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(71) Applicant: **Zini Astucci S.r.l.**
**59100 Prato (IT)**

(72) Inventor: **ZINI, Corrado**
**50023 Impruneta (Firenze) (IT)**

(74) Representative: **Soldatini, Andrea et al**
**Società Italiana Brevetti S.p.A.**
**Corso dei Tintori, 25**
**50122 Firenze (IT)**

(54) **IMPROVED METHOD FOR MAKING A CASKET-LIKE CARDBOARD CONTAINER AND CONTAINER THUS OBTAINED**

(57) The present invention refers to the field of cardboard containers, typically made from covered cardboard, and specifically its object is a method for making a casket-like container with such material, i.e. a container having base and cover able to be hingeably articulated and with the internalarticulation axis of the hinge staggered towards the inside. The invention extends to a casket-like container thus obtained, mainly intended for use as packaging box for precious objects such as jewels and watches.

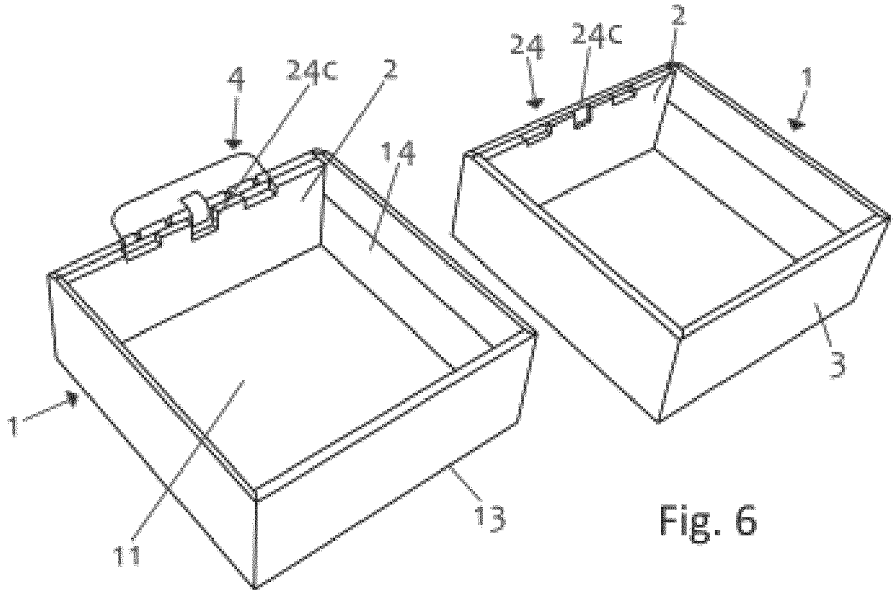


Fig. 6

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## Description

**[0001]** The present invention refers to the field of cardboard containers, typically made from covered cardboard, and specifically it concerns a method for obtaining a casket-like container with such material, i.e. a container having base and cover able to be hingeably articulated and with spring-loaded opening. The invention extends to a casket-like container thus obtained, mainly intended for use as packaging box for precious objects such as jewels and watches.

**[0002]** Containers of this type are well known and widely used in various configurations and materials, most of all wood and thermoplastic materials. Known solutions, however, generally pose problems of relative complexity of production, and relative costs (which add to the intrinsic costs of the material), that are anything but negligible, and hence there is an increasingly competitive market range seeking any possible saving that can translate into a reduction of the final price, or an increase in the perceived quality for the same price.

**[0003]** Containers like the ones mentioned above can also be obtained through a method devised by the same applicant, and disclosed in EP patent publication n. EP2581210. Such a method succeeds in obtaining a quality container that is strong and aesthetically pleasing, but using cardboard, with simple modes of operation and a drastic reduction in production costs. According to the method, through specially shaped flat blanks, and in particular provided with hinge flaps equipped with suitable slits, shells are made that are connected through insertion and gluing in the slits of one or more hinge devices typically of the type with elastic contrast.

**[0004]** Although satisfactory overall, such a solution has further margins of improvement, linked to the search for an almost complete absence of folds and for perfect masking of the metal hinges.

**[0005]** The present invention now offers this kind of improvement, which through a new version of the method allows surprising results to be obtained in terms of quality and finishing level of the box.

**[0006]** The method and the container according to the present invention have the essential characteristics defined by the first and by the ninth of the attached claims.

**[0007]** The characteristics and advantages of the improved method for making a cardboard casket-like container and of the container thus obtained according to the present invention will become apparent from the following description of embodiments thereof, given as a non-limiting example, with reference to the attached drawings, in which:

- figures 1 and 2 show planar development views of two blanks intended to form one of the two matching halves or shells of a casket-like container according to the invention;
- figures 3 to 10 represent axonometric views of successive steps of the manufacture of a casket-like container according to the invention; and
- figure 11 shows a set of blanks, including blanks of covering sheets, intended for the formation of a container according to the invention in a different embodiment.

**[0008]** With reference to said figures, according to the invention it is devised to obtain a cardboard casket-like container having two mutually hinged shells, typically but not necessarily with elastic contrast to the opening rotation, and preferably but not necessarily snap-locking in the open position, and assisted rotation towards the open position, wherein the two shells, facing one another on the open side, combine to form a closed container. The hinge device adapted for obtaining such a functionality, is a *per* se known device (usually metallic), the specific characteristics of which will in any case be discussed hereinafter.

