

(21) Application No: 1320221.3  
 (22) Date of Filing: 15.11.2013

(51) INT CL:  
 B65D 43/02 (2006.01) B65D 45/16 (2006.01)  
 B65D 45/20 (2006.01)

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(58) Field of Search:  
 INT CL **B65D**  
 Other: **EPODOC, WPI**

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(54) Title of the Invention: **Container**  
 Abstract Title: **A composite lid and sealing collar for a container**

(57) This invention relates to a sealing element for a container, to a container including a sealing element 2 and to a method of forming a container including a sealing element 2. The container comprises a main body and a lid 6, the main body of the container including a side wall 18 and at least a part of a top edge 32 of the side wall 18 being provided with a downwardly extending skirt portion 26 on an exterior of the side wall, and the sealing element 2 comprising a mounting portion 40 for engaging with the top edge 32 of the side wall; engagement means 44 configured for repeated sealing engagement with said lid 6 of the container; and a securing portion 42 configured to extend under said skirt portion of the container to secure the sealing element to the side wall. The walls 18 of the container being made from paperboard and having an internal lining of plastic, the securing section are designed to be pivoted into place underneath the skirt by a hinge structure 66. The container can container paint, varnish, woodcare liquid, adhesive, filler and putty.

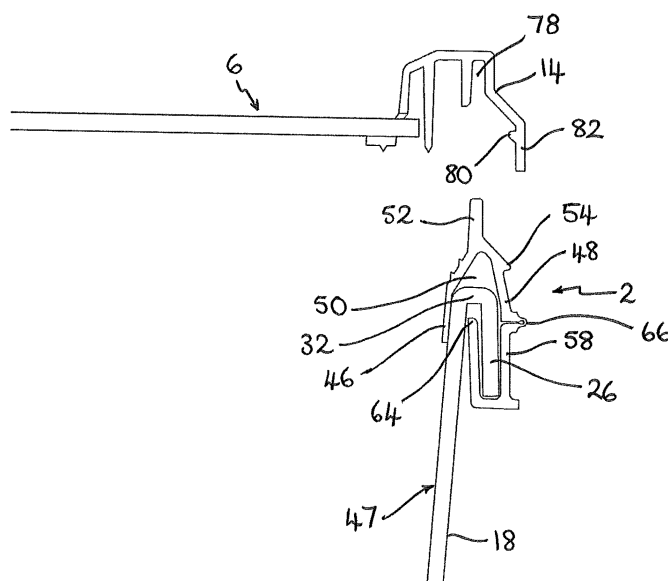


Fig. 5

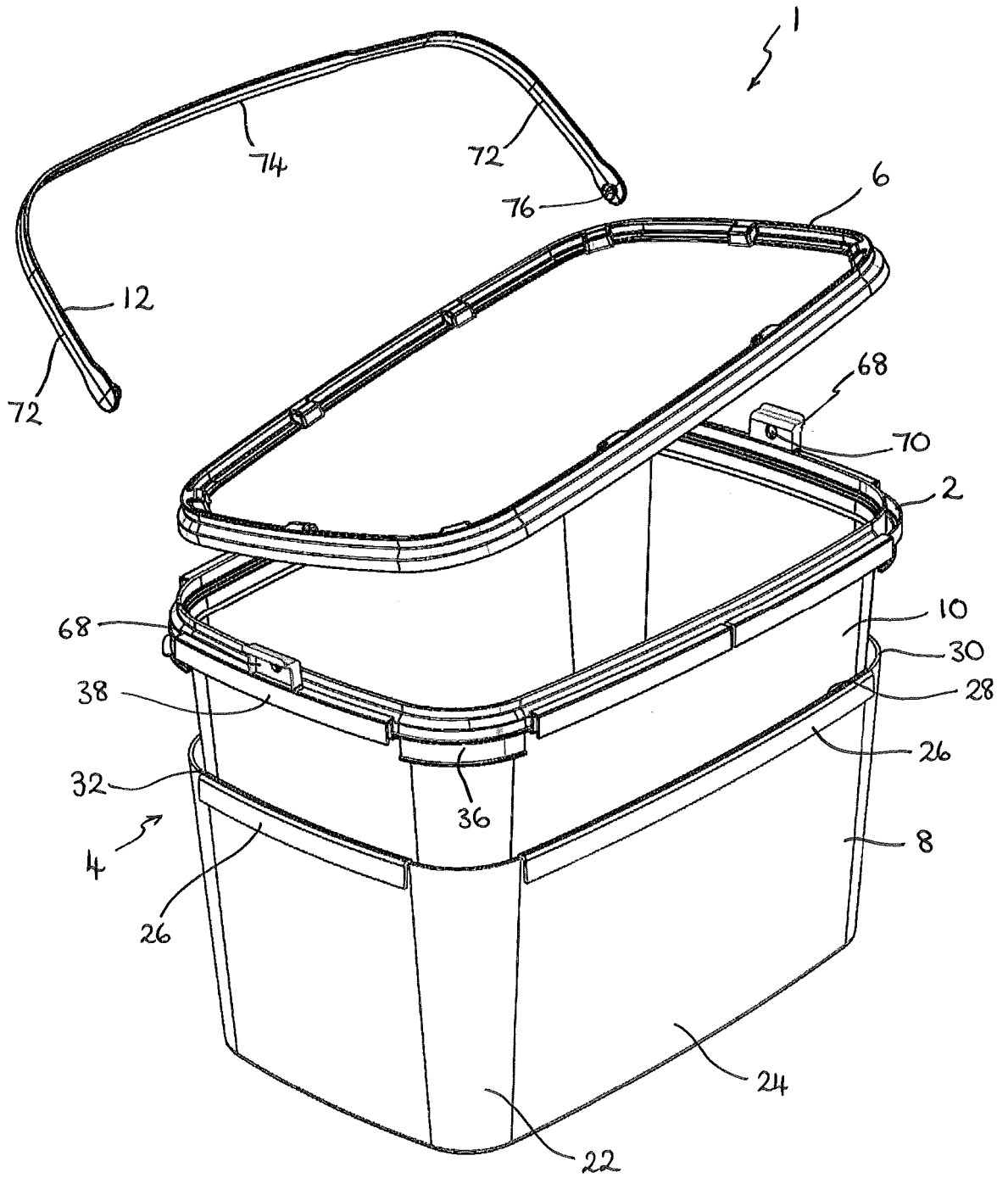


Fig. 1

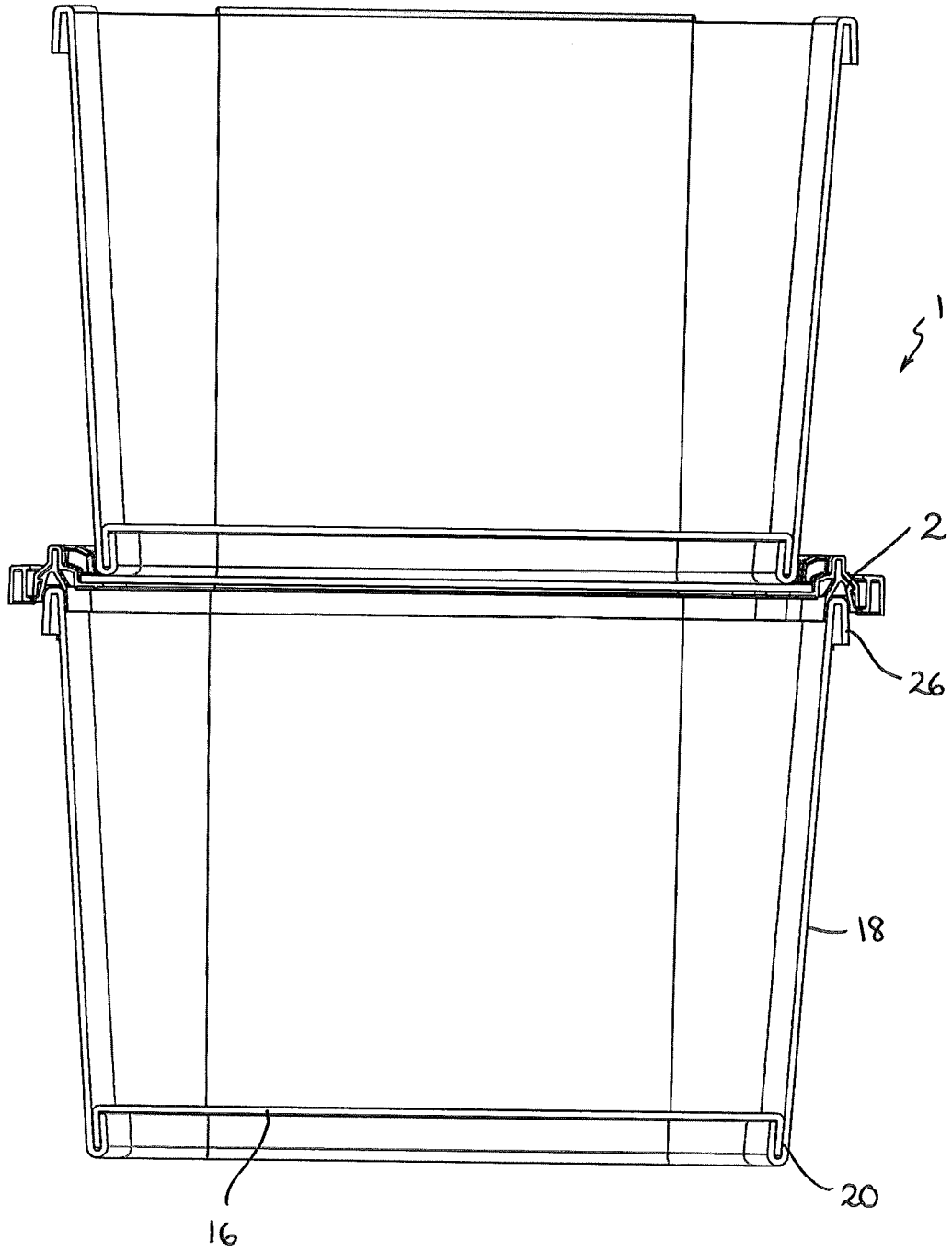


Fig. 2

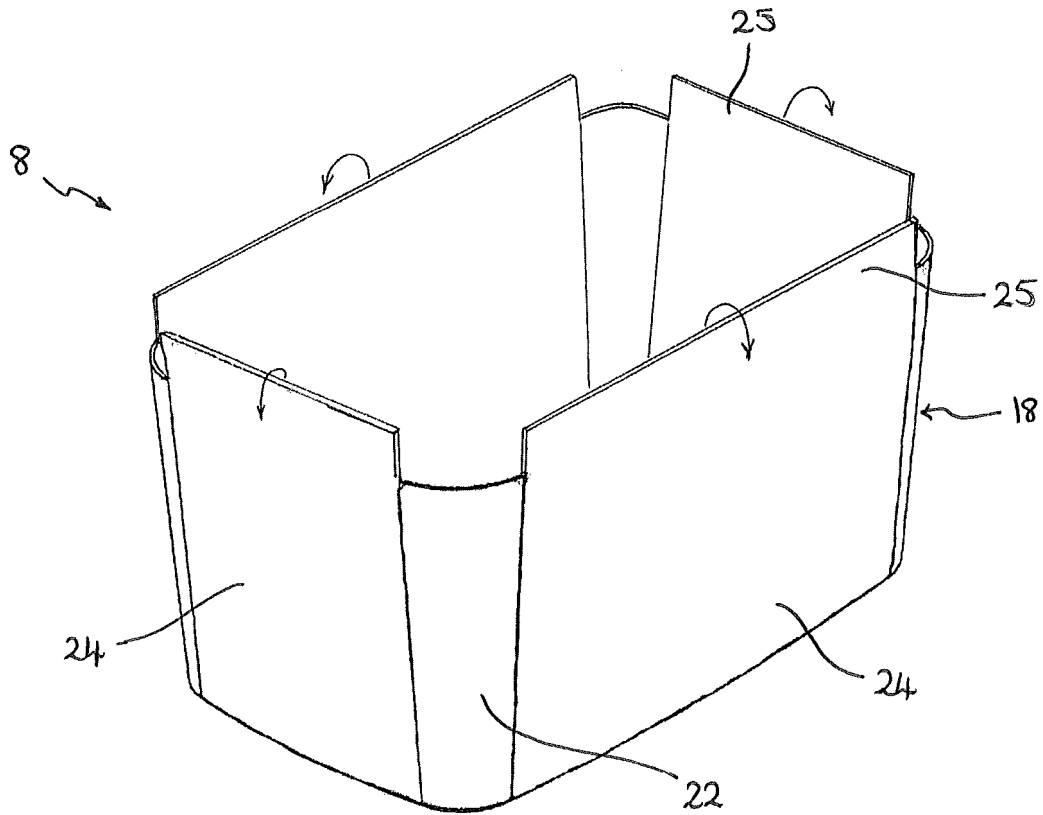


Fig. 3

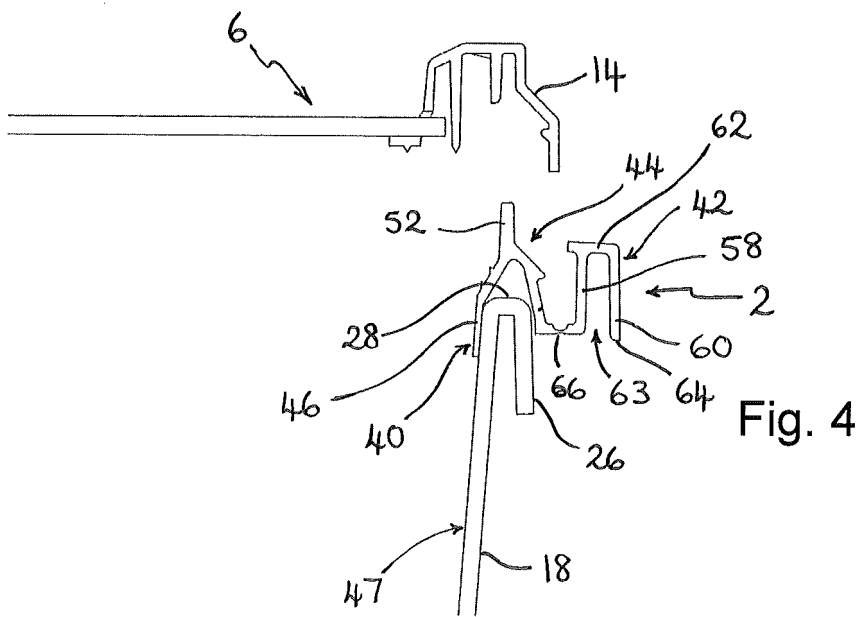


Fig. 4

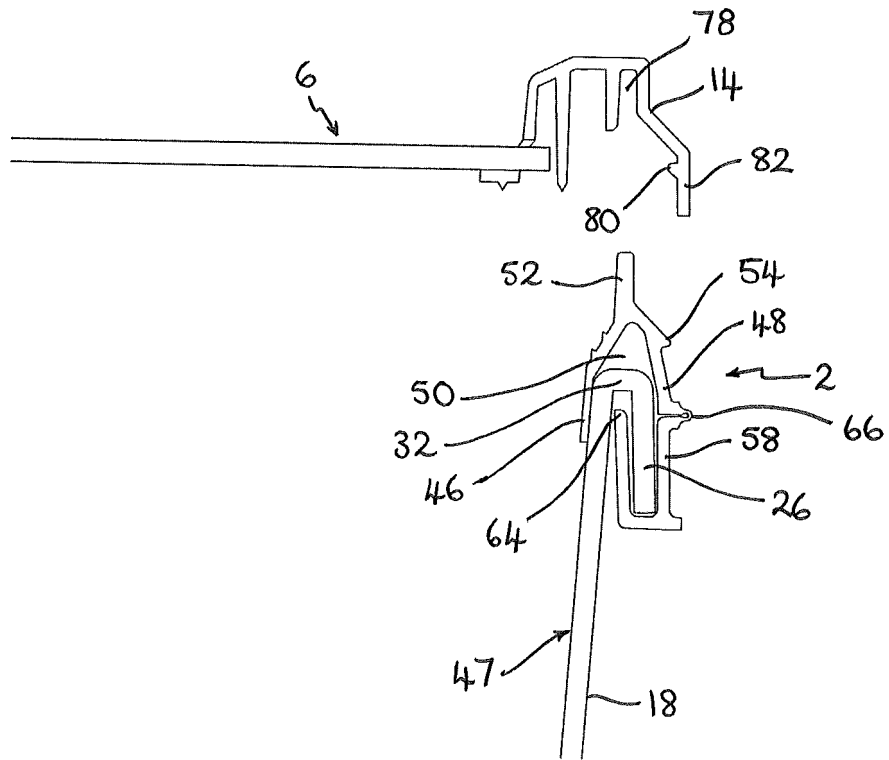


Fig. 5

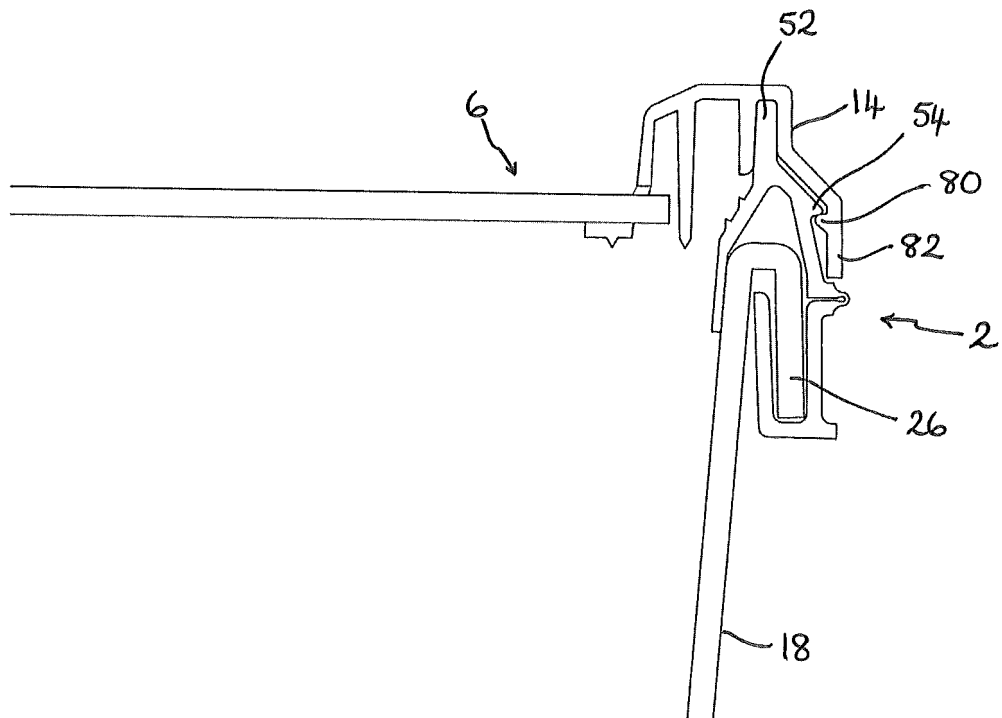


Fig. 6

