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(54) Supporting base for chairs.

(57) A base for chairs and similar articles comprising a metal frame having a central ring member (11) and peripheral spokes (15) radially extending from said central ring (11); a plastic sleeve (12) having a downwardly tapering conical internal surface (13) is fitted into said ring member (11) and holding means (19; 23, 24; 25, 16) are provided for preventing the sleeve (12) from slipping out of the central ring member (11).

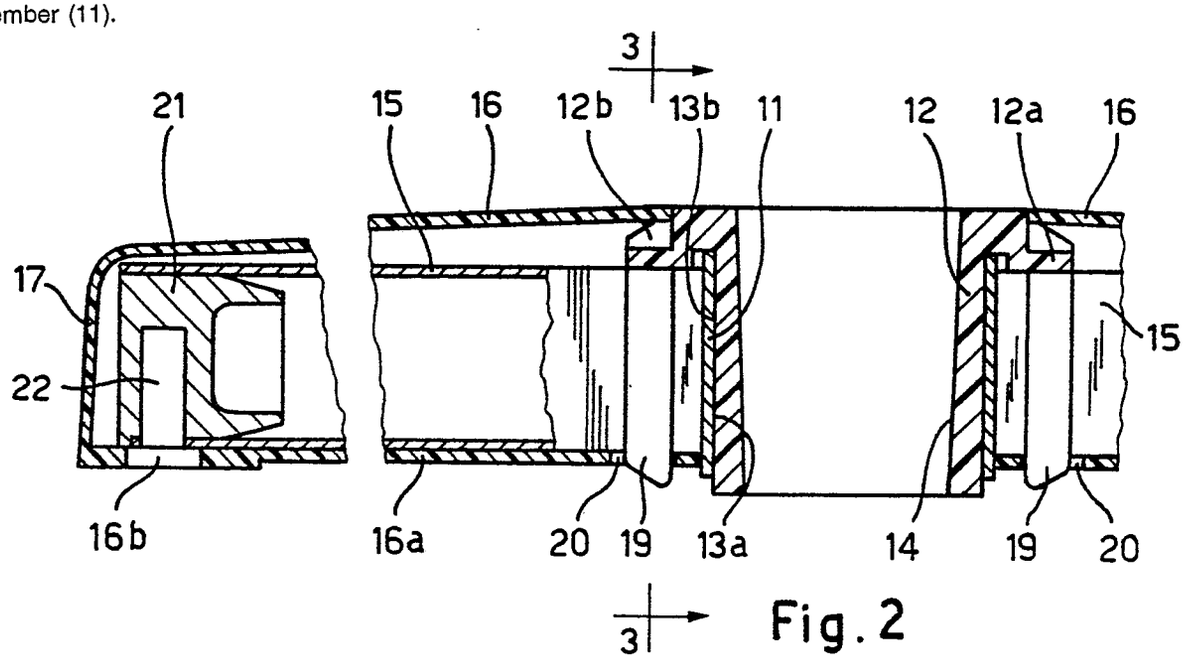

Fig. 2

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Supporting base for chairs

This invention concerns a supporting base for chairs and relates in particular to a spoke-type base for swivel chairs, of the type comprising a central hub for an upright bearing the seat.

Usually conventional spoke-type bases for swivel chairs and similar articles, with wheels and without pivotable wheels, comprise a metal frame having a central hub made up of an annular element to which are rigidly fixed, for example by welding, arms or angularly spaced peripheral spokes, which extend radially from the above-mentioned ring; before the spokes are welded, the central ring must be suitably made conical in shape to receive the conical lower end of the swivelling upright bearing the seat. In the case where there are pivotable wheels or supporting feet, the radially external end of each spoke is provided with a hole in which a pivot for a wheel or for a foot of the chair may be inserted. A protective covering formed, for example by means of a paint coating, a chrome covering, or a plastic tubular sheath member, can also be provided for each spoke.

Conventional spoke-type bases present numerous problems and drawbacks that negatively affect both assembly and maintenance of the bases, before they are used. A first problem concerns the correct accomodation in the central hub of the upright bearing the seat; in fact, the central ring of the hub is produced starting from a cylindrical tubular element which must be deformed and shaped according to a pre-set conical angle so as to fit with the conical shape of the lower end of the upright. The operation for giving the central ring of the hub a conical shape is mainly undertaken in special dies so as to enable economic and low-cost production of the workpiece; however, this operation does not allow a very precise check on the conical shape of the ring, which frequently fits poorly with the conical shape of the lower end of the upright, so making the latter unstable or incorrectly fixed to the base. The tubular element from which the conical ring is obtained has variable or inconstant dimensions and characteristics which affect the shaping operation of the ring to the required conical form. In addition, the internal conical shape is repeated on the outside surface of the ring; this gives rise to a further difficulty due to the downwardly inclined disposition of the spokes; this disposition of the spokes appreciably complicates the assembling and welding operations since it becomes necessary to prepare appropriate jigs for positioning both the central ring and the peripheral spokes before welding.

