April 8, 1941. A. O. SAMUELS ET AL 2,237,452

HEATING AND VENTILATING APPARATUS FOR AUTOMOBILES

Filed May 17, 1938 2 Sheets-Sheet 1

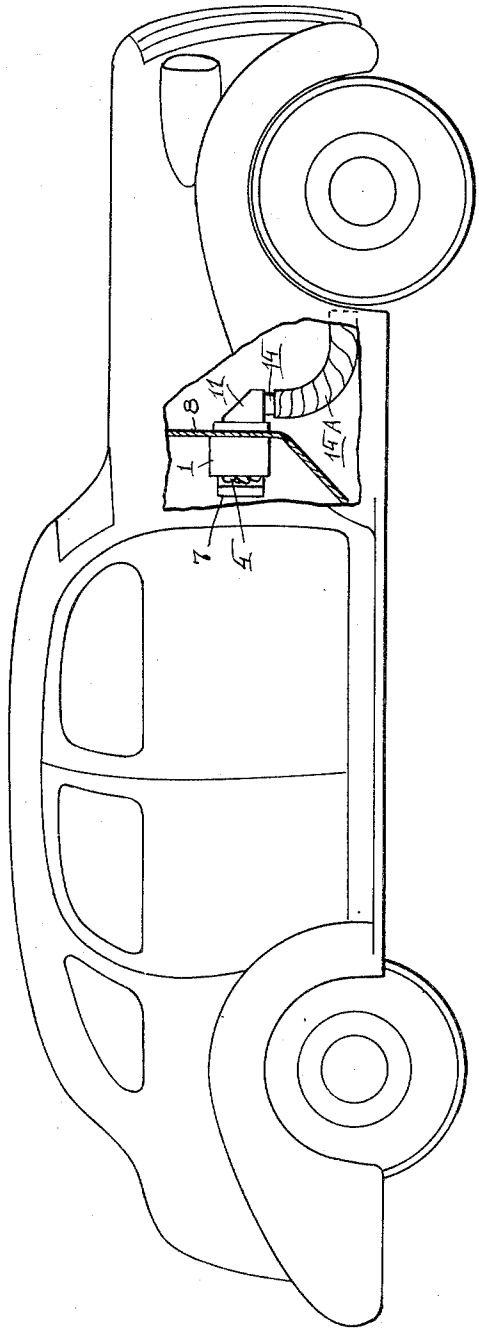


FIG. 1

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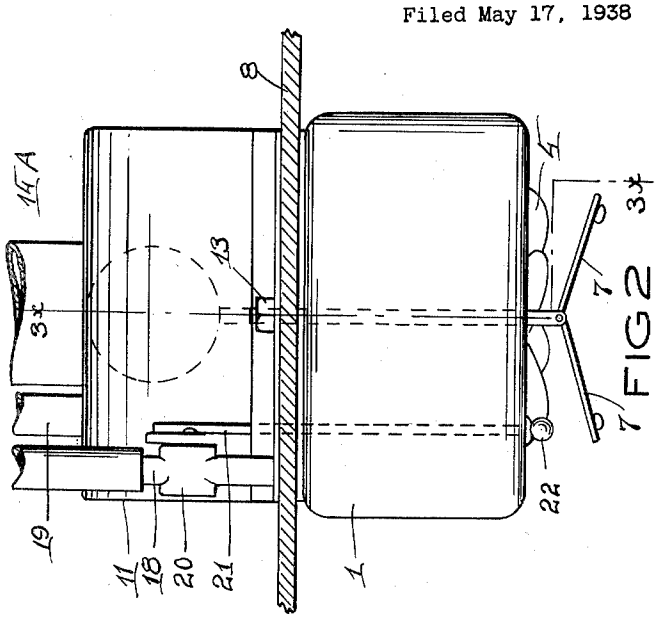


