Nov. 30, 1937. E. V. RIPPINGILLE 2,100,490

COOLING SYSTEM

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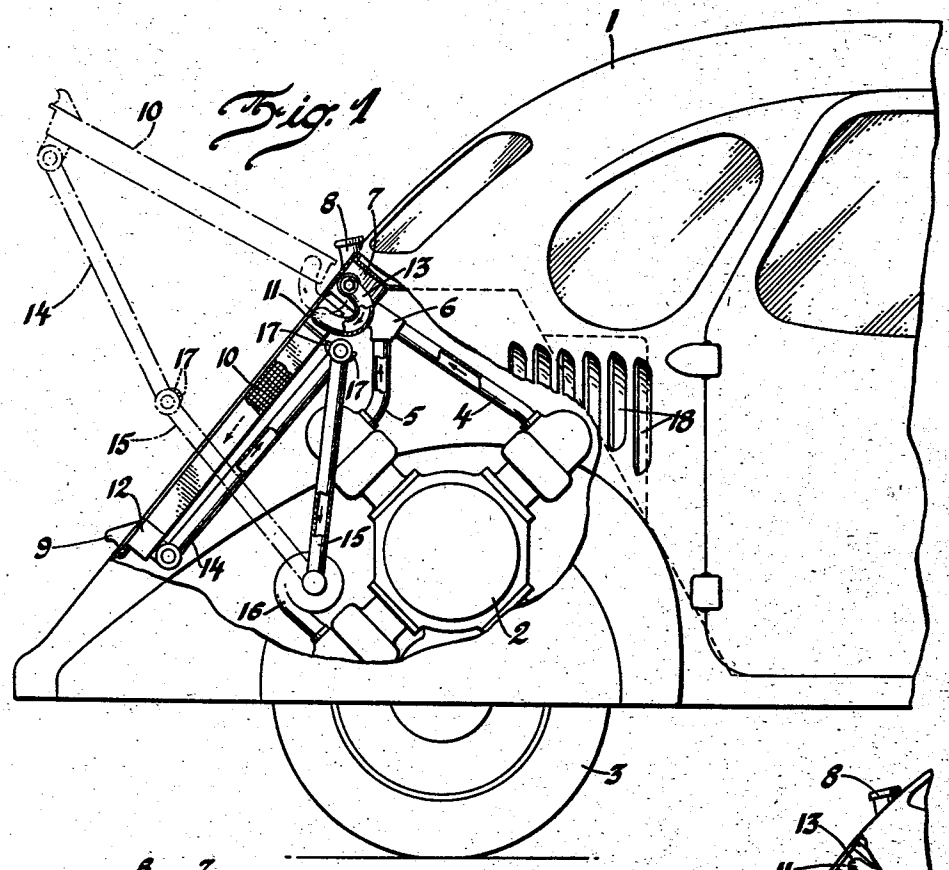


Fig. 1

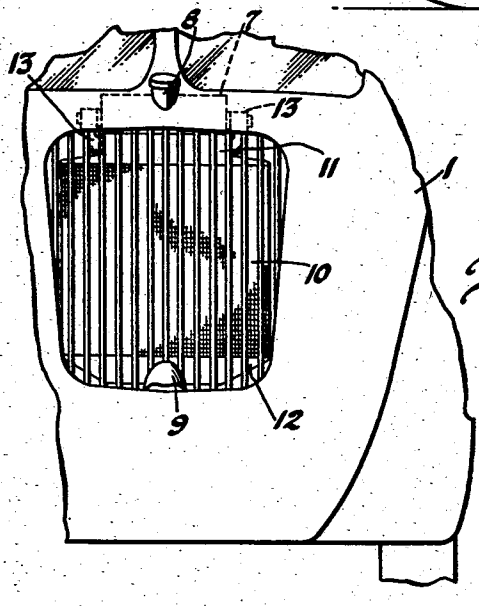


Fig. 2

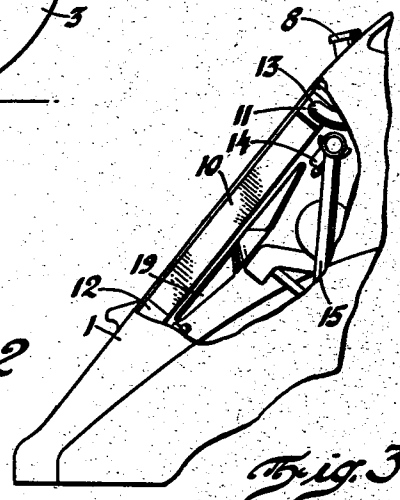


Fig. 3

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COOLING SYSTEM

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8 Claims. (Cl. 180—54)

This invention relates to motor vehicles and more particularly to an arrangement wherein the engine cooling radiator is mounted in the wall of the body and serves as a closure door for the engine compartment.

One of the principal objects of the invention is to mount the radiator assembly for outward swinging movement to permit access to the engine through the inspection opening for adjustment and replacement of parts, for the replenishment of lubricating oil and other similar purposes.

A further and important object of the invention is to provide conduits connecting the engine and radiator in a circuit for the flow of cooling medium which enable relative movement of the radiator without disconnection of couplings or otherwise disturbing the cooling system and contents.

A more complete description of the structure involved will be made with reference to the preferred embodiment of the invention as illustrated in the accompanying drawing wherein Figure 1 is a side elevation partly broken away of the rear portion of a motor vehicle; Figure 2 is a view looking at the rear wall of the vehicle and Figure 3 is a fragmentary view illustrating a modification.

