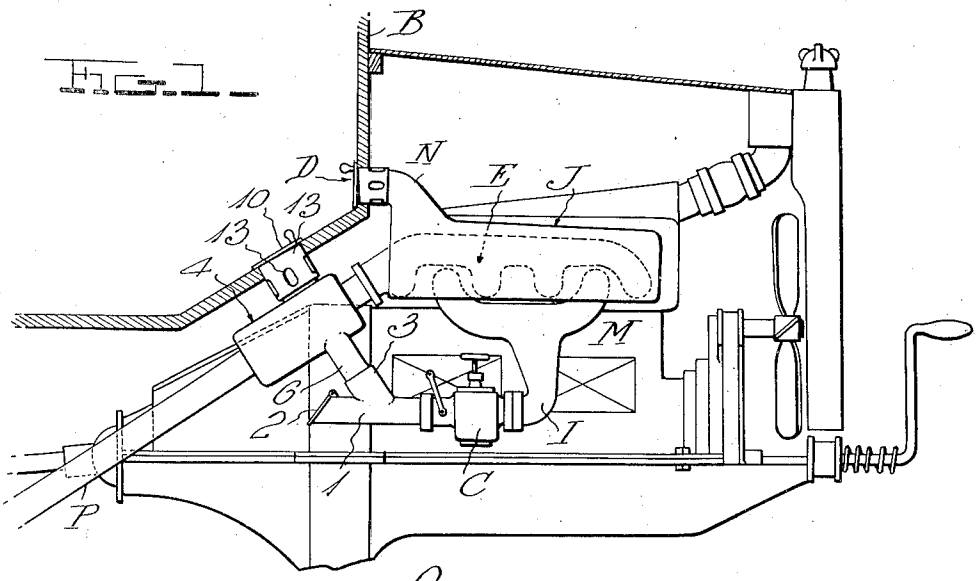
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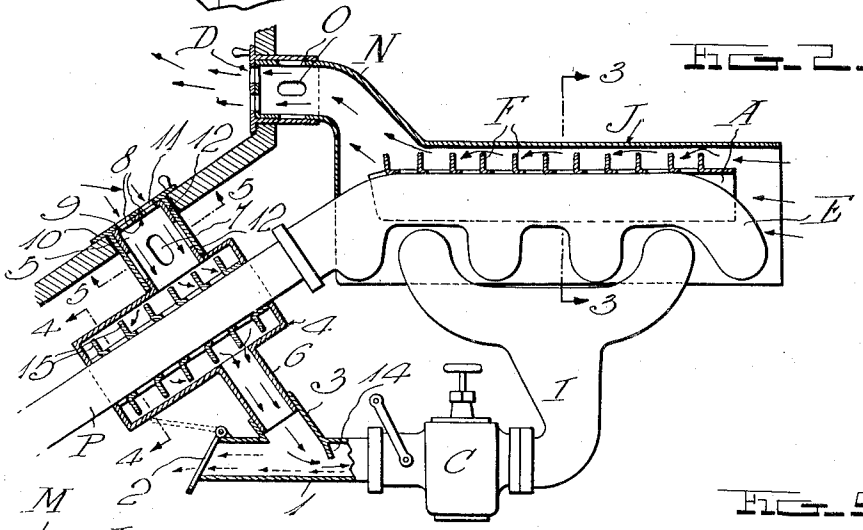
March 29, 1927. 1,622,498

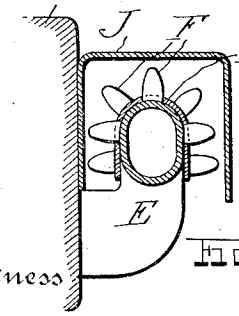
W. G. DUNN

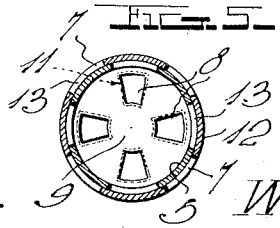
VEHICLE INCLOSURE HEATING AND VENTILATING MEANS

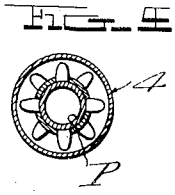
Filed Feb. 24, 1925











Witness
H. Woodard

Inventor
W. G. Dunn

By H. B. Wilson & Co
Attorneys

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UNITED STATES PATENT OFFICE.

WILLIAM G. DUNN, OF CLARINDA, IOWA.

VEHICLE INCLOSURE HEATING AND VENTILATING MEANS.

