

W. P. MURPHY.
RAILWAY CAR CONSTRUCTION.
APPLICATION FILED JUNE 17, 1912.

1,058,889.

Patented Apr. 15, 1913.

3 SHEETS-SHEET 1.

FIG. 2.

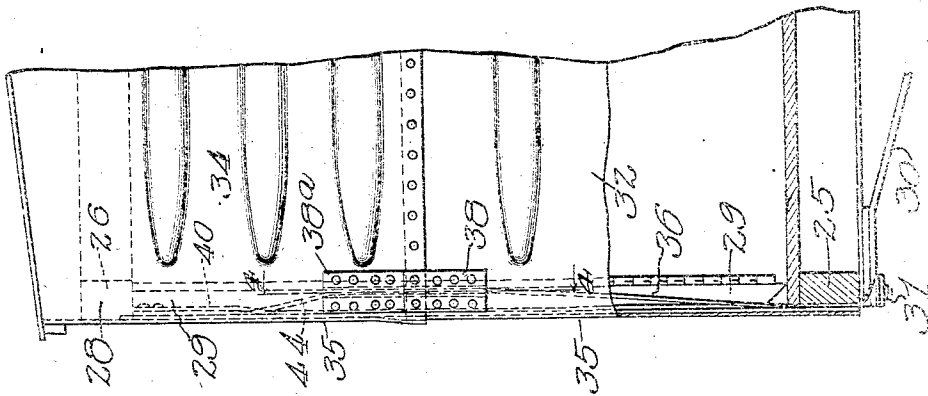
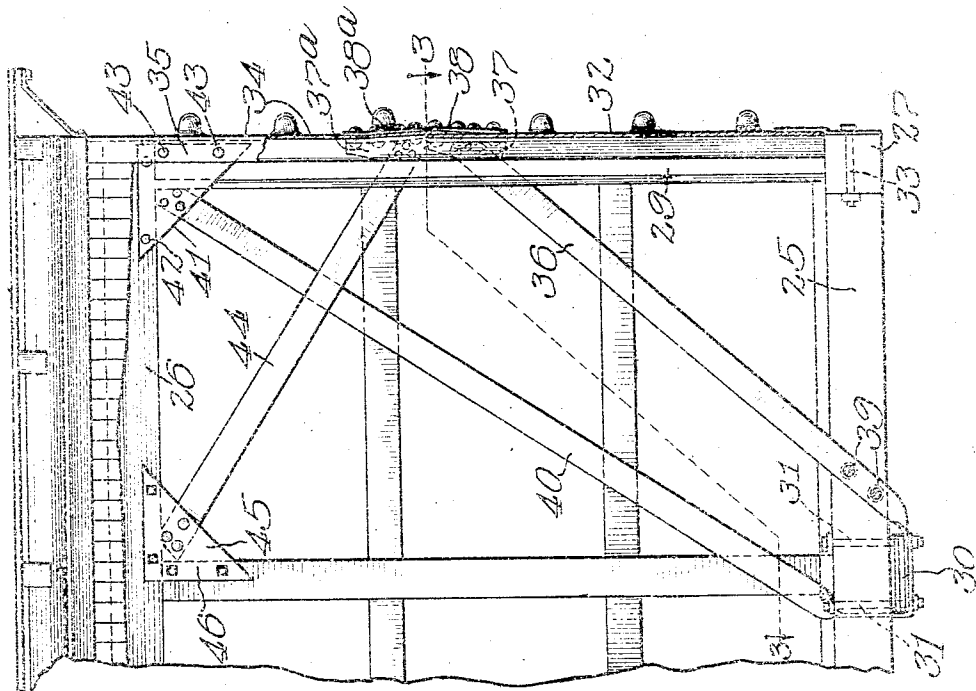


FIG. 1.



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3 SHEETS—SHEET 2.

Fig. 3.

