



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
15.09.2021 Bulletin 2021/37

(51) Int Cl.:
E05D 15/06 (2006.01) E06B 7/14 (2006.01)

(21) Application number: **21161480.5**

(22) Date of filing: **09.03.2021**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(30) Priority: **09.03.2020 BE 202005160**

(54) **GUIDE RAIL FOR A SLIDING DOOR ASSEMBLY**

(57) The present invention relates to a guide rail (2) comprising upright guide ribs (5, 6) for guiding sliding door leaves (3, 4) in a sliding door assembly (1) and a channel (11) which is delimited by the guide ribs (5, 6) for discharging precipitation landing on the sliding door leaves (4), wherein the guide rail (2) comprises a zone (12) at one end which is free from the guide ribs (5, 6) at

the top and in which a collector (13) is provided in which the channel (11) ends, and wherein the guide rail (2) is provided with a hollow chamber (15), a passage opening (16), which connects the collector (13) to the hollow chamber (15), and an outlet opening (17), which connects the hollow chamber (15) to an outside environment (14) for draining off the precipitation.

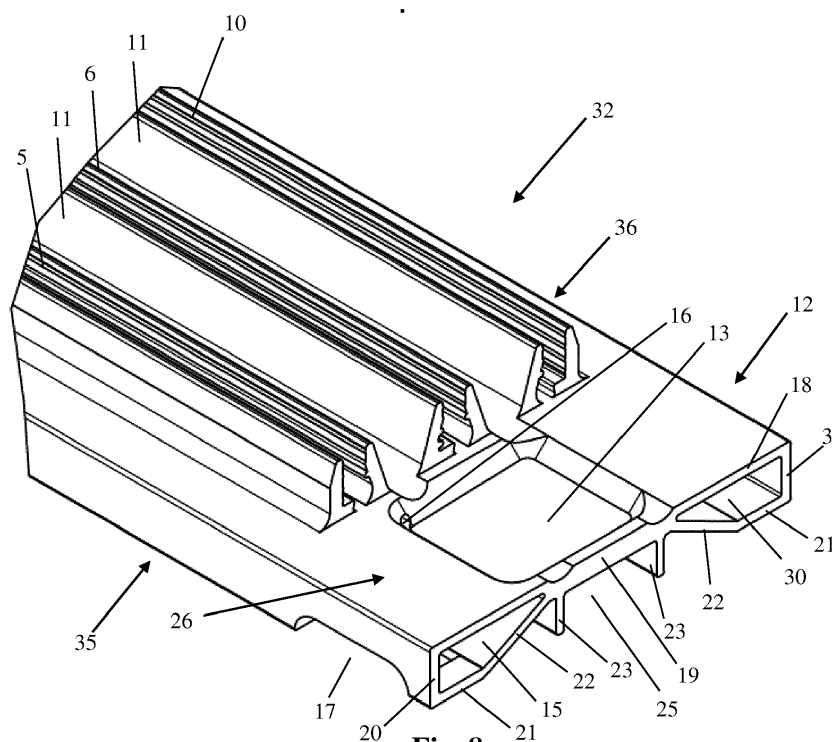


Fig. 8

Description

[0001] The present invention relates to a guide rail for a sliding door assembly comprising a first sliding door leaf and a second sliding door leaf which are slidably arranged, comprising:

- a first upright guide rib for guiding the first sliding door leaf at the bottom of this first sliding door leaf;
- a second upright guide rib for guiding the second sliding door leaf at the bottom of this second sliding door leaf; and
- a channel which is delimited by the guide ribs for collecting and discharging precipitation landing on the sliding door leaves;

wherein the guide rail comprises a zone at one end which is free from said guide ribs at the top and in which a collector is provided in which the channel ends for the draining off the precipitation to an outside environment.

[0002] Typically, drainage openings are milled into one or several guide ribs in order to drain precipitation away from guide rails for sliding door assemblies comprising several slidable sliding door leaves.

Such drainage openings are regarded as not being very aesthetic.

With guide rails comprising more than two such guide ribs, it is also technically more difficult to produce such drainage openings in at least two guide ribs in order to be able to drain off all channels between the guide ribs. The reason for this is that milling cutters which are capable of milling such drainage openings have a limited length.

[0003] Several alternative solutions have already been devised in order to drain off precipitation from such guide rails. Examples of such solutions are for example described and illustrated in CN 1162604 C, EP 2 365 169 A2, JP 2002-115467 A and DE 10 2016 007 291 A1.

In CN 1162604 C, drainage openings are milled up to a first channel which is arranged in front of a first guide rib. In order to drain off a second channel between the guide ribs, separately formed drainage channels are provided in the guide rail. Fitting such drainage channels is relatively laborious. In addition, these drainage channels have to be fitted particularly accurately in order to form a watertight combination by means of which precipitation can be drained off efficiently. Like the draining openings, the protruding drainage caps are deemed not to be very aesthetical.

In EP 2 365 169 A2, the guide rail is divided into pieces, between which inserts are placed. These inserts are water drainage elements which are provided with a flow passage up to the channel between the guide ribs. Such a guide rail composed of different parts is deemed to be less aesthetic. In this case, the connection between the pieces of the guide rail and the inserts has to be made sufficiently watertight in order to prevent the undesired flow of precipitation between these pieces and the in-

serts.

In JP 2002-115467 A and DE 10 2016 007 291 A, a separate drainage element is added at the end of a guide profile. In this case, a guide rail according to the preamble of the first claim is formed in DE 10 2016 007 291 A1. The addition of such a drainage element is again not deemed to be very aesthetic.

[0004] It is the object of the present invention to provide an alternative guide rail for a sliding door assembly comprising several slidable sliding door leaves from which precipitation can be drained off efficiently and which is deemed to be more aesthetic.

[0005] This object of the invention is achieved by providing a guide rail for a sliding door assembly comprising a first sliding door leaf and a second sliding door leaf which are slidably arranged, comprising:

- a first upright guide rib for guiding the first sliding door leaf at the bottom of this first sliding door leaf;
- a second upright guide rib for guiding the second sliding door leaf at the bottom of this second sliding door leaf; and
- a channel which is delimited by the guide ribs for collecting and discharging precipitation which ends up on the sliding door leaves;
- a zone at one end of the guide rail which is free from said guide ribs at the top and in which a collector is provided, in which the channel ends for draining off the precipitation to an outside environment;
- a hollow chamber;
- a passage opening which connects the collector to the hollow chamber for draining off the precipitation from the collector to the hollow chamber; and
- an outlet opening which connects the hollow chamber to the outside environment for draining off the precipitation from the hollow chamber to the outside environment.

[0006] By providing the guide rail with a hollow chamber, a passage opening, which connects the collector to the hollow chamber for draining off the precipitation from the collector to this hollow chamber, and an outlet opening, which connects the hollow chamber to the outside environment for draining off the precipitation from the hollow chamber to the outside environment, precipitation may be drained off inside the guide rail in a zone at one end of the guide rail. In this case, only an outlet opening at the end of this guide rail is visually visible. Such an outlet opening at the end of the guide rail is deemed to be more aesthetic than said solutions from the prior art.

[0007] More specifically, such a guide rail may comprise a said zone with a collector at both its ends, wherein precipitation can be drained off from both these collectors in the same way by means of a passage opening, a hollow chamber and an outlet opening.

[0008] Optionally, one said hollow chamber may also comprise several subchambers, wherein these various subchambers are then connected to each other by

means of one or several passage openings for passing the precipitation through these subchambers.