FIG 2

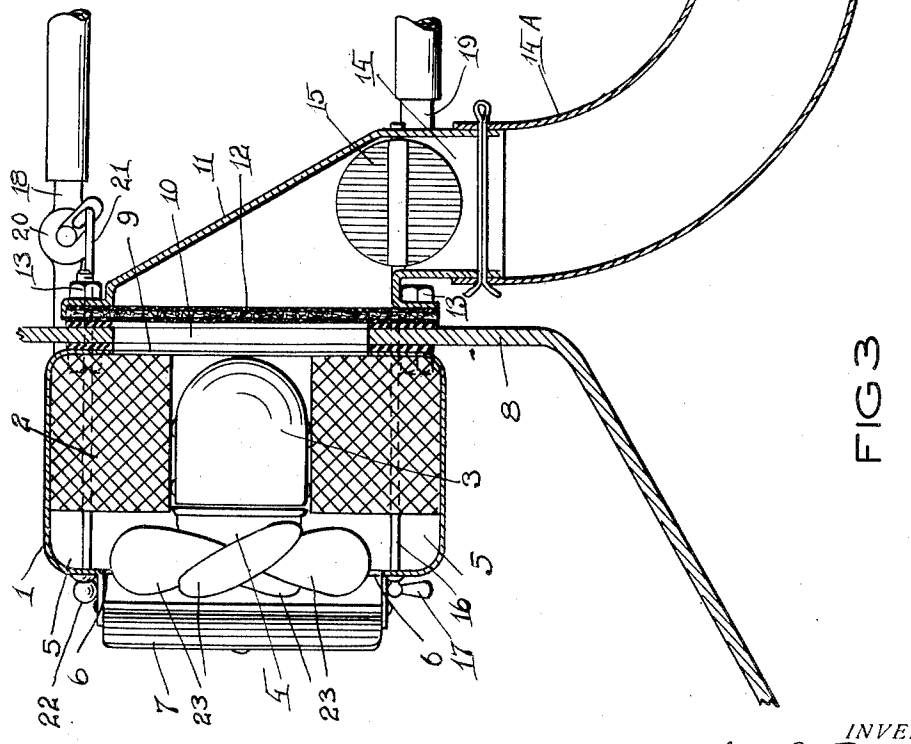


FIG 3

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Patented Apr. 8, 1941 2,237,452

UNITED STATES PATENT OFFICE

2,237,452

HEATING AND VENTILATING APPARATUS FOR AUTOMOBILES

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Application May 17, 1938, Serial No. 208,419

1 Claim. (Cl. 98—2)

This invention relates to heating and ventilating apparatus and more specifically to one particularly adapted for heating, cooling and ventilating the interior of motor vehicles.

One object of the invention is to provide a novel heating and ventilating apparatus for the interior of closed motor vehicles which takes its supply of air from the outside of the vehicle.

Another object of this invention is to provide a novel heating and ventilating apparatus for the interior of closed motor vehicles which may be operated to either furnish fresh air from the outside of the vehicle or recirculate the air within the closed body of the vehicle.

Still another object of the invention is to combine a novel air intake and filter with a heat exchange device.

A further object is to provide a novel construction for the heating and ventilating apparatus which lends itself for a quick and easy installation thereof.

A still further object of the invention is to provide a novel construction of the combined heater and fan for the distribution of air.

Other objects and attendant advantages will become more readily apparent from the detailed description of one embodiment of the invention which follows, reference being had to the accompanying drawings in which

Figure 1 is a side elevation of a motor vehicle partly broken away to show the installation of the heating, cooling and ventilating apparatus.

Figure 2 is a detail top plan view of the heating, cooling and ventilating apparatus.

Figure 3 is a longitudinal sectional view of the apparatus taken on the line 3*x*—3*x* of Figure 2.

