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(54) **AN OUTFLOW ELEMENT FOR DISCHARGING RAINWATER IN A SUBSTANTIALLY HORIZONTAL PLANE OF A ROOF**

(57) The present invention relates to an outflow element for discharging rainwater in a substantially horizontal plane of a roof, which outflow element is composed of an outlet pipe provided with an inlet opening and an outlet opening for rainwater, wherein the outlet pipe can be positioned with the inlet opening on the roof surface of the roof and which extends with its outlet opening through a roof edge of the roof, wherein the outflow ele-

ment further comprises a sheet, which sheet is provided with an opening with an inner dimension that is similar to the outer dimension of the outlet pipe, wherein the sheet is sealingly arranged around the outlet pipe at a certain distance from the inlet opening and, during positioning on the roof, can be formed to the shape of the roof edge and the roof surface.

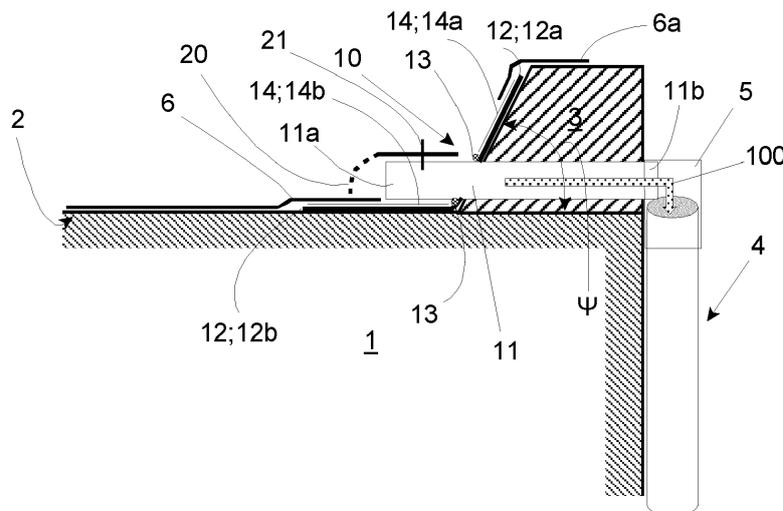


Fig. 1

Description

[0001] The invention relates to an outflow element for discharging rainwater in a substantially horizontal plane of a roof.

[0002] Outflow elements for rainwater are generally known and are provided in a flat roof for the purpose of discharging rainwater via a drainpipe to the sewage system.

[0003] One variant of known outflow elements consists of a sheet of lead or otherwise deformable sheet, which sheet is permanently fastened in a mechanical manner by means of a clamping bush to an outlet pipe, which extends through the roof. Such a variant is for example known from Dutch patent no. 2007002. The sheet of lead or otherwise deformable sheet may be modified or remodelled manually or using light hand tools to the contours of the roof on-site, in order to subsequently be covered with an appropriate roof covering.

[0004] The outflow element shown in NL-2007002 is characterized by a rather complex manufacturing method, wherein the fastening between the various components is achieved by mechanical deformation of, inter alia, the outlet pipe and the clamping bush. The risk of an inadequate sealing fit between the components cannot be ruled out, which results in a leaking outflow element in the roof structure.

[0005] The invention aims to provide a water-tight outflow element which does not exhibit the above-mentioned drawbacks and which can moreover be manufactured in a simpler manner and with fewer operations and can be installed on a flat roof in a simple manner.

[0006] To this end, the outflow element is composed of an outlet pipe provided with an inlet opening and an outlet opening for rainwater, wherein the outlet pipe can be positioned with the inlet opening on the roof surface of the roof and which outlet pipe extends with its outlet opening through a roof edge of the roof, wherein the outflow element further comprises a sheet, which sheet is provided with an opening with an inner dimension that is similar to the outer dimension of the outlet pipe, wherein the sheet is sealingly arranged around the outlet pipe at a certain distance from the inlet opening and, during positioning on the roof, can be formed to the shape of the roof edge and the roof surface.

