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(54) **Chair backrest with simplified assembly**

(57) A back for chairs, seats or the like with simplified assembly, comprising a rigid support (14), which is fixed by means of engagement elements to uprights (15) that protrude from a frame (11), a body (16a) that supports a padding (16) being applied by snap-together coupling to the rigid support (14), each one of the engagement elements being constituted by a sliding guide (21) in which it is possible to insert a corresponding portion of an upright (15). Positioning studs (26) protrude in a cantilever fashion from the body (16a) that supports the padding (16), and at least one of the studs for each upright (15) is suitable to pass through respective holes (27, 28) formed in the rigid support (14), in the sliding guide (21) of the upright (15) and in the corresponding portion of upright (15) inserted therein. Each one of the uprights (15) has, on the face (29) provided with the corresponding insertion hole (28) for the stud (26), in the region comprised between the hole (28) and the end (30, 30a) to be inserted in the guide (21), a portion (31, 31a) that tapers toward the end. The tapering portion (31, 31a) constitutes, when the rigid support (14) is assembled to the body (16a) that supports the padding (16), during the insertion of the upright (15) in its seat, a guide for the head (32) of the stud (26) which forces an axial movement thereof by elastic deformation of the body (16a) that supports the padding (16) until the stud (26) is inserted in its corresponding hole (28) of the upright (15).

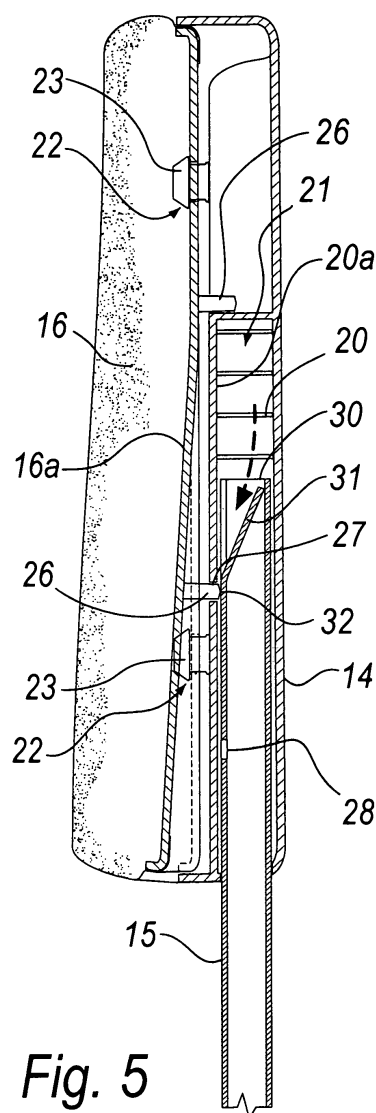


Fig. 5

Description

[0001] The present invention relates to a back for chairs, seats or the like with simplified assembly.

[0002] As it is known, seats and chairs designed for various applications, such as for example office furniture, are currently constituted by various components, which are assembled either directly at the factory or at the installation site by specialized workers or by the user.

[0003] Usually, the components that constitute the seats and chairs provide for snap-together couplings and, especially for auxiliary components, for couplings obtained by means of threaded elements or equivalent couplings.

[0004] Currently, even seats that have a rather simple structure obtained with a limited number of components require a certain expenditure of time for their assembly.

[0005] The work required to perform assembly by resorting to screws is in fact well known.

[0006] Applying a screw, especially in positions that are not particularly easy, can in fact entail a certain degree of difficulty and in any case, even for expert users, always entails a certain expenditure of time.

[0007] A seat, chair or the like with simplified assembly has therefore been devised and marketed and is disclosed in EP-1042976 in the name of Challenger Gestao e Consultadoria Sociedade Unipessoal Limitada; it comprises components that are applied exclusively by snap-together action and are suitable to form at least one sitting surface and at least one back.

[0008] The back comprises at least one rigid support, which is fixed by means of first couplings to uprights that protrude from the frame, and a body that supports a padding layer is applied by snap-together coupling to said rigid support.

[0009] The sitting surface comprises a rigid bottom, which is fixed by snap-together coupling to a flat supporting element; these elements are in turn fixed by snap-together coupling, by way of second engagement elements, to at least two horizontal cross-members of the frame.

[0010] As regards in particular the back, each one of the first engagement elements is constituted by two series of mutually opposite tabs, which are suitable to form as a whole a sliding guide in which it is possible to insert a corresponding portion of upright.

[0011] Connecting pins cantilever out from the rigid support, on the side suitable to be coupled to the body that supports the layer of padding, and each pin is provided with a mushroom-shaped head, in which slots are provided for elastic yielding.

[0012] Each pin is inserted with a snap-together action in a corresponding tubular seat formed in the rigid body.

[0013] Positioning studs cantilever out from the body that supports the padding layer; each stud is suitable to pass through respective holes formed in the rigid support at a corresponding seat formed by one of said series of tabs and in the corresponding portion of upright inserted

therein.

[0014] Although it has achieved a considerable commercial success, while truly solving the problems noted in the prior art, the structure described above has been found to be susceptible of improvement.

