April 22, 1930. F. O. DE ALCOCER 1,755,316

AUTOMOBILE RADIATOR CAP

Filed Jan. 5, 1928

Fig. 1.

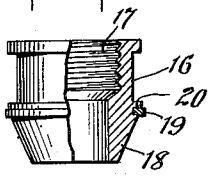
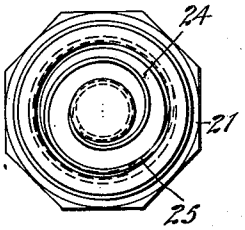


Fig. 5.



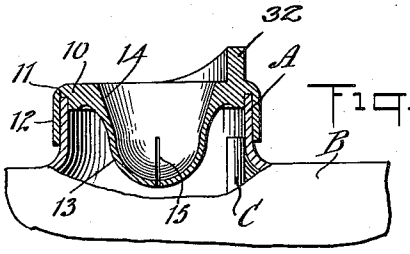


Fig. 2.

Fig. 3.

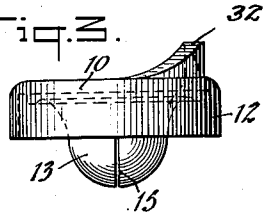


Fig. 6.

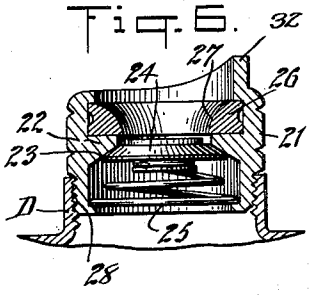


Fig. 7.

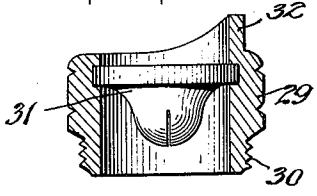


Fig. 4.

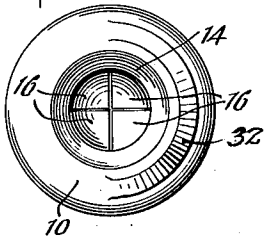


Fig. 9.

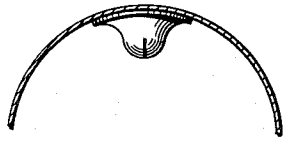
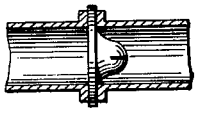


Fig. 8.



WITNESSES

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UNITED STATES PATENT OFFICE

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AUTOMOBILE RADIATOR CAP

Application filed January 5, 1928. Serial No. 244,692.

This invention relates to automobile accessories and has particular reference to an improvement in radiator caps therefor.

The invention broadly comprehends a radiator cap which is so constructed as to permit of the filling or addition of water to the cooling system of an automobile without the necessity of removing the cap from the radiator nozzle, thereby eliminating the danger of scalding the person or injury to the finish of the automobile which occurs when the cap is removed when the water in the cooling system reaches approximately the boiling point.

More specifically the invention comprehends a radiator cap equipped with an outwardly closing, inwardly opening valved filling aperture with which a hose nozzle is adapted to be associated for introducing water or other cooling liquids to the cooling system.

Other objects reside in the simplicity of construction and mode of use of the invention, the economy with which the same may be produced and installed and the general efficiency derived therefrom.

With the above recited and other objects in view, reference is had to the following description and accompanying drawings in which there is exhibited certain example or embodiments of the invention, while the appended claims define the actual scope of the invention.

In the drawings—

Figure 1 is an elevation partly in section of a hose nozzle adapted to be used in connection with the radiator cap constituting the present invention;

Fig. 2 is a fragmentary sectional view of a radiator filling nozzle equipped with a cap constructed in accordance with the invention;

Fig. 3 is a side view of the cap removed;

Fig. 4 is a plan view of the cap;

Fig. 5 is a bottom plan view of a modified adaptation of the invention;

Fig. 6 is a vertical sectional view therethrough;

Fig. 7 is a further modified adaptation of the invention;

Figs. 8 and 9 are sectional views illustrating other uses to which the invention may be adapted.

