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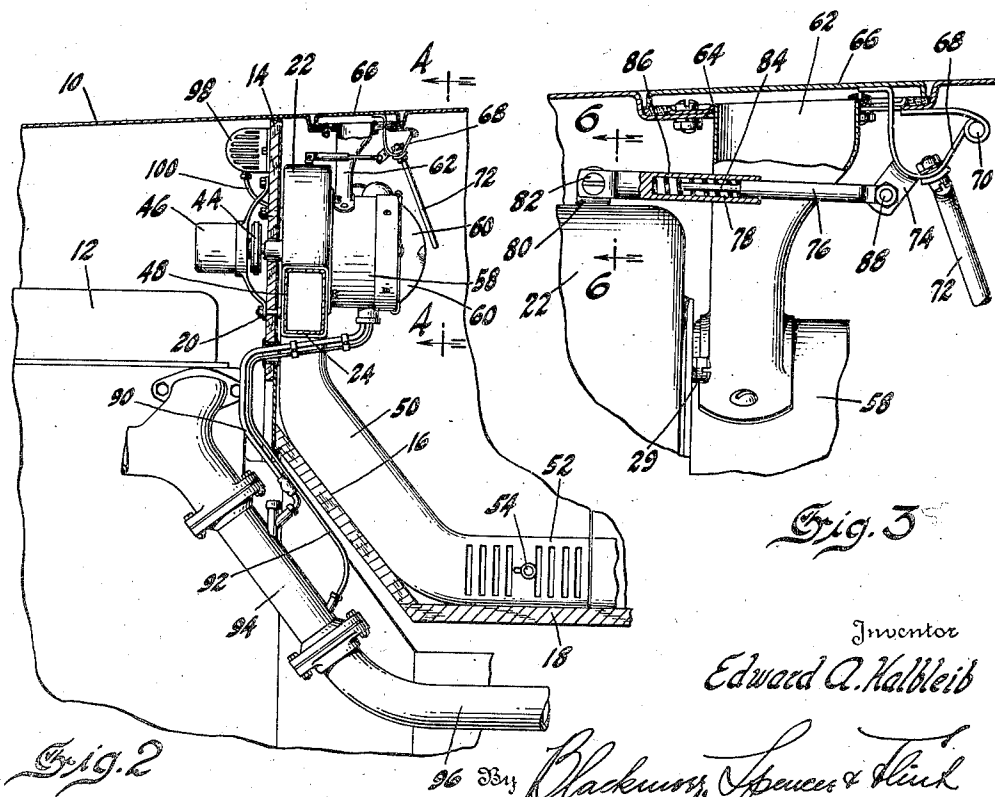
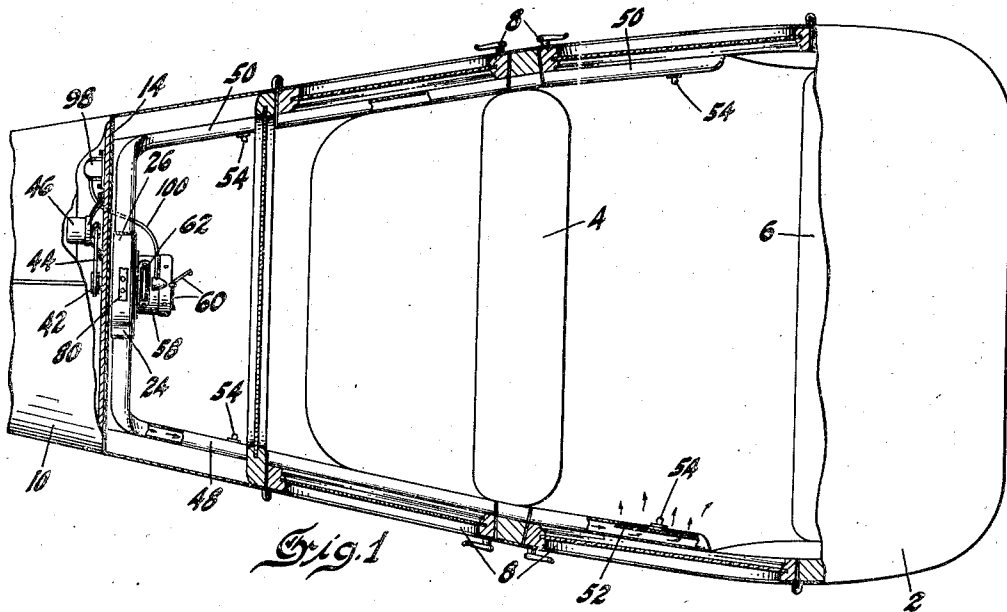
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2,104,394

