

D. I. COOKE.  
AIR DUCT.  
APPLICATION FILED NOV. 13, 1909.

963,518.

Patented July 5, 1910.

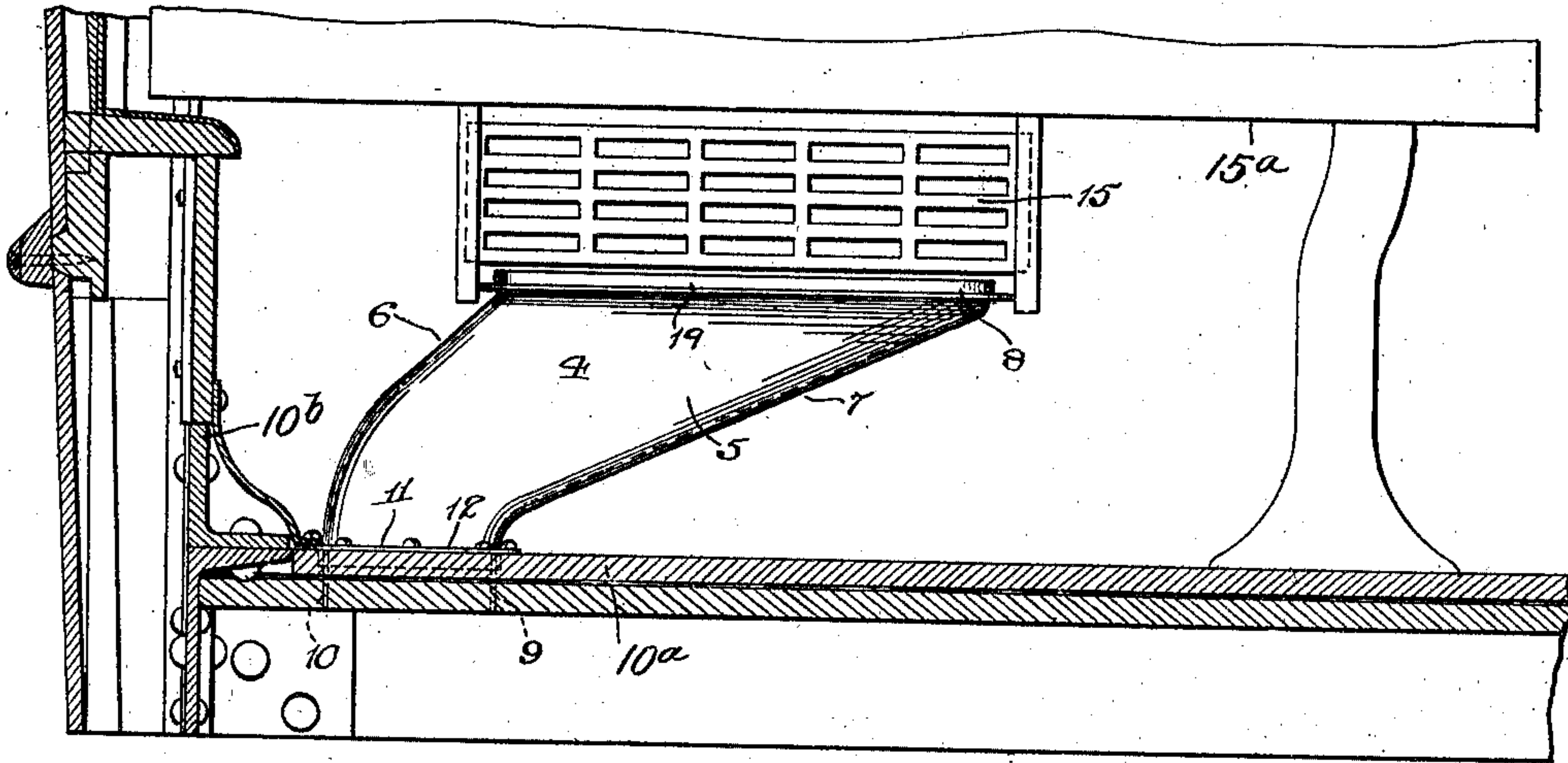


Fig. 1.

