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(54) **PULL-OUT FOR HANGING TROUSERS AND/OR ITEMS**

(57) Pull-out (1) item hanger for furniture (10) having housing compartments (100) defined by at least two opposite side walls (110, 120) spaced along a width direction (X-X) and extending between a front portion (111, 121) and a rear portion (112, 122) spaced along a depth direction (Y-Y) perpendicular to the width direction (X-X) and extending between a bottom wall (140) connecting the rear portions (112, 122) and an access opening (130) defined between the front portions (111, 121) of the side walls (110, 120), said pull-out comprising: rotation means (20) constrainable to the furniture (10) inside the housing compartment (100); a support element (30) extending between a first end (31) rotatably constrained to the rotation means (20) defining a rotation point (40) near the access opening (130) of the housing compartment (100) and an opposite second end (32), said support element

(30) being configured to rotate around the rotation point (40) between a resting configuration in which it is arranged entirely inside the housing compartment (100) and an extracted configuration in which it is arranged outside the housing compartment (100), one or more secondary support elements (50) constrained to the support element (30) and extending along an extension direction (A-A) between a first end (51) facing the inside of the housing compartment (100) and an opposite second end (52) facing the outside of the housing compartment (100) when in a resting configuration, each secondary support element (50) being configured to rigidly rotate with the support element (30) between the resting configuration in which it is arranged inside the housing compartment (100) and the extracted configuration in which it is arranged outside the housing compartment (100).

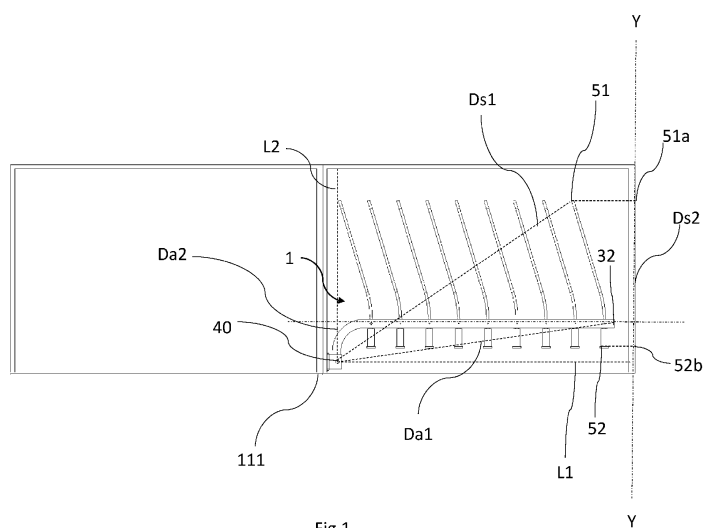


Fig.1

Description

Technical field

[0001] The present invention relates to a pull-out for hanging trousers and/or items. In particular, the pull-out allows to move the trousers and items hanging inside and outside a housing compartment of a piece of furniture. The object of the present invention is used in the furniture and furnishings sector, in particular for wardrobes and walk-in closets.

Background art

[0002] Various types of pull-out devices for trousers and clothing items such as ties or belts are known from the state of the art. A first type of pull-out present in the state of the art includes sliding guides perpendicular to the bottom of the wardrobe. Thereby, the rods on which trousers and items are hung or on which they must be hung are pulled out of the housing compartment by the user by means of sliding along the sliding guides. Another type of known pull-out includes straight rods overlapping each other in the height direction of the housing compartment and rotatable with respect to a fixed pin. One or more pairs of trousers can be hung on such straight rods. Finally, the known types of pull-outs also include pull-outs provided with a main rod and a plurality of rods for hanging trousers rotatably constrained to the main rod. Thereby, by simultaneously rotating the rods for hanging trousers towards the rotation pin of the main rod, they allow the rotation of the main rod itself inside and outside the housing compartment. It should be noted that to make such a pull-out, in addition to being rotatably constrained to the main rod, the rods for hanging the trousers extend perpendicular to the main rod and face the side wall of the compartment facing the wall to which the main rod is constrained, when the pull-out is inside the compartment, and face the outside of the housing compartment, downstream of the mutual rotation when the pull-out is rotated and the main rod is near the opening of the housing compartment.

Problems of the Prior Art

[0003] The known pull-outs have several disadvantages related not only to the use of the space available inside the compartment, but also to the complexity of construction and use thereof. Moreover, it should also be noted that such complexity reduces the durability of the coupling between the components of which the pull-outs are made.

[0004] Specifically, the known pull-outs, in addition to not allowing easy access inside the housing compartment for cleaning operations, do not fully exploit the available space of the compartment for hanging trousers and clothing items. In fact, the sliding pull-outs are spaced apart from each other, generating unused space and also

the sliding guides are subject to jamming and sliding blocks which could cause breakage not only of the pull-out but also of the doors of the furniture itself during the closure thereof. As for the straight rod pull-outs, in addition to having to exploit the height of the housing compartment, they require a high number of rods arranged inside the housing compartment, making it difficult for the user to extract a specific garment or item. Furthermore, the way in which the straight rods overlap each other along the height direction also overlap the trousers, making them subject to unwanted folds which could damage the trousers themselves over time. It should be noted that the same observations are also applicable to items which due to their shape could tangle, blocking the rotation of the pull-outs themselves.

[0005] A further disadvantage which can be detected especially in the last type of pull-out is linked to the need for a mutual rotation between the rods in order to hang the trousers which, in addition to limiting the number of possible trousers to hang, requires a complicated mechanism of action whose jamming would cause inaccessibility to the trousers themselves. Furthermore, the very arrangement of the rods for the trousers and the need to rotate them in order to insert and extract the pull-out inside the compartment makes only one embodiment possible in which the rods protrude from only one side of the main rod. Also in this case the contact between the trousers during extraction or insertion inside/outside the compartment can cause unwanted folding of the hung clothing or tangling of the items.

[0006] Furthermore, it should be noted that the furniture and in particular the depth thereof is sized with respect to the average size of clothes which are larger than trousers. For these reasons, the known pull-outs generate even more unused space inside the wardrobe.

Object of the Invention

[0007] The object of the invention in question is to make a pull-out device capable of overcoming the drawbacks of the prior art mentioned above.

[0008] In particular, it is an object of the present invention to provide a simple pull-out capable of improving the use of the space of a housing compartment for hanging trousers and/or clothing items as well as facilitating the cleaning operations of the compartment itself.

[0009] The technical task mentioned and the objects stated are substantially achieved by a pull-out comprising the technical features set out in one or more of the appended claims.

BRIEF DESCRIPTION OF THE FIGURES

[0010] Further features and advantages of the present invention will become more apparent from the illustrative, and therefore non-limiting, description of a preferred, but non-exclusive, embodiment of a pull-out for hanging trousers and/or items, as illustrated in the appended draw-

ings, in which:

- figure 1 shows a top view of a pull-out mounted in a housing compartment according to an embodiment of the present invention in a first configuration;
- figure 2 shows a top view of the pull-out of figure 1 in a second configuration;
- figure 3 shows a top view of the pull-out in figure 1 in a third configuration;
- figure 4 shows a perspective view of a pull-out mounted in a housing compartment according to an embodiment of the present invention;
- figure 5 shows a perspective view of a detail of a portion of the pull-out of figure 3;
- figure 6 shows a front view of a detail of the pull-out in accordance with an embodiment of the present invention;
- figure 7 shows a perspective view of a detail of the pull-out in accordance with an embodiment of the present invention;
- figure 8 shows a top view of the detail of figure 7;
- figure 9 shows a top view of a detail of figure 1;
- figure 10 shows a top view of a detail of figure 1;
- figure 11 shows a perspective view of an embodiment of a pull-out mounted in a housing compartment according to an embodiment of the present invention;
- figure 12 shows a perspective view of a detail of an embodiment of the present invention.

DETAILED DESCRIPTION

[0011] Even if not explicitly highlighted, the individual features described with reference to the specific embodiments shall be understood as accessory and/or interchangeable with other features, described with reference to other embodiments.

[0012] The present invention relates to a pull-out for hanging clothes, preferably trousers and items, indicated as a whole with 1 in the figures. Such a pull-out 1 can be mounted inside a piece of furniture 10. For the purposes of the present invention, furniture 10 can be understood as a closet, a wardrobe or walk-in closets. It should be noted that the furniture 10 in which the pull-out 1 is mounted has a housing compartment 100 in which it is possible to hang the aforementioned clothes and therefore mount the pull-out 1.

[0013] Preferably, the housing compartment 100 is defined by two opposite side walls 110, 120 spaced along a width direction X-X. Each side wall 110, 120 extends between a front portion 111, 121 and a rear portion 112, 122 spaced along the depth direction Y-Y perpendicular to the width direction X-X. It should be noted that the side walls 110, 120 define an access opening 130 to the housing compartment 100 which can typically be closed by means of hinged or sliding doors or alternatively left free for example for walk-in closets. The housing compartment 100 can be further defined by a bottom wall 140

which respectively connects the side walls 110, 120 at the rear portion 112, 122. It should be noted that in accordance with known embodiments, the furniture 10 can be provided with a bottom wall 140 being embodied in a bottom of the housing compartment defined between the rear portions 112, 122. Such a bottom can comprise a bottom opening, for example. For the purposes of the present invention, bottom can be understood as both bottom wall and bottom opening.

[0014] The housing compartment 100 also includes a lower base and an upper base respectively spaced along a height direction Z-Z perpendicular to both the width direction X-X and the depth direction Y-Y. Specifically, the lower base is preferably parallel to the floor and is defined by the floor itself in the case of walk-in closets or by an element of the furniture 10 in the case of closets/wardrobes which are resting on the floor itself. As regards the upper base, it can be defined by the ceiling in the case of walk-in closets or by a further element of the furniture 10 in the case of closets/wardrobes. Furthermore, support planes parallel to the ground are insertable inside the housing compartment, for example shelves. Such support planes as well as the upper base have a front portion facing the outside of the compartment and preferably near the access opening 130 and an opposite rear portion facing the bottom 140.

[0015] Preferably, it should be noted that the housing compartment 100 has:

- a width between the side walls measured along the width direction X-X between 45cm and 200cm;
- a depth between the front and rear portions measured along the depth direction Y-Y between 30cm and 100cm;
- a height measured between the upper and lower base along the height direction Z-Z between 50cm and 350cm.