HEATING AND VENTILATING OF PASSENGER CARS

Filed March 7, 1935

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

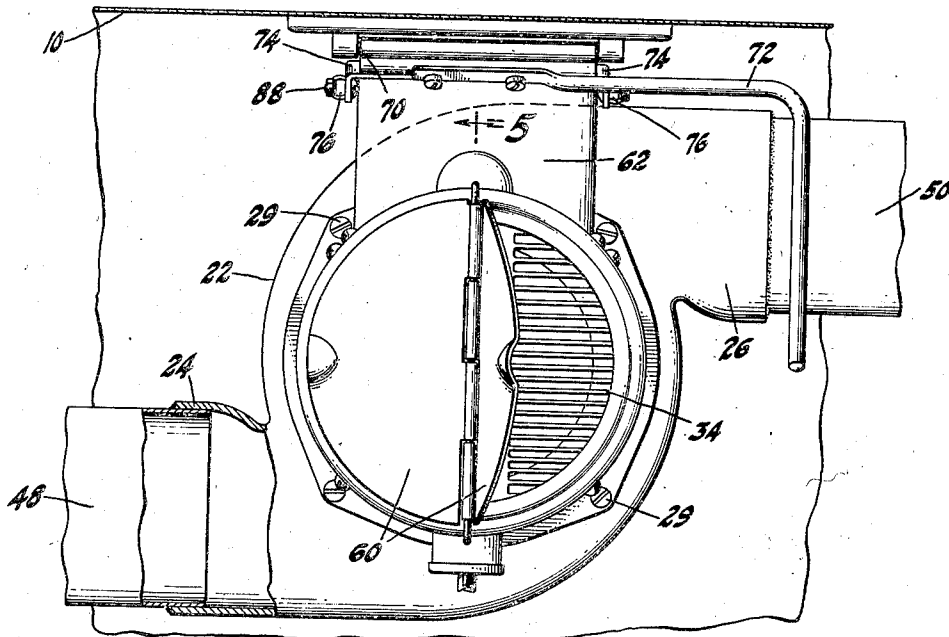


Fig. 4

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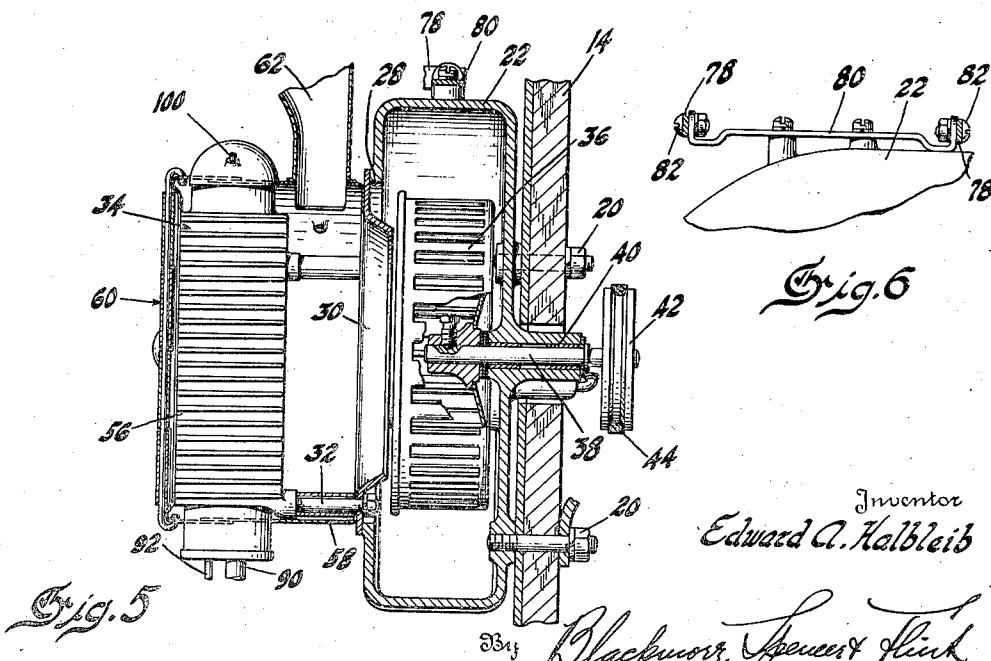