[0015] For example, the two components of the back can be assembled directly only during manufacture, since the cantilever studs that protrude from the supporting body of the padding upon assembly must pass both through the part of the rigid support that forms the seat of the upright and through the upright.

[0016] Therefore, necessarily, insertion of the upright in its seat must precede the insertion of the corresponding stud in its seat and accordingly precede the assembly of the two components of the back.

[0017] Not being able to preassemble the back independently of the frame in order to entrust the entire assembly to the dealer or user in practice limits the manufacturing flexibility of the seat or chair, since it is far easier to be able to store and sell frames and components that are complete and preassembled, allowing to choose variations and colors at will, than it is to have to sell already-complete seats or chairs.

[0018] The aim of the present invention is to provide a seat, chair or the like whose structure optimizes the advantages that derive from the structure cited in EP-1042976, allowing to preassemble the back completely before it is fitted to the frame.

[0019] Within this aim, an object of the present invention is to provide a back that is particularly strong and functional and allows highly ergonomic use.

[0020] Another object of the present invention is to provide a back that is easy and quick to assemble even for personnel lacking specific experience.

[0021] Another object of the present invention is to provide a back that can be manufactured at low cost with conventional equipment and systems.

[0022] This aim and these and other objects that will become better apparent hereinafter are achieved by a back for chairs, seats or the like with simplified assembly, of the type that comprises a rigid support, which is fixed by means of engagement elements to uprights that protrude from a frame, a body that supports a padding being applied by snap-together coupling to said rigid support, each one of said engagement elements being constituted by a sliding guide in which it is possible to insert a corresponding portion of an upright, positioning studs protruding in a cantilever fashion from said body that supports the padding, at least one of said studs for each upright being suitable to pass through respective holes formed in said rigid support, in said sliding guide of the upright and in the corresponding portion of upright inserted therein, said back being characterized in that each one of said uprights has, on the face provided with the corresponding insertion hole for said stud, in the region comprised between said hole and the end to be inserted in said guide, a portion that tapers toward said end, said tapering portion constituting, when said rigid support is

assembled to said body that supports the padding, during the insertion of said upright in its seat, a guide for the head of said stud which forces an axial movement thereof by elastic deformation of said body that supports the padding until said stud is inserted in its corresponding hole of said upright.

[0023] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of an embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a seat with a back according to the invention;

Figure 2 is an exploded perspective view of the back;

Figure 3 is an exploded sectional view of the back;

Figures 4 to 6 are sectional views of respective successive steps of the assembly of the back to the frame;

Figure 7 is an exploded perspective view of the step of the initial assembly of the back to the frame;

Figure 8 is a perspective view of a different embodiment of a portion of the frame;

Figure 9 is a front view of the portion shown in Figure 8;

Figure 10 is a sectional side view of the portion shown in Figures 8 and 9.

[0024] With reference to the figures, a seat is generally designated by the reference numeral 10 and comprises a frame 11 made of metal tube, to which a sitting surface 12 and a back 13 are assembled.

[0025] The back 13 comprises a rigid support 14 made of plastic material, which is contoured anatomically and is applied by means of respective engagement elements, described in greater detail hereinafter, to two tubular uprights 15 that protrude from the frame 11.

[0026] In particular, said engagement elements, in this embodiment, are constituted by two guides 21 formed on the rigid support 14; each guide is constituted by the set formed by two series of equidistant tabs 20, which are arranged opposite with respect to a longitudinally elongated central flat portion 20a and protrude from the support 14 so as to form a seat for accommodating the corresponding end portion of a corresponding upright 15.

[0027] The equidistant tabs 20 are conveniently flat and perpendicular with respect to the central flat portion 20a.

[0028] A padding 16 is applied by snap-together coupling to the rigid support 14 and is supported by a body 16a made of plastics, as described in greater detail hereinafter.

[0029] Pins 22 protrude in a cantilever fashion from the rigid support 14 of the back 13, and each is provided with a mushroom-shaped head 23 on which slots 24 are provided which ensure the necessary elastic yielding.

[0030] Each one of the pins 22 is suitable to be inserted with a snap action in a corresponding tubular seat 25

formed on the body 16a that supports the padding 16.

[0031] The pins 22 are conveniently arranged in the region of the back 14 that is comprised between the positions for coupling to the two uprights 15.

[0032] Studs 26 further protrude from the body 16a; the position of two of said studs corresponds to a respective hole 27 formed in the rigid support 14 at each one of the corresponding guides 21.

[0033] Correspondingly, a hole 28 is formed in each end portion of the uprights 15.

[0034] According to the invention, each one of the uprights 15, which in this case is tubular, is provided, on the face 29 provided with the corresponding hole 28 for the insertion of the stud 26, in the region comprised between the hole 28 and the end 30 to be inserted in the guide 21, a portion 31 that tapers towards the end 30.

[0035] The tapering portion 31 is provided in this case by means of two parallel slits in the wall so as to form a tab that is deformed so as to tilt toward the opposite wall, which it touches with its end.

[0036] In a different embodiment, shown in Figures 8 to 10, said tapering portion, designated by the reference numeral 31a, is obtained by cold-forging the end 30a, therefore at a lower cost than the sequence of the two successive processes described above (cutting to form a tab and subsequent bending of the tab).