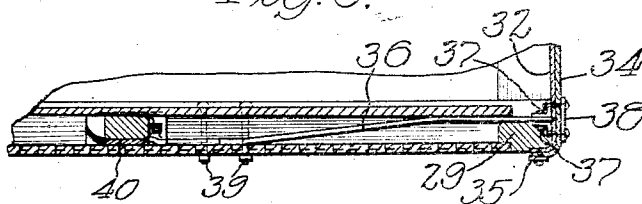


Fig. 4.

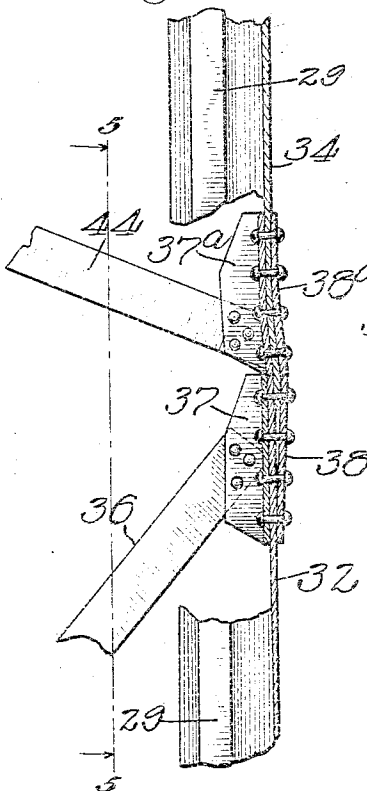


Fig. 5.

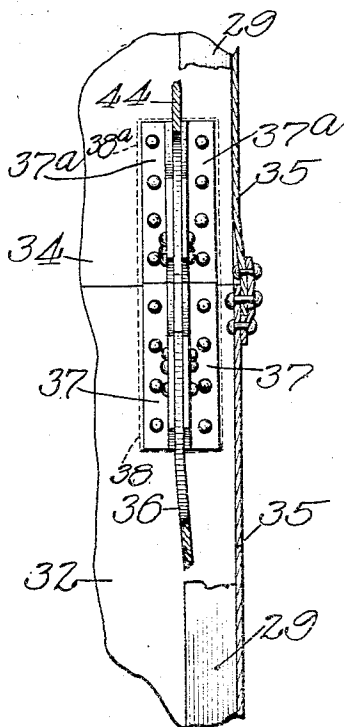
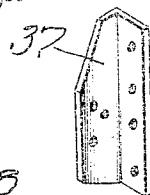


Fig. 6.