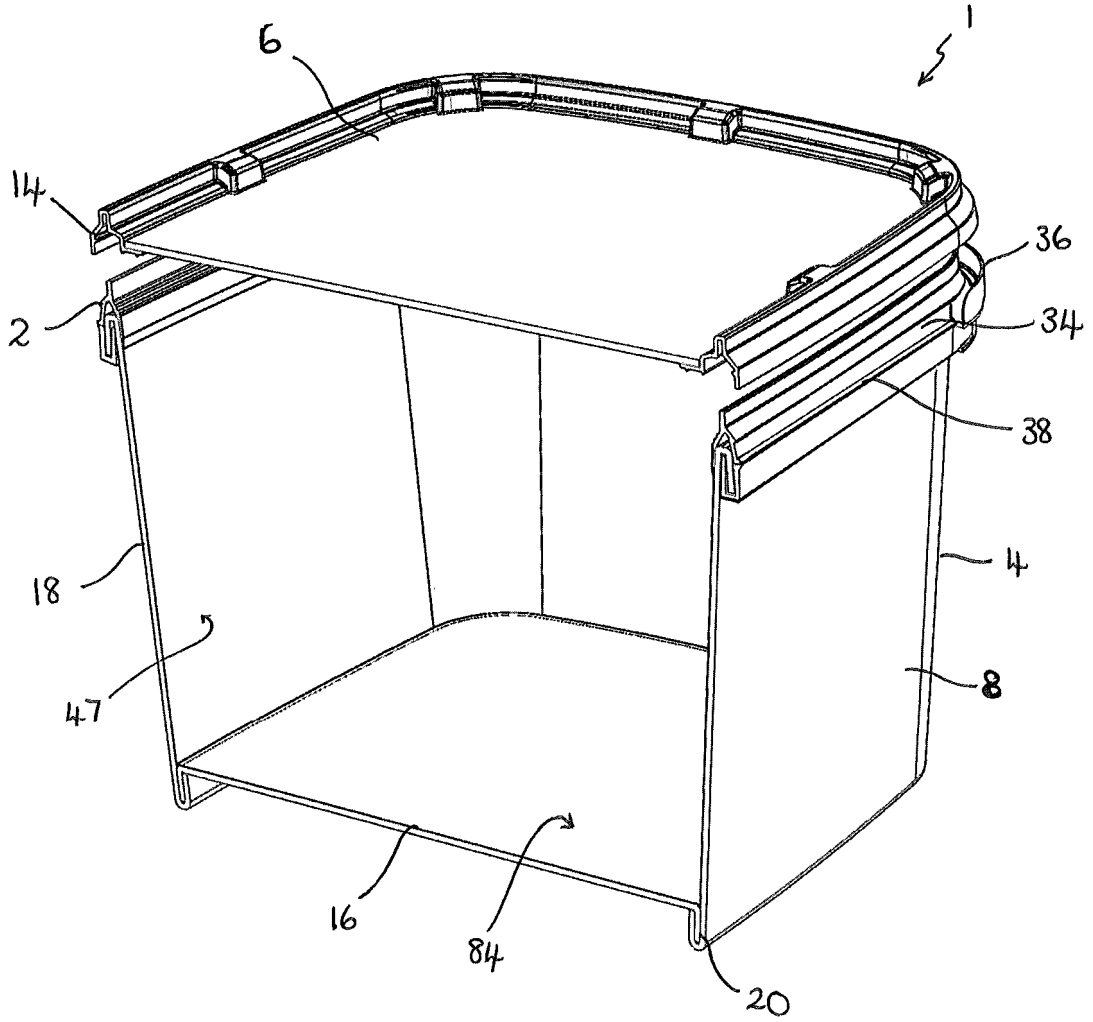


Fig. 7

## Container

### BACKGROUND

5 a. Field of the Invention

This invention relates to a sealing element for a container, to a container including a sealing element and to a method of forming a container including a sealing element.

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b. Related Art

There is a general desire and need to reduce the amount of waste that is produced and a drive to recycle as much as possible. One particular area that is receiving much attention is packaging.

15

Containers for hazardous liquids, such as paints, are difficult to dispose of in an environmentally safe manner and very few containers are recycled due to contamination by the paint, oil or other similar substance.

20

Known paint pots and similar containers filled with environmentally hazardous liquids are typically made from a semi-rigid plastics material or from metal. After use, the pot remains contaminated with paint residue or similar and the entire container must be disposed of in a suitable manner depending on the type of hazardous liquid. Often the containers end up in a specialist landfill. However, the cost associated with dealing with these containers means that it is becoming increasingly difficult to dispose of them in a convenient and cost effective way.

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It is known to provide containers for liquids such as paint comprising a main body formed of paperboard and having an inner plastics lining, such as that described in UK patent application GB 2492887. These containers have the advantage that the contaminated plastics lining can be separated from the paperboard shell for

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disposal once the contents of the container have been used.

Typically, the contents of the container are not used all at one time and it is necessary, therefore, to be able to repeatedly reseal the container and prevent the  
