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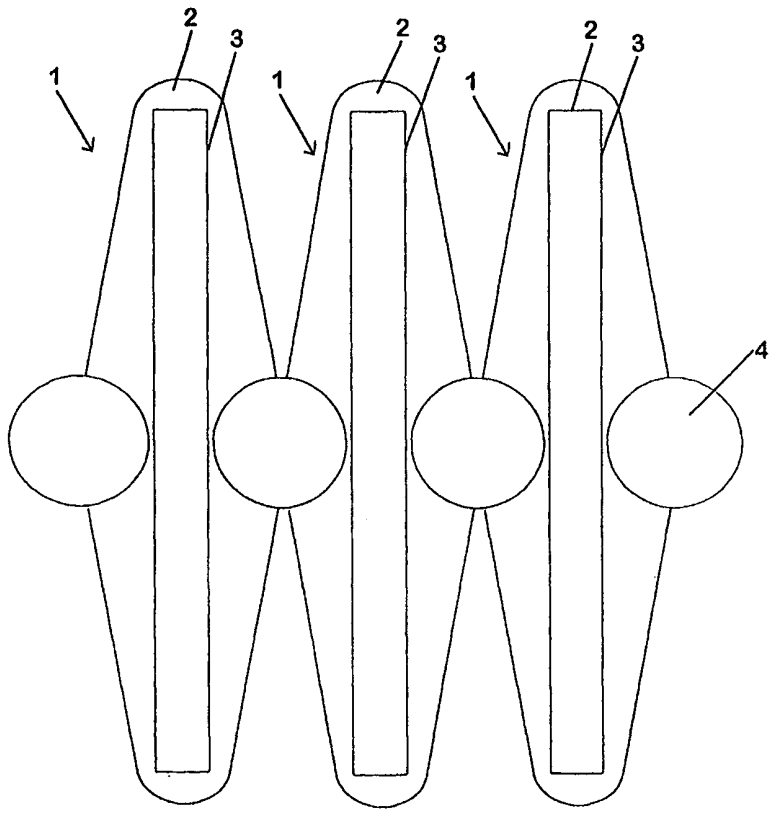
(54) Title: A RACK FOR CDs OR OTHER STANDARDISED CASSETTES

(57) Abstract

The invention relates to a rack (1) for CDs or other standardised cassettes, wherein the rack (1) has a holder portion for receiving, securing, releasing and displaying one or more cassettes (15), and having at least two coupling elements (4) on each rack (1). The coupling elements (4) of the rack are configured for interconnection with a coupling element (4) of a corresponding rack (1) while forming a pivotal, releasable interconnection of the racks.



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A rack for CDs or other standardised cassettes.

The invention relates to a rack for CD-cassettes or the like standardised cassettes, wherein the rack has a holder portion for receiving, securing, releasing and displaying one or more cassettes, and having at least two coupling elements on each rack.

A wide variety of racks are available for storing and displaying CD-cassettes or the like standardised cassettes, such as tape cassettes for audio or videotapes, or cassettes for computer diskettes. An example of such rack is described in EP published patent application No 0,301,417 A1. The rack taught therein is constituted by a box, the front of which being a lid portion that is - via link articulations - connected to and parallel displaceable relative to the back for opening the box. By connection of the front of boxes in a plane manner to the back of corresponding boxes, a block of coherent boxes is formed. The individual boxes are not connected via articulations, and cannot be pivoted relative to each other. At the same time the link articulation joint between the lid of the boxes and the remaining part is expensive to manufacture.

By the invention a rack is provided that is not expensive and is able to receive one or more diskettes and, upon pivotal connection with a number of further racks, it is able to form flexible chain-like structures of racks that are pivotal relative to each other.

This is accomplished by a rack of the kind described above, the coupling means of which being configured for interconnecting with a coupling element of a correspond-

ing rack while forming a pivotal, releasable interconnection of the rack. The interconnection being pivotal enables each rack to be angled relative to the adjacent rack, and the chain of racks can hereby be arranged in different configurations, such as circles or in S-shape, according to the wishes of the user. The racks being releasably interconnected means that it is possible, anywhere in the chain - including at its extremities, to introduce further racks, which may be desirable if the rack is used for a collection of CDs and if further CDs are purchased that are to be fitted into the collection in an alphabetical order. If one or more of the racks in a collection is/are fastened to the support, additional racks can be connected to end portions of the rack chain.

According to one embodiment of the rack, it has - as featured in claim 2 - an elongated groove for receiving a CD cassette, wherein there is provided a coupling element at least at either side of the groove. The elongated groove can be configured with lateral portions that resiliently squeeze around the CD cassette, and end portions so as to form a rectangular, upwardly open space for receiving an edge portion of a cassette. Coupling elements can be configured both at either side of the groove and/or at the ends thereof, thereby enabling the racks to be arranged either side-by-side or in extension of each other, or to form branched structures.

When, as featured in claim 3, the coupling elements are opposed opposite the centre line of the groove, it is possible to form chains that are arranged in S-shape or in the shape of rosettes, and wherein the individual CDs in the chain will be situated relatively close to each

other thereby adequately ensuring that space is not wasted.

As featured in claim 4, the coupling elements can be configured as snap locks comprising lock pins and indentations, wherein the lock pins on a coupling element is configured for being resiliently received in indentations in an opposed coupling element, such that lock pins and indentations are aligned with each other for forming a hinge line about which the racks can be pivoted relative to each other. Such snap locks are particularly convenient if the rack is made of plastics in an injection moulding process, since it is hereby possible to exploit the flexibility of the plastics material for bringing about the snap effect.

However, it is also an option - as featured in claim 5 - to allow the coupling elements to comprise one or more hinge elements that are, upon assembly of two coupling elements, aligned with each other for receiving a hinge pin. This method of manufacturing coupling elements permits the hinge parts to be manufactured integrally with the rack. The hinge pin can be configured in one piece or it can be configured in two pieces that are introduced into the hinge parts from each their side and kept together by a snap effect or by means of a through-going screw.

For securing the rack to a surface, it can be configured such - and in accordance with claim 6 - that the rack comprises a through-going aperture intended for a mounting element for securing the holder against a support, and wherein the through-going aperture can be covered with a lid that hides the mounting element from sight.

