

CONTAINER CAPABLE OF STACKING ONE OVER THE OTHER

Field of the Invention

5 The present invention relates to a container for storing articles. More specifically, the present invention pertains to containers capable of stacking one over the other.

10 Background Art

15 Conventionally, various types of containers have been produced by molding plastic materials and used for storing articles such as relatively small articles or cloths. Among these known types of containers, some containers are designed so that they can be stack one over another container of the same or similar configuration with the articles stored therein.

20 Some containers are also designed so that one container can be stack over another container of the same or similar configuration in empty conditions with the upper container being received in the cavity of the lower container for the convenience of transportation or display in shops.
25 By stacking containers with the upper container received in the cavity of the lower container, it is possible to remarkably reduce the overall volume of the stack. However, this type of containers will have difficulties in stacking one over the other with articles stored therein.

30 Summary of the Invention

The present invention has an object to provide a



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container which is capable of stacking on another container of similar or identical configuration with the upper container received in the cavity of the lower container to thereby reduce the overall volume of the stack in an empty condition for the convenience of transportation and/or display at stores, and which is also capable of stacking one over the other with articles stored therein for the convenience of use.

According to the present invention, the above and other objects can be accomplished by a container which comprises a container body having an open top portion provided with at least a pair of opposing upper edge portions. An edge member is attached to the container body along each of the upper edge portions for swingable movements between an inner position wherein it extends inwardly from the associated upper edge portion over an interior of the first mentioned container body, and an outer position wherein it extends outwardly from the container body, whereby another container body can be supported at its bottom portion by the edge members but said another container body can be received in the interior of the first mentioned container body in an empty condition of the first mentioned container body.

According to a specific aspect of the present invention, the container of the present invention comprises an open top container body including side walls which are inclined vertically inwardly from top to bottom so that the container bodies of similar configuration can be stacked together with the upper container body received in the interior of the lower container body. The container body is provided at its open top with at least a pair of opposing



upper edge portions and an edge member is provided along each edge portions. Each of the edge members are attached to the container body for swingable movements about its longitudinal axis between an inner position wherein it extends inwardly from the associated upper edge portion over an interior of the first mentioned container body, and an outer position wherein it extends outwardly from the container body. The container body has a bottom which is provided with leg portions for engagement with the edge members of another container body of similar configuration located beneath the first mentioned container body when the edge members are in the inner position.

In accordance with this structure, a plurality of containers can be stack one above the other with the leg portions of the upper container body engaged with the edge member of the lower container body when the edge member of the lower container body is in the inner position. It is preferable to provide one or more grooves on the side of the edge member which is faced upwards in the inner position of the edge member for receiving the leg portions of the upper container body. It is further preferable that each of the leg portions of the container body is formed with an engagement pawl and the edge member is formed at the groove with an engagement projection which projects inwardly into the groove and adapted for engagement with the engagement pawl on the leg portion of the upper container body. The container body may preferably be formed at portions beneath the upper edge portion with one or more outwardly extending flanges and the edge member may preferably be formed at a side which is faced upwards in the outer position of the edge member with one or more flange receiving shoulder portions for receiving the



outwardly extending flanges provided on the upper container body.

According to the present invention, each of the upper edge portions are preferably be made straight in configuration, and the paired edge portions are preferably be in parallel with each other. The container body may comprise a pair of side walls extending downwardly from the paired upper edge portions and a pair of further side walls which are provided to extend between the first mentioned side walls. According to the present invention, the container body and the edge members may preferably be made by molding plastics materials, such as polyethylene or polypropylene.

Brief Description of the Drawings

Figure 1 is an exploded perspective view of a stackable container in accordance with one embodiment of the present invention;

Figure 2 is a perspective view of the container shown in Figure 1 with the edge members in the inner position;

Figure 3 is a perspective view of a pair of edge members used in the embodiment of the present invention;

Figure 4(a) is a sectional view showing two empty containers stack together;

Figure 4(b) is a sectional view showing two loaded containers stack together;

Figure 5(a) is an enlarged sectional view showing



details of edge members in two empty containers which are stack together; and,

Figure 5(b) is an enlarged sectional view showing details of edge members in two loaded containers which are stack together.

Description of the Preferred Embodiment

The present invention will now be described with reference to a preferred embodiment which is shown in the accompanying drawings.

Referring first to Figure 1, there is shown a storing container 1 in accordance with the present invention. The container 1 includes a container body 3 which is made of a plastics material such as polyethylene or polypropylene. the container body 3 is of an open top box shape having a pair of parallel straight upper edge portions 3a at the top opening. The container 3 further has a pair of side walls 3b extending downwardly from the upper edge portions 3a and a rear wall 3c extending between rear side edges of the side walls 3b. Each of the side walls 3b has a front edge portion which includes an upper half curved to extend forwardly and a lower half inclined rearwardly from the vertically intermediate portion toward downward direction. A front wall 3d is formed to extend between the lower halves of the side walls 3b.

