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(54) AWNING AND METHOD FOR MOUNTING AN AWNING

(57) Awning (1) comprising a support structure (2) with a support bar (3) and two support elements (4), a winding roller (6) and a sheet (7) windable on the winding roller (6), wherein the support structure (2) also comprises fixing means (5) with a locking lever (50), in order to allow installation and maintenance of the awning in a simple and quick manner.

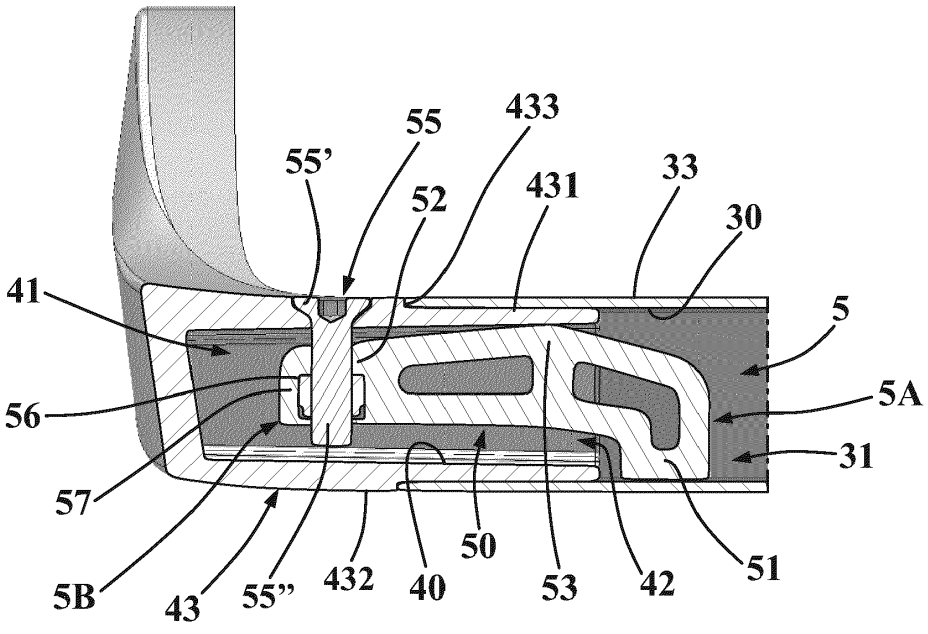

Fig. 5

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Description

Field of application

[0001] The present invention regards a roller blind and a process for mounting a roller blind, according to the preamble of the respective independent claims.

[0002] The present roller blind is intended to be advantageously employed for covering external surfaces to be protected from atmospheric agents and in particular from the sun and rain.

[0003] More in detail, the present roller blind is preferably intended to be fixed to the wall or to the ceiling of a building above an opening, such as a door or a window, in order to cover the opening itself or an external surface adjacent to the wall itself and accessible from the opening, such as a terrace or a garden, a veranda, etc.

[0004] The present roller blind is therefore intended to be inserted in the industrial field of production of accessories for the home, in the field of windows/shutters/doors and in the field of production of sheets for shading from the sun and similar applications.

State of the art

[0005] Roller blinds are known on the market which are provided with a horizontal support profile fixed to a wall of a building by means of two or more connection brackets and carrying, mounted thereon, a take-up roller, on which a cover sheet is wound, and generally two or more articulated arms connected to the sheet in order to pull it when the latter is unwound from the take-up roller.

[0006] More in detail, the sheet is fixed with a rear edge thereof to the take-up roller and with a front edge to a transverse bar, and is movable, following the rotation of the take-up roller, between a closed position, in which the sheet is wound around the roller, and an open position, in which the sheet is unwound from the roller to cover the underlying surface or an opening above which the blind is mounted.

[0007] In addition, the articulated arms of the blind are provided with a first end hinged to the support profile and with an opposite second end hinged to the aforesaid transverse bar, and are movable between an extended position, in which they push the transverse bar away from the take-up roller in order to pull the sheet in the open position, and a collected position, in which their second end connected to the transverse bar is brought adjacent to the roller when the sheet is placed in the closed position.

[0008] In order to rotatably support the roller, generally the blind is provided with support elements fixed to the support profile, which comprise an attachment portion, fixed to the support profile, and a support portion, on which the take-up roller is rotatably mounted. Generally, the attachment portion is provided with a cavity in which the end of the support profile is inserted via fitting. In order to render the fixing stable, moreover, the attachment portion and the support profile are coupled by means of through screws through the walls of both.

[0009] Several examples of blinds of known type are described in the documents DE 2817759 and DE 6752140.

[0010] The above-described roller blinds have in practice demonstrated that they do not lack drawbacks.

[0011] The main drawback of the roller blinds of the type briefly described above lies in the fact that they are not particularly easy to assemble and install, for example due to the need to perforate the support profile, which is generally made of steel.

[0012] A further drawback of the above-described roller blinds lies in the fact that they are poorly appreciable aesthetically for several reasons. First of all, such drawback is due to the fact that the screws remain visible when the blind is mounted. Secondly, the cavity made on the attachment portion is generally through, thus leaving the end of the support profile uncovered, which must be closed with a cover cap.

[0013] In order to resolve such problems, roller blinds are known in which the attachment portion of the support bracket is provided with a plurality of laminar elements extended along the extension axis of the support profile, inserted within the latter and in contact with its internal walls. In addition, between such laminar elements, an expansion body is inserted which is wedge shaped and is movable along the extension axis of the support profile in order to expand the laminar elements and consequently make a coupling via friction between the laminar elements themselves and the support profile.

[0014] Also such solution has in practice demonstrated that it does not lack drawbacks.

[0015] The main drawback of the described roller blind is once again the presence of visible fixing screws. Indeed, in order to move and subsequently maintain the expansion body in position, it is necessary to insert a tightening screw acting along the extension axis of the support profile and consequently entering from a visible external surface from the attachment portion of the support element.

Presentation of the invention

[0016] In this situation, the problem underlying the present invention is to provide a roller blind and a process for mounting a roller blind which allow executing operations of installation and maintenance of the blind in a simple and quick manner.

[0017] A further object of the present invention is to provide a roller blind which is structurally simple and inexpensive to achieve.

[0018] A further object of the present invention is to provide a roller blind which is entirely reliable in operation.

[0019] A further object of the present invention is to provide a roller blind that is aesthetically appreciable.

Brief description of the drawings

[0020] The technical characteristics of the invention, according to the aforesaid objects, can be clearly seen in the contents of the below-reported claims and the advantages thereof will be more evident in the following detailed description, made with reference to the enclosed drawings, which represent a merely exemplifying and non-limiting embodiment of the invention, in which:

- figure 1 shows a bottom perspective view of the roller blind, object of the present invention in closed position;
- figure 2 shows a perspective view of a detail relative to a support bar and to a support element of the support structure of the roller blind of figure 1;
- figure 3 shows a side view of the detail of the roller blind illustrated in figure 2;
- figure 4 shows a top view of the detail of the roller blind illustrated in figure 2;
- figure 5 shows a sectional view of the detail of the roller blind illustrated in figure 4, according to the trace V - V of figure 4 itself;
- figure 6 shows a perspective view of the support element of the roller blind with relative fixing means associated therewith;
- figure 7 shows a side view of the support element of figure 6 which depicts the movements of the components in order to place the fixing means from a disengagement position to a fixing position, in which the support element is represented in transparent view in order to better illustrate the fixing means themselves;
- figure 8 shows a side view of the support element of figure 6 which depicts the movements of the components in order to place the fixing means from the fixing position to the disengagement position, in which the support element is represented in transparent view in order to better illustrate the fixing means themselves.

