

LOCKING PAPERBOARD SLEEVE

5 This invention relates to paperboard devices for retaining a plurality of articles which taper inwardly towards their bases. An example of such an article is a pot of the type often used for dairy products such as yoghurt, cream etc. When a sleeve is used to form a multipack of such articles, the heels of the articles require positive separation to retain pack integrity.

10 According to the present invention there is provided a paperboard retaining device for one or more pairs of articles arranged side by side in two rows, each article tapering inwardly towards its heel portion, said device comprising a top panel, oppositely disposed side panels hingedly connected to opposite edges of the top panel and base
15 panels hingedly connected to lower edges of the respective side panels, there being provided at least one locking means between the two base panels, which locking means comprises a primary lock and a secondary lock which comprises a locking panel connected to the first base panel
20 by way of a first hinge which is substantially parallel to the hinge between the first base panel and its associated side panel and a keel panel which is connected to the second base panel by way of a second hinge which is substantially perpendicular to the hinge between the
25 second base and its associated side panel, the keel panel in use being moved out of the general plane of the base into a raised position so as to be located between a pair of adjacent articles and the locking panel being hinged upwardly so that formations on the locking panel and keel
30 panel interlock so as to be retained in their raised positions.

35 Preferably the locking panel extends through the space vacated by the keel panel which is moved into its raised position by the locking panel. With certain arrangements said cooperating formations of the secondary lock comprise a hook portion on the first locking panel and a notch formed in the keel panel.

In preferred arrangements said primary lock comprises interlocking elements located on the two base panels. Conveniently said interlocking elements comprise an edge formed in said second base panel by virtue of cut and a locking tab being formed on the first base panel between two aligned third hinges which are parallel to the first hinge, the tab being connected to a second locking panel which extends between the first and third hinges and in use being engaged behind said edge.

Preferably a further lock is provided to prevent the secondary lock from opening once engaged. In one embodiment a further hook portion is provided on the first locking panel adjacent the second locking panel, which further hook position engages in an additional cut in the second base panel.

A preferred feature is that the keel panel has a further hinge, parallel to the second hinge thereby defining an angled part and a free part of the keel panel remote from the second hinge which free part in use is in a plane substantially parallel to the general plane of the base of the device. Also, the angled part and the free part of the keel panel are contoured so as to follow the contours of the articles which are engaged by keel panels. Another feature is that the cooperating notch is formed in the angled part of the keel panel.

Ideally a locking means is provided between each adjacent pair of articles and also location means are provided for the heels and/or tops of the articles, which location means may be in the form of apertures or slots.

One embodiment of the present invention will now be described in more detail. The description makes reference to the accompanying drawings in which:

Figure 1 is a view of a blank for forming a device according to the present invention.

Figure 2 is a perspective view from above the device of the present invention in use.

Figure 3 is an end view of the figure 2 arrangement.

5 Figures 4 to 8 are various perspective views from below showing the assembly of the device, and

Figure 9 is a view of a blank for forming a second embodiment of device according to the present invention.

10 In the figures there is shown a paperboard blank 10 for forming a device in the form of a sleeve 11 retaining a multipack of articles 12 which taper inwardly towards their heel portions 13. In the embodiment shown there are two rows of two articles 12 which are in the form of pots for containing dairy products such as yoghurt, cream
15 etc. Other products can be contained in the pots and other arrays apart from 2 X 2 can be accommodated.

20 The blank 10 comprises a top panel 14, which is hingedly connected at opposite side edges to side panels 15, 16 along fold portions 17. Cooperating sets of arcuate cuts 18 and transverse cuts 19 constitute formations for locating and retaining top flanges 20 of the pots 12.

25 First and second base panels 21, 22 are hingedly connected to the respective side panels 15, 16 along folds 23. A rectangular aperture 24 is provided for each pot 12 in one of the base panels 21, 22 from the aperture 24 for a short way up the associated side panel 15, 16. Each cut 25 and aperture 24 combination constitutes
30 an arrangement for receiving the heel portion 13, a pot 12 when the device 11 is assembled.

