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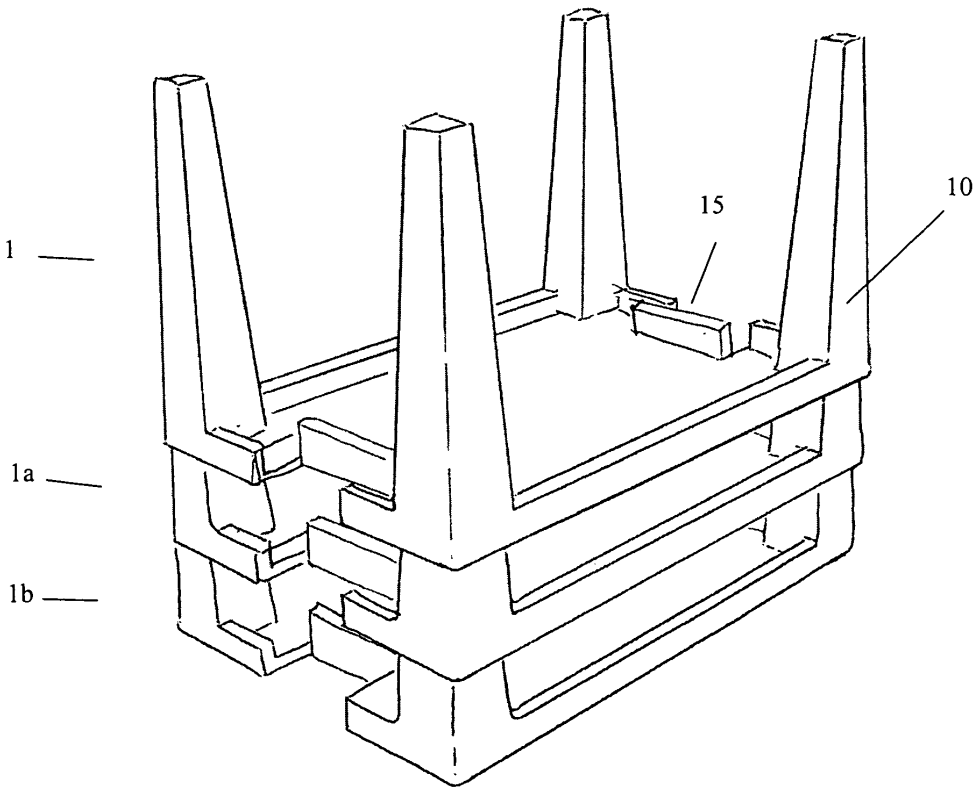
(54) **Stacking or nesting tray**

(57) A tray (1) includes a deck (2), a plurality of legs (10) projecting to one side of the deck, a plurality of apertures (20) formed in the other side of the deck and being arranged to allow passage of the legs of a second tray so that the second tray may be stacked in a nested fashion, and a plurality of movable covers associated with the respective apertures, said covers being slidable to selectively cover or open the apertures.

FIG. 4



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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a tray used for loading with a product. More particularly the present invention relates to a tray having legs that enable a number of trays to be stacked on top of each other.

2. Description of Related Art

[0002] Conventional trays that are typically made from wood, metal or plastic and can only be placed on top of each other in a stacked formation. The trays cannot usually be stored in a more space efficient manner and thus, when the trays are stored they take up large amounts of space leading to high transportation and storage costs.

[0003] There is a need for a tray that can be stacked on top of another tray when needed, i.e. when holding products, but which is also able to be stored in a more space efficient manner when not being used.

SUMMARY OF THE INVENTION

[0004] The present invention has been made with the aim of solving the above problems.

[0005] In accordance with a first aspect of the invention, there is provided a tray comprising a deck, a plurality of legs projecting to one side of the deck, a plurality of apertures formed in the other side of the deck and being arranged to allow passage of the legs of a second tray so that the second tray may be stacked on the tray in a nested fashion, and a plurality of movable covers associated with the plurality of apertures, said covers being slideable to selectively cover or open the plurality of apertures.

[0006] Preferred further features of the tray according to the invention are set forth in claims 2 to 9.

[0007] Preferred embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

Figure 1 is a perspective view of a tray in accordance with a preferred embodiment of the invention.

Figure 2 is a perspective view of a number of trays stacked on top of one another in accordance with the preferred embodiment.

Figure 3 is a perspective view of the tray of the preferred embodiment with its tabs pushed inwards.

Figure 4 is a perspective view of a number of the trays stored in a nested fashion in accordance with the preferred embodiment.

Figures 5A and 5B are cross sectional views of the hollow legs in accordance with the preferred embodiment.

Figures 6A to 6C are perspective views of the underside of the tray in accordance with the preferred embodiment.

Figure 7 is a plan view of the underside of the tray showing the arrangement of a movable cover, tabs and apertures in accordance with the preferred embodiment.

