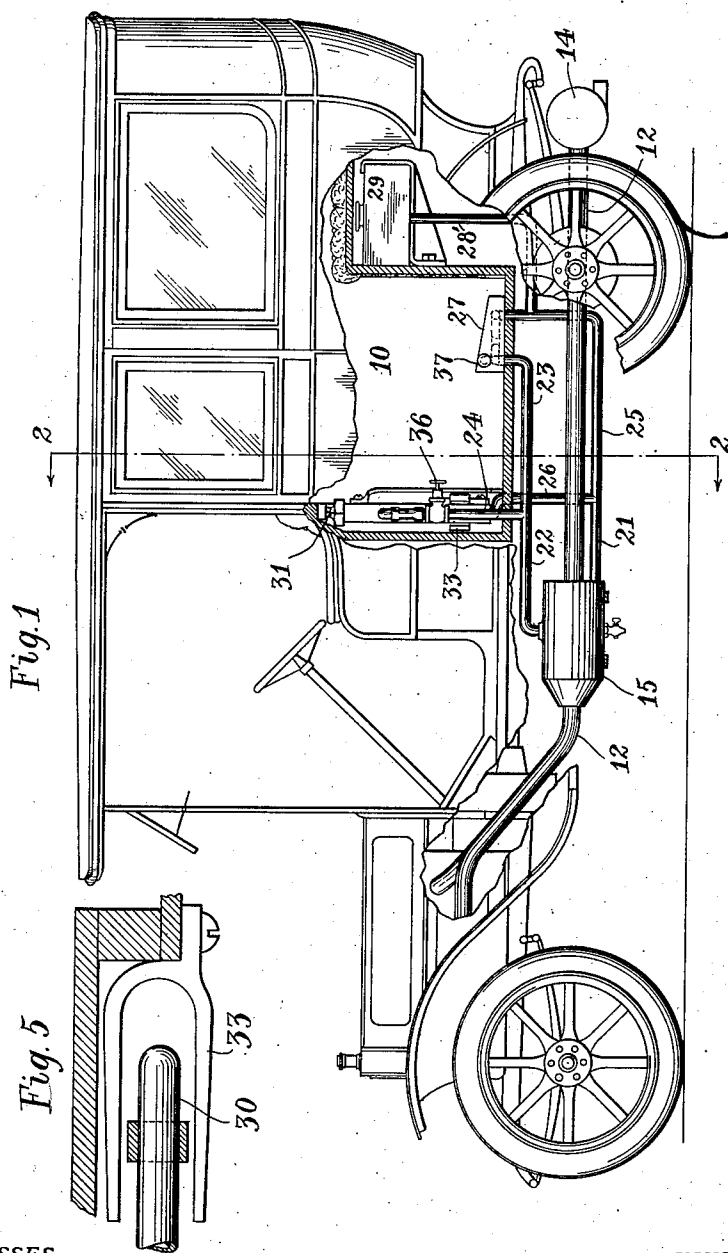


C. W. VAN SCHOIK.
 HEATER FOR AUTOMOBILES.
 APPLICATION FILED JAN. 16, 1912.

1,109,376.

Patented Sept. 1, 1914

2 SHEETS-SHEET 1.



WITNESSES:
 David J. Walsh
 R. P. Patton

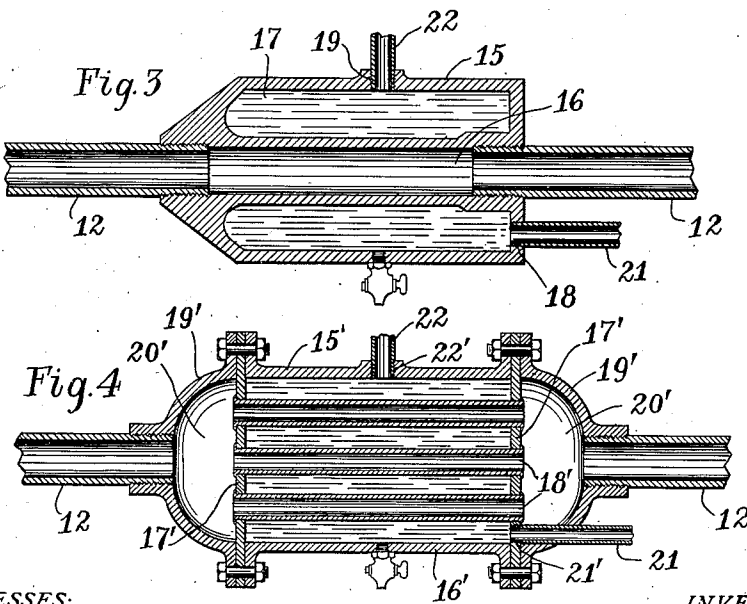
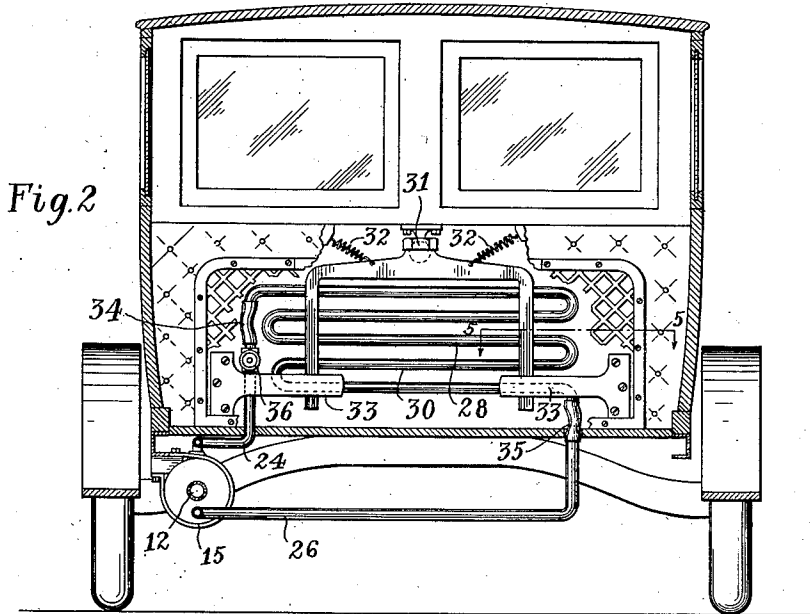
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WITNESSES:

David J. Walsh
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UNITED STATES PATENT OFFICE.

