(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 474 594 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
11.12.2024 Bulletin 2024/50

(21) Application number: **24180827.8**

(22) Date of filing: **07.06.2024**

(51) International Patent Classification (IPC):
E04F 21/00 *(2006.01)* ***E04F 21/18*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
E04F 21/0023; E04F 21/0007; E04F 21/0015; E04F 21/18

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(30) Priority: **07.06.2023 BE 202305471**

(71) Applicant: **Vandel BV**
8450 Bredene (BE)

(72) Inventor: **Delrue, Jean-Paul**
8450 Bredene (BE)

(74) Representative: **Brantsandpatents bv**
Pauline Van Pottelsberghelaan 24
9051 Ghent (BE)

(54) **AUXILIARY TOOL FOR INSTALLING REVEALS AND METHOD OF INSTALLATION USING SAID TOOL**

(57) The present invention relates to an auxiliary tool for installing a reveal, comprising a mounting leg and a support leg as a support surface for a reveal, wherein the mounting leg extends in a first direction and the support leg extends in a second direction perpendicular to the first direction, wherein the mounting leg comprises a suction cup for releasably attaching the auxiliary tool on the window, wherein the suction cup extends transversely to a plane formed by the mounting leg and the support leg. The invention also relates to a method for placing the reveal, comprising placing at least one auxiliary tool on a reference plane, wherein the auxiliary tool comprises a support surface for the reveal of the window, placing sheet material against the support surface to form the reveal, and securing the sheet material, wherein the reference plane is a glass surface of the window, wherein the auxiliary tool is placed releasably on the glass surface.

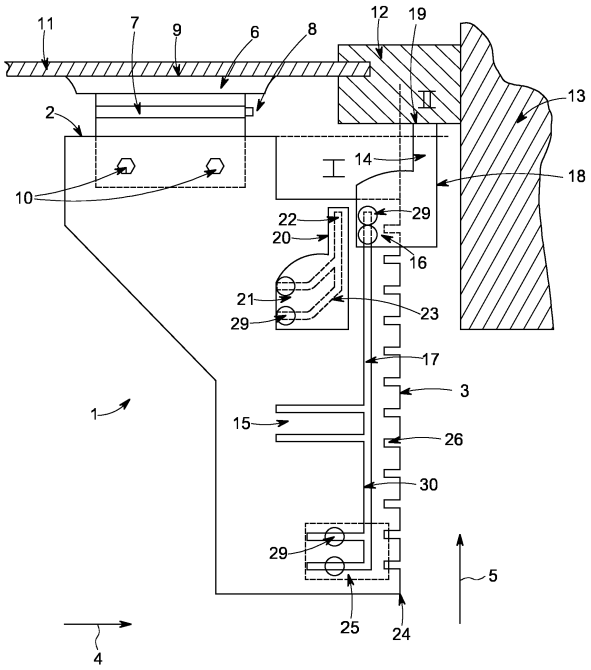

FIG. 1

EP 4 474 594 A1

Description

TECHNICAL FIELD

[0001] The invention relates to an auxiliary tool, more specifically an auxiliary tool for installing a window reveal. The invention also relates to a method and a use for installing a window reveal.

PRIOR ART

[0002] After installing a window in a wall, it is necessary to finish the inside of the wall opening around the window. This is usually done using sheet material that is perpendicular to the window, such as a plastic or wooden sheet or plasterboard. For a sleek finish, it is necessary that the sheet material is placed vertically or horizontally and transversely to the window. However, the wall around the window is rarely perfectly flat and/or vertical and/or horizontal. This makes it almost never possible to apply the sheet material directly to the wall. Traditionally, wooden blocks are placed in several places on the wall in the wall opening to compensate for distance differences between the sheet material and the wall, and the sheet material is attached to the blocks. This way, despite imperfections in the wall surface, the sheet material can be placed perfectly perpendicular to the window and perfectly vertically or horizontally.

[0003] A disadvantage of this traditional method with blocks is that it is a very time-consuming process. That is why the sheet material is nowadays often glued to the wall around the wall opening, for example using foam. The sheet material is first positioned transverse to the window and then the space between the sheet material and the wall around the wall opening is filled with the foam. This method is much faster but has the disadvantage that the sheet material is not allowed to move during the spraying and curing of the foam. The sheet material must therefore be held in position manually or with the aid of an auxiliary tool until the foam has hardened.

[0004] Such an auxiliary tool is known from R.U 2 517 095 (RU '095). RU '095 describes an auxiliary tool for temporarily fixing boards to a corner of a wall during plastering, painting or tiling. The auxiliary tool comprises an L-shaped profile. Both legs of the L-shaped profile include a clamping screw. The long leg includes an opening for a threaded pin or a pin with a mounting plate. The L-shaped profile is attached to the wall using the pin, after which the boards can be temporarily fixed using the clamping screws. Once the boards no longer need to be fixed, the clamping screws can be loosened and the auxiliary tool removed from the wall. This auxiliary tool has the disadvantage that a significant part of the time saved by using foam for adhering the sheet material is lost, because the auxiliary tool has to be screwed onto the wall and then unscrewed. In addition, the holes in the wall caused by this must also be repaired or concealed. An additional disadvantage is that when used to finish the inside of the wall opening around the window, depending on how sloping and/or uneven the wall around the wall opening is, the sheet material is not necessarily positioned transversely to the window.

[0005] Another known auxiliary tool is described in US 6 145 206 (US '206). This auxiliary tool is suitable for correctly installing a window casing on or in the plane of the wall in which a window is placed. The auxiliary tool from US '206 ensures that there is a correct distance between an inner edge of the window casing and an outer edge of the window. The disadvantage of the auxiliary tool from US '206 is that it must be removed when installing a reveal, making it unsuitable for supporting the reveal.

[0006] CN 207 829 416 (CN '416) discloses an auxiliary tool for forming right angles when laying tiles on floor and wall surfaces. The auxiliary tool from CN '416 has the disadvantage that it does not include a support surface for a window reveal.

[0007] The present invention aims to solve at least some of the above problems or drawbacks.

SUMMARY OF THE INVENTION

[0008] In a first aspect, the present invention concerns an auxiliary tool according to claim 1.

[0009] The suction cup included in the mounting leg of the auxiliary tool is particularly advantageous for quickly releasably attaching the auxiliary tool to a glass surface of the window. This means that it is not necessary to drill additional holes in a wall to screw on the auxiliary tool, nor is it necessary to subsequently unscrew the auxiliary tool and conceal the holes in the wall. This results in maximum time savings when installing reveals. Because the auxiliary tool can be attached to a glass surface of the window using the suction cup and because the mounting leg and the support leg are perpendicular to each other, the reveal will also automatically be positioned transversely to the window.

[0010] Preferred forms of the auxiliary tool are shown in claims 2 up to and including 9.

[0011] A specific preferred form concerns an auxiliary tool according to claim 2.

[0012] In this preferred form the auxiliary tool comprises a first finger. In the first end position, the first finger lies within the first quadrant, bounded by the mounting leg and the support leg, allowing the reveal to rest freely against the support leg. In the second end position, the tip of the first finger is in the quadrant diagonally opposite the first quadrant. So, this is past the mounting leg and near the window. The first finger can be moved in a direction parallel to the support leg to the second end position, allowing the first finger to be moved up to against the window. The first finger can therefore be used as an indication for the position of the reveal, allowing the auxiliary tool to be placed easily and correctly.

[0013] In a second aspect, the present invention relates to a method according to claim 10.

[0014] This method has the advantage, among other things, that because a glass surface of the window is used as a reference surface and the support surface is perpendicular to the glass surface, the reveal is automatically positioned perpendicular to the window. The glass surface is also a flat surface, making it more suitable as a reference surface than a wall around the wall opening in which the window is placed. This makes it easier to position the reveal perfectly vertically or horizontally using the auxiliary tool. An additional advantage of using the glass surface for releasably placing the auxiliary tool is that it is not necessary, for example, to drill mounting holes for the auxiliary tool in the wall around the wall opening, which must subsequently be concealed. This results in maximum time savings.

[0015] Preferred forms of the method are described in dependent claims 11 up to and including 14.

[0016] In a third aspect, the present invention relates to a use according to claim 15.

[0017] This use results in an advantageous, quick installation of the reveals around a window, where a reveal is positioned perfectly perpendicular to the window and horizontally or vertically.

DESCRIPTION OF THE FIGURES

[0018]

Figure 1 shows a top view of an auxiliary tool according to an embodiment of the present invention, used in an early step of a method according to an embodiment of the present invention.

Figure 2 shows a top view of the auxiliary tool in Figure 1, in a subsequent step of the method.

Figure 3 shows a top view of the auxiliary tool in Figure 2, in a further subsequent step of the method, wherein sheet material is positioned using the auxiliary tool to form a reveal.

Figure 4 shows a top view of the auxiliary tool in Figure 3, in an even further subsequent step of the method, in which the sheet material is clamped.

Figure 5 shows a top view of the auxiliary tool in Figure 4, in an even further subsequent step of the method, in which the sheet material is secured using foam.

Figure 6 shows a top view of an auxiliary tool according to an alternative embodiment of the present invention, used in the same step of the method as in Figure 1.

Figure 7 shows a top view of the auxiliary tool from Figure 6, in the same step of the method as in Figure 3.

Figure 8 shows a bottom view of the auxiliary tool from Figure 6.

Figure 9 shows a top view of a clamping means as used with the auxiliary tool from Figure 6.

DETAILED DESCRIPTION

[0019] Unless otherwise defined, all terms used in the description of the invention, including technical and scientific terms, have the meanings as commonly understood by a person skilled in the art to which the invention pertains. For a better understanding of the description of the invention, the following terms are explained explicitly.

[0020] In this document, "a" and "the" refer to both the singular and the plural, unless the context presupposes otherwise. For example, "a segment" means one or more than one segment.

[0021] The terms "comprise," "comprising," "consist of," "consisting of," "provided with," "include," "including," "contain," "containing," are synonyms and are inclusive or open terms that indicate the presence of what follows, and which do not exclude or prevent the presence of other components, characteristics, elements, members, steps, as known from or disclosed in the prior art.