Figures 8A and 8B are plan views of the underside of the tray showing the arrangement of a movable cover and apertures in accordance with an alternative embodiment.

Figures 9A and 9B are perspective views of the underside of the tray in accordance with the alternative embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0009] The embodiments described below are in relation to a typical arrangement for a nested tray, although it will be appreciated that other embodiments will fall within the scope of the appended claims.

[0010] Figure 1 shows a tray **1** that includes a deck **2** and a plurality of legs **10** attached thereto that project to one side of the deck **2.** The legs **10** are preferably tapered and are placed at the corners of the deck **2.** Although not shown, the legs are hollow. The tray **1** is typically made from a plastics material, although it may be made from any other suitable material, such as metal. The deck **1** and legs **10,** if made from a plastics material, may be formed by injection moulding. Alternatively, the deck **2** and legs **10** may be separately formed and the legs **10** affixed to the deck **2.** Although the tray **1** is shown having four legs **10,** the number of legs is not limited to this; there may typically be three or more legs. The tray **1** also includes at least one moveable tab **15.** The number of tabs **15** is shown as two, but it should be understood that it is not limited to this number, there may be one or more tabs, although there will usually be no more tabs than the number of legs. The tabs **15** are operable to move from a first, outer position, to a second, inner position. Changing the position of the tabs **15** allows the trays to either be stacked on top of each other or stored in a space saving manner. The operation of the tabs **15** will be described in more detail below.

[0011] Figure 2 shows the first tray **1** stacked on top of a second tray **1a** when the tabs **15** are in the first position. With reference to Fig. 6A, the deck **2** has a plurality of apertures **20** in its underside, one for each leg, and when the tabs **15** are in the first position, slideable covers **25** close the apertures. This allows the trays to be stacked on top of each other. Preferably the slideable cover **25** is indented from the underside surface of the deck **2** and forms an indentation in which the ends of the legs **10** may be accommodated. Such an arrangement allows the

trays to be stacked more securely.

[0012] Figure 3 shows the first tray **1** with the tabs **15** in the second position. By pushing the tabs **15** in to their second position, the slideable covers **25** are moved so as to reveal the apertures **20** in the deck **2** (see Fig. 6C). The apertures **20** are arranged and positioned in the deck to correspond to the inside of the hollow legs **10.**

[0013] As shown in Figure **4,** by moving the tabs **15** to their second position, thus opening the apertures **20** in the deck **2,** the legs of a second tray **1a** are able to be partly inserted into the inside of the legs of the first tray **1.** Any number of trays can be nested and stored in this manner, as shown by a third tray **1b,** the legs of which are partly accommodated by the legs of the second tray **1a.**

[0014] Figure 5a shows in cross section the first tray **1** stacked on top of the second tray **1a.** The tab **15** of the first tray **1** is in the first position so that the end of the leg **10** of the second tray **1 a** rests on the slideable cover **25** closing the aperture **20** in the deck **2** of the first tray **1.** Figure 5b shows the situation when the tab **15** of the first tray **1** is in the second position and the leg of the second tray **1a** is partly inserted into the inside of the leg **10** of the first tray **1.**

[0015] Figure 6A shows a view of the underside of the tray **1,** showing the aperture **20** in the deck **2** and the slideable cover **25** that closes the aperture **20** when the tab **15** is in the first position. As can be seen in Figure 6a the cover **25** is slightly below the underside surface of the deck **2** providing a small recess in which the end of a leg **10** of another tray may be located. However, it is not necessary for the cover **25** and aperture **20** to form a recess; the cover **25** may instead be flush with the surface of the deck **2.**

[0016] Figure 6B is a similar view to figure 6A but shows the position of the cover **25** when the tab **15** is partly between the first and second position.

[0017] Figure 6C shows the exposed aperture **20** in the deck **2** with the cover **25** fully drawn back when the tab **15** is moved to the second position. By moving the cover **25** and exposing the aperture **20** the hollow inside of the leg **10** can be accessed. Figures 6B and 6C show that the covers **25** slide linearly so as to move in a plane parallel to the deck **2.**

[0018] Figure 7 shows the underside of the deck **2** in plan view. The tab **15** is shown partly between the first position and the second position. As can be seen the slideable cover **25** has exposed part of the aperture **20** in the deck **2.**

[0019] Figures 8A and 8B show an alternative embodiment where slideable covers **25a** are used instead of covers **25.** In this embodiment, slideable covers **25a** are each attached to the bottom of the deck **2** by a pivot **30,** and each cover **25a** preferably includes a handle **32** to change their position instead of the tabs **15.** The remaining features are the same as described above and have the same reference numbers. The covers **25a** rotationally slide about the pivot **30** and move in a plane parallel to the deck **2,** so as to selectively cover or uncover the apertures **20.** Figure 8A shows one of the slideable covers **25a** rotated to expose the aperture **20,** while Figure 8B shows one of the covers **25a** covering the aperture **20.** Preferably the covers **25a** include an indentation **34** that serves to accommodate the end of one of the legs **10,** allowing the trays to be stacked securely. Figures 9A and 9B show, in perspective views, the covers **25a** in the first and second position, respectively.