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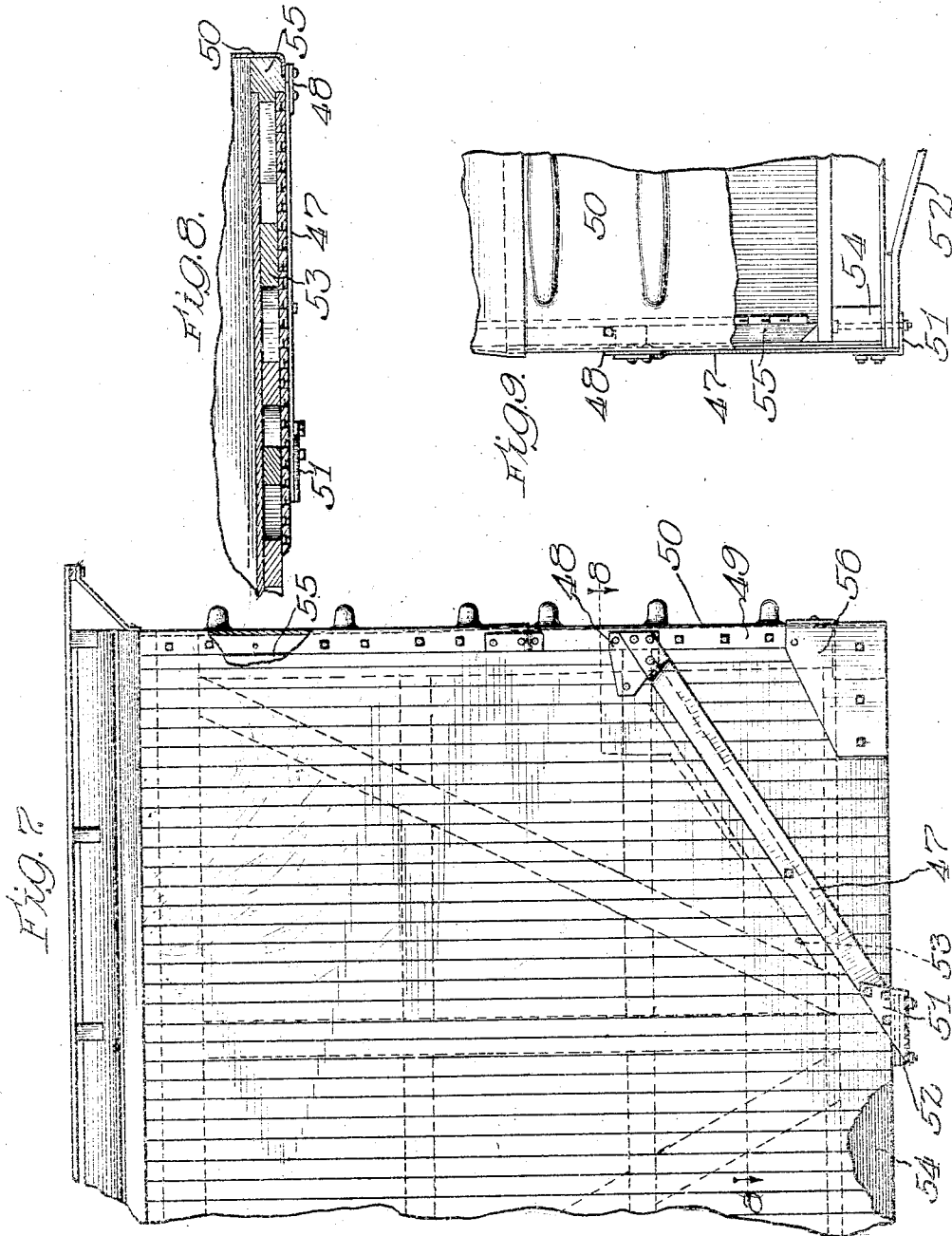
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3 SHEETS—SHEET 3.

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UNITED STATES PATENT OFFICE.

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RAILWAY-CAR CONSTRUCTION.

1,058,889.

Specification of Letters Patent.

Patented Apr. 15, 1913.

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To all whom it may concern:

Be it known that I, WALTER P. MURPHY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Car Constructions, of which the following is a specification.

My invention relates to the construction of railway cars and particularly box freight cars; and the invention has for its object to provide a novel and improved end structure for railway cars which will be of a character to withstand the stresses to which this part of a box car is subjected when in use.

Box cars are frequently loaded with miscellaneous cargoes which cannot be closely packed. As a result there is usually a certain shifting movement in the cargo of a box car when the train starts or stops which causes the articles adjacent the ends of the car to be thrust somewhat violently against the ends. As a result the number of broken and injured car ends is very great. If the end of a freight car is broken even to a slight extent, or the timbers or other structures forming the same loosened or pulled away from the body of the car the car cannot be safely used as a grain carrier and the portion of railway box cars which are in constant use as carriers of grain is quite large. This makes it important that an end structure be provided which will withstand the shocks and stresses to which the end of a box car is continually subjected when on the road. These shocks and stresses may be roughly divided into two classes, the localized impacts of relatively heavy articles like rails and piping which shift readily and are likely to make a break or hole in the end of the car, and the shock of the cargo as a whole which, when exerted against the end of the car, tends to wrench it away from the framing.

To provide a structure which will withstand the first mentioned stresses it has been proposed to construct the end of a car with one or more sheets of metal instead of employing the usual timber construction; and several sheet metal car end structures have been devised in which the metal is suitably corrugated or otherwise reinforced in order to give it sufficient strength and rigidity.

