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(54) HORIZONTAL REFRIGERATED SHOWCASE WITH ENHANCED PRODUCT DISPLAY

(57) The invention relates to a horizontal refrigerated showcase, comprising:
- a base wall (**B**),
- four transparent lateral walls,
- an opening/closing system of the showcase, arranged opposed in respect to the base wall (**B**),
wherein the opening/closing system comprises a plurality of transparent panes (**G1**, **G2**),
- each pane (**G1, G2**) resting on two of its opposed sides, along the entire length of said sides, on a respective sliding path (**C12, C23**),
- each pane (**G1, G2**) being capable to move in its own plane, on the respective sliding paths, in a direction (X) that is the same with the direction of the sides resting on the sliding paths (**C12, C23**),
- wherein the sliding paths (**C12, C23**) are attached respectively to two opposed lateral walls of the showcase, walls that are parallel to the panes (**G1**, **G2**) moving direction (**X**),

- each transparent lateral wall corresponding to the sliding paths (**C12**, **C23**) consists of transparent parallel panels (**P1**, **P2**, **P3**) having ascending heights starting with the innermost panel (**P1**) and ending with the outermost panel (**P3**),
- the transparent panels (**P1**, **P2**, **P3**) being kept appart from each other by means of transparent spacers (**D12**, **D23**) arranged such that the upper surface of each spacer (**D12**, **D23**) serves as a sliding path (**C12**, **C23**) for a respective pane (**G1**, **G2**).

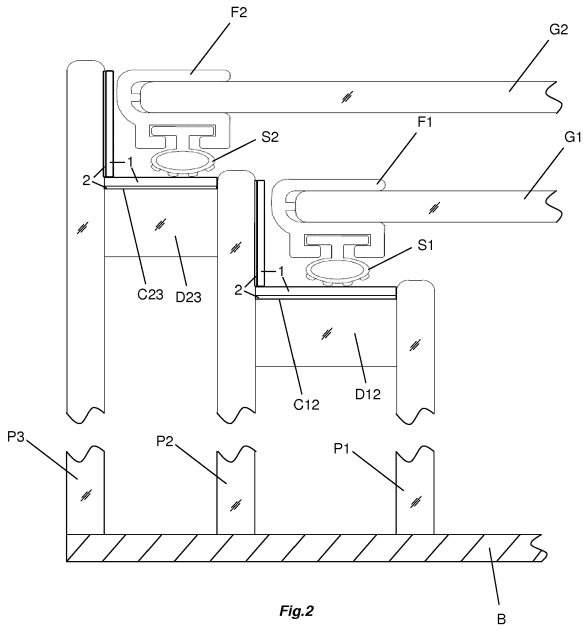

Fig.2

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Description

[0001] The invention relates to a horizontal refrigerated showcase where the products within said showcase are advantageously displayed, the visibility of said products being maximal.

[0002] Horizontal refrigerated showcases (that are, in essence, containers provided with an opening/closing system, as well as with a system for refrigerating the interior of the container) are used in commerce for the storage and the display of perishable products available for sale. Clients passing by the showcase look at the displayed products and can reach them by means of the opening/closing system, in order to pick the preferred products that they wish to buy.

[0003] Besides products quality, of utmost importance is the degree of visibility of the products within the showcase, which has a positive impact on the buying process impetus.

[0004] The market demand is for refrigerated showcases offering as much exposure as possible for the products displayed within the showcase.

[0005] Prior art comprises horizontal refrigerated showcases approaching this problem by providing the refrigerated showcase with transparent lateral walls as well as with an opening/closing system made of a transparent material.

[0006] The disadvantage of prior art showcases is that some components (namely the sliding paths for the cover, the frames of the panes, and the sliding seals) are opaque, reason why a client, looking from certain distances and from certain unfavourable angles, has a part of the showcase content obturated by said opaque components.

[0007] Another disadvantage of prior art showcases is that they have a relatively complicated structure, wherein said sliding paths are separate components attached to the showcase walls.