5 liquid contents evaporating or drying between uses. It is often difficult, however, to form a good seal, i.e. a liquid-proof seal, between a container formed of paperboard or laminated paperboard and a lid if it is necessary to be able to repeatedly remove the lid from the container.

10 For example, it is known to seal a paper cup or container with a foil lid that is heat sealed to the rim of the container. These lids can provide a good seal; however, they are designed for single use and once they have been removed, the container cannot be resealed. It is also known to provide plastic lids that snap fit over the rolled rim of a typical paper cup or container, such as those lids that are provided  
15 with a drinking hole for disposable coffee cups. These lids can be repeatedly used to close the container; however, they do not provide a good seal. As such, any liquid contents of the container may leak out through small gaps between the rim of the container and the lid. This is especially problematic near any overlapping seams in the container due to the change in thickness of the side wall and rim in  
20 this region.

It is, therefore, an object of the present invention to provide a sealing element for a container that enables reliable and repeated sealing of the container.

25

## SUMMARY OF THE INVENTION

According to a first aspect of the present invention, there is provided a sealing element for a container, the container comprising a main body and a lid, the main  
30 body of the container including a side wall and at least a part of a top edge of the side wall being provided with a downwardly extending skirt portion on an exterior of the side wall, the sealing element comprising:



- a mounting portion for engaging with the top edge of the side wall;
