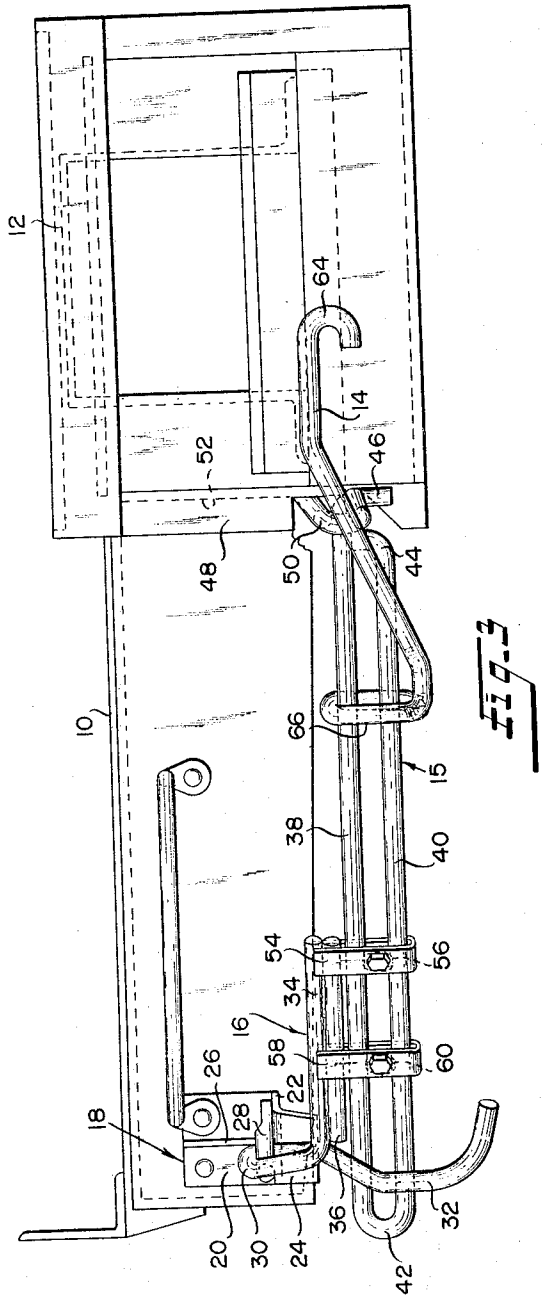


FIG. 3

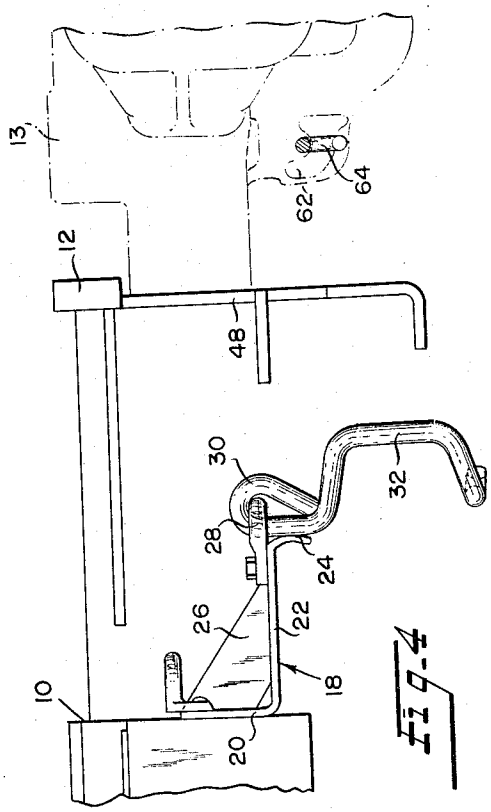


FIG. 4

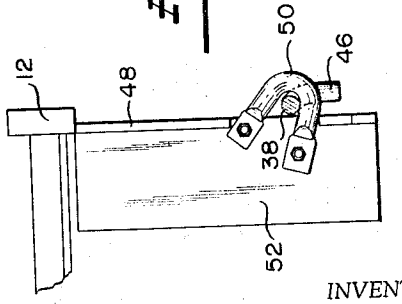


FIG. 2

