

PAPERBOARD INTERLOCK ARRANGEMENT

This invention relates to interlock arrangements between two pieces of paperboard. In particular, but not exclusively the invention relates to such arrangements for securing the ends of a paperboard sleeve about an article or articles.

According to the present invention there is provided an interlocking arrangement for connecting two pieces of paperboard comprising at least one flap projecting from one of said pieces for cooperation with at least one respective opening in said second piece, the or each flap having a leading portion farthest from the remainder of said one piece of paperboard, behind which leading portion is a portion which projects laterally at least in one direction, the or each flap being folded such that the leading portion and the laterally projecting portion are folded back on the rest of the flap, the flap is then in use inserted into its associated opening folded area or areas first, such that when the laterally projecting portion passes through the opening takes up a position clear of the edge of the opening thereby preventing withdrawal while the leading portion remains held by the opening. Such an interlocking arrangement can lie generally flat relative to the pieces of paperboard.

Preferably each flap has portions projecting laterally in both directions, the flap having a waisted section immediately behind said projecting portions, at which waist the flap is folded back along a straight line.

In preferred embodiments the opening comprises a single cut having two ends.

With chosen arrangements the laterally projecting portions are angled into the waist and into the leading portion. Also the maximum width across the

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laterally projecting portions of each flap is substantially the same as the maximum width of the associated opening. It is a preferred feature that the ends of the opening cut are angled in a manner corresponding to the angling, when folded back, of the laterally projecting portions towards the leading portion.

Preferably the flaps are dimensioned in such a way that over insertion such that the leading portions clear the edges of the openings is not possible.

In certain embodiments the two pieces of paperboard are constituted by ends of a wraparound sleeve for containing one or more articles. Preferably two or more of said flaps are provided on one end of the sleeve and two or more of said openings are provided on the other end of the sleeve.

One preferred feature is that the ends of the openings are aligned on a fold line such that the free portion of the sleeve end hinges about the fold to assist the insertion of the flaps.

Another feature is that the fold comprises two end sections joined by a C-shaped cut extending away from the leading portion of the flap so that when folded back, a tab projects forwardly of the fold line.

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

Figure 1 shows a blank for a carton incorporating an interlocking arrangement according to the present invention,

Figures 2a and 2b show perspective end views of the interlocking arrangement of figure 1 before and after connection,

Figure 3 is a part sectional plan view of an assembled interlocking arrangement,

Figure 4 is a schematic end view of the

assembled interlocking arrangement of figure 3,

Figure 5 shows a blank for a carton incorporating another interlocking arrangement according to the present invention, and

5 Figures 6a and 6b show perspective end views of the interlocking arrangement of figure 5 before and after connection.

10 In figures 1 to 4 there is shown a blank 10 for forming a sleeve-like carton for retaining three articles. The blank 10 has a top 11, main side panels 12, secondary side panels 13, a first base panel 14 and a second base panel 15. Cut outs 16 are provided for locating the tops of the articles and cutouts 17 are provided for locating the bottoms of the articles. These features are well known in the art of carton manufacture.

15 The first base panel 14 is hingedly connected to its associated side panel 13 by means of a fold 18 which connects the ends of the cutouts 17. The base panel 14 is formed with three projecting flaps 19 each having a leading portion 20. Immediately behind, that is on the side nearest the cutouts 17, are laterally projecting portions 21 which are angled laterally outwards at 22 from a waist section 23 in the form of a fold. Behind the waist, at 24, the flap again flares laterally towards the widest parts 25 of the flap 19. The widest parts 25 are just further from the waist 23 than the widest parts of the laterally projecting portions 21, but are of a similar lateral width.

20 The second base panel 15 has a further fold 26 interspersed with three openings 27 in the form of cuts. The openings 27 are located at positions which correspond to the positions of the flaps 19 on the first base panel 14 when the blank 10 is folded to make

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the carton. The lateral ends 28 of each opening 27 are angled towards the free edge 29 of the base panel 15 in the inward direction and then the central portion 30 of the opening returns to the imaginary continuation of the fold 26. The lateral width of the openings are just marginally larger than the width of the laterally extending portions 21 of the flaps 19.