The operation for giving the central ring a conical shape can have other disadvantageous effects because the narrowing of the diameter at the lower end frequently causes scoring and striations on the internal surface that damage the seat-bearing upright or result in it being wrongly positioned.

The main object of this invention is to obviate these drawbacks by providing a structure for a spoke-type base for chairs and similar articles, of simplified design, such as to allow easy and rapid fixing of the peripheral spokes to the central ring of the hub which does not need to be deformed as happens with traditional bases.

A further object of this invention is to provide a base as previously defined, in which the hub has a perfectly conical seating, able to fit exactly with the conical surface of the lower end of the seat-bearing upright.

The above requisites can be obtained with a spoke-type base having the characteristics according to the main claim.

Additional objects and advantages can be obtained with the characteristics defined in the dependent claims. In particular, the use of a plastic sleeve, for the hub, prevents the formation of rust both on the inside, near the conical surface of the upright, and on the outside of the hub, so preserving the base from possible damage when it is stacked up or kept in the open or in damp surroundings, before being used. Finally, the use of appropriate attaching means enables correct attachment and positioning of the sheath members covering the spokes and protecting the central hub.

The invention will be more fully described below, with reference to the figures in the appended drawings, in which:

Fig. 1 is a top view of a base for chairs according to a first embodiment of the invention, which makes use of covering sheaths for the spokes;

Fig. 2 is an enlarged cross-sectional view along the line 2-2 of figure 1;

Fig. 3 is a cross-sectional view along the line 3-3 of figure 2;

Fig. 4 is a view along the line 4-4 of figure 1 with the sheaths partially removed;

Fig. 5 is a sectional view essentially similar to that in figure 2, for a second embodiment of the invention;

Fig. 6 is a sectional view along the line 6-6 of figure 5;

Fig. 7 is a partial view, in an upside-down position, of the central part of the base, according to a further embodiment of the invention;

Fig. 8 is a sectional view along line 8-8 of figure 7.

As can. be seen in figures 1 to 4, reference number 10 indicates the overall spoke-type base for swivel chairs, provided by a metal frame comprising a central ring 11 to the periphery of which are fixed, for example by welding, five radial spokes 15 angularly spaced apart and made up, in the example shown, of tubular elements. Preferably the central ring 11, forming part of the hub for the upright bearing a seat, not shown, is in the form of a cylindrical ring member of requisite height, obtained by cutting it from a tubular element of matching diameter; in this way the ring 11 is delimited internally and externally by cylindrical surfaces concentric to the longitudinal axis of the hub.

Therefore the welding operations of the spokes are appreciably facilitated because special jigs for positioning the spokes 15 with respect to the ring 11 are no longer needed; additionally, the spokes are all positioned in a single plane at right angles to the vertical axis of the hub and therefore to the external surface of the central ring 11. Within the ring 11 there is provided a plastic sleeve member 12 having an external cylindrical surface 13a which fits within the internal cylindrical surface 13b of the ring 11; the sleeve 12 also has an internal conical surface 14 tapering downwards, which constitutes the seating accomodating an upright bearing the seat (not shown). The use of a sleeve 12 obtained by moulding plastic guarantees a perfect internal conical shape corresponding to that of the seat-bearing upright, so eliminating the complex and costly mechanical working operations previously necessary.

The plastic sleeve 12 must be suitably fixed inside the metal ring 11 in such a way that it cannot come away under the weight of the seat or of a person sitting on it. Accordingly, as shown in figure 2, the sleeve 12 can be fixed internally to the ring 11 and can, outside its upper edge, have a shaped annular flange 12a that fits with the upper edge of the central ring 11 as well as against the upper surface of the spokes 15. If required, the upper flange 12a need not be included, or can be differently shaped, with other axial fixing means for the sleeve 12 being provided, for example by making the opposing surfaces 13a and 13b of ring 11 and the sleeve 12 conic in shape and downwardly tapering; given the adaptability of the plastic of the sleeve 12, said surfaces 13a and 13b do not require careful, high-precision working.

