SPECIFICATION

FOOD CONTAINER AND LUNCH BOX

Technical Field

The present invention relates to a container for housing food and a lunch box using the container.

Background Art

Conventionally, containers having a variety of shapes, sizes and materials have been used to contain various foods such as rice, side dishes and the like. One container of this kind, for example, is a container for carrying rice or a side dish, such as a lunch box, which is sold at stands of railway stations for tourists. The lunch box needs to be sufficiently rigid to be carried with food housed therein. Thus many conventional lunch boxes are shaped like boxes from materials such as wood blocks, styro-foam blocks, cardboard, etc. Typically, such lunch boxes are used with lids conforming to their openings.

A lunch box manufactured to have rigidness or strength as a top priority is not easily crushed into a compact piece for disposal, which results in bulky garbage. Such garbage needs a large disposal space compared to compact garbage, which is undesirable in view of obvious environmental concerns.

The alternate lunch boxes formed of a material thinner than cardboard may have an improved crushability. However, this raises a new problem such as spilling due to the easy deformation of the material. Further, in such a case, it is time-wasting and troublesome to reliably mount a lid on an opening that particularly tends to deform.

Accordingly, it is an object of the present invention to provide a food container that can be crushed into a compact piece for disposal and further, one that has enough rigidity for a lid to be reliably mounted thereon and is easy to handle.

Disclosure of the Invention

To achieve the above object, the present invention comprises a combination of a container body with an opening and a lid corresponding to the configuration of the opening of the container body. The container body is formed of a sheet material and comprises a bottom and a surrounding wall which protrudes upward from the periphery of the bottom. A plurality of folds are formed at least in part of the peripheral wall, at least part of which overlap with one another. A support portion is formed by rolling part of the surrounding wall at the periphery of the opening. The lid is removably mounted on the support portion.

Accordingly, a container is given enough strength for a

lid to be reliably mounted on the container body even though the container can be crushed into a compact piece at the time of disposal and thus it is easy to handle.

Brief Description of the Drawings

Fig.1 is a perspective view showing a container body and a lid in an embodiment;

Fig.2 (a) is a partial enlarged cross-sectional view showing a rim portion of the container body, and Figs.2 (b)-(d) are partial enlarged cross-sectional views showing modified examples of the rim portion;

Fig.3 is a partial enlarged cross-sectional view showing a lid mounted on the container rim;

Fig.4 is a perspective view showing a lunch box comprising containers and a tray;

Fig.5 is a perspective view showing a modification of the container body;

Fig.6 is a perspective view showing an additional modification of the container body;

Figs.7 (a),(b) and (c) are bottom plan views respectively showing an example of the bottom of the container body;

Fig.8 is a partial perspective view showing a modification of the lunch box;

Fig.9 is a perspective view showing a process in which a cake is separated from the container body; and

Fig.10 is a partial perspective view showing another example of the tray of the lunch box.

Best Mode for Carrying Out the Invention

Several embodiments of a food container and a lunch box therewith according to the present invention will be described hereinafter with reference to Figs.1-4.

Fig.1 shows a container body 1 and a lid 11 comprising a part of a lunch box 14. The container body 1 in this embodiment is made of a sheet material M. A material comprising a single layer thinner than conventional wood block or cardboard is used as a sheet material M. For example, a sheet of thin paper, nonwoven fabric or aluminum foil can be used as the material. A laminated sheet may also be used as the material. Such a laminated sheet is provided with a layer of synthetic resin R by thermocompression-bonding a synthetic resin such as polyethylene, polypropylene, vinylidene chloride, silicone resin, or the like to a surface, part of both surfaces or to both entire surfaces of this material. Further, the material such as paper, nonwoven fabric, or the

like may be impregnated with the above-mentioned synthetic resin.

In the embodiment, a material M in which silicone resin is thermocompression-bonded to a surface of paper is used. A container body 1 with a predetermined shape is formed by drawing this material M in a predetermined die. In this case, the inner surface covered by the silicone resin provides the body 1 with waterproofing, oilproofing and thermal resistance.

As shown in Fig.1, a container body 1 has a substantially cylindrical shape and comprises a circular bottom 2 and a peripheral wall 3 extending upward from the periphery 2b of the bottom 2. A circular opening O is formed at the upper end 5 of the peripheral wall 3. The inner diameter of the opening O is slightly larger than the outer diameter of the bottom 2. A container space S is defined by the bottom 2 and the peripheral wall 3. A central portion 2a of the bottom 2 slightly protrudes toward the container space S with respect to the periphery 2b. The bottom 2 can be formed in a flat shape.

