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(54) **Screen construction with improved water disposal**

(57) The present invention relates to a screen construction (1) comprising a roof structure (2), a supporting structure (3) for this roof structure (2), and at least one screen (4) which can be wound onto and unwound from a screen roller and comprises an essentially horizontally extending bottom lath (5), in which the roof structure (2) comprises at least two lateral guides (6) in which the ends of the bottom lath (5) can be guided, and in which the

bottom lath (5) comprises a water-draining duct (7) in which water of precipitation can be drained off in the direction of the lateral guides (6).

Since, in the case of precipitation, the water of precipitation is drained off via the water-draining duct (7) and the lateral guides (6), such a screen construction (1) has the significant advantage that water of precipitation can be drained off efficiently and easily, irrespective of the position of the screen (4).

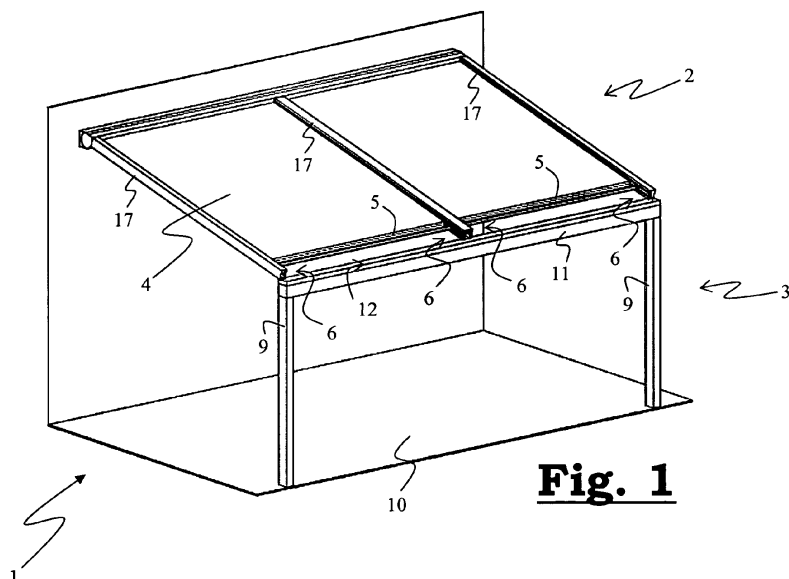


Fig. 1

Description

[0001] The present invention relates to a screen construction comprising a roof structure, a supporting structure for this roof structure, and at least one roll-up/roll-down screen on a screen roller which comprises an essentially horizontally extending bottom lath, in which the roof structure comprises at least two lateral guides in which the ends of the bottom lath can be guided.

[0002] In order to be able to enjoy a terrace even more, screen constructions, such as for example awnings, pergolas, terrace coverings and the like are an ideal solution. In order to protect the user against bright sun, precipitation (rain, snow, etc) the known screen constructions comprise a roll-up/roll-down screen which, depending on the weather conditions, can be rolled down completely, partly or not at all.

[0003] With such screen constructions, good drainage is important so that water of precipitation (or possibly melted water) which lands on the screen can be drained away quickly. It is known from European patent publication EP 2 011 932 to provide the bottom lath with a collecting duct in which the water of precipitation collects which lands on the screen. In order to drain the water away, this bottom lath is furthermore provided with at least one gutter which allows the collected water to flow out in the direction of openings provided in the columns which form part of the supporting structure.

[0004] However, the device described in EP 2 011 932 has the drawback that the gutters provided on the bottom lath only join onto the openings provided in the columns when the screen is completely rolled down. If the screen is only partly rolled down when precipitation falls, the water collected in the collecting duct will thus at least partly end up on the terrace due to the fact that, in this case, the gutters are not joined onto said openings and, consequently, the water of precipitation will gush onto the terrace, as it were.

[0005] Likewise, with the screen construction described in international patent application W002092938, large amounts of water will disappear via the lateral edges of the screen in the direction of the space to be protected below the screen construction in the case of rain in combination with gusts (or blasts) of wind, despite the presence of a water drainage duct at the location of the lateral guides. The reason for this is that the edges of the screen in the international patent application W002092938 hang freely, even when the screen has been completely unwound, and thus these edges will flap when rain falls and wind blows, resulting in the edges of the screen at certain points in time being situated below the water drainage duct. At these points in time, the edges are at their lowest position, as a result of which the water of precipitation will follow this route and thus end up in the space under the screen construction which is to be protected.

