June 9, 1931. K. E. STANT 1,809,186

RADIATOR CAP

Filed Nov. 28, 1928 2 Sheets-Sheet 1

Fig. 1.

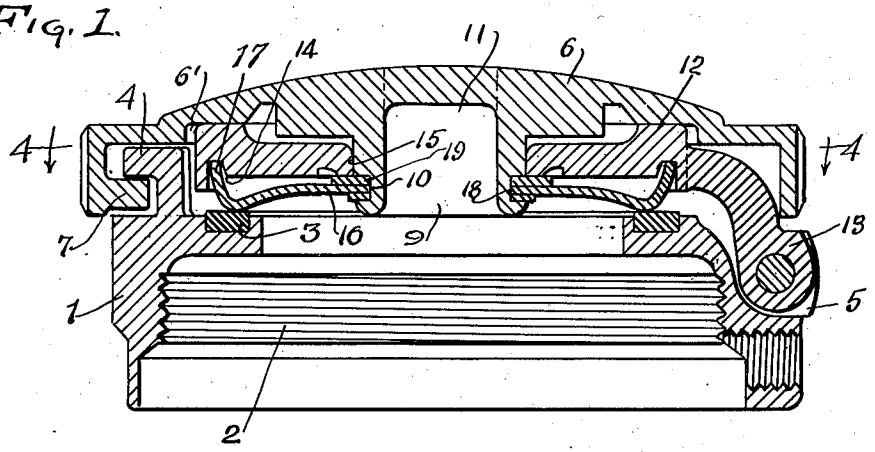
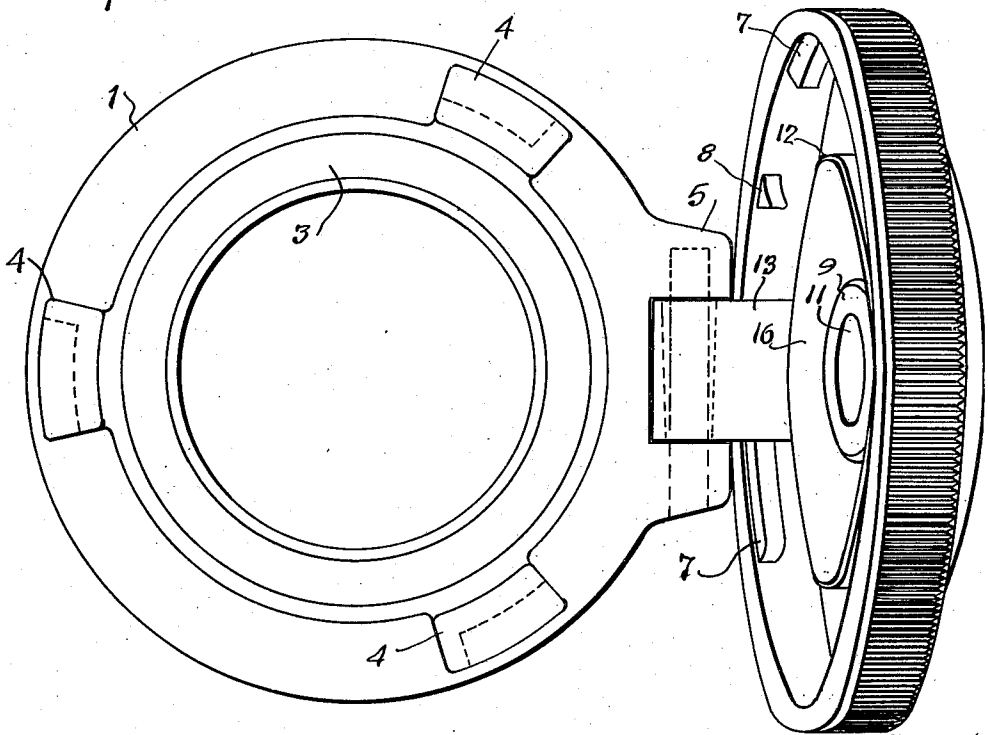


Fig. 2.



