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STREAMLINED VESTIBULE CONNECTION

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2 SHEETS—SHEET 1

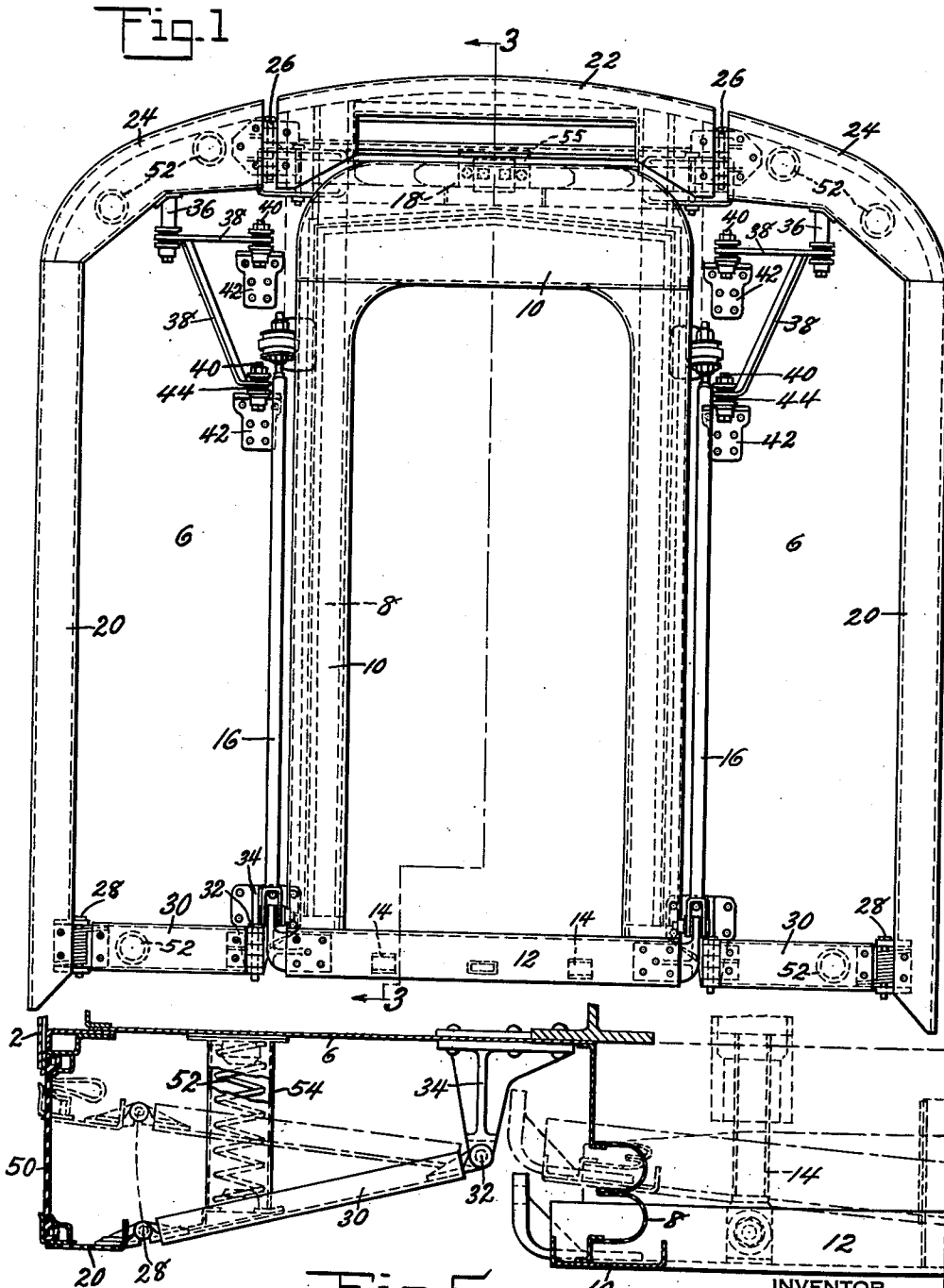


Fig. 5

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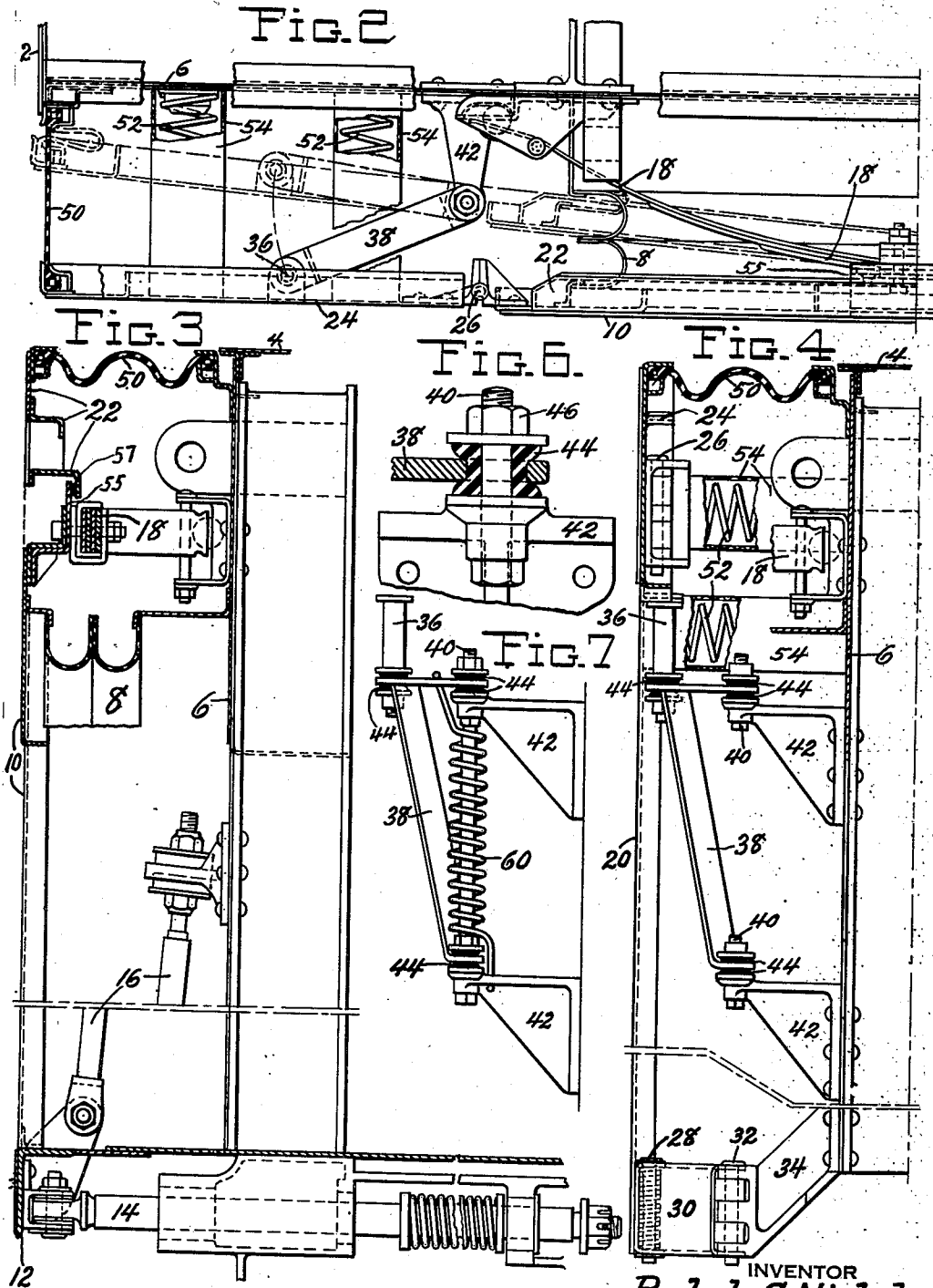
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STREAMLINED VESTIBULE CONNECTION

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This invention relates to vehicles in general and in particular to railway vehicles of the passenger carrying type having so-called streamlined connections between the cars.

Various metallic and resilient streamlined or diaphragm connections have been made for connecting cars of passenger trains, but due to the complex problems met with, it has been impossible to provide a streamlined diaphragm which was properly supported and which did not unnecessarily wrinkle or sag during normal operation of the train on tangent track. It is an object, therefore, of the present invention to provide a streamlined form diaphragm which is so supported and controlled as to prevent excessive wrinkling or sagging of the vertical side members during normal movements of the cars.

A further object of the invention is the provision of an outer face plate and diaphragm assembly which is entirely free of supporting connection to and can move independently of the central or passageway face plates and can thus be supported uniformly level regardless of the movement of the central face plate.