[0008] A prior art horizontal refrigerated showcase embodiment is schematically shown, in a simplified manner, in Figure 1. By simplified manner is meant that the showcase is not shown entirely, but only a detail, in cross sectional view, of an upper zone neighbouring the sliding paths.

[0009] The prior art refrigerated showcase has a substantial parallelepipedic shape, meaning that it has a base, four lateral walls substantially perpendicular to the base and an opening/closing system arranged at the top.

[0010] Each lateral wall consists of two transparent parallel panels **P1**, **P2** of the same height and kept apart from each other by means of at least one spacer **D**.

[0011] Between two opposed lateral walls, two transparent panes **G1**, **G2** are arranged in parallel planes, with the possibility to slide on sliding paths **C12**, **C23** that are fixed along each of said two opposed lateral walls. The sliding of the panes **G1**, **G2** on the sliding paths **C12**, **C23** is made by means of sliding seals **S1**, **S2** that are fixed to frames **F1**, **F2**.

[0012] The sliding paths **C12**, **C23**, the spacer **D**, the frames **F1**, **F2** and the sliding seals **S1**, **S2** are made of non-transparent materials, fact that is a disadvantage because an observer/client looking at the showcase from the direction marked with arrow A, will have the image of the products within the showcase blocked by the aforementioned non-transparent parts, such that a zone within the showcase (and implicitly some of the displayed products) will remain concealed from the sight of the observer/client.

[0013] The present invention aims to eliminate the afore-mentioned disadvantage, by providing a horizontal refrigerated showcase comprising:

- a base wall;
- four transparent lateral walls, each fixed substantially perpendicular to the base wall, such that the showcase has a substantially parallelepipedic shape;
- an opening/closing system of the showcase, arranged opposed in respect to the base wall,
  wherein the opening/closing system comprises a plurality of transparent panes, arranged in parallel planes, each pane having a substantially rectangular shape,
  - each pane resting on two of its opposed sides, alog the entire length of said sides, on a respective sliding path,
  - each pane being capable to move in its own plane, on the respective sliding paths, in a direction that is the same with the direction of the sides resting on the sliding paths,
  - wherein the sliding paths are attached respectively to two opposed lateral walls of the showcase, walls that are parallel to the panes moving direction,
- each transparent lateral wall corresponding to the sliding paths consists of transparent parallel panels having ascending heights starting with the innermost panel and ending with the outermost panel,
- the transparent panels being kept appart from each other by means of transparent spacers arranged such that the upper surface of each spacer serves as a sliding path for a respective pane.

[0014] In a preferred embodiment, each pane may rest on the associated sliding paths by means of transparent frames fixed to the entire length of the sides of the pane that are parallel to the moving direction.

[0015] In a preferred embodiment, each pane may rest on the associated sliding paths by means of transparent or semi-transparent sliding seals fixed to the entire length of the sides of the pane that are parallel to the moving direction.

[0016] In a preferred embodiment, each pane may rest on the associated sliding paths by means of transparent or semi-transparent sliding seals fixed to associated

transparent frames fixed to the entire length of the sides of the pane that are parallel to the moving direction.

[0017] In a preferred embodiment, each spacer may be made of a wear-resistent transparent material.

[0018] In a preferred embodiment, the upper surface of each spacer may be coated with a wear-resistent transparent material by means of a transparet adhesive.

[0019] In a preferred embodiment, the surface portion of a panel that surpasses in height the precedent panel and that is oriented towards the associated pane, may be coated with a layer of wear-resistent transparent material by means of a transparent adhesive.

[0020] Any of the above mentioned preferred embodiments have the advantage that from whatever direction an observer/client is looking, absolutely all the interior of the showcase remains visible.

[0021] Another advantage of the invention is that said sliding paths are an integral part of the associated lateral walls of the showcase, fact that simplifies the showcase manufacturing process. Unlike the invention, in the case of prior art showcase from Figure 1, the sliding paths are a separate part attached to the associated wall of the showcase.

