Mar. 13, 1923. 1,448,094.

R. SORGAN.

CLOSURE.

FILED FEB. 1, 1921.

Fig:1.

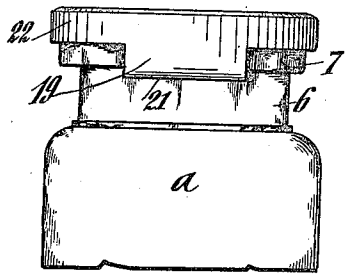


Fig:4.

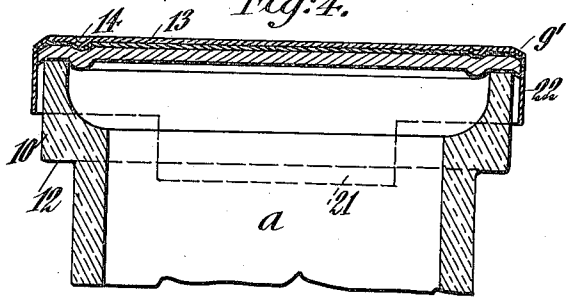


Fig:2.

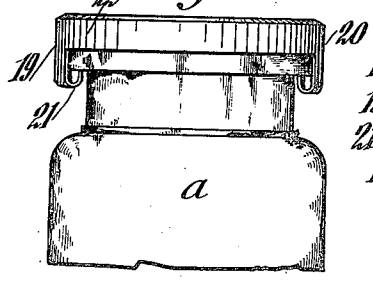


Fig:5.

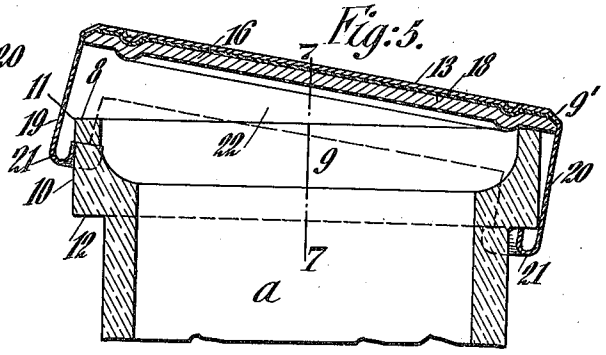


Fig:3.

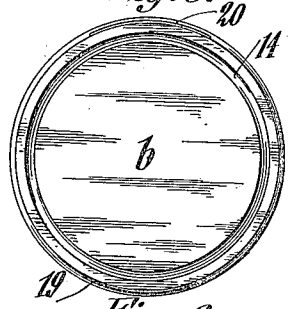


Fig:7.

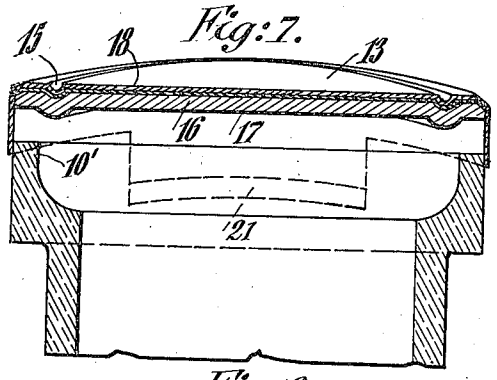


Fig:6.

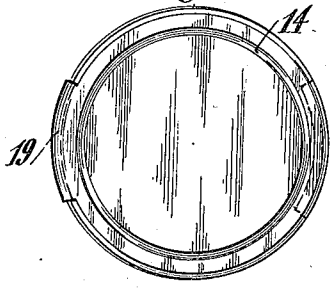


Fig:8.

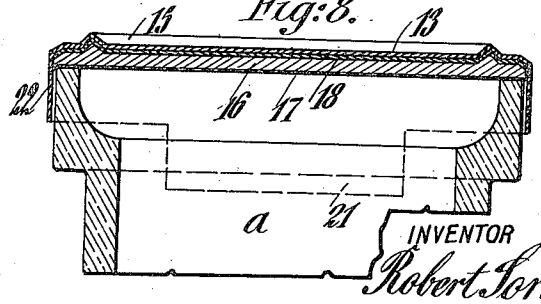
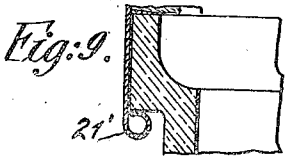


Fig:9.



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UNITED STATES PATENT OFFICE.

ROBERT SORGAN, OF JERSEY CITY, NEW JERSEY.

CLOSURE.

Application filed February 1, 1921. Serial No. 441,536.