[0016] It should be noted that each front portion 111, 121 of the side walls 110, 120 of the furniture has an inner edge and an outer edge, represented in other words by the edge of the front portion. For the sake of simplicity, in the following description reference is made to the inner edge 111a and the outer edge 111b of the front portion 111 of the wall 110 without excluding the presence of an outer edge and an inner edge for the opposite wall. Preferably, inner edge 111a means the edge towards the opposite side wall and outer edge 111b means the edge opposite the respective inner edge 111a facing away from the housing compartment 100. Preferably, the edges are spaced for a distance between 1 and 5 cm in the case of a closet, and between 3 and 20 cm in the case of a walk-in closet.

[0017] The pull-out 1 comprises rotation means 20 constrainable to the furniture 10 inside the housing compartment 100 near the access opening 130 of the housing compartment 100 itself. In other words, the rotation means 20 are constrainable to a side part 110, 120 of

the piece of furniture or to the upper base or to a parallel support plane (for example a shelf arranged inside the housing compartment 100)

[0018] According to a preferred embodiment, the pull-out 1 comprises rotation means 20 constrainable to one of the side walls 110, 120 of the housing compartment, preferably near the respective front portion 111, 121 of the side wall 110, 120 on which it is constrained. More preferably, the rotation means 20 are positioned on one of the side walls 110, 120 and are configured, as will be described in detail below, to retain and allow the rotation of a support element 30 (figures 1 to 10).

[0019] In accordance with a preferred embodiment as specified below, the rotation means 20 define with the support element 30 a rotation point positioned near the access opening 130, preferably near the front portion 111 at a distance between 0 and 15cm, even more preferably between 0 and 10cm, so as to facilitate the rotation of the support element 30. Furthermore, it should be noted that the rotation means 20 projecting from the side wall to which they are positioned, make the rotation point project in a range between 0 and 15cm, even more preferably between 0 and 10cm. Preferably, the positioning of the rotation point 40 along the depth direction Y-Y, as a function of the rotation means 20, is measured from the inner edge 111a along the depth direction towards the inside of the housing compartment 100, while the distance for the projection is measured from the side wall on which the rotation means 20 are positioned.

[0020] In accordance with an alternative embodiment to the previous one, the rotation means 20 are constrainable to the upper base or to a support plane (figure 12). Also in this case, the rotation point 40 is positioned near the access opening 130 at a distance between 0 and 15cm, even more preferably between 0 and 10cm. However, in this case the rotation means 20 project from the upper base or the support plane along the height direction Z-Z, the rotation point 40 positioned in a range between 0 and 15cm, even more preferably between 0 and 10cm.

[0021] The pull-out 1 comprises a support element 30 extending between a first end 31 and an opposite second end 32. The first end 31 is rotatably constrained with rotation means 20 which are configured to allow the rotation of the support element 30. It should be noted that the support element 30 defines a rotation point 40 with the rotation means 20 around which the support element 30 can rotate. It should be noted that the rotation point 40 is positioned near the access opening 130 preferably near the front portion 111, 121 of the wall 110, 120 in the case where the support element 30 is constrained to the wall 110, 120 or near the front portion of the support plane (or the upper base) in the case where the support element 30 is constrained to the support plane (or the upper base). It should be noted that only one rotation point 40 is defined between the support element 30 and the rotation means 20.

[0022] In particular, the support element 30 is configured to rotate with respect to the rotation point 40 around

a rotation axis R-R preferably parallel to the height direction Z-Z. For the sake of simplicity, the rotation angle of the pull-out 1 is defined between an axis parallel to the depth direction Y-Y passing through the rotation point 40 and a portion of the pull-out near the rotation means 20 as well as the rotation point 40.

[0023] In detail, the support element 30 is configured to rotate around the rotation point 40 between a resting configuration and an extracted configuration. In the resting configuration, the support element 30 is arranged entirely inside the housing compartment 100, while in the extracted configuration it is at least partially arranged outside the housing compartment 100, so as to be able to see and take clothes hanging from the pull-out 1.

[0024] For the purposes of the present invention, it should be noted that the pull-out 1 rotates on a plane parallel to the floor/ground.

[0025] It should be noted that the support element 30 can have different shapes, including straight and curvilinear, so as to be able to make the best use of the housing compartment 100.

[0026] According to a preferred embodiment, the support element 30 is at least partially hollow, preferably totally hollow, having an inner cavity delimited by a side surface 30a. Specifically, although the support element 30 can have different shapes, the side surface 30a has at least one portion facing outside the housing compartment 100 and an opposite portion facing inside the housing compartment 100 as well as a portion facing the lower base and a portion facing the upper base (at least when inside the housing compartment).

[0027] Preferably, the support element 30 is a support rod.

[0028] According to a preferred embodiment, the rotation means 20 comprise a first rotation element 21 fixable on the side wall 110, 120, second rotation elements 22 obtained on the support element 20 and a third rotation element 23 configured to rotatably constrain the first rotation element 21 and the second rotation element 22 (figure 5).

[0029] Specifically, the first rotation element 21 is configured to receive the first end 31 of the support element 30 and retain it. It should be noted that the first rotation element 21 is also configured to support the weight of the support element 20 and any hanging clothes. Preferably, the first rotation element 21 is fixed to the side wall by means of screws and/or dowels.

[0030] With regard to the second rotation elements 22, they comprise a pair of through holes 22a which can be aligned with through holes 21a obtained on the first rotation element 21. It should be noted that such through holes 22a, 21a are preferably aligned along the rotation direction R-R.

[0031] Finally, the third rotation element 23 is configured to rotatably couple the respective through holes 22a, 21a. Preferably, the third rotation element 23 comprises a pin.

[0032] In accordance with an alternative embodiment,

the rotation means 20 are constrainable instead of to the side wall 110, 120 to the upper base or to the support plane where the first rotation element 71 is fixable to the upper base or to the support plane, substantially reproducing the same features of the previous embodiment by means of dowels or screws.

[0033] According to non-limiting embodiments, the rotation means 20 comprise a hinge or further forms of rotation means known to those skilled in the art which allow the coupling between the support element 30 and the piece of furniture as well as the rotation of the support element 30 near the respective first end 31.

[0034] The pull-out 1 comprises one or more secondary support elements 50 constrained to the support element 30, preferably at a junction point 50a. Each secondary support element 50 extends along an extension direction A-A between a first end 51 facing inside the housing compartment 100 and an opposite second end 52 along the extension direction A-A facing outside the housing compartment 100, in the resting configuration.

[0035] It should be noted that each secondary support element 50 is configured to rigidly rotate with the support element 30 between the resting configuration in which each secondary support element 50 is arranged inside the housing compartment (figure 1) and the extracted configuration in which each secondary support element 50 is arranged outside the housing compartment 100 (figure 3).

[0036] It should be noted that the secondary support elements 50 allow to hang trousers and items.

[0037] In alternative embodiments, the secondary support elements 50 can have different shapes and include different arms each for hanging a plurality of garments or other shapes typical of the sector (figure 11).

[0038] According to a preferred embodiment, the secondary support elements 50 are secondary rods (figures 1 to 10).

[0039] Preferably, the secondary rods 50 have an overall length between 30 and 60 cm measured between the first end 51 and the second end 52.

[0040] According to a preferred embodiment, the pull-out comprises locking means 70 configured to removably constrain the secondary support elements 50 to the support element 30.

[0041] Preferably, the locking means 70 comprise first locking elements 71 obtained on the support element 30, second locking elements (not shown in the figures) obtained on each secondary support element 50 and configured to couple with the respective first locking elements 71. The locking means 70 further comprise third locking elements 73 configured to constrain the second locking elements with the first locking elements 71.

[0042] According to the embodiment illustrated in the figures in which the secondary support elements 50 are secondary rods and the support element 30 is a support rod, the first locking elements 71 comprise a plurality of pairs of through holes 71a obtained on the side surface 30a of the support rod 30. Specifically, the pairs of

through holes 71a define a passage channel for the insertion of a portion of the secondary rod 50 so that each secondary rod 50 extends from opposite sides of the support rod 20. Thereby, a portion of each secondary rod 50 is retained inside the support rod 30. Furthermore, the first locking elements 71 comprise first through coupling holes 71b also obtained on the side wall 30a preferably facing the upper surface or the lower surface. Such first coupling holes 71b are configured to couple the second locking elements with the third locking elements 73 so as to rigidly constrain the secondary rods 50 to the support rod 30. Specifically, the second locking elements comprise a second coupling hole obtained on each secondary rod 50, preferably in the portion configured to be inserted inside the passage channel of the support rod between the pair of through holes 71a. Each second coupling hole is configured to align, during assembly, with the respective first coupling hole 71b thereby allowing the respective third holding element 73 to constrain the support rod 30 with the secondary rods 50. Preferably, the third holding elements 73 comprise pins or screws and are configured to fit inside the first coupling hole 71b and the corresponding second coupling hole 72a (figures 5 and 6).

[0043] Advantageously, the pull-out 1 can be completely disassembled, thus facilitating transport and simplifying packaging.

[0044] According to a preferred embodiment, the secondary support elements 50 comprise extension means 60 associated with the respective second ends 52. The extension means 60 are configured to extend the second end 52 between a retracted configuration and an extracted configuration. Specifically in accordance with the embodiment in which the secondary support elements are secondary rods, the extension means 60 allow to extend the secondary rod 50 along the extension direction A-A. Specifically, such extension means 60 allow a telescopic extraction of the second end 52 of the secondary rod 50. Specifically, the extension means 60 comprise a first hollow sleeve 61 and a second hollow sleeve 62 sliding along the first hollow sleeve 61. In detail, the secondary rod 50 is at least partially insertable in the first hollow sleeve 61, preferably from the part of the second end 52. The first sleeve 61 is configured to be fixed to the support rod 30. The first hollow sleeve extends between a first end 61a facing the support rod 30 and a second end 61b opposite the first one. The first end 61a is insertable inside the support rod 30 by means of the pair of through holes 71a and comprises a further coupling hole 74a configured to align with the other coupling holes 71b of the support rod and the coupling hole of the secondary rod and to be constrained with the support rod 30 by means of the respective third locking element 73a. The second end 61b of the first hollow sleeve 61 has a locking element 63, preferably a flange protruding from the sleeve 61 itself. Such a locking element 63 is configured to limit the sliding of the second sleeve 62. In detail, the second hollow sleeve 62 slidably mounted on the first sleeve 61

extends between a first end 62a and a second end 62b and has inner locking elements which limit the stroke of the sleeve itself. In particular, such inner locking elements are configured to abut the locking element 63 of the first hollow sleeve 61.

