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(54) SCREENING APPARATUS AND METHOD OF INSTALLING SAID SCREENING APPARATUS

ABSCHIRMVORRICHTUNG UND VERFAHREN ZUR INSTALLATION DER
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(73) Proprietor: **VKR Holding A/S
2970 Hørsholm (DK)**

(72) Inventor: **BIRKKJÆR, Martin
6731 Tjæreborg (DK)**

(74) Representative: **AWA Denmark A/S
Strandgade 56
1401 Copenhagen K (DK)**

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Description

Field of the invention

[0001] The present invention relates to a screening apparatus comprising a screening device with a set of end pieces in which the screening device during mounting is configured to be connected with a set of two mounting brackets arranged on side members of a frame of a window, particularly a roof window. The invention furthermore relates to a window having a frame and such a screening apparatus. The invention furthermore relates to a method for mounting such a screening apparatus on a window having a frame.

Background of the invention

[0002] As such screening arrangements are provided in a supply condition, and the person performing the installation is most often not a craftsman, the mounting of the screening arrangement in the window frame must be able to be carried out without too many difficulties and with a low risk of erroneous installation. The window frame may be either a stationary frame or sash, or an openable sash.

[0003] Such support assemblies are described in Applicant's published international applications and counterpart European patents Nos WO 99/07974 A1 (EP 1003953 B1), WO 00/47858 A1 (EP 1151176 B1) and WO 2007/110072 A1 (EP 2002079 A1).

[0004] End pieces for a screening device of such screening arrangements are known from e.g. Applicant's international publication WO 2008/131757 A1 in which end pieces with mutually cooperating locking means in the form of snap locking means are provided. In general, the snap locking means comprise resilient engagement means of a male locking means constituted by a tongue and a retaining pawl to provide a spring bias. When the screening device is mounted on a window, the male locking means in the form of the retaining pawl snaps out into engagement with first and second female locking means of a mounting bracket arranged on the window. For instance, VELUX® windows are delivered from the factory with such mounting brackets pre-mounted on the windows for simple and straight forward mounting of the screening device. Alternatively, the mounting brackets may be delivered with the screening device and are to be mounted on the window on-site before mounting of the screening device.

[0005] An alternative end piece for cooperation with a mounting bracket is shown in EP 2474702 B1. Here, a flexible and elastic locking tab is provided at the lower edge of the end piece.

[0006] The end pieces described above are generally provided with both a locking element and several, particularly two, guiding elements and are therefore complex in construction.

[0007] In support assemblies of the kind mentioned in

the above, relatively safe temporary retention of the screening arrangement by means of the support assembly is vital to facilitate the installation.

[0008] Also, proper guiding of the end piece with respect to the locking elements is vital to provide for a simple and straight forward installation process. At the same time there is a need for an end piece with a simplified and more durable construction, which at the same time still provides for proper guiding of the end piece with respect to the locking elements.

Summary of the invention

[0009] With this background it is the object of the invention to provide facilitated installation of a screening apparatus, in which it is nevertheless possible to provide a proper guiding of the end piece with respect to the locking elements without the use of additional guiding elements.

[0010] In a first aspect, this and further objects are met by a screening apparatus according to claim 1.

[0011] Thereby, and in particular as at least one of the two end pieces further comprises a resilient arm with a first end and a second end, at least one of the first and second ends being connected to the top wall in such a manner that the resilient arm is also capable of flexing in a direction X towards a first surface of the top wall being parallel with the body portion, a screening device is provided with which the resilient arm during mounting of the screening device on a window is capable of flexing in a direction towards and away from the side frame member of the window, which in turn provides for a guiding function, guiding the end piece with respect to the side frame member of the window.

[0012] Thus, the resilient arm is hereby made capable of guiding the screening device with respect to a corresponding mounting bracket arranged on the side members of the frame during mounting the screening device without the need for further guiding members.

[0013] That the resilient arm is capable of flexing in a direction Y perpendicular to the first surface of the top wall provides for simple and easy locking of the end pieces to the mounting brackets.

[0014] This in turn provides for a screening device which is simple to mount, in particular with end pieces being simple to connect with a set of two mounting brackets arranged on the side members of the frame. Such a screening arrangement further comprises end pieces of a particularly simple construction at the resilient arm provides both a locking function and a guiding function.

[0015] In an embodiment both of the first and second ends, of the resilient arm are connected to the top wall in such a manner that the resilient arm is capable of flexing in both in the direction X towards the first surface of the top wall and in the direction Y perpendicular to the first surface of the top wall.

[0016] This provides for end pieces with a more durable and robust structure as the resilient arm is made less

prone to breaking off the remaining part of the end piece.

[0017] In an embodiment the resilient arm is capable of flexing in the direction Y perpendicular to the first surface of the top wall from a second surface of the top wall perpendicular to the first surface towards a third surface of the top wall parallel and opposite to the second surface at least to a position in which the resilient arm is situated level with or beyond the second surface.

[0018] This provides for an end piece further simplifying the mounting of the screening arrangement since the resilient arm is capable of flexing sufficiently far in the direction Y to allow it to pass the mounting bracket during installation without having to use excess force. This in turn also provides for a more durable end piece.

[0019] In an embodiment the flexible arm is biased in the direction Y and/or in the direction X towards an initial, un-flexed position.

[0020] Such a bias in the direction Y provides for a further simplification of the mounting process as the end piece and the mounting bracket are automatically locked together when the flexible arm flexes back into its initial position.

[0021] Such a bias in the direction X provides for provides for a bias of the screening device towards the side frame member of the window during the installation process, thus enhancing the guiding function guiding the end piece with respect to the side frame member of the window.

[0022] In an embodiment an edge of the resilient arm extending between the first and second ends and facing towards the top wall extends in a distance from the top wall, such that a gap is provided between the resilient arm and the top wall.

[0023] Thereby the flexibility in the direction X of the resilient arm is provided in a particularly simple manner as no further elements contributing to the flexibility are required.

[0024] In an embodiment, starting from the first end, the resilient arm comprises the first end, a first section extending away from the top wall in a direction opposite to the body portion, a second section extending back towards the top wall and the second end.

[0025] In an embodiment, starting from the first end, the resilient arm comprises the first end, a first section extending away from the top wall in a direction away from the first surface of the top wall, a second section extending back towards the top wall and the second end.

[0026] By any of the two above-mentioned embodiments a particularly simple manner of predefining the magnitude of the flexibility of the resilient arm in the direction X is provided for, since the said magnitude of flexibility may simply be defined by means of adjusting how far away from the top wall the first section of the resilient arm extends.

[0027] In an embodiment the first section and the second section meet in an elbow. This enables providing an engagement member for engagement of the end piece with the mounting bracket in a particularly simple manner.

[0028] Thus, in a further embodiment the resilient arm comprises an engagement member adapted for snapping engagement with the set of two mounting brackets, whereby a particularly simple engagement member is provided for. The engagement member may be provided by, on or at the elbow.

[0029] In an embodiment the engagement member is arranged substantially midway between the first end and the second end of the resilient arm. Put in other terms, the engagement member may be arranged on the transition between the first and second section of the resilient arm.

[0030] Thereby the flexibility of the resilient arm in the direction Y is exploited to the full to provide a durable and secure engagement of the end piece with the mounting bracket

[0031] In an embodiment at least one of the two end pieces further comprises a bottom flange.

