Nov. 24, 1931. G. A. FERRIER 1,833,833

RADIATOR CAP

Filed Jan. 14, 1929

Fig. 1.

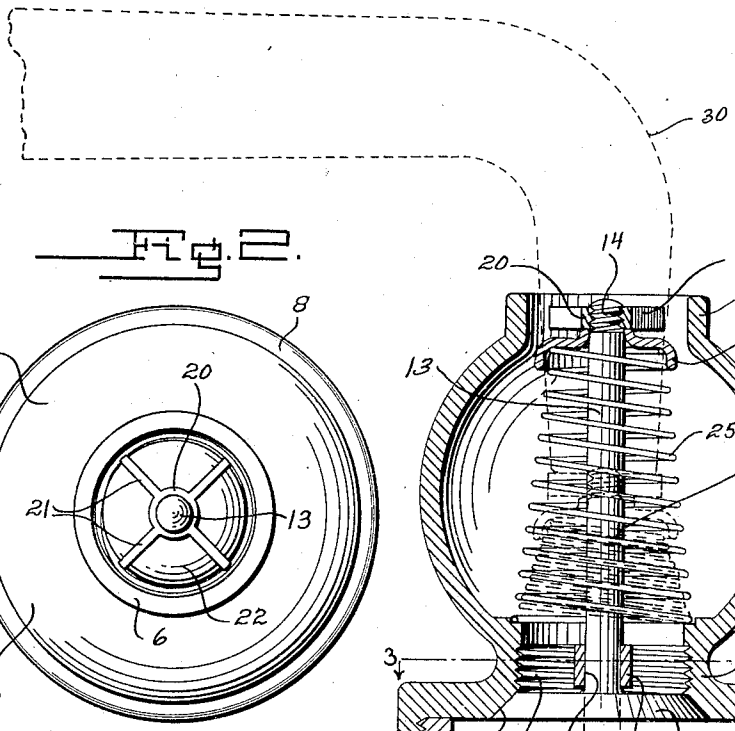
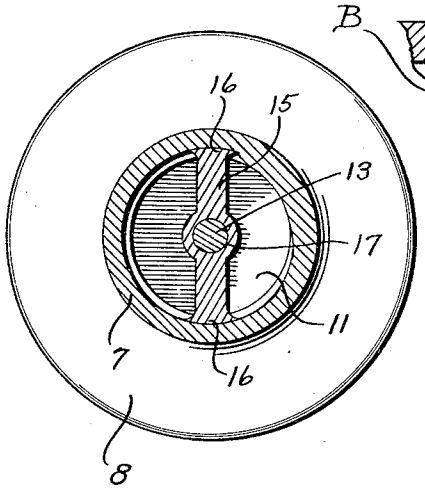
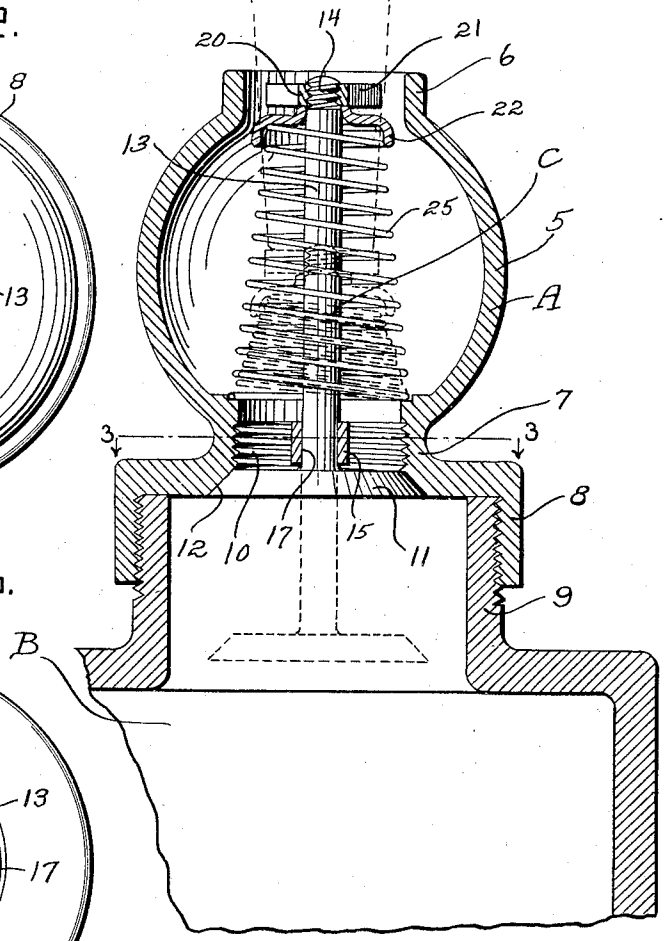