[0009] In embodiments comprising more than two upright guide ribs and several channels which are delimited by these guide ribs and end in the collector, said problem of milling drainage openings through several guide ribs is solved.

[0010] A guide rail according to the present invention preferably comprises a guiding surface which delimits the hollow chamber at the bottom for guiding the precipitation between the passage opening and the outlet opening.

[0011] More specifically, the guide rail may comprise a guide profile on which the guide ribs are provided or of which the guide ribs form part.

[0012] The hollow chamber is then preferably provided in this guide profile, this guide profile comprising a side wall which delimits the hollow chamber towards the outside environment.

Furthermore preferably, the guide profile is configured to be installed on a floor, the side wall extending up to this floor. The hollow chamber is furthermore preferably delimited at the bottom by an oblique wall of the guide profile which extends downwards from the passage opening towards the side wall and towards the floor in order to form said guiding surface. This oblique wall may be flat or may be curved or may be composed of several part-walls which together slope downwards towards the floor and the side wall. In this case, this oblique wall may directly adjoin the side wall. Alternatively, the guide profile may comprise a bottom wall which is configured to be installed on the floor and extends between said oblique wall and the side wall and, together with the oblique wall, forms said guiding surface.

[0013] In this case, such a guide profile can easily be produced by means of, for example, extrusion, for example from aluminium or plastic or a composite material. The guide ribs may be formed integrally with a said guide profile and therefore form a single part therewith. Alternatively, these guide ribs may, for example, also be made, at least partly, separately, for example in the form of guide slats which are fitted in a fitting slot provided in the guide profile for this purpose. Thus, the guide ribs may, for example, at least partly, be made of a more wear-resistant material than the material from which the guide profile is made.

[0014] A said guide profile and the collector are preferably made as a single piece. To this end, the collector is preferably hollowed out in a top wall of the guide profile. To this end, the guide profile may be provided, for example at the top, with a thickened wall. To this end, a wall section of the guide profile may be made thicker than the other wall sections of the guide profile.

[0015] In addition to said hollow chamber, such a guide profile preferably comprises a second hollow chamber and a second side wall which is arranged on the side of the guide profile opposite the first-mentioned side wall and which delimits the second hollow chamber. Such a

guide profile may then advantageously be configured to be symmetrical. Preferably, this second hollow chamber does not contain a said passage opening, so that precipitation can only flow along one side in the guide profile and can run away to the outside environment. On the other side, the guide profile may then adjoin parts of a building in which the sliding door assembly is incorporated without precipitation being able to flow to these parts of the building.

[0016] In one embodiment comprising two hollow chambers, the guide profile is preferably configured to be installed on a floor, wherein the two said side walls are configured to extend up to this floor and wherein the hollow chambers are arranged at a distance apart.

The guide profile may then furthermore also comprise, for example, one or several downward ribs which are provided between the hollow chambers to support the guide profile on the floor.

Between both hollow chambers and/or between neighbouring downward ribs and/or between the downward ribs and the hollow chambers, there are then one or several spaces which are designed to be open towards the bottom and in which a sealing such as a said swelling band or compriband may be fitted. In this way, it is easy to provide a sealing between the guide profile and the floor which is watertight even in torrential rain.

[0017] The object of the present invention is in addition achieved by providing a sliding door assembly comprising several sliding door leaves which are slidably arranged and comprising an above-described guide rail according to the present invention for guiding the sliding door leaves at the bottom of these sliding door leaves.

[0018] In a preferred embodiment of such a sliding door assembly, the guide rail, in the zone which is free from the guide ribs at the top, comprises a fitting surface, in which the collector is provided. If the sliding door assembly comprises a side jamb which is provided as a stop for a said sliding door leaf, this side jamb may then be fitted on top of the fitting surface in an aesthetic manner. One or several guide ribs may then run as far as this side jamb and adjoin this side jamb in an aesthetic manner. It is also possible to hide the collector from view by means of this side jamb. Precipitation can then be discharged into the collector by means of the channel under this side jamb.

[0019] The object of the present invention is furthermore also achieved by providing a method for producing a guide rail in which a guide profile is extruded.

This guide profile is either provided with a first upright guide rib for guiding a first sliding door leaf at the bottom of this sliding door leaf and a second upright guide rib for guiding a second sliding door leaf at the bottom of this sliding door leaf or this guide profile comprises this first upright guide rib and this second upright guide rib. This guide profile furthermore comprises a channel in which the guide ribs are provided to delimit this channel for collecting and discharging precipitation landing on the sliding door leaves in this channel.

With the method according to the present invention, the guide profile is in this case provided with a thickened wall which delimits the channel at least partly. The guide profile is furthermore provided with a hollow chamber which is at least partly delimited by the thickened wall and which is delimited by a side wall of the guide profile.

In this case, the guide profile is freed from the upright guide ribs at one end in a zone at the top. In this zone, a collector is hollowed out in the thickened wall, in which the channel ends for draining off the precipitation from the channel to the collector. A passage opening is provided in the thickened wall to connect the collector to the hollow chamber for draining off the precipitation from the collector to the hollow chamber. An outlet opening is provided in the side wall to connect the hollow chamber to an outside environment for draining off the precipitation from the hollow chamber to the outside environment.

[0020] More specifically, with a method according to the present invention, the guide profile may be provided with upright ribs in order to form the guide ribs. These upright ribs may in this case, for example, delimit corresponding fitting slots in order to fit guide slats therein to form the guide ribs. These upright ribs are then milled away in said zone in order to free this zone from the upright guide ribs.

[0021] In order to hollow the collector out, it may be milled out, for example, in the zone in the thickened wall.

[0022] In order to provide the passage opening and the outlet opening, these may also be, for example, milled out. Preferably, only a part of the side wall is milled away in order to form the outlet opening.

[0023] With a particular method according to the present invention, the guide profile is provided with a second hollow chamber which is at least partly delimited by the thickened wall and which is delimited by a second side wall of the guide profile which is arranged on the side of the guide profile opposite to the first-mentioned side wall. The guide profile is then preferably produced so as to be symmetrical during its extrusion.

[0024] Preferably, an above-described guide rail according to the present invention is formed using a method according to the present invention.

[0025] The present invention will now be explained in more detail by means of the following detailed description of some preferred guide rails, sliding door assemblies and methods according to the present invention. The sole aim of this description is to give illustrative examples and to indicate further advantages and features of the present invention, and may therefore not be interpreted as a limitation of the area of application of the invention or of the patent rights defined in the claims.

[0026] In this detailed description, reference numerals are used to refer to the attached drawings, in which:

- Fig. 1 shows a part of an embodiment of a sliding door assembly according to the present invention for three slidable sliding door leaves in perspective;
- Fig. 2 shows the part A of the sliding door assembly

from Fig. 1 at the location of the guide rail in more detail in perspective;

- Fig. 3 shows the part of the sliding door assembly from Fig. 3 in cross section;
- Fig. 4 shows the guide profile of the sliding door assembly from Fig. 1 separately in cross section, installed on a floor;
- Fig. 5 shows a guide profile for an embodiment of a sliding door assembly according to the present invention for four slidable sliding door leaves in cross section;
- Fig. 6 shows a guide profile for an embodiment of a sliding door assembly according to the present invention for five slidable sliding door leaves in cross section;
- Fig. 7 shows the guide profile of the sliding door assembly from Fig. 1 separately in perspective in a shortened representation, viewed from a first side of this guide profile;
- Fig. 8 shows the part B of the guide profile from Fig. 7 in more detail in perspective;
- Fig. 9 shows the guide profile of the sliding door assembly from Fig. 1 separately in perspective in a shortened representation, viewed from a second side of this guide profile;
- Fig. 10 shows the part C of the guide profile from Fig. 9 in more detail in perspective;
- Fig. 11 shows an end of the guide profile from Fig. 5 in perspective;
- Fig. 12 shows the guide profile from Fig. 6 in perspective in a shortened representation;
- Fig. 13 shows an end of a guide profile for an alternative embodiment of a sliding door assembly for five slidable sliding door leaves in perspective, seen from a first side of the guide profile;
- Fig. 14 shows the end from Fig. 13 in perspective, seen from a second side of the guide profile.

