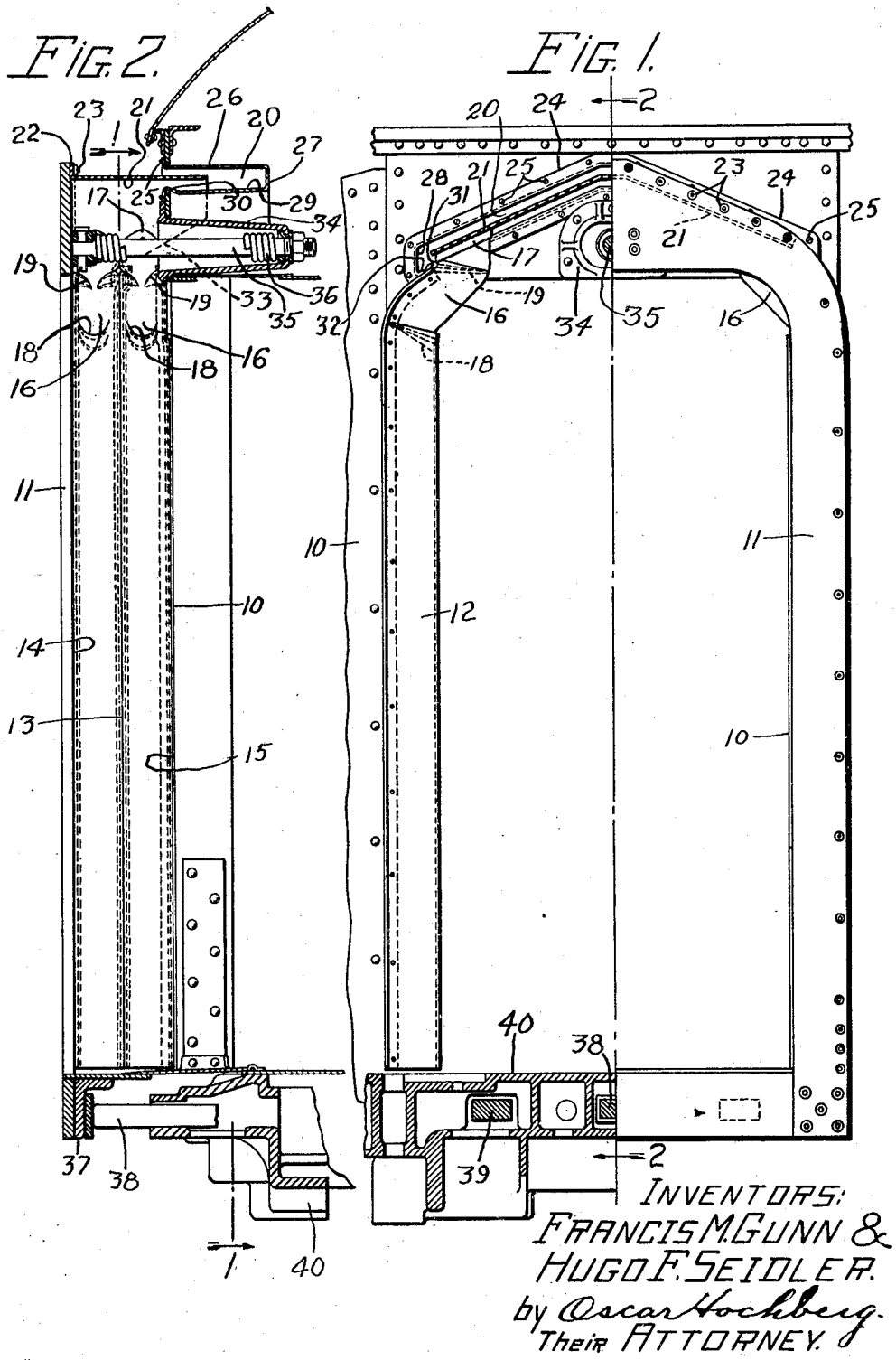
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CAR VESTIBULE DIAPHRAGM

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CAR-VESTIBULE DIAPHRAGM

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The invention relates generally to diaphragms adapted to unite the vestibules of adjacent car platforms, and specifically to diaphragms in which the top portion is of metal and the sides formed of canvas or like material, and is particularly designed to adapt itself to existing vestibule conditions except for the provision of a pocket under the hood of the car to accommodate the metal top, the sides of the diaphragm being secured to the face plate and vestibule wall as before.