[0045] It should be noted that in the embodiment in which the secondary rods are provided with extension means 60, the second end 52 of the secondary rod corresponds to the second end 62b of the second sleeve 62.

[0046] In accordance with a preferred embodiment, the support element 30 is extendable by modifying the distance between the first end 31 and the second end 32 so as to allow the adjustment with respect to the dimensions of the respective housing compartment 100 (figures 7 and 8).

[0047] Preferably, the support element 30 comprises a plurality of modular elements 80, preferably two. Specifically, each modular element 80 is rigidly constrainable to another. In detail, the modular elements 80 comprise at least one primary element 81 having the features described above for coupling with the side wall or with the support plane or with the upper base, by the rotation means 20 and at least one secondary element 82 coupled to the primary element 81. Preferably, the secondary element 82 is insertable inside the cavity of the primary element 81 or vice versa, so as to adjust the length of the support element 30. In fact, it should be noted that the modular elements 80 of the support element 30 have the same features as the support element described above.

[0048] It should be noted that, according to the embodiment illustrated in the figures in which the support element 30 is a support rod, each modular element 80 has the relative first locking elements 71 described above so that the modular elements 80 can be mutually coupled to each other. Thereby, once a modular element 80 is inserted in another and the distance between the two opposite ends is adjusted, it will be possible to align the pairs of through holes 71a and the first coupling holes 71b obtained on the outer surface so as to subsequently mount the secondary rods 50 and fix the modular elements to each other.

[0049] Advantageously, the proposed solution further simplifies the assembly and the mutual coupling between the different elements.

[0050] According to a preferred embodiment, the extension direction A-A of each secondary support element 50 is inclined with respect to the support element 30 preferably by an angle between 1 and 30 degrees, preferably between 1 and 20 degrees and more preferably between 3 and 10 degrees. It should also be noted that each secondary support element 50 can be inclined by a non-null angle with respect to the width direction X-X.

[0051] In accordance with a preferred embodiment, the pull-out comprises end-stroke damping means which allow the rotation of the pull-out to be damped during the passage between the operating configurations.

[0052] According to a preferred embodiment, the sup-

port element 20 has a first significant distance Da1 measured between the rotation point 40 and the second end 32 of the support element 30. Specifically, the first significant distance Da1 is less than or equal to a first limit distance L1 measured along the width direction X-X between the rotation point 40 and the side wall 120 near the second end of the support element 30 in the resting configuration. In other words, the first limit distance L1 is measured between the rotation point 40 and the wall facing it along the width direction X-X. Thereby the support element 20 is freely rotatable between the resting configuration and the extracted configuration, preventing the second end 32 from abutting a side wall 110, 120 blocking the rotation of the pull-out.

[0053] According to a preferred embodiment, each secondary support element 50 has a first significant distance Ds1 measured between the first end 51 of the secondary support element 50 and the rotation point 40. This first significant distance Ds1 of the secondary support element 50 is equal to or less than the first limit distance L1 measured along the width direction X-X between the rotation point 40 and the side wall 120 near the second end 32 of the support element 30. Thereby, the pull-out can freely rotate between the resting configuration and the extracted configuration, allowing not only to free the housing compartment 100 for cleaning operations, but also to facilitate the user's choice of hanging clothes and/or items, as well as other items positioned below the pull-out on a support surface or on the lower base such as shoes.

[0054] It should therefore be noted that regardless of the orientation and shape of the secondary support element 50, the aforementioned condition allows the rotation of the pull-out.

[0055] Preferably, each secondary support element 50 has a second significant distance Ds2 measured between the projections of the first end 51a and of the second end 52b on the depth direction Y-Y. Such a second significant distance Ds2 is equal to or less than a second limit distance L2 measured between the bottom wall 140 and the rotation point 40 along the depth direction Y-Y (figures 1 and 9). In other words, as clarified below, the second limit distance L2 is measured along the depth direction Y-Y between the projection of the first end 51a and a first demarcation line Ld1 parallel to the depth direction X-X and passing through the rotation point 40. Preferably, the second significant distance Ds2 of the secondary support element Ds2 is equal to or less than the distance between the projections of the first end 51a and a projection of the pin 40a on the depth direction Y-Y.

[0056] Specifically, the pull-out 1 has a first demarcation line Ld1 parallel to the width direction X-X and passing through the rotation point 40 and arranged at a distance from the bottom wall 140 equal to the second limit distance.

[0057] Each second end 52 of the secondary support elements 50 extends at most to the first demarcation line Ld1. Thereby, the pull-out 1 can rotate up to at least 130

degrees in a substantially straight configuration.

[0058] In accordance with a preferred embodiment, the support element 30 comprises at least a first portion 34 and a second portion 35 extending on incident extension directions. More specifically, the first portion 34 extends from the first end 31 to an intermediate point 33 arranged between the first end 31 and the second end 32 along a first extension direction B-B. With regard to the second portion 35, this extends from the intermediate point 33 to the second end 32 along a second extension direction C-C incident with the first extension direction B-B. In other words, the support element 30 has a non-straight shape.

[0059] It should be noted that the support element 30 preferably has a curved shape. In detail, the first portion 34 can have different shapes such as, for example, an "S" shape, a "C" shape or a straight shape which connects with the second portion 35 at the intermediate point 33. Preferably, the second portion 35 is configured to support one or more secondary support elements 50 and has a substantially straight shape along the second extension direction.

[0060] In accordance with a preferred embodiment, the first extension direction B-B has an inclination with respect to a direction parallel to the depth direction Y-Y which is less than the inclination of a line joining the rotation point 40 and the edge 111a with respect to the same direction parallel to the depth direction Y-Y. Thereby, the support element 30 avoids abutting against the inner edge 111a.

[0061] It should be noted that the first extension direction B-B and the second extension direction C-C define a rotation plane Rot parallel to the ground/floor on which the pull-out 1 rotates. In other words, the first extension direction B-B and the second extension direction C-C lie on the same plane.

[0062] In accordance with the preferred embodiment illustrated in the figures, the first extension direction B-B and the second extension direction C-C are substantially perpendicular.

[0063] Advantageously, the curved-rod support element 30 allows to make greater use of the space inside the housing compartment as well as promote the rotation of the support rod at greater angles.

[0064] Preferably, the pull-out defines a first occupation area Ao1, inside the housing compartment 100 with a circular crown centred on the rotation point 40 and having an outer radius Re equal to the first limit distance L1 and an inner radius Ri equal to the distance between the rotation point 40 and the front portion 111 of the side wall 110 on which the rotation element 20 is constrained. Specifically, the secondary support elements 50 are contained inside the first occupation area Ao1. It should be noted that such a condition is respected during the entire rotation of the pull-out.

[0065] More preferably, the pull-out 1 has a second demarcation line Ld2 parallel to the width direction X-X and positioned at a distance from the rotation point 40 along the depth direction Y-Y towards the inside of the

housing compartment 100 equal to a third limit distance L3 measured between the rotation point 40 and the projection thereof on the width direction 42 towards the outside of the housing compartment 100 at the opening 130 of the housing compartment (figure 9). In other words, the second demarcation line Ld2 is spaced apart from the opening 130 by a distance equal to twice the third limit distance L3. It should be noted that the third limit distance L3 is such that the rotation point is close to the access opening 130.

[0066] In order to allow a rotation of the pull-out 1 beyond 135 degrees and up to at least 180 degrees, the second ends 52 of the secondary support elements 50 which exceed the second demarcation line Ld2 are excluded from occupying a second occupation area Ao2 with a circular section centred on the rotation point and having a radius equal to the inner radius R1 and centred on the rotation point 40.

[0067] In other words, the pull-out 1 has a second occupation area Ao2 with a circular section and having a radius equal to the inner radius Ri. Specifically, each second secondary support element 50 which exceeds the second demarcation line Ld2 is outside a second occupation area Ao2 with circular section having a radius R1 equal to the inner radius Ri so as to be able to ensure a rotation of the pull-out around the rotation point 40 of at least 180 degrees, preferably in the case of a sliding door or walk-in closet. Preferably, each second end 52 extends at most to the second demarcation line Ld2 to allow the rotation of the pull-out up to 180 degrees.

[0068] According to a preferred embodiment illustrated in the images, the inner radius Ri is equal to the distance between the rotation point 40 and the outer edge 111b. Thereby, it is possible to rotate the pull-out 1 up to and including 180 degrees.

[0069] Preferably, each secondary support element 50 has a second significant distance Ds2 equal to or less than the distance between the second demarcation line Ld2 and the bottom wall 140. Thereby, the rotation up to at least 180 degrees is allowed.

[0070] In accordance with a preferred embodiment, in which the support element 30 has a second significant distance Da2 defined along the depth direction Y-Y and measured between the rotation point 40 and the projection of the rotation point 43 on the second extension direction B-B (figure 10). Such a second significant distance Da2 of the support element 30 is greater than the third limit distance L3.

[0071] It is a further object of the present invention a piece of furniture 10, in particular a wardrobe or a walk-in closet in which a pull-out 1 as described above is mounted. The furniture 10 comprises two opposite side walls 110, 120 spaced along a width direction X-X and extending between a front portion 111, 121 and a rear portion 112, 122 spaced along a depth direction Y-Y perpendicular to the width direction X-X. Such furniture 10 has the housing compartment 100 defined by at least the side walls 110, 120. Furthermore, the furniture 10 com-

prises, as previously anticipated, a bottom wall 140, an opening 130, an upper base and a lower base defining the housing compartment 100. Also in this case, the furniture 10 can comprise a bottom as defined above in place of the bottom wall. Optionally, the furniture 10 can comprise support surfaces, for example, shelves arranged in the housing compartment 100 parallel to the ground.

[0072] In accordance with a preferred embodiment, the furniture 10 comprises the pull-out 1 constrained to a side wall 110, 120 in the manner described above, or to the support plane or to the upper base.

[0073] In accordance with alternative embodiments, the furniture 10 comprises multiple pull-outs overlapping one another along the height direction Z-Z.

