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Description

[0001] The present invention relates to a plate-shaped element, which has at least substantially flat, opposing upper and lower faces and at least three through openings, through which cup-shaped elements extend and jut down past said lower face, which cup-shaped elements each comprise an upper cup with an upper edge flange projecting over said upper face, a lower locking element, which surrounds a portion of the cup jutting down from said lower face and has an edge flange projecting over said lower face, and snap-locking members, which are configured on the cup and the locking element and cooperate with each other and which, in their engagement position, fix the locking element to the cup.

[0002] It is previously known to configure pallets, for example, in the above-stated manner. One example is shown and described in US-A-3 610 172. The pallet here consists of a fiberboard plate-shaped platform having a number of, more precisely six, uniformly placed openings, in which plastics cup-shaped support legs of above-stated configuration are fixed. The support legs rest against the base of the pallet. The interspaces between the support legs correspond to the interspaces between the distancing blocks on a conventional pallet, into which lifting forks on a forklift truck can be introduced.

[0003] One advantage with a pallet of this configuration compared with a conventional pallet is that the pallets can be stacked one upon the other, so that the support legs on an overlying pallet can jut into the upwardly open cups, formed by the support legs, in an underlying pallet. By suitable configuration of the support legs, the pallets can then be stacked virtually without interspaces between the bottom side of an overlying pallet and the top side of an underlying pallet. The positive-locking engagement between the pallets allows the possibility of higher stacks without risk of the stack tipping over, compared with a stack of conventional pallets.

[0004] One problem is, however, to achieve a solution as regards the configuration, the production and the fixing of the cup-shaped elements on the plate-shaped element, which solution is economic and at the same time satisfies the strength requirements. In the known construction which is described above, the snap fastening between the cup and the locking ring is localized to the region closely adjacent to the periphery of the opening. This means that there is high risk of the snap fastening becoming undone, if the plate-shaped element is made of a material which is prone to swell, for example if exposed to damp. The same applies if the cup-shaped element is exposed to mechanical action giving rise to laterally directed forces which endeavor to deform the element. This dependent on the deformation section between the bottom side of the plate-shaped element and the snap fastening being very short and therefore allowing very limited deformation before the snap fastening is actuated and is at risk of becoming undone.

[0005] US-A-5 497 898 discloses a lid in correspond-

ence with the pre-characterising portion of claim 1. WO 2006/018029 A1 discloses a pallet comprising a plate-shaped base element and support feet.

[0006] The object of the present invention is generally to provide a plate-shaped element of the kind stated in the introduction which is easy and cheap to produce and install and which allows relatively large swelling of the plate-shaped element and relatively large mechanical action upon the cup-shaped element, while maintaining secure engagement between the cooperating snap-locking members of the snap fastening.

[0007] This is achieved according to the invention by means of a plate-shaped element which is characterized in that the snap-locking members are dimensioned and placed such that said engagement position lies at a substantial distance from the outer edge of the opening.

[0008] Conducted trials have shown that a particularly positive result is obtained if, according to one refinement of the invention, the snap-locking members are dimensioned and placed such that the engagement position lies closer to the center of the opening than the outer edge of the opening. This produces a long deformation section between the snap fastening and the flange connection between the plate-shaped element and the cup-shaped element.

[0009] One preferred embodiment of the plate-shaped element according to the invention is characterized in that the cup and the locking element have a circular cross-section, in that the cup has a conical, annular bottom portion, which surrounds an at least substantially cylindrical portion jutting down from the inner periphery of the conical portion, and in that one snap-locking member is formed by an external groove in the cylindrical portion. By configuring the locking element with a slotted, weakly conical portion which surrounds the cylindrical portion of the cup and has hook elements which, in the engagement position, engage in said grooves, a secure snap fastening between the cup and the locking element is obtained, which is protected against external damage.

[0010] In one preferred embodiment of the plate-shaped element, which is especially intended for use as a lid for a rectangular or square, upwardly open container, the plate-shaped element has a shape matched to the edges of the opening of the container, and four through openings with associated cup-shaped elements positioned such that they form guides toward the side walls of the container in the corners of the container.

