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(54) **HORIZONTAL REFRIGERATED SHOWCASE WITH ENHANCED PRODUCT DISPLAY**
HORIZONTALE KÜHLVITRINE MIT VERBESSERTER PRODUKTPRÄSENTATION
VITRINE RÉFRIGÉRÉE HORIZONTALE DOTÉE D'UNE PRÉSENTATION DE PRODUITS
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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.

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.

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

[0003] 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.

[0004] 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.

[0005] 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.

[0006] 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.

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.

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**.

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**.

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.

[0007] DE20203716U U1 discloses a refrigerated showcase having sliding doors supported on tracks.

[0008] 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, along 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 apart 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.

[0009] 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.

[0010] 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.

[0011] 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.

[0012] In a preferred embodiment, each spacer may be made of a wear-resistant transparent material.

[0013] In a preferred embodiment, the upper surface of each spacer may be coated with a wear-resistant transparent material by means of a transparent adhesive.

[0014] 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-resistant transparent material by means of a transparent adhesive.

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.

[0015] 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.

[0016] 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.

[0017] Figure 1 was previously explained in the chapter of prior art presentation.

[0018] An embodiment according to the invention is shown in Figures 2 and 3, comprising:

- a base wall **B**;
- one of the four transparent lateral 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 re-

spective 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 apart 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**.

[0019] For clarity reasons (to avoid the excessive loading of the drawing), in Figure 3 are present only some of the references of Figure 2.

[0020] 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.

[0021] 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.

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 allow them to perform their function.

[0022] According to Figure 2, the upper surface of each spacer **D12**, **D23** is coated with a layer of wear-resistant transparent material **1** by means of a transparent adhesive **2**.

[0023] 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-resistant transparent material **1** by means of a transparent adhesive **2**. Non-limiting examples of wear-resistant transparent materials **1** may be: PVC, PC, PMMA, ABS, PBT, TPU, etc.

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

[0024] 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).

[0025] In any of the embodiments i, ii, iii or that from Figure 2, the layer of wear-resistant transparent material **1** together with the adhesive **2** may be missing, case in which each spacer **D12**, **D23** is made of a wear-resistant 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 apart 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-resistant 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-resistant 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-resistant transparent material (**1**) by means of a transparent adhesive (**2**).

Patentansprüche

1. Horizontale Kühlvitrine, bestehend aus:

- einer Basiswand (**B**);
- vier transparenten Seitenwänden, die jeweils im Wesentlichen senkrecht zur Basiswand (**B**) befestigt sind, so dass die Vitrine eine im Wesentlichen parallelepipedische Form aufweist;
- einem Öffnungs-/Schließsystem der Vitrine, das in Bezug auf die Basiswand (**B**) gegenüberliegend angeordnet ist,
- wobei das Öffnungs-/Schließsystem eine Vielzahl von transparenten Scheiben (**G1**, **G2**) umfasst, die in parallelen Ebenen angeordnet sind, wobei jede Scheibe (**G1**, **G2**) eine im Wesentlichen rechteckige Form aufweist,
- wobei jede Scheibe (**G1**, **G2**) an zwei ihrer gegenüberliegenden Seiten, entlang der gesamten Länge dieser Seiten, auf einer jeweiligen Gleitbahn (**C12**, **C23**) ruht,
- wobei jede Scheibe (**G1**, **G2**) in der Lage ist, sich in ihrer eigenen Ebene auf den jeweiligen Gleitbahnen in einer Richtung (**X**) zu bewegen, die die gleiche ist wie die Richtung der auf den Gleitbahnen (**C12**, **C23**) ruhenden Seiten,
- wobei die Gleitbahnen (**C12**, **C23**) jeweils an zwei gegenüberliegenden Seitenwänden der Vitrine befestigt sind, wobei die Wände parallel zu der Bewegungsrichtung (**X**) der Scheiben (**G1**, **G2**) sind,
- dadurch gekennzeichnet, dass**
- jede transparente Seitenwand, die den Gleitbahnen (**C12**, **C23**) entspricht, aus transparenten, parallelen Paneelen (**P1**, **P2**, **P3**) besteht, die ansteigende Höhen aufweisen, beginnend mit dem innersten Paneel (**P1**) und endend mit dem äußersten Paneel (**P3**),
- wobei die transparenten Paneele (**P1**, **P2**, **P3**) mittels transparenter Abstandshalter (**D12**, **D23**) voneinander getrennt gehalten werden, die so angeordnet sind, dass die Oberseite jedes Abstandshalters (**D12**, **D23**) als Gleitbahn (**C12**, **C23**) für eine jeweilige Scheibe (**G1**, **G2**) dient.