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Filed Nov. 28, 1928 2 Sheets-Sheet 2

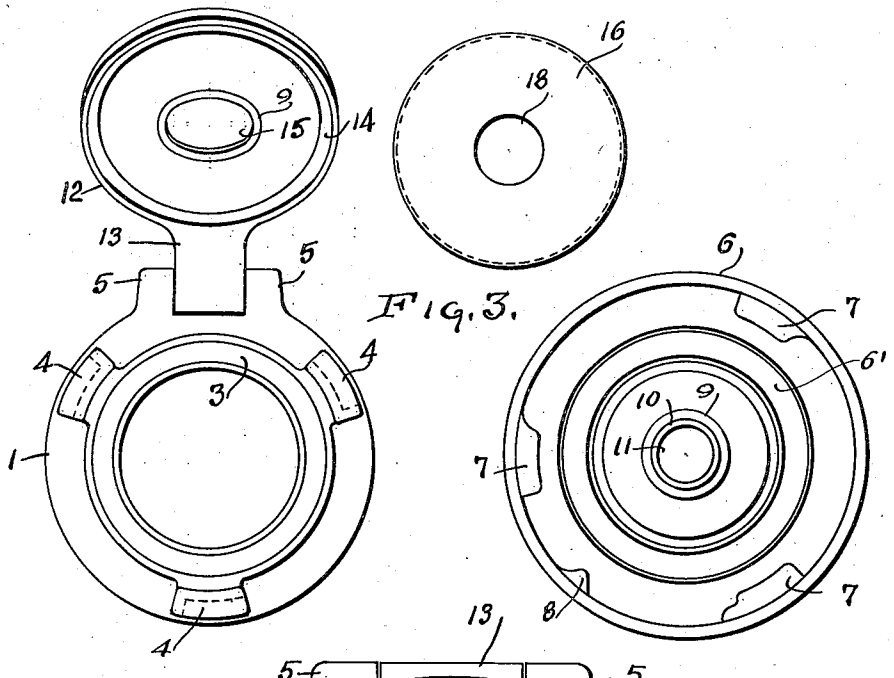
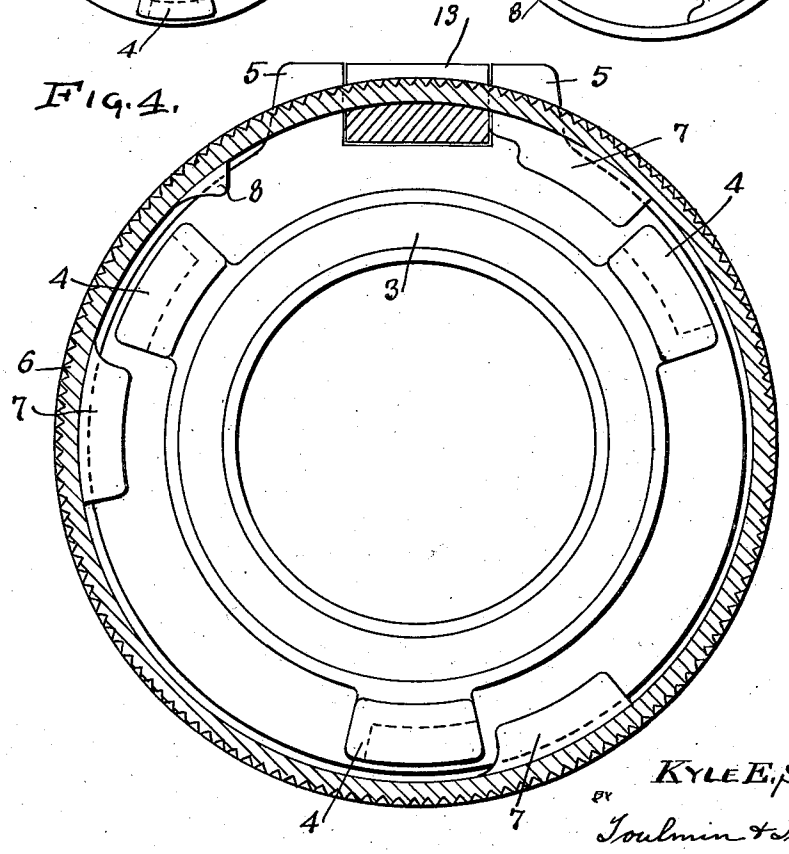


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE

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RADIATOR CAP

Application filed November 28, 1928. Serial No. 322,493.

This invention relates to radiator caps.