A still further object of the invention is the provision of a three-part outer face plate assembly which is supported by sound insulated brackets for pivotal movement relative to the end wall.

Yet another object of the invention is the provision of a simplified sound deadening pivotal mount for the supporting brackets of a diaphragm face plate.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawings, in which

Fig. 1 is an end view of a car having the improved face plate assembly attached thereto;

Fig. 2 is a plan view of the construction with parts broken away to better disclose the construction;

Fig. 3 is a vertical section taken substantially on line 3—3 of Fig. 1;

Fig. 4 is a vertical section similar to Fig. 3 but taken to one side of the center passageway structure;

Fig. 5 is a horizontal sectional view taken substantially through the lower portion of Fig. 1;

Fig. 6 is a detailed view of the improved pivotal connection for the bracket, and

Fig. 7 is a detailed view of a slightly modified form of supporting bracket.

Referring now to the drawings in detail, it will be seen that the face plate assemblies have been shown as applied to a car having side walls 2

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and roof 4 joined by an end wall 6 in which is provided the usual end doorway. Surrounding the end doorway is an inner bellows fold passage member 8 fastened to the inner face plate assembly 10. This inner face plate assembly is connected to the buffer beam 12 urged outwardly by the buffer stems 14 and having its weight supported by suspension rods 16. The upper portion of the inner face plate is urged outwardly by an upper semi-elliptic spring 18 which is anchored to the face plate and bears against the car end wall, all in the well known manner.

Surrounding the inner passageway face plate structure and entirely independent thereof is the outer face plate assembly which consists of a pair of side pieces 20 and a central bridging piece 22. The side pieces 20 have vertical portions merging into rounded portions 24 conforming to portions of the roof outline and directed inwardly to have pivotal connection at 26 to the central bridge portion 22, which likewise conforms in contour to the central portion of the vehicle roof. The lower portions of the side pieces 20 are pivotally connected as at 28 to cantilever arms 30, the inner ends of which are pivotally connected as at 32 to brackets 34 rigidly fastened to the car end wall structure. The inwardly directed portions 24 of the side pieces have attached thereto downwardly projecting pins 36 which are adapted to be pivotally connected to the leg of a Y-shaped bracket 38, the arms of which are pivoted as at 40 to brackets 42 rigidly attached to the car end wall. The pivotal connection of the Y-shaped bracket to the face plate and end wall is accomplished by means of non-metallic resilient cylinders 44 which are passed through the arms or leg of bracket 38 and compressed by nuts and washers 46, all as clearly shown in Fig. 6. Compression of the non-metallic resilient cylinders causes them to bulge and securely grip and hold the brackets 38 in proper position, preventing any possible metallic contact between the brackets and the pivot structures. It is to be noted that the axes of pivots 32 and 40 are substantially in vertical alignment and are located substantially in parallel vertical planes, passing through these pivots and through the pivots 26 connecting the side and central bridge pieces.

The outer surface of the side pieces and central bridging piece have connected thereto the outer edge of a flexible diaphragm member 50, the inner edge of which is fastened by any suitable means to the car end wall and held substantially in alignment with the car side walls

and roof. This diaphragm member preferably extends continuously from the lower edge of one side piece across the roof of the car to the lower edge of the opposite side piece. In order to maintain the diaphragm in a smooth condition resilient means such as helical springs 52 are provided. As shown, one of these springs is located to force the cantilever arm 30 outwardly and two springs are located so as to force the upper or inturned end 24 of the side piece outwardly. These springs are preferably encased in a fabric or non-metallic housing 54 so as to prevent as much as possible the transmission of noise and to protect the springs against corrosion. Since the side pieces are limited in their outward motion by the flexible diaphragm, the spring means located inwardly of this diaphragm will cause a rotative effect, thus forcing the central bridging piece 22 outwardly and thereby maintaining the entire diaphragm taut. Excessive outward movement of bridging piece 22 is prevented by stop 55 fastened to the central passage member and engaging a non-metallic member 57 fastened to a down turned flange of the central bridging piece (Fig. 3). Inward and outward motion of the face plate will be limited by the diaphragm and stop and controlled by the springs together with the supporting brackets and cantilever arms. Due to the flexibility of the outer face plate and its lack of any connection with the center face plate, it will operate to maintain the diaphragm sides in a smooth condition under normal operating conditions.

