

(19)



(11)

EP 2 010 434 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
22.05.2013 Bulletin 2013/21

(51) Int Cl.:
B65D 21/02 (2006.01)

(21) Application number: **07722564.7**

(86) International application number:
PCT/DK2007/000185

(22) Date of filing: **20.04.2007**

(87) International publication number:
WO 2007/121745 (01.11.2007 Gazette 2007/44)

(54) **STACKABLE BOXES AND COVERS**

STAPELBARE KISTEN UND ABDECKUNGEN

BOÎTES EMPILABLES ET COUVERCLES

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE
SI SK TR**

(30) Priority: **22.04.2006 DK 200600566**

(43) Date of publication of application:
07.01.2009 Bulletin 2009/02

(73) Proprietor: **TANOS GmbH Verpacken Ordnen
Präsentieren
89257 Illertissen (DE)**

(72) Inventor: **MADSEN, Jens, Ole
DK-5400 Bogense (DK)**

(74) Representative: **Abel, Martin
Patentanwälte
Magenbauer & Kollegen
Plochingen Strasse 109
D-73730 Esslingen (DE)**

(56) References cited:
**EP-A2- 1 238 602 DE-A1- 4 201 264
DE-U1- 7 828 640 DE-U1- 9 406 521
US-A- 4 457 433 US-A- 4 570 798
US-B2- 7 134 673**

EP 2 010 434 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The invention relates to stackable boxes which may be coupled to each other by locking means, said locking means being formed by locking parts at the bottom of a box which are capable of cooperating with locking means at the top of a box, wherein a removable cover has locking means at the bottom which are of the same type as the locking means at the bottom of a box.

[0002] Stackable boxes are known e.g. from DE Utility Model No. 78 28 640. These known boxes, which may have mutually different heights, may be coupled to each other and be terminated at the top by a cover.

[0003] according to the preamble of claim 1, EP 555 533 B1 also discloses stackable boxes according to the preamble of claim 1, which may be coupled together.

[0004] According to this patent, all the boxes have a cover which is confined between two boxes when the boxes are clamped together.

[0005] Thus, the boxes are clamped together analogously with the boxes in the above-mentioned utility model, but with a cover which is arranged between the boxes.

[0006] Accordingly, an object of the invention is to provide stackable boxes with or without a cover, which may be coupled together in order to achieve a more flexible stacking, where boxes and covers may be coupled together in an arbitrary order.

[0007] The object of the invention is achieved by stackable boxes of the type defined in the introductory portion of claim 1, which is characterized in that the cover has locking means at the top of the cover which are of the same type as the locking means at the top of a box.

[0008] Hereby, boxes and covers may be coupled together in an arbitrary order.

[0009] For instance, three boxes without a cover may be coupled together, or two boxes without a cover may be coupled together with a box having a cover, and in an arbitrary order.

[0010] It is even possible to stack several covers on top of each other, if the teachings in claim 1 are followed.

[0011] A user-friendly way of configuring the boxes and the covers is, as stated in claim 2, that the locking means at the bottom of the boxes and the covers are formed by at least one snap lock, which is adapted to grip an edge at the top of the boxes or the covers.

[0012] Expediently, as stated in claim 3, the covers and the boxes have two snap locks and two edges, and, as stated in claim 4, at least one snap lock is biased, which results in an embodiment which makes it easy to couple-together the stackable boxes and covers and to separate them from each other.

[0013] When, as stated in claim 5, the cover is provided with a carrier grip which is recessed into the cover, and, as stated in claim 6, the covers and the boxes have a snap lock at the bottom and an edge at the top in their one end portion, while they have hooks or flanges at the bottom in their opposite end portion, which are capable of engaging fixing holes positioned at the top of the cover

or the box, it is advantageously ensured that the snap locks of the stackable boxes are not subjected to loads, which may occur if the stackable boxes are very heavy, as the separation of the boxes from each other takes place in that the one snap lock is loosened from its edge on an underlying box or cover, following which the loosened box and the overlying boxes are pushed to the side, and then the carrier grip is used for lifting the boxes away from the underlying boxes.

[0014] When the boxes are coupled together, they are moved laterally inwards, whereby the hooks or the flanges extend into the fixing holes, while the snap lock automatically locks the boxes to each other.

