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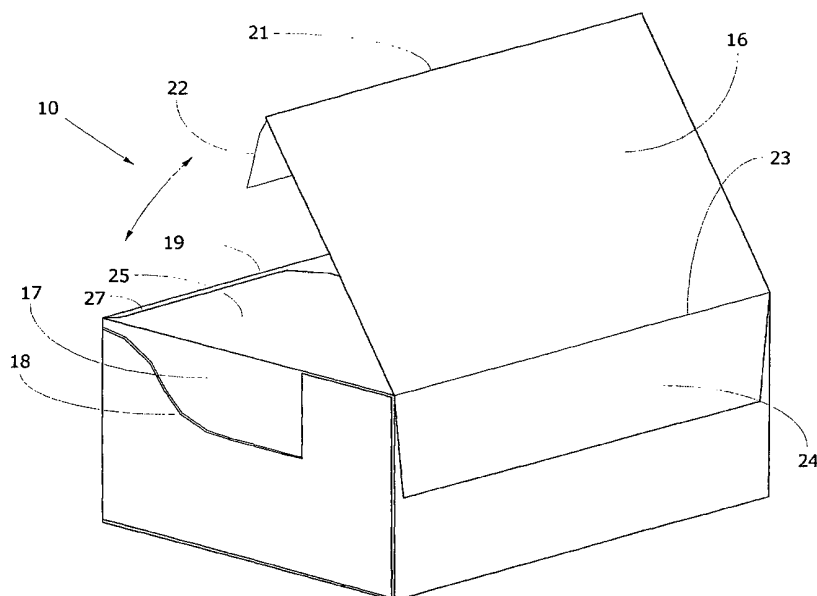
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(54) Title: DISPLAYING BOX PROVIDED WITH A QUICK OPENING SYSTEM



(57) Abstract: A displaying box (10) provided with a quick opening system comprises a base face (11), a first small lateral face (12), a rear lateral large face (13), a second small lateral face (14), a front lateral large face (15) and a cover (16), a first edge (23) of said cover being provided with a closure flap (24) that can be fixed to said front large face (15). Said cover (16) is provided, in correspondence of a second edge, with a preferential tearing-off line (19) in such a way that said cover (16) may be opened on said second edge by rotating the cover (16) about an axis defined by said first edge (23) associated to said flap (24), the cover being therefore manually opened on the opposed side relative to the side where the box is closed in the factory.



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DISPLAYING BOX PROVIDED WITH A QUICK OPENING SYSTEM

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TECHNICAL FIELD

The present invention relates to a displaying box provided with a quick opening system.

More particularly, the present invention relates to a displaying cardboard box provided with a quick opening
10 system, said box being advantageously but not exclusively suitable for being used by carpenter's shops, mechanic's workshops or ironmonger's shops, whereby said box is provided with a structure allowing the box to be very easily opened and, subsequently, to be used for showing
15 its contents. Said box comprises a tearing-off opening allowing a closure underlying the cover to be set free, said closure including a flap which can be inserted into said box on the same side of the box that is provided with a label that is applied while assembling the box in
20 an industrial plant, said label being well visible from the outer side of the box.

BACKGROUND ART

It is known that the products of mechanical industry, such as for instance fasteners, nuts and bolts,
25 fixing accessories, nails etc. are usually manufactured as large series lots that are packaged inside of suitable containers by means of automatic plants operated at high speed.

The containers which are used to carry out these
30 operations are generally constituted either by plastic bags, or by blisters, or by cardboard boxes made of plain or corrugated cardboard, whose upper face or cover may

firstly be opened in order to allow an automatic filling up operation to be carried out, and it is then reclosed.

Said cover generally comprises a flap which can rapidly be glued to a corresponding front side face of the box in order to close the latter.

With this kind of box it is operatively impossible to insert the flap inside the box while assembling the package, owing to the high speed of the assembling machines which are usually employed: in fact, in case the flap gets stuck, the whole plant has to be stopped.

On these grounds the flap is glued on the outer side of the box.

On the other hand, this kind of closure is conceived for being realised by an automatic plant operated at high speed, and it does not take into account that the final user needs a box that can correctly be opened and closed, that can be superimposed to other similar boxes without causing stability problems, and that is provided with a perfectly readable label on the user's side.

Another drawback is constituted by the fact, that since the flap is glued on the external surface of the front side of the box, it is operatively not possible to apply to said box a well readable label for identifying the products contained therein, and all the more so when the box has small dimensions, i.e. its respective length, width and height being less than 10 cm.

On these grounds, it is necessary to reduce the dimensions of the flap, but this is prejudicial to the possibility of manufacturing a totally hermetic seal, because the glueing operation of the flap on the external surface of the front side of the box becomes more difficult and less reliable.

Nevertheless, it should be stressed that the presence of a well readable and accessible label has a capital importance, since all data relative to the contents of the box, in a way that is readable by the user or by a machine (e.g. a bar code), are printed on said label.

Furthermore, in this kind of box, once the box is opened the flap is bent inwardly under the cover and inserted into the box; since the box is generally made of plain or corrugated cardboard, whose original sheet is provided with a bending line that is specifically designed in order to allow the flap to be precisely bent on the external surface of the box, when the flap is bent and inserted inside the box, the cover cannot be maintained in a perfectly flat position. This jeopardizes the stacking characteristics of the box, because two superimposed boxes are not anymore supported on the four box forming corners, in correspondence of the respective upper and lower faces which are placed one on the other.