Fig. 5

Fig. 6

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UNITED STATES PATENT OFFICE

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HEATING AND VENTILATING OF PASSENGER CARS

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Application March 7, 1935, Serial No. 9,729

3 Claims. (Cl. 98—2)

This invention relates to heating and ventilating systems, and more particularly to a heating and ventilating system for passenger motor cars having inclosed bodies.

In passenger cars it is common practice to use some type of heater to warm the interior of the car for winter driving, but these installations have usually been a single opening under the dash for hot air heaters or a single hot water or steam radiator suspended from the cowl with a blower attached. These installations give a single source of heat and allow more than necessary to the person riding beside the driver, but hardly enough for the driver, and little heat circulates to the rear seat because of the various obstructions such as the seats and persons in the front of the car.

It is also desirable when heating a car to introduce into the inclosure a small amount of fresh air rather than recirculating the stale heated air. In present installations, it is necessary to open a window and this is usually more than is needed and creates a cold draft.

It is also difficult in hot weather to secure the correct amount of cool air for the comfort of the occupants of the car without an excessive draft and air blowing around the inside of the car.

It is an object of my invention to provide a system whereby heat may be taken from a heater and distributed to a plurality of points throughout the car for an even heating.

It is a further object of my invention to provide means whereby the same distribution system may be utilized to distribute cool air from the exterior throughout the car.

A still further object is to provide means to distribute both heated and cool air to the interior of the body in any desired proportionality.

For a better understanding of the nature and objects of this invention, reference is made to the following specification wherein there are described the embodiments of my invention which are illustrated in the accompanying drawings, in which:

Figure 1 is a top plan view of a motor car having my invention applied thereto, parts being broken away and shown in section.

Figure 2 is a vertical section through the dash board showing the heater and details of my invention.

Figure 3 is an enlarged sectional view through the cowl ventilator showing the connecting duct.

Figure 4 is a front view of the heater and its connections, parts being broken away, looking in the direction of the arrows 4—4 of Figure 2.

Figure 5 is a sectional view taken on the line 5—5 of Figure 4.

Figure 6 is a sectional view taken on the line 6—6 of Figure 3.

A motor car designated generally at 2 has front and rear seats 4 and 6 respectively for passengers and a plurality of doors 8 to allow access to either of the seats. Immediately to the rear of the hood 10 and the motor 12 is located the vertical dash board 14 from the lower edge of which a foot board 16 extends at an angle to the floor boards 18.

Secured to the dash board 14 by bolts 20 is a substantially cylindrical casing 22 having two pipe connecting openings 24 and 26 spaced at diametrically opposite points and entering the casing tangentially. In the forward face of the casing is a large circular opening 28 over the edge of which is secured by bolts 29 an inwardly directed flanged ring 30, to which is secured by bolts 32 any conventional radiator 34 used with motor cars. Within the casing 22 is rotatably mounted a fan or blower element 36 upon a shaft 38 which extends through a bearing 40 in the rear wall of the casing. To the end of the shaft 38 which projects through the dash board is secured a pulley 42, which is driven by a belt 44 from a motor 46.

To each of the openings 24 and 26 is connected hollow conduits 48 and 50 respectively. These conduits lead from the blower casing to the side of the car and then toward the rear, and lie at the junction of the floor boards and side wall. They are sectionalized and the portion that crosses the door is secured to the lower section of the door and opens with it resuming alignment with the fixed conduit when the door is closed. As shown, the conduits extend back to a point a little past the center of the rear doors, but if desired may go farther to the rear. At suitable positions along the length of the conduits registers 52 are provided, which are adjustable by handles 54 to allow air to flow from the registers as desired.