[0032] Thereby a further guiding element for guiding the end piece with respect to the mounting bracket during mounting of the screening arrangement is provided, thus further simplifying the mounting process.

[0033] In an embodiment the screening arrangement further comprises a set of two mounting brackets, each mounting bracket having a thickness dimension, a height dimension, and a length dimension, and being adapted to be mounted to a respective side member of the frame, such that the thickness dimension is parallel to the first direction w, the height dimension is parallel to the second direction h, and the length dimension is parallel to the third direction d, each mounting bracket having a top ledge defining an upper line, x_1 , of the mounting bracket and extending in the length dimension of the mounting bracket, in the third direction in the mounted condition of the mounting bracket, and the resilient arm of the end pieces of the screening device are adapted to ride on the top ledge during mounting and to be supported on the top ledge of the respective mounting bracket in the mounted condition of the screening device.

[0034] In a further embodiment the engagement member of the resilient arm is adapted for snapping engagement with a corresponding engagement member in the top ledge of the respective mounting bracket.

[0035] This in turn provides for a screening device which is particularly simple to mount, in particular with end pieces being particularly simple to connect with a set of two mounting brackets arranged on the side members of the frame.

[0036] In a second aspect, a window is provided. In a third aspect, a method for mounting a screening arrangement according to the first aspect of the invention on a window is provided. The advantages of the first aspect of the invention and further developed embodiments are also applicable to the second aspect and to the third aspect of the invention as have been described in the above and reference is made thereto.

[0037] Further details are described, and further advantages stated, in the description of particular embod-

iments of the invention.

Brief description of the drawings

[0038] In the following the invention will be described in further detail by means of examples of embodiments with reference to the schematic drawings, in which

Fig. 1 is a schematic perspective view of a window in an embodiment of the invention with a mounting bracket of a screening arrangement according to the invention;

Fig. 2 is a top front view of an end piece of a screening arrangement in an embodiment of the invention;

Fig. 3 is a perspective view of the end piece according to Fig. 2;

Fig. 4 is a side view of the end piece according to Fig. 2; and

Fig. 5 is a perspective view of the end piece according to Fig. 2, the angle of view differing from that of Fig. 3.

Description of detailed embodiments of the invention

[0039] In the drawing figures, parts of a screening arrangement are shown. The screening arrangement comprises a screening device represented by one of its end pieces, namely end piece 40 shown separately in Figs 2-5, and a set of mounting brackets, typically of two mounting brackets, of which one is shown in Fig. 1.

[0040] As is known as such, the screening arrangement according to the invention is adapted to be mounted in a window frame of a window 1 as shown in Fig. 1. The window frame may be an openable sash 3 encasing a pane 5 and adapted to be mounted in a stationary frame 2 to be installed in an inclined roof surface. It is noted that the terms "sash" or "frame" are to be understood as incorporating any substantially rectangular structure positioned in any opening in a building, whether in a wall or the roof, and surrounding an aperture to be screened. The window frame needs not be composed of separate frame members but may be a coherent frame. Notwithstanding, the portions of the window frame are referred to as "top member" denoted by reference numeral 3a in Fig. 1, "side members", of which one side member 3b is shown in Fig. 1, and "bottom member" in order to facilitate reading. Thus, the window frame is substantially rectangular and has a top member, two side members and a bottom member.

[0041] The screening arrangement is provided in a supply condition and is configured to be installed in the window frame to attain a mounted condition.

[0042] Terms such as "left-hand" and "right-hand" refer to the orientation shown in the drawings and/or in the mounted condition, and are utilized for reasons of convenience only. Similarly, the terms "front" and "back" are utilized to denote the sides of the screening arrangement,

"front" being the side intended to face inwards into the interior of a building, and "back" the outwards facing side. The terms "upper" or "top" and "lower" refer to the orientation of the screening arrangement installed in a frame, where "upper" and "top" refers to general direction towards the top member of the frame and "lower" refers to the direction towards the bottom member of the frame.

[0043] Furthermore, and referring still to Fig. 1, a first direction is defined as being parallel to a longitudinal direction of the top and bottom members corresponding to a width direction w of the frame. In Fig. 1 the first direction, w , extends perpendicular to the plane of view. A second direction is defined as being parallel to a longitudinal direction of the side members corresponding to a height direction h of the frame. A third, or transverse, direction is defined as being perpendicular to the first and second directions corresponding to a depth direction d of the frame.

[0044] Still referring to Fig. 1, the mounting bracket 6 forms part of a set of mounting brackets to be mounted at opposite frame side members. The mounting brackets of a set are typically identical, but variations are conceivable.

[0045] The mounting bracket 6 has a thickness dimension, a height dimension, and a length dimension. When connected to the frame of the window, the thickness dimension is parallel to the first direction, the height dimension is parallel to the second direction, and the length dimension is parallel to the third direction.

[0046] The mounting bracket 6 is provided as a moulded part of a suitable material such as a plastic material and the dimensions chosen for the length, height and thickness are chosen from the respective ranges of 20 to 45 mm (length); 15 to 25 mm (height); and 2 to 10 mm (thickness).

[0047] The mounting bracket 6 has a top ledge 7 extending in the length dimension of the mounting bracket 6, in the third direction in the mounted condition, substantially along an upper line x_1 .

[0048] In the embodiment shown, the mounting bracket is symmetrical around an axis extending in the length dimension, substantially corresponding to the arrow indicating the depth direction d in Fig. 1. Hence, at the side opposite the top ledge 7, the mounting bracket 6 has a bottom edge 8. In the embodiment shown, the bottom edge 8 thus has a certain thickness, corresponding to the thickness of the top ledge 7. Depending on the configuration of the window, it is also possible to have an asymmetrical shape with a bottom edge of very low thickness, the guiding of the end piece on the mounting bracket being assisted by the shape of the frame in which the screening arrangement is mounted.

[0049] At the top ledge 7, which defines an upper line x_1 of the mounting bracket, the mounting bracket 6 is provided with an engagement member 9 in order to provide engagement with the end piece 40 during installation of the screening arrangement. As will be described in detail further on, the end piece 40 is provided with a cor-

responding engagement member.

[0050] In the embodiment shown, the engagement member 9 comprises a shoulder. Alternatively, the engagement member 9 may comprise a recess. The engagement member 9 is provided substantially below upper line x_1 parallel to the length dimension of the mounting bracket 6.

[0051] Referring now to Figs 2 to 5, the one end piece 40 of a set of end pieces of the screening device will be described in detail. The two end pieces of the set are positioned at opposite ends of an elongated top casing of the screening device, which extends in parallel with the first direction in the mounted condition. The opposite end piece has an outer side configured in a substantially mirror-inverted manner relative to the shown end piece 40.

[0052] The end piece 40 comprises a body portion 44 and a top wall 41 extending perpendicular to the body portion 44. The body portion 44 forms the surface of the end piece 40 that constitutes an end surface of the assembled screening device and that, in the mounted position of the screening device on a window, extends vertically and faces the side frame member 3b of the window. The top wall 41 forms a part of the end piece 40 that is intended to face the top frame member 3a of the window in the mounted position of the end piece and thus the screening device. The end piece 40 further comprises a resilient arm 43. The resilient arm 43 comprises a first end 435, a first section 431, a second section 432 and a second end 436 opposite to the first end 435.