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COUPLER OPERATING DEVICE

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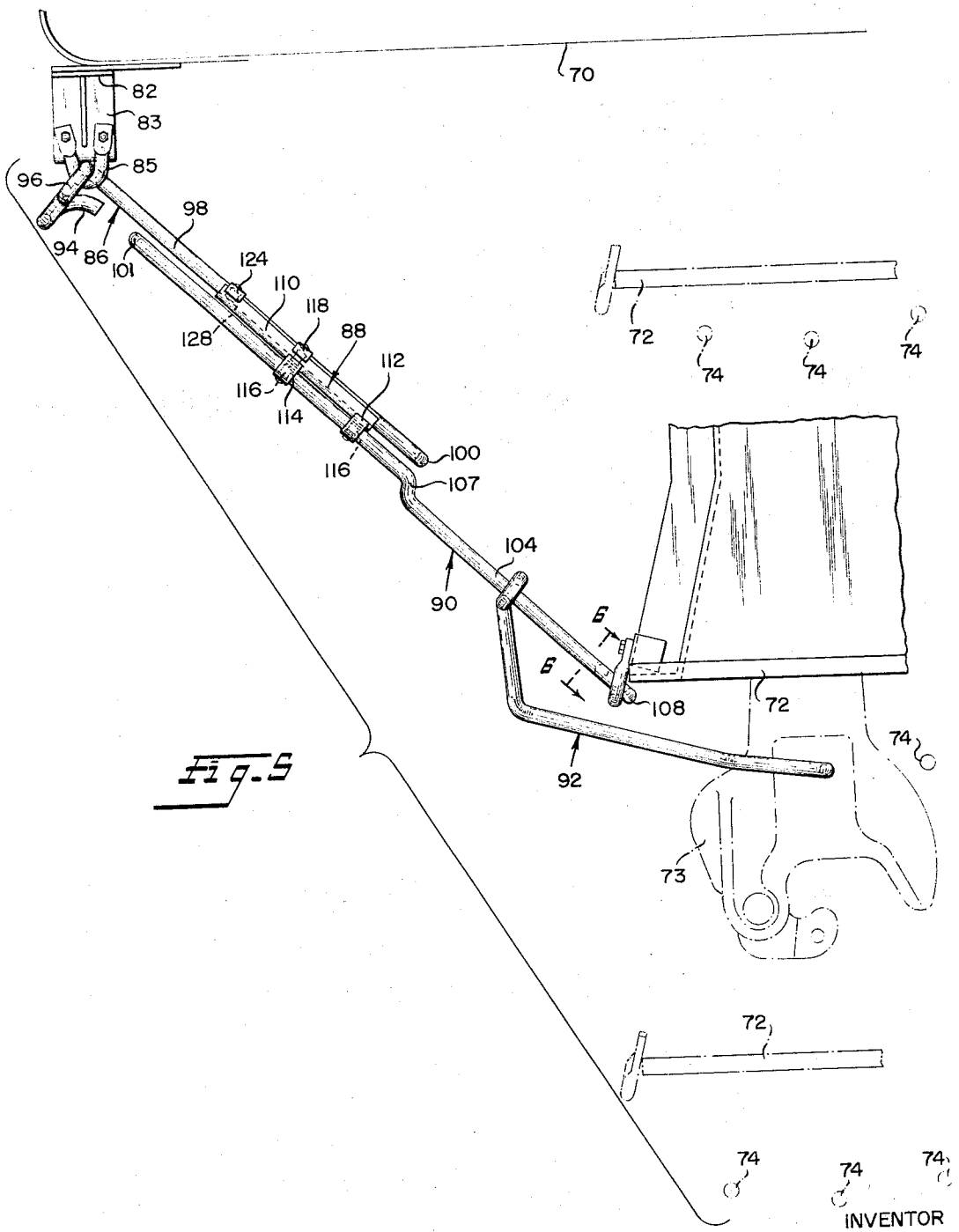


