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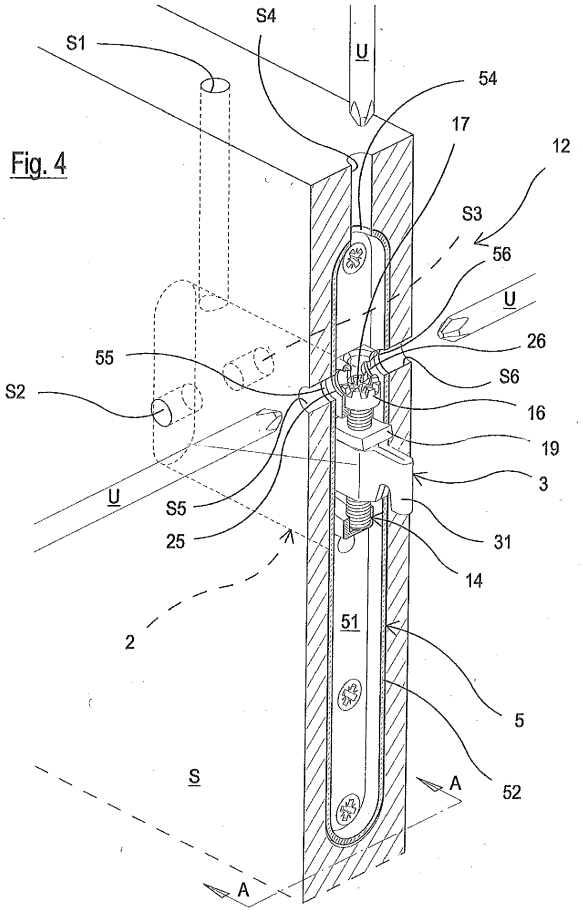
(54) IMPROVEMENTS TO A HIDDEN DEVICE FOR THE WALL ASSEMBLY OF A PIECE OF FURNITURE AND STRUCTURAL COMPONENT OF A PIECE OF FURNITURE COMPRISING SAID DEVICE

(57) A hidden device (1) for the wall assembly of a structural component wherein shaped engagement means (15,16) for the assembly tool extend at least on two opposite sides of a respective control element (13,14) of a specific regulation mechanism in height or depth, so as to be activated in correspondence with opposite sides of the body (2); a further object of the invention relates to a structural component of a piece of furniture which comprises said device.

Fig. 4



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Description

[0001] The present invention relates to a hidden device, so-called "shoulder-centre", for the wall assembly of a structural component of a piece of furniture.

[0002] "Shoulder-centre" devices are destined for being housed in the thickness of a shoulder of a piece of furniture, which is equipped with a suitable housing for this purpose.

[0003] These devices are also commonly called hidden hanging brackets in the field.

[0004] As a non-limiting example, the invention is described hereunder with reference to the wall assembly of a wall-cupboard, but it can also be equally used for the assembly of uprights (shoulders) forming part of a bookcase or other piece of furniture.

[0005] These devices also have the function of allowing regulations in height and depth of the piece of furniture assembled to the wall, with respect to the wall itself and to adjacent furniture.

[0006] Hanging brackets of this type are described, for example, in patent applications PCT/EP20115079 and PCT/EP20115081.

[0007] The assembly of the wall cupboard is effected by means of an arm which extends from the body of the device and is hooked to a support, for example a bar, dowel, plate or similar product, fixed to the wall.

[0008] The above regulations in height and depth are effected by acting on said arm through various types of mechanisms, which are controlled (from outside the device) by means of a maneuvering tool (for example a screwdriver).

[0009] Hanging brackets of the hidden type described above have various actuation and regulation difficulties, specifically deriving from the installation position in the housing of the shoulder.

[0010] It is evident, in fact, that according to the accessibility of the housing from the outside, especially with the use of a tool, various actuation mechanisms must obviously be envisaged or even various configurations of the device, depending on its application on the right or left shoulder of the cupboard, or should the cupboard be close to the wall (which would hinder the maneuvering of the tool).

[0011] The general objective of the present invention is therefore to provide a shoulder-centre hanging bracket that can be activated in a versatile and simple way, regardless of the position of the shoulder of the wall cupboard housing it.

[0012] Said objective is achieved by a device, a so-called shoulder-centre hanging bracket, having the characteristics specified in claim 1 and enclosed subclaims.

[0013] A first object of the invention relates to said device and a second object of the invention relates to a structural component of a piece of furniture comprising said device.

[0014] The structural and functional characteristics of the invention, and its advantages with respect to the known art, will appear more evident from the following description, referring to the enclosed drawings which show a possible practical embodiment of the invention itself.

[0015] In the drawings:

- figures 1, 2 and 3 are three sectional views respectively illustrating from the front, side and rear, an assembly device according to the invention in the corresponding housing of the piece of furniture;
- figures 4 and 5 are perspective views of the device along the section planes AA and BB of figure 2;
- figure 6 is an enlarged detail of a detail of the device of the previous figures.

[0016] Figures 1-5 of the drawings illustrate a possible embodiment of the invention in which the assembly device is indicated as a whole with the reference number 1.

[0017] The hidden device 1 of the invention comprises a body 2 and a movable hooking arm 3 to a wall support (not shown).

