Aug. 22, 1933. K. E. STANT 1,923,337

CLOSURE CAP

Filed May 11, 1931

Fig 1.

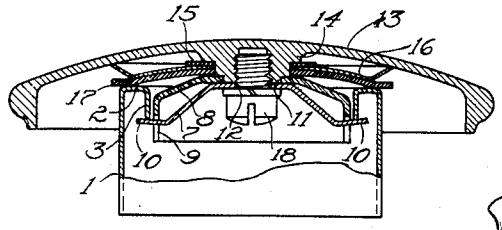


Fig 2.

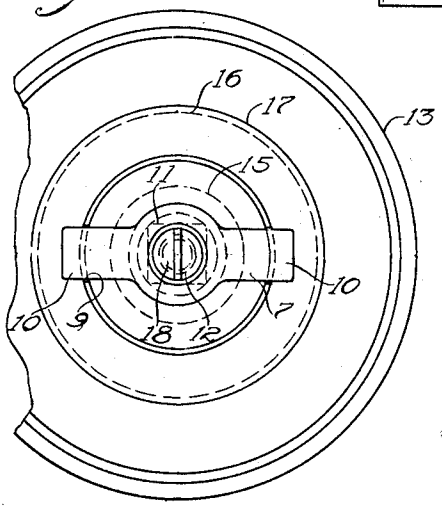


Fig 5.

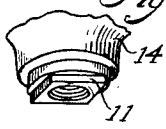


Fig 6.



Fig 7.

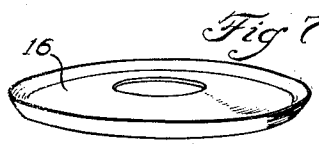


Fig 8

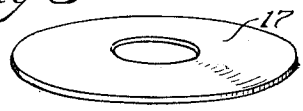


Fig 3.

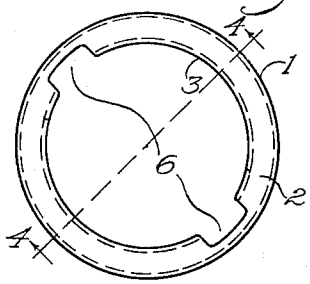


Fig 9.

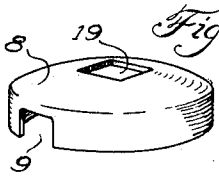


Fig 10.

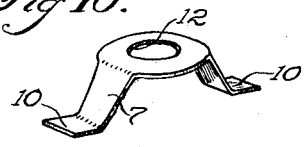
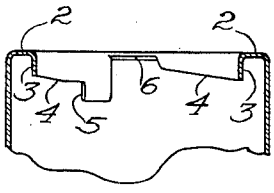


Fig 4.



INVENTOR.

Kyle & Stant

Patented Aug. 22, 1933 1,923,337

UNITED STATES PATENT OFFICE

1,923,337

CLOSURE CAP

Kyle E. Stant, Connersville, Ind.

Application May 11, 1931. Serial No. 536,420

5 Claims. (Cl. 220—40)

This invention relates to improvements in bayonet-joint closures of the type provided with opposed locking fingers for cooperation with opposed cam portions of a device having an opening to be closed and sealed.

The general object of the present invention is the provision of a closure of the type described which is of simple and inexpensive construction and highly efficient in use.

Another object of the invention is to provide a sealing and locking mechanism of such construction that it will seal and lock onto both old and new spouts which are usually made of soft sheet metal. When the cam surfaces of these spouts are worn away excessively by the locking fingers this invention will automatically compensate for this excessive wear.

A further object of the invention is to provide an auxiliary spring or tension means whereby the parts may adapt themselves to the variations of filler spout cam dimensions. Filler spouts are manufactured with a wide variation of cam dimensions, thus preventing the proper operation of the ordinary closure mechanism, whereas the invention herein described and shown adapts itself very readily to all such irregular spouts.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

Referring to the drawing, which represents one suitable embodiment of the invention.

Fig. 1 is a vertical sectional view of my closure applied to the tubular neck portion of a tank or the like.

Fig. 2 is a bottom view of the closure.

Fig. 3 is a plan view of the tubular member of Fig. 1.

Fig. 4 is a vertical sectional view of said tubular member taken on the line 4—4 of Fig. 3.

Fig. 5 is a perspective view of the boss of the cap.

Fig. 6 is a perspective view of a sealing washer.

Fig. 7 is a perspective view of the diaphragm member.

Fig. 8 is a perspective view of another sealing washer.

Fig. 9 is a perspective view of the driving cup.

Fig. 10 is a perspective view of the resilient locking member.

As disclosed in the accompanying drawing, 1 denotes a tubular member provided at its upper end with the inwardly extending peripheral flange portion 2 and the downwardly extending locking lips 3, the last named lip portions being separated by the openings 6. The lower edges of the flanges 3 are inclined so as to form the cam edges 4, and are provided with the lugs 5 to serve as stops for limiting the rotary movement of the closure thereupon. The closure proper is composed of the ornamental or operating portion 13 having on the interior and central part thereof a boss portion 14, the end of the boss 14 is formed into a plurality of shoulders of graduated diameters and a square shoulder 11. Mounted on the square shoulder 11 is a cup-shaped member 8 having in the top portion thereof the square opening 19 and in the side walls thereof the openings 9 for receiving loosely the finger portions 10 of the resilient locking member 7, on one of the round shoulders of the boss portion 14 are mounted the yielding metallic diaphragm member 16, the sealing washer 15 to seal the part 16 to the boss and the sealing washer 17 for engaging the spout portion 2. Passing through the part 7 at 12 and clamping it to the boss 14 is a screw 18 which is threaded into the boss 14.

