

Aug. 20, 1940.

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2,211,831

AUTOMOBILE HEATING APPARATUS

Filed June 27, 1938

2 Sheets-Sheet 1

Fig. 1.

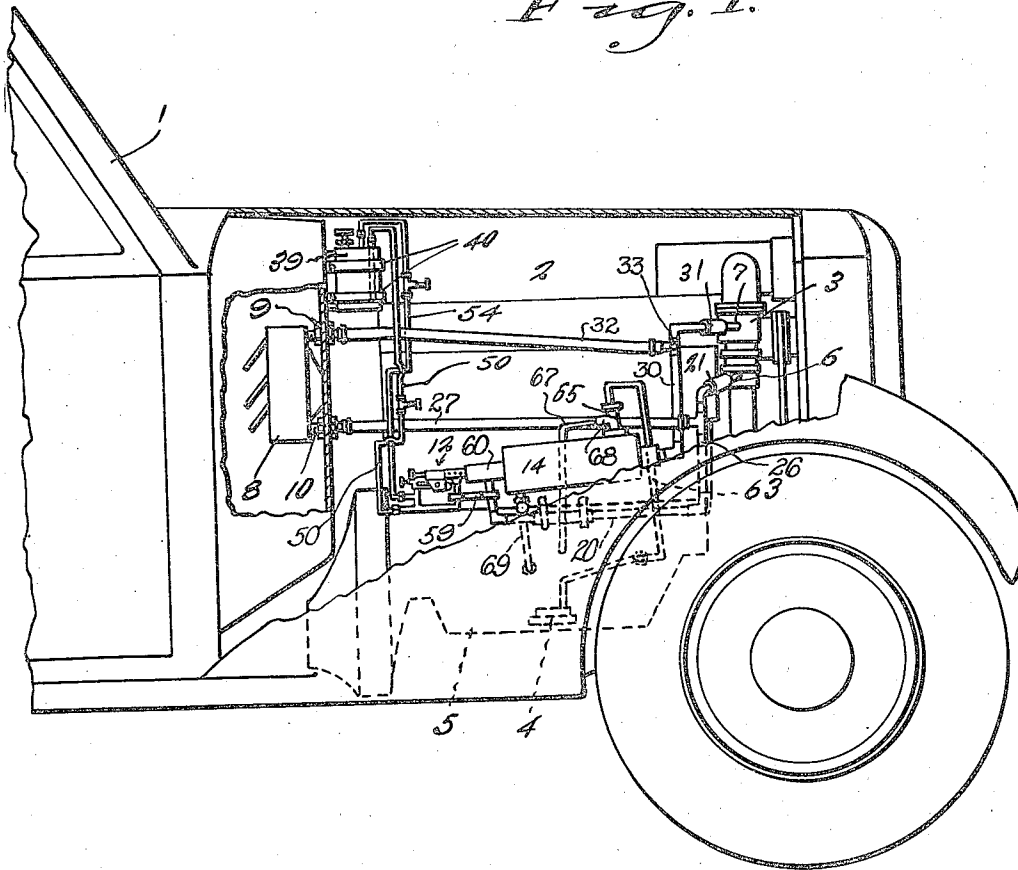
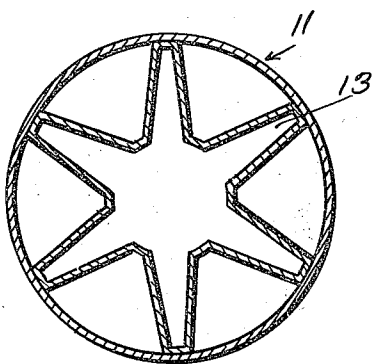


Fig. 2.



