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(71) Applicant: **VKR Holding A/S**
2970 Hørsholm (DK)

(72) Inventor: **Østergaard, Leif Schack**
8700 Horsens (DK)

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(54) **Roof component flashing, a flashing system and a method of flashing**

(57) A flashing for a sloping roof penetrating component like roof window, solar collector or the like, that includes: A first portion (16a) and a second portion (16b), pivot means (17) linking the first portion (16a) and second portion (16b), where the second portion (16b) comprises

attachment means configured to be fixed at the top frame of a roof component and said first portion (16a) when in use provides a drain cavity (18). The first portion (16a) provides adjustment means for minimizing a gap (19). The invention also relates to a flashing system and a flashing method.

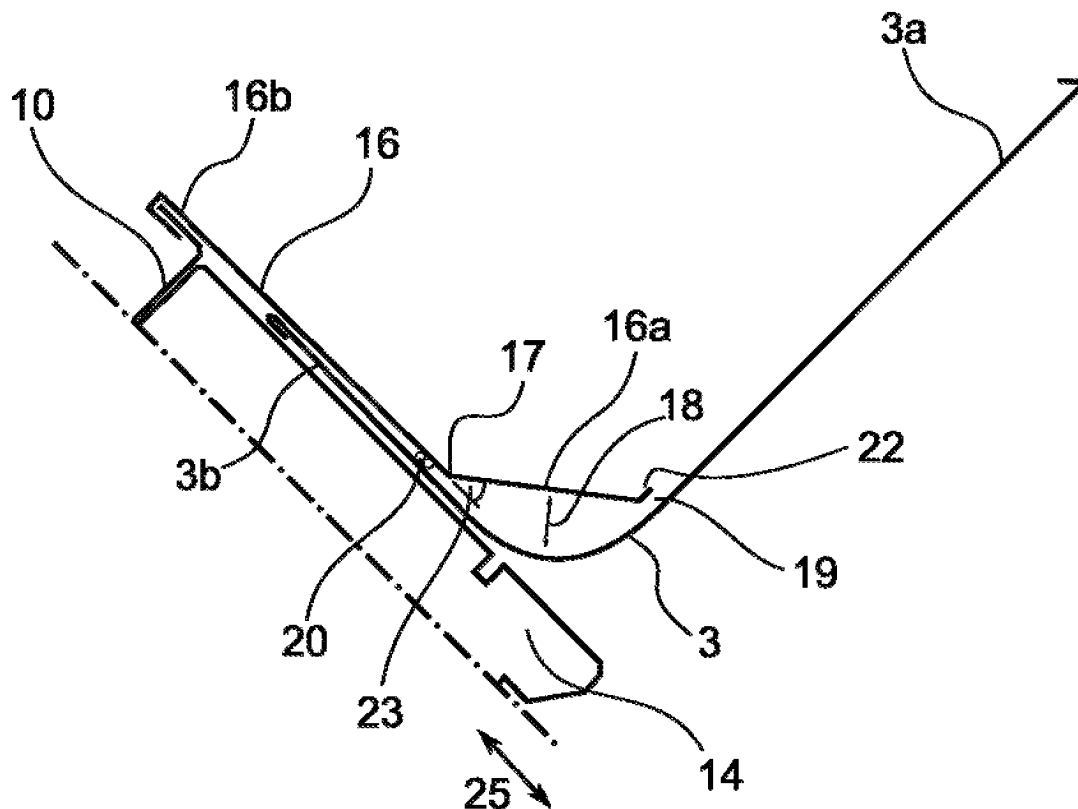


Fig.3

Description

Field

[0001] The exemplary and non-limiting embodiments of this invention relate generally to a flashing, a flashing system and a method for flashing a roof component, like a roof window or a solar collector.

Background

[0002] The present invention relates to a flashing cover for a sloping roof penetrating structure, for example a roof window, a solar collector or a photovoltaic panel e.g. a roof component that penetrates the roof covering.

