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(54) REFRIGERATOR WITH GLASS SHELVES

(57) A refrigerator (R) has an internal compartment (C) with side walls (W), each wall (W) being provided with molded parts (14, 17) for supporting a glass shelf (G); two parallel side of the glass shelf (G) are provided with plastic elements (10) having a C-shaped cross-section for embedding, at least partially, the respective edges (12) of the glass shelf (G), each plastic element (10) being provided with a first elastic portion (16) configured to co-operate with a corresponding seat (14a) of a molded part (14) for keeping the glass shelf (G) in a correct position.

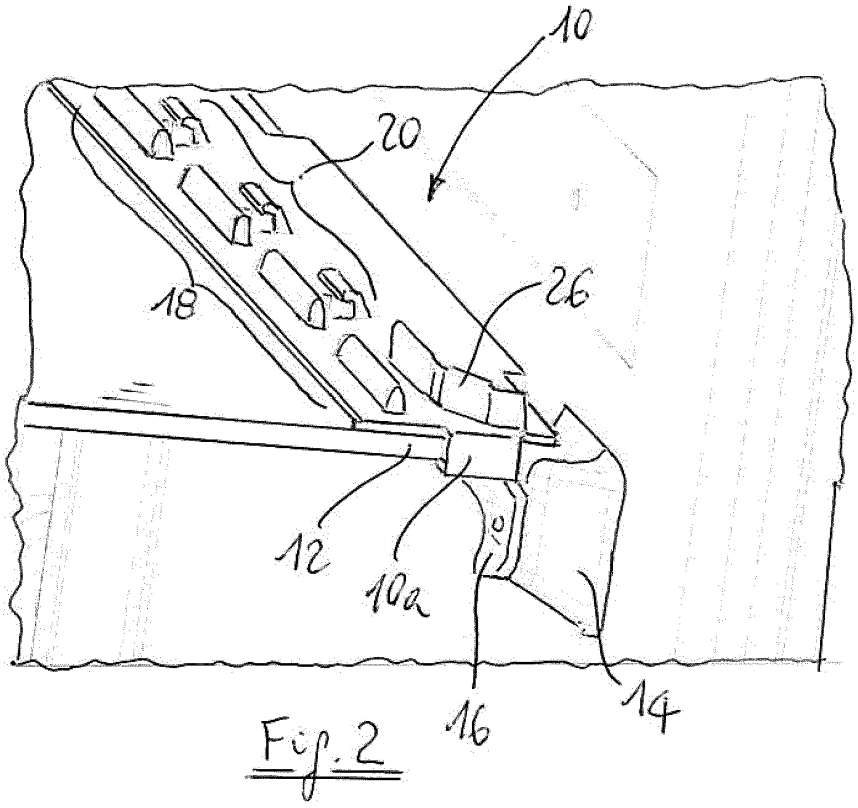

Fig. 2

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Description

[0001] The present invention relates to a refrigerator, in particular a domestic refrigerator, having an internal compartment with side walls, each side wall being provided with molded parts for supporting at least one glass shelf.

[0002] A refrigerator of the above kind is disclosed by EP 2606295 where the molded parts are grooves of the inner liner adapted to cooperate with support rails on which the shelf can slide.

[0003] Such construction is quite complex since need at least three element on each side of the shelf, i.e. the groove, the support rail and a shaped rail fixed to the shelf. Moreover this solution is mainly focused on sliding shelves and not sliding drawers.

[0004] In the modern refrigerators there is the trend of allowing the user to arrange the inner part of the refrigerator depending on his will. So he can decide to have simple glass shelves or sliding drawers in the refrigerator cavity.

[0005] Object of the present invention is to provide a refrigerator in which the user can easily pass from a cavity with shelves only to a cavity with shelves and drawers.

[0006] Another object is to provide the user with a good feedback during the use of the drawers. The above objects are reached thanks to the feature listed in the appended claims.

[0007] In particular, the present invention avoids the lateral wobbling of the drawer and its vertical movement. In this way, during the use of the drawer, the customers feel a precise extraction of the drawer, similar to the use of metal telescopic rails.

