



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 838 411 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
29.04.1998 Bulletin 1998/18

(51) Int. Cl.⁶: **B65D 81/02, B65D 85/48**

(21) Application number: **97100077.3**

(22) Date of filing: **04.01.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV RO SI

(30) Priority: **04.10.1996 IT PI960046**
14.10.1996 IT PI960046

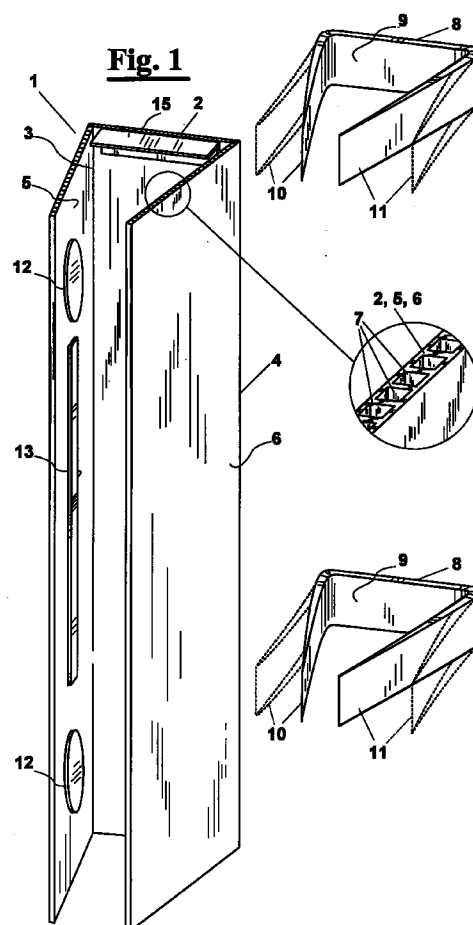
(71) Applicant:
Ciessecci S.a.s. di Camarlinghi Carlo & C.
56125 Pontedera, Pisa (IT)

(72) Inventor: **Gazzotti, Giorgio**
56031 Bientina, (Pisa) (IT)

(74) Representative: **Celestino, Marco**
ABM, Agenzia Brevetti & Marchi,
Via A. Della Spina 40
56125 Pisa (IT)

(54) **Casing for the protection and clasp of packs of sheet material**

(57) Casing for protecting and clasp of packs of sheet material, such as glass or stone material, capable of reducing damages to the edges of the pack and danger for people while handling the packs inside factories and/or during transportation. The casing comprises: a central elongated wall (2) suitable for engaging with the edge (18) of the pack (16); two lateral wings (5,6) which extend from longitudinal sides (3,4) of the central wall (2) and are suited to wrap the external sheets (17a, 17b) of the pack (16); fastening means (8) suited to press the two lateral wings (5,6) against the external sheets (17a, 17b) and the central wall (2) against the pack (16) side. The central wall (2) and the fastening means (8) of the casing may have either a permanent size, produced in many dimensional groups, each mountable on packs of the same thickness, or a variable size, selectively adapted to packs of different thickness.



EP 0 838 411 A2

Description

Field of the invention

The present invention relates to the field of packaging and more precisely it relates to a casing for protecting and claspings packs of slab material, in order to reduce damages of the lateral edges of such packs and danger for people while handling in factory and/or transporting them. In particular, the casing is suitable for protecting and claspings fragile material, such as glass or stone material.

Description of the prior art

In glass and stone industry, the problem of safely handling packs of slab material, carried by means of self moving means or bridge cranes through the factories, for further machining and/or for storing or shipping them, is strongly felt.

In the known art, the slabs or sheets packs are either packaged or handled and carried with free edges, picked up with suitable grasping means.

In the first case, the packs, simply based on supporting wedges, are picked up by special pincers which lift them keeping the sheets compressed. The hanging packs have, however, the drawbacks that the free edges of their sheets are subject to collisions, which damage them and free in all directions dangerous splinters. Moreover, when the pack, while being handled, sways in the air, the pressure between the sheets may not be sufficient to keep them together with the risk that the internal sheets of the pack can slide and cause serious damages. In addition, when the collisions are not strong, even if there are not risks for people, the problem arises that the sheets are irreparably damaged. In any case, the transportation of the sheets with free edges is not convenient because sharp edges, difficult and dangerous to be handled, are exposed.

