No. 738,034. PATENTED SEPT. 1, 1903.

J. S. HENDERSON & A. H. LEWIS.

MEANS FOR KEEPING FROST FROM WINDOWS.

APPLICATION FILED JUNE 3, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

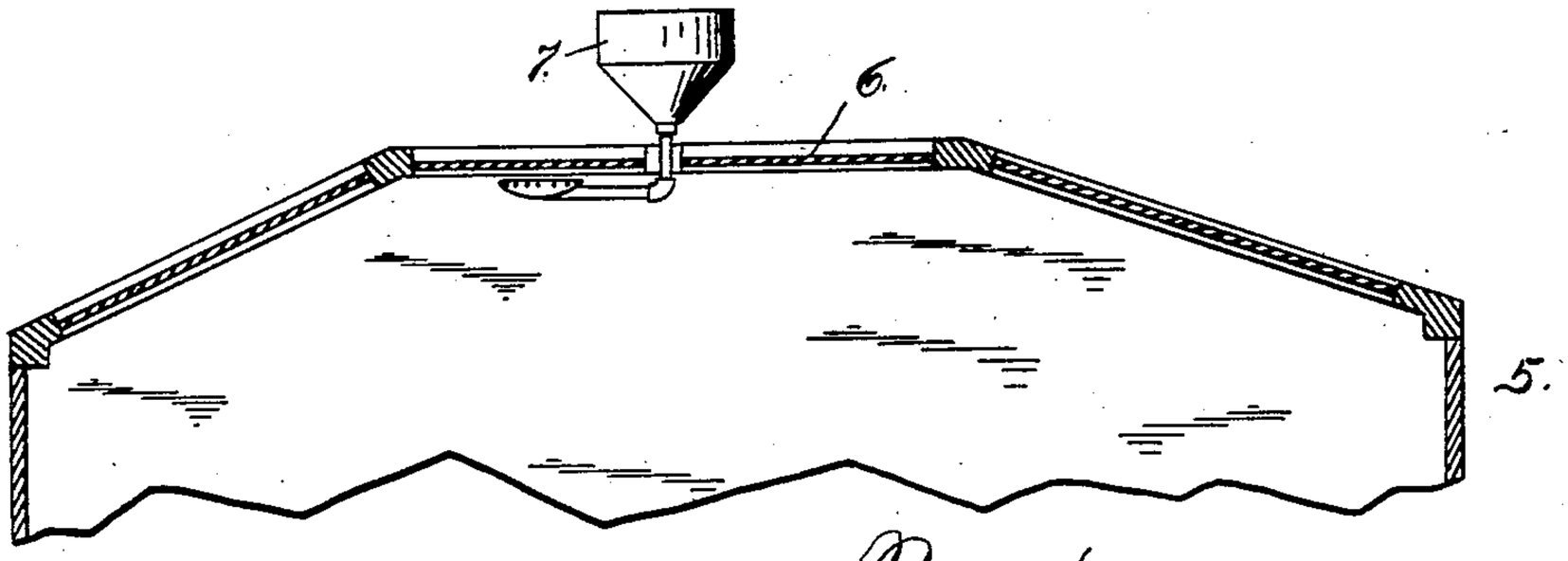

Fig. 1.

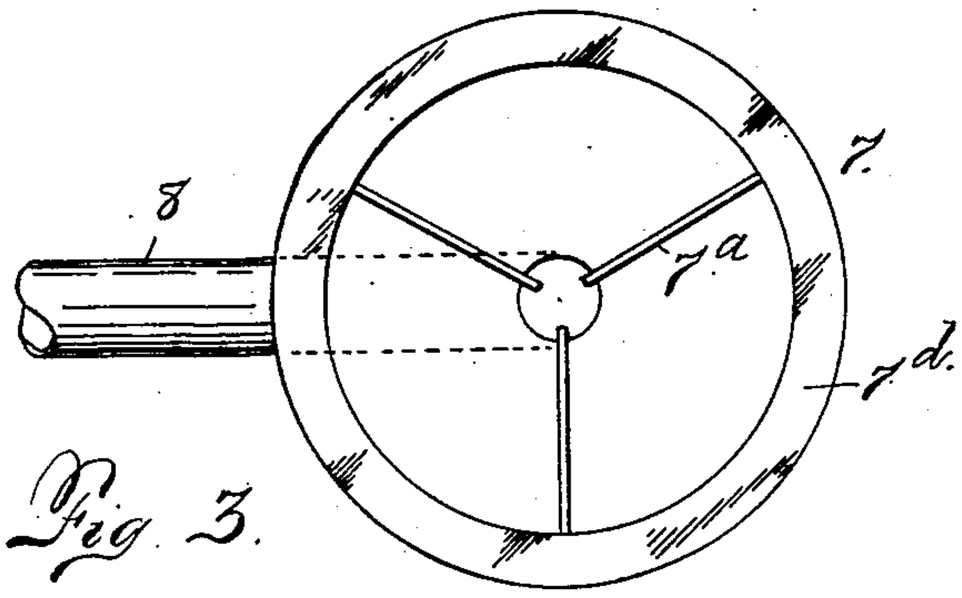

Fig. 3.