[0022] Quoting numeric intervals by the endpoints includes all integers, fractions, and/or real numbers between the endpoints, including those endpoints.

[0023] In the context of this document, a reveal means a finished inside of a wall opening around a window. In the context of this document, the reveal is perpendicular to the window.

[0024] In the context of this document, a half-space is a subspace of a three-dimensional space bounded by a hyperplane. When the hyperplane is enclosed in the half-space, the half-space is called closed, otherwise the half-space is called open.

[0025] In the context of this document, a leg is a straight edge on a surface or volume.

[0026] A finger, in the context of this document, is a primarily longitudinally extending object.

[0027] In a first aspect, the invention concerns an auxiliary tool for placing a window reveal.

[0028] The auxiliary tool comprises a mounting leg for releasably attaching the auxiliary tool and a support leg as a support surface for a reveal of the window. The mounting leg extends in a first direction. The support leg extends in a second direction. The first direction and the second direction are perpendicular to each other. The first direction and the second direction are perpendicular to each other if the second direction is located in a plane that is perpendicular to the first direction. The mounting leg is located in a first open or closed half-space. The support leg lies in the hyperplane of the first half-space. The first direction is perpendicular to the hyperplane of the first half-space. Preferably the mounting leg and the support leg lie in the same plane. Alternatively, the extensions of the mounting leg and the support leg cross

each other.

[0029] The mounting leg and the support leg, for example, are profiles that are attached to each other in an L-shape. In another possible embodiment, the mounting leg and the support leg are straight sides of a flat plate, perpendicular to each other. In yet another embodiment, the mounting leg or the support leg is a profile and the support leg or the mounting leg, respectively, is a straight side of, for example, a flat plate. The flat plate is made of metal, wood, plastic or another suitable material. It will be apparent that many embodiments for the mounting leg and the support leg are possible.

[0030] According to a preferred embodiment, the mounting leg comprises a suction cup for releasably attaching the auxiliary tool on a glass surface of the window. The suction cup comprises a cup-shaped suction surface. The suction cup preferably comprises a push-button or lever for creating a vacuum between the cup-shaped suction surface and the glass surface. The suction surface comprises an outermost edge. The outermost edge forms the perimeter of the suction surface when the suction cup is attached to the glass surface. The first direction in which the mounting leg extends is parallel to a plane in which the outermost edge of the suction surface is located. The second direction is transverse to the plane in which the outermost edge of the suction surface is located. This means that when the auxiliary tool is releasably attached to the glass surface of the window with the suction cup, the first direction is parallel to the glass surface and the support leg is transverse to the glass surface of the window.

[0031] The suction cup is particularly advantageous for quickly releasably attaching the auxiliary tool to a glass surface of the window. This means that it is not necessary to drill additional holes in a wall to screw on the auxiliary tool, nor is it necessary to subsequently unscrew the auxiliary tool and conceal the holes in the wall. This results in maximum time savings when installing reveals. Because the auxiliary tool can be attached to a glass surface of the window using the suction cup and because the mounting leg and the support leg are perpendicular to each other, the reveal will also automatically be positioned transversely to the window.

[0032] According to a preferred embodiment, the auxiliary tool comprises a first finger. The first finger is made of plastic, metal, wood or another suitable material. The first finger is parallel to the support leg. The first finger thus extends in the second direction. The first finger can be moved between a first end position and a second end position.

[0033] In the first end position of the first finger, the first finger is located within a first quadrant, viewed in a direction perpendicular to the first direction and perpendicular to the second direction. The said direction and the first direction are perpendicular to each other if the said direction is located in a plane that is perpendicular to the first direction. The said direction and the second direction are perpendicular to each other if the said direction is located in a plane that is perpendicular to the second direction. The first quadrant is bounded by the mounting leg and the support leg. This means that when the mounting leg and the support leg are projected according to the said direction onto a plane perpendicular to the said direction, at least extensions of the mounting leg and the support leg intersect perpendicularly. The extensions of the mounting leg and the support leg divide the said plane into four quadrants. In only one quadrant, both the mounting leg and the support leg lie along an edge of the quadrant. For the remaining quadrants, there is at least one edge wherein only an extension of the mounting leg or the support leg lies along the edge of the quadrant. This is because the mounting leg is located in the first half-space. Three-dimensionally, this means that the first finger in the first end position lies in the intersection of the first half-space and a second half-space. The second half-space is an open or closed half-space in which the support leg lies. The mounting leg lies in the hyperplane of the second half-space. The second direction is transverse to the hyperplane of the second half-space. Because the first finger is located within the first quadrant, the reveal can rest freely against the support leg with the first finger in its first end position.

[0034] The first finger includes a tip. In the second end position, the tip of the first finger, viewed in a direction perpendicular to the first direction and perpendicular to the second direction, is located in a second quadrant, diagonally opposite the first quadrant. Three-dimensionally, this means that the tip of the first finger in the second end position lies in the intersection of a half-space opposite the first half-space and a half-space opposite the second half-space. So, this is past the mounting leg and near the window.

[0035] The first finger can be moved at least in a direction parallel to the support leg, i.e. according to the second direction, to and from the second end position. As a result, the first finger can be moved up to against the window. The first finger can therefore be used as an indication for the position of the reveal, allowing the auxiliary tool to be placed easily and correctly.

[0036] Preferably, the first finger comprises an edge that is parallel to the support leg with the first finger in the second end position. Measured in the first direction from the support leg, this edge is a furthest edge from the first finger. This edge is particularly advantageous as a reference for a rear side of the reveal to be installed. If the first finger can be positioned against the window in the second direction, the auxiliary tool is placed sufficiently far from an inside of the wall opening around the window, so that the reveal can be placed.

[0037] According to a preferred embodiment, the auxiliary tool comprises a second finger. The second finger is made of plastic, metal, wood or another suitable material. The second finger is parallel to the support leg. The second finger thus extends in the second direction. The second finger can be moved between a first end position and a second end position.

[0038] In the first end position of the second finger, the second finger is located within a first quadrant, viewed in a direction perpendicular to the first direction and perpendicular to the second direction. The first quadrant is as described in a previous embodiment. Because the second finger is located within the first quadrant, the reveal can rest freely against the support leg with the second finger in its first end position.

[0039] In the second end position, the second finger, as a support surface for the reveal of the window, is an extension of the support leg. This means that the second finger has an edge that is in the extension of the support leg, against which the reveal can rest.

[0040] The second finger can be moved at least in a direction parallel to the support leg, i.e. according to the second direction, to and from the second end position. The second finger can be moved along a path from the first end position of the second finger to the second end position of the second finger, wherein at least part of the path is movable in the second direction and in a sense directed towards the mounting leg. As a result, the second finger can be moved up to against the window. The second finger can therefore fill a free space between an end of the support leg and the window as a support surface. It is particularly advantageous that the second finger can be moved in the second direction, because this means that the auxiliary tool can be used with different thicknesses of window frames.

[0041] According to a preferred embodiment, the first finger and the second finger are a single finger. This is advantageous because it results in a simpler auxiliary tool. A single finger used as a first and second finger is possible because the first finger and the second finger are not used simultaneously.

[0042] According to a preferred embodiment, the support leg comprises a clamping means for clamping the reveal against the window. The clamping means can be moved at least in a direction parallel to the support leg, i.e. in the second direction. The clamping means is preferably movable in a guideway parallel to the support leg. The clamping means preferably comprises a locking means for locking the clamping means in the guideway. A non-limiting example of a locking means is a clamping screw comprised in the clamping means. The clamping means is, for example, a rubber cylinder or a projection in another material that can be moved along the guideway and can be fixed at a position along the guideway by screwing down the clamping screw.

[0043] In an alternative embodiment, the clamping means comprises a locking mechanism. The locking mechanism includes a lip pre-tensioned by a spring, where the lip engages in teeth. The teeth are placed in the second direction along at least part of the support leg. The teeth can be arranged in the support surface or attached to the support leg as a separate rack. When moving the clamping means in the second direction towards the mounting leg, the lip of the locking mechanism always engages in the next tooth. The locking mechanism prevents movement of the clamping means in the second direction away from the mounting leg. By moving the lip against the pretension of the spring, it is possible to move the clamping means in the second direction away from the support leg.

[0044] By moving the clamping means in a direction parallel to the support leg against a side of the reveal and locking the clamping means, the reveal is clamped against the window. Due to this clamping against the window, the reveal will also remain resting against the support leg. The use of a foam, such as insulating foam, to fill a space between a back of the reveal and the wall opening around the window is particularly advantageous because the expansion of the foam guarantees that the reveal is pressed against the support leg.

[0045] According to a preferred embodiment, the mounting leg comprises a spirit level for horizontally and/or vertically placing the mounting leg. If the mounting leg is positioned nicely horizontally or vertically, then the reveal will automatically be positioned correctly vertically or horizontally as well. The auxiliary tool can quickly be correctly oriented.

[0046] According to a preferred embodiment, the auxiliary tool comprises several notches along the support leg for receiving a slat. The notches in the support surface are in a direction parallel to the mounting leg. These notches are advantageous when using relatively flexible sheet material to form the reveal. Such sheet material can be pushed away by foaming a space between the sheet material and the wall opening around the window, causing the reveal to bulge. This is particularly advantageous when using relatively flexible sheet material for the reveal at the top of a window, where the relatively flexible sheet material can bend due to gravity. By using at least two auxiliary tools and placing at least one slat in a notch in a first auxiliary tool and in a notch in a second auxiliary tool, the sheet material can be supported over at least part of the length of the sheet material, thus avoiding bulging or sagging. It will be apparent that the at least one slat connects the first auxiliary tool and the second auxiliary tool. Preferably, slats are used that have a cross-section that corresponds to the notches, so that an edge of the slat that serves as a support surface for the reveal is flush with the support surface formed by the support legs of the auxiliary tools.