The closure is detachably secured to the spout by passing the finger portions 10 down through the openings 6 of the spout and then imparting clockwise rotary movement to the closure so as to cause said finger portions 10 to ride down the cam edges until they reach the stops 5. The movement of the finger portions along said cam edges causes the member 7 and the cap 13 to be pulled downwardly against the tension of the yielding metallic diaphragm 16 so that the finger portions 10 engage the cam surfaces with a slight yielding effect, and the sealing washers 15 and 17 are pressed into engagement with the cap and spout by the cooperative tension of said diaphragm and finger portions, thus sealing the opening of said spout, the periphery of said diaphragm being spaced from the cap.

The foregoing description endeavors to make plain the action of the different parts when the closure is applied to a standard filler spout of correct commercial dimensions. I will next describe the action of the same closure on a filler spout having cams of greater dimensions and proportions than the so-called standard, which would render the ordinary closure mechanisms inoperable and would not allow the cap to be rotated until the finger portions 10 strike the stops 5.

The closure is applied to the spout in the same manner as before described, the action of the different parts being the same as before up to a point where the extra height of the cams causes the yielding member 16 to reach the limit of its movement, then, as the closure is further rotated

the resilient member 7 is sprung from its normal position at points 10 thus permitting the closure to be rotated until the finger portions 10 strike the stops 5. The cap is, by reason of this added action of the resilient member, adapted to close, seal and automatically adjust itself to the variations found in manufactured spouts.

While the performance of the invention as recited in the foregoing paragraphs is unique and useful, another useful action of the invention is as follows;

The closure mechanism is manufactured in such dimensions and proportions that it will operate when applied to a new spout of correct commercial dimensions the same as described in the paragraph on over size cams, then, as before mentioned, as the spout cams are soon worn off by the locking fingers, and even though they are worn to a point where they no longer spring the resilient locking fingers, the yielding member 16 still exerts a pressure upon the sealing washers 15 and 17.

It is evident that the above described construction is capable of being modified in various ways and while I have shown and described this particular form I do not wish to be limited in the construction of the same further than is required by the state of the art or that which comes within the appended claims.

What I claim is:

1. A detachable closure for receptacles, in combination, a filler spout having a seat and an inwardly turned lip, said lip having entrance slots, cams, and a stop lug thereon, a cap having a central depending boss, a resilient plate carried by said boss adjacent the end thereof, said plate having portions slightly spaced from the cap before said cap is rotated toward its locked position and abutting said cap after partial rotation, a resilient locking means mounted on said boss comprising an inverted cup shaped member having notches in the periphery thereof and a flat leaf spring having ends extending radially through said notches, said ends being free to move vertically and means preventing rotation of said cup shaped member on the boss, whereby the resilient locking means engages the cams on the spout with yielding effect after the said resilient plate abuts the cap.

2. In a closure for a receptacle, in combination, a filler spout having a flange and spaced cams thereon, a cap adapted for rotational engagement with said spout, a yielding plate supported at its central portion by said cap, said plate having outer portions slightly spaced from said cap in its normal position but abutting said cap upon partial rotation thereof on said spout, a resilient locking member carried by said cap non-rotatively thereof for engaging said cams with yielding effect upon partial rotative movement of the cap on the spout, further rotative movement of said cap being permitted by the yielding action of said locking member.

3. In a closure for a receptacle, in combination, a filler spout having a flange and spaced cams thereon, a cap rotatively mounted on said spout, said cap provided with a depending boss having a shoulder thereon, a resilient plate supported centrally by said shoulder, said resilient plate having outer portions slightly spaced from said cap in its normal upsprung position but abutting said cap upon partial rotation thereof upon said spout, a resilient locking means carried by said boss non-rotatably thereof for engaging said cams with yielding effect upon partial rotative movement of said boss, further rotative movement of said boss being permitted by the yielding action of said locking means.

4. In a closure for a receptacle, in combination, a filler spout having spaced cams thereon, a rotatable cap having a depending boss, a flexible yielding plate supported centrally by said boss, said plate having outer portions slightly spaced from said cap in its normal position but abutting said cap upon partial rotation thereof on said spout, resilient means provided between said cap and said yielding plate for reinforcing said outer portions of said yielding plate, a resilient locking means carried by said boss non-rotatably thereof for engaging said cams with yielding effect upon partial rotative movement of said cap on said spout, further rotative movement of said cap being permitted by the yielding action of said locking means.

5. In a closure for a receptacle, in combination, a filler spout having a circular flange member thereon, a cap, a resilient closing means supported centrally by said cap, a resilient locking member carried by said cap non-rotatably thereof and adapted to engage said spout flange member, one of said members having cam means thereon for cooperative engagement with the other member, outer portions of said closing means adjacent said flange being slightly spaced from said cap during the normal upsprung position of said closing means but abutting said cap upon partial rotative movement thereof on said spout, further rotative movement of said cap being permitted by the resiliency of said locking member.

KYLE E. STANT.