[0022] The invention will be better understood from the following embodiments, explained in detail and based on the figures, that represent:

Figure 1 : detail, in section view, of an upper zone of a prior art refrigerated showcase;
Figure 2: details, in section view, of an upper zone and of a lower zone of a refrigerated showcase according to the invention;
Figure 3 : detail of the upper zone of Figure 2, in axonometric view.

[0023] Figure 1 was previously explained in the chapter of prior art presentation.

[0024] An embodiment according to the invention is shown in Figures 2 and 3, comprising:

- a base wall **B**;
- one of the four transparent latelal walls of the showcase; although not shown in Figures 2 and 3, all four transparent lateral walls are fixed substantially perpendicular to the base wall **B**, such that the showcase has a substantially parallelepipedic shape;
- an opening/closing system of the showcase, arranged opposed in respect to the base wall **B**, wherein the opening/closing system comprises two transparent panes **G1**, **G2** arranged in parallel planes, each pane **G1**, **G2**, having a substantially rectangular shape,
  - each pane **G1**, **G2** having two opposed sides on which are fixed, along the entire length of said sides, a respective transparent frame **F1**, **F2**; to each transparent frame **F1**, **F2** is mounted a respective transparent sliding seal **S1**, **S2** respectively in contact with an associated sliding path **C12**, **C23**,
  - each pane **G1**, **G2** being capable to move in its own plane, on the respective sliding paths **C12**, **C23**, in a direction **X** that is the same with the direction of the sides of the panes **G1**, **G2** that are provided with frames and sliding seals,
  - wherein the sliding paths **C12**, **C23** are attached to two opposed lateral walls respectively, walls that are parallel to the moving direction **X**,

- each transparent lateral wall corresponding to the sliding paths **C12**, **C23** consists of three transparent parallel panels **P1**, **P2**, **P3** having ascending heights starting with the innermost panel **P1** and ending with the outermost panel **P3**,
- the transparent panels **P1**, **P2**, **P3** being kept appart from each another by means of transparent spacers **D12, D23** arranged such that the upper surface of each spacer **D12, D23** serves as a sliding path **C12, C23** for a respective pane **G1**, **G2**.

[0025] For clarity reasons (to avoid the excessive loading of the drawing), in Figure 3 are present only some of the references of Figure 2.

[0026] Another advantage of the showcase according to the invention is that the cooling of the showcase is more efficient due to the thermal barriers consisting of the air-filled gaps between the panels **P1**, **P2**, **P3** of the lateral walls.

[0027] The embodiment of Figures 2 and 3 is not a limiting one, i.e. the refrigerated showcase according to the invention may have lateral walls comprising a different number of transparent panels and the opening/closing system may have a different number of transparent panes.

[0028] In addition, the shapes of the sliding seals and of the frames are non-limiting, said parts may have any other shape that is suitable to alow them to perform their function.

[0029] According to Figure 2, the upper surface of each spacer **D12**, **D23** is coated with a layewr of wear-resistent transparent material **1** by means of a transparent adhesive **2**.

[0030] The surface portion of a panel **P2**, **P3** that surpasses in height the precedent panel **P1**, **P2** and that is oriented towards the associated pane **G1**, **G2**, is coated with a layer of wear-resistent transparent material **1** by means of a transparent adhesive **2**. Non-limiting examples of wear-resistent transparent materials **1** may be: PVC, PC, PMMA, ABS, PBT, TPU, etc.

[0031] Non-limiting examples of transparent adhesives **2** may be: adhesive strip, monocomponent or bicoponent silicone, etc.