[0053] The end piece 40 is provided as a moulded part of a suitable material such as a plastic material. For instance, the resilient arm 43 may be moulded of a first suitable plastic material with a first hardness chosen to provide the necessary resilience, while the top wall 41 and for that matter the remaining parts of the end piece 40 may be made of a second plastic material with a second hardness being higher than the first hardness and moulded together with the resilient arm 43. Alternatively, the end piece 40 may be moulded of one and the same suitable plastic material. The top wall 41 comprises a first surface 411 being parallel to and facing in the same direction as the body portion 44, a second surface 412 being perpendicular to first surface 411 and facing towards the body portion 44 and a third surface 413 being parallel and opposite to the second surface 412 - cf. Figs. 2 to 4. In other words, the third surface 413 is perpendicular to first surface 411 and faces away from the body portion 44. In the embodiment shown on Figs. 2-5 the first surface 411 of the top wall 41 merges with or into the body portion 44 thus forming a continuous surface.

[0054] The first end 435 and the second end 436 are connected to the top wall 41. It is also feasible than only one of the first end 435 and the second end 436 is connected to the top wall 41, while the other one of first end 435 and the second end 436 is not connected to the top wall 41. In any event, the resilient arm 43 is capable of flexing in both in a direction X towards the first surface

411 of the top wall and in a direction Y perpendicular to the first surface 411 of the top wall 41 and away from the body portion 44. Furthermore, the flexible arm 43 is biased towards an initial, un-flexed position, in which it is shown in Figs. 2-5.

[0055] More particularly, the resilient arm 43 is sufficiently flexible and connected to the top wall 41 in such a manner that it is capable of flexing in the direction Y at least until reaching an outermost, i.e. maximally flexed, position where the resilient arm 43 is situated level with or possibly even beyond the second surface 412 of the top wall 41 in a direction towards the third surface 413.

[0056] The resilient arm 43 further comprises an edge 437 facing the first surface 411 of the top wall 41. The edge 437 of the resilient arm 43 extends between the first end 435 and the second end 436. The edge 437 extends in a distance from the top wall 41. Thereby a gap 45 is provided between the resilient arm 43 and the top wall 41.

[0057] The resilient arm 43 is sufficiently flexible and connected to the top wall 41 in such a manner that it is capable of flexing in the direction X at least until reaching an outermost, i.e. maximally flexed, position where the edge 437 of the resilient arm 43 is situated in abutment with the first surface 411 of the top wall 41.

[0058] The first section 431 extends from the first end 435 away from the top wall 41, and more particularly the first surface 411 thereof. In an embodiment, the first section 431 may extend sufficiently far away from the top wall 41 to allow the flexible arm 43 to abut or support on and, due to the resilience, also press against the side frame member 3b during installation of the screening arrangement. As this during installation will be the case at both opposite ends, the result is that the screening device will be centred or aligned during installation, thus further simplifying the installation process.

[0059] The second section 432 extends back towards the top wall 41, and more particularly the first surface 411 thereof, to the second end 436. The first section 431 and the second section 432 are connected or meet at their respective ends opposite the first end 435 and the second end 436, respectively. An elbow or angle 433 is provided where the first section 431 and the second section 432 meet. The elbow 433 is shaped in such a manner as to provide a locking means or an engagement means 434 adapted for engaging with the locking means or engagement means 9 of the mounting bracket 6. In the embodiment shown, the engagement means 434 is provided as a protrusion or nose on the resilient arm 43. Thereby the respective engagement means 434 and 9 provide for a snapping engagement between the end piece 40 and the mounting bracket 6, capable of locking the end piece 40 and the mounting bracket 6 together when mounting the screening arrangement on a window 1.

[0060] Referring to Fig. 1, the top frame member 3a of the window 1 is provided with a bevel of about 4°. Therefore, a wedge shaped space 10 is formed between the lower edge of the top frame member 3a of the window 1

and the top ledge 7 defining the upper line x_1 of the mounting bracket 6. Therefore, the end piece 40 is provided with a wedge shaped part 46 dimensioned to correspond to the said wedge shaped space 10. Referring to Fig. 2, this wedge shaped part 46 is shown between the lines L and M. As may furthermore be seen the resilient arm 43 is in the embodiment shown provided with a general outline being substantially parallel with the line M and is thus adapted for substantially corresponding to the bevelling of the top frame member 3b of the window 1. Thereby, when mounting the screening device, the end piece will be held between the top ledge 7 of the mounting bracket 6 and the lower edge of the top frame member 3a of the window 1 in such a way that it is substantially unable to move in the second direction h. This provides for a particularly simple installation process.

[0061] Furthermore, one or both of the two end pieces 40 may optionally comprise a bottom flange 42 for guiding the end piece 40 and thereby the screening arrangement into position with respect to the mounting bracket 6 when mounting the screening device. The bottom flange 42 is thus adapted for guiding engagement with the bottom edge 8 of the mounting bracket (Fig. 1). The bottom flange 42 may be provided in a manner known per se. Alternatively, the bottom flange 42 may be provided in the form of a further resilient arm, for instance being similar or identical to the resilient arm 43 described above, albeit mirror-inverted in comparison thereto.

[0062] Furthermore, the end piece 40 may comprise spring means for cooperation with a cord system of a further screening arrangement (not shown).

[0063] Mounting of the screening device with the end pieces 40 on the mounting brackets 6 will be described below in some detail with reference to the figures.

[0064] Bringing the screening device of the screening arrangement to its mounted condition involves engaging the two end pieces 40 of the screening device with the two mounting brackets 6 mounted on opposing side members 3b of the frame 3 of the window 1. During mounting, the screening device with its set of end pieces 40 is moved substantially in the third direction d (Fig. 1) from a point distant from the pane 5 to a point proximate to the pane 5.

[0065] During the installation procedure, the female engagement means 9 is able to cooperate with the male engagement means 434, so that it is possible to provide engagement between each end piece 40 and the respective mounting bracket 6 in at least a terminal position.

[0066] In a first step, the resilient arms 43 of the end pieces 40 of the screening device are aligned with the top ledges 7 of the respective mounting bracket 6.

[0067] Secondly, the resilient arms 43 of the end pieces 40 of the screening device are supported on the top ledges 7 of the respective mounting bracket 6.

[0068] Third, the screening device is moved in the third direction. Thereby, the resilient arm 43 is flexed outwards in the direction Y to a position at least level with the second surface 412 of the top wall 41 to allow the flexible

arm 43 to pass along the top ledge 7 of the mounting bracket 6.

[0069] Finally, the end pieces 40 are locked to the mounting brackets 6 in the terminal position to attain the mounted condition. In the mounted condition the male engagement means 434 in the form of a protrusion or nose on the resilient arm 43 interacts or engages with the shoulder or recess 9. This is obtained in that the flexible arm 43 flexes back to its initial, un-flexed position when the protrusion or nose 434 is aligned with the shoulder or recess 9.

