No. 790,038. PATENTED MAY 16, 1905.

J. H. DONALDSON.

CAR VESTIBULE DIAPHRAGM.

APPLICATION FILED MAR. 12, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

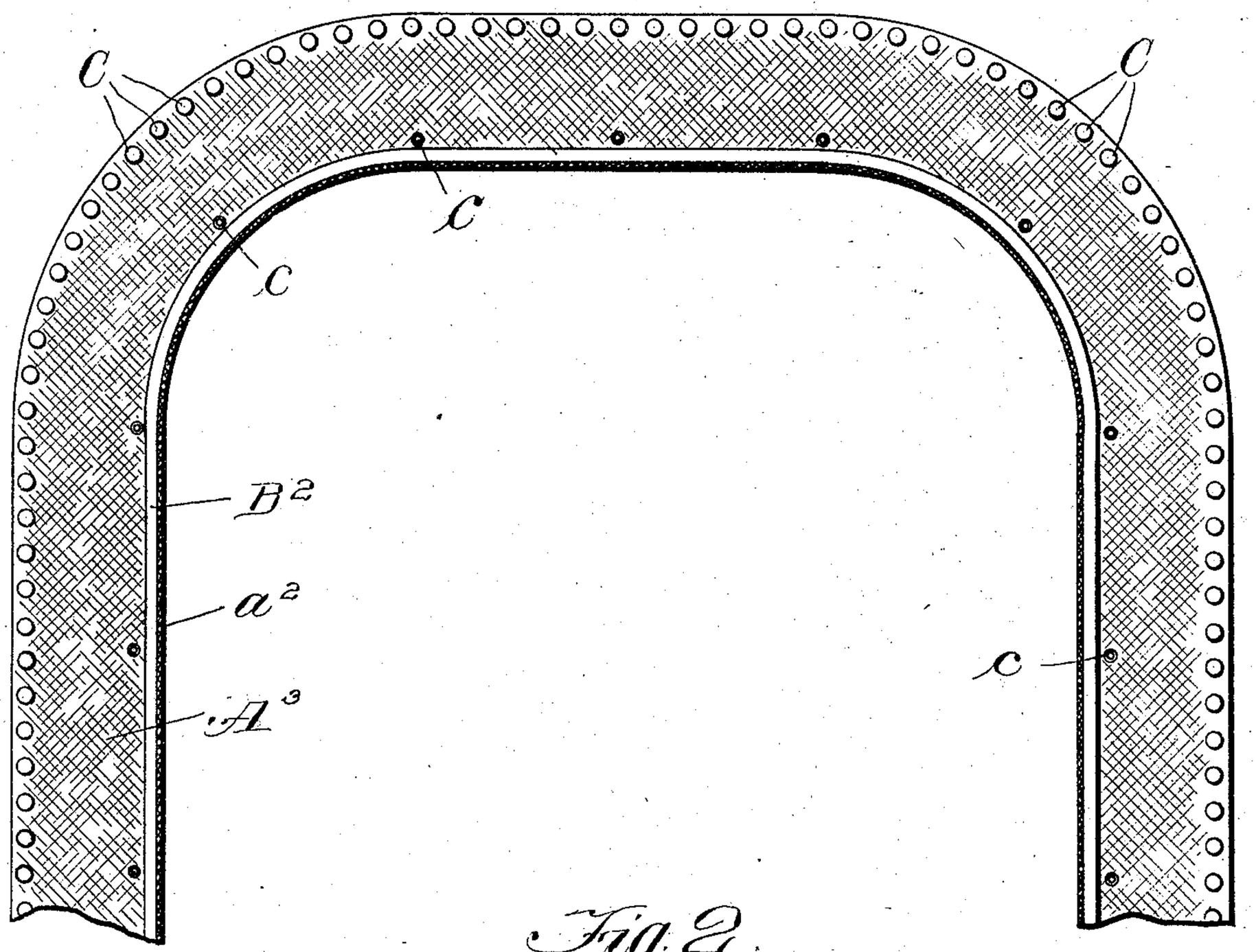
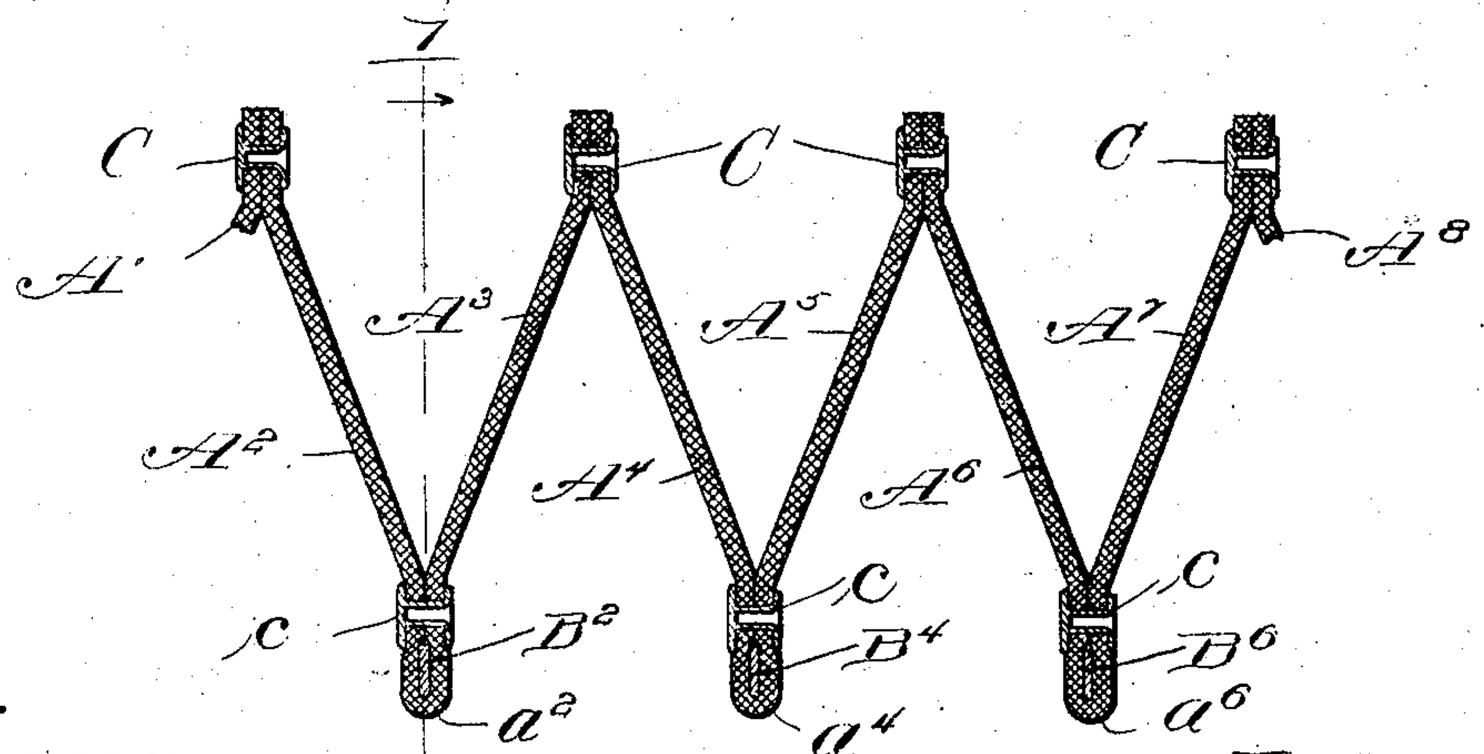