Fig. 5

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COUPLER OPERATING DEVICE

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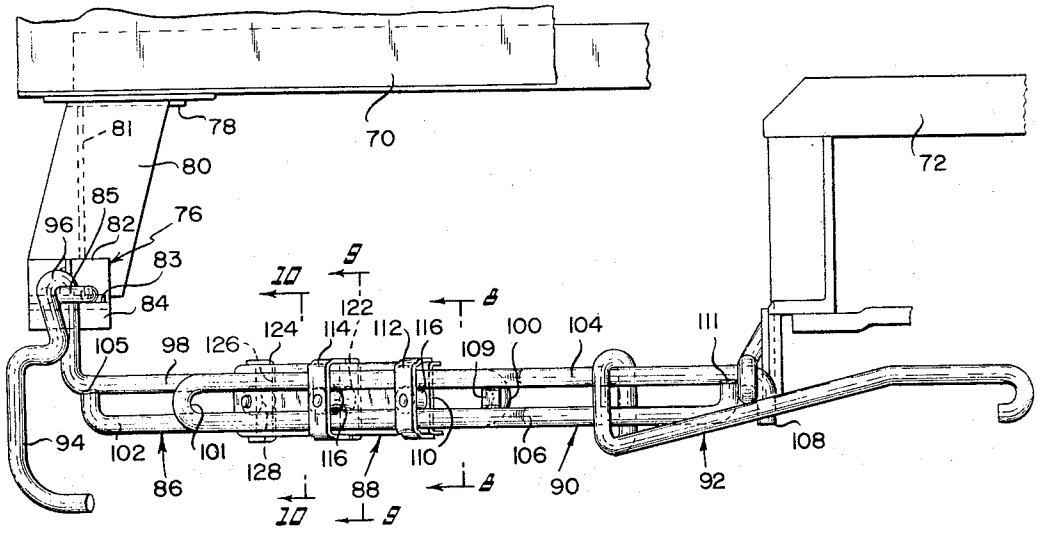