**[0009]** Each shell is obtained from a cardboard flat blank. With specific reference to figures 1 and 2, in an example parallelepiped-shaped shell a main blank 1 comprises (figure 1) a central portion 11, having a quadrilateral profile as the bottom of the shell that will be represented by the aforementioned portion. The sides of the central portion 11 have respective flaps 12, 13, 14 foldably extending from them, intended to form, indeed by folding, side walls that will rise from the central or bottom portion 11. Each flap therefore has a base folding line 12a, 13a, 14a that separates it from the central portion 11. In this embodiment two of the flaps, and more precisely a hinge flap 12 intended, as will be seen shortly, to form the wall of the shell that hingeably connects with the other shell, and a distal flap 13 opposite the hinge flap, also have a transverse inner folding line 12b, 13b. Thanks to such an inner folding line the respective walls will be doubled, i.e. formed from two overlapping portions of cardboard sheet.

**[0010]** In the end portion of the hinge flap 12 at least one window 15 for receiving a mounting template is formed from the internal folding line 12b, as will be discussed hereinafter. In the case of a single window 15, it will be like in the example in central position with respect to the direction of extension of the internal folding 12b.

**[0011]** The flaps 12, 13, 14 are configured on the side edges, i.e. those intended to couple on the corners of the shell following the elevation by folding with respect to the central portion or bottom 11, so that the doublable flaps 12, 13 generate respective angled seats in which the edges of the other two flaps 14, i.e. the flank flaps, in this case single flaps, stop.

**[0012]** More specifically, such a result is obtained with doublable flaps that have the end portion slightly narrower than the attachment portion, which has side edges slightly staggered and projecting with respect to the folding line separating the single flaps from the bottom.

**[0013]** According to a significant aspect of the invention, the flank flaps 14 have an angle, specifically the angle that - when the flap is lifted - is adjacent to the hinge

wall, cut by a chamfer 14b, indicatively (but not necessarily) at about 45° with respect to the two edges. In order to ensure that the chamfers 14b are flush with the outer face of the hinge wall, the angle area of each flank flap where the same chamfers are formed comprises a tooth 14c along the junction with the hinge flap, adapted for engaging with a relative notch 12c formed on the attachment portion of the hinge flap, close to the internal folding line 12b. More specifically, the notch 12c is formed by an area of the attachment portion that, as well as the folding line 12b, maintains the same width of the end portion, that as mentioned is smaller with respect to that of the attachment portion.

**[0014]** Furthermore, the hinge flap is made so as to stop, with its upper edge determined after the folding of the internal folding line 12b, slightly lower than the outmost elevation of the corresponding flank walls. This, as will be seen hereinafter, creates a slot that separates and spaces apart such upper free edges of two coupled shells.

**[0015]** Now going back to the window 15 of the hinge flap 12, it has been mentioned that it is intended to receive a mounting template 2. The latter, shown in figure 2 in its partially folded starting blank, is made in two portions 21, 22 mutually separated indeed by a folding line 23. A first portion 21 is in this case shaped so as to fit-insert into the window 15, having substantially the same profile and has blind inner cuts 21 a for promoting the penetration of the gluing material. A second portion 22, on the other hand, is the same size as the attachment portion of the hinge flap, therefore being adapted to produce a further thickening of the whole hinge wall.

**[0016]** At the internal folding line 23 of the template 2 a slit 24 is formed, which indeed extends along such a folding line engaging it centrally. More specifically, the slit 24 interrupts the folding line centrally with a cut 24a slightly staggered towards the second portion, by an amount indicated with S in figure 2. From the cut 24a two teeth 24b extend in central position towards the first portion. The slit 24 further comprises, between the two teeth 24b, a groove 24c formed in the second portion and that therefore opens a hollow space onto it, deriving from removal of material between the spaced cut flaps.

**[0017]** The configuration of the slit just described exemplifies a solution for suitably receiving, as will be seen hereinafter, a hinge device, and facilitating the removal of material without waste and without structurally weakening the template, but it can of course be subjected to various constructive alternatives.

**[0018]** Now with reference also to figures 3 to 10, a method for making the casket-like container according to the invention firstly provides for folding and glueing a pair of blanks 1 to form respective shells of the container, all with the help of known folding and gluing systems. As mentioned, the corners are particularly stable due to the engagement between the ends of the flank walls and the step seats formed by the folding of the double walls. In a shell thus obtained shown in figure 3 it can be seen how the window 15 after folding generates a recess on the inner face of the hinge wall. The shells are covered, again according to usual techniques, by respective suitably shaped covering sheets 3 (figure 4).

**[0019]** The templates, previously completely folded along the internal folding line 23 so as to generate a double layer of material, are thus arranged so as to match the first portion 21 with the window 15 (figure 5) and facing the slit 24 outwards, so that the recess defined by the same window provides a housing and a reference for the template. With the use of appropriate gluing material in this way there will be two shells like in figure 6, the slits being accessible and free from the previously glued covering sheet.

