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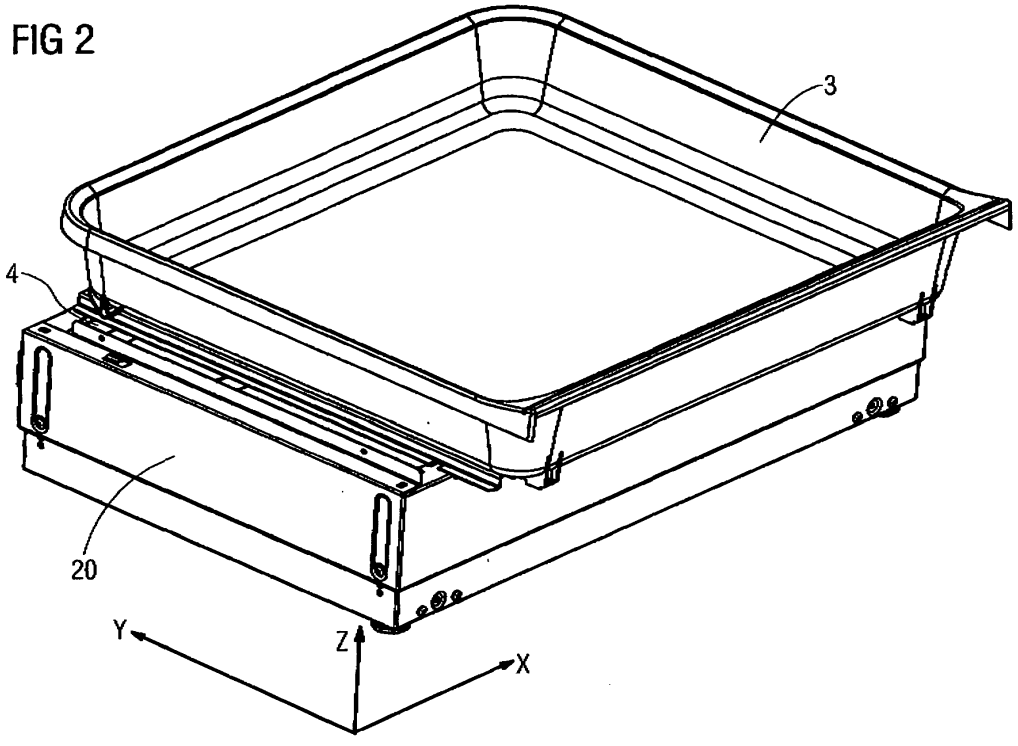
(54) Oven, especially domestic oven

(57) The invention relates to an oven (1), especially to a domestic oven, comprising a cavity (2), wherein at least one drawer (3) is arranged in the cavity (2), wherein the drawer (3) can be moved relatively to the cavity (2) in a horizontal slide direction (y), wherein at least two longitudinal extending rails (4) are arranged parallel to another in the cavity (2) and being oriented into the slide direction (y) and wherein the drawer (3) is arranged slidable on the rails (4). To obtain an economical solution for the slidable arrangement of the drawer the invention is characterized in that the drawer (3) has at least two sliding surfaces (5) at its bottom side (6), which sliding surfaces (5) are arranged for sliding on a top surface (7) of the rails (4), wherein the drawer (3) has at least two holding elements (8) at its bottom side (6) which holding elements (8) are arranged for sliding on a bottom surface (9) of the rails (4).

FIG 2



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Description

[0001] The invention relates to an oven, especially to a domestic oven, comprising a cavity, wherein at least one drawer is arranged in the cavity, wherein the drawer can be moved relatively to the cavity in a horizontal slide direction, wherein at least two longitudinal extending rails are arranged parallel to another in the cavity and being oriented into the slide direction and wherein the drawer is arranged slidable on the rails.

[0002] A domestic oven according to this kind is know from DE 100 54 954 B4. Here, a drawer which can be moved in a horizontal direction into and out of the cavity of the oven is arranged on guiding rails. The arrangement can be established as a sliding bearing, while the use of linear roller bearings is preferred. For obtaining a sufficient travel of the drawer in the horizontal direction a telescopic solution is proposed. Another similar design is disclosed in DE 198 47 727 C2, i. e. also here a telescopic arrangement is employed, wherein a sliding bearing is used for movement of the drawer.

[0003] Other solutions of a similar kind are shown in GB 2 047 076 A, in EP 0 406 703 A1 and in JP 1021 044 A. Here, for the movement of the drawer relatively to the cavity roller bearings are used.

[0004] The realization of the pre-known arrangements for supporting a drawer movable into and out of the cavity are thus quite costly.

[0005] Therefore, it is an object of the invention to propose a design of an oven according to the kind mentioned above which allows a reliable movement of the drawer into and out of the cavity into a slide direction which can be produced in a more economical way. The cost efficiency should apply both for the production of the necessary parts and the assembly of the oven.

[0006] The solution of this object is characterized in that the drawer has at least two sliding surfaces at its bottom side, which sliding surfaces are arranged for sliding on a top surface of the rails, wherein the drawer has at least two holding elements at its bottom side which holding elements are arranged for sliding on a bottom surface of the rails.

[0007] Preferably the rails have a cross section consisting of two lower flat bands extending in a horizontal plane and an upper flat band extending in a horizontal plane. The rails can have two flat connection bands extending in a vertical plane and connecting the upper flat band with the two lower flat bands. The bottom surface of the rail can be arranged at the bottom side of the upper flat band. The top surface of the rail can be arranged at the upper side of one of the lower flat bands.

