May 29, 1934. K. E. STANT 1,960,928

CLOSURE CAP

Original Filed May 1, 1929 2 Sheets-Sheet 1

Fig 1.

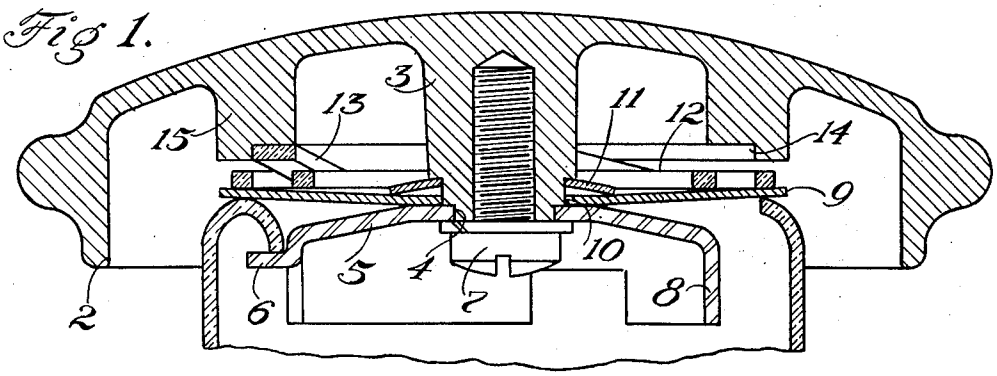


Fig 2.

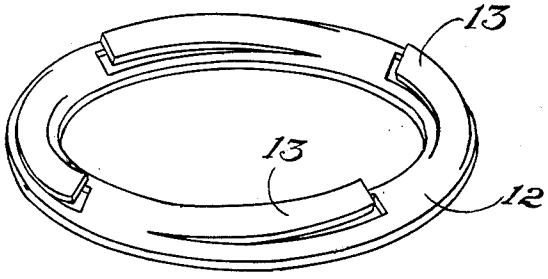


Fig 3.

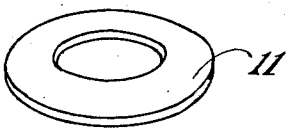


Fig 4.

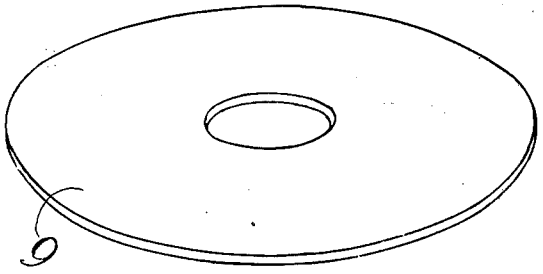
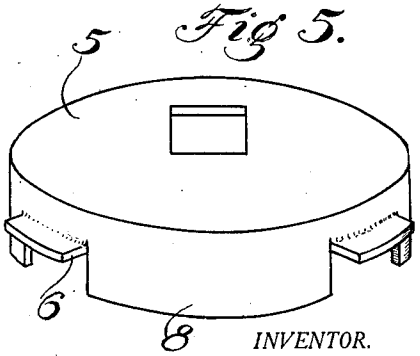


Fig 5.



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Fig. 6.

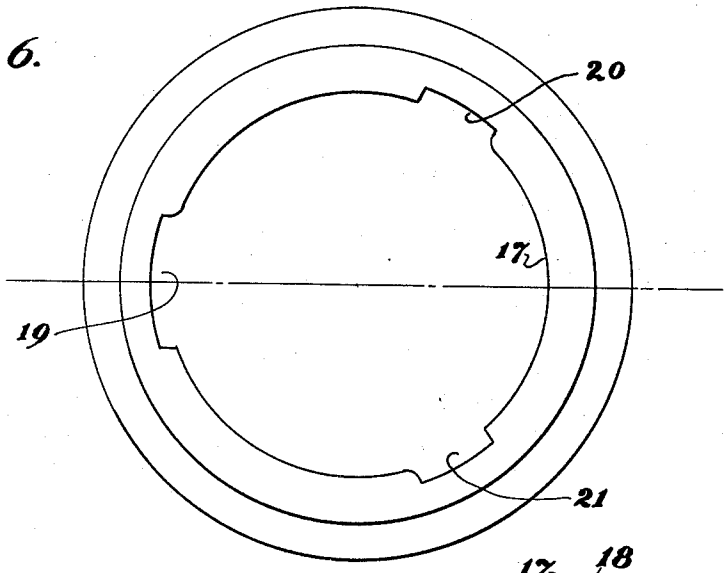


Fig. 7.