Another inconvenience is represented by the fact that the box may be opened in a hurried and unsuitable way, thereby causing an irreversible damage thereof, whereby its contents are poured-off inside the other new boxes which are not always immediately available.

A further known solution is constituted by a box that differs from the described one only in that it is assembled in a manual way.

In this case, contrary to assembling operation carried out by means of an automatic plant, it is possible to insert the flap associated to the cover inside the box, instead of glueing it on the external side of the box.

However, this solution involves the substantial disadvantage that this kind of box cannot be hermetically sealed.

Actually, since the inner part of the box may always
5 be accessed to by everybody, en route between the manufacturer and the final user, it is not possible to guarantee a precise matching of the number of pieces which are boxed by the manufacturer, and which are printed on the label, with the number of pieces that the
10 box will contain when in the hands of the final user.

DESCRIPTION OF THE INVENTION

The present invention aims at providing a displaying box having a quick opening system that is able to prevent or to substantially reduce the above-described
15 inconveniences, and to provide then for a box that can be mass produced by means of a plant working at high speed, that is provided with a label, or with indications relative to its contents on a face thereof, thereby exploiting the whole surface of said face, furthermore
20 having a cover which is hermetically sealed during the assembling operation, but which can be later opened and re-closed on the box side where said label is present, whereby said box may easily be stacked and superimposed to other similar boxes in a simple and reliable way.

25 This is achieved by means of a displaying box comprising a quick opening system having the features disclosed in the main claim.

The dependent claims outline some particularly advantageous forms of embodiment of the invention.

30 The displaying box including a quick opening system according to the invention comprises a container having a cover that can be opened along a preferential tearing-off

line, a portion thereof being easily accessed from the outside and having at least a grip or notch suitable for enabling a manual grasping and a subsequent tearing-off operation.

5 According to an advantageous form of embodiment of the invention, said grip or notch is cut inside of a niche that is adjacent to the face comprising said preferential tearing-off line.

10 By grasping the grip or notch and by firmly dragging it along the preferential tearing-off line, the cover is lifted and the inner side of the box can be accessed to from the side opposite the closure flap, whereby the rear face of the box is maintained entirely visible; said rear face is provided with a label that is applied while
15 manufacturing the box and that carries all possible indications relative to the contents of the box, in a way that is readable by a user or by a suitable machine.

ILLUSTRATION OF DRAWINGS

20 Other features and advantages of the invention will become apparent by reading the following description of a form of embodiment of the invention, given as a non-limiting example, with the help of the drawings illustrated in the attached sheet, in which:

- figure 1 shows a sheet prepared for assembling a
25 displaying box according to a first form of embodiment of the invention;
- figure 2 shows a perspective schematic view of an open displaying box that is ready for being filled up with products;
- 30 - figure 3 shows a perspective schematic view of the displaying box according to figure 2, as hermetically sealed;

- figure 4 shows a perspective schematic view of the displaying box, after having been opened;
- figure 5 shows a sheet prepared for assembling a displaying box according to a second form of embodiment of the invention; and
- figure 6 shows a sheet prepared for assembling a displaying box according to a third form of embodiment of the present invention.

DESCRIPTION OF A FORM OF EMBODIMENT

10 In the figures, reference sign 10 generally indicates a displaying box provided with a quick opening system, in particular a displaying cardboard box 10.

For instance, box 10 may have a parallelepipedic shape comprising:

- 15 - a base face 11;
- a smaller tearing-off side face 12;
- a larger rear side face 13;
- a smaller smooth side face 14;
- a larger front side face 15;
- 20 - an upper cover 16.

Face 12 is provided with a niche 17 surrounded by a preferential tearing-off line 18 that runs along the whole upper side 19 of face 13.

25 Tearing-off line 18 delimits, inside niche 17, a grip or notch 20 (see figure 3) for the insertion of a finger; said grip or notch 20 can be easily removed when the box is open.

30 As can be observed in figure 4, the free edge 21 of cover 16 can be provided with a closure flap 22 that can be inserted inside box 10 in order to guarantee an hermetic seal thereof.

Edge 23 of cover 16, that is opposed to free edge 16, is provided with a fixing flap 24 that is fixed, for example glued, to large front face 15 (see in particular figure 3).

5 In this context, it is possible to notice that, from the point of view of an industrial packaging operation, the surface of fixing flap 24 may easily be designed in such a way as to guarantee a perfect and hermetic seal of box 10 once the products have been filled up and flap 24
10 has been glued on the surface of face 15.

 This allows many apparent advantages to be achieved in comparison to the already known solution, that has previously been described, according to which the box is opened by lifting this flap: actually, according to the
15 known solution, the need of placing a label for identifying the products on the box surface beneath the flap imposes very small dimensions for said flap. As a result, the operation of glueing the flap on the box surface is more difficult and less reliable.

20 Each small side face 12, 14 has a respective tab 25, 26 which, in use, is bent inwardly inside box 10, thereby delimiting, together with face 13, a slot 27 for inserting closure flap 22 when box 10 is closed.

