(54) Title: CONTAINER WITH PEEL-OFF COVER

(57) Abstract: A container (10) comprising a plurality of side walls (12) arranged in a polygonal shape, a bottom surface (14) and a top surface (16) extending from the side walls, a peel-off cover (18) removable from the top surface (16) along a shear line (20), and a handle (24) attached to the container.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
CONTAINER WITH PEEL-OFF COVER

FIELD OF THE INVENTION

The present invention relates generally to non-round containers, and particularly to a non-round container with a peel-off cover.

BACKGROUND OF THE INVENTION

Paints, varnishes, whitewash, epoxies and other single, dual- or multi-component substances generally are provided in round cans with a removable cover. The cover is typically round and press-fit onto the top of the can. The press fit forms a seal to prevent the contents of the can from spilling or drying out. In order to gain access to the contents, one generally pries open the cover with a flat-blade tool, e.g., a screwdriver. After opening, one may introduce a mixing tool into the contents and thoroughly mix the contents before use. Once the contents are mixed, one usually carries the can to the application site, pours the contents to an application device (e.g., air/airless sprayer, floor spreader, etc.), or uses the contents directly from the can (e.g., brush, trowel, etc.).

However, existing round cans may present some problems. Transporting or storing cans naturally necessitates placing the cans one next to the other. It is readily appreciated that rectangular cans may be placed side-by-side with virtually no wasted space therebetween. On the other hand, round cans placed adjacent one another wastes a lot of valuable space. Nevertheless, round cans are used to store such abovementioned substances largely due to the need for a full top opening, which enables proper mixing of the contents before use. In practice, rectangular cans are normally placed right next to each other, with a small carry handle at the middle of the top surface, and a filling/pouring hole near one of the corners. A press-fit or screw-on lid normally seals the filling/pouring hole.

However, a rectangular can may not provide the same degree of “open-mix-carry” qualities of a round can, such as for the following reasons:

a. Providing a lid on the entire top surface leaves no room for the handle, which eliminates the ability to easily carry the mixed can to the place of its use.

b. Providing a lid on the entire top surface cannot provide the same degree of sealing, largely due to bowing or bending of the sides of the rectangular can (such bending does not occur with a round can).

c. Providing a side-hooked handle (like in round cans) will cause the rectangular cans to stand apart, thus wasting valuable space (in round cans the side handle fits easily into the voids between the cans).
Due in part to the above reasons, rectangular cans are used mainly for storing substances, which do not require mixing before use, thus losing a significant potential market.

SUMMARY OF THE INVENTION

The present invention seeks to provide improved non-round containers, which may be used to store any kind of substance, such as those which require thorough mixing before use. A handle may be provided that does not jut out beyond the perimeter of the container, and which may be used to carry the container before and after it has been opened. The container may be made of any suitable material, such as but not limited to, metal, plastic, or cardboard.

There is thus provided in accordance with an embodiment of the present invention a container comprising a plurality of side walls arranged in a polygonal shape, a bottom surface and a top surface extending from the side walls, a peel-off cover removable from the top surface along a shear line, and a handle attached to the container. The handle may be made of any suitable material, such as but not limited to, metal or plastic.

In accordance with an embodiment of the present invention the handle may be outside the area bounded by the shear line. The handle may not significantly jut beyond an outer contour of the container.

Still further in accordance with an embodiment of the present invention at least a portion of the shear line may have a polygonal shape.

In accordance with an embodiment of the present invention the polygonal shape may comprise rounded corners.

In accordance with an embodiment of the present invention the polygonal shape may comprise a corner near a corner of the top surface.

In accordance with an embodiment of the present invention the polygonal shape may comprise a corner near a side of the top surface.

Still further in accordance with an embodiment of the present invention the shear line may comprise an arcuate portion and a polygonal shape extending from and continuous with the arcuate portion.

In accordance with an embodiment of the present invention the shear line may be arranged with respect to the top surface, such that after removal of the cover, a remaining edge of the shear line may be in a non-injurious position.
Further in accordance with an embodiment of the present invention a fill hole is formed on the top surface. The fill hole may be formed within or outside of the area bounded by the shear line.

Still further in accordance with an embodiment of the present invention the handle is pivotally attached to the container.

