Jan. 3, 1933. G. H. OSGOOD 1,892,847

WINDSHIELD WARMER

Filed Jan. 21, 1931

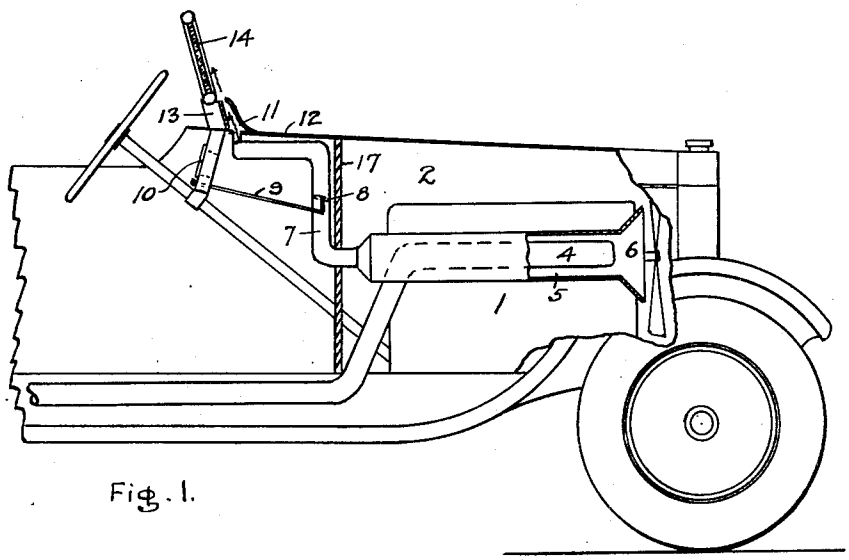


Fig. 1.

Fig. 2

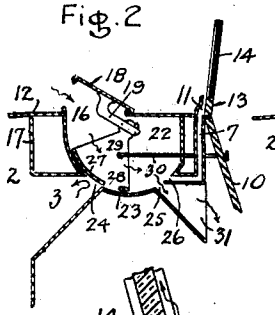


Fig. 3.

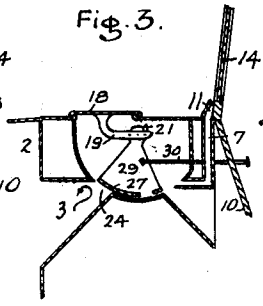


Fig. 4.

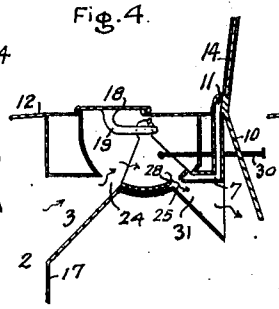
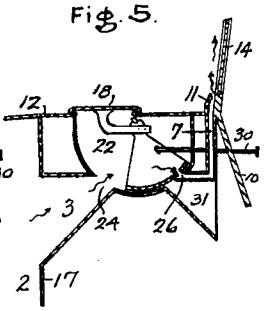


Fig. 5.



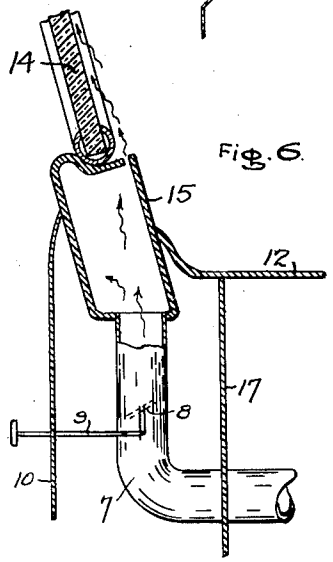


Fig. 6.

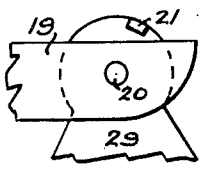


Fig. 8

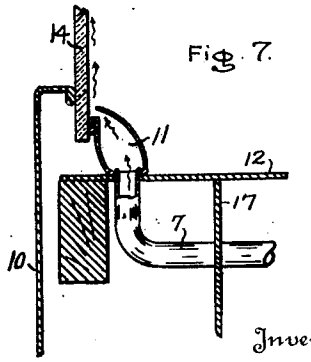


Fig. 7.

