Jan. 30, 1940. E. J. W. RAGSDALE 2,188,632

DIAPHRAGM

Filed May 8, 1937

Fig. 1.

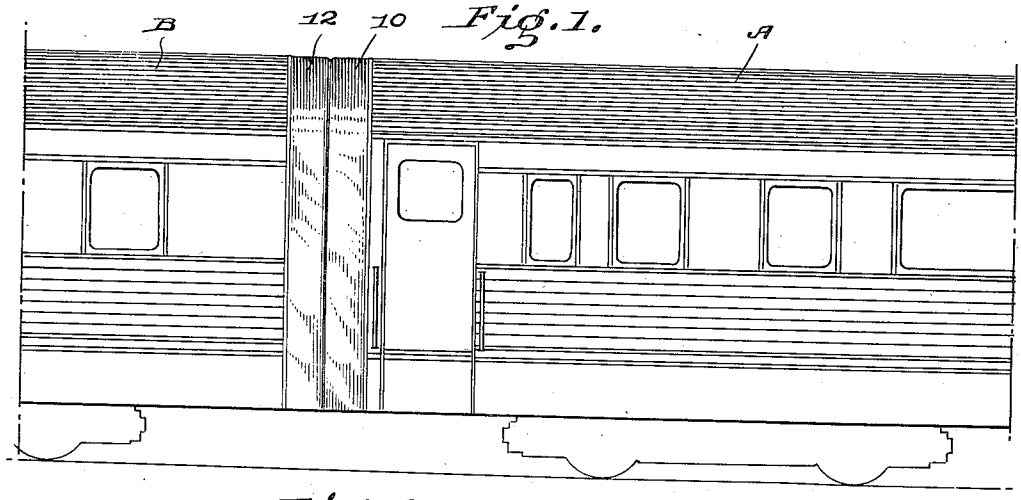


Fig. 2.

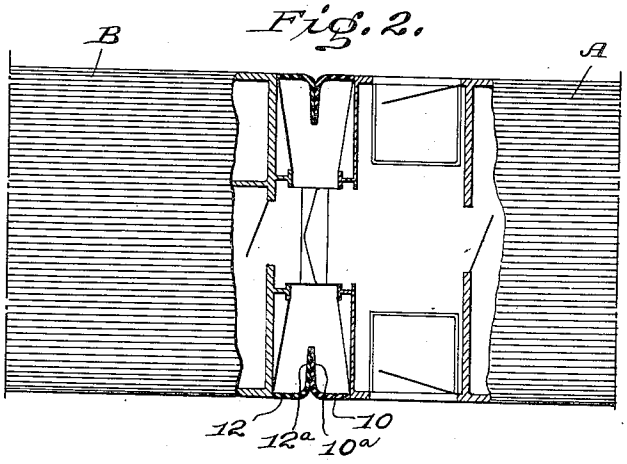


Fig. 3.

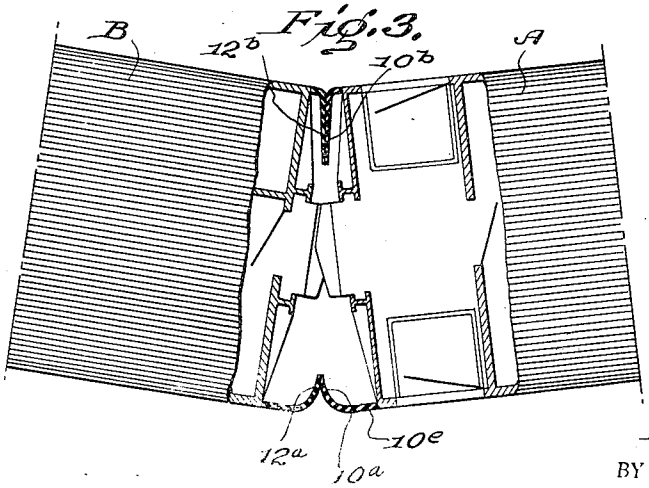
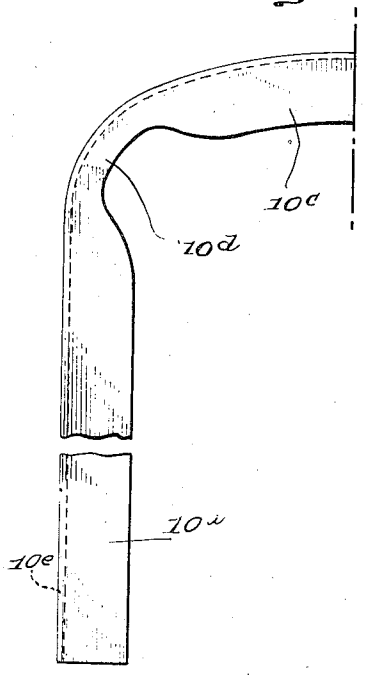