[0037] Moreover, in this embodiment the end 30a is substantially shaped into a cone or rounded as an alternative, so as to facilitate its insertion in the corresponding guide 21.

[0038] In Figures 8 to 10, the conical end portions are designated by the reference numeral 33.

[0039] The tapering portion, both in the variation 31 and in the variation 31a, which is arranged at the centerline of the axis of the upright 15 like the hole 28, constitutes, when the rigid support 14 is assembled to the body 16a that supports the padding 16, during the insertion of the upright 15 in its seat of the guide 21, a guide for the head 32 of the stud 26 that forces an axial movement thereof by elastic deformation of the body 16a that supports the padding 16 (as shown in Figure 5) until the stud 26 (Figure 6) is inserted in its corresponding hole 28 of the upright 15.

[0040] The elastic deformation of the body 16a is allowed by the fact that the studs 26 are arranged in regions of said body that protrude with respect to the pins 22.

[0041] In this manner, the rigid support 14 and the body 16a that supports the padding can be preassembled before they are coupled to the frame 11 by inserting the uprights 15 in the guides 21, said insertion occurring in the manner described above.

[0042] In practice, it has been found that the present invention fully achieves the intended aim and objects.

[0043] The seat in fact has a structure that optimizes the advantages arising from the structure disclosed in EP-1042976, by allowing to preassemble completely the back before it is assembled to the frame.

[0044] Moreover, the structure is particularly strong

and functional and allows highly ergonomic use.

[0045] Assembly is quick and easy and can be performed even by personnel lacking specific experience.

[0046] The back can be manufactured at a low cost with conventional equipment and facilities.

[0047] The present invention is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0048] All the details may be replaced with other technically equivalent elements.

[0049] The materials employed, so long as they are compatible with the contingent use, as well as the dimensions, may be any according to requirements.

[0050] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A back (13) for chairs, seats or the like with simplified assembly, of the type that comprises a rigid support (14), which is fixed by means of engagement elements to uprights (15) that protrude from a frame (11), a body (16a) that supports a padding (16) being applied by snap-together coupling to said rigid support (14), each one of said engagement elements being constituted by a sliding guide (21) in which it is possible to insert a corresponding portion of an upright (15), positioning studs (26) protruding in a cantilever fashion from said body (16a) that supports the padding (16), at least one of said studs for each upright (15) being suitable to pass through respective holes (27, 28) formed in said rigid support (14), in said sliding guide (21) of the upright (15) and in the corresponding portion of upright (15) inserted therein, **characterized in that** each one of said uprights (15) has, on the face (29) provided with the corresponding insertion hole (28) for said stud (26), in the region comprised between said hole (28) and the end (30) to be inserted in said guide (21), a portion (31) that tapers toward said end, said tapering portion (31) constituting, when said rigid support (14) is assembled to said body (16a) that supports the padding (16), during the insertion of said upright (15) in its seat, a guide for the head (32) of said stud (26) which forces an axial movement thereof by elastic deformation of said body (16a) that supports the padding (16) until said stud (26) is inserted in its corresponding hole (28) of said upright (15).
2. The back according to claim 1, **characterized in that** said tapering portion (31) in this case is provided by means of two parallel slits of the tubular wall of

said upright (15), so as to form a tab that is deformed so as to tilt toward the opposite wall, which it touches with its end.

3. The back according to claim 1, **characterized in that** said tapering portion (31a) is obtained by cold-forging the end (30a).
4. The back according to claim 1, **characterized in that** said end (30a) is shaped so as to become conical.
5. The back according to claim 1, **characterized in that** said tapering portion (31) is arranged at the centerline of the axis of said upright (15), like said hole (28) thereof.
6. The back according to claim 1, **characterized in that** said studs (26) are arranged in regions of said body (16a) that supports the padding (16) which cantilever with respect to the points of snap-together coupling between said rigid support (14) and said body (16a) that supports the padding (16).