[0008] The sliding surfaces of the drawer can be formed by at least two rib elements which are arranged at the bottom side of the drawer. The holding element can be formed by a L-shaped or T-shaped or Z-shaped rib part which is fixed at the bottom side of the drawer.

[0009] The holding element can be arranged at one end of the drawer seen in slide direction. The length of the holding element in slide direction is preferably below 15 % of the length of the drawer in slide direction. The rail can have a longitudinal extending slot, wherein a vertically extending part of the holding element (a rib part) of the drawer is penetrating the slot. The rail can have a cut out adjacent to one end of the slot with a bigger size than the size of the slot for receiving the holding element. The rail can have a chamfered transition zone between the cut out and the slot.

[0010] The rail can have a guiding element at one of its axial ends forming a guiding surface for the rib element. The rail can be made of a sheet metal part, wherein the guiding element is produced by deformation of a section of the sheet metal part.

[0011] The rail is preferably symmetrically to a plane being arranged vertically and extending in the slide direction.

[0012] The concept according to the invention thus proposes a cheaper drawer sliding system without wheels and shafts. It makes preferably use of symmetrically formed rails, which can be used on the left and right side under the drawer and therefore requires only one set of tools for manufacturing.

[0013] Thus, the invention supplies a relatively cheap guiding solution for low end products, which avoids wheels and shafts but which also provides a sufficient comfort in handling of the drawer.

[0014] The two rails are fastened to the plinth of the oven. The rails have the function to guide the drawer in a proper way on the full pull out distance of the drawer. The rail is designed as a fully symmetrical part in order to use it as left and right guidance for the drawer.

[0015] In the case that the drawer will be assembled to the rails, there is preferably a special cut out in the rail. This cut out is defined in width and length to be able to receive the holding element (e. g. with a L-rib) of the drawer at the left and right rail at the same time without creating problems (for example three tries for assembly). After receiving the holding element (e. g. the L-rib) by the cut out the drawer can be pushed inside the oven in slide direction. During this movement of the drawer the holding element (e. g. the L-rib) is guided by a chamfer of the rail. The holding element (e. g. the L-rib) is pushed slightly by the chamfer to the slot. This slot ensures the guidance of the drawer on the full pull out distance.

[0016] A rib element ensures a proper sliding over the whole distance and keeps the drawer also in horizontal position (slide direction). The rib element is guided by a guiding element (bridge element) at the rail. Both rib elements together (the rib part of the holding element and the rib element) are guarantying a good guiding system even if the drawer is

pulled out to the limit.

[0017] The tool costs for producing the rails are kept at a minimum due to the symmetric design of the rails.

[0018] In the drawings an embodiment of the invention is depicted.

Fig. 1	shows a schematic side view of a domestic oven,
Fig. 2	shows a plinth of the oven on which a drawer is arranged,
Fig. 3	shows a top plan view onto the plinth with the drawer,
Fig. 4	shows the section B-B according to Fig. 3,
Fig. 5	shows a perspective view onto the bottom side of the drawer,
Fig. 6	shows a perspective view of a rail on which the drawer is guided,
Fig. 7	shows an enlarged depiction of feature "A" according to Fig. 6 and
Fig. 8a Fig. 8b and Fig. 8c	show different embodiments of a holding element being arranged at the bottom side of the drawer.

[0019] In Fig. 1 a domestic oven 1 is shown schematically which has a cooking cavity 2. A drawer 3 on which food can be placed is arranged on two rails 4. The drawer 3 can be pulled out of the cavity in a slide direction y.

[0020] In Fig. 2 to Fig. 7 details of an embodiment of the invention is depicted.

[0021] Fig. 2 shows a plinth 20 which is arranged in the bottom region of the cavity 2. Two rails 4 are arranged in the side region of the plinth 20; the drawer 3 can slide on the rails 4 to be moved forth and back in the slide direction y.

[0022] In the synopsis of Fig. 3 to Fig. 7 is can be seen that each rail 4 is symmetrically to a plane which is arranged vertically and contains the slide direction y.

[0023] In the bottom side 6 of the drawer 3 - see Fig. 5 - two sliding surfaces 5 are arranged which are running parallel to another in the side regions of the drawer 3. The sliding surfaces 5 are formed by rib elements 15 which are located in the bottom of the drawer 3. Holding elements 8 are arranged at one end of the rib elements 15. The holding elements 8 have a cross section - seen in slide direction y - as schematically shown for three examples in Fig. 8a, 8b and 8c, see below.

[0024] Each rail 4 is formed from a sheet metal strip by deforming. It has two lower flat bands 10 and 11 extending in slide direction y as well as an upper flat band 12. The upper flat band 12 is connected with the lower flat bands 10 and 11 by flat connection bands 13 and 14 (see Fig. 7). A top surface 7 is formed on one of the lower flat bands which is contacted by the sliding surface 5 of the rib elements 15 of the drawer 3.

[0025] Furthermore, a bottom surface 9 is formed by the bottom side of the upper flat band 12 (see Fig. 7). The upper flat band 12 has a slot 16 which extends along most of the extension of the rail 4.

[0026] As can be seen from Fig. 8a, 8b and 8c the holding element 8 extends along a certain extension vertically downward from the drawer 3. Thus, the holding element 8 penetrates the slot 16 downwards. Under the upper flat band 12 the bottom surface 9 is established. A part of the holding element 8 finds here a sliding counter face due to the circumstance that the holding element has e. g. a T-shaped form (see Fig. 8a) or a L-shaped form (see Fig. 8b) or a Z-shaped form (see Fig. 8c).