Claims

1. A screening apparatus for a window (1), in particular a roof window, said window having a frame (3) encasing a pane (5) and composed by a top member (3a), two side members (3b) and a bottom member and defining a first direction (w) parallel to a longitudinal direction of the top and bottom members corresponding to a width direction of the frame, a second direction (h) parallel to a longitudinal direction of the side members corresponding to a height direction of the frame, and a third direction (d) perpendicular to the first and second directions corresponding to a depth direction of the frame, said apparatus comprising:

- a set of two mounting brackets (6),
- a screening device including an elongated top casing provided with a set of two end pieces (40) and adapted to extend in parallel with said first direction (w) in a mounted condition, each end piece (40) having a body portion (44) and a top wall (41) extending perpendicular to the body portion (44),

wherein

the screening device during mounting is configured to be connected with said set of two mounting brackets (6), wherein each bracket is configured to be arranged on one of the side members (3b) of the frame (3), by moving the screening device with its set of end pieces (40) substantially in the third direction (d) from a point distant from the pane (5) to a point proximate to the pane (5), and each of the two end pieces (40) further comprises a resilient arm (43) with a first end (435) and a second end (436), at least one of the first and second ends (435, 436) being connected to the top wall (41) in such a manner that during installation of the screening apparatus, the resilient arm (43) is configured to pass along a top ledge of one of the two mounting brackets (6) so that the resilient arm is capable of flexing in a direction (Y) parallel to a first surface (411) of the top wall (41), **characterized in that** the resilient arm (43) is further configured to be pressed against one of the side

- frame members (3b) so that said resilient arm is capable of flexing in a direction (X) towards the first surface (411) of the top wall (41) being parallel with the body portion (44).
2. A screening apparatus according to claim 1, wherein both of the first and second ends (435, 436) of the resilient arm (43) are connected to the top wall (41) in such a manner that the resilient arm (43) is capable of flexing in both in the direction (X) towards the first surface (411) of the top wall (41) Amended Claims re A94(3) July 2020 and in the direction (Y) perpendicular to the first surface (411) of the top wall (41).
 3. A screening apparatus according to any one of the above claims, wherein the resilient arm (43) is capable of flexing in the direction (Y) perpendicular to the first surface (411) of the top wall (41) from a second surface (412) of the top wall (41) perpendicular to the first surface (411) towards a third surface (413) of the top wall (41) parallel and opposite to the second surface (412) at least to a position in which the resilient arm (43) is situated level with or beyond the second surface (412).
 4. A screening apparatus according to any one of the above claims, wherein the flexible arm (43) is biased towards an initial, un-flexed position.
 5. A screening apparatus according to any one of the above claims, wherein an edge (437) of the resilient arm (43) extending between the the first and second ends (435, 436) and facing towards the top wall (41) extends in a distance from the top wall (41), such that a gap (45) is provided between the resilient arm (43) and the top wall (41).
 6. A screening apparatus according to any one of the above claims, wherein, starting from the first end (435), the resilient arm (43) comprises the first end (435), a first section (431) extending away from the top wall (41) in a direction opposite to the body portion (44), a second section (432) extending back towards the top wall (41) and the second end (436), or wherein, starting from the first end (435), the resilient arm (43) comprises the first end (435), a first section (431) extending away from the top wall (41) in a direction away from the first surface (411) of the top wall (41), a second section (432) extending back towards the top wall (41) and the second end (436).
 7. A screening apparatus according to claim 5 or 6, wherein the first section (431) and the second section (432) meet in an elbow (433).
 8. A screening apparatus according to any one of the above claims,
- wherein the resilient arm (43) comprises an engagement member (434) adapted for snapping engagement with the set of two mounting brackets.
9. A screening apparatus according to claim 8, wherein the engagement member (434) is arranged substantially midway between the first end (435) and the second end (436) of the resilient arm (43).
 10. A screening apparatus according to any one of the above claims, wherein at least one of the two end pieces (40) further comprises a bottom flange (42).
 11. A screening apparatus according to any one of the above claims, each mounting bracket having a thickness dimension, a height dimension, and a length dimension, and being adapted to be mounted to a respective side member (3b) of the frame, such that the thickness dimension is parallel to the first direction (w), the height dimension is parallel to the second direction (h), and the length dimension is parallel to the third direction (d), each mounting bracket having a top ledge (7) defining an upper line (x₁) of the mounting bracket and extending in the length dimension of the mounting bracket (6), in the third direction in the mounted condition of the mounting bracket, the resilient arm (43) of the end pieces (40) of the screening device being adapted to ride on the top ledge (7) during mounting and to be supported on the top ledge (7) of the respective mounting bracket (6) in the mounted condition of the screening device.
 12. A screening apparatus according to claim 11 when dependent on claim 8, wherein the engagement member (434) of the resilient arm is adapted for snapping engagement with a corresponding engagement member (9) in the top ledge (7) of the respective mounting bracket (6).
 13. A screening apparatus according to claim 12, wherein the corresponding engagement member (9) comprises a shoulder or a recess and/or wherein the corresponding engagement member (9) is provided substantially below an upper line (x₁) parallel to the length dimension of the mounting bracket (6).
 14. A window (1), in particular a roof window, comprising a screening apparatus according to any one of the above claims.
 15. A method of installing a screening apparatus according to any one of claims 1 to 13 in a window according to claim 14, comprising the steps of:
 - a) aligning the resilient arms (43) of the end pieces (40) of the screening device with the top ledges (7) of the respective mounting bracket (6),

b) supporting the resilient arms (43) of the end pieces (40) of the screening device on the top ledges (7) of the respective mounting bracket (6),

c) moving the screening device in the third direction (d) such that the resilient arm (43) is flexed in the direction (Y) parallel to the first surface (411) of the top wall (41), and

d) aligning the engagement means (434) of the end pieces (40) with the engagement means (9) of the mounting bracket (6) thereby allowing the flexible arm (43) to flex back to its initial, unflexed position such as to lock the end pieces (40) to the mounting brackets (6) in a terminal position to attain the mounted condition.

Patentansprüche

1. Abschirmvorrichtung für ein Fenster (1), insbesondere ein Dachfenster, wobei das Fenster einen Rahmen (3) aufweist, der eine Scheibe (5) umschließt und aus einem oberen Element (3a), zwei Seitenelementen (3b) und einem unteren Element besteht und eine erste Richtung (w) parallel zu einer Längsrichtung des oberen und unteren Elements, die einer Breitenrichtung des Rahmens entspricht, eine zweite Richtung (h) parallel zu einer Längsrichtung der Seitenelemente, die einer Höhenrichtung des Rahmens entspricht, und eine dritte Richtung (d) senkrecht zur ersten und zweiten Richtung, die einer Tiefenrichtung des Rahmens entspricht, definiert, wobei die Vorrichtung Folgendes umfasst:

- einen Satz zweier Montagebügel (6),
- eine Abschirmeinrichtung, die ein längliches oberes Gehäuse umfasst, das mit einem Satz zweier Endstücke (40) versehen und dazu ausgelegt ist, sich im Montagezustand parallel zur ersten Richtung (w) zu erstrecken, wobei jedes Endstück (40) einen Körperabschnitt (44) und eine obere Wand (41), die sich senkrecht zum Körperabschnitt (44) erstreckt, aufweist,

wobei

die Abschirmeinrichtung während der Montage dazu ausgelegt ist, durch Bewegen der Abschirmeinrichtung mit ihrem Satz Endstücke (40) im Wesentlichen in die dritte Richtung (d) von einem von der Scheibe (5) entfernten Punkt zu einem Punkt in der Nähe der Scheibe (5) mit dem Satz zweier Montagebügel (6) verbunden zu werden, wobei jeder Bügel dazu ausgelegt ist, auf einem der Seitenelemente (3b) des Rahmens (3) angeordnet zu sein, und jedes der zwei Endstücke (40) ferner einen elastischen Arm (43) mit einem ersten Ende (435) und einem zweiten Ende (436) umfasst, wobei das erste und/oder zweite Ende (435, 436) derart mit der o-

beren Wand (41) verbunden ist, dass während der Installation der Abschirmvorrichtung der elastische Arm (43) dazu ausgelegt ist, entlang eines oberen Vorsprungs eines der zwei Montagebügel (6) zu verlaufen, sodass der elastische Arm dazu fähig ist, sich in eine Richtung (Y) parallel zu einer ersten Fläche (411) der oberen Wand (41) zu krümmen, **dadurch gekennzeichnet, dass** der elastische Arm (43) ferner dazu ausgelegt ist, gegen eins der Seitenelemente (3b) gedrückt zu werden, sodass der elastische Arm dazu fähig ist, sich in eine Richtung (X) zur ersten Fläche (411) der oberen Wand (41), die parallel zum Körperabschnitt (44) verläuft, zu krümmen.