[0027] The embodiments of a sliding door assembly (1) illustrated in the figures comprise a door frame in which several sliding door leaves (3, 4) are slidably arranged.

The door frame is not illustrated in its entirety, but is formed in a known manner at the top, is formed laterally by side jambs (27) and is formed by the guide rail (2) at the bottom.

The sliding door leaves (3, 4) are not illustrated in their entirety either, but can be constructed in various known manners. A part of these sliding door leaves (3, 4) can be seen in Figs. 1-3. These sliding door leaves (3, 4) are slidably arranged in the door frame, with the side jambs (27) serving as a stop for these sliding door leaves (3, 4). At the bottom, the sliding movement of these sliding door leaves (3, 4) is guided by the guide ribs (5, 6, 10, 34) of the guide rail (2). In this case, a first sliding door leaf (3) is guided by a first guide rib (5), a second sliding door leaf (4) by a second guide rib (6) and further sliding door leaves (not shown) by further guide ribs (10, 34).

[0028] The guide rail (2) is in each case composed of a guide profile (32) which is provided with upright ribs (7) which delimit fitting slots (8), in which guide slats (9) are arranged in order to form the guide ribs (5, 6, 10, 34). An example of a guide rib (5) formed in this manner can be seen in Fig. 3. In the other guide ribs (6, 10, 34) in this figure and in the other figures, the guide slat (9) is not shown with the illustrated guide ribs (5, 6, 10, 34).

The guide slats (9) may be made, for example, from steel. In the illustrated embodiments, the guide profile (32) of the guide rails (2) may be made, for example, from aluminium by means of extrusion.

[0029] A channel (11) is formed in each case between the guide ribs (5, 6, 10, 34). The upright ribs (7) which delimit this channel (11) are in each case slanted in order to guide precipitation to the bottom of this channel (11) quickly. By means of this channel (11), precipitation landing on the sliding door leaves (3, 4) can be transported away towards the ends of the guide profile (2). These channels (11) are in each case deeper than the fitting slots (8).

[0030] At both ends of the illustrated guide profiles (32), a zone (12) is freed from the upright ribs (7) by milling away these upright ribs (7). This zone (12) always extends as far as the first side (35) of the guide profile (32) and towards the second side (36) in such a way that all channels (11) connect to this zone (12), but does not necessarily extend to the second side (36). Alternatively (as shown in Figures 13 and 14), the raised ribs (7) from the guide rib (34) adjacent to this second side (36) can be left untouched and continue to extend along the length of the guide profile (32). By milling away the upright ribs (7) in the said zone (12), a fitting surface (26) is freed up, on which the jambs (27) can be installed. These jambs (12) only possibly need to be milled in to accommodate a guide rib (34), which is set up on the second side (36). At milling away the upright ribs (7) in the said zone (12), the remaining guide ribs (5, 6, 10) are designed to have a length so as to adjoin these jambs (27). In this case, the channels (11) which are deeper run as far as under these jambs (27).

[0031] The illustrated guide profiles (32) are in each case configured to be installed on a floor (29). These guide profiles (32) are produced so as to be symmetrical during extrusion and comprise a top wall (18) and two side walls (20, 31) which extend from the top wall (18) to this floor (29). A bottom wall (21) extends from each side wall (20, 31) in order to support the guide profile (32) on the floor (29). A rising oblique wall (22) extends in each case from this bottom wall (21) up to the top wall (18). In the centre, the top wall (18) is made thicker between these oblique walls (22) to form a thickened wall (19). This thickened wall (19) extends in such a manner that all channels (11) are provided therein.

The top wall (18), the first side wall (20), the adjoining bottom wall (21) and the adjoining oblique wall (22) together delimit a first hollow chamber (15). The top wall (18), the second side wall (20), the adjoining bottom wall

(21) and the adjoining oblique wall (22) together delimit a second hollow chamber (30).

Downward ribs (23) are in each case provided between the hollow chambers (15, 30) to support the guide profile (32) on the floor (29).

In this case, the downward ribs (23) delimit one or several hollow spaces (25). These hollow spaces (25) are open towards the bottom, so that a sealing may be fitted therein.

[0032] In the illustrated embodiments, a collector (13) is in each case milled out in the two zones (12) at the ends of the guide profile (32) in the thickened wall (19), in which all channels (11) end.

In alternative embodiments, a collector (13) could also be provided in one such zone and the guide profile (32) may be arranged in such a manner that all channels (11) drain off towards this one collector (13).

[0033] In the illustrated guide profiles (32), the first side wall (20) is designed to be arranged freely towards an outside environment (28). Depending on the installation, it is possible for the second side wall (31) to adjoin, for example, parts of a building or to be arranged freely towards an inside environment.

A first passage opening (16) is milled out in the thickened wall (19) towards the first hollow chamber (15) in order to connect the collector (13) to the first hollow chamber (15) in order to drain off the precipitation from the collector (13) to the first hollow chamber (15).

[0034] In the first side wall (20), an outlet opening (17) is milled out which connects the first hollow chamber (15) to the outside environment (28) in order to drain off the precipitation from the hollow chamber (15) to the outside environment (28).

The oblique wall (22) and the bottom wall (21) which delimit the first hollow chamber (15) at the bottom together form a guiding surface (33) for guiding the precipitation from the passage opening (16) to the outlet opening (17).

Claims

1. Guide rail (2) for a sliding door assembly (1) comprising a first sliding door leaf (3) and a second sliding door leaf (4) which are slidably arranged, comprising:

- a first upright guide rib (5) for guiding the first sliding door leaf (3) at the bottom of this first sliding door leaf (3);
- a second upright guide rib (6) for guiding the second sliding door leaf (4) at the bottom of this second sliding door leaf (4); and
- a channel (11) which is delimited by the guide ribs (5, 6) for collecting and discharging precipitation landing on the sliding door leaves (4);

wherein the guide rail (2) comprises a zone (12) at one end which is free from said guide ribs (5, 6) at the top and in which a collector (13) is provided, in

which the channel (11) ends for draining off the precipitation to an outside environment (14);

characterized in that the guide rail (2) is provided with :

- a hollow chamber (15);
- a passage opening (16) which connects the collector (13) to the hollow chamber (15) for draining off the precipitation from the collector (13) to the hollow chamber (15); and
- an outlet opening (17) which connects the hollow chamber (15) to the outside environment (14) for draining off the precipitation from the hollow chamber (15) to the outside environment (14).

2. Guide rail (2) according to Claim 1, **characterized in that** the guide rail (2) comprises a guiding surface (33) which delimits the hollow chamber (15) at the bottom for guiding the precipitation between the passage opening (16) and the outlet opening (17).

3. Guide rail (2) according to one of the preceding claims, **characterized in that** guide rail (2) comprises a guide profile (32) on which the guide ribs (5, 6) are provided or of which the guide ribs (5, 6) form part and in which the hollow chamber (15) is provided, wherein the guide profile (32) comprises a side wall (20) which delimits the hollow chamber (15) towards the outside environment (14).

