

No. 845,451.

PATENTED FEB. 26, 1907.

J. H. DONALDSON.
CAR VESTIBULE DIAPHRAGM.
APPLICATION FILED NOV. 7, 1905.

Fig. 1.

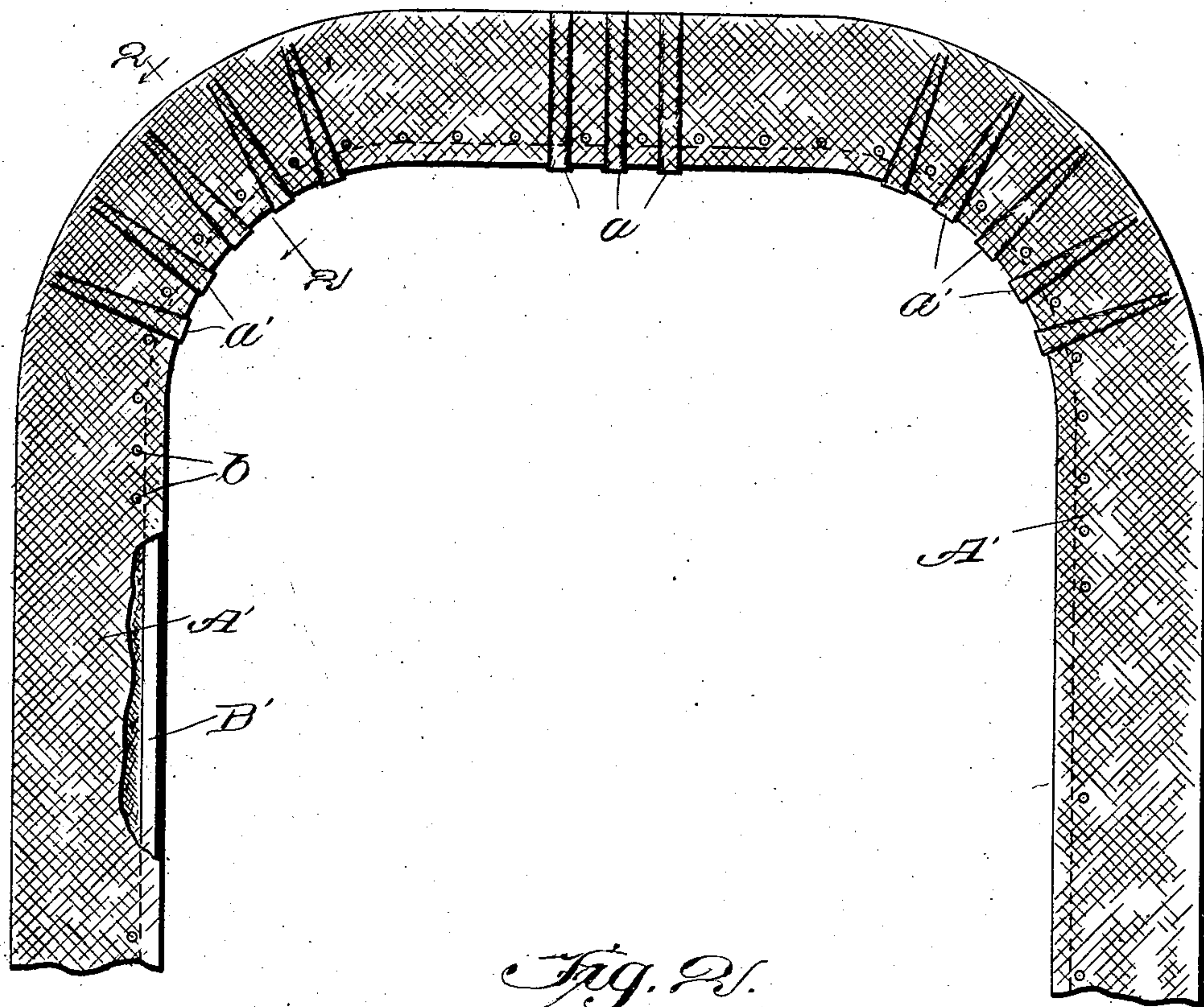


Fig. 2.