In accordance with an embodiment of the present invention the handle may be shaped such that when laying flat on the top surface the handle lies outside the area bounded by the shear line.

Further in accordance with an embodiment of the present invention the shear line may be located below, above, or flush with the top surface.

In accordance with an embodiment of the present invention the cover may extend from the top surface by means of a fold, and the shear line is located on the fold.

In accordance with an embodiment of the present invention the cover may extend from the top surface by means of an adhesive connection, and the shear line is located at the adhesive.

Further in accordance with an embodiment of the present invention a protective rim may be formed on or below the top surface adjacent the shear line.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated more fully from the following detailed description taken in conjunction with the drawings in which:

Fig. 1 is a simplified illustration of a container, constructed and operative in accordance with an embodiment of the present invention;

Figs. 2A, 2B and 3 are simplified top-view illustrations of a container, constructed and operative in accordance with three different embodiments of the present invention; and

Figs. 4A, 4B, 4C and 4D, are simplified illustrations of an interface between a peel-off cover and the top surface of the container of Figs. 1-3, in accordance with different embodiments of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference is now made to Fig. 1, which illustrates a container 10, constructed and operative in accordance with an embodiment of the present invention.

Container 10 may comprise any polygonal configuration (i.e., any finite number of sides at any angles). In the illustrated embodiment, there are four side walls 12, wherein adjacent side walls 12 are generally perpendicular to one another. Container 10 may be rectangular or square, for example, with round corners. (Alternatively, container 10 may be
hexagonal or any other polygonal shape.) A bottom surface 14 and a top surface 16 extend from side walls 12, and may be sealed thereto by any suitable method of manufacture.

Top surface 16 may comprise a peel-off cover 18 which is removable along a shear line 20. For example, cover 18 may be removed from top surface 16 by pulling upwards on a ring pull opener 22 and shearing cover 18 off top surface 16 along shear line 20. In another example, shear line 20 may comprise an adhesive connection between cover 18 and top surface 16, and cover 18 may be removed from top surface 16 by breaking the adhesive bond and pulling cover 18 off top surface 16. In the embodiment of Fig. 1, shear line 20 is generally circular, but other shapes are also possible, examples of which are described hereinbelow.

In general, shear line 20 may be formed on a structure which may be mechanically broken, such as but not limited to, mechanically shearing, stress cracking and rupturing, for example (a peel-off sheet metal cover is such an example). Alternatively, shear line 20 may be formed on adhesively bonded structures, wherein the adhesive bond may be broken or otherwise disrupted or destroyed along the shear line 20 (a peel-off adhesively bonded foil cover on an instant soup mix container is such an example).

A handle 24 may be attached to container 10. Handle 24 may be pivotally attached to top surface 16, wherein below top surface 16, handle 24 does not significantly jut beyond an outer contour of container 10. In the illustrated embodiment, handle 24 does not significantly jut beyond an outer contour of container 10 even above top surface 16. Handle 24 may be shaped, such that when laying flat on top surface 16, handle 24 lies outside the area bounded by shear line 20, as seen in Fig. 1.

Handle 24 may be pivotally attached to two opposite corners of the sidewalls of container 10. Alternatively, handle 24 may be pivotally attached to two opposite sidewalls of container 10.

These are just some possibilities of attaching handle 24, and the invention is not limited to these examples.

A fill/pour hole (26 or 28) may be formed on top surface 16. It is noted that throughout the specification and claims, the term fill hole encompasses both a fill hole and a pour hole. In the embodiment of Fig. 1, fill hole 26 is outside the area bounded by shear line 20, and fill hole 28 is within the area bounded by shear line 20. The fill/pour holes may be identical to fill holes in use in existing cans.

After removal of cover 18, the container 10 is open. One may introduce a mixing tool into the contents and thoroughly mix the contents before use. One may discard
container 10 after it has been opened. Alternatively, an external cover may be provided, which is described more in detail with reference to Fig. 2A.