**[0020]** At this point a hinge device 4, for example and typically with elastic contrast, is inserted and stabilized, again by gluing, in the slits 24 of the shells, so as to carry out the assembly of the casket (figure 7). The hinge device 4 is a *per se* known device, and comprises two plates 41, usually metallic, articulated with respect to one another along a hinge axis. Centrally, a flexing leaf spring 42 clamps the two plates wrapping in a C around the hinge axis, thus acting as elastic contrast to the mutual rotation of the two plates both from the open position and from the closed position, then promoting the snapping towards verso said positions once the rotation has been actuated and the end of the stroke approaches.

**[0021]** The aforementioned spring 42 causes a projection that, by inserting the plates 41 in the slits 24 of respective shells, is indeed received by the central groove 24c. The latter is arranged on the inner sheet of the flank wall and only partially occupied by the spring; the space made available is exploited to arrange a certain amount of additional glue that penetrates inside the two sheets of the wall and improves the gluing of the plate to the body of the same wall and between the two sheets of the latter.

**[0022]** The casket can be, and normally is, completed with the arrangement of a further covering sheet 5 over the entire development of the outer faces of the hinge walls. The final positioning of the container in various open positions is shown in figures 8 to 10, which highlight the main advantageous quality of the present method and of the casket thus obtained.

**[0023]** Indeed, according to the main aspect of the invention, as a result of the provision of the template, the slit 24, and with it the axis of the spring device, is moved towards the inside of the container, i.e. spaced with respect to the outer face of the hinge wall. Such a characteristic advantageously cooperates with the presence of the two chamfers 14b mutually facing on the hinge edge between the two shells. It is thanks to the chamfers and to the slot, indicated with F in the figures, between the two spaced free edges of the hinge walls, that the necessary space is created to allow the mutual opening by rotation of the two shells, despite the aforementioned movement of the internal articulation axis towards the inside. At the same time, no part of the metallic hinge

determines any projection and in the folding step the covering sheet 5 can be received internally, indeed inside the slot F, with a clean and neat fold (figures 8 and 10), which gives the casket the maximum perceived quality.

**[0024]** The manufacturing of the casket will then be completed with all of the desired finishing and personalising operations, according to what is known in the field. In particular, the shells will be provided with padding and/or support elements for the items to be housed, external decorations, etc.

**[0025]** Thanks to the method according to the invention it has therefore been possible to provide cardboard casket-like containers in which the functionality and the perceived quality are even more in line with that of current known containers made from rigid material such as wood or thermoplastic materials, which moreover are significantly more expensive (in the case of wood) and furthermore have a much greater environmental impact. The mechanical solidity of the casket is also really surprising considering the low intrinsic strength of the starting material. The production operations are as seen elementary and able to be carried out with known devices and apparatuses. The starting blank has a rational shape that minimises material waste, and this represents a substantial advantage in terms of storage bulk (and costs), even more so if it is considered that a single type of blank is suitable for obtaining both shells of the casket.

**[0026]** The folding lines arranged on the blank will be obtained through incisions or so-called cutting means, or with other analogous solutions known in the field of paper technology.

**[0027]** The embodiment described above clearly is not restrictive and, in a technical solution like the one generically expressed by the attached independent claims, which concentrate on the essential technical characteristic of internally moving the internal articulation axis of the hinge by means of a mounting template, in combination with the presence of chamfers on the corners of the hinge wall, multiple different embodiments can be adopted. Concerning this, figure 11 provides a significant example, representing flat blanks 101, 101' of the shells, 102, 102' of the respective templates and 103, 103' of the relative covering sheets, for an asymmetrically cut casket, i.e. with inclined opening plane with respect to the bottom and matching shells with flank walls having trapezoidal profile. Without going into a detailed specific description of this embodiment that is generically consistent with the previous embodiment outlined above, it should be noted that in this case the window 115 for receiving the template on the lower hinge wall (blank 101 on the left) is open on the free edge of the relative flap.

**[0028]** Indeed the template, and in particular the first portion that is arranged in contact with the inner face of the hinge wall, can also be shaped differently. The first portion can even be substantially the same as the second portion, and in this case do without the presence of the window on the hinge flap. In this case, the hinge flap could in theory also be single. However, for satisfying higher-end requirements of strength and consequent quality, the solution with the window and the correspondingly shaped template of the examples described can normally represent the preferred choice.

**[0029]** Of course, it is also possible to foresee solutions with multiple hinging devices for larger boxes, even with the consequent possibility of many templates able to be associated in succession. The number of sides of the box can also actually be different from that of the illustrated example, with the invention also being applicable to boxes having a pentagonal, hexagonal plan, etc.

**[0030]** The present invention has thus been described with reference to preferred embodiments thereof. It should be understood that there can be other embodiments that derive from the same inventive core, all of which are covered by the scope of protection of the claims below.

