

CONTAINER

FIELD OF THE INVENTION

5 [0001] This invention relates to a container, and more particularly to containers which can contain food, which are easy to handle, store and use, and which are convenient and hygienic.

BACKGROUND OF THE INVENTION

10

[0002] Containers are used widely in many areas, for example, in packaging food, particularly "take-out" food including fried, baked and grilled products. Some advantages of such containers are keeping food warm; convenience in delivery and eating, and giving the user an option of reheating the food in a microwave oven at a later time.

15 Traditionally, many such containers are cut out from a flat sheet into a blank, which can then be folded manually or automatically into a container-like configuration.

[0003] In many cases, a cover has a flange, tab or a flap which engages a slot or a groove on a lower portion of the container to close the container. Assembly of a
20 container by folding the cover to connect to the rest of the container can be relatively tedious and delicate operational step. Such steps are usually hurried through, resulting in an improper closure of the cover, which can lead to leakage and food contamination, especially when stacked and during transportation. Further under compression, known

containers have difficulty keeping shape and stability. In some instances a rubber band and/or tape is further required to secure the cover to the rest of the container. This is not especially efficient or cost effective, and some such elements may not be usable for microwaveable applications where heat and steam can cause separation of the known
5 tab at known locations from the corresponding slot, resulting in contamination. It would be desirable to provide a container which reduces these known problems.

SUMMARY OF THE INVENTION

10 [0004] A container with ease of moving from an open position to a closed position is described below. A cover of the container can be simply shut in a one-step operation and lifted in a one-step operation. The cover is releasably secured when in a closed position by the cooperation of one or more tabs and their corresponding slots. Such containers when stacked and transported are strong enough to keep the shape and
15 stability of the container. The new containers disclosed herein are unique in construction, have an improved exterior look and appearance, and are superior to known containers.

[0005] In accordance with a first aspect, a container movable from an open position to a
20 closed position comprises a base, a front side wall, a rear side wall, at least one more side wall, a cover extending from the rear side wall, and a flap extending from the cover, with a flap axis positioned between the cover and the flap. The cover is pivotable with respect to the rear side wall from an open condition to a closed condition, one of the

front side wall and the at least one more side wall have at least one tab, and the cover has at least one slot corresponding to the at least one tab, and the tab engages the slot when the cover is in the closed condition, and the at least one slot is positioned at the flap axis. A method of folding such a container is also disclosed.

5

[0006] From the foregoing disclosure and the following more detailed description of various preferred embodiments it will be apparent to those skilled in the art that the present invention provides a significant advance in the technology of container.

Particularly significant in this regard is the potential the invention affords for providing a high quality, low cost packaging. Additional features and advantages of various preferred embodiments will be better understood in view of the detailed description provided below.

10

BRIEF DESCRIPTION OF THE DRAWINGS

15

[0007] Fig. 1 is an isometric view of a container in accordance with one embodiment, shown in an open position.

[0008] Fig. 2 is an isometric view of the container of Fig. 1, shown in a closed position.

20

[0009] Fig. 3 is an isometric view of a container in accordance with another embodiment, shown in an open position.

[00010] Fig. 4 is a close-up view of the container of Fig. 3, showing tabs.

[0011] Fig. 5 is a close-up view of the container of Fig. 3, showing a slot formation.

5 [0012] It should be understood that the appended drawings are not necessarily to scale, presenting a somewhat simplified representation of various preferred features illustrative of the basic principles of the invention. The specific design features of the container as disclosed here, including, for example, the specific dimensions of the tabs and slots, will be determined in part by the particular intended application and use
10 environment. Certain features of the illustrated embodiments have been enlarged or distorted relative to others to help provide clear understanding. In particular, thin features may be thickened, for example, for clarity of illustration. All references to direction and position, unless otherwise indicated, refer to the orientation illustrated in the drawings.

15

DETAILED DESCRIPTION OF CERTAIN PREFERRED EMBODIMENTS

[0013] It will be apparent to those skilled in the art, that is, to those who have knowledge or experience in this area of technology, that many uses and design variations are
20 possible for the container disclosed here. The following detailed discussion of various alternative and preferred features and embodiments will illustrate the general principles of the invention with reference to a suitable for use as a food container. Other

embodiments suitable for other applications will be apparent to those skilled in the art given the benefit of this disclosure.