Reference is now made to Fig. 2A, which illustrates a container 29, constructed and operative in accordance with another embodiment of the present invention, and which is a variation of container 10 in Fig. 1. In the embodiment of Fig. 2A, at least a portion of shear line 20 has a polygonal shape 30, such as but not limited to, a triangular shape with a corner 32, which may be rounded. In the illustrated embodiment, shear line 20 comprises an arcuate portion 34 and the polygonal shape 30 extends from and is continuous with arcuate portion 34. The corner 32 of the polygonal shape 30, which may be rounded, may be near a corner 36 of top surface 16. The contents of container 29 may be poured from the corner 32 of the polygonal shape 30.

An external cover 52 (illustrated top-side up in Fig. 2A) may be provided that may be placed over the top of container 10 to seal the container after use. External cover 52 may be fitted over the outer contour of top surface 16 of container 29. Alternatively, an external press fit cover 53 (illustrated bottom-side up in Fig. 2A) may be provided that may be placed into the opening created after removing cover 18 from shear line 20, in order to seal the container 10 after use. External press fit cover 53 may accordingly have an inner ridge 55 configured to that of shear line 20. External cover 52 or 53 may or may not cover handle 24. For example, as shown with external cover 52, the cover may be formed with cutouts 73 that accommodate the pivots for handle 24 and allow handle 24 to lie over the external cover. External covers 52 or 53 may be made of any suitable material, such as but not limited to, metal, plastic or cardboard.

Reference is now made to Fig. 2B, which illustrates a container 59, constructed and operative in accordance with another embodiment of the present invention, and which is a variation of container 10 in Fig. 1. In the embodiment of Fig. 2B, at least a portion of shear line 20 has a polygonal shape 30, such as but not limited to, a triangular shape with a corner 32, which may be rounded. In the illustrated embodiment, shear line 20 comprises an arcuate portion 34 and the polygonal shape 30 extends from and is continuous with arcuate portion 34. The corner 32 of the polygonal shape 30 may be near a side 37 of top surface 16. The contents of container 29 may be poured from the corner 32 of the polygonal shape 30.

Reference is now made to Fig. 3, which illustrates a container 39, constructed and operative in accordance with yet another embodiment of the present invention, and which is another variation of container 10 in Fig 1. In the embodiment of Fig. 3, shear line 20 again
comprises a polygonal shape 40, wherein the polygonal shape 40 comprises at least a portion of a rhombus having corners 42, which may be rounded. Corners 42 of the polygonal shape 40 may be near corner 36 of top surface 16. The contents of container 39 may be poured from either corner 42 of the polygonal shape 40. In this embodiment, fill hole 26 is within the area bounded by shear line 20.

Reference is now made to Figs. 4A, 4B, 4C and 4D, which illustrate four possible locations of shear line 20 in the containers of the invention. It is emphasized that the invention is not limited to these locations. In these embodiments, shear line 20 is arranged with respect to top surface 16 such that after removal of cover 18, a remaining edge of shear line 20 is in a non-injurious position. In both of the embodiments illustrated in Figs. 4A and 4B, cover 18 extends from top surface 16 by means of a fold 48, and shear line 20 is located on fold 48. In Fig. 4A, shear line 20 is flush with top surface 16. In Fig. 4B, shear line 20 is located below top surface 16. In Fig. 4C, shear line 20 is flush with top surface 16 and a protective rim 50 may be formed on (shown in a solid line) or below (shown in a broken line) top surface 16. Protective rim 50 may help prevent accidental injury from a sharp edge after removal of cover 18. Protective rim 50 may be made of any suitable material, such as but not limited to, plastic.

As mentioned hereinabove, shear line 20 may be formed on a structure which may be mechanically broken, such as but not limited to, mechanically shearing, stress cracking and rupturing, for example. Alternatively, shear line 20 may be formed on adhesively bonded structures, wherein the adhesive bond may be broken or otherwise disrupted or destroyed along the shear line 20. Fig. 4D illustrates the latter example, wherein shear line 20 is located above top surface 16 by means of an adhesive 51, of any suitable kind. The protective rim 50 may be formed below top surface 16, adjacent to adhesive 51 and shear line 20. Protective rim 50 may help prevent accidental injury from a sharp edge after removal of cover 18. Protective rim 50 may be made of any suitable material, such as but not limited to, plastic.