[0008] The basic concept of the present invention consists of two plastic elements inserted at the glass shelf sides.

[0009] In the upper part of the plastic elements, some protrusions allow to block the sliding movement of the drawer.

[0010] According to another feature, lateral parts of the plastic elements allow keeping the glass shelf in the center of the compartment or cell.

[0011] According to another feature, in the front part of each shelf, two elastic ribs with pins block the glass shelf on the cell, avoiding its movement during food items handling or during pull out of the drawer. In addition, they compensate the unavoidable deformation of the cabinet.

[0012] Plastic elements are made of POM to allow a better sliding of the drawer. In an alternative solution, plastic elements may be made of cheaper plastic material (for instance PP) with co-molded shaped protrusion of POM on which the drawer can slide.

[0013] Further advantages and features of the present invention will be clear from the detailed description of one embodiment thereof, with reference to the attached drawings in which:

- Figure 1 is a perspective view of a portion of a shelf according to the invention immediately before its mounting on the side walls of the refrigerator compartment;
- Figure 2 is a perspective view of a portion of the shelf mounted on the side walls of the compartment;
- Figure 3 is a partially sectioned view of what is shown in figure 2;
- Figure 4 is a perspective view of a sliding drawer mounted on the shelf, where the side walls of the compartment have been removed for sake of clarity;
- Figure 5 is an enlarged view of a detail of figure 4,
- Figure 6 is a detail of a shelf viewed from the bottom thereof, and
- Figure 7 is a perspective view of a component according to the invention.

[0014] With reference to the drawings, a refrigerator R comprises an inner cavity C where a plurality of glass shelves G is mounted. Each shelf G is provided, on parallel sides, with plastic elements 10 having a C-shaped cross section mounted on edge 12 of the shelf G. Each plastic element 10 may have a continuous C-shaped portion 11 a (as shown in figure 7) or it can have a C-shaped slotted portion 11 b (as shown in figure 6), both C-shaped portions 11 a, 11 b (continuous or slotted) having the same purpose for mounting the plastic element 10 on the shelf.

[0015] The inner walls W of the compartment C present two molded parts 14 and 17 which may be obtained by thermoforming the plastic inner liner, or by using components obtained by injection molding and inserted in aperture of the liner in a foam tightly manner. With the term molded parts we mean the above solutions, and any alternative solution as well.

[0016] The front molded part 14 comprises a blind hole 14a for receiving a pin 16a of an elastic portion 16 of the plastic element 10 which protrudes laterally and in the front portion thereof. The detail of the mounted configuration is shown in figures 2 and 3, where the pin 16a is elastically inserted in the blind hole 14a.

[0017] The front portion of the plastic element 10 present a cross part 10a which avoids any sliding of the glass shelf G toward the outside, while any backward movement of the shelf G is prevented by a similar cross part 10b present in the rear portion of the plastic element 10 (figure 5) or by the rear wall of the compartment.

[0018] On the upper side of each plastic element 10, with reference to the installed configuration of the element, there are two series of protrusion 18 and 20. A first series of protrusions are simple linear protrusions on which a bottom wall of a plastic drawer 22 can slide. The protrusions of the second series are hook-shaped and are configured to cooperate with side rails 24 of the bottom of the drawer 22 for avoiding any tilting movement thereof. Moreover, each plastic element 10 is provided with a protrusion 26 on the front part of the element which is shaped so as to guide the drawer 22 and its side rails 24 in the initial mounting sliding movement of the drawer

itself.

[0019] Each plastic element 10 is also provided with a side elastic tongue 28 which keeps the glass shelf G in the center of the compartment.

[0020] From the above description it is clear how the mounting of the glass shelf G in the inner compartment C is simple and safe, since the plastic element 10 are coupled with two opposite side of the glass plate, and then the glass shelf G (including the glass plate and the plastic element 10) is inserted elastically in the molded parts. If the user wants to install a sliding drawer 22 in the space defined by two glass shelf G, he has to simply insert the drawer on the glass shelf and in this coupling movement he is helped by the shaped protrusion 26.

