

July 31, 1934.

K. E. STANT

1,968,324

LID TYPE LOCKING CAP

Original Filed Feb. 3, 1931 2 Sheets-Sheet 1

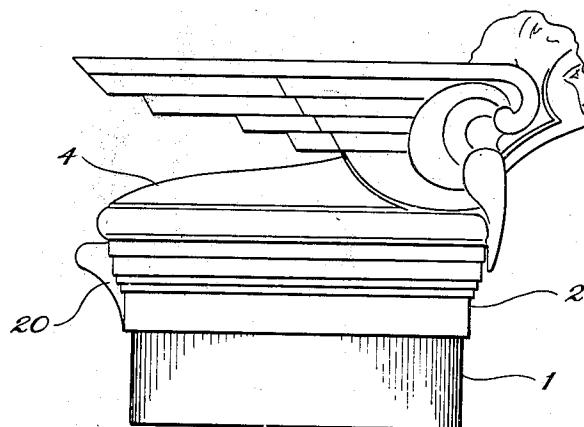


Fig. 1.

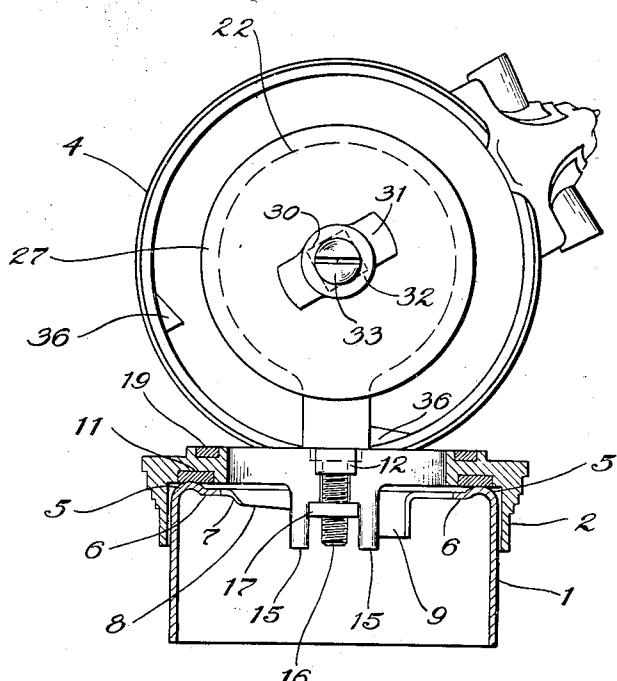


Fig. 2.

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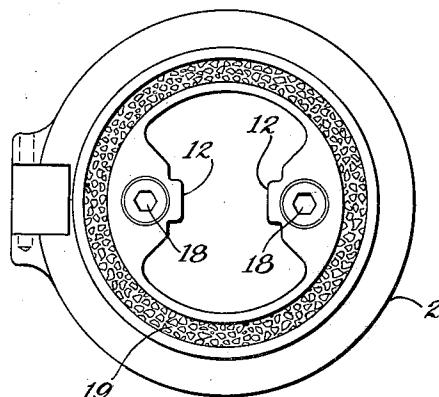


Fig. 3.

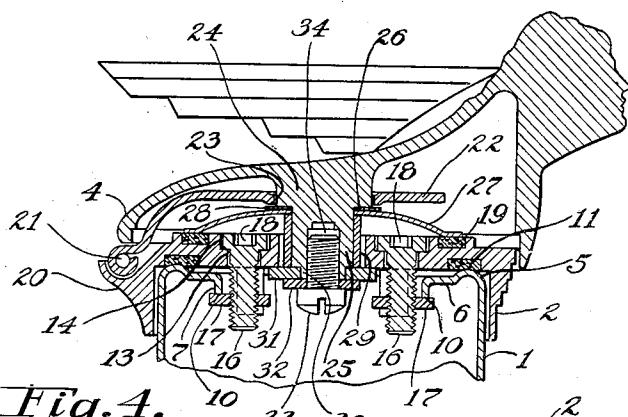


Fig. 4.

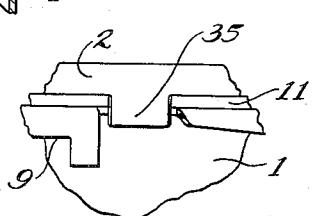


Fig. 6.