[0003] When flashing roof penetrating building structures, for example frame structures for roof windows, in order to protect them from the weather and to provide a seal between the structure itself and the roof, it is common to use flashing covers of sheet metal, for instance aluminum, copper, steel or zinc. Such flashing is disclosed in DE2503519 which shows a sloping roof window flashing structure, including a top flashing (6).

[0004] A problem related to the different sloping roof structures is present, because the depth of an installed roof windows/collectors depends on the different roof structures. Consequently the flashing dimensions depend on the depth of the installed roof component and adjustment or customization may be necessary. A problem is associated to the replacement of a roof component, where an old component with one depth is removed and a new component with a new depth is installed. In case of replacement of the roof component, part of the old flashing may remain and be reused while another part of the flashing covering the component may be replaced, and the two parts should be compatible or at least ensure a watertight flashing.

[0005] Another related problem is associated to rain and drain of the water. The flashing parts may overlap each other at the junctions in order to prevent the water from entering, for example an upper flashing part may overlap a lower flashing part. The drain design of a roof component flashing is critical to prevent wind and storm from forcing water through the flashing junctions or overlaps. The overlapping of the flashing parts also needs to be considered according to the roof inclination to ensure that the water is drained correctly under influence from gravity and winds.

[0006] The roof component depth has changed in recent years due to the aesthetic appearance of flush or low profile roof component installations.

[0007] Consequently many factors need to be considered when designing flashings that perform well in various roof structures and various roof inclinations.

Summary

[0008] It would be advantageous to provide for roof

components for sloping roof structures a flashing and a method for flashing and flashing system to eliminate or reduce the drawbacks mentioned above and further provide a number of advantages. For example where an old roof component with one depth is removed and a new roof component with a new depth is installed. For example having fewer parts provides advantages when packing complete flashing kits (i.e. kits containing all the flashing parts for, for example, a roof window) fewer and smaller parts provide production and logistic advantages as well as the costs for storage are reduced. A reduced number of parts and compact size of the parts to be installed is also advantageous, so the handling and installation may be improved.

[0009] As a non-limiting exemplary embodiment there is provided:

- a flashing cover comprising:
- a first portion and a second portion
- pivot means linking the first portion and second portion

wherein:

said second portion comprises attachment means configured to be fixed at the top of a roof component and said first portion when in use provides a drain cavity.

[0010] In accordance with an aspect of this exemplary embodiment, said first portion (16a) when in use provides adjustment means (16a) for minimizing a gap (19).

[0011] The above, together with numerous other advantages and features, which will become evident from the below description, are accomplished according to a second non-limiting exemplary embodiment by a flashing system, providing:

[0012] A flashing system comprising:

- a flashing cover comprising a first portion and a second portion,
- a flashing comprising a first portion and a second portion,

wherein:

the flashing first portion is extending in a first direction substantially parallel to a roof covering and the second portion (3b) is extending in a second direction substantially orthogonal to the first direction providing a substantially L shaped (3) flashing, the flashing cover second portion comprises attachment means configured to be fixed at the top of a roof component, the flashing cover second portion extends substantially parallel with the flashing second portion and overlaps the flashing second portion,

the first portion provides a cavity between the flashing and the flashing cover. As another non-limiting exemplary embodiment there is provided:

[0013] A method comprising:

- providing a flashing cover comprising a first portion and a second portion
- providing a flashing comprising a first portion and a second portion
- fixing the flashing cover second portion with attachment means at the top of a roof component,
- overlapping the flashing second portion with the flashing cover second portion,
- adjust the flashing cover first portion (16a) by pivot means (17) to minimize a gap (19) between the flashing cover first portion (16a) and flashing (3) and provide a drain cavity (18) between the flashing cover first portion (16a) and flashing (3).

[0014] In accordance with an aspect of the exemplary embodiments, said provided top flashing cover (16), the first portion (16a) is shorter than the second portion (16b). Hereby a compact flashing with fewer parts is realized.