2. Kühlvitrine nach Anspruch 1, **dadurch gekennzeichnet, dass** jede Scheibe (**G1**, **G2**) mittels transparenter Rahmen (**F1**, **F2**), die entlang der gesamten Länge der zur Bewegungsrichtung (**X**) parallelen Seiten der Scheibe befestigt sind, auf den zugehörigen Gleitbahnen (**C12**, **C23**) aufliegt.
3. Kühlvitrine nach Anspruch 1, **dadurch gekennzeichnet, dass** jede Scheibe (**G1**, **G2**) mittels transparenter oder halbtransparenter Gleitdichtungen (**S1**, **S2**), die entlang der gesamten Länge der zur Bewegungsrichtung (**X**) parallelen Seiten der Schei-

be befestigt sind, auf den zugehörigen Gleitbahnen (**C12**, **C23**) aufliegt.

4. Kühlvitrine nach Anspruch 1, **dadurch gekennzeichnet, dass** jede Scheibe (**G1**, **G2**) auf den zugehörigen Gleitbahnen (**C12**, **C23**) mittels transparenter oder halbtransparenter Gleitdichtungen (**S1**, **S2**) aufliegt, die an zugehörigen transparenten Rahmen (**F1**, **F2**) befestigt sind, die entlang der gesamten Länge der zur Bewegungsrichtung (**X**) parallelen Seiten der Scheibe befestigt sind.
5. Kühlvitrine nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** jeder Abstandshalter (**D12**, **D23**) aus einem verschleißfesten transparenten Material (**1**) besteht.
6. Kühlvitrine nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die Oberseite jedes Abstandshalters (**D12**, **D23**) mit einer Schicht aus verschleißfestem, transparentem Material (**1**) mittels eines transparenten Klebers (**2**) beschichtet ist.
7. Kühlvitrine nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** der Oberflächenabschnitt eines Paneels (**P2**, **P3**), der das vorhergehende Paneel (**P1**, **P2**) in der Höhe überragt und der zur zugehörigen Scheibe (**G1**, **G2**) gerichtet ist, mit einer Schicht aus verschleißfestem, transparentem Material (**1**) mittels eines transparenten Klebstoffs (**2**) beschichtet ist.

Revendications

1. Vitrine réfrigérée horizontale, comprenant:

- une paroi de base (**B**);
- quatre parois latérales transparentes, chacune fixée substantiellement perpendiculairement à la paroi de base (**B**), de sorte que la vitrine présente une forme substantiellement parallélépipédique;
- un système d'ouverture/fermeture de la vitrine, disposé opposé par rapport à la paroi de base (**B**),
- où le système d'ouverture/fermeture comprend une pluralité de vitres transparentes (**G1**, **G2**) disposées dans des plans parallèles, chaque vitre (**G1**, **G2**) ayant une forme substantiellement rectangulaire,
- chaque vitre (**G1**, **G2**) reposant sur deux de ses côtés opposés, sur toute la longueur desdits côtés, sur un chemin de glissement respectif (**C12**, **C23**),
- chaque vitre (**G1**, **G2**) étant apte à se déplacer dans son propre plan, sur les chemins de glissement respectifs, selon une direction (**X**) qui