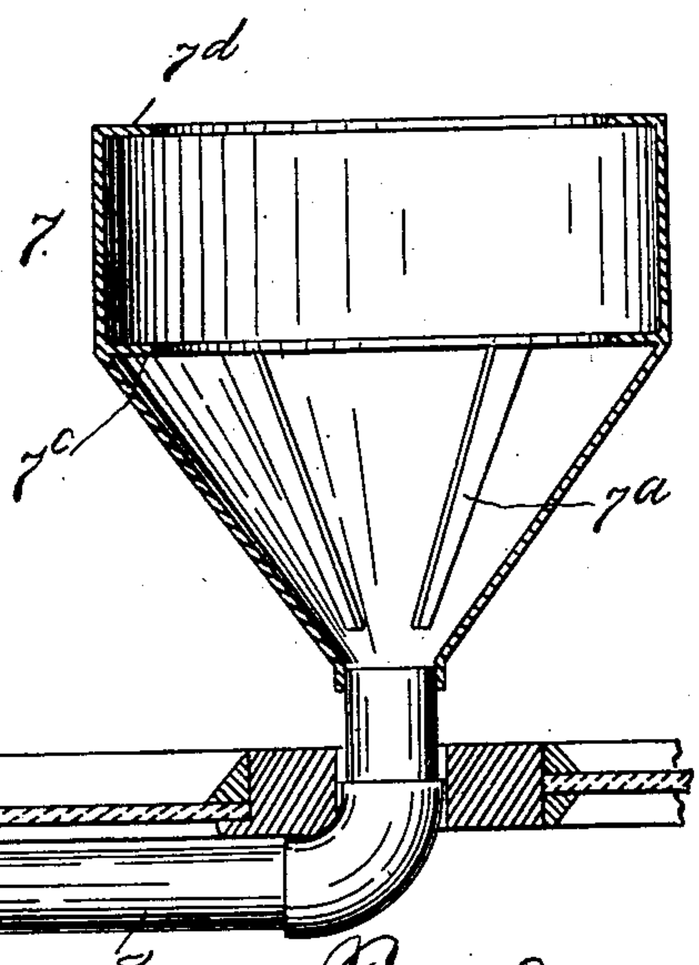

Fig. 2.

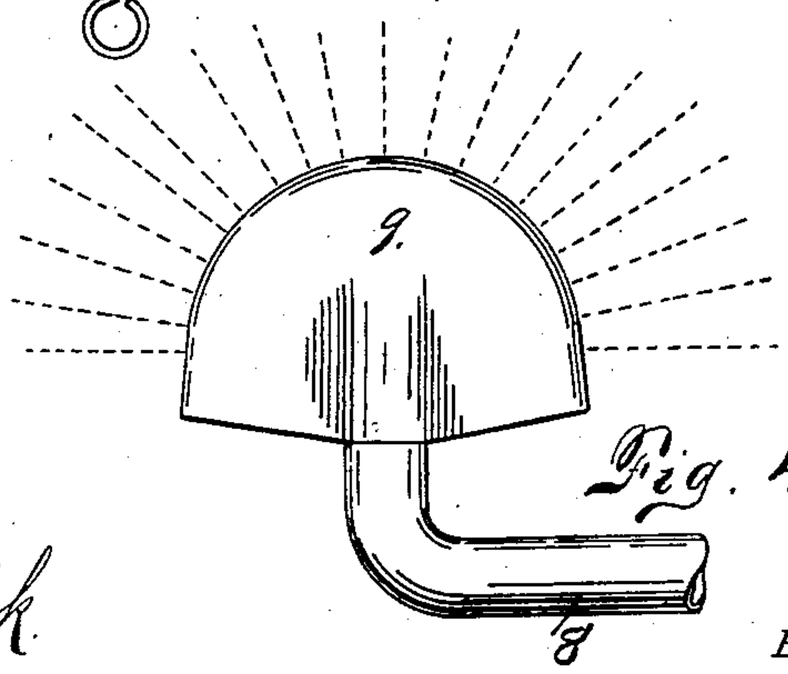

Fig. 4.