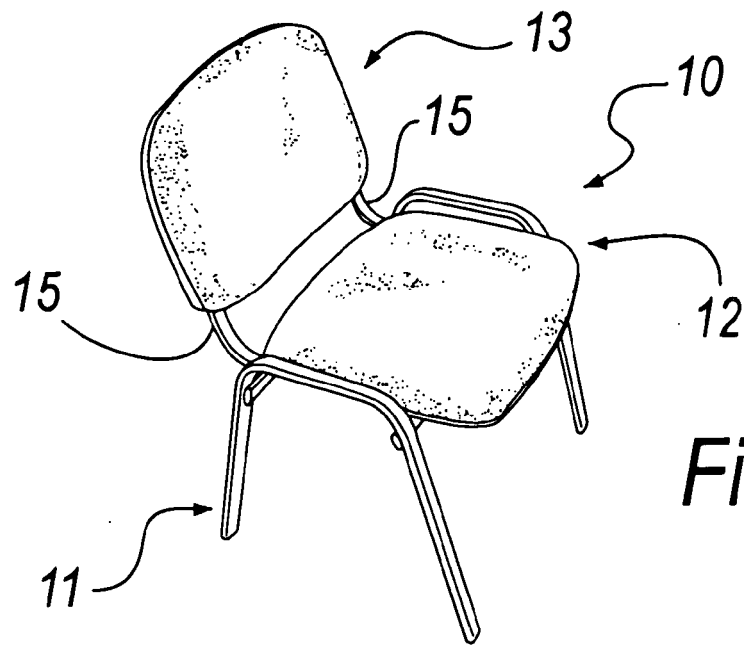


Fig. 1

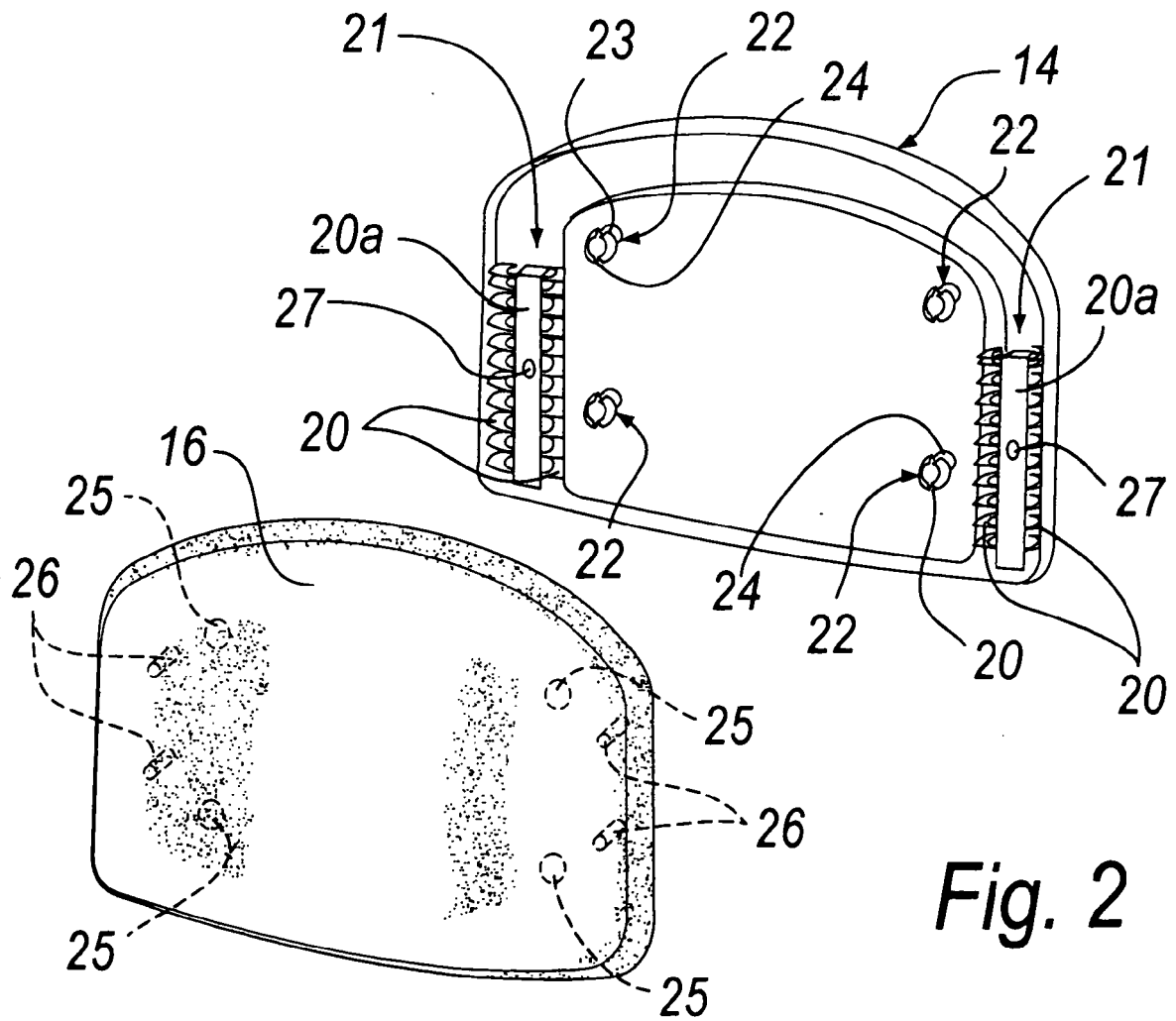