Application filed February 24, 1925. Serial No. 11,264.

Since the advent of the closed car, it has become common practice to install some sort of a heating device which usually utilizes the radiated heat on surfaces of the exhaust manifold for heating air to be supplied to the interior of the vehicle body. No provision however has been made, in so far as I am advised, for exhausting any air from the interior of the body to cause the hot air to more readily enter and circulate within such body. Thus, the efficiency of most heaters is rather low, but it is the object of the present invention to provide a suction passage which leads from the interior of the car body to the air intake of the carbureter, so that the air will be withdrawn from the interior of the body, thereby greatly facilitating entrance of the heated air. This arrangement also provides for effective ventilation of the body by withdrawing obnoxious gases which may accumulate therein, particularly when the motor is idling. Furthermore, by supplying the carbureter with air from the interior of the body, practically no road dust and other foreign matter will enter the carbureter and the engine cylinders, with obvious advantages.

It is common practice to utilize a portion of the exhaust pipe from the manifold or a part of the exhaust manifold itself, to preheat the air supplied to the carbureter, and it is a further aim of the invention to provide a construction which will permit the continuance of this practice.

It is a still further aim of the invention to provide novel damper means whereby air may be supplied to the carbureter totally from the interior of the body, totally from the exterior of said body, or partly from one source and partly from the other.

Yet another aim is to make provision whereby a back-fire through the carbureter cannot cause the discharge of any gases into the interior of the body, provision being made whereby such gases are expelled, through the instrumentality of a pressure-opened valve for the carbureter air intake.

Another aim is to make provision for carrying out the invention in an extremely simple and inexpensive, yet in an efficient manner, permitting practically any machine to be easily equipped with such invention.

An additional object is to provide an invention which is not restricted to land vehicles for carrying out the above or other objects, but may be used to equal advantage upon aircraft or any other type of vehicle which is propelled by an internal combustion motor and is provided with an occupant inclosure.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawing.

Figure 1 is a sectional view partly in elevation, showing the application of the invention to a well known type of automobile.

Figure 2 is an enlarged view similar to a portion of Fig. 1, but illustrating the hot air supplying and exhausting means in section.

Figures 3, 4 and 5 are detail sectional views as indicated by the lines 3—3, 4—4 and 5—5 of Fig. 2.

In the drawings above briefly described, one of the many ways of carrying the invention into effect, is illustrated. M designates an internal combustion motor for propelling an automobile, a portion of whose body is indicated at B. The motor M is of course provided with the usual carbureter C, intake manifold I, exhaust manifold E, and exhaust pipe P. I have illustrated a jacket or hood J around the exhaust manifold E, said jacket having a neck N for discharging hot air into the body B, said neck being controlled by a damper D which if desired, may also operate to admit any desired quantity of outside air, through openings O in the neck N. This damper may be of such form as to discharge hot air from the jacket J to the atmosphere, when it is in position to prevent discharge of such air into the body.

Within the hood or jacket J, an arched plate A has been shown upon the exhaust manifold E, said plate having heat radiating fins F, and it will be seen that by providing these fins or some equivalent fins on the exhaust manifold, its efficiency for heating the air passing through the jacket, is increased. I wish it understood however that while the fins are preferably used and the type of air heater shown, may well be employed, my invention is not restricted to the use of any particular type of heater,

nor to a heater having any special design of damper, although a damper of some sort is by preference used.

Leading to the air inlet of the carbureter C, I have shown a substantially horizontal pipe 1, whose outer end is provided with an inclined, gravity-closed, pressure-opened valve 2, this valve being adapted to open to relieve back-fire, instead of permitting obnoxious gases to pass into the body of the machine, through the communicating means yet to be described. This communicating means leads in some manner from the interior of the body to the air intake of the carbureter and in the present instance, such means is shown discharging into a branch 3 at the upper side of the pipe 1. It may here be stated however, that instead of using this pipe and its valve 2, other provision could well be made for the relief of back-fire.

