Dec. 16, 1958 A. KUNDERT 2,864,521

SAFETY SEAL CLOSURES

Filed July 10, 1957

Fig. 1

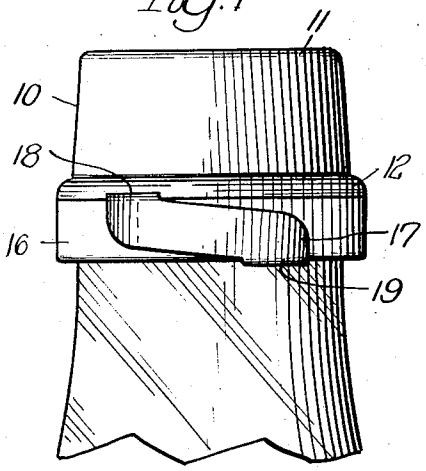


Fig. 2

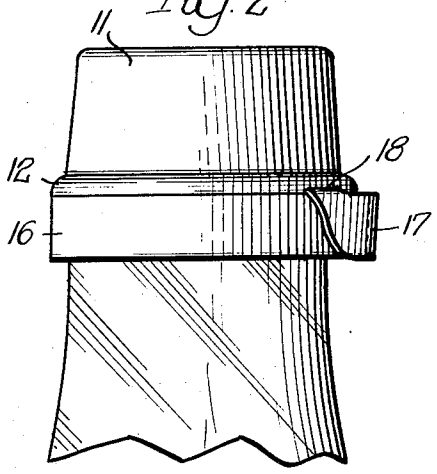


Fig. 3

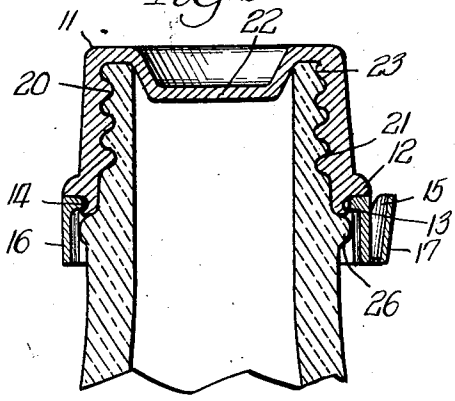


Fig. 4

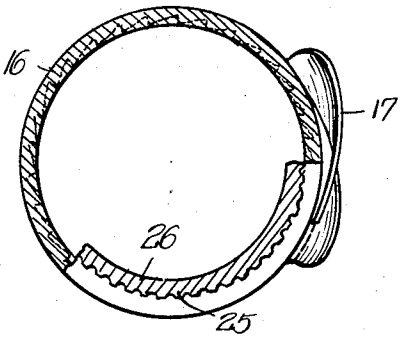


Fig. 5

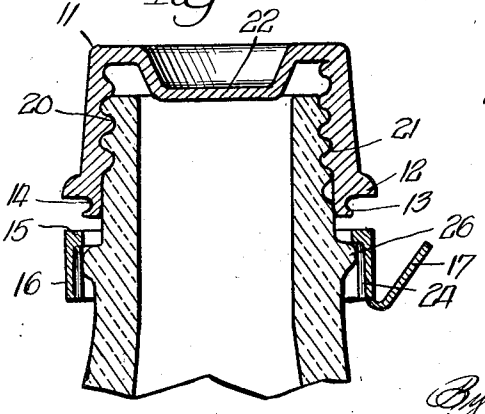
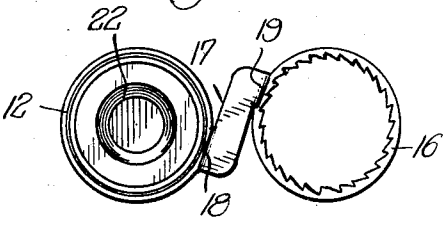


Fig. 6



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SAFETY SEAL CLOSURES

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3 Claims. (Cl. 215—42)

This invention pertains to closures for bottles, jars, and other receptacles, and in particular to closures which are tamperproof and must be mutilated to effect their removal.