[0018] The wall support can be a plate, a bar or similar product, depending on the requirements; various types of support are known in the state of the art, suitable for different assembly requirements, and consequently no further reference will be made thereto.

[0019] The arm 3 is provided for this purpose, with a free hook-shaped head 31, which protrudes from a first side of said body 2 and, when in use, is engaged in the wall support.

[0020] In order to allow the regulation in height and depth of the piece of furniture, the arm 3 is coupled with said body 2 by means of regulation mechanisms which allow its displacement (or at least the displacement of its head 31).

[0021] In the example illustrated, there is a first regulation mechanism in depth 11 and a second regulation mechanism in height 12.

[0022] The first mechanism 11, for regulating the depth, is at least suitable for causing the movement of the movable arm 3 in a first direction, substantially straight, for moving the hook-shaped head 31 towards/away from the body 2: said mechanism, when activated, allows the device 1 (and therefore the wall cupboard connected to it) to be moved towards/away from the wall.

[0023] The second mechanism 12, for regulating the height, is at least suitable for causing the movement of the movable arm 3 in a second direction, substantially angular, for moving the hook-shaped head 31 over an arc of circumference: said mechanism, when activated, allows the device 1 (and therefore the wall cupboard connected to it) moreover, to be moved upwards or downwards (vertically) from the wall.

[0024] In general, there are numerous embodiments of said mechanisms 11, 12, operating on the principle discussed above; the enclosed figures show one of these embodiments which should be considered as being ex-

emplificative but, in fact, non-limiting.

[0025] Further reference will be made to the mechanisms 11, 12 hereunder, for the moment it is sufficient to note that, in general, they are each provided with respective screw control elements 13,14 that can be activated by a tool U for respectively causing the movement of the arm 3 in the first and/or second direction; for this purpose, the control elements 13,14 comprise shaped engagement means 15,16 for said tool U.

[0026] In the example provided, the tool U is a Phillips head screwdriver but other forms can be equivalently envisaged, for example flathead screwdrivers, hexagonal-head screwdrivers, torx screwdrivers or the like.

[0027] Said shaped engagement means 15,16 typically have forms suitable for being engaged with the type of tool U envisaged; in any case, the principle of cooperation between the two, based on mechanical interference, is known *per sé* and a skilled person in the field can therefore define the most appropriate forms without exiting from the scope of the present invention.

[0028] According to the latter and in order to overcome the drawbacks discussed above, said shaped engagement means, 15 in the case of the control element 13, and 16 in the case of the control element 14, can be at least radially engaged with respect to the axis of the screw, so that they can be activated from opposite sides of the body 2, in particular in correspondence with opposite sides of the body 2 different from the side from which said hook-shaped head 31 protrudes.

[0029] The shaped engagement means 15, 16 each preferably comprise a toothed crown.

[0030] In this way, it is possible to activate each control element 13,14 from one side or the other, and independently, so as to regulate the hook-shaped head 31 in depth and/or height and, ultimately, the position of the cupboard on the wall on which it is suspended.

[0031] As can be noted, in fact, from the enclosed figures, the tool U can be introduced indifferently from the right or left and can activate the respective control element 13 and/or 14.

[0032] In the embodiment example illustrated, the control elements 13,14 are screw elements provided with at least one driving head; the head is enlarged and connected to the threaded body.

[0033] The shaped engagement means 15,16 are, in particular, envisaged on the above-mentioned driving head of the control elements 13,14.

[0034] The driving head of at least one control element is advantageously and optionally also provided with an imprint, for engagement with the tool.

[0035] In the embodiment example illustrated, one of the control elements, 14, is provided with said imprint, whereas the other does not have the same.

[0036] In other embodiments, the imprint is envisaged on both of the control elements 13 and 14, even if, as will appear evident hereunder, it may remain unused in the element 13.

[0037] This is linked to the fact that the two screws 14 and 13 are arranged, in this embodiment, with longitudinal development axes substantially perpendicular to each other: the screw 14 can therefore be radially engaged thanks to the toothed crown and it can be axially engaged thanks to the imprint 17; the other screw 13 can be engaged radially thanks to the toothed crown itself, as shown in figure 6.

[0038] As can be noted, the three radial access and engagement directions of the screw 13 and the two radial directions and axial direction of the screw 14 are arranged parallel to each other in pairs, so as to allow - ultimately - the regulations of the device with access from three different sides of the same.

[0039] As far as the imprint 17 is concerned, this forms a further engagement means for the tool U; analogously to what is specified above, the form of the imprint varies in relation to the type of use required and the tool to be adopted.

[0040] In the example provided, the control elements are therefore activated also in correspondence with a third side of said body 2 which is different from the two opposite sides.

[0041] The toothed crown is, advantageously and optionally, substantially arranged around the imprint 17; in other embodiments, the toothed crown itself at least partly defines the imprint 17.

[0042] This enables an extremely advantageous functionality of the device 1: the user can regulate the arm 3 in height or depth, with access from three different sides of the device, specifically from the right, from the left or from above.

[0043] The consequent advantages are immediately evident in the light of what has been described so far: only one type of device can in fact be envisaged, which, thanks to the expedients indicated herein, can be installed on a shoulder of the wall cupboard, regardless of the fact that the shoulder is on the right or left and also regardless of any possible obstacles that may hinder the maneuvering of the tool (for example closely spaced walls); the user can in fact maneuver the tool U in different access positions to the control elements 13,14 (e.g. from above, from the right or from the left).