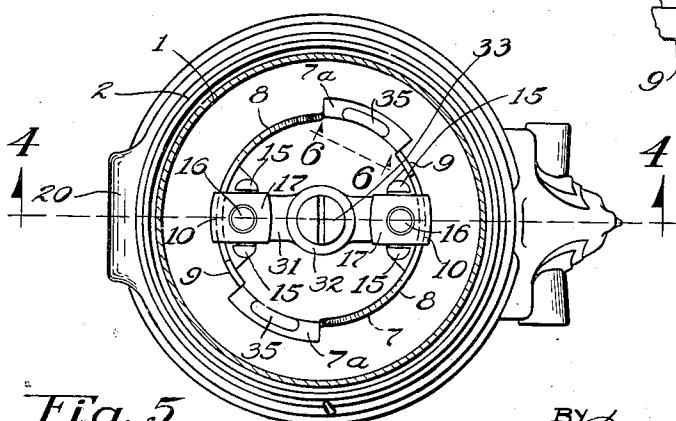


Fig. 5.

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## UNITED STATES PATENT OFFICE

1,968,324

## LID TYPE LOCKING CAP

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Refile for abandoned application Serial No. 513,194, February 3, 1931. This application October 11, 1932, Serial No. 637,289

3 Claims. (Cl. 220—24)

This invention relates to improvements in radiator caps, and has for its object the provision of a radiator cap composed essentially of three parts, a cap member, a plate on which the cap is supported for rotation, and a spout ring or collar attached to a spout and having means thereon, when the ring or collar is properly positioned, to prevent rotation or lateral displacement of the ring or collar and its vertical release from the spout.

It is also an object of this invention to provide, in connection with a cap for use on a filler spout, a spout ring adapted to be mounted on the spout, having on the interior thereof inwardly extending portions for supporting clamping means by which the ring is locked to the spout, said inwardly extending portions also having bosses thereon for cooperation with a locking means on the cap member to hold the cap in locked position on the ring for closing the filler spout.

These and other advantages will appear from the following description taken in connection with the drawings.

This application is a refile for abandoned application No. 513,194, filed February 3, 1931.

Referring to the drawings:

Figure 1 is a side elevation of the apparatus with the cap closed.

Figure 2 is a vertical section through the spout ring and the adjacent part of the spout, showing the cap in open position.

Figure 3 is a top plan view with the cap removed.

Figure 4 is a section on the line 4—4 of Figure 5.

Figure 5 is a bottom plan view of the apparatus, a section through which is shown in Figure 4.

Figure 6 is a fragmental elevation taken at 6—6 of Figure 5.

The present locking cap is adapted to be used in connection with various forms of filler spouts, but more particularly is adapted to be used in connection with a filler spout 1, such as that shown in Figures 1 and 2. The cap structure as a whole is composed essentially of three parts, a spout ring or collar 2 attached to the upper end of a spout by some suitable means, a hinge plate 22 pivoted to one side of the spout ring, and a cap 4 supported on the hinge plate for rotation.

The upper end of the spout is bent in to form a peripheral bead 5 to be engaged by packing to form a close fit between the spout and the spout ring. The inturned part of the spout adjacent the peripheral bead forms radially extending flanges 6, which terminate in downwardly extending or axial flanges 7. In the present instance

there are two of these flanges, separated from one another by slots 7a.

The turned down or axial flanges have on their lower surfaces cam surfaces 8 which terminate in stops 9. Adjacent the stops 9 on the cam surfaces are more or less horizontal seats 10 for clamping members carried by the spout ring. The spout ring has a radially extending part and in this part is a gasket 11 adapted to engage the peripheral bead 5 when the spout ring is properly located on top of the spout.

On the inwardly projecting part of the spout ring are bosses 12, which have holes 13 with seats 14 in the upper ends thereof. In the present instance there are two of these bosses. The holes 13 and seats 14 receive screws 16 for holding clamping members 17. The clamping members 17 are in the form of nuts adapted to be moved up and down by the rotation of the screws, and are prevented from rotating by means of posts 15, of which there is one on each side of each hole engaging opposite sides of the clamping plates or nuts 17. Each screw head has a socket 18 therein to receive the end of a suitable tool.