The connection of the interlocking arrangement will now be described. For the sake of convenience the connection of only one flap 19/opening 27 will be described. The first step is to bring the two base panels 14, 15 towards each other. The leading portion and laterally projecting portions of the flap 19 are folded upwards and back on the remainder of the flap about the waist fold 23. Also the end of the second base panel 15 is folded up slightly about the fold 26 thereby widening the opening 27. The flap 19, fold 23 first is then inserted through the opening 27. The portions 21 are just able to pass through the opening 27 and when they have cleared the angled ends 28 of the aperture 27 they tend to spring upwardly thus preventing withdrawal of the flap 19 relative to the opening 27 because the leading edges, now facing backwards, of the laterally projecting portions 21 engage the angled ends 28 of the opening 27. At the same time the central portion 30 of the opening is located such that the leading portion 20 of the flap 19 does not clear the opening 27 remains held below the second base panel 15. Further insertion of the flap is not possible because the ends of the openings 27 engage the widest parts 25 of the flap 19 at its join with the rest of the base panel 14.

When the arrangement is fully interlocked the interlock is generally flat. Such an interlock is, therefore, particularly suitable for use with flat-

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bottomed articles or containers, but can be used for other articles or containers.

5 In the alternative version shown in figures 5 and 6 most features are the same as those in figures 1 to 4 and so have been given like reference numerals. The principal difference is that the waist hinge 23 on the flap 19 is not continuous but has a C-shaped cut 50
10 made centrally between two end folds 51. When the leading portion 20 is folded back the tab 52 inside the C-shaped cut 50 projects forwardly of the hinge folds 51. When the flap 19 is interconnected with the opening 27, the tab 52 remains projecting forwardly.
15 The article held at the location of the tab 52 tends to press down on the tab thereby tending to encourage the laterally projecting portions 21 to raise further so as to strengthen the engagement with the ends 28 of the opening 27.

20 It will be appreciated that the shapes and dimensions discussed above are examples of suitable arrangements. Other pack sizes are of course equally suitable and it is also possible that the interlock could be provided on any paperboard article not
25 necessarily cartons for multipacks.

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CLAIMS

1. According to the present invention there is provided an interlocking arrangement for connecting two pieces of paperboard comprising at least one flap projecting from one of said pieces for cooperation with at least one respective opening in said second piece, the or each flap having a leading portion farthest from the remainder of said one piece of paperboard, behind which leading portion is a portion which projects laterally at least in one direction, the or each flap being folded such that the leading portion and the laterally projecting portion are folded back on the rest of the flap, the flap is then in use inserted into its associated opening folded area or areas first, such that when the laterally projecting portion passes through the opening takes up a position clear of the edge of the opening thereby preventing withdrawal while the leading portion remains held by the opening. Such an interlocking arrangement can lie generally flat relative to the pieces of paperboard.
2. An interlocking arrangement as claimed in claim 1 wherein each flap has portions projecting laterally in both directions, the flap having a waisted section immediately behind said projecting portions, at which waist the flap is folded back along a straight line.
3. An interlocking arrangement as claimed in claim 2 wherein the opening comprises a single cut having two ends.



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4. An interlocking arrangement as claimed in claim 3 wherein the laterally projecting portions are angled into the waist and into the leading portion.
- 5 5. An interlocking arrangement as claimed in claim 4 wherein the maximum width across the laterally projecting portions of each flap is substantially the same as the maximum width of the associated opening.
- 10 6. An interlocking arrangement as claimed in claim 5 wherein the ends of the opening cut are angled in a manner corresponding to the angling, when folded back, of the laterally projecting portions towards the leading portion.
- 15 7. An interlocking arrangement as claimed in claim 6 wherein the flaps are dimensioned in such a way that over insertion such that the leading portions clear the edges of the openings is not possible.
- 20 8. An interlocking arrangement as claimed in any one of claims 1 to 7 wherein the two pieces of paperboard are constituted by ends of a wraparound sleeve for containing one or more articles.
- 25 9. An interlocking arrangement as claimed in any one of claims 1 to 8 wherein two or more of said flaps are provided on one end of the sleeve and two or more of said openings are provided on the other end of the sleeve.
- 30 10. An interlocking arrangement as claimed in any one of claims 1 to 9 wherein the ends of the openings
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are aligned on a fold line such that the free portion of the sleeve end hinges about the fold to assist the insertion of the flaps.

- 5 11. An interlocking arrangement as claimed in claim 10 wherein the fold comprises two end sections joined by a C-shaped cut extending away from the leading portion of the flap so that when folded back, a tab projects forwardly of the fold line.