Fig. 1

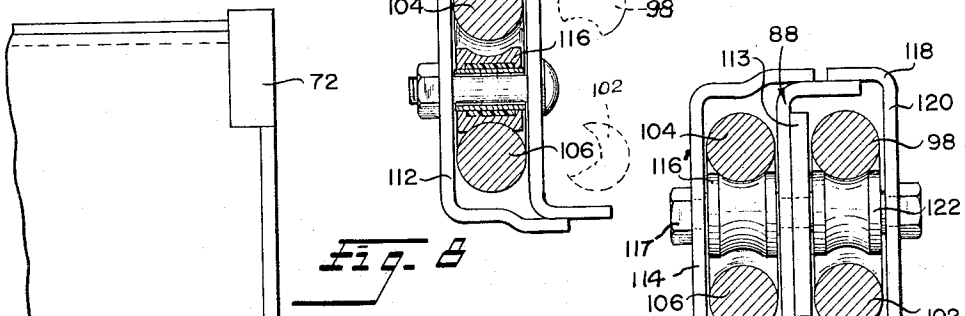


Fig. 8

Fig. 9

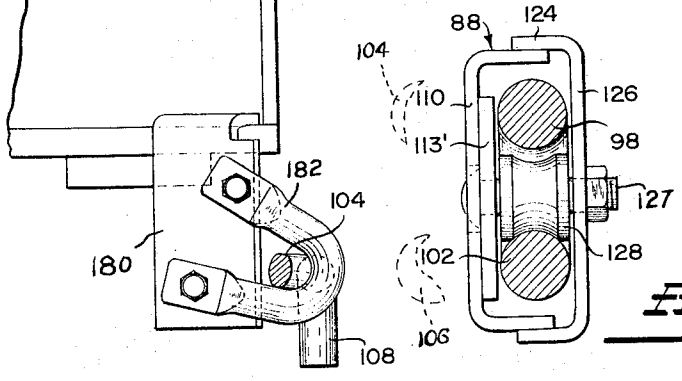


Fig. 6

Fig. 10

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United States Patent Office 3,294,253 Patented Dec. 27, 1966

3,294,253

COUPLER OPERATING DEVICE

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Filed Nov. 5, 1963, Ser. No. 321,622
6 Claims. (Cl. 213—166)

This invention relates to railway car coupler operating mechanisms. More specifically, the invention relates to an operating lever comprising a plurality of parts for operating the coupler upon rotation of the lever and to a bracket attached to the striker housing for supporting the inner end of an intermediate part.

To reduce damage to lading carried by railroad cars, there has been developed various underframe cushioning arrangements for such cars which would have little or no recoil and which would allow a considerable amount of travel of the car body relative to the underframe at all impact speeds, thereby to better protect the commodities carried within the car.

Couplers installed in this type of draft gear arrangement have been made to move forward and backward in relation to the car end a greater and greater distance. In the ordinary draft gear arrangement, couplers move some 7 inches or so, but with the various cushioning arrangements, the couplers move some 48" as in the first modification of the invention, or some 65⅛" as in the second modification. Furthermore, couplers are now made with varying shank lengths and this means greater side swing of the couplers when cars are rounding clrves.

Therefore, the object of the invention is to provide a coupler operating lever for a bottom operated coupler mounted in a cushion underframe construction which will be operable with as many variations of coupler movement as possible. When the coupler is in extreme buff position left, the oeprating lever must be able to contract to about 26" and when the coupler is in extreme draft position right, the operating lever must be able to extend to as much as 47" or so, and in extreme cases to as much as 97".

Other objects and advantages of the invention will appear in the following description thereof:

Referring now to the accompanying drawing forming part of this application and wherein like reference characters indicate like parts:

FIGURE 1 is a top plan view of one form of the invention showing in full lines the normal draft position of the coupler and indicating in dotted lines the full buff and full draft positions of the coupler.

FIGURE 2 is a section on the line 2—2 of FIG. 1.

FIGURE 3 is a front view of FIG. 1.

FIGURE 4 is an end view of FIG. 3.

FIGURE 5 is a top plan view of a modified form of the invention.

FIGURE 6 is a section on the line 6—6 of FIG. 5.

FIGURE 7 is a front view of FIG. 5.

FIGURES 8, 9 and 10 are sections on the lines 8—8, 9—9 and 10—10, respectively, of FIG. 7.

In the drawings and referring first to the modification shown in FIGURES 1 to 4, 10 indicates the end of the car to which the device is applied, and 12 indicates the striker which is a part of the sliding sill, which, in turn, is resiliently mounted in the car center sill, the main supporting member of the car body. The coupler, indicated in dotted lines at 13, is assembled in and attached to the sliding center sill of the car. The inner end of the coupler shank is attached to the cushioning medium as is common so as to cushion movements of the car body relative thereto. Thus the coupler has limited relative movement with the striker, and the striker has limited relative movement with the car body.

The inner end of the coupler operating device is formed into a hook for attachment to the lock lifter of the coupler, and the outer end of said device is mounted in a bracket attached to the car end. It is therefore obvious that the operating device must be constructed so as to compensate for the above mentioned long travel and wide side swing of couplers mounted in a cushion underframe.

