Aug. 21, 1945. A. G. DEAN 2,383,372

RAIL CAR CONSTRUCTION

Filed Oct. 25, 1943

FIG. 1.

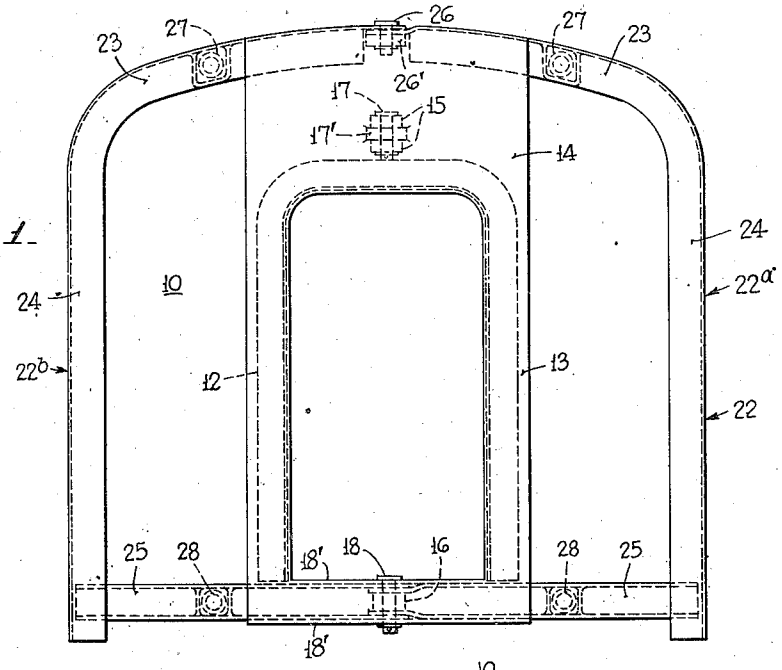


FIG. 2.

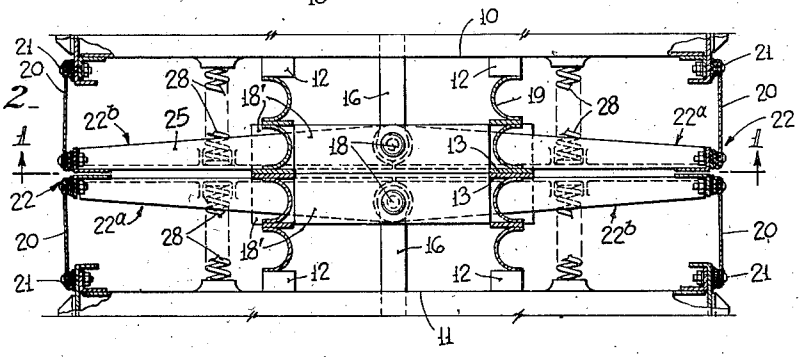
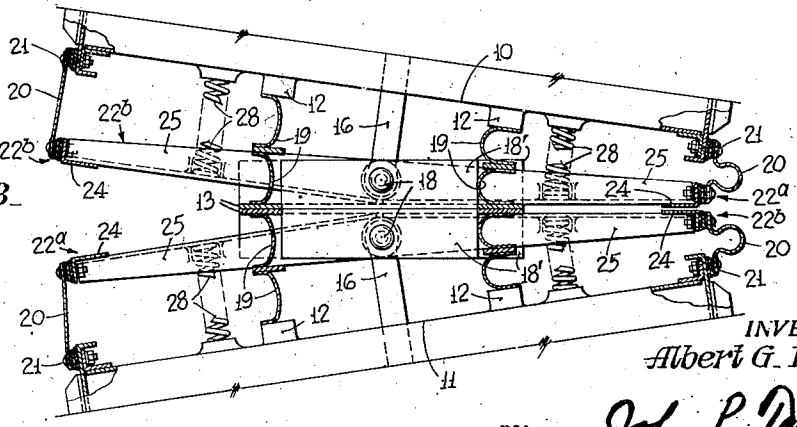


FIG. 3.