The through-going aperture can conveniently be elongated which enables a certain movement of the rack relative to the aperture when a mounting element in the form of eg a screw is introduced through the aperture and into a pre-drilled hole in a support. This means that the exact location of the hole is not critical.

As featured in claim 7, the through-going aperture is conveniently configured in the hinge pin of the coupling element.

When screwing a screw through the hole into a support, eg a wall, the two rack parts will continue to be freely pivotal around the now secured hinge pin.

The CD rack will now be described in further detail with reference to the drawing, wherein

Figure 1 illustrates three interlinked racks, seen from above;

Figure 2 illustrates three racks like in Figure 1, wherein however, the racks are angulated relative to each other;

Figure 3 shows interlinked racks forming a circle;

Figure 4 shows a long chain of racks;

Figure 5 shows a single rack in an enlarged scale;

Figure 6 is a sectional view through the rack shown in Figure 5 according to line A-A, and showing hinge pin elements in sectional view;

Figure 6a is a plan view of the one hinge pin element;

Figure 7 is a sectional view through an assembled hinge element;

Figure 8 illustrates an embodiment of the invention with coupling elements on more than two sides;

Figure 9 shows three linked racks according to an alternative embodiment of the invention;

Figure 10 is a longitudinal sectional view through the racks according to Figure 9; and

Figure 11 is an exploded view of a rack according to Figure 9.

Figure 1 shows three interlinked racks 1 seen from above, wherein each rack has an elongated groove 3 for receiving a CD cassette from its narrow side, and a frame 2 that surrounds the slot. The coupling 4 between the racks is arranged at the long side of the groove, and herein it is configured as an integral part of the frame 2. In the groove 3 a CD cassette can be received, secured and later released there from. This functionality can be obtained in another manner, eg by one or more resilient metal or plastics clips that resiliently secure the CD cassette.

Figure 2 illustrates three corresponding, linked racks that have the maximal angulation relative to each other. As will appear there is a distance between the rotational point between two racks and their frames whereby each

rack can be rotated a certain angle α relative to the position in which the racks are parallel.

Figure 3 shows an example of a number of linked racks that combine to form a circle. Figure 4 shows an example of a rack chain that forms a somewhat freer figure for arranging CDs eg alphabetically. Herein it is shown how the coupling 4 can be utilised to apply a letter.

The coupling element can be configured in a wide variety of ways. One way can be in the shape of snap locks wherein lock pins on one coupling element is configured for being resiliently received in indentations on the coupling element of the adjacent rack. When several lock pins are configured correctly on line, a hinged connection is accomplished that enables mutual rotation of the interconnected racks.

A ball joint connection is also an option and such will also enable a mutual movement between the racks in more than one plane and also allow rotation of the racks relative to each other.

A suitable configuration of the coupling elements will ensure that a certain friction is produced when the racks are moved relative to each other, which contributes to ensuring that an arrangement or mounting of a number of racks for forming a figure is maintained even if disturbed.

Figures 5, 6 and 7 show detailed examples the configuration of the coupling.

The rack 1 shown in Figure 5 has hinge elements 5 on respective sides. In the sectional view shown in Figure 7 it can be seen how the hinge elements can, on the one side, be aligned with the hinge elements on the other side of an adjacent rack, whereupon the two racks will, upon introduction of a hinge pin 6,7, be able to pivot there about. The hinge pin is configured in two parts 6, and 7 that are, following introduction into the hinge element from each their side, kept together by a bolt 8 with an associated nut 9. The elements 6 and 7 are configured as cylinder sleeves with respective flanges 10 and 11. Figure 6a is a top plan view of the hinge pin element 7, and herein the aperture 12 for the nut 8 is located in an end plate 13 near the internal cylinder face of the sleeve.

Centrally in the end plate 13 an elongated aperture is configured that is intended for receiving a screw for attachment of the two adjacent racks to a support. Herein a cover 14 that is arranged above the hinge pin element 7 hides this screw and the head of the nut 8.

Figure 8 illustrates an embodiment of the invention wherein each rack 1 is configured for receiving five CDs in slots 3 intended therefore, and wherein the racks are square with coupling elements at each of the four edges. As will appear from the figure this provides the option of forming branched chain structures of racks.

The three racks shown in Figures 9 and 10 each has a slot 3 for receiving a CD, and a frame 2 that surrounds the slot 3. Between the racks the coupling 4 is configured at a long side opposite the central line of the groove.

From the exploded view shown in Figure 11 of a single holder of the type shown in Figures 9 and 10, it will appear that the rack comprises a cover 29 and a lower portion 27. The cover 29 has a pleasant surface, eg in the form of a high-polished surface. The functionalities of the rack as such are enabled by the lower portion 27 that has partly hinge elements 17 and 18 at each side, partly resilient cover plates 19 at each end for resiliently securing a CD. Besides, the lower portion 27 has snap locking means 28 that bring about the interconnection between the lower portion 27 and the cover 29.

In the sectional view shown in Figure 10, it is shown how the two hinge elements 17 and 18 of two adjacent lower parts 27 can be caused to be aligned for receiving the hinge pin 20 that has snap locking elements 21 at the one end and, at the opposite end, a collar 22. When the lower parts are joined, the hinge pin is conveyed through the two hinge elements 17 and 18, whereby the collar 22 is caused to abut on a flange on the hinge element 17, and the snap locking elements 21 engage with a flange on the hinge part 18 of the abutting lower portion whereby two lower portions are secured in a mutually pivotal engagement. The cover 29 is mounted subsequently and also covers the hinge pin 20. The hinge pin has an elongated through-going aperture 16 that allows a screw to be inserted for securing the racks to a support.

As will appear from Figure 10, a finishing element is omitted at each end of a string of mutually hinged racks. Figure 11 illustrates the finishing elements consisting of two end pieces 23 and 24 and an end cover 25. The one end piece 23 replaces the omitted hinge element 17 above the hinge element 18 at the end of a series of inter-

hinged racks thereby enabling mounting of the hinge pin 20. The end piece 23 has a recess 26 with which engagement means interiorly of the end cover 25 are able to engage for securing the end cover 25. The end piece 24 replaces the omitted hinge element 18 at the end of a series of racks thereby enabling mounting of the hinge pin 20. The end piece 24 has an exterior surface corresponding to the surface of the cover 29.