Reference number 16 indicates tubular sheath members providing a protective covering for the radial spokes 15; the radially external end 17 of the sheaths 16 is closed, while their other end 18 is open and is arch-shaped, so fitting around the ring 11 to form a continuous protective surface around the central hub. It wil also be seen from figures 2 and 4 of the drawings that the peripheral flange 12a of the sleeve 12 has projections 12b on its upper portion circumferentially spaced apart; the height of each projection 12b is less than that of the enlarged upper edge of the sleeve 12 and has an inclined front-facing surface terminating in a horizontal length which, with the edge of the sleeve 2, defines an annular stopping shoulder for the end 18 of the sheath 16. The inclined front-facing surface of the projections 12b allows the open edge 18 of the sheaths to slide, so facilitating their assembling.

At a position corresponding with each spoke 15 the sleeve 12 is provided with two downwardly oriented parallel tongues 19 which are positioned along both sides of the respective spoke 15, said tongues 19 having their lower ends engaging apertures 20 in the bottom face of the sheath 16, so as to prevent the latter slipping out of place. As a substitute or alternative to the tongues 19 other means can be provided for centring and attaching the sheaths 16 and the central sleeve 12 to the hub.

The free end of each spoke 15 is provided with a plug 21 firmly fixed, for example by pressure fitting or by other means, independently of the sheath 16; the plug 21 comprises a hole 22 that opens downwards and is aligned with a hole 16b in the bottom face of the sheath 16 for inserting the pivot (not shown) of a revolving wheel or of a support foot. The sheaths 16 covering the spokes 15 may be in plastic material; accordingly, they can be easily made by moulding without any special manufacturing difficulties, because said sheaths can be moulded independently of the end sealing plug 21.

According to the example in figures 1 - 4 there is therefore provided a base for chairs and similar articles, comprising a metal frame having a central hub with radial spokes preferably provided with tubular covering sheaths, said hub comprising an external cylindrical ring integral with the spokes, and an inner plastic sleeve positioned coaxial to and inside the ring; the sleeve has an external surface that fits with the inner surface of the central ring, and an internal frusto-conical surface for accomodating the seat-bearing upright; attaching means may be provided for holding the sleeve and the covering sheaths connected to the metal frame.

In the example shown in the previous figures, the attaching means are formed integrally with the sleeve 12; according to the embodiments of the remaining figures said attaching means comprise separate attaching members, in a position corresponding to the bottom face of each tubular sheath 16 covering the spokes, said means being

able to engage with apertures in the bottom side of the spokes and with aligned apertures of the centring tongues or of the spokes.

As shown in figures 5 and 6, the base 10 still comprises an internal metal frame comprising the cylindrical ring 11 and radial spokes 15.

Reference number 12 still indicates the internal plastic sleeve of the hub. At its upper end the sleeve 12 has an annular flange 12a that fits against the upper surface of the spokes 15, said flange 12a being positioned with its protrusions 12b between the spokes and the edges of the covering tubular sheaths.

In the example shown in figures 5 and 6 there are provided retaining means in the form of attaching members independent of the sleeve 12, positioned on the lower side of the spokes. Said retaining means comprise, for example, a ring element 23 which fits against the lower edge of the cylindrical ring 11 or of the sleeve 12; on its upper side the ring 23 has two opposing tongue members 24 positioned against the respective sides of the spoke to hold the ring centred. On the opposite side of the ring 23 each tongue member 24 extends downwards for a short length, with a tongue portion 24a intended to engage in a corresponding hole 20 in the bottom side 16a of each tubular sheath 16. In this way the ring 23 serves to radially hold the tubular sheaths 16 on the spokes 15 which, in their turn, by resting against the annular flange 12a of the sleeve 12 prevent the flange from slipping out of position.

In the specific case of figures 5 and 6, the retaining ring 23 for the tubular sheaths is internally positioned, that is, between the spokes 15 and the internal surface of the sheaths; however, by suitably modifying the centring tongues 24, for example by eliminating the protruding portions 24a, the ring 23 could be positioned outside the covering sheaths with the tongues 24 forced into or attached to the apertures 20 in the sheaths.

Figures 7 and 8 of the drawings show another embodiment; in these figures the same reference numbers are used to indicate similar or equivalent parts as in the preceding figures.

