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(54) **HINGE FOR DOOR WITH 45 DEGREE BEVELLED EDGE**

(57) Hinge (C) for moving in opening and closing a door (2) bevelled at 45° with respect to a furniture item wall (1), also bevelled at 45°, said hinge (C) comprising a first hinge part (C1) and a second hinge part (C2), suitable for being accommodated in corresponding seats (S) provided in the wall (1) and in the door (2), each hinge part (C1) and (C2) comprising, respectively, a first shaped plate or arm (10) and a second shaped plate or cage (20), connected one to the other by means of four connecting rods (B 1, B2, B3, B4) with planar conformation and seven axes or joint pins (P1, P2, P3, P4, P5, P6, P7), forming the actual hinge assembly, wherein said arm (10) and said cage (20) have a parallelepiped shape and are housed in corresponding separate bases (G1) and (G2), whereto they are fixed by means of respective screws (51), (50), and wherein at least one lamina spring (M) or one torsion spring (M') are provided, placed between a pair of said connecting rods (B1, B2, B3, B4), or between one of said connecting rods and said arm (10) or said cage (20), exerting a force in the closing direction of the hinge, and a damper (D) actuated by at least one of said connecting rods (B1, B2, B3, B4), to slow down the closing of the hinge.

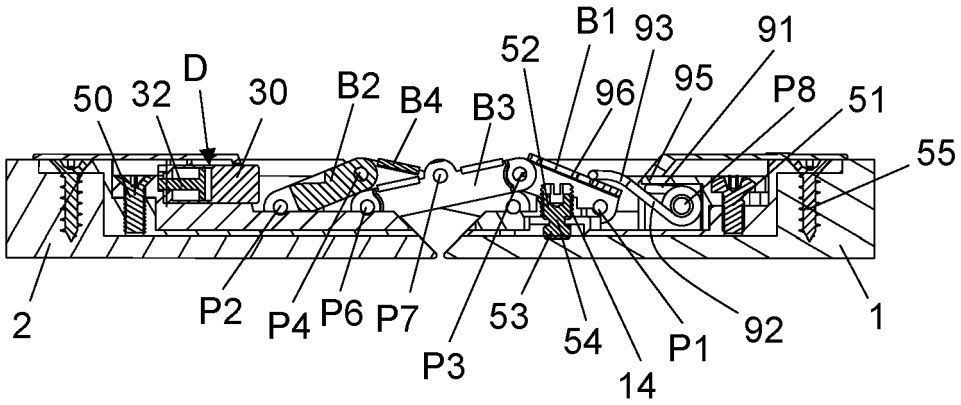

Fig. 14

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Description

[0001] The present invention relates to a hinge for the opening and the closure of furniture parts bevelled at 45°, in particular doors bevelled at 45° like the corresponding part of the furniture body, which may be a side, the base or the top.

[0002] For the sake of convenience, here below in this description the hinge in question will also be called a 45° door hinge, or simply 45° hinge.

Background of the invention

[0003] As is known, the standard for furniture in circulation provides for the cutting of doors at 90°, and there is a plurality of hinges on the market, exposed or also recessed, which allow the movement of these doors during opening and closure.

[0004] For particular applications, or even only for aesthetic reasons, users prefer to use doors cut at 45° which, in the closed condition, do not leave the edge of the door exposed.

[0005] However, the movement of these types of doors requires particular hinges, which do not always meet users' requirements, either because they are complex to install, or because they do not have springs to assist in closing, or because they protrude excessively into the compartment of the furniture item in the closed condition, and so on.

[0006] In addition, these known hinges are normally without a damper that acts during closure of the door to cushion the impact of the door against the body of the furniture item, which is currently present in the vast majority of hinges for standard doors bevelled at 90°.

[0007] US 4817241 A, dating from the 1980s, describes a 45° door hinge of the type referred to in the present invention. The hinge has a particularly complex structure, whose fixed and movable parts have a substantially round profile and require the machining of seats of the same round profile in the movable parts to be connected. This document is primarily based on the provision of gear means to allow regulations of the fixed and movable parts in directions perpendicular one to the other. Neither elastic means to assist in closing nor deceleration means to slow down closing are provided. Nor could such means be provided in the hinge structure described.