In order to overcome these drawbacks, various types of packaging have been studied, mainly comprising wooden sheaths which, even if they assure safety and protection to the sheets, are extremely expensive, cumbersome and difficult to be handled. Moreover, the wooden packages cannot be flexibly adapted to the size of the sheets and of the packs, and are not suitable for an effective use on a large scale, except at very high costs.

Synthesis of the invention

It is, therefore, object of the present invention to provide a protecting and claspings casing for packs of slab material, which overcomes the above drawbacks, and in particular protects the edges of the sheets, prevents the sheets from accidentally sliding while transportation, covers the sharp free edges of the sheets and contains splinters in case of strong collisions.

Another object of the present invention is to provide a protecting and claspings casing for packs of slab material which is cheap and effective when used, easily recyclable and of minimum encumbrance when handled, as well as applicable to packs of slabs of different thickness.

A further object of the present invention is to provide said casing so that it presents a surface on which trademarks, scripts and symbols can be printed, for advertisement and/or information purposes.

These and other objects are accomplished by the casing according to the present invention, for protecting and claspings packs of slab material, whose characteristic is that it comprises:

- an elongated central wall suited to engage with a side of the pack;
- two lateral wings which extend from longitudinal sides of the central wall and suited to partially wrap the external sheets of the pack;
- fastening means suited to clasp the two lateral wings with the external sheets and the central wall with the pack sides.

The casing according to the invention is advantageously made of a cell-like, waterproof, hydrophobic material, such as extruded polycarbonate.

In a first embodiment the central wall and the fastening means have permanent size, and are provided in many dimensions, each of which can be used with packs of the same thickness.

In another embodiment the central wall and the fastening means have variable size, and are adapted in turn to packs of different thickness.

Brief description of the drawings

Further characteristics and advantages of the protecting casing according to the present invention will be made clearer with the following exemplifying description of some embodiments, but not limitative, with reference to the attached drawings, wherein:

- figure 1 shows an elevational perspective view of a protecting casing according to the present invention and of the corresponding fastening means ;
- figures 2 and 3 show a front and a side partial perspective elevational view respectively of a pack of glass sheets to whose sides a protecting casing according to the invention are mounted;
- figures 4 and 5 show respectively a lateral and a top plan view of a different embodiment of the means for fastening the casing to the packs of sheets;
- figure 6 shows a joining bushing of the two halves of the fastening means of figures 4 and 5;
- figure 7 shows an elevational perspective view of a different embodiment of the protecting casing according to the invention.

Description of the preferred embodiments

With reference to figure 1, a casing according to the present invention for protecting and claspings packs of sheets has been generally indicated as 1 and comprises a central wall 2 from whose two longitudinal sides 3 and 4 two lateral wings 5 and 6 extend.

The wings 5 and 6 have been preferably hot folded about the sides 3 and 4 with respect to central wall 2. In particular, the wings 5 and 6 may be advantageously shaped already bent according to a acute angle with respect to central wall 2.

To casing 1 resilient fastening elements 8 are associated, having a central portion 9 and two lateral arms 10 and 11 which resiliently extend from central portion 9 so that they press, in use, the wings 5 and 6 towards the inside. In correspondence of the zones where the fastening means 8 are mounted, pads 12 or 13 may be provided for, for example made of highly adherent rubber material, either concentrated (12) or, alternatively, distributed (13) for all the length of the wings 5 and 6.

At one of the opposite free ends of the central wall 2, an abutment plate 15 may be advantageously provided for, for a precise reference of casing 1 with respect to a pack of sheets.

The use of the casing 1 according to the invention is shown in figures 2 and 3, where it is mounted in different embodiments to a same pack 16 of sheets 17, of which the two external sheets have been indicated as 17a and 17b. More in detail, a casing 1 is mounted on pack 16 of sheets 17 so that its central wall 2 engages with the side 18 of the pack 16, whereas the two lateral wings 4 and 5 partially wrap sheets 17a and 17b, respectively. The fastening means 8 are mounted so that their arms 10 and 11 press the wings 5 and 6 against the sheets 17a and 17b, whereas the central portion 9 press against central wall 2.