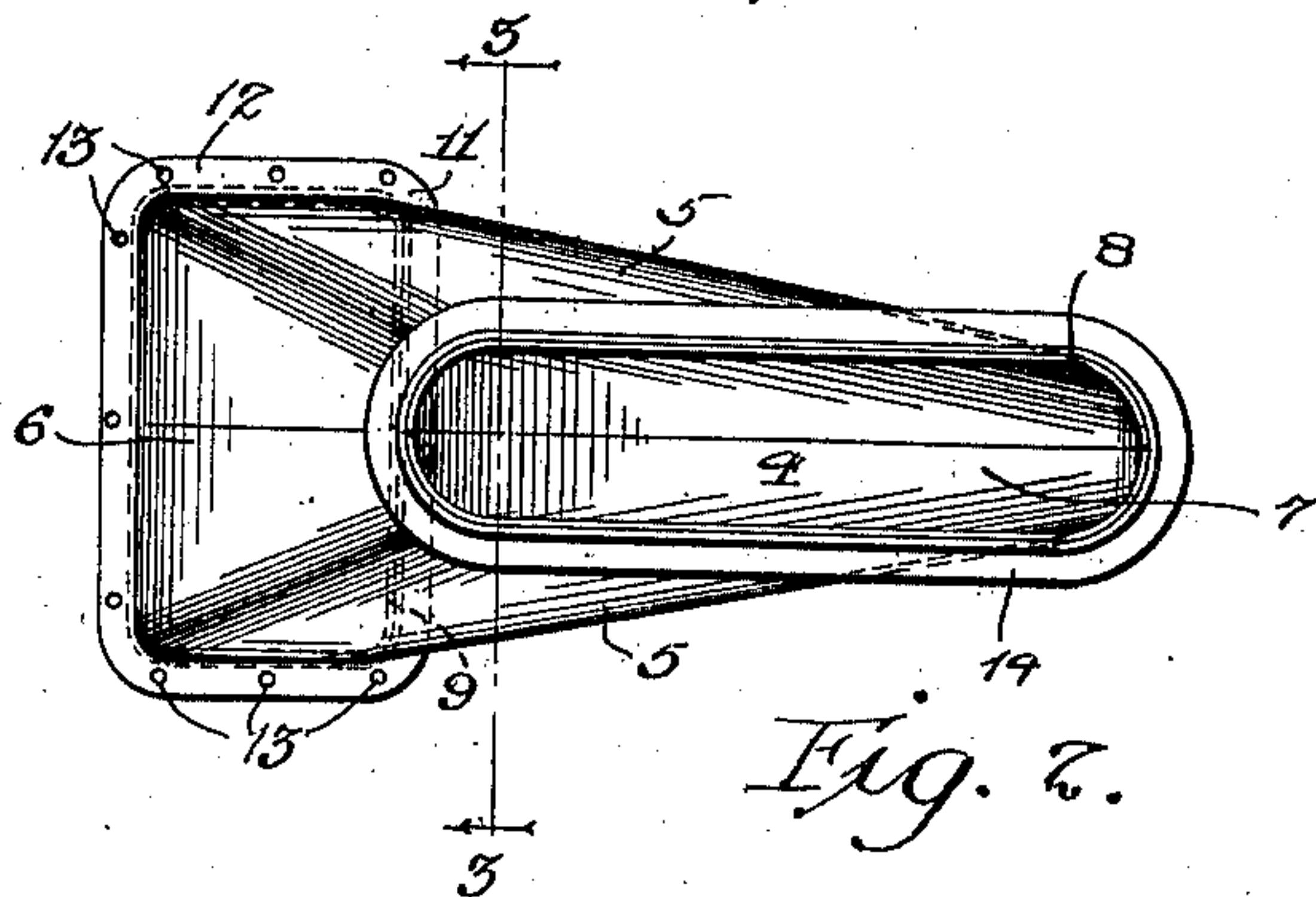


Fig. 2.

