

May 1, 1951

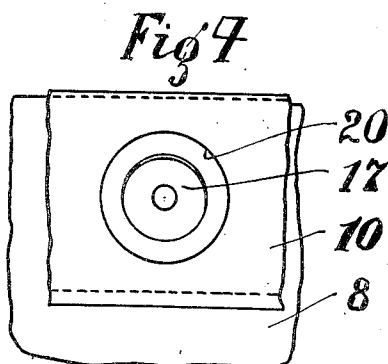
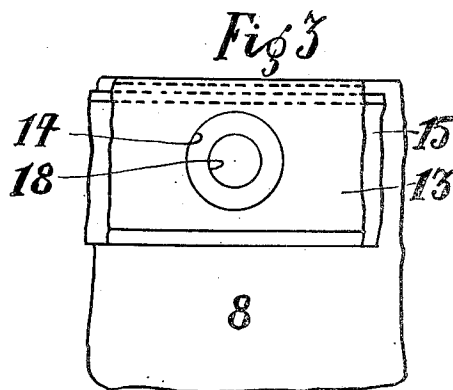
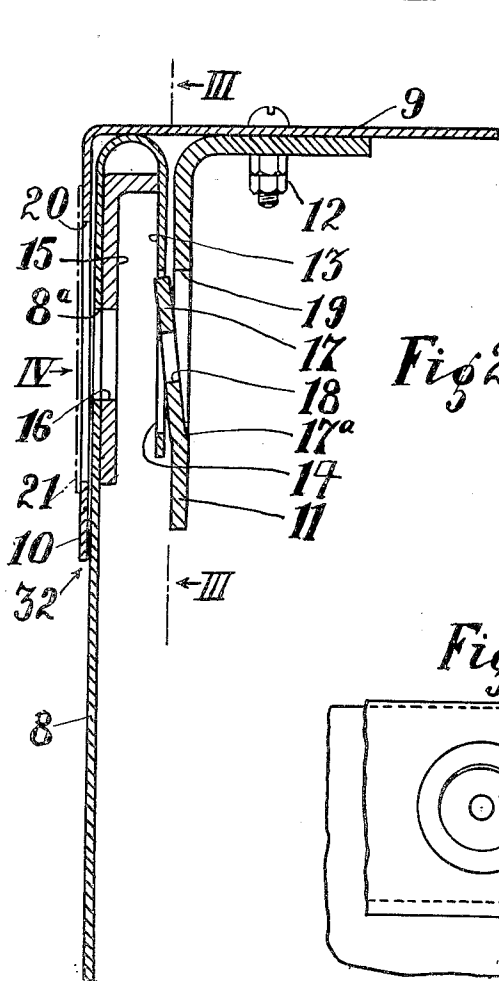
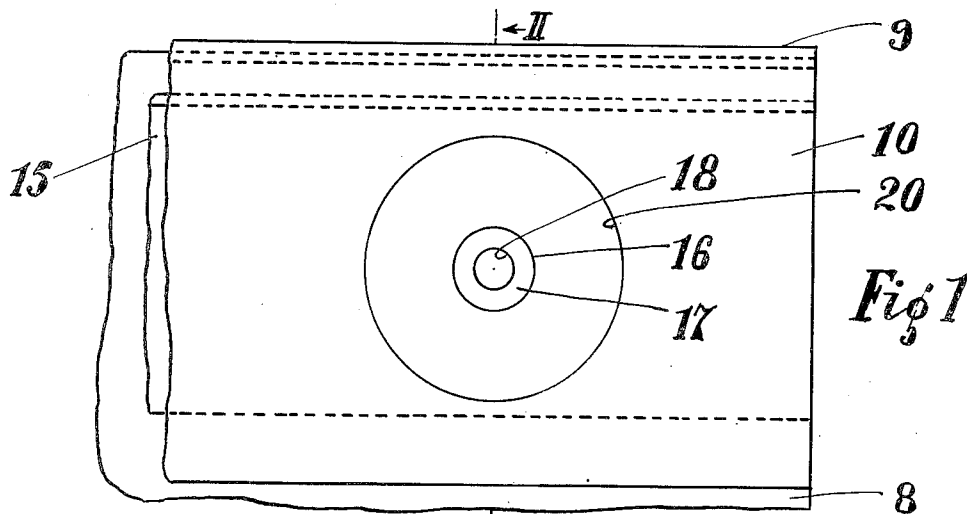
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2,551,499

