Apr. 17, 1923. 1,452,173

R. L. SCOVILLE

LOW WATER INDICATOR

Filed April 5, 1921

Fig. 1.

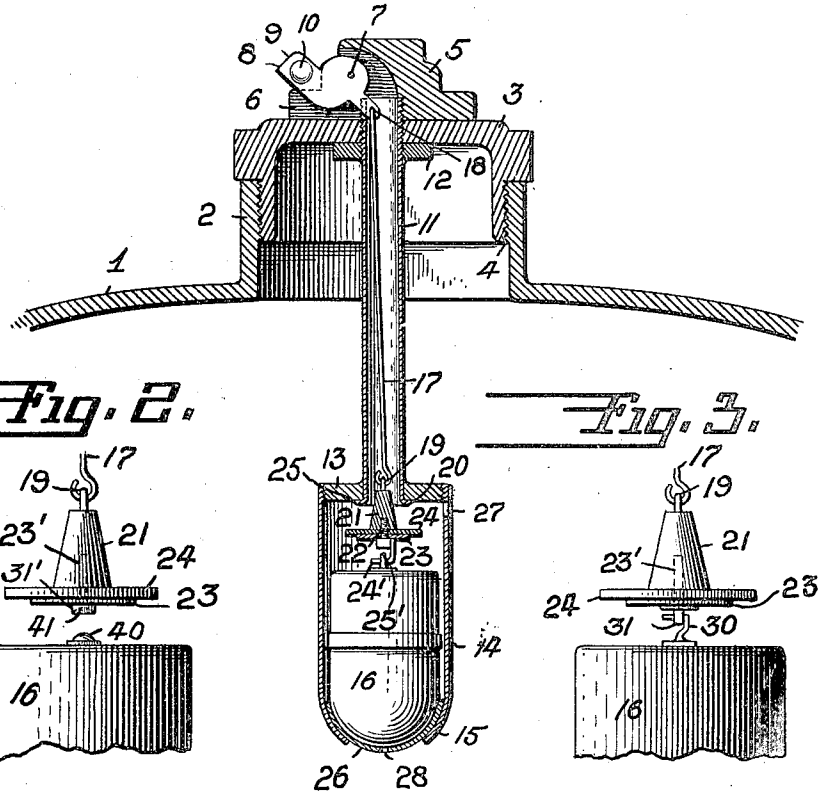


Fig. 2.

Fig. 3.

Fig. 4.

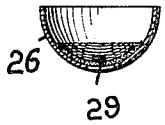
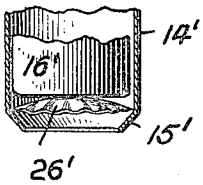


Fig. 5.



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UNITED STATES PATENT OFFICE.

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LOW-WATER INDICATOR.

Application filed April 5, 1921. Serial No. 458,856.

To all whom it may concern:

Be it known that ROYAL L. SCOVILLE, a citizen of the United States of America, residing at 50 Church Street, New York city, in the county of Kings and State of New York, has invented certain new and useful Improvements in Low-Water Indicators, of which the following is a specification.

This invention relates to low-water indicators especially adapted for the radiators of automobiles. One object of the invention is to reduce the cost of manufacture of such indicators and at the same time to render them more reliable and unaffected by weather conditions. The further object of the invention is to improve the operation of such indicators so that they will not be affected by the surging of the water in the radiator whereby the indicator will show the mean level of the water without registering temporary variations in the level. A still further object of the invention is to prevent effectively the water in the radiator from escaping or splashing out through the cap and attached indicator. A still further object is to design an indicator of universal application to all makes of cars.

Referring to the drawings in which the preferred forms of the invention are shown:

Fig. 1 is a vertical section through the radiator cap and low-water indicator as it is attached to the automobile radiator.

Fig. 2 is an enlarged detail and side elevation showing a slightly modified form of connection between the float and the push rod.

Fig. 3 is a similar view of a still further modification.

Fig. 4 shows, in section, a modified form of valve or cup member located at the bottom of the float container.

Fig. 5 is a detailed sectional view of the lower portion of a modified form of container float and cup valve.

The upper portion of an automobile radiator is indicated at 1 with the usual filling spout at 2. Preferably, my invention is attached to and forms a part of the radiator cap 3 which is shown as threaded in the spout 2 at 4. The upper portion of the cap 5 is provided with a slot 6 in which is pivoted on pin 7 an indicator arm 8. When the arm is in the position shown in Fig. 1 the outer end 9 of the same projects above the general contour of the cap so as to be plainly visible from the driver's seat. To render it easily discernible it may be especially colored or highly polished and may also be provided with a luminous button 10 containing radio-active material. When the arm, however, is in the lowered position, it lies entirely within the general contour of the cap and is invisible from the driver's seat.

