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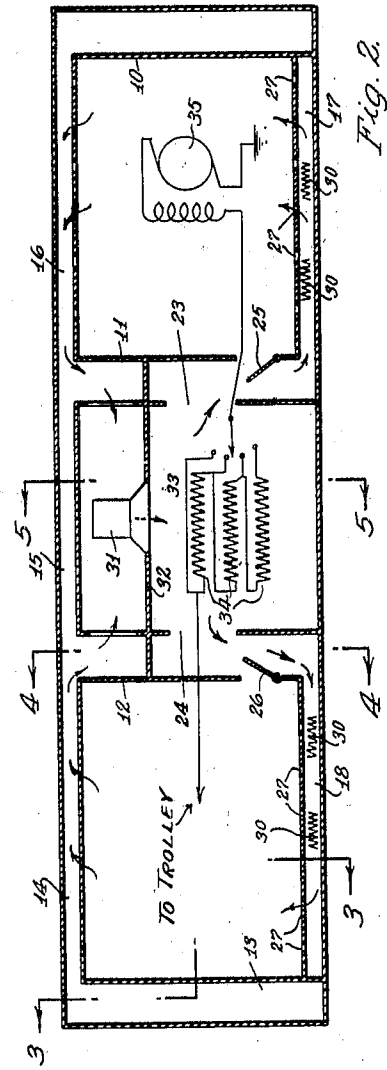
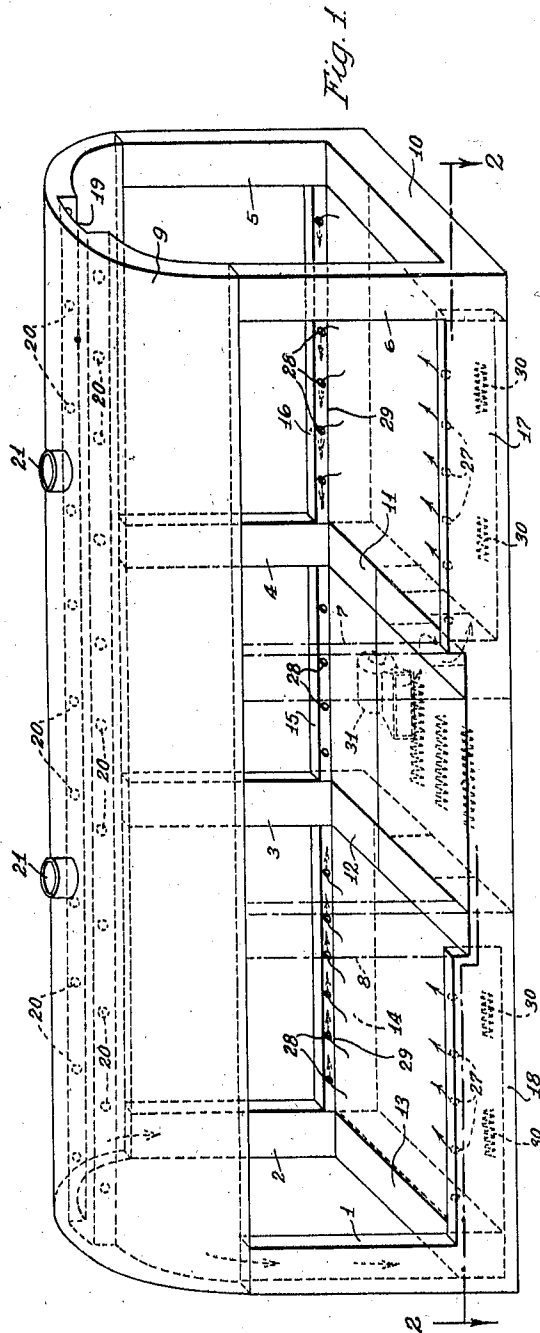
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2,178,644