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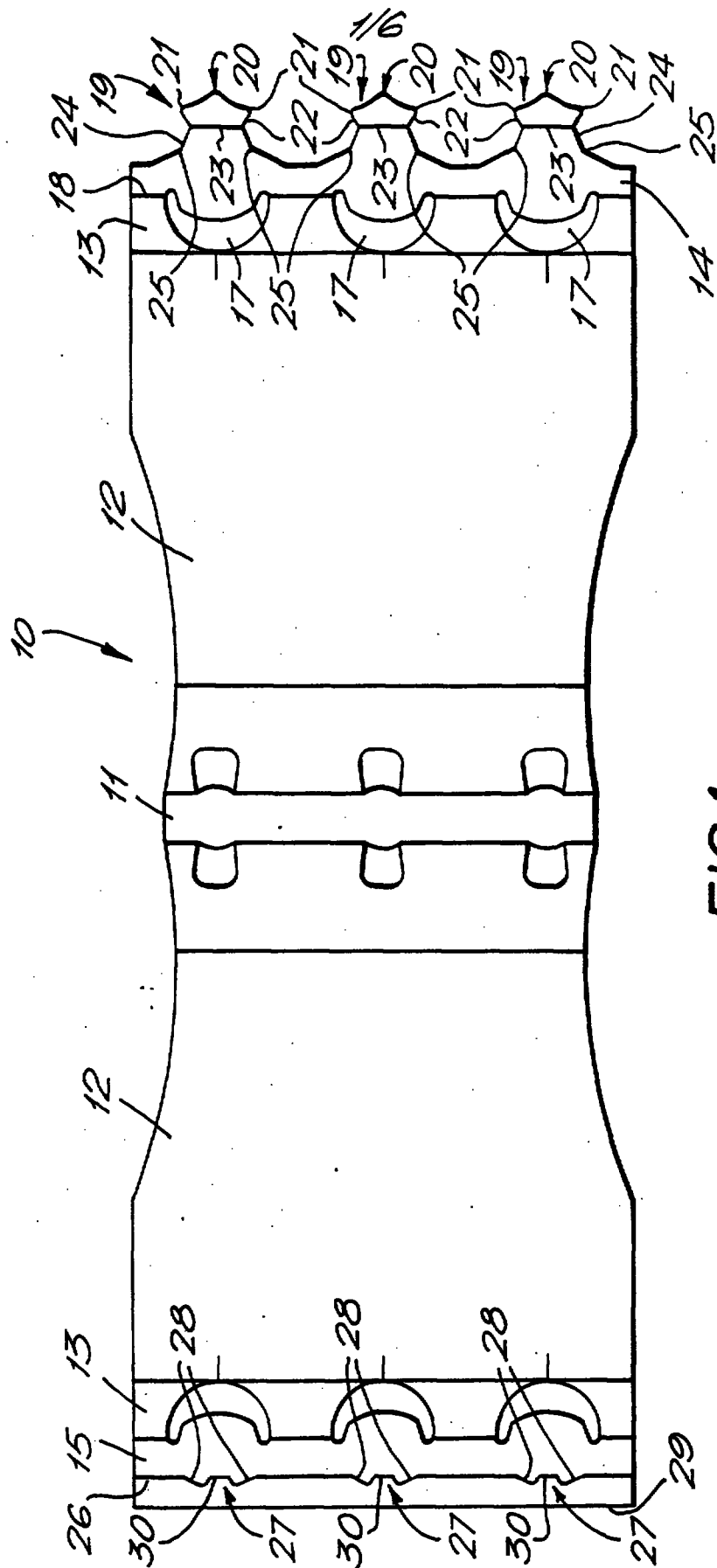
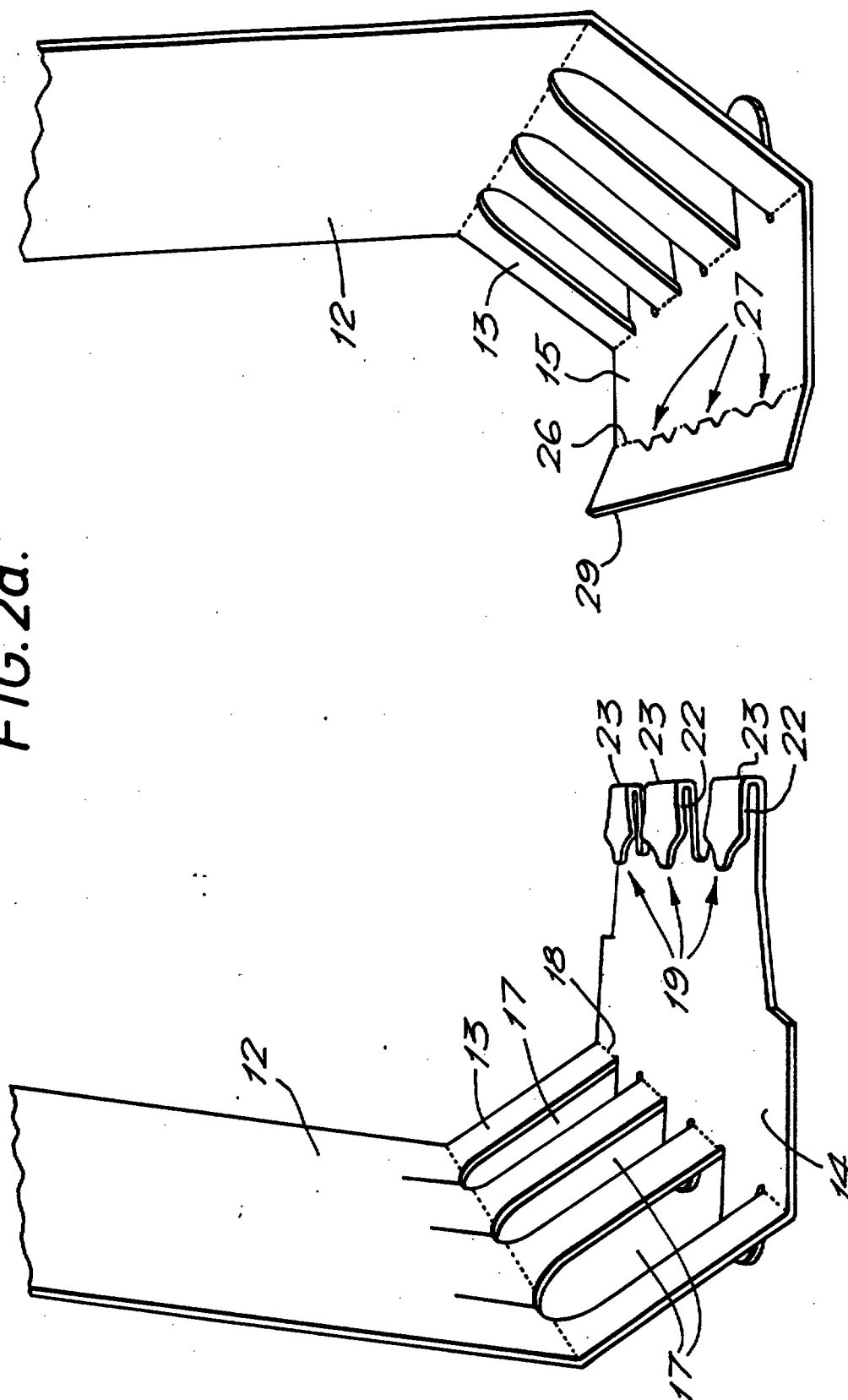