C l a i m s

1. A rack (1) for CDs or other standardised cassettes, wherein the rack (1) has a holder portion for receiving, securing, releasing and displaying one or more cassettes (15), and having at least two coupling elements (4) on each rack (1), **characterised in** that the coupling elements (4) are configured for interconnection with a coupling element (4) of a corresponding rack (1) while forming a pivotal, releasable interconnection of the racks (1).

2. A rack according to claim 1, **characterised in** that the rack (1) has an elongated groove (3) for receiving a CD cassette (15), and in that a coupling element (4) is arranged at least at each side of the groove (3).

3. A rack according to claim 2, **characterised in** that the coupling elements (4) are opposed opposite the centre of the groove (3).

4. A rack according to claims 1 through 3, **characterised in** that the coupling elements (4) are configured as snap locks comprising lock pins and indentations, wherein the lock pins on a coupling element are configured for being resiliently received in indentations in an opposed coupling element, thereby mutually aligning lock pins and indentations for forming a hinge line about which the racks (1) are mutually pivotal.

5. A rack according to claim 2 or 3, **characterised in** that the coupling elements (4) comprise one or more hinge elements (5) that are, upon joining of two coupling ele-

ments, caused to be aligned for receiving a hinge pin (6,7).

6. A rack according to claims 1 through 5, **characterised in** that the rack (1) comprises a through-going aperture (16) intended for a mounting element for securing the rack (1) against a support.

7. A rack according to claims 1 through 6, **characterised in** that the through-going aperture (16) is situated in the hinge pin (6,7) of the coupling element.