2. Abschirmvorrichtung nach Anspruch 1, wobei sowohl das erste als auch das zweite Ende (435, 436) des elastischen Arms (43) derart mit der oberen Wand (41) verbunden ist, dass der elastische Arm (43) dazu fähig ist, sich sowohl in die Richtung (X) zur ersten Fläche (411) der oberen Wand (41) als auch in die Richtung (Y) senkrecht zur ersten Fläche (411) der oberen Wand (41) zu erstrecken.
3. Abschirmvorrichtung nach einem der vorstehenden Ansprüche, wobei der elastische Arm (43) dazu funktionsfähig ist, sich in die Richtung (Y) senkrecht zur ersten Fläche (411) der oberen Wand (41) von einer zweiten Fläche (412) der oberen Wand (41) senkrecht zur ersten Fläche (411) zu einer dritten Fläche (413) der oberen Wand (41) parallel und entgegengesetzt zur zweiten Fläche (412) zumindest zu einer Stellung zu erstrecken, in der der elastische Arm (43) auf gleicher Höhe mit der zweiten Fläche (412) ist oder darüber hinausgeht.
4. Abschirmvorrichtung nach einem der vorstehenden Ansprüche, wobei der flexible Arm (43) in eine ungekrümmte Ausgangsstellung vorgespannt ist.
5. Abschirmvorrichtung nach einem der vorstehenden Ansprüche, wobei sich eine Kante (437) des elastischen Arms (43), die sich zwischen dem ersten und zweiten Ende (435, 436) erstreckt und der oberen Wand (41) zugewandt ist, derart in einem Abstand von der oberen Wand (41) erstreckt, dass ein Spalt (45) zwischen dem elastischen Arm (43) und der oberen Wand (41) vorgesehen ist.
6. Abschirmvorrichtung nach einem der vorstehenden Ansprüche, wobei, beginnend mit dem ersten Ende (435) der elastische Arm (43) das erste Ende (435), einen ersten Abschnitt (431), der sich in eine dem Körperabschnitt (44) entgegengesetzte Richtung von der oberen Wand (41) weg erstreckt, einen zweiten Abschnitt (432), der sich zurück zur oberen Wand (41) erstreckt, und das zweite Ende (436) umfasst, oder wobei, beginnend mit dem ersten Ende (435),

- der elastische Arm (43) das erste Ende (435), einen ersten Abschnitt (431), der sich in eine Richtung von der ersten Fläche (411) der oberen Wand (41) weg von der oberen Wand (41) weg erstreckt, einen zweiten Abschnitt (432), der sich zurück zur oberen Wand (41) erstreckt, und das zweite Ende (436) umfasst.
7. Abschirmvorrichtung nach Anspruch 5 oder 6, wobei der erste Abschnitt (431) und der zweite Abschnitt (432) in einem Bogen (433) aufeinandertreffen.
8. Abschirmvorrichtung nach einem der vorstehenden Ansprüche, wobei der elastische Arm (43) ein Eingriffselement (434) umfasst, das dazu eingerichtet ist, in den Satz zweier Montagebügel einzurasten.
9. Abschirmvorrichtung nach Anspruch 8, wobei das Eingriffselement (434) im Wesentlichen in der Mitte zwischen dem ersten Ende (435) und dem zweiten Ende (436) des elastischen Arms (43) angeordnet ist.
10. Abschirmvorrichtung nach einem der vorstehenden Ansprüche, wobei mindestens eins der zwei Endstücke (40) ferner einen unteren Flansch (42) umfasst.
11. Abschirmvorrichtung nach einem der vorstehenden Ansprüche, wobei jeder Montagebügel eine Stärkeabmessung, eine Höhenabmessung und eine Längenabmessung aufweist und dazu eingerichtet ist, an einem entsprechenden Seitenelement (3b) des Rahmens montiert zu werden, sodass die Stärkeabmessung parallel zur ersten Richtung (w) ist, die Höhenabmessung parallel zur zweiten Richtung (h) ist und die Längenabmessung parallel zur dritten Richtung (d) ist, wobei jeder Montagebügel einen oberen Vorsprung (7) aufweist, der eine obere Linie (x_1) des Montagebügels definiert und sich im Montagezustand des Montagebügels in die dritte Richtung in die Längenabmessung des Montagebügels (6) erstreckt, wobei der elastische Arm (43) der Endstücke (40) der Abschirmvorrichtung dazu eingerichtet ist, während der Montage auf dem oberen Vorsprung (7) zu gleiten und im Montagezustand der Abschirmvorrichtung auf dem oberen Vorsprung (7) des entsprechenden Montagebügels (6) abgestützt zu werden.
12. Abschirmvorrichtung nach Anspruch 11, wenn abhängig von Anspruch 8, wobei das Eingriffselement (434) des elastischen Arms zum Einrasten in ein zugehöriges Eingriffselement (9) im oberen Vorsprung (7) des entsprechenden Montagebügels (6) eingerichtet ist.
13. Abschirmvorrichtung nach Anspruch 12, wobei das zugehörige Eingriffselement (9) eine Schulter oder eine Aussparung umfasst und/oder wobei das zugehörige Eingriffselement (9) im Wesentlichen unter einer oberen Linie (x_1) parallel zur Längenabmessung des Montagebügels (6) vorgesehen ist.
14. Fenster (1), insbesondere Dachfenster, das eine Abschirmvorrichtung nach einem der vorstehenden Ansprüche umfasst.
15. Verfahren zur Installation einer Abschirmvorrichtung nach einem der Ansprüche 1 bis 13 in ein Fenster nach Anspruch 14, die folgenden Schritte umfassend:
- Ausrichten der elastischen Arme (43) der Endstücke (40) der Abschirmvorrichtung mit den oberen Vorsprüngen (7) des entsprechenden Montagebügels (6),
 - Abstützen der elastischen Arme (43) der Endstücke (40) der Abschirmvorrichtung auf den oberen Vorsprüngen (7) des entsprechenden Montagebügels (6),
 - Bewegen der Abschirmvorrichtung in die dritte Richtung (d), sodass der elastische Arm (43) in die Richtung (Y) parallel zur ersten Fläche (411) der oberen Wand (41) gekrümmt wird, und d) Ausrichten der Eingriffseinrichtung (434) der Endstücke (40) mit den Eingriffseinrichtungen (9) des Montagebügels (6), dadurch zulassen, dass sich der flexible Arm (43) zurück in seine ungekrümmte Ausgangsstellung zurück krümmt, um die Endstücke (40) in einer Endstellung mit den Montagebügeln (6) zu verriegeln, um den Montagezustand zu erhalten.