[0015] Finally, as stated in claim 7, it is possible that the snap locks are arranged in the end portions on the sides of the boxes and the covers.

[0016] The invention will now be explained more fully with reference to the drawing, in which

fig. 1 shows a box with a snap lock and an edge according to the invention,

fig. 2 shows two boxes with a cover which are coupled together, while

fig. 3 shows two boxes and two covers in a separated state, seen from the side in section, but with a snap lock modified relative to fig. 2.

[0017] It is noted initially that the parts which the covers have in common with the boxes are provided with the same reference numerals as the boxes, but with a suffix "a".

[0018] In fig. 1, the numeral 1 indicates a box which has locking means in the form of a snap lock 2 near its bottom in its one end portion, said snap lock being formed by a plate which may rotate about a shaft.

[0019] The snap lock is biased by a spring 3 so that its plate will normally be flush with the vertical wall of the end portion.

[0020] At its top, the box has an edge 4 which is adapted to receive a snap lock from another box 1 or a cover 1a, as will be explained below.

[0021] Finally, at its opposite end, the box has another snap lock, which, however, need not be biased by a spring, but may be made of a resilient material, cf. also fig. 3.

[0022] Further, the snap lock 2 and the edge 4 are configured in the same manner as described in EP 0 799 115.

[0023] Fig. 2 shows two boxes 1 with covers 1a which are coupled together.

[0024] At their lower side, the boxes 1 have snap locks 2 which are biased by a spring 3.

[0025] At their lower side, the covers 1a have snap locks 2a which are biased by a spring 3a.

[0026] At the upper side of the covers 1a, which have a recessed carrier grip 8, edges 4a are arranged, which are adapted to grip snap locks 2, 2a from an overlying

box, or, although it is not shown, snap locks 2a from an overlying cover.

[0027] 1 In figure 3, the boxes 1 and the covers 1a have a spring-biased snap lock 2, 2a at their one end, while the snap lock 5, 5a at the opposite ends may be made of a resilient material.

[0028] The spring-biased snap locks 2, 2a have engagement faces 6, 6a, while the snap locks of a resilient material have engagement faces 7, 7a.

[0029] When the boxes 1 and the covers 1a are assembled, as shown in fig. 3, a cover 1a having a snap lock 5a without a spring is caused to engage an edge 4 on an underlying box 1 with its engagement face 7a by lateral displacement of the cover 1a. Then, the snap lock 2a with the spring 3a will engage the edge 4 on the box, whereby the cover 1a is coupled to the box 1.

[0030] The process may be repeated so that a plurality of covers 1 and boxes 1a may be coupled together in an arbitrary order, however, the covers 1a may also be coupled to each other.

[0031] However, it is also possible to arrange hooks or flanges at the opposite end portion, which may engage fixing holes, which, however, are not shown in the figures.

[0032] Finally, it should be mentioned that, although it is not shown in the figures, it is also possible to couple two or more covers together on top of each other.

[0033] As will be appreciated, the invention provides an extremely flexible stack-able box system, where boxes 1 and covers 1a may be coupled together and be separated in an arbitrary order, where the stackable box system may serve as a general storage device.

Claims

1. Combination of stackable boxes and at least a removable cover, wherein the stackable boxes (1) may be coupled to each other by locking means (2, 4, 5), said locking means being formed by locking means (2, 5) at the bottom of a box (1) which is capable of cooperating with locking means (4) at the top of a box (1), wherein the removable cover (1a) has locking means (2a, 5a) at the bottom which are of the same type as the locking means (2, 5) at the bottom of a box (1), **characterized in that** the cover (1a) has locking means (4a) at the top of the cover (1a) which are of the same type as the locking means (4) at the top of a box (1).
2. Combination according to claim 1, **characterized in that** the locking means (2, 5; 2a, 5a) at the bottom of the boxes (1) and the covers (1a) are formed by at least one snap lock (2, 2a), which is adapted to grip an edge (4, 4a) at the top of the boxes (1) or the covers (1a).
3. combination according to claim 2, **characterized in that** the covers (1a) and the boxes (1) have two snap

locks (2a, 5a, 2, 5) and two edges (4a, 4).