[0007] The advantage of this variant is that the outflow element does not extend beyond the roof through the roof structure but through the vertical roof edge in order to discharge rainwater in a substantially horizontal direction. In addition, a permanent sealing connection is produced between the outlet pipe and the sheet, as a result of which leakage between the roof structure and the roof covering is not possible.

[0008] More specifically, in one embodiment, the seal between the sheet and the outlet pipe is formed by a weld, or the seal between the sheet and the outlet pipe is formed by a sealant joint.

[0009] As the sheet extends perpendicularly with re-

spect to the longitudinal direction of the outlet pipe prior to the positioning of the outflow element on the roof, the outflow element can on the one hand be produced in a more simple manner and with more consistent quality requirements. In addition, such a standardized design can be better adapted to different roof edge structures.

[0010] In one functional design, the outflow element also comprises a sealing layer, which sealing layer is sealingly arranged on the sheet and around the outlet pipe, wherein the sealing layer can - after the outflow element has been positioned on the roof - be incorporated in or with a roof covering layer which is provided on the roof.

[0011] In this case, the sealing layer may be bitumen.

[0012] More specifically, the outlet pipe has a rectangular cross section, wherein the rectangular outlet pipe can be positioned with its longitudinal side on the roof surface. As a result of this design, a stable positioning and orientation on the roof surface is possible, wherein the positioning on the longitudinal side also makes it possible to achieve the greatest discharge of water.

[0013] In functional embodiments, which allows for a rapid and efficient, but especially sufficiently water-tight, connection to the roof possible, the part of the sheet which extends from the longitudinal side facing away from the roof of the outlet pipe forms an angle of 30°-90°, in particular an angle of 40°-75°, more particularly an angle of 40°-60°, with respect to the roof surface.

[0014] That part of the sheet which extends on the longitudinal side facing towards the roof of the outlet pipe may also be formed so as to be parallel to the roof surface.

[0015] One functional embodiment of the outflow element may also comprise a leaf trap or leaf basket, which can be fastened to the outlet pipe so as to be situated around the inlet opening and against the sheet.

[0016] The invention will now be explained in more detail with reference to a drawing, in which drawing:

Figure 1 shows a schematic illustration of a roof structure provided with an exemplary embodiment of an outflow element according to the invention; Figure 2 shows a view of the outflow element from Figure 1.

[0017] For better understanding of the invention, similar components shown in the various figures are denoted by the same reference numerals in the following description of the figures.

[0018] Reference numeral 1 schematically illustrates a building provided with a roof 2. The roof 2 is configured in the form of a flat roof provided with a roof edge 3. One example of an outflow element according to the invention for discharging rainwater 100 in the direction of a substantially horizontal plane of the roof 2 is denoted by reference numeral 10.

[0019] This outflow element 10 is composed of an outlet pipe 11 provided with an inlet opening 11a and an outlet opening 11b for rainwater 100. In this case, the

outlet pipe 11 is positioned on the roof 2 such that the inlet opening 11a is located on the roof surface of the roof 2. Furthermore, the outlet pipe 11 is guided through an opening present in a roof edge 3 and terminates with its outlet opening 11b beyond the roof surface of the roof 2, and in this case connects to a rainwater drainage system (drainpipe) 4 via a coupling piece 5.

[0020] Rainwater 100 which collects on the roof 2 is discharged through the outlet pipe 11 via the inlet opening 11a (and the roof edge 3) towards the outlet opening 11b and into the rainwater drainage system (drainpipe) 4.

[0021] The outlet pipe 11 is preferably manufactured from a metal, in particular from stainless steel. Preferably, the outlet pipe 11 has a rectangular cross section, in such a way that the rectangular outlet pipe 11 is positioned with its longitudinal side (wide side) on the roof 2. Suitable dimensioning for the rectangular outlet pipe 11 is 6 cm x 10 cm (wide side) or 10 cm x 40 cm or 10 cm x 80 cm, the last two variants being (very) wide outflow elements for ejecting or draining large amounts of rainwater from a roof.