Revendications

1. Appareillage d'écran pour une fenêtre (1), en particulier une fenêtre de toit, ladite fenêtre ayant un cadre (3) entourant une vitre (5) et composé d'un élément supérieur (3a), de deux éléments latéraux (3b) et d'un élément inférieur et définissant une première direction (w) parallèle à une direction de longueur des éléments supérieur et inférieur correspondant à une direction de largeur du cadre, une deuxième direction (h) parallèle à une direction de longueur des éléments latéraux correspondant à une direction de hauteur du cadre, et une troisième direction (d) perpendiculaire aux première et deuxième directions correspondant à une direction de profondeur du cadre, ledit appareillage comprenant :
- un ensemble de deux supports de montage (6),
 - un appareillage d'écran comprenant un boîtier supérieur allongé muni d'un ensemble de deux pièces d'extrémité (40) et conçu pour s'étendre parallèlement à ladite première direction (w)

- dans un état monté, chaque pièce d'extrémité (40) ayant une partie de corps (44) et une paroi supérieure (41) s'étendant perpendiculairement à la partie de corps (44), l'appareillage d'écran pendant le montage étant conçu pour être relié 5 audit ensemble de deux supports de montage (6), chaque support étant conçu pour être disposé sur l'un des éléments latéraux (3b) du cadre (3), en déplaçant l'appareillage d'écran avec son ensemble de pièces d'extrémité (40) sensiblement dans la troisième direction (d) d'un point distant de la vitre (5) à un point proche de la vitre (5), et chacune des deux pièces d'extrémité (40) comprenant en outre un bras élastique (43) avec une première extrémité (435) et une seconde extrémité (436), la première et/ou la seconde extrémité (435, 436) étant reliée à la paroi supérieure (41) de sorte que, lors de l'installation de l'appareillage d'écran, le bras élastique (43) soit conçu pour passer le long d'un rebord supérieur d'un des deux supports de montage (6) de sorte que le bras élastique puisse fléchir dans une direction (Y) parallèle à une première surface (411) de la paroi supérieure (41), **caracté-** 10 **risé en ce que** le bras élastique (43) est en outre conçu pour être pressé contre l'un des éléments latéraux (3b) de cadre de sorte que ledit bras élastique puisse fléchir dans une direction (X) vers la première surface (411) de la paroi supérieure (41) qui est parallèle à la partie de corps (44).
2. Appareillage d'écran selon la revendication 1, les première et seconde extrémités (435, 436) du bras élastique (43) étant toutes deux reliées à la paroi supérieure (41) de sorte que le bras élastique (43) puisse fléchir à la fois dans la direction (X) vers la première surface (411) de la paroi supérieure (41) et dans la direction (Y) perpendiculaire à la première surface (411) de la paroi supérieure (41).
 3. Appareillage d'écran selon l'une quelconque des revendications précédentes, le bras élastique (43) pouvant fléchir dans la direction (Y) perpendiculaire à la première surface (411) de la paroi supérieure (41) depuis une deuxième surface (412) de la paroi supérieure (41) perpendiculaire à la première surface (411) vers une troisième surface (413) de la paroi supérieure (41) parallèle et opposée à la deuxième surface (412) au moins jusqu'à une position dans laquelle le bras élastique (43) est situé au niveau ou au-delà de la deuxième surface (412).
 4. Appareillage d'écran selon l'une quelconque des revendications précédentes, le bras flexible (43) étant sollicité vers une position initiale, non fléchie.
 5. Appareillage d'écran selon l'une quelconque des re-
- vendications précédentes, un bord (437) du bras élastique (43) s'étendant entre les première et seconde extrémités (435, 436) et faisant face à la paroi supérieure (41) s'étendant à une certaine distance de la paroi supérieure (41), de sorte qu'un espace (45) soit fourni entre le bras élastique (43) et la paroi supérieure (41).
6. Appareillage d'écran selon l'une quelconque des revendications précédentes, en partant de la première extrémité (435), le bras élastique (43) comprenant la première extrémité (435), une première section (431) s'étendant à l'opposé de la paroi supérieure (41) dans une direction opposée à la partie de corps (44), une seconde section (432) s'étendant en retour vers la paroi supérieure (41) et la seconde extrémité (436), ou, en partant de la première extrémité (435), le bras élastique (43) comprenant la première extrémité (435), une première section (431) s'étendant à l'opposé de la paroi supérieure (41) dans une direction à l'opposé de la première surface (411) de la paroi supérieure (41), une seconde section (432) s'étendant en retour vers la paroi supérieure (41) et la seconde extrémité (436).
 7. Appareillage d'écran selon la revendication 5 ou 6, la première section (431) et la seconde section (432) se rejoignant dans un coude (433).
 8. Appareillage d'écran selon l'une quelconque des revendications précédentes, le bras élastique (43) comprenant un élément de mise en prise (434) conçu pour venir en prise par encliquetage avec l'ensemble de deux supports de montage.
 9. Appareillage d'écran selon la revendication 8, l'élément de mise en prise (434) étant disposé sensiblement à mi-chemin entre la première extrémité (435) et la seconde extrémité (436) du bras élastique (43).
 10. Appareillage d'écran selon l'une quelconque des revendications précédentes, au moins une des deux pièces d'extrémité (40) comprenant une bride inférieure (42).
 11. Appareillage d'écran selon l'une quelconque des revendications précédentes, chaque support de montage ayant une dimension d'épaisseur, une dimension de hauteur et une dimension de longueur, et étant conçu pour être monté sur un élément latéral (3b) respectif du cadre, de sorte que la dimension d'épaisseur soit parallèle à la première direction (w), la dimension de hauteur soit parallèle à la deuxième direction (h) et la dimension de longueur soit parallèle à la troisième direction (d), chaque support de montage ayant un rebord supérieur (7) définissant une ligne supérieure (x_1) du support de montage et s'étendant dans la dimension

- de longueur du support de montage (6), dans la troisième direction dans l'état monté du support de montage,
- le bras élastique (43) des pièces d'extrémité (40) de l'appareillage d'écran étant conçu pour passer sur le rebord supérieur (7) pendant le montage et pour être supporté sur le rebord supérieur (7) du support de montage (6) respectif dans l'état monté de l'appareillage d'écran.
12. Appareillage d'écran selon la revendication 11 lorsqu'elle dépend selon la revendication 8, l'élément de mise en prise (434) du bras élastique étant conçu pour venir en prise par encliquetage avec un élément de mise en prise (9) correspondant dans le rebord supérieur (7) du support de montage (6) respectif.
13. Appareillage d'écran selon la revendication 12, l'élément de mise en prise (9) correspondant comprenant un épaulement ou un évidement et/ou l'élément de mise en prise (9) correspondant étant disposé sensiblement en dessous d'une ligne supérieure (x1) parallèle à la dimension de longueur du support de montage (6).
14. Fenêtre (1), en particulier une fenêtre de toit, comprenant un appareillage d'écran selon l'une quelconque des revendications précédentes.
15. Procédé d'installation d'un appareillage d'écran selon l'une quelconque des revendications 1 à 13 dans une fenêtre selon la revendication 14, comprenant les étapes consistant à :
- a) aligner les bras élastiques (43) des pièces d'extrémité (40) de l'appareillage d'écran avec les rebords supérieurs (7) du support de montage (6) respectif,
 - b) supporter les bras élastiques (43) des pièces d'extrémité (40) de l'appareillage d'écran sur les rebords supérieurs (7) du support de montage (6) respectif,
 - c) déplacer l'appareillage d'écran dans la troisième direction (d) de sorte que le bras élastique (43) soit fléchi dans la direction (Y) parallèle à la première surface (411) de la paroi supérieure (41), et
 - d) aligner le moyen de mise en prise (434) des pièces d'extrémité (40) avec le moyen de mise en prise (9) du support de montage (6), permettant ainsi au bras flexible (43) de fléchir vers sa position initiale non fléchie, de sorte à verrouiller les pièces d'extrémité (40) aux supports de montage (6) dans une position terminale pour atteindre l'état monté.