FIG.1.

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FIG. 2a.



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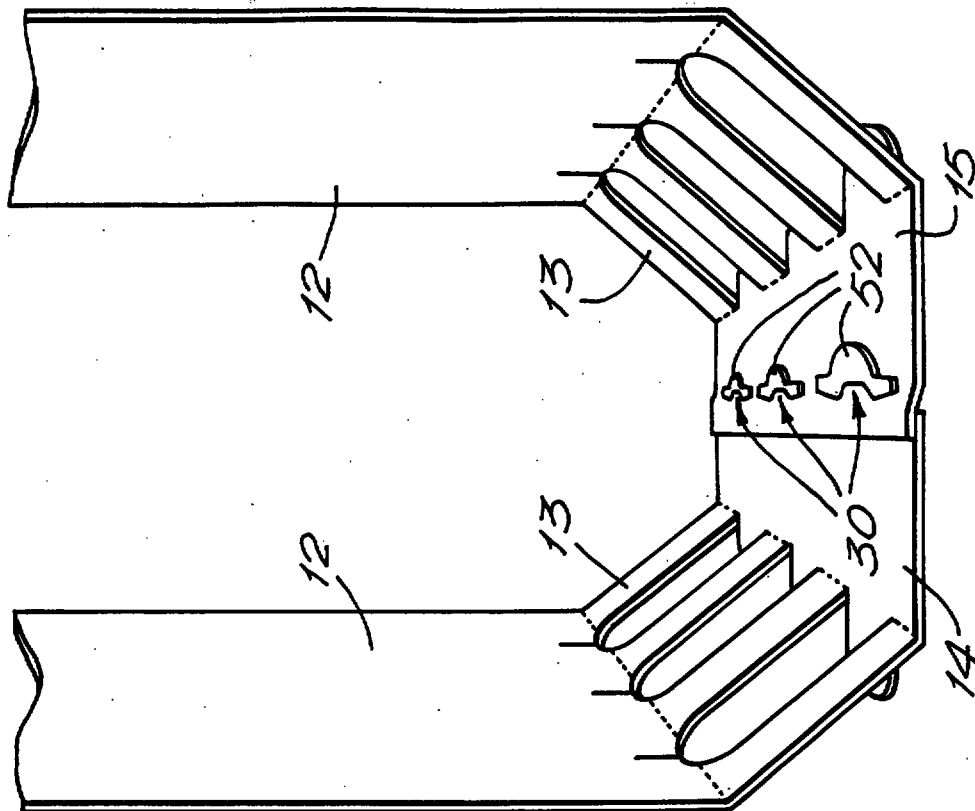