Referring to the drawings by characters of reference and particularly to the form of the invention illustrated in Figs. 2, 3 and 4, the cap is preferably constructed of elastic material including a substantially annular wall 10 having an annular groove 11 on its under side of a size to snugly fit the upper open end of the filling nozzle A of the radiator B. At its outer periphery the wall 10 is preferably provided with a depending annular flange 12 which snugly fits the outer periphery of the filling nozzle A. The wall 10 is provided with a depending substantially semi-spherical boss 13, the uppermost inner portion 14 of which is of frusto-conical formation presenting an outwardly flaring socket, the purpose of which will be hereinafter set forth. The boss 13 is provided with crossed slits 15 which sub-divided the same into a plurality of elastic or resilient sections 16 which normally close under their inherent resiliency or elasticity to prevent the escape of steam, water, or other pressure which has developed within the cooling system, thereby forcing the steam or pressure to escape through the usual overflow pipe C. In introducing or supplying water or other cooling liquids to the cooling system, use is made of a specially designed nozzle 16, which is adapted to be attached to a hose by the internal threaded portion 17 at one end. The opposite end of the nozzle is provided with a frusto-conical portion 18 which is adapted to be snugly engaged within the frusto-conical socket 14 of the cap. In addition to this the nozzle is provided with a sealing gasket or ring 19 of a yieldable material which is arranged in a groove 20 adjacent the upper enlarged end of the frusto-conical portion 18. It thus follows that when fresh cooling liquid is to be supplied to the cooling system through the filling nozzle A, the frusto-conical portion 18 of the nozzle 16 is forcibly inserted in the frusto-conical socket 14 of the cap and the force of the water or liquid will spread or open the portions 16. It is obvious that when the system is full, water or liquid will flow through the overflow pipe C so that the user may know the system is

full. In view of the fact that the portions 16 close against outward pressures, steam or hot water is prevented from escaping to injure the person or mar the finish of the automobile.

In the modified form of the invention illustrated in Figs. 5 and 6, the cap 21 is preferably of metal and is provided with an internal annular shoulder 22 having an internal frusto-conical seat 23 against which a valve element 24 is normally seated by a spiral expansion spring 25. Immediately above the shoulder 22 an elastic nozzle seat 26 is provided having an outwardly flaring aperture 27 for the reception of the hose nozzle 16. In this instance the cap 21 is provided with external threads 28 adapted to engage in the internally threaded filling nozzle D.

In the form of the invention illustrated in Fig. 7, the cap 29 is of metal and is externally threaded at 30 at its lower end to engage within an internally threaded filling nozzle. In this instance a valve element 31 constructed similarly to the valve element illustrated in the embodiment in Figs. 2, 3 and 4, is employed, said valve element being suitably anchored in the cap.

An upstanding deflector flange 32 is provided on the annular wall 10, the cap 21 or the cap 29, to deflect the wind and dust and to prevent the accumulation of dust, dirt or other foreign matter within the filling nozzle. In practice this flange may be suitably ornamented so as to add to the attractiveness of the appearance of the cap.

Figs. 8 and 9 illustrate other uses to which the valve element 31 illustrated in Fig. 7 may be employed, where gases or liquids are to be maintained at a certain point and passed therethrough from a hose temporarily applied to the inlet side thereof.

What is claimed is:

1. A radiator filling cap including a supply nozzle receiving wall adapted for frictional liquid tight connection with a supply nozzle and a check valve associated with said wall movable to open position by the pressure of the liquid flowing from the supply nozzle.

2. A radiator filling cap including a frusto-conical supply nozzle receiving wall adapted for frictional liquid tight connection with a frusto-conical supply nozzle and a check valve associated with said wall movable to open position by the pressure of the liquid flowing from the supply nozzle.

3. A radiator filling cap including a frusto-conical supply nozzle receiving wall adapted for frictional liquid tight connection with a supply nozzle and a check valve associated with said wall movable to open position by the weight or pressure of said liquid, said valve and wall being formed integrally of resilient material.

4. A radiator filling cap including a frusto-conical supply nozzle receiving wall adapted for frictional liquid tight connection with a supply nozzle and a check valve associated with said wall movable to open position by the weight or pressure of said liquid, said valve and wall being formed integrally of resilient material and being frictionally associated with the radiator filling nozzle.

5. In a radiator cap, the combination of a resilient receiving wall adapted for frictional liquid tight connection with a supply nozzle and a check valve associated with said wall movable to open position by the weight or pressure of said liquid, said valve and wall being formed integrally of resilient material.

6. In a radiator filling cap, the combination of a supply nozzle coupling receiving socket adapted for frictional liquid tight connection with a supply nozzle and a check valve operable by the pressure of the liquid, closing the inner end of said nozzle, said cap and check valve being constructed of a single piece of resilient material and said cap being constructed to frictionally fit the filling nozzle of the radiator.

Signed at Los Angeles, in the county of Los Angeles and State of California, this 13th day of December, A. D. 1927.

FRANCISCO O. DE ALCOCER.