Sept. 18, 1928. 1,684,415

F. R. SCHRIVER

CONTAINER CLOSURE

Filed March 5, 1927

Fig. 1

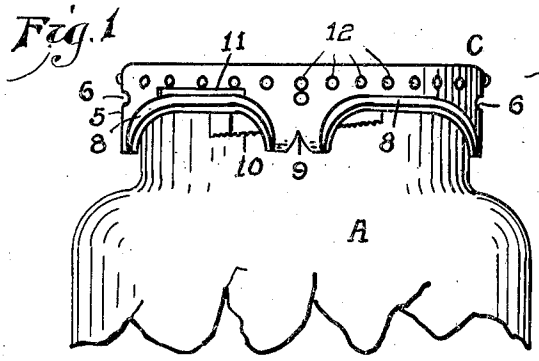


Fig. 4

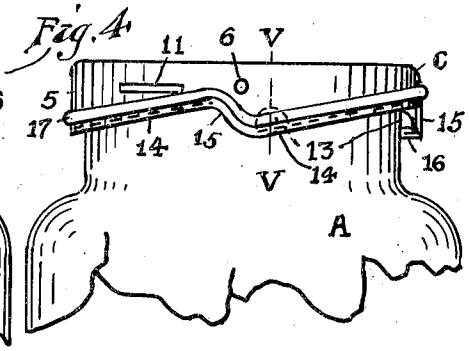


Fig. 2

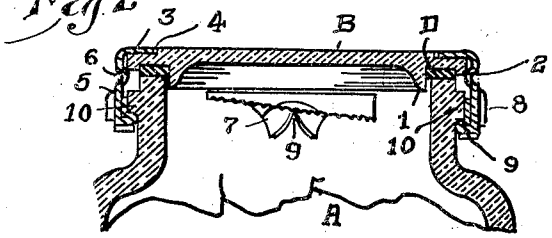


Fig. 5

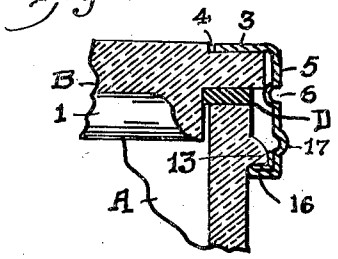


Fig. 3

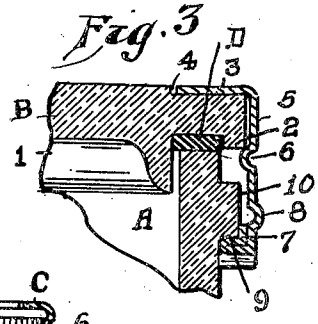


Fig. 6

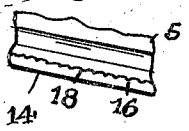
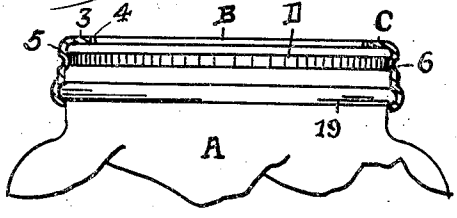


Fig. 7



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UNITED STATES PATENT OFFICE.

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CONTAINER CLOSURE.

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The most commonly used closure for glass fruit jars and similar containers is a metal cap-lid provided with a depending annular skirt which is threaded to screw onto the external threads on the neck of the container, a compressible gasket being interposed between the top edge of the neck and the lid. This is the standard Mason jar.

Such closures are objectionable as the acids of the fruit or other contents of the container tend to attack the metal.

Therefore the metal cap-lid has sometimes been provided with a glass liner disk which is laid in the cap and is intended to prevent contact of the contents of the container with the metal.

Generally the metal cap-lid is a complete closure but in come instances the central portion of the glass liner is exteriorly exposed.

Such liners are simply laid in the inverted cap-lid and must be held in place with the fingers when the cap-lid is reverted and applied to the container. Thus more time is required to apply the closure to the container, and also when the cap-lid is unscrewed the liner frequently is found to be stuck to the container, by means of the compressed gasket, and the liner must be separately pried loose therefrom. Again, it is difficult to employ machinery to apply the closures where they comprise a plurality of mutually unattached elements such as the cap-lid and the liner.

To provide a closure for glass fruit jars and the like, wherein no metal is in contact with the contents of the container, and which may be applied and removed as a unitary structure, and which is also adapted for application by machinery, I employ a closure comprised of a lid of glass or like material which bears on and closes the neck of the container with an interposed gasket, and a metal clamping ring which clamps the lid onto the container, the lid and the ring being connected together in such manner that they may be handled, put onto the container or removed from the container, as a unitary structure. The compressible gasket is also assembled with the lid and clamping ring.

Where the clamping ring is to be applied to or removed from the container by means of a rotative movement, such as screwing or unscrewing, relative rotation between the lid and the clamping ring is provided for, so that the lid need not rotate relative to the container while the closure is being applied or removed, but where the clamping ring is not turned relative to the container in being applied to or removed therefrom, the lid and clamping ring may be assembled in fixed relation.

