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(54) **HINGE TO HINGE A MOBILE ELEMENT, SUCH AS A DOOR OR A WINDOW, WITH RESPECT TO A FIXED STRUCTURAL ELEMENT SUCH AS A DOOR FRAME OR WINDOW FRAME**

(57) A hinge (10) for hinging a mobile element (11) with respect to a fixed structural element (12) and comprising a central hinging element (13) having a pivoting axis (X) and two terminal hinging elements (14, 15) configured to be disposed on reciprocally opposite sides and with play with respect to the central hinging element (13), coaxially to the pivoting axis (X). The central hinging element (13) comprises a first cavity in which a first pivoting mean (23) is slidingly disposed, mobile parallel to the pivoting axis (X) between an inactive position in which it is substantially inside the cavity, and an operating position in which it protrudes operatively from the cavity so that it can be selectively inserted into a corresponding first guide member of one of the two terminal hinging elements (14).

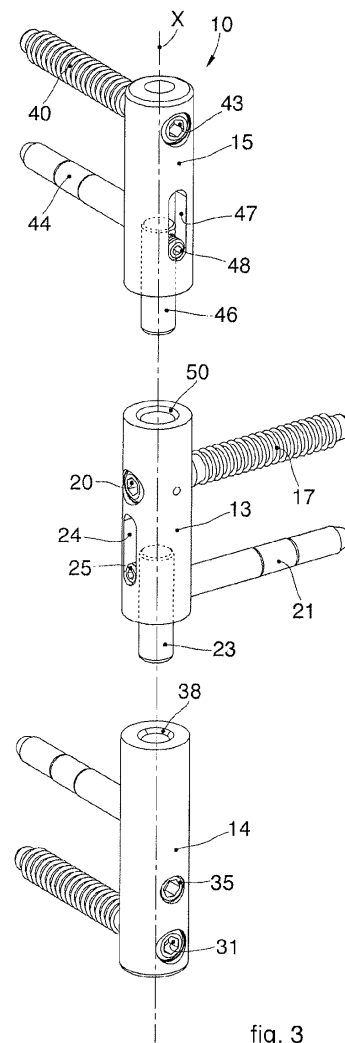


fig. 3

Description

FIELD OF THE INVENTION

[0001] The present invention concerns a hinge to hinge a mobile element, such as a door, even a very heavy one, for example about 80 kg in weight, or a window or a panel of an article of furniture, with respect to a fixed structural element such as a door frame or window frame, or the bearing structure of an article of furniture. The hinge according to the present invention is the type with three elements, coaxial to each other, of which a central one, configured to be attached normally to the mobile element, and two terminal or lateral hinging elements, disposed respectively one above and one below the central one, and configured to be both fixed normally to the fixed structural element. The two terminal hinging elements are pivoted with respect to the central element along the same hinging axis so as to allow, during use, the articulation of the mobile element with respect to the fixed structural element. The hinge is also provided with adjustment means that allow, during use, to adjust the position of the mobile element with respect to the fixed structural element in one or more directions.

BACKGROUND OF THE INVENTION

[0002] In the field of door and window frames and articles of furniture, hinges are known consisting of three hinging elements, coaxial to each other along a hinging axis, of which one is positioned in an intermediate position and is configured to be normally attached to the mobile element. The other two hinging elements, called terminal, are instead disposed respectively one above and one below the central element and are configured to be both normally attached to the fixed structural element. The two terminal hinging elements are pivoted with respect to the central element along the hinging axis so as to allow, during use, the articulation of the mobile element with respect to the fixed structural element.

[0003] From the European patent application EP-A-1.835.101, property of the present Applicant, a hinge is known that comprises two terminal hinging elements configured to be normally attached to a fixed structural element, a central hinging element mounted between the two terminal hinging elements coaxially thereto, and configured to be normally attached to the fixed structural element. The central hinging element in turn comprises a central cavity which has a development orthogonal to the hinging axis and is configured to house an adjustment element, which is in turn configured to be disposed in cooperation with the mobile element and which can be guided to modify the distance between the mobile element and the hinging axis. Moreover, two seatings are disposed on opposite sides with respect to the central cavity and have a development substantially parallel to the hinging axis. The hinge described in EP-A-1.835.101 also comprises two pins, each of which is associated with

a corresponding terminal element and is able to cooperate with a respective one of said seatings to allow the articulation of the mobile element with respect to the fixed structural element.

[0004] This known hinge, although simple to make, has the disadvantage that it requires a rather complex assembly step, since the two pins have to be inserted, one from above and one from below, into the central hinging element through the two terminal hinging elements.

[0005] Moreover, from the French patent application FR-A-2.883.902, which is considered the most pertinent state of the art, a hinge is known which comprises a central hinging element having a pivoting axis and two terminal hinging elements configured to be disposed on reciprocally opposite sides and with play with respect to the central hinging element, coaxially to the pivoting axis. The central hinging element comprises a cavity in which two pivoting elements are slidably disposed, mobile longitudinally along the pivoting axis between an inactive position in which they are completely inside the cavity and an operating position in which they protrude operatively from the cavity so that they can be selectively inserted into corresponding guide seatings made in the two terminal hinging elements. An elastic spring is inserted into the cavity of the central hinging element and constantly thrusts the two pivoting elements into the operating position. The hinge disclosed in FR-A-2.883.902 has the disadvantage, however, that in order to move axially each of the two pivoting elements it is necessary to contrast the action of the elastic spring, and also that it does not have any adjustment means to adjust the position of the pivoting axis with respect to the fixed element on which the hinge is mounted.

[0006] A hinge similar to that in FR-A-2.883.902 is also known from US-A-3.671.998, where in the central hinging element is made a cavity in which two pivoting elements are slidably disposed, longitudinally mobile along the pivoting axis between an inactive position in which they are completely inside the cavity, and an operating position in which they protrude operatively from the cavity so that they can be selectively inserted into corresponding guide seatings made in the two terminal hinging elements. An elastic spring is inserted into the cavity of the central hinging element and constantly thrusts the two pivoting elements into the operating position. The hinge described in US-A-3.671.998 has the same disadvantages as the hinge described in FR-A-2.883.902.