Fig. 2.

Fig. 3.





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UNITED STATES PATENT OFFICE

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RADIATOR CAP

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The present invention relates to closure caps primarily intended for use upon radiators of motor vehicles, and the primary object of the invention is to provide a valved radiator cap which may be readily substituted for the present types of radiator caps requiring removal of the cap to allow filling of the radiator.

A further object of the invention is to provide a radiator cap having valve closure means adapted to be unseated by the insertion of a hose nozzle or the like into the cap for allowing free passage of water thru the cap into the radiator, with the closure means automatically closing the passageway thru the cap upon withdrawal of the nozzle from the cap.

A further object of the invention is to provide a radiator cap of this character having a main body portion of such formation as to prevent splashing of water out of the cap during filling of the radiator.

A still further object of the invention is to provide a valved radiator cap which will be neat and ornamental in appearance, and one which will not require removal of the cap from the radiator for filling the radiator.

Other objects and advantages of the invention will be apparent during the course of the following detailed description, taken in connection with the accompanying drawings forming a part of this specification and in which drawings:

Figure 1 is a central vertical section thru the improved radiator cap shown applied to the filler neck of a radiator.

Figure 2 is a top plan view of the cap.

Figure 3 is a section on line 3—3 of Figure 1.

Referring to the drawings in detail, and wherein similar reference characters designate corresponding parts thruout the several views, the improved cap has been shown including a shell or casing A shown attached to a radiator B, said shell or casing housing a valve means C capable of being unseated to allow water to pass freely into the radiator B.

Referring first to the specific construction and formation of the shell or casing A, the same is formed with a globular main body portion 5 having a tubular neck 6 opening at its upper end. Formed at the lower end of the body portion 5 is a tubular sleeve portion 7 having an attaching cap portion 8 at its lower end which in the example shown is internally threaded for threaded connection with the filler neck or extension 9 of the radiator B. The sleeve portion 7 is internally threaded as at 10 and as will be observed in Figure 1 is disposed in axial alignment with the tubular neck 6.

The valve means C which operates for automatically closing the passageway thru the shell or casing A, includes a valve disc 11 having a tapering peripheral face for engagement with a tapering valve seat 12 formed at the lower side of the cap portion 8 about the inner end of the tubular sleeve portion 7. The disc 11 is provided with an axially disposed stem 13 which projects outwardly thru the globular body portion 5 with its threaded outer end 14 preferably terminating slightly inward of the end of the neck 6 when the valve disc is resting on the seat 12. A guide 15 is provided for the valve stem, and this guide preferably consists of an arm extending diametrically of the sleeve 7, and having threaded ends 16 for screw threaded engagement with the threads 10 formed internally of the sleeve 7. The guide arm is provided at its longitudinal center with a guide opening 17 thru which the preferably cylindrical valve stem has free sliding movement.

Adapted for connection with the outer or upper end of the valve stem 13 is a push member or spider including a hub portion 20 for threaded connection with the threaded stem portion 14, and a series of radially extending spokes or arms 21 having their ends

spaced slightly from the internal surface of the neck 6. This push member or spider aside from serving a purpose to be subsequently explained, serves as a keeper for a cup-shaped spring seat washer 22 thru which the valve stem 13 projects. Encircling the valve stem 13 is an expansion coil spring 25 the upper end of which seats in the concaved inner side of the washer 22 and the lower end of which seats upon the outer end of the tubular sleeve 7 in a manner whereby the spring acts to normally seat the valve disc 11 on the valve seat 12. The spiral spring 25 is preferably of conical formation as shown so as to be accommodated at its upper or outer end in the small seating washer 22 and have its larger lower end seat about the edge of the opening thru the sleeve 7. This arrangement allows for the washer 22 to be relatively small, while the opening thru the sleeve 7 will be such as to allow ready and free passage of water thru the sleeve into the radiator.