Numerous tamperproof closures have been developed in the prior art. Many of these are of such a design and construction that they require several operations in their fabrication, so that they are relatively expensive. Moreover, many of these prior art closures are comprised of several parts which not only add to the cost of fabrication but also will cause considerable inconvenience in assembling them with the bottle, jar, or other receptacle. This is particularly of consequence in large volume operations where the closures are assembled by machinery.

Therefore, it is an object of the invention to provide a tamperproof closure for jars, bottles, and receptacles that is novel in construction.

Another object of the invention is to provide a tamperproof closure that may be easily and economically fabricated.

A further object of the invention is to provide a tamperproof closure of a unitary and integrated construction.

A still further object of the invention is to provide a tamperproof closure which is easily assembled with the bottle, jar, or any other receptacle with which it may be used.

Other objects of the invention will become apparent upon further development of the specification, with reference to the drawings.

In the drawings:

Figure 1 is a side elevation view of the closure embodying the invention.

Figure 2 is similar to the view shown in Figure 1 with the closure rotated 90°.

Figure 3 is a side elevation in section showing the closure in sealing position with a bottle.

Figure 4 is an end view of the closure.

Figure 5 is a side view in section of the closure showing it partially removed after it has been in sealing position.

Figure 6 is a side elevation view of the closure in a disassembled form.

Referring now to Figures 1 and 2, there is shown a sealing portion generally denoted by the numeral **10**. The sealing portion in the preferred embodiment is fabricated from some flexible and resilient material such as polyethylene or some other suitable material. It is conceivable that the closure may be fabricated from a ductile metal such as aluminum, tin, or copper. The sealing portion **10** is provided with the flutes **11** for decorative purposes and to facilitate gripping of the closure during assembly and removal with or from the bottle.

At the lower end of the sealing portion **10** is the annular shoulder **12** to which is secured the lip **13** as best shown in Figure 3. The lip **13** is provided with the annular groove **14** which receives the flangelike portion **15** of the annular ring **16**. As was mentioned previously, the material used in the fabrication of the closure is preferably

one having resilient and flexible properties. The properties enable the construction as shown in Figure 3 to resiliently secure the annular ring **16** to the sealing portion **10** by the engagement of the flangelike portion **15** with the groove **14**. Thus the annular ring **16** may be snapped in and out of engaging position with the sealing portion **10**.

As best shown in Figure 1, the annular ring **16** is joined to the sealing portion **10** by the bridge member **17**. The bridge member **17** is joined at one end **18** to the sealing portion **10** and at the other end to the lower edge of the annular ring **16**. Since the bridge member **17** is fabricated from the same flexible material mentioned previously, the annular ring may be rotated from a coaxial position with the sealing portion **10** to a completely nonaligned position as shown in Figure 6. In this manner it can be best visualized that the entire closure can be fabricated by stamping or molding from a single sheet of plastic material in a single operation. For example, if the closure were to be molded from a plastic material, a cavity for the sealing portion would form one element of the mold and and a cavity for the annular ring would form another element of the mold, the two elements being joined by a groove or passage for the bridge member.

As best shown in Figure 3, the sealing portion **10** is provided with the threads **20** which engage like threads on the bottle **21**. In the preferred embodiment the sealing portion **10** is provided with the downwardly extending cuplike portion **22**. This portion co-operates with the lip **23** of the bottle **21** to form the sealing engagement between the closure and the bottle.

On the internal surface of the annular ring **16** there are a plurality of circumferentially arranged ratchet teeth **24**. These teeth are adapted to engage similar teeth **25** on the neck of the bottle **21**. As best shown in Figure 3, the teeth **25** are at the outer extremity of the shoulder **26** to insure adequate engagement with the ratchet teeth **24**. The direction of the ratchet teeth **24** is such that they may be slid over the teeth **25** when the closure is being turned toward sealing position. Conversely the direction of the ratchet teeth **24** is such that they will not permit the ratchet teeth **24** to be slid over the teeth **25** when the closure is being turned in the opposite direction. One important advantage of the annular ring **16** as disclosed is that its resilient and flexible characteristics allow it to readily conform to the shape of the shoulder **26** and thus enhance the gripping action between the teeth **25** and the ratchet teeth **24**. This is particularly important because the tolerances of most bottles are rather inaccurate.