 As may be noticed in figure 1, each face 11, 12, 13, 25 14, 15, 16 is surrounded by folds 28 that distinguish it from an adjacent face and/or tab.

 Base face 11 is provided with lateral fixing tabs 29, while face 15 is provided with lateral reinforcing tabs 30.

30 It may be noticed that lateral reinforcing tab 30 that is placed on the same side of grip or notch 20, plays the important role of preventing any outlet of

products from the hole that is made by acting on grip or notch 20 in order to open the box.

When the box is closed, fixing tabs 29 are bent with respect to face 11 until they overlook the inner part of box 10, whereby the tabs are fixed, for instance glued, to respective reinforcing tabs 30.

In fact, each reinforcing tab 30 is bent in order to be superimposed to a respective tab 29, whereby tab 30 is interposed between tab 29 and a respective side face 12 or 14 that has to be fixed, for example glued, thereto.

Flap 22 is provided with an extension 31 that can be fixed, preferably through glueing, to the surface of face 16 that is, in use, turned towards the inner side of box 10.

In order to guide the tearing-off operation along line 19, grip or notch 20 may be made integral to a thread 32 which is resistant to tensile stress, for instance a nylon thread, which is applied to the inner side of box 10 in correspondance of line 19.

Box 10 according to the invention may be quickly filled up with products by using automatic packaging machines; in fact, fixing flap 24 can be quickly fixed to face 15, thereby providing box 10 with a hermetic seal.

In order to open the box, an operator grasps grip or notch 20 and drags it along preferential tearing-off line 19, thereby setting free the cover 16 that can easily be lifted by means of a rotation about edge 23.

The subsequent lowering of cover 16, and the insertion of flap 22 inside of respective slots 27 allows the box to be re-closed, this time in a non-hermetically sealed way, in order to allow the box to be re-used.

Furthermore, it allows labels or alphanumeric indications to be applied on large rear side face 13.

In this context, it is important to underline that the possibility of opening box 10 along the preferential tearing-off line does not in any way jeopardize the stacking capability of the box, since the tear does not involve the four corners of the box, which do not play any role in the opening operation and which maintain unchanged their capability of supporting a plurality of superimposed boxes.

The invention has previously been described with reference to an advantageous form of embodiment thereof.

However, it is clear that the invention encompasses several variants that fall within its spirit, within the range of technical equivalences.

Another form of embodiment is illustrated in figure 5.

Referring to said fig. 5, in this case the box is provided with a cover 16A, an end thereof being provided with external closure flap 24A.

As may easily noticed, in correspondence of a side 35, cover 16A extends laterally with an extension comprising a portion 16B whose dimensions substantially correspond to those of cover 16A, as well as a portion 22A, that forms an inner closure flap, that is realised on a larger side of portion 16B.

Still, cover 16A is provided with a pair of preferential tearing-off lines 18A, 18B, which can alternately be torn off by acting on a grip 20A, 20B or 20C; said grips can indifferently be placed on the side of cover 16A, or centered in respect of the latter.

In operation, portion 16B is bent along line 35 (see the arrow in the figure), in such a way as to be entirely superimposed to cover 16A. In this way, internal flap 22A is placed in a given position which, once the box is assembled, will be found inside said box.

Once the box is assembled and hermetically sealed, according to a manufacturing method similar to the already described one, the cover may be opened on the rear side in respect of external flap 24 by acting on grips 20A, 20B, 20C. The inner flap can then be used for holding the box closed after it has been opened for the first time.

Figure 6 shows another form of embodiment of the box according to the invention.

By comparing figures 6 and 1, it may be noticed that the box according to figure 6 is not provided with an inner flap that is applied by glueing to the cover of the box, as is the case for the box according to figure 1.

Rather, in figure 6, the assembly forming a cover, that is constituted by cover portion 16C and external flap 24B, is connected along line 38 to a similar assembly that is formed by an element 24C (whose dimensions substantially correspond to those of flap 24B) and by an element 16D, whose dimensions are similar to those of cover 16C. Said element 16D is provided with a pair of cavities 20D, 20F acting as grips or notches for the subsequent opening operation of the box. The external end of element 16D extends in an inner flap 22C of the box.

In operation, the box is assembled as previously described. In the cover area, the assembly internal flap 22C - element 16D - element 24C is bent at 180° along

folding line 38, in such a way that flap 22C is brought to the inner part of the box.

The newly formed external flap has a double thickness since it is constituted by elements 24B, 24C,
5 and the cover has a double thickness too, since it is constituted by elements 16C, 16D.

Once the box is closed, it can be re-opened by acting on grips 20C, 20D, 20E and, in this case too, it is re-opened on the opposed side in respect of the
10 original closing side.

These and other variants are conceivable, within the range of technical equivalences.