[0011] The invention is described in greater detail below with reference to illustrative embodiments shown in the appended drawing, in which:

fig. 1 shows an exploded view of a part of a plate-shaped element with an embodiment of a cup-shaped element according to the invention,

fig. 2 shows the elements in fig. 1 in the assembled state, and

fig. 3 shows a longitudinal section through parts of two plate-shaped elements according to the embodiment in fig. 1 and 2 stacked one upon the other.

[0012] In fig. 1 and fig. 2, a part of a plate-shaped element 1 with the dividing plane through the middle of an opening 2 is shown in perspective. The element 1 has a flat upper face 3 and a flat lower face 4, which faces are parallel. A cup, generally denoted by 5, as well as a locking element, generally denoted by 6, are shown divided in the same plane as the opening 2. The plate 1 can be a wood fiber plate, whilst the cup 5 with the locking element 6 is expediently made of a plastics material which allows a certain elastic deformation.

[0013] As can most clearly be seen from fig. 3, the cup 5 has an upper annular flange 7, which in the illustrated fitted state of the cup bears against a recessed face portion 3a of the upper face 3, but can just as readily bear directly against the face 3 in the absence of a recess. The annular flange 7 merges into a cylindrical side portion 8, which, in turn, merges into a partially conical annular bottom portion 9.

[0014] Finally, the bottom portion 9 merges into a downwardly directed cylindrical end portion 10 having a lower end closed by a bottom 11. At the upper end of the cylindrical end portion 10, a groove 12 is configured, whose lower edge 13 forms one of two cooperating hook elements which together form the snap fastening.

[0015] As can also most clearly be seen from fig. 3, the locking element 6 has an annular flange 14, which in the illustrated fitted state of the locking element bears against the lower face 4 substantially directly opposite the upper flange 7. The annular flange 14 adjoins the lower end of a cylindrical side portion 15 accommodated in the opening 2 of the plate, which side portion, in turn, merges into a first conical, annular bottom portion 16. The inner peripheral edge of the bottom portion 16 adjoins a second cylindrical portion 17, which merges into a second conical portion 18, from whose inner periphery a weakly conical portion 19 extends upward toward the inner peripheral edge of the bottom portion 9 of the cup.

[0016] The weakly conical portion 19 of the locking element 6 surrounds the cylindrical end portion 10 of the cup 5 and, at its upper end, is configured with a flange 20, whose lower edge 21, in cooperation with the edge 13 of the groove, forms the snap fastening. As can be seen in particular from fig. 1, the portion 19 is cut up, so that tongues 19a with intervening slots 19b are formed. The tongues 19a thereby form hook elements of tailor-made resilience.

[0017] In the installation and fixing of the cup-shaped element 5, 6 in the opening 2, the cylindrical portion 15 of the locking element 6 is brought from below up into the opening 2, so that the flange 14 comes to bear against the lower face of the plate. After this, the cup 5 is brought down into the locking element 6, whereupon the above-described conical faces of the cup 5 and the locking element 6 help to center the end portion 10 of the cup

against the upper end of the weakly conical portion 19 of the locking element 6. Upon the initial contact between the flange 20 on the conical portion 19 of the locking element 6 and the lower end of the cylindrical portion 10 of the cup 5, the tongues 19a are forced apart, since the internal diameter of the flange 20 is somewhat less than the outer diameter of the cylindrical end portion 10 of the cup. In order to facilitate the forcing apart, both the flange 20 and the cylindrical end portion 10 are configured with beveled face portions 22 and 23 respectively.

[0018] In the illustrated preferred illustrative embodiment, the axial extent of the weakly conical portion 19 is matched to the axial extent of the cylindrical end portion 10 of the cup 5 such that the upper end of the tongues 19a butt against the bottom portion 9 of the cup, at the same time as the annular flange 7 of the cup butts against the upper face 4 of the plate-shaped element, when also the lower edge 19 of the flange 20 snaps over the edge 13 of the groove 12 in the end portion 10 and locks the cup 5 to the locking element 6. In this position, the conical annular bottom portion 9 of the cup 5 also bears against the first conical bottom portion 16 of the locking element 6.

[0019] When a plurality of plate-shaped elements 1 are stacked one upon the other, as can be seen from fig. 3, the downwardly directed force from the loading of an overlying element 1 will be transferred to the directly underlying element 1 via the conical portion 18 of the locking element 6 of the overlying element 1 to the conical bottom portion 9 of the cup of the underlying element 1. The downwardly directed force from the cup 5 to the locking element 6 is transferred via the portion 9 of the cup 5 and the end face of the tongues 19a or the face 16 of the locking element 6.