Referring now to Figure 5, the closure is shown in the partially removed position after it has been in sealing engagement with the bottle. As was mentioned previously, once the closure is in sealing engagement, the annular ring **16** cannot be turned in the disengaging direction. Thus, in order to remove the closure from the bottle, it is necessary to rupture the bridge member **17** so that the annular rings **16** and the sealing portion **10** are separated. This may be done by applying force directly to the sealing portion **10** sufficient to turn it with respect to the bottle and at the same time rupture the bridge member **17**. The bridge member **17** may also be ruptured by grasping one of its ends and tearing it loose from either the sealing portion **10** or the annular ring **17**. Once the bridge member **17** is ruptured, the annular ring **16** is easily parted from the sealing portion due to the resiliency of the lip **13**. After the closure has been removed or partially removed, it is impossible to rejoin the torn ends of the bridge member **17**. Thus, removal of the closure is indicated by the torn bridge member **17**. Conversely, if the bridge member **17** is whole, there is proof that the closure has not been tampered with.

From the foregoing description, it can be seen that the closure may be assembled with the bottle by merely plac-

ing the former on the bottle and turning it toward sealing position. This simple operation is brought about by the unitary construction of the closure. This is particularly important where a large volume operation is involved and the sealing is accomplished by machinery.

As was mentioned previously, the closure in the preferred embodiment is fabricated from some flexible and resilient material such as one of the many plastics. Such plastics are capable of being imbued with decorative colors or designs. In this manner the contents or the origin of the contents may be identified by the design or color of the closure and at the same time present an attractive appearance.

In the foregoing description, although certain elements and materials have been named, it is to be understood that these are merely by way of example and not by way of limitation. It is apparent that certain modifications may be made within the scope of the claims without departing from the spirit of the invention.

I claim:

1. A closure member for bottles, jars, and other receptacles, of flexible and resilient material comprising a sealing portion internally threaded and adapted to engage like threads on the receptacle, a downwardly extending shoulder on the lower edge of said sealing portion, an annular ring resiliently secured to said downwardly extending shoulder, a bridge member being secured at one end to the lower edge of said sealing portion, the other end of said bridge member being secured to said annular ring, said annular ring being provided with a plurality of internal ratchet teeth adapted to engage one or more like teeth on said receptacle, whereby removal of said closure will rupture said bridge member.

2. A closure member for bottles, jars, and other receptacles, of flexible and resilient material comprising a sealing portion adapted to engage said receptacle, a downwardly extending shoulder on the lower edge of said sealing portion, an annular ring resiliently secured to said downwardly extending shoulder, a bridge member being secured at one end to the lower edge of said sealing portion, the other end of said bridge member being secured to said annular ring, said annular ring being provided with a plurality of internal ratchet teeth adapted to engage one or more like teeth on said receptacle, whereby removal of said closure member from sealing engagement with said bottle will rupture said bridge member.

3. A unitary closure member for bottles, jars, and other receptacles, of flexible and resilient material comprising a sealing portion internally threaded and adapted to engage like threads on said receptacle, a downwardly extending shoulder on the lower edge of said sealing portion, an annular ring resiliently secured to said downwardly extending shoulder, a bridge member being secured at one end to the lower edge of said sealing portion, the other end of said bridge member being secured to said annular ring, said annular ring being provided with a plurality of internal ratchet teeth adapted to engage one or more like teeth on said receptacle, said ratchet teeth co-operating with said like teeth to permit rotation of said closure members in one direction, whereby removal of said closure will rupture said bridge member.

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