[0014] Turning now to the drawings, Fig. 1 shows an isometric view of a container 10 in accordance with one embodiment, shown in an open position. The container is movable from an open position to a closed position and comprises a base 12, a front side wall 16, a rear side wall 18, a left side wall 22, a right side wall 24, a cover 14 extending from the rear side wall 18, and a flap 35 extending from the cover 14, with a flap axis 50 positioned between the cover 14 and the flap 35. Although two side walls (left and right) are shown, it will be readily apparent to those skilled in the art, given the benefit of this disclosure, that only one side wall may be used, or more than two. The side walls may cooperate and converge to also take a regular geometric shape, such as a circle; a semi-circle; an arcuate shape; etc. For example, a circular shaped side wall (or another shape with a closed geometry) would effectively serve as a front side wall, rear side wall, and one or more additional side walls. Preferably the cover 14 is larger than the base 12 and larger than a mouth defined by an area formed from a top portion of the side walls. That is, the base 12 has a base area and the cover 14 has a cover area larger than the base area and larger than the mouth. The cover 14 is either a separate piece (i.e., a tray and lid formation) or is formed as an extension of one of the side walls. In Fig. 1, the cover 14 is shown as pivotable with respect to the rear side wall 18 from an open condition to a closed condition about cover axis 60. As shown in Fig. 1, the front side wall 16 has a tab 30, and the cover 14 has a slot 40. Tab 30 engages the slot 40 when the cover 14 is in the closed condition. Tab 30 is located at a distal end of the

front side wall remote from the base 12. The tab protrudes away from the base such that the tab extends through the cover 14 when the cover is in the closed condition. The front side wall 16 and the tab 30 optionally cooperate to define undercuts 98 which can help the tab releasably lockingly engage the slot. The tab has a tab length 77 and the corresponding slot has a slot length 66 which is less than the tab length 77. Thus the tab 30 resiliently deforms when it is inserted into and past the slot 40. More than one tab/slot combination may be used on any side wall and the tab/slot combination may be used on any wall, as desired. Tabs may be formed as unitary (i.e., one piece) extensions of the side walls. Alternatively the tabs may be integrally connected to the side walls or formed as several connected components integrally connected to the side walls.

[0015] The container may comprise any of several materials, for example, paper, paperboard, plastics, metals, woods, laminated constructions and other foldable materials. When the material of the container 10 is mouldable, the side walls may be simply moulded into shape. Alternatively, side flaps 23 may be formed as a flap fold or heated to bond together with the side walls as a fan fold shown in Figs. 1, 3 and 4. Adhesives may also be used for some materials. Other materials and techniques suitable for assembling the walls together so that they hold in place when the container is in the closed position will be readily apparent to those skilled in the art given the benefit of this disclosure.

[0016] Fig. 2 shows an isometric view of the container 10 of Fig. 1 in a closed position.

The tab 30 protrudes away from the base such that the tab 30 extends or pierces through the slot formed in the cover 14 when the cover 14 is in a closed condition, as shown. Advantageously, the flap axis 50 is coplanar with the front side wall 16 when the cover 14 is in the closed condition.

[0017] Fig. 3 shows an isometric view of a container 110 in accordance with another embodiment, shown in an open position. The container 110 may be provided with a plurality of tabs 130 and a slot formation 140 having a plurality of corresponding slots

44, as shown. Each of the plurality of tabs 130 engages its corresponding slot 44 when the cover 114 is in the closed condition. Tab 130, like tab 30, is preferably resiliently deformable to allow it to deflect into and through its corresponding slot. Alternatively, the material around the slot may be resiliently deformable, or both the tab and material around the slot may be resiliently deformable. The tab 130 is located at a distal end of the front side wall 116 remote from the base 12. The base 12 has a base area and the cover 114 has a cover area larger than the base, essentially the same as the embodiment of Fig. 1.

[0018] Figs. 4 and 5 show close-up views of the container of Fig. 3, showing tabs 130 and slots 44, respectively. The front side wall 116 cooperates with the pair of tabs 130 to define a pair of undercuts 198 at each of the tabs 130. Each of the pair of tabs 130 can have a mushroom shape 34 with projections 99 as shown, or optionally another shape such as an arrowhead shape where a portion of the tab close to the base is

narrower than a portion of the tab remote from the base. The tabs 130 can be separated by a keyhole 97, and a gap 46 defined by the cover 114 as extending between slots 44 on the cover 114 can be positioned in a keyhole 97 when the cover 114 is in the closed condition. As with the first embodiment, preferably the tab(s) each have a tab length and their corresponding slot has a slot length which is less than the tab length.

[0019] As noted above, the container can comprise paper or paperboard or other similar relatively thin materials. This material can be initially formed as a blank. The blank is foldable by folding a front side wall 16, a rear side wall 18, a left side wall 22, and a right side wall 24 at about a right angle with respect to a base 12, most preferably an obtuse angle to allow for stacking, with connection of the side walls by one of a variety of fastening techniques (adhesive, heat, etc.) noted above. The cover 14 which extends from the rear side wall 18 is folded from an open condition to a closed condition. The cover 14 defines at least one slot 40, and a flap 35 extends from the cover 14, with a flap axis 50 positioned between the cover 14 and the flap 35. The slot 40 is positioned at the flap axis 50. The tab 30 of the front side wall 16 is inserted into the slot 40 to move the cover to the closed condition. The container is then in the closed position, optionally containing food or other deliverables which can be presented to a customer, for example.