[0044] The teeth of the toothed crown radiate from the head of the respective screw and are teeth having a substantially triangular (or trapezoidal section), with the vertex of the triangle (or smaller base of the trapezium) facing the rotation axis of the same element 13,14.

[0045] This allows the teeth of the toothed crown to be used for engaging the tool U in correspondence with any circumferential position of the crown, on a plane perpendicular to the rotation plane of the element 13,14, and also, in some embodiments, to use the teeth frontally, for engaging the tool in correspondence with the rotation axis of the element 13. The rotation axis of the element 13,14 is that which is defined when the element 13,14 is rotated on its threading during an operative regulation phase in height or depth, depending on the case.

[0046] In the embodiment illustrated, the control ele-

ments 13,14 are at least partially housed in the body 2.

[0047] In order to guarantee a sufficient robustness and at the same time easy access to the control elements 13,14, the body 2 comprises windows respectively 21,22,23 for the part of the body 2 close to the control means 13 and 24,25,26 for the part of the body 2 close to the control means 14.

[0048] Said windows, in the example comprising holes of the body 2, form a passage for the tool, which therefore reaches the shaped engagement means 15,16 of the respective control element 13,14.

[0049] In the embodiment shown, at least three windows 21,22,23 and 24,25,26, are envisaged for each control element 13,14, but as a rule there may also be others.

[0050] At least two 22,23 and 25,26 of the three windows are aligned with each other and the remaining window 21 and 24 is arranged perpendicular with respect to a connection axis of the two aligned windows 22,23 and 25,26, so as to allow access of the tool U to each control element 13,14 in correspondence with three different sides of said body 2.

[0051] In particular, the two aligned windows 22,23 and 25,26 are envisaged on opposite sides of the body 2, specifically those which, when in use, are assembled laterally, so as to allow access, as already explained, from the right or left indifferently.

[0052] The remaining window 21 and 24 of the at least three windows is positioned on a different side of the body 2, in particular that which is assembled above when in use.

[0053] In the non-limiting example illustrated, the device 1 optionally also comprises a fixing upright 5 coupled with said body 2 in correspondence with the side of the latter from which the hook-shaped head 31 protrudes.

[0054] The upright 5 is provided with at least fixing means to the piece of furniture, for example housing holes for screws or dowels.

[0055] The fixing upright 5 preferably has a substantially open box-shaped structure, provided with a flat flange 51 surrounded by a raised edge 52.

[0056] Three passage openings 54,55,56 are envisaged on the raised edge 52, in correspondence with the three windows 24,25,26 of the control element 14 of the height regulation mechanism 12, for allowing access of the tool U to the control element 14 itself; said passage openings 54,55,56 are preferably aligned with the windows 24,25,26, to allow the tool U to reach the control element 14.

[0057] With respect to the non-limiting embodiment of the figures, it should also be noted that the body 2 is substantially flat and rectangular, comprising two intercoupled half-shells, and the arm 3 is contained in part of said half-shells.

[0058] The arm 3 is rotatable around the hinge 37 and can also be moved forwards and backwards.

[0059] More specifically, as can be clearly seen in figures 1 and 4, the hooking arm 3 is preferably fork-shaped in a single piece, with interspaced branches, open at the rear and flattened and shaped in the front, so as to form the head 31 protruding through an opening of the body 2.

[0060] The branches of the arm, close to the open rear end, are perforated, so as to receive the hinge 37 on which they can rotate.

[0061] As can be clearly seen in the drawings, the hooking arm 3 in its rotation and translation movements is guided by the inner surfaces of the body 2.

[0062] The mechanism 12, which drives the rotation of the arm 3 around the hinge 37, comprises the threaded element 14, described above, which is screwed in the hinge 37.

[0063] For this purpose, the head of the element 14 is rotatingly housed in a corresponding seat of the half-shells of the body 2.

[0064] The element 13, on the other hand, is housed in a threaded seat of the body 2 and acts on the curved spacer 19 which in turn acts on the arm 3.

[0065] The structural component of the invention belongs to a cupboard or similar piece of furniture, and is destined for being hung onto a vertical wall; the component comprises the shoulder S of a piece of furniture provided with at least an internal housing and also comprises a hidden device 1 of the type described above which is inserted in the housing and coupled with the shoulder S.

[0066] The shoulder S advantageously has, in communication with the internal housing for the device 1, at least four, preferably six holes S1,S2,S3 and S4,S5,S6 aligned with the windows 21,22,23 and 24,25,26, to allow the passage of the tool U.

[0067] The objectives of the invention have therefore been achieved.

[0068] Numerous variants of what has so far been described, are possible, all to be considered as being equivalent to the disclosures provided herein for exemplificative purposes.