[0047] According to a preferred embodiment, the auxiliary tool comprises a dimension indication for measuring a displacement of the first finger in a direction parallel to the mounting leg, i.e. parallel to the first direction. This is advantageous because it makes it possible to measure how much the first finger must be moved in the first direction, depending on the thickness of sheet material to form a reveal. This is particularly advantageous in combination with a first finger that comprises an edge that is parallel to the support leg with the first finger in the second end position, wherein this edge, as described previously, is a reference for a rear side of the reveal to be installed.

[0048] According to a preferred embodiment, the aux-

iliary tool comprises displacement control means for limiting a displacement of the first finger in a direction parallel to the mounting leg, i.e. parallel to the first direction. The displacement control means is, for example, a movable stop in a guideway for the first finger.

[0049] This embodiment is particularly advantageous in combination with a first finger that comprises an edge that is parallel to the support leg with the first finger in the second end position, wherein this edge, as described previously, is a reference for a rear side of the reveal to be installed. By correctly placing the displacement control means, after the maximum displacement of the first finger in the first direction, the said edge of the first finger is positioned at a distance from the support leg that corresponds to the thickness of sheet material for forming a reveal. When using a movable stop in a guideway for the first finger, it is preferable to have indications along the guideway for the different thicknesses of the sheet material.

[0050] According to a preferred embodiment, the support leg has a thickness of at most 3 mm, viewed in a direction perpendicular to the first direction and perpendicular to the second direction. This is advantageous because, if the horizontal or vertical orientation of the mounting leg is not perfect, it has a smaller influence on the orientation of the reveal to be installed. With a greater thickness, a small deviation of the mounting leg from a horizontal or vertical position will result in a larger deviation of the support surface formed by the support leg.

[0051] The said thickness is preferably a maximum of 2.5 mm, more preferably a maximum of 2.0 mm, even more preferably a maximum of 1.5 mm.

[0052] According to an embodiment, the auxiliary tool comprises a moving means for moving the first finger and/or the second finger in a direction parallel to the support leg, i.e. in the second direction. The moving means preferably comprises a locking means for locking the first finger and/or the second finger in their respective guideway. A non-limiting example of a locking means is a clamping screw comprised in the first finger and/or the second finger.

[0053] Preferably the locking means comprises a locking mechanism. The locking mechanism includes a lip pre-tensioned by a spring, where the lip engages in teeth. The teeth are placed in the second direction along at least part of the support leg. The teeth can be arranged in the support surface or attached to the support leg as a separate rack. When moving the first finger and/or the second finger in the second direction towards the mounting leg, the lip of the locking mechanism always engages the next tooth. The locking mechanism prevents movement of the first finger and/or the second finger in the second direction away from the mounting leg. By moving the lip against the pretension of the spring, it is possible to move the first finger and/or the second finger in the second direction away from the support leg. Preferably, the auxiliary tool comprises an actuator for moving the first finger and/or the second finger. For example, the actuator is a handle with a puller, wherein the puller is configured to move the first finger and/or the second finger in the second direction towards the mounting leg when operating the puller, whereby the lip of the locking mechanism engages in the next tooth.

[0054] In a second aspect, the invention concerns a method for installing a window reveal.

[0055] The method comprising the steps of:

- placing at least one auxiliary tool on a reference plane, wherein the auxiliary tool comprises a support surface for the reveal of the window,
- placing sheet material against the support surface to form the reveal,
- and securing the sheet material.

[0056] The sheet material is, for example, a plastic sheet, a wooden plate or a plasterboard. Preferably the sheet material is plasterboard.

[0057] The sheet material is, for example, secured with plaster, glue, nails, screws or foam. The sheet material is preferably secured with foam, more preferably with insulating foam.

[0058] According to a preferred embodiment, the reference surface is a glass surface of the window. The auxiliary tool is releasably placed on the glass surface. The auxiliary tool is, for example, placed releasably on the glass surface with a temporary adhesive layer or with a suction cup. The auxiliary tool is preferably placed releasably on the glass surface with a suction cup. The support surface included in the auxiliary tool is perpendicular to the glass surface.

[0059] This method has the advantage, among other things, that because a glass surface of the window is used as a reference surface and the support surface is perpendicular to the glass surface, the reveal is automatically positioned perpendicular to the window. The glass surface is also a flat surface, making it more suitable as a reference surface than a wall around the wall opening in which the window is placed. This makes it easier to position the reveal perfectly vertically or horizontally using the auxiliary tool. An additional advantage of using the glass surface for releasably placing the auxiliary tool is that it is not necessary, for example, to drill mounting holes for the auxiliary tool in the wall around the wall opening, which must subsequently be concealed. This results in maximum time savings.

[0060] According to a preferred embodiment, at least two auxiliary tools are placed releasably on the glass surface, after which the at least two auxiliary tools are connected by means of at least one slat. The at least one slat becomes part of the support surface for the reveal of the window. This embodiment is particularly advantageous when using relatively flexible sheet material for forming the reveal. Such sheet material can be pushed away, for example, by foaming a space between the sheet material and the wall opening around the window, causing the reveal to bulge. This is particularly advanta-

geous when using relatively flexible sheet material for the reveal at the top of a window, where the relatively flexible sheet material can bend due to gravity. By using at least two auxiliary tools and connecting by means of at least one slat, the sheet material can be supported over at least part of the length of the sheet material, to avoid pushing away or bulging of the sheet material.

[0061] According to a preferred embodiment, the auxiliary tool comprises a first finger. Before releasably placing the at least one auxiliary tool on the glass surface of the window, the first finger is moved from a first position to a second position. In the first position of the finger, the sheet material can rest against the support surface. In the second position, an edge of the first finger is a reference for a rear side of the sheet material. After releasably placing the auxiliary tool on the glass surface, the first finger is moved from the second position to the first position so that the sheet material can be placed and rested against the support surface.

[0062] This embodiment is advantageous because it allows the auxiliary tool to be placed simply and correctly, so that the auxiliary tool is positioned sufficiently far from an inside of the wall opening around the window and so that the reveal can be placed.

[0063] According to a preferred embodiment, the auxiliary tool comprises a second finger. After releasably placing the at least one auxiliary tool on the glass surface of the window, the second finger is pushed against the window. An edge of the second finger becomes part of the support surface for the reveal of the window. This is particularly advantageous because the sheet material is supported up to the window.

[0064] According to a preferred embodiment, after placing the sheet material against the support surface and before securing the sheet material, the sheet material is clamped against the window with the aid of a clamping means included in the auxiliary tool. This is advantageous because the sheet material also continues to rest against the support leg, so that it is not necessary to hold the sheet material during fixing. This embodiment is particularly advantageous in combination with the use of a foam, such as an insulating foam, for filling a space between a rear side of the reveal and the wall opening for securing the sheet material. Expansion of the foam ensures that the reveal is pressed against the support leg.

[0065] One skilled in the art will appreciate that a method according to the second aspect is preferably performed using an auxiliary tool according to the first aspect and that an auxiliary tool according to the first aspect is preferably configured for performing a method according to the second aspect. Each feature described in this document, both above and below, can therefore relate to any of the three aspects of the present invention.

[0066] In a third aspect, the invention concerns a use of an auxiliary tool according to the first aspect and/or a method according to the second aspect for installing reveals of a window.

[0067] This use results in an advantageous, quick installation of the reveals around a window, where a reveal is positioned perfectly perpendicular to the window and horizontally or vertically.

[0068] In what follows, the invention is described by way of non-limiting figures illustrating the invention, and which are not intended to and should not be interpreted as limiting the scope of the invention.

DESCRIPTION OF THE FIGURES

[0069] **Figure 1** shows a top view of an auxiliary tool according to an embodiment of the present invention, used in an early step of a method according to an embodiment of the present invention.

[0070] The auxiliary tool (1) comprises a plate. The plate is made of wood, metal, plastic or another suitable material. The auxiliary tool (1) comprises a mounting leg (2) for releasably attaching the auxiliary tool (1) and a support leg (3) as a support surface (24) for a window reveal. The mounting leg (2) and the support leg (3) are straight edges of the plate. The mounting leg (2) extends in a first direction (4). The support leg (3) extends in a second direction (5). The first direction (4) and the second direction (5) are perpendicular to each other. The mounting leg (2) comprises a suction cup (6) for releasably attaching the auxiliary tool (1) on a glass surface (11) of a window. The suction cup (6) comprises a cup-shaped suction surface (9). The suction cup (6) includes a handle (7) for placing and removing the suction cup (6). It will be apparent that the handle (7) can be included, for example, in the plate of the auxiliary tool (1) instead of in the suction cup (6). On the handle (7) there is a push button (8) for creating a vacuum between the cup-shaped suction surface (9) and the glass surface (11). The push button (8) is pressed before placing the suction cup (6) on the glass surface (11). In this embodiment, the suction cup (6) is attached to the plate using bolts and nuts (10). It will be apparent to one skilled in the art that the suction cup (6) can be attached to the plate in different ways. The cup-shaped suction surface (9) includes an outermost edge. This outermost edge is in contact with the glass surface (11) after the auxiliary tool (1) has been releasably attached. The first direction (4) is parallel to a plane in which the outermost edge of the suction surface (9) is located. So, after releasably attaching the auxiliary tool (1), the first direction (4) is parallel to the glass surface (11). The second direction (5) is transverse to the plane in which the outermost edge of the suction surface (9) is located.