[0007] A hinge is known from the German patent application DE-A-102010047774 with a central hinging element having in the lower part a pin protruding downward and inserted into a corresponding axial cavity of the lower hinging element. A second pin is disposed coaxial to the first and has the upper part inserted into an axial cavity of the upper hinging element, and the lower part inserted in an upper axial cavity of the central hinging element. Although it is provided with adjustment means, the hinge described in DE-A-102010047774 has the disadvantage that it requires a rather complex assembly step because,

due to the presence of the two pins, the three hinging elements have to be assembled one at a time, starting from the lower one.

[0008] A hinge is known from the French patent application FR-A-2.966.860 with two hinging elements coupled with each other by a central axial pin, which has its two ends configured to be inserted into two corresponding axial cavities of the two hinging elements. This last hinge also has the disadvantage that it requires that the upper hinging element is assembled from above only after the lower hinging element has been assembled, and that the central axial pin has been inserted into the axial cavity of the latter.

[0009] One purpose of the present invention is to obtain a hinge of the type with three hinging elements which is simple, effective and inexpensive, and which at the same time allows an easy and rapid assembly of the three hinging elements on the elements to be hinged on which it is installed, and in which, in particular, the two terminal hinging elements can be assembled on one of the two elements to be hinged autonomously with respect to the assembly of the central hinging element on the other of the two elements to be hinged.

[0010] Another purpose of the present invention is to obtain a hinge of the type with three elements which is also provided with adjustment means that allow to selectively adjust, during use, the position of the mobile element with respect to the corresponding fixed structural element, in at least one direction, preferably two directions, perpendicular to each other, and even more preferably three directions, each perpendicular to the other two, and that each adjustment can occur simply, continuously and quickly, without needing to dis-assemble the mobile element from the fixed structural element or the components of the hinge.

[0011] The Applicant has devised, tested and embodied the present invention to overcome the shortcomings of the state of the art and to obtain these and other purposes and advantages.

SUMMARY OF THE INVENTION

[0012] The present invention is set forth and characterized in the independent claim, while the dependent claims describe other characteristics of the invention or variants to the main inventive idea.

[0013] In accordance with the above purposes, a hinge according to the present invention, to hinge a mobile element with respect to a fixed structural element comprises a central hinging element having a pivoting axis and configured to be attached to the mobile element or to the fixed structural element, and two terminal hinging elements configured to be attached to the fixed structural element if the central hinging element is attached to the mobile element, or to the mobile element if the central hinging element is attached to the fixed structural element, so that the two terminal hinging elements are disposed on reciprocally opposite sides and with play with

respect to the central hinging element, coaxially to the pivoting axis. Furthermore, the central hinging element comprises at least a first cavity in which a first pivoting mean is slidably disposed, mobile parallel to the pivoting axis between an inactive position in which it is substantially inside the first cavity, and an operating position in which it protrudes operatively from said first cavity so that it can be selectively inserted into a corresponding first guide member of a first of the two terminal hinging elements.

[0014] According to a first characteristic aspect of the present invention, the central hinging element also comprises first adjustment means to selectively adjust the distance of the pivoting axis with respect to the corresponding mobile element, or fixed structural element, to which during use the hinging element is attached.

[0015] According to another characteristic aspect of the present invention, a second of the two terminal hinging elements comprises a second cavity in which a second pivoting mean is slidably disposed, mobile parallel to the pivoting axis between an inactive position in which it is substantially inside said second cavity, and an operating position in which it protrudes operatively from said second cavity so that it can be selectively inserted into a corresponding second guide member of the central hinging element.

[0016] According to another characteristic aspect of the present invention, the central hinging element also comprises a first eyelet parallel to the pivoting axis and which puts said first cavity into communication with the outside, moreover a first clamping element, accessible through said first eyelet, is associated with said first pivoting mean and is configured to selectively clamp the first pivoting mean in its inactive position or in its operating position.

[0017] According to another characteristic aspect of the present invention, the first pivoting mean comprises a first pin coaxial with the pivoting axis, and the first clamping element comprises a first threaded dowel screwed into the first pin transverse to the pivoting axis and having its head inserted into said first eyelet.

[0018] According to another characteristic aspect of the present invention, the second terminal hinging element also comprises a second eyelet parallel to the pivoting axis and which puts said second cavity into communication with the outside, moreover, a second clamping element, accessible through said second eyelet, is associated with the second pivoting mean and is configured to selectively clamp the second pivoting mean in its inactive position or its operating position.

[0019] According to another characteristic aspect of the present invention, the second pivoting mean comprises a second pin coaxial with the pivoting axis, and the second clamping element comprises a second threaded dowel screwed into the second pin transverse to the pivoting axis and having its head inserted into said second eyelet.

[0020] According to another characteristic aspect of

the present invention, the two terminal hinging elements comprise second adjustment means to selectively adjust the distance of the pivoting axis with respect to the corresponding fixed structural element or mobile element to which, in use, the two terminal hinging elements are attached.

[0021] According to another characteristic aspect of the present invention, the first terminal hinging element also comprises third adjustment means to selectively adjust the axial position of the central hinging element with respect to the two terminal hinging elements.

[0022] According to another characteristic aspect of the present invention, the third adjustment means comprise both a peg coaxial to the pivoting axis and having a first end configured to contact the first pivoting mean and a second end inclined with respect to the pivoting axis, and also a third threaded dowel screwed into a threaded hole made in the first terminal hinging element transverse to the pivoting axis and having a conical point permanently in contact with the inclined end of the peg.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] These and other characteristics of the present invention will become apparent from the following description of one embodiment, given as a non-restrictive example with reference to the attached drawings wherein:

- fig. 1 is a three-dimensional view of a hinge according to the present invention in accordance with a first embodiment, shown installed, in an operating condition, in a mobile element in order to hinge it with respect to a fixed structural element;
- fig. 2 is a first exploded view of the components of the hinge in fig. 1, in an assembled condition;
- fig. 3 is a second exploded view of the components of the hinge in fig. 1, in said operating condition;
- fig. 4 is a third exploded view of the disassembled components of the hinge in fig. 1, in said operating condition;
- fig. 5 is a longitudinal section along the pivoting axis of the hinge in fig. 1;
- fig. 6 is a longitudinal section along the pivoting axis of a hinge according to the present invention, in accordance with a second embodiment;
- fig. 7 is a longitudinal section along the pivoting axis of a hinge according to the present invention, in accordance with a third embodiment.

