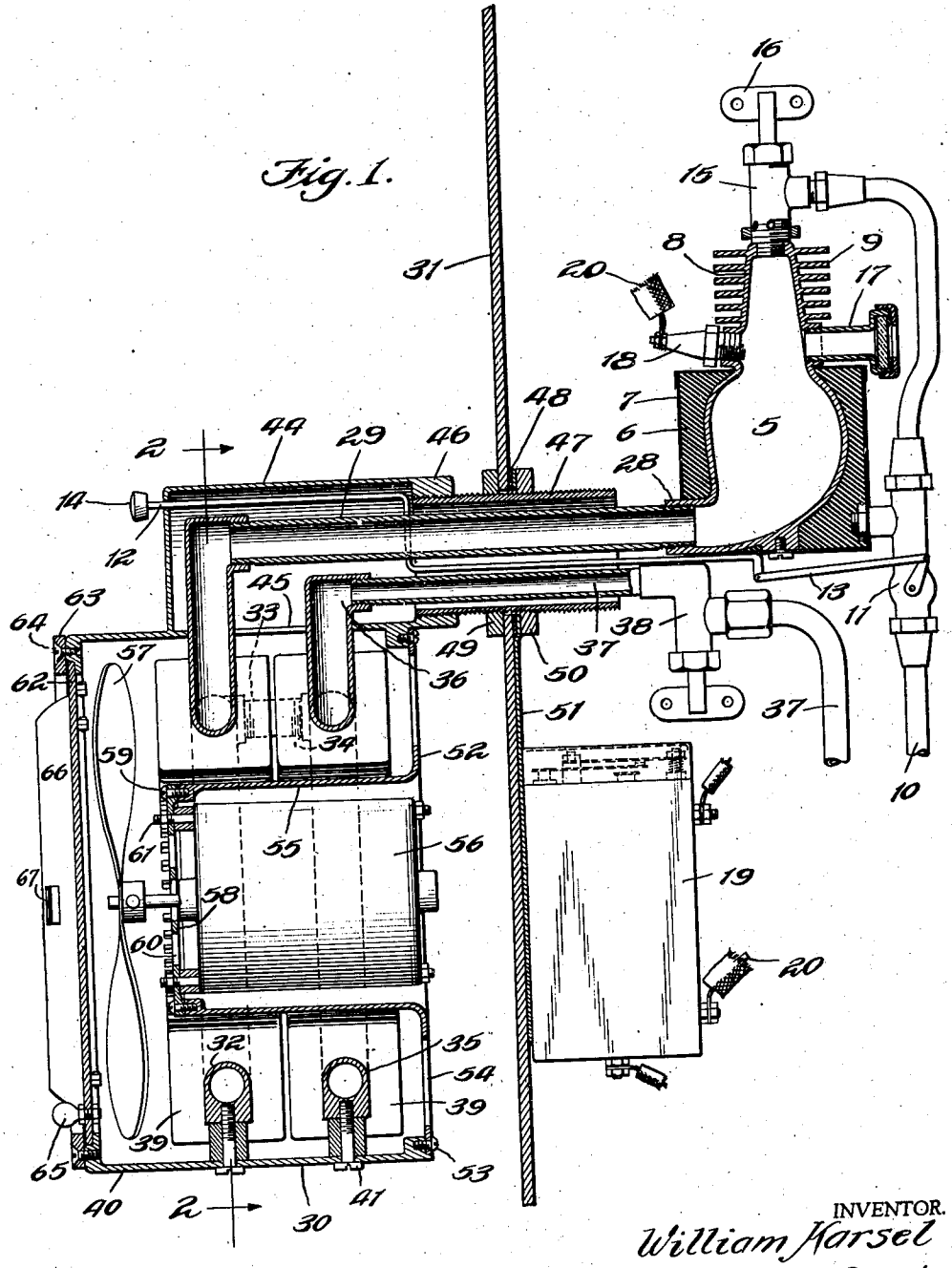
July 11, 1939. W. KARSEL 2,165,269

AUTOMOBILE HEATER

Filed March 11, 1936 2 Sheets-Sheet 1

Fig. 1.



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Fig. 3.

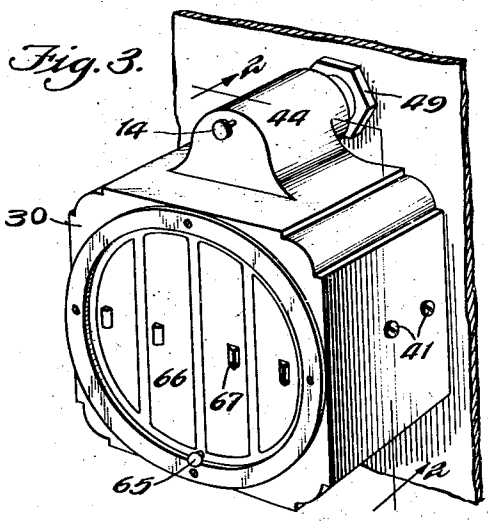


Fig. 4.