Claims

1. Pull-out (1) item hanger for furniture (10) having housing compartments (100) defined by at least two opposite side walls (110, 120) spaced along a width direction (X-X) and extending between a front portion (111, 121) and a rear portion (112, 122) spaced along a depth direction (Y-Y) perpendicular to the width direction (X-X) and extending between a bottom wall (140) connecting the rear portions (112, 122) and an access opening (130) defined between the front portions (111, 121) of the side walls (110, 120), said pull-out comprising:

- rotation means (20) constrainable to the furniture (10) inside the housing compartment (100);
- a support element (30) extending between a first end (31) rotatably constrained to the rotation means (20) defining a rotation point (40) near the access opening (130) of the housing compartment (100) and an opposite second end (32), said support element (30) being configured to rotate around the rotation point (40) between a resting configuration in which it is arranged entirely inside the housing compartment (100) and an extracted configuration in which it is arranged outside the housing compartment (100), **characterized in that it comprises**
- one or more secondary support elements (50) constrained to the support element (30) and extending along an extension direction (A-A) between a first end (51) facing the inside of the housing compartment (100) and an opposite second end (52) facing the outside of the housing compartment (100) when in a resting configuration, each secondary support element (50) being configured to rigidly rotate with the support element (30) between the resting configuration in which it is arranged inside the housing compartment (100) and the extracted configuration in which it is arranged outside the housing com-

partment (100).

2. Pull-out (1) according to claim 1, wherein:

- the support element (30) has a first significant distance (Da1) measured between the rotation point (40) and the second end (32), said significant distance (Da1) being less than or equal to a first limit distance (L1) measured along the width direction (X-X) between the rotation point (40) and the side wall (120) near the second end (32) of the support element (30) when in a resting configuration;
- each secondary support element (50) has a first significant distance (Ds1) measured between the first end (51) of the secondary support element (50) and the rotation point (40), said first significant distance (Ds1) being equal to or less than the first limit distance (L1) measured along the width direction (X-X) between the rotation point (40) and the side wall (120) near the second end (32) of the support element (30) when in a resting configuration.

3. Pull-out (1) according to any one of claims 1 or 2, wherein

- each secondary support element (50) has a second significant distance (Ds2) measured between the projections of the first end (51a) and the second end (52b) along the depth direction (Y-Y), said second significant distance (Ds2) being equal to or less than a second limit distance (L2) measured along the depth direction (Y-Y) between the projection of the first end (51a) and a first demarcation line (Ld1) parallel to the depth direction (X-X) and passing through the rotation point (40), each second end (52) extending at most up to the first demarcation line (Ld1).

4. Pull-out (1) according to one or more of claims 1 to 3, wherein the support element (30) comprises:

- a first portion (34) extending from the first end (31) to an intermediate point (33) arranged between the first end (31) and the second end (32) along a first extension direction (B-B),
- a second portion (35) extending from the intermediate point (33) to the second end (32) along a second extension direction (C-C) incident with the first extension direction (B-B).

5. Pull-out (1) according to claim 4, wherein said first extension direction (B-B) and said second extension direction (C-C) define a rotation plane (Rot) parallel to the ground on which said pull-out (1) rotates.

6. Pull-out (1) according to any one of claims 2 to 5,

wherein:

- the pull-out defines a first occupation area (Ao1) with a circular crown having an outer radius (Re) equal to the first limit distance (L1) and an inner radius (Ri) equal to the distance between the rotation point (40) and the front portion (111) of the side wall (110), said secondary support elements (50) being contained inside the first occupation area (Ao1);
 - the pull-out has a second demarcation line (Ld2) parallel to the width direction (X-X) positioned at a distance from the rotation point (40) along the depth direction (Y-Y) towards the inside of the housing compartment (100) equal to a third limit distance (L3) measured between the rotation point (40) and the projection thereof on the width direction (42) towards the outside of the housing compartment (100) and passing at the front portions (111, 121); each secondary support element (52) exceeding the second demarcation line (Ld2) is outside a second occupation area (Ao2) with a circular section having a radius (R1) equal to the inner radius (Ri) with the centre in the rotation point (40), preferably each second end (52) of the secondary support element (52) extending at most up to the second demarcation line (Ld2).
7. Pull-out (1) according to claim 6, wherein the secondary support element (20) has a second significant distance (Da2) defined along the depth direction (Y-Y) and measured between the rotation point (40) and the projection of the rotation point (43) on the second extension direction (B-B), the second significant distance (Da2) of the support element (30) being greater than a third limit distance (L3) measured between the rotation point (40) and the projection thereof on the width direction (42) towards the outside of the housing compartment (100).
8. Pull-out (1) according to any one of claims 1 to 7, wherein the extension direction (A-A) of each secondary support element (50) is inclined with respect to the support element (30).
9. Pull-out (1) according to any one of claims 1 to 7, wherein:
- the support element (30) is extendable by modifying the distance between the first end (31) and the second end (32) of the support element (30) to allow the adjustment thereof with respect to the dimensions of the respective housing compartment (100).
10. Furniture (10) comprising two opposite side walls (110, 120) spaced along a width direction (X-X) and

extending between a front portion (111, 121) and a rear portion (112, 122) spaced along a depth direction (Y-Y) perpendicular to the width direction (X-X), said side walls (110, 120) defining a housing compartment (100), said housing compartment (100) extending between a bottom wall (140) connecting the rear portions (112, 122) and an access opening (130) defined between the front portions (111, 121) of the side walls (110, 120) for clothes;

characterized in that it comprises a pull-out (1) according to any one of claims 1 to 9 rotatably constrained to the furniture (10) inside the housing compartment (100).