Always with reference to figure 2, different possible embodiments of the casing 1 according to the invention are shown on the left and on the right respectively. More precisely, the fastening means 8 on the left are mounted so that the resilient arms 10 and 11 correspond to the concentrated pads 12. On the other hand, as shown on the right of figure 2, only one dampening pad 13 extending for all the height of each wing of casing 1, for example a rubber strip, is provided for.

Always on the right of figure 2, casing 1 has a top wing 14 and a corresponding bottom wing not shown. On the left, instead, alternatively, as also shown in figure 1, casing 1 has only a top abutment plate 15.

Always with reference to the left, moreover, the casing 1a does not extend for all the height of sheets 17 of pack 16, but only for their half height, the other half being covered and protected by an equal casing 1b extending in the opposite way. On the left, instead, a single casing 1 for all the height of pack 16 is provided for.

In a preferred embodiment of the invention shown in figures from 1 to 3 above described, both the wings 5

and 6 are angled with respect to central wall 2 along its sides 3 and 4 so that they yield resiliently, but at the same time they are enough stiff so that casing 1 can be easily mounted on the side of pack 16. Wall 2 width must be, in this case, proportioned to pack 16 thickness.

For this reason, in order to protect packs of different thickness, according to this first embodiment, casing 1 must be provided in many dimensional groups, each having a central wall 2 differently wide. In the same way, the resilient fastening means 8, must be provided in many dimensional groups, each with a central portion 9 wide as the central wall 2 on which it is mounted.

If, when handling the glass sheets, packs of variable thickness are used often, the problem arise of providing casings and corresponding fastening means in many different sizes and, therefore, difficult to be managed. In this case, according to a different embodiment of the invention shown in figures 4, 5, 6 and 7, both resilient fastening means 8 and casing 1 may be advantageously provided with central portion 9 or central wall 2 of variable size.

More precisely, the fastening element 8 may comprise two halves, 8a and 8b, having respectively arm 10 and arm 11 and, always respectively, a central portion 9a and 9b with saw toothed profiles 19a and 19b. For coupling two halves 8a and 8b a bushing 20 is provided for, having a inner sliding housing 21, which carries out the regulable slip hooked engagement of the central portions 9a and 9b. These may be placed at different positions with respect to each other, of which only two are illustrated in figures 4 and 5, one of them being shown with a dotted line. In this way the distance between arms 10 and 11 can be varied by the packaging operators.

A preferred sectional shape of elements 8a and 8b is shown in figure 6, where guiding ridges 23 and 24 are provided for engaging with corresponding grooves of the bushing. In order to increase the grip of the arms 10 and 11, teeth 22 are provided for at their ends.

With reference now to figure 7, casing 1 may comprise, alternatively to what shown in figure 1, with only a wing 5 angled with respect to central wall 2. The other wing, 6, may be connected to central wall 2 in a foldable way, by means of a plurality of folding lines 25, so that they can be adapted to various packs 16 of different thickness.

Casing 1 is preferably made of cell-like, waterproof, hydrophobic material, having good mechanical strength, for example extruded polycarbonate, having a plurality of longitudinal channels 7, shown in the enlarged detailed view of figure 1.

The cell-like form of central wall 2 and of wings 5 and 6 is particularly suitable in this case, because it renders casing 1 lighter and cheaper and, at the same time, provides enough strength in case of small collisions. For example, by using extruded polycarbonate, 750-1000 g/m² dense, it is possible to have a strong casing so that:

- small collisions on the casing do not cause damages to the pack of sheets,
- strong collisions on the casing do not free dangerous splinters,
- the sharp edges of the sheets do not cut the casing.

Concerning the fastening means 8, their arms 10 and 11 must be resilient enough to press the sheets so that they prevent them from sliding on each other, even if a not excessive force is exerted on lateral wings 5 and 6. For example, with a force of 4-6 Kg necessary to unfasten the fastening element 8 in order to uncover casing 1, the total force for extracting a sheet 17 from pack 16 has been experimentally measured between 85 and 98 kg.

