A. SCHIEFER.

TEMPERATURE SIGNALING DEVICE.

APPLICATION FILED MAR. 5, 1919.

1,357,302. Patented Nov. 2, 1920.

Fig. 1.

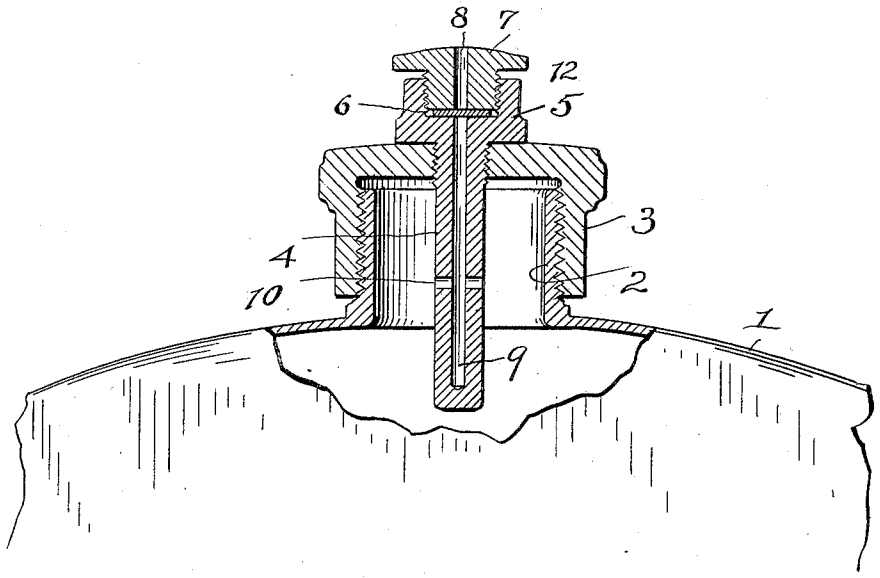
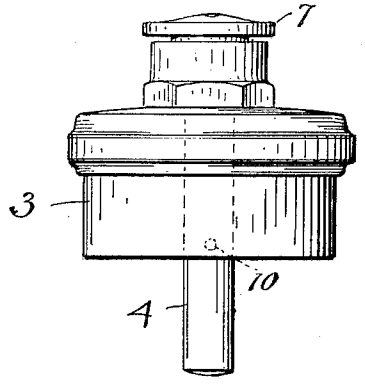


Fig. 2.



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UNITED STATES PATENT OFFICE.

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TEMPERATURE-SIGNALING DEVICE.

1,357,302. Specification of Letters Patent. Patented Nov. 2, 1920.

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To all whom it may concern:

Be it known that I, ANDREW SCHIEFER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Temperature-Signaling Devices, of which the following is a full, clear, and exact description.

This invention relates to what may be aptly described as a temperature signaling device, that is to say, a device which gives a visible signal of temperature conditions. The device is more particularly intended for use in connection with the water circulating system of an internal combustion engine, and in association with this water circulating system, the device gives a visible signal when the temperature condition of the engine is such that the attention of the operator should be directed to the same.

Briefly, the invention may be described as comprising the elements and the combination thereof set forth in the accompanying claims.

Reference should be had to the accompanying drawing forming a part of this specification, in which Figure 1 is a sectional elevation showing the device of the invention as applied to the radiator of an automobile; Fig. 2 is a front elevation of a portion of the radiator of an automobile with the device associated therewith.

Nearly every internal combustion engine has associated therewith a water circulating system for the purpose of cooling the cylinders of the engine, and every such water circulating system has as a part thereof a radiating device through which the water passes and in which it is brought into contact either with the air or other cooling medium for the purpose of reducing the temperature of the water. Every such circulation system also has some sort of pump used in connection therewith so that the water is circulated through the system.

It is a generally accepted fact that the temperature of the circulating water should be in the neighborhood of 170° to 180° in order to obtain the best efficiency from the engine, and when the temperature of the water rises, to any appreciable degree above 180° the engine is not working so efficiently and if the temperature of the water approaches the boiling point the continued running of the engine is very likely to damage the radiator and perchance the engine itself. It is therefore of considerable importance that the person operating the engine be given timely warning of the approach of any such undesirable condition in order that attention may be given to rectifying this condition.

The present invention provides a device which will give a visible signal when a predetermined temperature has been attained by the water forming the circulating system for the engine, and the signal will persist until the condition to which attention has been called by the signaling device is remedied.

