

Aug. 8, 1939.

S. LANDELL

2,168,995

DIAPHRAGM CONSTRUCTION

Filed Sept. 12, 1936

3 Sheets-Sheet 1

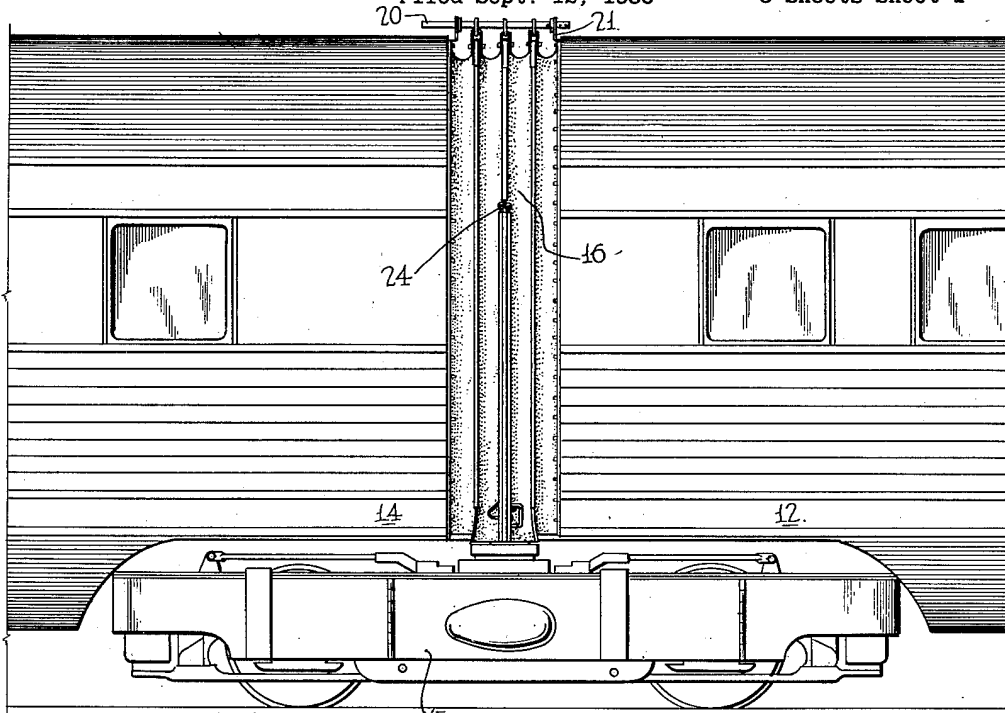


FIG. 1

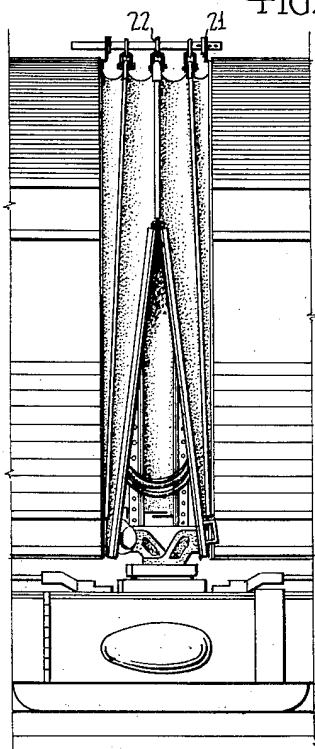


FIG. 2

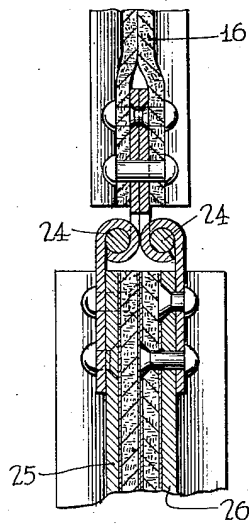