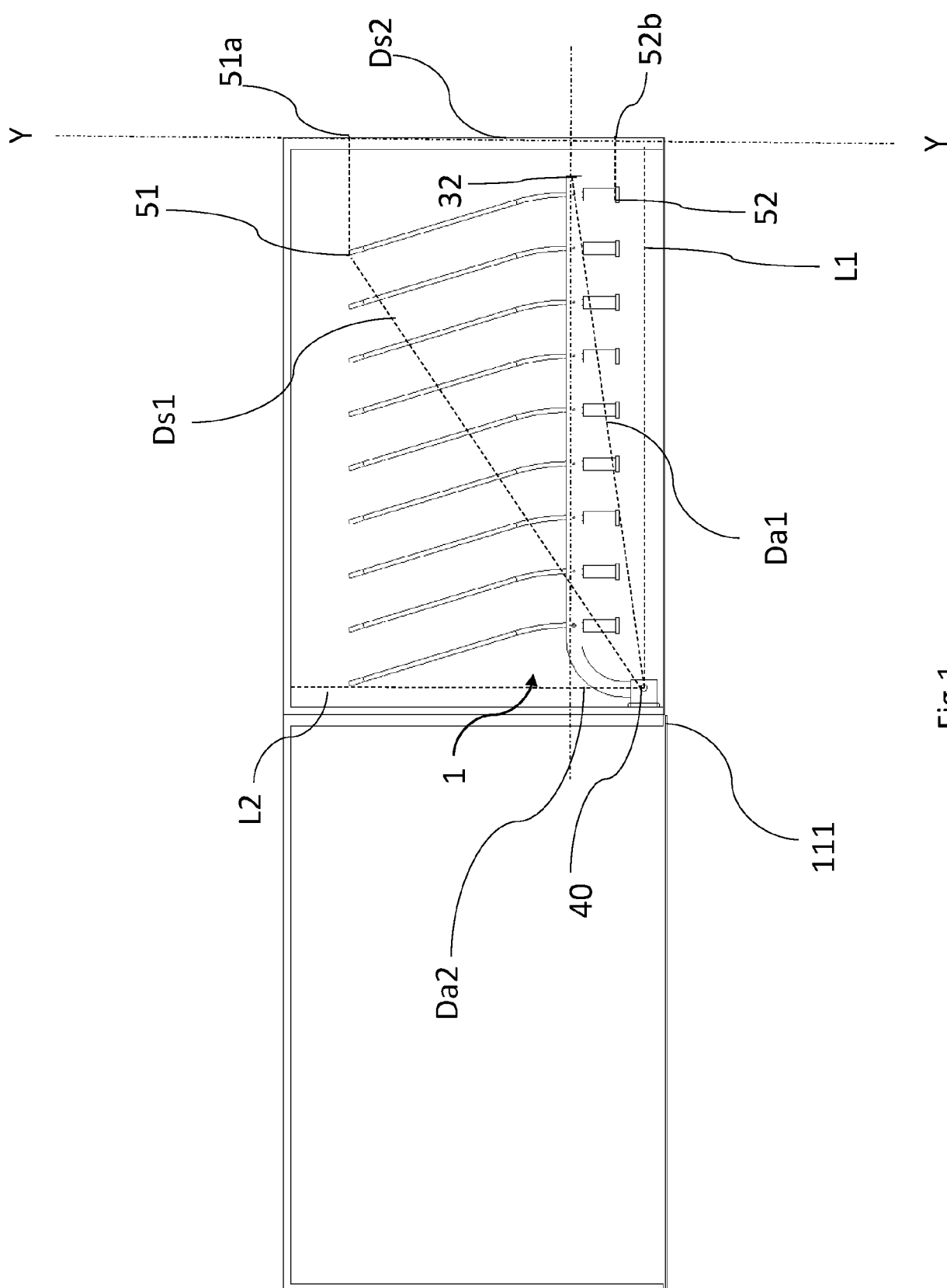


Fig. 1

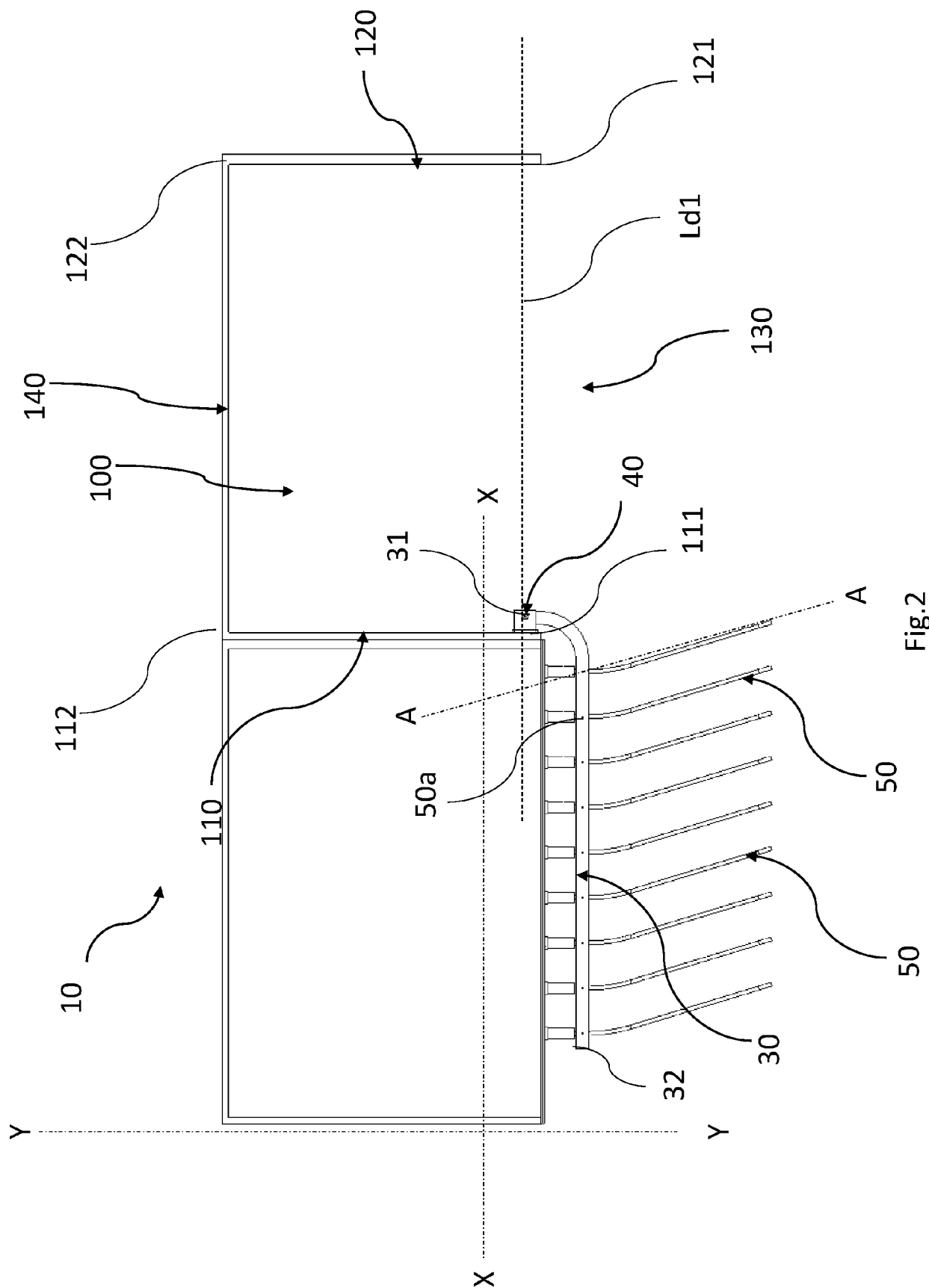


Fig. 2

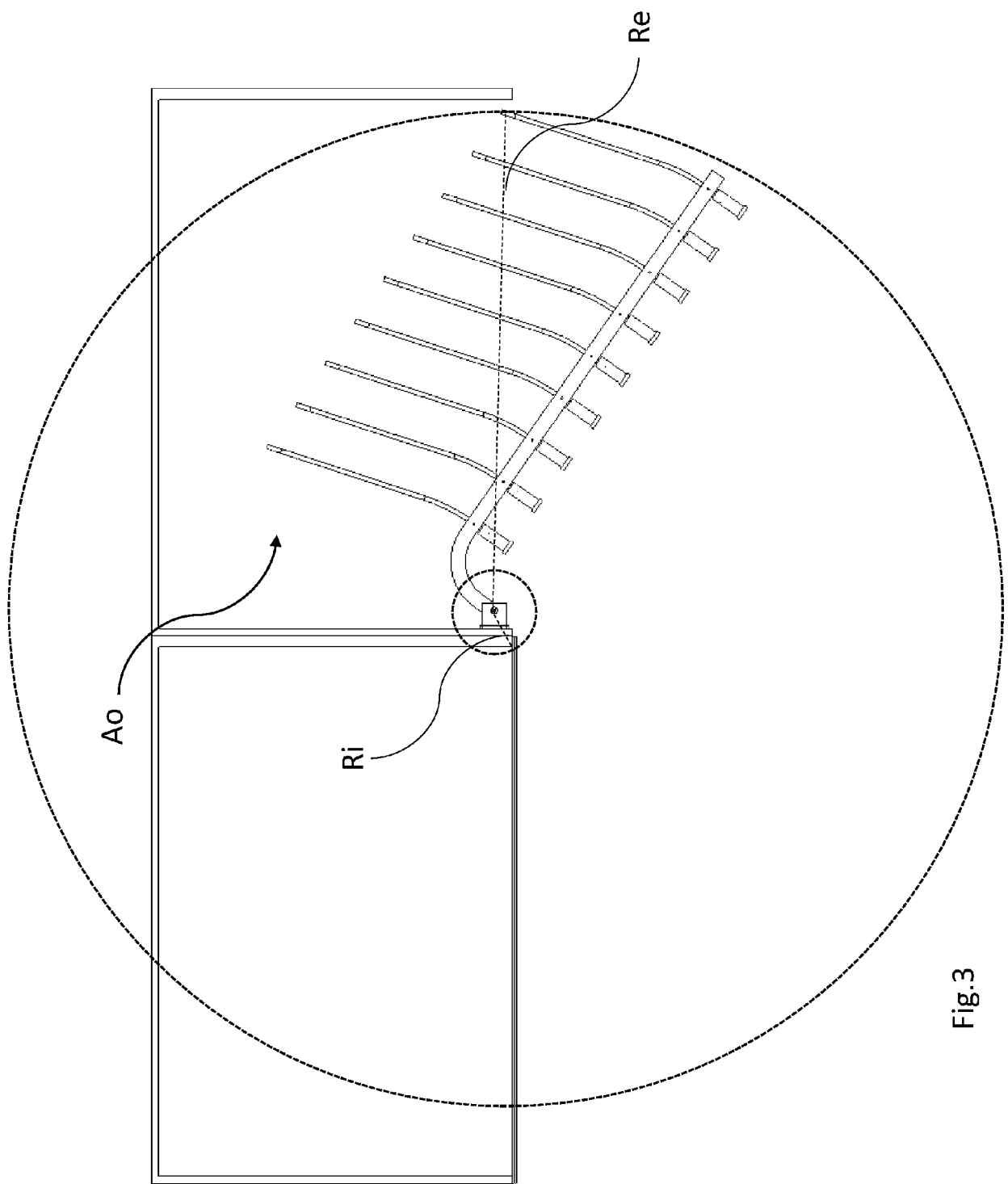