The upper portion 5 of the cap is shown as threaded on a tube 11 of fairly small bore. Also threaded on said tube is a nut 12 which clamps the cap firmly against the upper portion 5. Said tube extends downwardly below the mouth of the filling cap and is preferably provided adjacent its lower end with a threaded collar 13 or other enlargement. The container proper 14 for the float is shown as threaded on said collar 13. Said container may be made of brass tubing or the like which is preferably drawn or swaged inwardly at the bottom thereof to provide an annular stop 15 limiting the downward movement of the float 16. Said container 14 may be very little longer than the float itself since the purpose of my indicator is not so much to show the exact water level as merely to indicate where the water in the radiator gets dangerously low or, in other words, falls about to the level of the top of the radiating tubes. For connecting the indicator 8 and the float, I have shown a wire 17 pivoted at 18 to the indicator and at 19 to an intermediate valve member 20. Said member 20 is shown as formed of a conical piece 21 having secured to the bottom thereof as by means of a set screw 22 and washer 23, a rubber washer 24 or other valve member. When the member 21 is raised by the float, it can readily be seen that the washer 24 will seat against annular valve seat 25 on the lower end of the tube 11, thereby effectively preventing water from being forced up the tube 11 and out of the top of the cap. The float 16 is shown as connected to washer 23 by hook 24′ and an eye 25′, the former being shown on the washer and the latter on the float. It will be seen that by this hook and eye connection between the float and member 22 and also the hook and eye connection 19 between the member 21

and the wire 17 there is provided a universal connection between the float and the connecting wire 17. For preventing a surging of the water in the radiator from disturbing the indicator when the automobile is running, I prefer to also provide within the container 14 a lower valve member 26. This is shown in Fig. 1 as in the form of a cup fitting the lower rounded portion of the float and the annular inwardly curved lower portion of the container 14.

The action of the valve 26 in preventing undue actuation of the indicator is as follows: As the radiator is being filled and the water rises around the outside of the container 16 the pressure speedily lifts the member 26 and the float 16 seated thereon and flows into the interior of the container, the air therein being forced out through the upper vent 27. The water speedily gets between the member 26 and the float whereupon the member 26 settles upon its seat 15 while the float rises until valve 22 is seated against valve seat 24 and the indicator is lowered. If now the level of the water should temporarily fall below the lower end of the container 14 the water inside said container would not escape immediately but would maintain the float in its elevated position until the normal water level was restored. In order that water may not be permanently trapped within said container 14 and thus not only interfere with the proper functioning thereof when the water got permanently low but also render the same subject to damage by freezing in cold weather, I have provided the cap with a small aperture 28 at the lower portion thereof so as to drain the same slowly. Said aperture may be covered with wire gauze 29 if desired as illustrated in Fig. 4. Also said aperture may be dispensed with if provision is made so that the valve member does not seat tightly.

This may be accomplished by corrugating the same as indicated at 26′ in Fig. 5; the lower end of the container being indicated at 15′ and the float at 16′ in this figure. A simple form of hook and eye connection between the float and member 22 is shown in Fig. 3 wherein the hook 30 is secured to the top of the float 16 while the eye is formed by a hole through the head 31 of said screw 23′. In my indicator it should be observed the upper vent 27 in the float chamber is normally below the water level as well as the bottom opening. This also is useful in preventing improper actuation of the indicator.

In my invention it is unnecessary to secure the float 16 to the member 21, since its movement is thoroughly guided and limited by the housing 15. Such a modification is shown in Fig. 2 wherein the knob 40 on the float merely abuts when raised against the head 31′ of set screw 23′, the head being preferably hollowed out at 41 to form a universal connection.

Particular attention is called to the fact that my construction permits employing a much smaller diameter intermediate member 11 than the float chamber 14 between the latter and the cap 3, thereby permitting me to employ a float of substantial diameter and at the same time not interfering with the placing of the indicator in the radiator. On some makes of automobiles, the drainage pipe extends up into the filling spout 2, so that it is impossible to have a substantial float chamber, if the same is of the same diameter throughout, on account of interference with this pipe. By my design, however, the float chamber may be dropped down into the radiator off center until the float chamber clears the said pipe and then moved to the proper position to screw the same into place.

In accordance with the provisions of the patent statutes, I have herein described the principle of operation of my invention, together with the apparatus, which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by other means. Also, while it is designed to use the various features and elements in the combination and relations described, some of these may be altered and others omitted without interfering with the more general results outlined, and the invention extends to such use.

Having described my invention what I claim and desire to secure by Letters Patent is:

1. In a low water indicator, the combination with an indicator, of a float, a container therefor permitting limited up and down movement, said container being spun inwardly at its lower end, a cup shaped member seated within said end to form a valve, said float being adapted to rest on said member when the water is low and means connecting said float and indicator for operating the same.

2. In a low water indicator, the combination with a radiator spout and cap, of a float located below the same and spaced therefrom, a float chamber therefor enclosing the same, and of not much greater length than said float, a tube of much less diameter than said chamber connecting the same to the cap, whereby obstructions in the radiator spout need not restrict the size of the float employed, an indicator on said cap and means passing through said tube connecting said indicator and float.

3. In a low water indicator, the combination with an indicating member, of a float, a float chamber having an opening at each

end, a valve member for each of said openings, the lower valve member having a restricted opening for the purpose specified and means connecting said float and indicating member to operate the same.

4. In a low water indicator, the combination with a radiator spout and cap, of a float located below the same and spaced therefrom, a float chamber therefor enclosing the same, and of not much greater length than said float, said chamber having an upper and a lower opening both of which are normally below the water level, a tube of less diameter than said chamber connecting the same to said cap an indicator on said cap and means passing through said tube connecting said float and indicator.

In testimony whereof I have affixed my signature.

ROYAL L. SCOVILLE.