The operating device, shown in FIGURES 1 to 4, for such couplers is formed in three parts, an inner part 14, an intermediate part 15, and an outer or handle part 16. The bracket for mounting the outer part of the device to the car is shown generally at 18. This bracket member is of Z shape having a vertical rectangular flange 20 which is riveted or otherwise secured to the end of the car. Issuing normally from the lower edge of flange 20 is a horizontal portion 22 which terminates at its outer edge in a downturned arcuate flange 24. The outer edge of horizontal portion 22 is preferably inclined to the end of the car as clearly shown in FIGURES 1 and 3, although in certain instances it may be parallel to the end of the car.

A bracing gusset 26 is fixed between flanges 20 and 22 of the bracket for strength and stability.

At the outer margin of the flange 22 is mounted the ends of a U-shaped clevis 28 by riveting, welding, or other means of securing the same thereto. The bend in the clevis is positioned so as to extend over the edge of flange 22 and form, with said edge, an eye having a vertical axis, as clearly seen in FIGURES 1 and 4.

The outer or handle part 16 of the operating device or uncoupling lever comprises a section of rod which is bent intermediate of its ends so as to form an eye 30 having a substantially horizontal axis. This handle is mounted in the clevis to pivot therein, and one end of the rod section is formed into a handle 32 which depends from the eye 30. The other end of the rod section below the eye 30 is turned laterally toward the coupler forming a straight section 34. To reinforce the straight section 34, there is provided another short section of rod 36 equal in length to the straight section 34 and sections 36 and 34 are welded together along meeting peripheral lines, as shown in FIG. 3.

The intermediate part 15 of the device when on a car is substantially horizontally disposed and comprises an elongated hairpin-like section consisting of two rods 38 and 40 which are parallel and connected at their outer ends by a U-bend 42. The inner end of rod 40 is turned laterally as at 44 and butt-welded to the side of rod 38, adjacent its end. The inner end of rod 38 extends beyond portion 44 and has a downturned hook 46 formed on the end thereof.

The outer vertical face 48 of the striker is cut away so that another clevis 50, identical to clevis 28, may be mounted on the side wall 52 of the striker in a manner that the bend of the clevis will project outwardly beyond the striker face 48 and permit the hook 46 of the rod 38 to be mounted therein and be supported thereby.

At the inner end of the rod sections 34 and 36 of handle part 16 there is a U-shaped clip 54 which surrounds the sections 38 and 40 and the free ends of which overlap the sides of sections 34 and 36 and are welded thereto. Between the sides of the clip 54 and located in the space between rod sections 38 and 40 is mounted an anti-friction roller 56. Outwardly of the clip 54 is another identical U-shaped clip 58 which surrounds the spaced rod sections 38 and 40 and the free end margins of which overlap and are secured as by welding to rod sections 34 and 36. Between the sides of this clip 58 and also in the space between the rod sections 38 and 40 is mounted an anti-friction roller 60. Thus any movement of the intermediate part 15 relative to the handle part 16 will roll on the

anti-friction rollers **56** and **60**. The inner end of the intermediate part **15** is supported by the clevis **50**, the handle part is supported by the clevis **28**, and the overlapping portions are telescopically joined as just described.

The lock lifter of the coupler is indicated at **62** and counterclockwise movement of the lock lifter will operate the coupler. To provide this rotary movement, the inner part **14** of the device is provided. This part at its inner end comprises a hook **64** which is hooked into the lock lifter **62** (see FIG. 4). From this hook outwardly, part **14** angles around the face of the striker and its outer end is provided with an upturned portion forming an elongated eye **66** which surrounds the intermediate part **15** rather closely so as to be non-rotatable therewith. Eye **66** can slide and angle on said intermediate part in response to longitudinal and sidewise movements of the coupler in the striker.

Thus it is apparent that when the device is mounted on a car as described and counterclockwise rotation is imparted to the handle **32**, the clips **54** and **58** will be likewise rotated which will similarly move the intermediate part **15**, and this will correspondingly move the inner part **14**, which in turn will lift the lock lifter and uncouple the coupler.