As shown in Fig.1, a plurality of folds 4 are provided by a predetermined space on the entire outer surface of the peripheral wall 3. The adjacent folds overlap one another. The overlapping portions 4a of the folds 4 are not thermocompression-bonded and thus are not bonded to one

another.

As shown in Figs.1 and 2 (a), a curl-shaped support portion 6 is provided along the entire periphery of the opening O. The support portion 6 is formed by rolling the upper part of the peripheral wall 3 outward approximately once and protrudes externally from the opening O. This support portion 6 can be formed at the same time that the container body 1 is formed. This support portion 6 reinforces the container body 1 and prevents the folds from separating one from another. Therefore, the configuration of the container body 1 is reliably maintained even where a thin material is used.

The shape of the support portion 6 is not limited to that shown in Fig.2 (a). For example, as shown in Fig.2 (b), a support portion 7 that is rolled a plurality of times may be provided. As shown in Fig.2 (c), a support portion 8 that is rolled inward from the container body 1 can also be provided. Furthermore, as a support potion 9 shown in Fig.2 (d), the physical strength of the upper end 5 of the peripheral wall 3 can be increased by forming a bending part 9a throughout the periphery of the upper end 5 of the peripheral wall 3 in the initial part of the rolling.

In this embodiment, a lid 11 to be put on the container body 1 is used, which corresponds to the size and shape of the

opening O. The lid 11 is formed of a transparent plastic material. When the lid 11 is put on the support portion 6 of the container body 1 from above, a flange 11a of the lid 11 is supported by the support portion 6 from below as shown in Fig.3.

Fig.4 shows a lunch box 14 including the above-mentioned container bodies 1 and lids 11 and a tray 13. Container holes 12 for holding the container bodies 1 are formed on the upper surface of the box-shaped tray 13. In the embodiment, three holes, which are smaller than the outer diameter of the upper end portion of the peripheral wall 3 and the support portion 6, are formed as the container holes 12.

Thus, when the container body 1 is inserted into the container hole 12 from above, the peripheral wall 3 will engage the inner edge of an opening 12a of the container hole 12 as shown in Fig.4 so that the container body 1 is reliably held onto the upper surface of the tray 13. The container body 1 does not fall off downward from the container hole 12 since the inner diameter of each container hole 12 is smaller than the outer diameter of the support portion 6. The tray 13 does not need to be as rigid as is required, for example, of a conventional lunch box since the tray 13 primarily aims at holding the container body 1. Therefore, in this embodiment, the tray 13 is formed with a sheet of paper thinner than a wood block or cardboard.

The lunch box 14, as constructed above, is easy to carry when food such as rice, a side dish, or the like is housed in the container body 1 and the container body 1 is mounted on the tray 13. The opening O, which is most likely to deform in the container body 1, is reinforced by the support portion 6 formed at the upper end of the peripheral wall 3. As a result, predetermined strength is given to the container body 1 and the entire configuration of the container body 1 is reliably maintained. Even if the container body 1 or opening O is temporarily deformed by external forces, it is possible to restore it to the original shape. Therefore, spilling of the contents is reliably avoided even if the opening O is deformed when the support portion 6 is held to take the container body 1 out of the tray 13. Thus, the side dish can be eaten, for example, even when one of the container bodies 1 is held by a hand as well as when the container bodies 1 are held in the tray 13. Moreover, if the container body 1, the lid 11 and the tray 13 are formed of a highly heat-resistant material, food in the container body 1 can also be heated by a microwave oven or other type of oven along with the container body 1, lid 11 and tray 13.

Meanwhile, for example, when massive food that has a different cross-section from the opening O and has the substantially same outer diameter as the inner diameter of the opening O is placed in the container body 1, the food will be pushed into a container space S. Then the opening O will be

deformed and allow the food to pass through it. After food is housed, the food will be reliably held in the container space by the restoring force of the support portion 6. Therefore, when such food is housed, there is no necessity for deforming the opening O correspondingly to the shape of the food in advance. This can result in automated and high-speed packing of food.

Since the support portion 6 protruding outward is provided at the opening O, it is also easy to take the container body 1 out of the container hole 12 of the tray 13 by grasping the support portion 6. A plurality of container bodies 1 can also be stacked when the lids 11 are put on the container bodies 1.

In addition, with the container body 1 as constructed above, the lid 11 can be put onto the opening O, the configuration of which is held by the support portion 6, so that the operation is easily and reliably conducted. This leads to easy handling. Thus, lunch boxes having a variety of foods can be made by packing different kinds of side dishes in a plurality of container bodies 1, subsequently putting the lids 11 on, and properly selecting and housing them in the tray 1.