[0024] For a simpler description of the present invention, in the different embodiments described here, the same reference numbers refer to parts or components that are equal or very similar to each other.

[0025] Furthermore, in the present description, the terms horizontal, vertical, top, upper and lower have only the function of better illustrating the present invention with reference to the attached drawings, and in no way must

be used to limit the scope or use thereof.

DETAILED DESCRIPTION OF SOME EMBODIMENTS OF THE PRESENT INVENTION

[0026] With reference to fig. 1, a hinge 10 according to the present invention, and according to a first embodiment, is shown installed to hinge a mobile element 11, which can be for example a door, even a very heavy one, for example about 80 kg in weight, a window or a panel of a wardrobe or other article of furniture, with respect to a fixed structural element 12, which can be for example the frame of a door or window, or the fixed structure of an article of furniture.

[0027] The hinge 10 is the type with three hinging elements disposed coaxial with each other along a pivoting axis X. In particular, the three hinging elements comprise a central hinging element 13, a first terminal hinging element 14, disposed during use below the central hinging element 13, and a second terminal hinging element 15, disposed during use above the central hinging element 13. The three hinging elements each have a substantially cylindrical shape with the same external diameter.

[0028] The central hinging element 13 is provided with a transverse cavity 16 orthogonal to the pivoting axis X and able to house a first adjustment element which, in the case shown here, is a first screw 17 that can be selectively screwed into the mobile element 11 (fig. 1).

[0029] The first screw 17 has an annular groove 18 able to cooperate with mating retaining means, of a known type, for example two balls 19 (fig. 4), which prevent the axial translation thereof, and is provided with a head having a screwing seating 20, for example hexagonal in shape, to insert a tool, for example an Allen key.

[0030] The first screw 17 is therefore constrained transverse to the central hinging element 13, but can rotate with respect to a first axis of rotation Y1 (fig. 5), orthogonal to the pivoting axis X, so that it can be screwed/unscrewed with respect to the mobile element 11 (fig. 1) to modify the distance between the latter and the central hinging element 13.

[0031] The central hinging element 13 also comprises a first centering pin 21 parallel to the first axis of rotation Y1 and configured to enter into a corresponding guide hole of the mobile element 11.

[0032] Furthermore, the central hinging element 13 is provided with a first axial cavity 22 (fig. 5), coaxial to the pivoting axis X, in which a first pin 23 is slidably inserted. An eyelet 24, parallel to the pivoting axis X, is made in the front part, that is, the part opposite the first screw 17, of the central hinging element 13. A first threaded dowel 25 is screwed into the upper part of the first pin 23, transverse to the pivoting axis X, and has its head inserted into the eyelet 24.

[0033] The tip of the first threaded dowel 25 is configured to cooperate with a corresponding V-shaped hollow 26 made in the central hinging element 13 in correspondence with the first axial cavity 22.

[0034] The first terminal hinging element 14, in its lower part, is provided with a transverse cavity 27 orthogonal to the pivoting axis X and able to house a second adjustment element which, in the case shown here, is a second screw 28 which can be selectively screwed into the fixed structural element 12 (fig. 1).

[0035] The second screw 28 has an annular groove 29 (fig. 5) able to cooperate with mating retaining means, of a known type, for example two balls 30 (fig. 4), which prevent the axial translation thereof, and is provided with a head having a screwing seating 31, for example hexagonal in shape, to insert a tool, for example an Allen key.

[0036] The second screw 28 is therefore constrained transverse to the first terminal hinging element 14, but can rotate with respect to a second axis of rotation Y2 (fig. 5), orthogonal to the pivoting axis X, so that it can be screwed/unscrewed with respect to the fixed structural element 12 (fig. 1) to modify the distance between the latter and the first terminal hinging element 14.

[0037] The first terminal hinging element 14 also comprises a second centering pin 32 parallel to the second axis of rotation Y2 and configured to enter into a corresponding guide hole of the fixed structural element 12.

[0038] Furthermore, the first terminal hinging element 14 is provided with an axial cavity 33 (fig. 5), coaxial to the pivoting axis X, in which a peg 34 is slidably inserted, having its lower end cut at 45° with respect to the pivoting axis X. the upper end of the peg 34 is configured to contact the lower part of the first pin 23.

[0039] A second threaded dowel 35 is screwed into a threaded hole 36 made in the first terminal hinging element 14, transverse to the pivoting axis X and has a conical tip with an angle at the top of 90°, permanently in contact with the lower end of the peg 34.

[0040] Moreover, the upper part of the first terminal hinging element 14 is provided with an axial hole 37, in which a first bushing 38 is inserted, which functions as a first guide member and is configured to receive with precision the lower part of the first pin 23.

[0041] The second terminal hinging element 15, in its upper part, is provided with a transverse cavity 39 orthogonal to the pivoting axis X and is able to house a third adjustment element which, in the case shown here, is a third screw 40 that can be selectively screwed into the fixed structural element 12 (fig. 1).

[0042] The third screw 40 has an annular groove 41 (fig. 5) able to cooperate with mating retaining means, of a known type, for example two balls 42 (fig. 4), which prevent the axial translation thereof, and is provided with a head having a screwing seating 43, for example hexagonal in shape, to insert a tool, for example an Allen key.

[0043] The third screw 40 is therefore constrained transverse to the second terminal hinging element 15, but can rotate with respect to a third axis of rotation Y3 (fig. 5), orthogonal to the pivoting axis X, so that it can be screwed/unscrewed with respect to the fixed structural element 12 (fig. 1) to modify the distance between the latter and the first terminal hinging element 14.

[0044] The second terminal hinging element 15 also comprises a third centering pin 44 parallel to the third axis of rotation Y3 and configured to enter into a corresponding guide hole of the fixed structural element 12.

[0045] Furthermore, the second terminal hinging element 15 is provided with an axial cavity 45 (fig. 5), coaxial to the pivoting axis X, in which a second pin 46 is slidably inserted. An eyelet 47, parallel to the pivoting axis X, is made in the front part, that is, the part opposite the third screw 40 of the second terminal hinging element 15. A third threaded dowel 48 is screwed into the upper part of the second pin 46, transverse to the pivoting axis X, and has its head inserted into the eyelet 47.