[0021] For avoiding the tilting movement when the drawer reaches its fully opened configuration, the drawer 22 presents lateral protrusion 30 configured to cooperate with corresponding protrusion (not shown) of the inner liner.

[0022] The series of protrusion 18 and 20, where the drawer 22 slides may be of a plastic co-molded material different from the material of the plastic element and having a lower friction coefficient; this may reduce the overall cost of the plastic elements 10.

Claims

1. Refrigerator (R), in particular domestic refrigerator, having an internal compartment (C) with side walls (W), each wall (W) being provided with molded parts (14, 17) for supporting a glass shelf (G), **characterized in that** two parallel side of the glass shelf are provided with plastic elements (10) having a C-shaped cross-section for embedding, at least partially, the respective edges (12) of the glass shelf, each plastic element (10) being provided with a first elastic portion (16) configured to cooperate with a corresponding seat (14a) of a molded part (14).

2. Refrigerator according to claim 1, wherein each plastic element (10) is provided with a second elastic portion (28) cooperating with the respective side wall (W) for maintaining the glass shelf (G) centered within the internal compartment (C).

3. Refrigerator according to claim 1 or 2, wherein it comprises at least a drawer (22) having bottom portions configured to slide on raised portions (18) of each plastic element (10).

4. Refrigerator according to claim 3, wherein the raised portions comprise hook-shaped parts (20) configured to cooperate with corresponding rails (24) of the drawer (22) for preventing tilting movement of the drawer (22).

5. Refrigerator according to any of the preceding claims, wherein for each side wall (W) and each glass shelf (G) the molded parts comprises a rear portion (17) and a front portion (14), the first elastic portion (16) being configured to cooperate with the first molded part (14, 14a).

6. Refrigerator according to claim 5, wherein the first elastic portion (16) is a part of the plastic element (10) protruding laterally therefrom and configured to cooperate with a lowered seat (14a) of the front molded part (14).

7. Refrigerator according to claim 6, wherein the second elastic portion (28) of the plastic element (10) is an elastic tongue protruding laterally therefrom in a direction substantially opposite to the first elastic portion (16).