Fig. 2

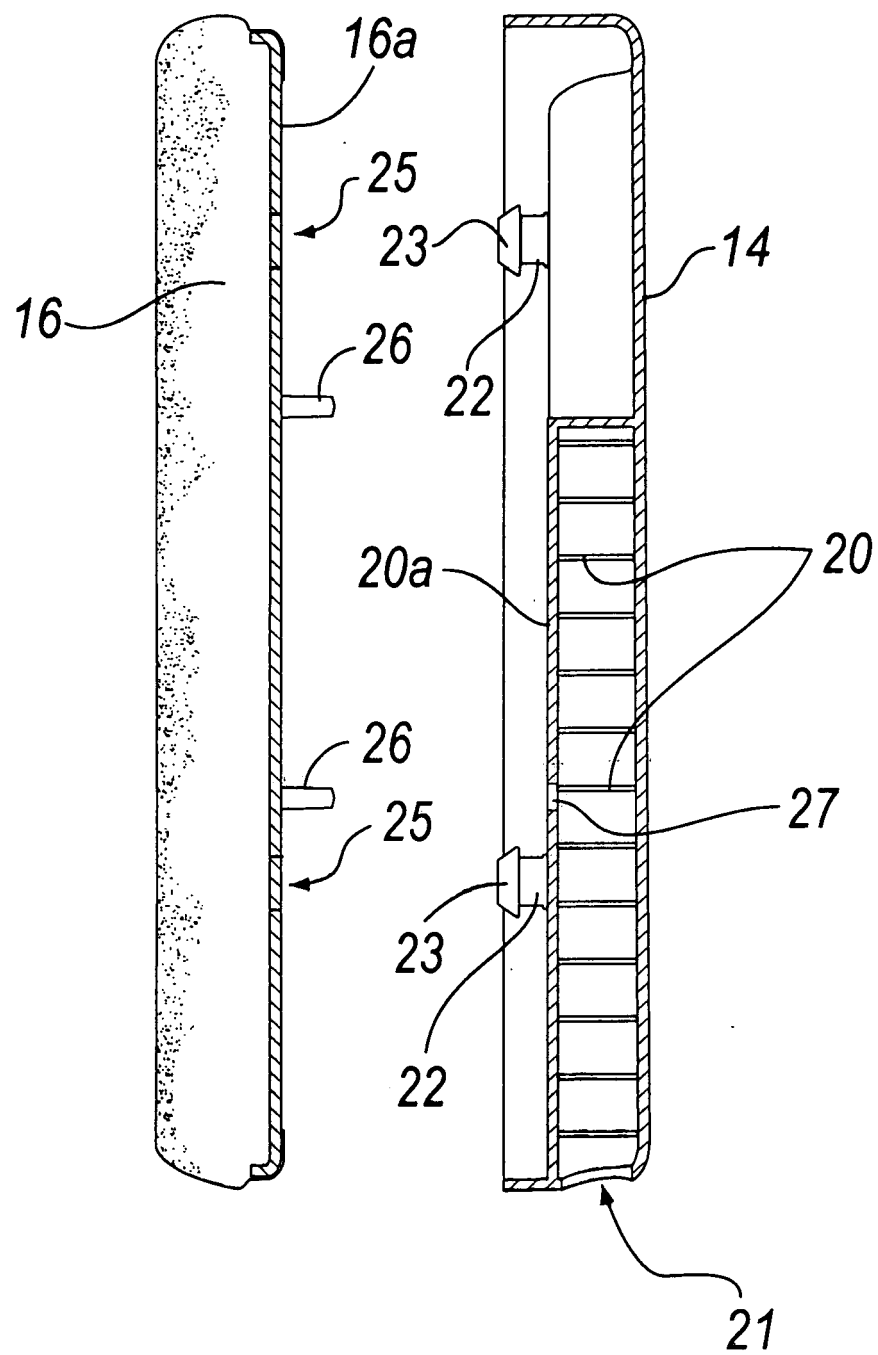


Fig. 3

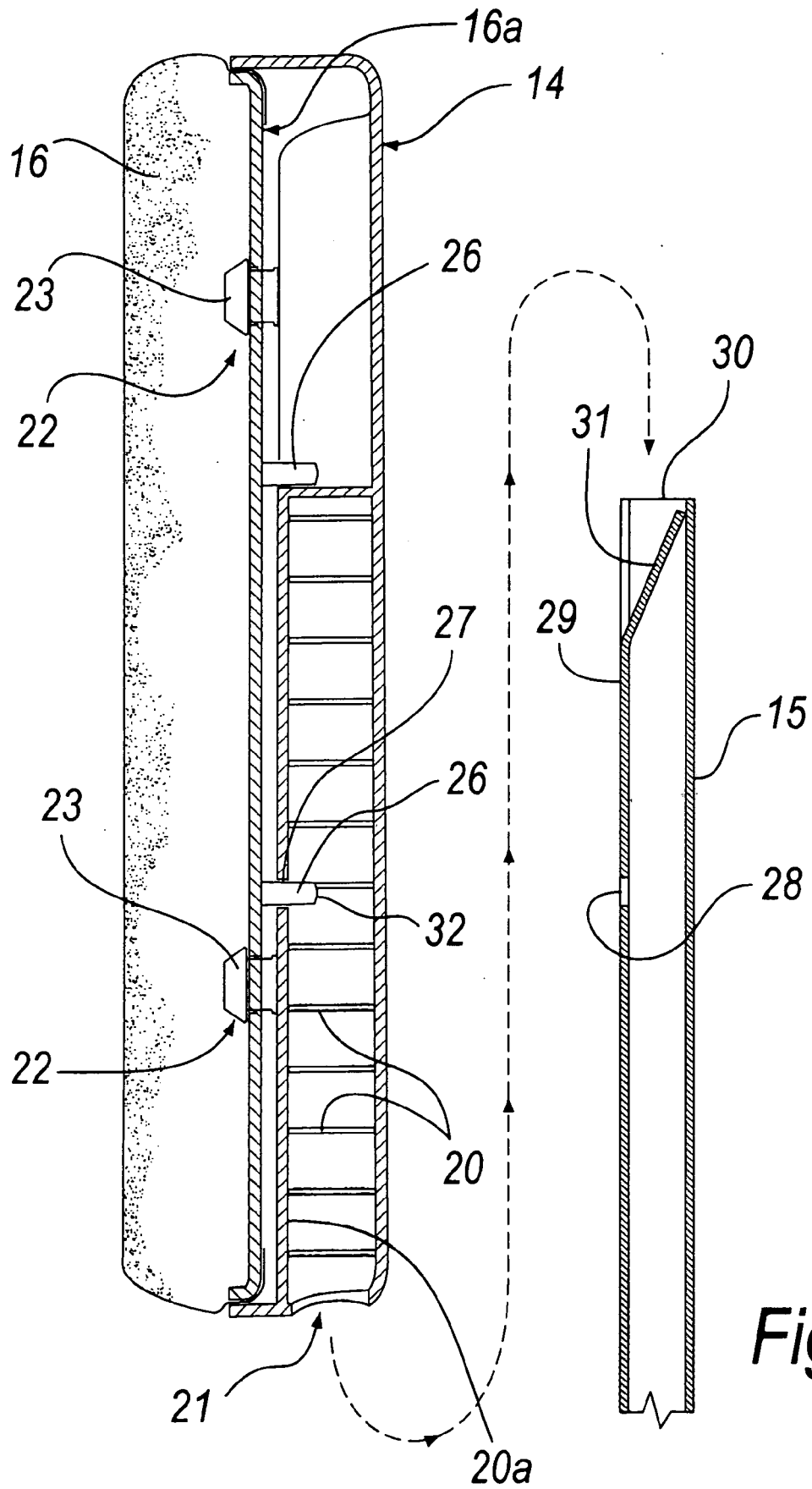