## Claims

1. A method for manufacturing a casket-like container comprising two mutually hinged shells, the method comprising the following steps: arranging, for each shell, a cardboard flat blank comprising a central portion (1), intended to form a bottom of the shell, and a plurality of flaps (12, 13, 14) foldably projecting from respective sides of said central portion, said flaps comprising a hinge flap (12); folding and gluing said blank so as to form with said flaps respective side walls of each shell, comprising a hinge wall defined by said hinge flap and provided with a hinge edge; mutually connect the two hinge edges of respective shells by means of at least one hinge device (4); wherein before the connection between the shells respective mounting templates are arranged inside the shells adjacent with an inner face of the hinge wall, said templates defining respective slits (24) in which said at least one hinge device is inserted, thereby the hinge device becomes arranged with its own internal articulation axis staggered towards the inside with respect to the hinge wall.

2. The method according to claim 1, wherein two flaps (14) adjacent with the hinge flap have respective angles adapted to become adjacent with the same hinge wall cut by a chamfer (14b), the hinge flap being realized so that said free hinge edge, after the folding with respect to the bottom portion, stops lower than the outmost elevation of the corresponding walls adjacent with the hinge wall, thereby a slot (F) is formed when the shells are coupled separating and spacing the respective free edges.

3. The method according to claim 2, wherein the angle area where said chamfer (14b) is formed comprises a tooth (14c) along the junction with the hinge flap (12), adapted to engage with a matching notch (12c)

formed in the hinge flap, close to the free hinge edge, thereby the chamfers (14b) come flush with the outer face of the hinge wall.

**4.** The method according to any of the previous claims, wherein at least one of said flaps is a doublable flap adapted to be doubled as a result of an internal folding, said doublable flap being shaped at its side edges, that is the edges to be coupled along the corners of the shell further to the elevation by folding with respect to the central or bottom portion (11), so that the resulting double wall forms respective angled seats in which the sides of the adjacent flaps/walls become stopped.

**5.** The method according to claim 4, wherein said at least one doublable flap has an end portion smaller than an attachment portion to the bottom (11), the attachment portion having side edges which are staggered and protruding with respect to the folding line separating the adjacent flaps from the same bottom (11).

**6.** The method according to claim 4 or 5, wherein said at least one doublable flap is said hinge flap, said hinge free wall being defined on said fold, and forms a doubled hinge wall in which a recess is defined as a result of at least one window (15), for housing and providing positional reference to a relative mounting template (2).

**7.** The method according to claim 6, wherein said flaps comprise a distal flap (13) opposite said hinge flap and two mutually opposite flank flaps (14), defining as a result of a folding with respect to the bottom (1) respectively a distal wall a hinge wall and flank walls of the shell, said hinge wall (12) and said distal wall (13) being doubled walls that form said angled seats for engagement of said flank flaps/walls (14) formed instead in single fashion.

**8.** A cardboard casket-like container comprising two mutually hinged shells, each shell in turn comprising a bottom portion (11) and a plurality of walls (12, 13, 14) elevating by folding with respect to said bottom (11) said walls including a hinge wall (12) comprising a free hinge edge, the hinge walls of respective shells being connected by a hinge device (4), the container further comprising respective mounting templates (2) arranged inside the shells adjacent with an inner face of the hinge wall, at least one template for each shell, said templates defining respective slits (24) in which said at least one hinge device is inserted, thereby the hinge device is arranged with its own internal articulation axis staggered towards the inside with respect to the hinge wall.

**9.** The container according to claim 8, wherein two walls (14) adjacent with the hinge wall have respective angles adjacent with the same hinge wall cut by a chamfer (14b), said free hinge edge stopping lower than the outmost elevation of the corresponding walls adjacent with the hinge wall, thereby a slot (F) is formed between the coupled shells separating and spacing the respective free edges.

**10.** The container according to claim 9, wherein the angle area where said chamfer (14b) is formed comprises a tooth (14c) along the junction with the hinge wall (12), engaging with a matching notch (12c) formed in the hinge wall, close to the free hinge edge, thereby the chamfers (14b) are flush with the outer face of the hinge wall.

**11.** The container according to any of the claims from 8 to 10, wherein at least one of said wall is doubled as a result of an internal folding and shaped at its side edges, that is the edges coupled along the corners of the shell so as to form respective angled seats in which the sides of the adjacent flaps/walls are stopped.

**12.** The container according to claim 11, wherein said at least one doubled wall is said hinge wall, said hinge free wall being defined on said fold, a recess being formed in said hinge wall for housing and providing positional reference to a relative mounting template (2).

**13.** The container according to claim 12, wherein said walls comprise a distal wall (13) opposite said hinge wall and two mutually opposite flank walls (14), said hinge wall (12) and said distal wall (13) being doubled walls that form said angled seats for the engagement of said flank walls (14) being formed instead in single fashion.

**14.** The container according to any of the claims from 8 to 13, wherein said at least one template comprises two portions (21, 22) mutually folded along a folding line (23) in correspondence to which said at least one slit (24) is formed and wherein said template comprises a first portion (21) arranged adjacent with said hinge wall and a second portion (22), at least said second portion (22) having the same size of the hinge wall, thus realizing a corresponding thickening of the whole hinged wall.

**15.** The container according to any of the claims from 8 to 14, comprising a covering sheet of the shells, the covering sheet comprising a unitary covering portion applied on the outer faces of the hinge walls mutually connected by the hinge device.