It is also apparent that longitudinal movements of the striker are compensated for by the telescoping relationship of the lever portions **15** and **16**, and that lateral and longitudinal movements of the couper relative to the striker are compensated for by the telescoping relationship of the lever portions **14** and **15**.

In cases where there is extreme longitudinal movement of the coupler, as for example where it may move relatively with the striker some 65½" and at the same time swing laterally in relation to the striker some 15° or so, I have devised the modification shown in FIGURES 5 to 10.

In these figures the end of the car is shown at **70** and the striker of the car at **72**. The coupler is shown in dotted lines at **73** and the relative location of the lock lifter of the coupler in several possible positions of the coupler is indicated by the circles **74**, FIGURE 5.

The coupler operating device of this modification comprises a bracket indicated generally at **76** which is attached to the car end and supports the outer end of the operating device. A mounting place for the bracket is provided, it comprising an angle-shaped member having a horizontal flange **78** which is secured in any desired manner to the bottom of the end sill of the car adjacent a corner thereof. The outer edge of the flange **78** is turned downwardly forming a rectangular vertical flange **80** which extends normally from the flange **78**. Extending normally from the rear face of flange **80** is a gusset plate **81** to stiffen flange **80**. The bracket **76**, for supporting the outer end of the operating device, comprises a rectangular vertical flange **82** which is secured to the lower end of the flange **80** of the mounting bracket.

A horizontal flange **83** issues outwardly from the lower edge of the flange **82** and the outer edge is turned downwardly into a relatively short arcuate flange **84** forming a stop for the handle, and preventing clockwise rotation thereof.

Upon flange **83** are mounted the ends of a U-shaped clevis **85**, which clevis is secured on flange **83** so that the bend of the clevis extends over the edge of the flange **82**, forming with flange **84** an eye therein on a vertical axis. See FIG. 5.

The coupler operating device comprises a plurality of parts, the outer or handle part **86**, an inner or coupler operating part **92**, a channel-shaped intermediate part **88**, and a hairpin-shaped intermediate part **90**.

The handle part **86** comprises a round rod which is formed into a depending handle **94**, at the upper end of which the rod is bent into an eye **96**, which encircles the clevis **85** through the eye therein and by which the outer end of the handle part is pivotally supported. The

rod extends downwardly for a short distance and is then turned laterally in a straight section **98** extending about half the distance to the center line of the car, where it is formed into a U-bend **100**, and another straight section **102** extending toward the handle in slightly spaced parallel relation to straight section **98**. Adjacent the handle end, section **102** is turned to the section **98** and is butt-welded thereto as at **105**. Thus the handle or power part **94** comprises a pair of parallel rods connected by a U-bend, with one of said rods extending upthrough the eye and around the bend in the clevis and then down in the form of a handle by which the device is manually operated.

The intermediate lever **90** comprises a pair of rods **104** and **106** which are spaced slightly from each other, identical, in fact, to the spacing of rods **98** and **102**, but somewhat longer. The inner end of rod **104** is formed into a hook **108** for purposes hereinafter described and the opposite ends of rods **104** and **106** are connected by a U-bend **101**. The inner end of rod **106** is turned laterally to rod **104** and is butt-welded thereto as at **111**. Thus the rods **104–106** are maintained in spaced parallel relation in the form of an elongated loop, which overlaps in side by side relation the loop formed by the rods **98–102**.

A rectangular plate **180** is welded to the side of the striker **72** at a lower outer corner thereof so as to project downwardly therefrom, as clearly seen in FIG. 6. To this plate is secured the ends of a clevis **182** similar in all respects to the clevis **85**. The bend in the clevis projects outwardly from plate **180** so that the extending portion forms, with the edge of the plate, an eye, the axis of which is parallel to the general axis of the coupler operating device. The downturned or hooked end **108** of rod **104** extends through the eye of this clevis which supports the inner end of the intermediate section **104–106** of the device.