[0020] As a result of the described embodiment, a secure locking of the conical element 5/6 on the plate 1 is achieved with a simple fitting process. The central placement of the cooperating snap-locking members 13 and 19a produces a protected placement within the cylindrical portion 17 of the locking element, which results in little risk of involuntary release of the snap-locking connection under mechanical action. An important consequence of the illustrated central placement of the snap-locking connection 13, 19a is also that it ends up at a relatively large axial and radial distance from the flanges 7 and 14 bearing against the plate, which results in a long deformation section in the event of possible mechanical action upon the cup-shaped element 5, 6. This, in turn, leads to substantially less risk of the snap-locking connection becoming undone, compared with if the snap-locking connection were placed, in a known manner, closely adjacent to the flanges 7 and 14. In the illustrated embodiment, the distance from the engagement position of the snap-locking members 13, 19a to the edge of the opening 2 is substantially longer than to the center of the opening, more precisely about three times longer.

[0021] Should a plate-shaped element 1 according to the invention be discarded, the illustrated and described

embodiment makes it possible to remove the cup-shaped elements 5, 6 easily from the plate 1 by banging with a suitable tool against the bottom 11 of the cylindrical portion 10 so that the snap fastening becomes undone. This is advantageous, for example, in source-sorting of waste, where plastics products are to be separated from timber products or if a damaged cup-shaped element 5, 6 needs to be replaced.

[0022] In a refined embodiment of the invention, the snap fastening can be reinforced by being supplemented with lugs 30 (one shown) evenly distributed on the outside of the conical bottom part 9, which are disposed at such a distance from the groove 12 in the cylindrical portion 10 that a certain elastic deformation of the lugs 30 is required to allow the hook elements 19a to be introduced between the edge of the groove 12 and the lugs 30.

[0023] The invention has been described above with reference to a preferred embodiment shown in the appended drawing, but can be varied, of course, within the scope of the following patent claims. If, for example, there is no need to remove or replace a cup-shaped element 5, 6, the bottom 11 of the cylindrical portion 10 does not need to be accessible from below through the locking element 6. Depending on the application, the lugs 30 can also be omitted.

Claims

1. A lid (1) for a rectangular or square, upwardly open container, which lid (1) has flat, opposing upper and lower faces (3, 4) and a shape matched to the edges of the opening of the container, and four through openings (2) with associated cup-shaped elements (5, 6) positioned such that they form guides toward the side walls of the container in the corners of the container, wherein the cup-shaped elements (5, 6) extend and jut down past said lower face (4), and wherein said cup-shaped elements each comprise an upper cup (5) with an upper edge flange (7) projecting over said upper face, a lower locking element (6), which surrounds a portion (9, 12) of the upper cup (5) jutting down from said lower face and has an edge flange (14) projecting over said lower face, and snaplocking members (13, 21), which are configured on the upper cup (5) and the locking element (6) and cooperate with each other and which, in their engagement position, fix the locking element (6) to the upper cup (5), wherein the snap-locking members (13, 21) are dimensioned such that said engagement position lies radially closer to the center of the opening (2) than the outer edge of the opening, **characterised in that** said upper edge flange (7) of the upper cup (5) merges into a cylindrical side portion (8) which merges into a partially conical annular bottom portion (9), and wherein said edge flange (14) of the lower locking element (6) adjoins the lower end of a cylindrical side portion (15) accommodated

in said opening (2), which side portion (15) merges into a first conical annular bottom portion (16), which bottom portion (16) has a shape complementary to the conical bottom portion (9) of the upper cup (5) and, in the engagement position, lies close up against the conical bottom portion (9) of the upper cup (5).