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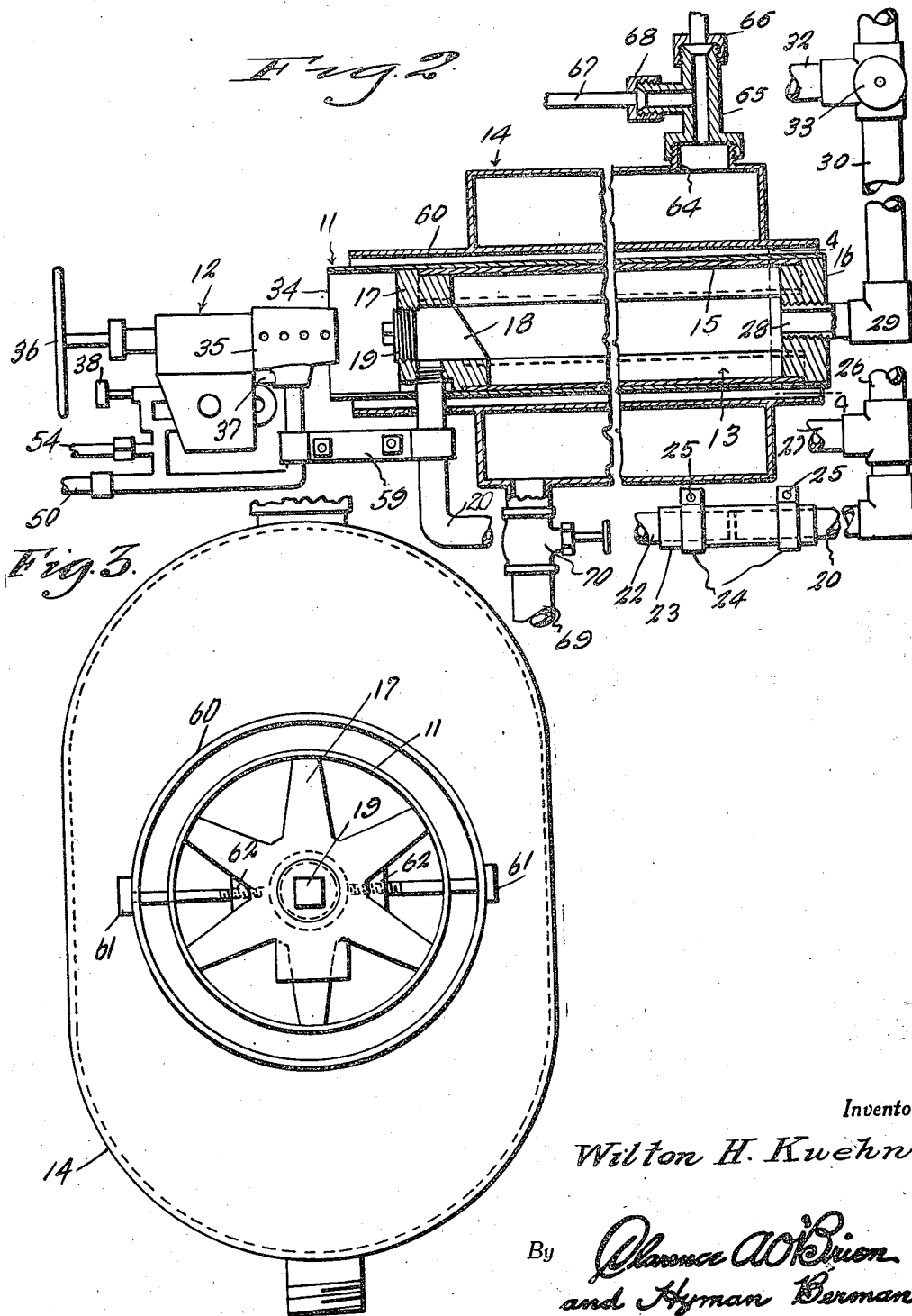
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UNITED STATES PATENT OFFICE

2,211,831

AUTOMOBILE HEATING APPARATUS

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Application June 27, 1938, Serial No. 216,117

1 Claim. (Cl. 184—104)

My invention relates to heating apparatus for automobiles, for use in preheating the engine and also to heat the interior of the car.

The invention is designed as an improvement over the apparatus disclosed in my U. S. Letters Patent No. 2,121,090, dated June 21, 1938, the improvements being directed particularly toward providing a more practical and structurally simplified and efficient heating apparatus than that disclosed in said patent and which is adapted to preheat the lubricating oil in the crank-case without overheating the same.