Detailed description of a preferred embodiment

[0021] With reference to the enclosed drawings, reference number 1 overall indicate the roller blind, object of the present invention.

[0022] The present roller blind 1 is advantageously intended to be fixed to a wall of a building in order to adjustably cover a surface of the ground adjacent to the wall, protecting it from the sun, from the rain, etc. In addition, the present roller blind 1 is preferably intended to be placed above an opening, such as in particular of a door, a window, a glass or the like, made on the aforesaid wall in order to protect such opening from the sun. Of course, in addition to a wall, the present roller blind 1 can also be mounted on a ceiling, e.g. below the cornice of the opening, below a terrace, an overhang, a small frame, etc.

[0023] With reference to the embodiment illustrated in the enclosed figures, the roller blind 1 is provided with a support structure 2, which is intended to be fixed to the wall and comprises a support bar 3, which is extended between two opposite ends 3' along a first extension direction X, preferably substantially horizontal (when the roller blind 1 is installed). The support bar 3 is also provided, at least at the ends 3', with a first internal surface 30 extended around the first extension direction X and defining at least one first cavity 31 provided, at each end 3', with a corresponding first passage opening 32. In particular, the first cavity 31 is continuously extended from one end 3' to the other of the support bar 3.

[0024] Advantageously, the support bar 3 is also provided with a first external surface 33 extended around the first extension direction X and opposite the first internal surface 30.

[0025] In accordance with the preferred embodiment illustrated in the enclosed figures, the support bar 3 has hollow tubular form and is advantageously attained by means of a metallic section, e.g. made of steel. Preferably, the support bar 3 is of the type with quadrangular section, in particular square or rectangular, thus being termed in the jargon of the field "square bar".

[0026] Advantageously, the support structure 2 of the roller blind 1 comprises at least one connection bracket 21, preferably at least two, which carries fixed thereto the support bar 3 and is intended to be fixed to the wall in order to support the support bar 3 itself. For example, the connection bracket 2 is provided with a fixing body 22 on which a plurality of through holes is made for housing attachment means (such as screws) in order to fix the connection bracket 21 to the wall. In addition, the connection bracket is advantageously provided with a fork body 23, which protrudes overhanging with respect to the fixing body 22 (in particular made integrally with the fixing body 22 or couplable therewith) and defines a slot, advantageously substantially counter-shaped with respect to the support bar 3, in which a portion of the support bar 3 itself is housed in order to support it attached to the wall.

[0027] The support structure 2 of the roller blind 1, object of the invention, also comprises two support elements 4, each of which mechanically connected to a corresponding end 3' of the support bar 3. Each support element 4 comprises an attachment portion 4', which is fixed to the corresponding end 3' of the support bar 3 and is provided with a second internal surface 40 defining a second cavity 41 provided with a second passage opening 42 through which the second cavity 41 is in communication with the first cavity 31 of the support bar 3. Advantageously, the second internal surface 40 is extended around the first extension direction X of the support bar 3 itself (considering in particular such first extension direction X as a line that is also extended beyond the ends 3' of the support bar 3).

[0028] Advantageously, moreover, the attachment portion 4' is provided with a second external surface 43,

opposite the second internal surface 40 and extended, at least partly, around the first extension direction X.

[0029] The attachment portion 4' and the corresponding end 3' of the support bar 3 are at least partially inserted one inside the other. In accordance with the preferred embodiment of the invention, the attachment portion 4' of the support element 4 is inserted within the end 3' of the support bar 3 through the corresponding first passage opening 32, as illustrated in the enclosed figures 2-5.

[0030] In particular, the attachment portion 4' is provided with a protruding connection part 4A', advantageously thinned, and inserted in the end 3' of the support bar 3 extended within a section of the first internal cavity 30 of the latter.

[0031] Preferably, the second external surface 43 is provided with a first section 431, extended in particular on the attachment part 4A', placed inside the first cavity 31 of the support bar 3, and preferably in contact with the first internal surface 30 of the support bar 3 itself, and a second section 432 placed outside the first cavity 31 (and in particular outside attachment part 4A').

[0032] Advantageously, the first and second sections 431, 432 are connected by a connection section 433, transverse with respect to the first extension direction X, which defines a shoulder between the first and second sections 431, 432. In particular, with the attachment portion 4' inserted in the support bar 3, the end 3' of the support bar 3 itself is placed in abutment against the aforesaid shoulder.

[0033] Advantageously, moreover, the first external surface 33 of the support bar 3 and the second section 432 of the second external surface 43 are, with the roller blind 1 mounted, substantially without interruption, so as to appear as a single surface.

[0034] Of course, without departing from the protective scope of the invention, the end 3' of the support bar 3 can be inserted within the attachment portion 4' of the support element 4, preferably by reversing, in an analogous manner, the characteristics of the internal and external surfaces 30, 40, 33, 43.

[0035] According to the invention, each support element 4 comprises a support portion 4", extended starting from the attachment portion 4' away from the first extension direction X, advantageously according to at least one second extension direction Y tilted with respect to the first extension direction X. In particular, the second extension direction Y is preferably orthogonal to the first extension direction X.

[0036] In particular, the support portion 4" is extended starting from the attachment portion 4' advantageously by means of an elbow bend. Preferably, the support and attachment portions 4', 4" are made integrally with each other and, in particular, each support element 4 is preferably made of metallic material, e.g. aluminum (in particular by means of melting and forming via casting).

[0037] Each support element 4 also comprises fixing means 5, which mechanically constrain the attachment portion 4' of each support element 4 to the corresponding end 3' of the support bar 3.

[0038] The roller blind 1 also comprises a winding roller 6, extended along a revolution axis X' substantially parallel to the first extension direction X, between two terminal portions 6' rotatably supported by the support portions 4" of the corresponding support elements 4. For such purpose, the support portion 4" of each support element 4 is advantageously provided with a housing seat 44, advantageously aligned with the revolution axis X' of the winding roller 6, in which each terminal portion 6' of the winding roller 6 itself is rotatably mounted.

[0039] In accordance with the preferred embodiment illustrated in the enclosed figures, the support portion 4" is provided with a first face 45 directed towards the end portion 6' of the winding roller 6 and a second face 46, opposite the first face 45. Advantageously, the support portion 4" is also provided with a perimeter face 47 extended between the first and second faces 45, 46, to connect the latter faces.

[0040] In particular, the housing seat 44 is made on part of the first face 45 starting from an insertion opening 48 on the perimeter face 47, so as to allow the insertion via sliding of the winding roller 6 advantageously along a direction transverse to the revolution axis X' of the winding roller 6 itself.

[0041] Advantageously, the support element 4 is provided with a closure body 49 fixable to the support portion 4" at the housing seat 44 in order to at least partly obstruct the insertion opening 48 on the perimeter face 47. Preferably, the closure body 49 forms, with the perimeter face 47, a substantially continuous surface.

[0042] According to the invention, the roller blind 1 also comprises a sheet 7, preferably with rectangular form, having a first edge fixed to the winding roller 6 and susceptible of being wound around the winding roller 6 itself.

[0043] In particular, the sheet 7 of the roller blind 1 is movable by means of rotation of the winding roller 6 around the revolution axis X' thereof between a closed position, in which the sheet 7 is completely wound around the winding roller 6, and an open position, in which the sheet 7 is at least partially unwound, advantageously to cover the surface of the ground adjacent to the wall and/or to the opening made on the aforesaid wall, in order to protect them from the different weather conditions.

[0044] In operation, the winding roller 6 of the roller blind 1 is actuatable to rotate around the revolution axis X' thereof by means of a motor or manually (e.g. by means of a drive rod engaged through an articulation to the winding roller), in order to unwind or wind the sheet around the winding roller 6 itself.