Claims

1. A hidden device (1) for the wall assembly of a structural component (S) of a piece of furniture or the like, comprising:

   - a body (2) of the device (1)
   - a movable hooking arm (3) of said device having a free hook-shaped head 31, said movable arm (3) being coupled with said body (2) by means of at least a first regulation mechanism in depth (11) and a second regulation mechanism in height (12) so that said hook-shaped head protrudes from a first side of said body (2)

   said first regulation mechanism in depth (11) being at least suitable for causing the movement of the movable arm (3) in a first substantially straight direction for moving the hook-shaped head (31) to-

wards/away from the body (2)
said second regulation mechanism in height (12) being at least suitable for causing the movement of the movable arm (3) in a second substantially angular direction, for moving the hook-shaped head (31) over an arc of circumference,
each of said regulation mechanisms (11,12) being provided with respective screw-control elements (13,14) that can be activated by a tool (U) for respectively determining the movement of the arm (3) in the first and/or second direction,
said control elements (13,14) comprising shaped engagement means (15,16) for said tool
characterized in that
for each screw-control element (13,14), the shaped engagement means (15,16) can be at least radially engaged with respect to the axis of the screw, so that they can be activated from opposite sides of the body (2).

2. The device according to the previous claim, wherein the screw-control elements (13,14) are provided with at least one driving head, said shaped engagement means (15,16) being located on said driving head.

3. The device according to the previous claim, wherein the driving head is provided with a toothed crown substantially around said imprint and suitable for forming at least the shaped engagement means (15,16) for the tool, so that the toothed crown can be radially engaged, with respect to a longitudinal development axis of the screw, by said tool.

4. The device according to the previous claim, wherein at least one of the screw elements comprises an engagement imprint (17) for the tool, said imprint being located on the head so as to be axially engaged by the tool.

5. The device according to claim 3 or 4, wherein the toothed crown also forms the engagement imprint for the tool (17).

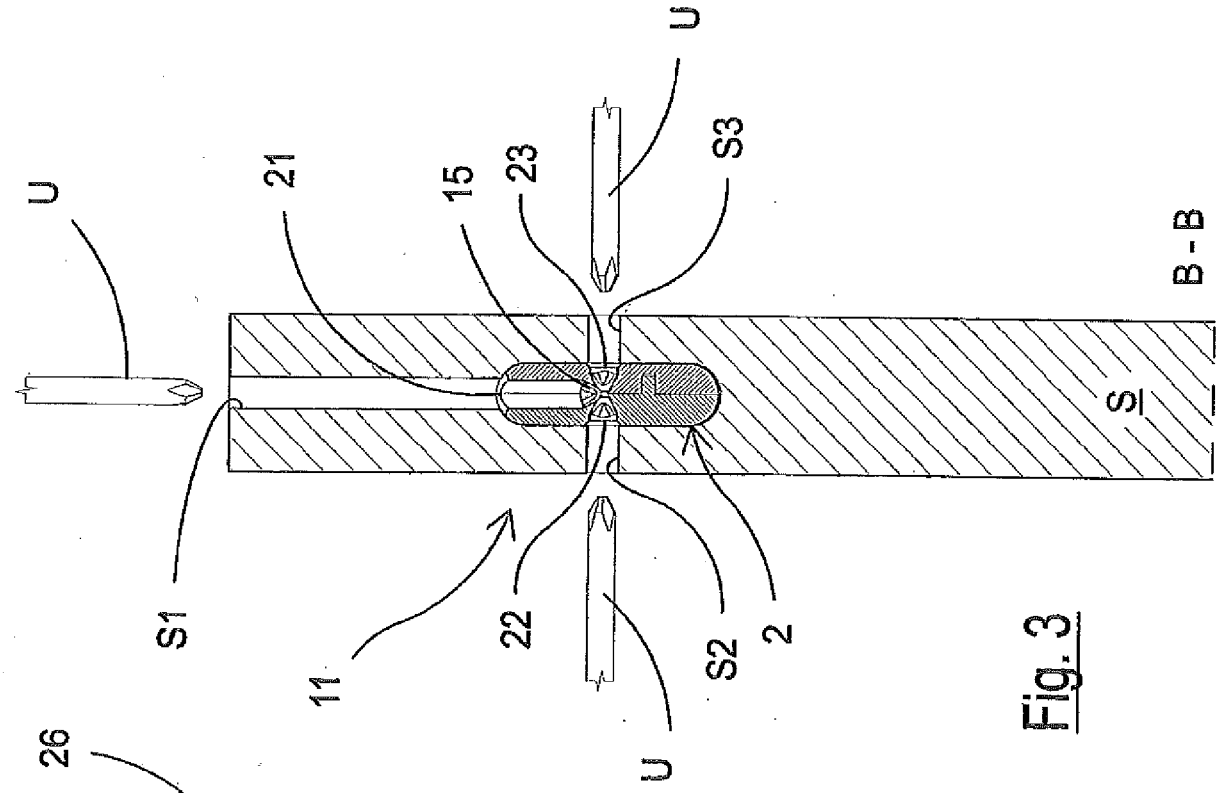
6. The device according to claim 2, 3 or 4, wherein the screw-control elements (13,14) are arranged with longitudinal development axes substantially perpendicular to each other, as one control element (14) is provided with a circular toothed crown that can be radially engaged by a tool and an engagement imprint (17) for the tool separate from said toothed crown and the other control element (13) is provided with at least a circular toothed crown that can be radially engaged by a tool.

7. The device according to one or more of the previous claims, wherein the control elements (13,14) are at least partly housed in the body (2) and wherein the body (2) comprises passage windows (21,22,23;24,25,26) for allowing a tool to have access to said shaped engagement means (15,16) of the control elements (13,14).