35 The first base panel 21 incorporates a locking panel means 26 which is connected to the remainder of the first base panel 21 by a hinge 27 which is parallel to the fold 23 between the first base panel 21 and the side wall 15. In this embodiment the locking panel

means 26 comprises two locking portions 28 which are independently movable about the first hinge 27. The operation of each locking portion 28 is identical and so the operation and composition of only one will be described.

5 For each locking portion 28, the hinge 27 is in two sections between which is an arcuate cut 29 across which the hinge 27 does not extend. The cut 29 results in the locking panel having a tab 30 projecting towards the side panel 15. Each locking portion 28 also has
10 another hinge 31 (the first hinge) which is parallel to the hinge 27 (the third hinge), thereby dividing the locking portion 28 into a first locking panel 32 and a second locking panel 33. The first locking panel 32 tapers inwardly towards its end remote from the first hinge 31 and is
15 formed at its free end with a hook portion 34. Also the inside edges 35 of the second locking panel 33 are angled away from each other, meeting at the location of the third hinge 27.

The second base panel 22 incorporates a pair of keel
20 portions 36 which cooperate with the respective locking portions 28 of the first base panel 21. Each keel portion 36 comprises a keel panel 37 which is hingedly connected to the second base panel 22 along a second hinge 38 which is transverse compared to the hinge 23 between
25 the second base panel 22 and the side panel 16. Each keel portion 28 also provides a small rectangular opening 39 which defines a locking notch 40 in the keel panel 37 and a further opening 41 which provides a locking edge 46.

30 Each keel panel 37 has a further hinge 42 which subdivides the keel panel 37 into a free part 43 and an angled part 44 (which is so called because of its disposition in use). The side edges 45 of the keel panel 37 are curved for reasons which will be explained later.

35 Assembly of the device 11 will now be described with particular reference to figures 4 to 8.

5 Firstly four pots 12 are arranged in a 2 X 2 array with the top flanges 20 overlapping so as to improve the stability of the array when held in the finished device 11. This overlapping is clear from figure 3. The blank 10 is then placed on the pots with the top panel 14 lying against the tops of the pots 12 as shown in figure 4. The side panels 15, 16 are then swept down and the second base panel 22 is folded under the pots 12 as is shown in figure 5.

10 The locking portions 28 are then folded about the third hinge 27 away from the pots so that the tabs 30 stand clear of the remainder of the first base panel 21. The tabs 30 are then inserted into the opening 41 and engage the respective locking edges 46. This constitutes the primary lock of the device 11 and rotation of the locking portions 28 back towards the pots 12 helps to tighten the blank 10 around the array of pots 12.

15 Each first locking panel 32 is then hinged about the first hinge 31 towards the pots 12 such that the free end of each first locking panel 32 engages the angled part 44 of the associated keel panel 37 adjacent the notch 40. The first locking panel is then urged upwards and inwards between the adjacent pair of pots 12 through the space left by the hinging of the keel panel. This causes the keel panel 37 to rise between the pots 12 with the free part 43 tending to hinge about the further hinge 42 and remain generally parallel to the overall plane of the base of the device 11.

20 At a certain point the angled part 44 has hinged sufficiently about the second hinge 38 for the hook portion 34 of the first locking panel 32 to pass the notch 40. The resilience of the paperboard causes the angled part 44 to snap back below the hook portion 34. This constitutes the secondary lock of the device 11 in addition to providing the device with a keel.

30 The dimensions of the blank 10 are such that when the secondary lock is made, the second locking panel lies substantially flat

along the base of the device. Also the size of the keel panel and its shaped edges 45 ensure that it is a snug fit between the pots 12 which tend to cause the areas of the side panels 15, 16 adjacent the cuts 25 to bulge slightly, thereby aiding the retention of the pots in the sleeve 12. The curved edges 45 also prevent movement of the pots forwards and backwards in the direction of the open ends of the sleeve as well as preventing transverse movement of the pots in the direction of the side walls.