CLAIMS

1. Displaying box (10) provided with a quick opening system, comprising a base face (11), a first small lateral face (12), a rear lateral large face (13), a second small lateral face (14), a front lateral large face (15) and a cover (16), a first edge (23) of said cover being provided with a closure flap (24) that can be fixed to said front large face (15), characterised in that said cover (16) is provided, in correspondence of a second edge, with a preferential tearing-off line (19) in such a way that said cover (16) may be opened on said second edge by rotating the cover (16) about an axis defined by said first edge (23) associated to said flap (24), the cover being therefore manually opened on the opposed side relative to the side where the box is closed in the factory.
2. Box (10) according to claim 1, characterised in that it further comprises at least a grip or notch (20) in order to enhance a manual access to said preferential tearing-off line.
3. Box according to claim 2, characterised in that said grip or notch (20) is realised inside a niche (17) that is adjacent to said cover (16).
4. Box (10) according to anyone of the preceding claims, characterised in that it is provided with a thread or band (32) made of a material resistant to tensile stress, that is applied to said box (10) in correspondence of said preferential tearing-off line (18, 19).

5. Box (10) according to claim 4, characterised in that one end of said thread or band (32) is integral to said grip (20).
6. Box (10) according to anyone of the preceding
5 claims, characterised in that said cover (16), when the box (10) is still in a disassembled condition, is provided with a closure flap (22) in correspondence of a free edge thereof, said flap (22) cooperating with the rear face (13) of said box
10 (10).
7. Box (10) according to anyone of the preceding claims, characterised in that it is made of plain cardboard.
8. Box (10) according to anyone of claims 1 to 6,
15 characterised in that it is made of corrugated cardboard.
9. Box (10) according to anyone of claims 3 to 8,
20 characterised in that the cut sheet from which said box is derived is provided with a tab (30) that is suitable for being placed, when the box is assembled, beneath said niche (17) that is provided with said grip or notch (20), in such a way as to prevent any outlet of products from the hole which
25 is formed by opening the box (10) through a manual action on said grip or notch (20).

