

DIVIDER PANEL FOR STACKED CANS

This invention relates to arrangements for separating a plurality of cans.

Cans are well known for drinks, foodstuffs and other materials and are often stacked one above the other with the base of an upper can engaging in the top of a lower can. Such metal to metal contact is, however, undesirable during storage and distribution prior to use by the end consumer. A current trend in multiple packaging is for multipacks containing two or more layers of cans stacked on top of each other. These layers may require separation for the reasons above.

According to the present invention there is provided an arrangement for separating a pair of cans stacked one on top of the other, each can having a base rim and a top rim projecting above a top panel incorporating opening means, said arrangement comprising a paperboard member having a pair of openings disposed one within the other, the widest opening being dimensioned so as to be marginally smaller than the top rim of the lower can and the narrowest opening being dimensioned so as to span the opening means in the top panel, said narrowest opening defining a first cover portion for the opening means, a top panel or second cover portion being defined between the two openings and a top rim or third cover portion being defined externally of the widest opening, said first cover portion being connected to the second cover portion by at least one first interconnecting tab and the second cover portion being connected to the third cover portion by at least one second interconnecting tab, said interconnecting tabs allowing the cover portions to move into different planes relative to each other.

Preferably the tabs are formed integrally with

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the cover portions of the paperboard member. Conveniently the paperboard member will provide a plurality of pairs of openings for separating a plurality of pairs of cans. Most cans are generally circular in section and so for such cans the openings in the paperboard member are generally circular. It is a preferred feature that there are at least three tabs connecting each pair of cover portions. Preferably there are four tabs generally equispaced around each opening. In a preferred arrangement the inner tabs are located at points which generally bisect the locations of the tabs of the arrangement.

In preferred embodiments, each opening is formed by a plurality of separate cuts in the paperboard member, the number of cuts corresponding to the number of tabs spanning the opening. Ideally the majority of each cut lies on the desired general periphery of the opening with one end of each cut extending outwardly and the other end of each cut extending inwardly, the outer end of one cut overlapping and being spaced from the inner end of an adjacent cut so as to define one of the tabs.

Conveniently the paperboard member is also provided with at least one recess for engagement with suitable indexing and positioning mechanisms in a packing line.

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

Figure 1 is a plan view of a can separating arrangement according to the present invention,

Figure 2 is a perspective view of the arrangement in use with the top can of a pair removed,

Figure 3 is a part sectional view through a

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pair of cans separated by the arrangement of figure 1,
and

Figure 4 shows a strip of connected separating
arrangements.

5 The figures show a can separating sheet 10,
which in this embodiment is made from paperboard.
Other materials could, however, be used. The sheet 10
is, in use, positioned between an array of upper cans
11 and lower cans 12, a pair of upper and lower cans
10 11, 12 for each can receiving location 13 of the sheet
10. In figure 1, there are six such locations 13.
The sheet 10 shown in the figures is designed
particularly for cans 11, 12 having a base rim 14
disposed inwardly of a side wall 15, a top rim 16 also
disposed inwardly of the side wall 15, a top panel 17
15 below the top rim and a can opening means 18 such as a
ring pull in the top panel 17.

Quite often such cans 11, 12 are stacked one
on top of the other with the base rim 14 of the upper
can 11 nesting in the top rim 16 of the lower can 12.
20 In such a stacked arrangement there is generally metal
to metal contact between the bottom edge of the base
rim 14 and the top panel 17 and between the top rim 16
and the side of the base rim 14. After the cans are
filled with a beverage such metal to metal contact is
25 undesirable and in some cases can result in an
unpleasant residue in the region of the metal to metal
contact due to movement abrasion.

Because each location 13 is the same as the
others on the sheet 10, only one will be described.
30 The location comprises a first cover portion 20 which
in use covers the opening means 18 of the lower can, a
second cover portion 21 which in use covers a part of
the top panel 17 around the opening means 18 and a
third cover portion 22 which in use covers the top rim
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16 of the lower can. The third cover portion 22 extends outwards and is continuous with the corresponding third cover portions associated with the other locations 13 of the separating sheet 10.

5 The cover portions 20, 21, 22 are generally defined by inner and outer openings 23; 24 which are generally of a circular nature. Each opening is formed from four cuts 23a; 24a. The central part of each cut is part-circular. One end of each cut, the most clockwise end, is angled outwards 23b; 24b and 10 the other end is angled inwards 23c; 24c. The ends of adjacent cuts overlap and are spaced from each other to constitute inner tabs 25 and outer tabs 26.