- engagement means configured for repeated sealing engagement with said lid of the container; and
- a securing portion configured to extend under said skirt portion of the container to secure the sealing element to the side wall.

10 Preferably the mounting portion comprises an inner annular wall arranged, in use, to extend down an interior surface of the container side wall, and an outer annular wall positioned such that, when the sealing element is attached to the container, the top edge of the side wall is seated between the inner and outer annular walls.

15 In some embodiments, in order to fully secure the sealing element to the main body, when the sealing element is attached to the container, a free edge of the securing portion is preferably located between an exterior surface of the container side wall and the skirt portion.

20 To aid in attaching the sealing element to the main body, the securing portion is preferably hingedly connected to the mounting portion. Furthermore, it is desirable if the securing portion is movable between a first position, in which the securing portion is not engaged with the skirt portion, and a second position, in which the securing portion is engaged with the skirt portion and prevents the top edge of the side wall being disengaged from the mounting portion.

25 For ease of manufacture it is preferable if the mounting portion, engagement portion and securing portion are parts of a unitary piece.

Preferably the securing portion comprises an opening configured to receive the skirt portion. The securing portion may, for example, be substantially U-shaped.

30 In preferred embodiments the engagement means comprises a rib for sealing engagement with a part of the lid.

The sealing element preferably further comprises retaining means for retaining the securing portion in engagement with the skirt portion. The retaining means may comprise adhesive tape.

