Feb. 4, 1958 E. G. GOODWIN 2,821,942

ROUND BOTTOM END DOORS FOR DROP END GONDOLA CARS

Filed Sept. 25, 1951 2 Sheets-Sheet 1

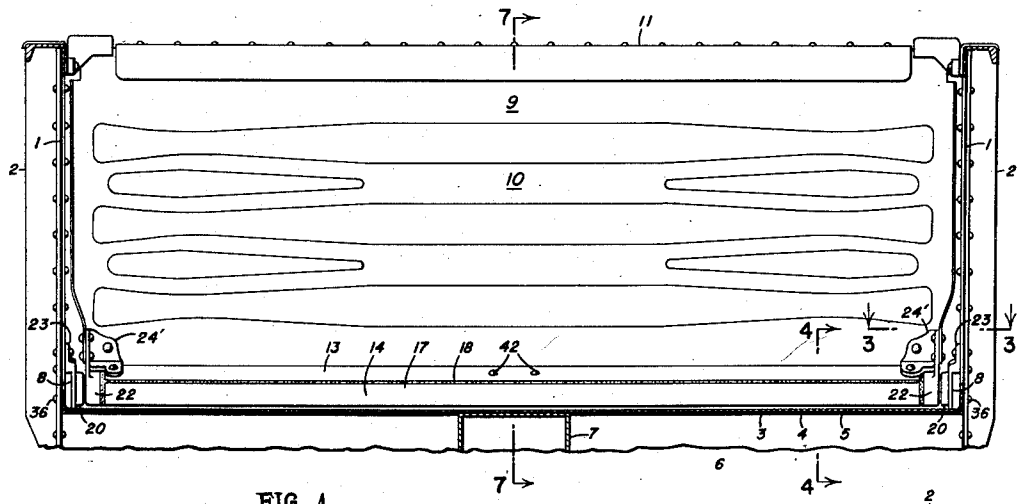


FIG. 1

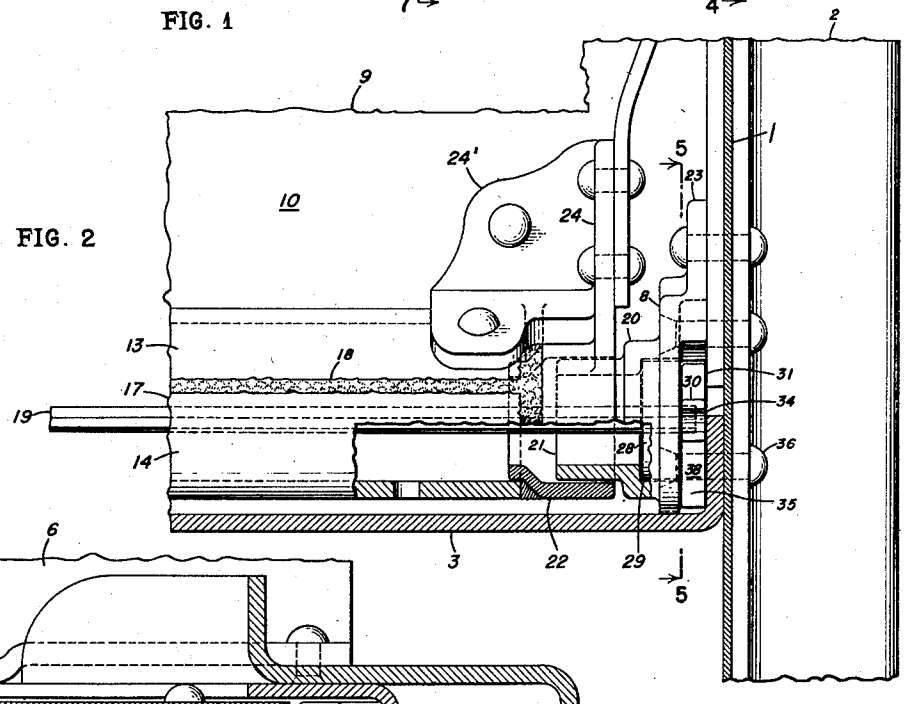


FIG. 2

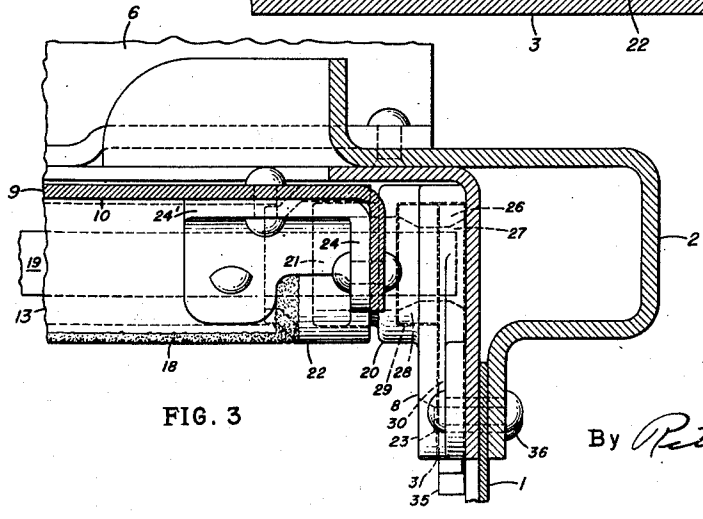