It is the object of this invention to provide an easily locked radiator cap, that will tightly seal the opening which the cap incloses.

It is an object of this invention particularly to provide a radiator cap composed essentially of four parts, one of which, a spout ring or collar, is attached to the filler spout to which is pivoted an intermediate member that might be called a hinge plate. To this hinge plate the closure part of the cap is pivotally attached so as to have free rotation within a limited degree.

The hinge plate is provided with a seat, in which is located a resilient diaphragm member which cooperates with part of the ring member to form therewith a tight engagement to prevent the escape of the contents of the container to which the spout is attached, be it a radiator or tank or any other suitable receptacle.

It is also an object of this invention to provide a lock engaging means between the cap and the spout ring so that these parts will be held firmly in relation to each other in such a way that the hinged relation between the filler spout ring and the cap will be relieved of any strain or any pressure.

It is an object of this invention to further provide means by which the cap may be locked to the spout ring by a slight rotation of the cap so as to bring the interengaging parts in relation to each other.

For the purpose of illustration there is presented in the accompanying drawings a preferred embodiment of this invention.

Figure 1 is a vertical section through the hinge and one of the coacting locking elements.

Figure 2 is a plan view of the filler spout ring with the cap open.

Figure 3 is a view showing in detail the four parts of this device.

Figure 4 is a section on the line 4—4 of Figure 1.

Referring to the drawings, the numeral 1 designates a filler spout ring or collar, which has screw threads 2 by which it is attached to a filler spout. Suitably locked on the upper surface of the filler spout ring or collar is a gasket 3. This gasket is composed of some fibrous material and is adapted, in cooperation with the diaphragm member, to be described hereafter, to form a close relation between the cap and the ring or collar.

This ring or collar is provided with three upstanding ears 4 which form the interlocking part of the ring or collar. On this ring there is also provided lug members 5, which provide between them a space for the reception of a corresponding member on another part of this device, by which the cap is pivoted to the ring.

The cap is indicated by the numeral 6 and has in the upper inside part thereof a hollowed out seat 6′. The general shape of the cap is somewhat cup-shaped and has on the inside of the periphery thereof three locking ears 7. These ears cooperate with the ears 4 for the purpose of locking the cap on the ring or collar.

There is also provided on the inside of the cap member similarly located with the locking ears 7 a stop member 8. Extending from the inner part of the cap there is a thimble member 9, which has on the outer end thereof a reduced portion 10. Through the cap, the thimble 9 and the reduced part 10 is a hole 11. This hole is adapted to receive any piece of ornamental work, or any suitable piece of material.

Fitting within the seat formed in the cap and around the thimble is a hinge plate 12. This hinge plate has a hole in the center thereof for the purpose of receiving the thimble member 9. The part of the hinge plate in engagement with the cap is circular in shape and has extending from one side thereof a lug 13 adapted to cooperate with the lugs 5 to form a hinged connection between the whole closure part and the ring or collar.

Around the periphery of the hinge plate is a trough 14 adapted to receive a part of the diaphragm which cooperates with the hinge plate to form part of the closure. The hole in the hinge plate to receive the reduced part 9 of the thimble is indicated by the numeral 15. Resting upon a cavity formed

in the hinge plate is a diaphragm member 16, which has upturned edges 17. The edges of the diaphragm extend into the trough 14 of the hinge plate.

When the parts are assembled the thimble 9 of the cap is passed through the hole 15 in the hinge plate and the reduced part 10 of the thimble 9 through the hole 18 in the diaphragm, and the inner end of the reduced part of the thimble is bent over in engagement with the inner surface of the diaphragm so that the parts are securely held in relation to each other. But before the parts are thus assembled there is provided a washer 19 which fits in between the diaphragm and the hinge plate for the purpose of providing between the outer surface of the diaphragm and the hinge plate space so that there is a certain amount of yielding afforded the diaphragm. When the parts are thus assembled the lug 13 is adapted to have a certain amount of movement between the stop 8 and one of the locking ears 7.

When the lug 13 is in contact with the stop member 8 the cap cannot be pressed down upon the ring member because in that position the ears 4 and 7 will engage each other to prevent said closure. But when the cap is shifted or rotated on the hinge plate so that the lug 13 is brought into contact with one of the ears 7 the cap then can be brought in fitting engagement with the ring or collar, and in this position a slight rotation of the cap causes the ears 4 and 7 to interlock and to hold the cap in engagement with the ring or collar. In this locked position the outer periphery of the diaphragm member will engage the gasket member 3 and form a tight fit so that no liquid or gas can escape.