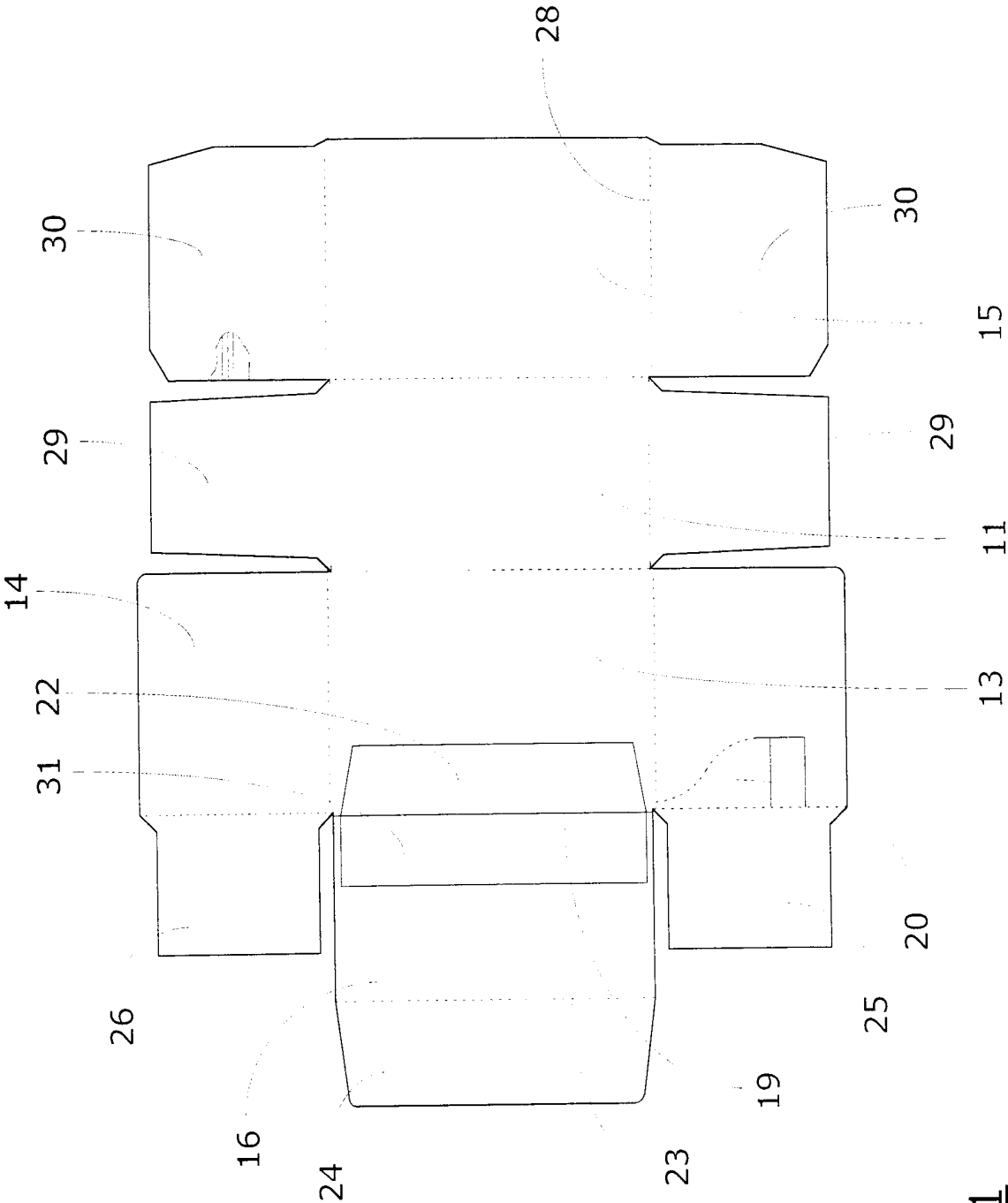


Fig. 1

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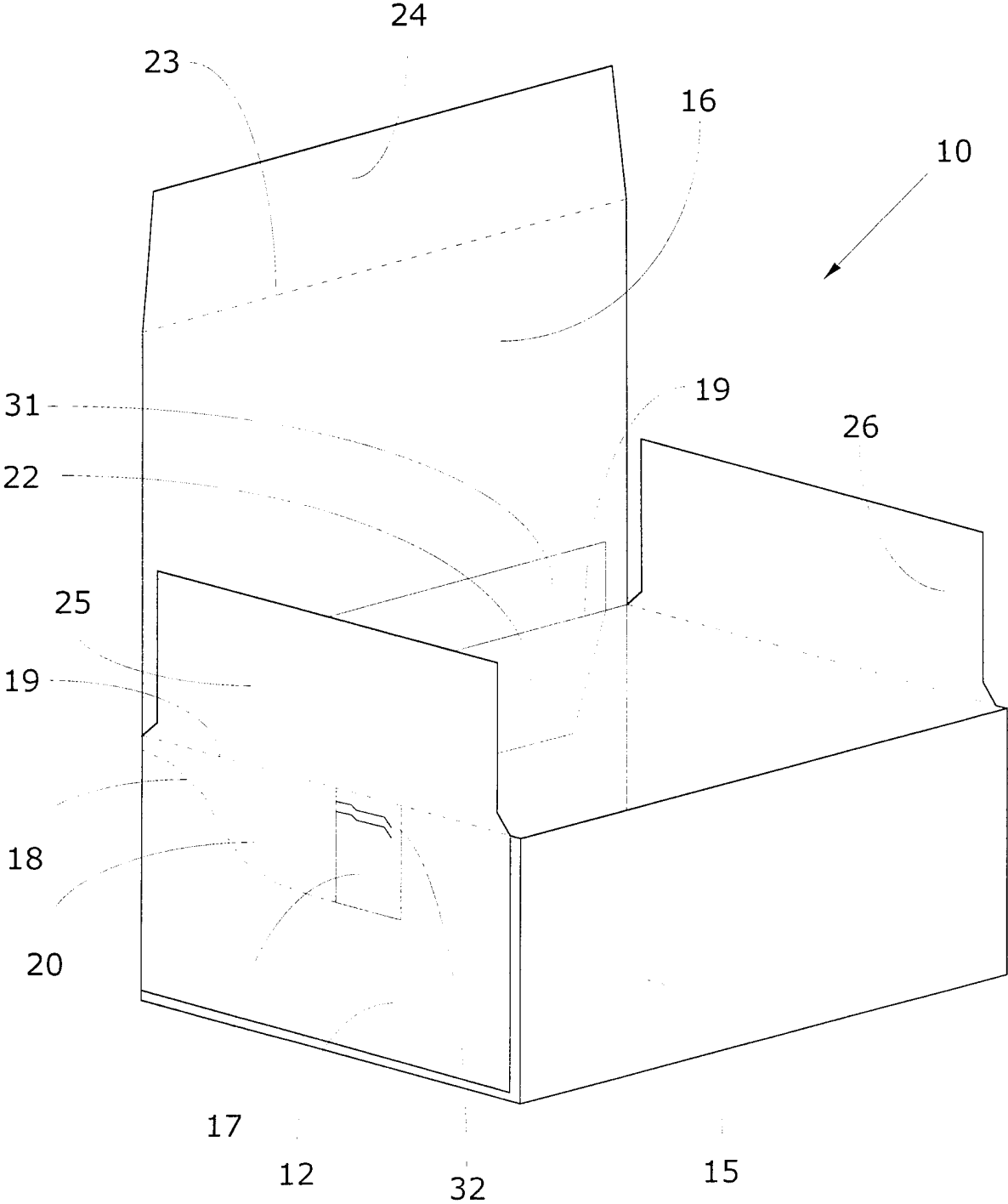