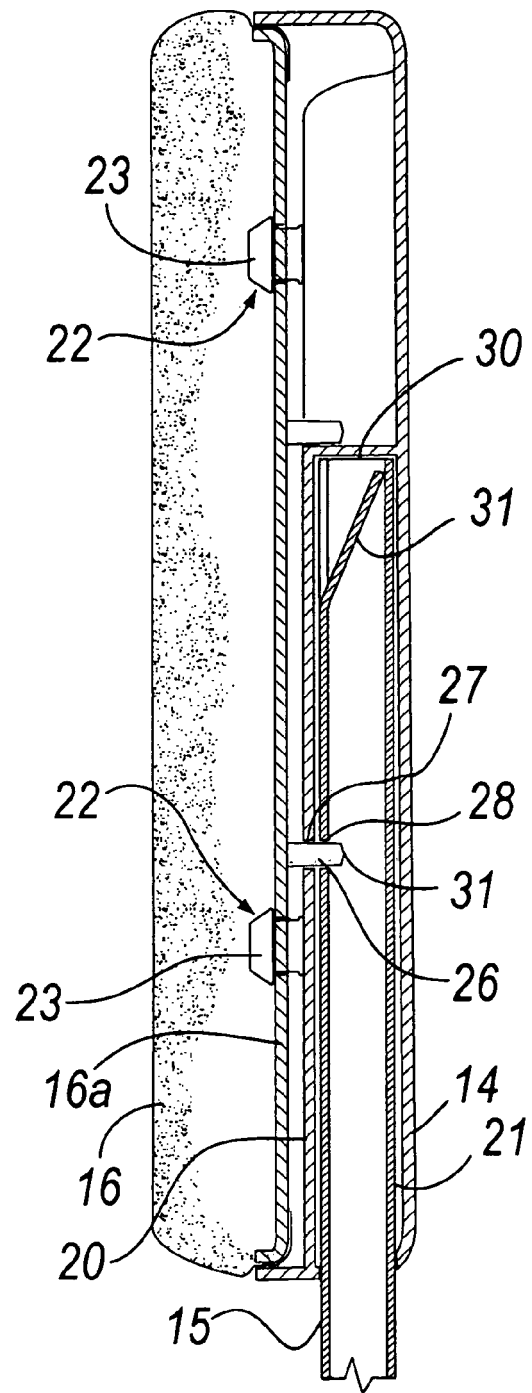
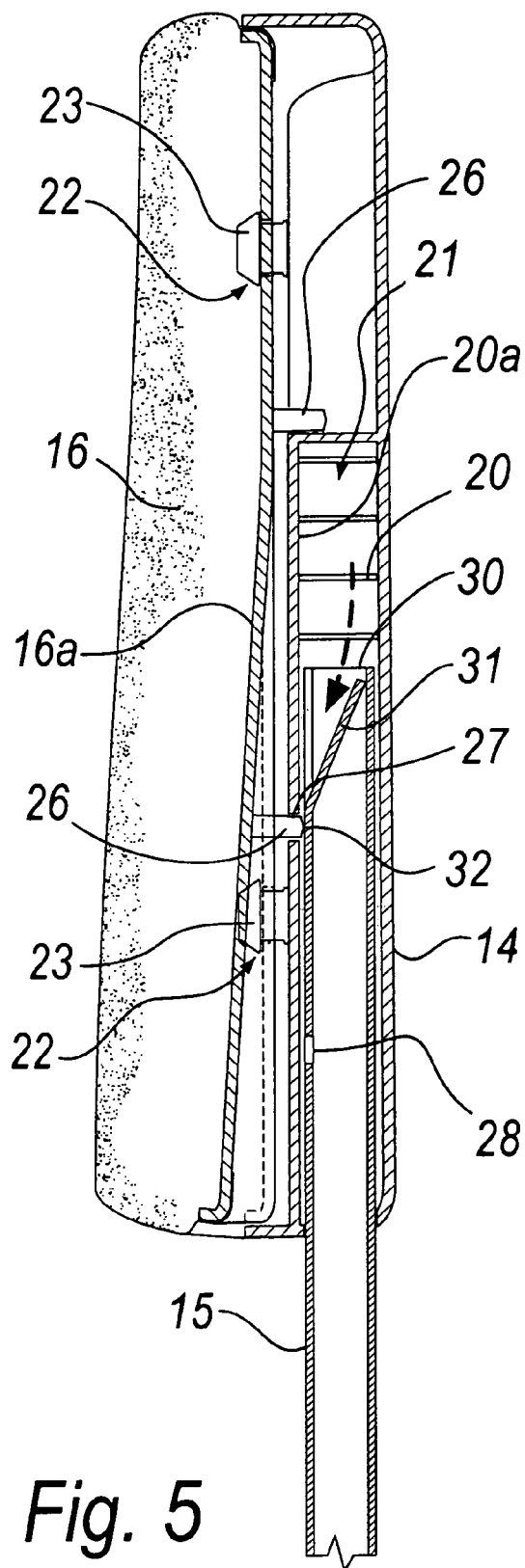