Located in an annular seat in the upper surface of the spout ring is a gasket 19 adapted to be engaged by a closure disc, later to be described. Pivotally attached to a lug 20 on one side of the spout ring is a disc plate 22, pivoted at a point 21 to the lug. The main body of this disc is circular in shape and has in the center thereof a hole 23 adapted to receive a post or extension 24 on the inside of the cap. The part of the post or extension adjacent the disc 22 is reduced in size and has a shoulder 26 against which a packing 28 bears. Against the packing opposite the shoulder 26 is a diaphragm 27, which is held in place by means of a sleeve 29 surrounding the reduced part 25 of the post. The part of the post adjacent the sleeve is still further reduced in size and formed into a square 30, which receives a locking plate 31 which has a square hole therein corresponding in size to the part 30 of the post.

Fitting over the locking plate is a washer 32 held in place by means of a screw 33, which is threaded into a hole 34 in the post 24. By screwing this screw up tight the locking plate is held rigidly with the post so that it cannot turn or move independently of the cap. As shown in Figure 5 the bottom surface of the inwardly projecting shoulder of the spout ring has axially projecting lugs 35 thereon. Although, in the present instance there are two of these lugs, one would be equally as efficient. The cap is located on the hinge plate 22 so that it may rotate, but in order that its rota-

tion may be limited lugs or stops 36 are provided on the cap member 4. These stops are well shown in Figure 2. They limit the rotary movement of the cap on the disc or plate that supports the cap 5 on the spout ring.

Whenever it is desired that the cap be placed on the end of the spout the screws 16 are operated to loosen the locking nuts 17. Then the cap is positioned on the spout so that the bosses 15 extend into the spout opening and the clamping members located thereon will enter into the spout in the slots 7a between the flanges. After the spout ring has been lowered until the lugs 35 rest on top of the flanges 6 of the spout, the spout ring 10 is rotated so that the locking nuts 17 are brought beneath the cam parts of the downwardly extending flanges 7 and gasket 11 engages the bead 5. The ring and its gasket 11 are held away from the bead 5 by the lugs 35 until the lugs drop into the openings 7a. When the nuts 17 reach the stop members 9 the screws are operated to bring the locking nuts in close engagement with the seats 10 on the cams. By this means the spout ring is securely fastened to the spout against vertical, outward or longitudinal movement and further rotative movement toward stop members 9 but in order that the spout ring may not be rotated in a reverse direction after the locking nuts have been properly seated and tightened the lugs 35 are provided which will extend into the slots 7a and engage the radially extending flanges 6 at the end of the slots 7a and prevent the rotation of the spout ring, or the lugs 35 may engage either end of slots 7a and thereby prevent or limit rotation in both directions independently of the stops 9. The cap may also be installed by placing the ring 2 on the spout with lug 35 entering directly into one of the slots 7a. This is accomplished by moving screws and clamps 17 inwardly so that the clamps will pass through the central opening of the spout and swing outward beneath cam seats 10. In this position the lug 35 will be fully entered into a slot 7a between the flanges 6 and then the clamp nuts may be drawn against the cam seats as heretofore described.

Thus the spout and the ring are made non-rotative and non-separable thereby making a perma-

nent close engagement possible, resulting in a liquid tight seal between the spout and the ring. The unit is further made theft-proof by pressing a lead ball in each set screw head.

After the spout ring has been thus seated on the end of the spout, the spout may be closed by bringing the cap member down and rotating the cap so that the locking plate 31 engages beneath the bosses 12, as shown in Figure 4. When the locking plate 31 is thus positioned the cap is firmly seated and the spout closed.

While I have shown the preferred form of my invention as known to me it will be understood that various changes in the combination, construction, and arrangement of the parts may be made by those skilled in the art without departing from the spirit of the invention as claimed.

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

1. In a closure apparatus, in combination with a spout having a flange thereon, a ring, means on the ring to clamp the flange part of the spout so that the ring cannot move vertically of the spout, means on the spout engaged by the first-named means to prevent rotation of the ring in one direction, and lug means on the ring to engage the spout to limit rotation of the ring in the other direction.

2. In a closure apparatus, in combination with a filler spout having spaced cams and a stop lug adjacent each cam, a ring, clamp means on the ring adapted to engage said cams and the stop lugs to prevent vertical movement and to limit rotary movement in one direction with respect to the spout, and a lug on the ring to engage the filler spout to limit rotation of the ring in the other direction.

3. In a closure apparatus, in combination with a spout having a flange element thereon, a collar, a clamping means on said collar adapted to cooperate with said flange element to clamp the collar to the spout to prevent vertical displacement of the collar relative to the spout, and lug means on the collar adapted to engage the flange to limit lateral and hence longitudinal movement of the collar relative to the spout.

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