[0045] Advantageously, the roller blind 1 is also provided with a front bar 8 and the sheet 7 is provided with a second edge opposite the first edge and fixed to the front bar 8.

[0046] In accordance with the embodiment solution illustrated in figure 1, the roller blind 1 comprises at least two articulated arms 9, each provided with a first end 9' constrained (in particular rotatably) to the support bar 3

and with a second end 9" carrying, mounted thereon, the front bar 8 (and in particular connected to the latter via hinging). Advantageously, articulated arms 9 are movable between an extended position, in which the articulated arms 9 are extended in order to pull the sheet 7 in open position, bringing the front bar 8 away from the winding roller 6, and a collected position, in which the articulated arms 9 place the front bar 8 adjacent to the winding roller 6 when the sheet 7 is wound in closed position around the winding roller 6 itself.

[0047] In particular, each articulated arm 9 comprises two tubular sections 91 hinged to each other at a central elbow 92 of the articulated arm 9 itself, and preferably comprises elastic extension means, for example constituted by elastic transmissions placed within the tubular sections 91 in a manner per se known to the man skilled in the art, which are arranged for exerting, on the corresponding articulated arm 9, an elastic force that tends to bring the articulated arm 9 into the extended position.

[0048] Of course, without departing from the protective scope of the invention, the roller blind 1 might not be provided with articulated arms 9, but can instead be a roller blind 1 of the type termed in jargon "drop" i.e. in which the sheet, in the movement from the closed position to the open position, slides vertically via gravity and is tensioned advantageously by the weight of the front bar 8. In accordance with a further embodiment variant, not illustrated, the front bar 8 can be provided with opposite ends slidably mounted on lateral guides during use placed in vertical, horizontal or oblique position with respect to the ground.

[0049] In accordance with the idea underlying the present invention, the fixing means 5 comprise a locking lever 50, in turn comprising a first engagement portion 51 inserted in the first cavity 31 of the support bar 3 and advantageously constrained to the support bar 3 itself, and a second engagement portion 52 inserted in the second cavity 41 of the attachment portion 4' of the corresponding support element 4 and advantageously constrained to the support element 4.

[0050] In particular, the locking lever 5 is placed to traverse the first passage opening 32 of the support bar 3 and of the second passage opening 42 of the attachment portion 4' of the corresponding support element 4.

[0051] Advantageously, the locking lever 5 is attained in a rigid manner, in particular metallic, such as steel. In addition, the locking lever 50 comprises a fulcrum portion 53 placed between the first engagement portion 51 and the second engagement portion 52 and defining a rotation axis R of the locking lever 50.

[0052] In particular, the fulcrum portion 53 of the locking lever 50 is pivoted to one between the attachment portion 4' of the corresponding support element 4 and the support bar 3. Advantageously, the locking lever 5 is extended between its ends 5A, 5B, between which the fulcrum portion 53 is interposed.

[0053] Suitably, the engagement portions 51, 52 of the locking lever 5 are positioned at the corresponding ends 5A, 5B of the latter.

[0054] Advantageously, the rotation axis R of the locking lever 50 is substantially orthogonal to the first extension direction X of the support bar 3.

[0055] The fixing means 5 also comprise stress means 54 acting on one between the first engagement portion 51 and the second engagement portion 52, and adapted to force in rotation the locking lever 50 around the rotation axis R, pressing the other between the first engagement portion 51 and the second engagement portion 52 in (mechanical) engagement with one between, respectively, the support bar 3 and the attachment portion 4'.

[0056] In particular, the stress means 54, acting against one between the first engagement portion 51 and the second engagement portion 52, are adapted to force in rotation the locking lever 50 around the rotation axis R, pressing the other between the first engagement portion 51 and the second engagement portion 52 in abutment against one between, respectively, the first internal surface 30 of the support bar 3 and the second internal surface 40 of the attachment portion 4' of the corresponding support element 4. Preferably, the stress means 54 mechanically connect one between the engagement portion 51 and the second engagement portion 52 respectively to the support bar 3 and to the attachment portion 4' (involving an engagement thereof), and, by forcing the rotation of the locking lever, push the other between the engagement portion 51 and the second engagement portion 52 in abutment against the respective internal surface 30, 40 (causing an engagement thereof). Suitably, the stress means 54 force in rotation the locking lever 50 in the sense that they tend to make the locking lever 50 rotate in order to maintain the engagement portion 51, 52 in abutment against the corresponding internal surface 30, 40.

[0057] In operation, with reference to figures 7 and 8, in particular in order to mount/dismount the support element 4 on/from the support bar 3, the locking lever 50 is susceptible of rotating between a disengagement position, in which the first engagement portion 51 and the second engagement portion 52 are spaced from the respective first and second internal surfaces 30, 40, and a fixing position, in which one between the first and second engagement portions 51, 52 acts in abutment against the corresponding first or second internal surface 30, 40. In particular, in the aforesaid disengagement position the stress means 54 are advantageously loosened so as to allow the movement of the locking lever 50, while in the fixing position the stress means 54 are tightened so as to act on the locking lever 50.

[0058] Advantageously, the fulcrum portion 53 of the locking lever 50 abuts against one between the first internal surface 30 of the support bar 3 and the second internal surface 40 of the support element 4. Advantageously, the other (which does not receive the fulcrum portion 53 in abutment) between the first internal surface 30 and the second internal surface 40 receives in abutment, respectively, the first engagement portion 51 or

second engagement portion 52. In particular, the fulcrum portion 53 and the engagement portion 51/52 act on facing sides of the aforesaid internal surfaces 30, 40.

[0059] In accordance with the preferred embodiment, illustrated in the enclosed figures 2-8, the stress means 54 act on the second engagement portion 52 of the locking lever 50 (mechanically engaging the second engagement portion 52 with the attachment portion 4'), and the first engagement portion 51 of the locking lever 50 is engaged with the support bar 3, preferably acting in abutment against the first internal surface 30 of the support bar 3 itself, by being mechanically engaged with the latter.

[0060] Preferably, the first engagement portion 51 of the locking lever 5 is provided with a protruding appendage 51' directed towards the side of the first internal surface 30 against which it abuts.

[0061] Advantageously, the fulcrum portion 53 of the locking lever 50 is in abutment against the second internal surface 40 of the second cavity 41 of the attachment portion 4' of the corresponding support element 4, in particular on a side of such second internal surface 40 opposite the side on which the first engagement portion 51 of the locking lever 50 acts in abutment against the first internal surface 30 of the support bar 3.

[0062] Preferably, the fulcrum portion 43 is wedge shaped, advantageously pivoting on the attachment portion 4' of the support element 4. More in detail, when the stress means 54 are loosened, the fulcrum portion 53 is free to be moved within the second cavity 41 defined in the attachment portion 4' and, when the stress means 54 are tightened, the fulcrum portion 53 is susceptible of acting in abutment against the second internal surface 40 of the attachment portion 4' of the support element 4.

[0063] Of course, without departing from the protective scope of the invention, the fulcrum portion 53 may be only rotatably mounted within the support bar 3, i.e. pivoted within the attachment portion 4' by means of a pin and advantageously being only free to rotate around the rotation axis R thereof when the stress means 54 are loosened.

[0064] Acting in abutment against one of the internal surfaces 30, 40 of the support bar 3 and of the attachment portion 4' of the support element 4, the locking lever 50 generates an engagement at least via friction against this, preventing the relative sliding along the first extension axis X between the support bar 3 and the support element 4 and consequently the detachment of the latter from the support bar 3 itself.

