APPLICATION FOR A STANDARD PATENT

I/We, CONTAINERS LIMITED, a Victorian Company

of 265 Franklin Street, Melbourne, in the State of Victoria, Australia,

hereby apply for the grant of a standard patent for an invention entitled CROWN CLOSURE

which is described in the accompanying provisional specification.

Details of basic application(s):

<table>
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<tr>
<th>Number of basic application</th>
<th>Name of Convention country in which basic application was filed</th>
<th>Date of basic application</th>
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My/our address for service is care of CLEMENT HACK & CO., Patent Attorneys, 140 William Street, Melbourne, Victoria, 3000, Australia.

DATED this 14th day of December, 1983.

CONTAINERS LIMITED

CLEMENT HACK & CO.

To: The Commissioner of Patents.
More recently crown closures have been produced
TWIST OFF CROWN CAP WITH TWENTYFOUR CORRUGATIONS

1. A blank for a crown closure adapted in use to be twisted from the neck of an associated container, said blank comprising a circular top portion and a downwardly and outwardly flared corrugated skirt, wherein there are at least twenty-four, but not more than thirty-six, corrugations in the skirt, and wherein the number of corrugations is a whole number multiple of the number of thread lengths or starts on the neck of the container with which the closure is to be associated.
AUSTRALIA

PATENTS ACT 1952

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE

Short Title:

Int. Cl:

Application Number:

Lodged:

Complete Specification—Lodged:

Accepted:

Lapsed:

Published:

Priority:

Related Art:

This document contains the amendments made under Section 49 and is correct for printing.

36207/84.

TO BE COMPLETED BY APPLICANT

Name of Applicant: CONTAINERS LIMITED

Address of Applicant: 265 Franklin Street, Melbourne, Victoria, Australia

Actual Inventor: Thomas William FURNIS of 4 Baird Street, Ashburton Victoria, and Malcom WALLACE of Lot 408 Sixth Avenue, Eden Park, Victoria,

Address for Service: CLEMENT HACK & CO., 140 William Street, Melbourne, Vic. 3000. Australia.

Complete Specification for the invention entitled: CROWN CLOSURE

The following statement is a full description of this invention, including the best method of performing it known to me:

PF/CPLF/2/80
This invention relates to crown closures for 5 bottles and the like.

Blanks for conventional crown closures consist of a circular top portion provided with a downwardly and outwardly extending corrugated skirt. Such a blank is pressed from a circular disc of metal, such as tinplate 10 or aluminium, and after positioning on the top of a bottle, the outwardly extending peripheral corrugated skirt is crimped around an annular bead on the outer surface of the neck of the bottle.
More recently crown closures have been produced for crimping onto threaded bottle-necks and removed from the bottle by twisting the closure relative to the bottle. These twist off crown closures suffer from the disadvantage that the lower edge of the corrugated skirt is extremely sharp and can cause scratching or cutting of the hand when grasped in order to twist it from the bottle, and also suffer from the disadvantage that the corrugations themselves become sharper upon being crimped.

It has been previously proposed to overcome these disadvantages by providing the uncrimped crown closure blank with a protective lip which extends downwardly from the outwardly extending peripheral skirt so that when the closure is crimped onto the top of a bottle the sharp edge is directed inwardly towards the neck of the bottle and not downwardly. However, the disadvantages with such a proposal are that a larger circular metal disc is required in order to manufacture the closure, which prevents conventional forming tools being used, whilst the inturned lower edge tends to lock tightly under the threads of the bottle-neck necessitating the use of higher unscrewing torques.

It has also been previously proposed to provide a crown closure blank in which the crests of the corrugations in the skirt are both wider and shallower than in a conventional crown closure, such that, when the closure is crimped onto the neck of a bottle, the peripheral edge is substantially smoother than that of a conventional crimped crown closure. However, one disadvantage which arises with such a closure is that with the smoother peripheral skirt it is more difficult to maintain a firm grip on the closure and achieve the necessary torque to twist the closure from the bottle.
Furthermore, the threads produced around the neck of the bottle basically consist of lengths or starts of thread each extending only part way around the neck of the bottle with the leading end of each thread length overlapping the trailing end of the next thread length, and with all known closures of the twist off type there is always the possibility that insufficient corrugations will engage a particular thread length and the closure will not satisfactorily seal the bottle.

It is therefore an object of the present invention to minimize, if not remove, the above disadvantages with known twist off crown closures.

In accordance with the present invention there is envisaged a blank for a crown closure adapted in use to be twisted from the neck of an associated container, said blank comprising a circular top portion and a downwardly and outwardly flared corrugated skirt, wherein there are at least twenty-four, but not more than thirty-six, corrugations in the skirt, and wherein the number of corrugations is a whole number multiple of the number of thread lengths or starts on the neck of the container with which the closure is to be associated.

