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(54) **Household refridgerator door**

(57) Household refrigerator door of the type that comprises at least one shelf (2) supported on an interior vertical wall (1a) of said door (1), said shelf (2) comprising a flat base plate (3) made of glass or a similar material, and two lateral support pieces (4) fixed to lateral edges (1b) of the door (1), the base plate (3) being supported

between said lateral support pieces (4). The lateral support pieces (4) comprise, on their interior surface (4b), a seating (8) in which is supported the transverse edge (3b) of the base plate (3), and a retention element (12) that projects from said interior surface (4b) and which comprises an extension (12a) with a substantially spherical surface that presses on said transverse edge (3b).

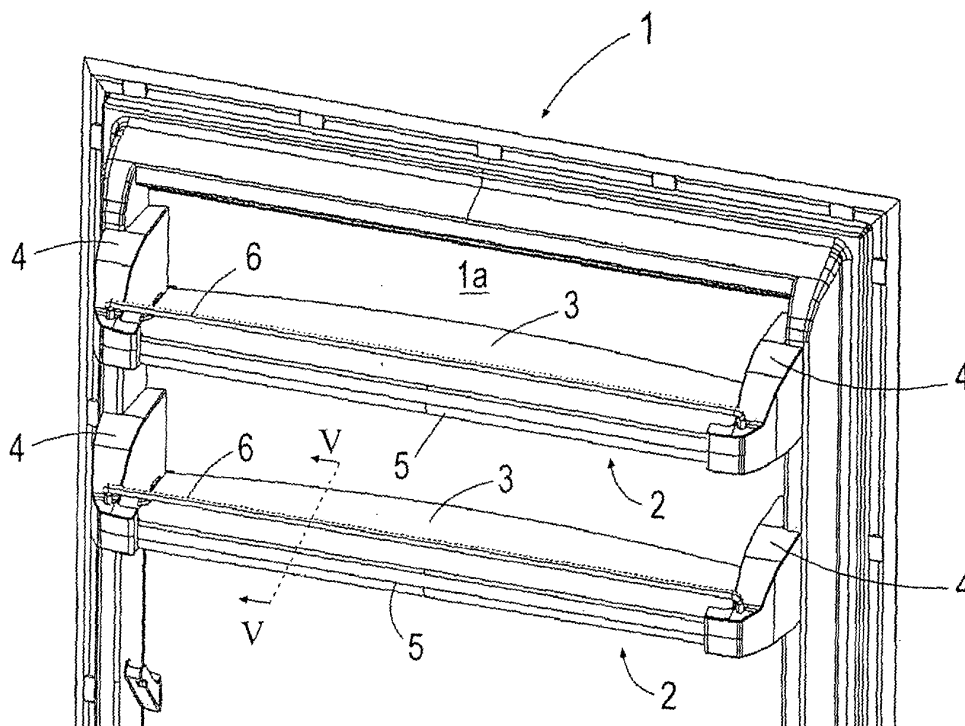


Fig. 1

## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to a door of a household refrigerator and more specifically to the constructive characteristics of a shelf supported on the interior of said door.

### PRIOR ART

**[0002]** There are known household refrigerators with at least one shelf supported on the interior wall of the door and comprising a flat base that is held between two lateral support pieces made of plastic. Said lateral support pieces are fixed to longitudinal lateral edges disposed on the interior wall of the door.

**[0003]** US 3,375,936 describes a shelf in which the flat base is held between two lateral support pieces and also between the lateral walls of the longitudinal lateral edges of the door. Said flat base is held by means of respective grooves disposed on the lateral walls of the longitudinal lateral edges of the door.

**[0004]** DE 8606724 U1 discloses a shelf that comprises a flat base formed with a glass plate that is held between two lateral support pieces. Said lateral support pieces comprise respective grooves in which the transverse edges of said flat base are housed.

**[0005]** EP 634616 A1 describes a refrigerator door that comprises shelves with a flat base plate made of glass and two lateral support pieces fixed to lateral edges of the door. In this case, the lateral support pieces also comprise respective grooves in which are housed the transverse edges of the base plate.