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RAIL CAR CONSTRUCTION

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4 Claims. (Cl. 105—10)

The invention relates to railway cars and more particularly to the diaphragms forming enclosures for the space between adjacent ends of coupled cars.

It is a primary object of the invention to provide a simplified arrangement for supporting the inside and outside diaphragms from the car ends.

It is a further object of the invention to provide an arrangement for the support of the outer diaphragm which precludes extension thereof beyond the associated face plate and hence precludes the danger of its fouling with parts of the adjacent coupled car.

These and other objects and the manner in which they are attained will become clear from the following detailed description when read in connection with the drawing forming a part of this specification.

In the drawing:

Fig. 1 is a more or less diagrammatic end elevational view of a rail car having the invention applied thereto, the view being taken along the line 1—1 of Fig. 2 looking in the direction indicated by the arrows;

Fig. 2 is a similar diagrammatic plan view of the adjacent ends of two coupled cars equipped with the invention, most of the structure extending between the spaced car end walls and lateral portions of the end walls being shown in horizontal section taken at a level somewhat below the top of the doorways in the car ends;

Fig. 3 is a view similar to Fig. 2 showing the position of the parts when the coupled cars are rounding a curve.

In the drawing, the spaced end walls of the two coupled cars are designated, respectively, 10 and 11. Each end wall is provided as usual with a central doorway having a frame, as 12, extending around it.

Supported from each end wall for in and out and pivotal movement with respect thereto is the face plate 13, which face plate has the usual bottom, side and top portions framing a doorway therein aligned with the doorway in the end wall of the associated car. The present face plate differs mainly from the usual face plate in having an upward extension, as 14, terminating substantially at the roof and conforming in its top margin substantially to the transverse contour of the roof of the car.

Any usual means may be provided for supporting the face plate from the adjacent car end. In the diagrammatic showing of the drawing, such means comprise upper and lower center stems 15 and 16, respectively, supported and guided in a usual manner for in and out movement in the end of the adjacent car. To provide for the pivotal movement of the face plate the stems 15 and 16 may be connected by vertical pivots 17 and 18, respectively, to the projections, as 17' and 18', from the inward side of the face plate.

To provide a usual inner closed passageway between cars the sides and top members of the face plate 13 flanking the doorway opening therein are connected to the sides and top of the door frame in the adjacent car end by a usual flexible inner diaphragm, as 19.

The face plate is normally urged to an outward limit position by buffer springs (not shown) associated with the stems 15 and 16, in a usual manner and also by additional spring means to be later described.

In modern high speed streamline trains it is desirable also to substantially close the space between the outer margins of the coupled cars. This is effected by an outer flexible diaphragm, as 20, normally extending around the sides and top margins of the car end and secured thereto on the one hand, as at 21, and on the other hand to the support structure 22 now to be described.

Such support structure is carried by the face plate, and may comprise two lateral parts 22a and 22b. Each part comprises a top transverse member 23 conforming to the contour of the roof and merging at its outer end into the lateral vertically extending portion 24 conforming to the contour of a car side and connected to a bottom transversely extending member 25.

It will be seen by reference to the drawing that the top transverse members are each pivoted, at 26, to a lug 26' projecting from the inward side of the top extension 14 of the face plate 13 on a common vertical pivot.

At the bottom simplicity of mounting is attained by having the inner ends of the members 25 both pivoted on the same pivot as the pivot 18 about which the face plate turns on the center stem 16.

To permit lightness with adequate stiffness, the transverse members 25 may be of inwardly facing channel section and the side, vertical and top transverse members may be of angular section. The outward margin of the flexible diaphragm 20 is secured to the continuous angular marginal member so formed by the two parts 22a and 22b to close the space between said member and the end wall margin of the car at sides and top.