[0065] Of course, without departing from the protective scope of the invention, the engagement between the first engagement portion 51 or the second engagement portion 52 with, respectively, the support bar 3 or the attachment portion 4' (and in particular with the corresponding internal surface 30, 40) can be an engagement via connection or via shape coupling, for example if the aforesaid corresponding internal surface 30, 40 is respectively provided with an appendage protruding towards the interior of the cavity 31, 41 or with a recess at least partially counter-shaped with respect to the engagement portion 51, 52, on one of which the corresponding engagement portion 51, 52 can be connected in fixing position. Otherwise, additionally, the engagement portion 51, 52 can generate a deformation of the corresponding internal surface 30, 40, increasing the effectiveness of the engagement. Otherwise, furthermore, the first or the second engagement portion 51, 52 can be connected to a through engagement hole respectively made in the support bar 3 or in the attachment portion 4' of the support element 4.

[0066] In accordance with a preferred embodiment, the stress means 54 mechanically connect the second engagement portion 52 to the attachment portion 4' of the corresponding support element 4 and act on the second engagement portion 52, abutting against the attachment portion 4', mechanically engaging the second engagement portion 52 with the attachment portion 4'.

[0067] More in detail, the stress means 54 comprise at least one tie rod element 55 placed as a connection between the second engagement portion 52 and the attachment portion 4'. For example, as illustrated in figure 5, the tie rod element 55 is a screw placed passing through a first hole made on the attachment portion 4' and extended between the second external surface 43 and the second internal surface 40. The aforesaid screw is advantageously provided with a head 55' acting in abutment against the second external surface 43 of the attachment portion 4' and a stem 55" passing through a second hole made on the second engagement portion 52 of the locking lever 50. In particular, the second engagement portion 52 is provided with a seat 56 in communication with the aforesaid second hole and the stress means 54 comprise at least one reception element 57 of the tie rod element, in particular a nut, placed in the seat 56 in order to receive in engagement the tie rod element 55, i.e. in particular the stem 55" of the screw, and advantageously allow the tightening of the second engagement portion 52 towards the second internal surface 40.

[0068] Otherwise, in accordance with an embodiment variant, the second hole can be threaded and receive the stem of the screw 55" without requiring the reception element 57.

[0069] In accordance with the particular example illustrated in the enclosed figures, the stress means 54 (and in particular the tie rod element 55) act from (are are advantageously placed on) an upper side of the attachment portion 4' of the support element 4 (or of the support bar 3). Of course, without departing from the protective scope of the present patent, the stress means 54 can be arranged on any other side (e.g. lower, rear or front) of the attachment portion 4' of the support element 4 (or of the support bar 3), with consequent modification of the position of the engagement portions 51, 52 and of the fulcrum portion 53 of the locking lever 50.

[0070] In operation, by tightening the tie rod element 55, the second engagement portion 52 is brought close to the second internal surface 40, in particular towards one side of such second internal surface 40 in which the

aforesaid tie rod element 55 is inserted. Substantially, at the same time, the fulcrum portion 53 advantageously comes into contact with the same side of the second internal surface 40 and the further movement of the second engagement portion 52 causes the rotation of the locking lever 50 around the rotation axis R. Consequently, the first engagement portion 51 is brought into abutment against the first internal surface 30 of the support bar 3, in particular on a side thereof opposite the side in which the tie rod element 55 is inserted, generating a friction force caused by the tightening torque applied to the tie rod element 55 and by the distance of the engagement portions 51, 52 by the fulcrum portion 53, thus preventing the removal of the support element 4.

[0071] Of course, without departing from the protective scope of the invention, the stress means 54 can provide for, in an analogous manner, a thrust element in place of the tie rod element 55. In such case, the fulcrum portion 53 is brought into abutment against the side of the second internal surface 40 opposite that in which the thrust element is inserted.

[0072] Advantageously, with the preferred embodiment of the invention it is not necessary to perforate the support bar, since the stress means 54 are placed in the attachment portion 4' of the support element 4. In addition, the stress means 54 are advantageously placed during use directed upward with respect to the ground and are therefore not visible, improving the aesthetic appearance of the roller blind 1.

[0073] In accordance with a further embodiment, not illustrated in the enclosed figures, the stress means 54 mechanically connect the first engagement portion 51 to the support bar 3 and act on the first engagement portion 51, abutting against the support bar 3, in particular against the first external surface 33 of the latter. In such case, therefore, the first engagement portion 51 of the locking lever 50 is stressed by the stress means 54 and the second engagement portion 52 of the locking lever 50 consequently acts in abutment against the second internal surface 40 of the attachment portion 4', retaining the latter via friction. Advantageously, the shape of the locking lever 50 and of the stress means 54 is analogous but reversed with respect to the shape described for the preferred embodiment.

[0074] In accordance with further non-illustrated embodiments, the fixing means 5 comprise two locking levers 50, placed substantially as a scissors, symmetric from each other with respect to the first extension direction X. In particular, each locking lever 50 abuts with its own fulcrum portion 53 against the fulcrum portion 53 of the other locking lever 50. In addition, the first engagement portions 51 abut against opposite sides of the first internal surface 30 of the support bar 3 when the second engagement portions 52 are spaced from each other by means of the stress means 54.

[0075] Also forming the object of the present finding is a process for mounting the aforesaid roller blind 1, regarding which the same reference numbers will be maintained for the sake of description simplicity.

[0076] Advantageously, the process comprises a wall attachment step, in which at least one connection bracket 21, preferably two, is fixed to the wall, and a step of fixing the support bar 3 to the connection bracket 21, in which the connection bar 3 is advantageously inserted and fixed in the slot of the fork body 23.

[0077] Advantageously, the process comprises a step of connecting the articulated arms 9 (or the guides), to the support bar 3 of the support structure 2.

[0078] The aforesaid steps occur in a mode already per se known to the man skilled in the art, and therefore they are not further described in detail.

[0079] In accordance with the idea underlying the present invention, the process comprises a step of associating at least one support element 4 with the support bar 3, in which the attachment portion 4' of the support element 4 and the corresponding end 3' of the support bar 3 are at least partially inserted one inside the other, with the first engagement portion 51 of the locking lever 50 inserted in the first cavity 31 of the support bar 3 and the second engagement portion 52 of the locking lever 50 inserted in the second cavity 41 of the attachment portion 4' of the support element 4. Advantageously, the attachment portion 4' of the support element 4 and the corresponding end 3' of the support bar 3 are inserted one inside the other by means of relative sliding with respect to each other along the first extension direction X of the support bar 3.

[0080] In accordance with a preferred embodiment of the process, the attachment portion 4' (and in particular the connection part 4A') of the support element 4, as indicated above, is inserted within the corresponding end 3' of the support bar 3.

[0081] According to the invention, the process also comprises a fixing step, in which the stress means 54 are actuated in order to move one between the first engagement portion 51 and the second engagement portion 52, rotating the locking lever 50 around the rotation axis R up to bringing the other between the first engagement portion 51 and the second engagement portion 52 to be engaged with one between, respectively, the support bar 3 and the attachment portion 4', in particular abutting against one between, respectively, the first internal surface 30 of the support bar 3 and the second internal surface 40 of the attachment portion 4'.

[0082] Advantageously, the fixing step provides for, by means of the actuation of the stress means 54, bringing the locking lever 50 to rotate between the disengagement position, in which the first engagement portion 51 and the second engagement portion 52 are spaced from the respective first and second internal surfaces 30, 40, and a fixing position, in which one between the first and second engagement portions 51, 52 acts in abutment against the respective first or second internal surface 30, 40.

[0083] Preferably, in the fixing step, the stress means 54 are actuated in order to act on the second engagement portion 52 of the locking lever 5 in a manner such that,

following the rotation of the latter, the first engagement portion 51 is brought into abutment against the first internal surface 30 of the first cavity 31 of the support bar 3, being engaged, in particular via friction, with such first internal surface 30.