4. Combination according to claims 2 - 3, **characterized in that** at least one snap lock (2, 2a) is biased by a spring (3).
5. Combination according to claims 1 - 4, **characterized in that** the covers (1a) are provided with a carrier grip (8) which is recessed in the cover (1a).
6. Combination according to claim 2, 4 or 5, **characterized in that** the covers (1a) and the boxes (1) have a snap lock (2, 2a) at the bottom and an edge (4, 4a) at the top in their one end portion, while they have hooks or flanges (5, 5a) at the bottom in their opposite end portion which are capable of engaging fixing holes (4, 4a) provided at the top of the cover (1a) or the box (1).
7. Combination according to claims 1 - 6, **characterized in that** the snap locks (2) are provided in the end portions or on the sides of the boxes (1) and the covers (1a).

Patentansprüche

1. Kombination aus stapelbaren Kisten und mindestens einer entfernbarer Abdeckung, wobei die stapelbaren Kisten (1) mittels Verriegelungsmitteln (2, 4, 5) aneinander gekoppelt werden können, wobei die Verriegelungsmittel gebildet sind von Verriegelungsmitteln (2, 5) unten an einer Kiste (1), die mit Verriegelungsmitteln (4) oben an einer Kiste (1) zusammenwirken können, wobei die entfernbare Abdeckung (1a) unten Verriegelungsmittel (2a, 5a) hat, die vom gleichen Typ sind wie die Verriegelungsmittel (2, 5) unten an einer Kiste (1), **dadurch gekennzeichnet, dass** die Abdeckung (1a) oben an der Abdeckung (1a) Verriegelungsmittel (4a) hat, die vom gleichen Typ sind wie die Verriegelungsmittel (4) oben an einer Kiste (1).
2. Kombination nach Anspruch 1, **dadurch gekennzeichnet, dass** die Verriegelungsmittel (2, 5; 2a, 5a) unten an den Kisten (1) und den Abdeckungen (1a) durch mindestens eine Schnappschließe (2, 2a) gebildet sind, die dazu ausgelegt ist, eine Kante (4, 4a) oben an den Kisten (1) oder den Abdeckungen (1a) zu ergreifen.
3. Kombination nach Anspruch 2, **dadurch gekennzeichnet, dass** die Abdeckungen (1a) und die Kisten (1) zwei Schnappschließen (2a, 5a, 2, 5) und zwei Kanten (4a, 4) haben.
4. Kombination nach Ansprüchen 2 - 3, **dadurch gekennzeichnet, dass** mindestens eine Schnapp-

schließe (2, 2a) durch eine Feder (3) beaufschlagt ist.

5. Kombination nach Ansprüchen 1 - 4, **dadurch gekennzeichnet, dass** die Abdeckungen (1a) mit einem Tragegriff (8) versehen sind, der in die Abdeckung (1a) versenkt ist. 5
6. Kombination nach Anspruch 2, 4 oder 5, **dadurch gekennzeichnet, dass** die Abdeckungen (1a) und die Kisten (1) an ihrem einen Endabschnitt unten eine Schnappschließe (2, 2a) und oben eine Kante (4, 4a) haben, während sie an ihrem entgegengesetzten Endabschnitt unten Haken oder Flansche (5, 5a) haben, die mit Befestigungslöchern (4, 4a) in Eingriff gelangen können, die oben an der Abdeckung (1a) oder der Kiste (1) vorgesehen sind. 10
7. Kombination nach Ansprüchen 1 - 6, **dadurch gekennzeichnet, dass** die Schnappschließen (2) an den Endabschnitten oder an den Seiten der Kisten (1) und der Abdeckungen (1a) vorgesehen sind. 20