Between these two pairs of rods **104–106** and **98–102** is a second intermediate part **88** which comprises an elongated channel-shaped member **88**, the web **110** of which is disposed in the plane between the two pairs of rods and the flanges of which extends over and under the rods **98** and **102**, as clearly shown in FIGS. 8, 9, and 10. This channel faces toward the end of the car, and is free moving between the pairs of rods within the limits hereinafter described. Two narrow channel-shaped clips **112** and **114** are provided, the webs of which are disposed vertically adjacent the rods **104** and **106** with the flanges extending thereover and thereunder and overlapping the flanges of intermediate member **88**, and being secured thereto as by welding or the like. There is of course sufficient clearance between the webs of clips **112–114** and member **88** to provide free movement of the channel member **88**. Thus the rods **104–106** extend between the web **110** and webs of clips **112** and **114**. Extending between the web of clip **112** and web **110** is a bolt on which is mounted an anti-friction roller **116** disposed intermediate of rods **104–106** so that when said rod section **106–106** or channel section **88** (with clip **112** secured thereto) move relative to each other the roller **116** will provide ease of movement of said sections. It is noted that in this area the roller rolls on rod **106**.

Spaced outwardly a short distance from clip **112** is another similar channel-shaped clip **114**, the web of which is disposed in parallel spaced relation to the web **110**. The flanges of this clip **114** also overlap and underlap the rod section **104** and **106**, and said flanges also overlap and underlap the flanges of channel section **88**, and are secured thereto in any desired manner as by welding. See FIG. 9. The channel portion **88** and the channel clips **112** and **114** all face toward the car on which the device is mounted.

At the same location on the device as the clip **114** is another similar outwardly facing clip **118** which faces section **88**. The flanges of this clip **118** overlap and underlap the flanges of the intermediate portion **88** and are

secured thereto as by welding. This clip **118** encloses the rods **98** and **102** of the handle section **86** of the device. A substantially square filler piece **113** is secured to the inner face of the web **110** of intermediate section **88** so as to keep the bend **100** of rods **98** and **102** from contacting the bolt head of the bolt holding roller **116** when the sections are extending to accommodate draft movement of the coupler.

A bolt **117** extends through axially alined holes in the web of clip **114** and webs **110** and **120** as shown in FIG. 9. On this bolt **117**, between clip **114** and web **110** is an anti-friction roller **116'** on which rod **104** rolls. Between the filler piece **113** and web **120** on bolt **117** is another anti-friction roller **122** on which rod **98** rolls. It will be remembered that the intermediate channel section **88** is free to move between and relative to the handle section comprising rods **98–102** and the intermediate section comprising rods **104–106**, and that as the striker moves outwardly from the car, the section **104–106** moves outwardly therewith and telescopes relative to the handle section **86** and other intermediate section **88**.

It will be noted that the rods **104–106** of intermediate part **90** are offset intermediate their ends as shown at **107** (see FIG. 5), and therefore when the parts are contracted as in an extreme buff position, the clip **116** could bind at the offset area **107**. Therefore a small rectangular stop **109** is positioned between the rods just outwardly of the offset portion **107**. Stop **109** is a small formed strip of metal, welded or otherwise secured at opposite ends to the rods **104–106**. Thus the stop will effectively prevent the intermediate section **88** from moving into the offset area **107** where it would bind when the device contracts to accommodate buff position of the coupler because the roller **116** would contact said stop **109**.

The purpose of the offset portion is to provide a space between the handle section **86** and the intermediate section **90** when the coupler travels from draft to buff position.