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MEANS FOR KEEPING FROST FROM WINDOWS.

APPLICATION FILED JUNE 3, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

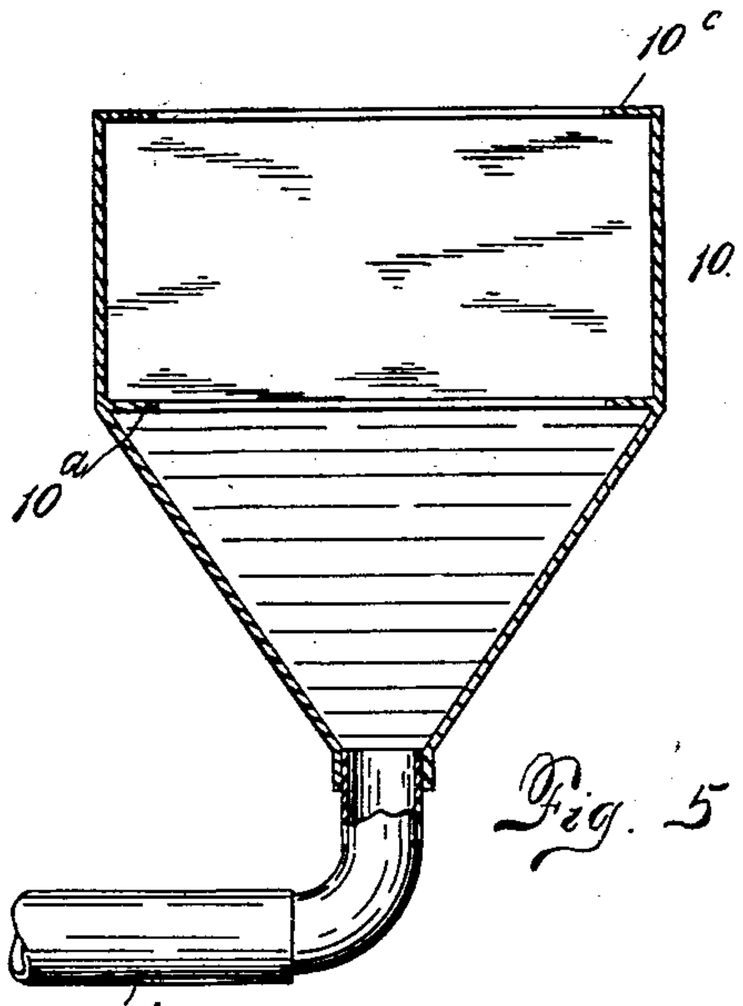

Fig. 5.

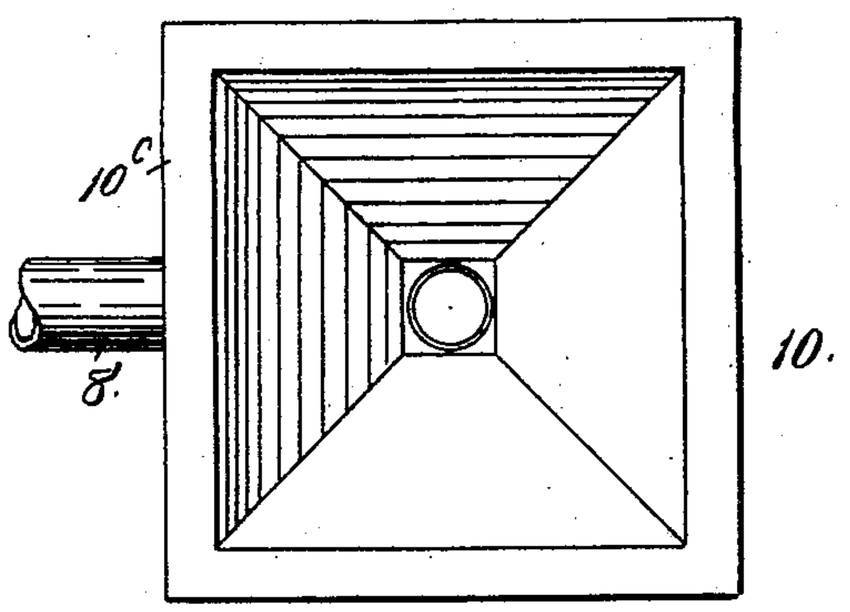

Fig. 6.