In this case, unlike in the preceding one, the retaining means are in the form of pegs 25 which pass through apertures 20 in the bottom face 16a of each tubular covering sheath 16 and which are pressure fitted into, or attached to, a hole or a corresponding seating 25' which opens at one end of cylindrical tongues 26 integral with the flange 12a of the conical sleeve. The pegs 25 may be made entirely independently or can form part of the ring 25a as diagrammatically shown in figure 8. As an alternative to the arrangement shown, the pegs 25 could be forced into, or snap fitted into aligned apertures in the tubular sheaths 16 and in the metal spokes 15.

Claims

1. A base for chairs and similar articles, comprising a metal frame having a hub portion comprising a central ring member (11) with radial spokes (15), characterised by the fact that a plastic sleeve member (12) is provided inside the above-mentioned ring (11), said sleeve member (12) having an external surface (13b) matching with the internal surface (13a) of the central ring (11), said sleeve member (12) further comprising a downwardly oriented frusto-conical inner surface(14), and means (19; 23, 24; 25, 26) for retaining said sleeve member (12) into the external ring (11) of the frame.

2. A base as claimed in claim 1, characterised by the fact that the sleeve member (12) comprises an external cylindrical surface (13b) fitting against an internal cylindrical surface (13a) of said central ring (11).

3. A base as claimed in claim 1, characterised by the fact that the sleeve member (12) comprises a conical external surface (13b) fitting against a conical internal surface (13a) of said central ring (11).

4. A base as claimed in claim 1, in which the spokes (15) are provided with a tubular covering sheath (16), characterised by the fact that the internal sleeve member (12), at a point corresponding to each sheath (16), comprises a pair of opposing tongue members (19) positioned on both sides of each spoke (15), the lower ends of said tongue members (19) engaging apertures (20) on the bottom face (16a) of the sheaths (16).

5. A base as claimed in claim 1, characterised by the fact that said sleeve member (12) comprises an upper edge portion having a peripheral flange (12a) which fits with the upper edge portion of said central ring (11).

6. A base as claimed in claims 4 and 5, characterized by the fact that said peripheral flange (12a) of the sleeve (12) defines a peripheral stopping shoulder means for the covering sheaths (16), said shoulder means comprising protrusions (12b) on said peripheral flange (12a) having an inclined front-facing surface.

7. A base as claimed in claim 1, and connecting means for holding covering sheaths (16) on the spokes (15) of the metal frame, characterised by the fact that said connecting means comprise connecting members (24, 25) at the bottom face (16a)

of the covering sheaths (16), said connecting members engaging with apertures (20) in the sheaths' bottom face (16a).