The container body 3 has a bottom which is formed at an outer surface with leg portions. In the illustrated embodiment, the leg portions includes a front leg 3e extending along the lower edge portion of the front wall 3d



and a pair of spaced apart side leg portions 3f formed along the lower edge portion of each of the side walls 3b.

As shown in Figures 1 and 2, the container body 3 is provided at the pair of upper edge portions 3a of the side walls 3b with edge members 5 which are attached thereto. As apparent from Figure 1, the edge member 5 has a pair of pins 5a which extend axially outwardly from the longitudinally opposite ends of the edge member 5. The pair of pins 5a are axially aligned and fitted to pin receiving holes 3g formed in the container body 3. It will therefore be understood that the edge member 5 is attached to the container body 3 for swinging movements about a longitudinal axis defined by the pair of axially aligned longitudinal pins 5a.

Figure 3 shows the configuration of the edge member 5. The edge member 5 includes a body 5b formed at the outer side with a plurality of ribs 5c in axially spaced relationship. The body 5b further has end walls 5d formed at the axially opposite ends. The end wall 5d includes a first abutting edge 5e extending transversely from a portion adjacent to the pin 5a and a raised portion 5f formed on the end wall 5d adjacent to the end of the first abutting edge 5e remote from the pin 5a. The end wall 5d is formed with a leg receiving groove 5g to extend between the raised portions 5f of the paired end walls 5d.

The end wall 5d is formed at an outer side or a side opposite to the abutting edge 5e with a stepped portion 5h. Each of the ribs 5c has an outer peripheral configuration similar to and axially aligned with the outer peripheries of the end walls 5d of the edge member 5. Thus, the rib 5c is



formed at the outer side with a stepped portion which is aligned in position and shape with the stepped portions of the end walls 5d in the longitudinal or axial direction of the edge member 5.

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The side wall 3b of the container body 3 is formed at the upper edge portion 3a with a shoulder portion 7 and an upper flange 9 located beneath the shoulder portion 7 as shown in Figures 5 (a) and (b). In a position where the edge member 5 is swung outwardly with respect to the container body 3, the abutting edge 5e formed on the end wall 5d of the edge member 5 is engaged with the upper flange 9 formed on the upper edge portion of the container body 3 as shown in Figure 5(a). In this situation, the edge member 5 takes an outer position wherein the edge member 5 extends outwardly from the container body 3. The edge member 5 is thus held with the outer side or the side having the stepped portion 5h on the end wall 5d and the axially aligned with the stepped portions of the ribs 5c directed upwardly. In the position where the edge member 5 is swung in the opposite direction, namely, toward inward direction, the stepped portion 5h on the end wall 5d of the edge member 5 and the axially aligned stepped portions of the ribs 5c are engaged with the shoulder portion 7 of the upper edge portion 3a of the container body 3. In this situation, the edge member 5 takes a position wherein it extends inwardly above the container body 3. The edge member 5 is held with the inner side or the side having the groove 5g directed upwardly.

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The container in accordance with the embodiment of the present invention is configured so that a plurality of similar containers can be stacked one over the other. For the



purpose, the side leg portions 3f provided at the lower portion of each side wall 3b of the container body 3 are of the size and configurations which allow the leg portions to be fitted to the groove 5g formed in the edge member 5 of the container 1. As shown in Figures 1 and 5(b), each of the side leg portions 3f is formed at a lower portion with a laterally outwardly extending retaining pawl 8. The leg portions 3f of the upper container 1 are received by the grooves 5g in the edge members 5 of the lower container 1 in a stacked condition. Further, as shown in Figure 5(b), the leg receiving groove 3f is formed at an inner wall surface with retaining projections 6 which are adapted for engagement with the retaining pawls 8 on the side leg portions 3f of an upper container 1 which is stacked on the container 1 having the retaining projections 6.

Referring to Figure 4(a), there are shown two empty containers 1 which are stacked one over the other. In order to make it possible to stack containers 1 in this way, the side walls 3b and the rear wall 3c are inclined inwardly toward downward direction. In stacking the empty containers, the edge members 5 are placed in the outer position. As shown in Figure 4(a), the side leg portions 3f at the lower portion of the side walls 3b of the container body 3 are within the outer contour of the side walls 3b, so that the leg portions do not disturb the stacking. The front wall 3d and the front leg portion 3e do not disturb the stacking either, since the front wall 3d is inclined inwardly toward downward. In order that a plurality of containers 1 can be stacked together with a suitable stacking depth, the side wall 3b is provided at an upper portion with a laterally outwardly extending flange 10. The flange 10 is adapted to be engaged with the stepped



portions 5h of the edge members 5 and the stepped portions provided on the ribs 5c and axially aligned with the stepped portions 5h. The engagement determines the stacking depth. It should further be noted that the flange 10 has an effect of functioning as a reinforcement for increasing the rigidity of the container body 3.