2. The lid as claimed in claim 1, wherein the cup (5) and the locking element (6) have a circular cross-section, and in that the cup has a conical, annular bottom portion (9), which surrounds an at least substantially cylindrical portion (10) jutting down from the inner periphery of the conical portion, and in that one (13) of said snap-locking members is configured on an external contacting surface of the cylindrical portion.
3. The lid as claimed in claim 2, wherein one (13) of said snap-locking members is formed by a groove (12) configured in said contacting surface, whilst the other of said snap-locking members is formed by hook elements (21) configured on the locking element (6).
4. The lid as claimed in claim 3, wherein the hook elements (21) are formed by flange portions (20) on a slotted cylindrical portion (19) which is connected to the locking element and which, in said engagement position, surrounds the firstnamed cylindrical portion (10).
5. The lid as claimed in claim 3 or 4, wherein the hook elements (21) are dimensioned such that, in the engagement position, upper faces of the hook elements lie close up against a lower face of the conical annular bottom portion (9).
6. The lid as claimed in claim 4 or 5, wherein the lower face of the conical bottom portion (9) has stop lugs (30) arranged so as to prevent the hook elements from being forced out of the groove if the cup-shaped element is exposed to forces endeavoring to separate the locking element (6) from the cup (5).
7. The lid according to any one of claims 4-6, wherein the locking element (6) is configured with a bottom portion (16) connected to said slotted portion (19).
8. The lid according to any one of claims 4-7, wherein the bottom portion (18) of the locking element (6), connected to said slotted portion, only extends radially up to the slotted portion (19), so that a lower end portion (11) of the cylindrical portion of the cup (10) is exposed to the environment.
9. The lid (1) according to any one of claims 1-8, wherein the bottom portion (9) merges into a downwardly

directed cylindrical end portion (10) having a lower end closed by a bottom (11).

Patentansprüche

1. Deckel (1) für einen rechteckigen oder quadratischen, nach oben offenen Behälter, welcher Deckel (1) eine flache, entgegengesetzte obere und untere Fläche (3, 4) und eine Form, die mit den Kanten der Öffnung des Behälters zusammenpasst, und vier Durchgangsöffnungen (2) mit zugehörigen kelchförmigen Elementen (5, 6), die so positioniert sind, dass sie Führungen gegen die Seitenwände des Behälters in den Ecken des Behälters bilden, aufweist, wobei sich die kelchförmigen Elemente (5, 6) nach unten und an der unteren Fläche (4) vorbei erstrecken und hervorstehen, und wobei die kelchförmigen Elemente jeweils einen oberen Kelch (5) mit einem oberen Randflansch (7), der über die obere Fläche hervorsteht, ein unteres Sicherungselement (6), das einen Teil (9, 12) des oberen Kelchs (5) umgibt und nach unten von der unteren Fläche hervorsteht und einen Randflansch (14) aufweist, der über die untere Fläche hervorsteht, und Schnappschlosselemente (13, 21), die auf dem oberen Kelch (5) und dem Sicherungselement (6) ausgebildet sind und mit einander zusammenwirken, und die, in der Eingriff-Position, das Sicherungselement (6) am oberen Kelch (5) fixieren, umfassen, wobei die Schnappschlosselemente (13, 21) so dimensioniert sind, dass die Eingriff-Position radial näher an der Mitte der Öffnung (2) als die Außenkante der Öffnung liegt, **dadurch gekennzeichnet, dass** der obere Randflansch (7) des oberen Kelchs (5) in einen zylindrischen Seitenteil (8) übergeht, der in einen teilweise konischen ringförmigen Bodenteil (9) übergeht, und wobei der Randflansch (14) des unteren Sicherungselements (6) an das untere Ende eines zylindrischen Seitenteil (15) angrenzt, der in der Öffnung (2) untergebracht ist, welcher Seitenteil (15) in einen ersten konischen ringförmigen Bodenteil (16) übergeht, welcher Bodenteil (16) eine Form aufweist, die mit dem konischen Bodenteil (9) des oberen Kelchs (5) abgestimmt ist und, in der Eingriff-Position, eng an den konischen Bodenteil (9) des oberen Kelchs (5) anliegt.

2. Deckel nach Anspruch 1, wobei der Kelch (5) und das Sicherungselement (6) einen kreisförmigen Querschnitt aufweisen, und dass der Kelch einen konischen, ringförmigen Bodenteil (9) aufweist, der einen zumindest im Wesentlichen zylindrischen Teil (10) umgibt, der nach unten von dem inneren Umkreis des konischen Teils hervorsteht, und dass eines (13) der Schnappschlosselemente auf einer äußeren Kontaktfläche des zylindrischen Teils ausgebildet ist.