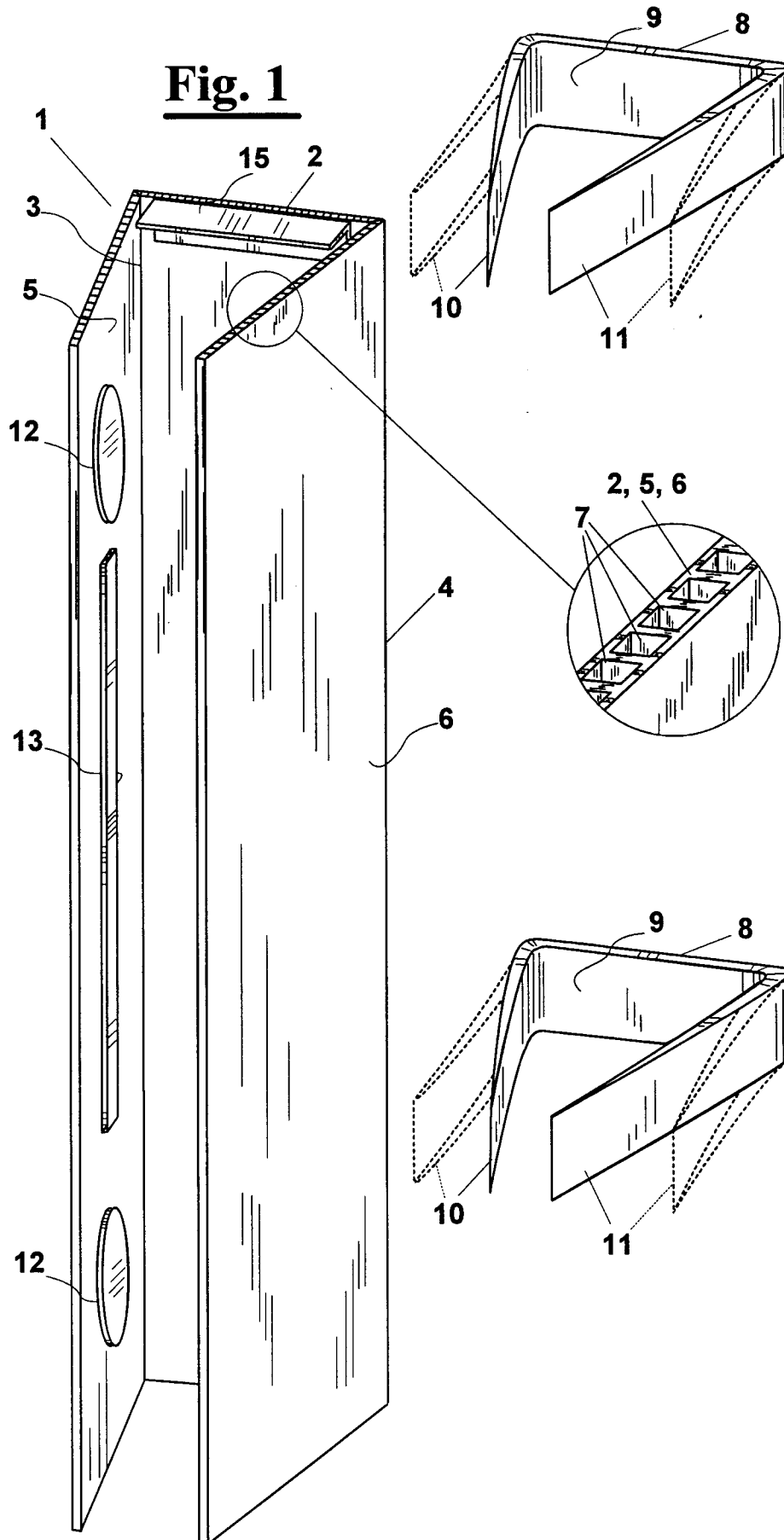
Both fastening means 8 and casing 1, which are preferably made of plastics, are easily recyclable. This is an advantage with respect to the known wooden cases which, besides requiring a more environmentally important material, are more expensive and cannot be easily recycled for packaging. Moreover, they are not easily recyclable as wood either, because their exposure to rain and humidity causes them to become heavier and causes their conversion difficult, complicated by the presence of rusty nails.