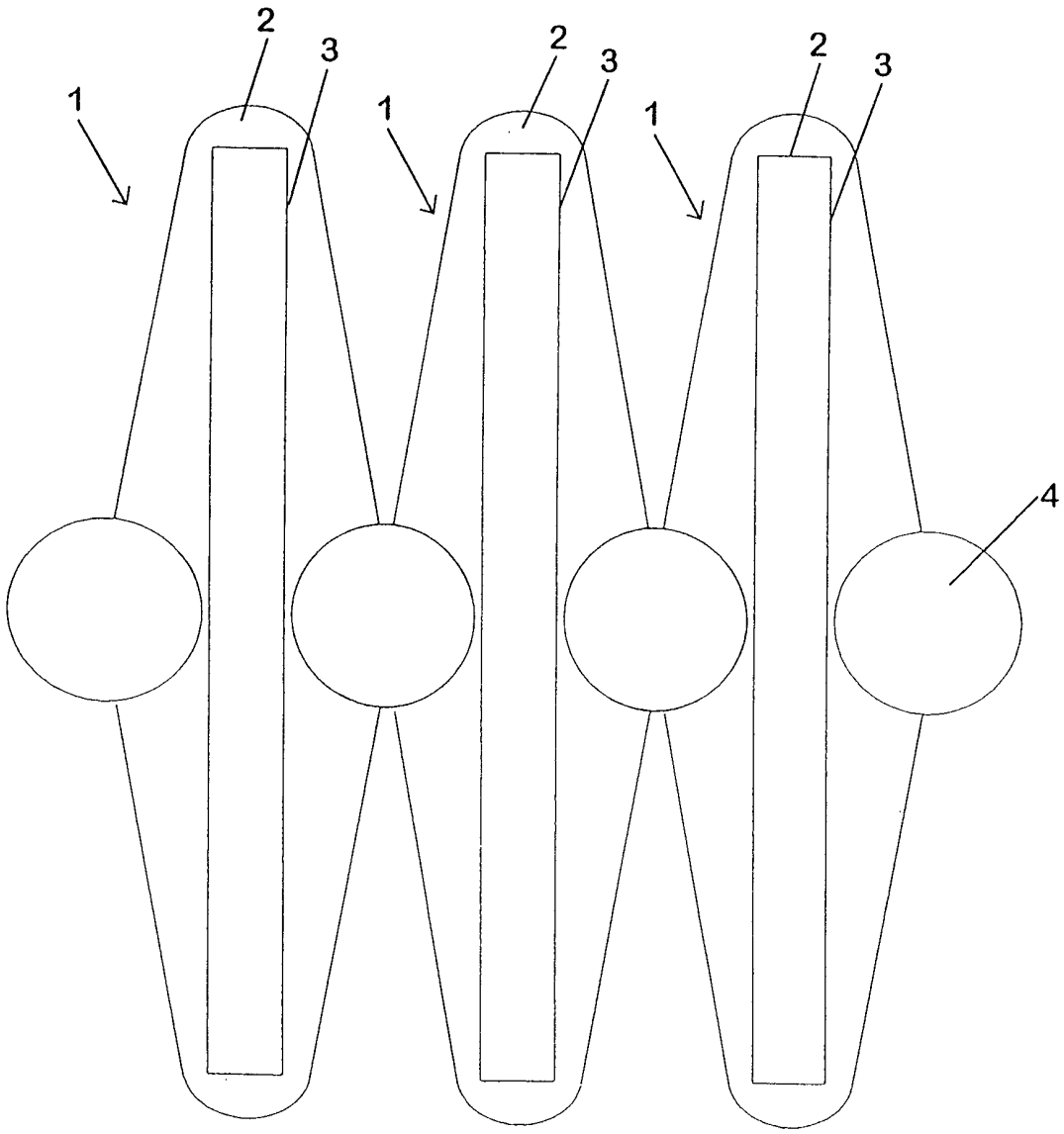

FIG. 1

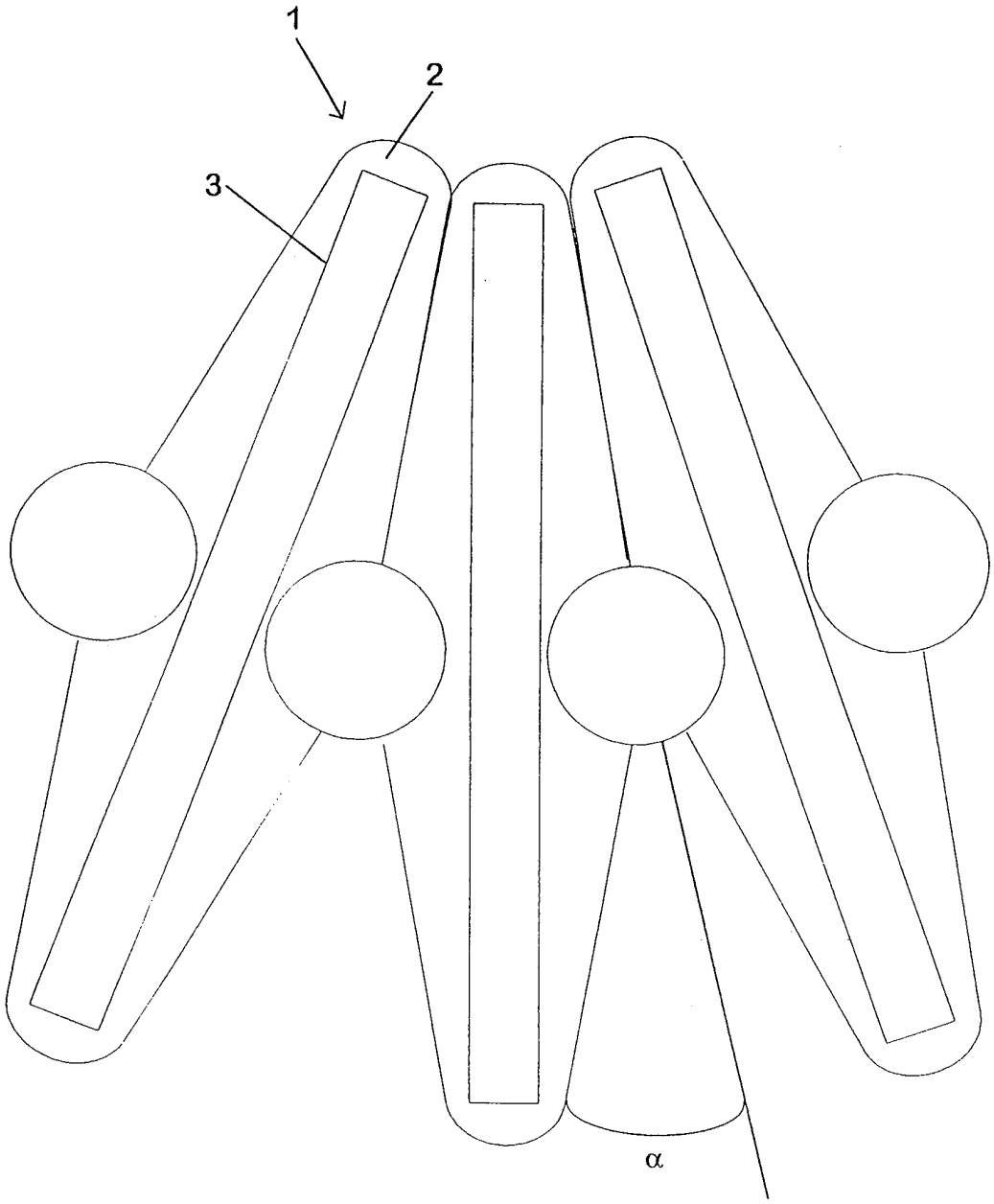

FIG. 2

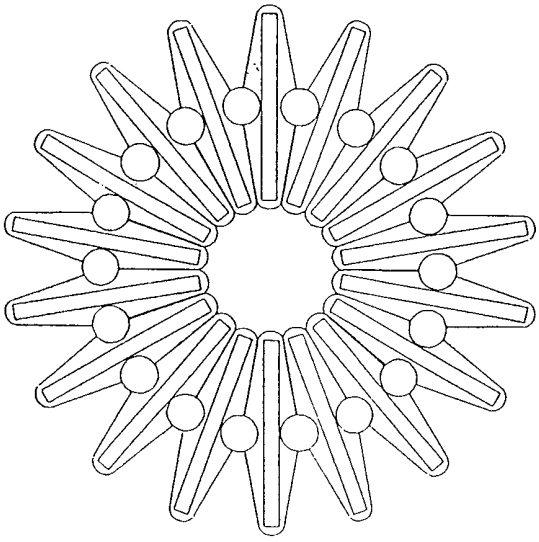

FIG. 3

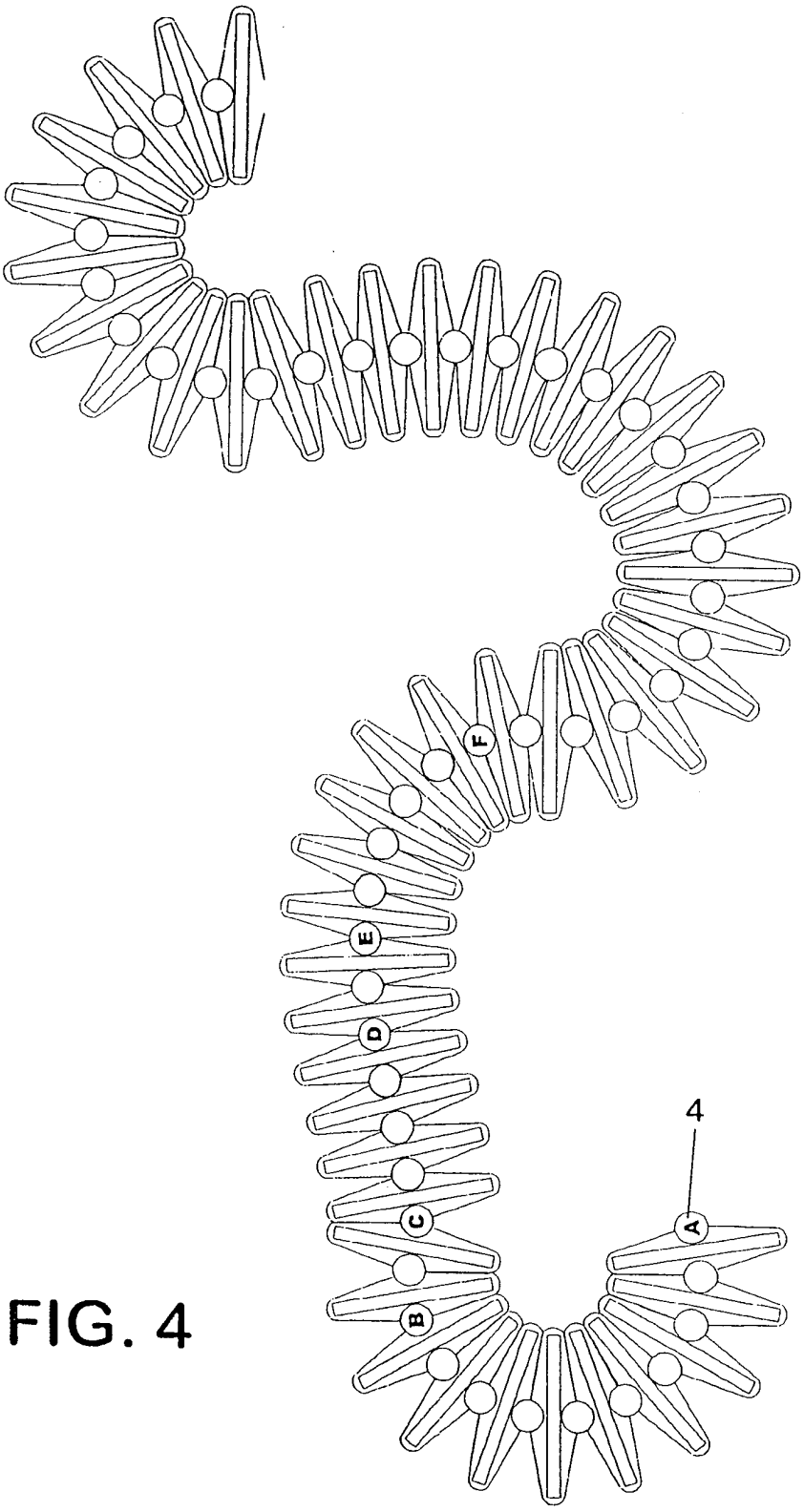

FIG. 4

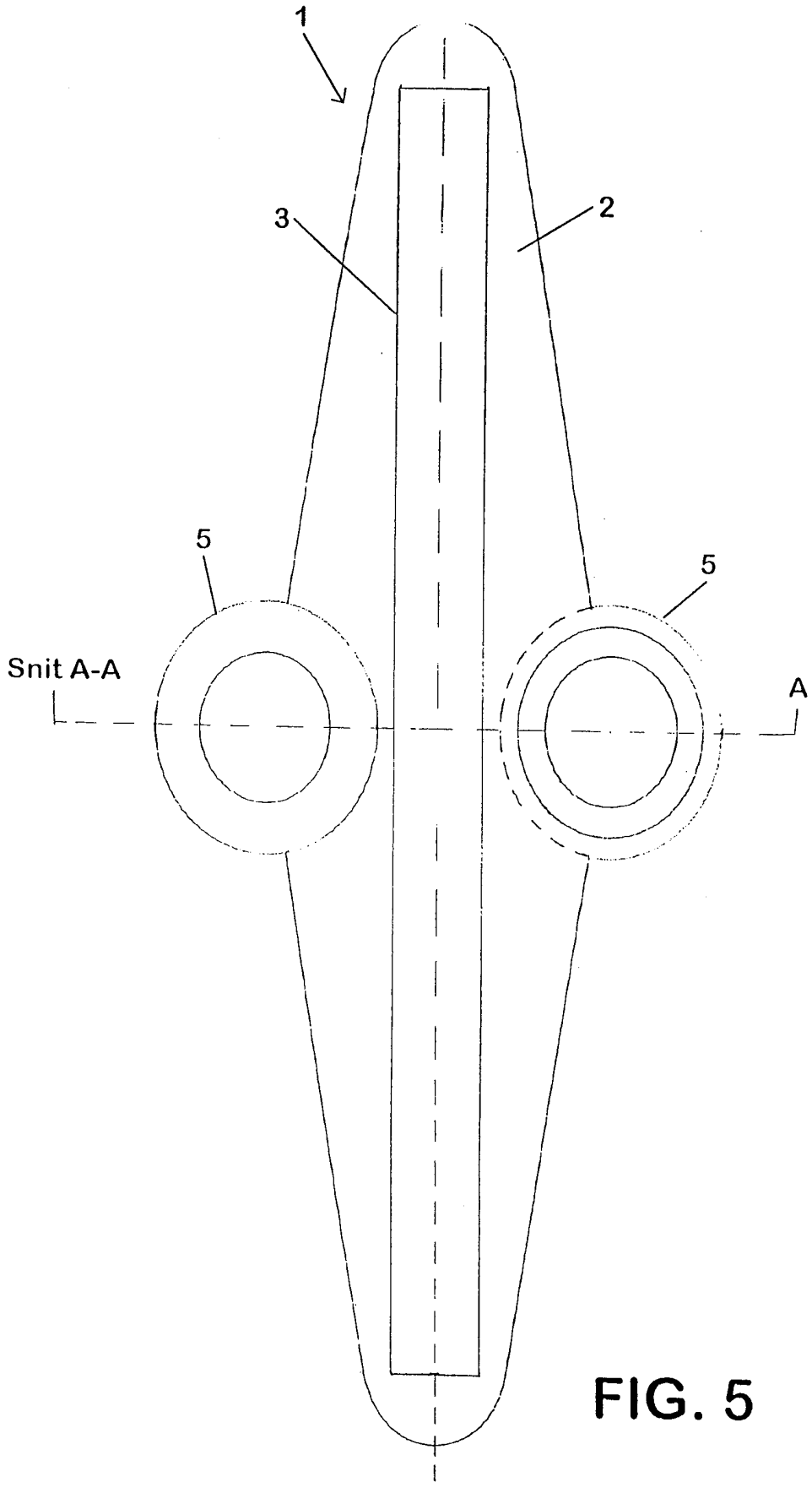

FIG. 5

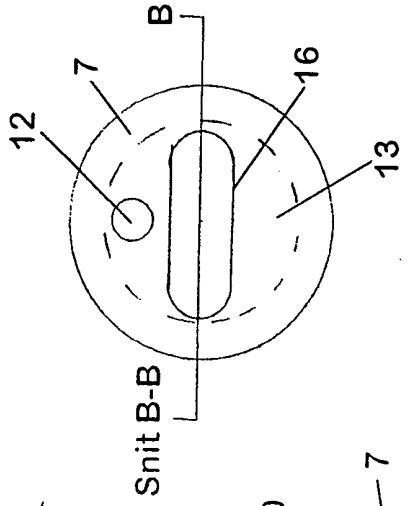

FIG. 6a

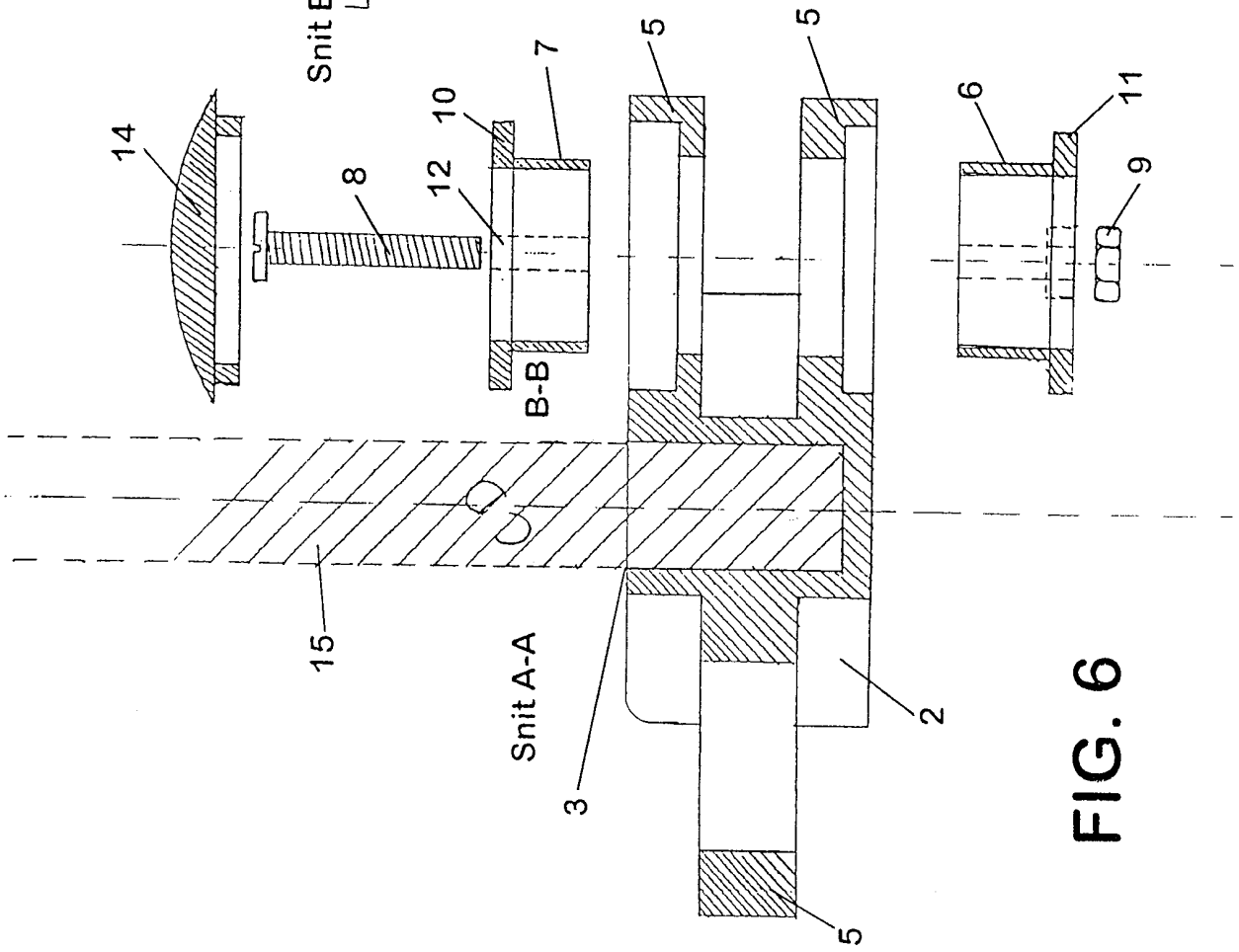

FIG. 6

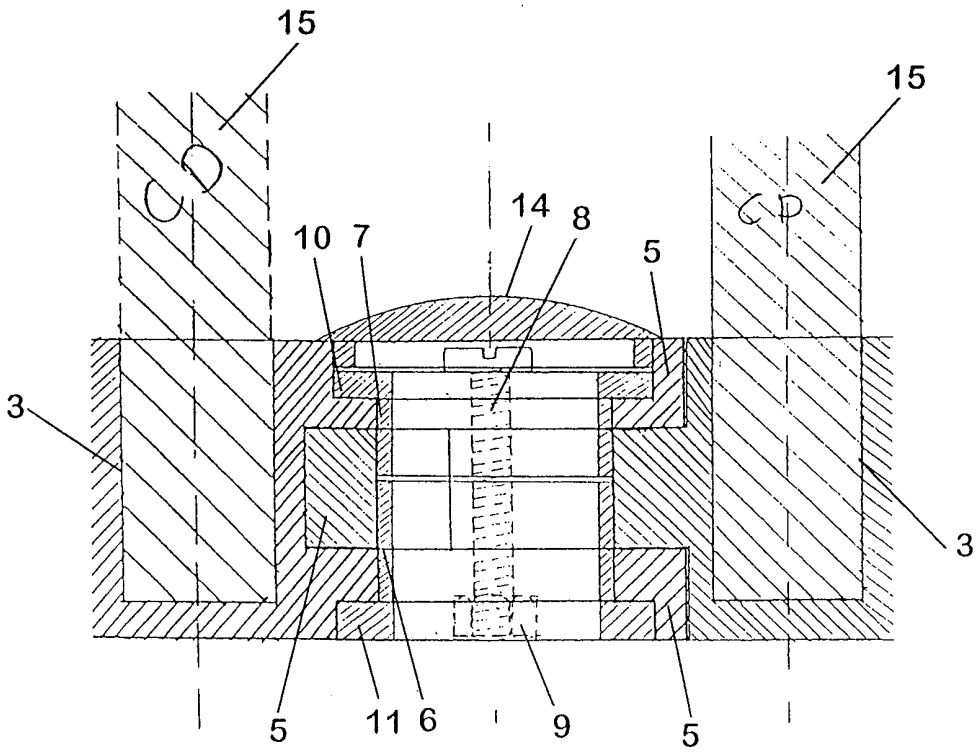

FIG. 7

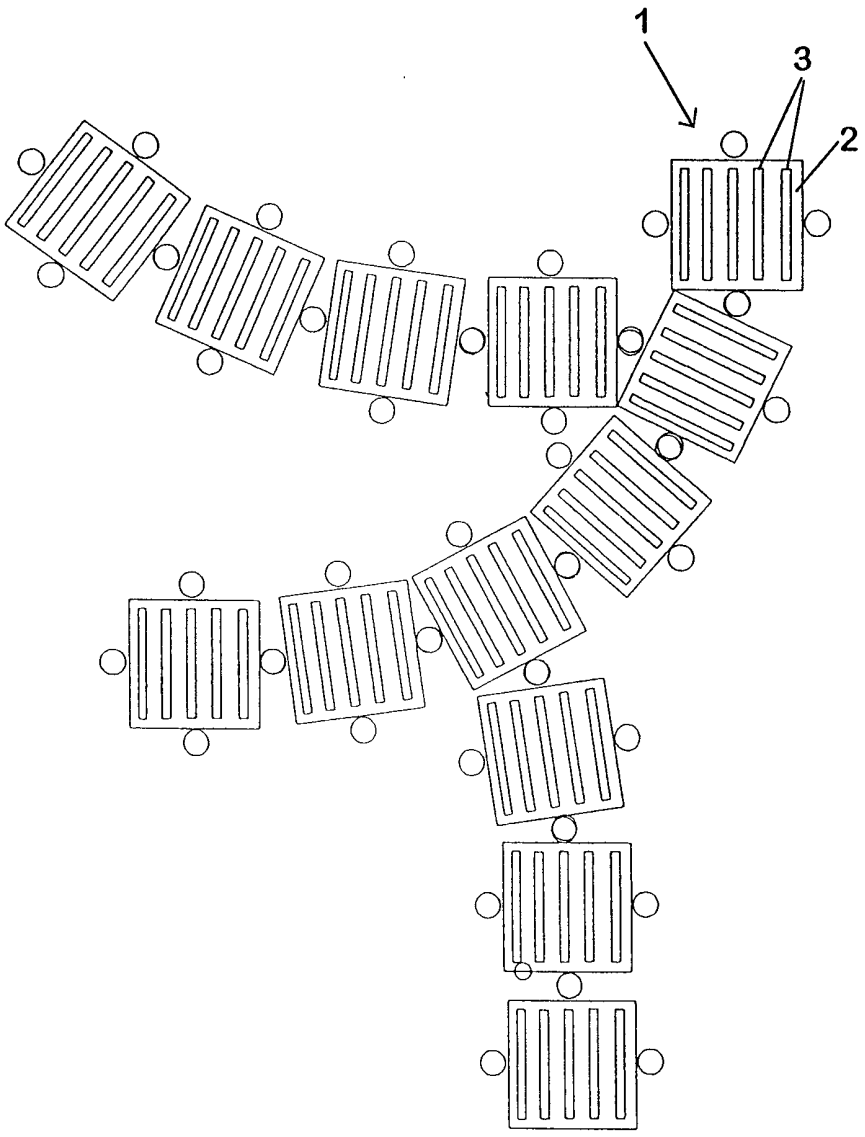

