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(54) **GUTTER BRACKET AND SYSTEM**

(57) A gutter bracket (1) for a hidden roof drainage system, and a roof drainage system. The gutter bracket (1) comprises a back portion (2) for attachment the gutter bracket (1) to a building, an intermediate portion (3) extending outward from the back portion (2) for receiving a gutter element (7), and an outer portion (4) extending from the intermediate portion (3). The outer portion (4)

comprises an adjustable adjustment member (5) that comprises a flashing attachment means (6) for receiving a flashing element (8). The height/vertical position of the flashing attachment means (6) is arranged to be adjustable in an adjustment range (A) in relation to the intermediate portion (3).

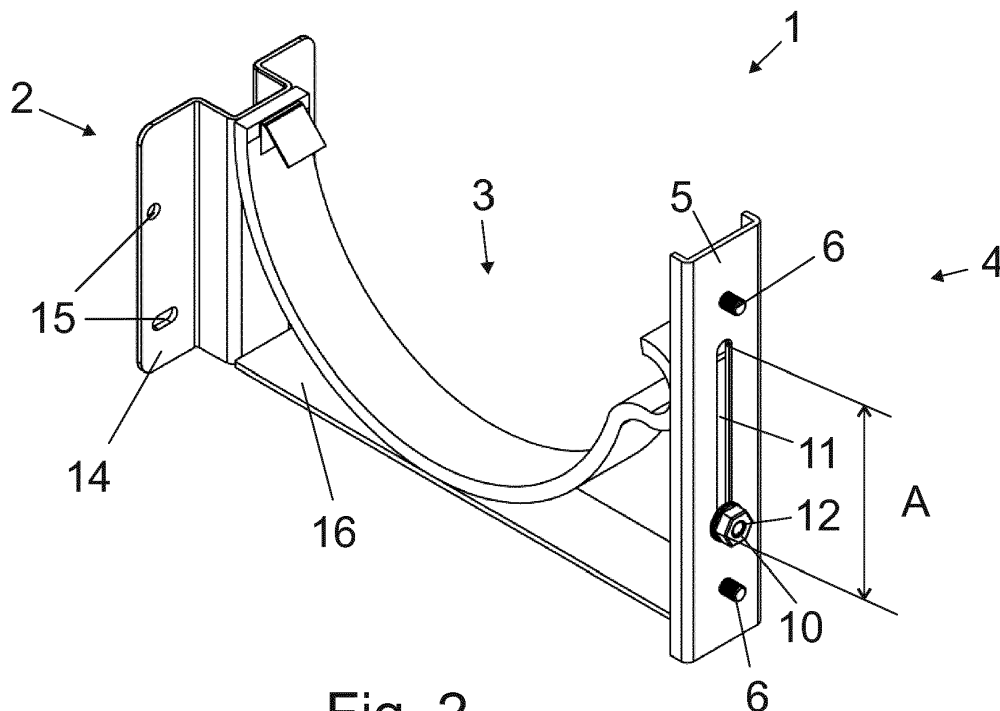


Fig. 2

Description

BACKGROUND

[0001] The invention relates to a gutter bracket for a hidden roof drainage system.

[0002] The invention further relates to roof drainage system.

[0003] Hidden gutter system is designed for so called eaveless roofs that have a growing demand on the market. In said systems, the gutter is hidden back of a masking frame. A problem with the known hidden gutter systems is that the masking frame is following the sloping gutter. Thus, the masking frame is not horizontally arranged, or aligned with the horizontal lines of the roof.

BRIEF DESCRIPTION

[0004] Viewed from a first aspect, there can be provided a gutter bracket for a hidden roof drainage system, the gutter bracket comprising

- a back portion for attachment the gutter bracket to a building,
- an intermediate portion extending outward from the back portion for receiving a gutter element, and
- an outer portion extending from the intermediate portion, wherein
- the outer portion comprises an adjustable adjustment member, comprising a flashing attachment means for receiving a flashing element, wherein
- the height/vertical position of the flashing attachment means is arranged to be adjustable in an adjustment range in relation to the intermediate portion.

[0005] The gutter bracket makes it possible to provide a gutter arrangement realizing independent adjustment of the gutter slope relative to the flashing elements.