It will be seen that the top and bottom transverse members 23 and 25 have a substantial over-

lap with the inward face of the face plate 13, 14 and the engagement between these overlapping parts serves as effective stop means to limit the outward swinging of the support members 22a, 22b, about their pivots. Also the wide overlap avoids any excessive strain on the pivots, when the members 22a and 22b are moved outwardly against the stop provided by the rear face of the face plate.

To yieldingly urge the support members 22a, 22b, to their outward limit position against the stops so provided, top and bottom coil springs, as 27 and 28, may be provided, these springs reacting at their opposite ends with the adjacent car end wall and with the support members 22a and 22b, through their top and bottom transverse members 23 and 25, respectively.

After the support members 22a and 22b have been moved to their outward positions against the stops formed by the rear face of the face plate 13, the outer diaphragm is held in taut condition. With the springs arranged as shown they also act either alone or in conjunction with the usual buffer springs, to move the face plate 13 outwardly.

The parts are so proportioned and related, that the periphery of the members 22a and 22b are stopped from outward movement before their outward faces quite reach the plane of the outer face of the face plate, so that when two cars equipped with the invention are coupled together, see Fig. 2, a slight spacing exists between these members 22a and 22b and their corresponding members on the adjacent coupled car, avoiding wear on these parts when the face plates slide laterally on each other, as happens for example, in the cross over from one track to another.

The outer flexible diaphragm, according to this arrangement may be made of durable material, such as canvas, which has little or no stretch.

The operation of the arrangement is believed clear from the foregoing description and the showing in Figs. 2 and 3, and need not be further described herein.

While a specific form of the invention has been shown and described it will be understood that changes and modifications may be made by those skilled in the art without departing from the main features of the invention, and such changes and modifications are intended to be covered by the appended claims.

What is claimed is:

1. In combination, a rail car end wall having a doorway opening therein, an inner diaphragm face plate supported in spaced relation from said end wall for in and out and pivotal movement substantially in the vertical central plane of the car, said face plate being laterally of a width to provide a framed doorway opening therein and extending from top to bottom of the car, an inner flexible diaphragm connecting the sides and tops of said doorway openings, lateral members together conforming to the sides and top of the car, each said members having inwardly extending portions at top and bottom overlapping the inner face of said face plate and pivoted thereto at top and bottom substantially in the central plane of the car, a flexible outer diaphragm connecting the sides and top of said lateral members with the periphery of the sides and top of said car end, and means urging said members and face plate outwardly to maintain said outer diaphragm taut.

2. In combination, a rail car end wall, a diaphragm face plate of substantially less width than the car end wall but extending from top to bottom thereof and supported in spaced relation from said end wall for in and out and pivotal movement substantially in the central vertical plane of the car, lateral members hinged to the inward side of said face plate substantially in the central vertical plane thereof and limited in their outward swinging movement by engagement with the inward side of said face plate, the combined outer peripheral portions of said members conforming at sides and top to the sides and top of the car ends, a flexible diaphragm connecting the peripheral sides and top portions of said members with the periphery of the sides and top of the car end wall, and means urging the said members and face plate outwardly to maintain said diaphragm taut.

3. The combination of claim 2 in which the bottom of the face plate is pivotally mounted on a center stem, and the lateral members are pivoted on the face plate by pivot means common to said center stem pivot.

4. In combination, a rail car end wall, a diaphragm face plate surrounding a doorway opening therein and extending substantially from top to bottom of said end wall, said face plate being supported in spaced relation from said end wall for in and out and pivotal movement substantially in the central vertical plane of the car, lateral members connected by hinges to the inward side of said face plate on hinge lines disposing the hinges associated with the respective members some distance inwardly from the adjacent portions of the side margins of said face plate, whereby said members have substantial overlap with said face plate and are limited in their outward swinging movement by said overlapping engagement with the inward side of the face plate, a flexible diaphragm connecting the peripheral side and top portions of said members with the periphery of the sides and top of the car end wall, and means urging said members and face plate outwardly to maintain said diaphragm taut.

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