FIG. 6

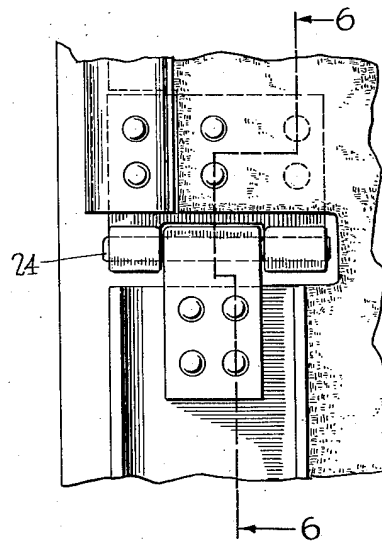


FIG. 7

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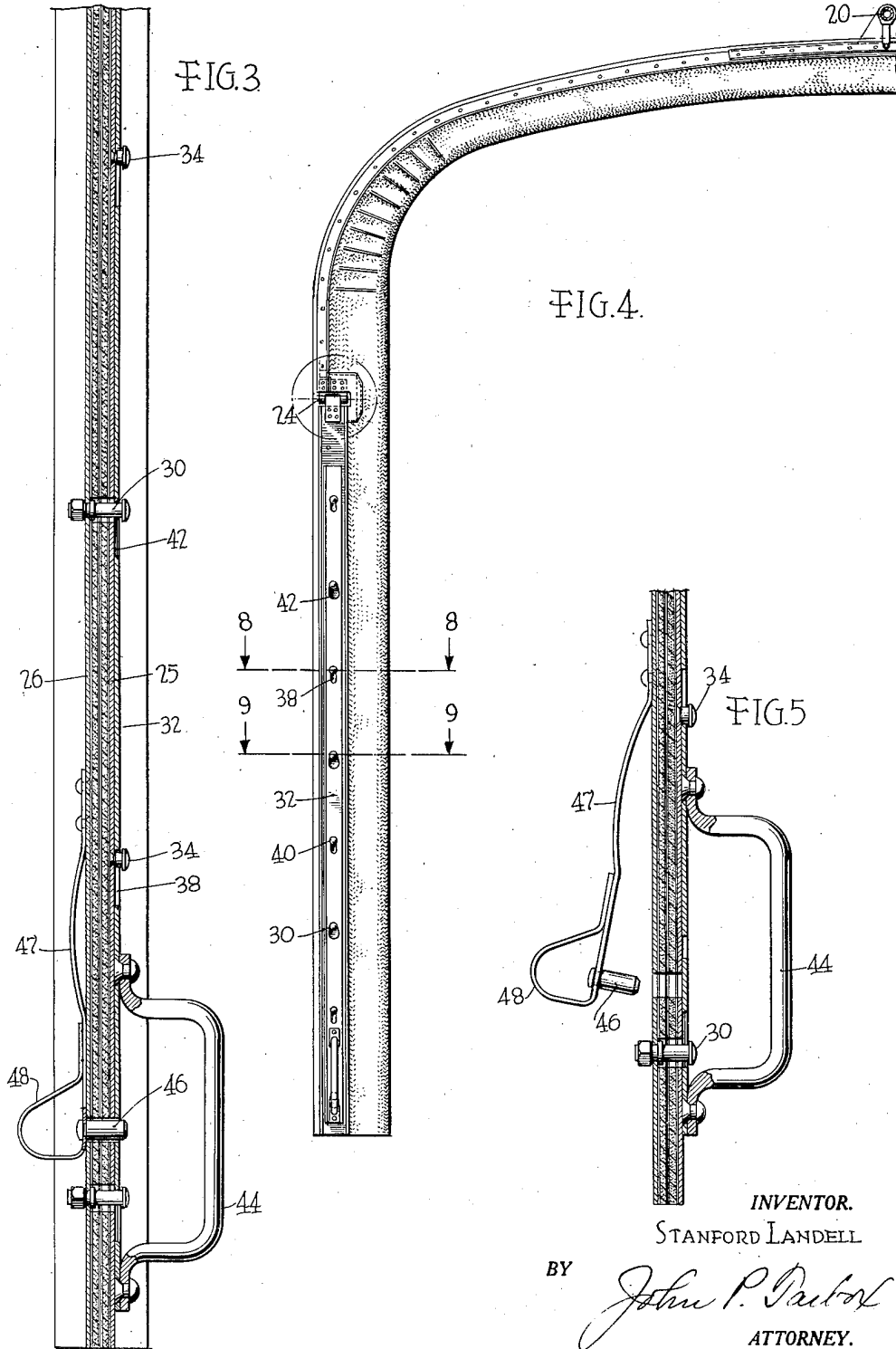
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3 Sheets—Sheet 2