To all whom it may concern:

Be it known that I, ROBERT SORGAN, a citizen of the United States, and resident of the city of Jersey City, county of Hudson, and State of New Jersey, have invented certain new and useful Improvements in Closures, of which the following is a specification.

The present invention relates to improvements in closure caps formed of resilient material and adapted when arranged over the mouth of a bottle, jar or the like, to yield under suitably applied pressure and thereby snap into engagement with a ridge or collar adjacent to the mouth of the bottle, jar or the like.

The general object of the invention is to increase the effectiveness of hand operated closure caps in point of attachable, detachable and leak proof properties, by the provision of a structure which will render the body of the cap rigid, without reducing the resiliency of the flange or skirt, and thereby distinguish the cap from others heretofore proposed and wherein rigidity of the body was sacrificed to attain flexibility in the flange, to the end that in the act of applying the cap to a jar or the like the body of the cap underwent distortion, frequently displaced the gasket, and thereby caused leakage.

To these ends the invention resides in reinforcing the disk shaped body of the cap and so proportioning the length of the resilient flange or skirt to the diameter of the body of the cap as to permit of flexing the skirt sufficiently to effect engagement thereof with the flanged neck of a bottle, jar or the like without distorting the said body, and to employ the reinforcing structure as a means for depressing the marginal portions o the gasket around the edges of the mouth of the closure.

Other objects will appear and be better understood from that embodiment of the invention of which the following is a specification, reference being had to the accompanying drawings forming part thereof and in which:

Figure 1 is a side elevation of the upper portion of a jar with my improved closure applied thereto;

Figure 2 is a view similar to Figure 1 but looking at right angles thereto;

Figure 3 is a plan view of Figure 1;

Figure 4 is an enlarged vertical cross section of Figure 1;

Figure 5 is a view similar to Figure 4 showing the position of the closure when engaging with or disengaging from the container;

Figure 6 is a plan view on reduced scale of Figure 5;

Figure 7 is a vertical cross section on the line 7—7 of Figure 5 looking in the direction of the arrow;

Figure 8 is a vertical cross section of the upper portion of a container showing a modified form of my closure connected thereto;

Figure 9 is a detail vertical section of a modified form of claw terminal.

The container *a* which forms no part of this invention may be a bottle, jar or the like provided at its upper end with the neck 6, the outer surface of which is interrupted as by the presence of a collar 7, the upper surface 8 of which is continuous with the end of the mouth 9 and joins with the outer surface 10 and the inner surface 10′ on a line at right angles thereto and thereby provides the sharpened edges 11. The base of the collar joins the outer surface 10 on a line at right angles thereto so that a shoulder 12 of appreciable size is provided as shown in the drawing.

The cap which is designated generally by *b* is by preference formed throughout of metal and consists of the central body portion 13 which conforms in contour to the mouth 9, which in most cases is circular, and as shown in the drawings is reinforced by a rib which in Figures 1 to 7 inclusive is in the form of a depression 14 in the marginal portion of the body and disposed so as to lie adjacent to the edge of the inner surface 10′ of the mouth and with a peripheral bevelled surface 9′ disposed so as to extend downwardly and overlie the outer edge 11 of the mouth when the closure is positioned as shown in Figures 1 to 2. In Figure 8 a slightly modified form of rib 15 is provided which is formed by a depression in the inner face of the body 13 and disposed substantially in the same relation to the central portion of the body as the depression 14. The provision of this construction operates as a reinforcement against easy bending or flexure of the body 13. The body 13 functions as one element of a clamp,

the other element being provided by the end 8 of the mouth 9 and the clamp operates to compress the disk-like gasket which as shown in Figures 4, 5, 7 and 8 is of slightly greater diameter than the diameter of the mouth and may consist of an intermediate layer 16 of fibrous material preferably pasteboard, conforming in area substantially to the area of the body 13, and an outer layer 17 of waterproof material as paper or rubber; an additional reinforcement in the form of a metallic disk 18 may be provided for the body 13 when interposed between disk 16 and the body and constructed so as to bear throughout on the inner surface of the body as shown in Figures 4 to 7 and Figure 8. When the gasket is clamped between the body 13 and surface 8, the clamping action is such as to compress the intervening portion of the gasket and the marginal portion of the gasket is bent around the edge 11 by the bevelled surface 9′ and around the edge of the inner surface 10′ by the depression 14, so that a positive seal at the bearing portion 8 and the marginal portion of the gasket is effected. This effective clamping of the gasket is not dependent upon any precise thickness of collar, because the bevelling of the periphery of the body 10, and cross sectional curvature of the depression cooperate to provide a flared socket-like structure which is adaptable to slight variations in the thicknesses of the collars of different containers.