- est la même avec la direction des côtés reposant sur les chemins de glissement (**C12, C23**),
 - où les chemins de glissement (**C12, C23**) sont fixés respectivement à deux parois latérales opposées de la vitrine, lesdites parois qui sont parallèles à la direction de déplacement (**X**) des vitres (**G1, G2**),
caractérisé en ce que
 - chaque paroi latérale transparente correspondant aux chemins de glissement (**C12, C23**) est constituée de panneaux parallèles transparents (**P1, P2, P3**) ayant des hauteurs croissantes en commençant par le panneau le plus à l'intérieur (**P1**) et se terminant par le panneau le plus à l'extérieur (**P3**),
 - les panneaux transparents (**P1, P2, P3**) étant maintenus écartés les uns des autres au moyen d'entretoises transparentes (**D12, D23**) disposées de telle sorte que la surface supérieure de chaque entretoise (**D12, D23**) sert de chemin de glissement (**C12, C23**) pour un vitre respectif (**G1, G2**).
2. Vitrine réfrigérée selon la revendication 1, **caractérisée en ce que** chaque vitre (**G1, G2**) repose sur les chemins de glissement associées (**C12, C23**) au moyen de cadres transparents (**F1, F2**) fixés sur toute la longueur des côtés de la vitre qui sont parallèles à la direction de déplacement (**X**).
3. Vitrine réfrigérée selon la revendication 1, **caractérisée en ce que** chaque vitre (**G1, G2**) repose sur les chemins de glissement associés (**C12, C23**) au moyen de joints coulissants transparents ou semi-transparentes (**S1, S2**) fixés sur toute la longueur des côtés de la vitre qui sont parallèles à la direction de déplacement (**X**).
4. Vitrine réfrigérée selon la revendication 1, **caractérisée en ce que** chaque vitre (**G1, G2**) repose sur les chemins de glissement associés (**C12, C23**) au moyen de joints coulissants transparents ou semi-transparentes (**S1, S2**) fixés sur des cadres transparents associés (**F1, F2**) fixés sur toute la longueur des côtés de la vitre qui sont parallèles à la direction de déplacement (**X**).
5. Vitrine réfrigérée selon l'une quelconque des revendications 1 à 4, **caractérisée en ce que** chaque entretoise (**D12, D23**) est réalisée en un matériau transparent résistant à l'usure (**1**).
6. Vitrine réfrigérée selon l'une quelconque des revendications 1 à 4, **caractérisée en ce que** la surface supérieure de chaque entretoise (**D12, D23**) est revêtue d'une couche de matériau transparent résistant à l'usure (**1**) au moyen d'un adhésif transparent (**2**).
7. Vitrine réfrigérée selon l'une quelconque des revendications 1 à 6, **caractérisée en ce que** la partie de surface d'un panneau (**P2, P3**) qui dépasse en hauteur le panneau précédent (**P1, P2**) et qui est orientée vers la vitre associée (**G1, G2**), est revêtue d'une couche de matériau transparent résistant à l'usure (**1**) au moyen d'un adhésif transparent (**2**).