[0032] Starting from the embodiment of Figure 2, one can obtain other embodiments of the invention, such as in the following examples i - iii, in which:

i) the sliding seals **S1**, **S2** are missing, and each pane **G1**, **G2** is resting on the associated sliding paths **C12**, **C23** by means of the transparent frames **F1**, **F2** (that will have a suitable geometry, different from that of Figure 2);

ii) the transparent frames **F1**, **F2** are missing, and each pane **G1**, **G2** is resting on the associated sliding paths **C12**, **C23** by means of the transparent sliding seals **S1**, **S2** (that will have a suitable geometry, different from that of Figure 2) fixed directly on the panes **G1**, **G2**;

iii) the sliding seals **S1**, **S2** as well as the transparent frames **F1**, **F2** are missing, and the panes **G1**, **G2** are sliding directly on the sliding paths **C12**, **C23** (that will have a suitable geometry, different from that of Figure 2).

[0033] In any of the embodiments i, ii, iii or that from Figure 2, the layer of wear-resistent transparent material **1** together with the adhesive **2** may be missing, case in which each spacer **D12**, **D23** is made of a wear-resistent transparent material and the upper surface of each spacer **D12**, **D23** serves as an associated sliding path **C12**, **C23**.

Claims

1. Horizontal refrigerated showcase, comprising:

- a base wall (**B**);
- four transparent lateral walls, each fixed substantially perpendicular to the base wall (**B**), such that the showcase has a substantially parallelepipedic shape;
- an opening/closing system of the showcase, arranged opposed in respect to the base wall (**B**),

wherein the opening/closing system comprises a plurality of transparent panes (**G1**, **G2**) arranged in parallel planes, each pane (**G1**, **G2**) having a substantially rectangular shape,

- each pane (**G1**, **G2**) resting on two of its opposed sides, along the entire length of said sides, on a respective sliding path (**C12**, **C23**),
- each pane (**G1**, **G2**) being capable to move in its own plane, on the respective sliding paths, in a direction (**X**) that is the same with the direction of the sides resting on the sliding paths (**C12**, **C23**),
- wherein the sliding paths (**C12**, **C23**) are attached respectively to two opposed lateral walls of the showcase, walls that are parallel to the panes (**G1**, **G2**) moving direction (**X**),

characterized in that

- each transparent lateral wall corresponding to the sliding paths (**C12**, **C23**) consists of transparent parallel panels (**P1**, **P2**, **P3**) having ascending heights starting with the innermost panel (**P1**) and ending with the outermost panel (**P3**),
- the transparent panels (**P1**, **P2**, **P3**) being kept appart from each other by means of transparent spacers (**D12**, **D23**) arranged such that the upper surface of each spacer (**D12**, **D23**) serves as a sliding path (**C12**, **C23**) for a respective pane (**G1**, **G2**).

2. Refrigerated showcase according to claim 1, **characterized in that** each pane (**G1**, **G2**) rests on the associated sliding paths (**C12**, **C23**) by means of transparent frames (**F1**, **F2**) fixed along the entire length of the sides of the pane that are parallel to the moving direction (**X**).

3. Refrigerated showcase according to claim 1, **characterized in that** each pane (**G1**, **G2**) rests on the associated sliding paths (**C12**, **C23**) by means of transparent or semi-transparent sliding seals (**S1**, **S2**) fixed along the entire length of the sides of the pane that are parallel to the moving direction (**X**).

4. Refrigerated showcase according to claim 1, **characterized in that** each pane (**G1**, **G2**) rests on the associated sliding paths (**C12**, **C23**) by means of transparent or semi-transparent sliding seals (**S1**, **S2**) fixed to associated transparent frames (**F1**, **F2**) fixed along the entire length of the sides of the pane that are parallel to the moving direction (**X**).

5. Refrigerated showcase according to any of the claims 1-4, **characterized in that** each spacer (**D12**, **D23**) is made of a wear-resistent transparent material (**1**).

6. Refrigerated showcase according to any of the claims 1-4, **characterized in that** the upper surface of each spacer (**D12**, **D23**) is coated with a layer of wear-resistent transparent material (**1**) by means of a transparent adhesive (**2**).