[0006] Viewed from a further aspect, there can be provided a roof drainage system, comprising

- at least two gutter brackets as described above,
- at least one gutter element arranged on said gutter brackets, and
- at least one flashing element attached to the adjustment members of said gutter brackets, wherein
- one of the gutter brackets is arranged higher than another of the gutter brackets so that a desired gutter slope diverging from horizontal level is provided, and
- the adjustment members of said gutter brackets are adjusted such that said flashing element is in horizontal level.

[0007] The roof drainage system provides the possibility of independent adjustment of the gutter slope relative to the flashing elements. Said adjustment allows at least essentially precise horizontal mounting of the flashing elements, which positively affects the aesthetics of

the roof edge.

[0008] The gutter bracket and the system are characterised by what is stated in the independent claims. Some other embodiments are characterised by what is stated in the other claims. Inventive embodiments are also disclosed in the specification and drawings of this patent application. The inventive content of the patent application may also be defined in other ways than defined in the following claims. The inventive content may also be formed of several separate inventions, especially if the invention is examined in the light of expressed or implicit sub-tasks or in view of obtained benefits or benefit groups. Some of the definitions contained in the following claims may then be unnecessary in view of the separate inventive ideas. Features of the different embodiments of the invention may, within the scope of the basic inventive idea, be applied to other embodiments.

[0009] In one embodiment, the outer portion is provided with an outer surface faced away from the intermediate portion, and a projection extending from the outer surface, and wherein the adjustment member comprises an oblong opening arranged for receiving the projection, the position of the projection arranged to be selectable, and a locking member arrangeable to the projection for fastening the adjustment member against the outer surface. An advantage is that the position of the adjustment member is simple to do.

[0010] In one embodiment, the projection comprises a screw thread and the locking member comprises a counter thread that fits to the screw thread. An advantage is that the components are simple and easy to use.

[0011] In one embodiment, the locking member is a wing nut. An advantage is that the locking may be realized even without tools.

[0012] In one embodiment, both ends of the oblong opening are closed. An advantage is that the oblong opening has a sturdy structure.

[0013] In one embodiment, the flashing attachment means comprises a screw thread and a flashing locking member comprising a counter thread that fits to said screw thread. An advantage is that the components are simple and easy to use.

[0014] In one embodiment, the back portion comprises an attachment plate and at least two attachment holes therethrough for receiving fasteners. An advantage is that it is easy to attach the gutter bracket in the building.

[0015] In one embodiment, the gutter bracket comprises a transversal support element arranged under the intermediate portion, said transversal support element connecting the back portion to the outer portion. An advantage is that a very firm structure of the gutter bracket may be achieved.

[0016] In one embodiment, the flashing element comprises a facade element and a base element arrangeable between the gutter brackets and the facade element, wherein the base element comprises an attachment means for matching to flashing attachment means of at least two gutter brackets, and wherein the facade ele-

ment is attachable to the base element. An advantage is that the system is strong and the façade element easy to change if needed.

[0017] In one embodiment, the attachment means are arranged in at least one groove that extends in lengthwise direction on outer surface of the base element. An advantage is that the attaching means can be sink in the base element.

[0018] In one embodiment, the facade element comprises attachment folds on its longitudinal edges, said attachment folds being elastically bendable for attaching the facade element to longitudinal edges of the base element. An advantage is that creating of façade surface may be very simple and quick.

BRIEF DESCRIPTION OF FIGURES

[0019] Some embodiments illustrating the present disclosure are described in more detail in the attached drawings, in which

Figure 1 is a schematic perspective view of an embodiment of a gutter bracket,

Figure 2 is another schematic perspective view of the gutter bracket shown in Figure 1,

Figure 3 is a third schematic perspective view of the gutter bracket shown in Figure 1, but without an adjustment member,

Figure 4 is a schematic side view of the adjustment member,

Figure 5 is a schematic side view of an embodiment of a roof drainage system in partial cross-section,

Figure 6 is a schematic perspective view of a detail of a roof drainage system, and

Figure 7 is a schematic perspective view of another detail of a roof drainage system.

[0020] In the figures, some embodiments are shown simplified for the sake of clarity. Similar parts are marked with the same reference numbers in the figures.