FIG. 6b.

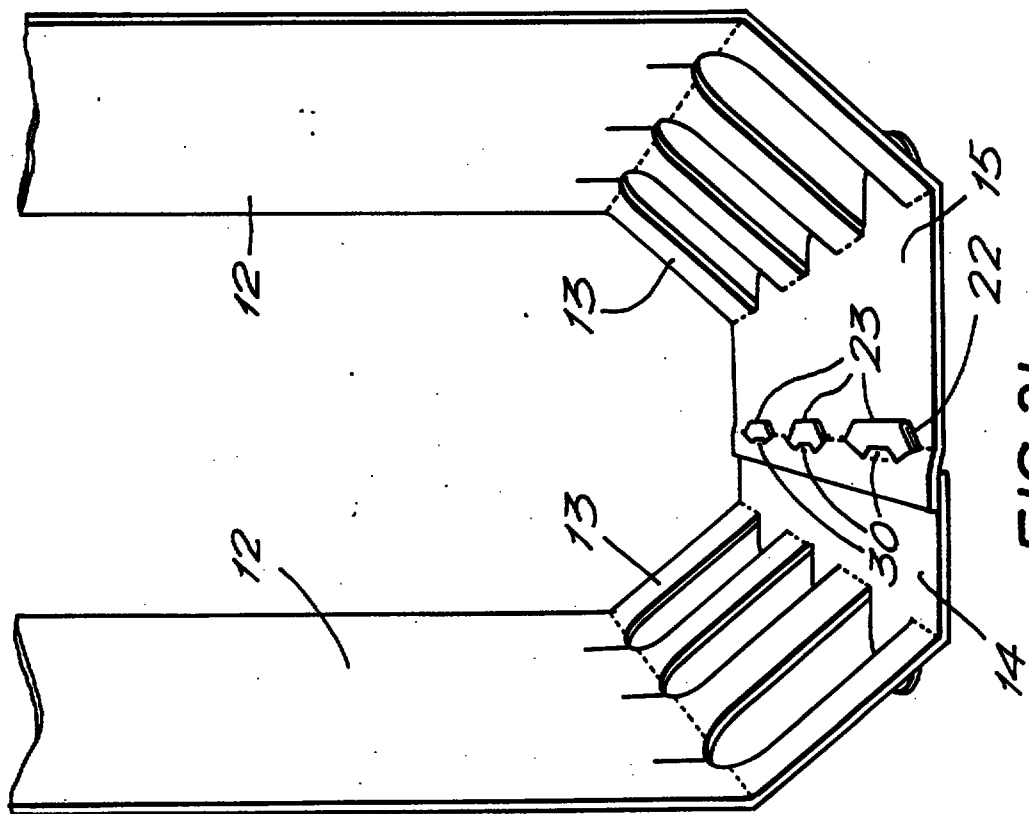
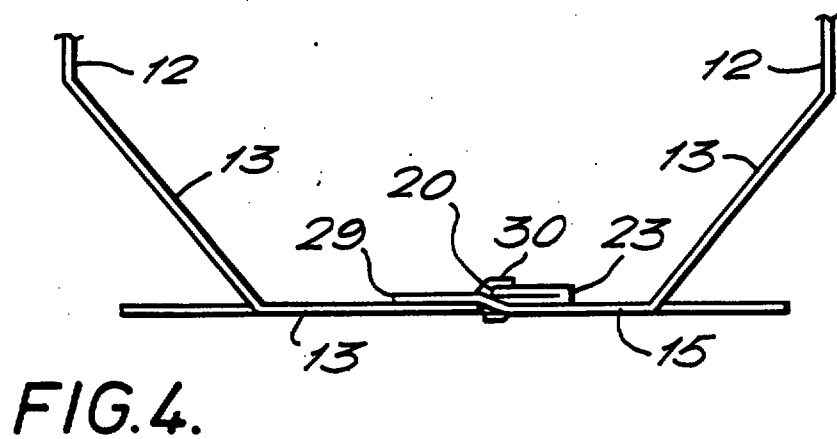