[0071] The auxiliary tool (1) comprises a first finger (14). In this embodiment the first finger (14) is located at the top of the plate. The first finger (14) is parallel to the support leg (3). This means that the first finger (14) extends in the second direction (5). The first finger (14) can be moved between a first end position (15) and a second end position (16). The first finger (14) can be moved from the first end position (15) to the second end position (16) and back using clamping screws (29) in a guideway (17). The first finger (14) can be fixed at any position between

the first end position (15) and the second end position (16) using the clamping screws (29). The first finger (14) can be moved at least in a direction parallel to the support leg (3), i.e. in the second direction (5) from and to the second end position (16). In this embodiment this is in a part of the guideway (17) that is parallel to the support leg (3). In the first end position (15), the first finger (14), viewed in a direction perpendicular to the first direction (4) and perpendicular to the second direction (5), is located within a first quadrant (I) bounded by the mounting leg (2) and the support leg (3). Because the first finger (14) is located within the first quadrant (I) in the first end position (15), the reveal can rest freely against the support leg (3) with the first finger (14) in its first end position (15). In the second end position (16), a tip (19) of the first finger (14), viewed in a direction perpendicular to the first direction (4) and perpendicular to the second direction (5), is located within a second quadrant (II), diagonally opposite the first quadrant (I). The first finger (14) includes an edge (18). When the first finger (14) is in the second end position (16), the edge (18) is parallel to the support leg (3). Measured in the first direction (4) from the support leg (3), the edge (18) is a furthest edge (18) from the first finger (14). The edge (18) is a reference for a rear side of the reveal to be installed. This means that a distance measured in the first direction (4) from the support leg (3) to the edge (18) corresponds to a thickness of sheet material (27) for the reveal to be formed. When releasably placing the auxiliary tool (1) on the glass surface (11), the first finger (14) is placed in the second end position (16). The first finger (14) is not fixed in the second end position (16). Assuming that the reveal is a vertical reveal, the mounting leg (2) is positioned horizontally. It will be apparent to a person skilled in the art that with a horizontal reveal the mounting leg (2) is held vertically. The tip (19) of the first finger (14) touches the frame (12) of the window. If the first finger (14) can be positioned against the frame (12) of the window in the second direction (5), the auxiliary tool (1) is placed sufficiently far from an inside of the wall (13) around the window, so that the reveal can be placed. The auxiliary tool (1) is then releasably attached to the window using the suction cup (6) by releasing the push-button (8).

[0072] The auxiliary tool (1) further comprises a second finger (20). In this embodiment the second finger (20) is located on the top side of the plate. The second finger (20) is parallel to the support leg (3). This means that the second finger (20) extends in the second direction (5). The second finger (20) can be moved between a first end position (21) and a second end position (22). The second finger (20) can be moved from the first end position (21) to the second end position (22) and back using clamping screws (29) in a guideway (23). The second finger (20) can be fixed at any position between the first end position (21) and the second end position (22) using the clamping screws (29). The second finger (20) can be moved at least in a direction parallel to the support leg (3), i.e. in the second direction (5) from and to the second end position (22). In this embodiment this is in a part of the guideway (23) that is parallel to the support leg (3). In the first end position (21), the second finger (20), viewed in a direction perpendicular to the first direction (4) and perpendicular to the second direction (5), is located within a first quadrant (I) bounded by the mounting leg (2) and the support leg (3). In the second end position (22), the second finger (20), as a support surface (24) for the reveal of the window, is an extension of the support leg (3). This functionality will become clear in later figures.

[0073] The auxiliary tool (1) comprises a clamping means (25) for clamping the reveal against the window, more specifically against the frame (12). This functionality will become clear in later figures. In this embodiment the clamping means (25) is located on the underside of the plate. The clamping means (25) in this embodiment is a simple plate. The clamping means (25) can be moved in a guideway (30) using clamping screws. In this embodiment, the guideway (30) is largely common with the guideway (17) for the first finger (14). The clamping means (25) can be secured at any position along the guideway (30) using the clamping screws (29). The clamping means (25) can be moved at least in a direction parallel to the support leg (3), i.e. in the second direction (5). In this embodiment this is in a part of the guideway (30) that is parallel to the support leg (3).

[0074] The auxiliary tool (1) comprises several notches (26) along the support leg (3) for receiving a slat. The notches (26) in the support surface (24) are in a direction parallel to the mounting leg (2), i.e., in the first direction (4). These notches (26) are advantageous when using relatively flexible sheet material (27) to form the reveal. Such sheet material (27) can be pushed away by foaming a space between the sheet material (27) and the wall (13) around the window, causing the reveal to bulge. When using relatively flexible sheet material (27) for the reveal at the top of a window, the relatively flexible sheet material (27) can bend due to gravity. By using at least two auxiliary tools (1) and placing at least one slat in a notch (26) in a first auxiliary tool (1) and in a notch (26) in a second auxiliary tool (1), the sheet material (27) can be supported over at least part of the length of the sheet material (27), thus avoiding bulging or sagging. Preferably, slats are used that have a cross-section that corresponds to the notches (26), so that an edge of the slat that serves as a support surface for the reveal is flush with the support surface (24) formed by the support legs (2) of the auxiliary tools (1). No slats are shown on the figures.

[0075] **Figure 2** shows a top view of the auxiliary tool in Figure 1, in a subsequent step of the method.

[0076] After the auxiliary tool (1) has been releasably placed on the glass surface (11) of the window, the first finger (14) is moved back to its first end position (15). This means that the support surface (24) formed by the support leg (3) is free, so that sheet material (27) for forming the reveal can rest against the support surface (24).

[0077] **Figure 3** shows a top view of the auxiliary tool in Figure 2, in a further subsequent step of the method, wherein sheet material is positioned using the auxiliary tool to form a reveal.

[0078] In a next step, the second finger (20) is moved in the second direction (5) to the second end position (22) of the second finger (20) until the second finger (20) touches the frame (12). In Figure 3, the second finger (20) has been moved to the second end position (22). However, it will be apparent that depending on a length of the second finger (20) and dimensions of the frame (12), the second finger (20) does not always have to be moved to the second end position (22). The second finger (20) is secured using the clamping screws (29). An edge of the second finger (20) is in line with the support leg (3). The second finger (20), together with the support leg (3), forms a support surface (24) for the reveal of the window. After the second finger (20) has been positioned, the sheet material (27) to form the reveal is placed against the support surface (24) and the frame (12).

[0079] **Figure 4** shows a top view of the auxiliary tool in Figure 3, in an even further subsequent step of the method, in which the sheet material is clamped.

[0080] After the sheet material (27) has been placed against the support surface (24) and the frame (12), the clamping means (25) is moved along the guideway (30) in the second direction (5) up to against the sheet material (27) and secured in this position using the clamping screws (29). This clamps the sheet material (27) against the frame (12), so that the sheet material (27) also continues to rest against the support surface (24).

[0081] **Figure 5** shows a top view of the auxiliary tool in Figure 4, in an even further subsequent step of the method, in which the sheet material is secured using foam.

[0082] After clamping the sheet material (27) against the frame (12) and the support surface (24), the space between the sheet material (27) and the wall (13) is foamed using foam (28), for example insulating foam. The sheet material (27) adheres to the wall (13) by means of the foam (28). The foam (28) presses the sheet material (27) against the support surface (24). Only after the foam (28) has hardened, the second finger (20) and the clamping means (25) are moved to the positions shown in Figure 2 and the auxiliary tool (1) is removed from the window surface (11). The reveal has been placed.

[0083] It will be apparent that in addition to foam, other ways are possible to secure the sheet material, such as the use of glue, plaster, nails, screws, etc.

[0084] It will also be apparent that in addition to the use of a plate, there are other possibilities for manufacturing an auxiliary tool according to the invention, for example by using a profile for the mounting leg and a profile for the support leg that are attached to each other in an L-shape, wherein grooves in the profiles function as guideways for a first finger, a second finger and a clamping means.

[0085] **Figure 6** shows a top view of an auxiliary tool according to an alternative embodiment of the present invention, used in the same step of the method as in Figure 1.

[0086] This alternative embodiment of the auxiliary tool (1) has a similar functionality as the auxiliary tool (1) in Figure 1. The main difference is that the first finger (14) and the second finger (20) are one and the same finger. The guideway (17) for the first finger (14) is also the guideway (23) for the second finger (20). The first end positions (15) and (21) and the second end positions (16) and (22) are also the same in the second direction (5). In Figure (6) the finger is used as the first finger (14),wherein the edge (18) of the first finger (14) is positioned beyond the support surface (24) and the tip (19) of the first finger (14) in the second quadrant (II). Another important difference is that there are no notches (26) in the support surface (24). The presence of notches (26) mainly depends on the type of sheet material (27). It will be apparent that in an auxiliary tool (1) wherein the first finger (14) and the second finger (20) are one and the same finger, notches (26) in the support surface (24) are indeed possible. A second important difference is that the clamping means (25) comprises a locking mechanism (34). The locking mechanism (34) is not clearly visible in Figure 6 and will be discussed in more detail in Figure 8 and Figure 9.

[0087] **Figure 7** shows a top view of the auxiliary tool from Figure 6, in the same step of the method as in Figure 3.

[0088] Figure 7 clearly shows that the finger can be moved in the first direction (4). By moving the finger in the first direction (4), the finger can be used as first finger (14) or as second finger (20). In Figure 7 the finger is used as second finger (20). The edge (18) of the first finger (14) and therefore also the second finger (20) lies in line with the support surface (24) and serves as a support surface for the sheet material (27) from which the reveal is formed.

[0089] **Figure 8** shows a bottom view of the auxiliary tool from Figure 6.

[0090] The locking mechanism (34) is clearly visible in Figure 8. The locking mechanism (34) includes a lip (33) pre-tensioned by a spring. The lip (33) engages with teeth (31). The teeth (31) are part of a rack (35) that is attached to an underside of the support leg (3). The rack (35) extends in the second direction (5). The teeth (31) are asymmetrically shaped. When moving the clamping means (25) in the second direction (5) towards the mounting leg (2), the lip (33) of the locking mechanism (34) always engages in the next tooth (31). The spring presses the lip (33) between the teeth (31). Due to the asymmetrical shape of the teeth (31), the locking mechanism (34) prevents movement of the clamping means (25) in the second direction (5) away from the mounting leg (2). By moving the lip (33) using a lever (32) against the pretension of the spring, it is possible to move the clamping means (25) in the second direction (5) away from the support leg (2). The clamping means (25), more precisely the locking mechanism (34), is guided in the second direction

(5) in a guideway (30) in the rack (35). Clamping the sheet material (27) is done by moving the locking mechanism (34) against the sheet material (27).

[0091] **Figure 9** shows a top view of a clamping means as used with the auxiliary tool from Figure 6.