[0084] Advantageously, in the aforesaid fixing step, the actuation of the stress means 54 pushes the fulcrum portion 53 in abutment against one between respectively the first internal surface 30 of the support bar 3 and the second internal surface 40 of the support element 4, preferably against the second internal surface 40.

[0085] In accordance with a preferred embodiment of the process, object of the invention, illustrated in the enclosed figure 7, in the fixing step the tie rod element 55 of the stress means 54, in particular a screw associated with the attachment portion 4' of the support element 4, is tightened by pulling the second engagement portion 52 towards the corresponding side of the second internal surface 40. In addition, the fulcrum portion 53 of the locking lever 50 is advantageously brought into abutment against the same side of the second internal surface 40. Advantageously, therefore, the first engagement portion 51 of the movement lever 50 rotates integrally with the second engagement portion 52 (moved by the stress means 54) and abuts against the first internal surface 30, on the side opposite that in which the fulcrum portion 53 is abutted.

[0086] In this manner, in the fixing step, an engagement via friction is advantageously established between the locking lever 50 (and hence the support element 4 on which this is mounted) and the support bar 3.

[0087] Advantageously, the method also comprises a step of inserting terminal portion 6' of the winding roller 6, with the sheet 7 wound thereon, within the housing seat 44 of the corresponding support element 4 through the insertion opening 48.

[0088] Advantageously, moreover, the method comprises a step of closing the housing seat 44, in which the closure body 49 is fixed to the insertion opening 48 on the perimeter face 47 of the support portion 4" of the support element 4, in order to maintain in position the terminal portion 6' of the winding roller 6.

[0089] The process can also comprise further steps that are per se known to the man skilled in the art and therefore are not described.

[0090] The invention thus conceived therefore attains the pre-established objects.

Claims

1. Roller blind (1), which comprises:

- a support structure (2), which is intended to be fixed to a wall and comprises:
  - a support bar (3), which is extended between two opposite ends (3') along a first extension direction (X) and is provided, at least at said ends (3'), with a first internal surface (30) extended around said first extension direction (X) and defining at least one first cavity (31) provided, at each said end (3'), with a corresponding first passage opening (32);
  - two support elements (4), each of which is mechanically connected to a corresponding said end (3') of said support bar (3) and comprises:
    - an attachment portion (4'), which is fixed to the corresponding end (3') of said support bar (3) and is provided with a second internal surface (40) defining a second cavity (41) provided with a second passage opening (42) through which said second cavity (41) is in communication with said first cavity (31), and
    - a support portion (4"), extended starting from said attachment portion (4') away from said first extension direction (X); wherein said attachment portion (4') and the corresponding end (3') of said support bar (3) are at least partially inserted one inside the other;
  - fixing means (5) which mechanically constrain the attachment portion (4') of each said support element (4) to the corresponding end (3') of said support bar (3);
- a winding roller (6), extended along a revolution axis (X') substantially parallel to said first extension direction (X), between two terminal portions (6') rotatably supported by the support portions (4") of the corresponding said support elements (4);
- a sheet (7) having an edge fixed to said winding roller (6) and susceptible of being wound around said winding roller (6);

said roller blind (1) **being characterized in that** said fixing means (5) comprise:

- a locking lever (50) comprising:
  - a first engagement portion (51) inserted in the first cavity (31) of said support bar (3);
  - a second engagement portion (52) inserted in the second cavity (41) of the attachment portion (4') of the corresponding said support element (4);
  - a fulcrum portion (53) placed between said first engagement portion (51) and said second engagement portion (51) and defining

a rotation axis (R) of said locking lever (50);

- stress means (54) acting on one between said first engagement portion (51) and said second engagement portion (52), and adapted to force in rotation said locking lever (50) around said rotation axis (R), pressing the other between said first engagement portion (51) and said second engagement portion (52) in engagement with one between, respectively, said support bar (3) and said attachment portion (4').

2. Roller blind (1) according to claim 1, **characterized in that** the fulcrum portion (53) of said locking lever (50) is pivoted to one between the attachment portion (4') of said corresponding support element (4) and said support bar (3).

3. Roller blind (1) according to claim 1 or 2, **characterized in that** said stress means (54) act on the second engagement portion (52) of said locking lever (50) and the first engagement portion (51) of said locking lever (50) is engaged with said support bar (3).

4. Roller blind (1) according to claims 2 and 3, **characterized in that** the fulcrum portion (53) of said locking lever (50) is in abutment against the second internal surface (40) of the second cavity (41) of the attachment portion (4') of said corresponding support element (4).

5. Roller blind (1) according to any one of the preceding claims, **characterized in that** said other between said first engagement portion (51) and said second engagement portion (52) is engaged in abutment against one between, respectively, said first internal surface (30) and said second internal surface (40).

6. Roller blind (1) according to claim 5, **characterized in that** the fulcrum portion (53) of said locking lever (50) abuts against one between said first internal surface (30) and said second internal surface (40), and the other between said first internal surface (30) and said second internal surface (40) receives in abutment the corresponding said first engagement portion (51) or said second engagement portion (52), on facing sides of said internal surfaces (30, 40).

7. Roller blind (1) according to claim 4 or 6, **characterized in that** said fulcrum portion (53) is wedge shaped.

8. Roller blind (1) according to any one of the preceding claims, **characterized in that** the rotation axis (R) of said locking lever (50) is substantially orthogonal to said first extension direction (X).

9. Roller blind (1) according to any one of claims 3 or 4, **characterized in that** said stress means (54) mechanically connect said second engagement portion (52) to the attachment portion (4') of said corresponding support element (4) and act on said second engagement portion (52), abutting against said attachment portion (4').

10. Roller blind (1) according to claim 9, **characterized in that** said stress means (54) comprise at least one tie rod element (55) placed as a connection between said second engagement portion (52) and said attachment portion (4').

11. Process for mounting a roller blind (1) according to any one of the preceding claims, **characterized in that** it comprises:

- a step of associating at least one said support element (4) with said support bar (3), wherein the attachment portion (4') of said support element (4) and the corresponding end (3') of said support bar (3) are at least partially inserted one inside the other, with the first engagement portion (51) of said locking lever (50) inserted in the first cavity (31) of said support bar (3) and the second engagement portion (52) of said locking lever (50) inserted in the second cavity (41) of the attachment portion (4') of said support element (4);
- a fixing step, wherein said stress means (54) are actuated in order to move one between said first engagement portion (51) and said second engagement portion (52), rotating said locking lever (50) around said rotation axis (R) until the other between said first engagement portion (51) and said second engagement portion (52) is brought to be engaged with one, respectively, between said support bar (3) and said attachment portion (4').

12. Process according to claim 11, **characterized in that**, in said fixing step, said other between said first engagement portion (51) and said second engagement portion (52) is brought into abutment against one between, respectively, said first internal surface (30) and said second internal surface (40).

13. Process according to claim 11 or 12, **characterized in that**, in said fixing step, the actuation of said stress means (54) pushes said fulcrum portion (53) in abutment against one between respectively said first internal surface (30) and said second internal surface (40).