I have also invented new and improved means for applying the metal clamping ring to the container.

I have also invented new and convenient means for releasing the lid in case it has become tightly stuck to the container and resists removal.

Other novel features of construction, and also of arrangement of parts, will appear from the following description.

In the accompanying drawings, wherein I have illustrated the best embodiment of the principles of my invention now known to me, Fig. 1 is a broken side elevation of a fruit jar and its closure; Fig. 2 is a section taken diametrically through the neck of the container and the closure; Fig. 3 is an enlarged detail of Fig. 2; Fig. 4 is a view similar to Fig. 1 but showing a modification; Fig. 5 is a view similar to Fig. 3 and taken in section on the line V—V in Fig. 4 to show the modified structure of Fig. 4; Fig. 6 is a detail showing an inside view of one of the lips of the clamping ring; and Fig. 7 is a broken elevation of a container with the closure in diametric section, showing a further modification.

In the drawings A represents the container such as a glass fruit jar or the like; B represents the lid; C represents the metal clamping ring, and D represents the gasket of rubber or other suitable compressible material.

Referring first to Figs. 1, 2 and 3, the lid B is a disk of glass or like material provided on its under side with an annular concentric rib 1 spaced inwardly from the edge of the lid and which extends down within the neck of the container A, and the gasket D, which is compressed between the lid B and the end of the neck of the container, surrounds said rib and is held in place thereby. I prefer to also provide the lid B with an annular depending edge rib 2 of less depth than the rib 1, thus forming an annular

channel or seat for the gasket. The outer rib is shown in Figs. 2 and 3 but is omitted in Fig. 5.

The clamping ring C may be stamped or otherwise formed of sheet metal and has an inwardly extending flange 3 which bears down on the lid B adjacent to its edge. The outer surface of the lid is preferably recessed adjacent to its edge to form a seat 4 for the flange 3 so that the flange 3 is thus substantially flush with the outer surface of the lid, thereby permitting the jars to be stacked one on the other.

The clamping ring C is also provided with a depending annular skirt 5 which surrounds the lid B and the upper end of the neck of the container A, said skirt and neck being provided with interengaging portions or means to hold the closure in place, as hereinafter described.

The lid B and clamping ring C are assembled, before application as a closure to the jar or other container, as a unitary structure so that they may be applied and removed as a unit. Thus I show the material of the skirt 5 of the clamping ring indented or struck-in as at 6 forming lugs which engage the lid B from beneath and support it in the clamping ring. Where the lid is provided with the outer rib 2 the lugs 6 engage the rib 2 from beneath. In case the lid is unprovided with an outer rib the lugs engage beneath the plain edge of the lid. The material of the clamping ring is sufficiently resilient to permit the lid to be sprung into and out of assemblage with the clamping ring but the elements are held against accidental disassemblage. The gasket D is preferably mounted on the lid before the latter is sprung into the clamping ring, and the elasticity of the gasket holds it in place. Thus the closure comprised of the said elements may be applied to the container either by hand or by mechinery as a unitary structure and likewise removed as a unitary structure from the container.

In the case of a closure which is to be applied or removed by a rotative or screwing or unscrewing movement, relative rotary movement between the lid and the clamping ring is provided for, so that the clamping ring may be rotated to engage it with or disengage it from the container while the lid remains stationary.

Where the clamping ring is secured to the container or disengaged therefrom without rotary movement, as for instance as shown in Fig. 6, the lid may be tightly held in the clamping ring to prevent relative rotation of the two elements.

In Figs. 1, 2 and 3, the lower edge of the skirt 5 of the clamping ring C is scalloped to form a plurality of depending apices and the edge of the metal of said skirt is doubled inwardly and upwardly on itself as shown at 7 to strengthen it and is also beaded outwardly as at 8 to add further strength. The apices are struck inwardly and upwardly to form the teeth 9 which engage the under, inclined surfaces of the wedge lugs 10 formed on the neck of the container 8. The lower inclined surfaces of said lugs are preferably roughened or transversely serrated, as shown in Fig. 2, to prevent the teeth 9 accidentally slipping along the lugs and thus loosening the closure on the container. The teeth 9 and the lugs 10 are each preferably four in number.

In applying the closure, the assembled lid, gasket and clamping ring are placed on the neck of the container with the teeth 9 between the lugs 10 and the clamping ring is then given a rotary movement causing the teeth to engage beneath the lugs and travel down the inclined surface of the same, wedging the lid down tightly on the neck of the container with the gasket tightly compressed between the lid and the neck to form an air and gas tight joint. A sharp turn of the clamping ring in the reverse direction will loosen the clamping ring. In case the lid is stuck too tightly to the neck of the container to be loosened by the loosening of the clamping ring, a knife or other tool may be inserted through the slot or slots 11 in the side of the clamping ring and between the lid and the neck of the container to pry the lid loose.

