Nov. 24, 1931. K. E. STANT 1,833,694

RADIATOR CAP

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FIG. 1

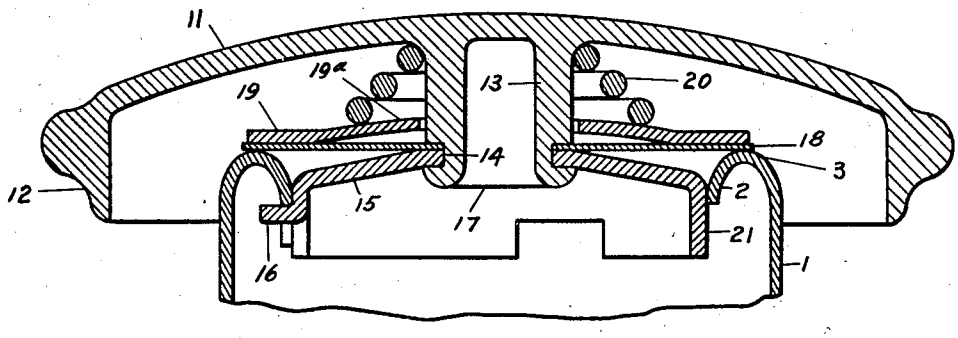


FIG. 2

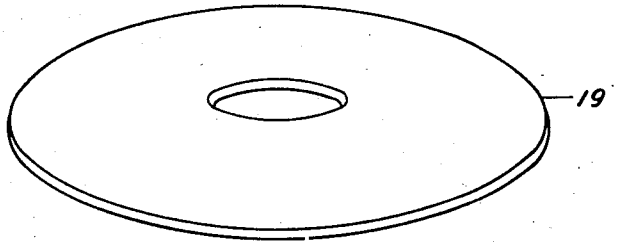
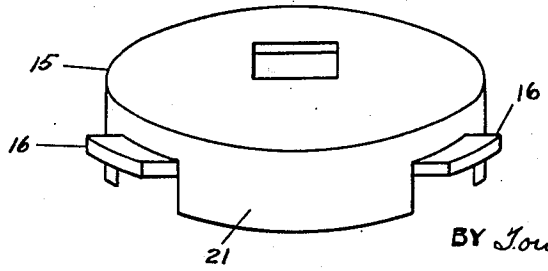


FIG. 3



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RADIATOR CAP

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FIG. 4

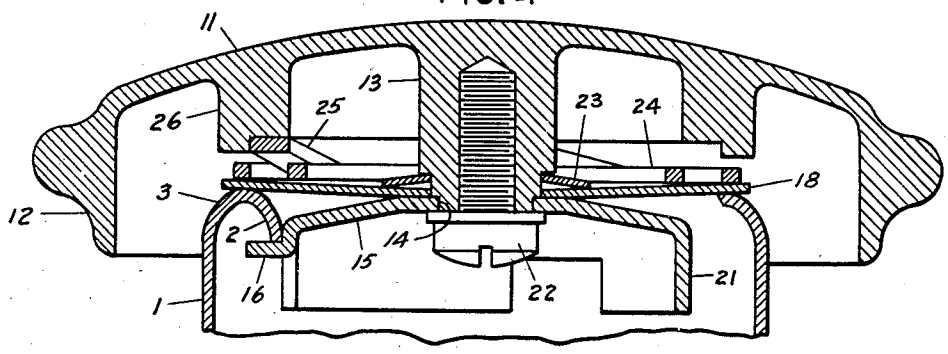


FIG. 5

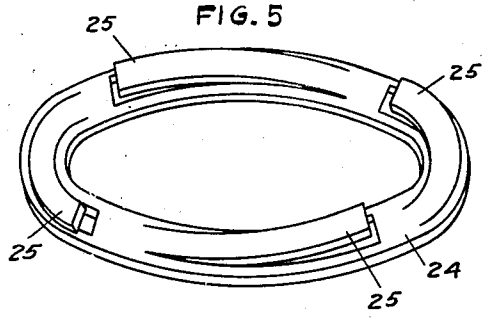


FIG. 6

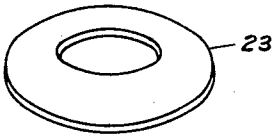


FIG. 7

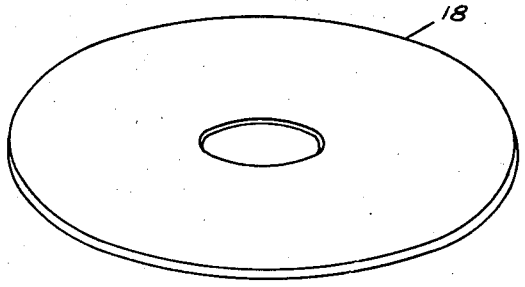
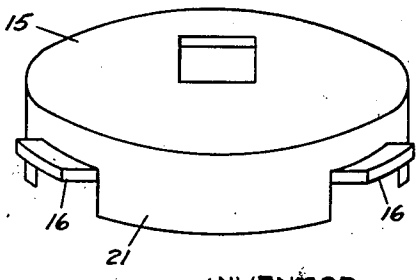