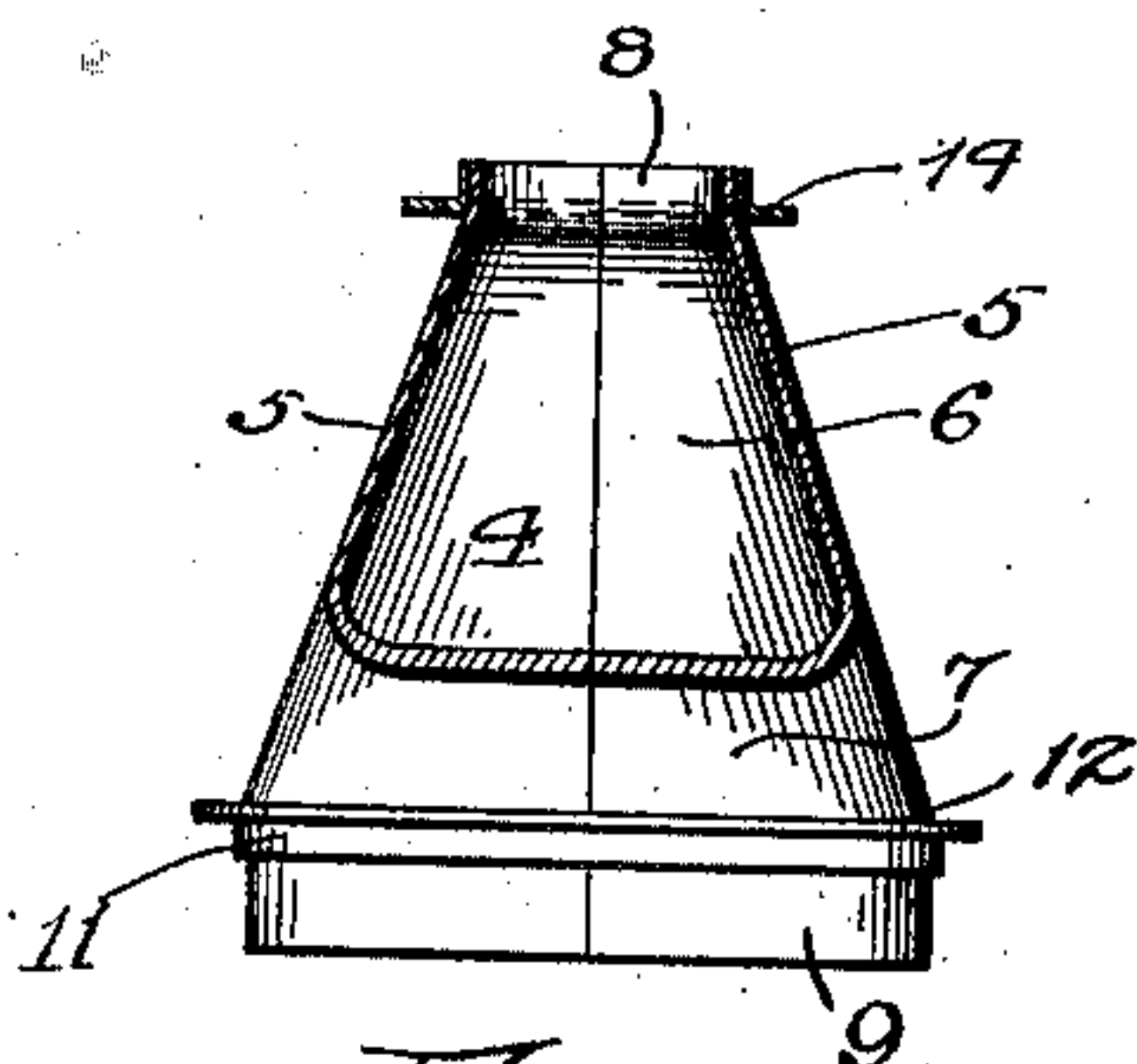


Fig. 3.

Witnesses:  
Frank W. Remm  
Wm. P. Bond

Inventor:  
Dwight I. Cooke  
By: *Running & Running*  
Attys.



# UNITED STATES PATENT OFFICE.

DWIGHT I. COOKE, OF CHICAGO, ILLINOIS, ASSIGNOR TO VACUUM CAR VENTILATING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## AIR-DUCT.

963,518.

Specification of Letters Patent.

Patented July 5, 1910.

Application filed November 13, 1909. Serial No. 527,824.

*To all whom it may concern:*

Be it known that I, DWIGHT I. COOKE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Air-Ducts, of which the following is a specification.

This invention relates more particularly to that type of air duct which is especially adapted for use with passenger cars to conduct air to the interior of the car body for the purpose of ventilation; and has for its object to construct a duct which will be light of weight, strong of construction, and easily positioned within the car body; which is of such form that when positioned it will not interfere in any way with the convenience of the passenger or with the cleaning of the car; which will have no restricted opening or protruding surface to retract the flow of air or cause it to leave the duct at an excessive speed and thus produce a draft; which will have no sharp-angled recesses in which dirt can collect; which will distribute the air over the entire surface of the heater in the car body, thus causing the air to become thoroughly warmed before passing into the interior of the car; which will be assembled in a manner to eliminate all joints or junctures which might become loose; and in which the shape of the walls will give additional strength to the structure.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a section of a portion of a car body, showing the duct of the present invention in operative position; Fig. 2, a plan view of the duct; and Fig. 3, a section on line 3—3 of Fig. 2.

The duct comprises a body portion 4, in the form of a shell or casing open at its upper and lower ends, and preferably formed of companion sections of thin sheet metal brazed together. The shell or casing comprises side walls 5, a rear wall 6, and a front wall 7, all of which walls terminate, at their upper and lower extremities, in vertically extending portions forming necks 8 and 9, respectively. The lower end, which may be termed the induction end, extends through an opening 10 in the floor 10<sup>a</sup> of the car body and communicates with the outside air said opening lying adjacent the juncture of the floor 10<sup>a</sup> with the wall 10<sup>b</sup> of the car body.