[0020] The embodiments described above provide the advantage that by allowing the legs of one tray to be partly accommodated inside the legs of another tray, the trays may be stacked in a nested fashion. In the nested fashion the space required for storage is greatly reduced. For example the space required for four trays stacked in a nested manner may be less than the space required for two trays in an un-nested stack. The space saving may be 30% and possibly 50% or more.

[0021] In addition because the tabs **15** may be pushed in it is easy to operate the opening of the apertures **20** in the deck **2** to allow nesting. It is also possible that only one tab **15** is provided that opens and closes all the apertures in the deck allowing easy operation and allowing the nesting operation to be carried out efficiently and quickly.

[0022] Although the present invention has been described in terms of preferred embodiments, it will be appreciable that various modifications and alterations might be made by those skilled in the art without departing from the scope of the invention. The invention should therefore be measured in terms of the claims which follow.

Claims

1. A tray (1) comprising
a deck (2),
a plurality of legs (10) projecting to one side of the deck (2),
a plurality of apertures (20) formed in the other side of the deck (2) and being arranged to allow passage of the legs of a second tray (1a, 1b) so that the second tray may be stacked on the tray in a nested fashion, and
a plurality of movable covers (25, 25a) associated with the plurality of apertures (20), said covers being slideable to selectively cover or open the plurality of apertures (20).

2. A tray (1) according to claim 1, further comprising,
at least one tab (15) connected to the plurality of movable covers (25), the at least one tab being selectively movable from a first position to a second position, wherein in the first position of the tabs the plurality of movable covers (25) cover the plurality of apertures (20) and wherein in the second position of the tabs the plurality of movable covers (25) do not cover the plurality of apertures (20).

3. A tray (1) according to any preceding claim, wherein the plurality of legs (10) are hollow to allow insertion of the legs of the second tray.

4. A tray (1) according to any preceding claim, wherein the plurality of legs (10) are tapered.

5. A tray according to any preceding claim, wherein the plurality of movable covers (25) and the deck (2) are arranged such that when the plurality of covers (25) cover the plurality of apertures (20) recesses are formed between the surface on said other side of the deck (2) and the plurality of moveable covers (25) to accept the ends of the plurality of legs of the second tray to allow un-nested stacking.

6. A tray according to any of claims 1 to 5, wherein the plurality of movable covers (25) and the deck (2) are constructed and arranged such that when the plurality of covers (25) cover the plurality of apertures (20) the plurality of covers (25) are flush with the surface on said other side of the deck (2) to allow un-nested stacking.

7. A tray according to claim 1, wherein the covers (25a) are attached to the deck (2) by a pivot (30) and rotationally slide about the pivot (30) in a plane parallel to the deck (2).

8. A tray according to claim 7, wherein the cover (25a) includes a handle (32) and an indentation (34).

9. A tray according to any preceding claim, wherein the deck (2) and the plurality of legs (10) are formed by injection moulding.