FIG. 3

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ROUND BOTTOM END DOORS FOR DROP END GONDOLA CARS

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FIG. 4

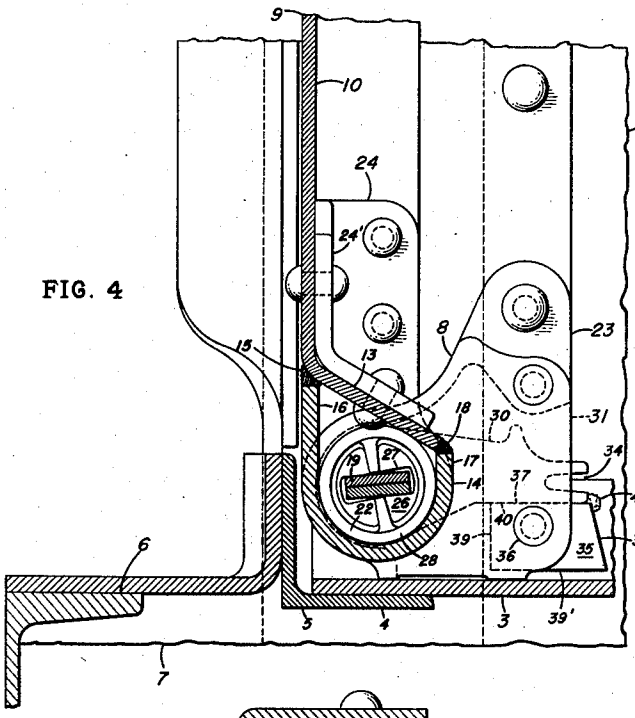
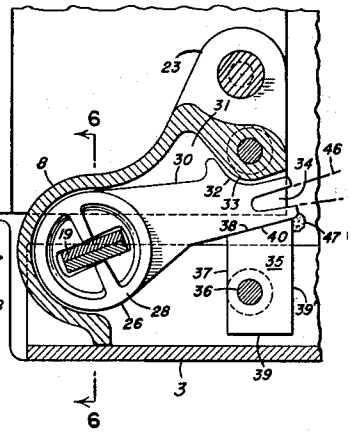