[0015] As should be apparent, one non-limiting advantage that is gained by the use of the exemplary embodiments is a flashing cover with better drain properties. Other non-limiting advantage that is provided, is that the flashing cover is compact. Another non-limiting advantage is, that the flashing cover enables adjustment to fit roof components of various depths (25). This is advantageous when replacing old roof components with new components with different depth. The provided flashing cover enables installation with existing flashings.

[0016] Other features and advantages of the disclosed embodiments will appear from the following detailed disclosure, from the attached dependent claims as well as from the drawings. Generally, all terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device, component, means, step, etc]" are to be interpreted openly as referring to at least one instance of the element, device, component, means, step, etc., unless explicitly stated otherwise. The steps of any method disclosed herein do not have to be performed in the exact order disclosed, unless explicitly stated.

Brief description of the drawings

[0017] The foregoing and other aspects of the teachings of this invention are made more evident in the following description, when read in conjunction with the attached figures, wherein:

Fig. 1 shows an example of the principle of water drain in a roof component installation.

Fig. 2 shows a cross section of an example of an

installed roof window.

Fig. 3 shows a cross section of a top flashing cover installation.

Fig. 4 shows a top flashing cover.

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Detailed description of embodiments

[0018] The disclosed embodiments will now be described more fully hereinafter with reference to the accompanying drawings, in which certain embodiments of the disclosed embodiments are shown. These disclosed embodiments may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided by way of example so that this disclosure will be thorough and complete, and will fully convey the scope of the disclosed embodiments to those skilled in the art. Like numbers refer to like elements throughout.

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[0019] Fig. 1 illustrates an example of water drain in a roof window installation, where water is drained by flashing parts that form a drain path (2). An aperture (1) for a roof component e.g. a roof window is present in the roof structure comprising battens (8) and roof covering tiles (9). To seal the component/window (not shown) flashing parts are installed (3, 4, 5, 7). The upper flashings parts (3) overlap the lower flashing parts (4) etc. in order to provide a seal. The aperture (1) has a top flashing (3) comprising a protruding profile (6) which provides drain for the water from the tiles towards the sides of the aperture. Next the side flashing (4) drains the water to the bottom flashing (5) which comprises flexible skirt (7) which can be formed to fit the jagged tiles (9). The width of the roof component/window has influence on the drain requirements of the top flashing (3).

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[0020] Fig. 2 shows a cross section of a roof window installation and fitted flashing. A roof structure comprises battens (8) for supporting tiles (9). A window pane (12) is supported by a window sash (13). The window frame (14) is supported by the roof structure. The window is sealed and drained by flashing parts. A first portion (3a) of a top flashing (3) is secured to the roof structure and a second portion (3b) is secured to the top of the window frame. The top of the frame has a top face (15) which is substantially perpendicular to the plane of the roof. Here after the expression top flashing indicates that the flashing is associated with the top of the frame (14) and the frame face (15). The upper window portion has top box 10 which is interconnected to the top flashing by a folding in the second portion (3b). The bottom of the roof window installation is sealed by a flexible skirt (7). A top flashing portion (3) may be joined directly to the top box (10), but the depth (25) of the installation varies with different roof structures and consequently this is associated with various problems, as mentioned in the background section.

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[0021] Fig. 3 shows an embodiment of a top flashing cover (16) installed on the top of the window frame (14). The top flashing cover has a first portion (16a) and a

second portion (16b). The top flashing cover first portion (16a) is preferably shorter than the second portion (16b). Pivot means are provided between the first portion (16a) and second portion (16b). The pivot means (17) are provided on the half of flashing cover (16) that comprise the first portion (16a). The second portion (16b) may be sealed and fixed with the top box (10) by attachment means. The attachment means may be a fold. The fold at the second portion (16b) allows to seal and join the top flashing cover with the roof window top box (10). The second portion (16b) extends above the flashing (3). The second portion (16b) overlaps the flashing (3). The second portion (16b) extends higher than the flashing (3) in a direction normal to the roof plane (25).