4. Guide rail (2) according to Claim 3, **characterized in that** the guide profile (32) and the collector (13) are made as a single piece.

5. Guide rail (2) according to Claim 3 or 4, **characterized in that** the guide profile (32) comprises a second hollow chamber (30) and a second side wall (31) which is arranged on the side (36) of the guide profile (32) opposite the first-mentioned side wall (20) and which delimits the second hollow chamber (30), wherein the second hollow chamber (30) does not contain a said passage opening (16).

6. Guide rail (2) according to Claim 5, **characterized in that** the guide profile (32) is configured to be installed on a floor (29), **in that** the side walls (20, 31) are configured to extend up to this floor (29), **in that** the hollow chambers (15, 30) are arranged a distance apart, and **in that** the guide profile (32) comprises one or several downward ribs (23) which are provided between the hollow chambers (15, 30) to support the guide profile (32) on the floor (29).

7. Sliding door assembly (1), comprising:

- several sliding door leaves (3, 4) which are slidably arranged; and

- a guide rail (2) for guiding the sliding door leaves (3, 4) at the bottom of these sliding door leaves (3, 4);

characterized in that the guide rail (2) is a guide rail (2) according to one of the preceding claims.

8. Sliding door assembly (1) according to Claim 7, **characterized in that** the guide rail (2), in the zone (12) which is free from the guide ribs (5, 6) at the top, comprises a fitting surface (26), in which the collector (13) is provided, and **in that** the sliding door assembly (1) comprises a side jamb (27) which is provided as a stop for a said sliding door leaf (3, 4) and which is fitted on top of the fitting surface (26).

9. Method for producing a guide rail (2), comprising extruding a guide profile (32), wherein this guide profile (32) is provided with a first upright guide rib (5) for guiding a first sliding door leaf (3) at the bottom of this sliding door leaf (3) and a second upright guide rib (6) for guiding a second sliding door leaf (4) at the bottom of this sliding door leaf (4), or wherein this guide profile (32) comprises this first upright guide rib (5) and this second upright guide rib (6) and wherein this guide profile (32) comprises a channel (11) in which the guide ribs (5, 6) are provided to delimit this channel (11) for collecting and discharging precipitation landing on the sliding door leaves (3, 4) in this channel (11), **characterized in that** the guide profile (32) is provided with a thickened wall (19) which delimits the channel (11) at least partly, **in that** the guide profile (32) is provided with a hollow chamber (15) which is at least partly delimited by the thickened wall (19) and which is delimited by a side wall (20) of the guide profile (32), **in that** the guide profile (32) is freed from the upright guide ribs (5, 6) at one end in a zone (12) at the top, **in that** a collector (13) is hollowed out in this zone (12) in the thickened wall (19), in which the channel (11) ends for draining off the precipitation from the channel (11) to the collector (13), **in that** a passage opening (16) is provided in the thickened wall (19) to connect the collector (13) to the hollow chamber (15) for draining off the precipitation from the collector (13) to the hollow chamber (15), and **in that** an outlet opening (17) is provided in the side wall (20) to connect the hollow chamber (15) to an outside environment (14) for draining off the precipitation from the hollow chamber (15) to the outside environment (14).

10. Method according to Claim 9, **characterized in that** the guide profile (32) is provided with upright ribs (7) in order to form the guide ribs (5, 6), and **in that** these upright ribs (7) are milled away in the zone (12) in order to free this zone (12) from the upright guide ribs (5, 6).

11. Method according to Claim 9 or 10, **characterized in that** the collector (13) is milled out in the zone (12) in the thickened wall (19).
12. Method according to one of Claims 9 to 11, **characterized in that** only a part of the side wall (20) is milled away in order to form the outlet opening (17). 5
13. Method according to one of Claims 9 to 12, **characterized in that** the guide profile (32) is provided with a second hollow chamber (30) which is at least partly delimited by the thickened wall (19) and which is delimited by a second side wall (31) of the guide profile (32) which is arranged on the side (36) of the guide profile (32) opposite to the first-mentioned side wall (20), and **in that** the guide profile (32) is produced so as to be symmetrical during its extrusion. 10 15
14. Method according to one of Claims 9 to 13 for forming a guide rail (2) according to one of Claims 1 to 6. 20