In some instances it may be desirable to eliminate one or more of the upper coil springs, in which case the pivots 40 can be connected by a long bolt as shown in Fig. 7 in order that a torsion spring 30 may be applied with one end reacting against one of the brackets 42 and the other end against the bracket 38, the torsion spring being so coiled and tensioned as to urge the brackets 38 to swing outwardly away from the car end wall.

Although the invention has been described more or less in detail with specific reference to the form shown, it will be obvious to persons skilled in the art that various modifications and rearrangements of parts other than those shown may be made without departing from the scope of the invention as defined by the appended claims.

What is claimed is:

1. A vehicle having sides and a roof joined by an end wall, a diaphragm forming substantially a continuation of the sides and roof beyond the end wall and having the inner edge connected to the vehicle, a faceplate assembly secured to the outer edge of the diaphragm and comprising a pair of side pieces and a central top bridge piece pivotally connected to and carried by the upper end portions of said side pieces, cantilever arms each pivotally connected to the lower end of a side piece and to the end wall, and bracket members each pivotally connected to the upper portion of a side piece and to the end wall, said brackets and cantilever arms supporting said face plate assembly and diaphragm for in and out and angling movements relative to the end wall.

2. A vehicle having sides and a roof joined by an end wall, a diaphragm forming substantially a continuation of the sides and roof beyond the end wall and having the inner edge connected to the vehicle, a three-piece inverted U-shaped faceplate assembly secured to the outer edge of

the diaphragm and comprising a pair of side pieces and a central top bridge piece pivotally connected to and carried by the upper end portions of said side pieces, cantilever arms each pivotally connected to the lower end of a side piece, and bracket members pivotally connected to the upper portion of a side piece, said bracket members and cantilever arms being also pivotally connected to the end wall for pivotal movement relative thereto.

3. A vehicle having sides and a roof joined by an end wall, a diaphragm forming substantially a continuation of the sides and roof beyond the end wall and having the inner edge connected to the vehicle, a three-piece inverted U-shaped faceplate assembly secured to the outer edge of the diaphragm and comprising a pair of side pieces and a central top bridge piece pivotally connected to and carried by the upper end portions of said side pieces, a pair of cantilever arms each pivotally connected to the lower portion of a side piece and to the end wall inwardly of the side piece, and a pair of Y shaped brackets each pivotally connected at the ends of its arms to the upper portion of a side piece and at its leg portion to the end wall, said cantilever arms and brackets supporting said outer face plate assembly.

4. A vehicle having sides and a roof joined by an end wall, a diaphragm forming substantially a continuation of the sides and roof beyond the end wall and having the inner edge connected to the vehicle, a three-piece inverted U-shaped faceplate assembly secured to the outer edge of the diaphragm and comprising a pair of side pieces and a central top bridge piece pivotally connected to and carried by the upper end portions of said side pieces, a pair of cantilever arms each pivotally connected to the lower portion of a side piece and pivotally connected to the end wall inwardly of the side piece, a pair of Y-shaped brackets each having its leg pivotally connected to the upper portion of a side piece and its arms pivotally connected to the end wall, and non-metallic thimbles located at the pivotal connections of said brackets to prevent metallic contact between the brackets and the associated pivot parts.

5. A vehicle having sides and a roof joined by an end wall, a diaphragm forming substantially a continuation of the sides and roof beyond the end wall and having the inner edge connected to the vehicle, a three-piece inverted U-shaped faceplate assembly secured to the outer edge of the diaphragm and comprising a pair of side pieces and a central top bridge piece pivotally connected to and carried by the upper end portions of said side pieces, a pair of cantilever arms each pivotally connected to the lower portion of a side piece and to the end wall inwardly of the side piece, and a pair of brackets each having a single point of pivotal connection to the upper portion of a side piece and two points of pivotal connection to the end wall, the pivotal connections of said cantilever arms and brackets to the end wall being located substantially in parallel vertical planes passing through the pivotal connection of said central bridge piece to said side pieces.

6. A vehicle having sides and a roof joined by an end wall, a diaphragm forming substantially a continuation of the sides and roof beyond the end wall and having the inner edge connected to the vehicle, a jointed faceplate assembly free of direct supporting connection to the vehicle and

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rigidly secured to the outer edge of the diaphragm and conforming substantially to the contour of the vehicle sides and roof, a pair of brackets supporting said faceplate assembly at substantially uniform height through direct pivotal connections thereto and to the end wall, said pivotal connections comprising non-metallic resilient cylinders axially compressed to grip and fully insulate said brackets from metallic contact with the end wall or faceplate, said pivotal connections being located in a vertical plane.

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