In the drawing the vehicle body 1 has a downwardly inclined rear wall in conformity to current styling and adjacent the rear wall is an enclosed compartment in which is mounted the power plant or engine 2 for driving the road wheels 3. The engine illustrated has its cylinders arranged radially of the crankshaft and each cylinder is provided with a cooling jacket, the several jackets being in communication with each other. The uppermost cylinder jackets are connected through conduits 4 and 5 with a Y-fitting 6 joined to a tank 7 which is fixedly mounted in the body at the rear wall and adjacent the upper edge of an inspection opening in the wall. A filler spout 8 may be associated with the fixed tank 7.

Closing the rear wall opening is a hinged door which consists essentially of a radiator assembly, preferably provided with an ornamental grille over its exposed face and a lift handle 9. The radiator assembly comprises a cooling core 10 and upper and lower headers or tanks 11 and 12 fixedly secured on opposite ends of the core for communication with the several core tubes. The header 12 at the free end of the swinging assembly is the outlet tank and the header 11 is the inlet tank and is hingedly related to the fixed tank 7. To constitute the hinge and provide for the free flow of coolant between the tanks there are provided on opposite sides a pair of bowed or U-shaped conduits 13, each having one end fixed to the header 11 and the opposite end pivotally joined to the fixed tank 7 on a transverse axis which enables the closure to be swung from the full line position shown in Figure 1 to the dotted line position for access to the engine.

The return liquid flow connection may consist of a pair of jointed conduits 14 and 15 swivelly joined together at their adjacent ends with their remote ends pivoted, respectively, to the outlet header 12 and to the engine driven pump 16 rigid with the power plant. The pivotal connections are such that the tank 12 is in communication with the pump 16 in all relative positions of the radiator assembly so that the engine pump circulates cooling medium through the engine and radiator and the circuit remains intact whether the door is open or closed.

Advantage is taken of the jointed conduits 14 and 15 when in extended position for holding the closure door against accidental closing movement, the conduits serving as an overcenter toggle brace and being held against collapse by a pair of complemetary abutment lugs 17 at the intermediate knuckle joint.

For the dissipation of heat absorbed in the engine jacket, air flow through the radiator may be dependent upon vehicle travel through the provision of a tunnel or duct leading from the front of the vehicle into the engine compartment or optionally a series of air scoops or louvers 18 may be provided in the side of the vehicle or other suitable region of pressure to direct air into the engine compartment for outward flow through the radiator assembly. Alternately an engine driven fan 19, as seen in Figure 3, may be used to induce air flow or to augment air currents available during car travel.

I claim:

1. In a motor vehicle, a body having an engine compartment therein, an engine mounted in the compartment adjacent an inspection opening in the wall thereof, an engine cooling radiator normally positioned in said opening, means mounting the radiator for movement out of the opening to enable access to the compartment and a foldable pipe connecting the engine and radiator for liquid flow therebetween in all relative positions of the radiator and engine.

2. A motor vehicle body having a rearwardly disposed engine compartment, a closure door for the compartment which includes an engine cooling radiator, means hingedly mounting the door for outward swinging movement, an engine

mounted in said compartment, and a combined extensible brace and liquid flow conduit between the engine and a portion of the radiator removed from said hinged mounting means.

3. In combination, an engine, a compartment enclosing the engine and having an opening through which the engine is accessible, an engine cooling radiator normally closing said opening, means hingedly mounting said radiator adjacent one end for swinging movement out of said opening and an extensible conduit connecting the engine and the free end of said radiator for cooling medium flow and being adjustable to maintain the connection throughout the range of swinging movement of the radiator.

4. A motor vehicle body having an opening in the wall thereof, a tank fixedly mounted on the body adjacent said opening and adapted for connection with an engine cooling jacket, a radiator assembly fitting said opening and having a header at the end thereof adjacent said fixed tank, and a conduit connecting the tank and header and having a pivotal joint therein to accommodate swinging movement of the radiator assembly into and out of said opening.

5. A motor vehicle having an engine compartment with an inspection opening leading thereto, a jacketed engine mounted in said compartment, a pair of hingedly related tanks, a radiator core secured at one end to one of the tanks as a unit therewith to close said opening, means fixedly mounting the other tank on the vehicle for connection with the engine jacket, a conduit communicating said tanks and having a pivotal joint therein to accommodate swinging movement of the hinged tanks, a tank secured to the free end of the core as a unit therewith, and a jointed conduit connecting the last mentioned tank with the engine and serving as a knuckle brace to hold the radiator in open position.

6. In a motor vehicle having an engine compartment and an opening thereto, an engine mounted in the compartment, a radiator assembly hingedly mounted in said opening to serve as a closure door, and a pair of conduits pivotally joined at adjacent ends to each other and at remote ends to the radiator and engine, respectively.

7. In a motor vehicle having a body and an engine compartment within the body, an engine mounted in said compartment, a radiator hingedly mounted on the body to provide a closure door for the compartment, and a toggle brace for the door comprising a conduit for cooling medium having a knuckle joint intermediate its ends and end pivotal joints with the radiator and engine, respectively.

8. A construction of the character described having an engine compartment and an inspection opening thereto, a liquid cooled engine in the compartment, a radiator normally positioned in said opening and arranged for the passage of cooling air therethrough between the interior and exterior of the engine compartment, a hollow swivel joint hingedly mounting said radiator in the opening, a conduit connecting said joint and the engine for liquid flow between the engine and radiator, and a foldable pipe connecting the engine and a portion of the radiator spaced from the axis of said swivel joint for liquid flow in all relative positions to which the radiator may be swung on its swivel joint mounting.

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