In the construction illustrated, an air-heating drum 4 is provided around a portion of the exhaust pipe P, said drum being equipped with an air inlet neck 5 which extends to the interior of the car body, said drum having also an air outlet 6 which is connected with the branch 3 of the pipe 1. In the preferred form of construction, the neck 5 has dampered communication with the interior of the car body and is also provided with one or more fresh air inlets 7 for admitting the free air at the exterior of said body, said fresh air inlet or inlets being also damper-controlled. In the construction illustrated, several of the fresh air inlets 7 are shown in the cylindrical side wall of the neck 5, while a plurality of air inlet openings 8 are shown in an upper end wall 9 with which the neck 5 is provided. A damper plate 10 operates over the end wall 9 and is provided with openings 11 which may be registered to any desired extent with the openings 8, or moved entirely out of register therewith, and movable bodily with the damper plate 10, is a damper sleeve 12 which surrounds the neck 5 and is formed with spaced openings 13 which may register totally or partially with the inlets 7, or may be moved entirely out of communication therewith. The damper 10—12 is so constructed that when the openings 8 are entirely open, the inlets 7 are entirely closed and vice versa, and as the openings 8 are gradually closed, the openings 7 are gradually opened. Thus, all air supplied to the carbureter may be taken from the interior of the body, or it may be taken from the exterior of the body. It will further be noted that some air may be taken from the outside of the body and some of it conducted from the inside thereof, as occasion may demand.

By providing the construction shown and described or any other preferred construction for obtaining the same results, not only can the occupant-inclosure be more effectively heated, but it is adequately ventilated and practically no foreign matter can enter the carbureter.

As excellent results may be obtained from the general construction shown and described, it may well be followed, but obviously a great number of changes may be made within the scope of the invention as claimed. For instance, any desired form of heater may be used in connection with the air conducting passage from the interior of the occupant-inclosure to the carbureter, or in some instances, the heater may be entirely dispensed with; any desired form of damper may be employed but this is also an element which might in some cases be omitted; a lip 14 has been shown in the pipe 1 to direct back-fire gases away from the branch 3, but other provision could be made for this purpose; and while heat-radiating fins 15 have been shown on the exhaust pipe P, within the drum 4, it will be understood that they are not absolutely essential.

I claim:

1. In a vehicle having an internal combustion motor, an occupant inclosure, a hot air inlet for said inclosure, and means for heating the air entering said hot air inlet; a suction passage leading from said occupant inclosure to the air inlet of the carbureter and embodying an air heater, whereby the suction produced by the motor will induce the heated air to enter the occupant inclosure through said hot air inlet, will cause circulation of the heated air in the inclosure to heat the latter, will withdraw the heated air from the inclosure, and in so withdrawing said air will subject it to the heating action of said air heater, thereby additionally heating the air to insure thorough vaporization of the fuel with which it is mixed by said carbureter.

2. In a vehicle having an internal combustion motor and an occupant inclosure; a suction passage from said inclosure to the carbureter air intake of the motor, back-fire relief means from said air intake, and means for preventing back-fire fumes from discharging through said passage into the occupant inclosure.

3. In a vehicle having an internal combustion motor, an occupant inclosure, a hot air inlet for said inclosure, and means for heating the air entering said inlet; a suction passage leading to the carbureter air intake of the motor and having one air inlet leading from the interior of the aforesaid inclosure to withdraw air therefrom and induce hot air to enter said inclosure through said hot air inlet for the purpose of heating the inclosure, said suction passage also having another air inlet leading from the air at the exterior of said inclosure, and damper

means for said inlets of said passage under a common control and operative to totally or partially close one of said inlets and simultaneously effect total or partial opening of the other inlet, whereby at one operation, both the heating of the occupant inclosure and the temperature of the air entering the carbureter, may be regulated according to the temperature outside of said inclosure.

4. In combination with a vehicle having an internal combustion motor, an occupant inclosure, and an exhaust pipe from the motor extending under a floor board of said occupant inclosure; an air heater surrounding a portion of said exhaust pipe and having an upstanding air inlet neck and a downwardly projecting discharge neck, the latter being connected with the air inlet of the motor carbureter, said air inlet neck having a fresh air inlet in its wall and a warm air inlet in its upper end for communication with the interior of the occupant compartment, a damper sleeve rotatably surrounding said air inlet neck and having a fresh air inlet for registration with the first named fresh air inlet, and a damper plate carried by said sleeve for controlling the additional air inlet at the upper end of said first named neck.

5. In a vehicle having an internal combustion motor and an occupant inclosure; an air inlet pipe leading to the carbureter air intake and having an outwardly movable pressure-opened valve, and an air inlet passage joining said pipe between the carbureter and said valve and leading from the interior of said inclosure, said pipe having internal means for directing an outrush of gases away from said air inlet passage.

In testimony whereof I have hereunto affixed my signature.

WILLIAM G. DUNN.