The precise nature of my improvement, together with the advantages thereof, will be readily understood when the succeeding description and appended claim are read with reference to the drawings accompanying and forming part of this specification.

In said drawings:

Figure 1 is a fragmentary view partly in longitudinal section and partly in side elevation of an automobile equipped with my improved apparatus,

Figure 2 is a similar view of the apparatus detached,

Figure 3 is a view in rear end elevation drawn to an enlarged scale and with parts eliminated for the sake of clearness of illustration,

Figure 4 is a view in transverse section taken on the line 4—4 of Figure 2 and drawn to an enlarged scale.

Referring to the drawings by numerals, the apparatus of the instant invention has been shown applied to a conventionally illustrated automobile, 1 designating the body, 2 the engine, 3 the water pump, and 4 the oil pump in the crank-case 5. In the type of engine illustrated the water cooling system has a lower discharge tap 6 and an upper inlet tap 7 upon opposite sides of the water pump 3 respectively, which are utilized in the present instance as presently described. The automobile is shown as equipped with a usual type of car heater 8 attached to the dash-board by upper and lower outlet and inlet taps 9 and 10 respectively.

My improved apparatus embodies as its basic element, and in common with the apparatus of my before mentioned patent, a heat conducting conduit 11 disposed substantially horizontally alongside the lower part of the engine 2 and having the form of a cylinder open at its front and rear ends, a burner 12 in the rear of said conduit for introducing heat into the rear end thereof, a water jacket 13 in the conduit 11 for preheating water from the cooling system of the

engine, and an oil heating drum 14 surrounding the conduit 11 and connected in the oil circulating system of the engine. These elements, however, differ from the corresponding elements of said patent in the following respects.

The heating jacket 13 comprises a shell 15 having the cross-sectional form of a six-pointed star and fitting into the conduit 11. The front and rear ends of the shell 15 are closed by castings 16 and 17 corresponding in shape to the cross-sectional shape of the shell and fitting into said ends of the latter, respectively, to which they are connected in any suitable manner. The rear casting 17 has a central axial bore 18 therein communicating with the interior of the shell 15 and closed at its outer end by a screw plug 19 threaded into the rear thereof, said plug being provided for clean out purposes. An inlet pipe line 20 for the jacket 13 is connected at one end to the before-mentioned discharge tap 6 of the cooling system by a coupling 31, said line extending downwardly from said coupling and then rearwardly beneath the drum 14 with its other end bent upwardly and extended through the conduit 11 and rear casting 17 into communication with the interior of said jacket. The rearwardly extending part 22 of the pipe line 20 extends through a coupling sleeve 23 by means of which and clamps 24 surrounding said coupling at the opposite ends thereof, said part of the pipe line is bolted, as at 25, to the engine 2. The downwardly extending part 26 of the pipe line 20 has extending laterally therefrom a lower branch line 27 suitably secured to the discharge tap 10 of the heater 8. The front casting 16 has extending centrally therefrom a discharge nipple 28 suitably coupled as at 29 to an upwardly extending discharge line 30 connected at its upper end, as by the coupling 31, to the before mentioned inlet tap 7. A laterally extending branch line 32 connects the discharge line 30 to the inlet tap 9 of the heater 8. A control valve 33 at the juncture of the pipe lines 30 and 32 controls the flow of water to the heater 8. The pipe lines 32 and 27, as will be understood, are for the purpose of supplying water to and discharging the same from the heater 8 but since this invention is not concerned with the heater 8 said pipe lines 32 and 27, together with the circulation controlling valve 33, need merely be identified in passing.

As indicated in my aforesaid patent, the water heating jacket 13 is shorter than the conduit 11 and located forwardly of the rear end of said conduit to provide a combustion chamber 34 in the rear end of the latter.