[0022] The first portion (16a) comprises pivot means (17). The pivot means (17) can be a bend. The pivot means (17) or bend (17) provides adjustment of the first portion (16a). The top flashing 3 comprises a corner bend and the first portion (16a) of the flashing cover is in proximity of said bend. The adjustment of the first portion (16a) provides a flexible flashing cover which can be fitted and configured to various structures. The pivot means (17) provide means for taking up or minimizing a gap (19) when displacing the flashing cover in a direction normal to the roof plane (25). The first portion (16a) provides a flap for adjustment of the gap between the flashing (3) and the flashing cover (16). The flap provides means for adjustment when displacing the flashing cover in a direction normal to the roof plane. The pivot means (17) or bend (17) provide a drain cavity (18). The drain cavity (18) provides an improved flashing. The drain cavity (18) provides a more laminar drain. The drain cavity (18) provides a better drain, where water during storm may be turbulent, some water can be drained above the top of flashing cover (16a) and also the water that enters the drain cavity (18) can be drained laminar through the drain cavity (18).

[0023] The top flashing cover (16) can provide seal means (20). Seal means (20) may be a gasket or rubber strip. Seal means (20) may be attached to the top flashing cover (16). Seal means (20) are provided towards the first portion (16a) of the top flashing cover (16) and above the pivot means/bend (17). Seal means (20) are provided in vicinity of pivot means (17). The top flashing cover (16) provides a second bend (22). The second bend (22) provides rigidity and provides a lip. The second bend (22) may be in contact with top flashing (3) when installed or when in use. The flashing cover (16) may gap (19) when installed and still provide good draining. A resilient force may be provided to the first portion (16a) to minimize the gap (19). The top flashing (3a) extends under the roof covering, for example tiles. The top flashing (3a) extends beyond the flashing cover first portion (16a) in a direction parallel with the roof covering. The top flashing (3a) extends longer upwards the sloping roof than the flashing cover (16) in a direction substantially parallel with the roof covering. The top flashing first portion (3a) is substantially longer than the flashing cover (16a) first portion.

[0024] Fig. 4 shows an embodiment of a top flashing cover (16). The top flashing cover comprises arms (21). The flashing cover arms (21) extend downwards and provide cover for the sides of the window frame. The arms (21) provide a fold (24) that is configured to provide sealing and joining of the top flashing cover with the roof window top box (10). The arms (21) extend orthogonally from the flashing cover (16). The arms (21) provide a watertight assembly with the roof component top and side flashings.

[0025] It will be understood that the embodiments described herein are merely exemplary and that variations and modifications of the teachings will still fall within the scope of this invention. For example the connection/attachment means may be a fold, pin, slot, projection, aperture, bend, fasteners etc. For example the second bend (22) may be folded for even better rigidity and to prevent sharp edges. For example the pivot means may be equipped with one or more bend markings, allowing the user to choose which bend(s) to perform to adjust the flashing cover. For example the flashing cover first portion (16a) may comprise grooves or corrugations to enable easier bending/adjustment. For example the flashing cover first portion (16a) may be made from a flexible material. For example the first portion (16a) of the flashing cover may be arc shaped. For example the first portion (16a) may have any shape suitable for adjustment and forming a cavity. It should be noted that the flashing cover may not form a single part. For example, the flashing cover first portion (16a) and second portion (16b) may be embodied in a separate parts assembled or joined together. For example a joint of the first and second part may provide means for adjustment.

[0026] Furthermore, some of the features of the examples of this invention may be used to advantage without the corresponding use of other features. As such, the foregoing description should be considered as merely illustrative of the principles, teachings, examples and exemplary embodiments of this invention, and not in limitation thereof.

Claims

1. A sloping roof penetrating component top flashing cover (16) comprising:

- a first portion (16a) and a second portion (16b)
- pivot means (17) linking the first portion and second portion

wherein:

said second portion (16b) comprises attachment means configured to be fixed at the top of a roof component and said first portion (16a) when in use provides a drain cavity (18).

2. Flashing cover according to claim 1 wherein the pivot means (17) is at least one U or L shaped bend.

3. Flashing cover according to claim 1-2 wherein the pivot means (17) provide a change of direction (23) between said first portion (16a) and second portion (16b) of 20 to 70 degrees, preferably 30 to 60 degrees.

