

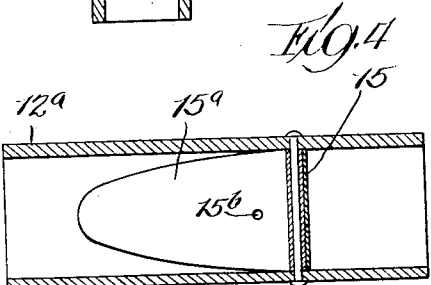
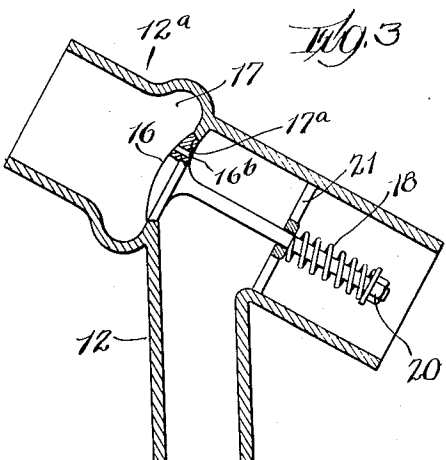
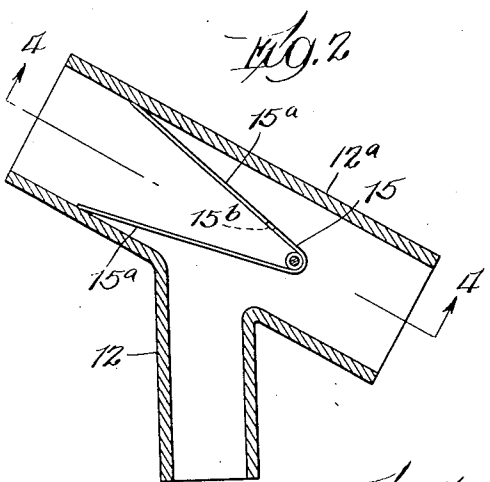
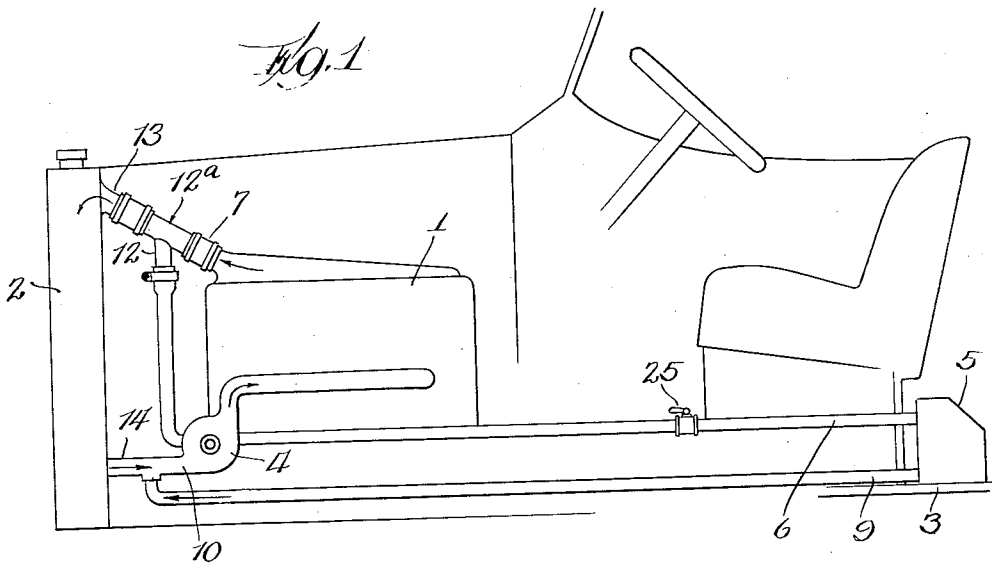
April 10, 1928.

1,665,725

E. AEBY

AUTOMOBILE HEATER

Filed March 11, 1922



Inventor
Elizabeth Aeby
by Dunton & Dunton *for Attys*

UNITED STATES PATENT OFFICE.

ELIZABETH AEBY, OF INDIANA HARBOR, INDIANA, ASSIGNOR TO LOUIS AEBY, OF EAST CHICAGO, INDIANA.

AUTOMOBILE HEATER.

Application filed March 11, 1922. Serial No. 542,882.

The purpose of this invention is to provide an improved construction for utilizing the cooling liquid of the engine cooling circulatory system of a motor vehicle for heating the cab. It consists in the elements and features of construction shown and described as indicated in the claims.

In the drawings:—

Figure 1 is a partly diagrammatic side elevation of the engine and cab of a motor vehicle equipped with this invention.

Figure 2 is a detail section axial with respect to the passages of the circulatory system at the junction of the two circuits thereof, one of which contains the radiator, and the other of which contains the heater.