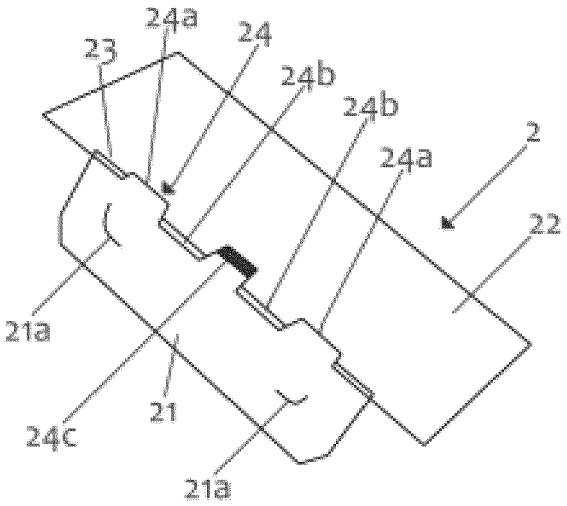
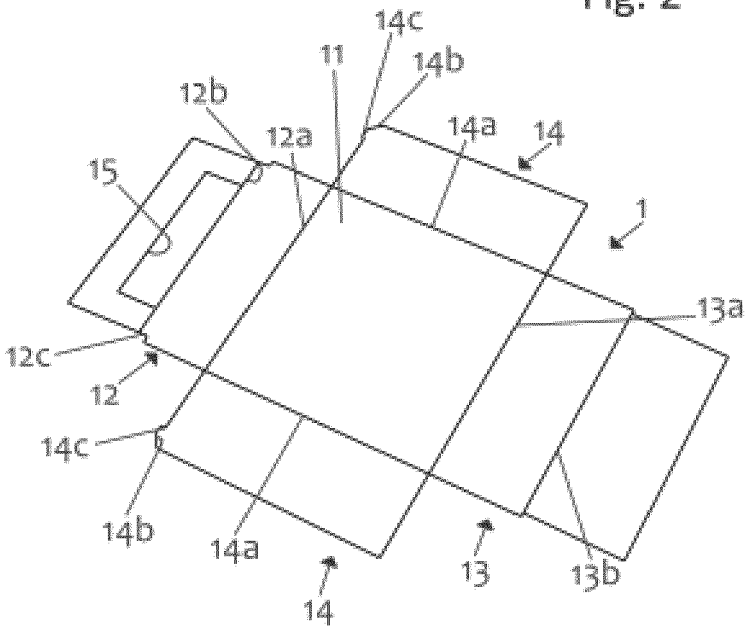

24a
24
23
24b
24b
2
24a
22
21a
21
24c
21a

Fig. 2


14c
11
14b
12b
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14
12a
15
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13a
12c
12
14c
14b
14a
13
13b
14

