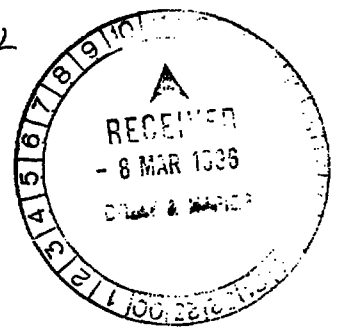




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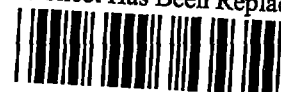
IMPROVEMENTS IN OR RELATING TO CONTAINERS

The present invention relates to containers which can be secured in the closed condition without the need for additional fastening means such as an elastic band or adhesive tape. The invention is particularly useful for containers for foodstuffs but is equally applicable to containers for any other type of merchandise.

Conventional containers for merchandise typically consist of straight sided boxes with lids which simply fit over the top of the box. Such boxes must often be secured in a closed condition with additional means such as an elastic band or tape in order to prevent the lid simply slipping off again. Other conventional containers are closed by tabs which tuck into slots or interlock with other tabs. These types of fastening means are often awkward to engage and certain types are not very reliable at keeping the container securely closed. Furthermore, straight sided boxes or clamshell type boxes do not perform well under compression, for example if stacked one on top of another. In the case of straight sided containers, the sides tend to bow outwardly causing the container to open. With clamshell boxes, compression tends to crush the boxes and break the locking tab.

The present invention provides a container comprising a base member and a lid member cooperable to form a closed box, wherein the base member comprises at least one outwardly tapering wall and the lid member comprises at least one inwardly tapering wall and wherein means is provided to allow either the outwardly tapering wall to flex inwardly or the

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inwardly tapering wall to flex outwardly so as to enable the inwardly tapering wall to be fitted over the outwardly tapering wall.

- 5 Preferably, the means to allow flexing comprises at least one crease line formed in the wall to be flexed.

- 10 In a preferred embodiment, the base member comprises at least three outwardly tapering walls and the lid member comprises at least three inwardly tapering walls.

- 15 Advantageously, the outwardly tapering wall tapers at an angle in the range of 8 to 15° and most preferably at about 11°. Similarly, the inwardly tapering wall preferably tapers at an angle in the range of 8 to 15° and most preferably at an angle of about 11°.

- 20 In one aspect of the invention the base member and the lid member are integral with one another, being joined along a hinge line.

- 25 In another aspect of the invention, the base member and the lid member are separate from one another.

- 30 The depth of the outwardly tapering wall may be substantially equal to the depth of the inwardly tapering wall. Alternatively, the depth of the outwardly tapering wall may be substantially greater than the depth of the inwardly tapering wall.

- 35 Preferably, the container is constructed either

from stiff paper, cardboard or plastics material. Moreover, the container can be constructed from a laminated material.

5 The invention will be described in more detail, by way of example only, with reference to the accompanying drawings in which:

10 Figure 1 is a perspective view of one embodiment in the open condition;

 Figure 2 is a sectional view of Figure 1 along the line AA;

 Figure 3 is a sectional view of Figure 1 along the line BB;

15 Figure 4 is a sectional view similar to Figure 2 but showing the container in the closed condition and

 Figure 5 is a sectional view similar to Figure 3 but showing the container in the closed condition.

20 With reference to Figure 1, a container 10 in accordance with one embodiment of the present invention consists of a base member 11 and lid member 12.

25 The base member 11 comprises a rectangular base panel 13 and four side walls 14a,b,c and d, one extending from each edge of the base panel 13. Adjacent side walls 14a-d are secured together at each corner. Each of the side walls 14a-d makes an obtuse
30 angle, i.e greater than 90°, with the base panel 13 so that the side walls 14a-d taper outwardly as best seen in Figures 2 and 3.

 The lid member 12 comprises a rectangular lid
35 panel 15. One edge of the lid panel 15 adjoins one of



the side walls 14d of the base member 11 along a hinge line 16.

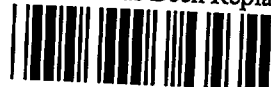
5 The lid member 12 is also provided with side walls 17a,b and c which extend from the remaining three edges of the lid panel 15. Each of the side walls 17a-c is secured to the adjacent side wall. Each of the side walls 17a-c makes an acute angle, i.e. less than 90°, with the lid panel 15 so that the side walls 17a-c taper inwardly as best seen in Figures 3 and 4.

15 One of the side walls 14b of the base member 11 which is foremost as seen in Figure 1 and which is opposite to the hinge line 16, is provided with crease lines 18a and 18b which extend obliquely from the respective lower corners of the side wall 14b. The purpose of these crease lines is discussed further below.

20 On the lid member 12, the opposing pair of side walls 17a and 17c are also each provided with a crease line 19 which extends obliquely from the corner which is adjacent to both the lid panel 15 and the third side wall 17b. The purpose of these crease lines is described further below.

30 In order to close the container 10, the lid member 12 is rotated about the hinge line 16 so that it is in a position above the base member 11.

35 The opposing pair of side walls 17a and 17c of the lid member 12 can be pulled outwardly to a small extent by bending at the crease lines 19. This enables the side walls 17a and 17c to be fitted over



the corresponding side walls 14a and 14c of the base member 11.