The present application relates more particularly to providing the end of the car, which will preferably be made of sheet

metal, though not necessarily so, with means whereby it will withstand the shocks of the cargo as a whole; the object being to provide an extremely strong, rigid construction by means of which the car end is held firmly and rigidly to the body of the car.

The invention is illustrated, in several preferred constructions, in the accompanying drawings wherein—

Figure 1 is a side elevation of one extremity of the box car with the sheathing removed. Fig. 2 is a fragmentary elevation of the end of the car with certain parts in section; Fig. 3, a sectional plan taken on line 3—3 of Fig. 1; Fig. 4, a vertical sectional view taken on line 4—4 of Fig. 2; Fig. 5, a sectional view on line 5—5 of Fig. 4; Fig. 6, a view, in perspective, of one of the angle plates shown in the preceding figures; Fig. 7, a fragmentary side elevation of a car illustrating a modification; Fig. 8, a sectional plan taken on line 8—8 of Fig. 7, and Fig. 9, a fragmentary end elevation of the same construction.

Like characters of reference indicate like parts in the several figures of the drawings.

In the drawings a box car is shown which, except for the constructions and arrangements constituting my invention, is of the ordinary standard type, 25 designating one of the side sills of the car, 26 the side plate, 27 the end sill, 28 the end plate, 29 the corner posts, and 30 a bolster, which latter is secured to the side sills 25 by the bolts 31.

The end structure shown consists of a lower sheet metal plate 32 bolted to the end sill by bolts 33 and an upper sheet metal plate 34 which overlaps the lower plate 32. Both plates are formed with flanges 35 which are secured to the corner posts of the car.

As cars are ordinarily loaded, with the heavier articles in the bottom of the car, the lower sheet of metal 32 (in case the end is composed of two or more separate sheets) is subjected to greater stresses than the upper part of the end. If the cargo is unusually heavy the strains developed may be sufficient to wrench the sheet or plate from its attachment to the car and to the upper sheet 34. To prevent this braces or tie members are provided, one at each side of the car, which are secured to the sheet 32 at some point above the sill, for example, at or near the upper edge of the sheet. These braces or tie members extend diagonally downward and are anchored to the bolster 30.

Referring particularly to Figs. 1 to 6 inclusive, 36 designates a tie member of this character, the upper end of which is secured between a pair of angle plates 37 that are riveted to the inside of sheet 32, the rivets preferably extending through a plate 38 on the outside of the sheet. The lower end of the tie member 36 may, if thought desirable, be secured by bolts 39 to the side sill 25. The tie member, however, is carried down beyond the sill and bent so that it extends under the bolster 30. The bolts 31 which secure the bolster to the sill may be used for anchoring the tie member 36 to the bolster. By this construction the sheet metal end and particularly the lower sheet 32 is securely anchored to the car so that it can not be wrenched or torn therefrom. The stresses exerted against the end are transmitted directly to one of the bolsters upon which the whole car structure rests. Furthermore the attachment between the upper and lower plates 32 and 34 is reinforced and strengthened.

If need be, although this will not be necessary under all circumstances, the structure may comprise braces or tie members for the upper plate 34.

Again referring to Figs. 1 to 6, 40 designates a tie member riveted at its upper end to a gusset plate 41 which is secured to the frame of the car by bolts 42 and to the overlapping flange 35 of the upper end sheet 34 by means of the rivets 43, the tie member extending diagonally downward and around under the bolster to which it can be secured by the bolts 31 above mentioned. 44 designates another diagonal brace or tie member which is secured at its upper end to a gusset plate 45 attached by bolts 46 to the car frame back of the end and extending diagonally downward and secured to the lower portion of the end sheet 34 by means of the angles 37^a and plates 38^a.