DETAILED DESCRIPTION

[0021] Figure 1 is a schematic perspective view of an embodiment of a gutter bracket, **Figure 2** is another schematic perspective view of the gutter bracket shown in Figure 1, **Figure 3** is a third schematic perspective view of the gutter bracket shown in Figure 1 without an adjustment member, and **Figure 4** is a schematic side view of the adjustment member.

[0022] According to an aspect, the gutter bracket 1 comprises a back portion 2 through which the gutter

bracket 1 can be attached to a building or an eaves thereof. The gutter bracket 1 further comprises an intermediate portion 3 extending outward from the back portion 2 and an outer portion 4 extending from the intermediate portion 3. The intermediate portion receives a gutter element 7 (shown in Figure 5), whereas the outer portion 4 is used for attaching a flashing element 8 (an embodiment shown in Figures 5 - 7).

[0023] In an embodiment, the gutter bracket 1 is made from 1,5 mm - 6 mm steel bars welded together, galvanized with zinc and painted with a powder paint. In another embodiments, the gutter bracket 1 may be made of another metal as steel, or made even non-metallic materials, such as plastic or plastic composition reinforced by e.g. glass fibers.

[0024] The outer portion 4 comprises an adjustable adjustment member 5 that comprises a flashing attachment means 6 for receiving the flashing element 8. The height or vertical position of the flashing attachment means 6 are adjustable in an adjustment range A in relation to the intermediate portion 3. Thus, the vertical position of the flashing element 8 in relation to the gutter element 7 attached to the intermediate portion can be adjusted.

[0025] In an embodiment, the adjustment member 5 is made from 1,5 - 3mm steel bar, galvanized with zinc and painted with a powder paint. In another embodiments, the adjustment member 5 may be made of another metal as steel, or made even non-metallic materials, such as plastic or plastic composition reinforced by e.g. glass fibers.

[0026] In an embodiment, the adjustment range A is 60 mm. It is to be noted, however, that the adjustment range A may be smaller, for instance 30 - 50 mm, or larger, such as 70 mm - 100 mm.

[0027] In the embodiment shown in Figures 1 - 4, the outer portion 4 is provided with an outer surface 9 (best shown in Figure 3) that is faced away from the intermediate portion 3 and on which the adjustment member 5 may slide up and down. A projection 10 extends from the outer surface 9. The adjustment member 5 comprises an oblong opening 11 that receives the projection 10 and in which oblong opening 11 the position of the projection 10 may be selected.

[0028] In an embodiment, the projection 10 comprises a screw thread and a locking member 12 for fastening the adjustment member 5 against the outer surface 9 comprises a counter thread that fits to the screw thread. In an embodiment, the locking member 12 is a nut, such as a hex headed nut or a wing nut.

[0029] In an embodiment, such as shown in Figures, both ends of the oblong opening 11 are closed. However, in another embodiment, one of the ends is open.

[0030] In an embodiment, the flashing attachment means 6 comprises a screw thread, and a flashing locking member 13 that comprises a counter thread can be fitted to said screw thread. The flashing locking member 13 may e.g. a nut. A flashing element 8 (an embodiment shown in Figures 5 - 7) may comprise holes through

which the flashing attachment means 6 can be arranged and the flashing element 8 attached to the gutter bracket 1 by tightening the flashing locking member 13 to the flashing attachment means 6.

[0031] In an embodiment, such as shown in Figures 1 - 4, the back portion 2 comprises an attachment plate 14 and at least two attachment holes 15 therethrough for receiving fasteners that attach the gutter bracket 1 to a building. Said fasteners may be screws, for instance.

[0032] In an embodiment, such as shown in Figures 1 - 3, the gutter bracket 1 comprises a transversal support element 16 that is arranged under the intermediate portion 3. The transversal support element 16 connects the back portion 2 to the outer portion 4 and gives an extra support for the gutter bracket 1 and the roof drainage system 100 as a whole.

[0033] **Figure 5** is a schematic side view of an embodiment of a roof drainage system in partial cross-section, **Figure 6** is a schematic perspective view of a base element of the roof drainage system, and **Figure 7** is a schematic perspective view of a facade element of the roof drainage system.

[0034] The roof drainage system 100 comprises at least two gutter brackets 1 as defined in this description. Said gutter brackets are distributed in a suitable spacing and attached to a building. A distance between the gutter brackets 1 may be e.g. 600 mm - 1000 mm, for example 800 mm.