In this embodiment, the contents of the container body can be seen externally even if the lid 11 is on since a

transparent lid made of plastic is used. This is desirable for both the purchaser of a lunch and the lunch preparer.

In the embodiment, both the container body 1 and the tray 13 can be easily crushed into a compact piece during disposal since they are formed of thin materials. Therefore, the bulkiness of the resulting garbage can be reduced as compared with prior arts in which wood blocks or styro-foam pieces are fabricated into the shape of boxes. Even children or the aged can easily crush a tray 14 into a compact piece.

In addition, the support portion 6, which is provided at the opening O, prevents the folds 4 from extending outward in advance. Thus there is no necessity for bonding the adjacent folds 4 to one another by means of heat sealing. This enables the container body to be still more easily and inexpensively manufactured. Additionally, the support portion 6 improves the decoration and design of the container body 1. The folds 4 of the peripheral wall 3 also improve the decoration and design of the container body 1. Various patterns or characters can be printed on the surface of the material such that they appear on the outer surface of the container body 1. The container body 1 can be manufactured even with a material without a layer of synthetic resin R. In this case, the manufacturing cost can be reduced.

Further, when the container body is manufactured solely

by a sheet of paper, it is extremely desirable to use it as a container of poundcake to be baked. The container body which is made of paper absorbs oil from the poundcake to some degree. Thus, the poundcake has a favorable taste and its fattiness is reduced. Moreover, the cake is made voluminous and puffy.

In this embodiment, the support portion 6 is held with fingers of both hands and then the folds 4 are spread out along the periphery of the support portion 6 in order to take a cake C housed in the container body 1 out of the container body 1 as shown in Fig.9. When this manipulation is conducted with all of the folds 4, the peripheral wall 3 of the container body 1 can be easily detached from the outer periphery of the cake C. Creases are left after the folds 4 are spread out. The cake C, however, can be easily eaten by using the container body 1 like a dish.

In this embodiment, the container body 1 does not need tearing off when the cake C is removed since the folds 4 are not bonded to one another. Thus there is no necessity for forming perforations or the like for easily tearing the container body off. Therefore, the container body can be manufactured inexpensively compared with a container body with perforations.

Fig.5 shows a second example of the invention. The

container body 30 of the second example has an elliptic bottom 31. The upper end 33 of the peripheral wall 32 takes an elliptic shape with a slightly larger diameter than that of the bottom 31. A plurality of folds 34 are formed in the entire outer surface of the peripheral wall 32. Overlapping portions 34a of the adjacent folds 34 are not bonded to one another in the same manner as the previously described embodiment. A support portion 6 as shown in Fig.2 (a) is provided at the upper end 33 of the peripheral wall 32.

Fig.6 shows a third example of the invention. A container 20 of the third example has a rectangular bottom 21 and a peripheral wall 22 extending upward therefrom. The peripheral wall 22 is bent on each corner C wherein a plurality of folds 24 are formed. Overlapping portions 24a of the adjacent folds 24 are not bonded to one another in the same manner as the previously mentioned embodiment. A support portion 6 as shown in Fig.2 (a) is provided at the entire upper end 23 of the peripheral wall 22. Therefore, in each example mentioned above, the same operations and effects of the embodiment can be achieved.

Further, the container body 1 of the invention can also be used when a cake is made from cake batter which is formed from flour and sugar to which oils and fats are added. In this case, the cake batter is put in the container body 1 to be heated by a heating board. Then the oils and fats scatter and

the cake batter expands along the peripheral wall of the container body. Preferably, the bottom 2 of the container body 1 has a through hole(s) 40 as shown in Figs.7 (a)-(c) in order to improve the passing of heat through the cake batter and to brown the cake browner, softer and fuller. The number, shape, size and arrangement of the through holes 40 are not particularly limited. The container shown in Fig.7 (a), for example, has five circular through holes 40 which are formed with predetermined spaces. The inner diameter of the bottom 2 in this example is approximately 100mm. The inner diameter of each hole 40 is approximately 4 mm. In the containers shown in Figs. 7 (b) and (c), a circular through hole 40 is formed at the center of the bottom 2. In the examples of Figs. 7 (b) and (c), the inner diameters of the bottoms 2 are approximately 100mm; however, the inner diameters of the circular through holes 40 are approximately 15 mm and approximately 50mm, respectively.