Fig. 4.



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DIAPHRAGM

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Application May 8, 1937, Serial No. 141,408

8 Claims. (Cl. 105—15)

This invention relates to improvements in a diaphragm construction more particularly for vehicle bodies such as of the rail car type.

One of the principal objects of this invention is to provide a flexible, light weight diaphragm for the end of a vehicle body which will cooperate with the diaphragm of an adjacent vehicle body to maintain the enclosure between the bodies, regardless of the angularity between the bodies.

Another object of the invention is to provide a resilient diaphragm of generally angular cross section for a vehicle body which is adapted to maintain contact with a diaphragm of an adjacent body without the necessity of attaching means between diaphragms so that the vehicle bodies may be coupled or uncoupled without interference with the diaphragm.

Another object of the invention is to provide a diaphragm having a substantially flat contacting surface with a reduced section at the corners so that the diaphragm will maintain an effective contacting surface without wrinkles.

Further objects and advantages of the invention will appear from the following disclosure of a preferred form of embodiment of the invention taken in connection with the attached drawing, in which,

Fig. 1 is a side elevation of a part of coupled rail cars;

Fig. 2 is a top plan view adjacent the coupling of the rail cars shown in Fig. 1 with parts of the structure broken away and other parts shown in cross section to show the arrangement of the diaphragm;

Fig. 3 is a view similar to Fig. 2 with the bodies at an angle with respect to each other; and

Fig. 4 is an elevation of one-half of the diaphragm.

The vehicle bodies A and B shown in Fig. 1 may be any type normally coupled together, although in this particular form of embodiment of my invention, they are shown as typical rail car bodies of the non-articulated type, each being mounted on its own respective trucks. It is frequently necessary to couple and uncouple such bodies and heretofore diaphragms with heavy rigid face plates have been used to maintain the enclosure between the bodies, but it has been very difficult to maintain diaphragm contact when the diaphragms were mounted adjacent the outer walls of the body to maintain the streamline shape of the car bodies.

In accordance with my invention, each body A and B has a diaphragm generally represented at 10 and 12, each diaphragm being of generally angular cross section and being of substantially inverted U-shape in elevation as shown in Fig. 4. The diaphragms 10 and 12 are suitably attached to the sides of the car bodies A and B substantially at their periphery thereby forming a streamline exterior as generally shown in Figs. 1, 2 and 3, although it is possible to use the diaphragm to advantage when attached at other locations. The diaphragm 10 has an inturned flange 10*a* on diaphragm 12 attached to the adjacent car body thus forming a relatively tight joint.

As shown in Fig. 4, the contacting face 10*a* of the diaphragm is continuous up the respective legs of the U-shape, and across the top and is of substantial width to maintain contact with the adjacent flange 12*a* not only in the in-line position of the car bodies, as shown in Fig. 2, but also when the car bodies are at an angle with respect to each other, as, for example, when on a curve. In such position, as shown in Fig. 3, the flanges 10*a* and 12*a* still maintain the enclosure whereas the flanges 10*b* and 12*b* have a substantial overlapping face.

The side flanges 10*a* and 10*b* of diaphragm 10 as well as the corresponding parts of diaphragm 12 are joined and are continued across the top by the flange surface 10*c*, such flange being of materially reduced width at the corners 10*d*. This reduction in the width of the flange 10*d* materially reduces the tendency of the diaphragm to buckle at the corners with the result that the depending flange of the diaphragm will always maintain a substantially flat contacting surface for contact with the adjacent diaphragm.