8. The device according to the previous claim, wherein at least three windows (21,22,23;24,25,26) are envisaged for each control element (13,14), of which at least two (22,23;25,26) are aligned with each other and the remaining window (21;24) arranged perpendicular with respect to a connection axis of the other two windows (22,23;25,26), so as to allow access of the tool (U) to each control element (13,14) in correspondence with three different sides of said body (2).

9. The device according to the previous claim, also comprising a fixing upright (5) coupled with said body (2) in correspondence with the side of the body (2) from which the hook-shaped head (31) protrudes, and provided with fixing means with the piece of furniture, wherein the fixing upright comprises a substantially open box-shaped structure, provided with a flat flange (51) surrounded by a raised edge (52), and wherein three passage openings (54,55,56) are envisaged on said raised edge (52), in correspondence with the three windows (21,22,23) of the control element (14) of the height regulation mechanism (12), for allowing access of the tool (U) to the control element (13) itself.

10. A structural component (S) of a piece of furniture or the like, destined for being hung onto a vertical wall, comprising a shoulder of the piece of furniture provided with at least an internal housing, **characterized in that** it also comprises a hidden device (1) according to one or more of the previous claims inserted in said housing and coupled with said shoulder.


U
21
15
23
S3
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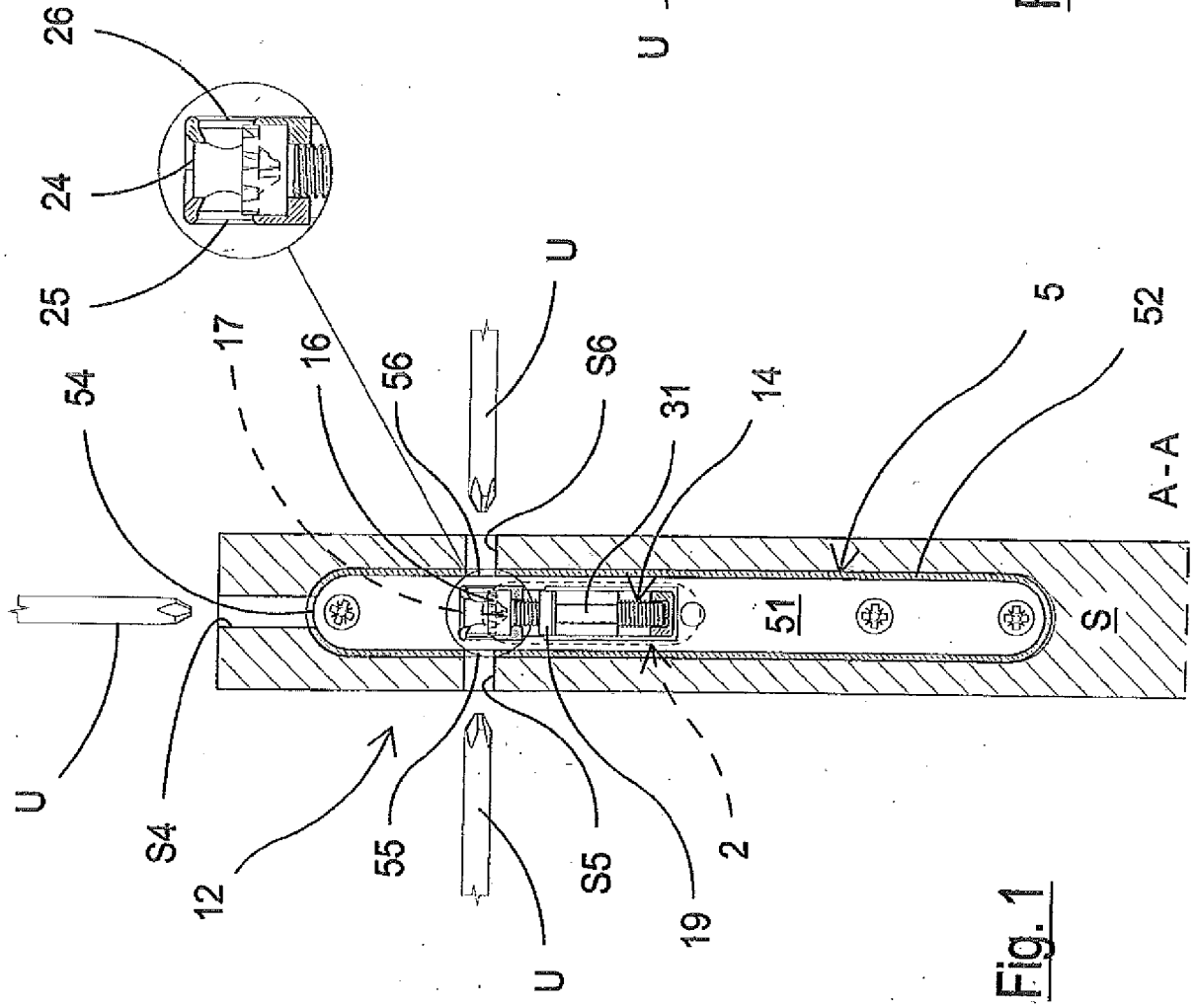
S
S1
22
11
S2
2
U
U

Fig. 3


26
24
25
17
16
56
U
S6
31
14
5
52
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51
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S4
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55
S5
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Fig. 1