The present invention is not restricted to the embodiments mentioned above and can be modified as follows. The bottom 2 and the opening O may be differently configured; for example, the bottom 2 may be circular and the opening O may be square.

Even when the container body 1 is substantially cylindrical, the folds may be formed on part of rather than the entire outer surface of the peripheral wall as in the third

example.

The number of container holes 12 of the tray 13 is not restricted to three. A plurality of container holes with different sizes and shapes may be provided on the upper surface of one tray 13 to contain a various kinds of container bodies with different shapes. Further, as shown in Fig.8, a hole 41 with a smaller diameter than that of the container hole 12 may be provided on the tray 13 in place of the container holes 12 shown in Fig.4. At the same time, a plurality of movable segments 42 may be formed that extend radially from the hole 41 by forming a plurality of radial slits. In this case, each segment 42 is bent downward as shown by a two-dot chain line in Fig.8 by pressing the bottom of the container body 1 against the segments 42 from above. Then the hole 41 becomes larger, and the container body 1 can be housed therein. The segments 42 bent are pressed against the external peripheral wall of the container body 1 so that the container body can be held in a more stable manner. The number of holes 41 and their diameters and the number of segments 42 can be properly determined as occasion demands. As shown in Fig.10, the hole 41 may be omitted. In this case, a plurality of segments 43 may be made by forming a plurality of movable segments which extend radially from a point 44 on the tray 13. In this case, the operation is the same as in the above-mentioned case. Namely, each segment 43 is bent downward by pressing the bottom of the container body 1

against each slice 43 from above. Then a hole is formed for housing the containing body, and the container body 1 can be placed therein.

The contents to be housed in the container body 1 are not limited to the above-mentioned rice or side dishes. For example, liquid (sauce, soy sauce, Worcester sauce, etc.), liquid food (ketchup, mayonnaise, etc.) and solid foods that contain much water (jelly etc.) may naturally be contained.

The container body 1 in the embodiment is used in combination with the tray 13 as a component of the lunch box 14. In addition, naturally, the container body 1 may independently be used as a housing body which houses cakes etc.

The lid 11 does not necessarily need to be transparent and plastic. For example, the lid 11 can also be formed with a sheet of thin paper etc. in the same manner as the container body 1.

Industrial Applicability

As described in detail above, a container of the present invention has enough strength for a lid to be put thereon, although it can be crushed into a compact size at the time of disposal. Accordingly, its manipulation is easy. Further, the lunch box according to the present invention can reduce the bulkiness of the resulting garbage since it is provided

with a container body that is made of a material thinner than a wood block, cardboard, etc. as a component.

CLAIMS:

1. A container having a container body (1) which includes an opening (O) and a lid (11) which is in conformity with the opening (O), said container comprising:

said container body (1) being made of a sheet material, and having a bottom (2) and a peripheral wall (3) extending upward from a periphery (2b) of the bottom (29);

a plurality of folds (4) provided at least on a part of the peripheral wall (3), at least a part of said folds (4) overlapping one another; and

a support portion (6) formed by rolling a part of the peripheral wall (3), said support portion (6) being arranged to detachably receive the lid (11).

2. The container as set forth in Claim 1, wherein said sheet material having a single layer formed by one selected from the group consisting of a sheet of paper, nonwoven fabric and metal foil.

3. The container as set forth in Claims 1 or 2, wherein said sheet material is made of one selected from the group of polyethylene, polypropylene, vinylidene chloride and silicone resin.

4. The container as set forth in Claim 3, wherein said sheet material is made of the paper having a layer of the silicone resin thermocompression-bonded to a surface of the paper, and

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wherein said surface covered by the layer of the silicone layer is provided on inner surface of the container body (1).

5. The container as set forth in any one of the preceding claims, wherein said container body (1) is processed by pressing the sheet material.

6. The container as set forth in any one of the preceding claims, wherein said support portion (6) extends outwardly, and wherein the lid (11) has a flange (11a) engaging the support portion (6) from above.

7. A lunch box having the container as set forth in any one of Claims 1 through 5, said lunch box further including a tray (13) which has container portions (12) each of which holds the container body.

8. The lunch box as set forth in Claim 7, wherein each of container portions includes a hole an inner diameter of which is smaller than an outer diameter of the support portion (6).

9. The lunch box as set forth in Claim 7, wherein each of container portions includes a plurality of segments (42, 43) extending radially, and wherein each of said segments (42, 43) is bent downward in the tray (13) by pressing the bottom of the container body (1) against the segment (42, 43) so as to engage the peripheral wall (3) of the container body (1).

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