3. Deckel nach Anspruch 2, wobei eines (13) der Schnappschlosselemente durch einen Einschnitt (12) gebildet ist, der in der Kontaktfläche ausgebildet ist, während das andere der Schnappschlosselemente durch Hakenelemente (21) gebildet ist, die auf dem Sicherungselement (6) ausgebildet sind.

4. Deckel nach Anspruch 3, wobei die Hakenelemente (21) durch Flanschteile (20) auf einem genuteten zylindrischen Teil (19) gebildet sind, welcher mit dem Sicherungselement verbunden ist und, in der Eingriff-Position, den obengenannten zylindrischen Teil (10) umgibt.

5. Deckel nach Anspruch 3 oder 4, wobei die Hakenelemente (21) so dimensioniert sind, dass, in der Eingriff-Position, obere Flächen der Hakenelemente eng an eine untere Fläche des konischen ringförmigen Bodenteils (9) anliegen.

6. Deckel nach Anspruch 4 oder 5, wobei die untere Fläche des konischen Bodenteils (9) Anschlagnasen (30) aufweist, die eingerichtet sind, um zu verhindern, dass die Hakenelemente aus dem Einschnitt gezwungen werden, wenn das kelchförmige Element Kräften ausgesetzt wird, die versuchen, das Sicherungselement (6) vom Kelch (5) zu trennen.

7. Deckel nach irgendeinem der Ansprüche 4-6, wobei das Sicherungselement (6) mit einem Bodenteil (16), der mit dem genuteten Teil (19) verbunden ist, ausgebildet ist.

8. Deckel nach irgendeinem der Ansprüche 4-7, wobei sich der Bodenteil (18) des Sicherungselements (6), das mit dem genuteten Teil verbunden ist, nur radial nach oben bis zum genuteten Teil (19) erstreckt, so dass ein unterer Endteil (11) des zylindrischen Teils des Kelchs (10) der Umgebung ausgesetzt wird.

9. Deckel (1) nach irgendeinem der Ansprüche 1-8, wobei der Bodenteil (9) in einen nach unten gerichteten zylindrischen Endteil (10) mit einem unteren Ende, das durch einen Boden (11) geschlossen ist, übergeht.

Revendications

1. Couvercle (1) pour un récipient rectangulaire ou carré et ouvert vers le haut, ledit couvercle (1) présentant des faces supérieures et inférieures (3, 4) plates et opposées et une forme adaptée aux bords de l'ouverture du récipient, et quatre ouvertures traversantes (2) avec des éléments associés en forme de coupe (5, 6) agencés si bien qu'ils forment des guides vers les parois latérales du récipient dans les coins du récipient, les éléments en forme de coupe