[0006] It is an object of the present invention to provide a screen construction which makes it possible to drain

away the water of precipitation which lands on the screen in an efficient and quick manner, irrespective of the position of the screen.

[0007] This object of the invention is achieved by providing a screen construction comprising a roof structure, a supporting structure for this roof structure, and at least one roll-up/roll-down screen on a screen roller which comprises an essentially horizontally extending bottom lath, in which the roof structure comprises at least two lateral guides in which the ends of the bottom lath can be guided, in which said lateral guides comprise one or more screen guides for guiding the lateral sides of the screen during the roll-up/roll-down movement thereof and in which a water-carrying duct is connected to or forms part of the bottom lath by means of which water of precipitation can be drained away in the direction of at least one of said lateral guides. Due to the fact that the lateral sides of the screen are guided in said screen guides, the screen is prevented from flapping and consequently water of precipitation is prevented from flowing away via the lateral sides of the screen in the direction of the space under the screen construction which is to be protected. In this way, the water of precipitation will be forced in the direction of the bottom lath, as it were, and water of precipitation is prevented from being drained off laterally via the lateral sides of the screen.

[0008] In order to achieve quick drainage in the direction of the lateral guides, said water-draining duct, in a preferred embodiment, slopes in the direction of at least one of the lateral guides, so that the water of precipitation is forced in the direction of at least one of the lateral guides, as it were.

[0009] Since in the case of precipitation, the water of precipitation is drained off via the water-draining duct and the lateral guides, such a screen construction has the significant advantage that water of precipitation can be drained off efficiently and easily, irrespective of the position of the screen.

[0010] In a preferred embodiment of the screen construction according to the invention, at least one of the lateral guides comprises a water-carrying profile provided for collecting and guiding water of precipitation originating from the water-draining duct in the direction of the supporting structure.

[0011] According to a more preferred embodiment of the screen construction according to the invention, the supporting structure comprises substantially vertically extending columns, which are at least provided draining off water of precipitation originating from the lateral guides in the direction of the ground.

[0012] In a particular embodiment of the screen construction according to the invention, the roof structure comprises an essentially horizontally extending front beam in which or on which a gutter profile is provided which is suitable for collecting and guiding water of precipitation originating from at least one lateral guide in the direction of at least one of the substantially vertically extending columns. In an alternative embodiment, said gut-

ter profile is situated on an essentially horizontally extending front beam. In the latter case, the gutter profile may be attached to said front beam by means of mounting means, for example one or more screw connections or bolt connections.

[0013] In a more particular embodiment of the screen construction according to the invention, at least one of said columns comprises a drainage pipe provided for draining off the water of precipitation originating from the lateral guides and/or the gutter profile in the direction of the ground. Said drainage pipe preferably also extends vertically and has a diameter of between 50 and 120 mm.

[0014] To prevent blockages, in a particularly advantageous embodiment of the screen construction according to the invention, the bottom lath comprises a perforated profile which is provided to filter out leaves and other material from the water of precipitation. Said profile is preferably provided on the upper side of the water-draining duct of the bottom lath.

[0015] In order to guide the lateral side of the screen during the roll-up and roll-down movement thereof in screen guides, the lateral sides of the screen which are guided in these screen guides preferably have a thickening, with each of these thickenings being provided in a respective guide profile to retain and guide the screen in the screen guides. These thickenings contribute significantly to a good and controlled drainage of the water of precipitation, as they ensure that the sides of the screen are kept at least in the plane of the screen or even come to lie slightly higher than the plane of the screen due to the own weight of the screen. The advantage thereof is that the water of precipitation will substantially be drained off to the bottom lath. In a particularly advantageous embodiment, the screen construction comprises thickenings on the lateral sides of the screen which are provided to drain off the water of precipitation on the lateral sides of the screen in the direction of the bottom lath.

[0016] Such a guide profile which is provided with such a thickening can then be arranged in the screen guides, for example with play. Play should in this case preferably be provided in the plane of the screen. If forces act on the screen, such as for example blasts of wind, or if rain falls on the screen, etc., this screen can then deflect slightly, thanks to said play, without the thickenings coming out of the guide profiles and without damaging the screen. The guide profiles can in this case also be pushed away from the screen into the screen guides by means of resilient material, so that the screen comes under a resilient prestress in a direction at right angles to the roll-up and roll-down direction.