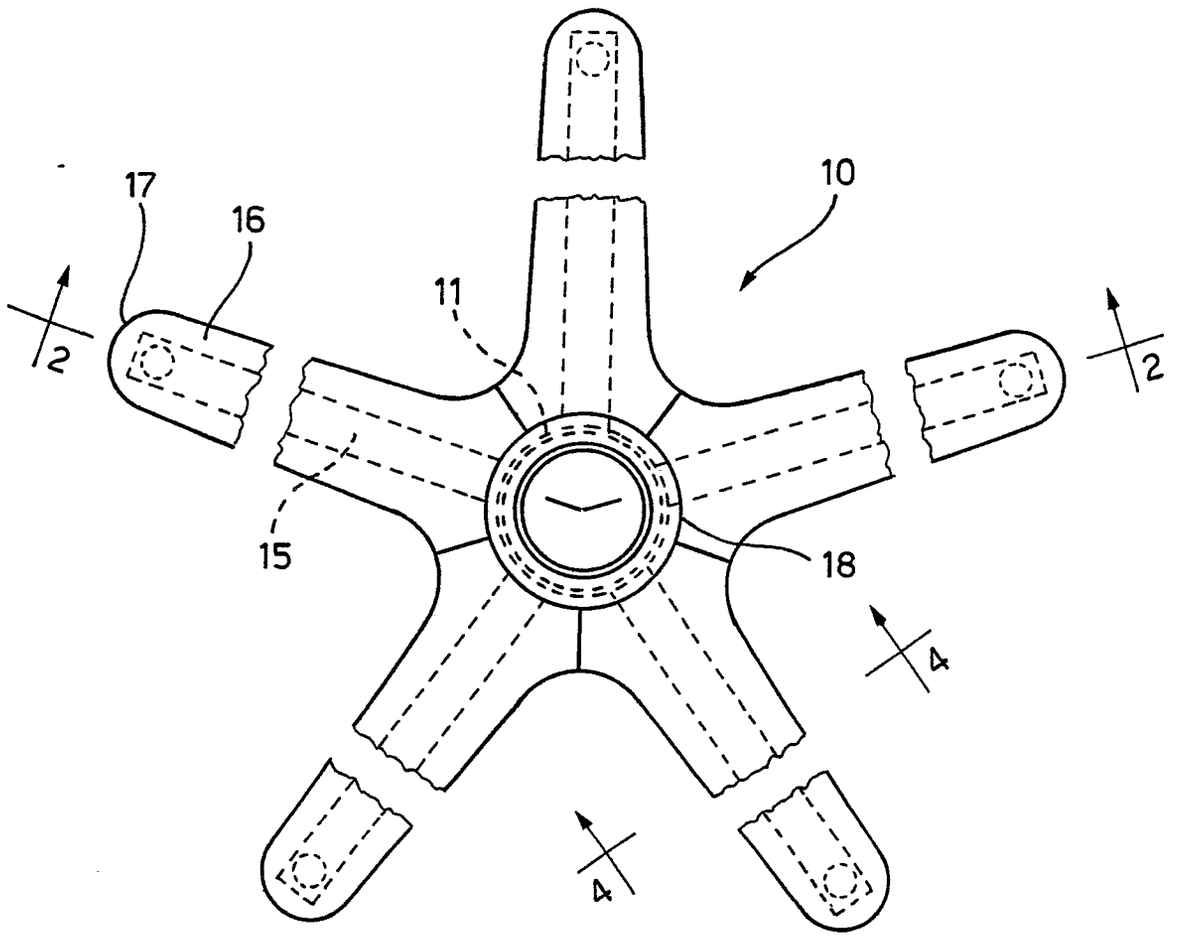
8. A base as claimed in claim 7, characterised by the fact that said connecting members comprise an annular element (23) concentrically arranged around the central ring member (11), said annular element (23) having in a position corresponding to each spoke (16) a pair of parallel tongues (24) which extend on both sides of a spoke (15), and means for engaging said tongues (24) with said covering sheath (16).

9. A base as claimed in claim 8, characterized by the fact that a portion (24a) of said tongues (24) protrudes on the side of the ring (23) facing away from the spokes (15), said tongue portion (24a) engaging in apertures (20) in the bottom face (16a) of the covering sheath (16).

10. A base as claimed in claim 1, comprising sheath members (16) for covering the spokes (15), characterized by the fact that it comprises means for