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DIAPHRAGM CONSTRUCTION

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3 Sheets-Sheet 3

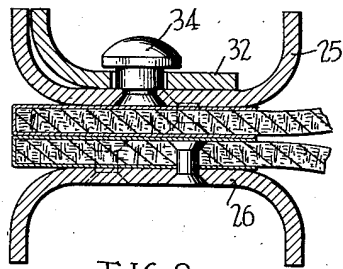


FIG. 8

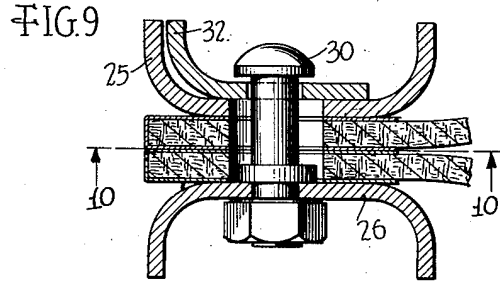


FIG. 9

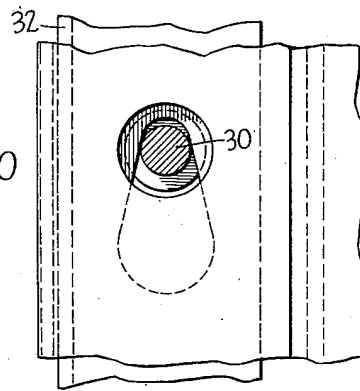


FIG. 10

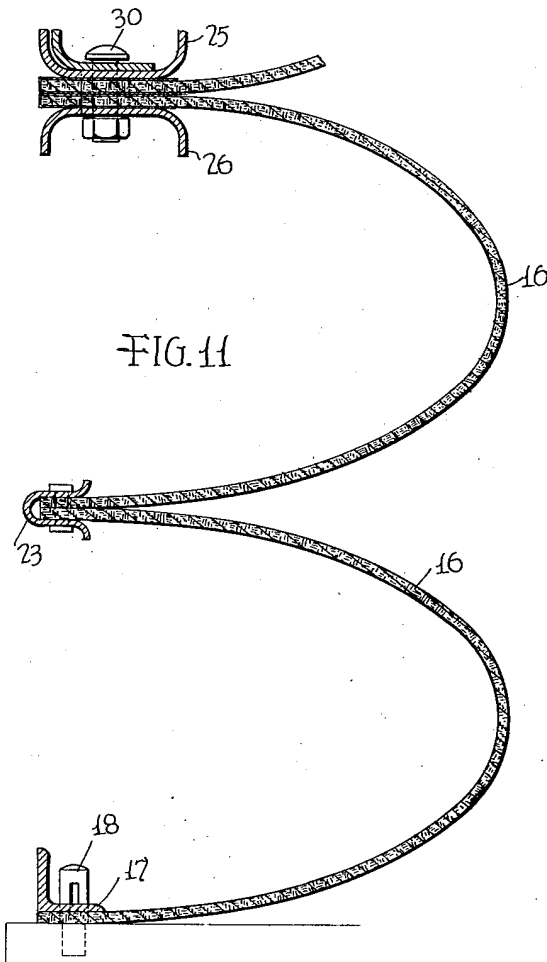


FIG. 11

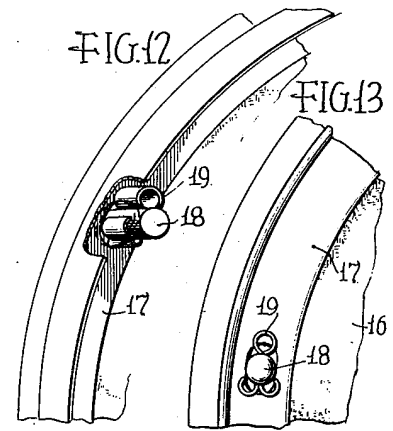


FIG. 12

FIG. 13

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UNITED STATES PATENT OFFICE

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DIAPHRAGM CONSTRUCTION

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Application September 12, 1936, Serial No. 100,401