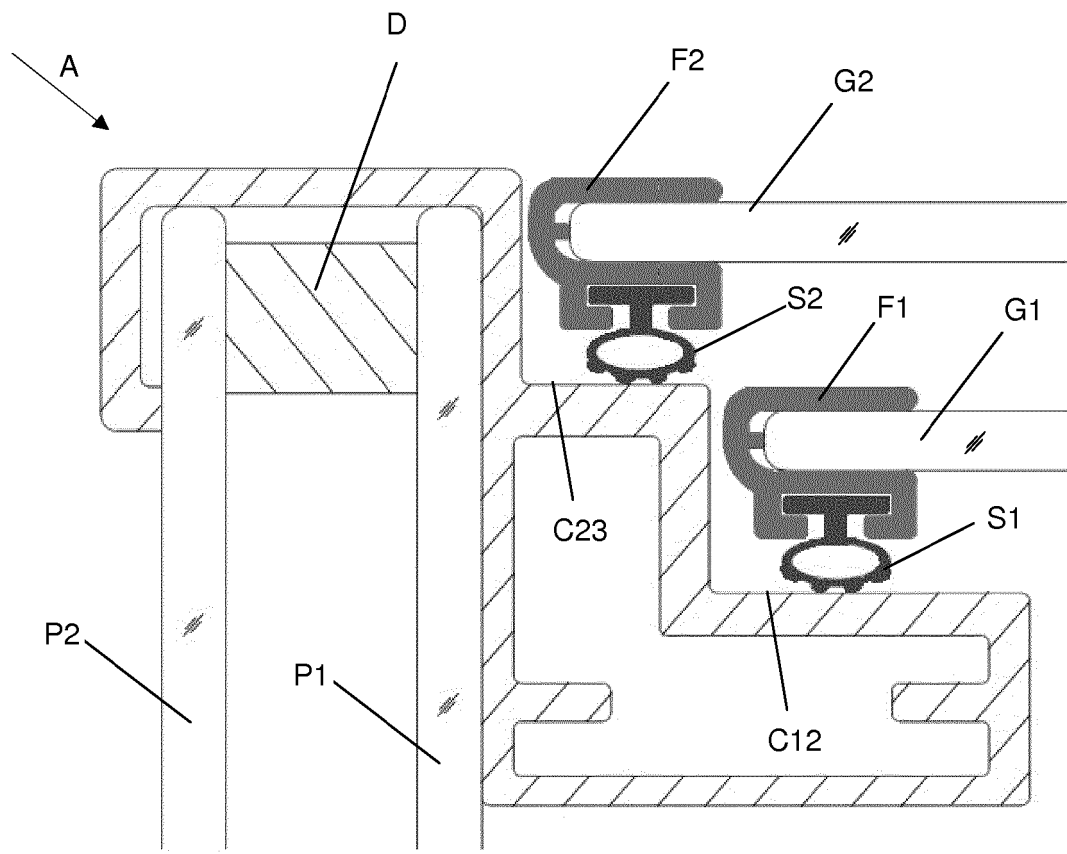
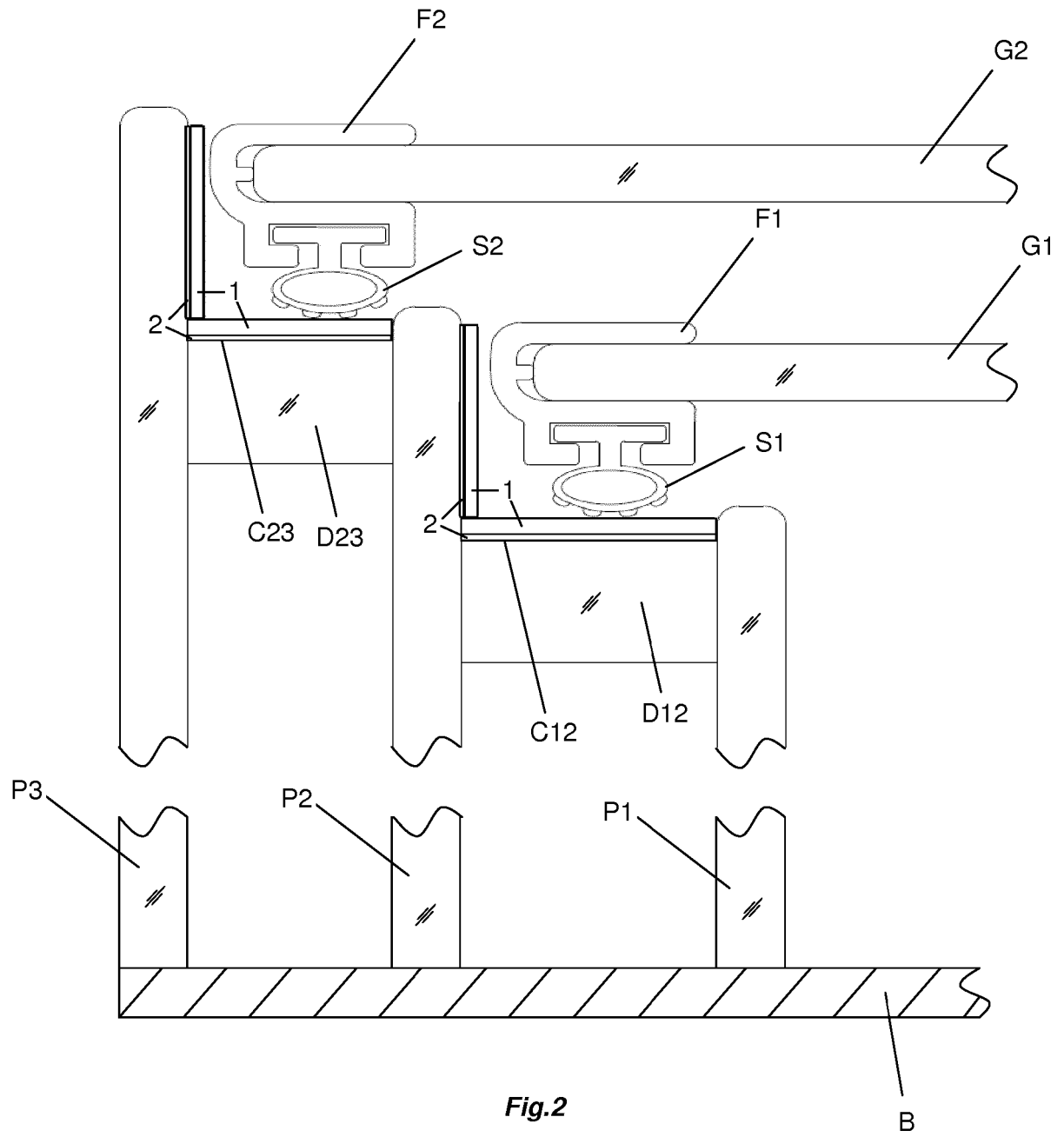