connecting the sheaths (16) to said frame, said connecting means being in the form of peg elements (25) fitted through apertures (20) in the bottom face (16a) of the covering sheaths (16), aligned with holes in the spokes (15) or hole seatings (25′) in the lateral tongues (26) integral with said internal sleeve (12).

11. A base as claimed in claim 10, characterised by the fact that said pegs (25) are in the form of independent connecting members.

12. A base as claimed in claim 10, characterized by the fact that said pegs (25) are integral with an annular supporting element (25a).


17
16
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11
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18
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4

Fig. 1

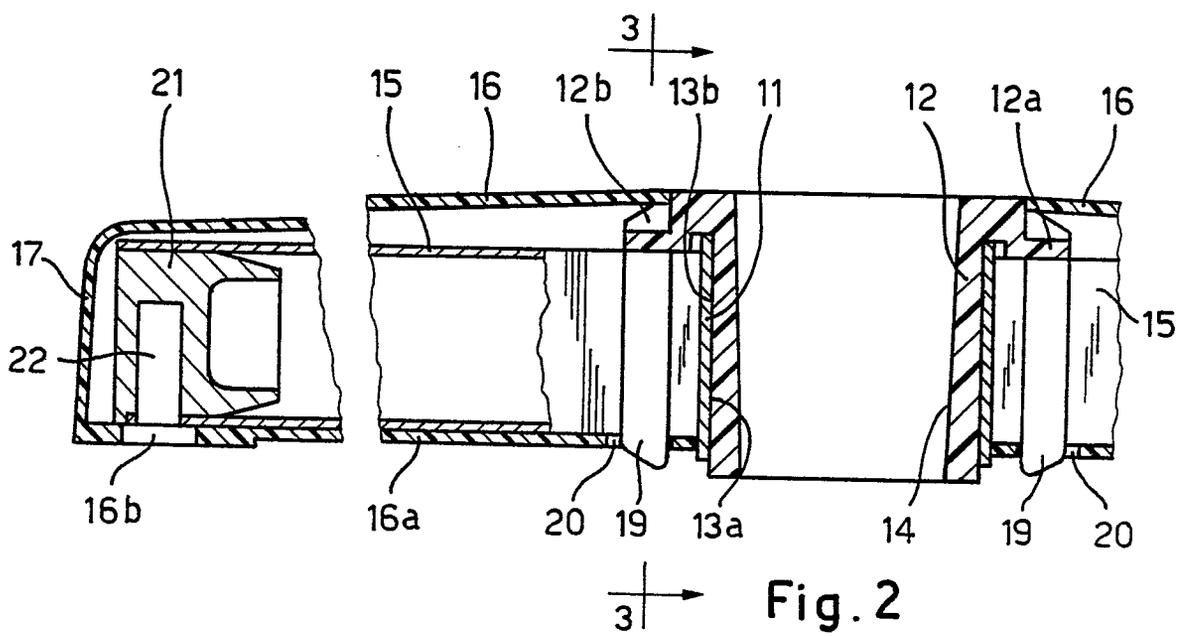
3
21
15
16
12b
13b
11
12
12a
16
17
22
15
16b
16a
20
19
13a
14
19
20
3