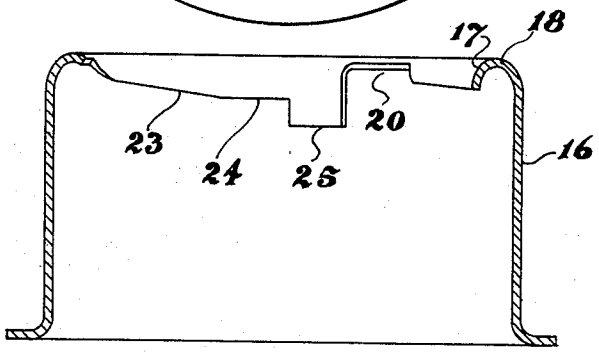
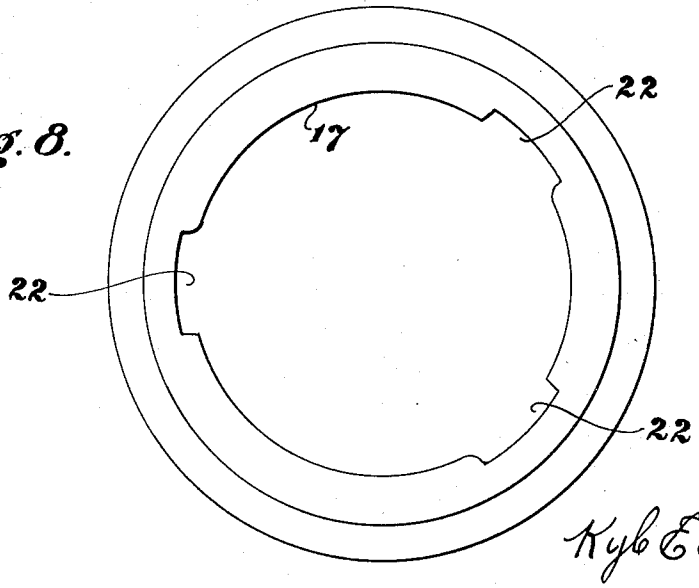


Fig. 8.



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UNITED STATES PATENT OFFICE

1,960,928

CLOSURE CAP

Kyle E. Stant, Connersville, Ind.

Original application May 1, 1929, Serial No. 359,514. Divided and this application May 20, 1931, Serial No. 538,694

4 Claims. (Cl. 220—40)

This invention relates to radiator caps, and particularly to a combination of a cap and inside lock on the filler spout.

It is an object of my invention to provide a cap which may be yieldingly locked to the interior of the filler spout and simultaneously seal the opening in the spout to prevent the escape of liquids or gases.

It is a further object to provide such a combination of parts that they will be self-adjusting, non-rattling, non-leaking and of such cheap construction that they will be adapted to quantity production at low cost.

It is a further object to provide such a locking member that will prevent lateral shifting of the cap on the filler spout and thereby insure alignment of the sealing washer in sealing position on the margin of the filler spout where a tight, leak-proof joint may be made.

It is a further object to provide means of aligning the radiator cap on the filler spout so as to insure the exact position of the cap, both for ease and accuracy, for mounting and locking, and for proper location of any ornament carried on the cap.

It is a further object of my invention to provide a sealing gasket having a leak-proof connection at substantially the center of the cap and extending laterally and radially to cover and seal the entire spout opening. This gasket may be either rotatable or non-rotatable relative to the cap.

This application is a division of application Ser. No. 359,514, filed May 1, 1929.

Referring to the drawings:

Figure 1 is a vertical section through the cap and the upper part of the filler spout.

Figure 2 is a perspective view of the presser ring.

Figure 3 is a perspective view of the friction washer.

Figure 4 is a perspective view of the sealing washer.

Figure 5 is a perspective view of the locking and centering cup.

Figure 6 is a top plan view of the filler spout showing equally spaced slots of unequal width.

Figure 7 is a vertical section through the filler spout.

Figure 8 is a top plan view of the filler spout showing the slots of unequal width, and unequally spaced one from the other.

In Figure 1 there is shown a cap member mounted on the top of a filler spout. The cap is indicated by the numeral 1, and has a marginal, downwardly extending flange 2. Extending downwardly from the center of the cap is a boss member 3, which has on the extreme lower end thereof a shoulder 4 formed by reducing the end of the boss.

On the reduced end of the boss and fitting against the shoulder 4 is a locking cup 5, which has outwardly directed fingers 6 for engagement with the filler spout for holding the cap thereon. This cup is slightly resilient. This locking cup is attached to the boss 3 by means of a screw 7, which passes through the center part of the cup into the boss. The outer periphery of the cup is formed into a downwardly extending wall or skirt 8, from which the locking fingers 6 are struck up.

Located around the boss and immediately above the locking cup is a sealing washer 9 made of any suitable fibrous material for forming a close sealing and leak-proof connection with the upper surface of the filler spout. Immediately above the shoulder 4 is a reduced portion 10, around which the sealing washer 9 fits and around which a friction washer 11 fits. This friction washer 11 rests against a shoulder on the boss formed by the reduced part 10 and engages the upper surface of the sealing washer 9 and aids in holding the sealing washer in close fitting contact with the upper surface of the filler spout.