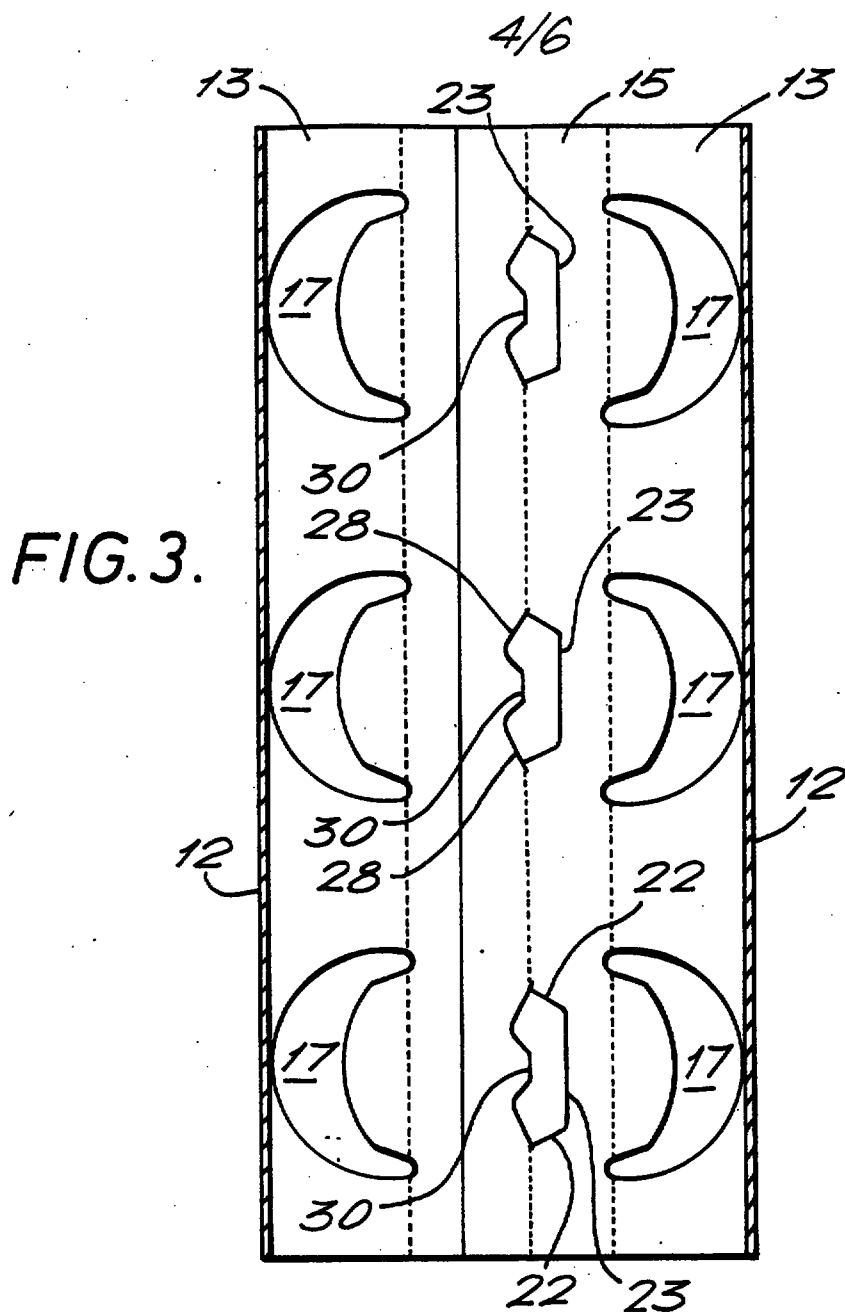


FIG. 2b.