When filling the radiator, it is merely necessary to place the nozzle or other like dispensing device 30 into the open neck 6 so that the same engages the radial arms 21 and by then exerting a slight inward pressure the spring 25 will be compressed and unseat the valve disc 11. With the water flowing thru the nozzle or the like 30 in the unseated position of the valve the water will have free passage between the radial arms 21 and strike upon the convex outer side of the cup washer 20 and be radially spread into the large chamber formed by the globular body portion 5. This even radial spreading of the water by the washer 22 against the annular sloping walls of the globular body portion 5 will prevent any splashing of the water during the filling operation. Since the valve disc is unseated by slight inward pressure exerted on the nozzle 30, the water entering the chamber of the globular body portion 5 will pass freely thru the sleeve 7 into the radiator thru the radiator filler neck 9. When the nozzle 30 is withdrawn from the casing, the spring 25 will automatically reseat the valve disc 11 and prevent escape of water from the radiator. Thus it will be seen that the radiator may be filled thru the improved radiator cap without requiring removal of the cap from the radiator.

With the type of radiator filler cap as shown it will be seen that inconveniences such as requiring unscrewing or unsnapping of the cap will be eliminated when desiring to place water in the radiator. Thus the cap will last over a considerably period of time since there is no likelihood of injury being done the threads either of the cap or the radiator thru frequent removal of the cap in order to refill the radiator. The valve means of the device is simple and durable and so constructed as to permit of replacements being made thereto in short order and with little effort.

Changes in detail may be made to the form of invention herein shown and described, without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. A filler cap comprising a hollow casing having axially aligning openings at its upper and lower ends, a valve including a valve disc closing the lower opening and a stem extending upwardly thru the casing, a spider carried by the upper end of the stem and arranged within the upper opening, and spring means normally urging the valve disc upwardly into a closed position.

2. A filler cap comprising a casing embodying a globular body portion having openings at its upper and lower sides, a valve vertically guided in the casing including a disc for closing the lower opening and a stem projecting upwardly into the upper opening, a spider carried by the upper end of the valve stem, an inverted cup washer encircling the stem beneath the spider, and a coil spring encircling the valve stem with its upper end engaging the washer and its lower end acting upon the casing about the opening in the lower side of the globular body portion.

3. A filler cap comprising a casing including a globular body portion having tubular neck and sleeve portions disposed in axial alignment at the upper and lower sides of the globular body portion respectively and an attaching portion at the lower end of said sleeve portion, a guide arm extending across the opening thru the sleeve, a valve including a disc having seating engagement with the lower end of the sleeve and a stem portion slidable thru said guide arm and projecting upwardly into the neck portion, a spider including radially extending arms carried by the upper end of the valve stem, an inverted cup-shaped washer encircling the valve stem and acting beneath the spider, and a conical expansion coil spring encircling the valve stem and acting between the washer and upper end of said sleeve for normally urging the valve disc to a closed position.

4. A radiator cap comprising a casing embodying a globular main body portion, a tubular neck portion at the upper end of the globular body, a tubular internally threaded sleeve at the lower end of the globular body portion in axial alignment beneath the neck portion, and an attaching cap portion at the lower end of the sleeve portion, said sleeve portion having a tapering valve seat formed at its lower end, a guide arm having threaded ends for threaded engagement in the sleeve to extend diametrically thereof and having a guide opening midway the ends thereof, a valve including a disc for seating upon the seat at the inner end of the sleeve portion

and a stem portion extending upwardly thru the guide arm opening into the neck portion, a push member threaded upon the upper end of the valve stem including radially projecting arms, an inverted cup-shaped washer encircling the valve stem beneath the push member, and an expansion coil spring encircling the valve stem and acting between the washer and upper end of the sleeve portion for normally urging the valve upwardly into a closed position.

GEORGE A. FERRIER.