[0046] The tip of the third threaded dowel 48 is configured to cooperate with a corresponding V-shaped hollow 49 made in the second terminal hinging element 15 in correspondence with the axial cavity 45.

[0047] The lower part of the second pin 46 is configured to be inserted with precision into a second bushing 50 disposed in an axial hole 51 made in the upper part of the central hinging element 13.

[0048] The hinge 10 as described heretofore is assembled and functions as follows.

[0049] In an assembled condition, shown schematically in fig. 2, the two pins 23 and 46 are completely inside the respective axial cavities 22 and 45, held there by the threaded dowels 25 and 48.

[0050] A first assembly step of the hinge 10 provides that the two terminal hinging elements of the hinge 10, that is, the lower one 14 and the upper one 15, are attached to the fixed structural element 12 (fig. 1), by screwing the two screws 28 and 40 so that the two terminal hinging elements 14 and 15 are coaxial with each other along the pivoting axis X, and so that there is a gap between them of at least some millimeters (for example from 2 to 4), greater than the height of the central hinging element 13 with the first pin 23 completely inside the corresponding first axial cavity 22.

[0051] Separately, the central hinging element 13 is attached to the mobile element 11, screwing the first screw 17 into the latter.

[0052] In a second assembly step, the central hinging element 13, already attached to the mobile element 11, is inserted between the two terminal hinging elements 14 and 15, coaxially with the pivoting axis X. In this position, shown in fig. 2, after having loosened the two threaded dowels 25 and 48, the two pins 23 and 46 are lowered so as to be inserted into the corresponding bushings 38 and 50 (figs. 1, 3 and 5). Then the two threaded dowels 25 and 48 are screwed in, to take their tips into the V-shaped notches 26 and 49 and keep the two pins 23 and 46 in said operating condition.

[0053] The hinge 10 thus assumes an operating condition simply and easily, with the mobile element 11 hinged to the fixed structural element 12.

[0054] In this operating condition it is also possible to easily adjust the hinge 10, to adjust the reciprocal position of the mobile element 11 with respect to the fixed struc-

tural element 12 in three directions perpendicular to each other.

[0055] In fact, by selectively screwing or unscrewing the second screw 28 and the third screw 40 into/from the fixed structural element 12 (fig. 1) it is possible to move the mobile element 11 toward or away from the fixed structural element 12, thus performing a first horizontal adjustment, also called front adjustment, of the mobile element 11 with respect to the fixed structural element 12.

[0056] Moreover, by selectively screwing or unscrewing the first screw 17 into/from the mobile element 11 it is possible to move the latter toward or away from the fixed structural element 12, thus performing a second horizontal adjustment, also called lateral adjustment, perpendicular to the first horizontal adjustment, of the mobile element 11 with respect to the fixed structural element 12.

[0057] Finally, by selectively screwing or unscrewing the second threaded dowel 35 it is possible to vary, by means of the peg 34 (fig. 5), the axial position of the central hinging element 13 with respect to the two terminal hinging elements 14 and 15, along the pivoting axis X, and hence vary the vertical position of the mobile element 11 (fig. 1) with respect to the fixed structural element 12.

[0058] According to a second embodiment, shown schematically in fig. 6, a hinge 110 according to the present invention substantially comprises the same components as the hinge 10 described above, except for the fact that each of the three hinging elements 113, 114 and 115, instead of a single centering pin 21, 32 and respectively 44, is provided with two centering pins 121, 132 and respectively 144, disposed on opposite sides with respect to the corresponding screw 17, 28 and respectively 40, and parallel to it.

[0059] According to a third embodiment, shown schematically in fig. 7, a hinge 210 according to the present invention comprises three hinging elements 213, 214 and 215, of which only the first terminal hinging element 214 is the same as the first terminal hinging element 14 of the second embodiment shown in fig. 6.

[0060] The central hinging element 213 is instead shaped so as to have the lower part the same as that of the central hinging element 13, with the axial cavity 22 in which the first pin 23 is housed, and the upper part which, instead of being provided with the axial hole 51 in which the second bushing 50 is housed, is provided with another axial cavity 245 into which a second pin 246 is slidingly inserted, configured to exit selectively upward, in an operating position.

[0061] In correspondence with the other axial cavity 245, an eyelet 246 is made, parallel to the axial cavity 245, into which the head of a third threaded dowel 248 is inserted, identical to the third threaded dowel 48. The tip of the third threaded dowel 248 is configured to cooperate with a corresponding V-shaped hollow 249 made in the upper part of the central hinging element 215, in correspondence with the other axial cavity 245.

[0062] The second terminal hinging element 215, in its lower part, instead of being provided with the second pin 46, is provided with an axial hole 251 into which a second bushing 250 is inserted, configured to receive the upper part of the second pin 246.

[0063] In the case of the hinge 210, the second assembly step provides that the central hinging element 213, already attached to the mobile element 11, is inserted between the two terminal hinging elements 214 and 215, coaxially with the pivoting axis X. In this position, the first pin 23 is lowered and the second pin 246 is thrust upward, so as to insert them into the corresponding bushings 38 and 250. Then the two threaded dowels 25 and 248 are screwed in, to take their tips into the V-shaped notches 26 and 249 and keep the two pins 23 and 246 in said operating condition.

[0064] It is understood that modifications and/or additions of parts may be made to the hinges 10, 110 and 210 as described heretofore, without departing from the field and scope of the present invention.

[0065] For example, each of the two threaded dowels 25 and 48, or 248, instead of cooperating with the corresponding V-shaped notch 26 and 49, or 249, could be inserted with its internal end into a corresponding transverse hole made in the body of the central hinging element 13 or 213, respectively of the second terminal hinging element 15 or 215.

[0066] Furthermore, it is clear that the terminal hinging elements 14, or 214 and 15, or 215 could be attached to the mobile element 11, and that therefore the central hinging element 13 or 213 could be attached to the fixed structural element 12.

[0067] Moreover, it is obvious for a person of skill in the art that the first pin 23 sliding axially in the central hinging element 13 could face upward and selectively cooperate with the second terminal hinging element 15, while the second pin 46 could be mounted sliding in the first terminal hinging element 14 and face upward to selectively cooperate with the central hinging element 13.