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

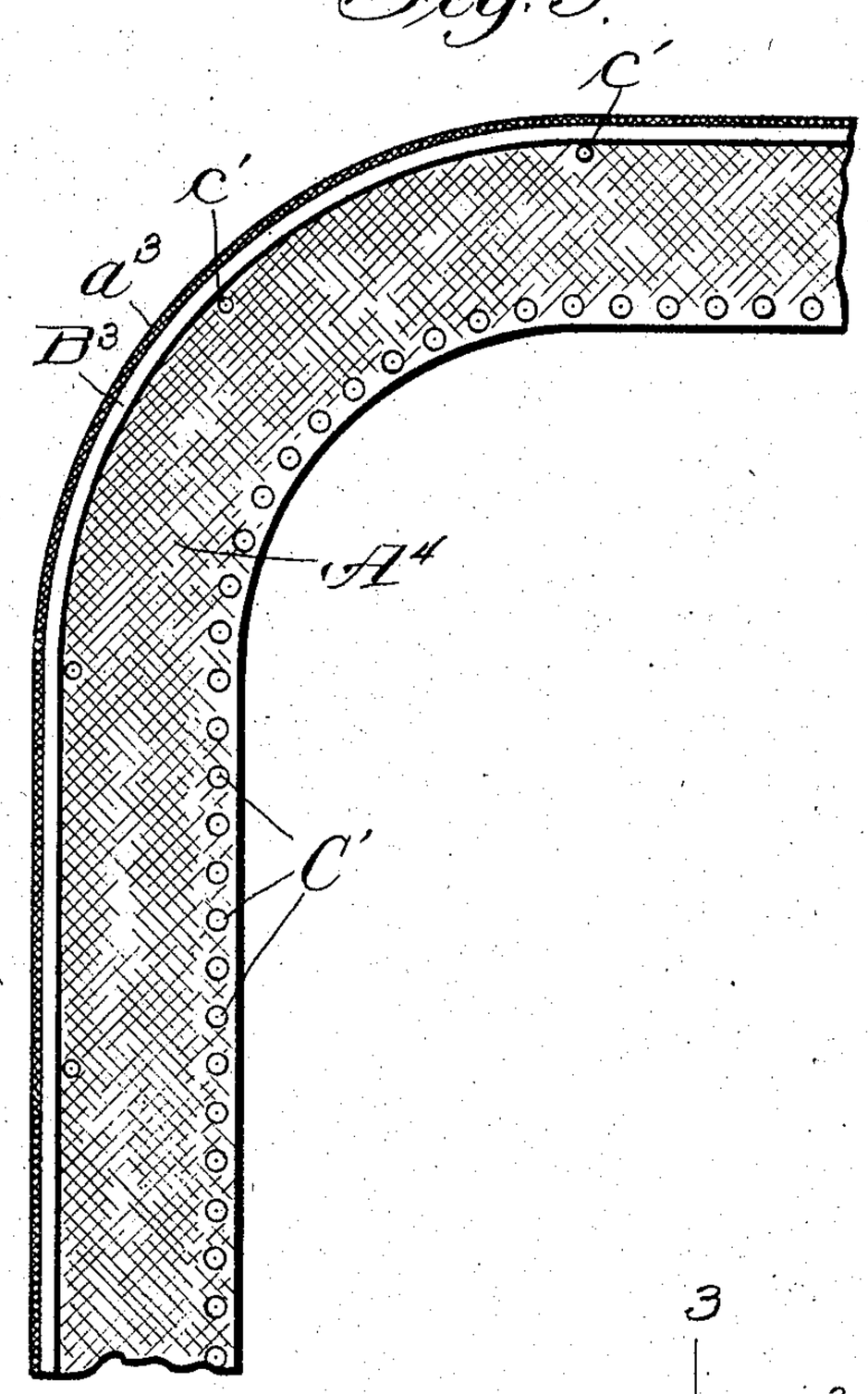
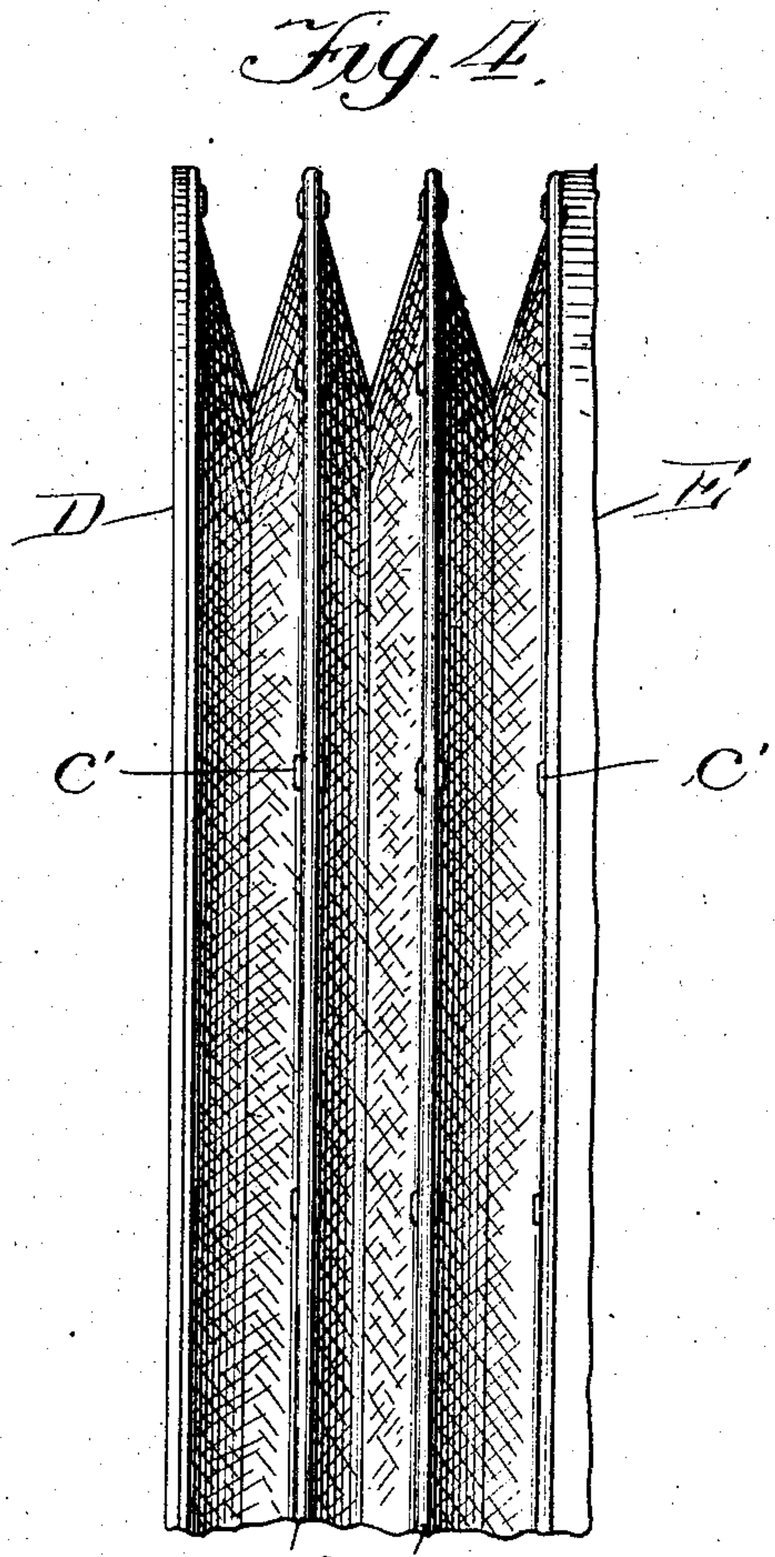