10. A tray, substantially as hereinbefore described with reference to the accompanying drawings.

FIG. 1

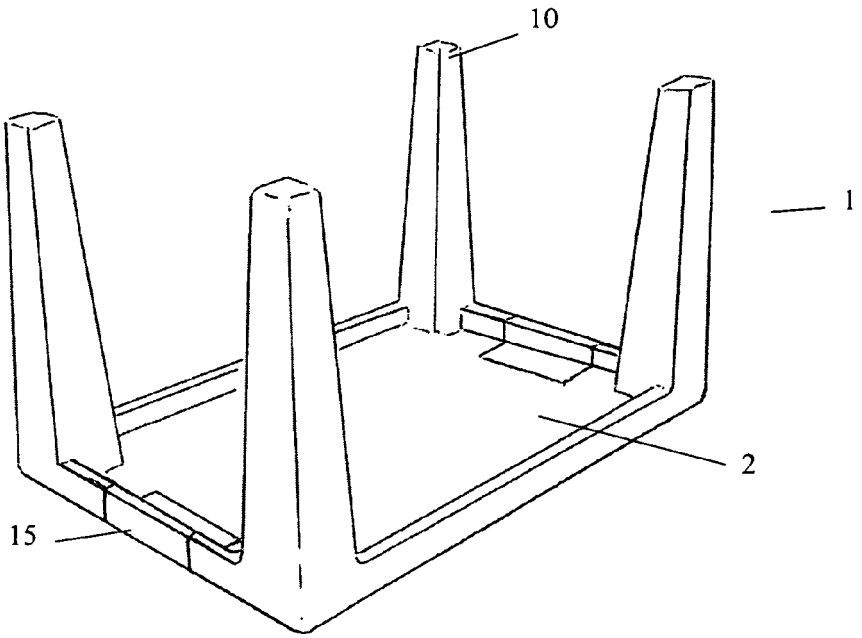


FIG. 2

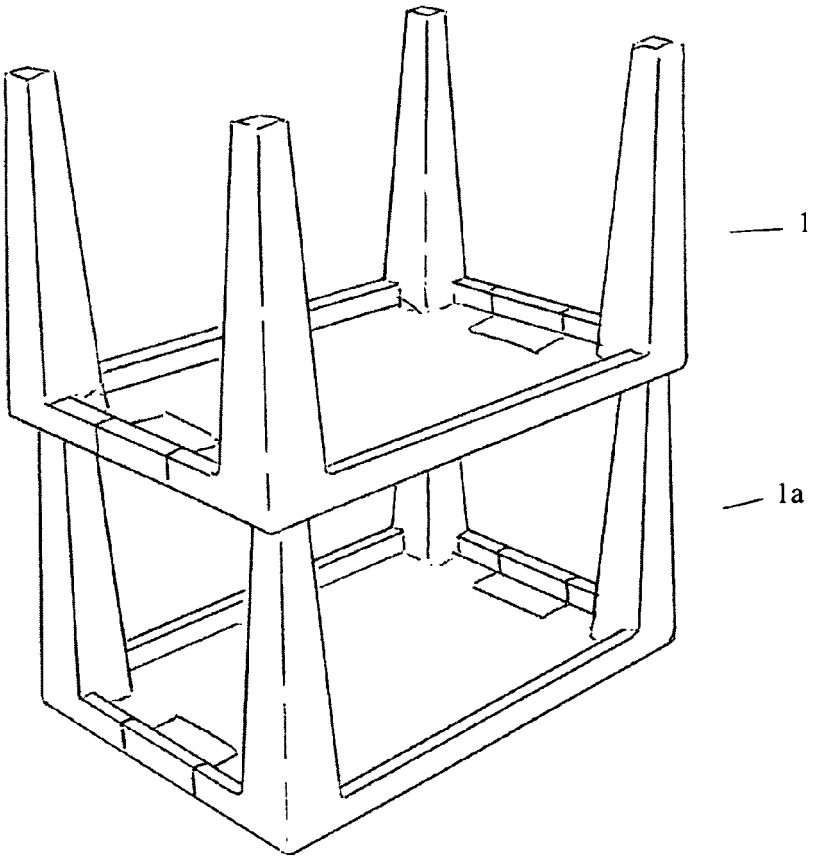


FIG. 3

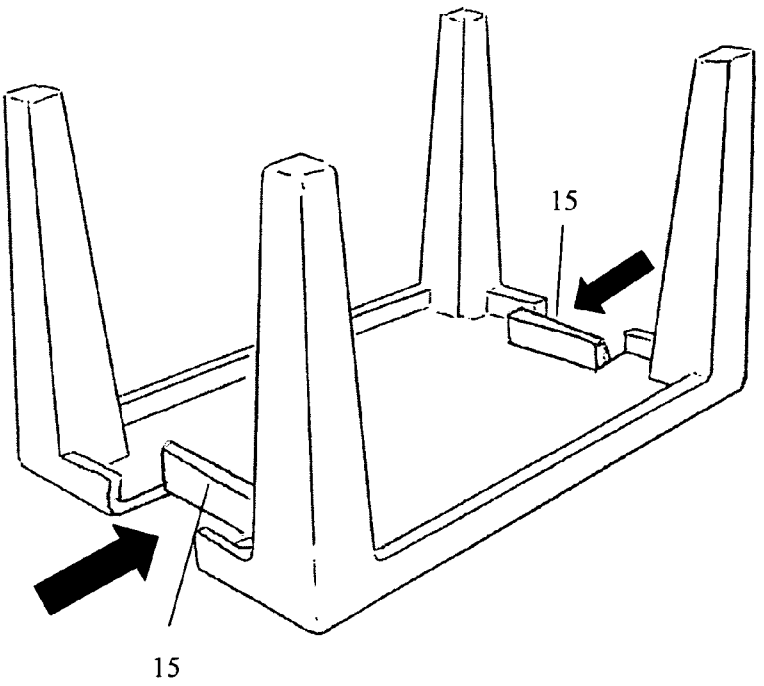


FIG. 4

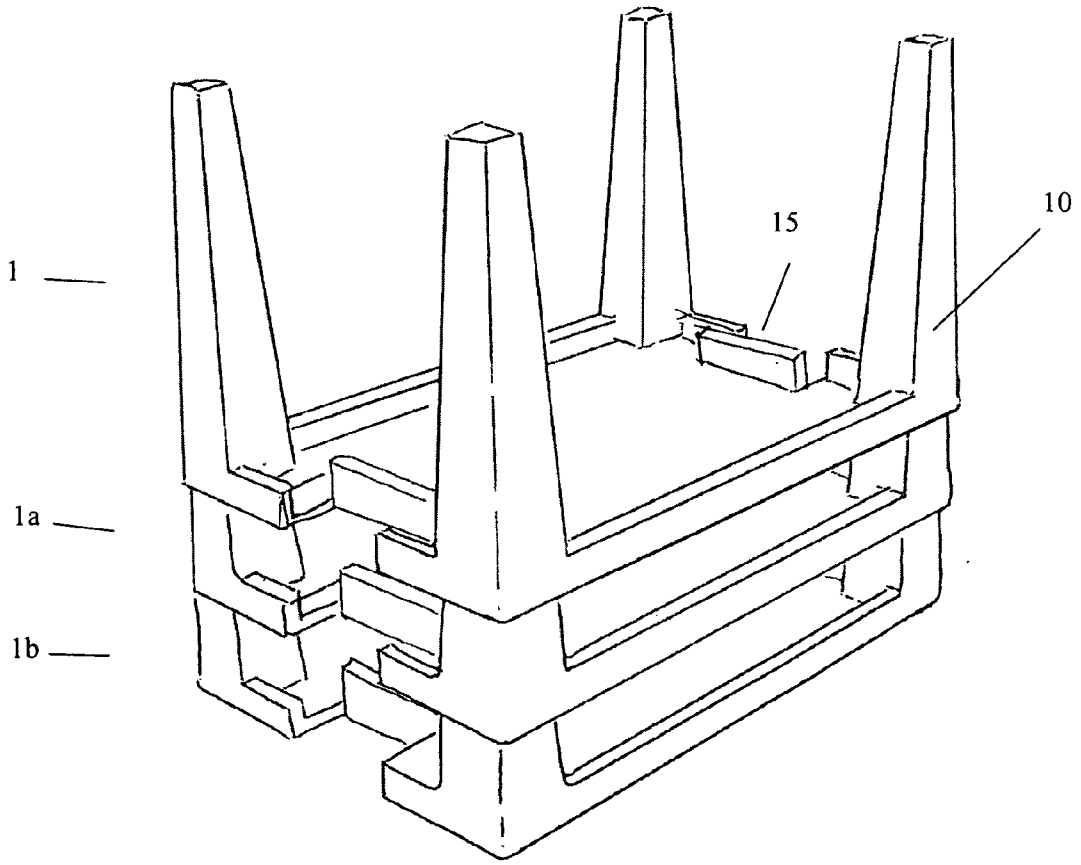


FIG. 5A

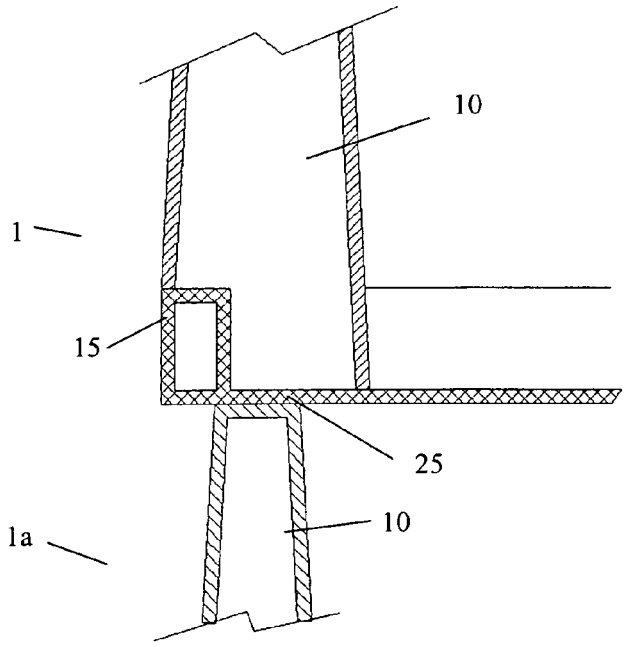


FIG. 5B

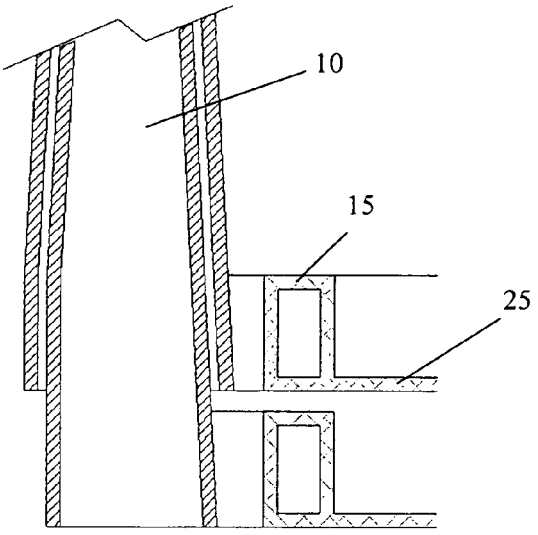


FIG. 6A

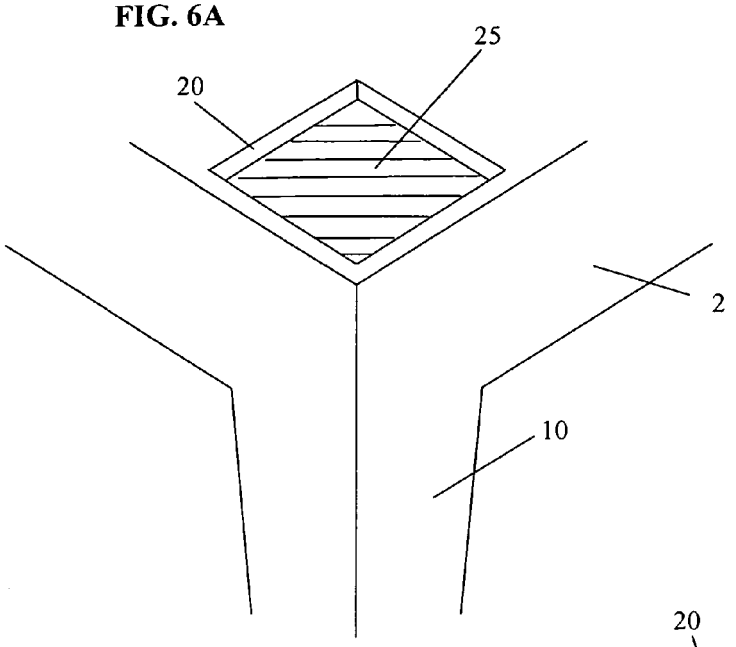