BODY CONSTRUCTION AND HEATING AND VENTILATING SYSTEM

Filed June 11, 1936

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

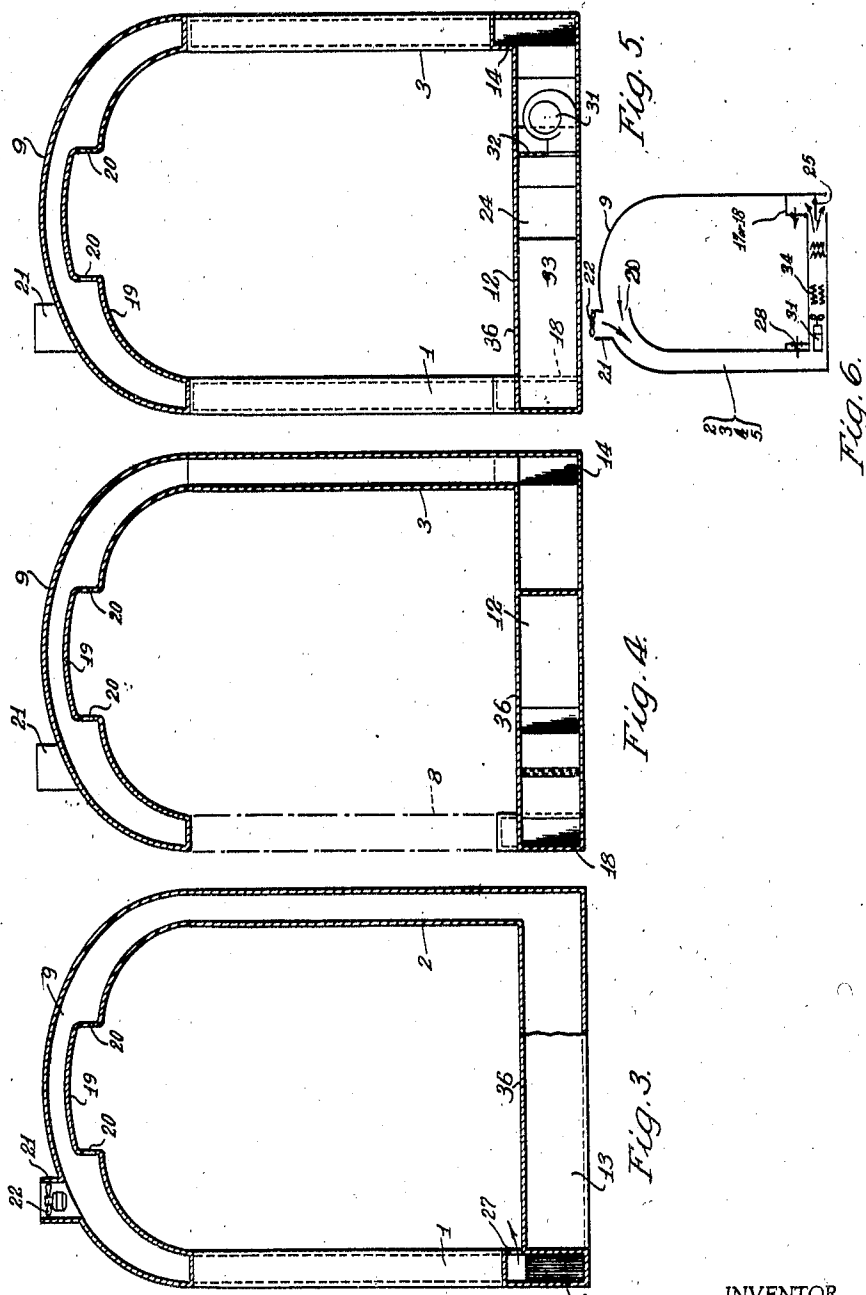


Fig. 5.

Fig. 6.

Fig. 4.

Fig. 3.

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BODY CONSTRUCTION AND HEATING AND VENTILATING SYSTEM

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4 Claims. (Cl. 98—10)

This invention relates to vehicle bodies and has for its object to provide an improved ventilating system therefor which will supply to the interior thereof an abundance of air which has been heated in whole or in part and which is partially or wholly composed of either fresh or re-circulated air.

Another object is to provide a body framework in the form of box-shaped members and to employ a number or portion of these members as air ducts and air collecting means for collecting air either from the interior or exterior of the body, or as a combination of both, and for directing the air over a heating means for conditioning to the desired temperatures.

Another object is to use others or a remaining portion of the box-shaped members to direct the collected air to various suitable points of vantage for release into the car body, or in case all of it is not needed within the body, to a point of external release.

A further object is to provide suitable automatic means including thermostats and control motors for automatically regulating the quantity and condition of air collected and delivered to the interior of the car body.

A further and important object is to provide a ventilating and air conditioning system for electrically driven cars in which the motor resistances are employed as an air heating means in the system, these resistances being supplemented by such other heating elements as may be necessary or desirable for extreme temperature conditions.

A further object incidental to the foregoing is to enclose these resistors together with other motor control equipment located beneath the floor of the body, the enclosure constituting the air heating compartment, the construction of the enclosure being such as to constitute a part of the floor underframe.