- 5 According to a second aspect of the present invention there is provided a container comprising:
- a shell comprising an opening and a side wall, at least a part of a top edge of the side wall being provided with a downwardly extending skirt portion on an exterior of the side wall;
  - 10 - a lid for covering and sealing the opening of the shell; and
  - a sealing element secured to the side wall of the shell, the sealing element comprising:
    - a mounting portion for engaging with the top edge of the side wall;
    - engagement means configured for repeated sealing engagement
    - 15 with said lid; and
    - a securing portion configured to extend under said skirt portion to secure the sealing element to the side wall.

Typically the shell of the container is made of a paperboard material. In some  
20 embodiments the container further comprises a lining covering internal surfaces of said shell. In particularly preferred embodiments the lining is made of a thin film plastics material, the shell is made of a paperboard material and the sealing element is made of a relatively rigid plastics material.

25 The mounting portion of the sealing element preferably comprises an inner annular wall and an outer annular wall, the top edge of the side wall being seated between the inner and outer annular walls, and the inner annular wall extending down an interior surface of the container side wall. In embodiments comprising a lining, the lining is preferably bonded to the inner annular wall.

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The container may be for storing at least one of paint, varnish, woodcare liquid, adhesive, filler and putty.

According to a third aspect of the present invention there is provided a method of constructing a container, the container comprising:

- 5 - a shell comprising an opening and a side wall, at least a part of a top edge of the side wall being provided with a downwardly extending skirt portion on an exterior of the side wall; and
- a sealing element secured to the side wall of the shell, the sealing element comprising a mounting portion for engaging with the top edge of the side wall, engagement means configured for repeated sealing engagement with a lid of the  
10 container, and a securing portion configured to extend under said skirt portion to secure the sealing element to the side wall,  
the method comprising the steps of:
  - seating the mounting portion of the sealing element over the top edge of the  
side wall; and
  - 15 - engaging the securing portion of the sealing element with the skirt portion.

In preferred embodiments the mounting portion of the sealing element comprises an inner annular wall and the container further comprises a lining for covering internal surfaces of said shell. In these embodiments the method preferably  
20 comprises the steps of seating the mounting portion such that the inner annular wall extends down an interior surface of said container side wall, placing the lining within the shell such that the lining covers internal surfaces of the shell, and bonding the lining to the inner annular wall of the sealing element.

25 Preferably the securing portion is hingedly connected to the mounting portion and, accordingly, the method preferably comprises the step of moving the securing portion between a first position, in which the securing portion is not engaged with the skirt portion, and a second position, in which the securing portion is engaged with the skirt portion and prevents the mounting portion being disengaged from the  
30 top edge of the side wall.

In some preferred embodiments the container further comprises retaining means,

and in these embodiments the method comprises affixing the retaining means to the sealing element to retain the securing portion in engagement with the skirt portion and prevent the sealing element being disengaged from the top edge of the side wall. Preferably the retaining means comprises adhesive tape, and the  
5 method comprises adhering the tape to at least the securing portion of the sealing element to retain the securing portion in engagement with the skirt portion.

### BRIEF DESCRIPTION OF THE DRAWINGS

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The invention will now be further described by way of example only and with reference to the accompanying drawings, in which:

15 Figure 1 is a perspective, exploded view of a container including a sealing element according to a preferred embodiment of the present invention;

Figure 2 is a vertical cross-sectional view of a pair of stacked containers according to the present invention, the containers being only partially assembled;

20

Figure 3 is a perspective view of an outer shell of a main body of the container according to the present invention;

25 Figure 4 is a cross-sectional detail view showing the sealing element of Figure 1 in a partially assembled state;

Figure 5 is a cross-sectional detail view showing the sealing element of Figure 1 in a fully assembled state, with the lid separated from the body of the container;

30

Figure 6 is a cross-sectional detail view showing the sealing element of Figure 1 in a fully assembled state, with the lid connected to the body of the

container; and

Figure 7 is a cut away perspective view of the container of Figure 1 in which the container is fully assembled and the lid has been removed.

5

## DETAILED DESCRIPTION

10 Figures 1, 2 and 7 illustrate a preferred embodiment of a container 1 comprising a sealing element 2 according to the present invention. The container 1 includes a main body 4 and a lid 6. The main body 4 comprises an outer shell 8 made from a paperboard material, an inner lining 10 made from a thin film plastics material and the sealing element 2 made from a plastics material. In this embodiment the container 1 also comprises a handle 12 (shown in Figure 1).

15

The sealing element 2 is designed to engage with a complementary sealing element 14 on the lid 6 in such a way as to enable repeated engagement and disengagement of the lid 6 with the main body 4 of the container 1. This allows the container 1 to be opened, some of the contents to be removed and the  
20 container 1 to be resealed in a reliable manner. Furthermore, the seal that is formed between the sealing element 2 and the lid 4 is such that any liquid contents of the container 1 cannot leak from the container.

25 Figure 1 shows a container 1 according to a preferred embodiment of the present invention. The container 1 is in the form of a paint pot or other similar container that may hold liquid or semi-liquid products, for example paint or varnish. The container may also be used to hold other products such as pastes, e.g. grout, or colloidal suspensions, e.g. hand creams. The container may be designed to contain and store hazardous or non-hazardous products such as paints, cleaning  
30 products, cosmetics and foodstuffs.

The outer shell 8 of the container 1 is made from a suitable paperboard or

cardboard material with no wax or plastics coating or lamination. The shell 8 comprises a base 16 and a side wall 18, the side wall 18 extending fully around the periphery of the base 16 and extending upwards from the base. The base 16 and side wall 18 thereby define an interior volume of the main body 4 of the container 1, as shown most clearly in Figures 2 and 7.

The outer shell 8 is made from sheet paperboard that has been folded and glued to form the final shape of the shell. In particular, a first sheet of paperboard is cut and folded to form the base 16 of the shell 8, and a second sheet of paperboard is cut and folded to form the side wall 18 of the shell 8. The base 16 is adhered to the side wall 18 around a bottom edge 20 of the container 1.

In this example the base 16 has a rounded rectangular shape and the side wall 18 includes curved corner panels 22 and substantially straight side panels 24. As shown in Figure 3, the shell 8 is manufactured such that, initially, the height of each of the side panels 24 is greater than the height of each of the corner panels 22; the corner panels 22 each being of a first height and the side panels 24 each being of a second height. In this way, tab portions 25 of the side panels 24 extend upwards beyond the height of the corner panels 22.

To finish forming the shell 8 of the container 1 the tab portions 25 are folded outwards as indicated by the arrows in Figure 3. Once folded, the tab portions 25 form skirt portions 26 that extend downwards on an exterior side of the side panels 24. The folded or curved top edge 28 of each of the skirt portions 26 preferably lies flush with a top edge 30 of each of the corner panels 22, thereby forming a continuous top edge or rim 32 of the shell 8; however, the top edge 28 of each of the side panels 24 may lie above the top edge 30 of the corner panels 22 as shown in Figure 1.