Revendications

1. Combinaison de boîtes empilables et au moins un couvercle amovible, dans laquelle les boîtes empilables (1) peuvent être couplées l'une à l'autre par des moyens de verrouillage (2, 4, 5), lesdits moyens de verrouillage étant formés par des moyens de verrouillage (2, 5) au bas d'une boîte (1) qui sont capables de coopérer avec des moyens de verrouillage (4) au sommet d'une boîte (1), dans laquelle le couvercle amovible (1a) comporte des moyens de verrouillage (2a, 5a) au bas qui sont du même type que les moyens de verrouillage (2, 5) au bas d'une boîte (1), **caractérisée en ce que** le couvercle (1a) comporte des moyens de verrouillage (4a) au sommet du couvercle (1a) qui sont du même type que les moyens de verrouillage (4) au sommet d'une boîte (1). 30
2. Combinaison selon la revendication 1, **caractérisée en ce que** les moyens de verrouillage (2, 5 ; 2a, 5a) au bas des boîtes (1) et des couvercles (1a) sont formés par au moins un fermoir (2, 2a), qui est apte à s'accrocher à un bord (4, 4a) au sommet des boîtes (1) ou des couvercles (1 a). 45
3. Combinaison selon la revendication 2, **caractérisée en ce que** les couvercles (1a) et les boîtes (1) comportent deux fermoirs (2a, 5a, 2, 5) et deux bords (4a, 4). 50
4. Combinaison selon les revendications 2 et 3, **caractérisée en ce qu'**au moins un fermoir (2, 2a) est contraint par un ressort (3). 55

5. Combinaison selon les revendications 1 à 4, **caractérisée en ce que** les couvercles (1a) sont pourvus d'une poignée porteuse (8) qui est évidée dans le couvercle (1 a).

6. Combinaison selon la revendication 2, 4 ou 5, **caractérisée en ce que** les couvercles (1a) et les boîtes (1) comportent un fermoir (2, 2a) au bas et un bord (4, 4a) au sommet dans leur une portion d'extrémité, alors qu'ils comportent des crochets ou des brides (5, 5a) au bas dans leur portion d'extrémité opposée qui sont capables de se mettre en prise avec des trous de fixation (4, 4a) fournis au sommet du couvercle (1) ou de la boîte (1).

7. Combinaison selon les revendications 1 à 6, **caractérisée en ce que** les fermoirs (2) sont fournis dans les portions d'extrémité ou sur les côtés des boîtes (1) et des couvercles (1 a).