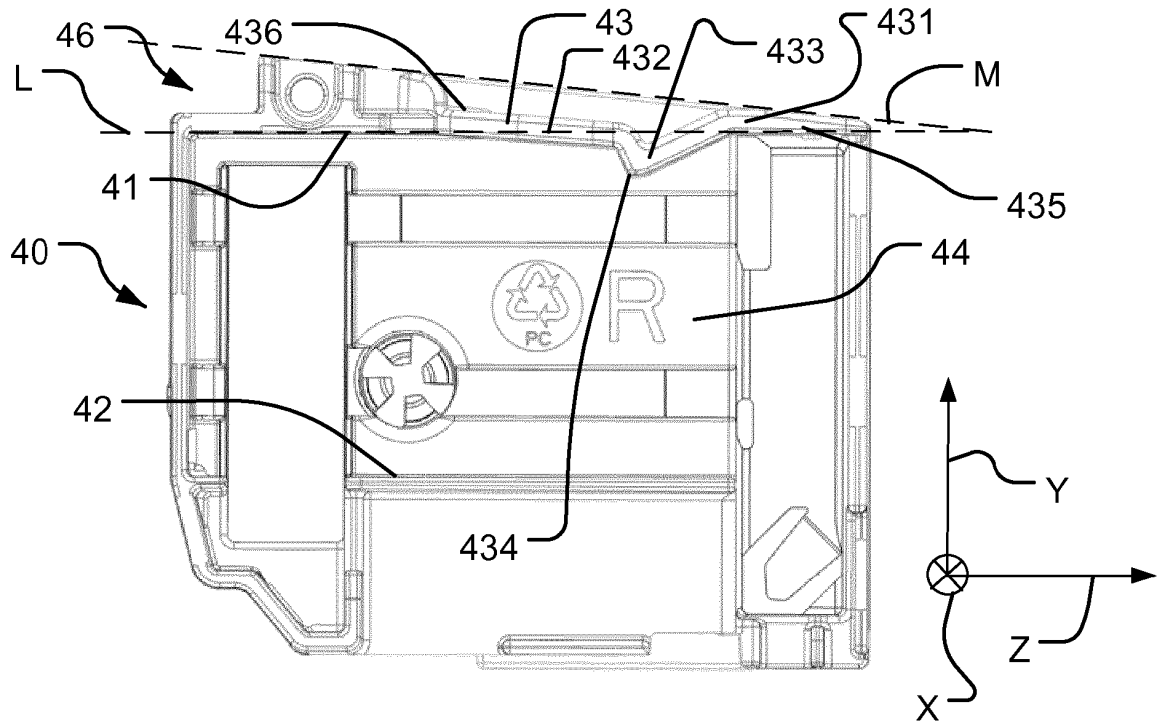


Fig. 2

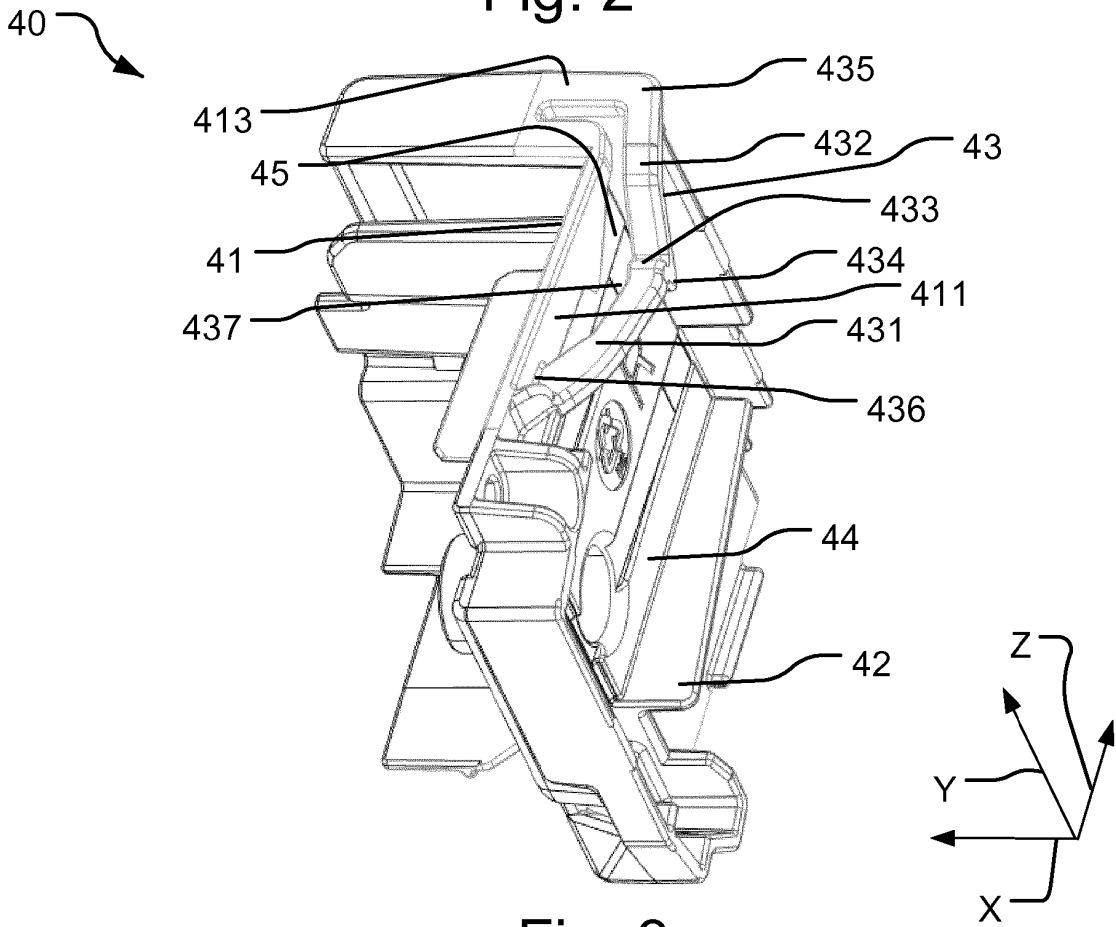


Fig. 3

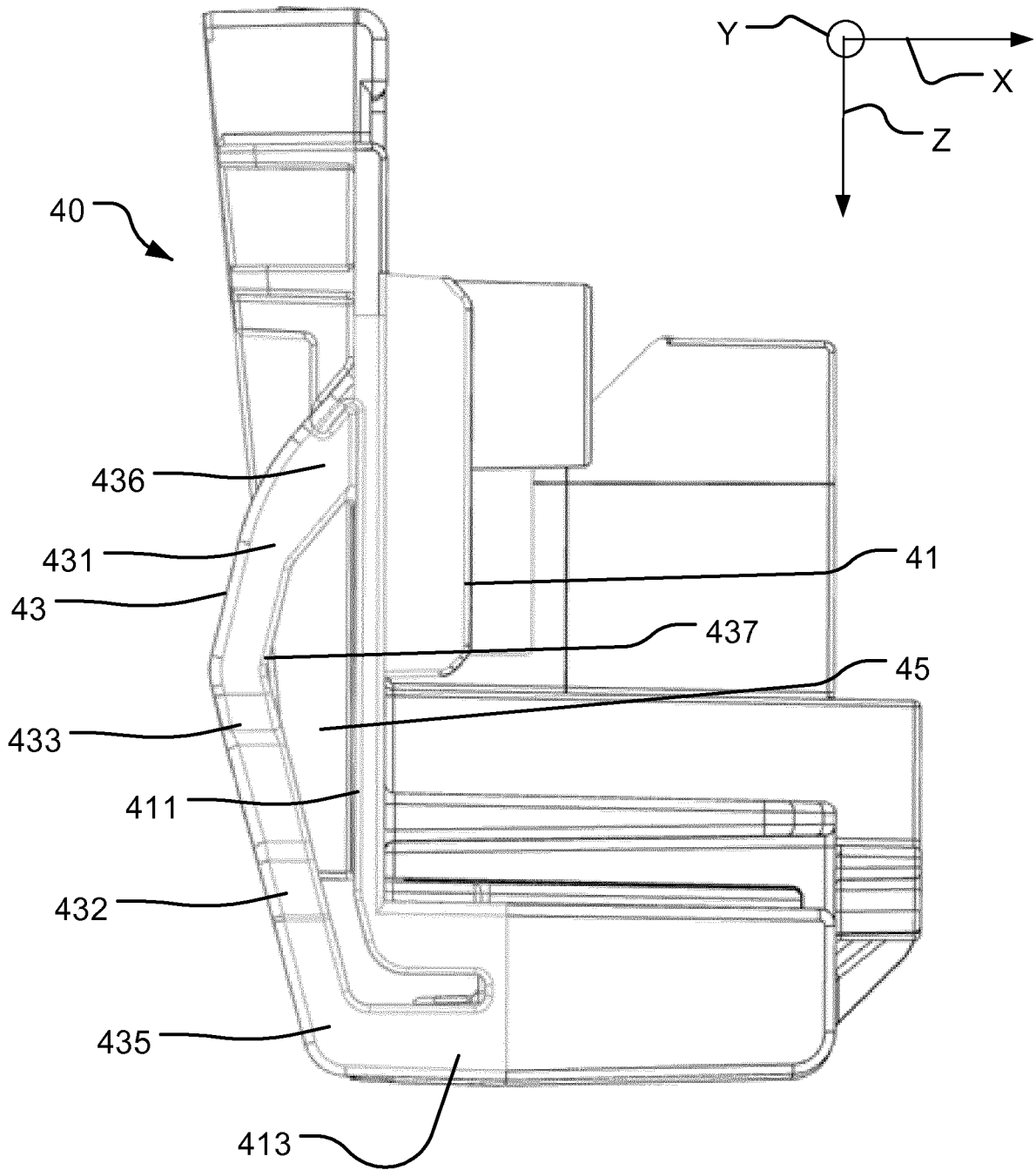


Fig. 4