[0092] Figure 9 shows more clearly the various parts of the clamping means (25), such as the locking mechanism (34) and the rack (35), containing the guideway (30) for guiding the locking mechanism (34).

[0093] The numbered elements in the figures are:

1. Auxiliary tool
2. Mounting leg
3. Support leg
4. First direction
5. Second direction
6. Suction cup
7. Handle
8. Push-button
9. Suction surface
10. Bolt and nut
11. Glass surface
12. Frame
13. Wall
14. First finger
15. First end position of first finger
16. Second end position of first finger
17. Guideway of first finger
18. Edge of first finger
19. Tip of first finger
20. Second finger
21. First end position of second finger
22. Second end position of second finger
23. Guideway of second finger
24. Support surface
25. Clamping means
26. Notch
27. Sheet material
28. Foam
29. Clamping screw
30. Guideway clamping means
31. Teeth
32. Lever
33. Lip
34. Locking mechanism
35. Rack

I. First quadrant
II. Second quadrant

Claims

1. Auxiliary tool for installing a reveal of a window, comprising a mounting leg for releasably attaching the auxiliary tool and a support leg as a support surface for a window reveal, wherein the mounting leg extends in a first direction and the support leg extends in a second direction, wherein the first direction and the second direction are perpendicular to each other, **characterized in that** the mounting leg comprises a suction cup for releasably attaching the auxiliary tool on a glass surface of the window, wherein the suction cup comprises a suction surface with an outermost edge, wherein the first direction is parallel to a plane in which the outermost edge of the suction surface is located and wherein the second direction is transverse to the plane in which the outermost edge of the suction surface is located.

2. Auxiliary tool according to claim 1, **characterized in that** the auxiliary tool comprises a first finger, wherein the first finger is parallel to the support leg, wherein the first finger is movable between a first end position and a second end position, wherein, in the first end position, the first finger, viewed in a direction perpendicular to the first direction and perpendicular to the second direction, is located within a first quadrant bounded by the mounting leg and the support leg, wherein, in the second end position, a tip of the first finger, viewed in the said direction, is located in a second quadrant diagonally opposite the first quadrant and wherein the first finger can be moved at least in a direction parallel to the support leg from and to the second end position.

3. Auxiliary tool according to claim 2, **characterized in that** the auxiliary tool comprises a dimension indication for measuring a displacement of the first finger in a direction parallel to the mounting leg.

4. Auxiliary tool according to claim 2 or 3, **characterized in that** the auxiliary tool comprises displacement control means for limiting a displacement of the first finger in a direction parallel to the mounting leg.

5. Auxiliary tool according to any of the preceding claims 1-4, **characterized in that** the auxiliary tool comprises a second finger, wherein the second finger is parallel to the support leg, wherein the second finger is movable between a first end position and a second end position, wherein, in the first end position, the second finger, viewed in a direction perpendicular to the first direction and perpendicular to the second direction, is located within a first quadrant bounded by the mounting leg and the support leg, wherein, in the second end position, the second finger, as a support surface for the reveal of the window, is an extension of the support leg, and wherein the second finger can be moved at least in a direction parallel to the support leg from and to the second end position.

6. Auxiliary tool according to any one of the preceding claims 2-4 and claim 5, **characterized in that** the

first finger and the second finger are a single finger.

7. Auxiliary tool according to any of the preceding claims 1-6, **characterized in that** the support leg comprises a clamping means for clamping the reveal against the window, wherein the clamping means is displaceable at least in a direction parallel to the support leg.

8. Auxiliary tool according to any one of the preceding claims 1-7, **characterized in that** the auxiliary tool comprises several notches along the support leg for receiving a slat.

9. Auxiliary tool according to any one of the preceding claims 1-8, **characterized in that** the support leg, viewed in a direction perpendicular to the first direction and perpendicular to the second direction, has a thickness of maximum 3 mm.

10. Method for installing a reveal of a window, comprising placing at least one auxiliary tool on a reference plane, wherein the auxiliary tool comprises a support surface for the reveal of the window, placing sheet material against the support surface to form the reveal, and securing the sheet material, **characterized in that** the reference plane is a glass surface of the window, wherein the auxiliary tool is placed releasably on the glass surface, and wherein the support surface is perpendicular to the glass surface.

11. Method according to claim 10, **characterized in that** at least two auxiliary tools are placed releasably on the glass surface, after which the at least two auxiliary tools are connected by means of at least one slat, wherein the at least one slat becomes part of the support surface for the reveal of the window.

12. Method according to claim 10 or 11, **characterized in that** the auxiliary tool comprises a first finger, wherein, before releasably placing the at least one auxiliary tool on the glass surface of the window, the first finger is moved from a first position to a second position, wherein an edge of the first finger in the second position is a reference for a rear side of the sheet material and wherein, after the auxiliary tool has been releasably placed on the glass surface, the first finger is moved from the second position to the first position.

13. Method according to claim 10, 11 or 12, **characterized in that** the auxiliary tool comprises a second finger, wherein, after releasably placing the at least one auxiliary tool on the glass surface of the window, the second finger is pushed against the window, and wherein an edge of the second finger becomes part of the support surface for the reveal of the window.

14. Method according to any one of the preceding claims 10-13, **characterized in that** after placing the sheet material against the support surface and before securing the sheet material, the sheet material is clamped against the window with the aid of a clamping means comprised in the auxiliary tool.

15. Use of an auxiliary tool according to any one of claims 1-9 and/or a method according to any one of claims 10-14 for installing reveals of a window.

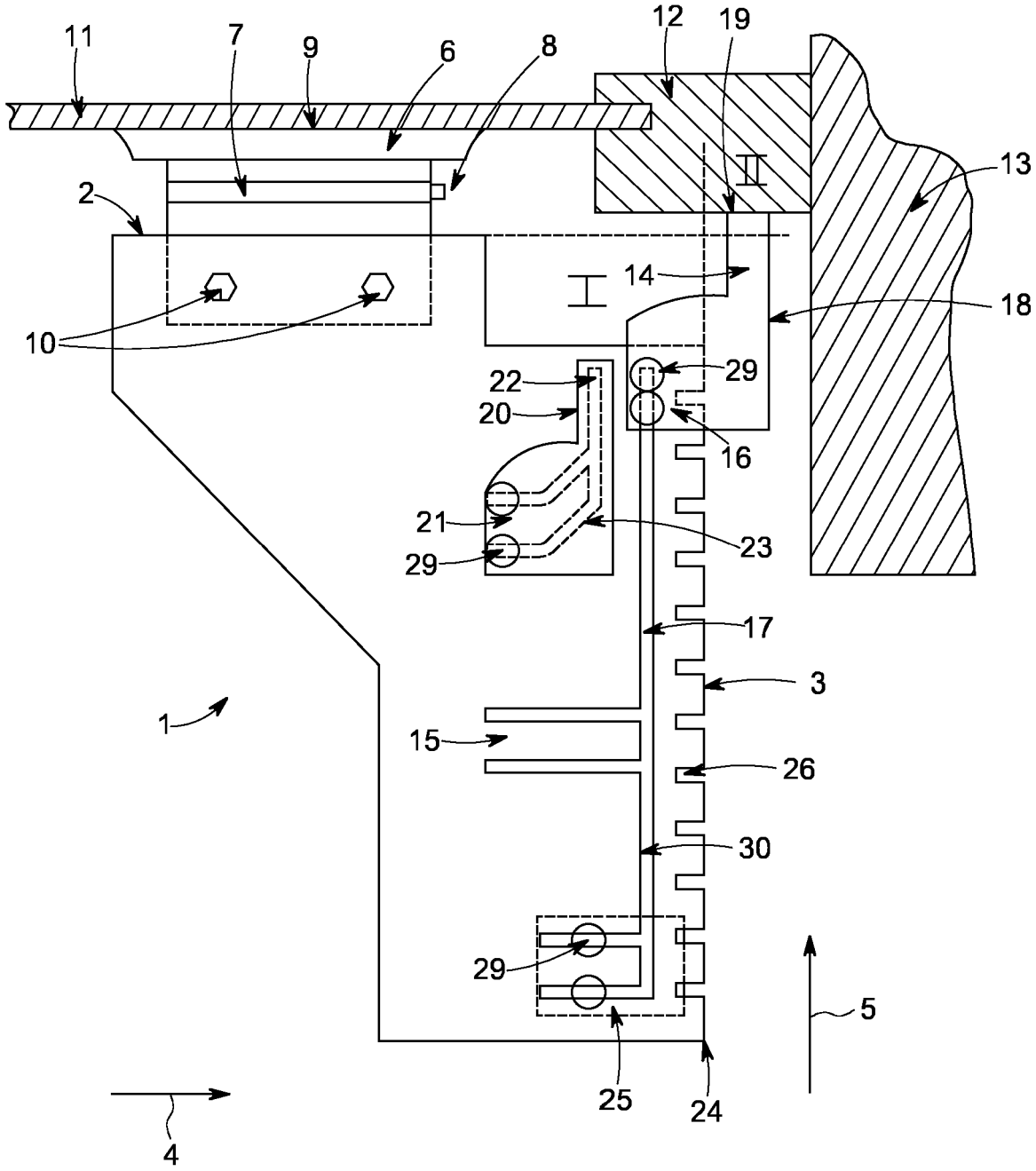
11
7
9
6
8
12
19
13
2
14
18
10
22
29
20
16
21
23
29
17
3
1
15
26
30
29
5
25
24
4

