# Container and Closure Arrangement

This invention relates to a container and closure arrangement. The invention finds particular, though not exclusive, application to closing a container of liquid, for example paint.

Cans of paint, for example, are often simply closed with a lid that has an outwardly-directed rim that is press-fitted into the top of the container. Removal of the lid may be made by means of insertion of the blade of the screw driver and twisting to prise off the lid. The lid can subsequently be replaced to re-close the container, but usually the mating surfaces of the lid and container become damaged, and can become coated with dried contents of the container, with the result that a significant effort has to be exerted to re-close the container, and even then a seal may not be effected, which can cause spillage and / or deterioration of the contents.

An improved form of closure for such a container is known, in which an outwardly-directed projection is provided on the outer surface of the container just below the rim of its open end. The lid is provided with a flat surface to close and seal down onto the container rim, and has a skirt that extends down and around the projection, with an inwardly-directed projection to engage beneath the projection of the container, thereby to secure the lid in position. The skirt is flexible so that it can be prised outwards and upwards, usually by hand, to release the inter-engaging projections, thereby to allow the can to be opened. Such an arrangement can be conveniently re-sealed. However, with this arrangement it can be very difficult to deflect the annular skirt to open the container.

In accordance with the present invention, there is provided an arrangement comprising an open-ended container and closure therefor, wherein the container comprises at least one projection extending at least partially around its outer surface adjacent the rim of its open, upper end, and wherein the closure comprises a cover for extending over the open upper end and a skirt depending therefrom having an upper and a lower portion, whereby the lower portion of the skirt may be flipped between a raised configuration for mounting and removal of the cover on the container and a lowered configuration in which it engages with the projection of the container thereby

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to retain the cover on the container, and wherein the lower portion of the skirt is divided into at least two discrete peripheral sections that may be flipped between the raised and lowered configurations independently of each other.

According to another aspect of the invention there is provided an arrangement comprising an open-ended container and closure therefor, wherein the container comprises at least one projection extending at least partially around its outer surface adjacent the rim of its open, upper end, and wherein the closure comprises a cover for extending over the open upper end and a skirt depending therefrom, an annular channel being formed between the cover and an upper portion of the skirt for receiving the rim and the projection of the container, wherein the skirt is divided into said upper and a lower portion by at least one inwardly-directed projection that extends therearound partway along its depth, whereby the lower portion of the skirt may be flipped between a raised configuration for mounting and removal of the cover on the container and a lowered configuration in which its projection engages beneath the projection of the container thereby to retain the cover on the container, and wherein the lower portion of the skirt is divided into at least two discrete peripheral sections that may be flipped between the raised and lowered configurations independently of each other.

By dividing the skirt of the closure of the arrangement of the present invention into a plurality of discrete sections, of which there may be three or four or more, it has been found to be much simpler to release the inter-engaging projections, which can be done section-by-section.

The discrete peripheral sections of the skirt may conveniently be formed by slitting a continuous skirt portion.

Although the container may be of generally cylindrical configuration, the cover then being of generally circular configuration, it is envisaged that the arrangement of the invention may be applied to other configurations.

Advantageously, the arrangement is made of plastics material, although the various components need not be made from the same composition.

An arrangement comprising an open ended container and closure therefor, will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a vertical section through part of the arrangement, prior to fitting the closure onto the container;

Figure 2 is a section corresponding to Figure 1, with the closure mounted on the container and locked thereon; and

Figure 3 is a top plan view of the closure of Figure 1.

Referring to the Figures, a generally cylindrical plastics paint container 2 has an annular rim 4 at its open end. Adjacent the rim 4 on the outer surface of the container 2, a projection 6 extends continuously therearound, and is directed outwardly and then downwardly to a free end 8.