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UNITED STATES PATENT OFFICE

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WINDSHIELD WARMER

Application filed January 21, 1931. Serial No. 510,096.

This invention relates to means for preventing the formation of frost on the windshield of an automobile, and has for its objects to direct a stream of warm air on the outer or forward side of the windshield, thereby preventing the condensation of moisture on the inside and the formation of frost crystals on the outside thereof, and melting any snow or ice which may have accumulated thereon while the machine was not in operation; to provide means to control the said stream of warm air; to provide means whereby the stream of warm air may be diverted into the car; to provide means whereby a stream of cool air may be passed into the car; and to provide a device which may be adapted to the many different makes of cars and which is simple to operate and effective in use.

I attain these and other objects by the devices, mechanisms and arrangements illustrated in the accompanying drawing, in which—

Fig. 1 is a side elevation, partly in section, showing the simplest form of my invention; Figs. 2, 3, 4 and 5 are sections of the control valve, showing it in four positions, namely, in Fig. 2, the valve is closed against warm air and is open to admit cool air into the car, in Fig. 3 the valve is closed against either warm or cool air, in Fig. 4 the valve is turned to admit warm air into the car, and in Fig. 5 the valve is turned to pass the warm air to the outside of the windshield to warm it; Fig. 6 is a section showing my device as applied to a metal windshield frame; Fig. 7 is a section showing my device when used in connection with a ventilating windshield; and Fig. 8 is a view of the pivotal support of the valve and of the ventilator arm.

Similar numerals of reference refer to similar parts throughout the several views.

When an automobile is driven in very cold weather, the windshield becomes chilled to a temperature as low as or even below that of the surrounding air and mists or frosts on the outside and, if the car be of the closed type and its windows are closed, it condenses the moisture of the air in the car on the inner side of the said windshield, thus materially impeding the use of the machine under such conditions. This condition is overcome in my device by a stream of warmed air which I direct on to the outside of the windshield, thus warming the glass to some extent, preventing the condensation on the inside of the car, but especially providing a layer or stream of warm air between the glass and the cold air. It is, of course, well known that cold air has a less capacity for moisture than warm arm and therefore this sheet of warm air absorbs any moisture on the outside of the windshield and prevents the moisture of the air from condensing thereon and also raises the temperature of any moisture thereon to a point well above the freezing point. I am aware that a similar stream of warm air has been directed against the inside of the windshield but, though its action might be effective to prevent the condensation of moisture on the inside of the windshield, its action on frost, sleet and snow on the outside thereof would be, at best, extremely slow and ineffective. I prefer to include, in my apparatus, a valve which will not only control the warm air but will direct it to the outside of the windshield or will pass it into the inside of the car, or will cut off the said warm air entirely and control the admission of cool air into the car, when needed in warm weather.

The source of heat used in my apparatus is the heat of the engine 1, either by conducting the air from the engine chamber 2 through a suitable passage 3, or by surrounding the hot exhaust manifold 4 of the engine 1, with a conduit 5, having an enlarged funnel-shaped opening 6 at its forward end and adjacent to the cooling fan of the said engine. The conduit 5 may connect with a suitable pipe 7 at its rear end, said pipe 7 being provided with a suitable damper 8, operated by the usual lever connected to a link or rod 9 leading to the instrument board 10 of the car.

In the simplest form of my invention, this pipe 7 leads directly to a transverse conduit 11 on top of the cowling 12 of the car and immediately adjacent to and in front of the frame 13 of the windshield 14. This transverse conduit 11 is provided with holes along its upper edge, or by a continuous slot or a series of slots therein, thus directing the flow

of warm air from the pipe 7 to the outside surface of the windshield 14. This simplest arrangement is especially applicable to open cars and effectively prevents the formation of frost and ice thereon.

A variation of the above-described simple form of my invention, is shown in Fig. 6, wherein the base-frame 15 of the windshield 14 is made on metal in hollow form, and may be utilized as the transverse conduit for the warm air, the pipe 7 leading directly thereinto and the warm air therefrom leaving the frame 15 by slots or holes positioned outside of the said windshield.

Another variation is illustrated in Fig. 7, wherein the windshield 14 is vertically adjustable to admit cool air into the car. In this case the transverse conduit 11 is positioned immediately outside of the windshield 14 and in contact therewith. So long as the windshield 14 is adjusted below the outlets of the conduit 11, the warm air therefrom will pass outside of the glass, but if it is raised just above this position the warm air will pass into the car, while if it is still further raised, and the damper 8 is turned to shut off the warm air, then the cool air will blow into the car in the ordinary way.