FIG. 8



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RADIATOR CAP

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FIG. 9

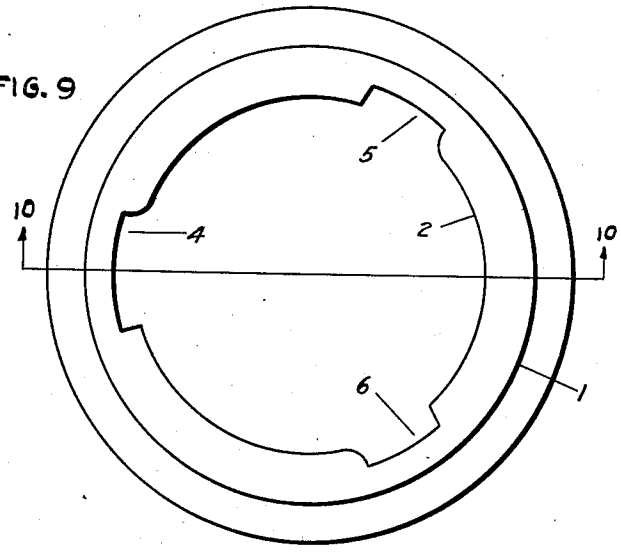


FIG. 10

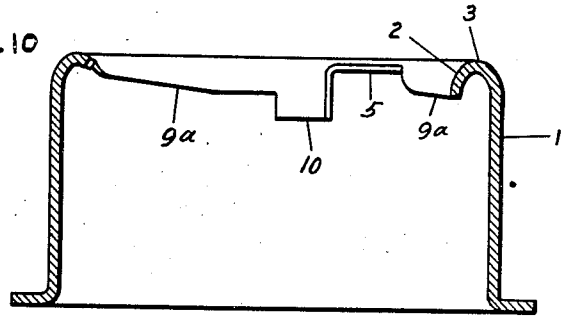
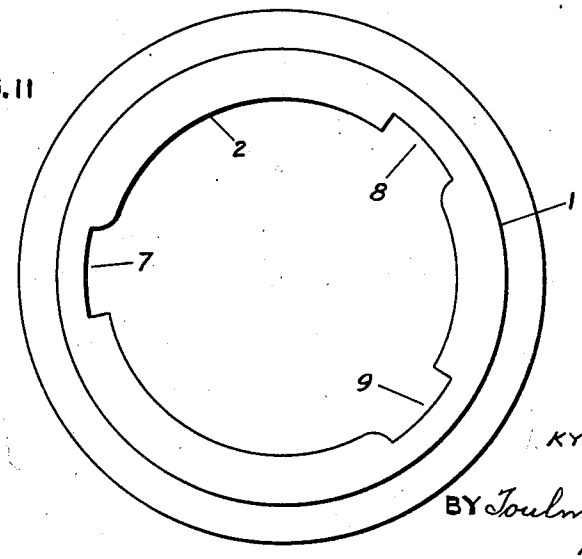


FIG. 11



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Patented Nov. 24, 1931 1,833,694

UNITED STATES PATENT OFFICE

KYLE E. STANT, OF CONNERSVILLE, INDIANA

RADIATOR CAP

Application filed May 1, 1929. Serial No. 359,514.

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 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 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.

Referring to the drawings:—

Fig. 1 is a vertical section through a filler spout and cap;

Fig. 2 is a perspective of the spring mounted plate of cap sealing and locking mechanism;

Fig. 3 is a perspective of the cap locking cup;

Fig. 4 is a vertical section through a modified form of the cap locking mechanism;

Fig. 5 is a perspective of the spring mount thereof;

Fig. 6 is a perspective of the friction washer;

Fig. 7 is a perspective of the sealing washer;

Fig. 8 is a perspective of the locking centering cap;

Fig. 9 is a top plan view of the filler spout showing equally spaced, unequal width slots;

Fig. 10 is a section on the line 10—10 thereof; and

Fig. 11 is a view similar to Fig. 9, showing equal width slots unequally spaced.

Referring to the drawings in detail, 1 is a filler spout which has a turn over lip 2 forming a relatively broad marginal bearing edge 3 for receiving the sealing washer. This lip has a plurality of slots; these slots may be equally spaced but one of them, such as slot 4, may be larger than the other slots 5 and 6, as in Fig. 9; or, the slots may be unequally spaced but of equal width, such as slots 7, 8 and 9 in Fig. 11.

Adjacent these slots are cams 9*a* and associated with the cams are stops 10 to limit the rotative movement of the cap.

The cap itself is designated 11 and is provided with an outside depending marginal flange 12, preferably of decorative character adapted to conceal the upper end of the spout and to enclose the locking and sealing mechanism. This cap is provided with a centrally located depending column, preferably hollow, and is designated 13. It is provided with a square shoulder portion 14, located in a groove which receives the locking cup 15. This locking cup has a plurality of laterally extending shoulders 16 which are inserted in the slots heretofore mentioned and then engage the cams 9*a* and stops 10. The lower end of column 13 is turned over at 17 to hold this locking cup 15 in position, so that it will be rotated by the rotating movement of cap 11.