Heretofore, efforts have been made to employ diaphragms having metal hoods for the purpose of prolonging the life of the vestibule connections by providing some protection from the destructive effects of sparks, hot cinders, and dirt lodging in the folds of the canvas tops then used. Such hoods were used in connection with diaphragms having sides and connecting tops. The hoods were pitched to provide a watershed and the diaphragm tops were either sloped to conform to the pitch of the overlying hoods or disposed horizontally. Thus disposed, the tops encroached upon the piston of the upper buffing device commonly used on Pullman cars and had to be cut away in the piston area of movement to avoid interference, a practice detrimental to both stability and operation of the diaphragm.

Other constructions involved the hanging of the diaphragm sides from a metal top, the metal tops being cumbered not only with the weight of the sides but required securing devices in their under faces to adequately support them. Metal tops thus equipped were required to be of metal heavy enough to prevent sagging under the weight imposed and contributed not a little to the load carried upon the buffer side stems supporting the face plate to which the diaphragm is secured. The top plates so employed were flat and made no provision for the accommodation and protection of the upper buffing device. Subsequent arrangements involved the use of flat plate hoods slidably connected to the face plate and operatively supported by the diaphragm fixed to the face plate, the car end being formed with continuous pockets adapted to receive both hood and diaphragm sides.

To avoid the difficulties resulting from defects inherently present in constructions of the type indicated, the diaphragm of the present embodiment has been assembled with an overlying metal top fixedly secured to the face plate and pitched to at once rigidify the top and provide a watershed, rendering such top self-sustaining and unhampered by any interlocking connection with the diaphragm sides, the whole being arranged to preserve an operating relation between the parts during car movement.

The foregoing and other advantages are attained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a dual front elevational view and vertical section taken on line 1—1 of Figure 2; and

Figure 2 is a vertical section through diaphragm and upper buffing piston and diaphragm top pockets in the car end, taken on line 2—2 of Figure 1.

In the drawing, 10 represents a railway car equipped with a diaphragm built in accordance with the invention, and 11 is the diaphragm face plate to which is secured a pair of diaphragm sides 12 each comprising a pair of folded sections united at their meeting edges 13 and secured along their respective outer edges 14 and 15 to the face plate and car end, respectively. In the practice of the invention, the sides 12 at their respective upper extremities 16 are shaped to assume a general ogee configuration with their top ends 17 inclined outwardly and downwardly for a purpose presently to appear. To effect the desired ogee contour the sides are reversely folded at separated points 18 and 19, and stitched along the folds of the diaphragm sides as shown.

The sides 12 are spanned by an overlying metal top 21 formed with a marginal attaching flange 22 for securing the top to the face plate 11, preferably by bolts 23, or the like, having countersunk heads to insure a flat outer face plate bearing surface for contact with similar plate on adjacent car. By virtue of the inwardly offset upper extremities 16 of the diaphragm sides 12, the width

of the metal top is materially reduced, since the sides at that level are substantially within the normal planes of the sides below the offsets as best shown in Figure 1. The metal top is pitched with its sloping sides extending with their areas completely overlying the diaphragm sides 12 at their respective upper ends 17 to amply protect the vestibule interior from the elements during car movement.

As both top and sides are secured to and move with the face plate during movement of the cars about a curve in the track, it is not important, though desirable, that there be positive contact between the inclined ends 17 of the offset upper portions 16 and the respectively adjacent sloping underfaces of the metal top 21, since it has been demonstrated in practice that ample protection from the elements is afforded the vestibule interior even though the parts be slightly out of contact with each other.

By virtue of the overlapping zones of movement of sloping upper ends 17 of the diaphragm sides and metal top 21, positive engagement between these parts is assured when the sloping sides of the metal top move towards the respectively adjacent diaphragm side, preventing any possible displacement of the diaphragm sides from their positions under the metal top at points farthest removed from the face plate.

The diaphragm sides 12 are secured to the vestibule end and collapse under pressure of face plate movement, but the pitched metal top 21, being comparatively rigid and of relatively greater length, must be accommodated within an enclosed recess in the vestibule end. Accordingly, provision is made to receive the top in pocket 20, anticlinal in transverse section and proportioned to provide ample clearance for the operative movements of the plate.

Pocket 20 is preferably of cast aluminum or the like, for lightness in weight, but may be built up of separate metal parts, if desired. As shown, the pocket is of channel formation in longitudinal section with suitable attaching flanges 24 disposed along the outer margins of the pocket and surrounding the pocket opening and secured to the car by screws 25 or like fastening devices. The pocket is pitched to conform to diaphragm top plate 21 and comprises an upper wall portion 26, inner wall 27, side walls 28, and a lower wall portion 29, the latter being inclined towards the pocket opening to avoid accumulations of water and other matter at the lower corners of the pocket.