[0027] To mount the drawer 3 into the rails 4 the holding elements 8 are fed through a cut out 17 in the rail 4. When pushing the drawer 3 in slide direction y a chamfered transition zone 18 makes sure that the holding elements 8 are easily fed into the slot 16.

[0028] For a good guidance a bridge-like guiding element 19 is formed at one end of the rail 4. This element is formed from the material of the rail 4 by deforming.

[0029] By the proposed design a cheap arrangement is created which comes up with a sufficient guiding comfort and a prevention of tiling of the drawer 3 when pulling it out of the cavity.

Reference Numerals

[0030]

1 Oven (domestic oven)

2 Cavity

3 Drawer

4 Rail

5 Sliding surface

6 Bottom side

7 Top surface

8 Holding element

9 Bottom surface

10 Lower flat band

11 Lower flat band

12 Upper flat band

13 Flat connection band

14 Flat connection band

15 Rib element

16 Slot

17 Cut out

18 Chamfered transition zone

19 Guiding element

20 Plinth

y Slide direction

Claims

1. Oven (1), especially domestic oven, comprising a cavity (2), wherein at least one drawer (3) is arranged in the cavity (2), wherein the drawer (3) can be moved relatively to the cavity (2) in a horizontal slide direction (y), wherein at least two longitudinal extending rails (4) are arranged parallel to another in the cavity (2) and being oriented into the slide direction (y) and wherein the drawer (3) is arranged slidable on the rails (4),
characterized in that
the drawer (3) has at least two sliding surfaces (5) at its bottom side (6), which sliding surfaces (5) are arranged for sliding on a top surface (7) of the rails (4), wherein the drawer (3) has at least two holding elements (8) at its bottom side (6) which holding elements (8) are arranged for sliding on a bottom surface (9) of the rails (4).

2. Oven according to claim 1, **characterized in that** the rails (4) have a cross section consisting of two lower flat bands (10, 11) extending in a horizontal plane and an upper flat band (12) extending in a horizontal plane.

3. Oven according to claim 2, **characterized in that** the rails (4) have two flat connection bands (13, 14) extending in a vertical plane and connecting the upper flat band (12) with the two lower flat bands (10, 11).

4. Oven according to claim 2 or 3, **characterized in that** the bottom surface (9) of the rail (4) is arranged at the bottom side of the upper flat band (12).

5. Oven according to one of claims 2 to 4, **characterized in that** the top surface (7) of the rail (4) is arranged at the upper side of one of the lower flat bands (10, 11).

6. Oven according to one of claims 1 to 5, **characterized in that** the sliding surfaces (5) of the drawer (3) are formed by at least two rib elements (15) which are arranged at the bottom side (6) of the drawer (2).

7. Oven according to one of claims 1 to 6, **characterized in that** the holding element (8) is formed by a L-shaped or T-shaped or Z-shaped rib part which is fixed at the bottom side of the drawer (3).

8. Oven according to one of claims 1 to 7, **characterized in that** the holding element (8) is arranged at one end of the drawer (3) seen in slide direction (y).

9. Oven according to claim 8, **characterized in that** the length of the holding element (8) in slide direction (y) is below 15 of the length of the drawer (3) in slide direction (y).

10. Oven according to one of claims 7 to 9, **characterized in that** the rail (4) has a longitudinal extending slot (16), wherein a vertically extending part of the holding element (8) of the drawer (3) is penetrating the slot (16).

11. Oven according to claim 10, **characterized in that** the rail (4) has a cut out (17) adjacent to one end of the slot (16) with a bigger size than the size of the slot (16) for receiving the holding element (8).

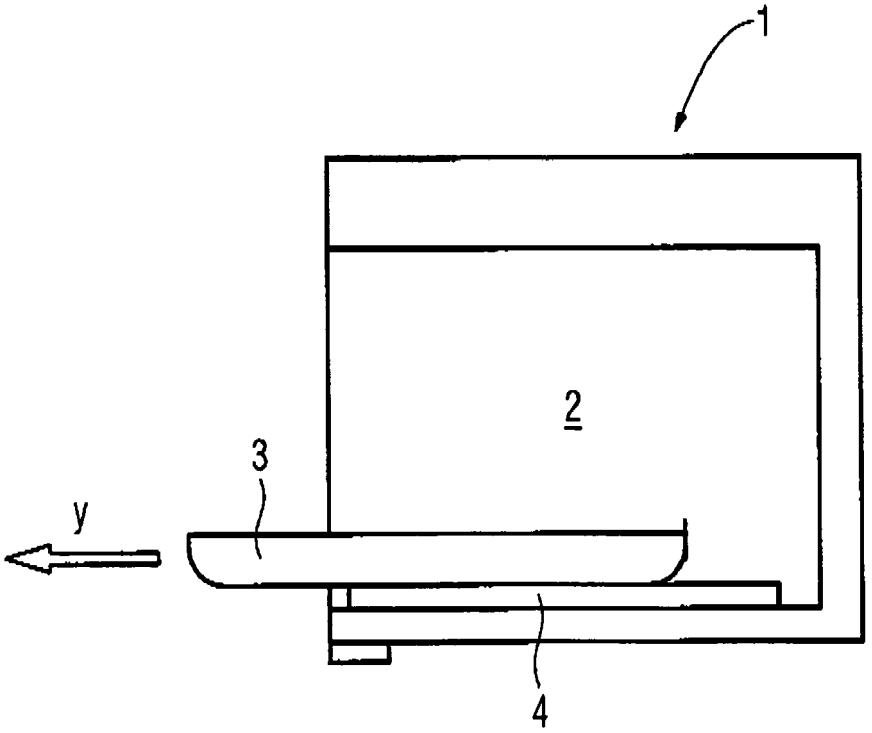
12. Oven according to claim 11, **characterized in that** the rail (4) has a chamfered transition zone (18) between the cut out (17) and the slot (16).