[0035] The roof drainage system 100 further comprises at least one gutter element 7 arranged and attached on said gutter brackets 1.

[0036] In the Figures, the cross-sectional shape of the gutter element 7 and the intermediate portion of the gutter brackets 1 is at least essentially semicircle. However, this is not the only possible cross-sectional shape of said elements. In another embodiments, the cross-sectional shape has a flat bottom and sides are straight, curved or combination of straight and curved portions.

[0037] In the roof drainage system 100, at least one flashing element 8 is attached to the adjustment members 5 of the gutter brackets 1. One of the gutter brackets 1 is arranged higher than another of the gutter brackets 1 so that a desired gutter slope diverging from horizontal level is provided. The slope may be, e.g. 0,2 % - 0,5 % to horizontal level.

[0038] The adjustment members 5 of the gutter brackets 1 are adjusted such that the flashing element 8 attached thereto is not sloping with the gutter elements 8 but is in horizontal level of the building.

[0039] In an embodiment, such as shown in Figures 5 - 7, the flashing element 8 has a layered structure, comprising a facade element 18 and a base element 17. The facade element 18 creates the outmost structure of the flashing element 8. The base element 17 is arranged between the gutter brackets 1 and the facade element 18.

[0040] The base element 17 comprises an attachment means 19 for matching to flashing attachment means 6 of the gutter brackets 1. In the embodiment shown in

Figure 6, the attachment means 19 comprises two series of holes arranged in grooves 20 that extend all the length of the base element 17. The grooves give room for the flashing locking members 13 described above.

[0041] In an embodiment, the facade element 18 is attachable to the base element 17 by attachment folds 21 that are formed on their longitudinal edges. The attachment folds 21 are elastically bendable for attaching the facade element 18 to longitudinal edges of the base element 17.

[0042] In an embodiment, the base element 17 is made of 0.7 mm thick material with MgZn coating.

[0043] In an embodiment, the facade element 18 is made of 0.5 mm material with Greencoat Crown BT coating.

[0044] Generally speaking, the base element 17 and the facade element 18 can be made of any suitable metal or even non-metallic materials such as plastic or plastic composition reinforced by e.g. glass fibers.

[0045] It is to be noted that the system 100 may include further elements that serve several functions: external corner elements, internal corner elements, gutter end elements, downpipe elements etc. In an embodiment, the downpipe is guided inside the façade of the building, optionally thermally insulated.

[0046] The invention is not limited solely to the embodiments described above, but instead many variations are possible within the scope of the inventive concept defined by the claims below. Within the scope of the inventive concept the attributes of different embodiments and applications can be used in conjunction with or replace the attributes of another embodiment or application.

[0047] The drawings and the related description are only intended to illustrate the idea of the invention. The invention may vary in detail within the scope of the inventive idea defined in the following claims.

REFERENCE SYMBOLS

[0048]

- | | |
|----|-----------------------------|
| 1 | gutter bracket |
| 2 | back portion |
| 3 | intermediate portion |
| 4 | outer portion |
| 5 | adjustment member |
| 6 | flashing attachment means |
| 7 | gutter element |
| 8 | flashing element |
| 9 | outer surface |
| 10 | projection |
| 11 | oblong opening |
| 12 | locking member |
| 13 | flashing locking member |
| 14 | attachment plate |
| 15 | attachment hole |
| 16 | transversal support element |
| 17 | base element |

18 facade element
 19 attachment means
 20 groove of base element
 21 attachment fold

100 roof drainage system

A adjustment range

Claims

1. A gutter bracket (1) for a hidden roof drainage system, the gutter bracket (1) comprising

- a back portion (2) for attachment the gutter bracket (1) to a building,
- an intermediate portion (3) extending outward from the back portion (2) for receiving a gutter element (7), and
- an outer portion (4) extending from the intermediate portion (3),

characterized in that

- the outer portion (4) comprises an adjustable adjustment member (5), comprising a flashing attachment means (6) for receiving a flashing element (8), wherein
- the height/vertical position of the flashing attachment means (6) is arranged to be adjustable in an adjustment range (A) in relation to the intermediate portion (3).