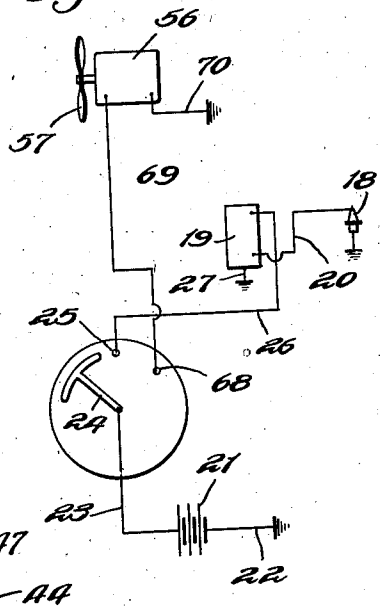
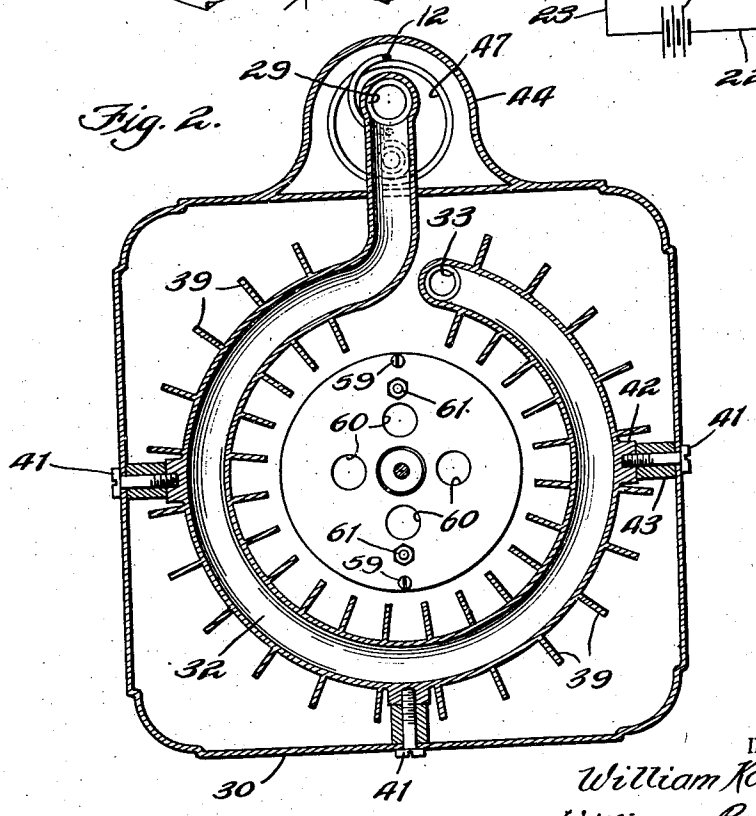


Fig. 2.



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Patented July 11, 1939

2,165,269

UNITED STATES PATENT OFFICE

2,165,269

AUTOMOBILE HEATER

William Karsel, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill., a corporation of Virginia

Application March 11, 1936, Serial No. 68,179

5 Claims. (Cl. 237—12.3)

My invention relates in general to heaters for heating automobiles or other motor vehicles utilizing hydro-carbons for fuel, although, of course, it may be used wherever applicable and is particularly directed to such heaters in which the heat is supplied directly by combustion as distinguished from those utilizing steam or heat from the automobile engine.

The objects of this invention are to provide an improved heater of the character indicated; to provide such a heater having a prime source of combustion to supply heat to the vehicle and an improved heat distributing unit; to provide a novel means for mounting a heater in a motor vehicle; to provide an improved means for heat transfer; and to provide such improvements in construction and advantages in operation as will appear more fully from the following description.

In the accompanying drawings illustrating this invention,

Figure 1 is a vertical view partly in section showing the heater as applied to a vehicle dashboard;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a perspective view of the radiator or heat transferring device; and

Figure 4 is a wiring diagram showing the control for the fan and also for the spark plug.

In the particular form of the invention shown in these drawings, 5 represents a casing which provides a furnace or combustion chamber, preferably of relatively small size. This combustion chamber is covered with insulating material 6 enclosed by a casing 7. The combustion chamber 5 is suitably made pear-shaped or bulbous with an integrally formed intake 8 having cooling fins 9. The fuel which preferably comprises gasoline is conducted to the burner through a pipe 10 which leads to any suitable source of fuel supply such as the carburetor, intake pipe or fuel pump of the motor vehicle. The supply is controlled by a valve 11 which is actuated by a rod 12 and link 13, the rod 12 extending into the body of the vehicle as shown in Figure 1, and being provided with a button or handle 14.