4. Flashing cover according to claim 1-3 wherein the first portion (16a) provides means (16a, 17) for minimizing a gap (19) related to the flashing cover first portion (16a) and provide means for adjustment of the flashing cover (16) in a direction substantially normal to the roof plane (25).

5. Flashing cover according to claim 1-4 comprising two arms (21) configured to extend along two sides of the roof penetrating component.

6. Flashing cover according to claim 5 wherein the arms (21) provide a fold (24) that is configured to provide sealing and joining of the top flashing cover (16) with a roof window top box (10).

7. Flashing cover according to any previous claims wherein the flashing cover (16) second portion (16b) extends in a direction substantially orthogonal to the roof covering.

8. Flashing cover according to any previous claims where the top flashing cover (16) comprises a second bend (22) providing a lip.

9. Flashing cover according to any previous claims where the flashing cover (16) second portion (16b) is configured to overlap a flashing (3).

10. Flashing system for a sloping roof penetrating component comprising:

- a flashing cover (16) comprising a first portion (16a) and a second portion (16b),
- a flashing (3) comprising a first portion (3a) and a second portion (3b),

wherein:

the flashing first portion (3a) is extending in a first direction substantially parallel to the roof covering and the second portion (3b) is extending in a second direction substantially orthogonal to the first direction providing a substantially L shaped (3) flashing,

the flashing cover second portion (16b) comprises attachment means configured to be fixed at the top of a roof component,

the flashing cover second portion (16b) extends

substantially parallel with the flashing second portion (3b) and overlaps the flashing second portion (3b), the flashing cover first portion (16a) provides a cavity (18) between the flashing (3) and the flashing cover (16).

11. Flashing system according to claim 10 wherein:

the cavity (18) span formed between the flashing (3) and the flashing cover first portion (16a) first increases and next decreases, when following the path from the pivot means (17) towards the end (22).

12. Flashing system according to claims 10-11 wherein:

the flashing cover provides pivot means (17) linking the first portion (16a) and second portion (16b) and provide means for minimizing a gap (19) related to the flashing cover first portion (16a) and provide means for adjustment of the flashing cover (16) in a direction substantially normal to the roof plane (25).

13. Flashing system according to claims 10-12 wherein: said pivot means (17) provide a change of direction (23) between said flashing cover first portion (16a) and flashing cover second portion (16b) of 20 to 70 degrees, preferably 30 to 60 degrees.

14. Flashing system according to claims 10-13 where the second portion (16b) extends higher than the flashing (3) in a direction normal to the roof plane (25).

15. Method of flashing a roof component for a sloping roof comprising:

- providing a flashing cover (16) comprising a first portion (16a) and a second portion (16b)
- providing a flashing (3) comprising a first portion (3a) and a second portion (3b)
- fixing the flashing cover second portion (16b) with attachment means at the top of a roof component,
- overlapping the flashing second portion (3b) with the flashing cover second portion (16b),
- adjust the flashing cover first portion (16a) by pivot means (17) to minimize a gap (19) between flashing cover first portion (16a) and flashing (3) and provide a drain cavity (18) between the flashing cover first portion (16a) and flashing (3).