Although in this embodiment the outer shell 8 is made from a cardboard or paperboard material, in other embodiments the outer shell 8 may be made from a plastics material.

The sealing element or collar 2, shown most clearly in Figures 4 to 7, includes an annular member 34 that attaches to and extends around the rim 32 of the shell 8 of the container 1. Accordingly, in this example, the annular member 34 is  
5 substantially non-circular, having a rounded rectangular shape comprising corner regions 36 and side regions 38.

The sealing element 2 comprises a mounting portion 40, a securing portion 42 and engagement means 44. The mounting portion 40 includes a first, inner annular  
10 wall 46, and a second outer annular wall 48. The inner and outer annular walls 46, 48 are connected at their respective top edges, thereby defining a channel 50 between them that extends fully around the sealing element 2. When the sealing element 2 is secured to the shell 8, the element 2 is seated over the rim 32 of the shell 8 so that inner annular wall 46 extends downwards over an interior surface  
15 47 of the side wall 18 of the shell 8, the second outer annular wall 48 extends downwards around an exterior of the shell 8, and the rim 32 of the shell 8 is positioned within the channel 50.

In this embodiment a first part of the engagement means 44, in the form of a rail  
20 member 52, extends upwards from the mounting portion 40. The rail member 52 extends continuously around the sealing element 2. A second part of the engagement means 44, in the form of a rib or barb 54, projects from an outer surface of the outer annular wall 48 of the mounting portion 40. The engagement means 44 is designed to engage with a complementary sealing element 14 on the  
25 lid 6 of the container 1, as described further below.

As shown most clearly in Figure 5, the arrangement of the rail member 52 and the inner and outer annular walls 46, 48 is such that a vertical cross-section through the mounting portion 40 and engagement means 44 is substantially wishbone-  
30 shaped.

In this example, the securing portion 42 is connected to the outer annular wall 48

of the mounting portion 40. The securing portion 42 is arranged to engage with the skirt portion 26 of the shell 8 to secure the sealing element 2 to the shell 8. The securing portion 42 comprises a substantially U-shaped channel member 56 having two parallel arm members 58, 60 that extend along the length of the channel member 56 and a base member 62 connecting the two arm members 58, 60, such that an opening 63 is defined between the arm members 58, 60. An edge of a first one of the arm members 58 is hingedly connected to the outer annular wall 48 of the mounting portion 40. An edge 64 of the other one of the arm members 60 is a free edge 64.

5

In this embodiment the annular member 34 of the sealing element 2 is a unitary member and the arm member 58 is hingedly connected to the outer annular wall 48 by a natural or live hinge 66 formed in the plastics material of the sealing element 2. In other embodiments the hinged connection may be formed in any other suitable way. In still further embodiments the connection between the mounting portion 40 and the securing portion 42 may be made in any suitable way that enables pivoting or rotation of the securing portion 42 with respect to the mounting portion 40.

10

The hinged connection enables the securing portion 42 of the sealing element 2 to rotate with respect to the mounting portion 40 between a disengaged position, shown most clearly in Figure 4, and an engaged position, shown most clearly in Figure 5. In the disengaged position the securing portion 42 is positioned on an external side of the mounting portion 40, with the channel 50 of the mounting portion 40 and the opening 63 of the securing portion 42 oriented in the same direction. In the engaged position, the securing portion 42 is positioned below the mounting portion 40 so that the channel 50 of the mounting portion 40 and the opening 63 of the securing portion 42 are oriented in opposite directions. Furthermore, in this engaged position the arm member 58 is substantially continuous with the outer annular wall 48 of the mounting portion 40, and the free edge 64 of the arm member 60 is located between the inner and outer annular walls 46, 48.

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To secure the sealing element 2 to the outer shell 8, the mounting portion 40 is pressed over the top edge 28 of each of the skirt portions 26. The securing portion 42 is then moved from the disengaged position to the engaged position  
5 such that the channel member 56 locates around and under the skirt portion. In the engaged position, the skirt portion 26 of the shell 8 is located in the opening 63 of the securing portion 42 and the arm member 60 is located between the side panel 24 and the skirt portion 26 of the shell 8.

10 As shown in Figure 1, separate skirt portions 26 are formed along each of the side panels 24 of the shell 8 and separate securing portions 42 are formed along each of the side regions 38 of the annular member 34. Once all of the securing portions 42 have been moved into their engaged position and engaged with the respective skirt portion 26, the sealing element 2 is then, preferably, fully secured to the shell  
15 8 using suitable retaining means.

In a preferred embodiment the retaining means is in the form of a length of adhesive tape (not shown) that is placed fully around the sealing element 2 in contact with the outer annular wall 48 and all of the arm members 58. With the  
20 tape adhered to the sealing element 2 in this way, the securing portions 42 are then unable to move out of their engaged positions back to the disengaged positions without first removing the retaining means.

In this embodiment, the sealing element 2 further comprises mounting means 68  
25 in the form of a pair of mounting tabs or brackets 68 to which the handle 12 may be attached. As shown in Figure 1, the mounting tabs 68 are positioned centrally along opposing side regions of the annular member 34. Each of the mounting tabs 68 includes a hole 70 for engagement with a part of the handle 12.

30 The handle 12 is substantially U-shaped and is formed of a suitable plastics material. In preferred embodiments the handle 12 is made of the same plastics material as the sealing element 2. The handle 12 includes two arm portions 72,

one extending from either end of a central gripping portion 74. At a free end of each of the arm portions there is an inwardly projecting pin or trunnion 76.

5 When the handle 12 is attached to the main body 4 of the container 1, each of the trunnions 76 locates in a respective one of the holes 70 in the mounting tabs 68 of the sealing element 2. In this way, a pivotal connection is made between the handle 12 and the main body 4 of the container 1.

10 When a user lifts the container 1 by the handle 12, an upward force is exerted on the sealing element 2, which tries to pull the sealing element 2 off the top of the side wall 18 of the shell 8. However, because the securing portion 42 of the sealing element 2 is engaged with the skirt portion 26, and in particular because the arm member 60 is located between the side panel 24 and the skirt portion 26 of the shell 8, the sealing element 2 cannot be pulled upwards relative to the shell  
15 8, and the sealing element remains securely attached to the shell 8.

As shown most clearly in Figures 5 and 6, the lid 6 includes a sealing element 14 that engages with the engagement means 44 of the sealing element 2 when the lid 6 is placed onto the main body 4 of the container. In this example, the sealing  
20 element 14 of the lid 6 comprises a channel portion 78 that is sized to receive the rail member 52, and an inwardly extending projection or barb 80 on an internal surface of an outer side wall 82.