The invention comprises the combination of a heat exchange device using the cooling medium employed for cooling the engine of the vehicle with a novel arrangement of an air intake and an air filter associated therewith with which fresh air from outside the enclosed body of the vehicle is filtered and, if necessary, heated and then efficiently distributed and circulated within it.

As illustrated in the various figures of the drawings, the apparatus comprises a heater housing 1 which contains a heat exchange device in the form of a radiator 2 which includes in its construction hollow and suitably spaced elements thru which liquid is circulated to transmit heat from the liquid circulating thru the elements to the air passing thru the apparatus. Centrally of the heat exchange device is mounted the motor 3 which operates the fan 4. In the construction of the apparatus illustrated in Figure 3, an air chamber 5 is formed within the housing 1 in front of the heat exchange device and the fan 4 is mounted in the outlet 6 of the housing so as to partially rotate within this air chamber 5 and partially outside thereof.

On the outside of the housing and spaced from it in front of the fan 4 are located a pair of deflecting shields 7, 7 which are mounted to be swung into angular positions so as to deflect the air delivered by the fan from within the housing into any desired direction.

The housing is attached to the dash-board 8 so as to bring its inlet 9 in register with an opening 10 provided in the dash-board. An air intake housing 11 with an air filter 12 covering its outlet is placed against the dash-board surrounding the opening 10 and is clamped by means of suitable bolts 13 against one side of the dash-board while the housing 1 is simultaneously clamped against the opposite side thereof. Suitable packing is placed between the housing 1 and the dash-board and between the intake housing 11 and the dash-board to seal the joints between them. The intake housing 11 has an inlet 14 at the bottom thereof and a butterfly valve 15 is mounted within this inlet. The valve rod 16, which operates this valve, extends to the front of the housing 1 and is provided with the handle 17 with which it may be turned to open and close the valve 15 in the inlet 14.

An extension 14A, in the form of a flexible tube, is attached to the inlet 14 and the open end of this extension is suitably located on the motor vehicle to provide for a forced intake of air when the vehicle is in motion.

The heat exchange device within the housing 1 is provided with a suitable liquid inlet 18 and liquid outlet 19 which are connected with flexible hose with the cooling system of the motor vehicle. A shut-off valve 20 is provided in the inlet and operated by a rod 21 and knob 22 so that the flow of the liquid may be regulated thru the heat exchange device to either heat or not heat the air passing thru the heat exchange device and the housing surrounding it.

From the foregoing it will be apparent that only fresh air from the outside of the body of the vehicle is used for heating and ventilating the interior thereof. While the vehicle is at a standstill this air is drawn by the fan thru the inlet tube 14A, the intake housing and its filter to within the housing 1 where it is heated if necessary and is then expelled therefrom by the fan 4 and deflected into the interior of the vehicle by the deflecting shields 7, 7.

In order to reduce the operating noise of the apparatus, the fan blades 23 of the fan are made of rubber. Such blades permit the fan to rotate in its exposed position as contact with it will not cause injury or damage.

When the car is in motion, the air enters the inlet of the intake tube at a high velocity without the aid of the fan. In such case the operation of the fan may be dispensed with or used to increase the ventilating effect of the apparatus.

When it is desired to merely circulate air within the car, the valve in the air intake is closed to shut off the outside air supply and cause the fan to agitate the air on the inside of the vehicle.

Of course the heating and ventilating apparatus shown and described may be changed in various ways, and variations may be required under certain circumstances, therefore, while some of the constructional details are deemed preferable and we have shown and described these specifically, it is to be understood that we do not limit ourselves to such precise construction, but consider that we are at liberty to make such changes and alterations as fairly come within the scope of the appended claim.

We claim:

In a heating and ventilating apparatus the combination of a housing, a heat exchange device adapted to transfer heat within said housing, an air chamber in front of said heating device and having an outlet, a fan mounted to rotate in said outlet partially within said air chamber and partially without it, and angularly adjustable deflecting shields mounted in front of said housing and the exposed portion of said fan.

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