The pipe 10 is connected with an intake mixing valve 15 of any suitable kind for mixing air with the fuel, such valve being preferably of the needle controlled type having a handle 16 for adjusting the same. The combustion chamber 5 is provided with a sight opening 17 whereby the operator may observe the nature of the combustion. It is also provided with a spark plug 18 for igniting the fuel mixture. This spark plug is actuated by means of current from a high tension coil of a buzzer or ignition device 19, being connected therewith by means of a wire 20—this arrangement being substantially the same as that more or less commonly used for supplying current to the spark plugs of an engine. As illustrative of such arrangement, a circuit or wiring diagram is shown in Figure 4 in which current is supplied from a battery or other suitable source of supply 21, one terminal of this battery being grounded by wire 22 and the other terminal being connected by wire 23 with a switch member 24, which member is adapted to make contact with the contact 25 which is connected by wire 26 with the buzzer or vibrating coil 19, the other terminal of this coil being grounded by wire 27. It will be readily seen that when the switch is closed current will be supplied to the vibrating coil from the battery and high tension current will be supplied from the coil wire 20 to the spark plug 18.

The lower end of the combustion chamber 5 is reduced and extended horizontally to provide an outlet 28 which is connected with a combined outlet and supporting pipe 29 that leads to the heat distributing unit or apparatus 30 which is preferably located on the opposite side of the dashboard or wall 31 and within the body of the vehicle. In the particular arrangement shown, the pipe 29 is connected with the inlet end of the first radiator section or coil 32 which preferably extends around the substantially complete circumference as shown in Figure 2, and has its outlet end connected by means of a nipple 33 with the inlet 34 of the second radiator coil 35 which also extends around a substantially complete circumference and has its outlet end 36 connected with a pipe 37 which leads to the intake manifold (not shown) of the vehicle engine, or to some suitable point connected with the vehicle power plant for producing suction in said pipe. The passageway through this pipe is controlled by means of a manually operable control valve 38 which is of considerable importance in accurately adjusting the combustion apparatus.

The radiator coils or elements are preferably made of cast iron or aluminum and are provided with heat distributing fins 39 to assist in the rapid transfer of heat to the surrounding air. While I have shown two radiator sections, any suitable number of sections may be utilized. In the present arrangement the gases of combustion or heat supplying gases pass around the first section 32 in a counterclockwise direction as shown from the rear, and then around the section 35 in a clockwise direction, thus serving to make a

more even distribution of the heat as the hottest portion of one coil will be adjacent to the cooler portion of the next coil.

The radiator is mounted in a shell or housing 40 and is secured therein by means of bolts or cap screws 41 which extend through the housing and engage with threaded lugs 42 on the heater coils, spacers 43 being provided to give suitable clearance around the heater. The housing 40 has a hollow projection 44 forming an auxiliary air intake which is connected with the housing by an opening 45 as shown in Figure 1. The projection 44 terminates in an annular threaded portion 46 which engages a threaded pipe 47 which serves as a support for the various parts of the heater. This pipe passes through a hole 48 in the dash or wall 31 of the vehicle and is held in adjusted position by nuts 49 and 50. A supporting plate 51 is also carried by the support 47 and provides a support for the coil 19 which is secured thereto in any convenient manner. The threaded pipe or support 47 is sufficiently large to permit the passage of the pipes 29 and 37 so that it is necessary to make only one hole through the dash in order to mount the complete apparatus. The pipe or support 47 also serves as an axis so that the heat distributing housing 40 may be adjusted circumferentially to any desired position. The pipe is also threaded a sufficient distance so that the parts carried thereby may also be adjusted longitudinally with respect to the wall 31.

The heater shell or housing 40 is provided at one end with an air deflector or head 52 which is secured thereto by means of screws 53 and which has a plurality of air passages or holes 54 to permit the passage of air through the radiator. This head has an inwardly extending cylindrical portion 55 which provides a chamber within the radiator, for the fan motor 56 which actuates the fan 57. The rear end of the cylinder 55 has a cap 58 which is secured thereto by screws 59 and which has a plurality of holes 60 to permit the free passage of air therethrough for ventilating the motor. The motor 56 is mounted on the cap 58 and is secured thereto by means of bolts or screws 61.

The rear end of the housing 40 is provided with a deflector disc 62 which is rotatably secured in position by means of a ring 63 and screws 64. The disc may be rotated by means of a handle 65 and carries a plurality of shutters 66 which are pivotally mounted or hinged therein in any suitable manner, these shutters having handles 67 for opening and closing the same.