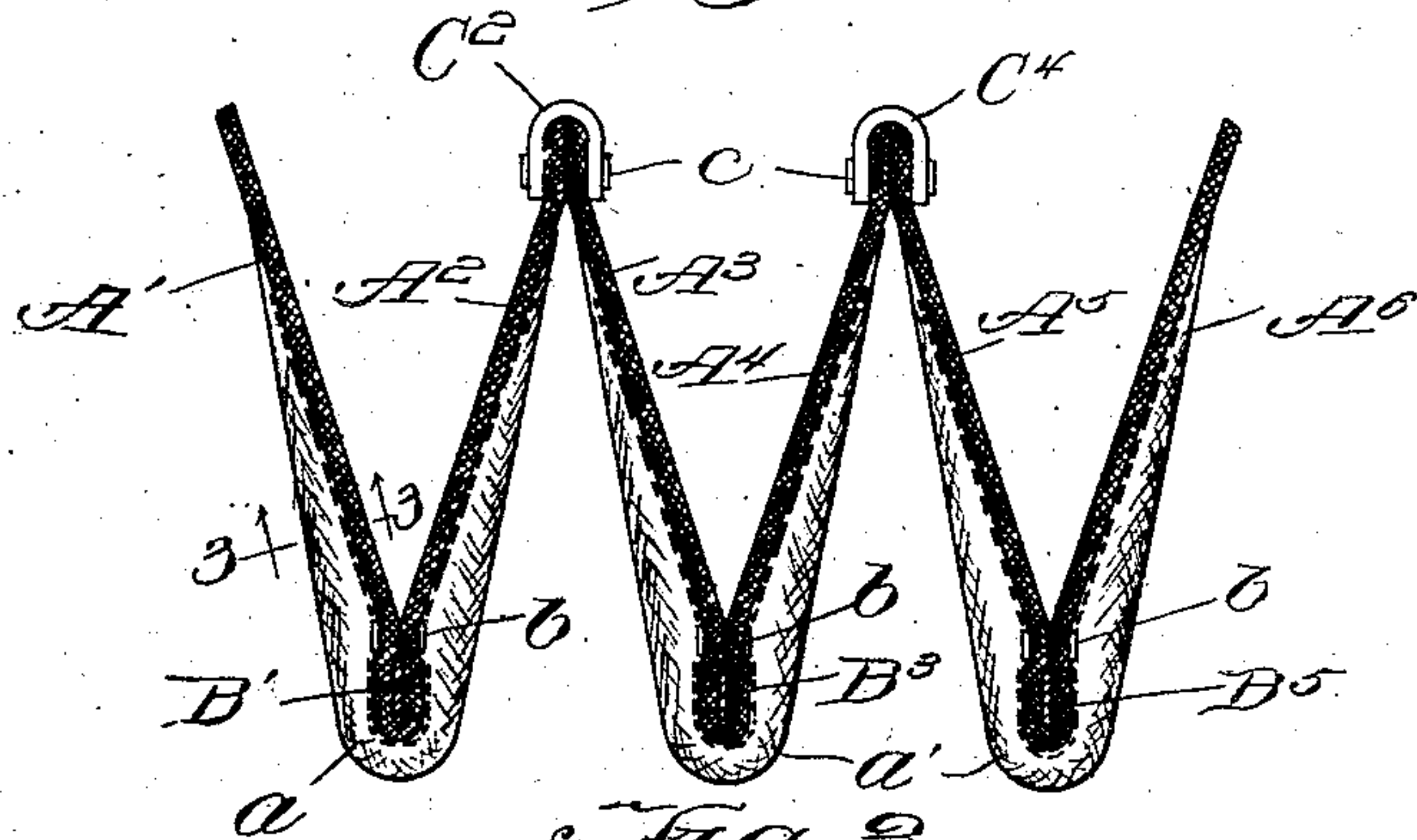
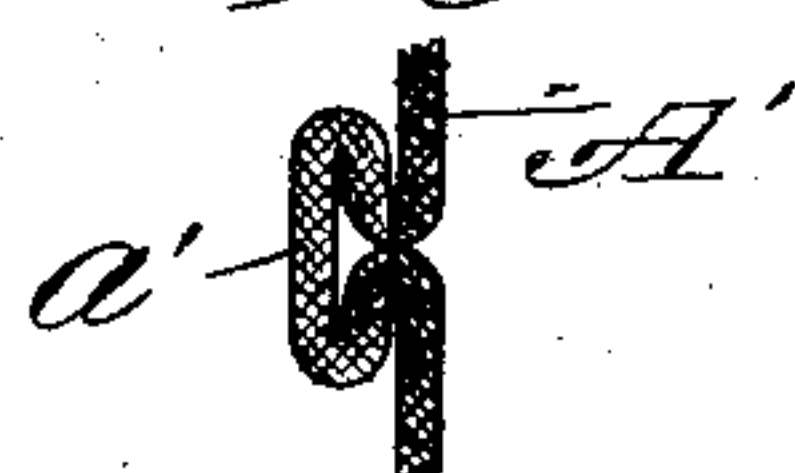


Fig. 3.



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CAR-VESTIBULE DIAPHRAGM.

No. 845,451.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed November 7, 1905. Serial No. 286,211.