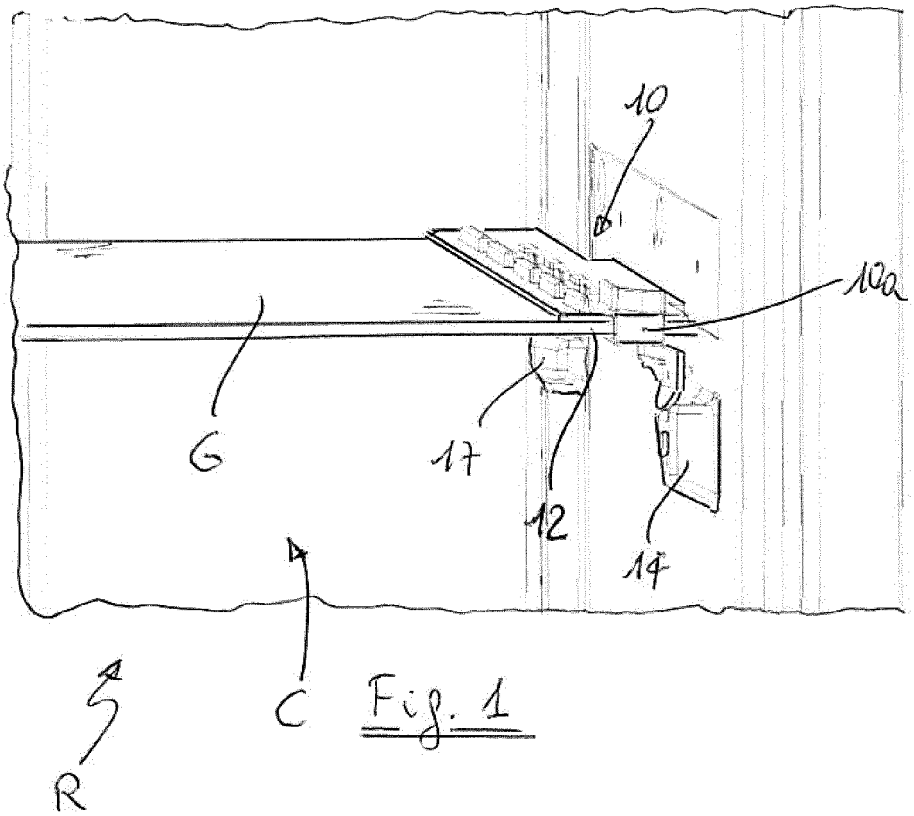

Fig. 1

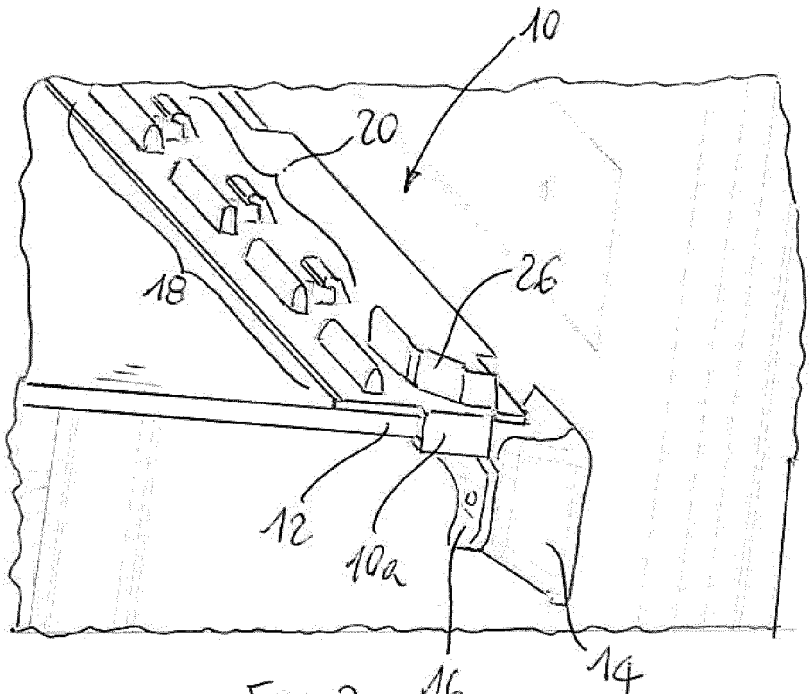

Fig. 2

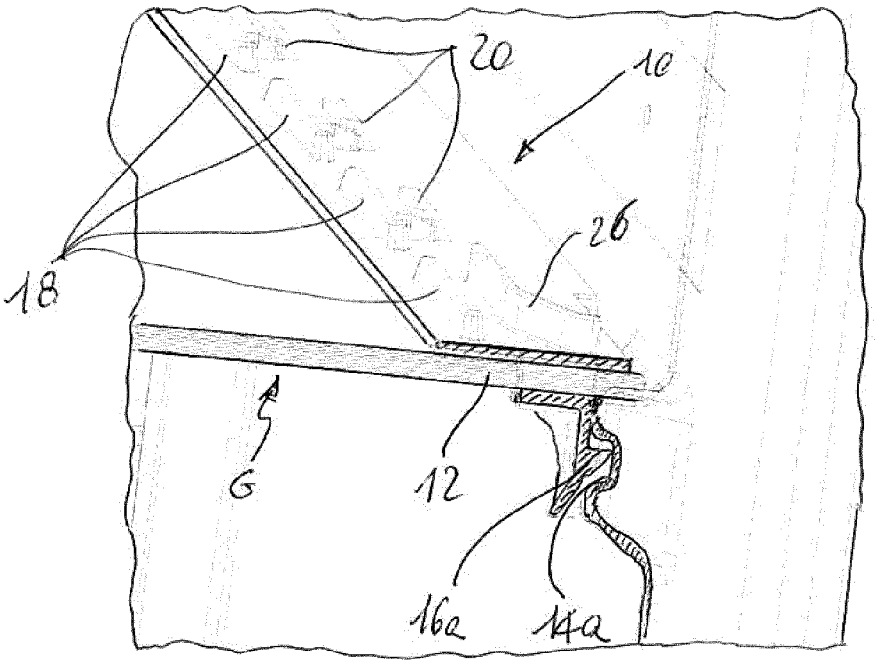

Fig. 3

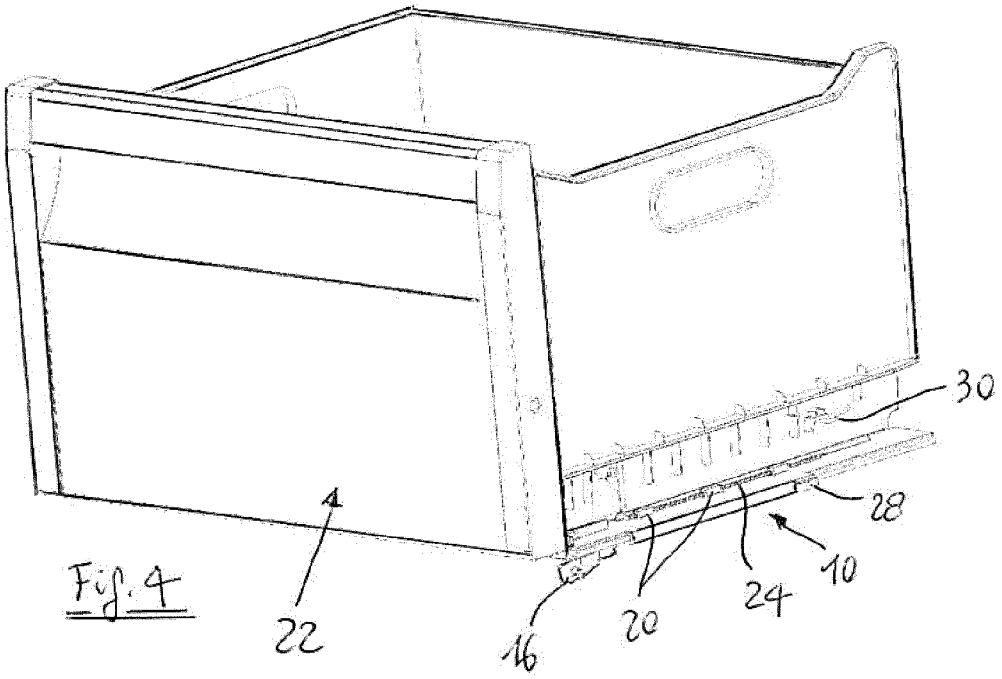

Fig. 4

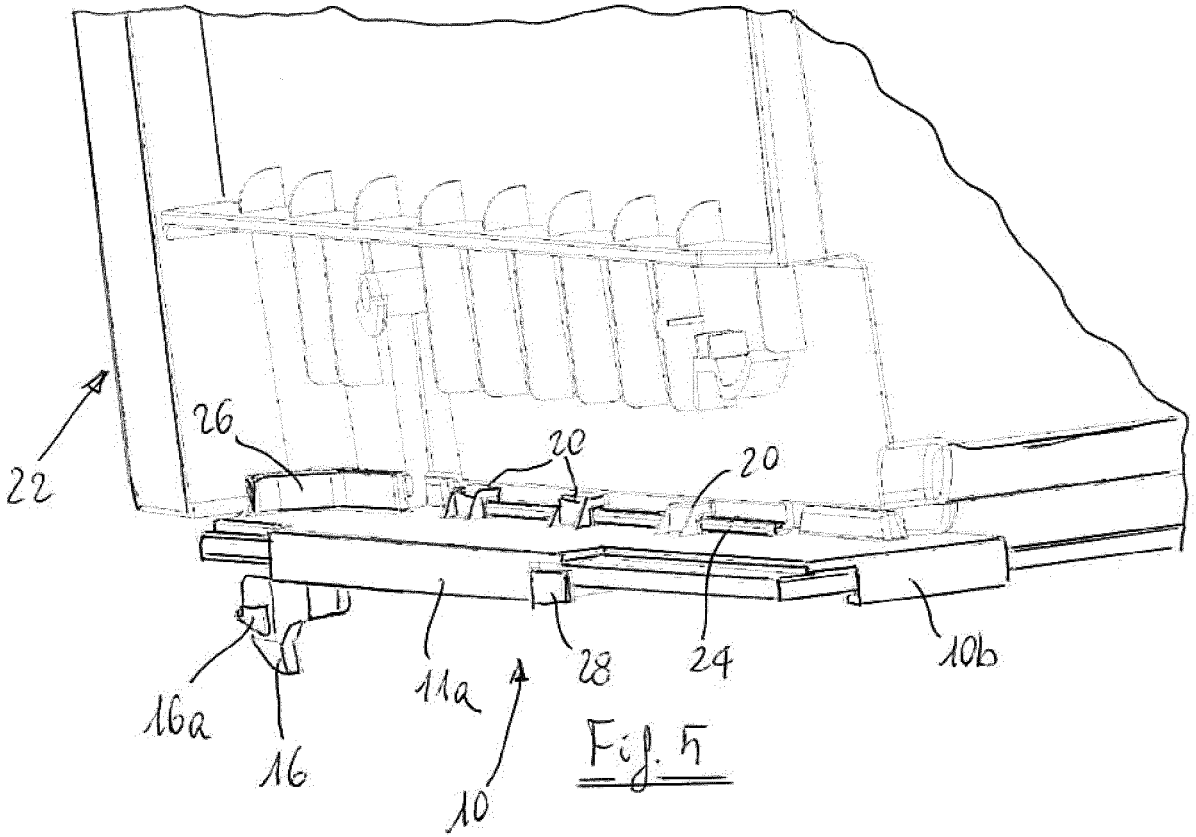

Fig. 5

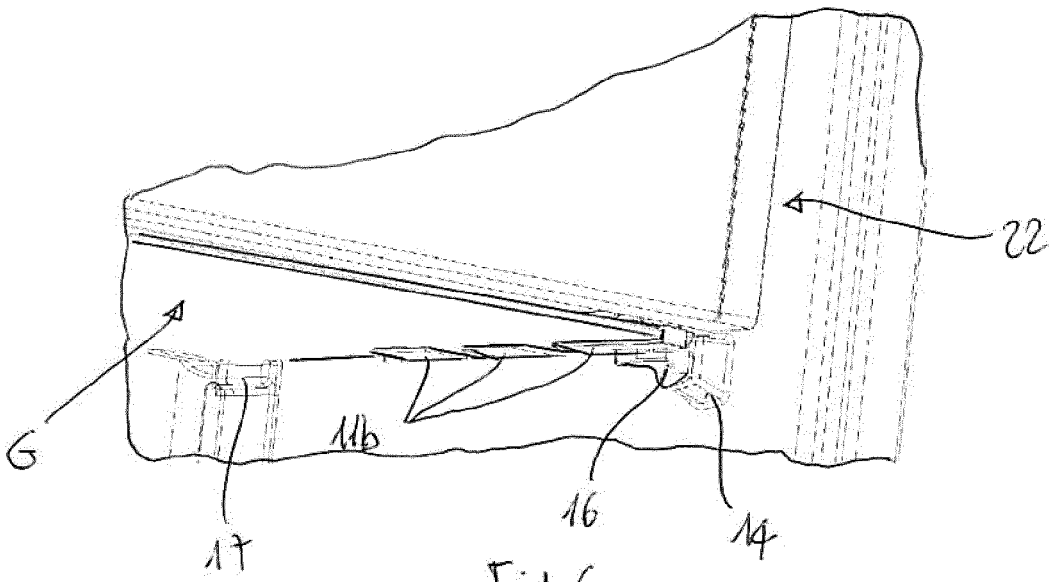

Fig. 6

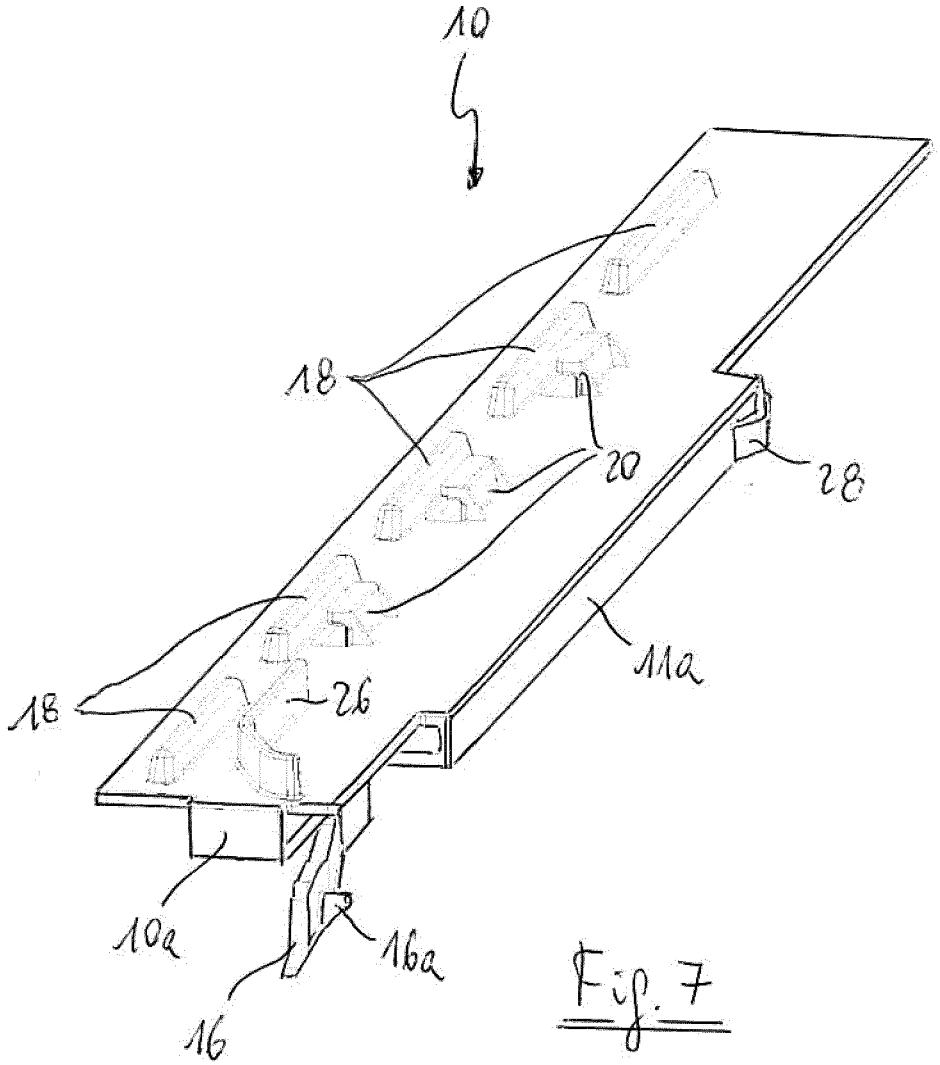

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 16 17 6460

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2005/009173 A1 (MULTIBRAS ELETRODOMESTICOS SA [BR]; AMARAL CLAITON EMILIO DO [BR]; KOL) 3 February 2005 (2005-02-03) * page 1, line 16 - page 12, line 2; figures 1-9 *	1,2,5-7	INV. F25D23/06 F25D25/02
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X	DE 20 2004 017136 U1 (LIEBHERR HAUSGERAETE [DE]) 16 March 2006 (2006-03-16) * paragraphs [0003] - [0054]; figures 1-8 *	1,3	
X	DE 10 2011 087785 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 6 June 2013 (2013-06-06) * paragraphs [0003] - [0033]; figures 1-12 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			F25D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	28 October 2016	Kolev, Ivelin

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 17 6460

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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