[0068] It is also clear that, although the present invention has been described with reference to some specific examples, a person of skill in the art shall certainly be able to achieve many other equivalent forms of hinges, having the characteristics as set forth in the claims and hence all coming within the field of protection defined thereby.

Claims

1. Hinge for hinging a mobile element (11) with respect to a fixed structural element (12), comprising a central hinging element (13, 113, 213) having a pivoting axis (X) and configured to be attached to said mobile element (11) or to said fixed structural element (12), and two terminal hinging elements (14, 114, 214; 15, 115, 215) configured to be attached to said fixed structural element (12) if said central hinging element

- (13, 113, 213) is attached to said mobile element (11), or to said mobile element (11) if said central hinging element (13, 113, 213) is attached to said fixed structural element (12), so that said two terminal hinging elements (14, 114, 214; 15, 115, 215) are disposed on reciprocally opposite sides and with play with respect to said central hinging element (13, 113, 213), coaxially to said pivoting axis (X), wherein said central hinging element (13, 113, 213) comprises at least a first cavity (22) in which a first pivoting mean (23) is slidably disposed, mobile parallel to said pivoting axis (X) between an inactive position in which it is substantially inside said first cavity (22), and an operating position in which it protrudes operatively from said first cavity (22) so that it can be selectively inserted into a corresponding first guide member (38) of a first of said terminal hinging elements (14, 114, 214), **characterized in that** said central hinging element (13, 113, 213) also comprises first adjustment means (17) to selectively adjust the distance of said pivoting axis (X) with respect to the corresponding mobile element (11) or fixed structural element (12) to which, in use, said central hinging element (13, 113, 213) is attached.
2. Hinge as in claim 1, **characterized in that** a second of said terminal hinging elements (15) comprises a second cavity (45) in which a second pivoting mean (46) is slidably disposed, mobile parallel to said pivoting axis (X) between an inactive position in which it is substantially inside said second cavity (45), and an operating position in which it protrudes operatively from said second cavity (45) so that it can be selectively inserted into a corresponding second guide member (50) of said central hinging element (13).
 3. Hinge as in claim 1 or 2, **characterized in that** said central hinging element (13, 113, 213) also comprises a first eyelet (24) parallel to said pivoting axis (X) and which puts said first cavity (22) into communication with the outside, and **in that** a first clamping element (25) is associated with said first pivoting mean (23), is accessible through said first eyelet (24), and is configured to selectively clamp said first pivoting mean (23) in its inactive position or its operating position.
 4. Hinge as in claim 3, **characterized in that** said first pivoting mean comprises a first pin (23) coaxial with said pivoting axis (X), and **in that** said first clamping element comprises a first threaded dowel (25) screwed into said first pin (23) transverse to said pivoting axis (X) and having its head inserted into said first eyelet (24).
 5. Hinge as in claim 2, **characterized in that** said second terminal hinging element (15) also comprises a second eyelet (47) parallel to said pivoting axis (X) and which puts said second cavity (45) into communication with the outside, and **in that** a second clamping element (48) is associated with said second pivoting mean (46), is accessible through said second eyelet (47), and is configured to selectively clamp said second pivoting mean (46) in its inactive position or its operating position.
 6. Hinge as in claim 5, **characterized in that** said second pivoting mean comprises a second pin (46) coaxial with said pivoting axis (X), and **in that** said second clamping element comprises a second threaded dowel (48) screwed into said second pin (46) transverse to said pivoting axis (X) and having its head inserted into said second eyelet (47).
 7. Hinge as in claim 1, **characterized in that** said central hinging element (213) also comprises another cavity (245), disposed on the opposite side of said first cavity (22) and in which a second pivoting mean (246) is slidably disposed, mobile parallel to said pivoting axis (X) between an inactive position in which it is substantially inside said other cavity (245), and an operating position in which it protrudes operatively from said other cavity (245) so that it can be selectively inserted into a corresponding second guide member (250) of a second of said terminal hinging elements (215).
 8. Hinge as in any claim hereinbefore, **characterized in that** said two terminal hinging elements (14, 114, 214; 15, 115, 215) comprise second adjustment means (28, 40) to selectively adjust the distance of said pivoting axis (X) with respect to the corresponding fixed structural element (12) or mobile element (11) to which, in use, said two terminal hinging elements (14, 114, 214; 15, 115, 215) are attached.
 9. Hinge as in any claim hereinbefore, **characterized in that** said first terminal hinging element (14, 114, 214) also comprises third adjustment means (34, 35) to selectively adjust the axial position of said central hinging element (13, 113, 213) with respect to said two terminal hinging elements (14, 114, 214; 15, 115, 215).
 10. Hinge as in claim 9, **characterized in that** said third adjustment means comprise both a peg (34) coaxial to said pivoting axis (X) and having a first end configured to contact said first pivoting mean (23) and a second end inclined with respect to said pivoting axis (X), and also a third threaded dowel (35) screwed into a threaded hole (36) made in said first terminal hinging element (14, 114, 214) transverse to said pivoting axis (X) and having a conical point permanently in contact with said inclined end of said peg (34).