MEANS FOR LOCKING CLOSURES TO CONTAINERS

Filed Feb. 5, 1946

2 Sheets-Sheet 1



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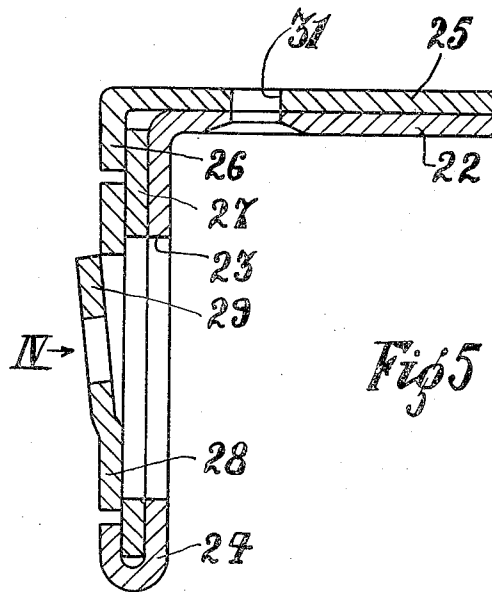
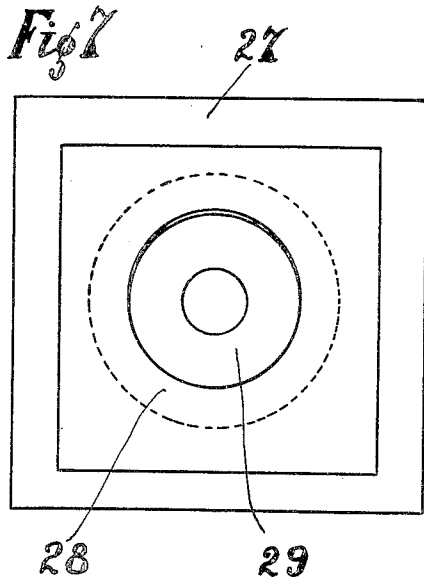
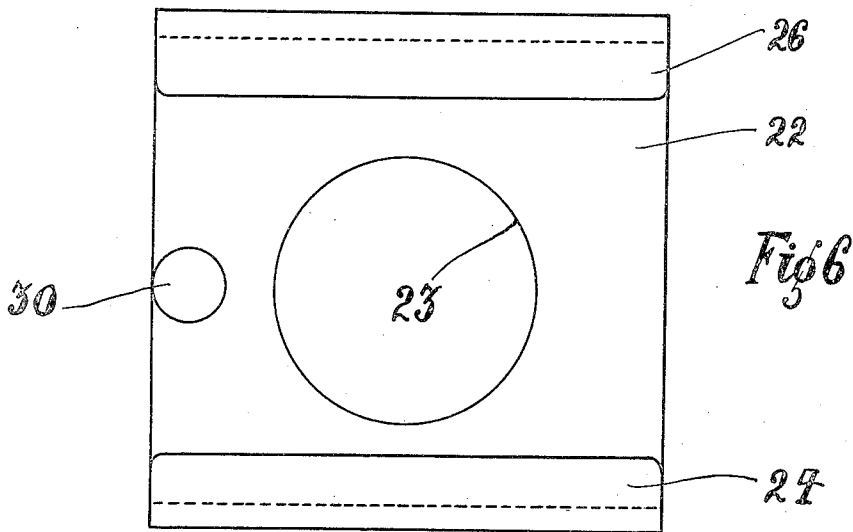
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MEANS FOR LOCKING CLOSURES TO CONTAINERS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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MEANS FOR LOCKING CLOSURES TO
CONTAINERS

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5 Claims. (Cl. 220—55)

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This invention relates to containers and closures thereof of the type wherein detent means on the one projects therefrom towards the other and an apertured part on the other has an aperture positioned to be engaged by said detent means when the closure is placed on the container.

The chief object of the present invention is to provide simple and efficient means whereby unauthorised removal of the closure from the container is conclusively evident.

I will now describe some embodiments of the invention, simply by way of example, with reference to the accompanying drawings, whereon:

Fig. 1 is an external elevation, taken at a corner of a container and showing part of a closure in accordance with the present invention, applied thereto.

Fig. 2 is a cross section on the line II—II, Fig. 1.

Fig. 3 is an external elevation of part of the upper part of the container, taken on the line III—III, Fig. 2, to a reduced scale.

Fig. 4 is an elevation externally of part of the closure when removed from the container, and taken in the direction of the arrow IV, Fig. 2, to a reduced scale.

Fig. 5 is a section corresponding to Fig. 2, but of a modified detent arrangement.

Figs. 6 and 7 are elevations in the direction of the arrow IV, Fig. 5, of the carrier for the detent, and of a replaceable detent, respectively.