In a closure thus constructed the diaphragm member is securely held in engagement with the thimble member 9 because of the turned over part of the reduced part 10. At the same time the hinge plate is so pivoted around the thimble that it has a certain amount of rotation, which is limited by the stop 8 and one of the ear members 7 being engaged by the lug 13 on the hinge plate.

It will thus be seen that this structure affords a cap that has a partial rotary motion in regard to the hinge plate, and that the hinge plate is pivoted to the ring or collar so as to bring the cap into engagement with the collar, or to bring it out of engagement with the collar.

The partial rotary movement between the cap and the hinge plate affords a movement by which the interlocking parts may be brought into engagement with each other to lock the cap to the ring or collar. Because of the diaphragm turning with the cap during the process of locking, there would be a slight movement of the diaphragm on the surface of the gasket, which tends to make a close fit between the two so that there is a better closing effect when the cap is brought into firm engagement with the ring.

I desire to comprehend within my invention such modifications as may be clearly embraced within my claims and the scope of my invention.

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

1. In a radiator cap, in combination with a collar, a hinge plate pivoted to said collar, a cap having inwardly directed ears pivoted to said hinge plate, and ears extending up from the collar adapted to engage the cap ears to hold the cap in engagement with the collar.

2. In a radiator cap, in combination with a collar having upwardly extending ears thereon, a hinge plate pivoted to said collar, a cap pivoted to said hinge plate, means on said cap to engage the hinge plate to limit the movement of the cap on the hinge plate, and means on the cap to engage the ears by a movement of the cap on the hinge plate.

3. In a radiator cap, in combination with a collar, a hinge plate having a hole therein pivoted to said collar, a resilient diaphragm having a hole therein, and a cap having means thereon to pass through said holes to hold the diaphragm on the cap and the cap in pivotal relation to the hinge plate.

4. In a radiator cap, in combination with a collar having ears thereon, a hinge plate having a hole therein pivoted to said collar, a resilient diaphragm having a hole therein, a cap having means thereon to pass through said holes to hold the diaphragm on the cap and the cap in pivotal relation to the hinge plate, and means on the cap adapted on rotation of the cap to engage the ears to hold the diaphragm in close engagement with the collar.

5. In a radiator cap, in combination with a collar having upstanding ears thereon, a hinge plate having a hole therein pivoted to said collar, a resilient diaphragm having a hole therein, a cap having means thereon to pass through said holes to hold the diaphragm on the cap and the cap pivoted to the hinge plate, and means within the cap adapted on rotation of the cap to engage the ears to hold the cap in close engagement with the collar.

6. In a radiator cap, in combination with a collar, having on its upper surface a gasket, a hinge plate pivoted to said collar, and a cap having a sealing means thereon adapted to engage the gasket, said cap being rotatably supported by said hinge plate.

7. In a radiator cap, in combination with a collar, having on its upper surface a gasket, a hinge plate pivoted to said collar, and a cap having a sealing diaphragm thereon adapted to engage the gasket, said cap being

rotatably supported by said hinge plate with the hinge plate between the diaphragm and the cap.

8. In a radiator cap, in combination with a collar, having on its upper surface a gasket, a hinge plate pivoted to said collar, a cap having a sealing diaphragm thereon adapted to engage the gasket, said cap being rotatably supported by said hinge plate with the hinge plate between the diaphragm and the cap, and interengaging means on the collar and the cap whereby on rotation of the cap the diaphragm is brought into close engagement with the gasket.

9. In a radiator cap, in combination with a collar, having a plurality of upstanding ears thereon, a hinge plate having a lug thereon pivoted to said collar, a cap pivoted to said hinge plate, said cap having a plurality of inwardly directed ears thereon and a stop, said stop and one ear adapted to limit the pivotal movement of said cap on the hinge plate so that in one extreme position of the cap the ears will engage each other to prevent the closing of the cap while in the other extreme position the cap will close so that the cap may be turned so the ears will engage each other to lock the cap on the collar.

In testimony whereof, I affix my signature.

KYLE E. STANT.