These tabs 25, 26 connect the first and second cover portions and the second and third cover portions 15 respectively. The tabs allow adjacent cover portions to take up different planes relative to each other. This movement also results in a slight rotation relative to each other. Figures 2 and 3 clearly shows a lower can 12 with the separating sheet 10 positioned 20 above. The third cover portion 22 sits on the top rim 16 of can 12 between the top rim 16 and the side portion of the base rim 14 of the upper can 11. The second cover portion 21 is moved into a lower position relative to the third portion by the downwardly 25 projecting base rim 14 of the upper can 11. The first cover portion 20, however, is not directly engaged by the base rim 14, but is prevented from remaining in the same plane as the second cover portion 21 by the upwardly projecting opening means of the can 12. The 30 first cover portion 20, therefore, remains in a plane above the second cover portion 21 and nestles in a hollow 27 formed in the underside of the upper can 11.

Such an arrangement prevents metal to metal 35 contact whilst continuing to allow the nesting of the

cans.

Each location can of course be dimensioned and indeed shaped according to the type of cans being used. It is also envisaged that further cover portions could be incorporated in a similar manner if it was necessary to accommodate further changes of plane in the separator sheet.

Also the precise number of tabs 25, 26 is a matter of design choice. Four inner tabs 25 and four outer tabs 26 has been found to be convenient, but any number is possible. In the embodiment shown the inner tabs 25 bisect the outer tabs and this gives better strength than if they were aligned. However, strength may not always be important and so the tabs could be aligned if desired. Also, the outer tabs may be located such that they are not immediately adjacent the narrowest parts of the third cover portion.

As shown in figure 4, the separator sheet 10 could be provided in a 12 X 2 arrangement 30 for application to an array of 24 lower cans and 24 upper cans. Lines of weakening 31 could then be provided to divide the resulting array into more manageable units. Using large arrays such as this enables the sheet 10 feeder to operate more slowly and accurately than if it had to feed 2 X 3 sheets 10 in a rapid manner. It will also be clear that recesses 32 are provided in the sheet 10 to improve feeding and indexing relative to the cans.

Although the embodiments described above show the second cover portion 21 in a position lower than the other two cover portions, it is envisaged in some arrangements that it may be required to have other arrangements such as the third portion being on the lowest plane, the second portion being on a higher plane and the first portion on an even higher plane.

Other combinations are of course possible. Also it will be clear that other rectangular arrays of cans are possible and the array need not even be rectangular depending on the particular packing requirements.

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It would also be possible to incorporate the separator sheet 10 with other features such as independent side sheets extending down the side walls of the lower cans. The tabs need not be integrally formed, but could be formed separately from the sheet 10 and adhesively secured.

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CLAIMS

1. An arrangement for separating a pair of cans stacked one on top of the other, each can having a base rim and a top rim projecting above a top panel incorporating opening means, said arrangement comprising a paperboard member having a pair of openings disposed one within the other, the widest opening being dimensioned so as to be marginally smaller than the top rim of the lower can and the narrowest opening being dimensioned so as to span the opening means in the top panel, said narrowest opening defining a first cover portion for the opening means, a top panel or second cover portion being defined between the two openings and a top rim or third cover portion being defined externally of the widest opening, said first cover portion being connected to the second cover portion by at least one first interconnecting tab and the second cover portion being connected to the third cover portion by at least one second interconnecting tab, said interconnecting tabs allowing the cover portions to move into different planes relative to each other.
2. An arrangement as claimed in claim 1 wherein the tabs are formed integrally with the cover portions of the paperboard member.
3. An arrangement as claimed in claim 2 wherein there are at least three tabs connecting each pair of cover portions.
4. An arrangement as claimed in claim 3 wherein there are four tabs generally equispaced around each opening.



5. An arrangement as claimed in claim 4 wherein the inner tabs are located at points which generally bisect the locations of the outer tabs of the arrangement.
- 5 6. An arrangement as claimed in any one of claims 2 to 5 wherein each opening is formed by a plurality of separate cuts in the paperboard member, the number of cuts corresponding to the number of tabs spanning the opening.
- 10 7. An arrangement as claimed in claim 6 wherein the majority of each cut lies on the desired general periphery of the opening with one end of each cut extending outwardly and the other end of each cut extending inwardly, the outer end of one cut overlapping and being spaced from the inner end of an adjacent cut so as to define one of the tabs.
- 15 8. An arrangement as claimed in any one of claims 1 to 7 wherein the paperboard member provides a plurality of pairs of openings for separating a plurality of pairs of cans.
- 20 9. An arrangement as claimed in any one of claims 1 to 8 wherein the openings in the paperboard member are generally circular.
- 25 10. An arrangement as claimed in any one of claims 1 to 9 wherein the paperboard member is also provided with at least one recess for engagement with suitable indexing and positioning mechanisms in a packing line.
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