[0017] Said thickenings have to be sufficiently flexible in order to be able to roll the screen up and down the screen roller. To this end, these thickenings may, for example, be designed as half zips. Such a half zip can readily be attached to a lateral side of the screen in its entirety by, for example, sewing or fusing or welding, in which case it can extend along the entire longitudinal direction of the screen.

[0018] The present invention will now be explained in more detail by means of the following detailed description of a preferred embodiment of a screen construction according to the present invention. The intention of this description is solely to give illustrative examples and to indicate further advantages and particulars of this screen construction, and can therefore by no means be interpreted as a limitation of the area of application of the invention or of the patent rights laid down in the claims.

[0019] In this detailed description, reference numerals are used to refer to the attached drawings, in which:

- **Fig. 1:** shows a perspective view of a screen construction according to the present invention;
- **Fig. 2:** shows a cross section of the bottom lath with the water-draining duct;
- **Fig. 3:** shows a cross section of a lateral guide;
- **Fig. 4:** shows a perspective view of the bottom lath illustrated in Fig. 2;
- **Fig. 5:** shows a perspective view of how the water of precipitation is drained off in the water-draining duct, via the carriage, in the direction of the lateral guide.

[0020] The screen construction (1) according to the invention and illustrated in Fig. 1, comprises an inclined roof structure (2) and a supporting structure (3) for this roof structure (2). In order to be able to protect the roof structure (2) at least partly, the screen construction (1) furthermore comprises at least one roll-up/roll-down screen (4) on a screen roller. The screen roller on which this screen (4) is rolled up and rolled down is not shown in these figures. This part of the screen construction is already generally known from the prior art.

[0021] On a side opposite the side where this screen (4) is rolled up and rolled down, the screen (4) is provided with an essentially horizontally extending bottom lath (5). Furthermore, the illustrated roof structure (2) comprises at least two lateral guides (6) in which the lateral sides of the screen (4) and the ends of the bottom lath (5) are guided during the roll-up and roll-down movement of the screen (4). To this end, the bottom lath (5) comprises an end piece at each end, also referred to as carriage (18), with one or more running wheels (16) which are arranged so that they can run in one or more lath guides (15) in order to retain and guide the bottom lath (5) in the lath guides (15) in this manner during the roll-up and roll-down movement of the screen (4). In order to improve the strength, the lateral guides (6) form part of a slanting roof structure element (17). The roof structure (2) of the screen construction (1) illustrated in Fig. 1 comprises three inclined roof structure elements (17) between which two screens (4) and an essentially horizontally extending front beam (11) can be rolled up and rolled down.

[0022] In order to now drain off the water of precipitation which lands on the screen (4) efficiently and quickly, irrespective of the position of the screen (4), the bottom lath (5) comprises a water-draining duct (7) in which water

of precipitation can be drained off in the direction of the lateral guides (6), as is clear from Figs. 2 and 4. In order to drain off water originating from said water-draining duct (7) further, the lateral guides comprise a water-carrying profile (8) which is provided in order to collect and guide the water of precipitation in the direction of the supporting structure (3), as is clear from Fig. 3. In order to prevent the water of precipitation from dripping outside the water-carrying profile (8), the carriage (18) comprises a protruding part (19), also referred to as a drip nose (19). This drip nose (19) ensures that (see Fig. 5) the water of precipitation drips or drains off in the water-carrying profile (8) and prevents it from dripping or draining off outside the water-carrying profile (8) as a result of adhesive force.

[0023] Fig. 3 in each case shows one of the outermost slanting roof structure elements (17) of the roof structure (2). The illustrated slanting roof structure element (17) comprises a lateral guide (6) which, in turn, also comprises a water-carrying profile (8) in addition to a screen guide (14) and a lath guide (15).