[0022] The outflow element 10 is further provided with a sheet 12, which sheet 12 is provided with an opening 14c with an inner dimension that is equal to the outer dimension of the outlet pipe 11. The sheet 12 is sealingly arranged around the outlet pipe 11 at a certain distance from the inlet opening 11a. The seal 13 between the sheet 12 and the outlet pipe 11 is preferably formed by a weld. As an alternative, the seal 13 between the sheet 12 and the outlet pipe 11 is formed by a sealant joint. However, preference is given to welding.

[0023] As Figure 2 shows, prior to the positioning of the outflow element 10 on the roof 2, the sheet 12 extends perpendicularly with respect to the longitudinal direction of the outlet pipe 11, and during positioning on the roof 2, the sheet part 12a which is facing away from the roof and the sheet part 12b which is facing towards the roof can be formed or modelled to conform to the shape of the roof edge 3 and the roof surface of the roof 2 (see Figure 1).

[0024] For the purpose of producing a good water seal of the outflow element 10 during the assembly in the roof edge 3 and on the roof 2, the outflow element 10 is also provided with a sealing layer 14, which sealing layer 14 is sealingly arranged on the sheet 12 and around the outlet pipe 11. After the outflow element 10 has been positioned on the roof 2, that sealing layer part 14b or 14a of the sealing layer 14 which is facing away from or facing towards the roof, respectively, can be incorporated in or with a roof covering layer 6 or 6a which is provided on the roof 2 or roof edge 3, respectively. The sealing layer 14 may be bitumen or any other tar-like material that can be incorporated in and with the roof covering layer 6 by means of heating.

[0025] That part 12a of the sheet 12 which extends on the longitudinal side, turned away from the roof 2, of the outlet pipe 11 and which is positioned against the roof edge 3 forms an angle Ψ of 30°-90°, in particular an angle

of 40°-75°, more particularly an angle of 40°-60°, with respect to the roof surface of the roof 2.

[0026] As is clearly shown in the figures, the part 12b of the sheet 12 which extends on the longitudinal side of the outlet pipe 11 and facing towards the roof 2 is formed so as to be parallel to the roof surface. The sealing layer part 14b which is similarly provided on this sheet part 12b can therefore be incorporated in the roof covering layer 6 in a rapid and efficient manner.

[0027] Reference numeral 20 relates to a leaf trap or leaf basket, which can be fastened to the outlet pipe 11 so as to be situated around the inlet opening 11a and against the sheet 12 by means of a screw or bolt 21, which can be screwed through the leaf trap 20 and into the longitudinal side of the outlet pipe 11 which is facing away from the roof 2. The leaf trap 20 prevents waste which has been collected on the roof 2, such as leaves or other dirt, from clogging the rainwater discharge 4 during the discharge of rainwater via the outflow element 10. The assembly by means of the screw or bolt 21 prevents said trap from being moved or blown away as a result of natural elements.

REFERENCE NUMERALS

[0028]

1	building
2	roof
3	roof edge
4	rainwater drainage system (drainpipe)
5	coupling between rainwater drainage system and outflow element
6	roof covering layer
10	outflow element
11	outlet pipe
11a	inlet opening of the outlet pipe
11b	outlet opening of the outlet pipe
12	sheet
12a	sheet side turned away from the roof
12b	sheet side turned towards the roof
13	weld
14	sealing layer
14a	sealing layer part to be connected to the roof edge
14b	sealing layer part to be connected to the roof covering layer
20	leaf basket or leaf trap
21	fastening bolt or screw
100	rainwater

Claims

1. Outflow element for discharging rainwater in a substantially horizontal plane of a roof, which outflow element is composed of an outlet pipe provided with an inlet opening and an outlet opening for rainwater, wherein the outlet pipe can be positioned with the