Surrounding the neck 9 is a flanged collar 11, the outwardly flanged portion 12 of which is provided with holes 13 through which fastening means are entered to secure the collar to the floor of the car body. Located upon the neck 8, which surrounds the upper or eduction end, is a flanged collar 14, and the collars 11 and 14 are riveted or otherwise secured to the walls of the shell or casing. The upper or eduction end in the construction shown preferably lies in a position to communicate with the heater body 15 located as shown centrally of the car-seat 15<sup>a</sup>, although the location of this heater body may be varied from the exact center of the seat without affecting the operation or utility of the duct.

In forming the body portion it is preferred that the walls be brazed at their juncture, so that when the collars are positioned the device will be of a construction which, to all practical purposes, will amount to a construction formed of a continuous sheet of metal. The rear wall 6 and the front wall 7 slope backward from the induction to the eduction end of the body portion, the rear wall extending at a greater degree of slope than the front wall; and the side walls are formed to converge toward each other with a slope extending from the bottom toward the top of the casing, this formation of walls throwing the induction and eduction openings out of alinement. The induction and eduction openings are both elongated, the elongated sides of the induction opening preferably lying at right angles to the eduction opening. As shown in the drawings, the eduction opening is elongated to a greater degree than the induction opening, this being desirable because of the fact that air, passing out of an opening so constructed, will be distributed over all of the surface of the heater, thereby getting the best effect possible in tempering the air before it enters the interior of the car. While the eduction opening is shown as being elongated, it is understood that said opening must not be contracted to a degree that the air will be retarded in passing out therefrom or forced out at a velocity to cause a draft. The formation of the eduction opening may, of course, be varied to suit the different types of heaters, the only point necessary to avoid being the contracting of the opening to a degree that will cause a retarding of the



flow of air therethrough. The induction opening, as shown, is not elongated to the degree of the eduction opening, although both openings are preferably formed to have approximately the same square area. It is considered more desirable to make the induction opening of the form shown, so that this portion of the duct, which necessarily lies adjacent to the floor, may be as compact as possible, and no great obstruction will be presented to interfere with the cleaning of the car.

It will be noted that the construction of the duct at the induction end is such that a broom can be easily passed therearound in the sweeping operation. As shown, the duct has no abrupt protruding surfaces, which would retard the progress of the air therethrough, or which would collect dust while the car was idle, to be afterward blown into the interior of the car by the rush of air.

The construction is one which is strong and durable, and at the same time light in weight, a point which is of great importance in ventilators applied to cars, because of the fact that every pound of weight added to the car adds to the cost of operation. The construction further is one in which the sloping walls of the shell or casing are of a mechanical formation to add strength to the structure, rendering it less liable to become bent or crushed. After the device has been assembled it is subjected to a Sheradizing or other suitable process, which would render it rust proof; and this serves to produce a seal around the rivets and joints, rendering the device more substantial and solid and more in the nature of a design made from a single unbroken piece of metal. The body portion of the device, as shown, is formed in two sections, both of which can be formed by the same die, as the right and left hand sections are alike in every respect. The collars surrounding the upper and lower necks are capable of being stamped, thus rendering the device very cheap and simple of construction.

I claim:

1. In combination with a car seat and a

heating element located beneath the central portion of the car seat, an air duct open at its top and bottom, the openings forming eduction and induction openings respectively, the top opening lying adjacent the heater and the body extending to an opening in the floor of the car body at a point adjacent the outer wall of the car body, the body of the duct being formed with a slope extending from the heating element toward the outer wall of the car body, substantially as described.

2. In combination with a car seat and a heating element located beneath the central portion of the car seat, an air duct open at its top and bottom, the openings forming eduction and induction openings respectively, the top opening lying adjacent to the heating element and the bottom opening communicating with an opening in the floor of the car body at a point adjacent the outer wall of the car body, the body of the duct being formed with a slope extending from the heating element toward the outer wall of the car body, each of the openings being elongated, the eduction opening being elongated to a greater degree than the induction opening and the elongated sides of said openings lying at right angles to one another, substantially as described.

3. In combination with a car seat and a heating element located beneath the central portion of the car seat, an air duct open at its top and bottom, the openings forming eduction and induction openings respectively, the top opening lying adjacent to the heater and the bottom opening communicating with an opening in the floor of the car body at a point adjacent the outer wall of the car body, the body of the duct being formed with a slope extending from the heating element toward the outer wall of the car body and sloping from its lower end toward its upper end, substantially as described.

DWIGHT I. COOKE.

Witnesses:

FRANCES M. FROST,  
WALKER BANNING.