Finally at the outer end of the intermediate section **88** there is another narrow channel-shaped clip **124** identical to and facing outwardly in the same direction as the clip **118**. The flanges of clip **124** also overlap and underlap the rods **98** and **102** and also the flanges of the intermediate channel section **88** as shown in FIG. 10. Fixed to the inner face of the web **110** is another filler piece **113'**. Axially alined holes are provided through web **110**, filler piece **113'** and web **126** of clip **124** so that bolt **127** may extend through said alined holes. The hole in web **110** is larger than the other holes, so that the head of bolt **127** may enter the same and bear against the face of filler piece **113'**, thereby not interfering with U-bend **101** and allowing it to pass over sad bolt head.

On bolt **117**, between the filler piece **113** and web **120**, is an anti-friction roller **122**, located between rods **98** and **102** and on which roller rod **98** rolls when the parts move relative to each other.

The distance between the rods in all instances is the same as the longest diameter of the rollers, so that the rollers may be inserted laterally between the rods to proper position. This leaves a ltle clearance between the rollers and rods and provides easier movement of the parts.

Each of the rollers has a stainless steel bushing surrounding the bolt, and between the bushing and roller is a Teflon sleeve which provides a roller mounting with a minimum of friction. The stainless steel sleeves are slightly longer than the width of the rollers so that the bolts may be tightened without fear of the webs impinging against the ends of the rollers.

From the above teaching it will be apparent to those skilled in the art that there has been provided coupler operating mechanisms which will operate a coupler

mounted in a cushion underframe arrangement, wherein the coupler has unusually long travel and wide side swing. When the handle portion is operated to cause the device to orbit counterclockwise about the pivotal point of the handle, it will translate this motion to the hook, which in turn so actuates the locklifter in uncoupling the coupler.

While I have illustrated and described the preferred structure of the invention, it is conceivable that the rod sections **15**, **16**, **90** or **86** may be formed of rectangular tubing instead of spaced parallel rods, in which event the rollers would roll on the edges of the tubing. Other variations of structure may also be resorted to without departing from the spirit of the invention.

I claim:

1. An uncoupling lever for car couplers comprising a plurality of parts, one of said parts comprising a pair of parallel rods, one of said rods having an eye formed therein providing means for pivotal mounting of said part adjacent the corner of a car end, a handle extending from said eye substantially normally to the axis of said rod, a coupler operating part having a hook at one end for attachment to the lock lifter of a car coupler, and an elongated eye at the other end, and an intermediate part comprising a pair of spaced parallel rods formed into an elongated loop, the ends of which loop overlap the adjacent ends of the handle part and the coupler operating part, means non-rotatably and slidably connecting the overlapped portions of the handle part and intermediate part, said eye of the coupler part encircling the overlapped portion of the intermediate part to provide a non-rotatable sliding connection thereto and permit angling of said respective parts, the inner end of said intermediate part terminating in means for attachment to a coupler striker for rotatably supporting same.

2. The structure set forth in claim **1**, and a bracket attachable to a car end, a clevis on said bracket for rotatably supporting said offset eye of said handle part.

3. The structure set forth in claim **1** and stirrups supported by said parallel rods of the handle part and non-rotatably encircling the outer margin of said intermediate part permitting the intermediate part to angle and non-rotatably slide in said stirrups.

4. The structure set forth in claim **1**, said intermediate part extending from its attachment to the striker to substantially the corner of the car, to permit substantial travel of the coupler operating part and said intermediate part relative to each other.

5. The structure set forth in claim **1**, said intermediate part comprising a plurality of portions slidably and non-rotatably connected together.

6. The structure set forth in claim **5** wherein the inner end of the innermost intermediate portion is pivotally supported by the coupler striker and non-rotatably connected to the outer end of said inner portion, the outer end of another intermediate portion is non-rotatably connected to the outer portion, and the other ends of said intermediate portions are slidably and non-rotatably connected together so that rotary motion imparted by the handle will be translated therefrom through the respective portions to the lock lifter of the coupler.

References Cited by the Examiner

UNITED STATES PATENTS

2,356,336	8/1944	Metzger	213—161
3,127,997	4/1964	Lahey	213—166

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