Finally, the shape of casing 1 permits the printing of trademarks, scripts and symbols 26 on the external face of central wall 2 (fig. 3), for advertisements and/or information purposes, and this is advantageous for the companies which use it.

Claims

1. Casing for protecting and clasping a pack of sheet material, said pack (16) having a external side (18) and being formed by two external sheets (17a,17b) and a plurality of internal sheets (17), **characterised in that** it comprises:
 - a central elongated wall (2) suitable for engaging with a side (18) of the pack (16);
 - two lateral wings (5,6) which extend from longitudinal sides (3,4) of the central wall (2) and are suited to partially wrap the external sheets (17a,17b) of the pack (16);
 - fastening means (8) suited to press the two lateral wings (5,6) against the external sheets (17a,17b) and the central wall (2) against the edge of the pack (16).
2. Casing according to claim 1, wherein said fastening means (8) have a central portion (9) engageable with said central wall (2) and two lateral arms (10,11), which resiliently extend from central portion (9) in order to press, in use, the wings (5,6) against said sheets (17a,17b), with interposition of rubber pads (12,13).
3. Casing according to claims 1 and 2, wherein said central wall (2) and said fastening means (8) have permanent size, and are provided in more dimensional groups, each suitable for packs (16) of the same thickness, said wings (5,6) being angled according to a acute angle about said sides (3,4) with respect to said central wall (2).
4. Casing according to claims 1 and 2, wherein said central wall (2) and said fastening means (8) have variable size, and are selectively adapted to packs (16) of different thickness.
5. Casing according to claim 4, wherein said fastening means (8) comprise two halves (8a,8b), each having a resiliently flexible arm (10,11) extending from a central portion (9a,9b), the central portions (9a,9b) slidingly engaging on each other in a regulable way.
6. Casing according to claim 5, wherein a bushing (20) with a inner housing (21) for the sliding engagement of said central portions (9a,9b) of said two halves (8a,8b) is provided for, said central portions (9a,9b) having saw toothed ends (19a,19b) allowing a slip hooked movement in only one direction.
7. Casing according to claims from 4 to 6, wherein one of said wings (6) extend from said central wall (2) in a way that it can be folded about a plurality of folding lines (25), whereby said central wall (2) can be mounted on packs (16) of different thickness.
8. Casing according to the previous claims, wherein from one end of said central wall an abutment plate (15) extends engageable with one edge (18) of said pack (16).
9. Casing according to the previous claims, wherein said central wall (2) and said wings (5,6) are made of cell-like, waterproof, hydrophobic material.
10. Casing according to claim 9, wherein said cell-like, waterproof, hydrophobic material is extruded polycarbonate, having a plurality of internal longitudinal channels (7).