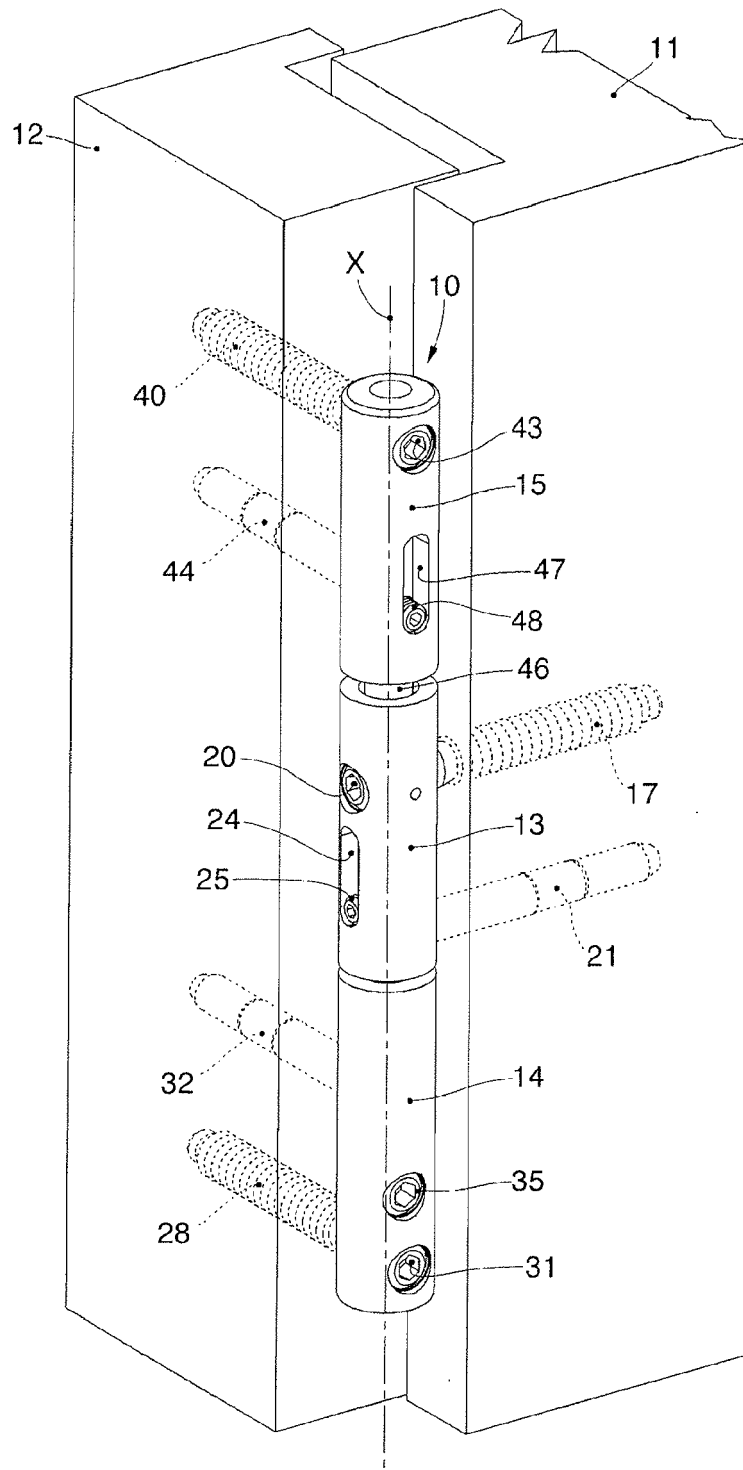


fig. 1

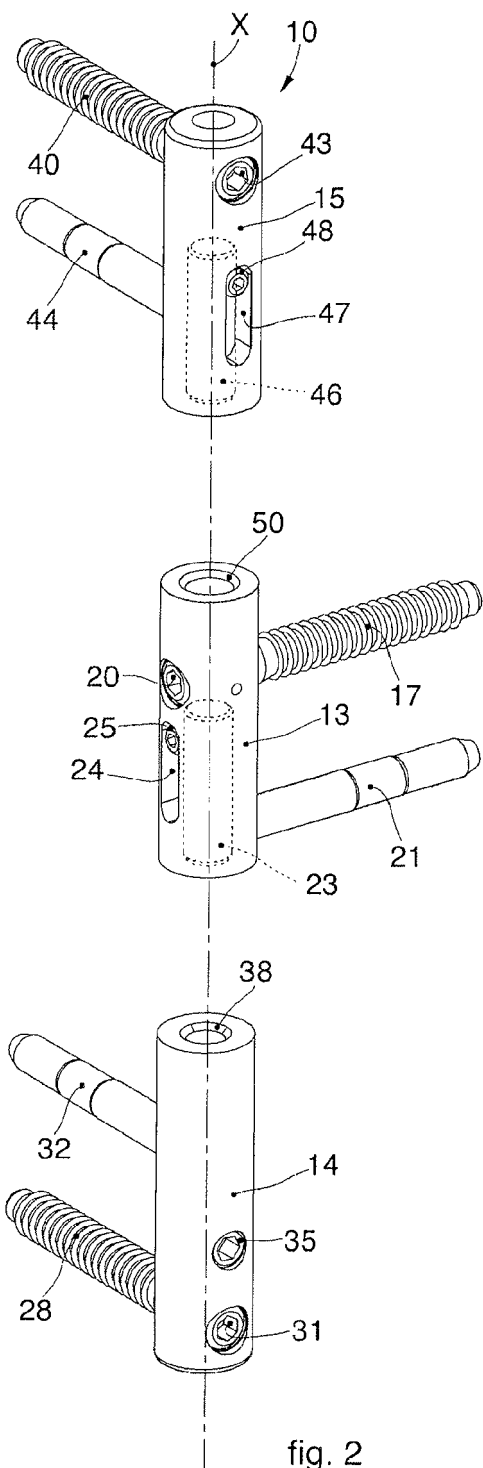


fig. 2

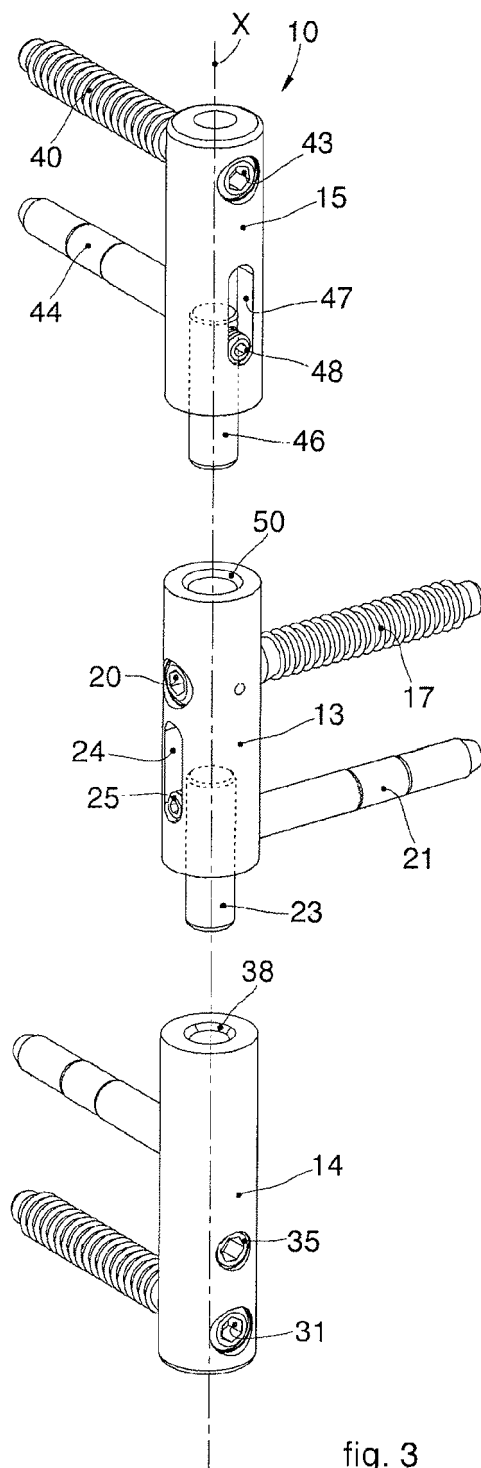


fig. 3

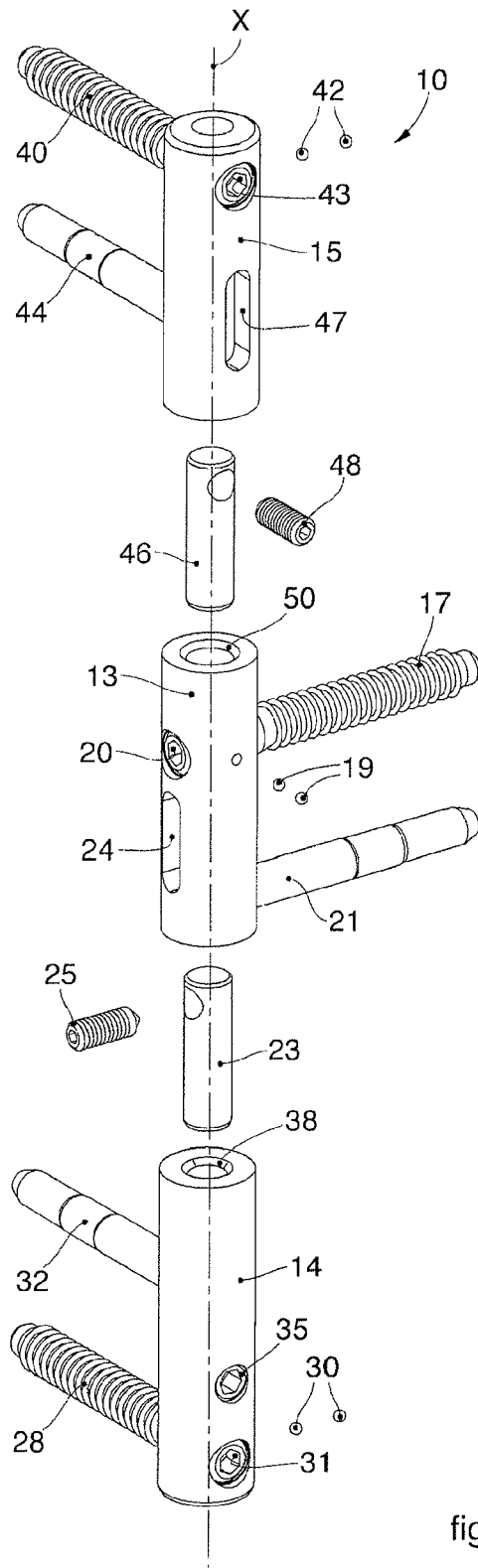


fig. 4