FIG. 6B

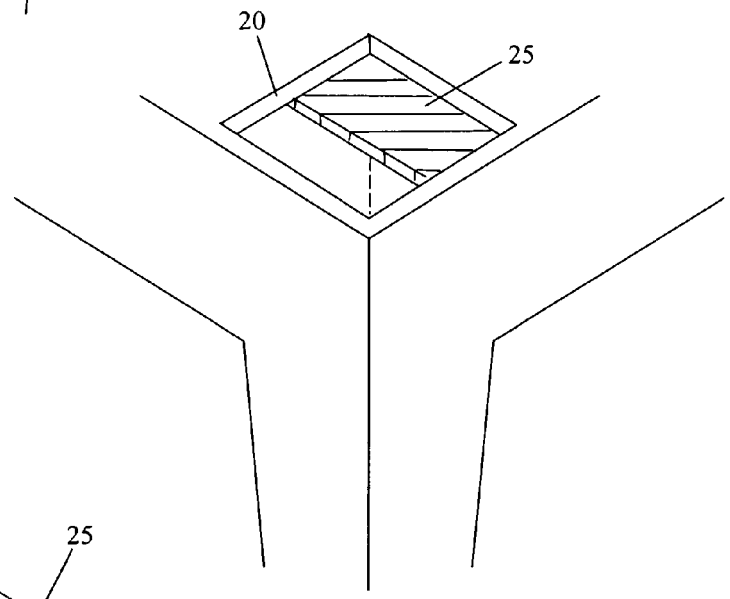


FIG. 6C

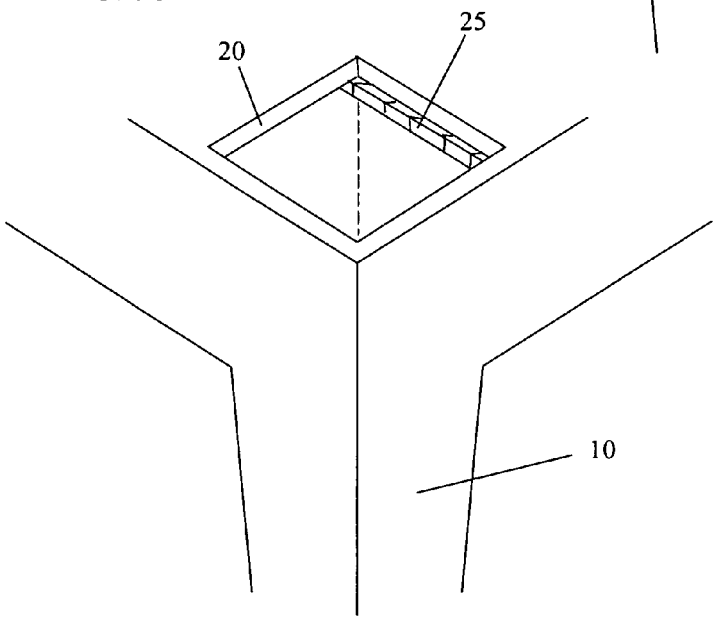


FIG. 7

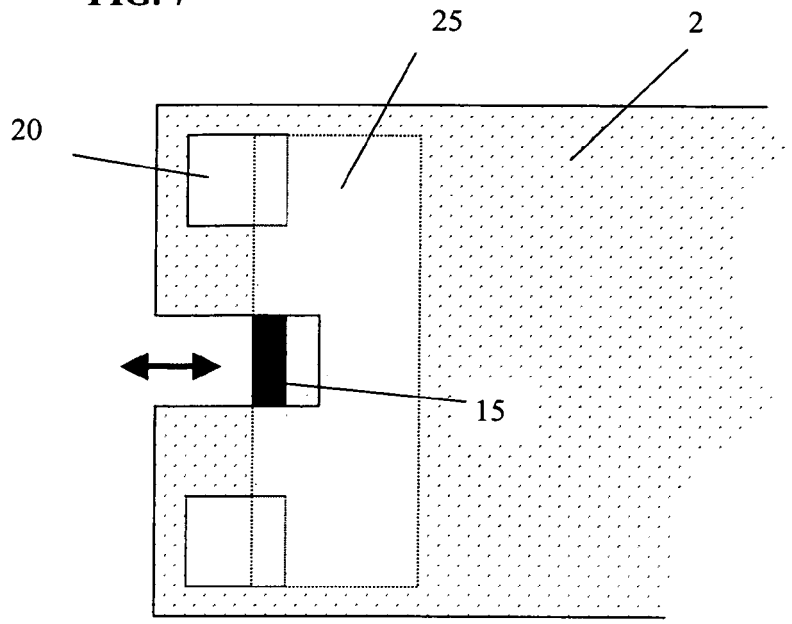


FIG. 8A

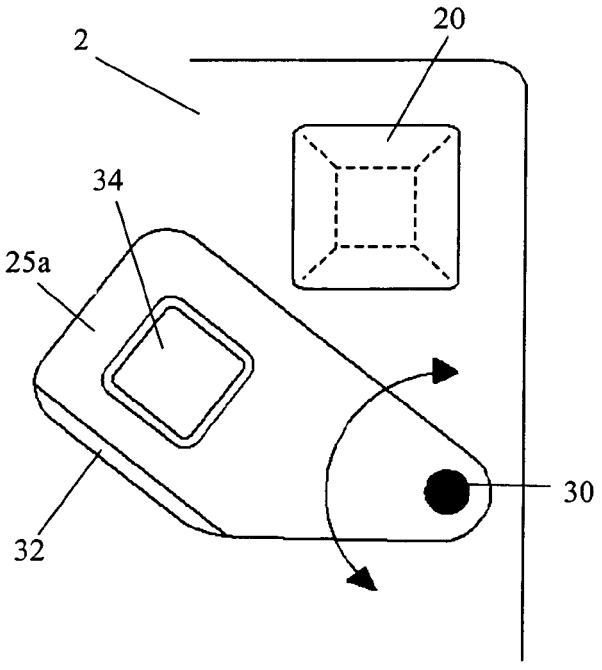


FIG. 8B

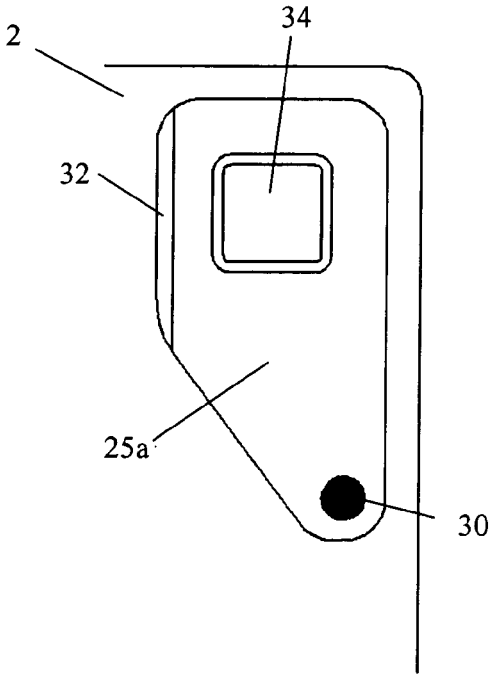


FIG. 9A

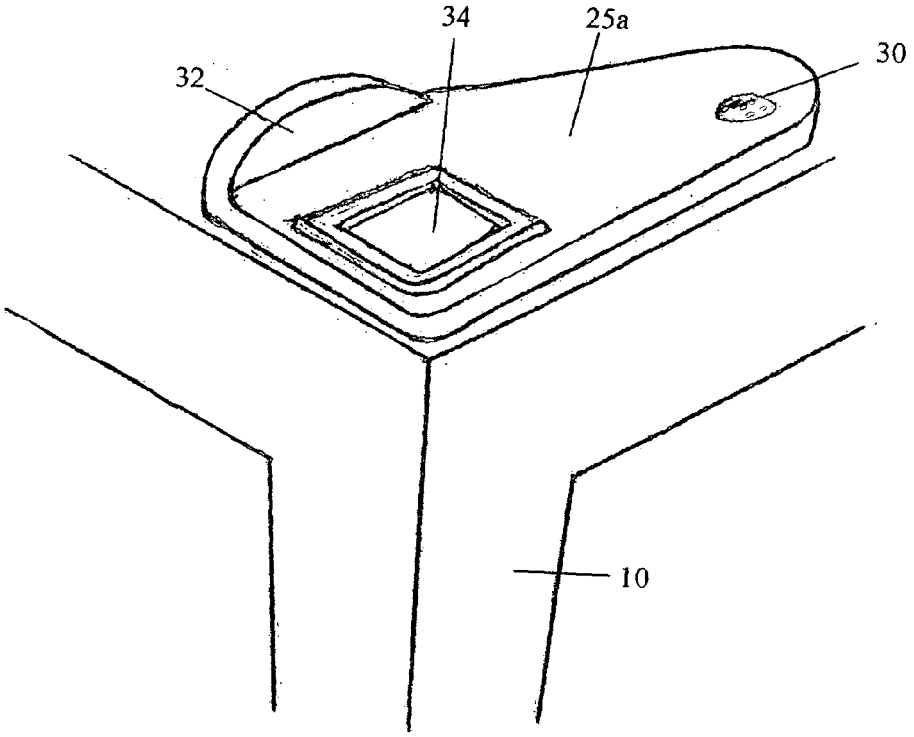
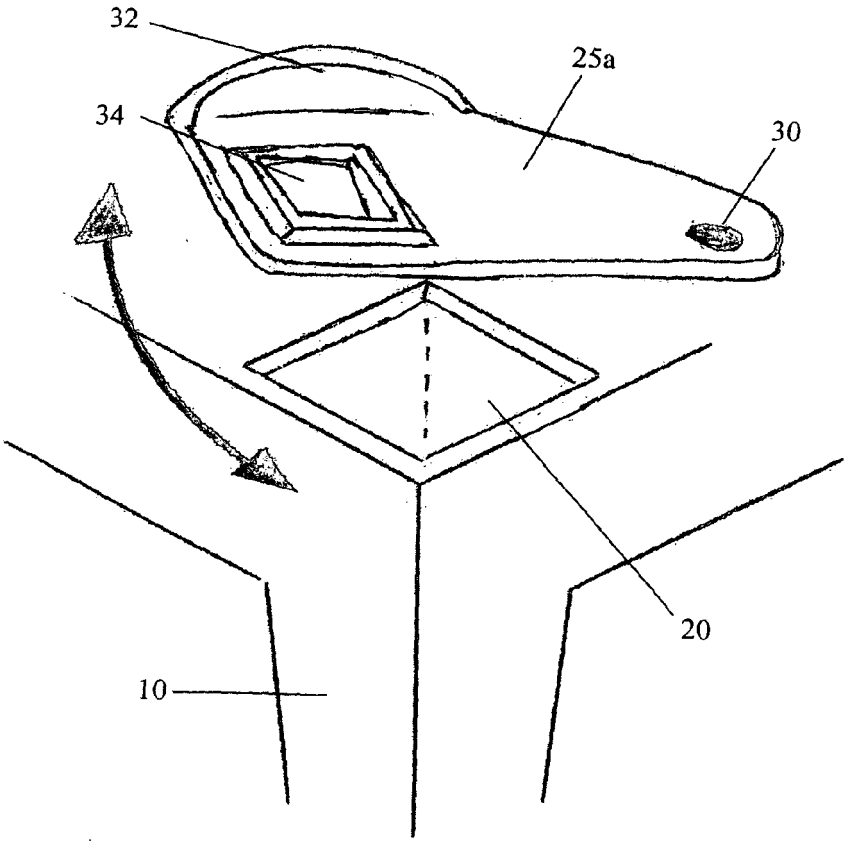


FIG. 9B



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PARTIAL EUROPEAN SEARCH REPORT

which under Rule 63 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number EP 08 25 2391

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 0 726 206 A (ALLIBERT EQUIPEMENT [FR]) 14 August 1996 (1996-08-14) * column 3, line 31 - column 7, line 8; figures 1-5 *	1-5,9	INV. B65D21/06
Y	DE 44 38 983 A1 (THYSSEN POLYMER GMBH [DE]) 2 May 1996 (1996-05-02) * the whole document *	1-5,9	
A	GB 1 148 535 A (SHAW REGENT LTD [GB]; KENNETH GRANGE [GB]) 16 April 1969 (1969-04-16) * figures 1-3 *	1-9	

TECHNICAL FIELDS SEARCHED (IPC)

B65D

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

Place of search	Date of completion of the search	Examiner
Munich	14 October 2008	Fitterer, Johann

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

3

EPO FORM 1503 03.82 (P04E07)

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INCOMPLETE SEARCH
SHEET C

Application Number
EP 08 25 2391

Claim(s) searched completely:
1-9

Claim(s) not searched:
10

Reason for the limitation of the search:

The only additional feature of claim 10 relies on a reference to the description and the drawings (see Rule 43(6) EPC).

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 25 2391

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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14-10-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82