FIG. 1

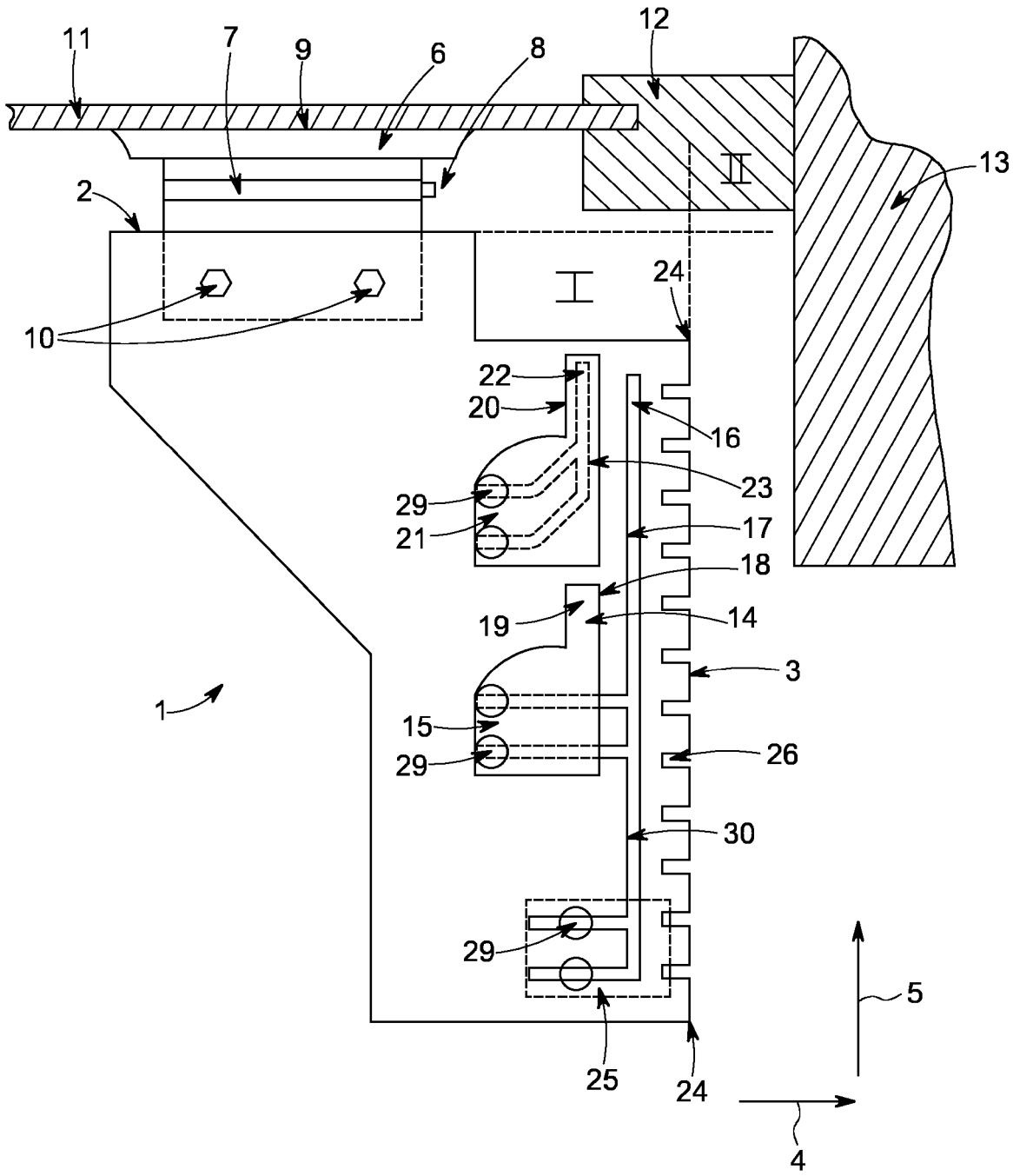
11
7
9
6
8
12
13
2
10
24
22
20
16
23
29
21
17
18
19
14
3
1
15
29
26
30
29
5
25
24
4

FIG. 2

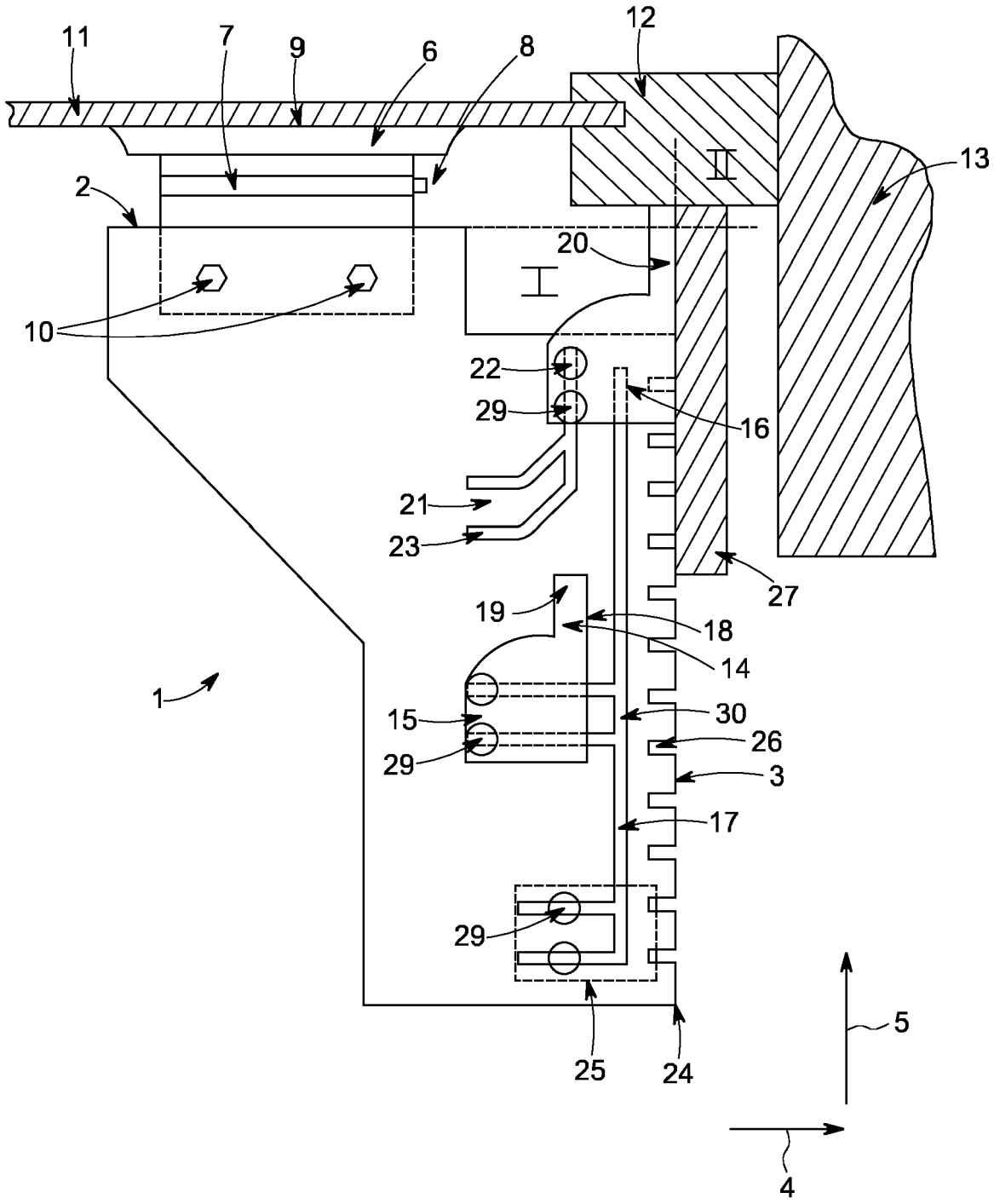
11
7
9
6
8
12
13
2
20
10
22
29
16
21
23
27
19
18
14
1
15
30
26
29
3
17
29
5
25
24
4

FIG. 3

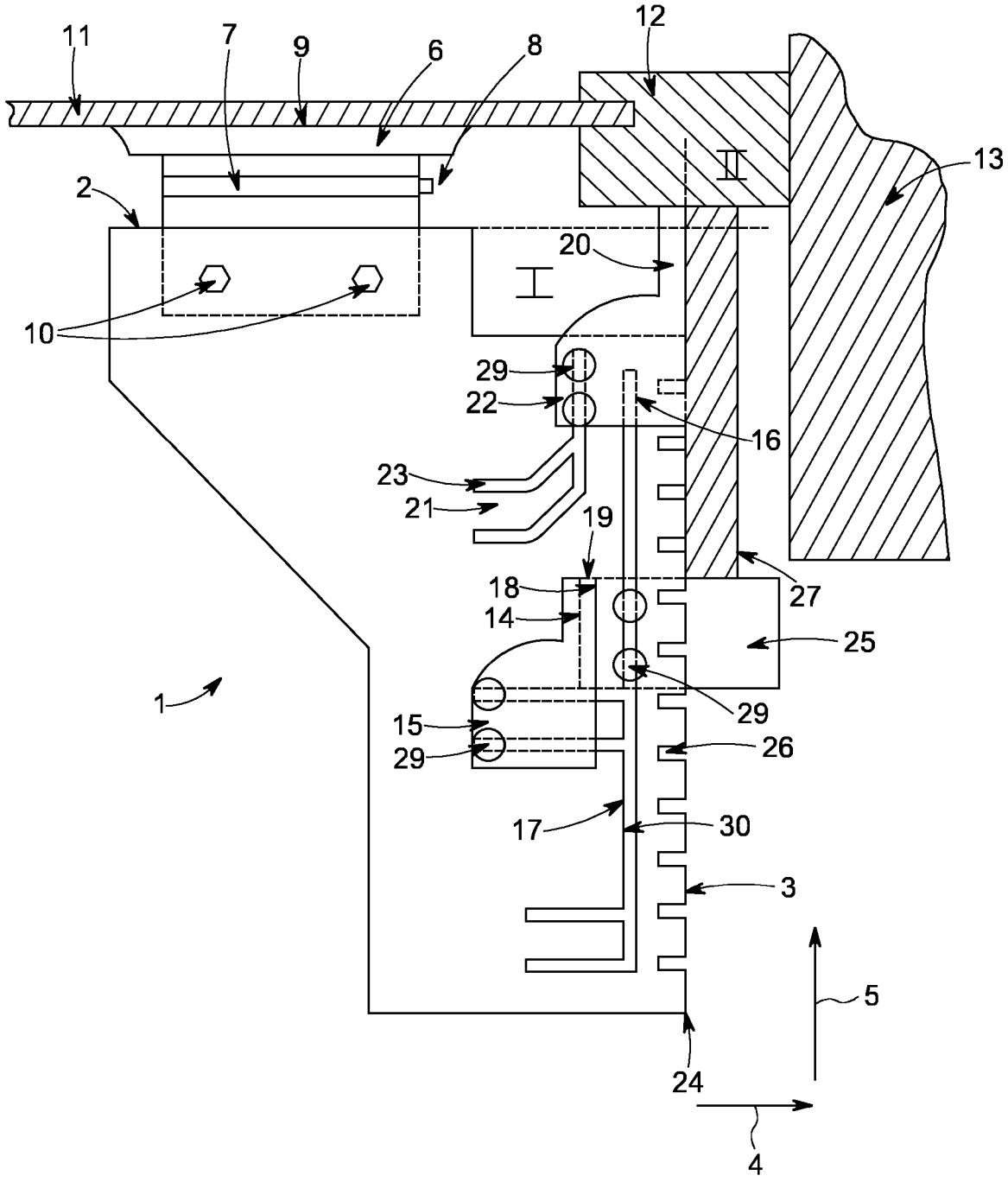
11
7
9
6
8
12
13
2
20
10
29
22
16
23
21
19
18
27
14
25
1
29
15
29
26
17
30
3
5
24
4