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
5 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 same, such as will enable others skilled in the art to which it
10 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 vestibule-cars, and more particularly to diaphragms for the vestibules. It is customary to provide closed passage-ways between the vestibules of adjoining cars, such
15 passage-ways consisting of telescopic diaphragms formed in a series of united sections, each section extending vertically at the sides of the passage-way and across the top thereof. It is usual to construct the diaphragms for car-vestibules of flexible material, such as a heavy grade of cotton duck.
20 The flexibility of the fabric permits the top portions, as well as the corners between the top and side portions, to sag, with the result that such portions soon wear out, owing to the constant expansion and contraction of the diaphragms due to the relative movements between the adjoining cars. The top
30 and vertical side portions of the diaphragm-sections are usually made of separate pieces of fabric, and the sections are usually made separate, owing to the difficulty in forming the curved corners between the top and vertical side portions when a single continuous piece of material is used for each section or for a plurality of sections. Diaphragms
40 composed of separate sections, each section made of a plurality of parts, are unsatisfactory, 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 to which they are subjected.

The primary object of my invention is to provide a vestibule-car diaphragm in which the top portion and corners of the diaphragm-
50 sections will not sag from usage, but will always remain distended.

A further object of my invention is to provide a car-vestibule diaphragm in which the corners between the top and side portions of the diaphragm-sections will be so constructed
55 as not to sag and at the same time permit a

continuous piece of material being used for each section or for a plurality of adjacent sections.

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

My invention, generally described, consists of a diaphragm the sections of which are provided with plaits at the corners between the vertical side and top portions and also in the top portion, thereby strengthening the sections to prevent their sagging and at the same time facilitating the making of the corners of the sections.

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

Figure 1 is an elevational view; Fig. 2, an enlarged sectional view on line 2 2, Fig. 1; and Fig. 3 a sectional view on line 3 3, Fig. 2.

The same reference characters are used to designate the same parts in the several figures of the drawing.

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 aligned 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.

Reference characters A', A², A³, A⁴, A⁵, and A⁶ indicate the sections of a car-vestibule diaphragm made of suitable flexible material—such, for instance, as heavy cotton duck. The fabric forming the sections is provided with a series of plaits *a'* throughout the portions thereof, extending around the corners intermediate of the vertical and top portions of the sections. In order to retain

the fabric in such plaits lines of stitches, such as indicated in Fig. 2, may be used. The fabric forming the top portion of each section is also preferably a series of vertical plaits *a*, as shown in Fig. 1.

When the adjacent sections are formed integrally, as indicated in Fig. 2, the plaits extend around the two sections and taper toward their outer ends, so as to render the inner edges of the sections within the corners shorter than the outer edges, thereby forming symmetrical corners. In Fig. 2 I have shown the sections $A^1 A^2$ as formed integrally while the two next sections $A^3 A^4$ are also formed integrally, and the sections A^5 and A^6 are formed integrally. The outer edges of the sections A^2 and A^3 are united by any suitable means—such, for instance, as a binding C^2 , through which rivets *c* pass. A similar binding C^4 unites the outer edges of the sections A^4 and A^5 by means of rivets *c*, passing through the binding and sections.

Within the integral folds uniting the inner edges of adjacent sections are provided resilient rods B^1 , B^3 , and B^5 , conforming to the contour of the diaphragms and which serve to retain the respective sections united by the integral folds surrounding the rods in a distended position around the passage-way through the diaphragm. Any suitable fastening device may be provided for retaining the resilient rods within the folds surrounding the same—such, for instance, as rivets *b*. The rivets *b*, as indicated in Fig. 1, are located suitable distances apart along the vertical side portions, as well as across the top portion of the diaphragm, the distances between the rivets being such as to insure the resilient rods being retained in proper positions relatively to the diaphragm-sections.

From the foregoing description it will be observed that I have invented an improved diaphragm for car-vestibules, the sections of which are reinforced, so as to always remain distended, the reinforcements at the corners of the sections serving also to form symmetrical curved corners uniting the vertical side and horizontal top portions of the sections.

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

1. In a diaphragm for car-vestibules, a section formed of flexible material having vertical portions at the sides and horizontal portion at the top of the diaphragm, the top and side portions being united by curved corner portions having radial plaits formed therein.

2. In a diaphragm for car-vestibules, a sec-

tion formed of a continuous integral strip of flexible material and having vertical portions at the sides and horizontal portion at top of the diaphragm, the top and side portions being united by curved corner portions having radial plaits formed therein.

3. A diaphragm for car-vestibules comprising a plurality of sections formed of flexible material each section having vertical portions at the sides and horizontal portion at the top of the diaphragm, the top and side portions of each section being united by curved corner portions having radial plaits formed therein.

4. A diaphragm for car-vestibules comprising a plurality of sections formed of flexible material each section having vertical portions at the sides and horizontal portion having vertical plaits formed therein at the top of the diaphragm, the top and side portions of each section being united by curved corner portions having radial plaits formed therein.

5. A diaphragm for vestibule-cars comprising a plurality of sections formed of flexible material each section having vertical portions at the sides and 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, the top and side portions of each section being united by curved corner portions having radial plaits formed therein.

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

7. In a diaphragm for car-vestibules, a section formed of flexible material having vertical portions at the sides and a horizontal portion at the top of the diaphragm, the material of which the section is formed being folded to form reinforcing-plaits.

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

JAMES H. DONALDSON.

Witnesses:

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