Fig.1 – prior art



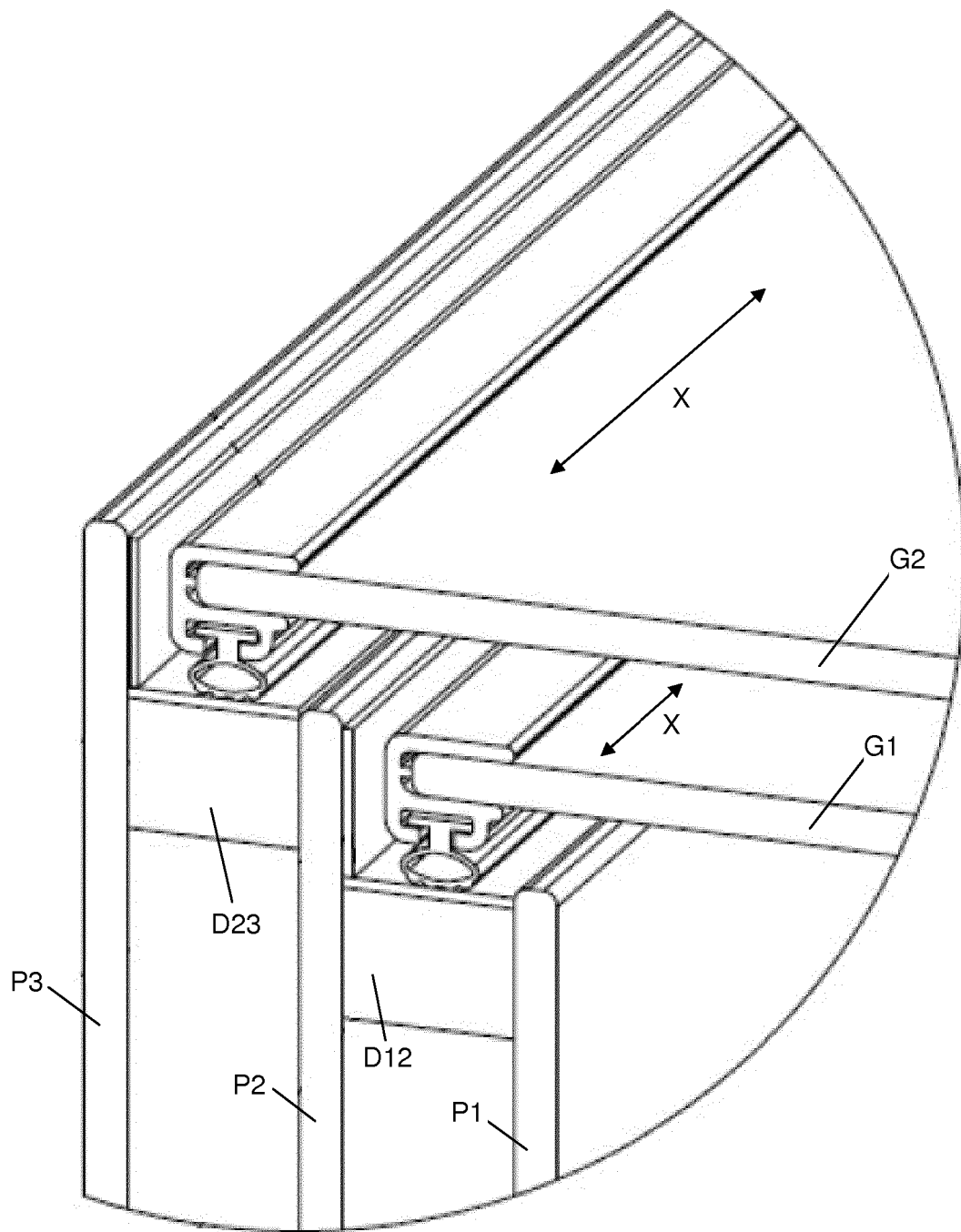


Fig.3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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