- inlet opening on the roof surface of the roof and which extends with its outlet opening through a roof edge of the roof, wherein the outflow element further comprises a sheet, which sheet is provided with an opening with an inner dimension that is similar to the outer dimension of the outlet pipe, wherein the sheet is sealingly arranged around the outlet pipe at a certain distance from the inlet opening and, during positioning on the roof, can be formed to the shape of the roof edge and the roof surface. 5 10
2. Outflow element according to claim 1, wherein the seal between the sheet and the outlet pipe is formed by a weld. 15
3. Outflow element according to claim 1, wherein the seal between the sheet and the outlet pipe is formed by a sealant joint. 20
4. Outflow element according to one or more of the preceding claims, wherein - prior to the positioning of the outflow element on the roof - the sheet extends perpendicularly with respect to the longitudinal direction of the outlet pipe. 25
5. Outflow element according to one or more of the preceding claims, wherein the outflow element also comprises a sealing layer, which sealing layer is sealingly arranged on the sheet and around the outlet pipe. 30
6. Outflow element according to claim 5, wherein the sealing layer - after the outflow element has been positioned on the roof - can be incorporated in or with a roof covering layer which is provided on the roof. 35
7. Outflow element according to claim 5, wherein the sealing layer is bitumen. 40
8. Outflow element according to one or more of the preceding claims, wherein the outlet pipe has a rectangular cross section. 45
9. Outflow element according to claim 8, wherein the rectangular outlet pipe can be positioned with its longitudinal side on the roof surface. 50
10. Outflow element according to claim 9, wherein the part of the sheet which extends on the longitudinal side facing away from the roof of the outlet pipe forms an angle of 30°-90°, in particular an angle of 40°-75°, more particularly an angle of 40°-60°, with respect to the roof surface. 55
11. Outflow element according to claim 9 or 10, wherein the part of the sheet which extends on the longitudinal side facing towards the roof of the outlet pipe is formed so as to be parallel to the roof surface.
12. Outflow element according to one or more of the preceding claims, further comprising a leaf trap or leaf basket, which can be fastened to the outlet pipe so as to be situated around the inlet opening and against the sheet.