### DISCLOSURE OF THE INVENTION

**[0006]** It is an object of the invention to provide a household refrigerator door of the type that comprises at least one shelf supported on an interior wall of said door, as defined in the claims.

**[0007]** The household refrigerator door of the invention comprises at least one shelf comprising a flat base plate made of glass or a similar material, and two lateral support pieces fixed to lateral edges of the door, the base plate being supported between said lateral support pieces.

**[0008]** The lateral support pieces comprise, on their interior surface, a seating in which is supported the transverse edge of the base plate and a retention element that projects from said interior surface and that comprises an extension with a substantially spherical surface that presses on said transverse edge.

**[0009]** In the household refrigerator door of the invention, the assembly of the base plate in the lateral support pieces is facilitated, as the area of friction between the base plate and the lateral support pieces is reduced to a single point of contact. In addition, with the use of the

retention element, the amount of material used for the lateral support pieces is reduced in comparison to solutions in the prior art in which grooves are used to hold the transverse edges of the base plate.

**[0010]** In addition, the tools for the manufacture of the lateral support pieces of the invention are more robust than the tools that have to be used for the manufacture of lateral support pieces with grooves.

**[0011]** Another advantage of the invention is that by means of the retention element looseness between the base plate and the lateral support pieces is eliminated. This ensures that the shelf has a good finish and is robust and that the possibility of noise due to said looseness is also eliminated.

**[0012]** Another advantage of the use of the retention element instead of grooves is that the cleaning of the shelf is made easier, as inaccessible areas for cleaning are reduced.

**[0013]** These and other advantages and characteristics of the invention will be made evident in the light of the drawings and the detailed description thereof.

### DESCRIPTION OF THE DRAWINGS

#### [0014]

FIG. 1 is a partial perspective view of a household refrigerator door with shelves according to a first embodiment of the invention.

FIG. 2 is a first partial perspective view of one of the shelves of FIG. 1.

FIG. 3 is a second partial perspective view of one of the shelves of FIG. 1.

FIG. 4 is a partial ground view of one of the shelves of FIG. 1.

FIG. 5 is a view in profile of one of the shelves of FIG. 1 according to section V-V.

FIG. 6 is a first partial perspective view of a shelf according to a second embodiment of the invention.

FIG. 7 is a second partial perspective view of the shelf of FIG. 5.

FIG. 8 is a third partial perspective view of the shelf of FIG. 5.

FIG. 9 is a profile view according to section IX-IX of FIG. 6.

### DETAILED DISCLOSURE OF THE INVENTION

**[0015]** Figures 1 to 5 show a first embodiment of the household refrigerator door 1 of the invention. The door

1 comprises shelves 2 supported on a vertical interior wall 1a of said door 1. Each shelf 2 comprises a flat base plate 3 made of glass or a similar material, and two lateral support pieces 4 moulded from plastic and fixed to lateral edges 1b of the door 1, the base plate 3 being supported between said lateral support pieces 4.

**[0016]** The lateral support pieces 4 comprise, on their interior surface 4b, a seating 8 in which is supported the transverse edge 3b of the base plate 3, and a retention element 12 that projects from said interior surface 4b. Said retention element 12, which forms an integral part of the lateral support piece 4, comprises an extension 12a with a substantially spherical surface that presses on the upper surface of said transverse edge 3b due to the elastic properties of said retention element 12.

**[0017]** In this first embodiment, the seating 8 of the lateral support pieces 4 comprises, as shown in Figure 2, two lateral support wings 8b separated by an intermediate space above which is disposed the retention element 12.

**[0018]** The shelf 2 comprises a front section 5 that comprises, as shown in Figure 5, a groove 7 in which the front longitudinal edge 3a of the base plate 3 is housed, the ends of said front section 5 being supported on a respective front recess 8a disposed in the seating 8 of the lateral support pieces 4 and shown in Figures 2 and 5. The lateral support pieces 4 comprise a housing 9 for the front section 5, the front recess 8a being the base of said housing 9.