In figure 9 there is shown a modified blank 50. It is similar in most respects to the blank 10 of figure 1 and so like features have been given like reference numerals. The blank 9 has the additional features of a further hook portion 51 being provided at the lower edge of each first locking panel 32, a hook edge 52 extending from the first hinge 31. The further hook portion 51 is located on the opposite side of the first locking panel to hook portion 34.

Also each lateral cut 53 in the second base panel 22, which lateral cut defines the inner edge of each free part 43 of the keel panel 37 is provided with an additional cut 54 which is generally of curled form extending in a generally lengthwise direction. When assembled the further hook portions 51 engage in the respective additional cuts 54 to prevent the lock from pushing back open.

It will be understood that the precise form of the further hook portions 51 and the additional cuts 54 are a matter of design choice.

It will be appreciated that the precise shape and size of the keel panels and locking portions are a matter of design choice. For example, more or less tabs 30 could be provided to form the primary lock. It is even possible that the primary lock features described above could be omitted with the primary lock being formed by an adhesive connection of the two base panels.

Also the heel retention and flange retention methods described above are shown as examples of suitable designs and could be replaced, modified or even omitted.

Although reference has been made to tapering articles, it is to be understood that the term covers other articles which are narrower at the heel than at the top. For example, straight sided pots having a wider top flange could also utilise the type of sleeve described above.

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CLAIMS

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1. A paperboard retaining device for one or more pairs of articles arranged side by side in two rows, each article tapering inwardly towards its heel portion, said device comprising a top panel, oppositely disposed side panels hingedly connected to opposite edges of the top panel and base panels hingedly connected to lower edges of the respective side panels, there being provided at least one locking means between the two base panels, which locking means comprises a primary lock and a secondary lock which comprises a locking panel connected to the first base panel by way of a first hinge which is substantially parallel to the hinge between the first base panel and its associated side panel and a keel panel which is connected to the second base panel by way of a second hinge which is substantially perpendicular to the hinge between the second base and its associated side panel, the keel panel in use being moved out of the general plane of the base into a raised position so as to be located between a pair of adjacent articles and the locking panel being hinged upwardly so that formations on the locking panel and keel panel interlock so as to be retained in their raised positions.

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2. A retaining device as claimed in claim 1 wherein the locking panel extends through the space vacated by the keel panel which is moved into its raised position by the locking panel.



- 5 3. A retaining device as claimed in claim 1 or claim 2 wherein said cooperating formations of the secondary lock comprise a hook portion on the first locking panel and a notch formed in the keel panel.
- 10 4. A retaining device as claimed in any one of claims 1 to 3 wherein said primary lock comprises interlocking elements located on the two base panels.
- 15 5. A retaining device as claimed in claim 4 wherein said interlocking elements comprise an edge formed in said second base panel by virtue of cut and a locking tab being formed on the first base panel between two aligned third hinges which are parallel to the first hinge, the tab being connected to a second locking panel which extends between the first and third hinges and in use being engaged behind said edge.
- 20 6. A retaining device as claimed in any one of claims 1 to 5 wherein a further lock is provided to prevent the secondary lock from opening once engaged.
- 25 7. A retaining device as claimed in claim 6 wherein a further hook portion is provided on the first locking panel adjacent the second locking panel, which further hook position engages in an additional cut in the second base panel.
- 30 8. A retaining device as claimed in any one of claims 1 to 7 wherein the keel panel has a further hinge, parallel to the second
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hinge thereby defining an angled part and a free part of the keel panel remote from the second hinge which free part in use is in a plane substantially parallel to the general plane of the base of the device.

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9. A retaining device as claimed in claim 8 wherein the angled part and the free part of the keel panel are contoured so as to follow the contours of the articles which are engaged by keel panels.

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10. A retaining device as claimed in claim 9 wherein the cooperating notch is formed in the angled part of the keel panel.

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11. A retaining device as claimed in any one of claims 1 to 10 wherein a locking means is provided between each adjacent pair of articles and also location means are provided for the heels and/or tops of the articles, which location means may be in the form of apertures or slots.

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