Fig. 2

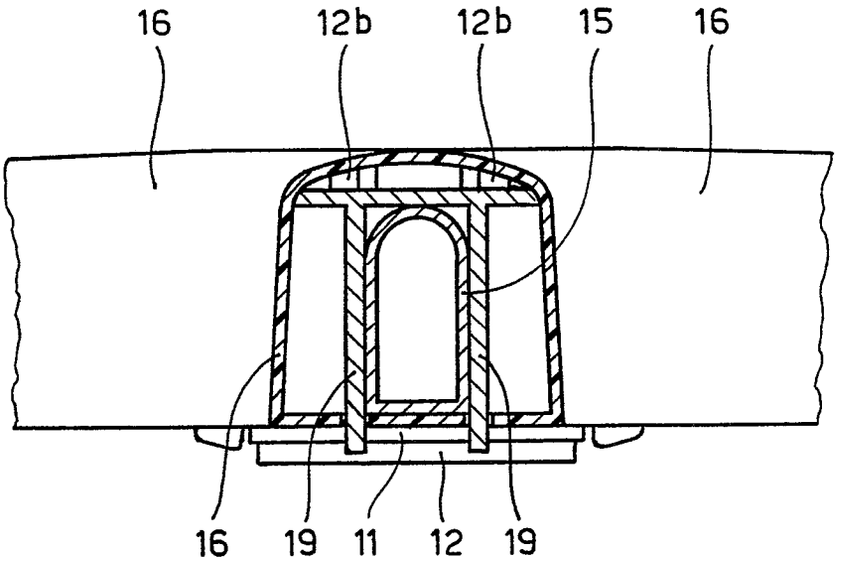

Fig. 3

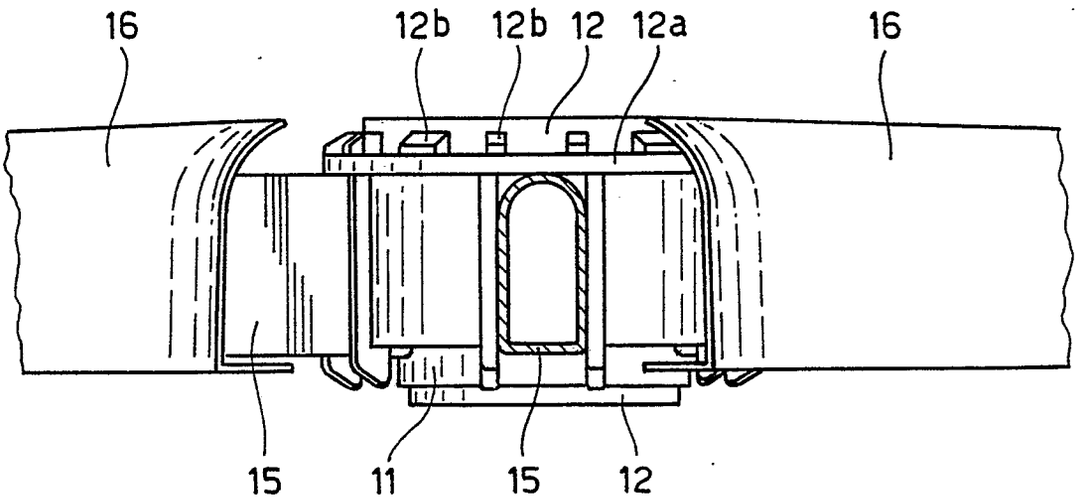

Fig. 4

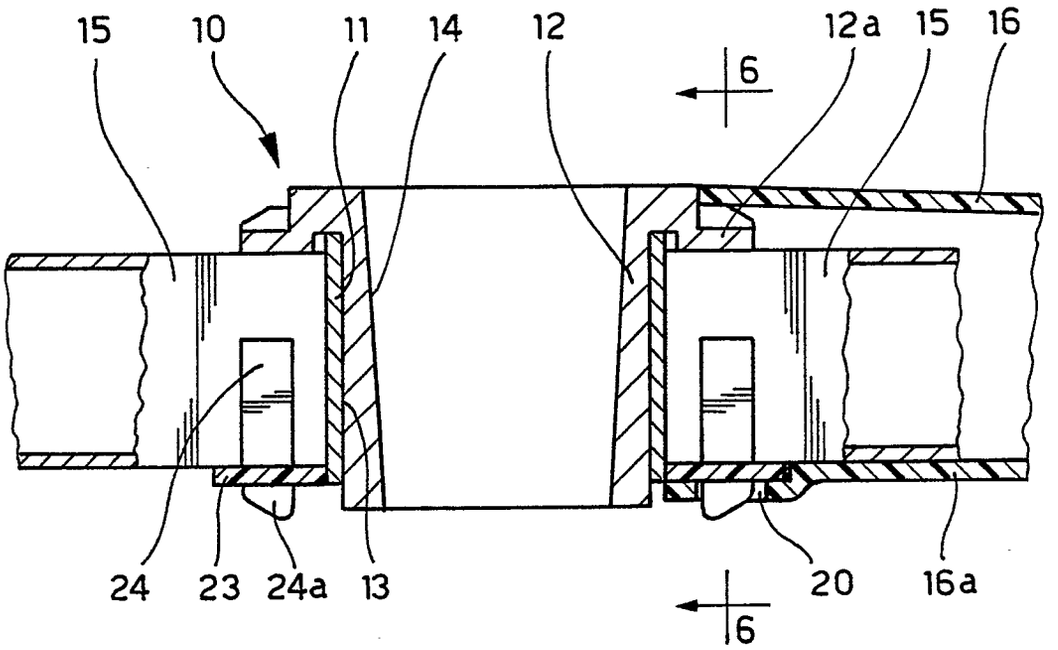
15
10
11
14
12
6
12a
15
16
24
23
24a
13
20
16a
6