2. The gutter bracket as claimed in claim 1, wherein

- the outer portion (4) is provided with
 - an outer surface (9) faced away from the intermediate portion (3), and
 - a projection (10) extending from the outer surface (9), and wherein
- the adjustment member (5) comprises
 - an oblong opening (11) arranged for receiving the projection (10), the position of the projection (10) arranged to be selectable, and
 - a locking member (12) arrangeable to the projection (10) for fastening the adjustment member (5) against the outer surface (9).

3. The gutter bracket as claimed in claim 2, wherein

- the projection (10) comprises a screw thread and
- the locking member (12) comprises a counter thread that fits to the screw thread.

4. The gutter bracket as claimed in claim 3, wherein the locking member (12) is a wing nut.

5. The gutter bracket as claimed in any of claims 2 - 4, wherein both ends of the oblong opening (11) are closed.

6. The gutter bracket as claimed in any of the preceding claims, wherein

- the flashing attachment means (6) comprises

-- a screw thread and

-- a flashing locking member (13) comprising a counter thread that fits to said screw thread.

7. The gutter bracket as claimed in any of the preceding claims, wherein the back portion (2) comprises an attachment plate (14) and at least two attachment holes (15) therethrough for receiving fasteners.

8. The gutter bracket as claimed in any of the preceding claims, comprising a transversal support element (16) arranged under the intermediate portion (3), said transversal support element (16) connecting the back portion (2) to the outer portion (4).

9. A roof drainage system (100), comprising

- at least two gutter brackets (1) as claimed in any of the preceding claims,
- at least one gutter element (7) arranged on said gutter brackets (1), and
- at least one flashing element (8) attached to the adjustment members (5) of said gutter brackets (1), wherein
- one of the gutter brackets (1) is arranged higher than another of the gutter brackets (1) so that a desired gutter slope diverging from horizontal level is provided, and
- the adjustment members (5) of said gutter brackets (1) are adjusted such that said flashing element (8) is in horizontal level.

10. A roof drainage system (100) as claimed in claim 9, wherein the flashing element (8) comprises

-- a facade element (18) and

-- a base element (17) arrangeable between the gutter brackets (1) and the facade element (18), wherein

- the base element (17) comprises an attachment means (19) for matching to flashing attachment means (6) of at least two gutter brackets (1), and wherein

- the facade element (18) is attachable to the base element (17).

11. A roof drainage system (100) as claimed in claim 9, wherein the attachment means (19) are arranged in at least one groove (20) that extends in lengthwise direction on outer surface of the base element (17).

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12. A roof drainage system (100) as claimed in claim 9, wherein the facade element (18) comprises attachment folds (21) on its longitudinal edges, said attachment folds (21) being elastically bendable for attaching the facade element (18) to longitudinal edges of the base element (17).

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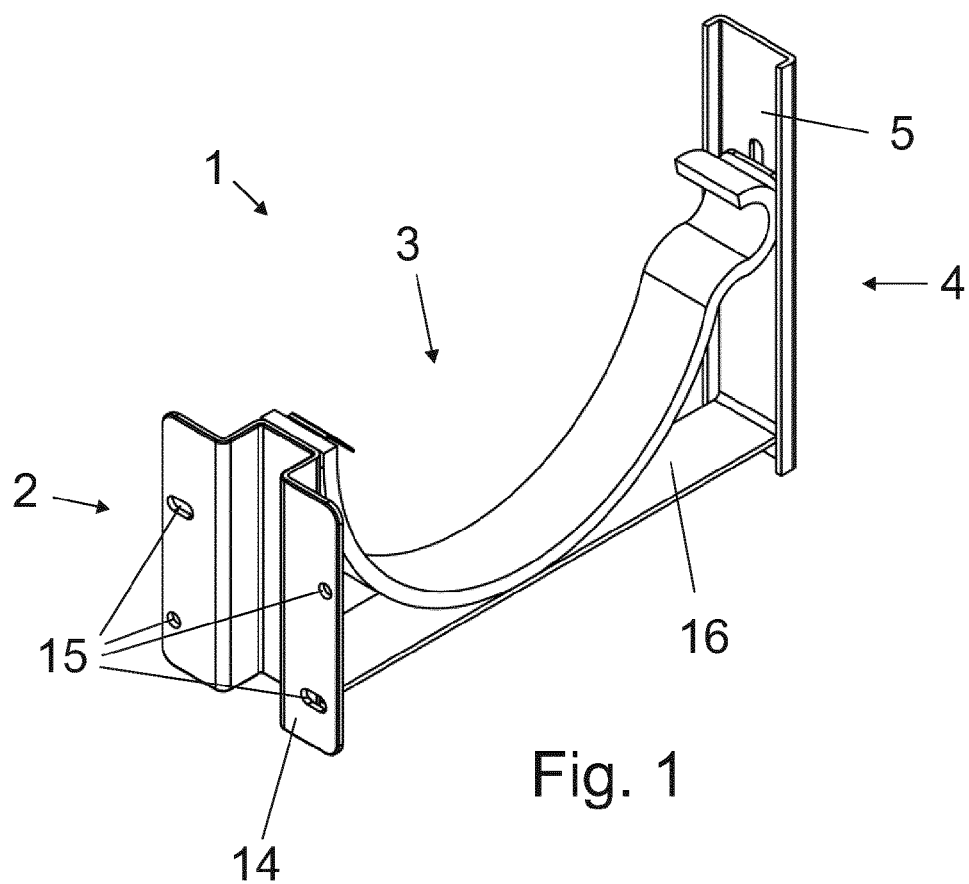