[0008] CN 203640462 U describes a wide-opening hinge for doors cut at right angles, comprising a series of articulated levers that determine particular opening kinematics. Both a helical spring and a damper are provided, as is usual in this type of hinge. However these elements are not transferable to 45° door hinges.

[0009] DE 20 2019 104311 U1 describes a hinge for 180° opening doors. The two hinge bodies are slightly bevelled at the same angle and are perfectly opposed when the door is closed. The hinge has neither spring means nor damping means.

Summary of the invention

[0010] An object of the invention is to eliminate the disadvantages of known 45° door hinges.

[0011] More particularly, an object of the present invention is to provide a hinge for 45° doors that allows automatic and, at the same time, cushioned closing of the door.

[0012] Another object of the invention is to provide such a 45° door hinge which can be supplied assembled or with the mechanism separate, so as to facilitate assembly thereof on the furniture item.

[0013] A further object of the invention is to provide such a hinge that is small in size and has a reduced footprint inside the furniture item in the closed condition. Yet another object of the invention is to provide such a hinge that is simple and inexpensive to make and, at the same time, highly reliable.

[0014] These and other objects are achieved by the 45° door hinge according to the invention, which has the features listed in the appended independent claim 1.

[0015] Advantageous embodiments of the invention are made clear by the dependent claims.

[0016] Substantially, the present invention relates to a hinge for opening and closing a door bevelled at 45° with respect to a wall of a furniture item, also bevelled at 45°, said hinge being formed of a first hinge part and of a second hinge part suitable to be accommodated in corresponding seats provided in the wall and in the door, each hinge part comprising, respectively, a first shaped plate or arm and a second shaped plate or cage, connected one to the other by means of four connecting rods and seven hinge pins or pivot pins, forming the actual hinge assembly, in which said arm and said cage are housed in corresponding separate bases, to which they are fixed by means of respective screws, and in which there is provided at least one spring arranged between a pair of said connecting rods, exerting a force in the direction of closure of the hinge.

Brief description of the drawings

[0017] Further features of the invention will be made clearer by the following detailed description, referring to an embodiment thereof purely by way of non-limiting example, illustrated in the accompanying drawings, wherein:

Fig. 1 is an axonometric blown-up view from above of the 45° door hinge according to the invention;

Fig. 2 is an axonometric view of the hinge of Fig. 1 assembled;

Fig. 2a is an axonometric section view taken along the plane B-B of Fig. 2, without the protective cover;

Fig. 3 is a median section taken along line A-A of Fig. 2;

Fig. 3a is a cross section view like that of Fig. 3, in which the closure spring is shown in a different ar-

rangement;

Figs. 4 and 5 are views like Fig. 3 showing successive steps during closure;

Figs. 6 to 12 show, in axonometric views, successive steps of a method of assembly of the hinge on a furniture item;

Fig. 13 is an axonometric view showing another method of assembly of the hinge on a furniture item;

Fig. 14 is a longitudinal median section view, like those of Figs. 3 and 3a, of a hinge in open position according to a second embodiment of the invention, wherein a different type of elastic means exerting a closure force on the hinge is provided;

Fig. 15 is a plan view from above of the hinge of Fig. 13;

Fig. 16 is a section view like that of Fig. 5, showing the hinge of Fig. 14 in closed position;

Finally, Figs. 17a, 17b, 17c are, respectively, an axonometric view, a side profile view and a plan view from above of the elastic element used in this second embodiment.

Detailed description of the invention

[0018] Referring to the accompanying drawings, the hinge according to the invention, designed for opening and closing 45° bevelled doors, as schematised in Figures 6 to 13, will now be described in greater detail.

[0019] In these drawings the door is shown on the left and denoted by reference numeral 2, while the wall of the furniture item, whereto it is hinged, on the right, is denoted by reference numeral 1.

[0020] However, the door 2 and the wall 1, which may be a side, the base, the top or also an intermediate shelf of the furniture item, may have their positions reversed with respect to what is shown, also because the seats S formed in them to accommodate the respective hinge parts are perfectly identical.

[0021] Similarly, the hinge can be mounted as shown in these drawings or with the position of its two parts reversed.

[0022] Referring now to Figures 1 and 2, the hinge according to the invention, denoted overall by the letter C and comprising a fixed hinge part C1, which, in the example shown, is mounted on the wall 1 of the furniture item, and a movable hinge part C2, which is mounted on the door 2, is described in its basic component parts.