The burner 12 which is designed for gasoline fuel comprises the nozzle 35 projecting slightly into the combustion chamber 34 and with which is associated with the usual control valve 36, a pre-heating jet 37 and a valve 38 controlling said jet. A bracket 59 mounts the burner 12 on the inlet pipe line 20. Fuel is supplied to the burner 12, under pressure, from a supply tank 39 secured to the dash-board by suitable clips 40. A fuel feed line 50 extends from the tank 39 to the burner 12. The numeral 54 designates a pressure line extending from said tank 39 to the jet 37 and which need merely be identified in passing.

The oil heating cylinder 14 comprises an axial open-ended sleeve 60 surrounding the conduit 11 in concentric spaced apart relation thereto and fixed in such relation by means of bolts 61 extending therethrough and through the conduit 11 into bosses 62 provided on the castings 16 and 17. As shown best in Figure 3, the drum 14 is preferably somewhat elliptical and is disposed with its longer axis upright so that it will fit flat close against the engine 2 and provide for a maximum oil containing capacity in a limited space. An oil feed line 63 extends from the feed side of the pump 4 up over the top of the drum 14 to which it is connected, by means of a nipple 64 on said drum, a T-coupling 65 threaded onto the nipple, and a gland nut 66 connecting the line to said fitting. An overflow line 67 is connected to the fitting 65 by a coupling 68 and leads downwardly from said fitting into the crankcase 5. An oil discharge line 69 extends from the bottom of the drum 14 into the crankcase 5 with a control valve 70 interposed therein at any suitable point.

As best shown in Figure 1, the conduit 11, water heating jacket 13, drum 14, and burner 12 incline downwardly and rearwardly to promote faster circulation of water and oil through the apparatus and to align the nozzle 35 of the burner with the conduit 11.

Referring to the operation, water from the cooling system of the engine is caused to circulate through the heating jacket 13 by way of the inlet line 20 and out of said jacket back into the cooling system by way of the discharge line 30 as a result of the water being heated in said jacket and thus creating substantially a syphoning action as will be understood. The fuel is fed to the burner 12 and burned under forced draft, as will be clear, to accelerate the passage of heated air from the combustion chamber 34 past the water heating jacket 13 and out of the front end of the conduit 11. Any amount of water desired may thus be heated in the apparatus, said heated water rising through the discharge line 30 and creating a syphoning action in the

cooling system, thereby returning said water to said system. The before mentioned valve 33 is adapted to open and close the line 30 so that when it is desired to warm up the engine said valve is set to opening position and the apparatus operated to warm up the water in the heating jacket 13 with the result previously described.

If it is desired to further warm up the engine the oil in the crank case is warmed. As will be seen from the foregoing, the oil pump 4 functions to fill the drum 14, the overflow draining back into the crank case by way of the fitting 65 and overflow line 67, this condition obtaining of course, only when the valve 70 is closed. By closing said valve the oil circulates through the drum 14 so that said drum under ordinary conditions is always full. The oil in the drum 14 may be subjected to the action of heat, as long as is desired, emanating from the conduit 13 and when it is judged to be sufficiently warm, discharged back into the crankcase by way of the valve 7. In this connection it is to be noted that the spacing between the conduit 11 and sleeve 60 prevents overheating of the oil in said drum 14.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly the invention, as described, is susceptible of modification without departing from the inventive concept and right is herein reserved to such modifications as fall within the scope of the subjoined claim.

What I claim is:

Heating apparatus for use in connection with the water cooling and lubricating systems of an automobile engine and the lubricating pump and comprising a heating cylinder for location alongside the engine and having inlet and outlet ends, respectively, inlet and outlet pipe lines extending from said ends, respectively, for connection in said cooling system to provide for circulation of water through the cylinder, means for heating said cylinder at will, a drum surrounding said cylinder and having inlet and outlet pipe lines extending therefrom for connection to said pump and to the crank case of the engine, respectively, to provide for circulation of lubricating fluids from the engine through said drum, an overflow pipe line extending from the top of the drum for connection to the crank casing of the engine, and a valve in the outlet pipe line of said drum for closing the same at will, said drum being spaced from said heating cylinder to provide an air cooling open chamber between said drum and cylinder preventing overheating of the oil in said drum.

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