

H. H. SCHROYER.
CAR VESTIBULE DIAPHRAGM.
APPLICATION FILED DEC. 23, 1907.

903,893.

Patented Nov. 17, 1908.

2 SHEETS—SHEET 1.

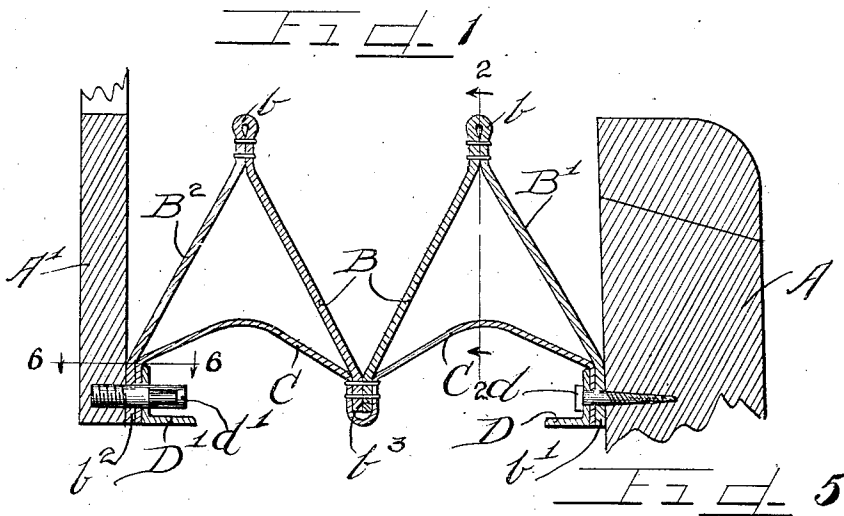
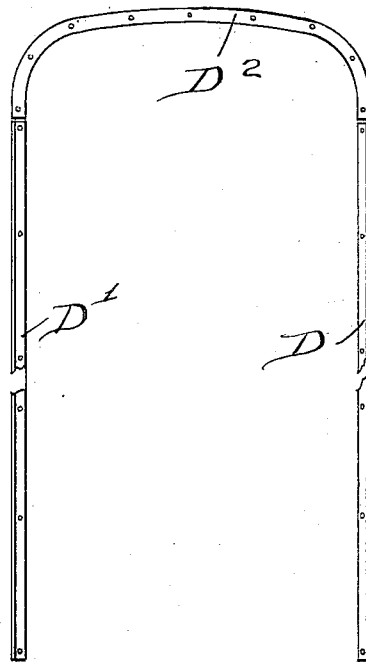
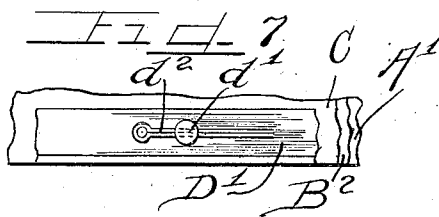
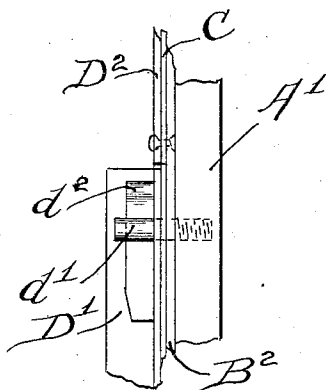


Fig. 6



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2 SHEETS—SHEET 2.