Merging with the inclined lower wall 29 at its outer margin is a watershed 30 designed to prevent water, if any in the pocket, from dripping inside the vestibule. As indicated in Figure 1, the watershed terminates adjacent the side walls 28 of the pocket and there merges with the lower wall as at 31, providing open drains 32 to the outside of the diaphragm. To insure freedom from possible interference between diaphragm top 21 and side and end pocket walls 27 and 28, the adjacent inner corners of the diaphragm top plate are cut away as indicated at 33 in Figure 2.

Beneath the apex of the pitched metal pocket 20 is the customary spring and piston housing 34 of the upper buffing device. The single piston 35 is secured at one end to the face plate 11 and is freely slidable at its opposite end in a bearing at the inner end of the housing, a spring 36 coiled about the piston and seating at its opposite ends against the face plate and housing yieldably opposing inward movement of the diaphragm. At the lower end of the diaphragm the face plate 11 is secured in the usual manner to the buffer angle 37 operatively connected and supported by center and side stems 38 and 39 movable in the buffer end sill 40 of the vestibule platform.

By the mechanism above described there has been provided an efficient diaphragm, economical of application and simple in construction, and because of the water and fireproof top construction the maintenance and operating costs chargeable against the diaphragm are held to a minimum.

What we claim is:—

1. In a railway car, a vestibule diaphragm comprising a rigid metal top pitched to provide a watershed, and relatively collapsible fabric sides.

2. In a railway car, a vestibule diaphragm comprising a rigid metal top of less than the normal width of the diaphragm below said top, and fabric sides.

3. In a railway car, a vestibule diaphragm comprising a rigid metal top of less than the normal width of the diaphragm below said top, and fabric sides having their respective upper ends of general ogee configuration.

4. In a car vestibule construction, the combination with the vestibule end and diaphragm face plate, of a rigid metal top fixed at one end to said face plate, fabric diaphragm sides secured to and collapsible between said face plate and end beneath said top, and a pocket member in said end adapted to normally receive said top.

5. In a car vestibule construction, the combination with the vestibule end and diaphragm face plate, of a rigid metal top fixed at one edge to the face plate and normally extending with its free edge beyond the end, fabric diaphragm sides secured to and collapsible between said end and face plate, and a pocket member in said end adapted to receive said top.

6. In a car vestibule construction, the combination with the vestibule end and diaphragm face plate, of a rigid metal top pitched to provide a watershed fixed at one

edge to the face plate and normally extending with its free edge beyond the end, an anticlinal pocket member in said end adapted to receive said top, and fabric diaphragm sides secured to and collapsible between said face plate and end.

7. In a railway car, a vestibule diaphragm comprising a face plate, an independently supported and rigid metal top fixed to said face plate, and collapsible fabric sides having their respective upper end portions inwardly offset within the area of said top.

8. In a car vestibule construction, the combination with the vestibule end and diaphragm face plate, of fabric diaphragm sides supported by and collapsible between said end and face plate, an independently supported and rigid metal top fixed at one edge to said face plate and normally extending with its free edge beyond said end, and a pocket member in said end adapted to receive said top.

9. In a car vestibule construction, the combination with the vestibule end and diaphragm face plate, of fabric diaphragm sides supported by and collapsible between said end and face plate, an independently supported and rigid metal top fixed at one edge to said face plate and normally extending with its free edge beyond said end, and a pocket member in said end adapted to receive said top, said fabric sides having their respective upper ends offset inwardly within the area of said top.

10. In a car vestibule construction, the combination with the vestibule end and diaphragm face plate, of fabric diaphragm sides supported by and collapsible between said end and face plate and having their respective upper ends of general ogee configuration, an independently supported and pitched metal top fixed at one edge to said face plate and normally extending with its free edge beyond said end and spanning said sides, the ogee portions of said sides having their respective upper extremities inclined downwardly and outwardly within the plane of said top.

11. In a car vestibule construction, the combination with the vestibule end and diaphragm face plate, of an independently supported and pitched metal top fixed at one edge to said face plate and normally extending with its free edge beyond said end, and fabric diaphragm sides supported by and collapsible between said end and face plate and having their respective upper ends bent inwardly and upwardly with their extremities inclined downwardly and outwardly within the plane of said top.

In witness whereof we have hereunto set our hands this 26th day of July, 1929.

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