Referring to Figs. 1—4 of the drawings, the container 8 has a closure 9 applied thereto, said closure having an outer flange 10 and having secured thereto an inner flange 11. Inner flange 11 is secured to the closure 9 in a manner either removable from the inside or permanently. The parts are shown connected by screw and lock nuts 12 but may be secured in any suitable manner for example by rivets or by welding.

The upper end of container 8 has a downwardly bent flange 13 having an aperture 14 therein and said flange is maintained at the required spacing from the main part of the container by a distance piece 15 secured thereto, for example, by welding, having an aperture 16 in line with a corresponding aperture 8a in the container 8.

Flange 11 is provided with a partly punched out detent 17 having an aperture 18, and the detent may be formed by using a punch having an oblique end face which cuts out the detent from the surrounding metal around the majority of its periphery, the remainder serving to maintain the detent in position as at 17a.

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In applying the closure to the container, when the closure is forced downwards, detent 17 is resiliently displaced towards its aperture 19 in the flange 11 so that the closure can pass down, and as soon as detent 17 comes into line with aperture 14 it springs back into place as shown in the drawing, thereby locking the closure on the container. This resilient effect may alternatively be attained wholly or in part by resilient displacement of flange 13, depending upon the relative stiffness of the various parts. In the preferred arrangement most of the parts are made of sheet metal and of metal sections, and although the invention is particularly applicable to sheet metal containers, it may also be applied to containers of any other material and having closure-locking parts, in accordance with the invention, made of metal, or other convenient material.

The flange 13 stiffens the container and the outer part shields the detent against unauthorised access by the instruments which by-pass the seal by deforming the closure and insertion as indicated by arrow 32.

It is preferred to have an enlarged opening 20 in the outer part of the closure, and a seal may be applied as shown in chain-dotted lines at 21 with, for example, the packer's marking thereon.

To remove the closure it is necessary first to break the seal 21 and then to insert an elongated metal instrument which engages the hole 18 (which is smaller than the outer holes to facilitate breaking off) and by side movement causes the detent to break off at its root 17a. The retention of detent 17 to the surrounding metal is weakened as shown at root 17a so that slight bending of the detent will cause fracture there. As soon as detent 17 is broken the closure can freely be removed. It will be obvious that removal of the closure can only be made by causing permanent damage to the closure, so that any unauthorised removal will be clearly evident.

If it is desired to re-utilise the closure, a fresh flange 11 may be applied thereto, and of course after repacking a fresh seal will be applied at 21.

Any number of closure locking arrangements in accordance with the invention may be provided between the closure and container but preferably they are provided at the corners where the material of the container is stiffest. For example there may be four in all on a rectangular container.

The arrangement shown in Figs. 5, 6 and 7 provides for easy replacement of the detent, the ar-

range ment shown in these figures taking the place of flange 11. In Fig. 5 an angle piece 22 is provided with an aperture 23 and an upturned flange 24, and it is secured to a second angle piece 25, for example, by spot welding, and the second angle piece has a downturned flange 26. Flanges 24 and 26 together with the part 22 furnish a guide for a slidably removable base 27 having welded thereto a detent part 28, the detent proper 29 being constructed as described with reference to Fig. 2. A projection 30 is provided on angle piece 23 so as to position base 27 when slid into position.

It will thus be evident that when a detent 29 has been broken, base 27 can be withdrawn and a new base and detent slid into position. The whole arrangement may be secured to the closure through apertures 31, for example, by rivets.

Although in the foregoing embodiment the detent has been provided on the closure, the detent may instead be provided on the container or a part secured thereto and the whole arrangement constructed as a mechanical inversion to these shown.

It is also preferred that the detent and co-operating parts are located at inwardly disposed parts which are protected from outside interference by the container and closure, as will be clear from Fig. 2, but in a modification, sufficient protection against unauthorised access may be obtained by providing the detent and co-operating parts at the external wall of the container, being screened from the exterior by the closure and a seal thereon.

A check that locking has been effected can be made by observation through apertures 20 and 16, prior to sealing. The sealing disc may be secured by soldering, welding or otherwise.

The inner part of the closure may carry on its under or inner side a shock-absorbing pad to assist packing firmness. Moreover the detent and the various apertures and cover plate may be of any desired shape, circular or non-circular.

In a modification, the detent is resiliently, but displaceably, mounted on the inner part of the closure, being urged outwardly by spring means attached to the closure. In this way, when one detent is broken off to remove the closure, a new detent and spring can be attached to enable the closure to be used again.

In a further modification the external flange 10 (Fig. 2) on the closure may not necessarily be provided, and the sealing can be effected on the external part of the container.

In a further modification the detent may be made as a leaf spring.