Resting upon the sealing washer is a ring 12 which has struck up therefrom a plurality of spring fingers 13 engaged in a seat 14 formed on the under edge or surface of a depending ring 15, which depends from the under surface of the cap and surrounds the boss 3, being spaced therefrom. The depending ring 15 and the ring 12 are located immediately above the periphery of the filler spout so that when the cap is in position on the spout the ring 12, with the fingers thereon, tends to force the sealing washer in close fitting engagement with the upper area of the filler spout.

The filler spout is indicated by the numeral 16 and is tubular in shape with the upper end or periphery thereof turned over to form an overturned part 17. The upper surface 18 of the turned-over part forms a bearing surface on which the sealing washer rests. In the turned-over part, as shown in Figure 9, are three slots, a large slot 19, an intermediate slot 20 and a smaller slot 21. These slots are equally spaced one from the other and are adapted to receive equally spaced fingers on the locking cup, but fingers of different sizes so that the cap cannot be properly seated on the spout until the fingers are adjusted

to correspond with the slots in the turned-over part of the spout. By this means the cap must be accurately adjusted before it can be placed upon the spout.

In Figure 8 the turned-over part is shown as having a plurality of equal slots 22, but unequally spaced one from the other. These slots are adapted to receive fingers such as 6 that are of equal size but spaced unequally from one another. By this means the cap cannot be placed on the spout until each finger is adjusted above the slot through which it should pass for properly seating the cap on the spout. The adjustment in both of these forms may be done in the dark, and when properly adjusted the cap will fit and properly close the upper end of the spout.

The under surface of the turned-over part of the filler spout has formed thereon cam surfaces 23. There is one of these cam surfaces between each of two adjacent slots. The entrance part of the cam surface is adjacent one slot and gradually tapers downwardly and terminates in a horizontal or dwell part 24, which is ended or terminated by a stop 25.

When the cap is placed on the filler spout with the fingers properly positioned in the slots and turned so that the fingers engage the cam surfaces 23, the sealing washer is pressed against the surface 18 on the upper end of the spout, the cap is turned until each finger rests against the stop 25 and on the dwell 24. In this position the cap remains until removed from the spout.

In order to place the cap on the spout it is adjusted until the fingers 6 align with the proper slot. In case the slots are of different sizes the finger must rest over a slot in size corresponding to the finger, after which the cap may be pressed so that the sealing washer properly seats on the upper edge of the spout. In case the fingers are of the same width as the slots shown in Figure 8, the cap has to be adjusted until the spaces between the fingers correspond to the spaces between the slots, after which the cap will seat and may be fastened to the upper end of the spout by rotation.

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

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

1. In combination, a filler spout having a seat and a locking member, a cap having a depending boss and shoulder adjacent the end thereof, a locking member located on said boss non-rotatable thereof, means to retain said locking member on said boss, a flexible gasket having a hole centrally thereof and mounted on said boss between said shoulder and said locking member, said gasket engaging the filler spout seat at its periphery, an inherently resilient friction washer interposed between the shoulder on said boss and said gasket, a portion of said resilient washer being spaced from said gasket whereby a constant sealing pressure is exerted between said gasket and the locking member, and a separate resilient means carried by said cap independently of said resilient friction washer for maintaining said gasket at its periphery in engagement with filler spout seat.

2. In combination, a filler spout having a seat and spaced locking members thereon, a cap having a depending boss with a shoulder adjacent the end thereof, a locking member having a plurality of fingers thereon mounted on said boss non-rotatably thereof, means to retain said locking member on said boss, a sealing washer having a hole centrally thereof and mounted on said boss, means to seal said washer at its boss engaging portion comprising, a resilient friction member one side of which engages the boss and the other side engages the sealing washer, a portion of said resilient member being spaced from said sealing washer whereby constant sealing pressure is exerted between said boss and said sealing washer, and a separate yielding means carried by the cap independently of said resilient disc adapted to maintain said sealing washer in engagement with the filler spout seat.

3. In combination, a filler spout having a seat and spaced locking members thereon, a cap having a boss, a locking member mounted on said boss non-rotatably thereof, means to retain said locking member on said boss, a sealing washer having a hole centrally thereof and mounted on said boss, means to seal said washer adjacent said boss comprising a yielding friction member one side of which engages the boss and the other side engages the sealing washer, with a space therebetween, a separate resilient means carried by the cap independently of said yielding friction member adapted to maintain said sealing washer in engagement with the filler spout seat.

4. In a closure, in combination, a bayonet filler tube having a circular seat, a cap, a depending boss on said cap, locking means on said boss for detachably locking said cap to said tube, a perforate yielding gasket rotatably mounted on said boss for closing one end of said tube, sealing means mounted on said boss comprising, a resilient plate one side of which engages the boss and the other engages said yielding gasket, a portion of said plate being spaced from said gasket whereby constant pressure is exerted against said gasket for forcing said gasket against the inner portion of said locking means, and independent yielding means between said cap and gasket adjacent said tube seat for forcing said gasket into sealing engagement with said filler tube seat.

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