In Figs. 7 to 9 inclusive, I have shown a modified construction in which the tie member or brace is on the outside of the car instead of being within the sheathing as in the construction just described. The tie member 47 is riveted at one end to a plate 48 which is riveted to the flange 49 of the lower end sheet 50. The plate 48 is also attached to the frame of the car. The lower end of the tie member 47 is secured to an angular plate 51 anchored to the bolster 52. If required further strength may be given to the end structure by employing a diagonal timber or compression member 53 extending from the side sill 54 of the car to the corner post 55. Angular metal corner pieces 56 may also be used, which are secured to the end and side sills and overlap and are riveted to the lower edge of the end sheet 50.

While I have described my invention as embodying preferred constructions it will be

realized that further modifications might be made without departure from my invention. Therefore I do not wish to be understood as limiting the invention to the particular arrangements, constructions and devices shown and described.

The invention is shown as applied to a box car of standard construction but it will be realized that it might be used in connection with house cars or other freight cars in which the end structures are subjected to heavy stresses due to the inertia of the cargo.

I claim:

1. In a freight car construction, the combination with the framing of the car, of a metal end sheet secured to said framing and a tie member secured directly to said end sheet, extending diagonally downward and provided with means for securing it to the bolster of the car.

2. In a freight car construction, the combination with the framing of the car, of a metal end sheet secured to said framing, and a tie member secured directly to said end sheet and extending diagonally downward and provided with means for securing it to the lower part of the car structure.

3. In a freight car construction, the combination with the framing of the car, of a metal end sheet secured to said framing, a tie member, means for securing the upper extremity of the tie member to the inner face of said end sheet, and means for securing the lower extremity of the tie member to the lower part of the car structure.

4. In a freight car construction, the combination with an end, of a tie member, a pair of angle irons secured to the end between which the tie member is fastened, and means for anchoring the other extremity of the tie member to the lower part of the car structure.

5. In a freight car construction, the combination with the framing of the car, of an end comprising upper and lower metal plates which extend across the end of the car from side to side, and a tie member secured at one extremity to the lower metal plate above the sill of the car, and at the other extremity to the lower part of the car structure.

6. In a freight car construction, the combination with the framing of the car, of an end structure comprising upper and lower metal plates which extend across the end of the car from side to side, and a tie member secured at one extremity to the lower metal plate above the sill of the car, and at the other extremity to a bolster of the car.

7. In a freight car construction, the combination with an end structure, of a pair of tie members, said tie members being secured to said end structure one above the other and anchored to the bolster at that end of the car.

8. In a freight car construction, the combination with an end structure, of a pair of tie members, said tie members being secured to said end structure one above the other, and anchored to the bolster at that end of the car, and a third tie member at each side of the car secured to the middle portion of the end structure and extending diagonally upward and attached to the upper part of the frame of the car.

9. In a freight car construction, the combination with an end structure comprising upper and lower metal plates, a tie member secured to the upper portion of the lower plate and extending diagonally downward and anchored to the under frame of the car, and a tie member secured to the lower portion of the upper plate and extending diagonally upward and anchored to the upper part of the frame of the car.

10. In a freight car construction, the combination with an end structure comprising a metal plate, of a tie member, and means for securing the tie member to the plate comprising an angle iron securing said tie member to said plate, the lower extremity of said tie member being bent and secured to the under side of the car bolster.

11. In a freight car construction, the combination with an end structure comprising a

sheet metal plate having flanges overlapping the sides of the car, of a tie member secured to one of said flanges, and means for anchoring the other extremity of said tie member to the car bolster.

12. In a freight car construction, the combination with an end structure, of a pair of braces for the same secured to the end structure at the middle, one extending diagonally upward and anchored to the upper part of the frame of the car and the other extending diagonally downward and anchored to the lower part of the car structure.

13. In a freight car construction, the combination with an end structure, of a pair of braces for the same secured to the end structure at the middle, one extending diagonally upward and anchored to the upper part of the frame of the car, and the other extending diagonally downward and anchored to the lower part of the car structure, and a third diagonal brace secured to the upper corner of the end structure and extending diagonally downward and anchored to the lower part of the car structure.

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Witnesses:

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