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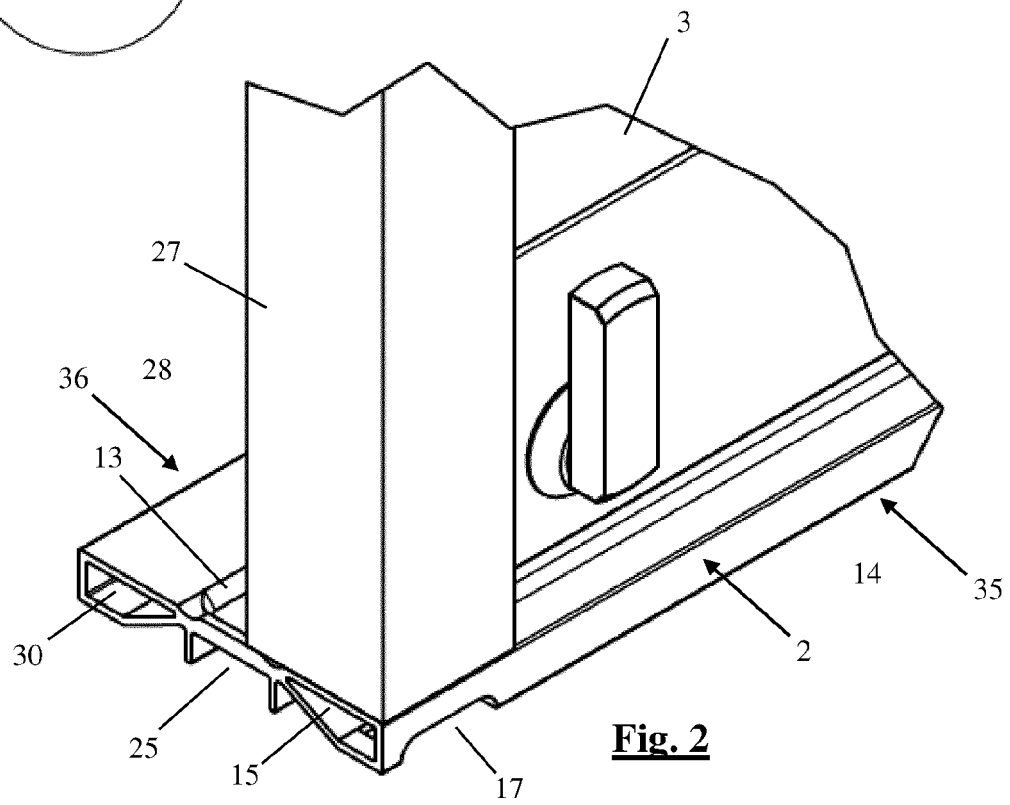
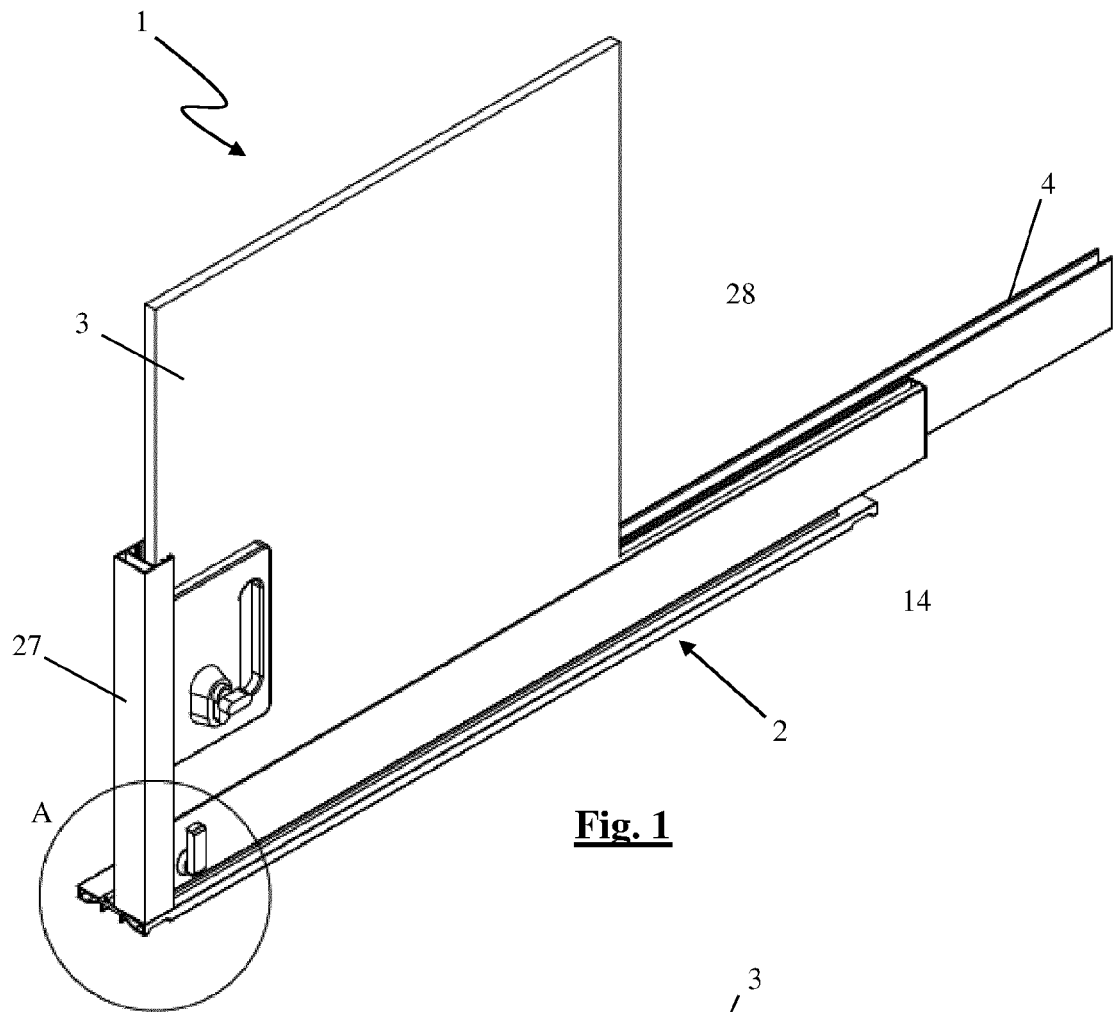
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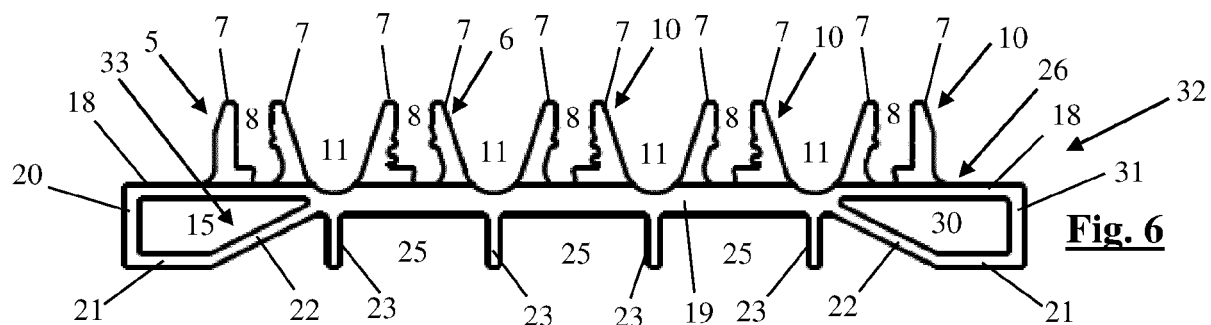