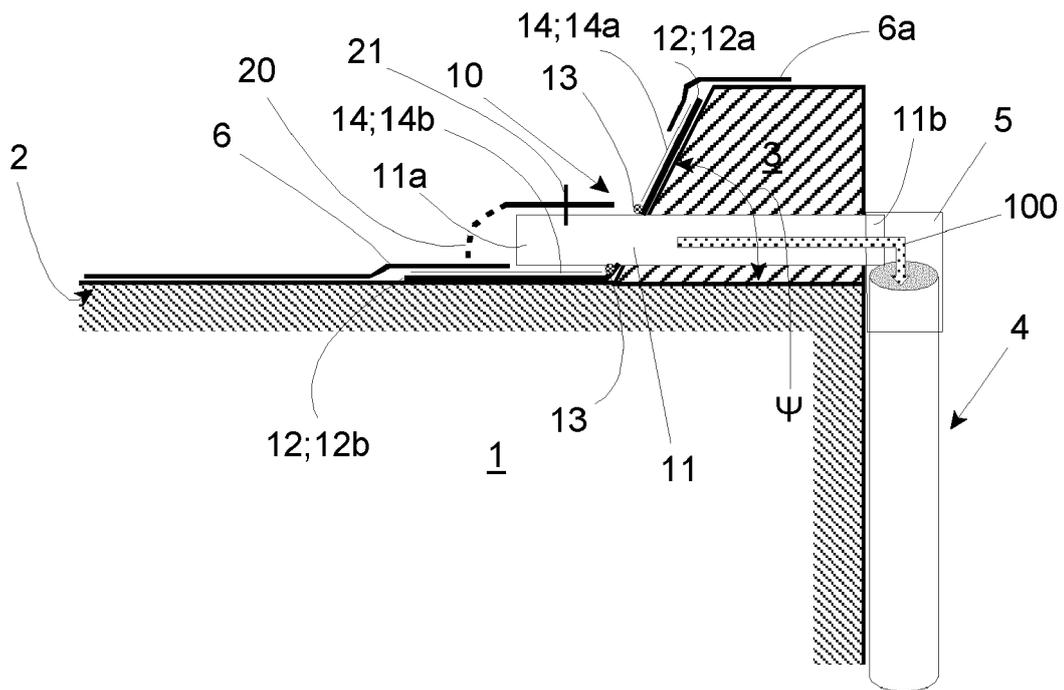


Fig. 1

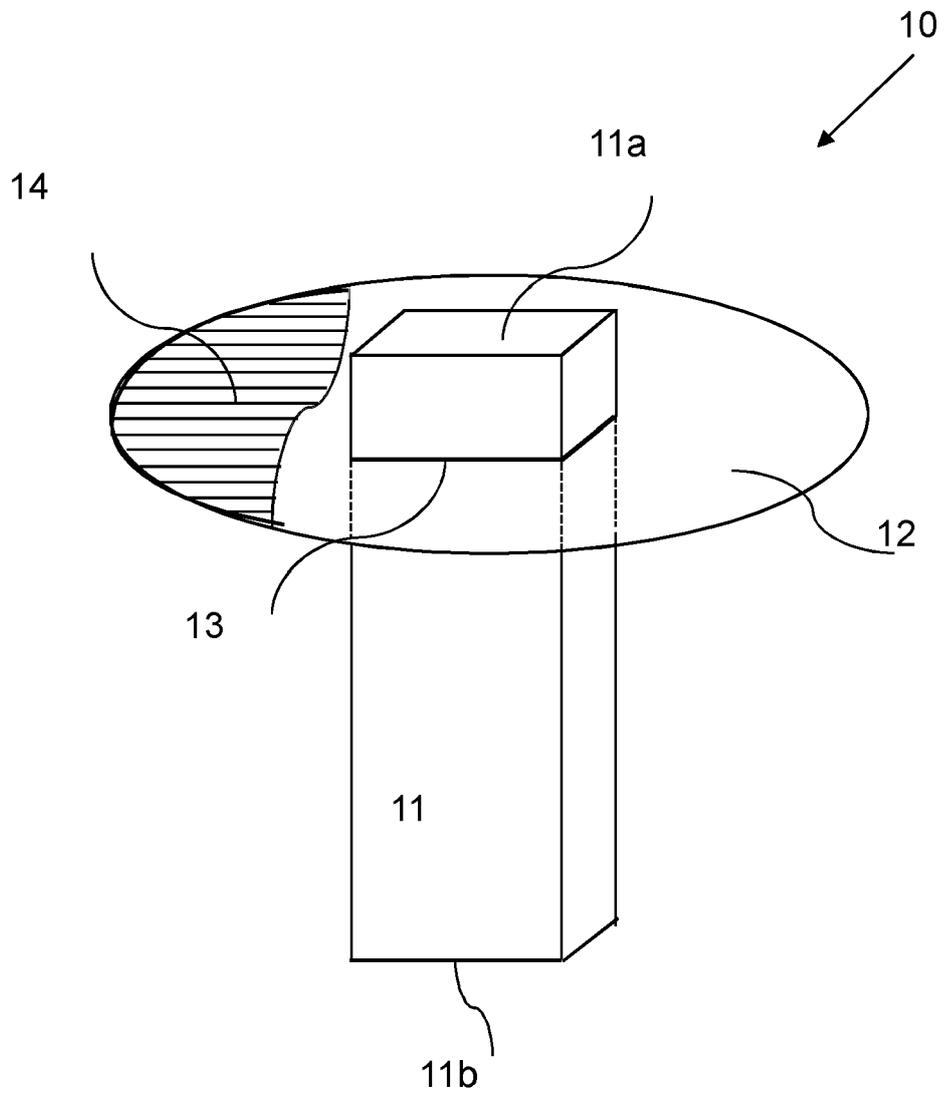


Fig. 2



EUROPEAN SEARCH REPORT

Application Number
EP 21 17 8361

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DOCUMENTS CONSIDERED TO BE RELEVANT

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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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 24 September 2021	Examiner Tran, Kim Lien
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

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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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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

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