Fig. 4.



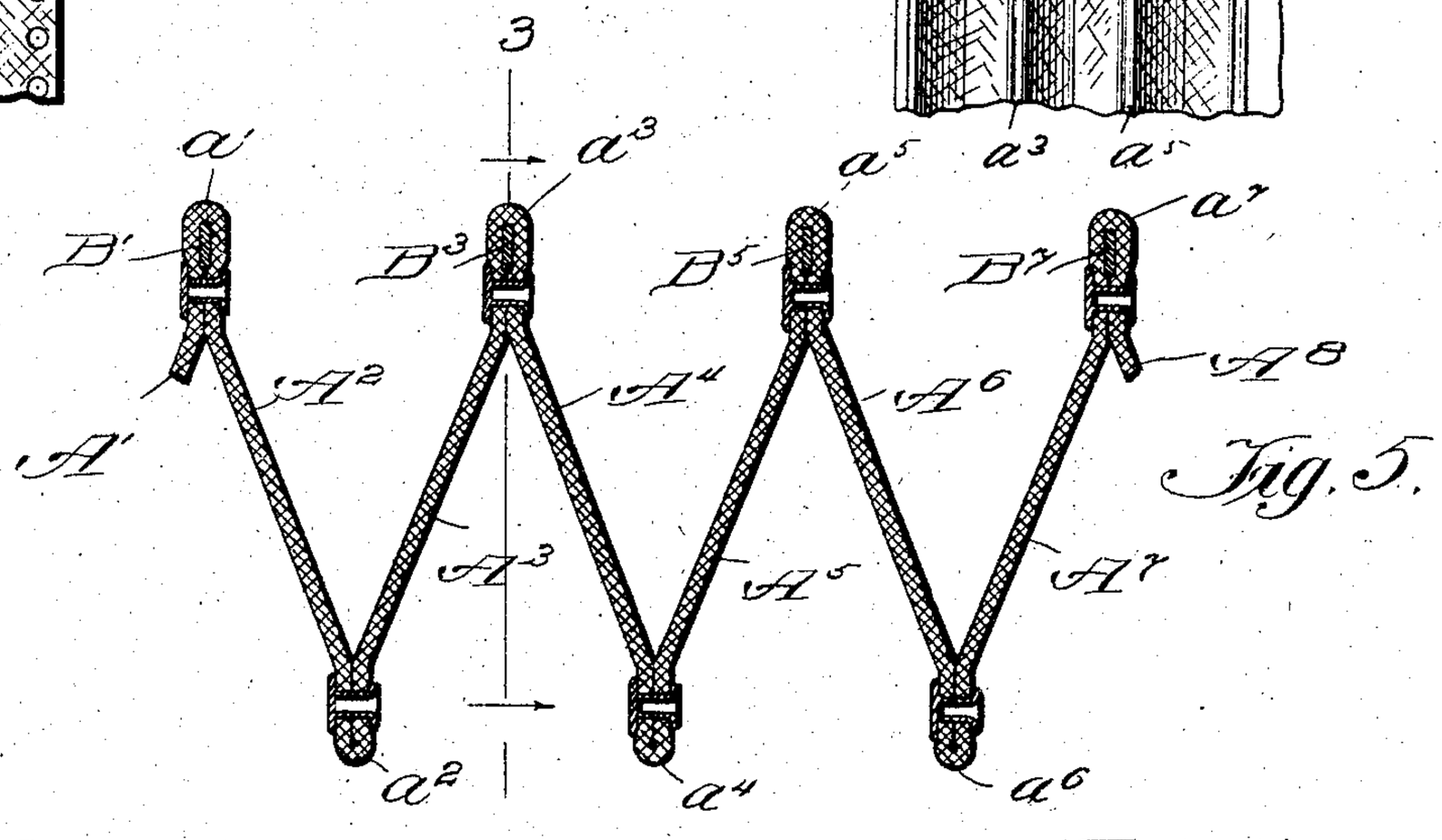


Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES H. DONALDSON, OF CHICAGO, ILLINOIS.

CAR-VESTIBULE DIAPHRAGM.

SPECIFICATION forming part of Letters Patent No. 790,038, dated May 16, 1905.

Application filed March 12, 1904. Serial No. 197,769.

To all whom it may concern:

Be it known that I, JAMES H. DONALDSON, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Car-Vestibule Diaphragms; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates in general to telescopic passage-ways, and more particularly to diaphragms for car-vestibules.

It is customary to provide closed passage-ways between the vestibules of adjoining cars, such passage-ways consisting in telescopic diaphragms formed in a series of united sections, each section extending vertically at the side of the passage-way and across the top thereof. Prior to my invention it was necessary to make the diaphragm-sections of separate pieces of fabric and to form each diaphragm-section of a plurality of parts. Diaphragms so constructed have proved unsatisfactory in use, as they are less durable along the lines where the sections or parts of each section are united, which results in the diaphragm wearing out at such points, owing to the constant strain due to the relative movements of the coupled cars.

The primary object of my invention is to provide a car-vestibule diaphragm two or more of the adjoining sections of which are formed of integral fabric and in which each section consists in a single continuous piece of fabric extending vertically at each side of the passage-way and across the top thereof, thereby simplifying and strengthening the construction of the diaphragm and obviating the objections to diaphragms the sections of which are composed of a plurality of pieces.

A further object of my invention is to provide a diaphragm for vestibule-cars which will be simple in construction, inexpensive in manufacture, and strong and durable in use.

My invention will be more fully described hereinafter with reference to the accompanying drawings, in which the same is illustrated as embodied in several convenient and practical forms, and in which—

Figure 1 is a sectional elevational view on line 1 1, Fig. 2; Fig. 2, an enlarged cross-sectional view; Fig. 3, a sectional elevational view of a modification; Fig. 4, a side elevational view, and Fig. 5 an enlarged sectional view of a modification.

Similar reference characters are used to designate similar parts in the several figures of the drawings.

Car-vestibule diaphragms are formed, as shown in Fig. 1, of vertical side portions and a top portion, which surround and form a passage-way between coupled cars. The diaphragms are made telescopic, so as to permit of the relative movements toward and away from each other of the ends of the coupled cars without opening a space between the diaphragms of the adjoining cars. In order that the diaphragms may have such telescopic movement, they are formed of alined sections, each section being united at one edge to the corresponding edge of the adjoining section, on one side thereof, and at its other edge to the corresponding edge of the adjoining section, on the other side thereof. The diaphragms may therefore be extended or telescoped to conform to the constantly-changing distance between the ends of the coupled cars.

In my invention the portions of each section of the diaphragm which extend vertically and across the top of the passage-way are formed integrally of a continuous strip of material. Any suitable material may be employed for making the sections, preferably, however, a strong durable fabric—such, for instance, as canvas of the requisite texture.