FIG. 5



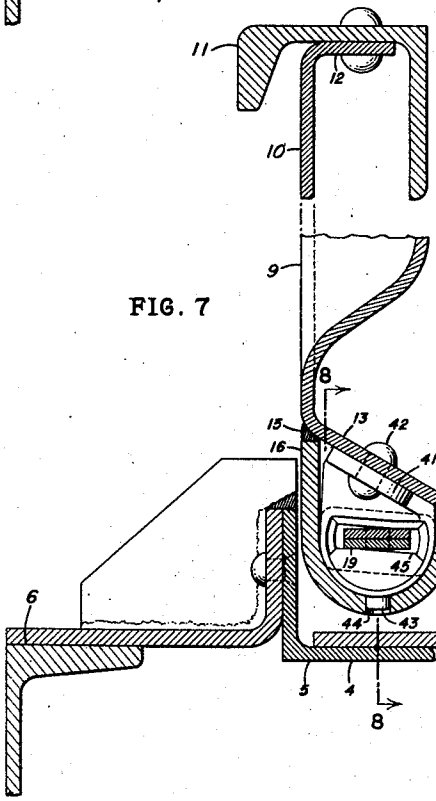


FIG. 7

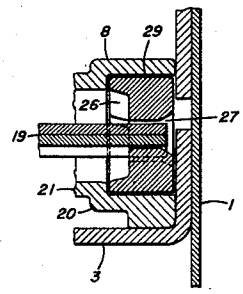


FIG. 6

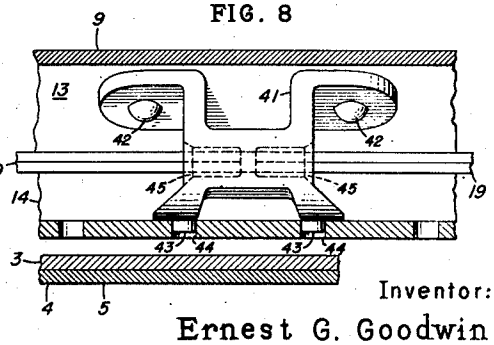


FIG. 8

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# ROUND BOTTOM END DOORS FOR DROP END GONDOLA CARS

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Application September 25, 1951, Serial No. 248,226

7 Claims. (Cl. 105—406)

This invention relates to drop end gondola cars and more particularly to cars of the type in which the drop ends or doors are pivotally connected and counterbalanced by a spring member so that the work of moving the door from open to closed position can be accomplished by trainmen without mechanical assistance.

The principal object of the invention, generally considered, is to provide the bottom of the door with a cylindrical housing for the spring means and to provide in connection with this housing an opening through which a portion of the tension means is adapted to extend.

Another object of the invention is to provide in a device of the character described a member housed within a suitably formed recess at the bottom of the door and adapted to have a portion of said member extend through a wall of said recess so as to permit the rotation of said member after the parts making up the counterbalanced door are in position.

Other features of the invention will hereinafter more fully appear in connection with the detailed description of the preferred embodiment of the invention illustrated in the accompanying drawings, in which:

Figure 1 is an end elevational view of a portion of a gondola car with certain of the sill members being shown in section.

Figure 2 is an enlarged view of the construction shown in Figure 1, portions of the door and adjacent parts being broken away and portions of the car frame member being shown in section.

Figure 3 is a horizontal view partially in section taken on line 3—3 of Figure 1, the direction of view being indicated by the arrows adjacent the ends of the said section line.

Figure 4 is a vertical sectional view taken on line 4—4 of Figure 1, the direction of view being indicated by the arrows adjacent the ends of said section line.

Figure 5 is a vertical sectional view taken along the line 5—5 of Figure 2, the direction of view being indicated by the arrows adjacent the ends of the said section line.

Figure 6 is a fragmentary sectional view of the construction shown in Figure 5, the view being a vertical sectional view taken on line 6—6 of Figure 5, the direction of view being indicated by the arrows adjacent the ends of the section line.

Figure 7 is a vertical sectional view on line 7—7 of Figure 1, the direction of view being indicated by the arrows adjacent the ends of the section line, and

Figure 8 is likewise vertical section taken on lines 8—8 of Figure 7, the direction of view being indicated by the arrows adjacent the ends of the section line.