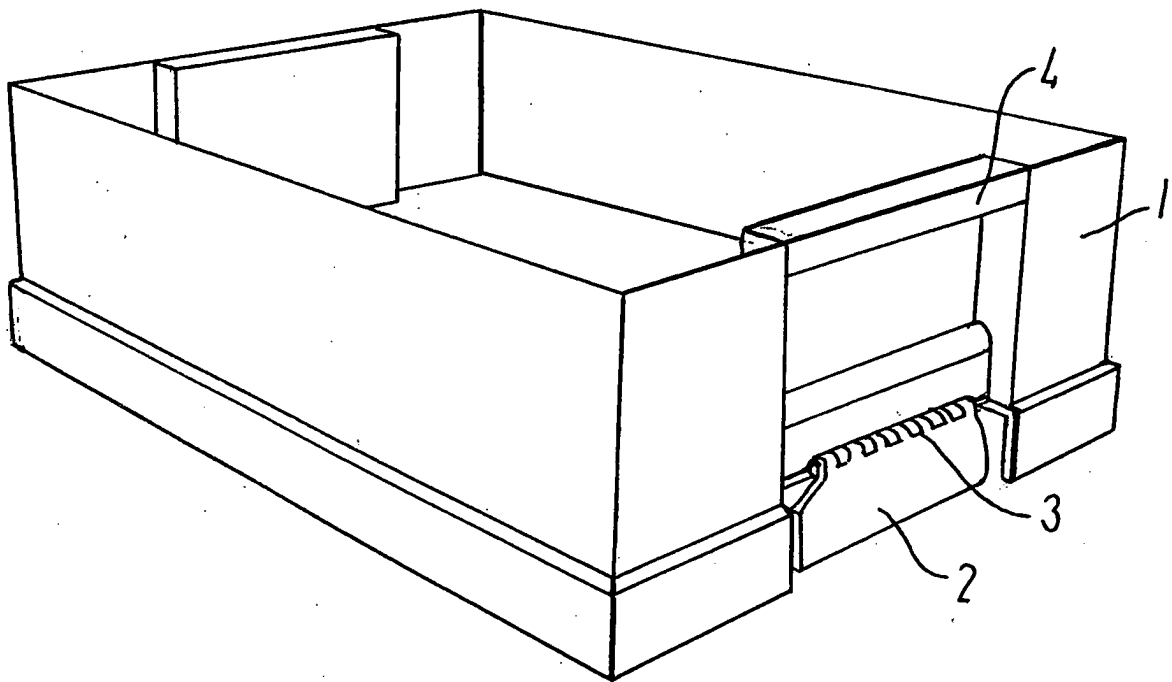
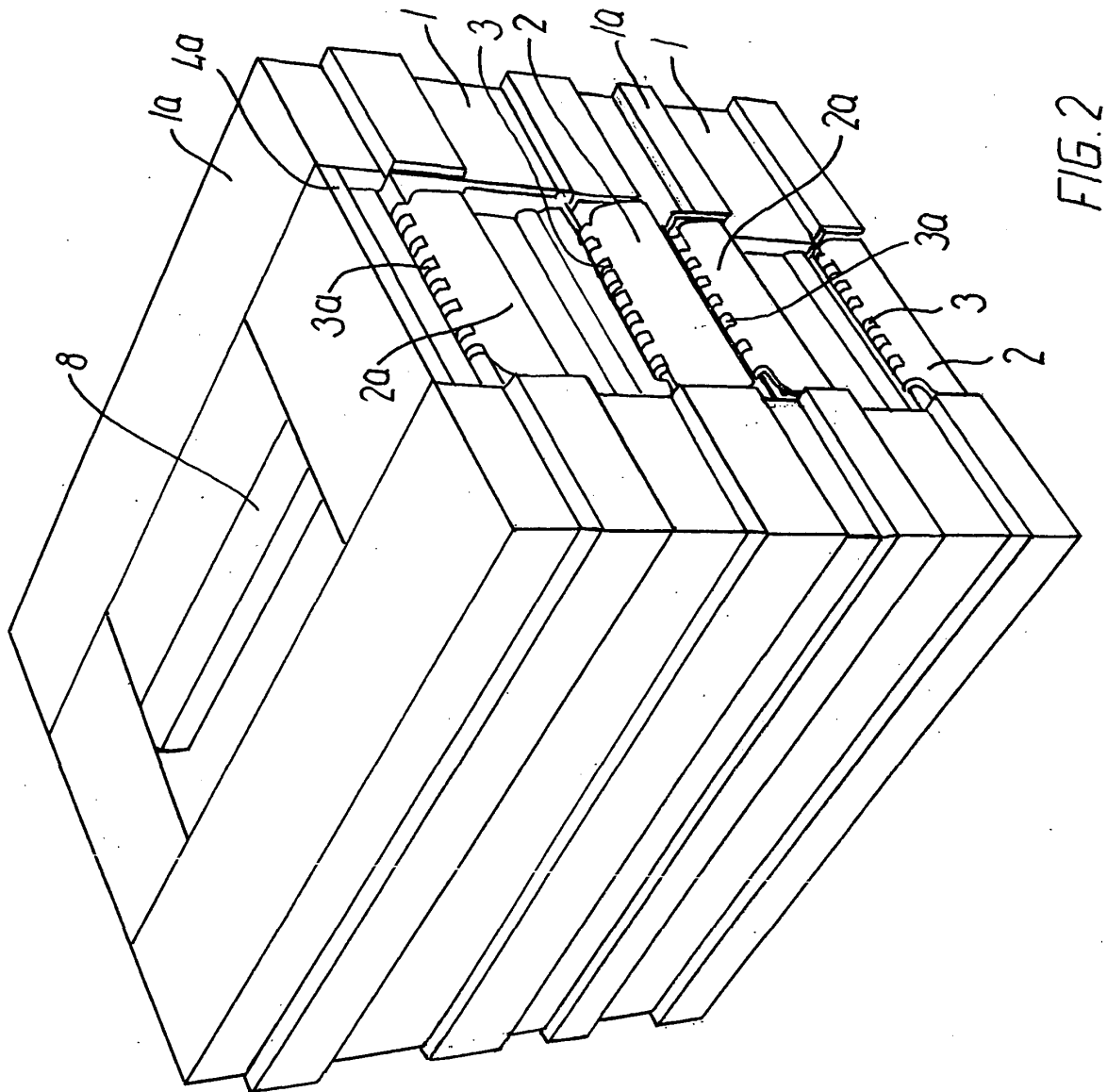
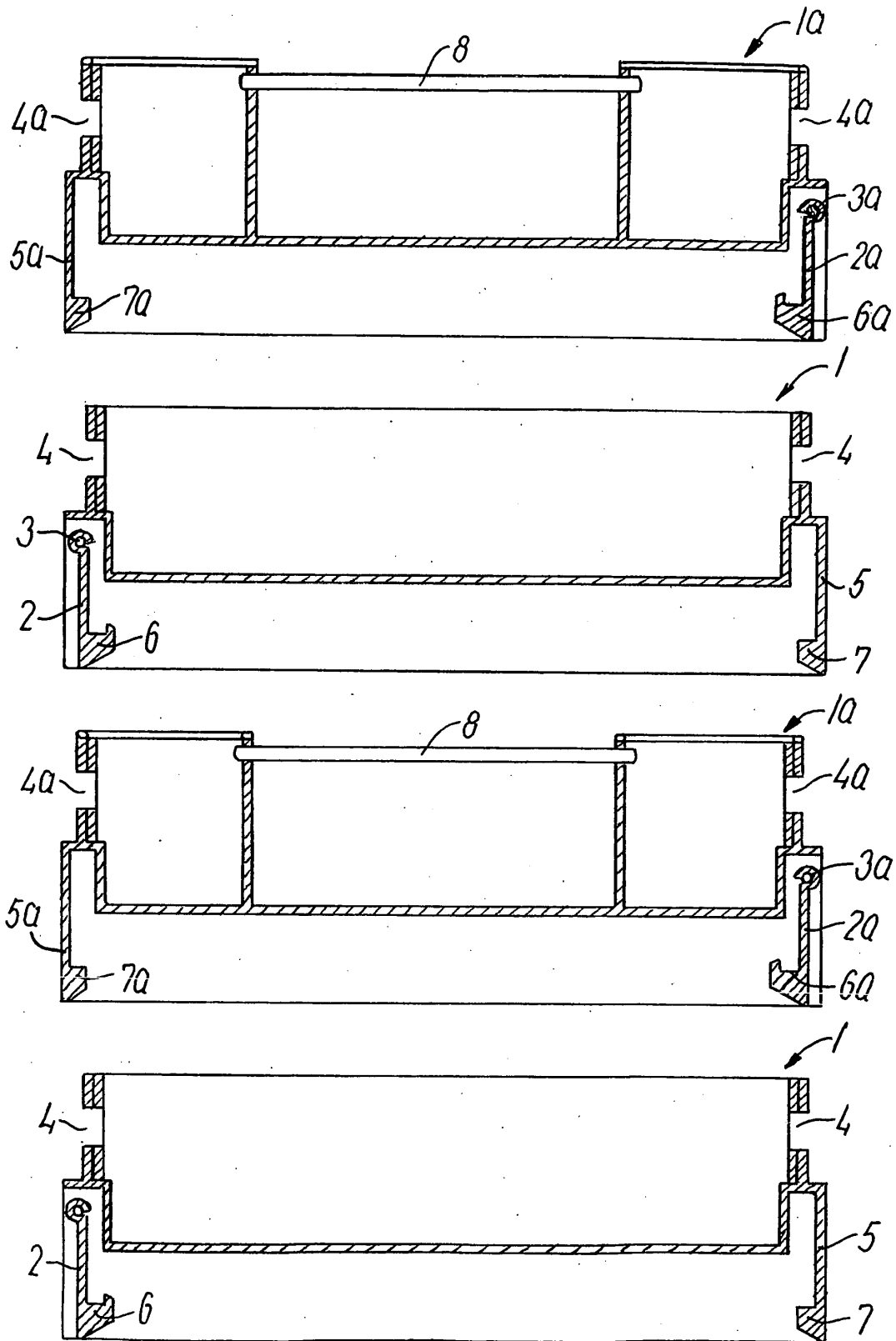


FIG. 1





REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 7828640 [0002]
- EP 555533 B1 [0003]
- EP 0799115 A [0022]