Fig. 2

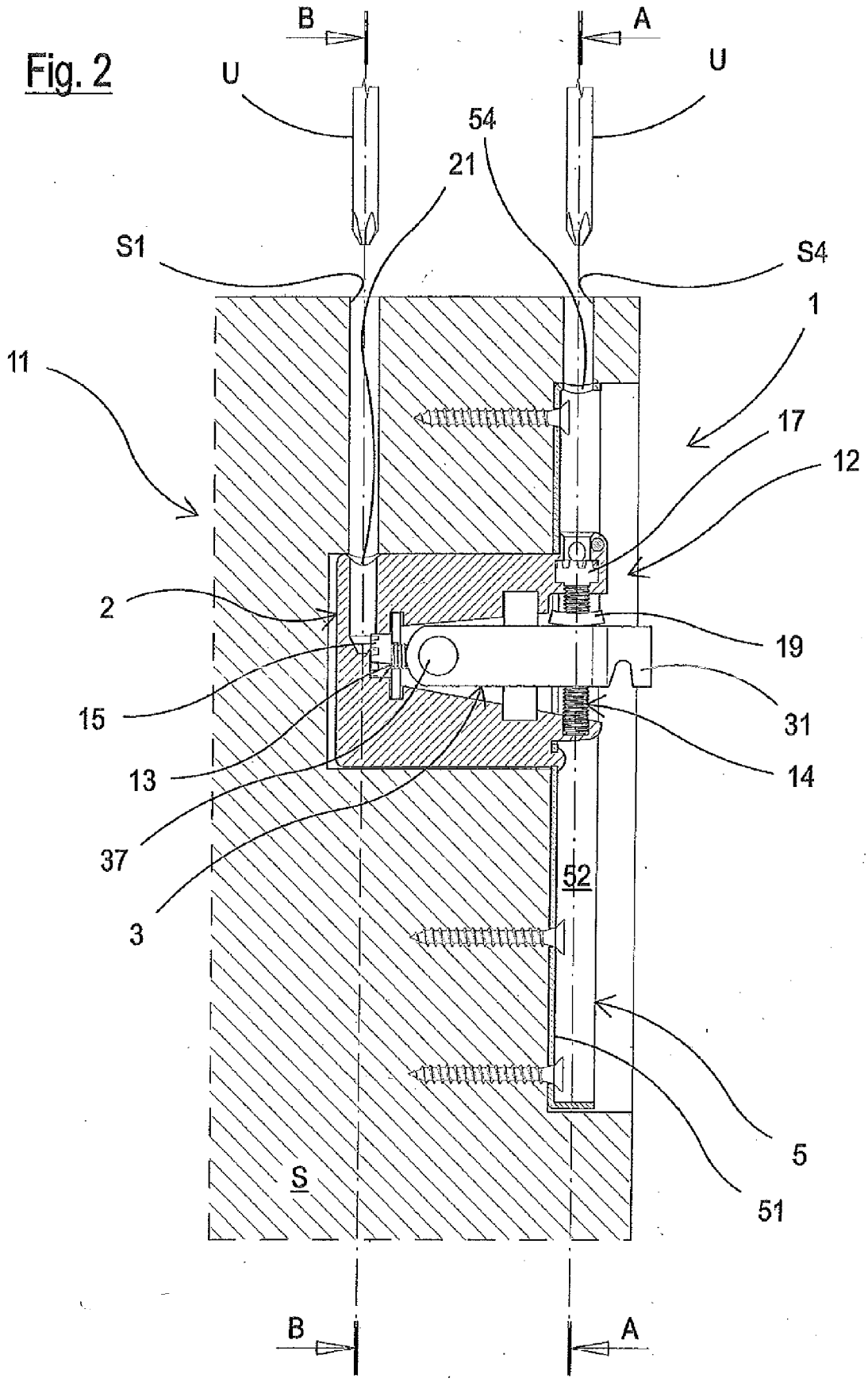
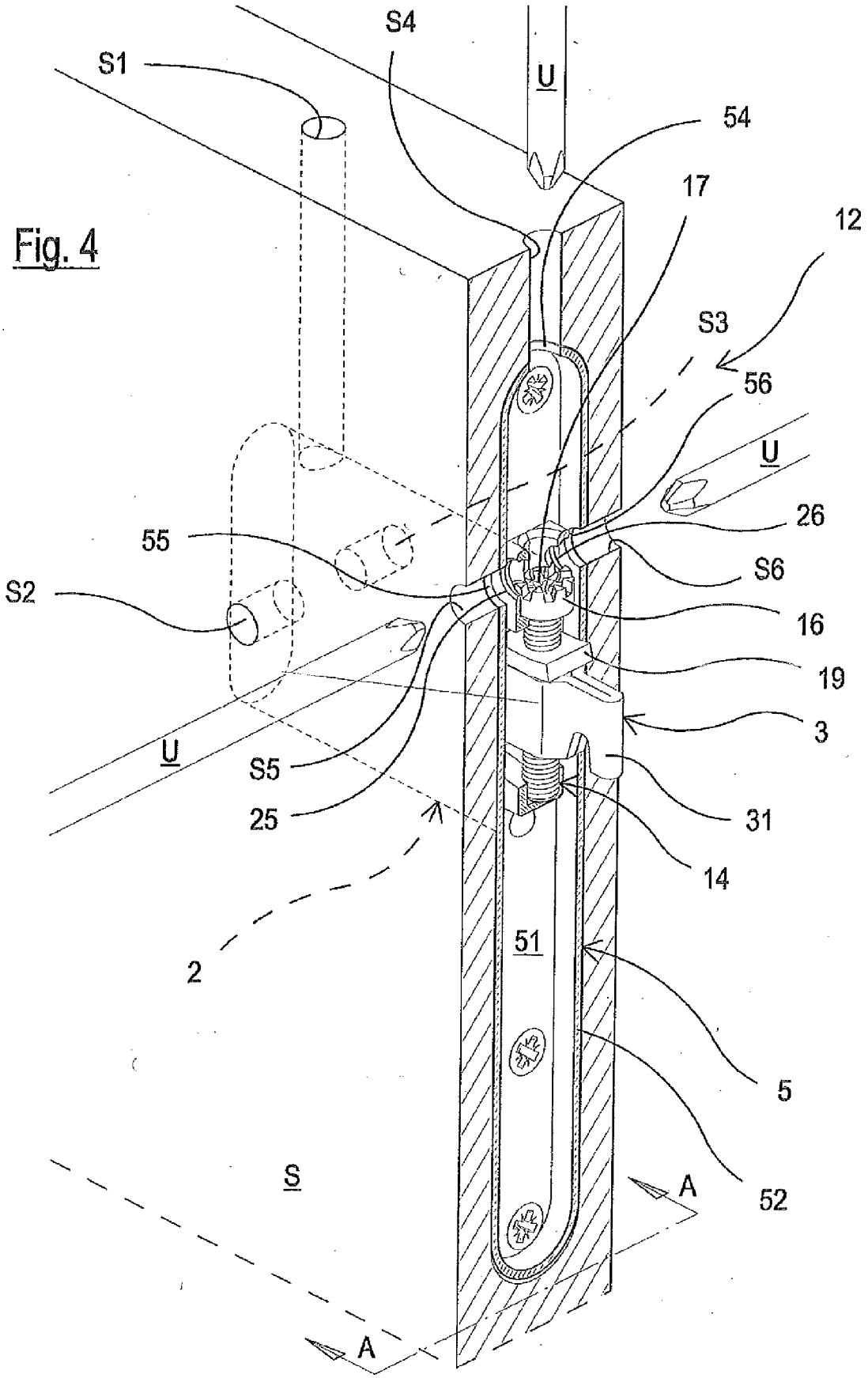