Fig. 1

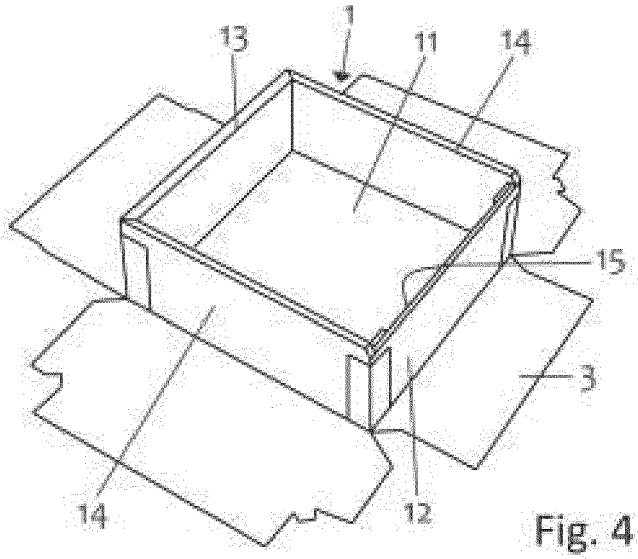


Fig. 4

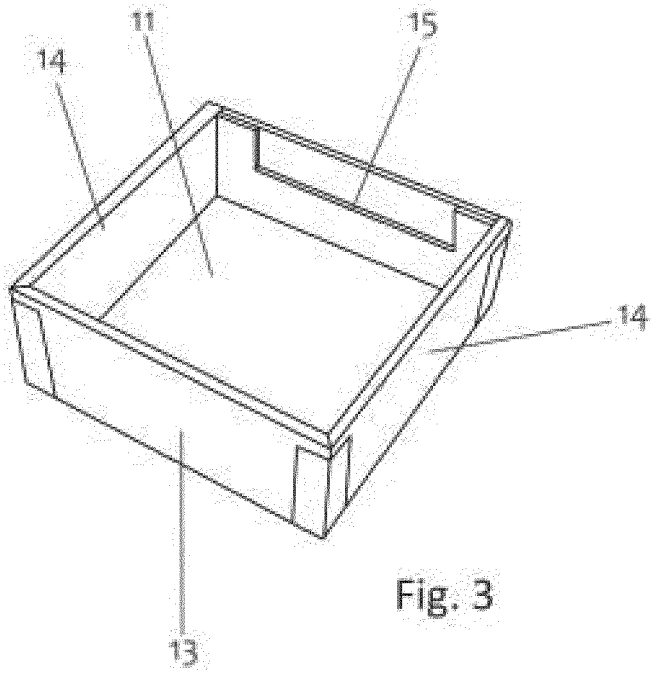


Fig. 3

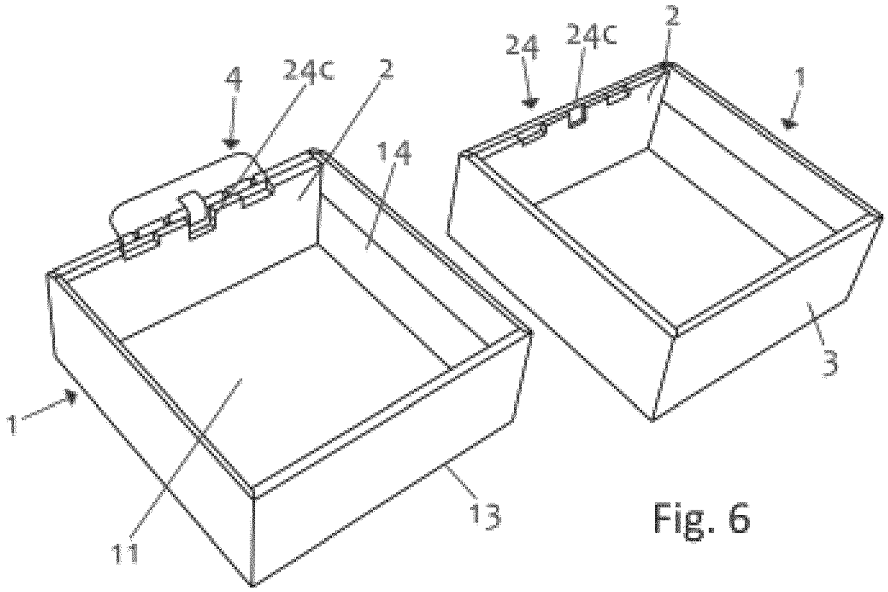


Fig. 6

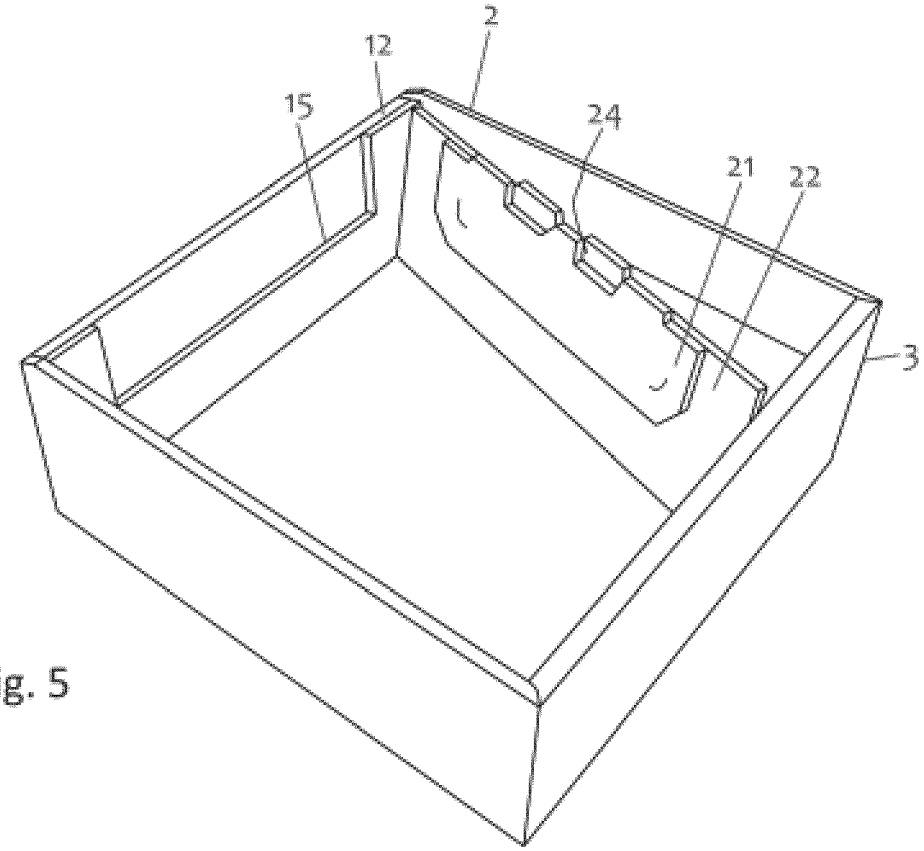


Fig. 5

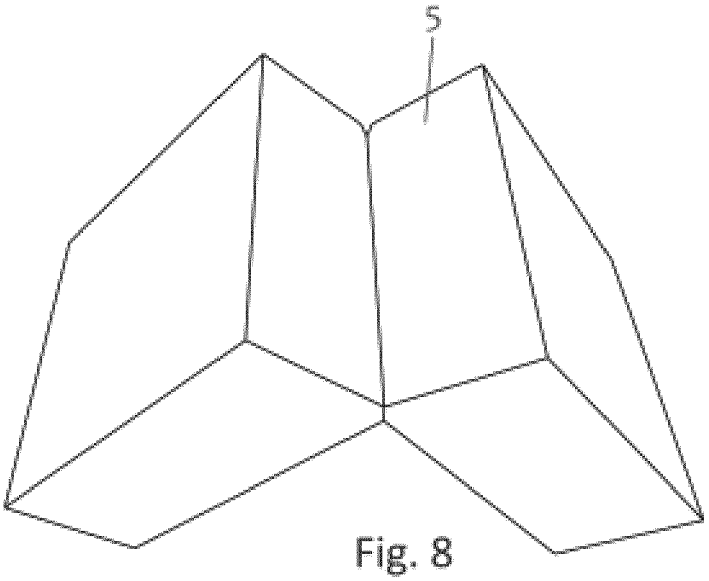


Fig. 8

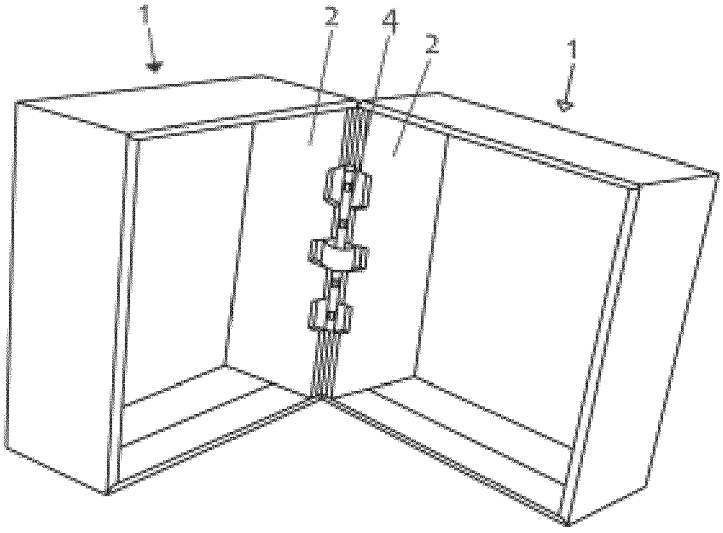


Fig. 7

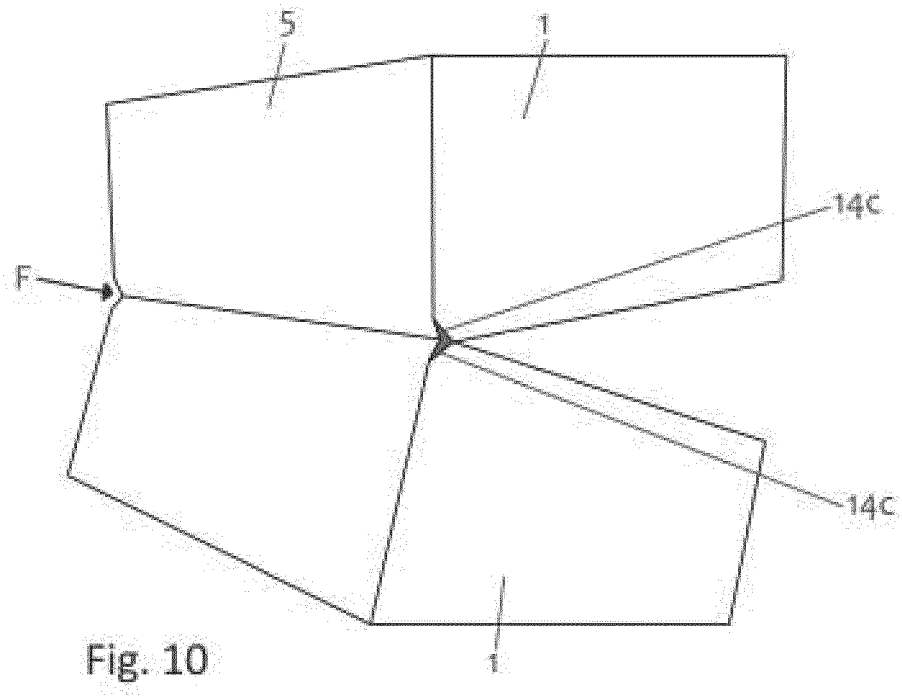


Fig. 10

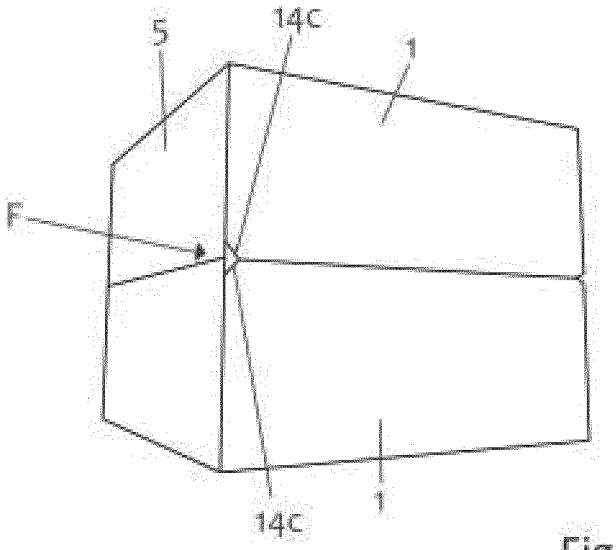


Fig. 9

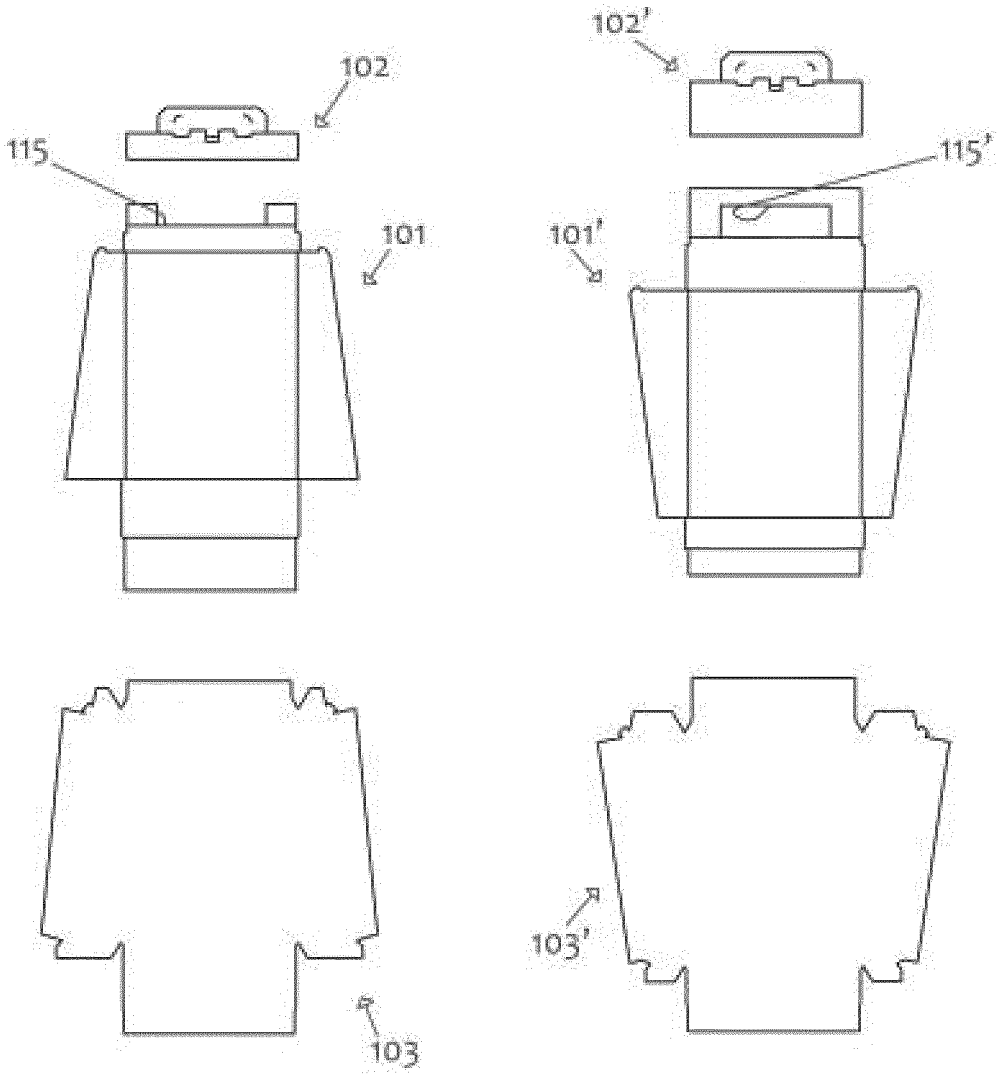


Fig. 11

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# EUROPEAN SEARCH REPORT

Application Number
EP 16 16 8646

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
| A | EP 2 581 210 A1 (ZINI ASTUCCI S R L [IT])<br>17 April 2013 (2013-04-17)<br>* claims 1,11; figures *<br>----- | 1-15 | INV.<br>B65D5/66<br>A45C11/24<br>B65D5/32 |
| A | FR 2 436 078 A2 (HABERT ROBERT)<br>11 April 1980 (1980-04-11)<br>* the whole document *<br>----- | 1-15 | |
| A | GB 186 543 A (ANTHONY ANGELO BALLATORE)<br>5 October 1922 (1922-10-05)<br>* the whole document *<br>----- | 1-15 | |
| A | US 2 648 486 A (DOUGLAS YOUNG LEWIS)<br>11 August 1953 (1953-08-11)<br>* the whole document *<br>----- | 1-15 | |
| | | | TECHNICAL FIELDS SEARCHED (IPC)<br>B65D<br>A45C<br>B31B |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 31 May 2016 | Serrano Galarraga, J |

CATEGORY OF CITED DOCUMENTS

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D : document cited in the application
L : document cited for other reasons

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 16 8646

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31-05-2016

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

## REFERENCES CITED IN THE DESCRIPTION

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