[0023] The two hinge parts C1, C2, having a substantially rectangular elongated shape in plan view, comprise a respective base G1, G2 that are structurally identical one to the other dimensionally, apart from some internal details that will be described here below, so that they can be housed equally in any of the seats S formed in the door and in the furniture item.

[0024] The two bases G1 and G2 house the actual hinge assembly, comprising a first shaped plate 10, with a substantially rectangular profile, which we will call arm, intended to be housed in the base G1, and a second shaped plate 20, also with a substantially rectangular profile, which we will call cage, intended to be housed in the base G2, between which is arranged the door movement mechanism, composed of a seven-axis or pins joint system, which will now be described, also with reference to the section views.

[0025] It comprises four levers or connecting rods B1, B2, B3, B4, jointed to each other and to the respective shaped plates 10, 20.

[0026] In the accompanying drawings, the seven joint pins are denoted by reference numerals P1, P2, P3, P4, P5, P6, P7 and, for ease of interpretation, in the blown-up view of Fig. 1, the holes provided in the connecting rods and in the shaped plates 10, 20, intended to accommodate them, are denoted by the same reference numerals followed by a superscript.

[0027] More particularly, the outermost connecting rods B1, B2 are jointed, with one of their ends, in the points P1 and P2, arranged more internally, in the arm 10 and in the cage 20, respectively.

[0028] The connecting rod B1 is jointed with its other end, at one end of one of the two central connecting rods B3, in point P3, the other end of which is jointed to the cage 20 in point P6, outermost in relation to the point of jointing P2.

[0029] The connecting rod B2 is jointed with its other end, at one end of the other central connecting rod B4, in the point P4, the other end of which is jointed to the arm 10 in the point P5, outermost with respect to the point of jointing P1.

[0030] The two central connecting rods B3, B4 are jointed one to the other in an intermediate point P7.

[0031] In open hinge condition, with the door 20 practically aligned with the wall 10 of the furniture item, the pairs of connecting rods B1, B4 and B2, B3 are slightly inclined in opposite directions with respect to these elements, without however producing external bulk, as can be seen in Figures 3, 3a.

[0032] In the phase of closure of the hinge, these pairs of connecting rods rotate 90° in opposite directions, to bring themselves into the configuration shown in Fig. 5, in which they protrude in a limited manner beyond the profile of the arm 10 and of the cage 20.

[0033] Connecting rods B1-B4 have a planar conformation and a width slightly smaller than the width of the arm 10 and of the cage 20, the joint pins P1-P7 extending transversally and parallel to the planes of the connecting rods.

[0034] To assist in the closing of the hinge, elastic means are provided, in this case a strip or lamina spring M, which acts between the connecting rods B1 and B3.

[0035] In Figures 3-5, this spring M is provided internally, i.e. below the connecting rods B1, B3, while in the alternative of Fig. 3a it is external, i.e. placed above the connecting rods. For the rest, the embodiment of Fig. 3a is identical to that of Fig. 3.

[0036] In order to allow the aforementioned two types of assembly of the spring M, one of the connecting rods,

i.e. the connecting rod B3 in the example shown, has, at one end thereof, a beak 26 projecting outwards, in proximity of which a transverse slot 27 is provided on the connecting rod B3. The distal end 28 of the flat surface of the adjacent connecting rod B1 is slightly distanced from the corresponding joint pin P1, in such a way as to determine a gap 29 with it. The spring M has the ends M1, M2 bent in an arc on the same side, so that one M1 of these arched ends goes to engage with the beak 26 of the connecting rod B3, optionally passing through the slot 27, and the other end M2 goes to engage with the aforementioned end 28 of the adjacent connecting rod B1, arranging itself in said passage gap 29.

[0037] Naturally, the spring M may be arranged between other pairs of connecting rods, or between a connecting rod and the arm 10 or cage 20, as also several springs M may be provided.

[0038] Further on, with reference to Figs. 14-17, a different type of spring will be described.

[0039] The hinge also comprises a decelerator D, designed to prevent the hinge from closing abruptly.

[0040] In the embodiment shown in the drawings, the decelerator D is a shock absorber or damper consisting in particular of an oil cylinder 30, with relative piston 31.