Fig. 1



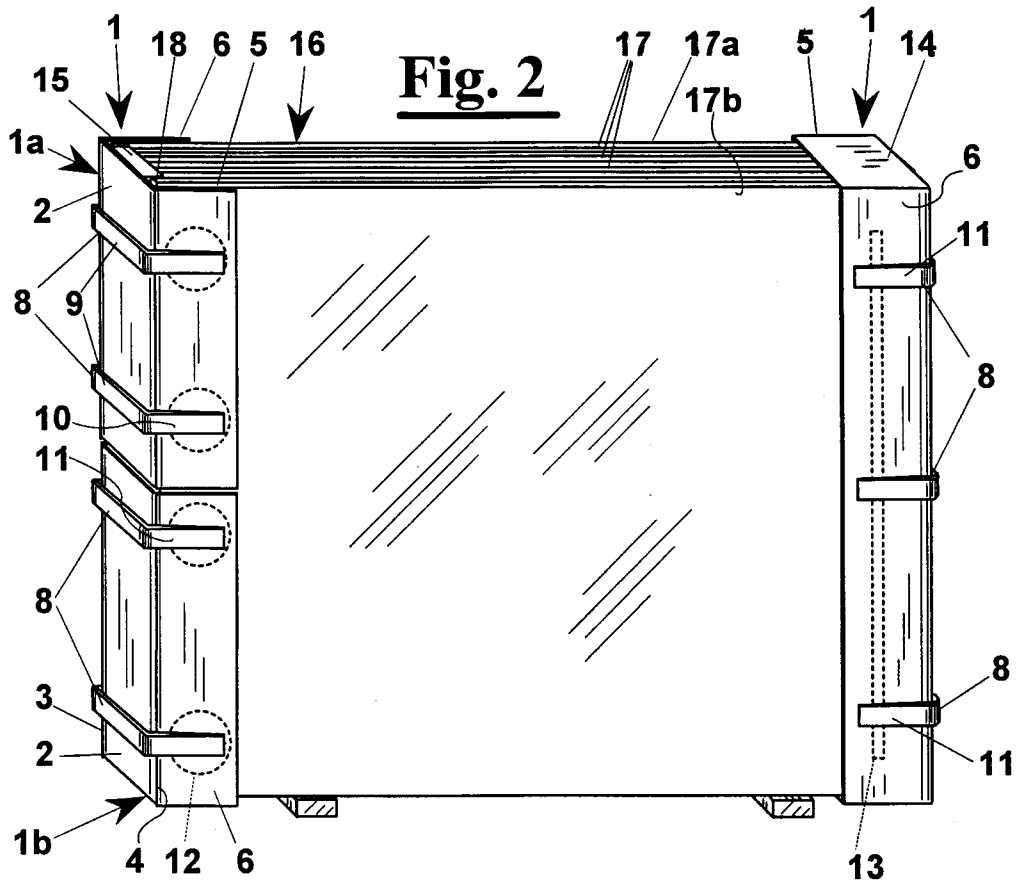


Fig. 3

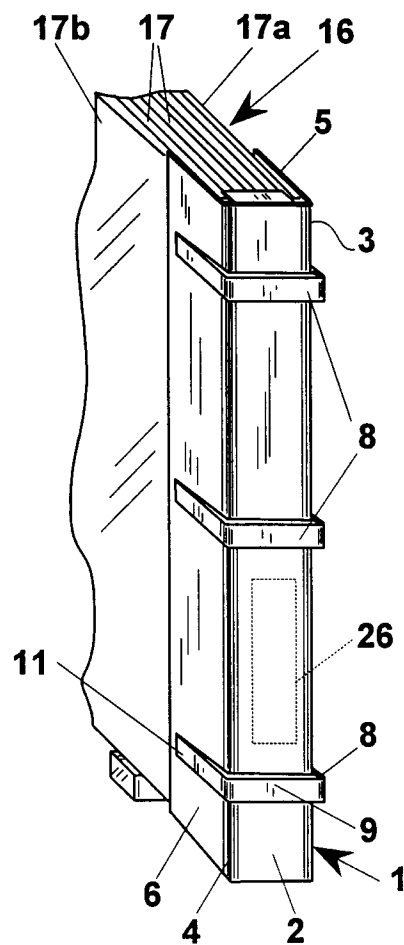


Fig. 4