[0020] In addition to the arrangement of tabs and slots shown in the Figs., it will be readily apparent to those skilled in the art, given the benefit of this disclosure, that

several variations of tab and slot arrangements are possible within the scope of this invention. For example, both the right side wall 24 and the left side wall 22 can have at least one tab, and the cover 14 can have has at least one slot corresponding to each of the tabs. This set of tabs and slots can be made either alone or in combination with the
5 tab of the front side wall and corresponding slot on the cover. Advantageously, the tab and slot designs and location with respect to the cover and front wall disclosed herein are more resistant to dislocation (with resulting separation of the cover from the front wall) during heating typically found when using such containers for reheating with a microwave. Containers as disclosed herein are advantageous in that their assembly is
10 a one step procedure. Furthermore, the exterior appearance is distinctive, especially from a distance, as the tab(s) pierce through the corresponding slots in the cover and extend above the cover.

[0021] From the foregoing disclosure and detailed description of certain preferred
15 embodiments, it will be apparent that various modifications, additions and other alternative embodiments are possible without departing from the true scope and spirit of the invention. The embodiments discussed were chosen and described to provide the best illustration of the principles of the invention and its practical application to thereby enable one of ordinary skill in the art to use the invention in various embodiments and
20 with various modifications as are suited to the particular use contemplated. All such modifications and variations are within the scope of the invention as determined by the appended claims when interpreted in accordance with the breadth to which they are fairly, legally, and equitably entitled.

CLAIMS

What is claimed is:

1. A container movable from an open position to a closed position comprising, in
5 combination:

a base, a front side wall, a rear side wall, at least one more side wall, a cover and
a flap extending from the cover, with a flap axis positioned between the cover and the
flap;

wherein the cover is movable with respect to the rear side wall from an open
10 condition to a closed condition;

one of the front side wall and the at least one more side wall have at least one
tab, and the cover has at least one slot corresponding to the at least one tab, and the
tab engages the slot when the cover is in the closed condition; and

the at least one slot is positioned at the flap axis.

2. The container of claim 1 further comprising a plurality of tabs and a plurality of
corresponding slots, wherein each of the plurality of tabs engages the corresponding
slot when the cover is in the closed condition.

3. The container of claim 1, wherein the at least one tab has a tab length and the at
least one corresponding slot has a slot length which is less than the at least one tab
length.

4. The container of claim 1 wherein the cover extends from the rear side wall and is pivotable with respect to the rear side wall.
5. The container of claim 1 wherein the at least one tab is located at a distal end of the front side wall remote from the base.
6. The container of claims 1 and 4, wherein the base has a base area and the cover has a cover area larger than the base area.
7. The container of claim 1 comprising one of a microwave safe plastic, paper and paperboard.
8. The container of claim 1 wherein the at least one tab comprises a pair of tabs, and the front side wall cooperates with the pair of tabs to define a pair of undercuts at each of the tabs.
9. The container of claim 1 wherein the pair of tabs have one of a mushroom shape and an arrowhead shape.
10. The container of claim 8 wherein the tabs are separated by a keyhole and the cover defines a slot formation formed as a pair of slots separated by a gap, and the gap is positioned at the keyhole when the cover is in the closed condition.

11. The container of claim 1 wherein the at least one tab protrudes away from the base such that the at least one tab extends through the cover when the cover is in a closed condition.

12. The container of claim 1 wherein the flap axis is coplanar with the front side wall when the cover is in the closed condition, and the flap is adapted to be one of parallel to the cover and perpendicular to the cover when the cover is in the closed condition.

13. The container of claim 1 wherein the at least one more side wall comprises a right side wall and a left side wall, and the at least one tab extends from one of:
the front side wall;
both the left side wall and the right side wall; and
each of the front side wall, the left side wall and the right side wall.

14. A method of folding a container from an open position to a closed position comprising, in combination, the steps of:

folding a front side wall, a rear side wall, at least one more side wall at about a right angle with respect to a base;

folding a cover extending from the rear side wall from an open condition to a closed condition, the cover defining at least one slot, wherein a flap extends from the cover, with a flap axis positioned between the cover and the flap; and

inserting at least one tab of the front side wall into the at least one slot corresponding to the at least one tab during the step of folding the cover to the closed

condition, wherein the at least one slot is positioned at the flap axis and the tab engages the slot when the cover is in the closed condition.

15. The method of folding the container of claim 14 wherein the at least one tab and
5 the front side wall cooperate to define undercuts at the tabs; and
- the at least one tab has a tab length and the at least one corresponding slot has a slot length which is less than the at least one tab length.