Figure 4(b) shows a plurality of containers 1 which are stacked one over the other with articles stored in the containers. In this instance, the edge members 5 are in the inner position as shown in Figure 5(b). The grooves 5g in the edge members 5 are directed to be faced upwards and the side leg portions 3f of the upper container 1 are inserted into the leg receiving grooves 5g in the edge members 5 of the lower container 1. The retaining pawls 8 in the side leg portions 3f of the upper container 1 are engaged with the retaining projections 10 in the grooves 5g in the edge members 5 of the lower container 1 to firmly hold the containers 1 together. For accomplishing the engagement between the retaining pawls 8 and the retaining projections 10, the side walls of the leg receiving grooves 5g are resiliently deformed when the side leg portions 3f of the upper container 1 are inserted into the leg receiving grooves 5g of the edge members 5 of the lower container 1 to allow the leg portions 3f of the upper container 1 to be inserted into the grooves 5g of the lower container 1. Similar resilient deformation will be produced when the upper container 1 is to be detached from the lower container.

It will be noted that, in accordance with the container of the present invention, a plurality of containers can be stacked one over the other both in an empty condition and in



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a loaded condition simply by rotating the edge members
between the outer and inner positions. It is therefore
possible to stack containers compactly for transportation and
display at stores. Further, in loaded condition, a plurality
5 of containers can conveniently stacked together for storage.

The invention has thus been shown and described with
reference to a specific structure, however, it should be
noted that the invention is in no way limited to the details
10 of the illustrated structures but changes and modifications
can be made without departing from the scope of the appended
claims.

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Claims:

1. A container comprising a container body having an open top portion provided with at least a pair of opposing upper edge portions, an edge member attached to the container body along each of the upper edge portions for swingable movements between an inner position wherein it extends inwardly from the associated upper edge portion over an interior of the container body, and an outer position wherein it extends outwardly from the container body, whereby another container body can be supported at its bottom portion by the edge members but said another container body can be received in the interior of the first mentioned container body in an empty condition of the first mentioned container body.

2. A container comprising an open top container body including side walls which are inclined vertically inwardly from top to bottom so that the container bodies of similar configuration can be stacked together with the upper container body received in the interior of the lower container body;

characterized by the facts that;

the container body is provided at its open top with at least a pair of upper edge portions which are opposed to each other with top opening interposed therebetween;

an edge member being provided along each edge portions;

each of said edge members being attached to the container body for swingable movements about its longitudinal axis between an inner position wherein it extends inwardly from the associated upper edge portion over an interior of the first mentioned container body, and an outer position wherein it extends outwardly from the container body;





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the container body having a bottom which is provided with leg portions for engagement with the edge members of another container body of similar configuration located beneath the first mentioned container body when the edge members are in the inner position, whereby a plurality of containers can be stacked one over the other with the leg portions formed in the bottom of an upper container engaged with said edge members of a lower container when said edge members of the lower container is in said inner position.

3. A container in accordance with claim 2 wherein said edge member has a surface which is directed upwards in said inner position of the edge member and formed with at least one leg receiving groove adapted for receiving said leg portions of the container body of an upper container.

4. A container in accordance with claim 3 wherein each of said leg portions is formed with a retaining pawl, said leg receiving groove formed in said surface of the edge member being formed with a retaining projection for engagement with said retaining pawl.

5. A container in accordance with anyone of claims 2 through 4 wherein said container body has an outer surface which is formed beneath the upper edge portion a flange portion extending outwardly from the outer surface, said edge member having a side which is directed upwards in said outer position of the edge member and formed with a stepped portion for receiving said flange portion of the container body of a container located above the first mentioned container.

6. A container in accordance with anyone of claims 1 through 5 wherein said upper edge portions formed on said





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container body are straight, the paired upper edge portions being parallel to each other.

5 7. A container in accordance with anyone of claims 1 through 6 wherein said container body includes a pair of side walls extending downwardly from said upper edge portions and at least one wall extending between said pair of side walls.

10 8. A container in accordance with anyone of claims 1 through 6 which is formed with a plastics material.

9. A container in accordance with claim 8 wherein said plastics material is polyethylene or polypropylene.

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