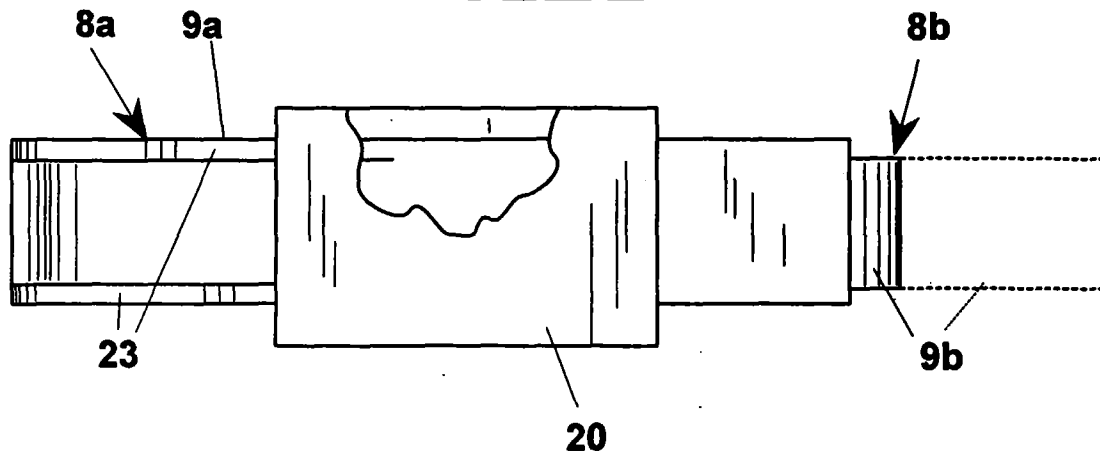


Fig. 5

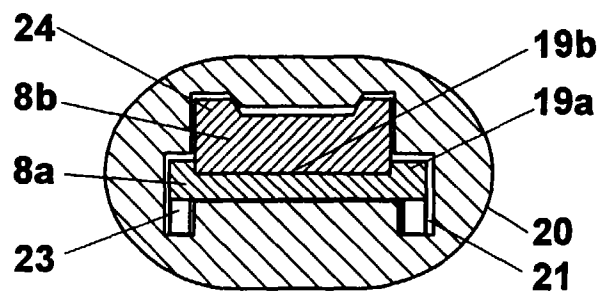
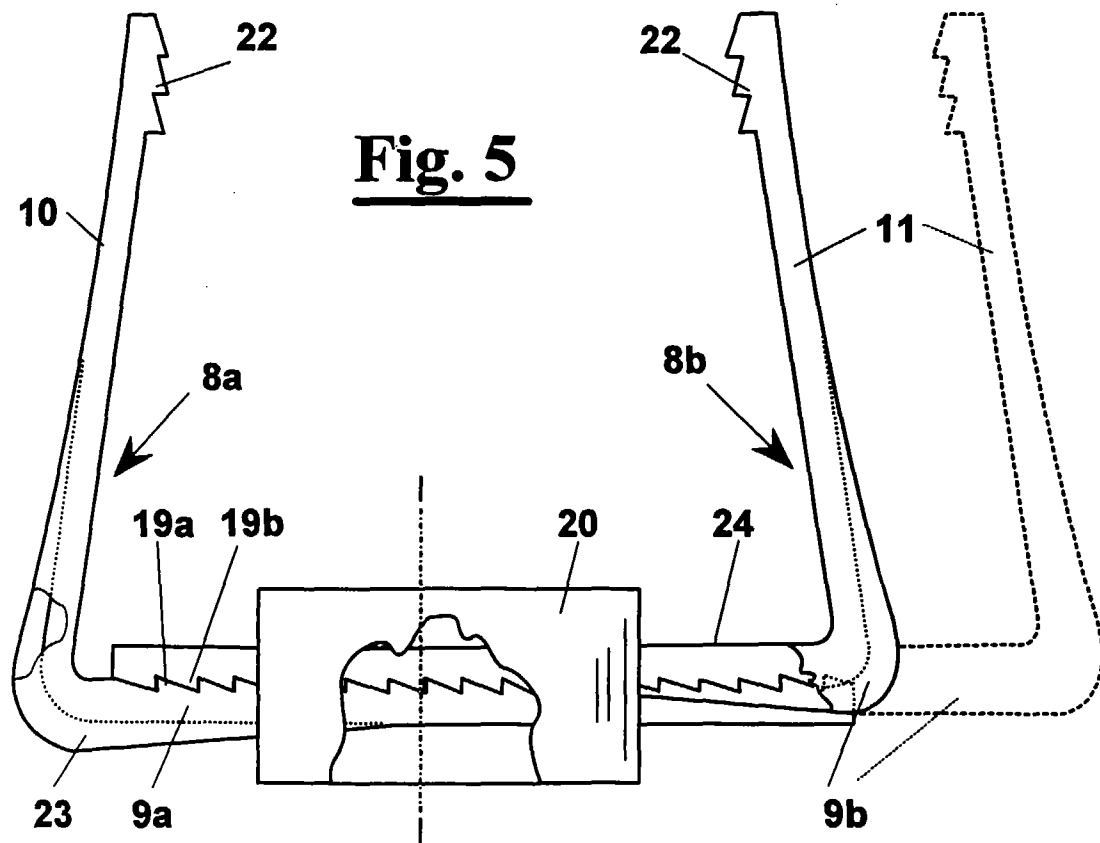