- (5, 6) s'étendant et faisant saillie vers le bas au-delà de ladite face inférieure (4), et lesdits éléments en forme de coupe comprenant chacun une coupelle supérieure (5) avec une bride de bord supérieure (7) faisant saillie sur ladite face supérieure, un élément de verrouillage inférieur (6) qui entoure une portion (9, 12) de la coupelle supérieure (5) faisant saillie vers le bas à partir de ladite face inférieure et comportant une bride de bord (14) faisant saillie sur ladite face inférieure, et des membres d'encliquetage (13, 21) qui sont configurés sur la coupelle supérieure (5) et l'élément de verrouillage (6) et coopèrent l'un avec l'autre et qui, dans leur position d'engagement, fixent l'élément de verrouillage (6) à la coupelle supérieure (5), les membres d'encliquetage (13, 21) étant dimensionnés si bien que ladite position d'engagement est située radialement plus près du centre de l'ouverture (2) que le bord extérieure de l'ouverture, **caractérisé en ce que** ladite bride de bord supérieure (7) de la coupelle supérieure (5) fusionne dans une portion latérale et cylindrique (8) qui fusionne dans une portion annulaire, inférieure et partiellement conique (9), et ladite bride de bord (14) de l'élément de verrouillage inférieur (6) avoisinant l'extrémité inférieure d'une portion latérale et cylindrique (15) logée dans ladite ouverture (2), ladite portion latérale (15) fusionnant dans une première portion inférieure, annulaire et conique (16), ladite portion inférieure (16) présentant une forme complémentaire à la portion inférieure conique (9) de la coupelle supérieure (5) et, dans la position d'engagement, se trouvant près de la portion inférieure conique (9) de la coupelle supérieure (5).
2. Couvercle selon la revendication 1, dans lequel la coupelle (5) et l'élément de verrouillage (6) présentent une section transversale circulaire, et en ce que la coupelle présente une portion inférieure, annulaire et conique (9) qui entoure une portion au moins essentiellement cylindrique (10) faisant saillie vers le bas depuis la périphérie intérieure de la portion conique, et en ce que l'un (13) des membres d'encliquetage est configuré sur une surface extérieure de contact de la portion cylindrique.
 3. Couvercle selon la revendication 2, dans lequel l'un (13) desdits membres d'encliquetage est formé par une rainure (12) configurée dans ladite surface de contact, tandis que l'autre desdits membres d'encliquetage est formé par des éléments de crochet (21) configurés sur l'élément de verrouillage (6).
 4. Couvercle selon la revendication 3, dans lequel les éléments de crochet (21) sont formés par des portions de bride (20) sur une portion cylindrique et fendue (19) qui est reliée à l'élément de verrouillage et qui, dans ladite position d'engagement, entoure la portion cylindrique mentionnée en premier lieu (10).
 5. Couvercle selon la revendication 3 ou 4, dans lequel les éléments de crochet (21) sont dimensionnés si bien que, dans la position d'engagement, des faces supérieures des éléments de crochet se trouvent près d'une face inférieure de la portion inférieure, annulaire et conique (9).
 6. Couvercle selon la revendication 4 ou 5, dans lequel la face inférieure de la portion inférieure et conique (9) présente des pattes de butée (30) agencées de manière à empêcher les éléments de crochet d'être forcés hors de la rainure si l'élément en forme de coupe est exposé à des forces qui s'efforcent de séparer l'élément de verrouillage (6) de la coupelle (5).
 7. Couvercle selon l'une quelconque des revendications 4 à 6, dans lequel l'élément de verrouillage (6) est configuré avec une portion inférieure (16) reliée à ladite portion fendue (19).
 8. Couvercle selon l'une quelconque des revendications 4 à 7, dans lequel la partie inférieure (18) de l'élément de verrouillage (6), reliée à ladite partie fendue, ne s'étend que radialement jusqu'à la portion fendue (19), si bien qu'une partie d'extrémité inférieure (11) de la portion cylindrique de la coupelle (10) est exposée à l'environnement.
 9. Couvercle (1) selon l'une quelconque des revendications 1 à 8, dans lequel la portion inférieure (9) fusionne dans une portion d'extrémité cylindrique et dirigée vers le bas (10) présentant une extrémité inférieure fermée par un fond (11).

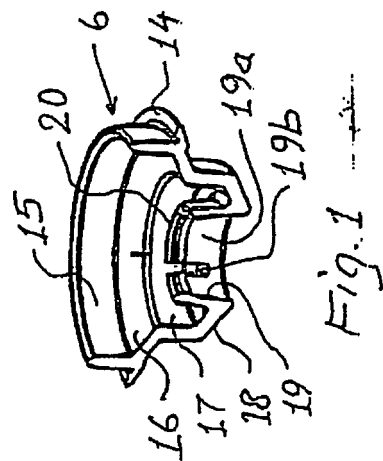
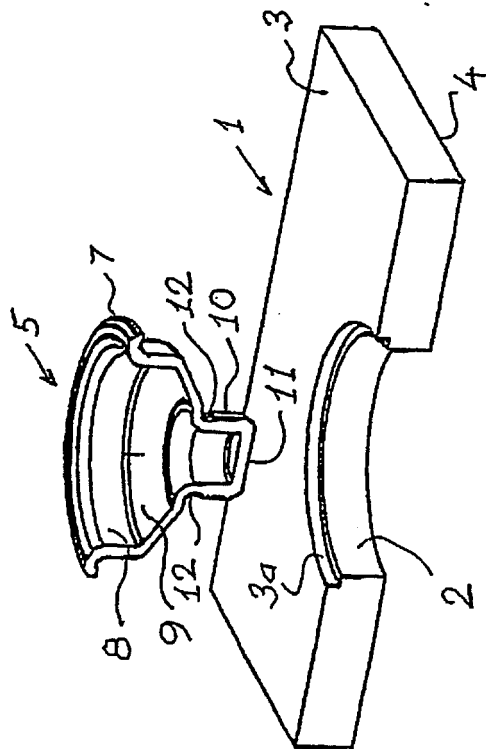
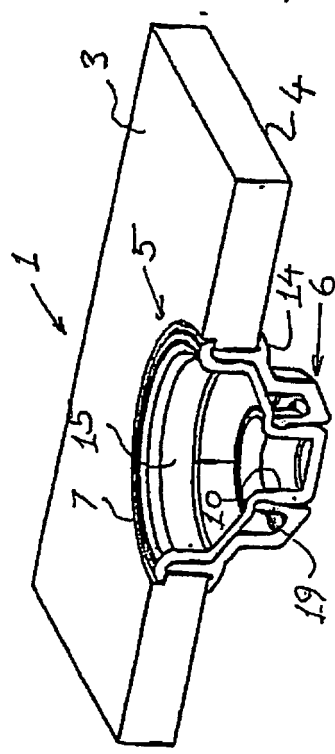