Throughout the specification and drawings like parts are designated by like reference characters.

There is illustrated a gondola car having side sheets 1, corner posts 2, a floor member 3, the floor member adjacent the end sill being seated on the horizontally extending portion 4 of the end framing member 5, the



end sill being indicated by the reference numeral 6 and the center sill by the reference numeral 7. Pivotally mounted in brackets 8 and secured to the side stakes and side walls adjacent the framing member 5 is the end door 9 which comprises an end plate 10, preferably of corrugated form, and a bulb angle member 11 secured to the entrant flange 12 of the plate 10. The lowermost corrugation of the plate 10 is perhaps most clearly shown in Figures 4 and 7 and this convolution 13 extends rearwardly at an angle to the horizontal and is spaced from the floor member 3. Secured to the underface of the portion 13 is a substantially U-shaped member 14, the outer vertical face of which is in alignment with the outer face of the sheet 10 and is adapted to be secured thereto by a weldment 15. This weldment preferably extends substantially the full width of the door.

The weldment 15, of course, unites with the plate 10 through the outer upstanding leg 16 of the member 14. The inner upstanding leg 17 of the member 14 is positioned beneath the inner edge of the portion 13 of the plate 10 and is secured thereto by a weldment 18. It will be thus seen that the door 9 has at one end, here its bottom, a cylindrical portion in which there is provided a semi-cylindrical recess into which, as will hereinafter be described, the spring members or torsion rods 19 and their associated parts are adapted to fit.

Extending outwardly from the bracket 8 are cylindrical bosses 20, the portions 21 of which are adapted to enter cylindrical bosses 22 secured to the hollow member 14. The brackets 8 are provided with upstanding flanges 23 secured to the side plates by rivets. Thus these members are rigidly secured to the car and pivotally connected through the bosses 20 and 22 to the ends of the door member 9. The boss 22 is provided with upright longitudinally and laterally extending flanges 24 and 24′ by which it is rigidly connected to the door plate and flanges 10.

Seated within each of the brackets 8 is the member 26 having a slot 27 extending through the center of the member 26 and into which the ends of the springs 19 are adapted to be received. The member 26, as clearly shown in Figure 5, is provided on one face with a cylindrical flange 28 which extends into the recess 29 in the boss 20. Extending outwardly from the cylindrical flange is an arm 30 adapted to extend into the recess 31 of the bracket 8. This arm is provided with a curved face 32 serving to engage a correspondingly formed face 33 of the bracket to limit the upward vertical movement of the arm 30. An opening 34 is provided in the outer face of the arm 30, the purpose of which will be hereinafter described.

A block 35 is mounted on the rivet 36 and is provided with faces 37, 38 and 39′. The block can, therefore, be positioned in any one of three positions to limit the movement of the arm 30 by the engagement of one of the block faces with the lower face 40 of the arm or lever 30. By altering the angularity of the arm 30 the torsion of the spring 19 will be adjusted and this can be done by inserting a bar or lever 46 (Figure 5), in the opening 34 and moving the arm to the desired position. It is, of course, understood that the arms 30 are provided at each end of the door.

It has been found that the torsion of the springs, when once established, should not be subject to change without definite reason therefor, so it is the intention of applicant to provide means, such as the weldment illustrated at 47, for securing the lower face of the arm 30 to the appropriate face of the block 35. If a spring should be broken the weldment can be removed and the arm returned to its normal position.

Positioned intermediate the ends of the member 14 is

a casting **41** which is adapted to be secured to the flange **13** of the door **10** by the rivets **42** and adapted to have projections **43** thereon extending through openings **44** in the member **14**, thus maintaining the casting **41** in a fixed position. The casting is provided with recesses **45** into which the ends of the springs **19** extend.

The construction at one end only of the door has been described, it being obvious to those skilled in the art that a like construction is used at each end of the door.