Fig.3

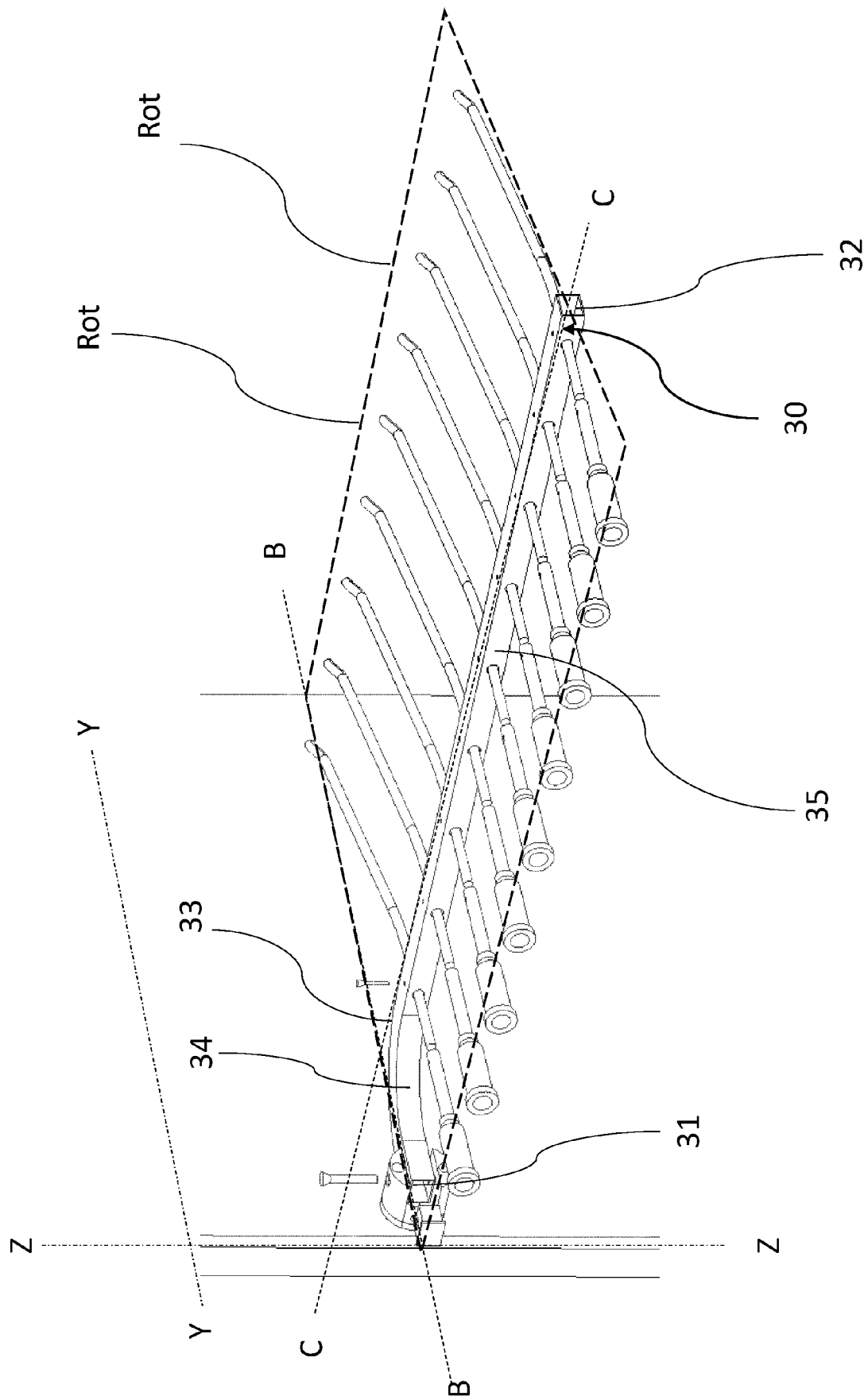


Fig.4

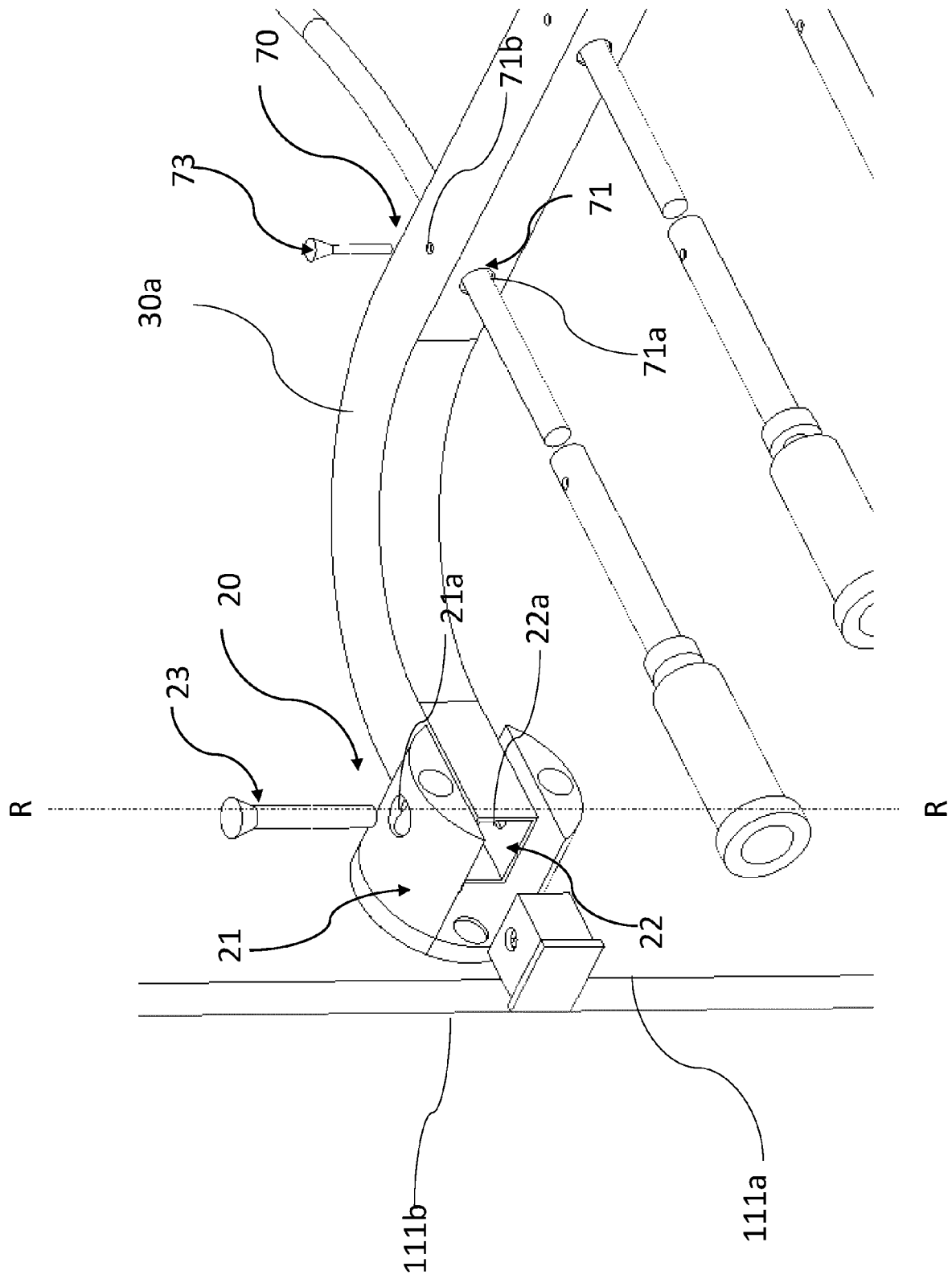


Fig. 5

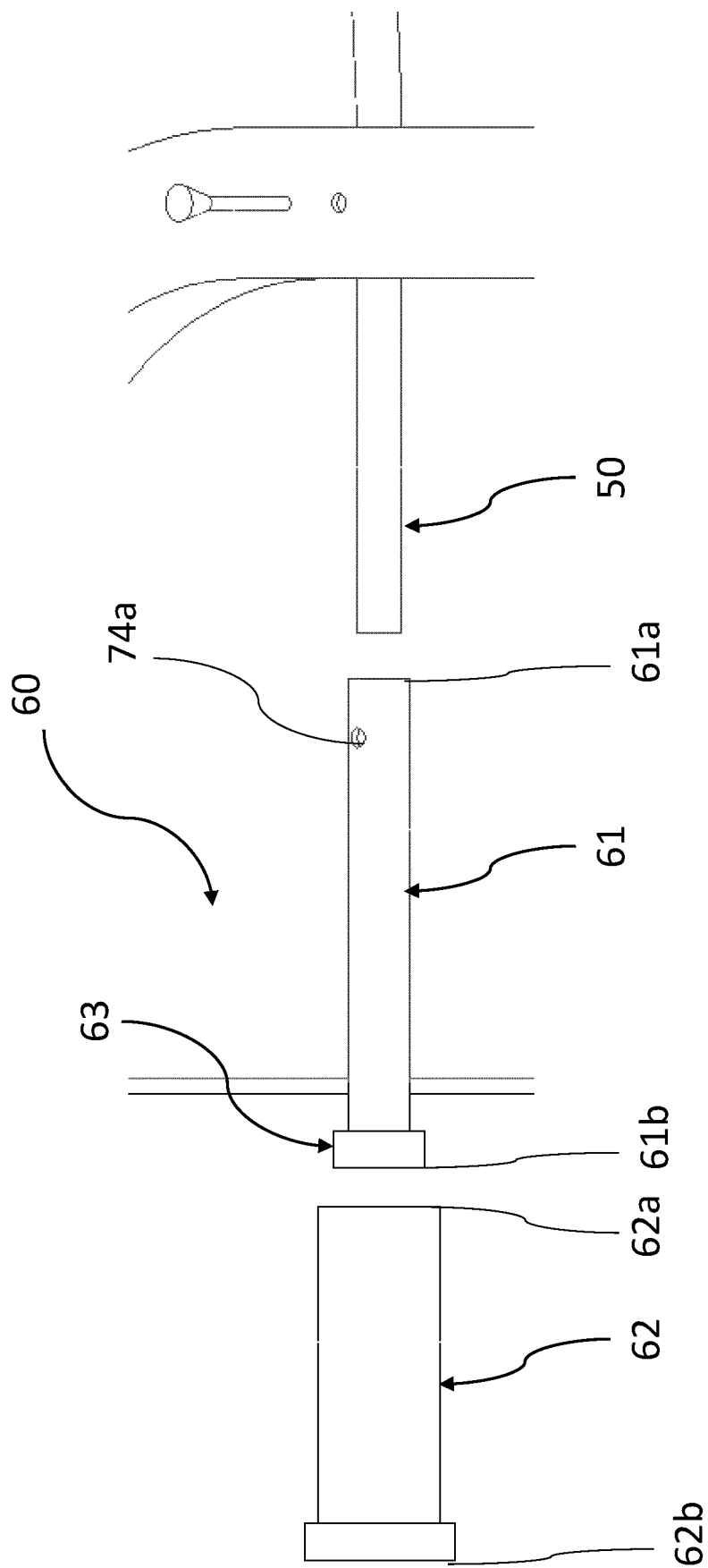