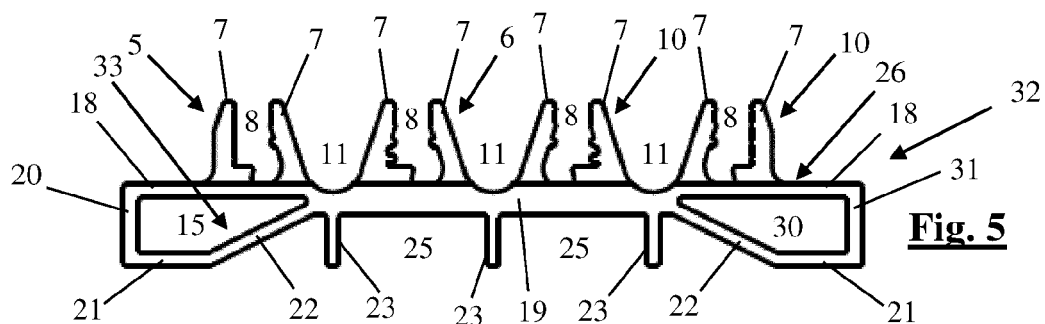
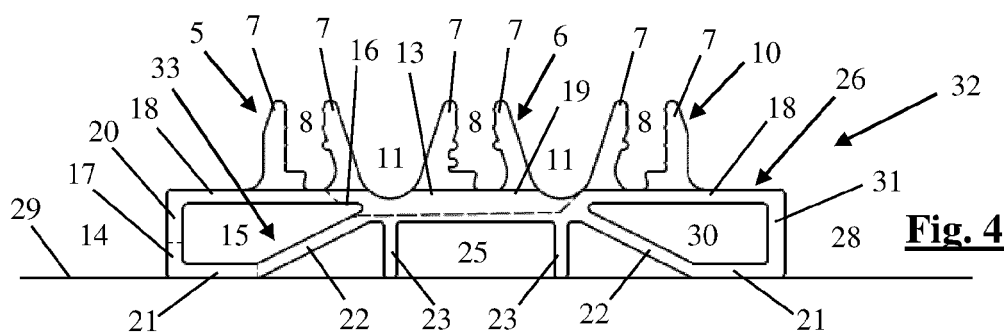
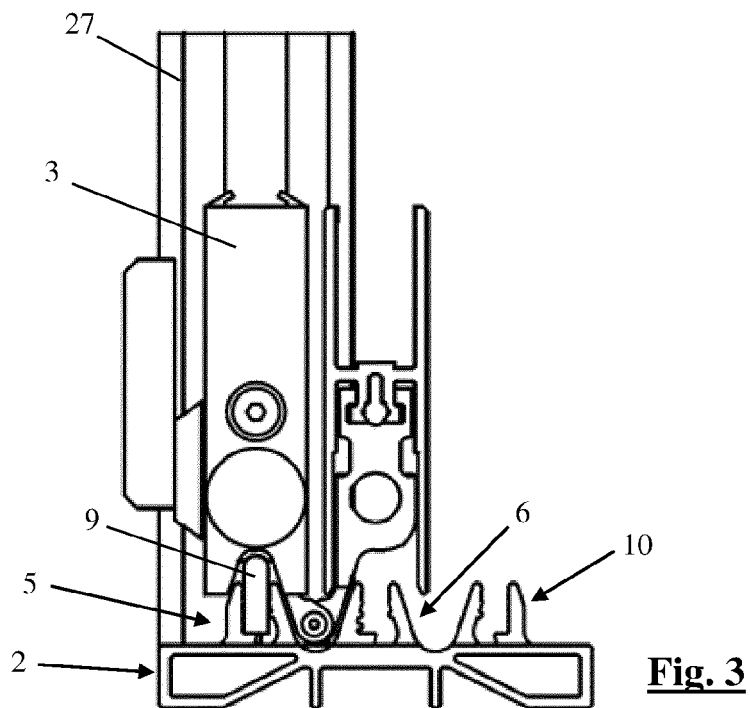
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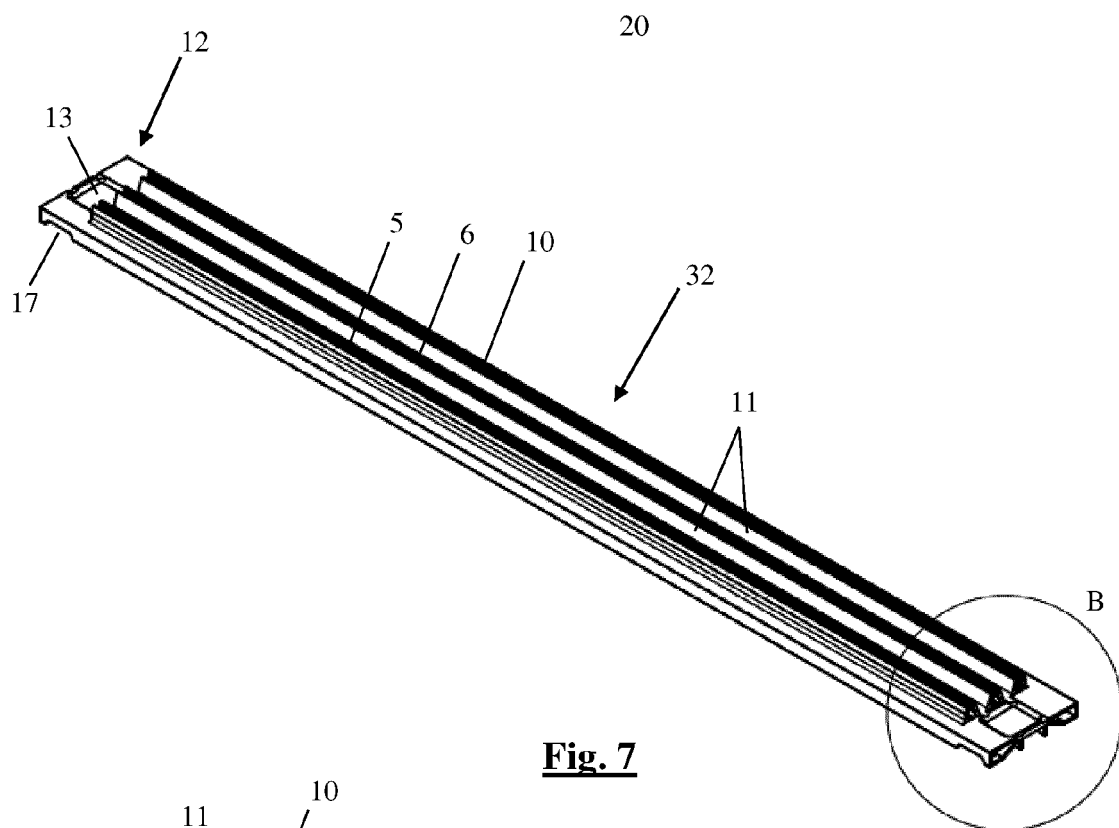