Mounted within the groove in which the locking cup 15 is mounted is a sealing washer, preferably of fiber, designated as 18 which rests at its margin upon the rim 3 of the

filler spout 1. A spring mounted plate 19 rests on this sealing washer 18 at its periphery, preferably directly over the line of engagement of the sealing washer with the filler spout. This spring mounted plate is loosely mounted upon the column 13 so that it may remain stationary with the washer when that is desired. A helical spring of bee-hive form designated 20 rests upon this plate at one end and abuts against the inside of the cap 11 around the column 13 at its other end. It is possible to permit vertical and rotative movement of the cap with respect to the spring actuated plate by reason of its mounting. The plate is dished as at 19*a*, so that only its margin will engage with the sealing washer.

In operation the locking lugs 16 are inserted through the slots in the lip 2 of the filler spout and the cap is rotated until the lugs 16 engage the stops 10. This compresses the spring, seals the washer to the filler spout, such washer being positioned laterally and the whole cap being positioned laterally by the abutment of the vertical walls 21 of the locking cup 15 engaging with the vertical inside walls of lip 2 of the filler spout 1.

Turning to the modifications shown in Figs. 4, 5, 6, 7 and 8 where like numerals represent like parts, we note that the method of mounting the cup 15 is by means of a screw 22 as distinguished from the rivet turn-over lip 17 on the other form. The gasket or sealing washer 18 has a friction washer 23 engaging it at its inner margin to seal it with respect to the depending sleeve 13 while its periphery is engaged by the spring washer which consists of a ring 24 and a plurality of struck-up spring fingers 25 which engage within the shoulder margins of a depending ring 26 carried on the inner side of the cap 11. The small friction washer 23 seals the gasket around the depending boss or sleeve 13 while permitting relative rotation so that the cap and its locking member may move while the sealing washer is stationary. While I prefer the sealing washer or gasket to be rotatably mounted yet it can be non-rotatably mounted.

It will be understood that I desire to comprehend within my invention and within the scope of my claims such modifications as may be fairly comprehended within such claims and invention due to necessary modifications to adapt my invention to varying conditions of use and to varying purposes.

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

1. In combination, a filler spout with an inwardly turned locking lip, a radiator cap having a depending central boss, a locking cup mounted thereon within said filler spout lip in locked engagement therewith, means to prevent said cup from rotating on said boss, a sealing washer carried on said boss engaging the margin on said lip, yielding means for retaining said washer in engagement with said lip and a reenforcing plate yieldingly moved by said yielding means against said washer.

2. In combination, a filler spout with an inwardly turned locking lip, a radiator cap having a depending central boss, a locking cup mounted thereon within said filler spout lip in locked engagement therewith, means to prevent said cup from rotating on said boss, a sealing washer carried on said boss engaging the margin on said lip, yielding means for retaining said washer in engagement with said lip, a reenforcing plate yieldingly moved by said yielding means against said washer engaging the periphery thereof said plate being freely mounted on said boss.

3. In combination, a filler spout having an inwardly turned lip with a plurality of locking cams and positioning slots, stops on said lip adjacent said cams, a cap, a locking cup carried thereby having locking shoulders projecting laterally therefrom through said slots riding on said cams and engaging said stops, a washer carried by said cap, a spring pressed plate carried by said cap and yielding means for forcing said plate and washer into engagement with the lip of said spout.

4. In combination a filler spout having an inwardly-turned lip with a plurality of locking cams and entrance slots, a cap, a locking member carried thereby having locking shoulders projecting laterally therefrom through said slots and riding on said cams, a washer carried by said cap, a spring-pressed plate carried by said cap, and yielding means for forcing said plate and washer into engagement with the lip of said spout, said plate being arranged for movement parallel with the axis of the cap.

5. In combination, a filler spout having locking cams, a cap having a centrally arranged depending boss, a locking cup with laterally projecting locking lugs mounted on said boss, a washer mounted on said boss, a spring plate rotatably mounted on said boss and a spring interposed between said cap and said plate around the boss for yieldingly moving said washer into engagement with the filler spout lip.

6. In combination, a filler spout having an inwardly turned lip with a plurality of spaced cams and stops thereon, entrance slots adjacent thereto, a cap having a depending boss, a locking cup the side of which engages the inner portion of said lip, locking lugs projecting laterally therefrom for engaging said cams, a washer carried by said boss engaging the upper margin of said lip, means to seal said washer to said boss and yielding means to seal said cap and said washer and to maintain it in engagement with said filler spout.

7. In combination, a filler spout having an inwardly turned lip with a plurality of spaced cams and stops thereon, entrance slots adjacent thereto, a cap having a depending boss, a rigid locking member mounted on said boss, means preventing rotation of the locking member on the boss, a washer clamped between said locking member and said cap, a movable plate between said washer and said cap, and yielding means for pressing said plate and washer into engagement with the lip of said spout when said cap is rotated into locked position on said spout.

In testimony whereof, I affix my signature.

KYLE E. STANT.