Fig. 6

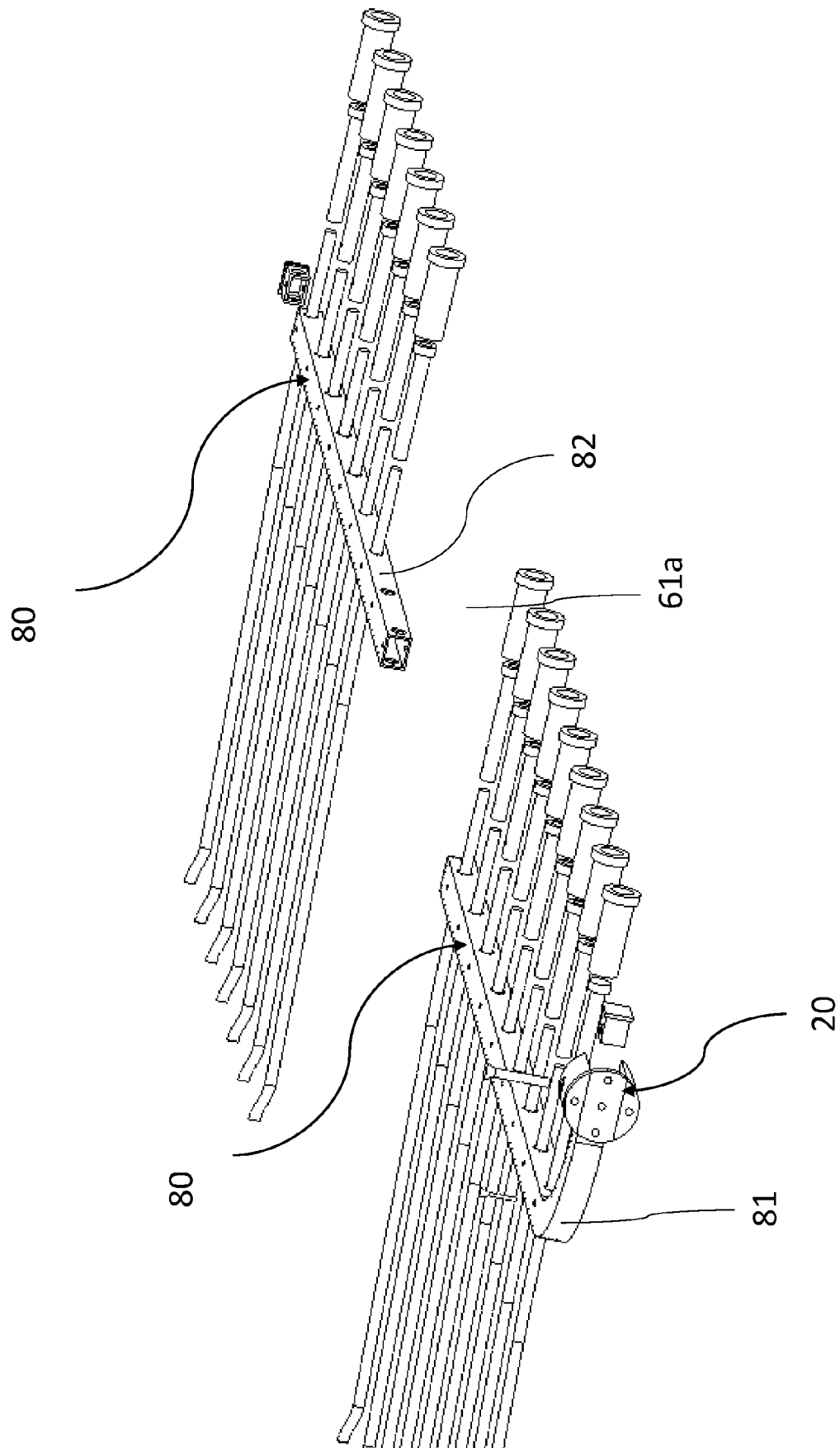


Fig.7

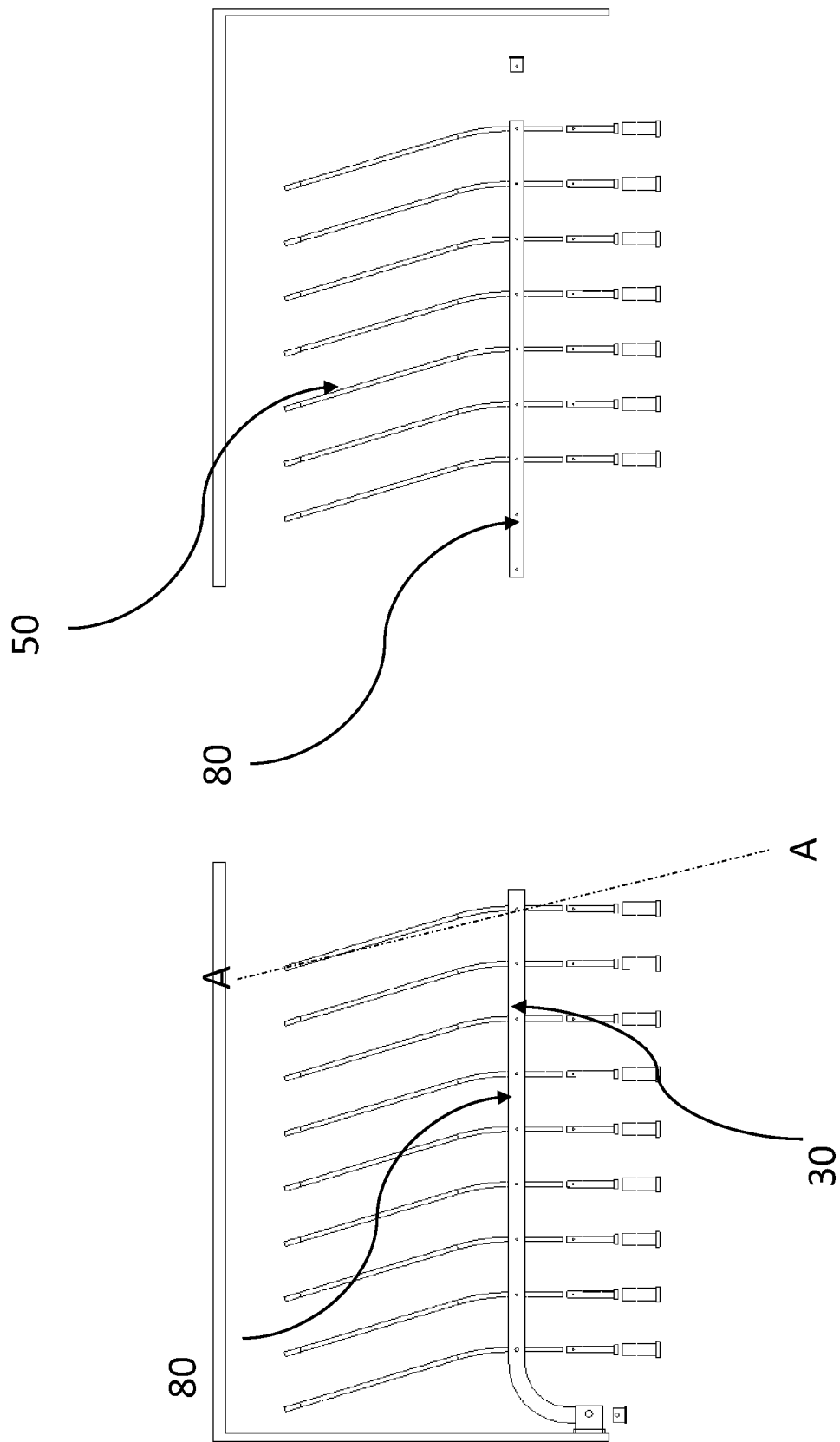
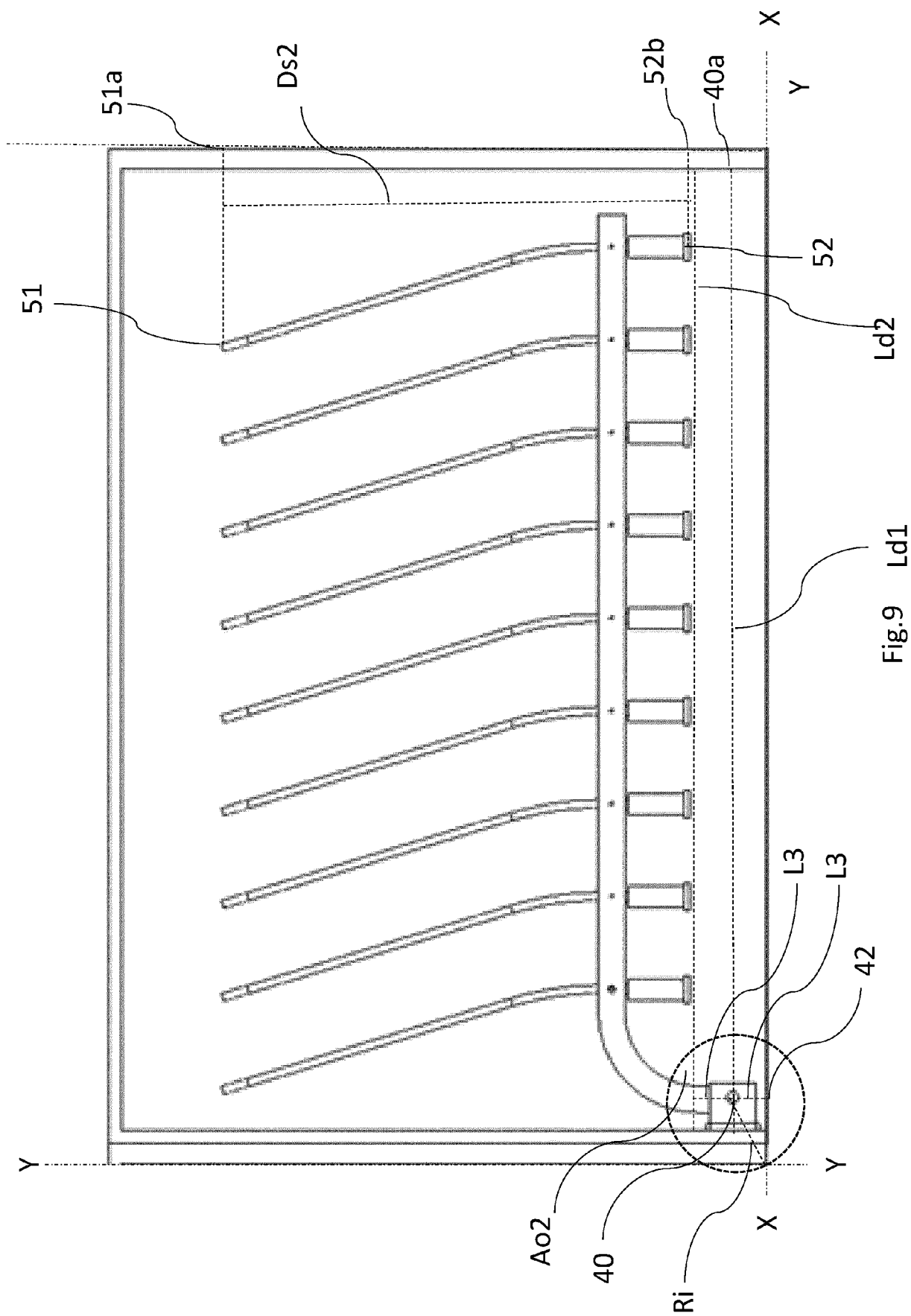