Fig. 7

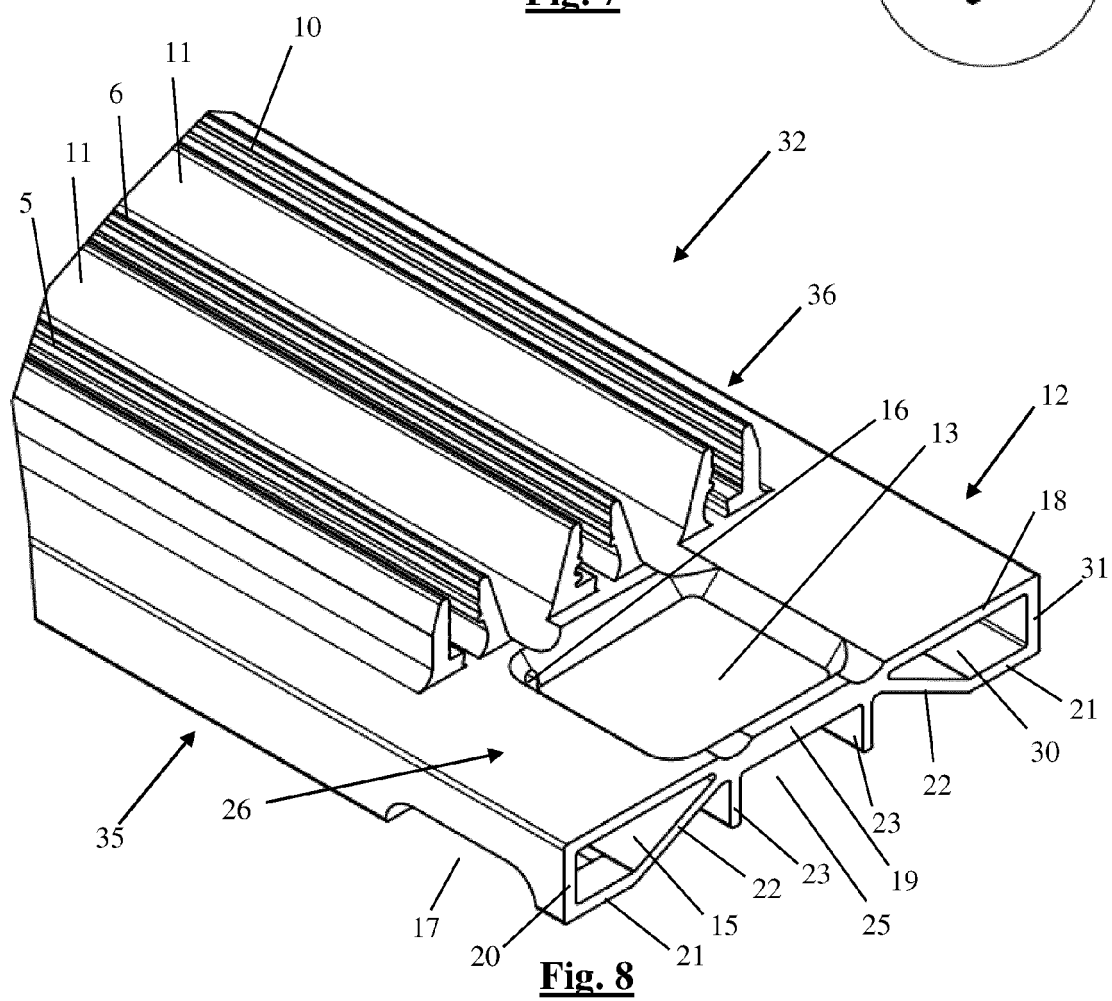


Fig. 8

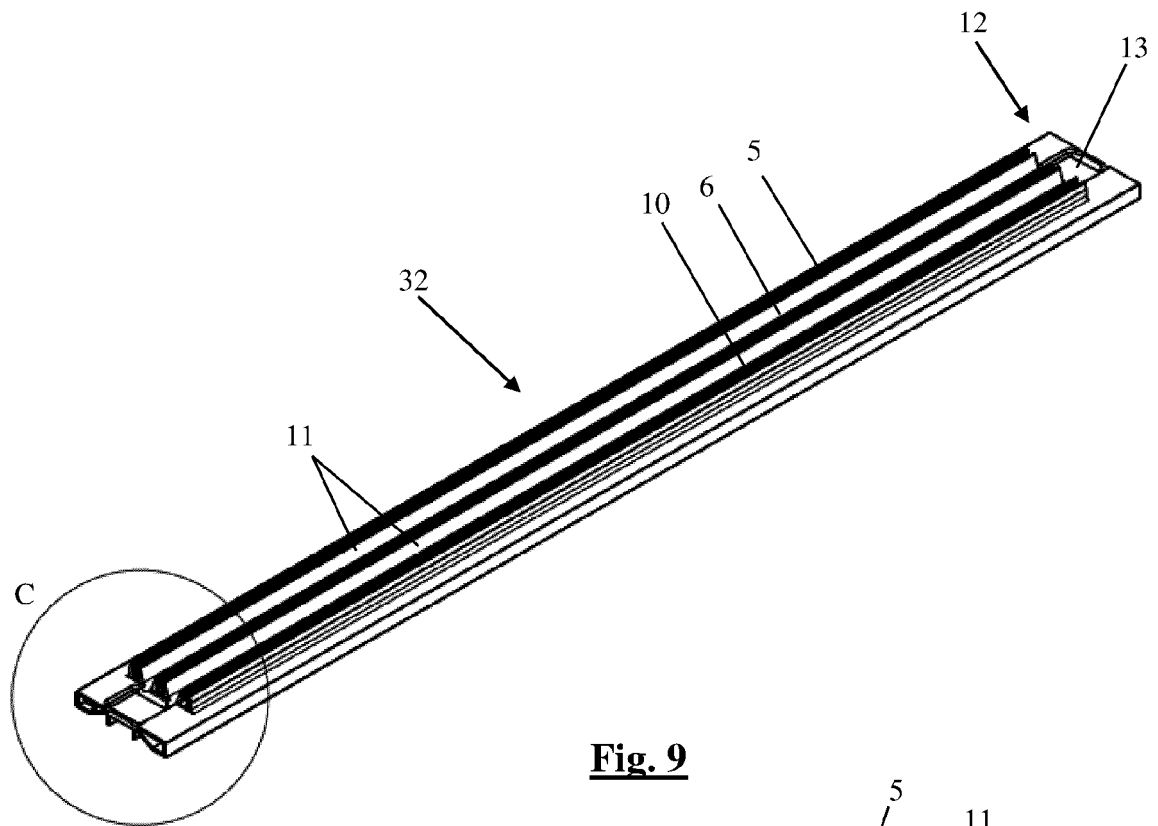


Fig. 9

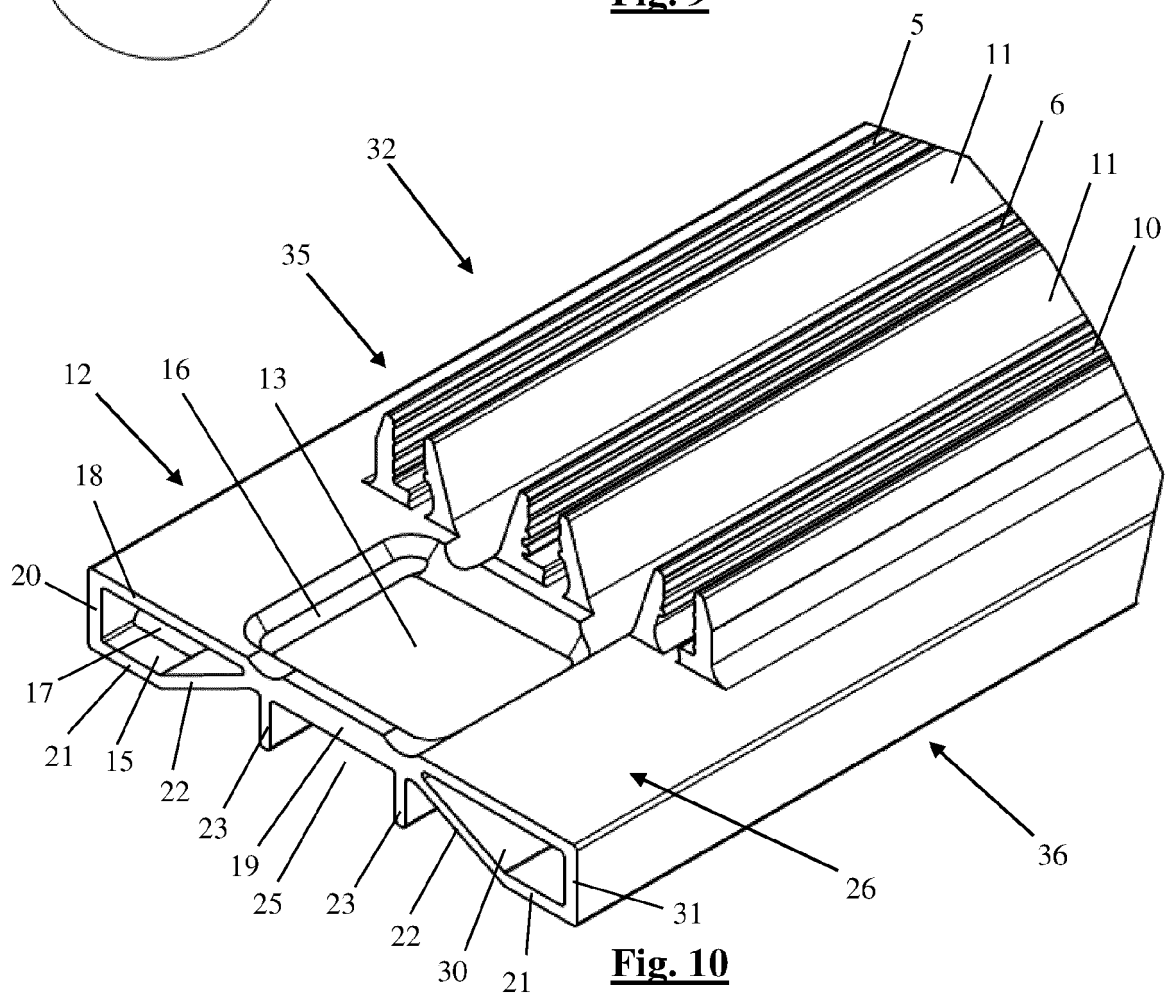


Fig. 10

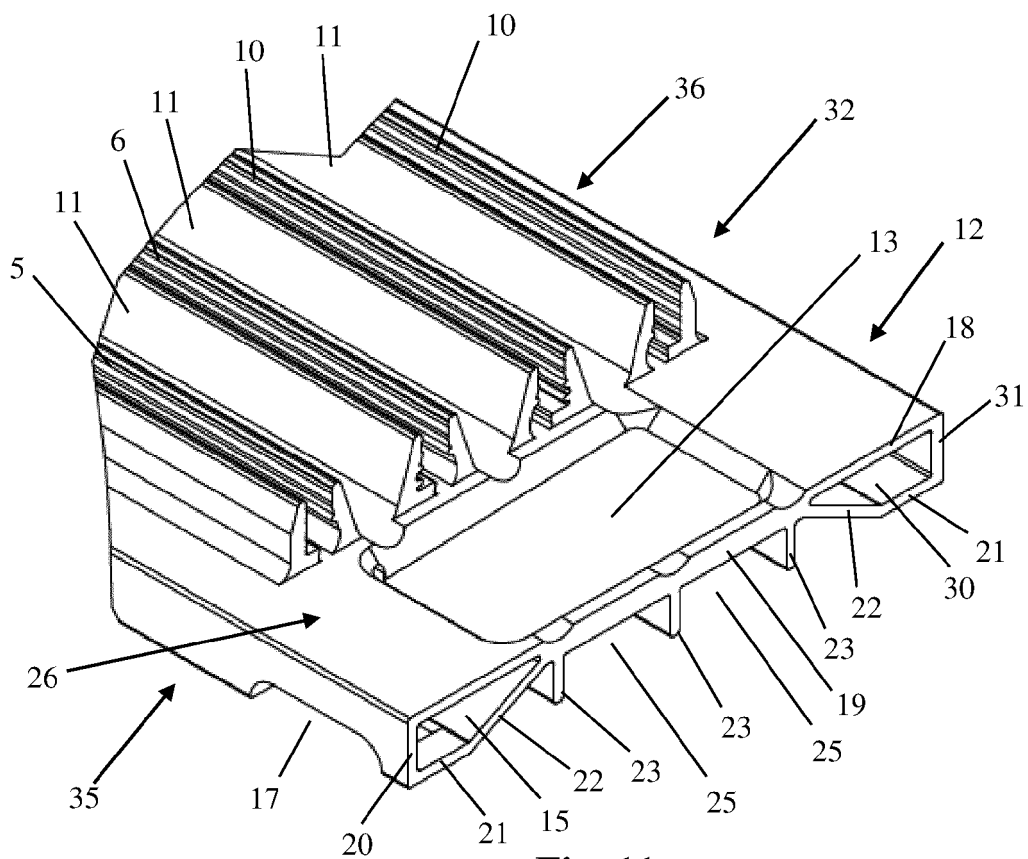


Fig. 11

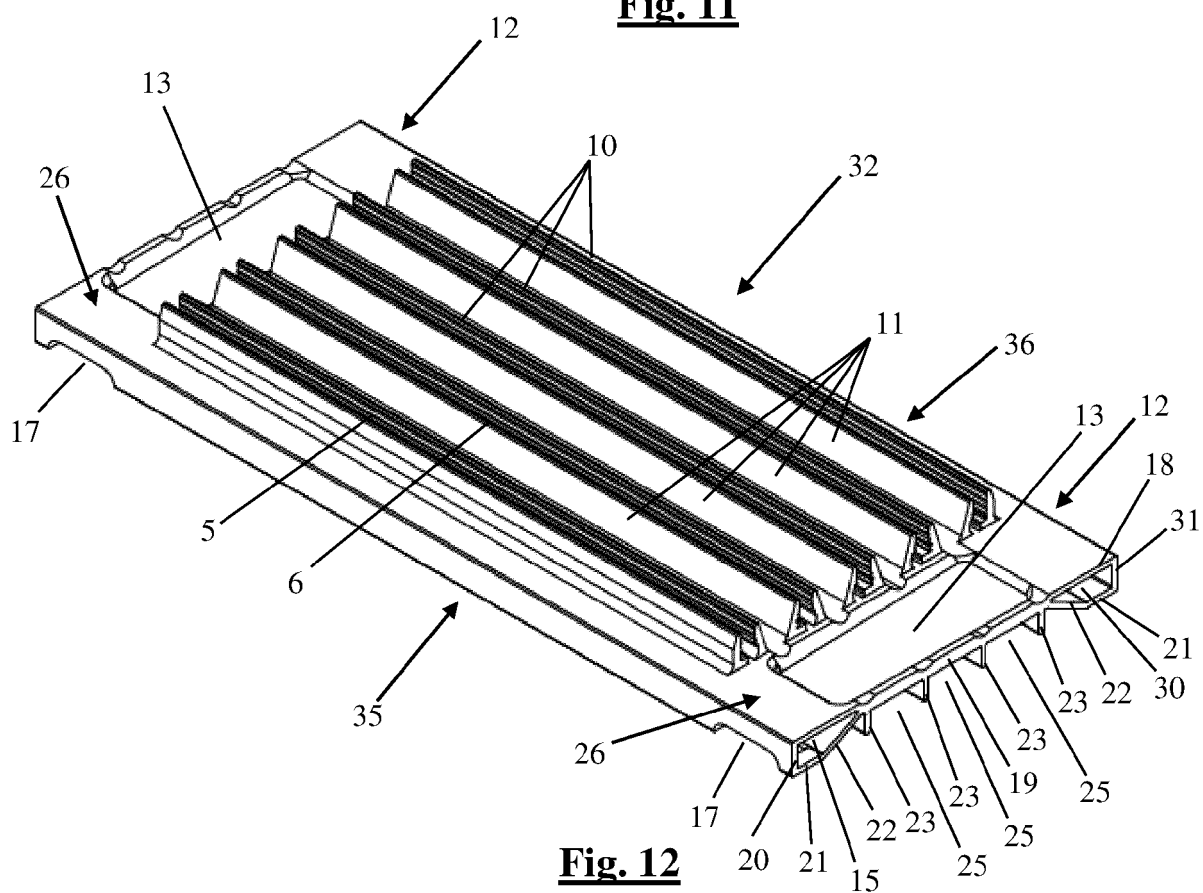


Fig. 12





EUROPEAN SEARCH REPORT

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EP 21 16 1480

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EPO FORM 1503 03.82 (P04C01)

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,D	DE 10 2016 007291 A1 (WEINOR GMBH & CO KG [DE]) 21 December 2017 (2017-12-21) * paragraph [0024] - paragraph [0028] * * figures 1-3 *	1-14	INV. E05D15/06 E06B7/14
A	WO 99/51825 A1 (NORDISKA BALCO AB [SE]; BJOERKMAN LARS [SE]) 14 October 1999 (1999-10-14) * page 4, line 14 - page 6, line 14 * * figures 1-4 *	1-14	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05D E06B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 25 June 2021	Examiner Prieto, Daniel
CATEGORY OF CITED DOCUMENTS 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		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 & : member of the same patent family, corresponding document	

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

EP 21 16 1480

5 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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25-06-2021

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102016007291 A1	21-12-2017	NONE	
-----	-----	-----	-----
WO 9951825 A1	14-10-1999	AT 268844 T	15-06-2004
		AU 4065499 A	25-10-1999
		CA 2327818 A1	14-10-1999
		CN 1296541 A	23-05-2001
		CZ 20003679 A3	11-04-2001
		DE 69917898 T2	30-06-2005
		DK 1076741 T3	16-08-2004
		EP 1076741 A1	21-02-2001
		ES 2223173 T3	16-02-2005
		HU 0102082 A2	28-10-2001
		JP 2002510760 A	09-04-2002
		NO 321131 B1	20-03-2006
		PL 343347 A1	13-08-2001
		RU 2208678 C2	20-07-2003
		SE 509284 C2	11-01-1999
		US 6370830 B1	16-04-2002
		WO 9951825 A1	14-10-1999
-----	-----	-----	-----

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 1162604 C [0003]
- EP 2365169 A2 [0003]
- JP 2002115467 A [0003]
- DE 102016007291 A1 [0003]
- DE 102016007291 A [0003]