25 When the sealing element 14 of the lid 6 is pressed down over the sealing element 2 of the main body 4, there is a push fit of the rail member 52 into the channel portion 78, and the outer side wall 82 extends down over the outer annular wall 48. The outer side wall 82 is able to resiliently flex such that the barb 80 of the sealing element 14 engages with the barb 54 of the sealing element 2 to retain the lid 6 on the main body 4, as shown in Figure 6.

30

The lid 6 can be removed from the main body 4 by flexing the outer side wall 82 to disengage the barbs 54, 80 and then pulling the lid 6 in an upwards direction to

remove the rail member 52 from the channel portion 78.

Because both the sealing elements 2, 14 are formed from a suitable plastics material, the engagement and seal between the sealing elements 2, 14 can be  
5 repeatedly formed during use of the container 1.

In preferred embodiments of the invention, the main body of the container includes an inner lining 10 made from a thin film plastics material, shown in Figure 1. This lining 10 acts as a barrier layer preventing leaking of the contents of the container  
10 1 through the paperboard shell 8. The barrier properties of the lining 10 may additionally prevent moisture or gasses entering or leaving the container 1 which may spoil or degrade the contents of the container 1.

Considering paints in particular, water-based paints are typically flushed with  
15 formaldehyde, or a similar substance, immediately before being sealed within a container to prevent the growth of fungus or bacteria in the paint. Similarly, it is necessary to prevent the evaporation of volatile additives from oil-based paints. In both these example, therefore, the barrier properties of the lining 10 must be tailored to prevent gas permeation through the lining 10.

20

In this example the lining 10 is made from thin-film polyethylene; however, the lining 10 may be made from any suitable thin-film plastics material. In particular, it may be preferable if the lining 10 is a laminate formed of a number of plastics materials. These laminates may include a gas barrier material such as EVOH that  
25 will, amongst other things, prevent paint odours being released from the container 1. The laminates may additionally or alternatively include a nylon layer which provides tear resistance. Preferably the thickness of the lining 10 is less than 200  $\mu\text{m}$ , and more particularly around 100  $\mu\text{m}$ . The thinner the lining 10 the lower the cost of materials and the less waste that is formed. However, the lining 10  
30 should be thick enough that it does not tear during the manufacturing process or during use of the container 1, e.g. when the contents are being stirred, and in particular during removal of the lining 10 from the shell 8, as described below.

In preferred embodiments, the lining 10 is inserted into and secured to the shell 8 of the container 1 after the sealing element 2 has been secured to the rim 32. In particular, once the mounting portion 40 of the sealing element 2 has been fitted  
5 over the rim 32 of the shell 8, a pre-formed lining 10 that at least substantially conforms to the internal shape of the shell 8 is then positioned within the interior of the shell 8, and subsequently the lining 10 is adhered to the internal surfaces 47 of the side wall of the shell 8, an internal surface 84 of the base 16 of the shell 8 and the inner annular wall 46 of the sealing element 2.

10

Preferably the lining 10 is secured to the shell 8 and the sealing element 2 using a suitable adhesive. The adhesive should have a low peel strength but a moderate shear strength, similar to the adhesive used on Post-It (RTM) Notes. The moderate shear strength of the adhesive means that the thin-film lining 10 will  
15 remain adhered to the internal surfaces 47, 84 of the outer shell 8 during use of the container 1. Additionally, because the containers 1 may be nested during transportation or storage before filling, it is important that, when the nested containers 1 are separated from each other, the lining 10 does not get pulled away from the outer shell 8. In contrast, the low peel strength means that minimal force  
20 is required to peel the lining 10 away from the outer shell 8 after use, in order to dispose of and recycle the lining 10 and the outer shell 8 separately. Preferably the peel strength of the adhesive used to bond the lining 10 to the shell 8 is less than 0.05 N, and more preferably between 0.02 N and 0.04 N.

25

In a preferred embodiment, the adhesive is heat activated. The use of a heat activated adhesive means that the adhesive is only tacky when heated above a certain temperature. In this way, the lining 10 may be inserted into the shell 8 in a non-activated state in which the adhesive is not tacky. Once the lining 10 is correctly positioned within the shell 8, heat is then applied to increase the  
30 temperature and cause activation of the adhesive. The activated adhesive, which is tacky, then adheres the lining 10 to the internal surfaces 47, 84 of the shell 8 and the inner annular wall 46 of the sealing element 2.

In other embodiments the adhesive may be pressure activated. As such, the adhesive only becomes tacky once a sufficient pressure has been applied to it. In yet other embodiments the adhesive may be pressure and heat activated.

5

The advantage of using an activated adhesive is that neither the internal surfaces 84 of the shell 8 nor external surfaces of the lining 10 are tacky when the lining is inserted into the shell 8. This allows the lining 10 to be positioned, and re-

10 In particular it allows the lining to be positioned against the internal surfaces 84 of the shell 8 so that there are no wrinkles or creases in the lining 10.

In preferred embodiments the lining 10 is more securely adhered or bonded to the sealing element 2 than to the internal surfaces 84 of the shell 8. More securely  
15 bonding the lining 10 to the sealing element 2 enables the sealing element 2 and the lining 10 to be separated from the shell 8 without the lining 10 separating from the sealing element 2, as described further below.

20 Because the lining 10 is secured to the sealing element 2, a complete layer of plastics material is provided covering the internal surfaces 47, 84 of the shell 8 and extending over the rim 32 of the shell 8, thereby protecting the paperboard shell 8 from the contents of the container 1.

25 Once the lining 10 has been secured in the shell 8, the securing portions 42 of the sealing element 2 are engaged with the skirt portions 26 and the retaining means is placed around the sealing element 2, as described above. In other embodiments, the securing portions 42 of the sealing element 2 may be engaged with the skirt portions 26 before the lining 10 is secured within the shell 8.

30 When a user wishes to dispose of the container 1, he or she can separate the plastics sealing element 2 and lining 10 from the paperboard shell 8 to enable these to be disposed of or recycled separately. To do this a user firstly removes

the retaining means from around the sealing element 2. The securing portions 42 are then unclipped from the skirt portions 26 and the sealing element 2 is pulled upwards to disengage the rim 32 of the shell 8 from the mounting portion 40. The relatively low peel strength of the adhesive used to adhere the lining 10 to the  
5 internal surfaces 47, 84 of the shell 8 allows the lining 10 to be separated from the shell 8 as the sealing element 2 is removed, such that the sealing element 2 and lining 10 are removed together as a single piece. This allows the plastics and paperboard parts of the container 1 to be disposed of or recycled separately.

10 In some embodiments the outer shell is made from a plastics material and an inner lining is provided to prevent the contents of the container 1 from contaminating the shell. In these embodiments the construction of the container according to the present invention enables the sealing element and lining, which have been contaminated, to be easily separated from the uncontaminated shell of the  
15 container.

In alternative embodiments the sealing element 2 and the lining 10 may be removed from the shell 8 separately.