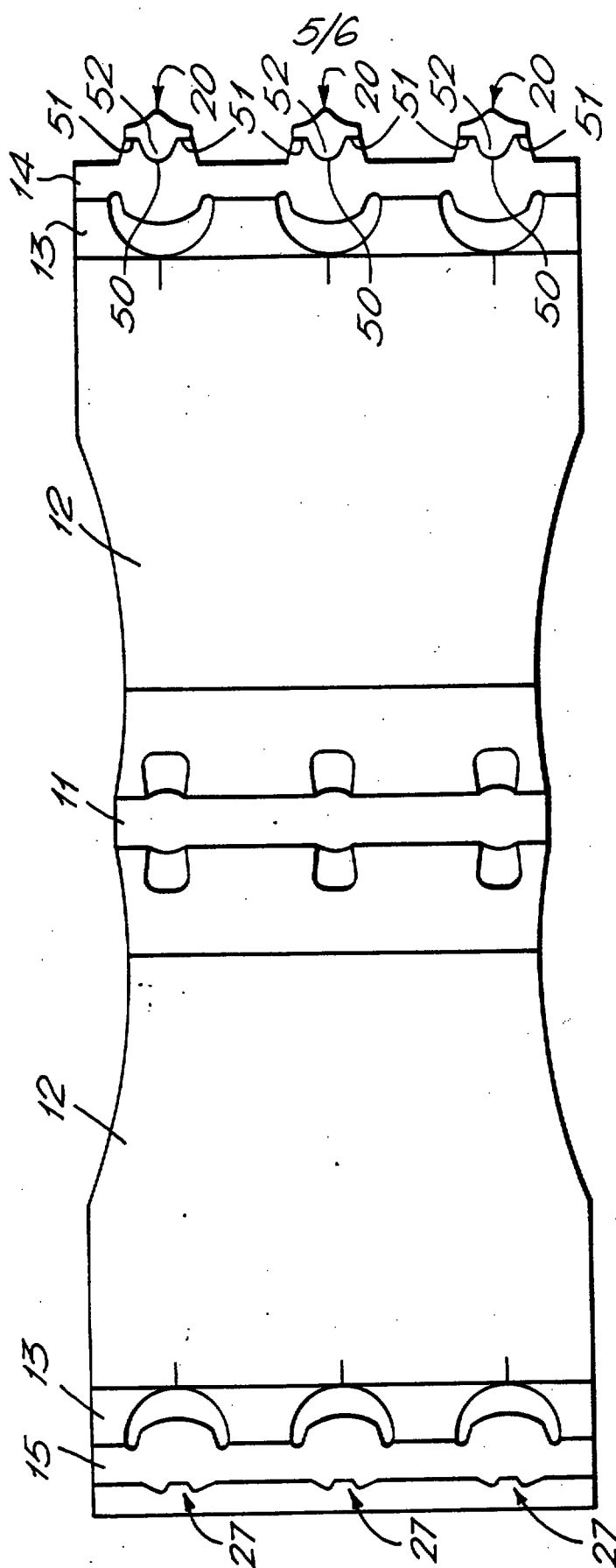
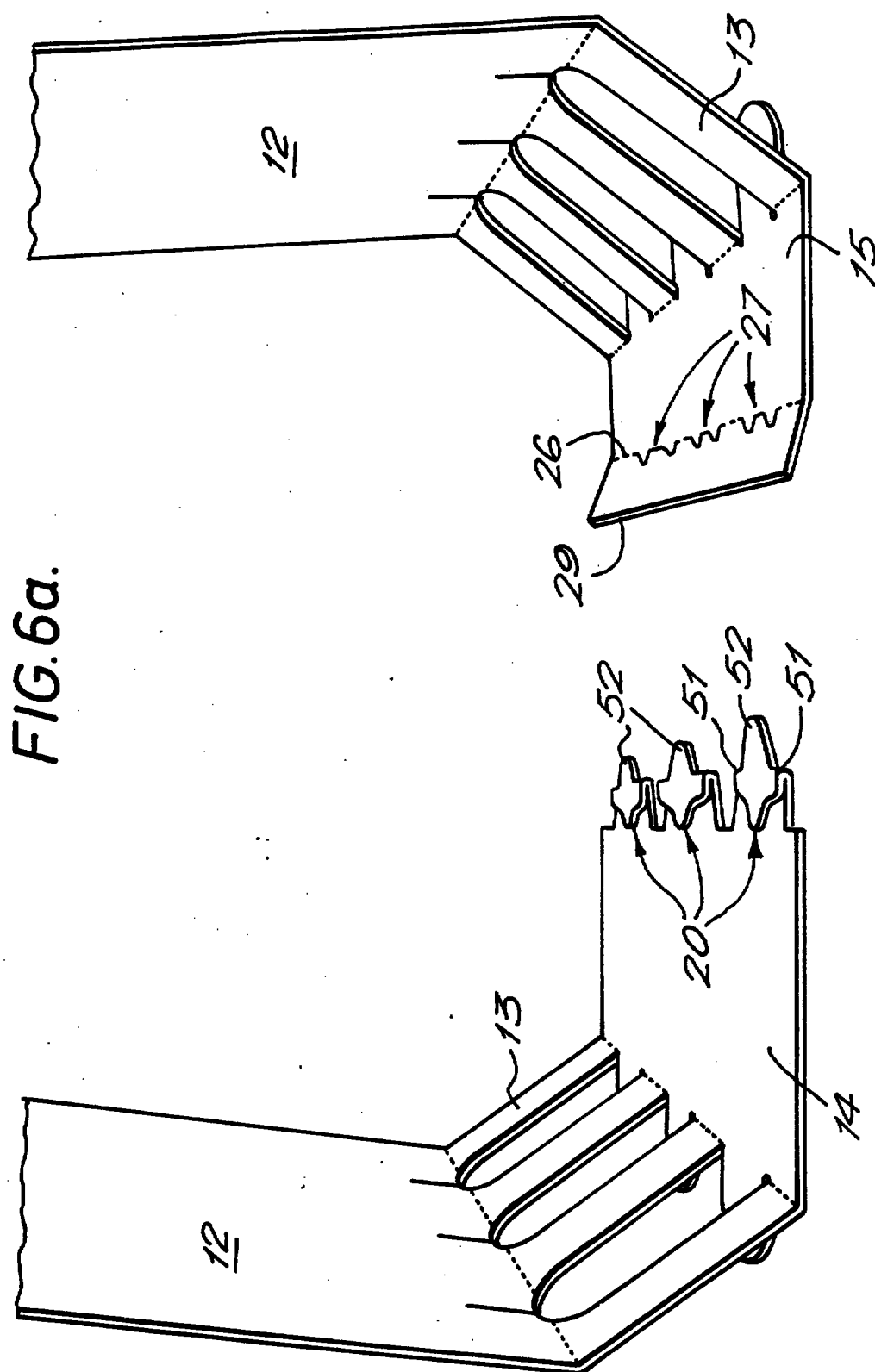