**[0019]** The front section 5 comprises, in the embodiment shown in Figures 1 to 5, a substantially vertical wall 5a, and the shelf 2 also comprises a metallic bar 6. The ends of said metallic bar 6 are housed on the edge 4a of the lateral support pieces 4, so that said wall 5a and said metallic bar 6 form a front enclosure.

**[0020]** Figures 6 to 9 show a second embodiment of the invention. In this second embodiment, the shelf 2 also comprises a flat base plate 3 made of glass or a similar material, and two lateral support pieces 4 moulded from plastic and fixed to side edges 1b of the door 1 (not shown in the figures), the base plate 3 being supported between said lateral support pieces 4. The lateral support pieces 4 comprise, on their interior surface 4b, as in the first embodiment, a seating 8 in which is supported the transverse edge 3b of the base plate 3, and a retention element 12 that projects from said interior surface 4b.

**[0021]** In this second embodiment, the seating 8 of the lateral support pieces 4 comprises a single front support wing 8b, the retention element 12 being disposed above the free space between the rear end of said support wing 8b and the rear end of the interior surface 4b of the lateral support piece 4, as shown in figures 8 and 9. Thus, in both embodiments the retention element 12 is positioned above a free space disposed in the seating 8. Said retention element 12, as in the first embodiment, forms an integral part of the lateral support piece 4 and comprises an extension 12a with a substantially spherical surface that presses on the upper surface of said transverse edge

3b.

**[0022]** The shelf 2 also comprises a front section 5, the ends of said front section 5 being supported on a respective front recess 8a disposed in the seating 8 of the lateral support pieces 4 and shown in figures 8 and 9. The front section 5 comprises, in addition to a groove 7 in which the front longitudinal edge 3a of the base plate 3 is housed, a second groove 13 disposed perpendicularly in relation to the other groove 7. On said second groove 13 a substantially vertical flat wall 14 made of glass or a similar material is disposed, so that said flat wall 14 forms a front enclosure.

## 15 Claims

1. Household refrigerator door of the type that comprises at least one shelf (2) supported on an interior vertical wall (1a) of said door (1), said shelf (2) comprising a flat base plate (3) made of glass or a similar material, and two lateral support pieces (4) fixed to lateral edges (1b) of the door (1), the base plate (3) being supported between said lateral support pieces (4), **characterised in that** the lateral support pieces (4) comprise, on their interior surface (4b), a seating (8) on which the transverse edge (3b) of the base plate (3) is supported, and a retention element (12) that projects from said interior surface (4b) and that comprises an extension (12a) with a substantially spherical surface that presses on said transverse edge (3b).
2. Door according to claim 1, wherein the retention element (12) is positioned above a free space disposed in the seating (8).
3. Door according to claim 2, wherein the seating (8) of the lateral support pieces (4) comprises at least one support wing (8b) that forms an integral part of the lateral support piece (4).
4. Door according to claim 3, wherein the seating (8) of the lateral support pieces (4) comprises two lateral support wings (8b) separated by an intermediate space, said intermediate space being the free space above which the retention element (12) is positioned.
5. Door according to claim 3, wherein the seating (8) of the lateral support pieces (4) comprises a single front support wing (8b), a space remaining between the rear end of said support wing (8b) and the rear end of the interior surface (4b) of the lateral support piece (4), said space being the free space above which is positioned the retention element (12).
6. Door according to any of the preceding claims,

wherein the shelf (2) comprises a front section (5) that comprises a groove (7) in which is housed the front longitudinal edge (3a) of the base plate (3), the ends of said front section (5) being supported on a respective front recess (8a) disposed in the seating (8) of the lateral support pieces (4). 5

7. Door according to claim 6, wherein the front section (5) comprises a substantially vertical wall (5a), and the shelf (2) also comprises at least one metallic bar (6), the ends of said metallic bar (6) being housed in the lateral support pieces (4), so that said wall (5a) and said metallic bar (6) form a front enclosure. 10

8. Door according to claim 6, wherein the front section (5) comprises a second groove (13) disposed perpendicularly in relation to the other groove (7), a substantially vertical flat wall (14) made of glass or a similar material being disposed on said second groove (13), so that said flat wall (14) forms a front enclosure. 15 20