Fig. 4



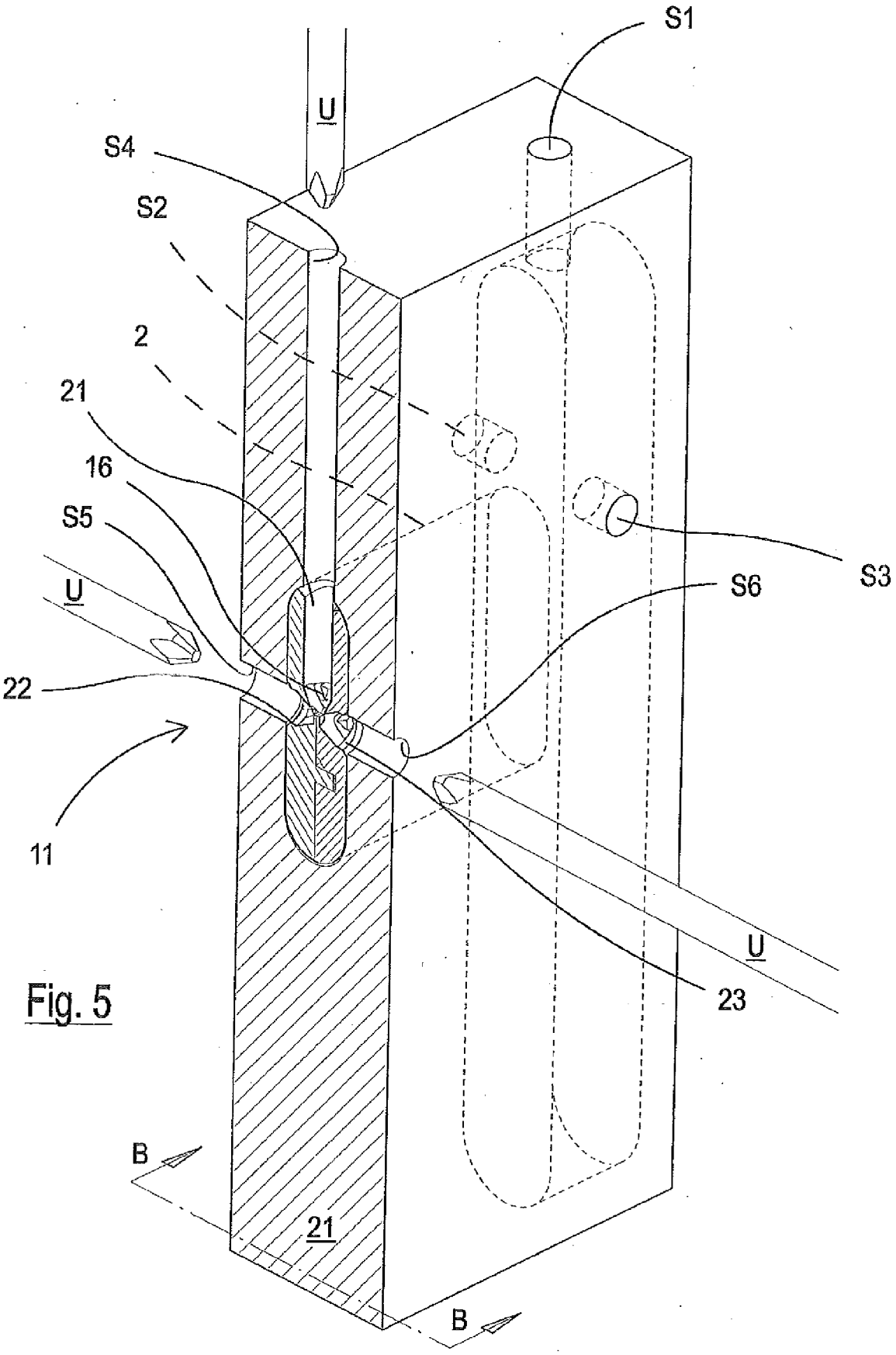


Fig. 5

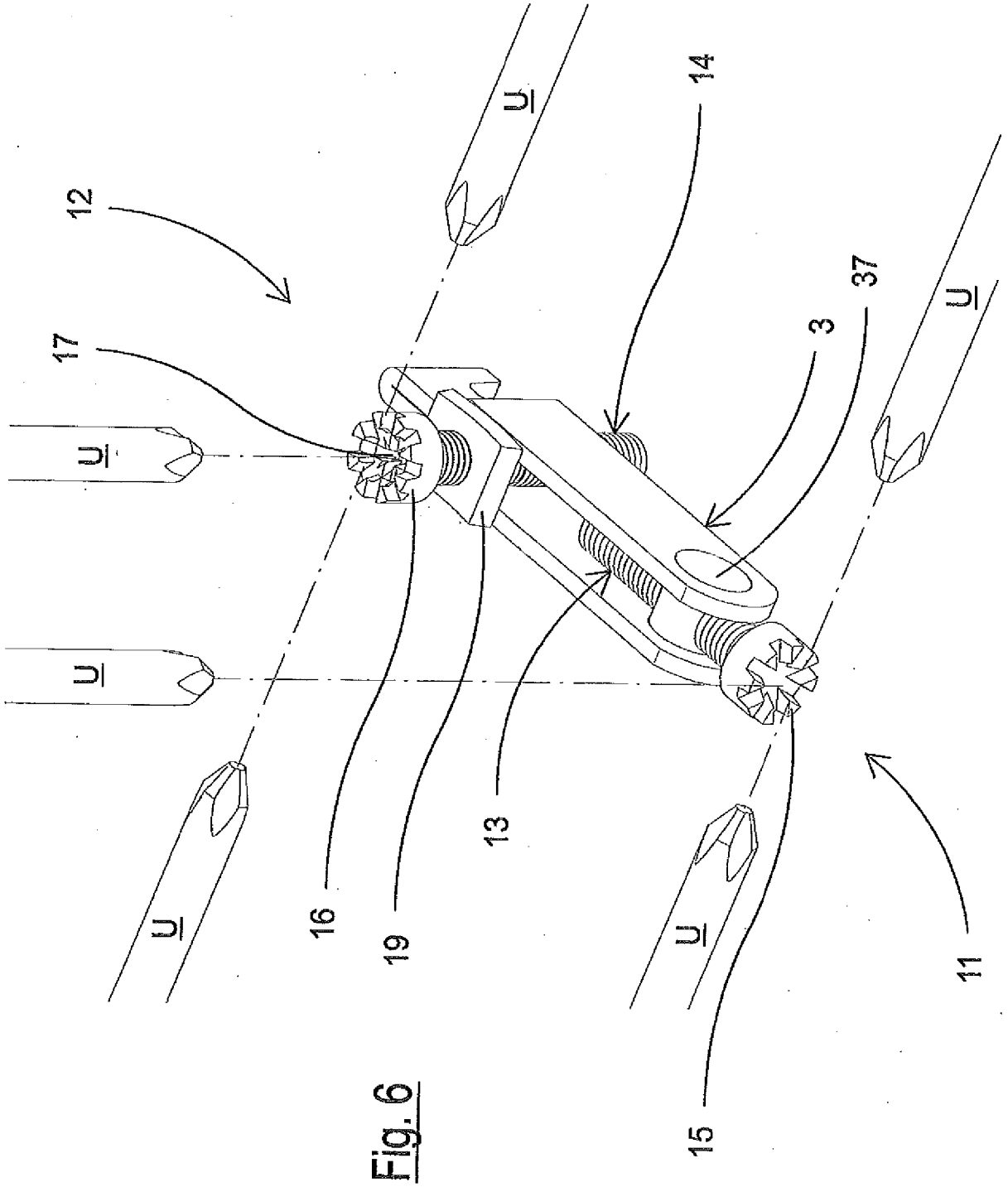


Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 16 15 7976

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	WO 2012/048849 A1 (LEONARDO SRL [IT]; CATTANEO CARLO [IT]) 19 April 2012 (2012-04-19) * page 5, line 12 - page 11, line 16; figures 1-15 *	1-3,7,10 6	INV. A47B95/00
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	29 June 2016	Jacquemin, Martin

CATEGORY OF CITED DOCUMENTS

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29-06-2016

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