CHARLES WELLING VAN SCHOIK, OF NEW YORK, N. Y.

HEATER FOR AUTOMOBILES.

1,109,376.

Specification of Letters Patent.

Patented Sept. 1, 1914.

Application filed January 16, 1912. Serial No. 671,460.

To all whom it may concern:

Be it known that I, CHARLES WELLING VAN SCHOIK, a citizen of the United States of America, residing in the city, county, and State of New York, have invented a new and useful Improvement in Heaters for Automobiles; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to means for heating automobiles and especially means for utilizing the heat from the explosion motor of automobiles and more particularly for utilizing the heat from the exhaust thereof.

The invention relates also to a particular form of radiator to be used with such means.

Herein I show only two forms of the invention in which the exhaust pipe of the motor is surrounded by a suitable water jacket or heater connected to radiators in the cab of the automobile, but it is understood that other forms may be used without departing from the scope of the invention as claimed, and that the heating means may be used for inclosures other than the cabs of automobiles.

In the accompanying drawings Figure 1 is a side elevation partly in section showing the heating means applied to an automobile; Fig. 2 is a sectional view taken on the line 2-2 of Fig. 1, parts being broken away; Fig. 3 is a vertical longitudinal sectional view of one form of water jacket; Fig. 4 is a similar view of another form of water jacket, and Fig. 5 is a horizontal sectional view of a detail, taken on line 5-5 of Fig. 2.

Referring more particularly to the drawing, the heating arrangement is shown applied to an automobile having a body or cab 10 and a motor provided with an exhaust pipe 12 and a muffler 14 which may be supported in any usual or convenient manner. At a convenient point between the ends of the exhaust pipe, a water jacket or heater 15 is inserted. This heater may, as shown in Figs. 1, 2 and 3, comprise a cast metal water jacket provided with a central opening 16 (Fig. 3) into which the exhaust pipe is screwed as shown, and a water space 17 completely surrounding the central opening. The hot exhaust gases pass through the central opening 16 and communicate heat to the water or other conducting fluid in the space 17, the water passing in at the opening 18 and out through the opening 19.

Instead of the heater shown in Fig.

3 other forms may be used, for instance, the heater 15' shown in Fig. 4. This heater 15' consists of a main drum 16', tube sheets 17' and tubes 18' connected at opposite ends to the exhaust pipe 12 by suitable heads 19' forming end chambers 20'. The hot gases pass through the exhaust pipe, the chambers 20' and tubes 18' to the muffler, while the water circulates in the space bounded by the drum 16', the sheets 17' and the tubes 18', passing in at the opening 21' and out through the opening 22'. Both forms of heaters are provided with suitable drain cocks, as shown. The openings 18 and 19 of Fig. 3 (or the openings 21' and 22' of Fig. 4) are provided with connecting pipes 21 and 22 respectively, having branches 23 and 24, and 25 and 26, respectively leading to the foot-warmer 27 (Fig. 1) and the radiator 28 (Fig. 2), in the cab or body of the automobile. The return branch 25 is connected by means of the pipe 28 with the expansion tank 29.

In order that the radiator tubes 30 of the radiator 28 may remain horizontal so as not to interfere with the circulation of water therein when the automobile is tilted to one side as when the automobile is resting at the curb of a street, the radiator 28 is suspended by a ball-and-socket 31 or other suitable connection so that there may be transverse pivotal movement relative to the automobile. Springs 32 hold the radiator against jarring or too sudden movement from side to side, while suitably secured spaced members 33 (Figs. 2 and 5) prevent a swinging movement from front to rear. In order to permit said transverse pivotal movements, suitable flexible connections 34 and 35 are inserted in the pipes 24 and 26 near where they connect with the radiator. Suitable valves 36 and 37 are provided for said radiator and the foot-warmer, respectively.

The operation of the arrangement is as follows: Water is poured into the expansion tank until the water-jacket, radiator, foot warmer, and all connecting pipes are entirely filled. The heat of the exhaust passing through the water-jacket heats the water therein and causes the water to circulate in the foot-warmer and radiator coils. The excess of water due to the expansion caused by the heat is stored in the expansion tank. If the wheels on one side of the automobile stand in a gutter or other depression of the street, the radiator will

swing on its ball and socket joint and maintain a proper level in the radiator tubes, thus insuring a good circulation in the coils.

I claim as my invention:

- 5 1. In a vehicle, the combination with the body, of a water heater, a radiator in the body, and pipes connecting the heater with the radiator, said radiator being pivotally supported at the upper part thereof to permit lateral swinging of the same, said pipes
10 being provided with flexible connections near where they join the radiator.
2. In a vehicle, the combination of a water heater, a radiator in the front part of the

cab; a foot warmer in the lower part of the 15 cab, and pipes connecting the heater with the foot warmer and the radiator, said radiator being pivotally suspended to permit transverse pivotal movement, said pipes being provided with flexible connections near 20 where they join the radiator.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES WELLING VAN SCHOIK.

Witnesses:

CORNELIUS HOVING,
M. KILPATRICK.