The device of this invention may be located in any part of the water circulating system of an internal combustion engine, but obviously in order that it may function as intended it must be in a position such that its signal will be visible to the operator of the engine.

The following description will be given of the device as applied to the water circulating system of an internal combustion engine for automobiles, without in any way limiting the invention to this particular installation.

In an automobile the upper part of the radiator and the cap which closes the filling opening of the radiator are always visible whether the operator be within the car or without, and therefore I prefer that the signaling device be applied to the cap of the radiator of an automobile.

Referring to the drawings, 1 indicates the upper part of the radiator having the filling neck 2, and the cap which closes the filling neck is indicated at 3. All these parts may be of usual construction. The cap of the automobile is provided with a threaded opening which receives a stem 4. This stem is threaded so that the stem may be secured to the cap. The stem at its upper end is provided with a head 5 which head has an opening such as indicated at 6. A closure member 7 is threaded and engages with threads upon the interior of the opening 6. The cap 7 is at the central portion thereof provided with an opening such as indicated at 8.

The stem 4 is also provided with an opening 9 which extends substantially to the bottom of the stem and at its upper end communicates with the space 6. There are also one or more openings such as indicated at 10 which extend from the outside of the stem

and communicate with the central passageway 9.

Within the opening 6 in the head 5 there is placed a disk 12. This disk is preferably formed of an alloy which alloy is made from suitable metals and fuses at a predetermined temperature. The disk 12 is held in proper position within the opening 6 by means of the cap 7 which is screwed down upon it and when the disk is inserted it will be seen that the disk forms a barrier or closure for the end of the opening 9 which is formed in the stem 4.

The alloy of which the disk 12 is made, may, as before stated, be selected so that it will fuse at any desired temperature, but of course this fusion temperature should be short of the boiling point, and preferably I desire to use a disk which will fuse at substantially 200°.

When the water circulating system is in operation the water which comes from the internal combustion engine circulates through the radiator and around the stem 4. However, so long as the temperature of the water is below the fusing point of the disk 12, the water finds no outlet through the stem 4. When the temperature of the water, however, rises to the point at which the disk 12 melts, the disk 12 is in part destroyed for that portion of the disk which overlies the duct 9 will be melted, and so open communication between the duct 9 and the duct 8 of the cap 7.

The circulating system as has before been stated, is always under pressure due to the fact that it is being pumped and under these conditions, that is to say, with the disk 12 punctured, water will squirt through the duct 9 and the duct 8, this giving a visable signal of the fact that the engine needs attention. And additionally, the water vapor due to the high heat within the cylinder will escape.

This condition will obtain until the operator of the engine gives attention to the matter and closes the opening in the cap or otherwise removes the signaling device.

It will be obvious that in order to restore the signaling device to its prior condition it is only necessary to remove the cap 7 and insert a new and imperforate disk in place of the one which has been destroyed.

It will be noted that the duct 9 in the stem 4 extends below the openings 10, and this portion of the duct which is below the openings received the melted alloy which the disk or the portion of it which overlies the duct 9 is fused so that no alloy finds its way into the radiator, which of course would be a very undesirable thing.

The alloy may be removed from the stem 4 by removing the device and shaking the small slug of alloy out of the stem.

Having described my invention, I claim:—

1. A temperature signaling device adapted for use in connection with the water circulating system of an internal combustion engine, comprising a stem adapted to be contacted by the water in the stem, a duct in said stem, one or more openings communicating with said duct, a cap having a duct therein, a fusible member forming a closure for the upper end of the duct on the stem and being held in position upon the stem.

2. A temperature signaling device adapted for use in connection with a water circulating system of an internal combustion engine, comprising a stem having a signal duct therein, one or more openings communicating with the said duct extending from the outside of the stem and communicating with the duct said openings being below the top of the duct, a fusible member forming a closure for the outer end of said duct, a cap having a central opening and holding the fusible member in place.

3. A device of the character described comprising a stem having a head, said head being provided with a cavity said stem being provided also with a centrally arranged duct, the stem being provided with one or more openings which extend from the outside of the stem to said duct below the top of the duct, a fusible plate member within the opening in the head and overlying the duct, a cap secured to said head, said cap having an opening, which opening is in line with the duct in the stem.

In testimony whereof I hereunto affix my signature.

ANDREW SCHIEFER.