When in clamped or closed position the body 13 is held by a pair of oppositely disposed resilient metallic tongues or claws 19 and 20, which depend vertically downward and terminate in inwardly and upwardly bent portions 21, the terminals of which bear on the base 12 of the collar. The portions 21 are parallel with the tongues 19—20 and relatively short, so that a maximum of resistance is offered to transverse bending upon the part of the portions 21 under the pressure exerted thereon by the tension of the gasket when compressed.

An alternative form of claw terminal is shown in Figure 9 and indicated by 21′; in this connection it will be observed that the part 21′ is rolled and formed as a bead at at the end of each tongue and disposed so as to extend upwardly and inwardly and engage the base 12 of the collar.

The tongues or claws are formed integral with the skirt 22 which is formed integral with the body 13 and the skirt is so proportioned in the dimension of its width that the portions 21 of the tongues or claws would extend below the base of the collar if the body 13 were arranged to bear directly on the mouth 9. The gasket, however, is so proportioned in the dimension of its thickness that when arranged as shown in Figures 4, 5, 7 and 8 its presence will operate to normally hold the portions 21 above the base 12 of the collar. Obviously with this construction and when the portions 21 engage with the base 12 the gasket will be compressed and function as previously stated. The tongues or claws 19—20 it will be observed are relatively narrow and are therefore readily bendable and the length of the skirt with respect to the external diameter of the collar and the diameter of body portion 13 is such that when the parts are positioned as shown in Figure 2 a degree of bending sufficient to detach either of the engaging end portions 21 from the base 12 is permitted without such bending on the part of these parts being transmitted to the body 13. Thus it will be seen that in view of the degree of clamping force exerted on the gasket when the parts are positioned as shown in Figures 1 and 2 only a relatively slight degree of effort, in most cases which may be applied directly with the fingers, is all that will be necessary to detach one of the claws or feet 19—20 whereupon the parts will occupy the position shown in Figure 5, which position corresponds to that which the parts will occupy in the closing of the container which is effected by engaging the portion 21 on the right in Figure 5 to the base of the flange 12 and then pressing downwardly on the upper left hand portion in Figure 5 to effect the downward movement of the tongue or claw on the left in the same figure, which tongue or claw together with the skirt will be flexed and thereby tensioned during the downward movement of the portion 21 over the outer surface of the collar until the portion 21 moves into alignment with the base 12 when the said portion will be moved to engaging position by the resiliency of the tongue or claw 19. During this movement of the parts it will be seen that the body 13 remains rigid so that lateral movement on the part of the gasket cannot occur. This is of importance because if the body 13 yielded then its movement would be imparted to the gasket with the result that the joint between the same and the bottle might be impaired.

Although I have shown and described an ideal embodiment of my invention it is to be understood that I am not to be limited to the specific details thereof, it being obvious that mechanical changes, within the scope claimed, may be made without departing from the spirit or sacrificing any of the advantages of the invention.

What is claimed as new is:

1. A bottle closure comprising a body portion of disc form adapted to seat upon the upper edge of the mouth of the bottle and having securing means adapted to cooperate with parts of the bottle for holding the body portion against the bottle mouth,

and a compressible gasket against the inner side of the body portion, said body portion near its marginal edge having an annular bevel and having an annular crimped portion spaced inwardly from the bevel forming concentric gasket retaining means for compressing and confining the marginal edge portion of the gasket upon and about the edge of said bottle mouth, the inner face of the gasket near its periphery being normally plane and extending beyond the outer edge of the bottle mouth before being applied thereto whereby the annular bevel of the body portion causes a swaging of the gasket about the outer edge of the bottle mouth.

2. A bottle closure comprising a body portion of disc form having a depending skirt portion larger than the bottle mouth adapted to seat upon the upper edge of the mouth of the bottle and having securing means adapted to cooperate with parts of the bottle for holding the body portion against the bottle mouth, and a compressible gasket in disc form against the inner side of the body portion, said body portion near its marginal edge having two opposite depending portions and having an annular crimped portion spaced inwardly from said depending portions forming concentric gasket retaining means for compressing and confining the marginal edge portion of the gasket upon and about the edge of said bottle mouth, the inner face of the gasket near its periphery being normally plane and extending beyond the outer edge of the bottle mouth before being applied thereto, whereby said opposite depending portions of the body portion causes a swaging of the gasket about the outer edge of the bottle mouth.

In testimony that I claim the foregoing as my invention, I have signed my name hereunder.

ROBERT SORGAN.