In Figs. 2–5 I have illustrated my improved valve for controlling the flow of cool or warm air. The top of the cowling 12 is provided with a ventilation opening 16, to the rear of the rear wall 17 of the engine chamber 2. A cover 18 is provided for said opening 16, said cover being supported on arms 19 which are pivotally mounted on a cross rod 20 and are adapted to be engaged by a lug 21 extending laterally from the hereinafter described valve support. Normally the said cover 18 closes the said opening 16, but when the valve is moved to bring the lug 21 into contact with the said arm 19, the cover 18 is raised, as shown in Fig. 2.

The above-described opening 16 in the cowling is positioned above a valve chamber 22 formed of two side walls and a curved bottom wall 23. The wall 23 has three openings 24, 25 and 26 therein, and a swinging valve 27, having a narrow opening 28 therein and supported by side hangers 29, which are pivotally mounted on the said cross-rod 20, and having the above-described lugs 21 suitably positioned thereon. An operating rod 30 is attached to the said hangers 29 and passes to the instrument board 10 of the machine. The above opening 24 in the wall 23 of the valve chamber leads to the passage 3 from the rear wall 17 of the engine chamber 2. The opening 25 therein leads to a passage 31 leading direct into the interior of the car at a point in front of the instrument board 10. The opening 26 leads to the conduit 7, which leads to the transverse conduit 11 adjacent to the outside of the windshield 14.

When the operating rod 30 is pushed to its furthermost position (Fig. 2), the valve 27 closes the opening 24 of the warm air passage 3 and also lifts the cover 18 off the opening 16 and, therefore, permits the cool air to enter the valve chamber 22 and to pass therefrom into the car by way of the opening 25 and the passage 31. If the operating rod 30 is pulled slightly out (Fig. 3), the said cover 18 is dropped over the ventilating opening 16, thus closing off the cool air from the car and, at the same time, the said valve 27 continues to close the warm air opening 24. If the rod 30 is further pulled out (Fig. 4), the cover 18 remains down and the valve 27 has been removed from the opening 24, and the opening 28 therein registers with the opening 25 leading to the passage 31, thus admitting warm air from the passage 3, by way of the opening 24, chamber 22, opening 25, and passage 31, to the interior of the car. If the rod 30 is still further pulled out (Fig. 5), the valve 27 closes the opening 25 and brings the opening 28 therein to register with the opening 26, thus directing the warm air from the passage 3 to the outside of the windshield 14, by way of the opening 24, chamber 22, opening 26 and conduits 7 and 11.

It is, of course, evident that my improved apparatus may be changed and modified to conform to the particular build and type of car, and that many variations in its structure may be made without departing from my invention as outlined in the appended claims.

Having described my invention, what I claim and desire to secure by Letters Patent, is:—

1. In a device of the class described, a heated engine chamber; a windshield; a transverse conduit adjacent said windshield and having openings therein adjacent said windshield; a valve chamber; passages connecting said valve chamber with said heated engine chamber, and with said transverse conduit, and with the interior of said car; and a valve in said valve chamber and adapted to control the several passages to direct the warm air from the engine chamber to the windshield or to the car.

2. In a device of the class described, a heated engine chamber; a windshield; a transverse conduit adjacent said windshield and having openings therein on the outer side of said windshield; a valve chamber; passage connecting said valve chamber with said heated engine chamber, and with said transverse conduit, and with the interior of the car; and a valve in said valve chamber and adapted to control the several passages to direct the warm air from the engine chamber to the outer side of the windshield or into the car.

3. In a device of the class described, a heated engine chamber; a windshield; a transverse conduit adjacent said windshield and

having openings therein adjacent said windshield; a valve chamber; passages connecting said valve chamber with said heated engine chamber, and with said transverse conduit, and with the interior of the car; a valve in said valve chamber and adapted to control the several passages; a cold-air opening leading into said valve chamber; a cover for said cold-air opening; and intermediate connections between said valve and said cover, whereby when said valve closes said passage leading to the heated engine chamber said valve raises said cover to admit cold air into the valve chamber and into the car.

GEORGE H. OSGOOD.