Fig. 1

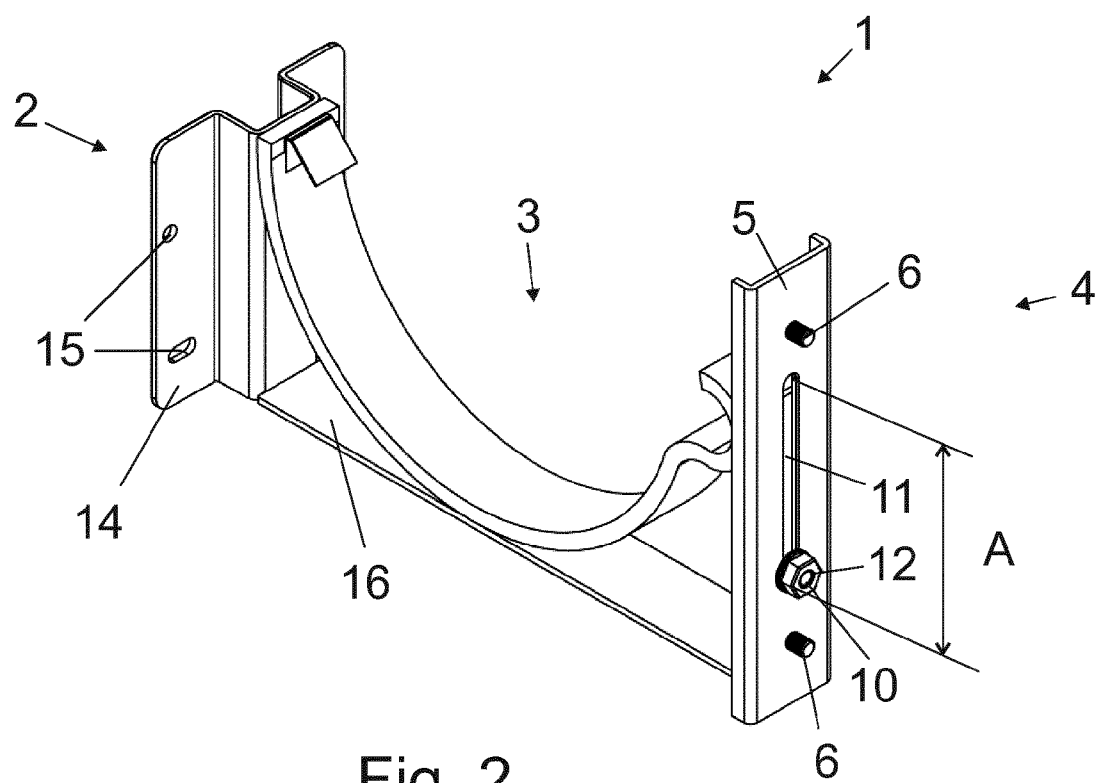