7. Refrigerated showcase according to any of the claims 1-6, **characterized in that** the surface portion of a panel (**P2**, **P3**) that surpasses in height the precedent panel (**P1**, **P2**) and that is oriented towards the associated pane (**G1**, **G2**), is coated with a layer of wear-resistent transparent material (**1**) by means of a transparent adhesive (**2**).

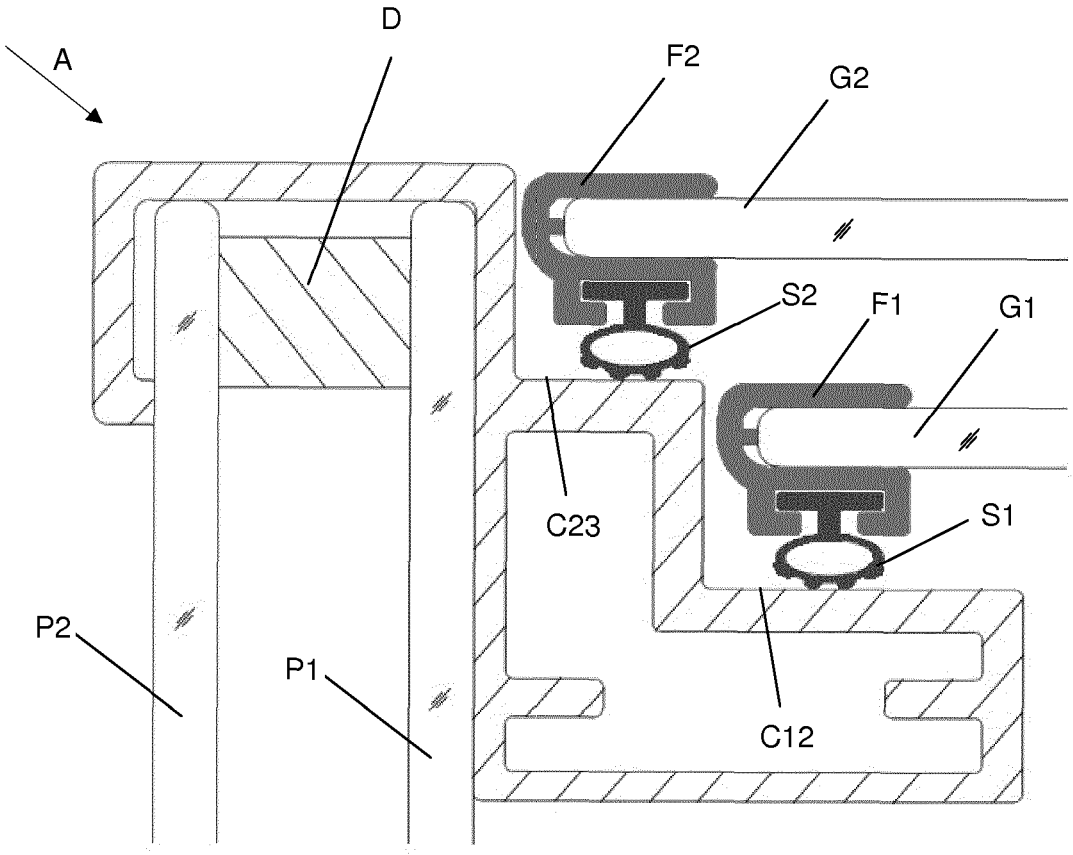

Fig.1 – prior art

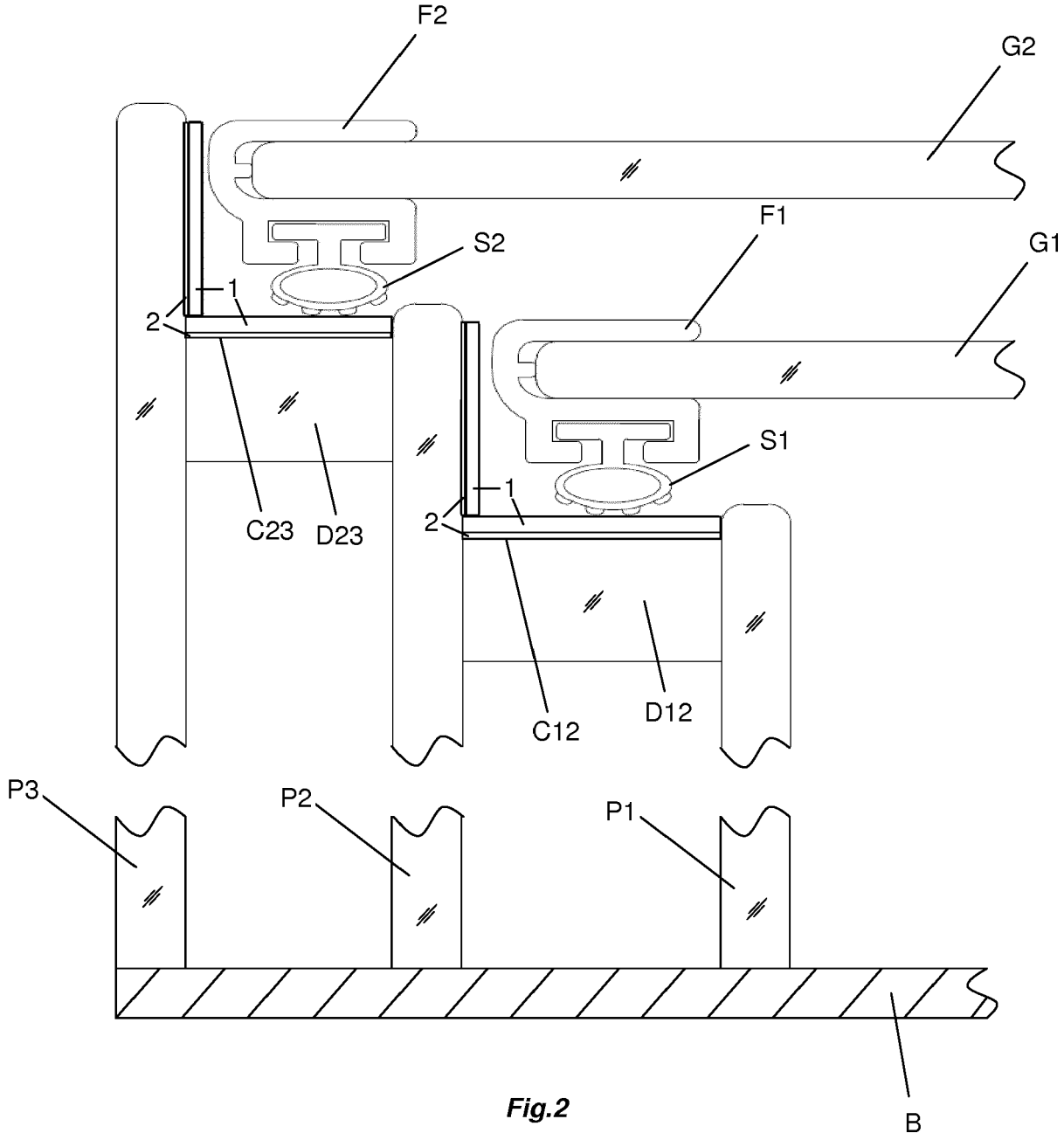