With such a closure, the increased number of corrugations results in a smaller spacing between the crests of the corrugations such that the sharpness of the crests and the edge of the skirt is less apparent whilst allowing for relatively secure gripping to achieve the required twist off torque. In addition, the greater number of corrugations lessens the chances of an insufficient number engaging a particular thread length on the neck of an associated bottle thus reducing the likelihood of insufficient sealing engagement with the bottle.

A minimum of twenty-four corrugations will be necessary to achieve the objectives of the invention up to a maximum of thirty-six beyond which it is unlikely that there will be sufficient purchase by each
corrugation on a thread length, whilst gripping engagement will also be reduced making it difficult to achieve the required twist off torque.

Preferably, the number of corrugations should be a whole number in multiples of the number of lengths or starts of thread on the neck of the bottle with which the closure is to be associated so that an equal number of corrugations will engage each of the thread lengths on the neck of the bottle.

Preferably for a situation where 4 thread lengths are involved, twenty-four corrugations are provided being the likely optimum number to achieve the objectives of the invention.

One preferred embodiment of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a plan view of half of a standard known blank for a crown closure;
Figure 2 is a partly sectioned side elevational view of the blank of Figure 1;
Figure 3 is a partly sectioned side elevational view of the blank of Figures 1 and 2 when crimped to the neck of a bottle to form a conventional crown closure of the twist off type;
Figure 4 is a plan view of half a blank for a crown closure in accordance with a preferred embodiment of the present invention;
Figure 5 is a partly sectioned side elevational view of the blank of Figure 4; and
Figure 6 is a partly sectioned side elevational view of the blank of Figures 4 and 5 when crimped to the neck of a bottle to form a crown closure.

Referring to Figures 1 to 3 of the drawings which show a conventional standard closure both in the form of a blank (Figures 1 and 2) and as applied to the
neck of a bottle (Figure 3), the closure blank comprises a circular top portion 10 and a downwardly and then outwardly flared skirt 11. The skirt is provided with a series of twenty-one identical corrugations 12, and the blank is pressed from a disc of tinplate, aluminium or other metal. As shown, a sealing insert 13 of compressible material is received within the closure. Referring to Figure 3, when the blank of Figures 1 and 2 is applied to the neck of a bottle having a series, usually four, lengths or starts of thread 14 formed thereon, the skirt is pressed down with the corrugations being crimped to the thread lengths. The disadvantages of such a closure have been discussed previously.

Referring to Figures 4 to 6 of the drawings, the closure of the preferred embodiment of the present invention also has a circular top portion 15, a downwardly and then outwardly flared skirt 16 and a sealing insert 17. However, unlike conventional closures, the skirt in this preferred embodiment is provided with twenty-eight corrugations 18. Although twenty-eight corrugations are illustrated, twenty-four is in fact preferred, and as stated previously the objective of the invention can be achieved to some degree with as high as thirty-six corrugations, and preferably the number of corrugations chosen should be a multiple of four for a situation where the blank is to be associated with a bottle having four thread lengths 19. When the closure is crimped to the neck of a bottle as shown in Figure 6, the corrugations engage the thread lengths or starts 19, and in this case seven corrugations will engage each thread length or start. Because of the relatively high number of corrugations the spacing between the crests of the corrugations is smaller such that the sharpness of the crests and the edge of the
skirt is less apparent whilst at the same time allowing for relatively secure gripping to achieve the required twist-off torque.

It is to be understood that the invention includes any modifications that would be envisaged by a person skilled in the art and which do not depart from the spirit of the invention, and any such modifications are to be considered within the scope of the invention.
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A blank for a crown closure adapted in use to be twisted from the neck of an associated container, said blank comprising a circular top portion and a downwardly and outwardly flared corrugated skirt, wherein there are at least twenty-four, but not more than thirty-six, corrugations in the skirt, and wherein the number of corrugations is a whole number multiple of the number of thread lengths or starts on the neck of the container with which the closure is to be associated.

2. A blank as claimed in any one of the preceding claims, wherein there are twenty-four corrugations.

3. A blank for a crown closure, substantially as hereinbefore described with reference to Figures 4 and 5 of the accompanying drawings.

4. A crown closure, substantially as hereinbefore described with reference to Figure 6 of the accompanying drawings.

DATED THIS 18th Day of April, 1988

CONTAINERS LIMITED
By Its Patent Attorneys;

CLEMENT HACK & CO.
Fellows Institute of Patent Attorneys of Australia