[0024] In order to drain off the water of precipitation originating from the lateral guides (6) further in the direction of the ground, the supporting structure (3) comprises essentially vertically extending columns (9), in which a drainage pipe is provided in or on at least one of said columns (9) for draining off water of precipitation originating from these lateral guides (6). The water of precipitation originating from the lateral guides (6) can either flow in a gutter profile first and then in said drainage pipe or, in an alternative embodiment, flow directly into this drainage pipe. The choice to provide one or more columns (9) with a drainage pipe is essentially determined based on the screen (roof) surface. With a screen surface of less than 20 m², only one column (9) will be provided with a drainage pipe, while if the screen surface is larger (> 20 m²), each column (9) will be provided with a drainage pipe.

[0025] The roof structure (2) of the screen construction (1) according to the present invention furthermore comprises an essentially horizontally extending front beam (11), in or on which a gutter profile (12) is provided which is suitable for collecting and guiding water of precipitation in the direction of the essentially vertically extending columns (9). This gutter profile (12) is important in order to ensure a rapid drainage of water in the case of relatively large screen constructions (1) which, like the screen construction illustrated in Fig. 1 comprise more than two lateral guides (6). The reason for this is that the water of precipitation which lands in the intermediate lateral guides (6) via the water-draining duct (7) is drained off in the direction of the columns (9) by means of this gutter profile (12).

[0026] Taking into account the above and referring to the screen construction (1) illustrated in Fig. 1, the water of precipitation which lands on the screen (4) will be drained off as follows: due to the inclination of the screen, the water of precipitation will run in the direction of the bottom lath (5) where it will flow into the water-draining

duct (7), as illustrated in Fig. 2. In order to ensure good drainage of water of precipitation coming from the screen (4) to the water-draining duct (7), the transition surface (denoted by reference numeral 20) of the screen (4) in the bottom lath (5) to the water-draining duct (7) is preferably a surface inclined in the direction of the water-draining duct (7).

[0027] Once the water of precipitation is in this water-draining duct (7), it will either be drained off in the direction of the outer lateral guide (6), where it will be drained off further via the water-carrying profile (8) in the direction of the gutter and then in the direction of the drainage pipe provided in the columns (9) or will be drained off in the direction of the intermediate lateral guide (6), where it will initially be drained off in the direction of the gutter profile (12) of the front beam (11) via the water-carrying profile (8) and will subsequently also be drained off via the drainage pipe provided in the columns (9).

[0028] In order to prevent blockages in the water-draining duct (7) according to the present invention, the bottom lath (5) is provided with a perforated profile (13), preferably on its upper side. Such a profile (13) is also referred to as a leaf collector and serves the purpose of filtering and collecting coarse dirt, such as leaves, moss and twigs, from the water of precipitation.

Claims

1. Screen construction (1) comprising a roof structure (2), a supporting structure (3) for this roof structure (2), and at least one roll-up/roll-down screen (4) on a screen roller which comprises an essentially horizontally extending bottom lath (5), in which the roof structure (2) comprises at least two lateral guides (6) in which the ends of the bottom lath (5) can be guided, **characterized in that** said lateral guides (6) comprise one or more screen guides (14) for guiding the lateral sides of the screen (4) during the roll-up/roll-down movement thereof and **in that** a water-draining duct (7) is connected to or forms part of the bottom lath (5) by means of which water of precipitation can be drained away in the direction of at least one of said lateral guides (6).
2. Screen construction (1) according to Claim 1, **characterized in that** at least one of the lateral guides (6) comprises a water-carrying profile (8) provided for collecting and guiding water of precipitation originating from the water-draining duct (7) in the direction of the supporting structure (3).
3. Screen construction (1) according to Claim 1 or 2, **characterized in that** the supporting structure (3) comprises essentially vertically extending columns (9) which are at least provided for draining off water of precipitation originating from the lateral guides (6) in the direction of the ground (10).

4. Screen construction (1) according to Claim 3, **characterized in that** the roof structure (3) comprises an essentially horizontally extending front beam (11) in or on which a gutter profile (12) is provided which is suitable for collecting and guiding water of precipitation originating from at least one lateral guide (6) in the direction of at least one of the essentially vertically extending columns (9). 5
5. Screen construction (1) according to Claim 3 or 4, **characterized in that** at least one of said columns (9) comprises a drainage pipe provided for draining off water of precipitation originating from the lateral guides (6) and/or the gutter profile (12) in the direction of the ground (10). 10 15
6. Screen construction (1) according to one of the preceding claims, **characterized in that** the bottom lath (5) comprises a perforated profile (13) which is provided to filter leaves from the water of precipitation. 20
7. Screen construction (1) according to one of the preceding claims, **characterized in that** said screen construction (1) comprises thickenings on the lateral sides of the screen (4) which are provided to drain off the water of precipitation on the lateral sides of the screen (4) in the direction of the bottom lath (5). 25
8. Screen construction (1) according to Claim 7, **characterized in that** said thickenings are configured as half zips. 30