The radiator 34 is composed of a heating core or radiating element 56 supported in a housing 58, which is cylindrical, the back being open to allow a flow of air to the blower and the front having a pair of pivoted shutters 60 to control the flow of air through the element 56. In the top of the housing 58 is a long rectangular opening 62 to which is secured one end of an air chute 64, the opposite end of which is fastened in the cowl ventilator opening 64 and is the same size as that opening. Over the top of the cowl opening is a cover 66 as is conventional. This cover is operated

by a member 68, which is pivoted at 70 and has connected therewith both an operating handle 72 and a U-shaped bracket 74. To both ends of the bracket 74 are pivotally connected as at 88 rods 5 76 which extend inside hollow cylinders 78 which are also pivotally connected by bolts 82 on a long bracket 80 secured to the casing 22. The ends of the rods 76 are reduced as at 84, and extend inside a coiled spring 86 to place the rod and 10 cylinder under a compression force. This arrangement is in the nature of a toggle and as the pivot 88 moves from one side of the line from the handle connection to the pivot 82 to the other, the coiled spring will complete the movement and tend to keep the cover either open or closed. 15

The particular type of heater illustrated is a steam type but any other heater would operate and this showing is merely arbitrary. The radiator is connected by two tubes 90 and 92, which 20 are the supply and return respectively. These two tubes are connected to a boiler section 94 of the exhaust pipe 96, where the steam is generated and to which the water returns. Mounted on the motor side of the dash board is a control chamber 25 98 connected to the heating core by a line 100 for regulating the pressure.

This heating and ventilating system distributes heat and/or air throughout the interior of the car through the conduits 48 and 50, and registers 30 52, the supply of air for the blower coming either from the front of the heater and being controlled by the shutters or coming from the cowl ventilator opening and being controlled by the cover therefor. In cold weather the shutters 60 would 35 be open and air would be drawn in over the radiating core, through the fan and out through the conduits and radiators. If it is desired to add some fresh air to the heated interior, the cover 66 may be raised to mix fresh air with the 40 heated air for distribution. In the warm weather when the heater is inoperative, the car may be ventilated by drawing in fresh air through the cowl ventilator and distributing it by blowers through the same conduits, thus avoiding strong 45 drafts to the annoyance of the passengers.

It may also be advisable under certain circumstances to reverse the flow of air through the system, since the air on the floor of the car may

be cool. This may be accomplished by utilizing a blower designed to propel air in the opposite direction such as the well-known screw type, as shown in Patent No. 1,306,845 to Andrews, which 5 will cause the air to be drawn in through the registers 52 and thus up through the radiator and out through the front of the heater, thus drawing the air from the lowest points in the car. In the same way, of course, fresh air may be drawn at the same time through the cowl ventilator as desired. 10

I claim:

1. In a ventilating system for an automobile body, a fan blower, a heating element adjacent the blower and located in an intake passage to the blower, a cowl ventilator, a second intake for 15 the blower between the blower and the heater connected to the ventilator, and a plurality of distributing conduits from the blower connected to the body for distributing heat and fresh air to various parts of the body. 20

2. In an automobile body, a dash board, a blower secured to the dash, a heating element connected to the blower, a casing around the heater and connected to the intake of the blower, whereby air may be drawn over the heater into 25 the blower shutters on the casing to control air flow over the heater, a cowl ventilator, conduit means connecting the cowl ventilator with the casing between the heater and the blower means to conduct air from the casing to the car interior so as to allow fresh unheated air to be blown 30 through said means to the interior of the car.

3. In an automobile body, a dash, front and rear seats, a blower secured to the dash, a housing secured to the blower, a heating element in the housing, shutters on the housing to control the flow of air over the heating element to the blower, a cowl ventilator, a conduit connecting the cowl ventilator with the housing between the heating element and the blower to supply fresh outside 40 air to the blower, a cover to control the flow through the ventilator, a plurality of conduits leading from the blower along opposite sides of the body to substantially the rear seat, and adjustable radiators in each last mentioned conduit at convenient points to control the flow of 45 air therefrom.

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