Fig. 2

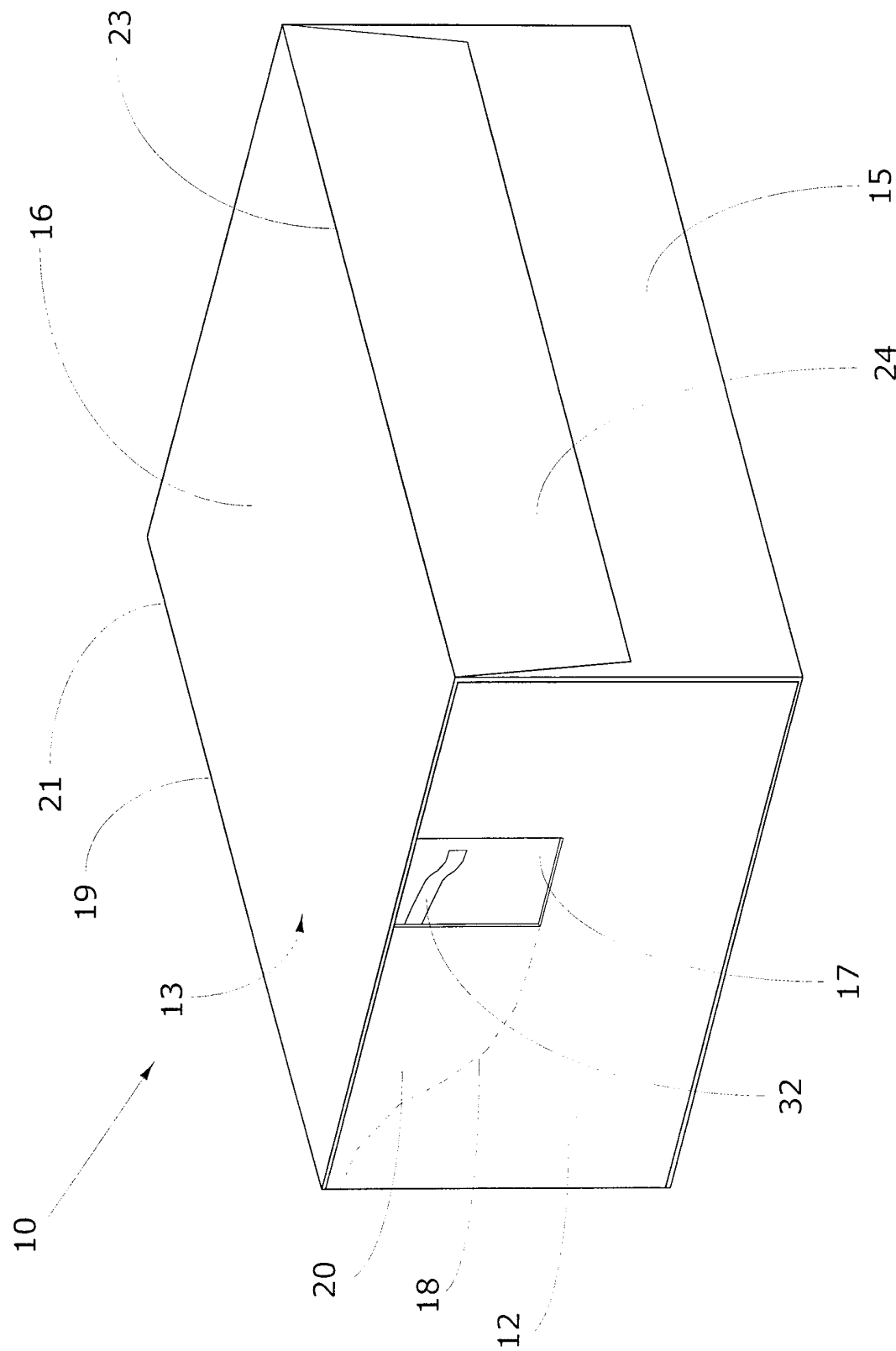


Fig. 3