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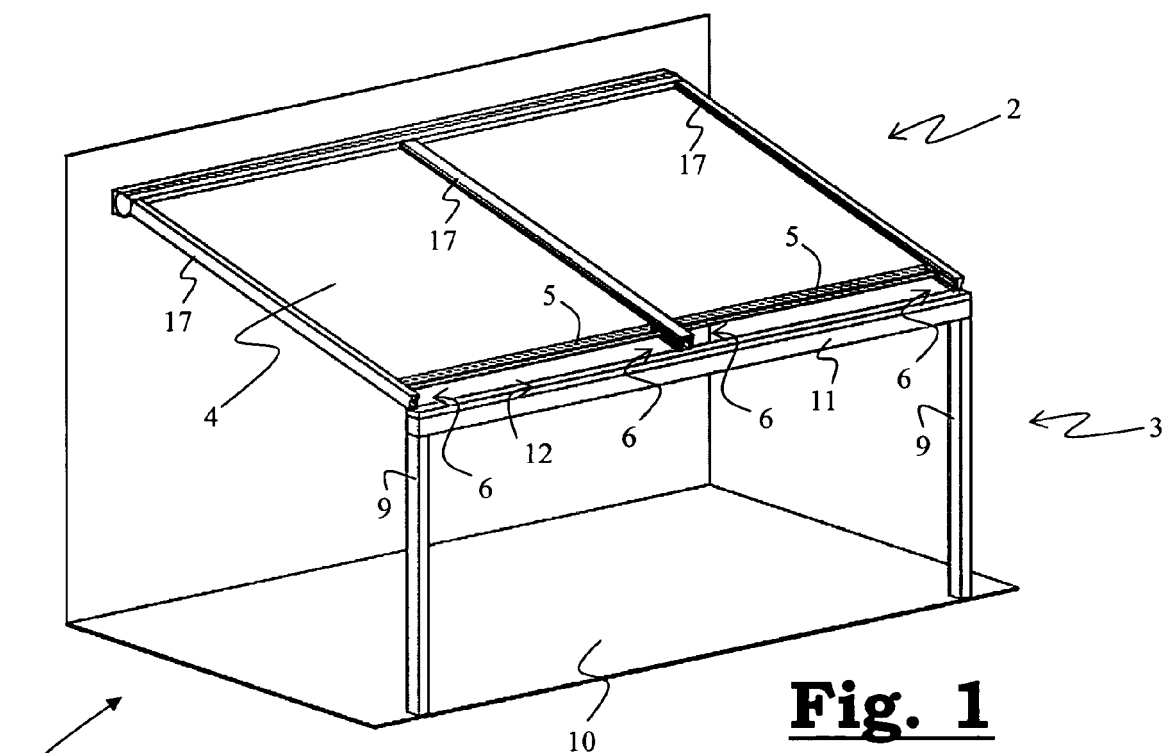