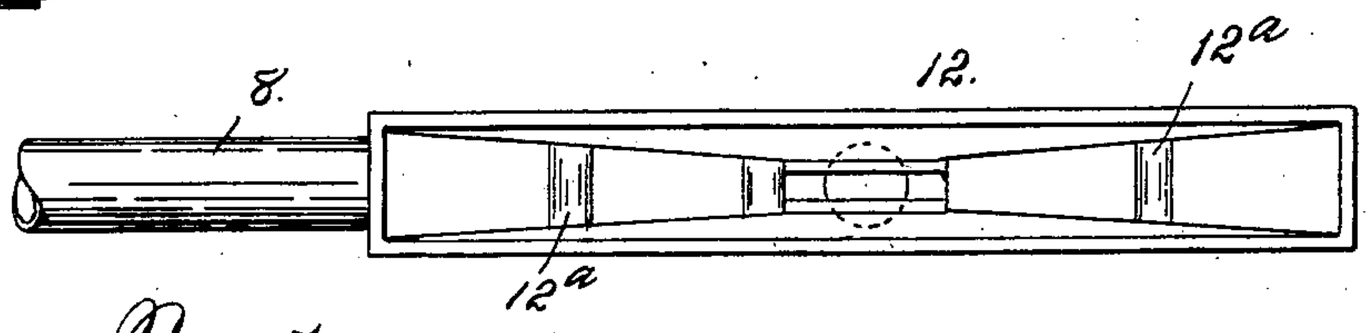

Fig. 7.

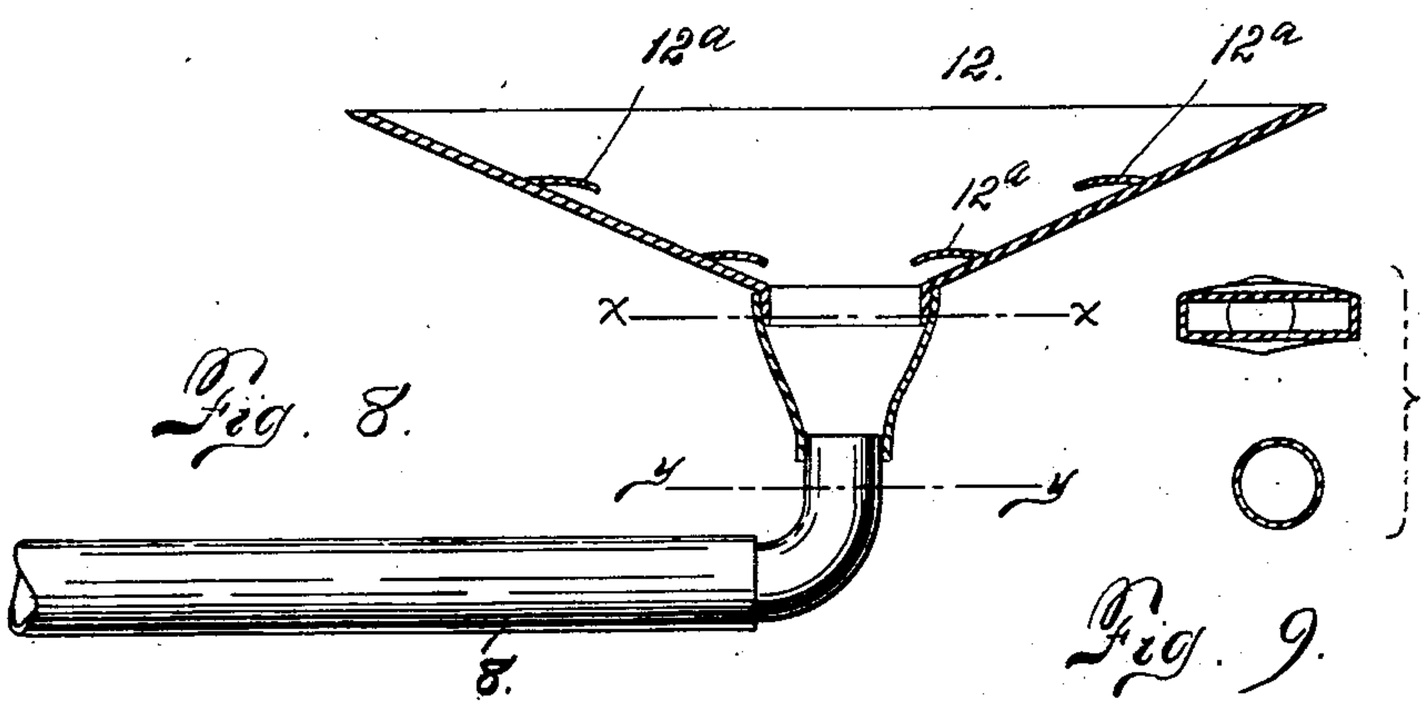

Fig. 8.