3 Claims. (Cl. 105—15)

This invention relates to improvements in a diaphragm construction for rail cars and more particularly to one which is adapted for mounting between the adjacent ends of articulated cars.

5 One of the principal objects of the invention is to provide an outside diaphragm which may be secured to the adjacent ends of rail car bodies and which is adapted to be opened for inspection or adjustment of portions of the car body normally covered by the diaphragm.

10 Another object of the invention is to provide a flexible diaphragm which is adapted to be secured to the adjacent ends of rail cars and which is free to compensate for the relative movement therebetween, such diaphragm being relatively continuous at the top and having side portions which may be opened for the temporary inspection or adjustment of parts of the car body or connections between the car bodies.

20 Another and more specific object of the invention is to provide a sliding latch and hinge construction for fastening a diaphragm to a car body, the hinge permitting a temporary opening of the diaphragm, and being held closed by the sliding latch, all parts being secured to the diaphragm to prevent accidental loss.

A specific object of the invention is to provide a diaphragm for articulated car bodies, portions of which are separately secured to the leaf portions of a hinge, such leaf portions being adapted to be held in relatively closed position by a detachable latch.

Further objects and advantages of the invention will appear from the following description of a preferred form of embodiment thereof as described in connection with the attached drawings in which:

Fig. 1 is a side elevation of the adjacent ends of articulated car bodies to which my diaphragm is secured.

Fig. 2 is a side elevation similar to Fig. 1 with the diaphragm in an open position.

Fig. 3 is a vertical section through the locking mechanism of the diaphragm showing the mechanism in locked position.

Fig. 4 is an end elevation of a part of a diaphragm showing the locking mechanism.

Fig. 5 is a vertical section similar to Fig. 3 showing the locking mechanism in unlocked position.

Fig. 6 is a vertical section and Fig. 7 is a side elevation of the hinge construction between the respective leaves of the diaphragm, Fig. 6 being taken substantially along the line 6—6 of Fig. 7.

Figs. 8 and 9 are horizontal sections taken along the lines 8—8 and 9—9 of Fig. 4.

Fig. 10 is a vertical section taken along the line 10—10 of Fig. 9.

Fig. 11 is a horizontal section through a portion of the diaphragm.

Fig. 12 is a perspective view with parts broken away of the diaphragm attachment to the car body, and

Fig. 13 is an end elevation of the construction shown in Fig. 12.

In one preferred form of embodiment of my invention, I provide a diaphragm which is adapted to be secured to the ends of rail car bodies and although the illustrative example is of articulated car bodies, the invention is also adapted for non-articulated cars if desired. In particular, the car bodies are generally represented by the characters 12 and 14 and are mounted on a single truck 15, the diaphragm being represented at 16. It is to be understood that the relative movement between the ends of the car bodies is such that the diaphragm is of a flexible form either being resilient or provided with a bellows arrangement.

The diaphragm is conveniently attached to the ends of the car bodies as more particularly shown in Figs. 11, 12, and 13, the end of the diaphragm being provided with a suitable perforated plate 17 having an angular cross section and being adapted to extend over the outwardly projecting pins 18 which extend from the car body. The pins 18 are provided with slots through which locking members 19 such as cotter pins may extend to lock the diaphragm to the car body. The diaphragm is preferably continuous between the cars and may be conveniently supported at the top from a supporting rod 20 which is suitably swiveled from the car roof as by bracket 21 to allow the necessary motion in accordance with the movements of the car. Loops 22 from the bellows plates of the diaphragm 16 are carried by this supporting rod.