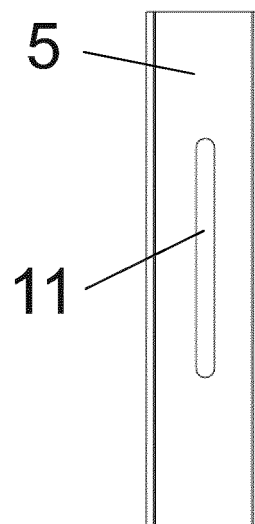
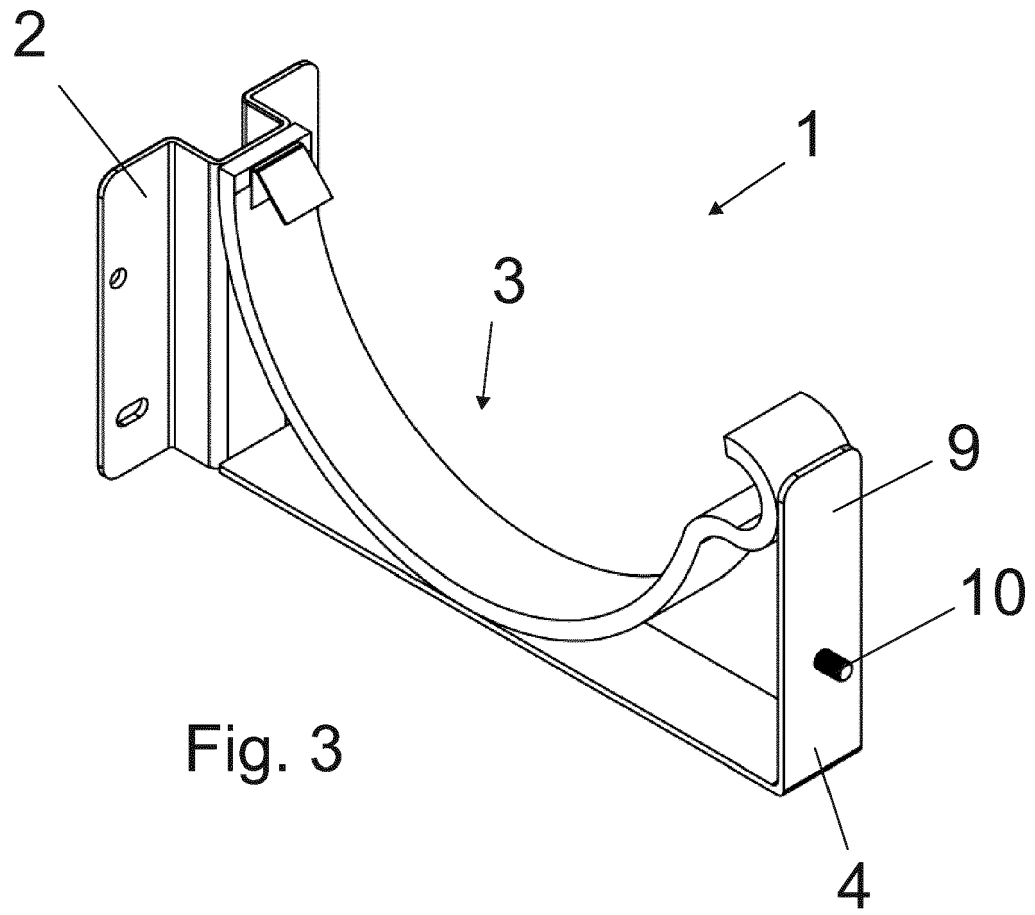