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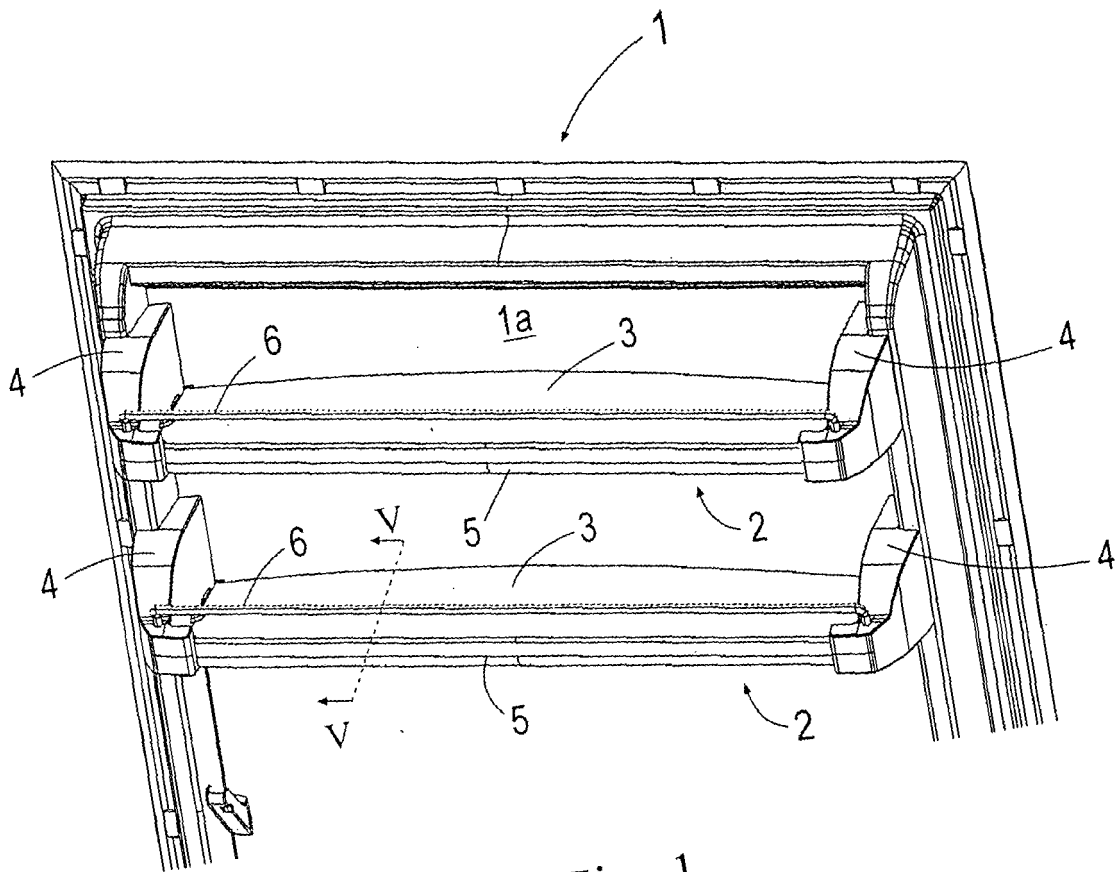