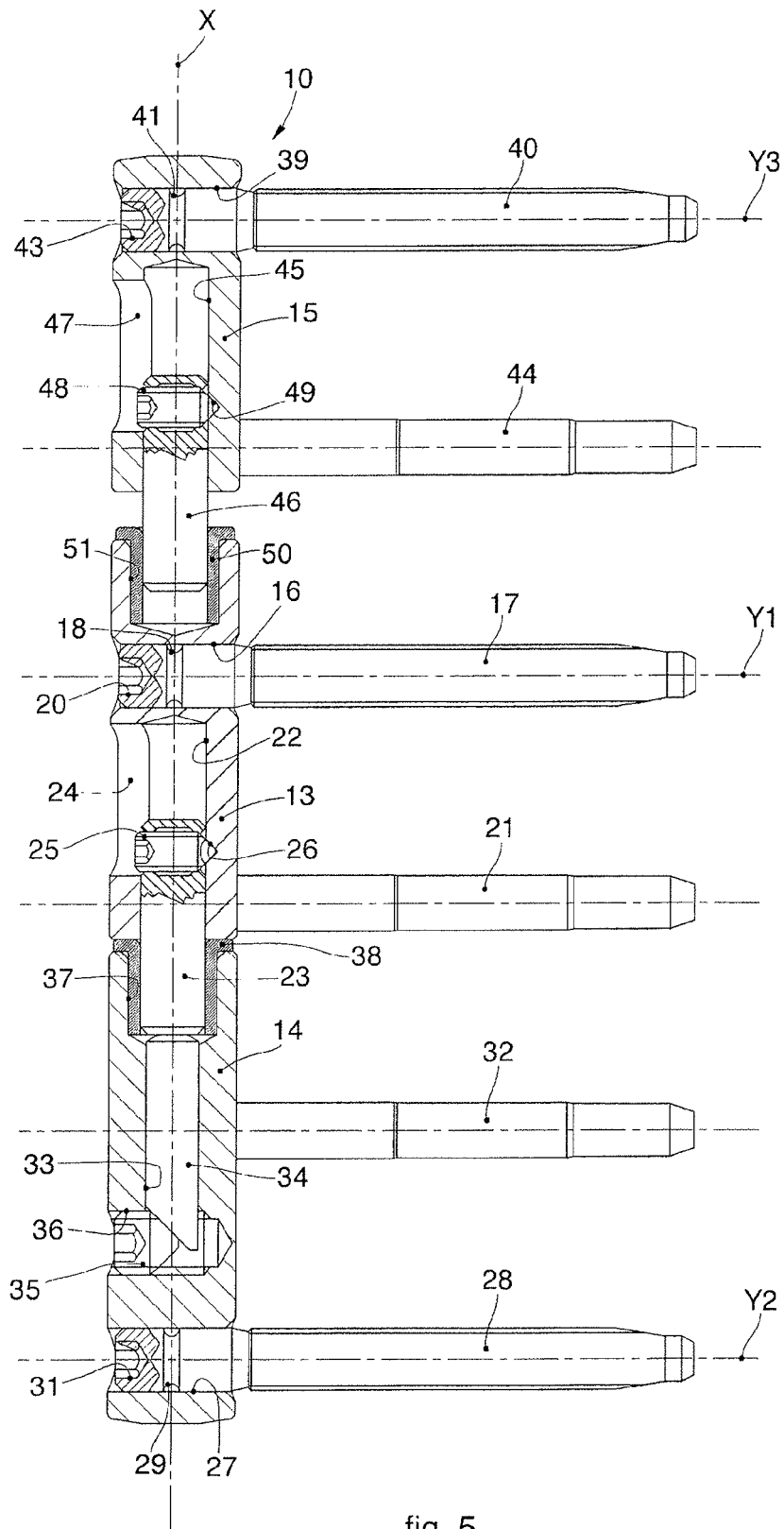
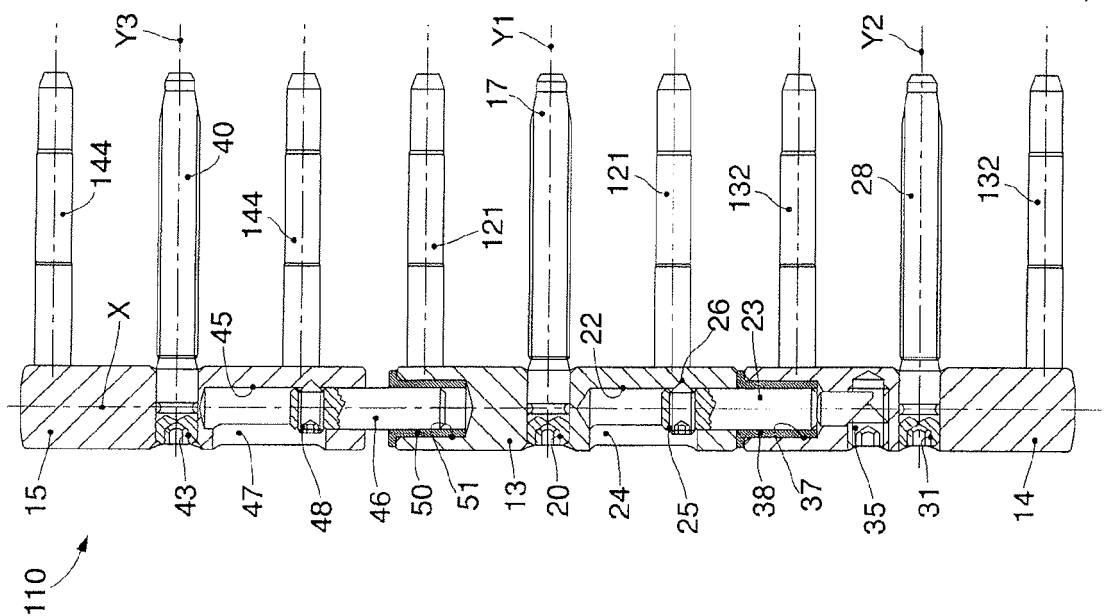
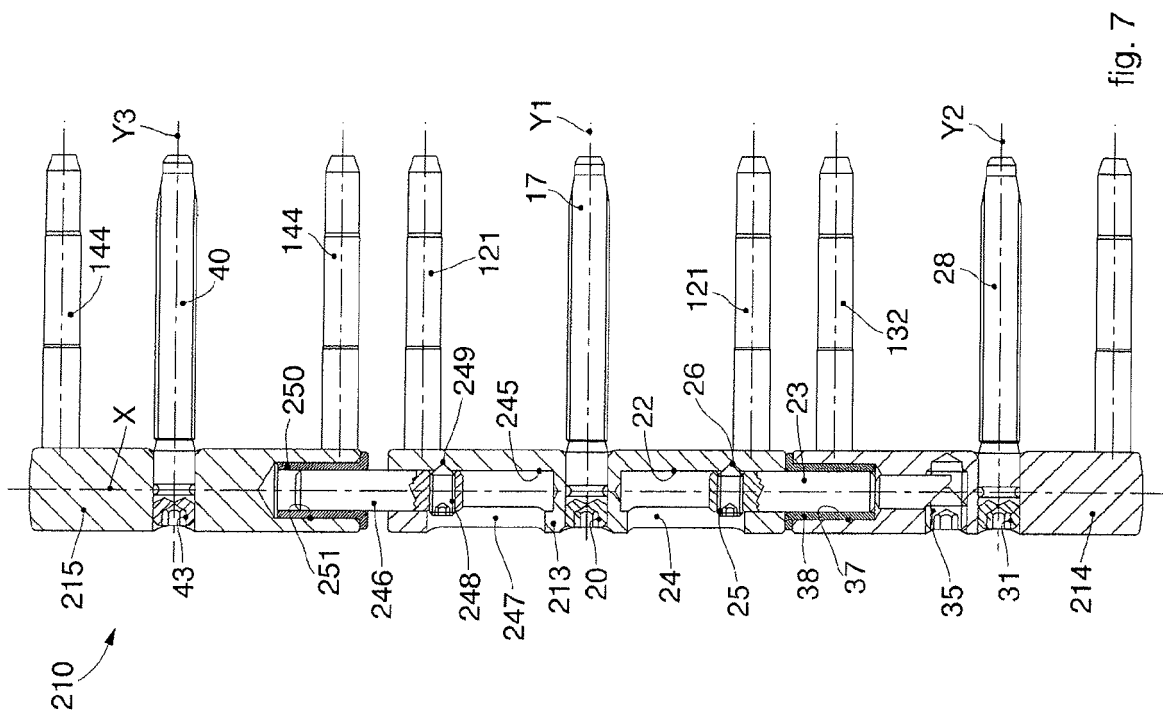


fig. 5





EUROPEAN SEARCH REPORT

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 EP 16 16 9689

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A		1,7	
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The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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