Fig.2

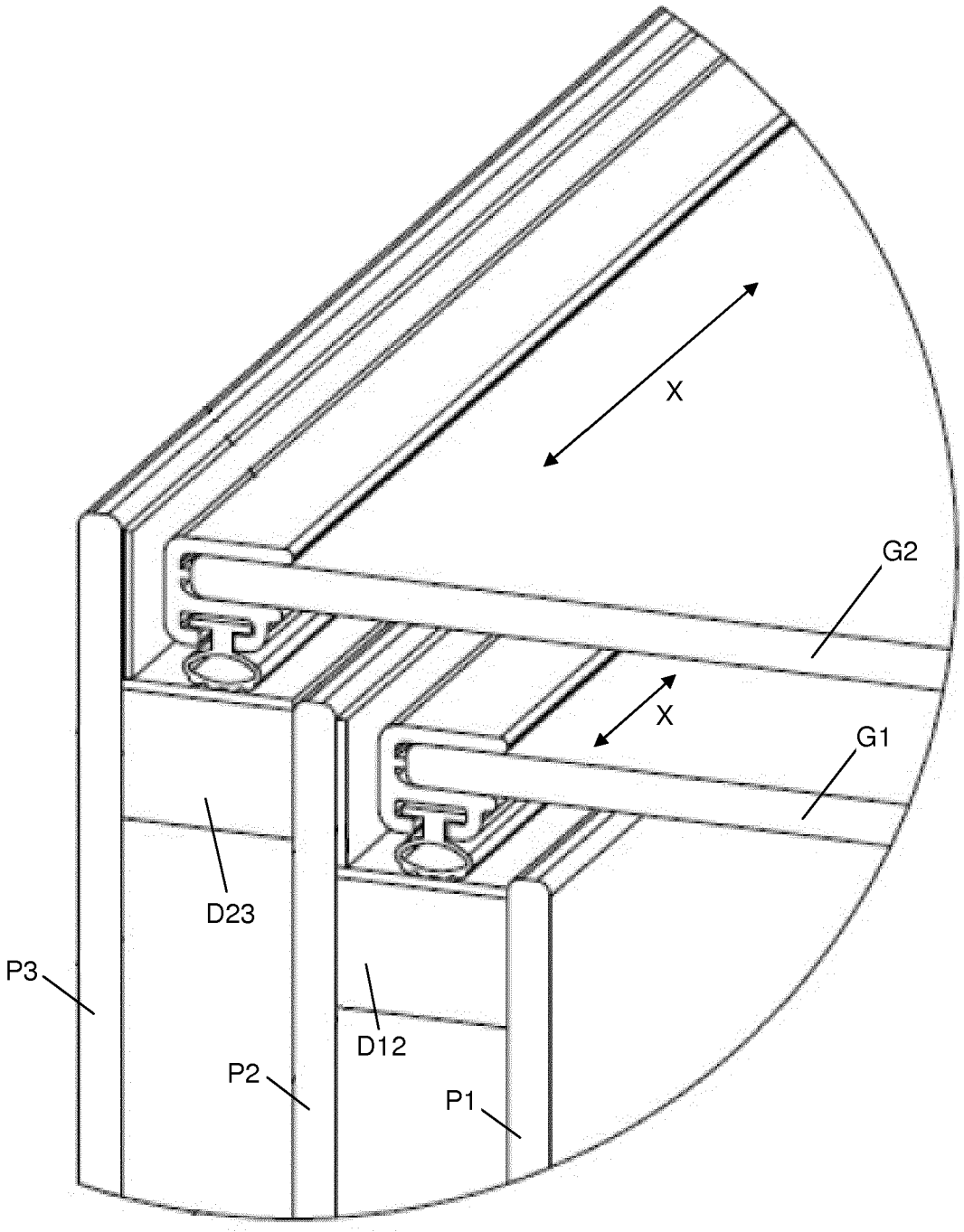

Fig.3

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EUROPEAN SEARCH REPORT

Application Number
EP 19 46 4007

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 202 03 716 U1 (GEBHARDT ANNA MARGARETHA [DE]; GEBHARDT TOBIAS [DE]) 25 July 2002 (2002-07-25) * page 1, line 1 - page 4, line 17; figures 1,2 *	1-7	INV. F25D23/02 A47F3/04
A	DE 20 2012 101699 U1 (AHT COOLING SYSTEMS GMBH [AT]) 29 June 2012 (2012-06-29) * the whole document *	1-7	

TECHNICAL FIELDS SEARCHED (IPC)

F25D
A47F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	29 August 2019	Kohler, Pierre

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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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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29-08-2019

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