20 The present invention, therefore, provides a sealing element for a container, a container including a sealing element and a method of forming a container including a sealing element that enables the container to be repeatedly resealed and further enables plastics and paperboard parts, or contaminated and uncontaminated parts, of the container to be easily separated for disposal or  
25 recycling.

## CLAIMS

1. A sealing element for a container, the container comprising a main body and a lid, the main body of the container including a side wall and at least a part of a top edge of the side wall being provided with a downwardly extending skirt portion on an exterior of the side wall, the sealing element comprising:
- 5
- a mounting portion for engaging with the top edge of the side wall;
  - engagement means configured for repeated sealing engagement with said lid of the container; and
- 10
- a securing portion configured to extend under said skirt portion of the container to secure the sealing element to the side wall.
2. A sealing element as claimed in Claim 1, wherein the mounting portion comprises:
- 15
- an inner annular wall arranged, in use, to extend down an interior surface of said container side wall; and
  - an outer annular wall positioned, such that, when the sealing element is attached to said container, the top edge of said side wall is seated between the inner and outer annular walls.
- 20
3. A sealing element as claimed in Claim 1 or Claim 2, wherein, when the sealing element is attached to said container, a free edge of the securing portion is located between an exterior surface of the container side wall and said skirt portion.
- 25
4. A sealing element as claimed in any preceding claim, wherein the securing portion is hingedly connected to the mounting portion.
5. A sealing element as claimed in Claim 4, wherein the securing portion is
- 30
- movable between a first position, in which the securing portion is not engaged with the skirt portion, and a second position, in which the securing portion is engaged with the skirt portion and prevents the top edge of the side wall being disengaged

from the mounting portion.

6. A sealing element as claimed in any preceding claim, wherein the mounting portion, engagement portion and securing portion are parts of a unitary piece.

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7. A sealing element as claimed in any preceding claim, wherein the securing portion comprises an opening configured to receive the skirt portion.

8. A sealing element as claimed in any preceding claim, wherein the engagement means comprises a rib for sealing engagement with a part of the lid.

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9. A sealing element as claimed in any preceding claim, wherein the sealing element further comprises retaining means for retaining the securing portion in engagement with the skirt portion.

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10. A container comprising:

- a shell comprising an opening and a side wall, at least a part of a top edge of the side wall being provided with a downwardly extending skirt portion on an exterior of the side wall;

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- a lid for covering and sealing the opening of the shell; and

- a sealing element secured to the side wall of the shell, the sealing element comprising:

- a mounting portion for engaging with the top edge of the side wall;

- engagement means configured for repeated sealing engagement with said lid; and

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- a securing portion configured to extend under said skirt portion to secure the sealing element to the side wall.

11. A container as claimed in Claim 10, wherein the shell of the container is made of a paperboard material.

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12. A container as claimed in Claim 10 or Claim 11, wherein the container



further comprises a lining covering internal surfaces of said shell.

13. A container as claimed in Claim 12, wherein the lining is made of a thin film plastics material, the shell is made of a paperboard material and the sealing  
5 element is made of a relatively rigid plastics material.

14. A container as claimed in Claim 12 or Claim 13, wherein the mounting  
portion of the sealing element comprises an inner annular wall and an outer  
annular wall, the top edge of said side wall being seated between the inner and  
10 outer annular walls, and the inner annular wall extending down an interior surface  
of said container side wall, and wherein the lining is bonded to the inner annular  
wall.

15. A container as claimed in any one of Claims 10 to 14, wherein the container  
15 is for storing at least one of paint, varnish, woodcare liquid, adhesive, filler and  
putty.

16. A method of constructing a container, the container comprising:  
- a shell comprising an opening and a side wall, at least a part of a top edge  
20 of the side wall being provided with a downwardly extending skirt portion on an  
exterior of the side wall; and  
- a sealing element secured to the side wall of the shell, the sealing element  
comprising a mounting portion for engaging with the top edge of the side wall,  
engagement means configured for repeated sealing engagement with a lid of the  
25 container, and a securing portion configured to extend under said skirt portion to  
secure the sealing element to the side wall,  
the method comprising the steps of:  
- seating the mounting portion of the sealing element over the top edge of the  
side wall; and  
30 - engaging the securing portion of the sealing element with the skirt portion.

17. A method of constructing a container as claimed in Claim 16, wherein the

mounting portion of the sealing element comprises an inner annular wall and the container further comprises a lining for covering internal surfaces of said shell, and wherein the method comprises:

- seating the mounting portion such that the inner annular wall extends down  
5 an interior surface of said container side wall;
- placing the lining within the shell such that the lining covers internal surfaces of the shell; and;
- bonding the lining to the inner annular wall of the sealing element.

10 18. A method of constructing a container as claimed in Claim 16 or Claim 17, wherein the securing portion is hingedly connected to the mounting portion and the method comprises moving the securing portion between a first position, in which the securing portion is not engaged with the skirt portion, and a second position, in  
15 mounting portion being disengaged from the top edge of the side wall.

19. A method of constructing a container as claimed in Claim 18, wherein the container further comprises retaining means, and wherein the method comprises affixing the retaining means to the sealing element to retain the securing portion in  
20 engagement with the skirt portion and prevent the sealing element being disengaged from the top edge of the side wall.

20. A method of constructing a container as claimed in Claim 19, wherein the retaining means comprises adhesive tape, and wherein the method comprises  
25 adhering said tape to at least the securing portion of the sealing element to retain the securing portion in engagement with the skirt portion.

21. A sealing element for a container substantially as herein described with reference to or as shown in the accompanying drawings.

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22. A container substantially as herein described with reference to or as shown in Figures 1, 2 and 7.

23. A method of constructing a container substantially as herein described with reference to the accompanying drawings.



**Application No:** GB1320221.3

**Examiner:** Adrian French

**Claims searched:** 1-23

**Date of search:** 21 March 2014

## Patents Act 1977: Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X,Y	X:1-3, 6-10, 15, 16; Y: 4, 5, 17, 18	WO2007/065232 A ALVARES, see whole document
X,Y	X:1, 2, 6-11, 14, 15, 16; Y: 4, 5, 12, 13, 17, 18	US2006/261067 A LETICA, see whole document
X,Y	X:1, 6, 8-11, 16; Y: 4, 5, 12-15, 18	WO2006/089432 A WITT, see whole document, especially figure 9
Y	12-15, 17	WO2013/036820 A SINN, see whole document
Y	4, 5, 18	WO2010/150985 A KOO see whole document

### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

Worldwide search of patent documents classified in the following areas of the IPC

B65D

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI



Intellectual  
Property  
Office

**International Classification:**

<b>Subclass</b>	<b>Subgroup</b>	<b>Valid From</b>
B65D	0043/02	01/01/2006
B65D	0045/16	01/01/2006
B65D	0045/20	01/01/2006