The diaphragm 16 normally extends downward to a point approximately on the level of the bottom of the car body and with articulated cars, it is frequently necessary to make inspections of the mechanical and electrical equipment under the diaphragm. To facilitate such inspections, the diaphragm is provided with opening leaf portions between certain parts or folds of the diaphragm. As shown in Fig. 11, the bellows portions are normally secured by a U shaped clamp 23. The center fold, however, is preferably secured to a pair of flange plates 25 and 26 and such plates extend upwardly to a pair of pintles

24 which serve as a hinge so that as shown in Fig. 2, the folds of the diaphragm may be opened to such an extent that the inspector or mechanic may enter under the diaphragm. Ordinarily, it is sufficient to hinge the folds of the diaphragm from a point mid-way of the top and approximately at the height of the vertical plane such as shown in Fig. 4 as this gives the operator adequate room.

10 The rapid locking and unlocking of the flange plates 25 and 26 is conveniently accomplished by a sliding latch which, as shown in Fig. 3, includes a plurality of projecting studs 30 which extend through suitable openings in the folds of the diaphragm, such studs being anchored to one of the flange plates 26 as by a suitable nut, the other end of studs 30 having an enlarged head with which slideable locking plate 32 cooperates. The plate 32 is anchored to flange 20 25 by relatively smaller studs 34, the plate having suitable slots 38 for the necessary relative movement. In addition, slideable plate 32 has enlarged slots 42 which are of a keystone shape with the larger portion permitting free insertion of the locking studs 30, and with the smaller portion of slot 42 engaging under the head to hold the respective flange members 25 and 26 together. Slideable plate 32 is also conveniently provided with a handle 44 for the necessary relative movement to lock the diaphragm closed and it is held in its locked position by a retainer pin 46 held in position by a resilient spring 47, which has operating loop 48 to release it.

35 If desired, the end leaf or fold of the diaphragm could be similarly hinged and detachably locked to the end of the car body, or modified forms of latching mechanism may be used either at the central or end portions of the diaphragm. If complete separation is required as for example between non-articulated cars the latching mechanism may be extended entirely around the periphery of the car diaphragm so that the respective portions of the car bodies may be separated one from the other. It will be understood that I have shown and described a preferred form of embodiment of the invention and that other modifications may be made thereto and that I, therefore, desire a broad interpretation of the invention within the scope and spirit of the description herein and of the claims appended hereinafter.

What I claim is:

1. In a railway train, a pair of adjoining coupled cars, an outer diaphragm closing the space between the cars at sides and top, portions of a side wall of said diaphragm being relatively partable to provide an opening through which ready access to the space between the cars can be had while the cars are coupled, the provision for the relatively partable side wall including duplex metal facings for parts of the diaphragm, said parts being hinged overhead to permit movement away from a transverse plane of symmetry thereof, and readily detachable means for simultaneously fastening said duplex facings together substantially throughout their length.

2. In combination, two adjoining coupled cars and a unitary diaphragm closing the space between the adjacent ends of said cars at sides and top, means to permanently secure the diaphragm directly to fixed parts of each of the cars, the diaphragm being formed at a side thereof with a vertical slit which permits parting of the portions of the diaphragm on opposite sides of the slit to provide an opening affording lateral access to the space between the car ends, and quickly detachable means extending substantially throughout the length of the slit, said means being operable for simultaneously fastening together or simultaneously releasing the portions of the diaphragm on opposite sides of said slit.

3. An inverted U-shape diaphragm having substantially the configuration of the outside sides and top of a rail car body, the outer edges of said diaphragm having means for substantially fixed attachment thereof to the ends of adjacent car bodies, the intermediate portion of the diaphragm between its outer edges being entirely closed at the top between car bodies and having the sides thereof forming a closure for the space between the end walls of the adjacent car bodies, parts of said sides being reinforced and constituting the edges of a vertical slit through which entry may be had for inspection and repair of car parts under the diaphragm when said edges are moved apart, means to hold said parts of said sides in contact with each other including members engaging said reinforced slit edges and means to simultaneously release all of said members for opening the slit.

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