Fig. 1

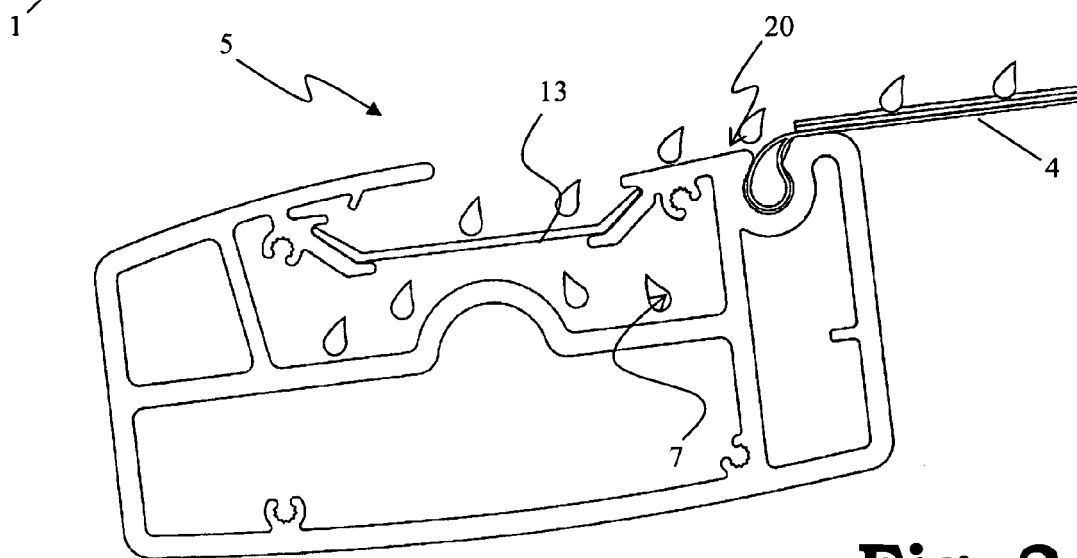


Fig. 2

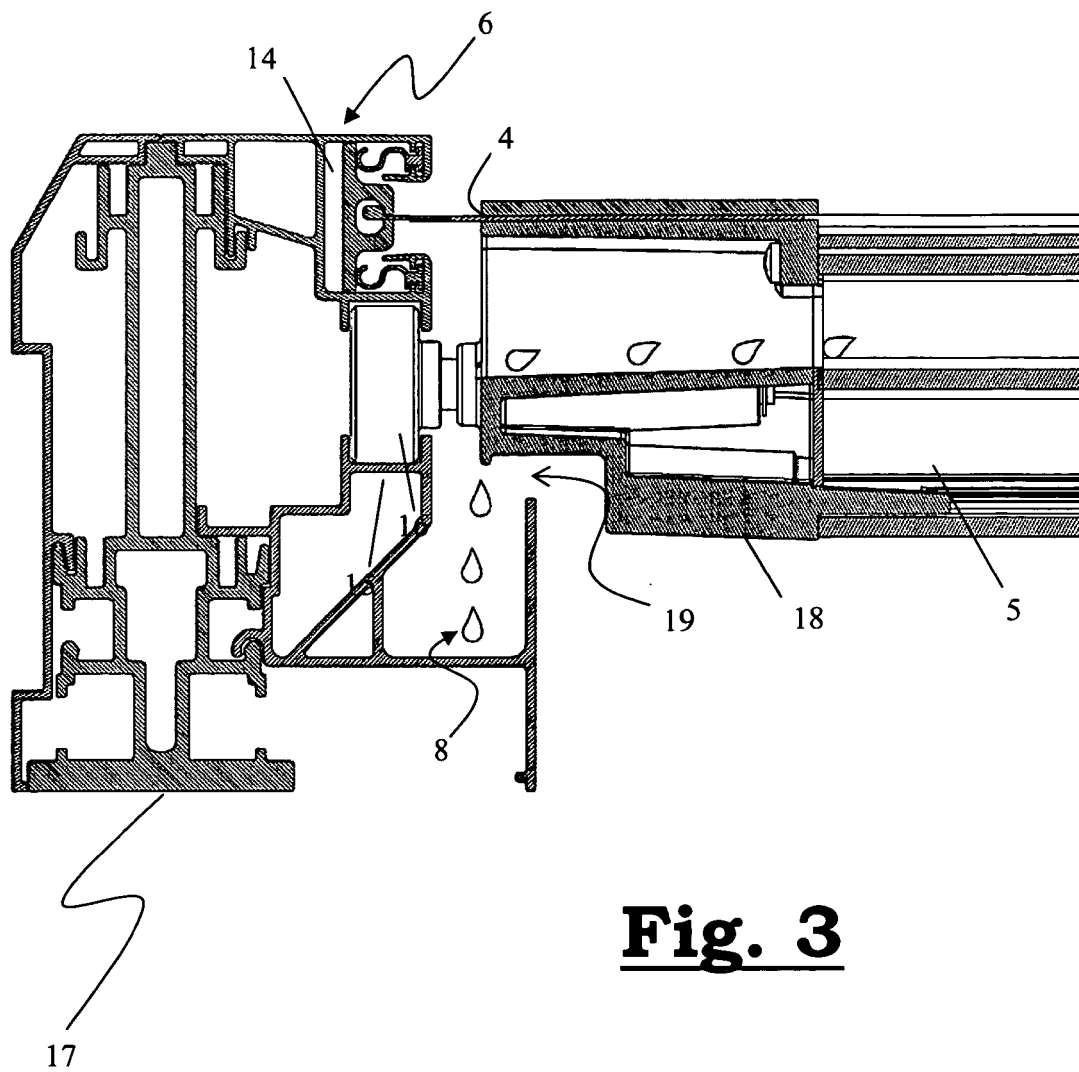


Fig. 3

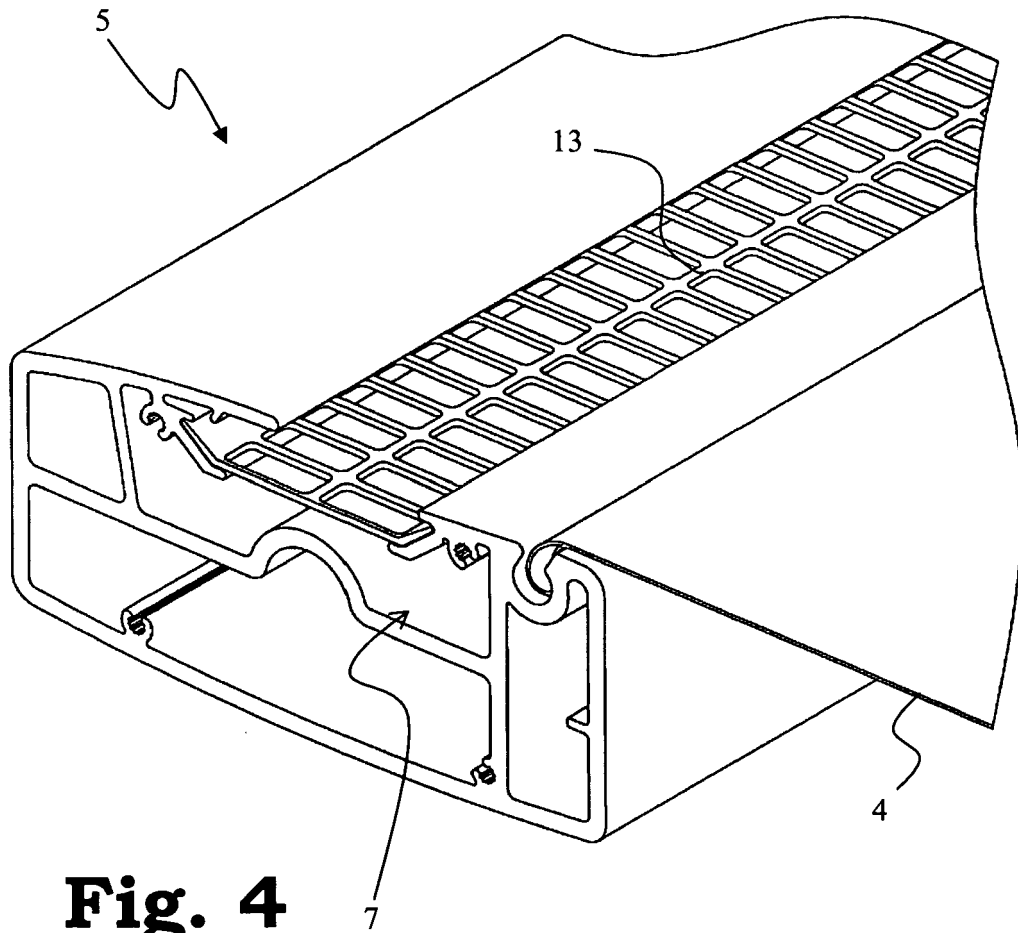
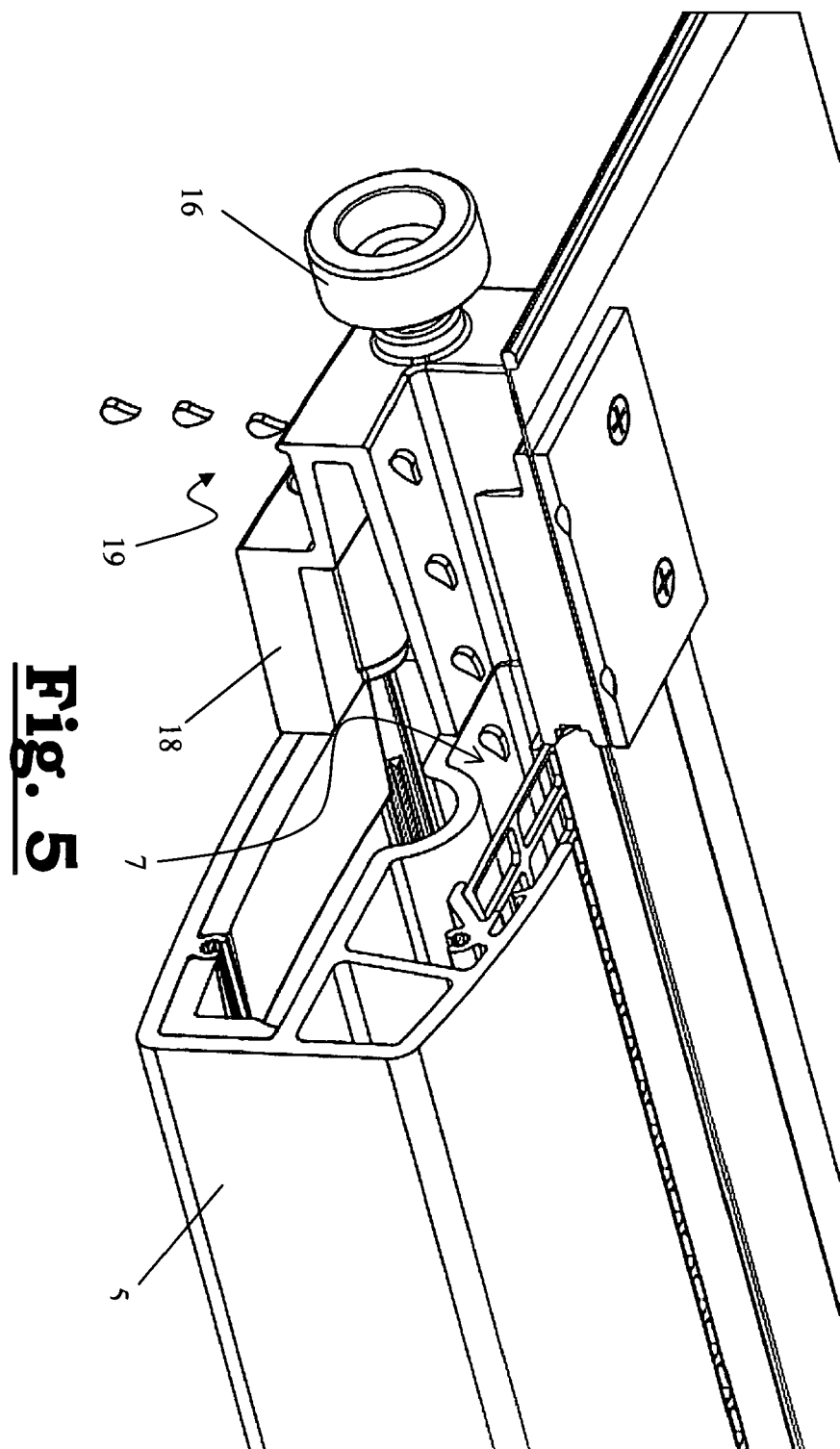


Fig. 4





EUROPEAN SEARCH REPORT

Application Number
EP 10 19 3914

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 02/092938 A1 (SPICKER UWE [DE]) 21 November 2002 (2002-11-21) * the whole document *	1-7	INV. E04F10/06
X	EP 2 011 932 A1 (CORRADI S R L [IT]) 7 January 2009 (2009-01-07) * the whole document *	1	
A	US 3 263 389 A (HEIRICH WILLIAM C) 2 August 1966 (1966-08-02) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 23 May 2011	Examiner Geivaerts, Dirk
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 19 3914

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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23-05-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 02092938	A1	21-11-2002	NONE
EP 2011932	A1	07-01-2009	AT 489518 T 15-12-2010 ES 2357280 T3 20-04-2011
US 3263389	A	02-08-1966	NONE

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2011932 A [0003] [0004]
- WO 02092938 A [0005]