Fig. 5

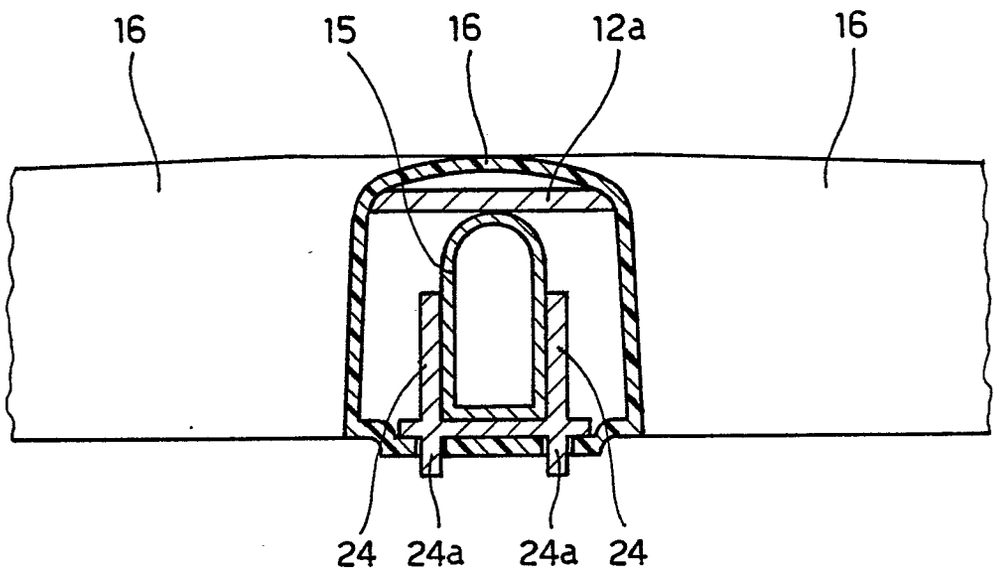
16
15
16
12a
16
24
24a
24a
24

Fig. 6

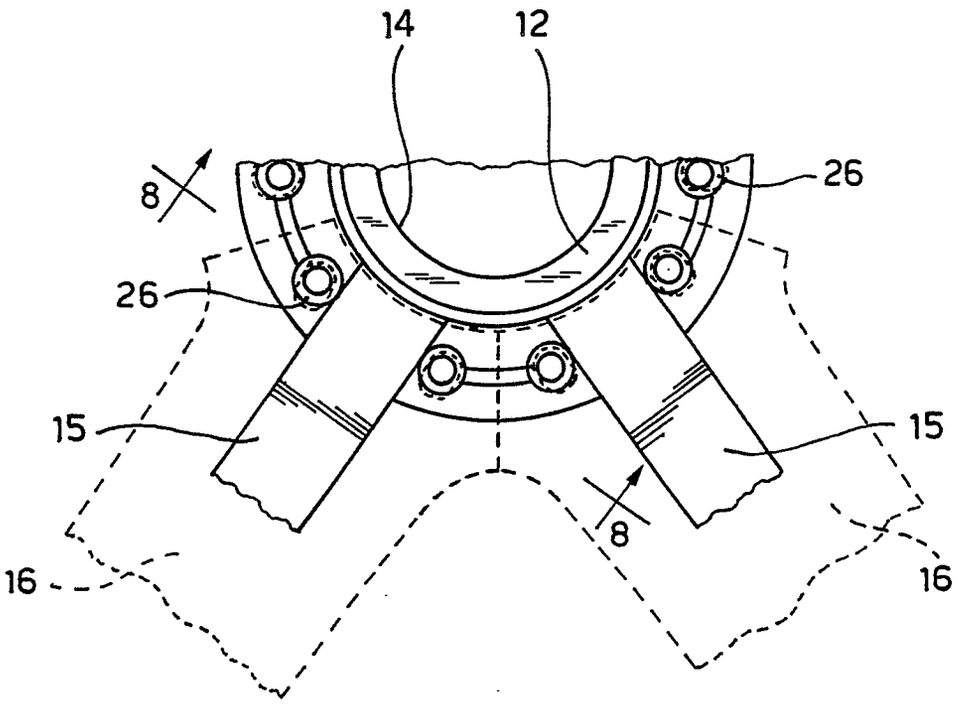

Fig. 7

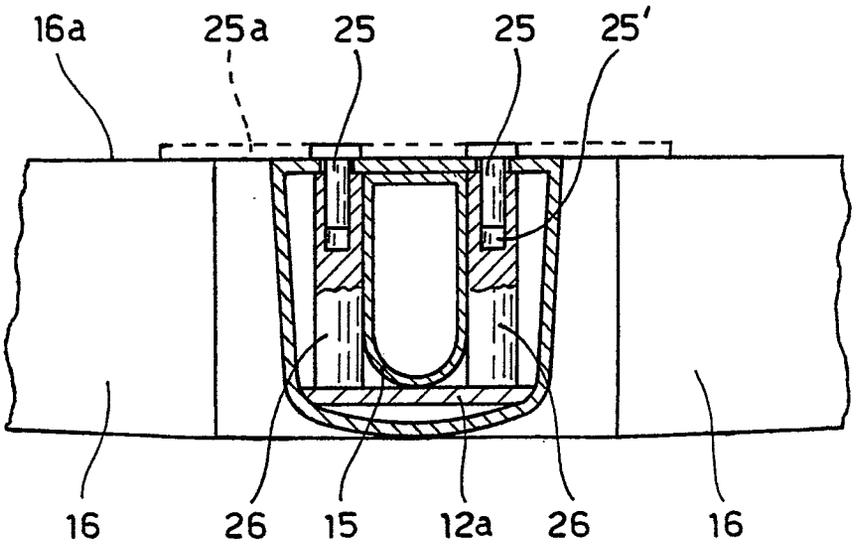

Fig. 8

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EUROPEAN SEARCH REPORT

Application Number

EP 89 10 3487

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	US-A-4 534 533 (DOERNER) * Figures 14-18; column 6, line 54 - column 7, line 15 *	1,4	A 47 C 7/00
A	DE-A-3 324 981 (GUY-RAYMOND ENGINEERING) * Figure 3 *	1	
A	US-A-4 084 776 (COOK) * Figures 5-8 *	7	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

A 47 C
A 47 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	29-05-1989	MYSLIWETZ W.P.

CATEGORY OF CITED DOCUMENTS

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