The ring is preferably strengthened by striking outwardly the rounded or cone-shaped projections 12 which also aid in obtaining a firm grip on the clamping ring for rotating the same.

In Figs. 4, 5 and 6 the integral studs 13 are substituted on the neck of the container A for the wedge lugs 10 of Figs. 1, 2 and 3, and the skirt 5 of the clamping ring C is formed to provide a series of parallel inclined portions 14 between which are interposed the shorter and steeper and reversely inclined portions 15. The lower edge of the skirt 5 along the inclines 14 is also first turned inwardly and upwardly on itself to obtain a double thickness and then the doubled thickness of metal is turned horizontally inwardly to form the inclined lips 16 which engage the studs 13 from beneath. The reverse inclines 15 are not provided with the lip 16, thus providing clearance for placing the closure on the container. The skirt 5 is also beaded as at 17 to add strength.

When it is to be applied to the container the closure is placed down thereon with the studs 13 opposite the inclines 15 and the closure is then turned from right to left causing the inclined lips 16 to engage the under sides of the studs 13 and to travel down beneath the same, thus wedging the closure tightly on the container. The lips 16 are preferably roughened or serrated as shown

at 18 in Fig. 6 to prevent accidental slipping of the lips 16 relative to the studs 13. A reverse rotation of the closure will release the lips 16 from the studs 13 and thus release the closure from the container.

In Fig. 7 the skirt 5 of the clamping ring C is crimped down over the circumferential rib 19 on the neck of the container. This form is especially adapted for closing and sealing the containers by machinery. In this case the lid B may be so tightly held in the clamping ring that no relative rotary movement between the elements is possible.

It is evident from the foregoing that my improved closure is much more convenient and quick to apply and also to remove from the container than the types of closures now in use, and that it especially lends itself for use in connection with automatic or semi-automatic machinery. It is sanitary and prevents any contact of the contents of the container with metal. It is inexpensive and adds no cost to the types of closures now in general use for the same purposes.

What I desire to claim is:—

1. A container closure comprising a glass disk adapted to fit on the mouth of the container, and a metal clamping ring having a skirt arranged to engage the neck of the container and an inwardly extending annular flange, the disk being held within the clamping ring so that the closure may be applied to and removed from the container as a unitary structure, provision being made for relative rotative movement between the disk and the clamping ring.

2. A container closure comprising a glass lid adapted to fit the mouth of the container and a metal clamping ring having an annular skirt which is arranged to be applied to and removed from the neck of the container by rotary movement and said clamping ring being further provided with an inwardly extending annular flange to complete a seat for the disk, means being provided for holding the disk in its assembled relation with the clamping ring, relative rotative movement between the disk and the clamping ring being provided to permit the ring to be rotated without rotating the disk, whereby the closure may be applied to and removed from the container as a unitary structure.

3. A container closure comprising a glass lid adapted to fit the mouth of the container and a metal clamping ring having an annular skirt which is arranged to be applied to and removed from the neck of the container by its rotary movement and said clamping ring being further provided with an inwardly extending annular flange to complete a seat for the disk, the disk being inserted in said seat and the clamping ring being provided with inwardly extending projections to prevent accidental disassemblage of the disk and clamping ring, relative rotative movement between the disk and the clamping ring being provided for to permit rotation of the clamping ring without rotating the disk.

4. A container closure comprising a glass lid adapted to fit the mouth of the container and a metal clamping ring having an annular skirt which is arranged to be applied to and removed from the neck of the container by its rotary movement and said clamping ring being further provided with an inwardly extending annular flange to complete a seat for the disk, the disk being inserted in said seat and the clamping ring being provided with inwardly extending projections to prevent accidental disassemblage of the disk and clamping ring, relative rotative movement between the disk and the clamping ring being provided for to permit rotation of the clamping ring without rotating the disk, and a compressible gasket carried by the disk.

5. A container closure consisting of a glass closure disk and a container neck engaging ring, said ring having an inwardly projecting flange overlapping the periphery of the disk and further having inwardly extending projections engaging the underside of the peripheral portion of the disk, the flange and projection being spaced to permit revolution of the disk relative to the ring.

6. A container closure having a closure portion and a depending metallic skirt, the bottom edge of the skirt being extended inwardly and doubled backwardly over the inwardly extending portion and up within the lower part of the depending portion to provide reinforced container lug engaging members.

7. A container closure having a closure portion and a depending metallic skirt, the bottom edge of the skirt being extended inwardly and doubled backwardly over the inwardly extending portion and up within the lower part of the depending portion to provide reinforced container lug engaging members, the lug engaging portions being notched and inwardly bent to provide upwardly pointing teeth.

Signed at Pittsburgh, Pa., this 4th day of March, 1927.

FLAVIUS RANDOLPH SCHRIVER.