5 To complete the closing procedure, the foremost side wall 14b of the base member 11 (which is opposite to the hinge line 16) can be pushed inwardly to a small extent by bending at the crease lines 18a and 18b. This action causes the opposing side walls 14a and 14c to move slightly closer to each other. This
10 enables the foremost side wall 17b of the lid member 12 to be fitted over the corresponding side wall 14b of the base member 11.

15 Once in the completely closed position, the side walls 14a-c of the base member 11 return to their outwardly tapering configuration and the side walls 17a-c of the lid member 12 return to their inwardly tapering configuration. The outwardly tapering walls 14a-c of the base member 11 are retained within the
20 inwardly tapering walls 17a-c of the lid member 12. In this way, the opposite tapers of the base member 11 and lid member 12 co-operate to retain the container securely in the closed position.

25 In order to reopen the container 10, the foremost side wall 14b of the base member 11 can be flexed inwardly by pressing through the cutout 20 provided on the side wall 17b of the lid member 12 which covers it. This reduces the taper of the base member
30 sufficiently for the lid member to be removed.

Preferably the angle α of the taper (as shown in Figure 2) of both the side walls 14 and of the base member 11 and the side walls 17a-c of the lid member
35 12 is in the range 8° - 15° and is most preferably about



11°. Within this range, it remains relatively easy to fit the lid member 12 over the base member 11 whilst, once fitted, there is sufficient resistance between the opposing tapers to retain the container securely closed.

Nevertheless, it is possible to use other taper angles if desired. Particularly, a much greater angle of taper could be used if it were desired to have a very shallow container, for example, for foodstuffs such as pizza.

The container is preferably made from a material such as stiff paper, cardboard or thin plastic which is relatively cheap and easy to handle and has a degree of resilience. However, any other suitable material could be used. The container could comprise a combination of different materials and it could also be formed as a laminate, for example to improve insulation.

A number of other modifications to the container described will be apparent to those skilled in the art.

For example, although the embodiment illustrated is a one-piece item with the lid member and base member integrally formed, a container comprising separate lid and base members could be produced.

In addition, although the embodiment described shows the base and lid panels 13 and 15 to be rectangular, other shapes could be constructed. For example, the base and lid panels could be other polygonal shapes such as square or octagonal and it is



also conceivable that the base and lid walls could be substantially circular or elliptical. In this case, the base member and lid member could be separate items each having a single side wall surrounding the base or lid panel in the form of a truncated cone, the base member having a fold or pleat enabling the diameter of the cone to be reduced for fitting within the lid member.

Furthermore, the embodiment illustrated shows the side walls 17a-c of the lid member 12 to be of the same depth as the side walls 14a-d of the base member 11. However, the side walls 14a-d of the base member 11 could be significantly deeper to give the container 10 a greater volume while the side walls 17a-c of the lid member 12 would then overlap only an upper portion of the side walls 14a-c of the base member 11 in the closed condition.

Thus, a number of variations are possible to the present invention which provides a container which is simple to close and which can be securely retained in the closed condition without the need for additional securing means. The container can also be stacked with like containers or other items without the weight causing opening or crushing of the container. Instead, the angle α of the tapers of both lid and base members tends to increase thereby forcing the outwardly tapering walls of the base member more tightly against the inwardly tapering walls of the lid member.

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CLAIMS:

1. A container comprising a base member and a lid member cooperable to form a closed box, wherein
5 the base member comprises at least one outwardly tapering wall and the lid member comprises at least one inwardly tapering wall and wherein means is provided to allow either the outwardly tapering wall to flex inwardly or the inwardly tapering wall to flex
10 outwardly so as to enable the inwardly tapering wall to be fitted over the outwardly tapering wall.

2. A container as claimed in claim 1, wherein the means to allow flexing comprises at least one
15 crease line formed in the wall to be flexed.

3. A container as claimed in claim 1 or claim 2, wherein the base member comprises at least three outwardly tapering walls.
20

4. A container as claimed in claim 3 wherein the lid member comprises at least three inwardly tapering walls.

25 5. A container as claimed in any preceding claim, wherein the outwardly tapering wall tapers at an angle in the range of 8 to 15°.

30 6. A container as claimed in claim 5, wherein the outwardly tapering wall tapers at an angle of about 11°.

35 7. A container as claimed in any preceding claim, wherein the inwardly tapering wall tapers at an angle in the range of 8 to 15°.

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8. A container as claimed in claim 7, wherein the inwardly tapering wall tapers at an angle of about 11°.

5 9. A container as claimed in any preceding claim, wherein the base member and the lid member are integral with one another, being joined along a hinge line.

10 10. A container as claimed in any of claims 1 to 8, wherein the base member and the lid member are separate from one another.

15 11. A container as claimed in any preceding claim, wherein the depth of the outwardly tapering wall is substantially equal to the depth of the inwardly tapering wall.

20 12. A container as claimed in any of claims 1 to 10, wherein the depth of the outwardly tapering wall is substantially greater than the depth of the inwardly tapering wall.

25 13. A container as claimed in any preceding claim, wherein the container is made from stiff paper or cardboard.

30 14. A container as claimed in any of claims 1 to 12, wherein the container is formed from plastics material.

35 15. A container as claimed in any preceding claim, wherein the container is formed from a combination of different materials.

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16. A container as claimed in any preceding claim, wherein the container is formed from a laminated material.

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