A cover 10 is of generally circular shape having a planar surface 12 that sits as a push fit within the rim 4 of the container 2. Beyond the surface 12, the cover 10 has an annular channel 14 of width sufficient to engage the radial extent of the rim 4 and the projection 6 of the container. The outer wall of the channel 14 is defined by a skirt 16 that has a relatively rigid upper portion 18 and a relatively flexible lower portion 20, the portions 18 and 20 being demarcated by an inwardly-directed projection 22.

As shown seen in Figure 1, the cover 10 is in its open configuration, with the lower portion 20 of the skirt 16 flipped upwardly to allow the cover 10 to be mounted down over the top of the container 2.

Figure 2 shows the arrangement with the cover 10 fitted onto the container 2, with the lower portion 20 of the skirt 16 having being flipped downwardly after the rim 4 and projection 6 have been enclosed within the channel 14, thus disposing the skirt projection 22 beneath and in engagement with the free end 8 of the container projection 6. In this way, the cover 10 is securely mounted on the container 2, and the

contents thereof are sealed inside by abutment of the rim 4 with the wall of the channel 14.

As can be seen in Figure 3, the lower portion 20 of the cover skirt 16 does not extend continuously all the way around, but rather is divided into three discrete sections that have been formed by making slits 24 therein. It will be appreciated that the slits 24, although shown as being of generally V-shape, may be of other shape, for example providing a castellated configuration.

With the arrangement in the closed and sealed state indicated in Figure 2, the container may conveniently be opened by flipping up one section of the skirt 20 at a time to the configuration shown in Figure 1. It will be appreciated that each configuration of the skirt 16, that is to say as shown in Figure 1 and in Figure 2, is a stable configuration, allowing repeated opening and closing of the cover 10 and the container 2.

It can be seen from figure 2 that the closure includes an annular channel positioned between the cover and the skirt, with the channel receiving both the rim and the at least one projection of the container. In an alternative embodiment, the rim of the container and/or the projection on the container need not be received in such a channel, for example, the rim only could be received in the channel.

In an alternative embodiment, the projection on the skirt may engage above the projection of the container, as opposed to beneath it, by using a suitable snap-fit arrangement.

In another embodiment, the skirt of the closure may be divided by alternative means, for example, by a live hinge, and not by the projection. In this case, the projection of the skirt could be positioned below the live hinge such that it engages with the container as the skirt is flipped from the upper to the lowered configuration.

It would also be possible to provide a recess on the skirt, as opposed to a projection, for snap-fit engagement with a corresponding projection on the container, so as to retain the cover on the container.

## Claims

1. An arrangement comprising an open-ended container and closure therefor, wherein the container comprises at least one projection extending at least partially around its outer surface adjacent the rim of its open, upper end, and wherein the closure comprises a cover for extending over the open upper end and a skirt depending therefrom having an upper and a lower portion, whereby the lower portion of the skirt may be flipped between a raised configuration for mounting and removal of the cover on the container and a lowered configuration in which it engages with the projection of the container thereby to retain the cover on the container, and wherein the lower portion of the skirt is divided into at least two discrete peripheral sections that may be flipped between the raised and lowered configurations independently of each other.

2 An arrangement according to claim 1 in which the closure includes an annular channel formed between the cover and the upper portion of the skirt for receiving the rim and the at least one projection of the container.

3. An arrangement according to claim 1 or 2 in which the skirt includes at least one inwardly directed projection that extends therearound partway along its depth, and the projection engages with the projection of the container.

4. An arrangement according to claim 3 in which the at least one inwardly directed projection engages beneath the projection of the container.

5. An arrangement according to claim 3 or 4 in which the at least one inwardly directed projection divides the upper and lower portions.

6. An arrangement according to any preceding claim, wherein the discrete peripheral sections of the skirt are formed by slits in a continuous skirt portion.

7. An arrangement according to any preceding claim, wherein the container is of generally cylindrical configuration and the cover is of generally circular configuration.

8. An arrangement according to any one of the preceding claims, made of plastics material.

9. A container and closure arrangement substantially as hereinbefore described with reference to the accompanying drawings.