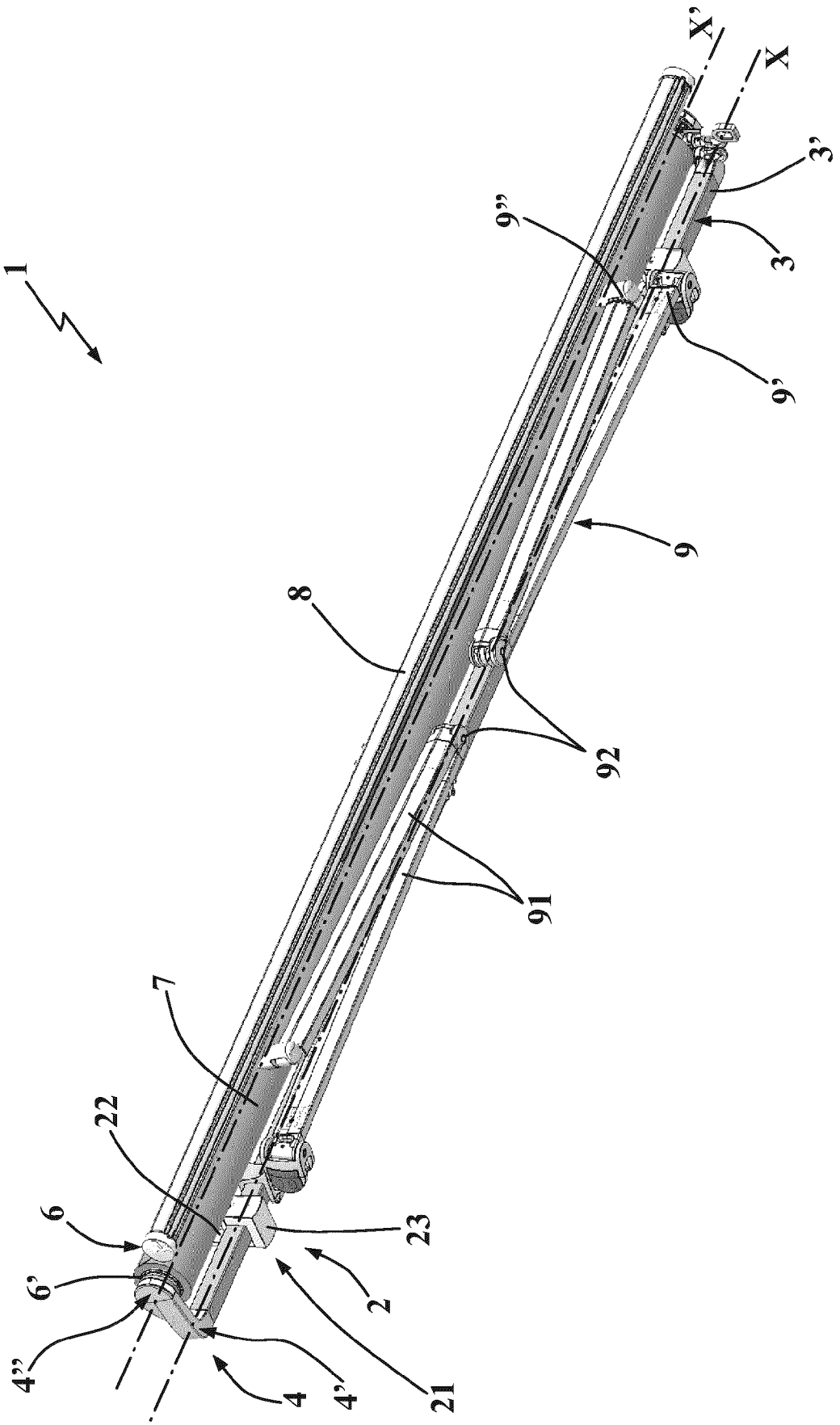
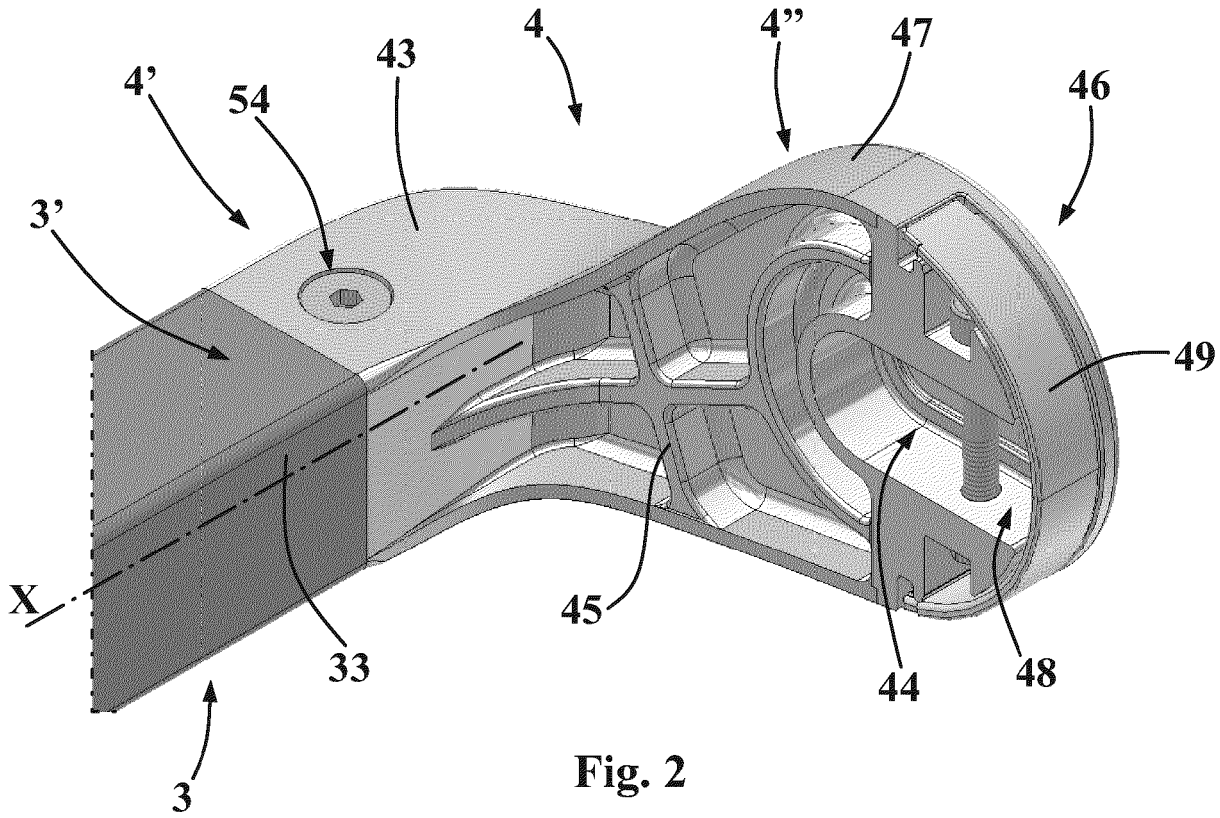


Fig. 1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44
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3