From this description it will be seen that I provide a heating apparatus which may be readily mounted in the vehicle and when so mounted the furnace or heater and the vibrating coil or box will be located under the hood so that these parts are readily accessible for connection, observation and adjustment. The novel method of mounting also permits the heat distributor to be located at any convenient or desired point in the vehicle and the positioning of the fan motor within the radiator and location of the fan between the radiator and the controlling shutters reduces the space required for the same which is highly desirable in view of the fact that the space in which such parts may be placed is often congested.

When the heater is to be used, it will be assumed that the vehicle engine is started which provides suction on the pipe 37. The fuel is admitted through the pipe 10 and control and mixing valve 15 and combustion chamber 5 where it is ignited by the spark plug 18. The gases of combustion or other gases are carried from the chamber 5 through the pipe 29 and the radiator and then back through the pipe 37 to the intake manifold or point of suction in the engine. This causes a rapid circulation of heat through the radiator for supplying the desired heat to the vehicle. The switch 24 will be conveniently located for the operator or driver and when turned to the contact 25 will first supply current to the spark plug so that the radiator may be heated before the fan is started. Further movement of the switch 24 causes it to make contact with a second contact 68 as shown in Figure 4 which closes the circuit from the battery 21 through wire 23, switch 24, wire 69, motor 56 and wire 70 to ground, thus supplying current to the motor and starting the circulation through the radiator. Further movement of the switch 24 will break the circuit through the contact 25 thereby shutting off the spark plug while maintaining the circuit through the motor 56. Thereafter the heat in the combustion chamber will be sufficient to maintain combustion without using the spark plug, thus not only saving current but also avoiding interference in the event that the vehicle is provided with a radio.

The suction created by the fan not only tends to draw air in through the holes 54 but also through the space between the motor and the cylinder 55, thus tending to keep the motor sufficiently cool. This suction also causes air to be drawn in through the open end of the pipe 47 around the pipes 29 and 37 and down through the hole or passageway 45, thus tending to keep such parts sufficiently cool.

While I have shown and described a particular embodiment of my invention it will be readily understood by those skilled in the art that variations may be made in the construction disclosed without departing from the basic features of my invention. I therefore do not wish to be limited to the precise construction disclosed but wish to include within the scope of my invention all such modifications and variations which will readily suggest themselves.

What I claim as new and desire to secure by Letters Patent is:

1. The combination with a motor vehicle having a dash or wall, of a heat distributing apparatus positioned within the body of the vehicle, a primary heat generating apparatus positioned on the outer side of the wall, and conduit means connecting said heat generating apparatus and said heat distributing apparatus, said means extending through the dash, and unitary means for supporting said generating apparatus and said heat distributing apparatus.

2. The combination with an automobile having a closed body and a dashboard and having an internal combustion engine, of a substantially closed combustion chamber having an intake located on the engine side of said dashboard, a mixing valve connected with the intake, a fuel supply pipe from the intake valve to the fuel supply of the engine, a spark plug mounted in the combustion chamber, a radiator connected with the combustion chamber and mounted in the body of the vehicle on the opposite side of the dashboard, an electric motor driven fan for forcing air through the radiator, and means for supplying high tension current to said spark slug.

3. The combination with a vehicle having an internal combustion engine and a closed body having a wall with a hole extending there-

through, of a combustion chamber mounted outside the body adjacent to the engine, means for supplying fuel to the combustion chamber, a spark plug for igniting the fuel in said combustion chamber, a pipe passing through said hole in said wall, means for securing said pipe to said wall, a housing within the body of the vehicle carried by said pipe, a radiator mounted in the housing, a combined supply and supporting pipe from the radiator extending through said first named pipe and connected with the combustion chamber and adapted to support the same, an outlet pipe from the radiator leading through said first named pipe and connected with a point of suction provided by the vehicle engine, a support also carried by said first named pipe, and a vibrating coil mounted on said support and adapted to supply current to said spark plug.

4. The combination with an automobile having a dash and having an internal combustion engine, of a tubular supporting member extending through a hole in the dash, means for securing said member to the dash, a housing secured to said member and adapted to be adjusted rotatably with respect to the axis of the member, a radiator in said housing, means for securing the radiator to the housing, an inlet pipe to the radiator extending through said support, a combustion chamber mounted on the opposite end of said pipe on the opposite side of the dash, an outlet pipe from the radiator extending through said tubular support and connected with the intake manifold of the engine, and a valve in said outlet pipe.

5. A heater of the class described for automobiles, consisting of a heat distributing unit and a heat generating unit, means for mounting the heat distributing unit on one side of a supporting wall of an automobile body, means for conducting a heating medium from the heat generating unit to the heat distributing unit, said means providing a support for the heat generating unit.

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