Fig. 4



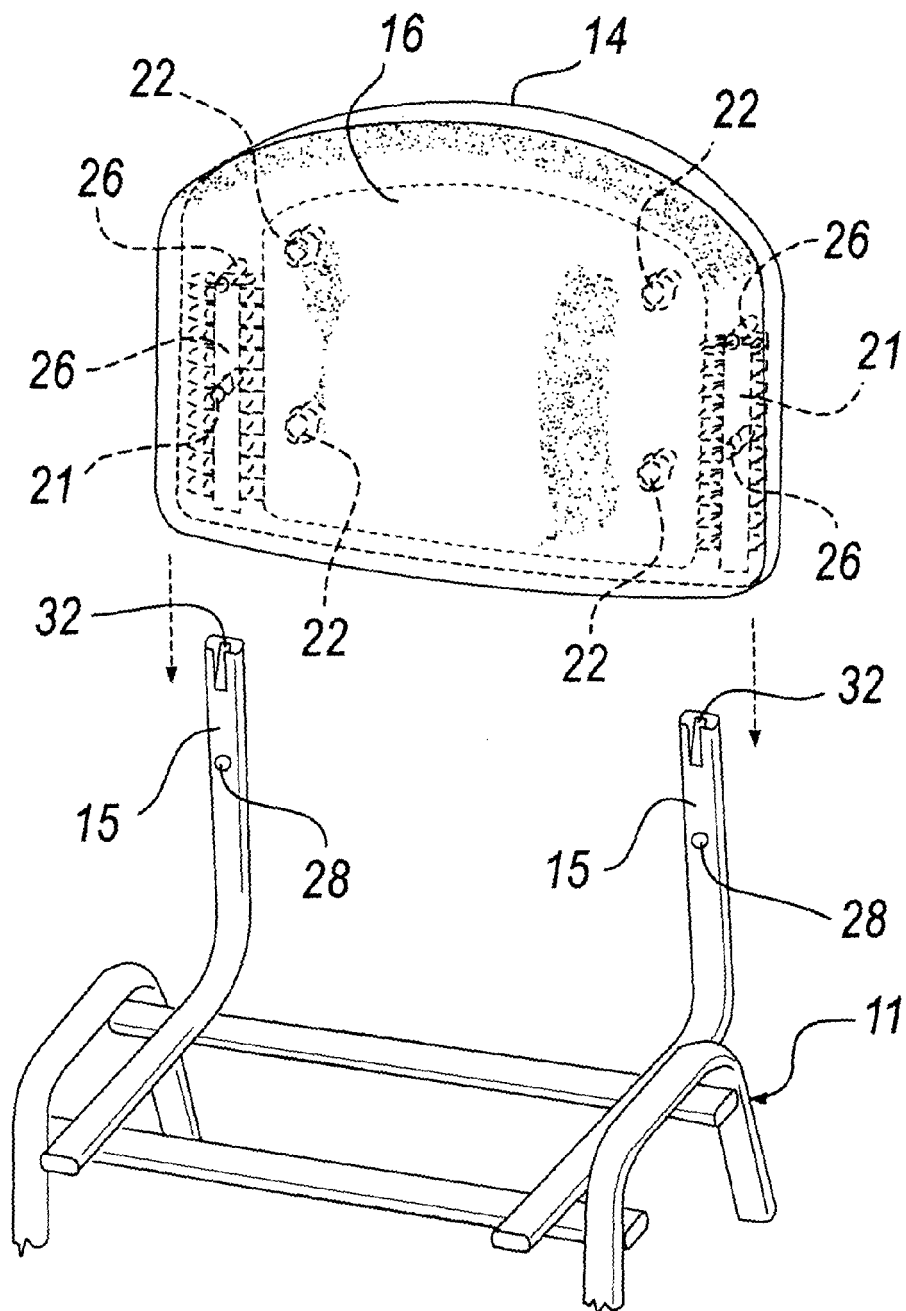


Fig. 7

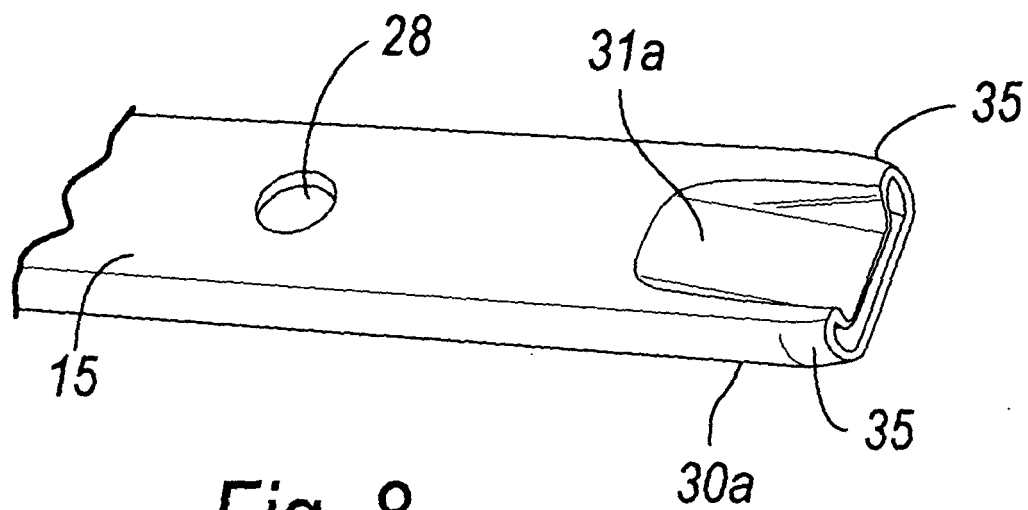


Fig. 8

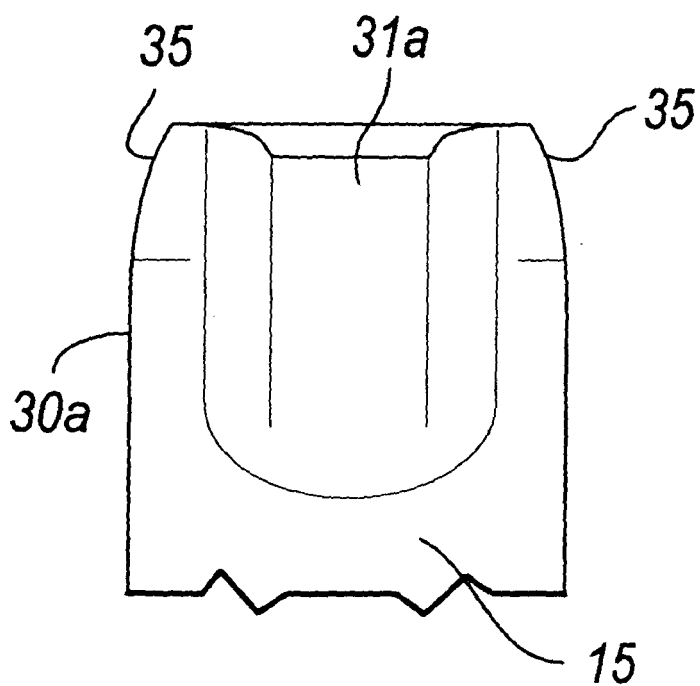


Fig. 9

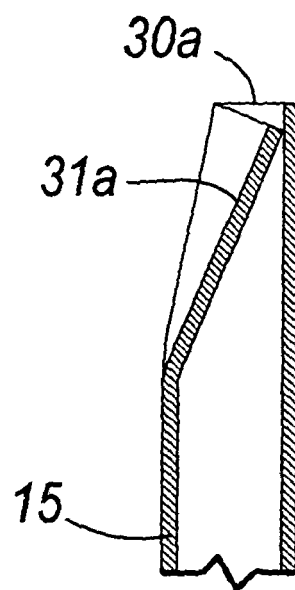


Fig. 10



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 04 01 4782

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.7)
A	US 6 135 562 A (INFANTI VITTORIO) 24 October 2000 (2000-10-24) * abstract; figures *	1-6	A47C7/42
A	US 5 253 923 A (GOOTEE LEROY) 19 October 1993 (1993-10-19) * abstract; figure 1 *	1-6	
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A	EP 1 145 669 A (IVARS FRANCE) 17 October 2001 (2001-10-17) * abstract; figures *	1-6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A47C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 October 2004	Examiner MacCormick, D
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			

2

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 04 01 4782

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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