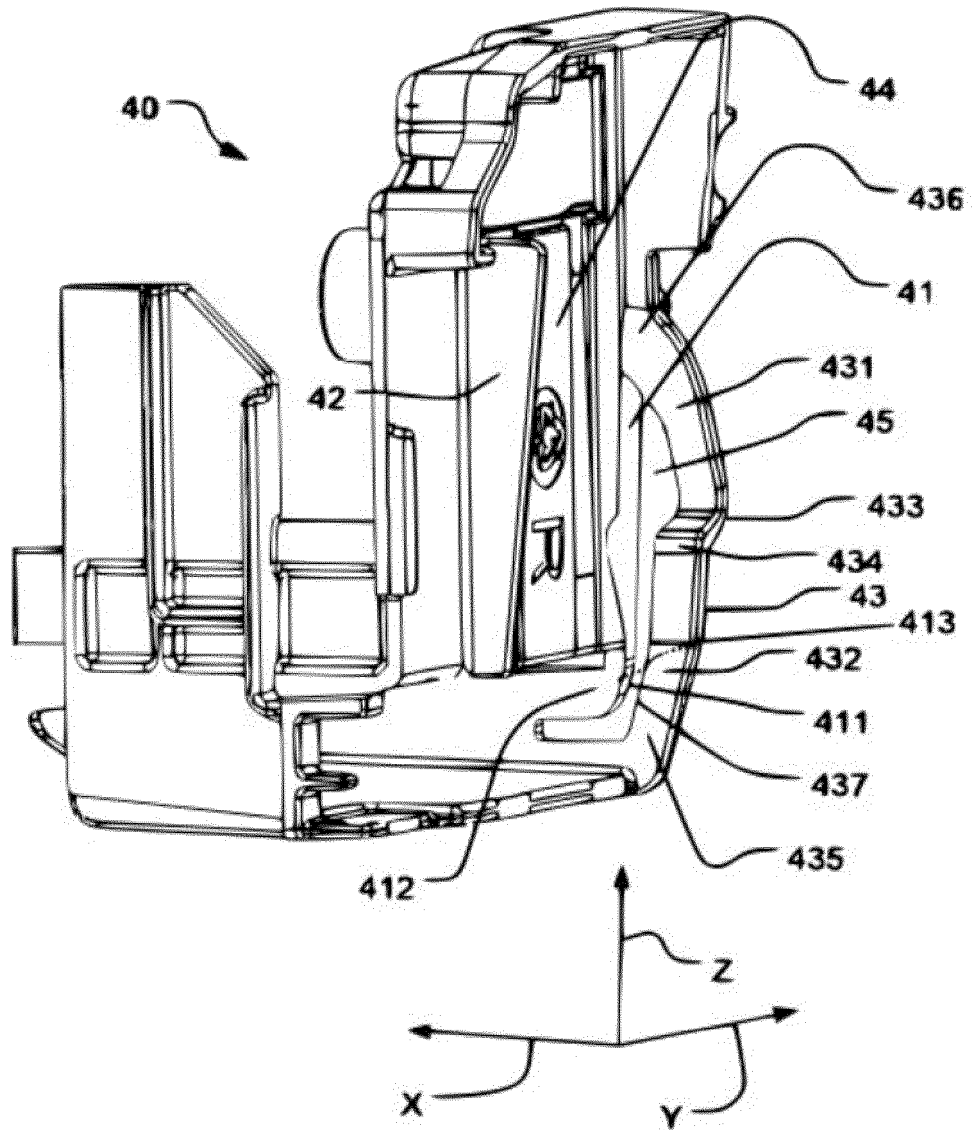


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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