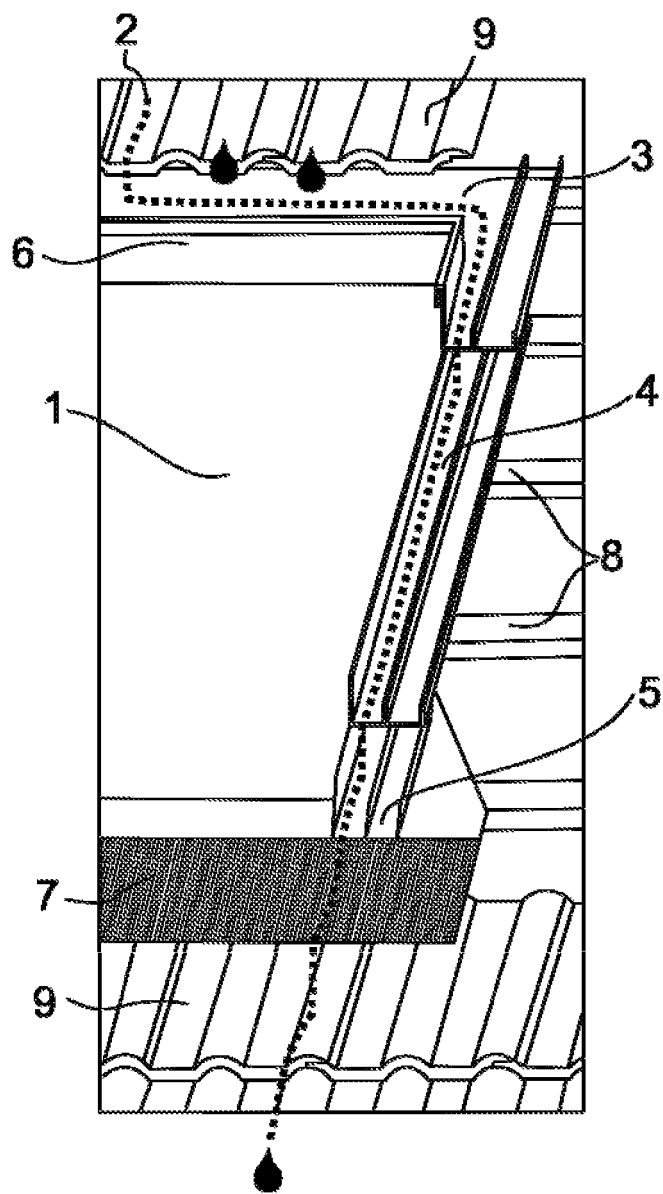


Fig.1

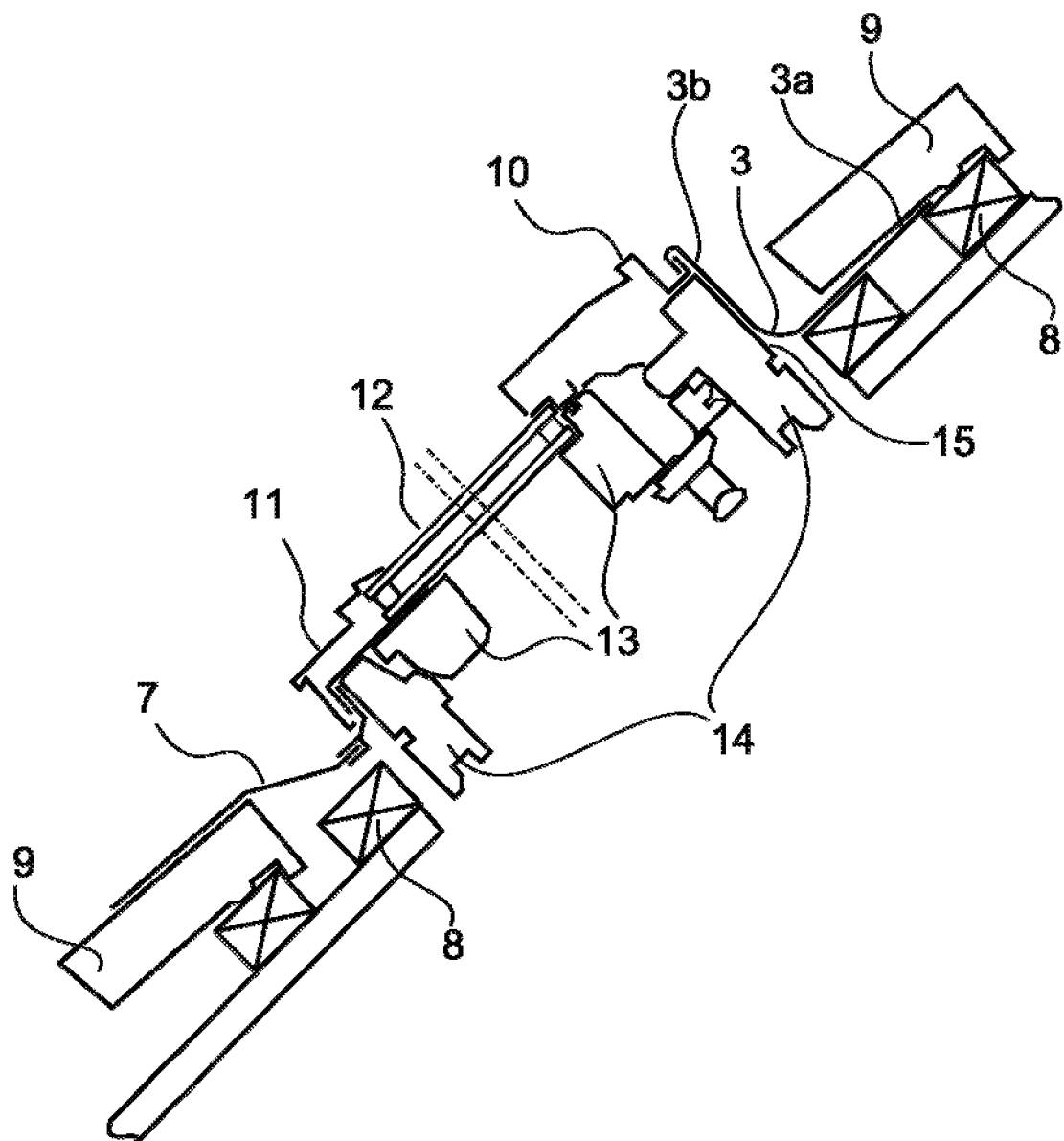


Fig.2