FIG. 4

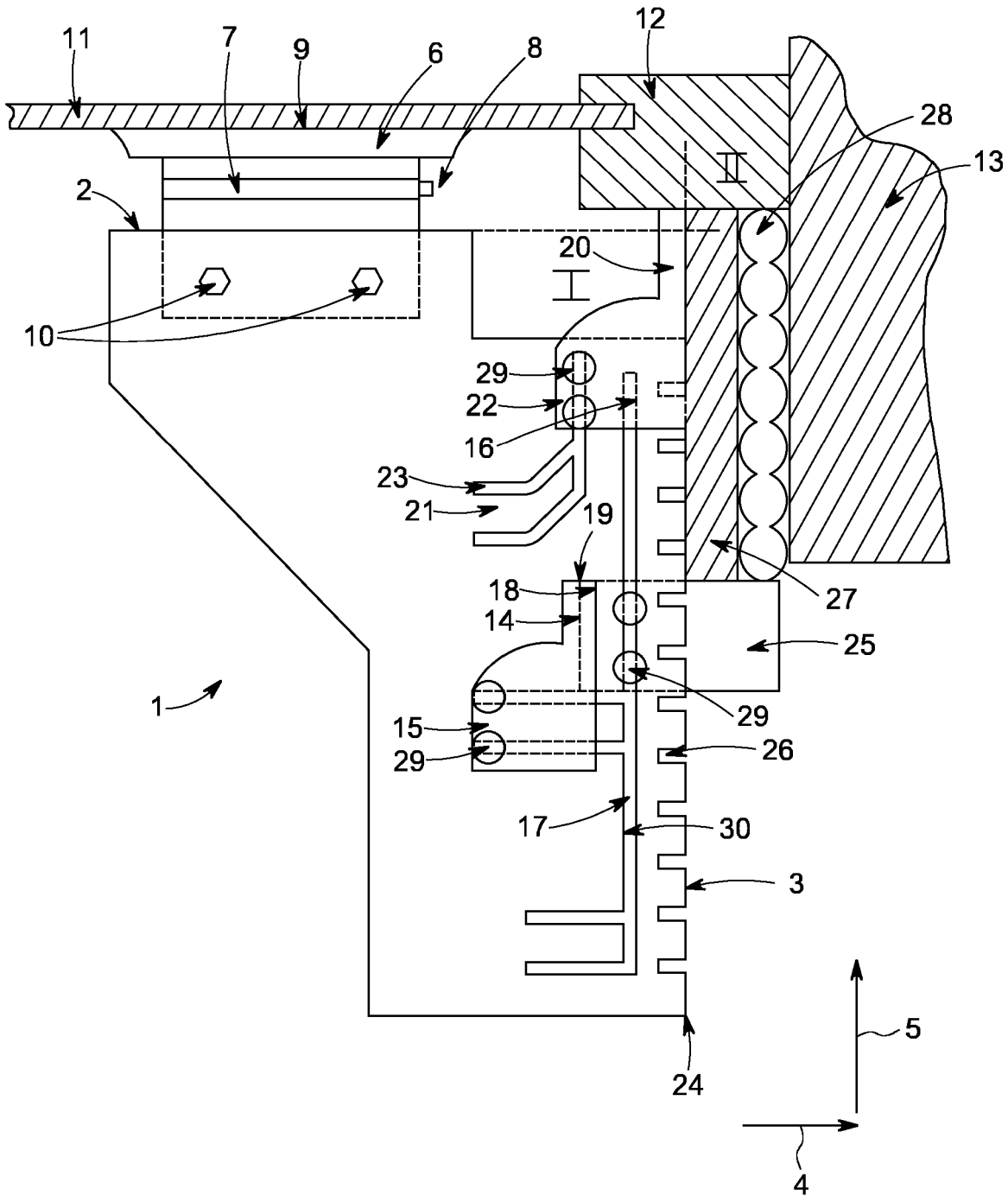
11
7
9
6
8
12
28
13
2
20
10
29
22
16
23
21
19
18
14
27
25
1
29
15
29
26
17
30
3
5
24
4