Fig. 1



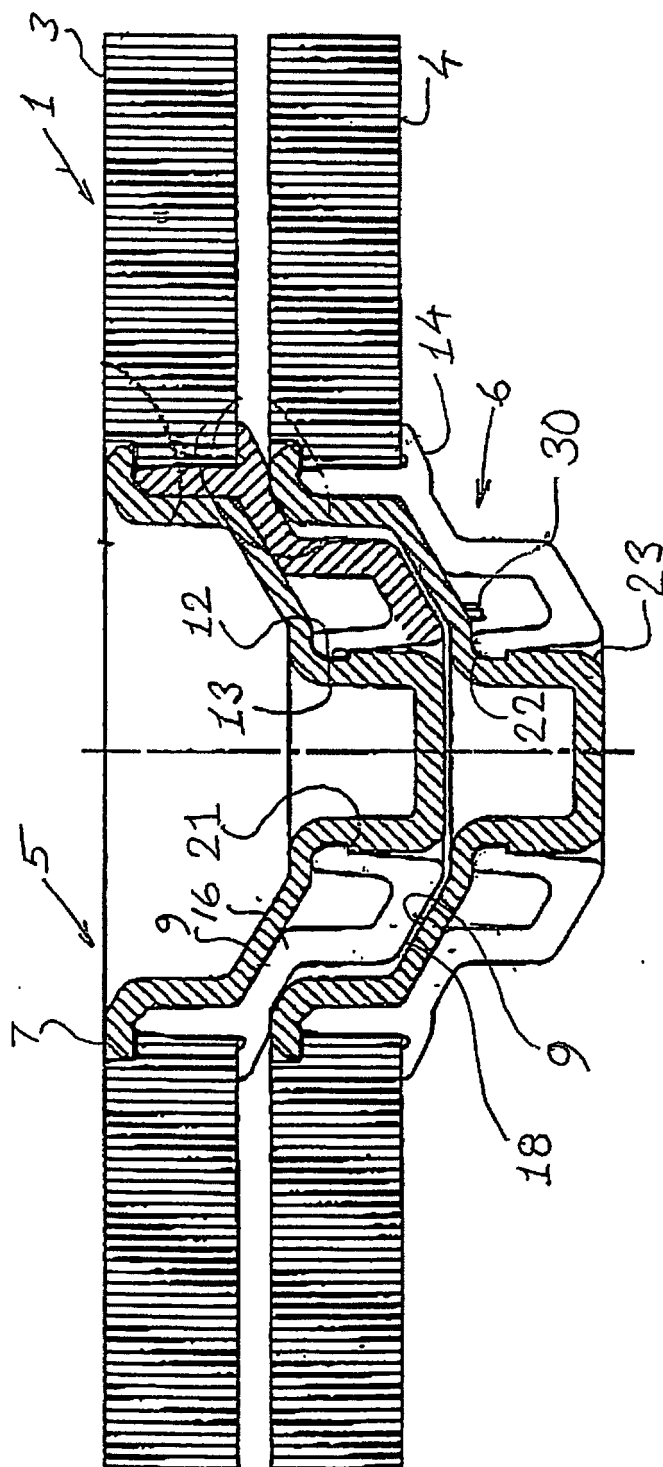


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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