Fig.8



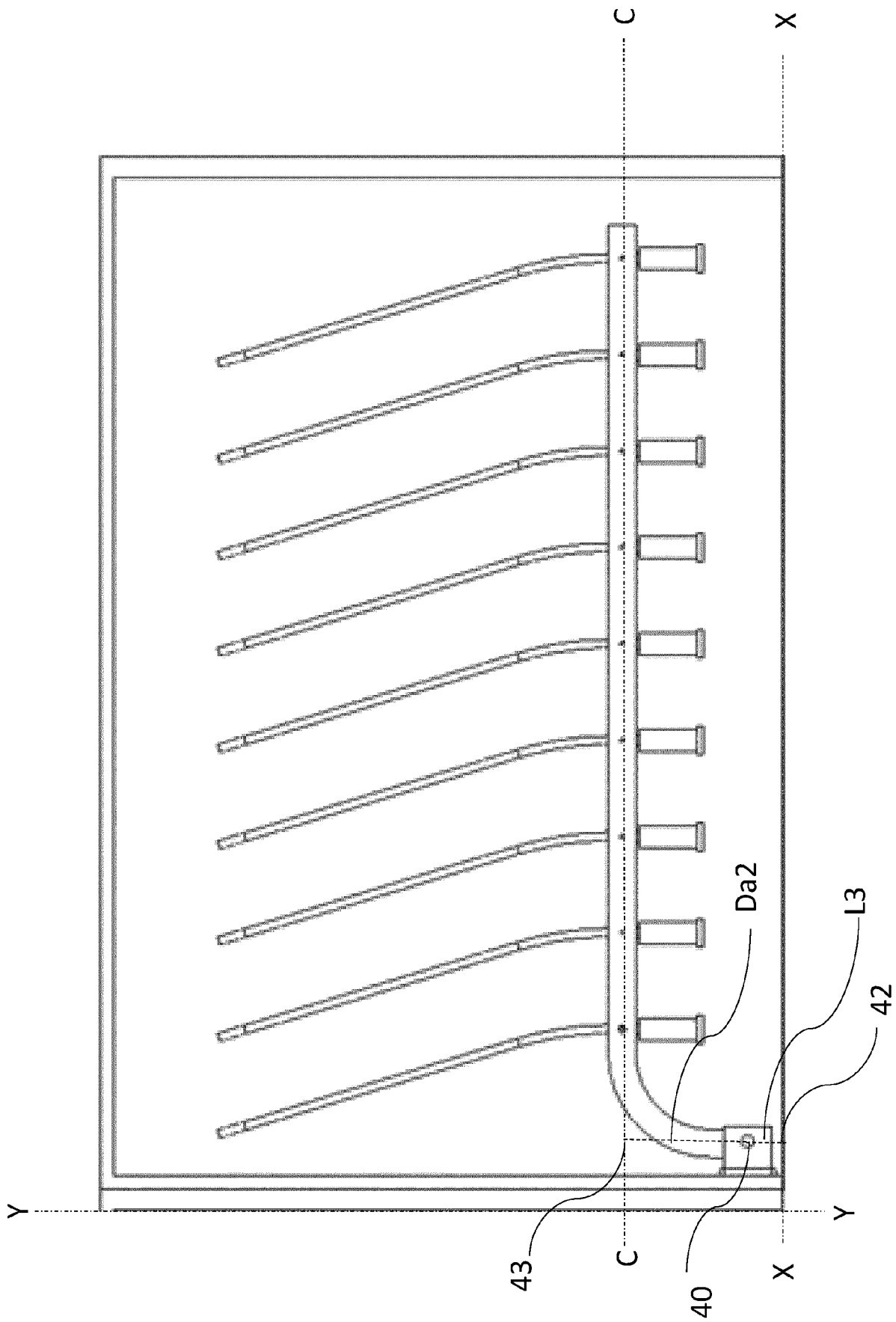


Fig. 10

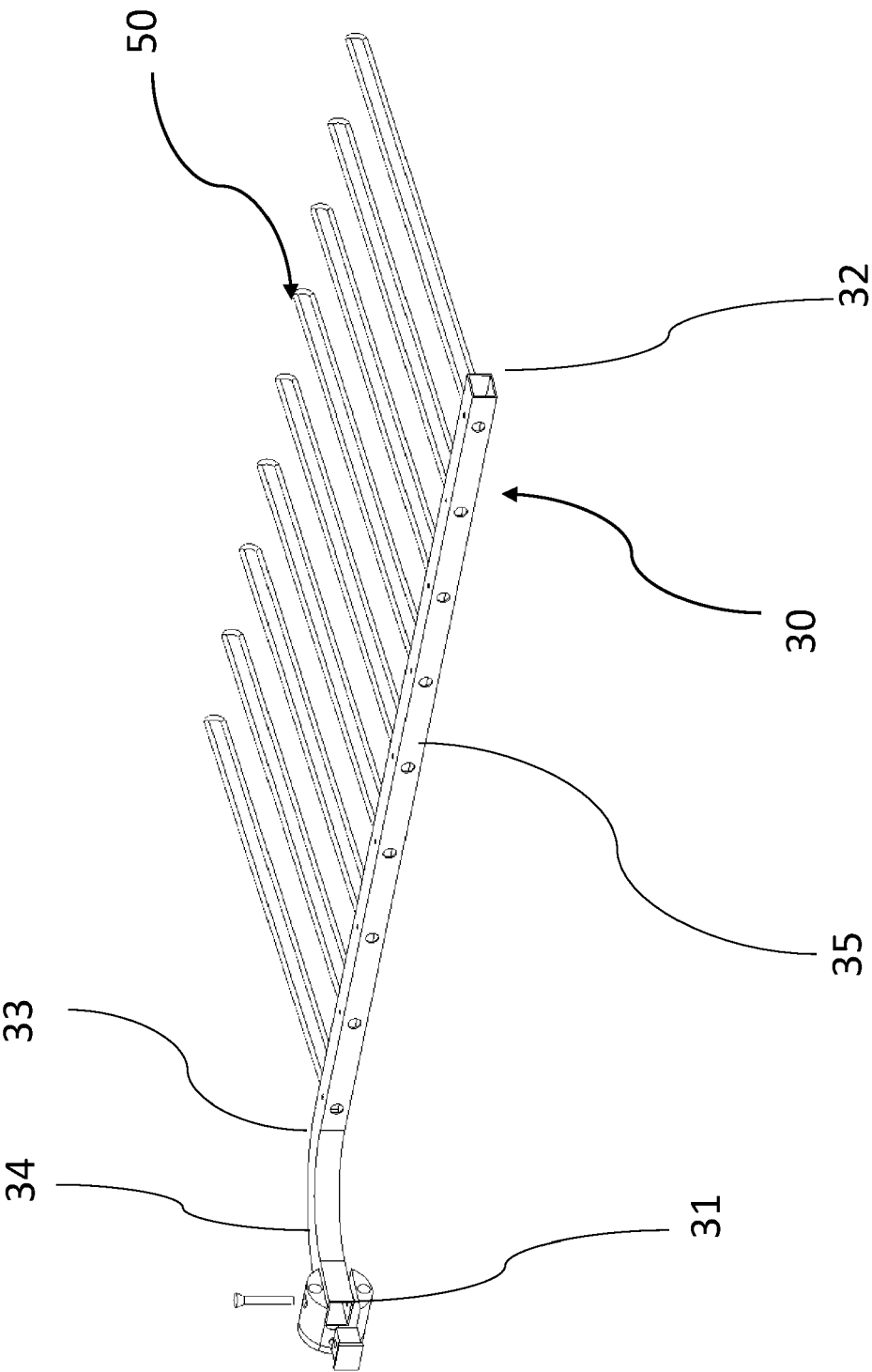


Fig.11

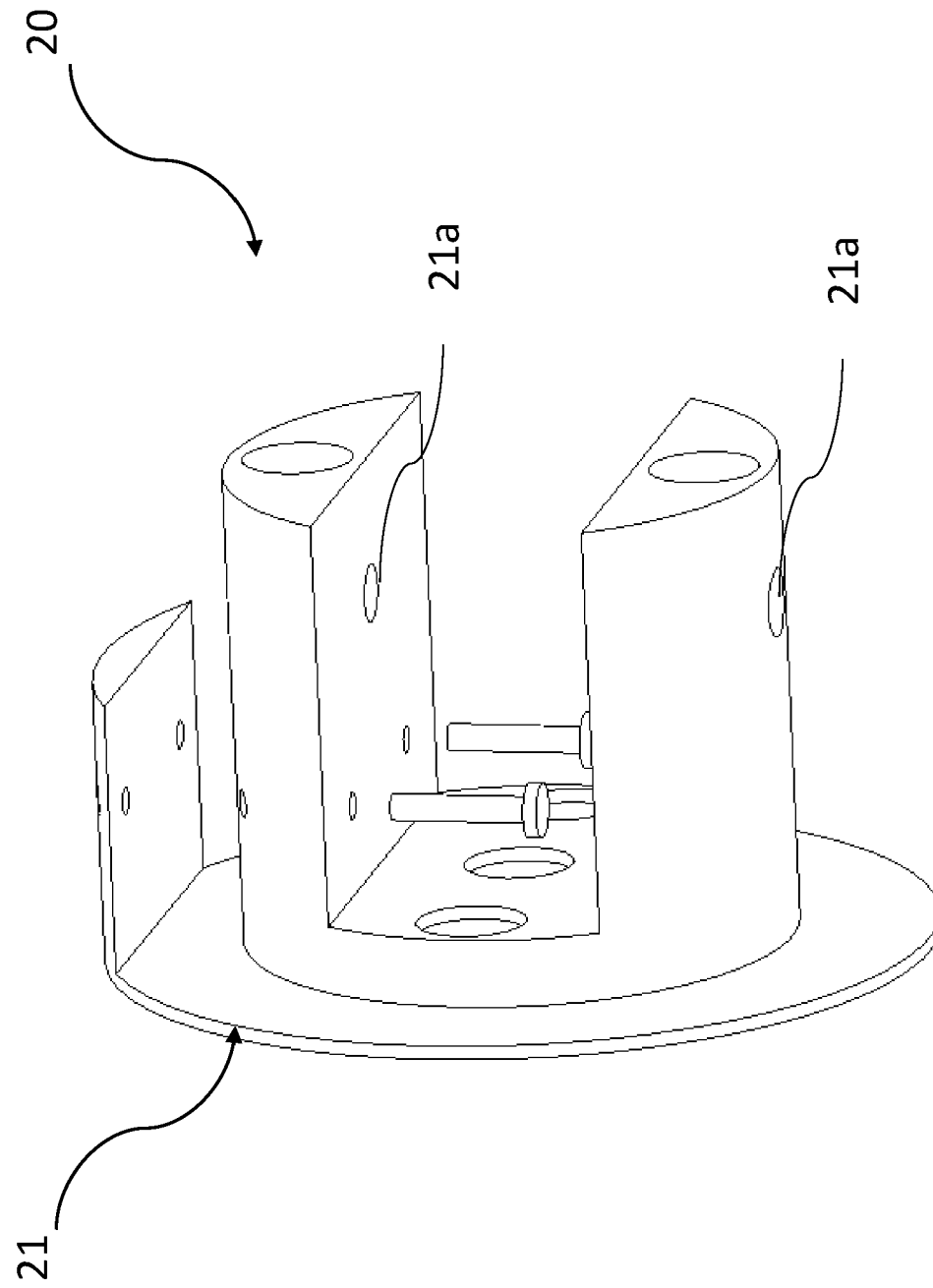


Fig.12



EUROPEAN SEARCH REPORT

Application Number

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A			TECHNICAL FIELDS SEARCHED (IPC) A47B A47G A47F A47K
1 The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 13 January 2022	Examiner Jacquemin, Martin
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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