Fig. 1

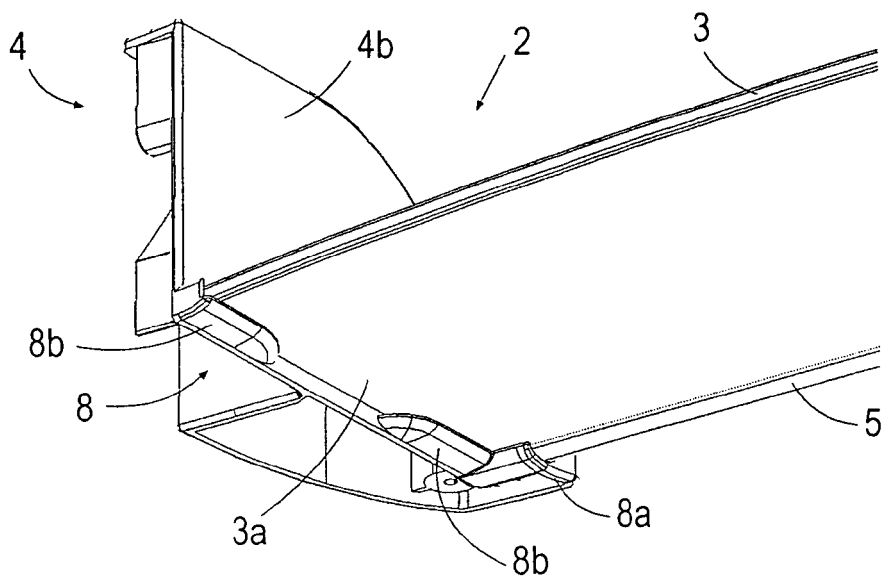


Fig. 2

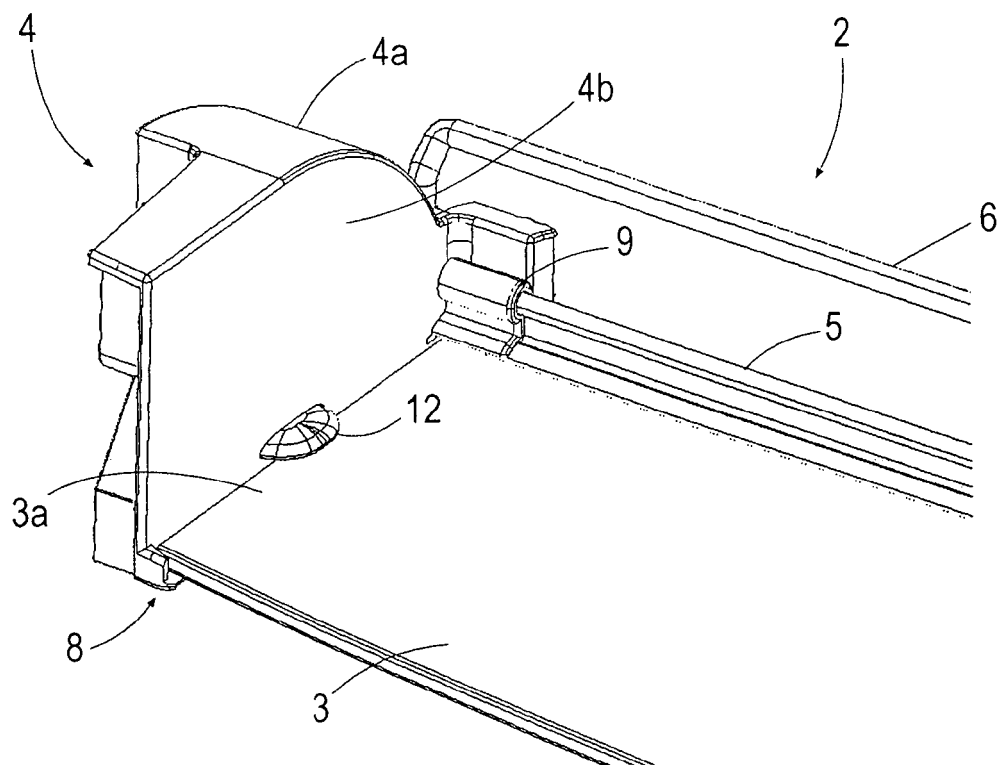


Fig. 3

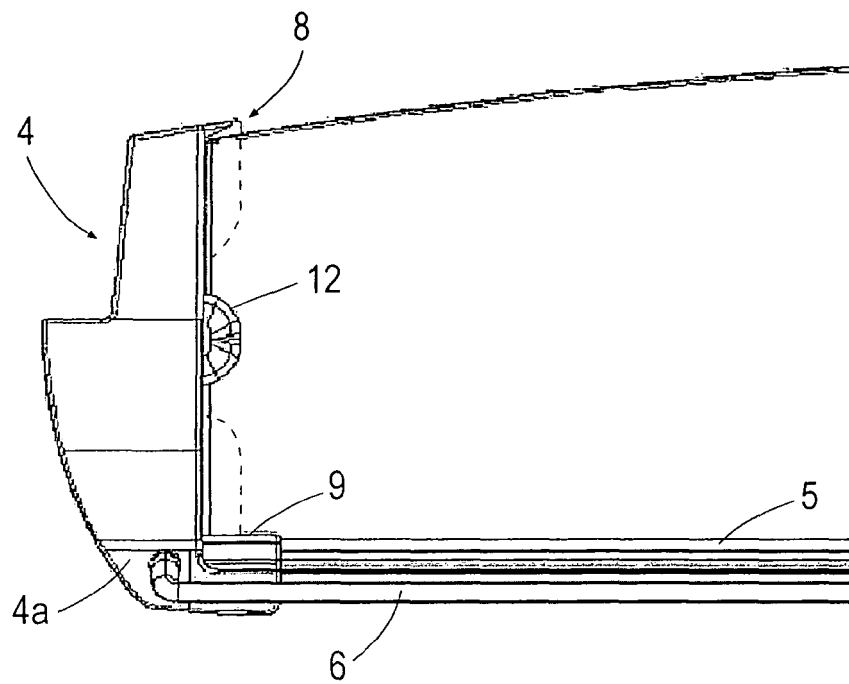


Fig. 4

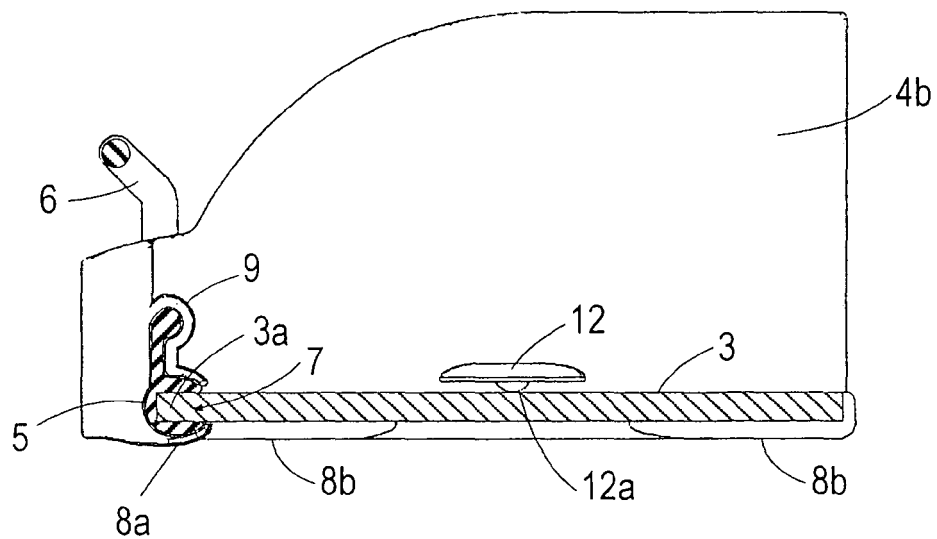


Fig. 5

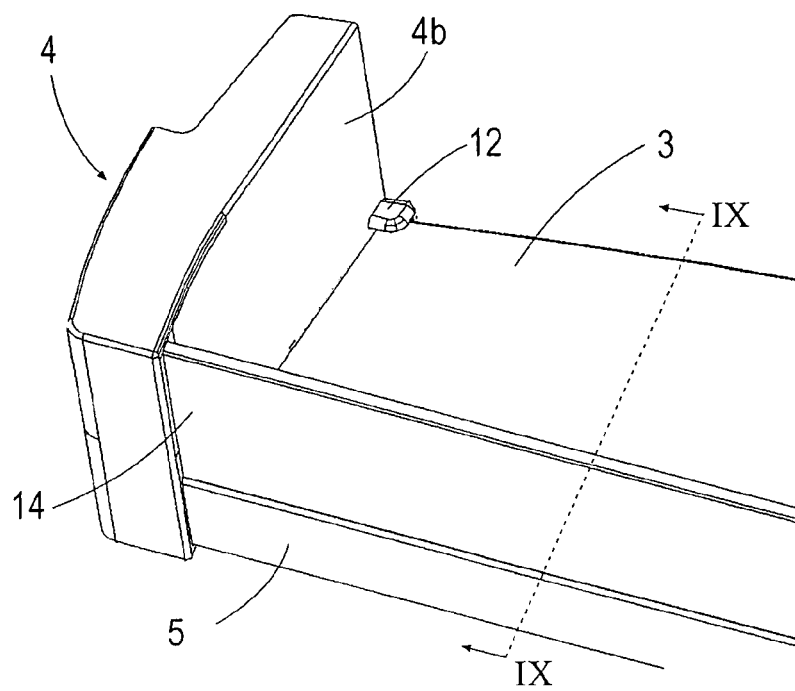


Fig. 6

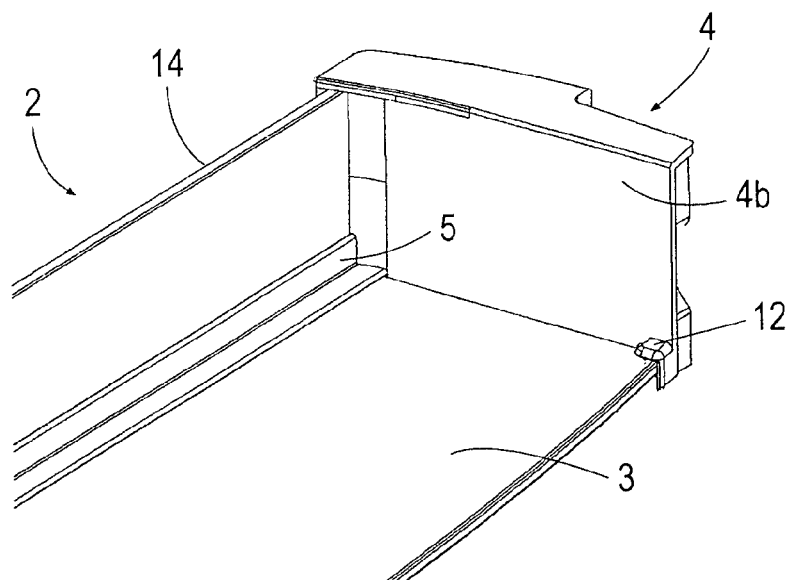


Fig. 7



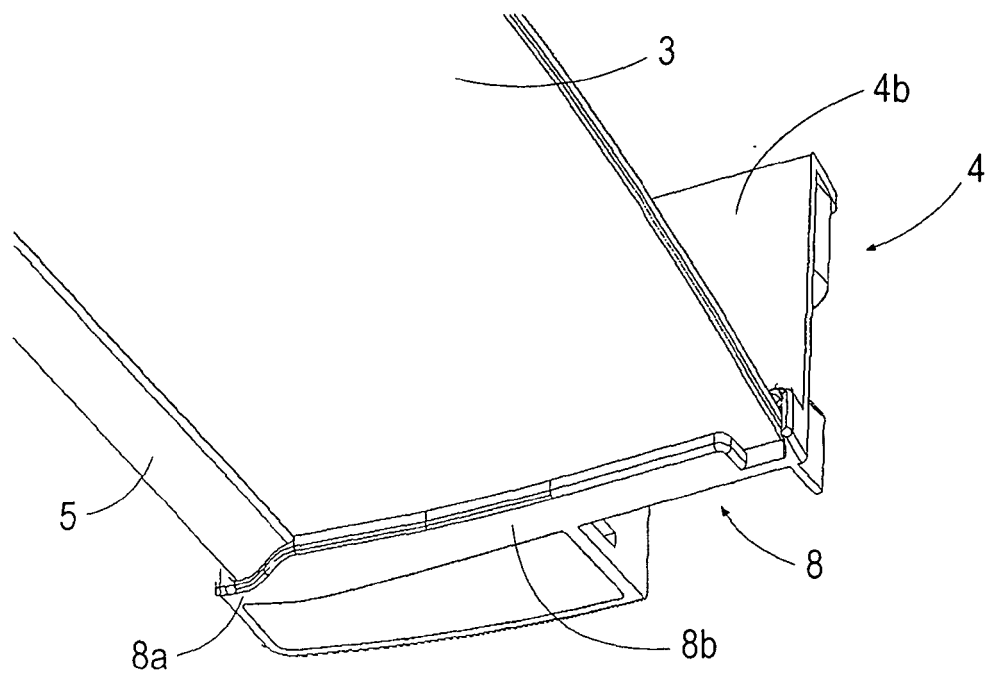


Fig. 8

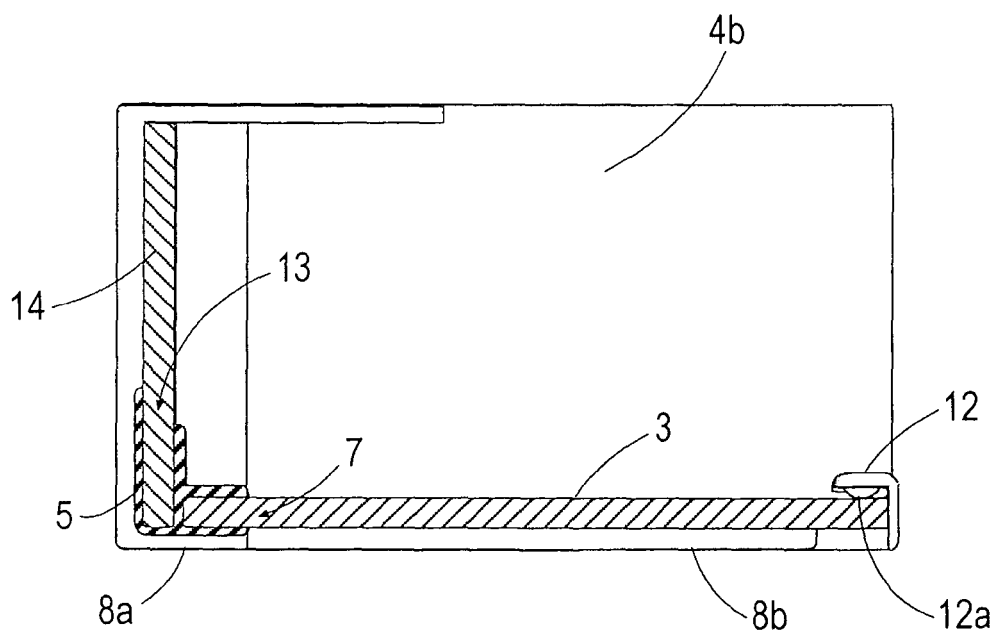


Fig. 9



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 07 38 0161

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 297 18 944 U1 (AEG HAUSGERAETE GMBH [DE]) 25 February 1999 (1999-02-25) * the whole document *	1	INV. F25D23/04
A	DE 102 08 063 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 4 September 2003 (2003-09-04) * the whole document *	1	
A	DE 20 2004 019907 U1 (LIEBHERR HAUSGERAETE LIENZ GMB [AT]) 27 April 2006 (2006-04-27) * the whole document *	1	
D,A	EP 0 634 616 A (LIEBHERR HAUSGERAETE [DE]) 18 January 1995 (1995-01-18) * the whole document *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			F25D
Place of search		Date of completion of the search	Examiner
Munich		4 January 2008	Jessen, Flemming
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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 &amp; : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 38 0161

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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04-01-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 29718944 U1	25-02-1999	NONE	
DE 10208063 A1	04-09-2003	NONE	
DE 202004019907 U1	27-04-2006	NONE	
EP 0634616 A	18-01-1995	NONE	

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- US 3375936 A [0003]
- DE 8606724 U1 [0004]
- EP 634616 A1 [0005]