Figure 3 is a detail view similar to Figure 2, showing a modification of the valve device or choker which governs the circulation through the two circuits.

Figure 4 is a detail section on the line, 4—4, on Figure 2.

In the drawings the engine is represented in conventional form at 1, the radiator at 2. A portion of the floor of the vehicle is shown at 3. The water circulating pump is shown at 4 in conventional relation to the engine and the radiator. 5 represents conventionally a heater in the vehicle, supplied by an in-leading pipe, 6, which leads off as a branch from the customary hose coupling shown at 7 from the engine jacket to the radiator; and connected by an out-leading pipe, 9, to the intake to the pump at 10. The connection of the heater in-leading pipe first mentioned is made by means of an oblique T-fitting, 12, having in the cross member, 12^a, of the T which constitutes the direct lead from the engine jacket to the radiator, a valve device which may be described as a choker, being yieldingly spring-seated for obstructing the flow from the engine jacket to the radiator, and adapted to yield for permitting flow past it upon a predetermined pressure, so that except when the pressure reaches and passes the predetermined limit, the circulation is restricted to the circuit containing the heater, that is, comprising the pipes, 6 and 9, and excluded from the circuit containing the radiator, comprising the pipes, 13 and 14.

In the form shown in Figure 2, this valve device or choker consists of a flat spring bar, 15, folded at its middle point in V shape and mounted by its apex diametrically

with respect to the cross member 12^a, of the T-fitting mentioned, with its two wings extending past the outlet to the stem of the T in the direction toward the radiator, its extremities seating yieldingly upon the opposite sides of the passage in the cross of the T. It will be understood that if the T-fitting is cylindrical as to its cross member, the wings, 15^a, of the valve device or choker will be semielliptical in form to fit the wall of the fitting when seated there-against, so that the device operates substantially as a valve closing the passage leading to the radiator, except when it is compressed, folding the two wings together or toward each other when the pressure of the liquid in the system due to the operation of the pump exceeds the elastic resistance of the wings to such compression. The resulting operation is that so long as the speed of the pump produces no greater pressure than that which the spring tension of the valve or choker will resist, the entire circulation of the cooling water is through the heater. But upon the speed of the engine, and thereby of the pump, increasing so as to increase the pressure in the circulatory system, the wings, 15^a, will be forced together, and the liquid will pass to the radiator as well as to the heater. The pressure on the heater, it will be observed, is thereby prevented from exceeding the predetermined pressure which will close together the wings of the choker. Desirably, the spring resistance of the choker is such as to limit the pressure on the heater to not more than two pounds, for which the joints and connections can be made safe through the pressure which the pump can produce at high speed of the engine will often reach ten or even fifteen pounds.

In Figure 3 there is shown a modification of the valve device or choker, consisting in making the valve of familiar reciprocating type, 16, having a definite chamber and seat provided for it in the T-fitting beyond the stem outlet to the heater circuit, as seen at 17 and 17^a, the valve opening toward the radiator and being held normally seated by a spring, 18, reacting between a nut, 20, provided on the end of the stem of the valve and a guide bridge or spider, 21, through which the valve stem passes. The operation of this device is not essentially different from that of the form shown in Figure 2.

All the pipe connections in the heater cir-

cuit may be flexible hose, and the entire device is therefore of a character which can be very easily applied and connected to the motor and body of any common type of
5 automotive vehicle.

Desirably there is provided a shut-off valve, 25, in the in-leading pipe of the heater circuit, and preferably in the body for shut-
10 ting off the hot water circulation when the heat is not required. When this valve is closed the pump will promptly raise the pressure in the circulatory system to the degree necessary to open the choker valve and circulate through the radiator.

15 It is desirable to make provision for limited circulation of the water past the valve or circulation-obstructing device in either of the forms shown, to insure some circulation of water through the radiator
20 when the valve device is closed, in order to reduce the danger of freezing which would arise in case of no circulation, if no anti-freezing mixture were employed. For that purpose a small port, 15^b, in the form shown
25 in Figure 2 and 16^b in the form shown in Figure 3 is made through the valve device, 15 or 16.

I claim:—

1. In combination with a motor vehicle, a radiator, a pump and a heater in the body, 30 two liquid circuits in both of which the motor and the pump are contained, one containing the radiator and the other containing the heater, said circuits being connected on the outlet side of the motor jacket be- 35 tween the same and the radiator, and a spring-seated valve device in the radiator circuit between said connection and the radiator, adapted to yield to predetermined pressure, and in case of less pressure to exclude 40 the circulating liquid from the radiator circuit and to limit it to the heater circuit.

2. In the construction defined in claim 1, foregoing, the valve device constituting a choker, adapted to be compressed for open- 45 ing a passage for the liquid around it, and to react to full obstructing dimensions upon reduction of pressure below a predetermined degree.

In testimony whereof, I have hereunto 50 set my hand at East Chicago, this 7th day of March, 1922.

ELIZABETH AEBY.