FIG. 5.

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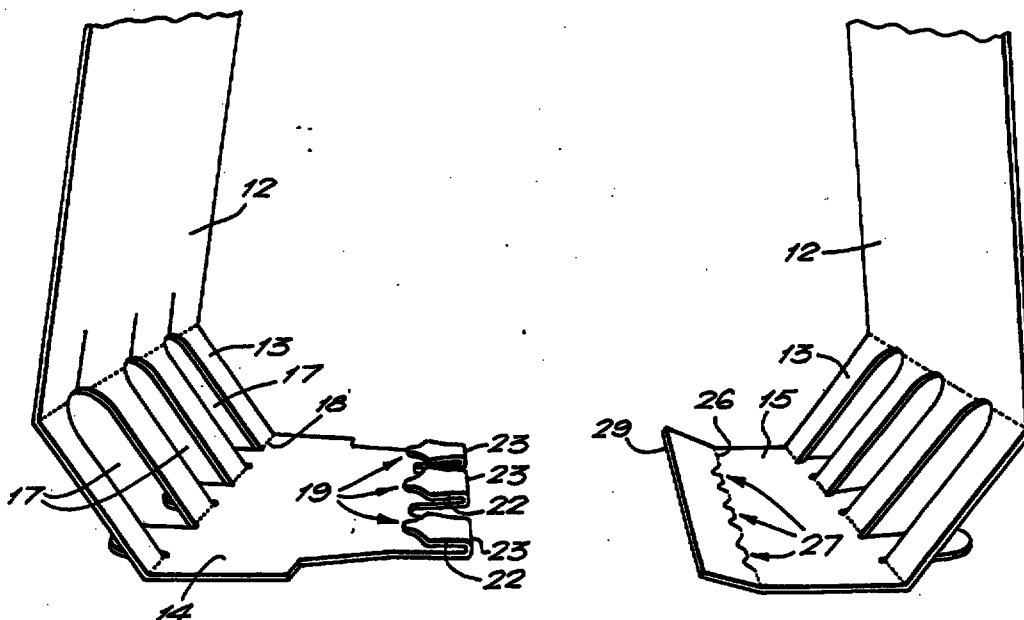




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(57) Abstract

There is provided an interlock arrangement for two pieces of paperboard. The arrangement comprises at least one flap (19) projecting from one piece, the leading portion (20) of which flap (19) is folded back about a waist section fold line (23). The leading portion (20) has laterally projecting portions (21) and is inserted through an opening (27) cut into the other piece of paperboard. The lateral projections (21) pass through the opening then tend to spring up so as to prevent withdrawal. The tip of the leading portion (20) remains held by the opening cut thereby ensuring that the flap (19) remains double thickness when engaged in the opening (27).

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