FIG. 8

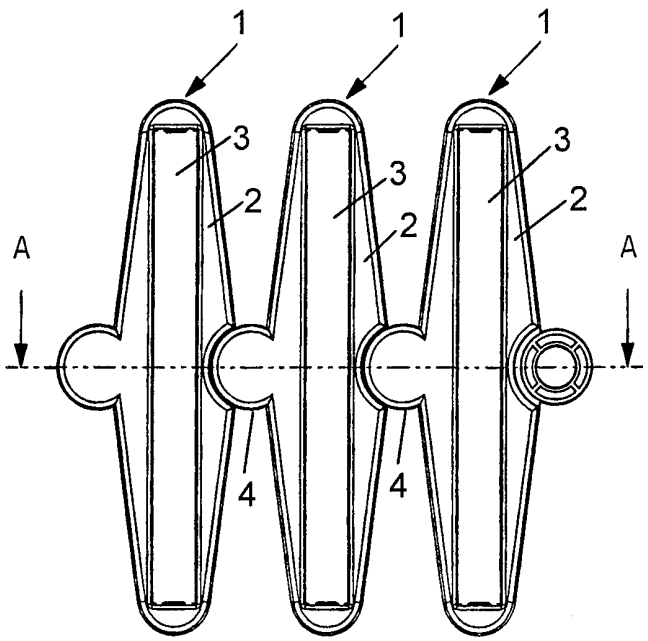

Fig. 9

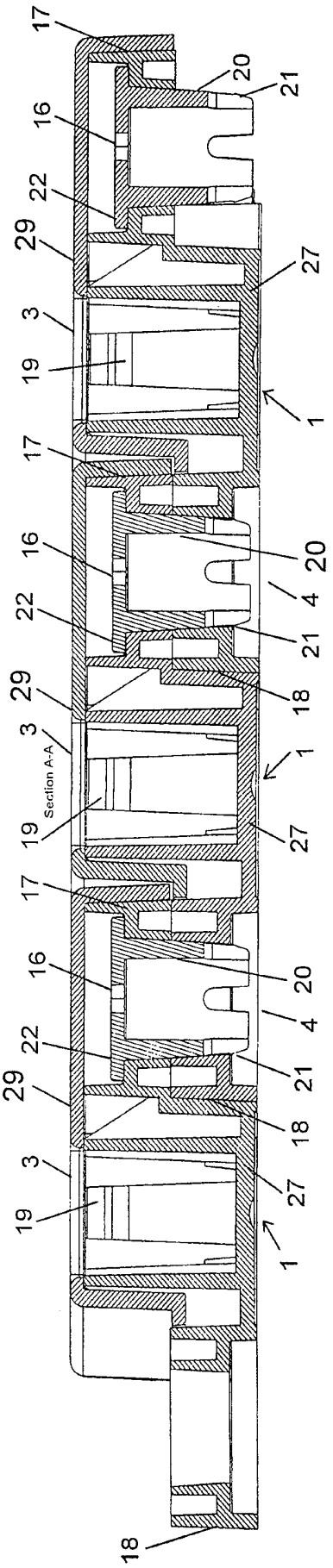
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Fig. 10

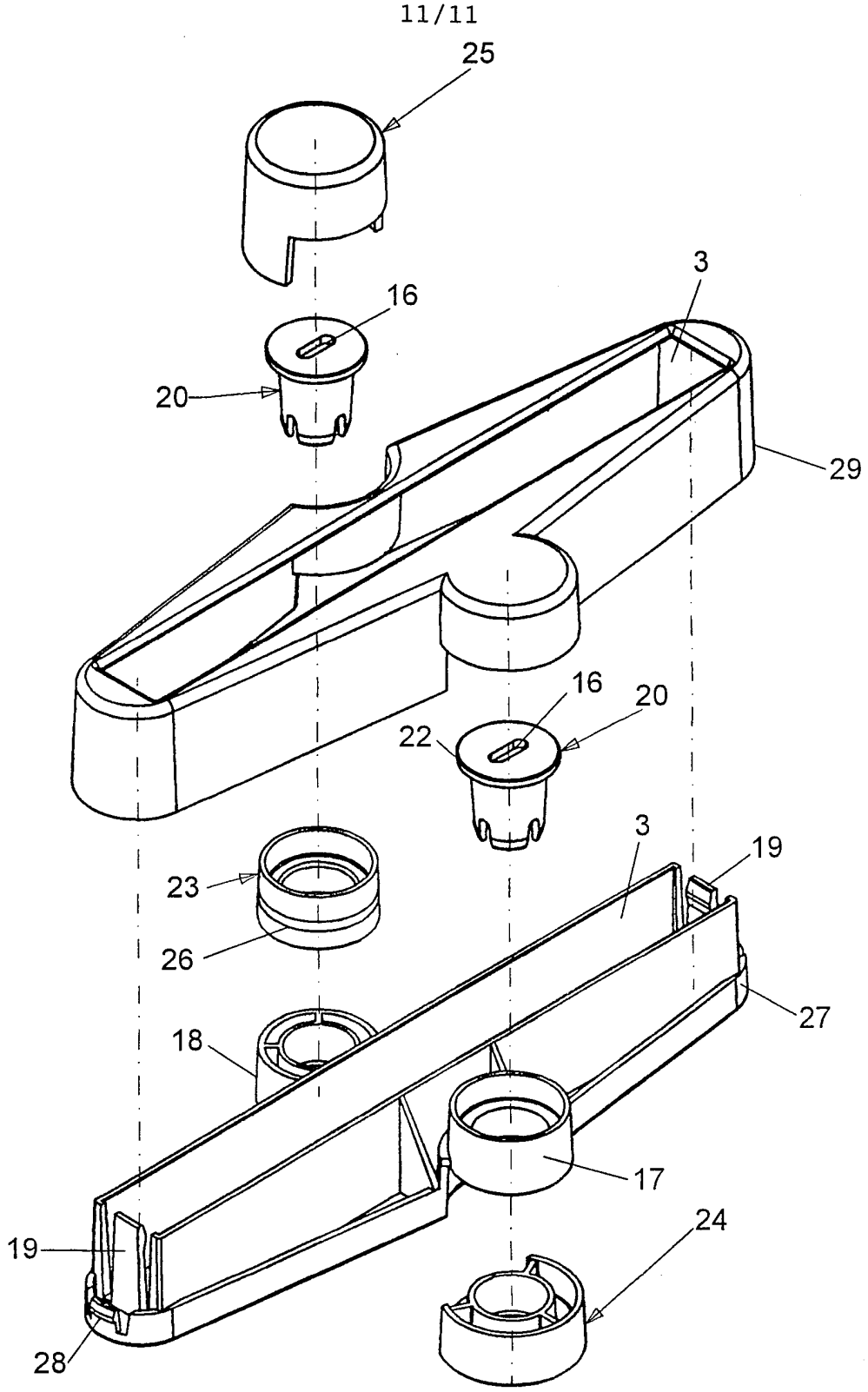

Fig. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 99/00672

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G11B 33/04 // A47B 81/06
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A47B, G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0675497 A2 (STEFFEN, ALFRED), 4 October 1995 (04.10.95), column 1, line 1 - line 7; column 1, line 29 - line 38, figures 2,3	1,2,5
Y		3,4
	--	
X	US 4223613 A (YOSHIZAWA), 23 Sept 1980 (23.09.80), column 1, line 5 - line 8; column 1, line 28 - line 41, figures 1-3	1
Y		3-5
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[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 99/00672

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5715948 A (HUNG), 10 February 1998 (10.02.98), column 1, line 47 - line 49; column 3, line 20 - line 23, figure 5	1
Y		3-5
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A	US 3944282 A (NAKAMURA), 16 March 1976 (16.03.76), column 1, line 36 - line 51; column 2, line 66 - column 3, line 8; column 3, line 51 - line 56	1
Y		3-5
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P	US 5845790 A (SMITH), 8 December 1998 (08.12.98), column 2, line 38 - line 43; column 3, line 14 - line 18; column 4, line 54 - line 57, column 6, line 4 - line 20; figures 1,2,5-7, claim 6	1,2,6
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/DK 99/00672

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 4223613 A	23/09/80	DE 2849391 A	17/05/79
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