In a further modification the parts may be made as pressings, castings or mouldings in metal or other material.

I claim:

1. In combination, in a container having a closure therefor, a side wall on said container having an aperture therein, an element carried rigidly by said container side wall but spaced inwardly therefrom, said container element being resilient at its lower part and having an aperture opposite the aperture in the container side wall, an outer depending wall on said closure adapted to fit outside the container side wall and having an aperture therein opposite the apertures in the container side wall and element, an inner rigid depending element on said closure adapted to fit inside the container element and spaced inwardly from said outer wall, a detent punched partly out of said closure element and bent out-

wardly therefrom opposite said apertures, said container element being resiliently displaced outwardly when the closure is forced on to the container until the aperture therein comes into line with said detent, whereupon said container element springs back into place and the aperture therein is engaged by said detent, thereby rendering separation of the closure from the container, otherwise than by breaking off said detent, impossible without effecting damage to said closure and/or container.

2. In combination, in a container having a closure therefor, a side wall on said container having an aperture therein, an intumed dependent resilient flange on the container side wall spaced inwardly therefrom, and having an aperture opposite the aperture in the container side wall, a rigid distance piece between the flange and the container side wall in order rigidly to space the upper part of the flange from the side wall, an outer depending wall on said closure adapted to fit outside the container side wall and having an aperture therein, opposite the apertures in the container side wall and element, an inner rigid depending element on said closure adapted to fit inside the container element and spaced inwardly from said outer wall, a detent punched partly out of said closure element and bent outwardly therefrom opposite said apertures, said container element being resiliently displaced outwardly, when the closure is forced on to the container, until the aperture therein comes into line with said detent, whereupon said container element springs back into place and the aperture therein is engaged by said detent, thereby rendering separation of the closure from the container, otherwise than by breaking off said detent, impossible without effecting damage to said closure and/or container.

3. In combination, in a container having a closure therefor, a side wall on said container having an aperture therein, an element carried rigidly by said container side wall but spaced inwardly therefrom, said container element being resilient at its lower part and having an aperture opposite the aperture in the container side wall, an outer depending wall on said closure adapted to fit outside the container side wall and having an aperture therein opposite the apertures in the container side wall and element, an inner rigid depending element on said closure adapted to fit inside the container element and spaced inwardly from said outer wall, detent means removably mounted on said inner rigid element and removable only from the interior of the closure, said detent means being bent outwardly from said closure element opposite said apertures, said container element being capable of yielding resiliently, when the closure is forced on to the container, to permit said detent to pass down adjacent said container element until it comes into line with the aperture therein, whereupon said container element springs back into place and the aperture therein is engaged by said detent, thereby rendering separation of the closure from the container, otherwise than by breaking off said detent, impossible without effecting damage to said closure and/or container.

4. In combination, in a container having a closure therefor, a side wall on said container having an aperture therein, an element carried rigidly by said container side wall but spaced inwardly therefrom, said container element being resilient at its lower part and having an aperture

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opposite the aperture in the container side wall, an outer depending wall on said closure adapted to fit outside the container side wall and having an aperture therein, opposite the apertures in the container side wall and element, an inner rigid depending element on said closure adapted to fit inside the container element and spaced inwardly from said outer wall, detent supporting means removably attached to said inner rigid element and being removable in a direction transversely of the direction of removal of the closure from the container, a detent secured to said detent supporting means opposite the said apertures and bent theretowards, said container element being capable of yielding resiliently, when the closure is forced on to the container, to permit said detent to pass down adjacent said container element until it comes into line with the aperture therein, whereupon said container element springs back into place and the aperture therein is engaged by said detent, thereby rendering separation of the closure from the container otherwise than by breaking off said detent, impossible without effecting damage to said closure and/or container.

5. In combination, in a container having a closure therefor, a side wall on said container having an aperture therein, an element carried rigidly by said container side wall but spaced inwardly therefrom, said container element being resilient at its lower part and having an aperture opposite the aperture in the container side wall, an outer depending wall on said closure adapted to fit outside the container side wall and having an aperture therein, opposite the apertures in the

container side wall and element, an inner rigid depending element on said closure adapted to fit inside the container element and spaced inwardly from said outer wall, a detent punched partly out of said closure element and bent outwardly therefrom opposite said aperture, said container element being capable of yielding resiliently, when the closure is forced on to the container, to permit said detent to pass down adjacent said container element until it comes into line with the aperture therein whereupon said container element springs back into place and the aperture therein is engaged by the detent, and a seal applied over the aperture in the outer depending wall on the closure, thereby rendering separation of the closure from the container, otherwise than by breaking the seal and breaking off said detent, impossible without effecting damage to said closure and/or container.

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