Fig. 2

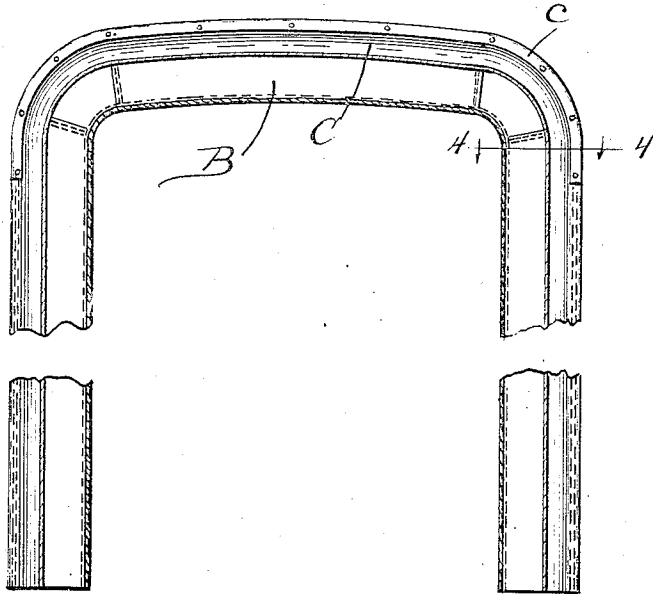
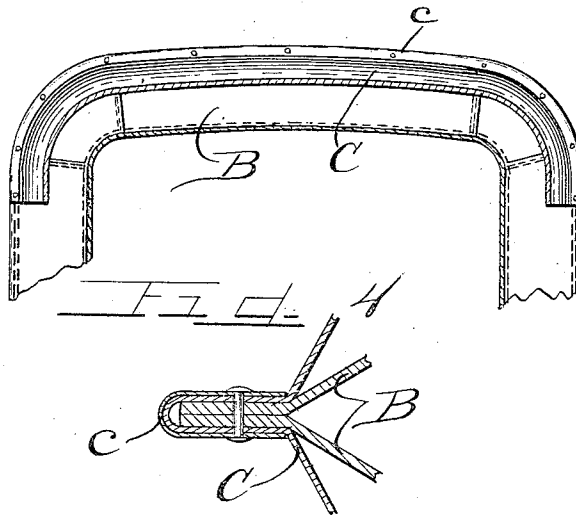


Fig. 3



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UNITED STATES PATENT OFFICE.

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CAR-VESTIBULE DIAPHRAGM.

No. 903,893.

Specification of Letters Patent.

Patented Nov. 17, 1908.

Application filed December 23, 1907. Serial No. 407,730.

To all whom it may concern:

Be it known that I, HARRY H. SCHROYER, a citizen of the United States, and a resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Car-Vestibule Diaphragms; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Heretofore car vestibule diaphragms have been made frequently by connecting alternate edges of strips of rubber or cotton belting or fabric to afford accordion plaits. These usually have been permanently secured to the vestibule face plate and to the diaphragm face plate. Usually three or more accordion plaits have been used where the fabric strips are $5\frac{1}{2}$ or 6 inches wide to enable the face plates to be separated sufficiently to permit the insertion or repair of platform buffer springs should it be necessary. As a matter of fact the equalizers for the diaphragm face plate permit outward movement thereof only to the extent of about nine inches and in consequence when it has been necessary to insert or repair platform buffer springs the diaphragm is usually ripped from the diaphragm face plate, frequently ruining the diaphragm. To obviate this difficulty was the purpose of my prior invention for which U. S. Patent No. 768,775, was issued to me on the 30th day of August, 1904, and which is also shown embodied in this invention. The use of this device permits diaphragms consisting of but two accordion plaits or folds to be used, for these permit ample movement of the diaphragm face plate even to its extreme limit of movement.

Diaphragms are often ruined by dirt and moisture lodging in the seams or folds tending to rot the diaphragm and sparks from the locomotive lodging in the angle are frequently fanned to a blaze by the movement of the car and the top of the diaphragm is thereby burned off.

The object of this invention is to provide a diaphragm for the purpose specified adapted to afford ample movement of the diaphragm face plate relative the vestibule face plate and consisting of a minimum number

of folds or plaits and also provided with means whereby the leg of the diaphragm may be quickly detached from the diaphragm face plate to permit the latter to be swung outwardly affording access to the buffer platform for the purpose before explained.

It is a further very important object of this invention to afford a lining or outer cover for the top or top and legs of the diaphragm and which though attached to the plaits of the diaphragm is itself constructed without plaits, and serves to exclude and shed moisture, dirt and sparks from the diaphragm.

It is a further object of the invention to afford such a lining for the top of the diaphragm or for the top and the legs as preferred, or both and the outer and the inner side of the diaphragm should it be desired and furthermore, to afford at the top of each diaphragm fold or plait a stiffening bow or arch to support the same on the top and to prevent sagging.

The invention consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a horizontal section taken through the diaphragm leg and covering or lining. Fig. 2 is a reduced vertical section thereof partly broken taken on line 2—2 of Fig. 1. Fig. 3 is a fragmentary sectional view in which the lining or outer covering extends downwardly somewhat below the bend or joint between the top of the leg. Fig. 4 is an enlarged fragmentary section on line 4—4 of Fig. 2. Fig. 5 is a face view of the metallic binding strips whereby the diaphragm is secured to the face plate. Fig. 6 is a fragmentary section on line 6—6 of Fig. 1. Fig. 7 is a fragmentary view showing one of the attaching studs for the leg binding strips of the diaphragm face plate.