Fig. 9.

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UNITED STATES PATENT OFFICE.

JOHN S. HENDERSON AND AMMON H. LEWIS, OF DENVER, COLORADO.

MEANS FOR KEEPING FROST FROM WINDOWS.

SPECIFICATION forming part of Letters Patent No. 738,034, dated September 1, 1903.

Application filed June 3, 1902. Serial No. 110,103. (No model.)

To all whom it may concern:

Be it known that we, JOHN S. HENDERSON and AMMON H. LEWIS, both citizens of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Means for Keeping Frost from Windows; and we do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in means for keeping the frost off the vestibule-windows of street-cars.

It is well known that in cold weather under ordinary circumstances frost accumulates on the inner surface of street-car vestibule-windows to such an extent as to make it difficult for the motorman to see the track ahead.

Our object is to provide means for automatically preventing the accumulation of frost on these windows, and to this end we provide a funnel or hopper shaped device which is arranged on the vestibule and projects in front of the car to catch the air. A conduit leads from this device to a nozzle arranged to discharge the air upon the inner surface of the window in sprays or jets.

The invention will now be described in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a horizontal section taken through the vestibule of a car, showing our improved device in place. Fig. 2 is a similar view, the parts being shown on a larger scale. Fig. 3 is a front view of the air-collecting funnel. Fig. 4 is a detail view of the discharge-nozzle. Figs. 5 and 6 are sectional and front views, respectively, of another form of air-collecting device, while Figs. 7 and 8 show still another form of device. Fig. 9 shows two sectional views taken on the lines $x\ x$ and $y\ y$, respectively, of Fig. 8.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the car-vestibule, and 6 the central pane or front glass of the vestibule-window, in front of which is mounted a funnel-shaped air-collecting device 7. This device is attached to one extremity of a conduit 8, whose opposite extremity is connected with a fan-shaped nozzle 9, perforated at its outer edge to permit the discharge of air which is collected in the device 7 and passes through the conduit 8, which is located inside the vestibule-window. This nozzle is flat on the side adjacent the window, so that it may occupy a position close to the glass, its opposite side being arranged or otherwise shaped to permit a suitable air-space within the nozzle. The inside of the funnel-shaped device is provided with blades 7^a, which are directed toward the smaller extremity of the funnel, which is also provided with interiorly-projecting flanges 7^c and 7^d. The theory of this device is that as the car moves forward the air collected in the funnel-shaped device is forced through the conduit 8 into the nozzle 9 and discharged therefrom across the face or inner surface of the window-glass, whereby the moisture is prevented from collecting on the glass and forming frost. The blades 7^a aid in directing the air-current into the conduit and prevent a rotary action of the air in the funnel, and the flanges 7^c and 7^d prevent the air-current when striking the funnel sides at an angle to a straight course or the line of travel from being deflected outwardly and escaping at the mouth of the funnel.

In Figs. 5 and 6 the air-collecting device is hopper-shaped and designated by the numeral 10. This device 10 is provided with interiorly-projecting flanges 10^a and 10^c. In the construction shown in Figs. 7 and 8 the air-collecting device 10 is narrow vertically and of considerable length horizontally. It is also provided with interiorly-projecting flanges or lips 12.

Having thus described our invention, what we claim is—

1. In means for preventing the accumulation of frost on the vestibule-windows of street-cars, the combination of an air-collecting device projecting in front of the car and having interiorly-located longitudinally-extending plates, said device having an enlarged outer extremity and tapering inwardly, a conduit passing through the win-

dow of the car and connected with the air-collecting device at one extremity, and an air-escape nozzle connected with the conduit at its opposite extremity and located to discharge air across the face of the glass on the inside.

2. In apparatus of the class described, the combination of an air-collecting device projecting in front of the car, and having an enlarged outer extremity provided with an interiorly-projecting flange, a conduit connected with said air-collecting device and extending within the vestibule, and an air-discharge nozzle arranged adjacent the window and to discharge air across the glass, substantially as described.

3. In apparatus of the class described, the combination of a funnel-shaped air-collecting device projecting from the car, provided with interiorly-projecting circular flanges, and longitudinal blades to direct the air to the small extremity of the device, a conduit with which the funnel-shaped device is connected at one extremity, the said conduit extending inside the vestibule, and an air-discharge nozzle connected with said conduit and arranged to deliver the air across the surface of the window on the inside, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN S. HENDERSON.
AMMON H. LEWIS.

Witnesses:
DENA NELSON,
A. J. O'BRIEN.