It will be appreciated by person skilled in the art that the present invention is not limited by what has been particularly shown and described herein above. Rather the scope of the present invention is defined only by the claims that follow:
What is claimed is:

1. A container comprising:
   a plurality of side walls arranged in a polygonal shape, a bottom surface and a top surface extending from said side walls;
   a peel-off cover removable from said top surface along a shear line; and
   a handle attached to said container.

2. The container according to claim 1, wherein said handle is outside said an area bounded by said shear line.

3. The container according to claim 1, wherein said handle does not significantly jut beyond an outer contour of said container.

4. The container according to claim 1, wherein said shear line is at least partially arcuate.

5. The container according to claim 1, wherein at least a portion of said shear line has a polygonal shape.

6. The container according to claim 5, wherein said polygonal shape comprises a corner near a corner of said top surface.

7. The container according to claim 5, wherein said polygonal shape comprises a corner near a side of said top surface.

8. The container according to claim 1, wherein said shear line comprises an arcuate portion and a polygonal shape extending from and continuous with said arcuate portion.

9. The container according to claim 1, wherein a fill hole is formed on said top surface.

10. The container according to claim 9, wherein said fill hole is formed within an area bounded by said shear line.

11. The container according to claim 9, wherein said fill hole is formed outside an area bounded by said shear line.

12. The container according to claim 1, wherein said handle is pivotally attached to said container.

13. The container according to claim 12, wherein said handle is shaped such that when laying flat on said top surface said handle lies outside an area bounded by said shear line.

14. The container according to claim 1, wherein said shear line is arranged with respect to said top surface, such that after removal of said cover, a remaining edge of said shear line is in a non-injurious position.
15. The container according to claim 1, wherein said cover extends from said top surface by means of a fold, and said shear line is located on said fold.

16. The container according to claim 1, wherein a protective rim is formed on said top surface adjacent said shear line.

17. The container according to claim 1, wherein said cover extends from said top surface by means of an adhesive, and said shear line is located at the adhesive.

18. The container according to claim 1, further comprising an external cover adapted to seal the container after it has been opened.

19. The container according to claim 18, wherein said external cover is adapted to be fitted over the outer contour of said top surface of said container.

20. The container according to claim 18, wherein said external cover is adapted to be placed into an opening created after removing said peel-off cover from said shear line.
**DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>GB 876 816 A (COAL INDUSTRY PATENTS LTD) 6 September 1961 (1961-09-06)</td>
<td>1-4,14</td>
</tr>
<tr>
<td></td>
<td>the whole document</td>
<td>5-8</td>
</tr>
<tr>
<td>Y</td>
<td>DE 38 18 684 A (ELOPLAST GMBH) 7 December 1989 (1989-12-07) figures</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>FR 2 439 136 A (BERG JACOB KG) 16 May 1980 (1980-05-16) figures</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>DE 11 45 040 B (KELSEY HAYES CO) 7 March 1963 (1963-03-07)</td>
<td>8</td>
</tr>
<tr>
<td>Y</td>
<td>the whole document</td>
<td>5-8</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

- Special categories of cited documents:
  - *A* document defining the general state of the art which is not considered to be of particular relevance
  - *E* earlier document but published on or after the international filing date
  - *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  - *O* document referring to an oral disclosure, use, exhibition or other means
  - *P* document published prior to the international filing date but later than the priority date claimed
  - *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
  - *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
  - *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to the person skilled in the art
  - *Z* document member of the same patent family

**Date of the actual completion of the international search**: 23 February 2004

**Date of mailing of the international search report**: 01/03/2004

Name and mailing address of the ISA:

European Patent Office, P.B. 5818 Patentlaan 2
NL – 2280 HV Rijswijk
Tel. (+31-70) 340-3040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer:

Fournier, J
<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>
| A        | FR 769 780 A (TRANSITORIA AB)  
1 September 1934 (1934-09-01) figures | 1                    |
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB 876816</td>
<td>A 06-09-1961</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>DE 3818684</td>
<td>07-12-1989</td>
<td>DE 3818684 A1</td>
<td>07-12-1989</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 8807185 U1</td>
<td>18-08-1988</td>
</tr>
<tr>
<td>DE 1145040</td>
<td>B 07-03-1963</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>FR 769780</td>
<td>A 01-09-1934</td>
<td>NONE</td>
<td></td>
</tr>
</tbody>
</table>