In Fig. 2 reference characters A′ A^2 A^3, &c., indicate the sections of the fabric, the section A^2 of which is united at one edge by any suitable fastening devices—such, for instance, as rivets C—to the corresponding edge of the adjoining section A′, while the opposite edge of the section A^2 is united to the corresponding edge of the adjoining section A^3 by an integral fold a^2. The section A^4 in a similar manner is united by rivets C to the corresponding edge of the section A^3 and by an integral fold a^4 along its opposite edge to the corresponding edge of the adjoining section A^5.

Within the integral folds a^2 a^4 a^6, which unite the corresponding edges of the diaphragm-sections, are located resilient rods conforming to the contour of the diaphragm and which serve to retain the respective sections united by the integral folds surrounding the rods in a distended condition around the passage-way through the diaphragm. Any suitable fastening devices may be provided for retaining the resilient rods B^2 B^4 B^6 within the corresponding folds surrounding the same—such, for instance, as rivets *c*. The rivets *c*, as indicated in Fig. 1, are located suitable distances apart along the vertical side portions, as well as the top portion of the diaphragm, the distances between the rivets being such as to insure the resilient rods being retained in proper relation to the adjoining diaphragm-sections.

While in Fig. 1 the resilient rods are shown as located within folds formed along the inner edges of the diaphragm-sections, it is obvious that they may be, if desired, located within folds formed along the outer edges of the adjoining diaphragm-sections, as shown in Fig. 3, in which event the inner edges of the adjacent sections are united by suitable fastening devices—such, for instance, as rivets C′.

In Fig. 2 I have shown two sections of a diaphragm as formed integrally; but it is obvious that more than two sections might be formed integrally by uniting the same along their adjacent edges by integral folds.

In Fig. 5 I have illustrated a diaphragm all of the sections of which are formed integrally, the outer edges of adjacent sections being united by integral folds a', a^3, a^5, and a^7, while the inner edges are united by integral folds a^2 a^4 a^6.

From the foregoing description it will be observed that I have invented an improved diaphragm for vestibule-cars composed of continuous sections extending at both sides and at the top of the diaphragm formed integrally, thereby strengthening and rendering more durable the diaphragm, as well as rendering the same absolutely dust-proof. It will be further observed that in my improved diaphram two or more of the sections thereof are formed integrally, thereby obviating the necessity of employing fastening devices to unite the corresponding edges of adjacent sections and rendering the construction of the diaphragm simple and durable.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form, the proportion of parts, and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit of my invention.

Having now fully described my invention, what I desire to secure by Letters Patent is—

1. A diaphragm for car-vestibules comprising a plurality of sections each section having vertical portions at the sides and a horizontal portion at the top of the diaphragm, the portions of each section being formed integrally and composed of a continuous strip of material, and means for uniting the inner edge of each section to the inner edge of the adjacent section on one side and the outer edge of each section to the outer edge of the adjacent section on the opposite side thereof.

2. A diaphragm for car-vestibules comprising a plurality of sections each section having vertical portions at the sides and a horizontal portion at the top of the diaphragm, the portions of each section being integral and composed of a continuous strip of material, two or more adjacent sections being formed integrally, and an integral fold extending along the edges of and uniting adjacent sections.

3. A diaphragm for car-vestibules comprising a plurality of sections each section having vertical portions at the sides and a horizontal portion at the top of the diaphragm, the portions of each section being integral and composed of a continuous strip of material, two or more adjacent sections being formed integrally, an integral fold extending along the edges of and uniting adjacent sections, and a rod located within said fold to retain the side and top portions of the sections distended.

4. A diaphragm for car-vestibules comprising a plurality of sections each section having vertical portions at the sides and a horizontal portion at the top of the diaphragm, the portions of each section being integral and composed of a continuous strip of material, two or more adjacent sections being formed integrally, an integral fold extending along the inner edges of the vertical and horizontal portions of adjoining sections, and a rod located within said fold to retain the vertical and horizontal portions of the sections distended.

5. A diaphragm for car-vestibules comprising a plurality of sections each section having vertical portions at the sides and a horizontal portion at the top of the diaphragm, the portions of each section being integral and com-

posed of a continuous strip of material, two or more adjacent sections being formed integrally, an integral fold extending along the inner edges of the vertical and horizontal portions of adjoining sections, a rod located within said fold to retain the vertical and horizontal portions of the sections distended, means for securing the rod within said fold, and means for uniting the outer edges of adjacent sections.

In testimony whereof I sign this specification in the presence of two witnesses.

JAMES H. DONALDSON.

Witnesses:

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C. C. CUNNINGHAM.