

D. WELGE.
 WATER COOLING SYSTEM FOR INTERNAL COMBUSTION MOTORS.
 APPLICATION FILED JULY 21, 1919.

1,378,070.

Patented May 17, 1921.

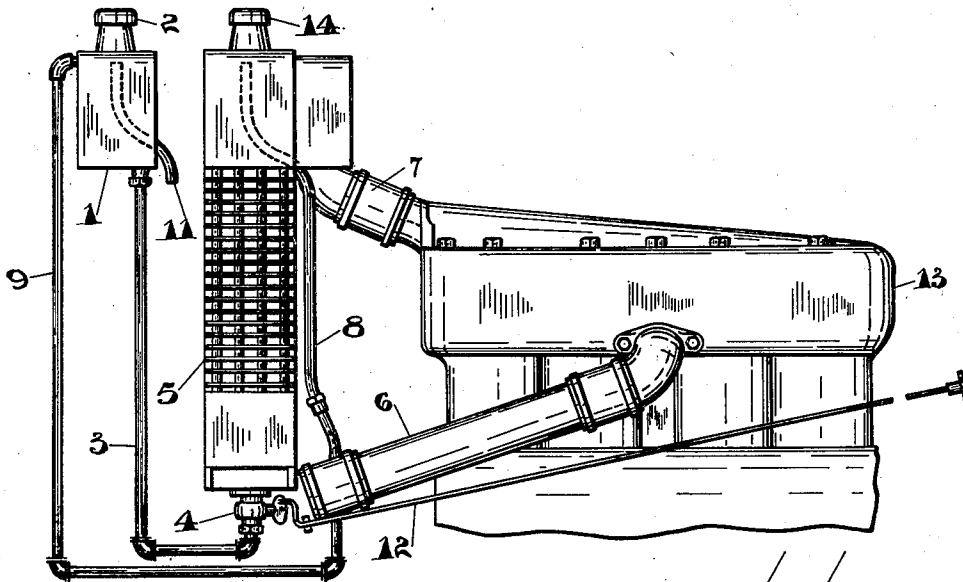


FIG. 2.

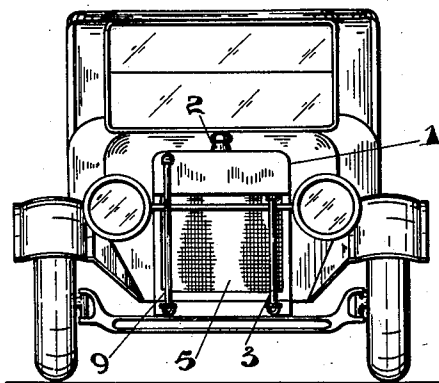


FIG. 1.

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WATER-COOLING SYSTEM FOR INTERNAL-COMBUSTION MOTORS.

1,378,070.

Specification of Letters Patent.

Patented May 17, 1921.

Application filed July 21, 1919. Serial No. 312,352.

To all whom it may concern:

Be it known that I, DIDRIK WELGE, of Mason, in the State of Nevada, United States of America, have invented certain new and useful Improvements in Water-Cooling Systems for Internal-Combustion Motors, of which the following is a specification.

This invention is applicable particularly to motor cars operating under conditions in which the ordinary water cooling system is inadequate. Particularly when cars are operating in hot districts at high altitudes and over steep grades, the water in the cooling system becomes too hot and boils away necessitating stops to allow the motor to cool off and for replenishing the water supply, and my object is to devise means for increasing whenever necessary the volume of cooling water in communication with the cooling system and for automatically replenishing the water in the radiator of the cooling system to keep the water level at the height necessary for effective circulation. I attain my object by means of the constructions hereinafter described and illustrated in the accompanying drawings in which—

Figure 1 is a front view of an automobile provided with my improvements in connection with its water cooling system; and

Fig. 2 a side elevation of the improved water cooling system on a larger scale.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

13 is an internal combustion motor of which 6 is the inlet water connection of its water jacket and 7 the outlet connection, these being connected to the top and bottom respectively of the radiator 5 of ordinary type.

Preferably in front of the upper part of the radiator 5 I locate a tank 1 which preferably does not extend up above the top of the upper part of the radiator 5. This tank is preferably closed by a cap 2 similar to the cap 14 of the radiator 5. The bottom of the tank 1 is connected by means of a pipe 3 with the bottom of the radiator 5. In this pipe is located a valve 4 to which for convenience is connected an operating rod 12, the rear end of which is located in any convenient position for operation by the driver of the motor car from his seat. The tank 1 is also connected with the upper part of

the radiator 5. The preferred arrangement is to employ a pipe 9 leading from the upper part of the tank passing below the lower part of the radiator 5 and connected to the lower end of the usual overflow pipe 8 leading from the upper part of the top of the radiator 5. An overflow is provided for the tank 1, this being preferably a pipe 11 arranged as is common in ordinary radiators.

When the motor is cold, the cooling system may be filled through either of the caps 2 or 14. Under normal conditions when overheating is not likely to occur, the valve 4 is closed, and the device operates in the ordinary manner. Assuming that overheating is occurring or is likely to occur, the valve 4 is opened, the lower part of the radiator 5 is immediately placed in communication with a considerable body of cool water contained in the tank 1, which by gravity tends to flow into the radiator 5 and displaces the hot water therein, which flows through the pipes 8 and 9 to the upper part of the tank 1.

I find in practice that owing to the greater weight of the cold water, the flow of water from the tank 1 to the radiator will occur even when the water level in the tank is considerably below the water level in the radiator; consequently the water from the tank will flow readily to the radiator 5 when the water in the latter is boiling and only steam is passing through the pipes 9 and 10. The pipe 11 permits of the free escape of steam generated and serves also as an overflow for any surplus water due to expansion or to overfilling.

I find that my improved cooling system will work with complete satisfaction, maintaining the cooling system at a proper temperature and keeping it filled under conditions previously this was impossible.

What I claim as my invention is:—

1. The combination with the radiator of the cooling system of an internal combustion motor of a tank located above the level of the bottom of the radiator; a water connection between the bottom of the tank and the bottom of the radiator; and an overflow pipe leading from the top of the radiator to the tank.

2. A cooling system for internal combustion motors constructed as set forth in claim 1 in which the overflow pipe passes below the bottom of the radiator.

3. The combination with the closed radia-

tor of the cooling system of an internal combustion motor of a closed tank located above the level of the bottom of the radiator; a water connection between the bottom of the tank and the bottom of the radiator; a control valve in said water connection; an overflow pipe leading from the top of the radiator to the tank; and an overflow outlet from the tank.

10 4. The combination with the radiator of the cooling system of an internal combustion

motor of a tank having a high water level approximately the same as that of the radiator and having water connections with both the top and bottom of the radiator. 15

Signed at Mason, Nevada, this third day of July, 1919.

DIDRIK WELGE.

Witnesses:

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J. B. CARROLL.