13. Oven according to one of claims 6 to 12, **characterized in that** the rail (4) has a guiding element (19) at one of its axial ends forming a guiding surface for the rib element (15).

14. Oven according to claim 13, **characterized in that** the rail (4) is made of a sheet metal part, wherein the guiding element (19) is produced by deformation of a section of the sheet metal part.

15. Oven according to one of claims 1 to 14, **characterized in that** the rail (4) is symmetrically to a plane being arranged vertically and extending in the slide direction (y).

FIG 1



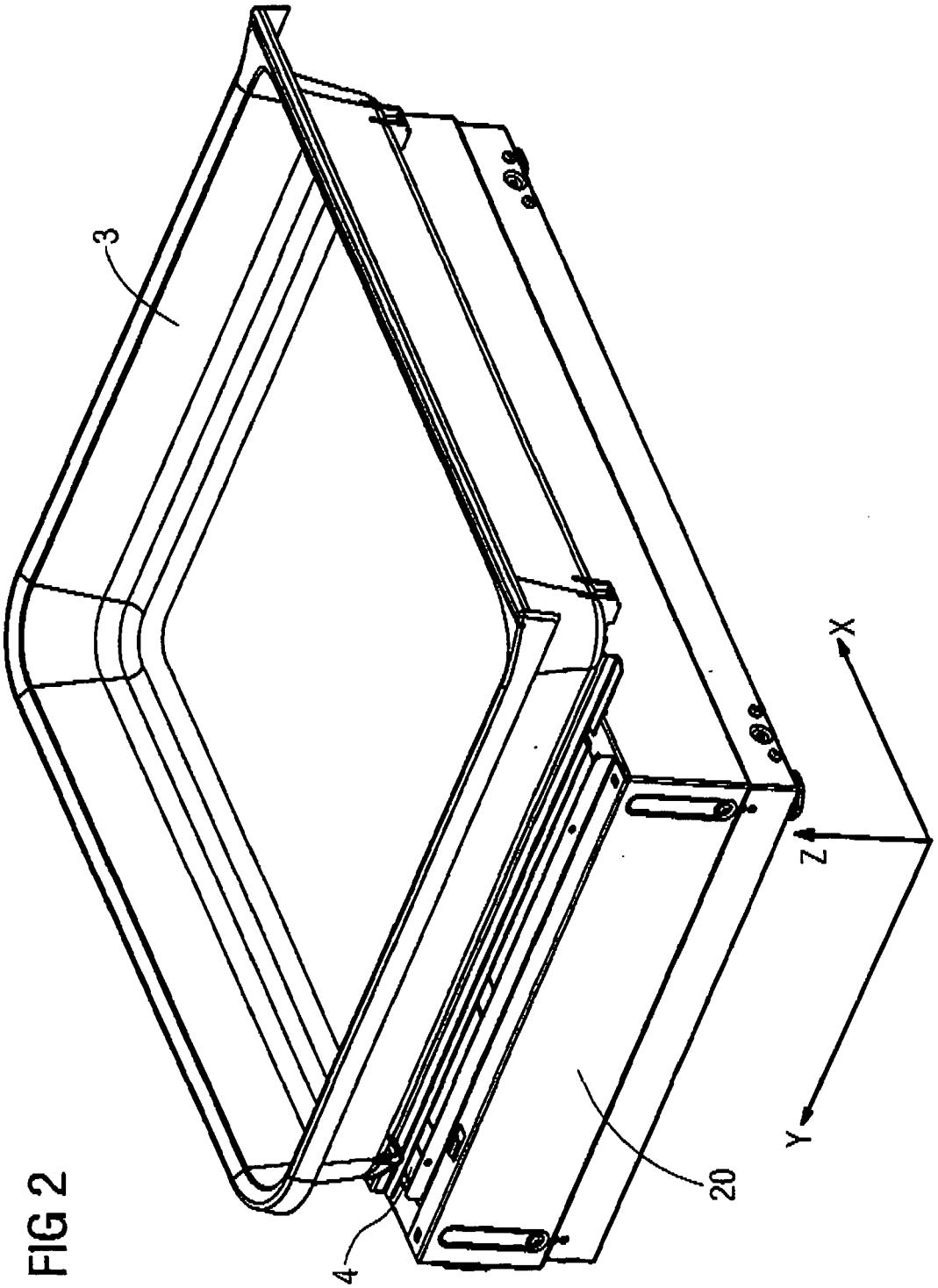


FIG 2

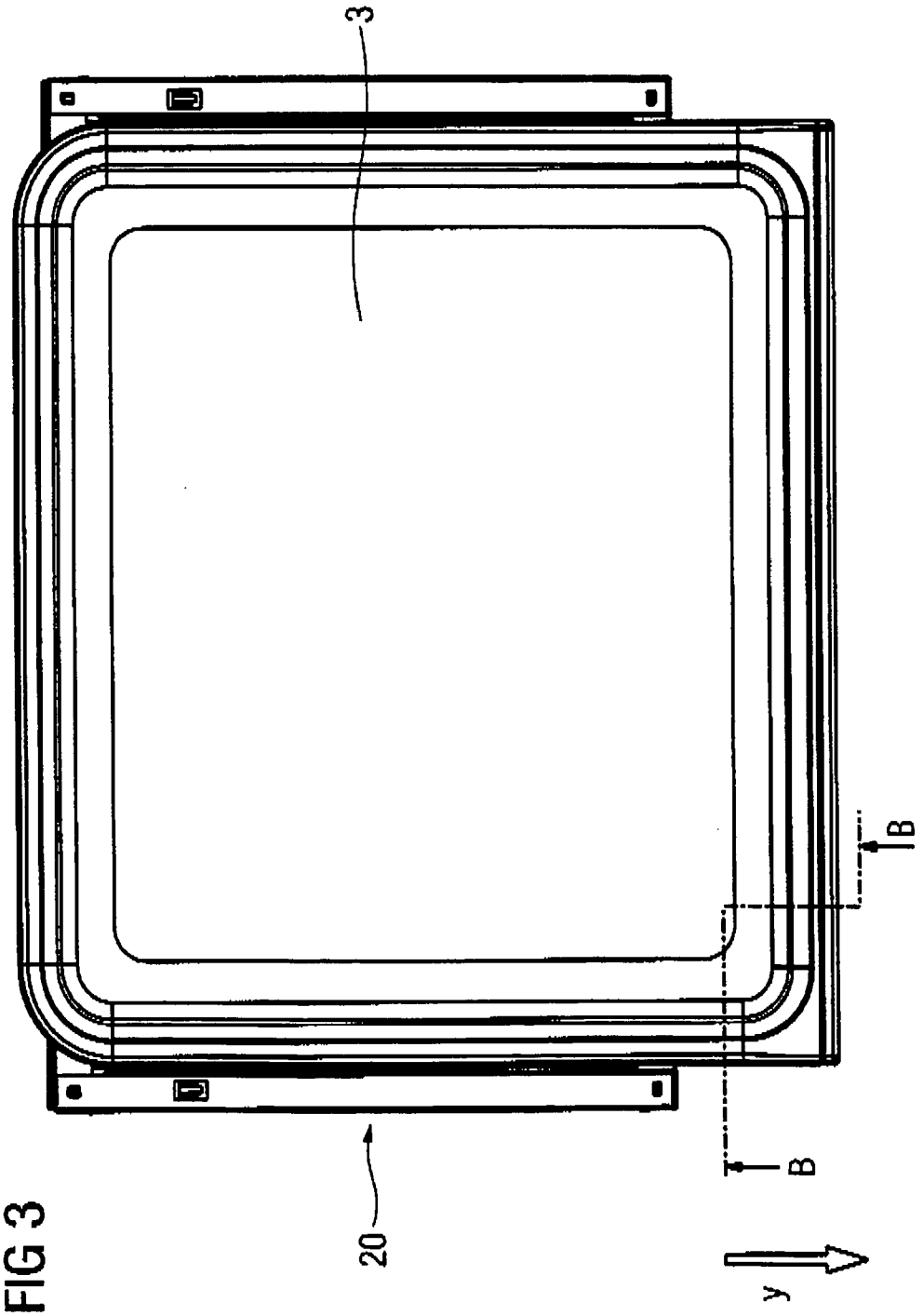
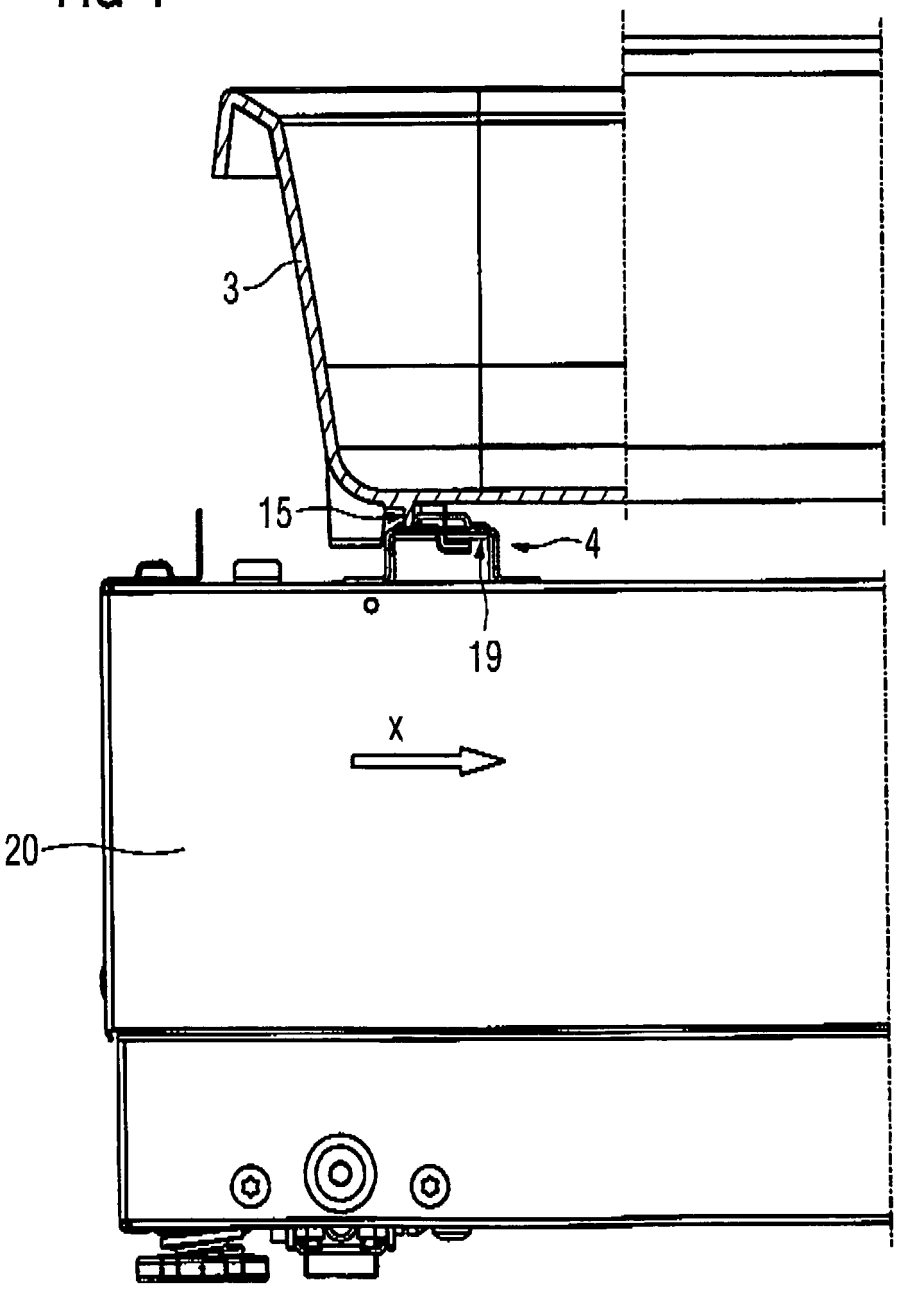