Fig. 2

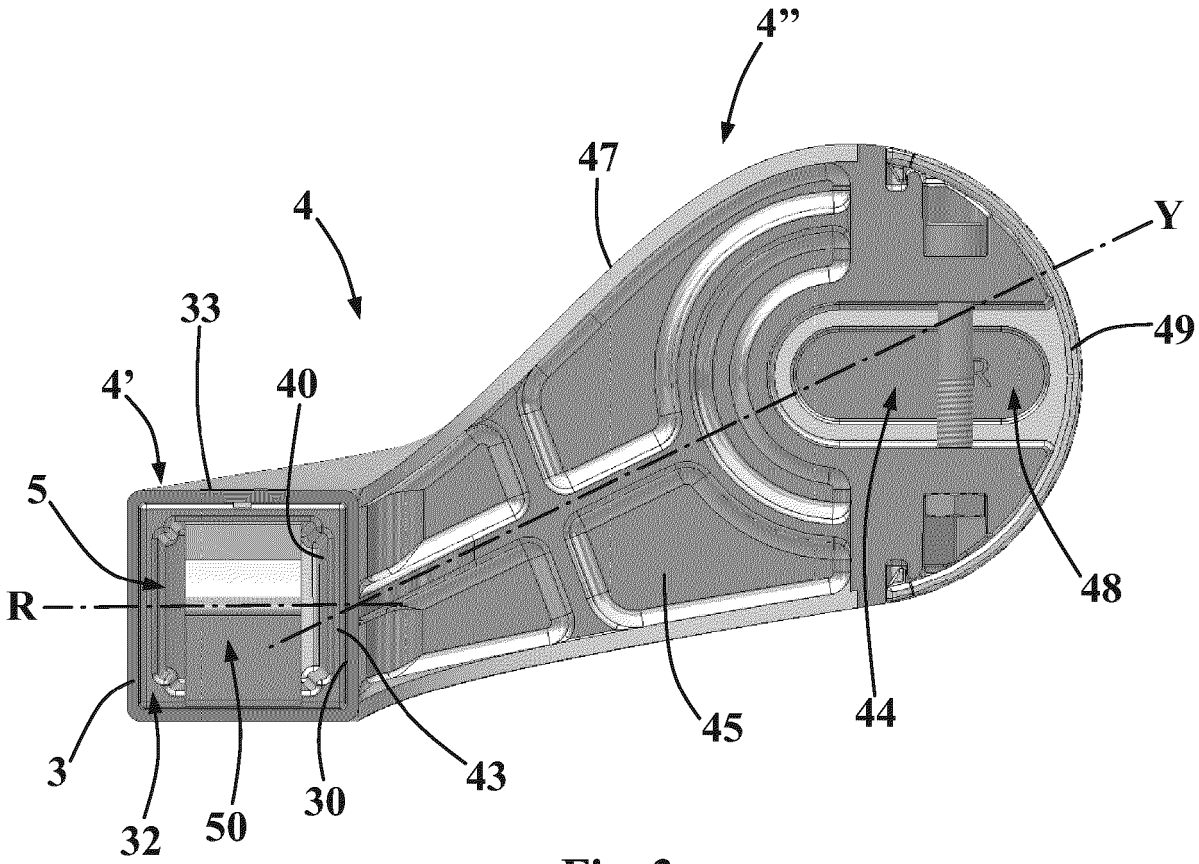
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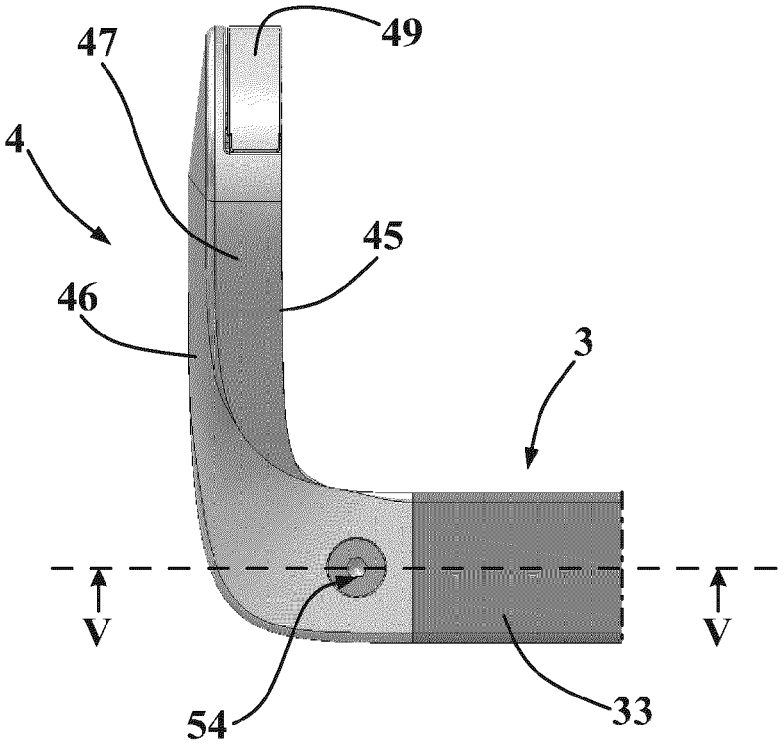
Fig. 3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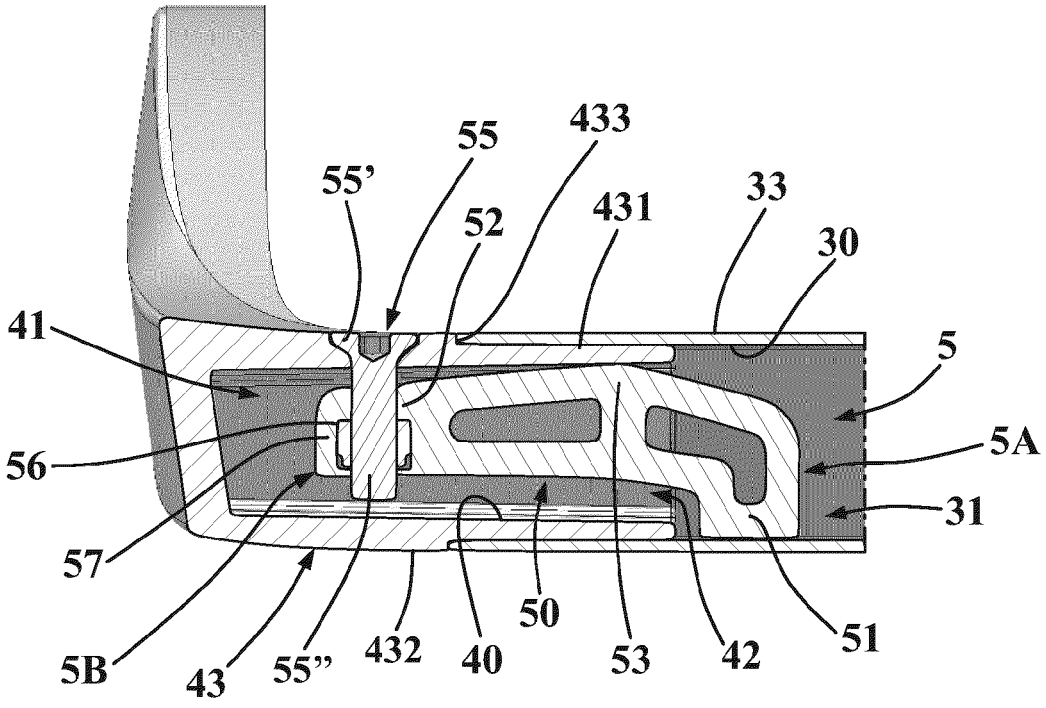
49
4
45
46
3
V
V
54
33

Fig. 4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433
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52
431
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56
5A
31
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5B
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55"
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40
50
53
42
51