In said drawings: A indicates a vestibule face plate and A' the diaphragm face plate which are constructed as is usual or in any suitable manner. The diaphragm B comprises as shown, strips of fabric which are folded or plaited longitudinally at the middle as shown at *b*, to provide inwardly directed folds and the adjacent edges each stapled, riveted or stitched together as shown in Figs. 1 and 4, and the outer edges or mar-

gins b' — b^2 are attached to the face plates. As shown the construction affords two accordion plaits, but of course, three may be used as is usual, and if preferred, instead of 5 folding two strips longitudinally to afford two plaits, any preferred number dependent on width may be used.

As shown, the lining or covering fabric C comprises a sheet or strip of waterproof and 10 preferably fire proof fabric or material of a width not much greater than the maximum distance between the face plates. This strip is stitched or otherwise secured to the central outer seam or plait b^3 formed by the diaphragm. Preferably it is secured thereto at 15 the same time that adjacent edges of the diaphragm strips are connected. The margins of said lining or cover strip are secured to the face plate by the same means used to 20 secure the margins of the diaphragm in place. Said covering strip need not, of course, be used along the leg, but in any event is provided over the top of the diaphragm and extends downwardly on each 25 leg preferably below the joints of the top and the leg.

A strip of sheet metal bent or folded longitudinally to U shape is secured over the outer seam or fold of the diaphragm and is 30 stitched or riveted therethrough, as shown in Fig. 4, rivets being employed. This binding may, of course, if desired, extend down the legs but this is not necessary inasmuch as the legs afford sufficient stiffness to maintain their shape or form and support the 35 weight of the top. Said metallic binding c is of great importance, however, as it affords an arch over the top of the diaphragm to support the center from sagging.

In attaching the diaphragm to the vestibule face plates a light angle bar D is provided with apertures therethrough and is of 40 a length to extend from below the joint between the leg and top to the bottom of the leg and lag screws d are inserted there- 45 through and also pass through said outer lining C and the margin B' of the diaphragm and firmly bind the same to the vestibule face plate. Angle bars D' similarly 50 perforated are normally held in place by means of stud bolts d' , which are threaded into the diaphragm face plate, and which, as shown, have longitudinally slotted heads adapted to receive a cotter-pin d^2 , whereby 55 said margin B^2 of the diaphragm and the margin of the outer lining are firmly engaged with the diaphragm face plate yet can be quickly detached by removing the cotter pins, permitting the plate to swing 60 outwardly at the bottom. As shown on both face plates a strap of metal D^2 which conforms to the top of the diaphragm is provided with apertures to receive lag screws, or other fastening means to firmly bind the

top of the diaphragm to the respective face 65 plates.

The operation is as follows: From the construction described the weight of the top of the diaphragm is carried to the legs, thus preventing any tendency whatever to sag- 70 ging. The outer lining or covering C affords an independent hood for each fold of the diaphragm excluding moisture, dirt and coals from the locomotive or other source from lodging in the folds of the diaphragm 75 and said outer lining being water proof as well as fire-proof, the diaphragm is thus prevented from injury either from the weather or from fire. There being but two of the accordion plaits usually instead of 80 three, and owing to the use of the cover or lining of the diaphragm and the stiffening strip c , the construction may be made of lighter material than heretofore though affording greater strength and consequently 85 a cheaper and better construction is secured. Of course, such a lining may be if desired, extended down the leg on the outer side, as shown in Fig. 1, as well as over the top 90 though ordinarily it is not necessary on the legs. Of course, should it be preferred a corresponding lining may be secured on the inner side of the diaphragms, to cover the plaits around the top or around the top and leg, as preferred. 95

Should it ever be necessary to partly detach the diaphragm face plate to afford access to the platform buffer spring, it may very quickly be accomplished by removing the cotter pin and swinging the bottom of the 100 diaphragm face plate outwardly in which event the fabric of the diaphragm serves as the hinge of the joint between the strap D^2 and the leg angle strips D' . Having effected the desired adjustment, said angle bars are 105 again pressed back over the slotted stud bolts d' , the cotter pins inserted and the joint is thus again closed. The methods of securing the cover or lining strip of fabric or material around the diaphragm may vary as may 110 also the construction of the metallic binding strips though the economical construction shown answers every purpose admirably and affords an exceedingly strong and durable 115 diaphragm, the strongly supported top of which is protected from the weather and from fire, which soon destroy the ordinary diaphragm.