It is customary to arrange the seats in a street car such that a center aisle is formed between two rows of double seats. One passenger in each double seat sits adjacent to and parallel with a window. Heating ducts necessarily consume a portion of the foot room of this passenger. It is therefore an object of this invention to reduce the encroachment on the passenger's foot room to a minimum without sacrifice in size of the duct desired but rather with increased duct capacity and without sacrifice of frame strength. This is accomplished by using the body side sills as ducts for conducting the conditioned air along the length of the body for release beneath the seats,

Other objects and advantages will become hereinafter more fully apparent as reference is had to the accompanying drawings wherein my invention is illustrated and in which,

Figure 1 is a perspective view of a vehicle body frame with heating and ventilating equipment,

Figure 2 is a horizontal section through the floor supports, taken along the horizontal plane 2—2 of Figure 1,

Figures 3, 4 and 5 are vertical sections taken at the line 3—3, 4—4 and 5—5 respectively of Figure 2, and

Figure 6 is a schematic figure illustrating operation the corner posts being omitted.

More particularly, 1, 2, 3, 4, 5, 6, 7, 8 are pier posts which support the roof 9 and which are hollow to constitute air ducts. Fixedly secured to the lower portions of the pier posts are cross sills 10, 11, 12, 13 and side sills or girders 14, 15, 16, 17, 18 which are also hollow to constitute air ducts except the posts 7 and 8 at the door, these two posts being unnecessary to the heating and ventilating system. The roof 9 has an inner wall 19 forming a hollow space which serves as an air collecting chamber to supply the various ducts either from the interior of the body by virtue of openings 20, or with a mixture of air within the body and air from the exterior thereof by means of the openings 21. These openings 21 may be equipped with fans 22 if desired.

The posts 1, 2, 3, 4, 5 and 6 are each open to the air collecting chamber between the roof walls 9 and 19 and air travels downwardly through all of these posts into the cross and side sill members. Duct 1 supplies the cross sill 13 where it encounters a downward flow through the duct 2 for joint flow into the side sill 14 where it encounters a downward flow through the duct 3 for joint flow into the space between the cross sills 11 and 12.

Similarly, the air from the collecting chamber is conducted through the duct 6 into the cross sill 10 where it encounters the flow through the post 5 for joint flow through the side sill 16 where the downward flow through the duct 4 joins it and this air also flows into the space between the sills 11 and 12.

In this space, the blower 31 blows the air through the partition 32 and into the space 33 which contains heating elements 34. These elements 34 may be the resistors for an electric motor 35.

The cross sills 11 and 12 are each open at 23 and 24 respectively to the space 34 and receive the flow of air therefrom. Within the ducts 11 and 12 are the dampers 25 and 26 respectively which

are operable to a position of releasing the air outwardly of the car body or to a position whereby the air is directed through the sills 17 and 18 for release through the ports 27 into the car body.

It will be noted that the side sill 18 does not communicate directly with the ducts 1 and 13 nor does the side sill 17 communicate with the ducts 6 and 10.

The numeral 29 indicates the level of the floor 36. Since the warm air is inducted to the body at only one side, it has been found advantageous to provide openings 28 in the opposite sill members 14, 15 and 16 whereby air from the openings 27 is induced to travel across the floor of the car.

If desired, the auxiliary heater coils 30 may be added so that they may be turned on thermostatically or manually when the elements 23 are giving insufficient heat. These elements 30 may be suitably placed in the ducts 17 and 18.

Figure 6 is a schematic drawing of my system and bears numerals corresponding to the numerals on the remaining figures in order to illustrate operation.

What I claim is:

1. In a vehicle body, a frame comprising side girders each of hollow construction, vertical air ducts leading from points adjacent the roof of the body into the girders along one side of said frame, a heating device, a blower for drawing air downwardly through said ducts and through said heating device, and means for conducting the air from said device into the side girders at the other side of said frame, said last named girders having outlets along the length thereof into the interior of said body.

2. In a vehicle body, a body frame comprising side girders and cross sills each of hollow construction, vertical air ducts in the body open at their upper end and in communication with the

interior of at least some of said cross sills and at least one of said side girders, a heating device, a blower for drawing air downwardly through said ducts, through the side girder and cross sills in communication therewith and through said heating device, and means for conducting the air from said heating device into the other of said side girders, said last named side girders having openings along the length thereof for emission of the air into said body adjacent the floor thereof.

3. In a vehicle body, a body frame comprising hollow side girders, a roof, hollow pier posts for supporting said roof from said side girders, hollow cross sills connecting said side girders, pier posts being open at the top thereof and in communication at their bottom with some of said cross sills and at least one of said side girders, a heating device, and a blower for drawing air downwardly through said pier posts, through the cross sills and side girders in communication therewith and through said heating device, and means for conducting the air from said heating device through the other side girders, said other side girders having vents opening into the interior of said car body.

4. A vehicle body comprising longitudinal members and hollow cross sills near the center of the body connecting said members, a compartment, said sills constituting two walls of the compartment of equal depth therewith, electrical resistors in said compartment, one of said sills being open to said compartment and constituting an air inlet means, the other of said sills being open to said compartment and constituting an air outlet means, and means conducting the air from said outlet means to the interior of said body.

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