Fig. 5

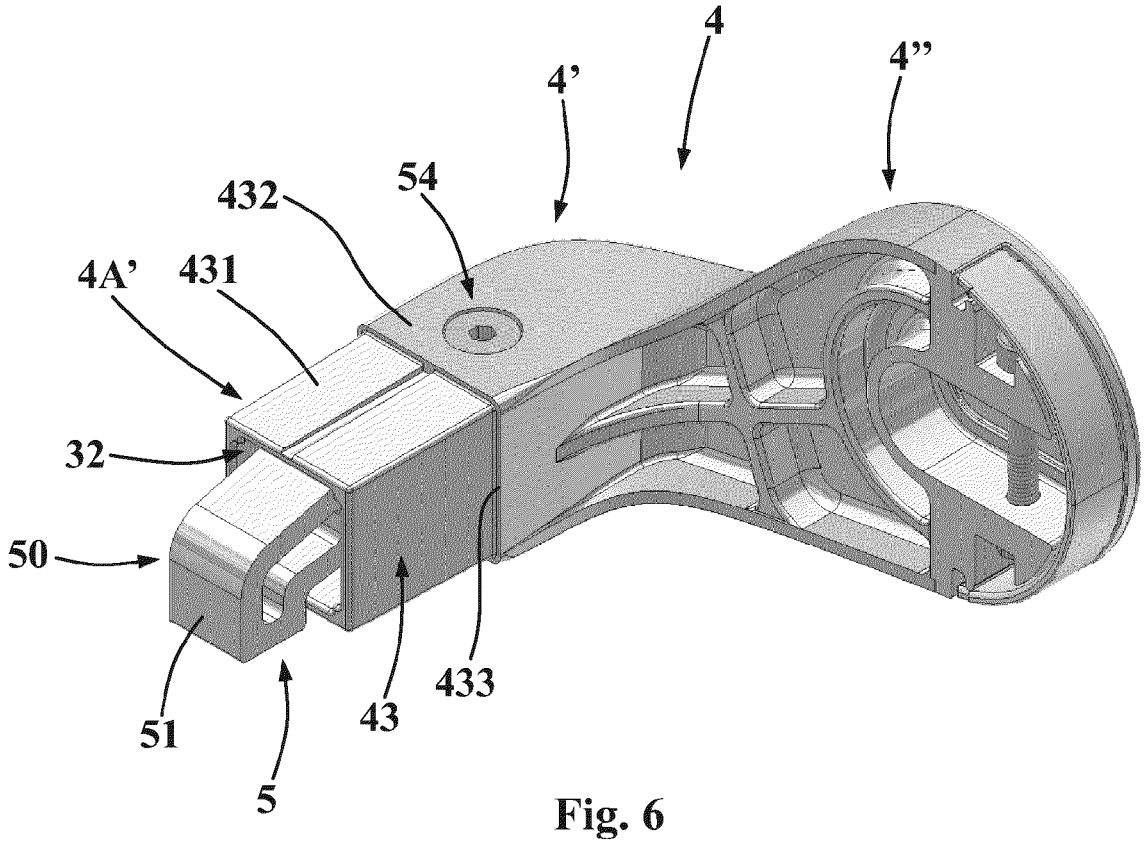

Fig. 6

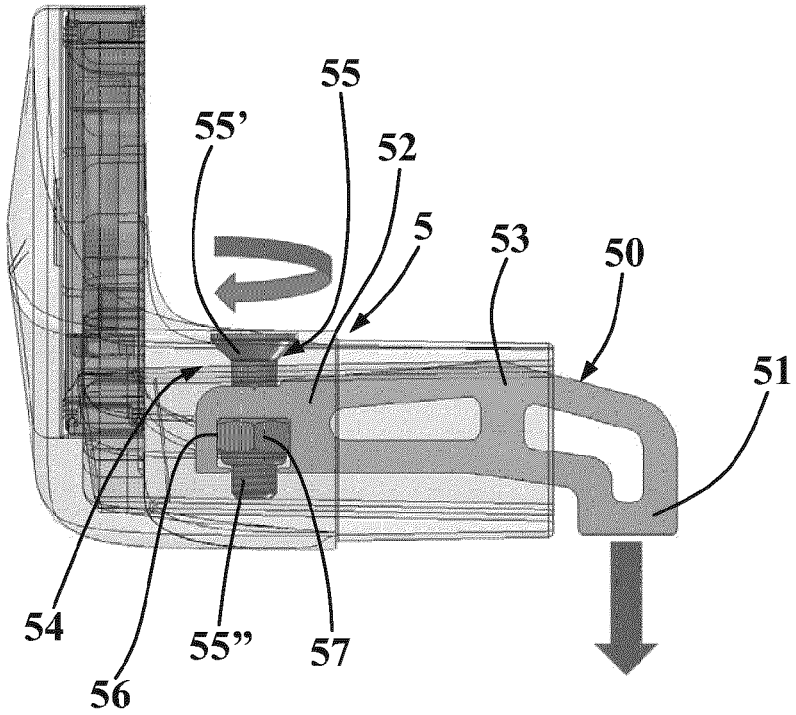

Fig. 7

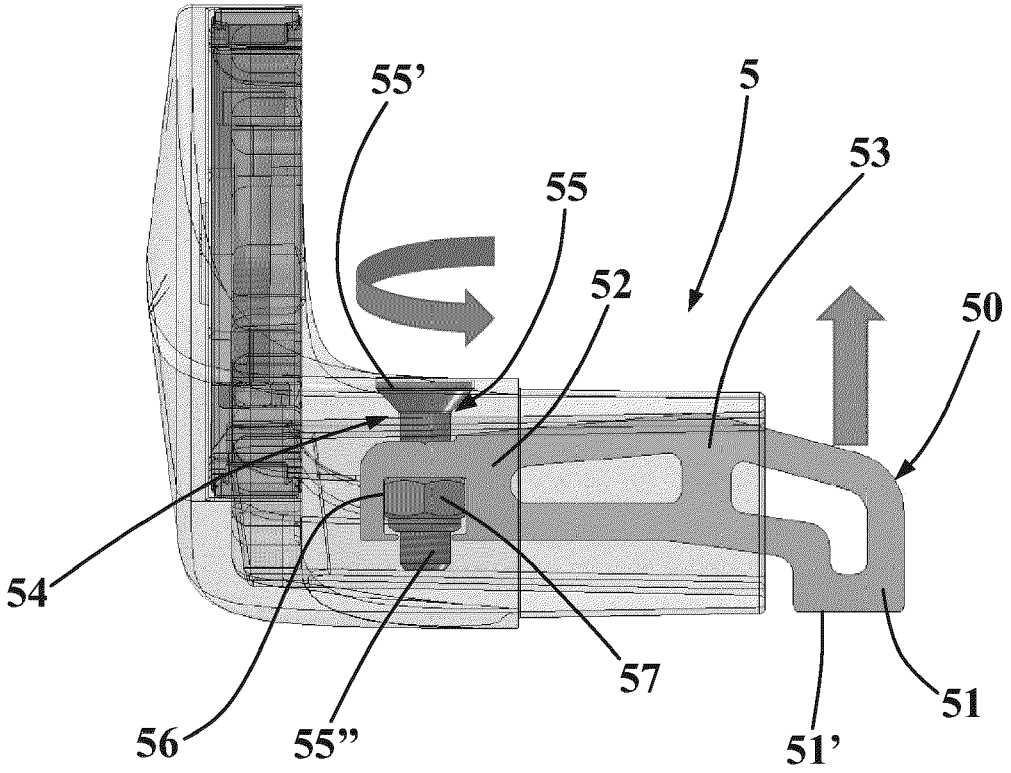

Fig. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 21 19 3771

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 28 17 759 A1 (RIRI SPA) 16 November 1978 (1978-11-16) * figures 15-17,19 * * pages 16,18,19 *	1-13	INV. E04F10/06
A	DE 67 52 140 U (FREGO OTTENBACH AG METALLBAU [CH]) 27 February 1969 (1969-02-27) * figures 1,3 * * page 2 - page 3 *	1	
A	DE 20 2010 003971 U1 (LLAZA SA [ES]) 19 August 2010 (2010-08-19) * figures 1-5 * * paragraph [0016] - paragraph [0019] *	1	
			TECHNICAL FIELDS SEARCHED (IPC) E04F

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 January 2022	Tänzler, Ansgar

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19-01-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 2817759 A1	16-11-1978	NONE	
DE 6752140 U	27-02-1969	NONE	
DE 202010003971 U1	19-08-2010	NONE	

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

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Patent documents cited in the description

- DE 2817759 **[0009]**
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