Owing to the fact that the outer lining or cover presents no sharp angles to afford 120 lodgment for dirt, the diaphragm is obviously self cleaning and sparks can find no lodgment thereon.

While I have shown and described a diaphragm embodying my invention as con- 125 sisting of but two plaits it is understood of course, that a similar construction may be used for diaphragms of the Gould type in

which the strips supporting the diaphragms are much narrower and more plaits are necessarily employed.

Obviously many details of construction may be varied. I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art.

I claim as my invention:

1. A diaphragm of the class described having an outer covering folded centrally to cover the outwardly directed seams of the diaphragm and extending across the outer ends of the diaphragm folds and attached to the face plates by means of the fastening means for the diaphragm.

2. In a device of the class described strips of fabric having adjacent edges secured together forming a seam, a one piece covering folded around the seam with the ends stretched across the strips of fabric for protecting the same.

3. A diaphragm of the class described having a one piece narrow water and fire proof covering folded along the outwardly directed seams of the diaphragm at the top and sewed or riveted along the seam and attached with the ends of the diaphragm to the face plate by means of the fastening means for the diaphragm and an arched support for the top of the diaphragm.

4. A diaphragm of the class described having a narrow unplaited covering attached thereto along the outwardly directed seams of the diaphragm and over the top and attached therewith to the face plates, said covering constructed in one piece and folded over the outwardly directed seam and the covering stretched over the diaphragm folds and sufficiently loose to allow for relative movement of the objects to which the ends are attached, and an arched metallic binding for the top seam which binds the covering and diaphragm and supporting the weight from the legs of the diaphragm.

5. A diaphragm of the class described comprising two strips of fabric each folded to provide a plait and the adjacent ends secured together, a relatively narrow unplaited outer covering attached along the outwardly directed seam formed by the adjacent ends of the diaphragm strips and attached with the outer ends of the strips to the face plates by means of the fastening means for the diaphragm.

6. A diaphragm of the class described comprising strips secured along alternate edges to afford accordion plaits, a narrow, water and fire proof and unplaited covering attached thereto along the plaits or seams of the diaphragms and attached therewith to the face plate, a suitable metallic binding for said top plaits and a strap of metal at

the attaching ends of the top of the diaphragm conforming in shape with the face plates.

7. A diaphragm of the class described comprising strips of fabric having adjacent edges secured together at opposite sides of the strips and affording two accordion plaits, a strip of fabric stitched over the center seam with the margins directed outwardly to coincide with the margins of the diaphragm and a stiffening rib of sheet metal folded to U shape and engaged over the center seam or plait and covering and affording an arch to carry the weight of the top of the diaphragm.

8. A diaphragm of the class described comprising strips of fabric having adjacent edges stitched together at opposite sides of the strips, and affording two accordion plaits, a narrow strip of fabric stitched over the outer center seam with the margin directed outwardly to coincide with the margins of the diaphragm, an arched stiffening rib of sheet metal folded transversely to U shape and engaged over the seam and covering and affording an arch to carry the weight of the top of the diaphragm to the legs and detachable straps through which the legs of the diaphragm are secured to the diaphragm face plate.

9. In a device of the class described a diaphragm consisting of two strips only, each folded and sewed or riveted at their folds, a protecting strip of fabric folded over the seam formed by the adjacent edges of the strips and sewed or riveted with said ends and the ends of the protective fabric extending over the strips, bars rigidly connecting the ends of the strips and covering together, means detachably securing one side of the diaphragm to the appropriate face plate and a strengthening and attaching strap secured at each edge of the top of the diaphragm.

10. In a diaphragm strips provided with one fold and affording one seam, a fire and moisture proof protective covering secured to the diaphragm at the seam with its ends extending nearly straight across the folded strips, means for binding the outer ends of the strips and the ends of the protective covering rigidly together and a metallic covering secured to the diaphragm at the seam and adapting the legs of the diaphragm to support the weight of the top and prevent sagging thereof.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

HARRY H. SCHROYER.

Witnesses:

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K. E. HANNAH.