The diaphragm is preferably made of a flexible material which is preferably resilient and may be made of a suitable moulded rubber composition so that the flange surface will maintain contact regardless of position of the car bodies and so that the car bodies may be coupled and uncoupled without making any mechanical attachment or detachment of the diaphragms necessary. The diaphragms are preferably of varying thickness, varying from a relatively thick portion 10*e* where attached to the edge of the car bodies to the tip of the abutting surfaces 10*a*, 10*b* and 10*c*. If necessary, they may be reinforced in any desired manner.

While I have shown a preferred form of embodiment of my invention, I am aware that modifications may be made thereto and I, therefore, desire a broad interpretation of my invention within the scope and spirit of the disclosure

herein and of the claims appended hereinafter.

What I claim is:

1. In combination with a rail car body of the class described, an exterior streamline diaphragm of inherently resilient moulded rubber composition having a portion attached to the end of the body and maintaining a substantially smooth streamline continuation thereof, said diaphragm having an inwardly turned portion forming a face substantially parallel to and spaced from the end of the vehicle body, such face being adapted to abut a corresponding face of a diaphragm on an adjacent body.

2. In combination with a rail car body of the class described, an exterior streamline diaphragm of inherently resilient moulded rubber composition having a portion attached to the end of the body and maintaining a substantially smooth streamline continuation thereof, said diaphragm having an inwardly turned portion forming a face substantially parallel to and spaced from the end of the vehicle body which face is adapted to abut the corresponding face of a diaphragm on an adjacent body, the abutting face of the diaphragm being of substantial width throughout the contacting area and being of materially reduced width at the corners to prevent wrinkles.

3. In combination with adjacent vehicle bodies of the class described, generally inverted U-shaped diaphragms conforming in shape to the side and top outside margins of the vehicle body ends and secured thereto in said margins, said diaphragms being of angular cross section and inherently resilient and flexible to maintain a close contact, one portion of each diaphragm having a substantially flat contacting surface for contacting the corresponding portion of the other diaphragm and a portion extending in continuation of the outer surface of the adjacent vehicle side and top walls.

4. In combination with adjacent vehicle bodies of the class described, generally inverted U-shaped diaphragms conforming in shape to the side and top outside margins of the vehicle body ends and secured thereto in said margins, said diaphragms being of angular cross section and inherently resilient and flexible to maintain a close contact, one portion of each diaphragm having a substantially flat contacting surface for contacting the corresponding portion of the other diaphragm and a portion extending in continuation of the outer surface of the adjacent vehicle side and top walls, the contacting surface portions of the respective diaphragms being substantially continuous and of reduced width at the corners.

5. An inherently resilient and flexible diaphragm for the outer end of a vehicle body having an adjacent portion for securement to the outer margin of the body side and top walls and for extension in the direction of the outer surface of said walls, and a contacting portion at an angle thereto, said contacting portion being substantially flat and of substantially constant width except at the corners where it is of reduced width.

6. An inherently resilient and flexible diaphragm of substantially inverted U-shape in end elevation and conforming in shape to the outside margins of the side and top of a vehicle body and angular-shaped in cross section and having a substantially flat abutting surface adapted to abut parts associated with an adjacent car body, said surface being of reduced width adjacent the corners.

7. An inherently resilient and flexible diaphragm for a vehicle body, said diaphragm being of generally inverted U-shape in elevation and conforming in shape to the outside margins of the sides and top of the body and of angle cross section, said angular cross section projecting outwardly of the body and being adapted through one arm thereof to abut parts associated with an adjacent body to form an enclosure, the one arm of said diaphragm of angular cross section being of reduced width adjacent the angles between the sides and the base of the U-shape.

8. In combination with adjacent vehicle body ends of the class described, diaphragm structures supported by and extending from the said ends into contact with each other and closing the space between said car ends, each of said diaphragm structures comprising angular cross section parts extending around the sides and top of its associated car end, one arm of each of said angular section parts extending substantially in smooth continuation of the sides and top of its associated car, and the other arm extending transversely and in contact with the corresponding arm of the adjacent car end, at least said first-named arm being flexible and capable of extension and contraction in width, said structures including the capability of causing said flexible arms to contract and expand in width as the space between the margins of the sides and tops of the adjacent ends of the bodies varies whereby to maintain a substantially smooth outer surface between car ends at all times.

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