FIG 3

FIG 4



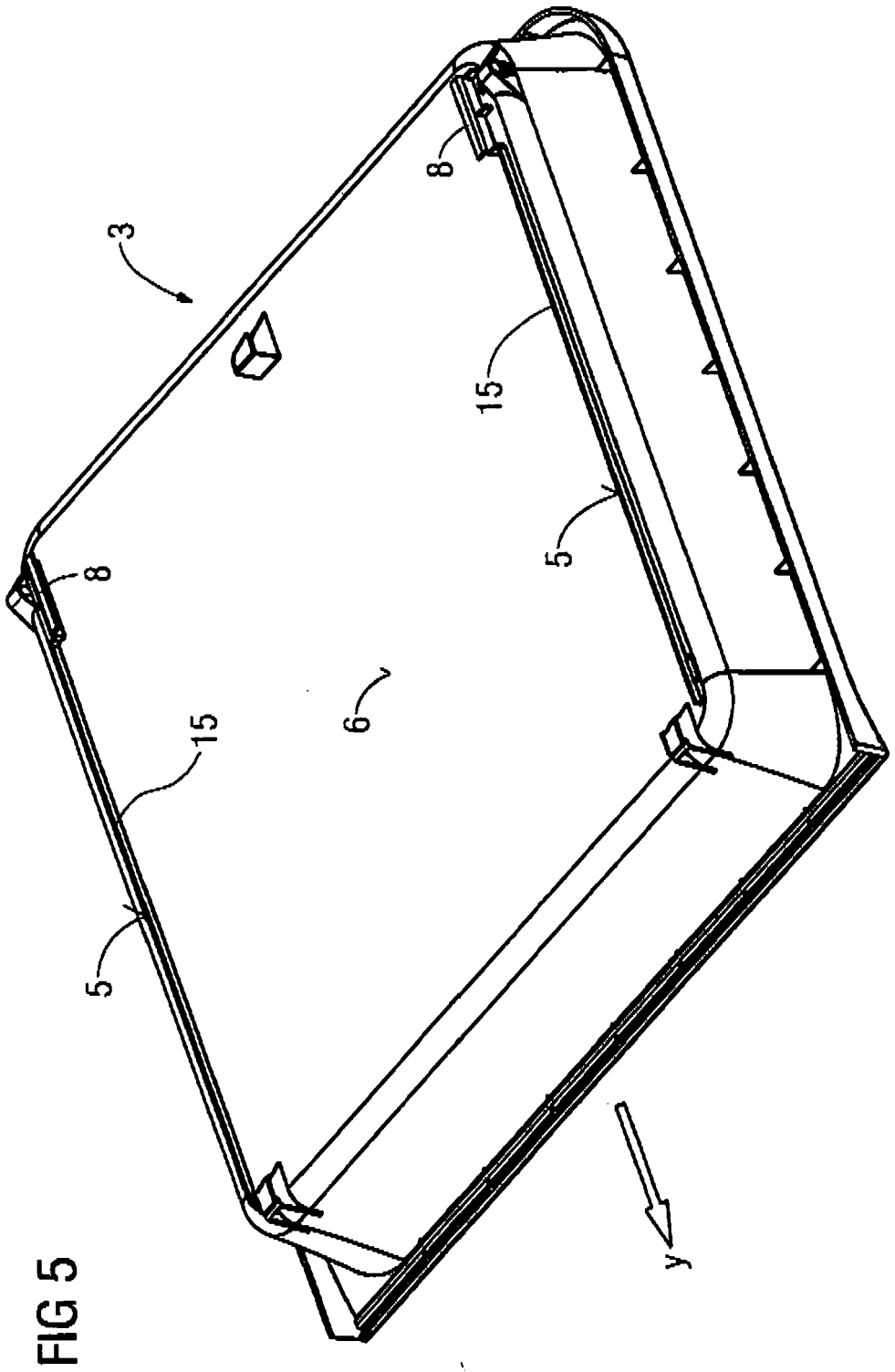


FIG 5

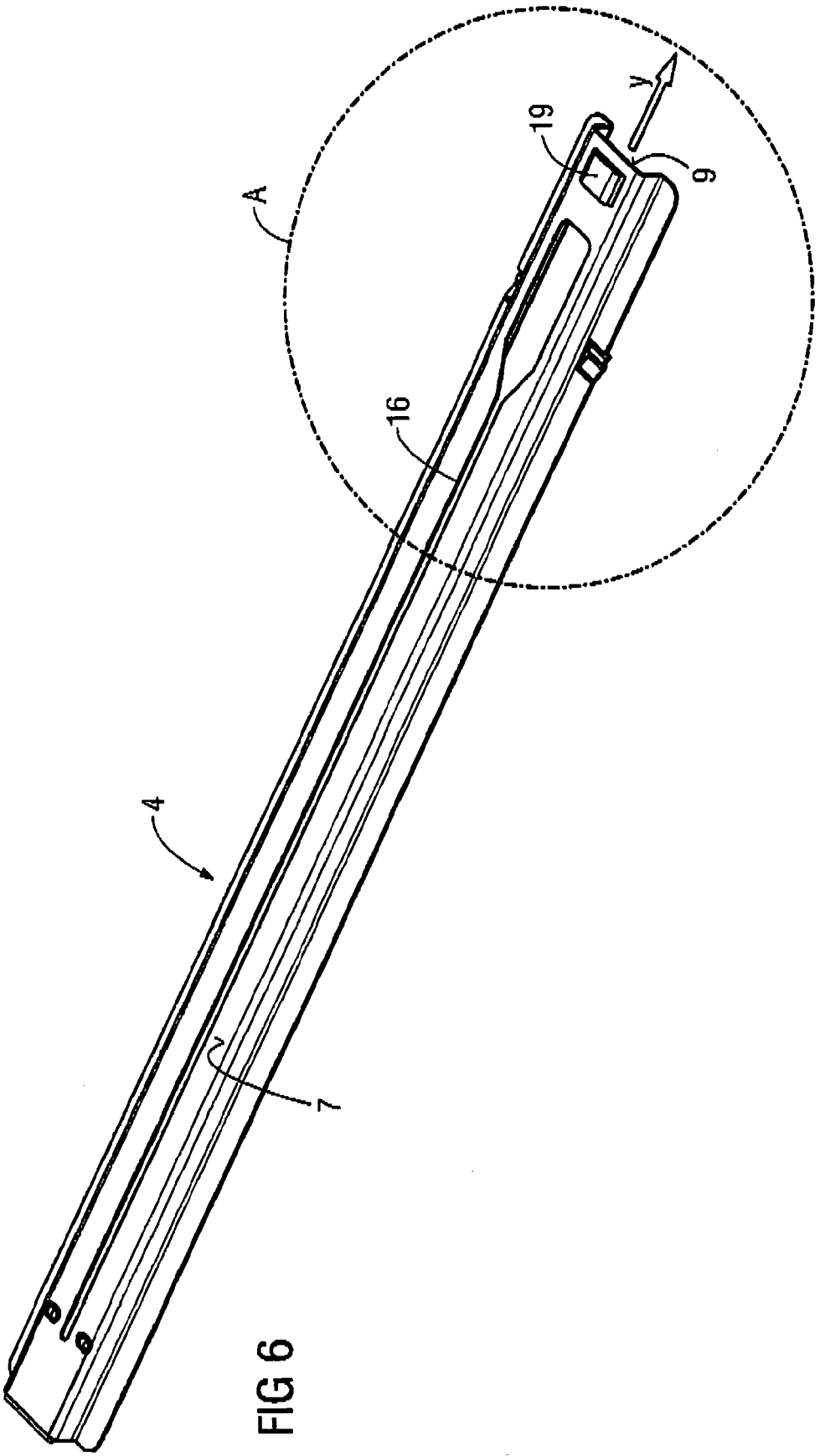


FIG 6

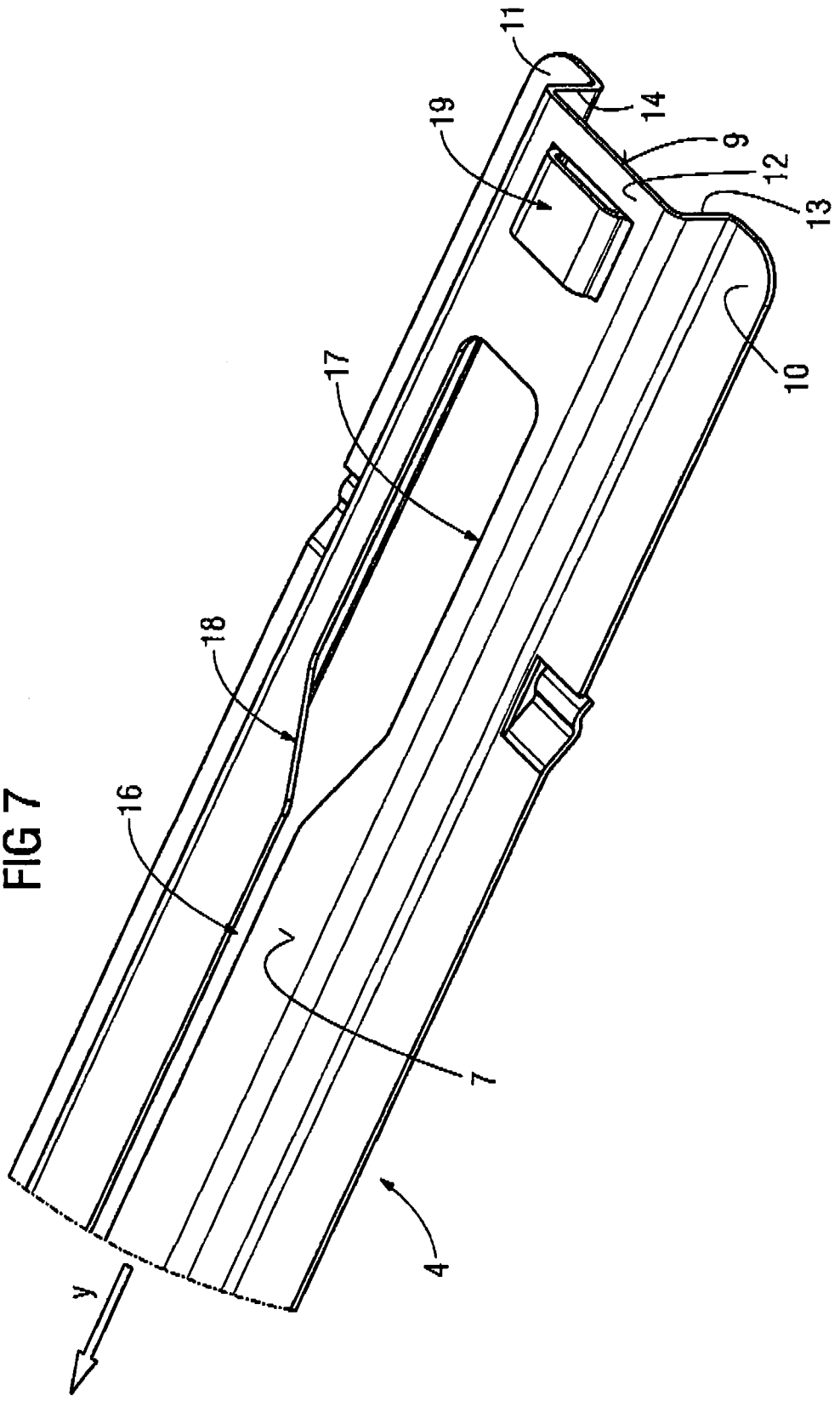


FIG 7

FIG 8a

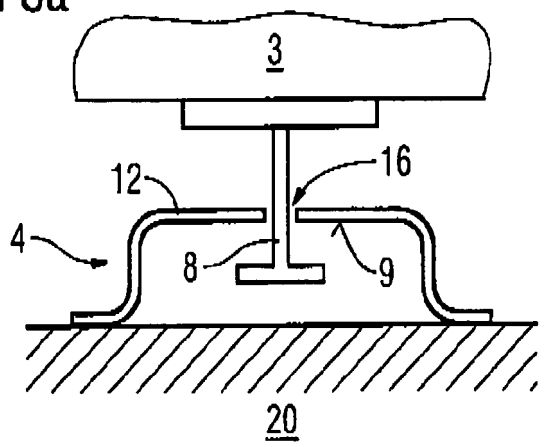


FIG 8b

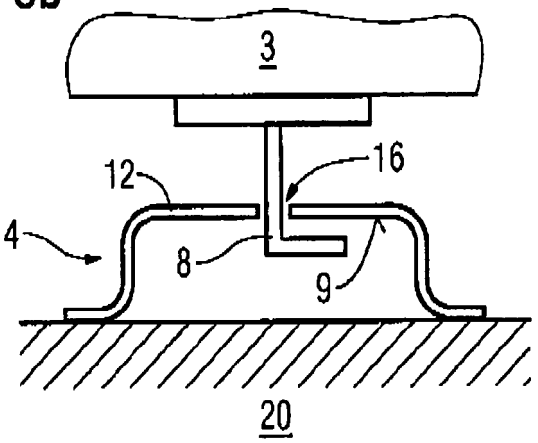
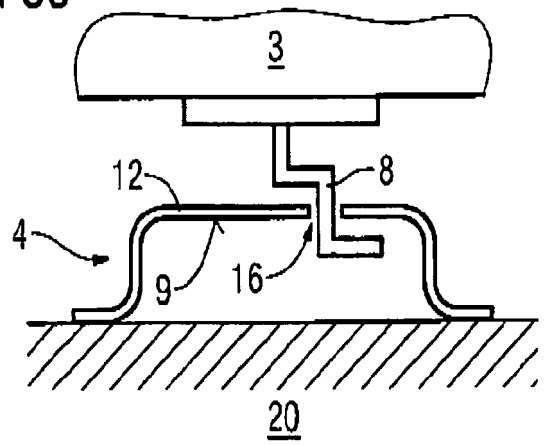


FIG 8c



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EUROPEAN SEARCH REPORT

Application Number
EP 11 00 2629

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	DE 24 22 633 A1 (KEFI VERWERTUNGS AG) 20 November 1975 (1975-11-20)	1-5,7,9	INV. F24C15/16
Y	* figures 1,3 *	8,15	

Y	US 2 597 684 A (STRINGE JACK W) 20 May 1952 (1952-05-20) * figures 1,2 *	8,15	

TECHNICAL FIELDS SEARCHED (IPC)

F24C
A47B
F25D
B25H
H05K
F16C
B60N

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 September 2011	Adant, Vincent

CATEGORY OF CITED DOCUMENTS

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1

EPO FORM 1503 03.82 (P04C01)

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 2422633 A1	20-11-1975	NONE	
US 2597684 A	20-05-1952	NONE	

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