Fig. 6

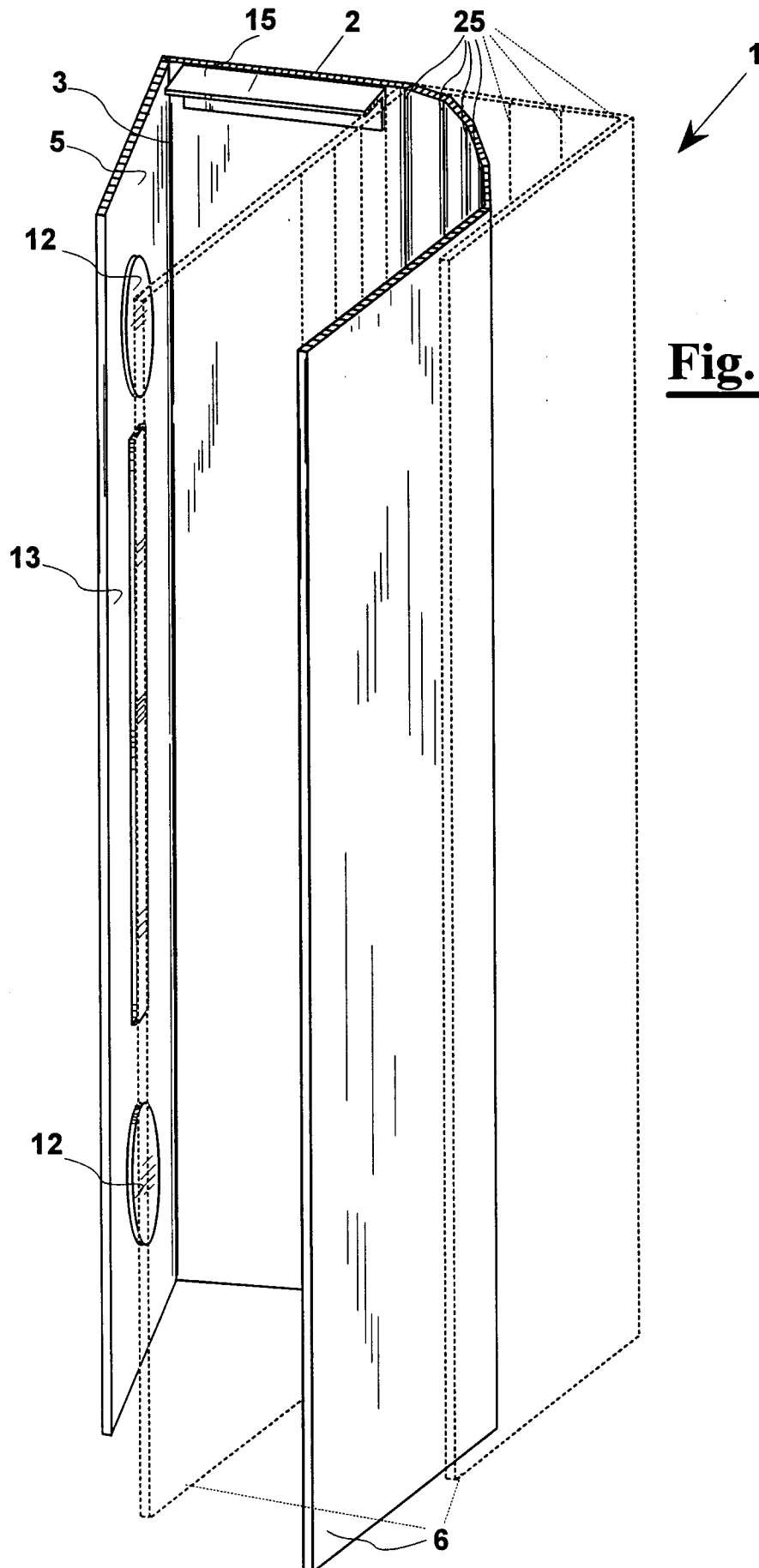


Fig. 7