FIG. 5

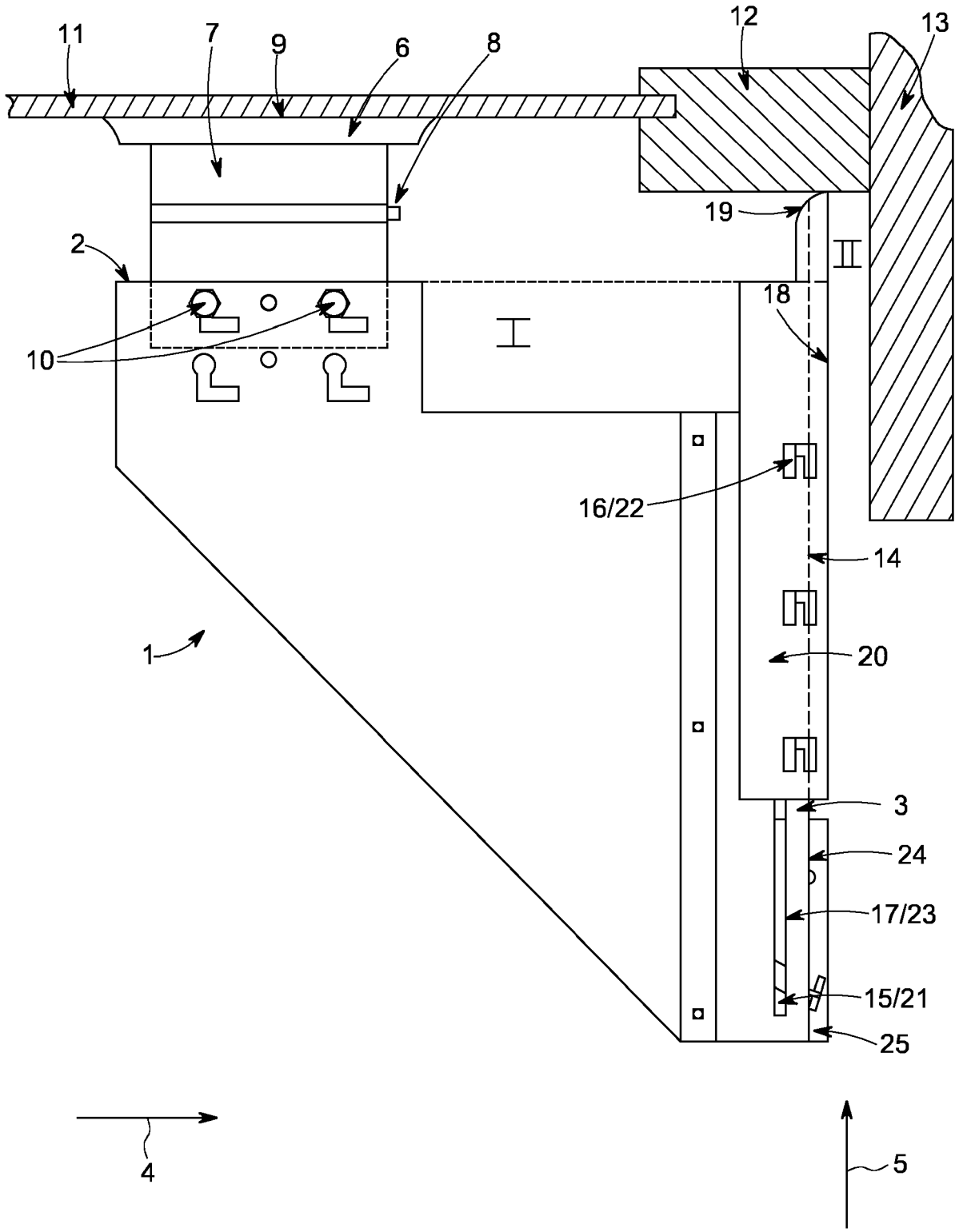

FIG. 6

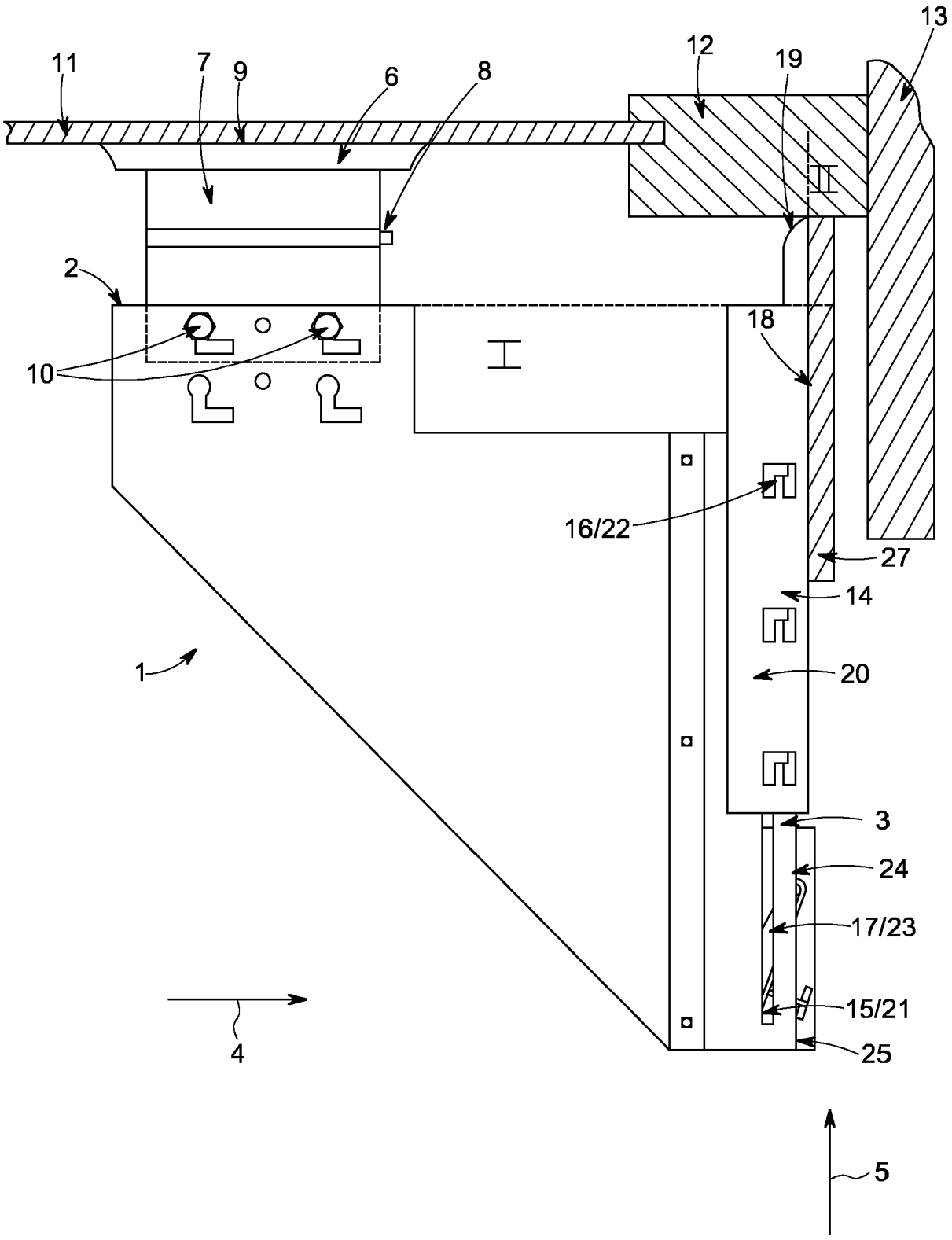

FIG. 7

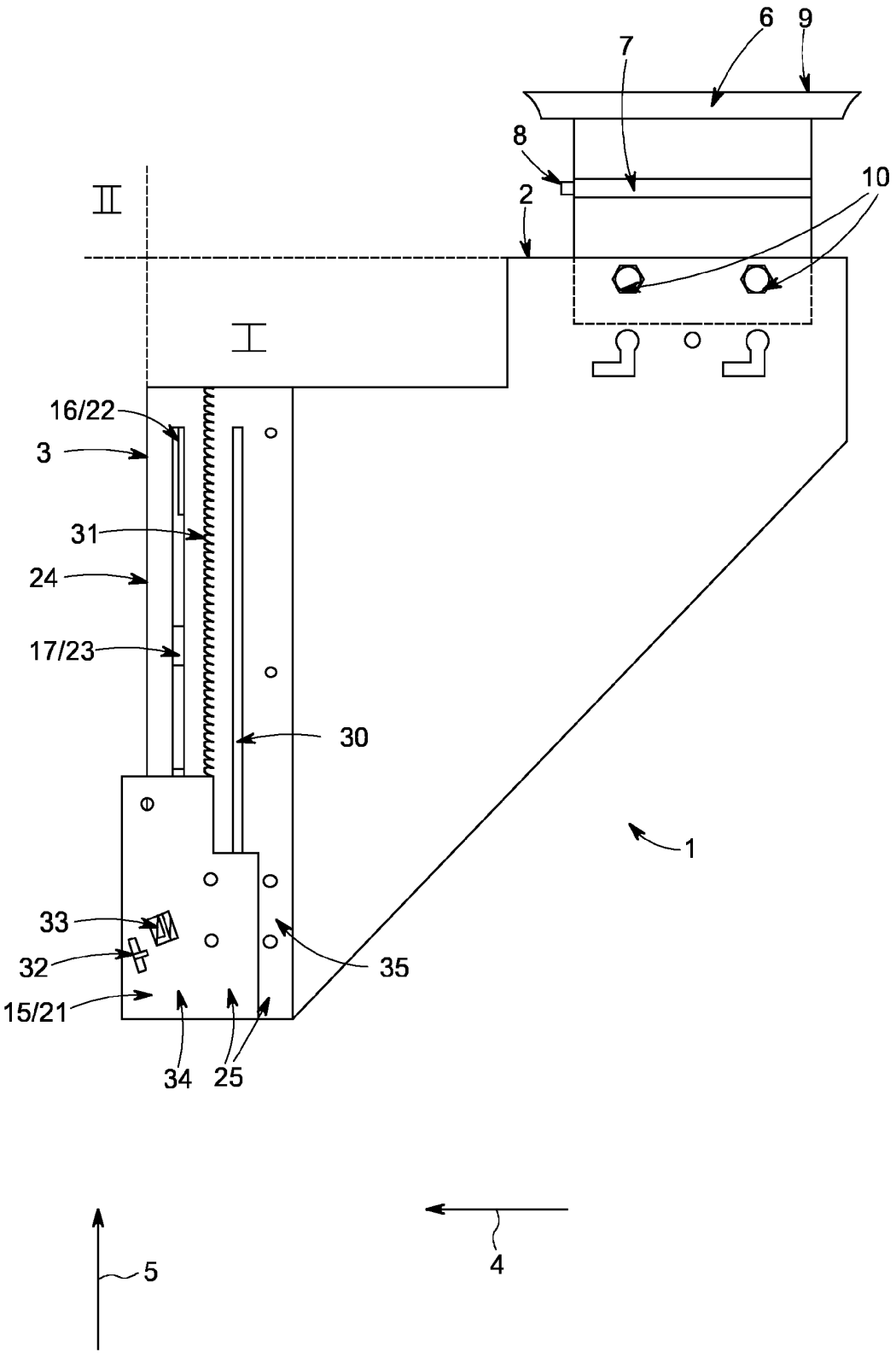

FIG. 8

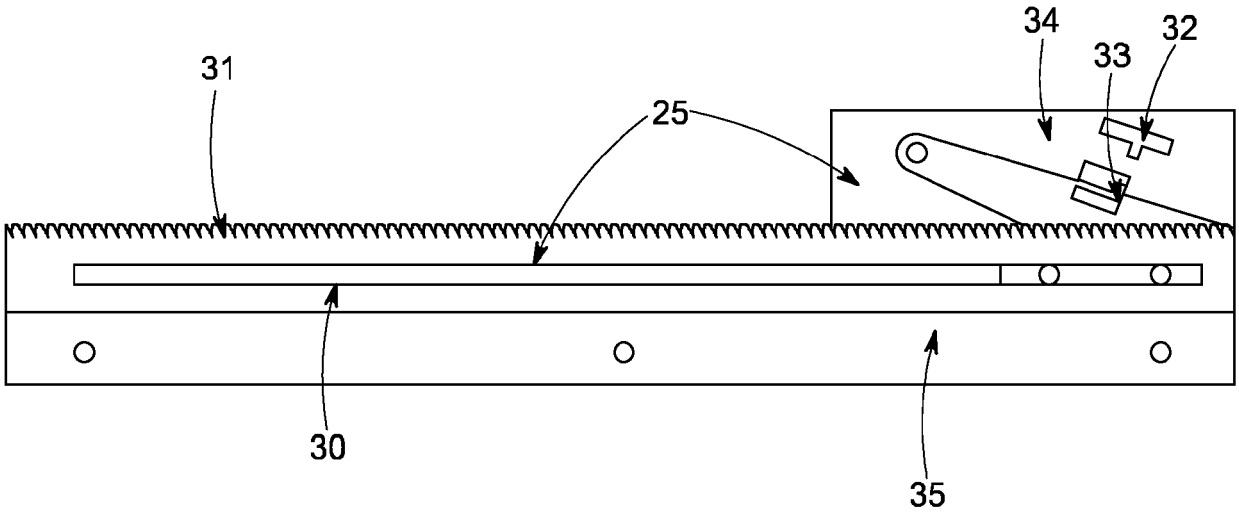

FIG. 9

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 24 18 0827

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y A	US 6 145 206 A (PICCIRILLO GARY C [US]) 14 November 2000 (2000-11-14) * figures 1-3 * * column 3, line 38 - line 45 * * column 5, line 9 - line 30 *	1,7,9, 10,15 2-6,8, 11-14	INV. E04F21/00 E04F21/18
Y	CN 207 829 416 U (SHANGHAI ZUOSHI TOOLS CO LTD) 7 September 2018 (2018-09-07) * figure 2 * * paragraph [0015] *	1,7,9, 10,15	

TECHNICAL FIELDS SEARCHED (IPC)

E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 August 2024	Estorgues, Marlène

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 18 0827

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.

01-08-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6145206 A	14-11-2000	AU 4960199 A	17-01-2000
		US 6145206 A	14-11-2000
		WO 0000709 A1	06-01-2000
CN 207829416 U	07-09-2018	NONE	

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 6145206 A **[0005]**
- CN 207829416 **[0006]**