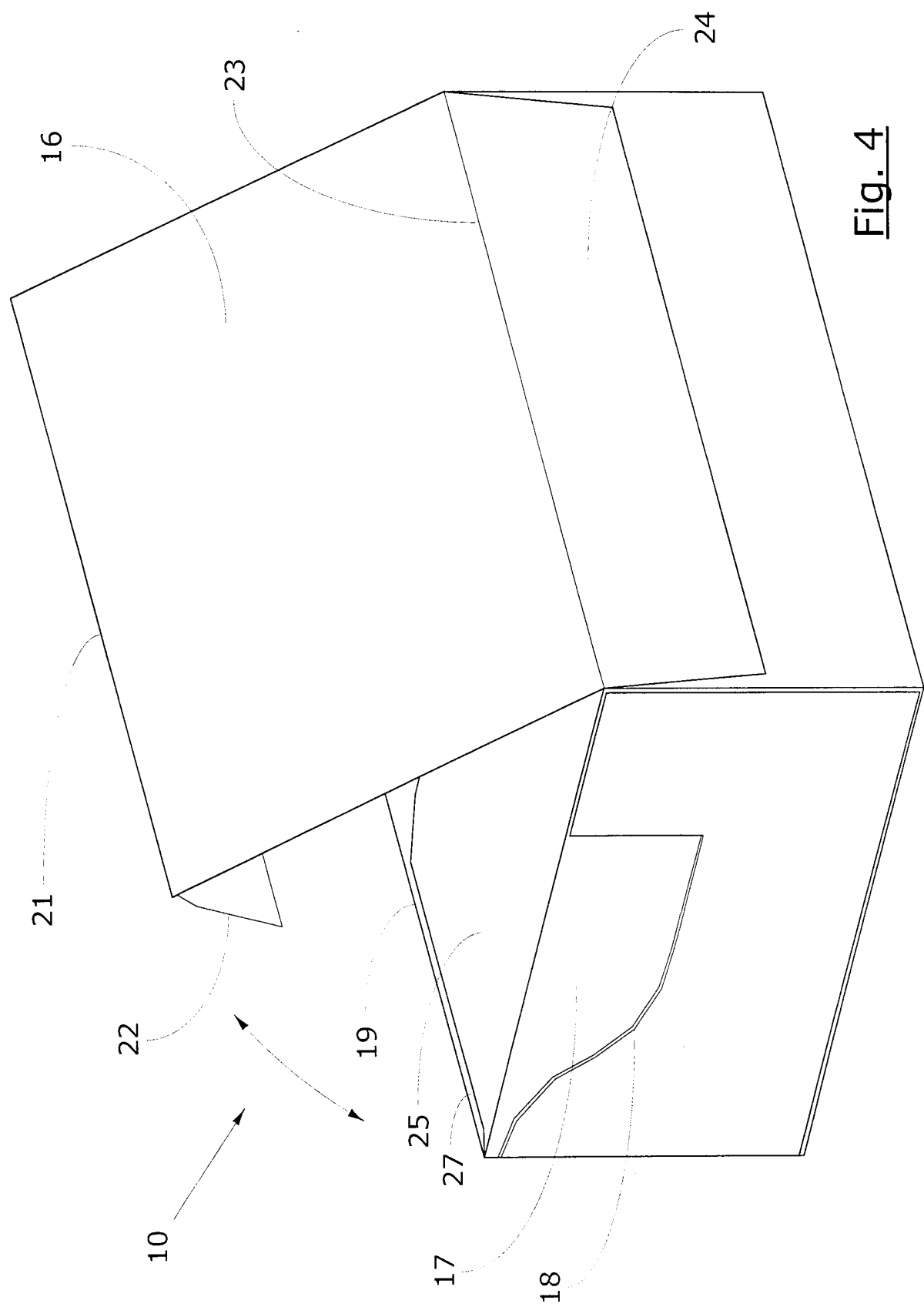
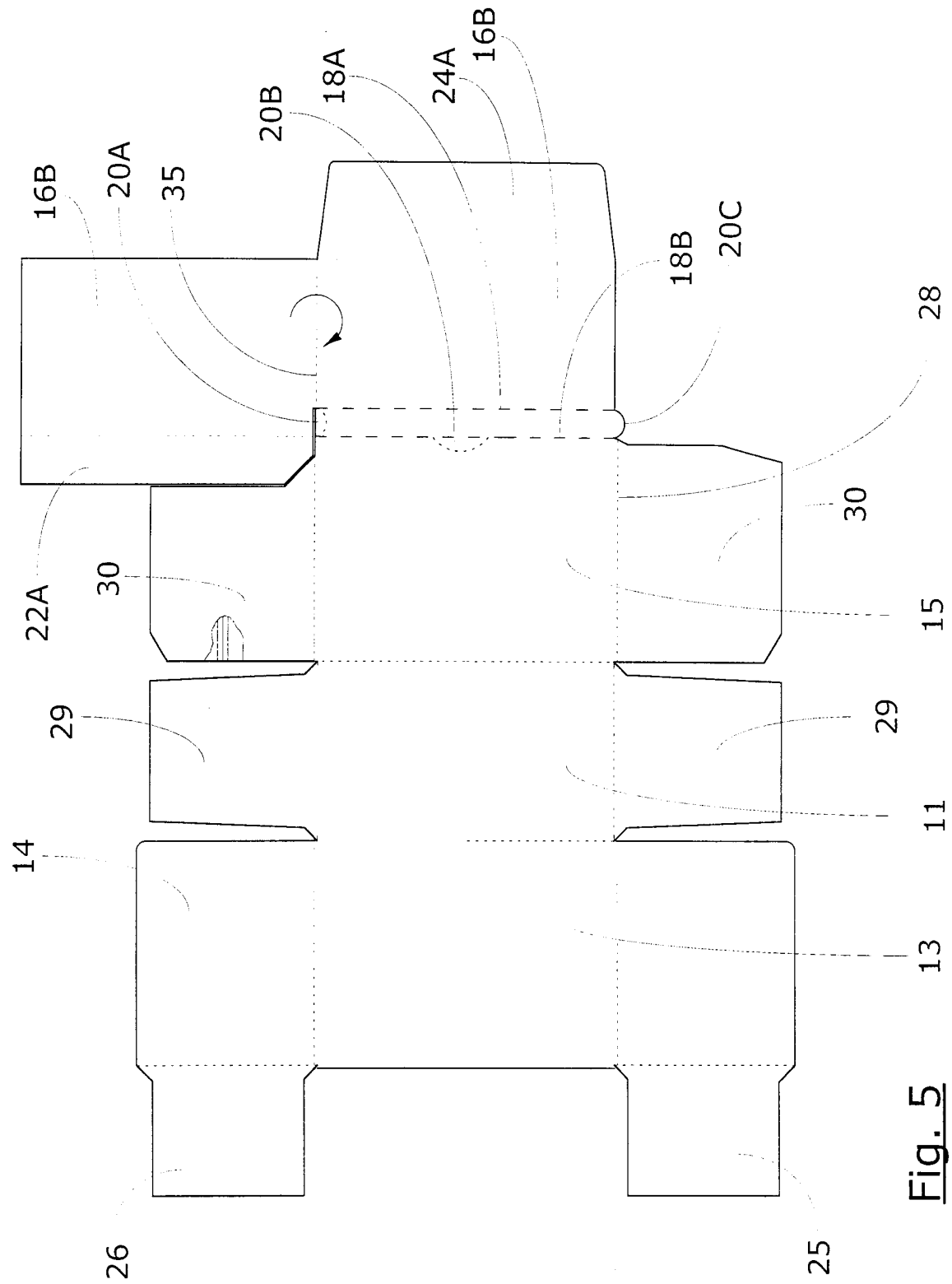