Fig. 2



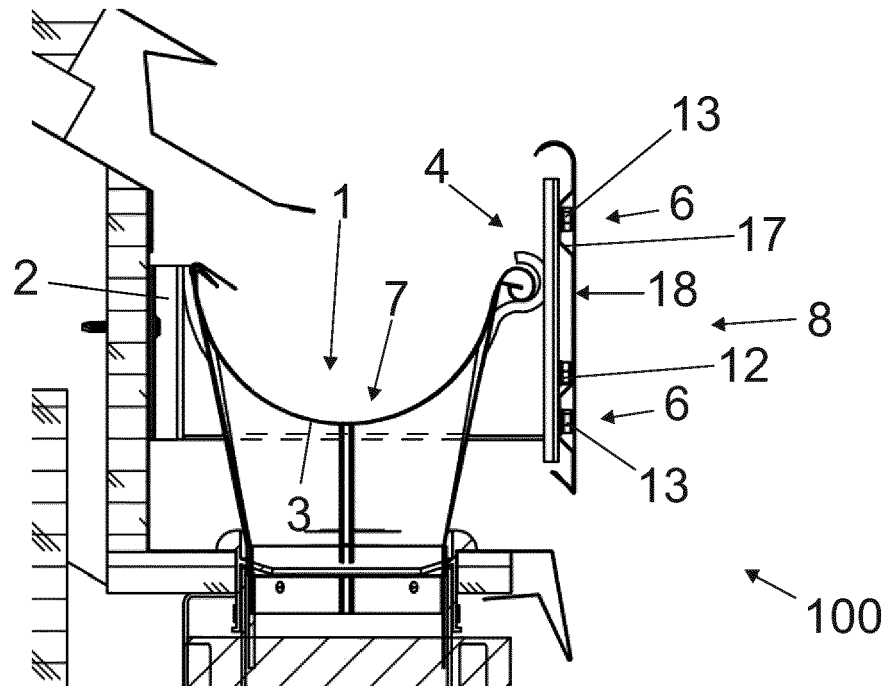


Fig. 5

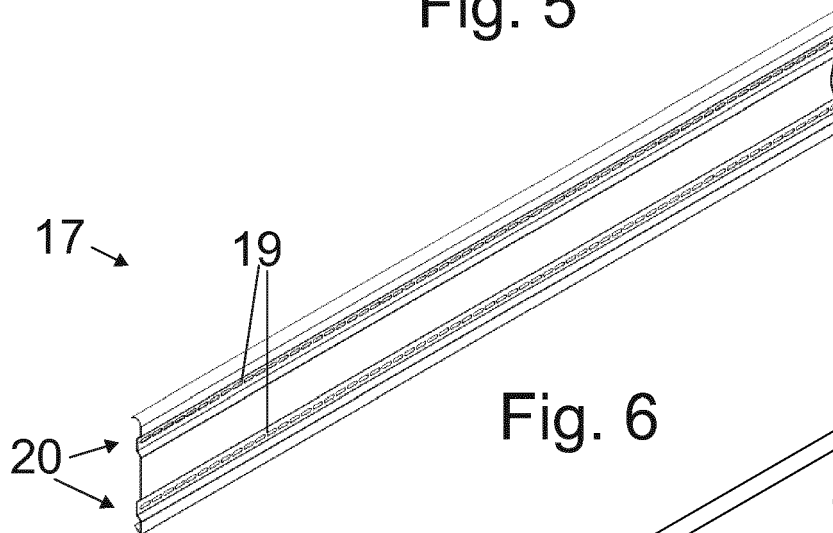


Fig. 6

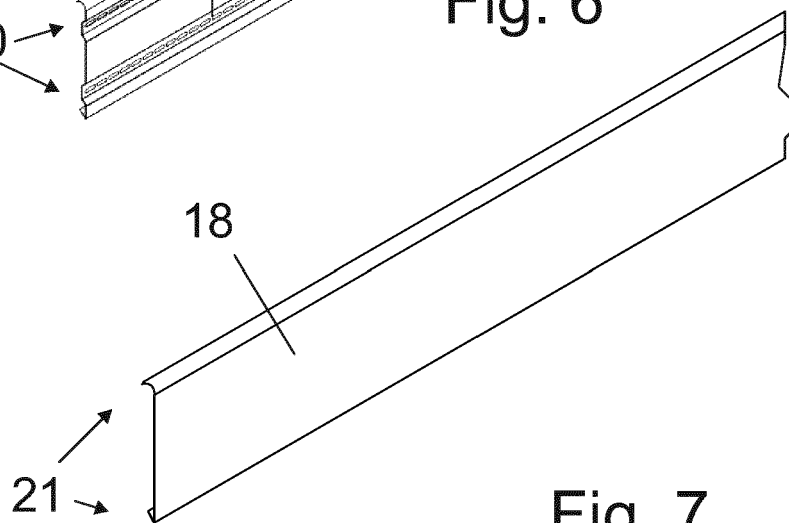


Fig. 7



EUROPEAN SEARCH REPORT

 Application Number
 EP 20 15 6057

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 July 2020	Examiner Demeester, Jan
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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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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