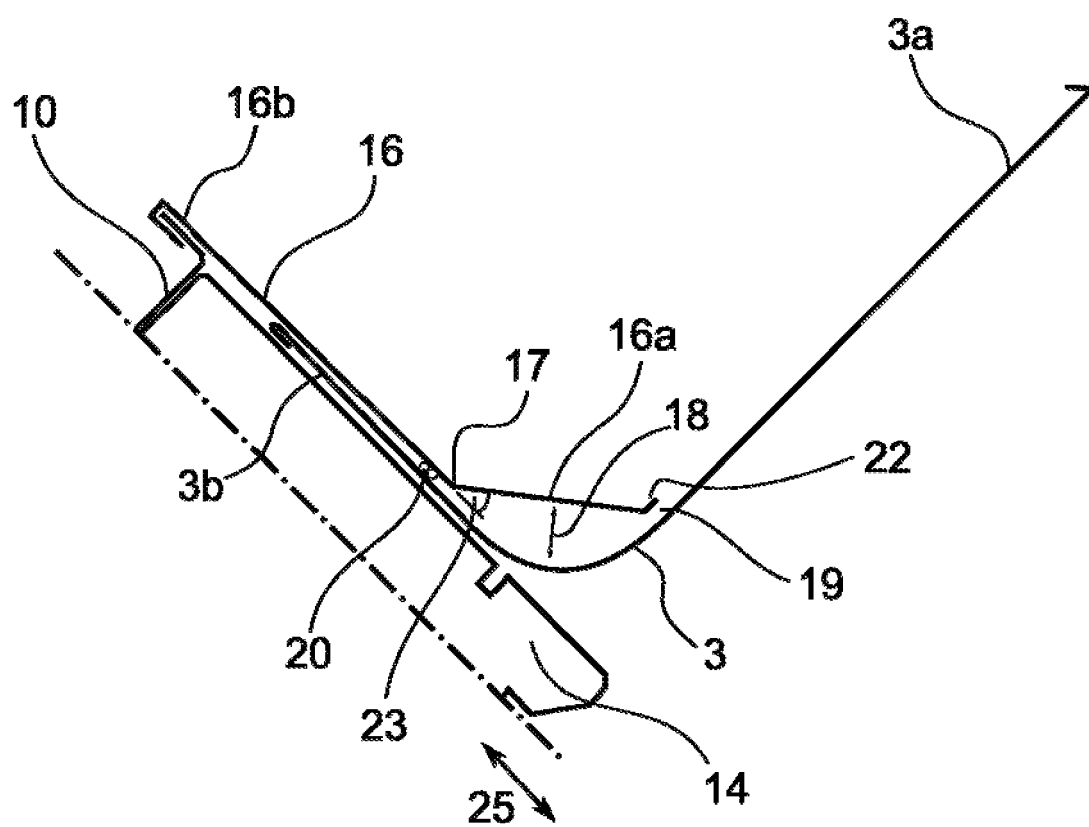


Fig.3

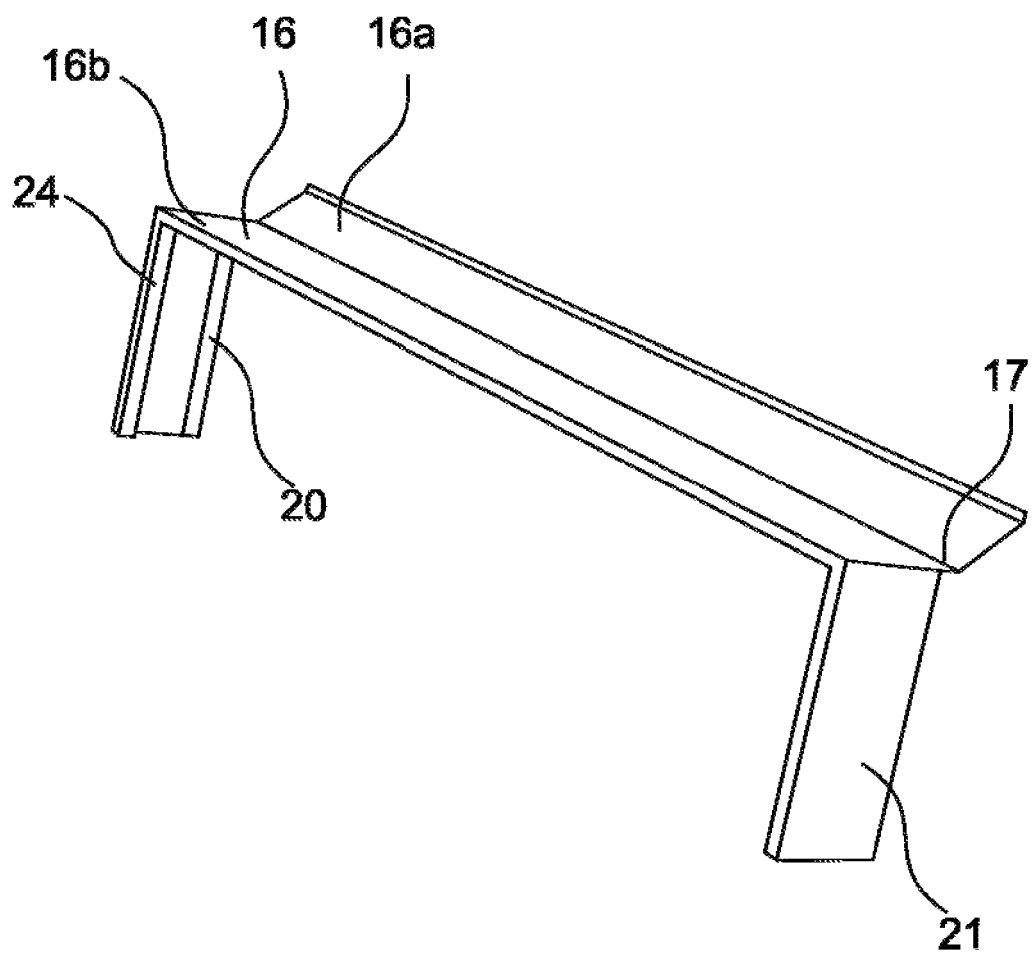


Fig. 4



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**ANNEX TO THE EUROPEAN SEARCH REPORT
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