The door, spring and brackets **8** are assembled and shipped to the car builder and the parts positioned in the car. The door is then lowered and the rivets securing the brackets **8** to the car sides are then placed in position. The tension of the springs **19** is then adjusted and the face of the arm **30** welded to the block **35** and nothing further is necessary to be done. It will, of course, be understood that at the upper end of the door the usual locking members are employed, as shown in Figure 1, to maintain the door in vertical position unless it is desired to lower the door to permit a different type of lading to be utilized.

Having now described my invention, it is to be understood that the description is not to be considered a limitation and what I claim and desire to secure by United States Letters Patent is:

1. In a gondola car having a drop door pivotally mounted on the body of the car and torsion rod means extending longitudinally of the door adjacent the pivotal end thereof and energized on opening of said door for counterbalancing its weight, the combination of bracket means on said car body for pivotally mounting said door thereon, and means attached to said bracket means and anchoring an end portion of said torsion rod means, said anchoring means being rotatable relative to said bracket means and selectively positionable for adjusting the torsion of said torsion rod means.

2. In a gondola car having a pivoted drop door and torsion rod means extending longitudinally of said door adjacent the pivoted end thereof, the combination of bracket means on said car body for pivotally mounting said door thereon, said bracket means receiving an end portion of said torsion rod means, and means in said bracket means and anchoring said end portion of said torsion rod means, said last named means being rotatable relative to said bracket means and selectively positionable for adjusting the torsion of said torsion rod means.

3. The combination with a drop door of a gondola car having torsion rod means for counterbalancing the weight of the door and opening thereof, of bracket means rigid with the body of said car and disposed on opposite sides of said door, cylindrical portions on said bracket means mating with corresponding portions on and pivotally mounting said door and receiving projecting portions of said torsion rod means, and means pivotally mounted in each of said bracket means and each anchoring an end of said torsion rod means, said last named means being selectively positionable to adjust the torsion of said torsion rod means.

4. The combination with a drop door of a gondola car having torsion rod means for counterbalancing the weight of the door and opening thereof, of bracket means rigid with the body of said car and disposed on opposite sides of said door, cylindrical portions on said bracket means mating with corresponding portions on and pivotally mounting said door and receiving projecting portions of said torsion rod means, means pivotally mounted in each of said bracket means and each anchoring an end of said torsion rod means, and means on said car body and having faces selectively engageable with said anchoring means for determining the position of said anchoring means.

5. The combination with a drop door of a gondola car having torsion rod means for counterbalancing the weight of the door and opening thereof, of bracket means rigid with the body of said car and disposed on opposite sides of said door, cylindrical portions on said bracket means mating with corresponding portions on and pivotally mounting said door and receiving projecting portions of said torsion rod means, means pivotally mounted in each of said bracket means and each anchoring an end of said torsion rod means, means on said car body and having faces selectively engageable with said anchoring means for determining the position of said anchoring means, and means for securing said position determining means to and fixing the position of said anchoring means.

6. The combination with a drop door of a gondola car having torsion rod means for counterbalancing the weight of the door and opening thereof, of bracket means rigid with the body of said car and disposed on opposite sides of said door, cylindrical portions on said bracket means mating with corresponding portions on and pivotally mounting said door and receiving projecting portions of said torsion rod means, a member pivotally mounted in one of said bracket means and anchoring an end of said torsion rod means, and means on said car body and engageable with said member for selectively positioning said member and adjusting the torsion of said torsion rod means.

7. The combination with a gondola car of a drop door thereon, said door having at one end a cylindrical portion, of a pair of brackets fixed to the body of said car at opposite sides of said car and each having a cylindrical boss extending into a correspondingly formed portion of said door in substantially axial alignment with said cylindrical portion thereof, torsion rod means housed in said cylindrical portion and having end portions extending therebeyond through said cylindrical bosses, and means pivotally connected to said brackets and engaging said end portions of said torsion rod means for adjusting the torsion thereof.

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