Fig. 4

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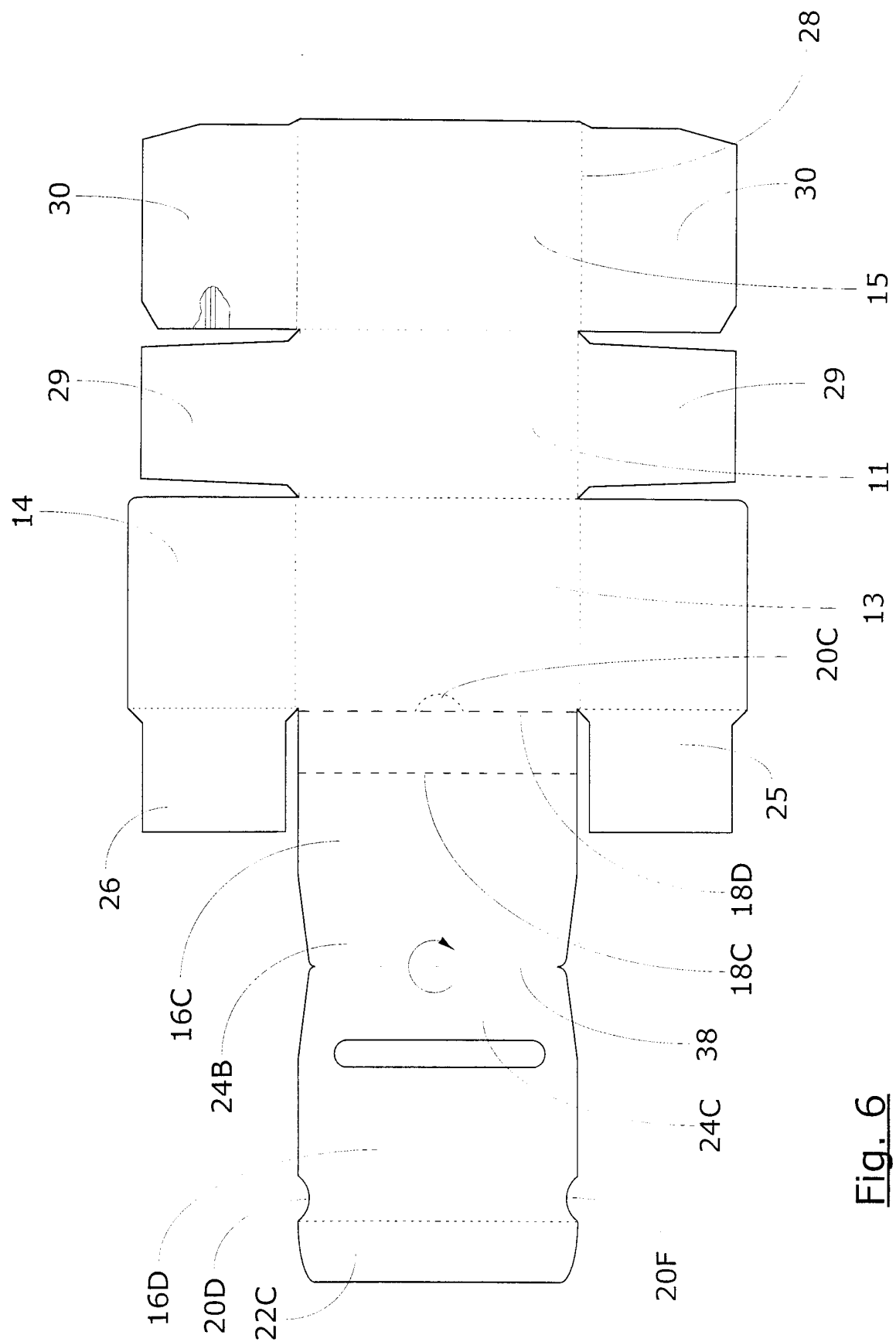


Fig. 6

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 00/00096

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65D5/54

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 634 007 A (RUSNOCK KEVIN R) 6 January 1987 (1987-01-06)	1,7,8
Y	the whole document ---	2-5,9
Y	US 3 111 255 A (G.SKOWRONSKI) 19 November 1963 (1963-11-19)	2,3,9
	the whole document ---	
Y	US 3 167 237 A (F. NEGUS) 26 January 1965 (1965-01-26)	4,5
	the whole document ---	
A	US 5 743 462 A (STONE JAMES L) 28 April 1998 (1998-04-28)	1-9
	the whole document ---	
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 00/00096

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 3 734 390 A (BUTTERY K ET AL)</p> <p>22 May 1973 (1973-05-22)</p> <p>the whole document</p> <p>-----</p>	1-9

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IT 00/00096

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4634007 A	06-01-1987	NONE	
US 3111255 A	19-11-1963	NONE	
US 3167237 A	26-01-1965	NONE	
US 5743462 A	28-04-1998	US 5505374 A US 5673849 A	09-04-1996 07-10-1997
US 3734390 A	22-05-1973	CA 957664 A CA 957348 A US 3797728 A	12-11-1974 05-11-1974 19-03-1974