[0041] The damper D is housed in a seat 21 of the cage 20, with the rod 32 of the piston that abuts against the bottom 22 of the seat 21.

[0042] In the example shown, the damper D is actuated by the connecting rod B2 which, on the side turned towards the damper, has a recess 33, capable of partially accommodating the cylinder 30 in the closed condition (Fig. 5).

[0043] In the example shown, the decelerator D and the spring M are mounted on opposite sides in the cage 20 and in the arm 10 respectively, an arrangement which is optimal due to the limited space available.

[0044] However these components can both be mounted in either the cage 20 or in the arm 10.

[0045] Both the arm 10 and the cage 20, and the corresponding G1 and G2 bases, are bevelled frontally at 45°, so as to fit the 45° bevel of the wall 1 of the furniture item and of the door 2.

[0046] The cage 20, substantially having a hollow parallelepiped shape for accommodating the damper D and partially the connecting rods B2 and B3, has on its two sides, starting from the front edge, a pair of external longitudinal ribs 23, extending for about half of the length of the cage 20, intended to engage slidingly in corresponding opposed grooves 41, provided inside the side walls 40 of the base G2, between which the cage 20 is arranged, that carries at the rear a protruding upper fin 24 with a transverse slotted hole 25, which overlaps with a threaded hole 43 provided in a thickening 44 of the back wall 42 of the base G2.

[0047] The insertion of a screw 50 into the slotted hole 25 and its screwing into the threaded hole 43 produce a firm fixing of the cage 20 in the base G2, with the possibility of transverse adjustment determined by the length of the slot 25.

[0048] The arm 10 also has a parallelepiped shape with a hollow front part 11, which partially accommodates the connecting rods B1 and B4, and a solid rear part 12, slightly raised centrally with respect to the bottom of the hollow front part 11, so as to determine two lateral fins 13 projecting below from said solid part 12.

[0049] The corresponding base G1 which, as mentioned, is identical externally to the base G2, so that the same reference numerals are used to distinguish identical or corresponding parts, has a central thickened wall 60 at the rear, on which said solid part 12 of said arm 10 is placed, with wings 13 which can slide at the sides of the thickening 60, as can be seen in greater detail in the axonometric section of Fig. 2a.

[0050] A longitudinal slotted hole 15 is provided in the aforementioned solid part 12 of the arm 10, which overlaps with a threaded hole 61 provided in said thickening 60 of the back wall 42 of the base G1.

[0051] The insertion of a screw 51 in the slotted hole 15 and screwing thereof in the threaded hole 61 produce a firm fixing of the arm 10 in the base G1, with the possibility of a longitudinal adjustment determined by the length of the slot 15.

[0052] For adjustment along the third axis, perpendicular to the aforementioned transverse and longitudinal directions, a grub screw 52 is provided which is screwed into a threaded hole 14 of the arm 10 and goes to engage, with one of its widened ends 53, below a longitudinal slot 62 provided frontally to said thickened part 60 of the base 10, into which a narrowed portion 54 of the shank of the grub screw 52 is inserted.

[0053] The engaging of the widened end 53 of the grub screw 52 below the slot 62 is enabled by the provision of a longitudinal slot 63 in the back wall 42 of the base G1, which extends at the front beyond said slot 62.

[0054] In this way, the arm 10, with the pre-mounted grub screw 52, before the screwing of the screw 51, is placed on the base G1 with the grub screw at the front part of the slot 63 and made to slide longitudinally along the base, to bring the grub screw 52 into engagement with the slot 62.

[0055] A rotation in one direction or the other of the grub screw 52, with the fixing screw 51 loosened, determines a greater or smaller inclination of the arm 10 with respect to the base G1, and therefore an adjustment along the aforesaid third axis.

[0056] In order to allow easy mounting and secure fixing of the hinge in the seats S formed in the wall 1 of the furniture item and in the door 2, externally to the side walls of the bases G1, G2 are provided a pair of longitudinal ribs 45, which start from the front bevel and extend for approximately half of the length of these bases.

[0057] In the rear part of the bases G1, G2, a protruding rear fin 46, in which a hole 47 is present, is instead provided.

[0058] Correspondingly, the seats S formed in the

furniture item wall 1 and in the door 2 have a shape with a substantially inverted T section, with longitudinal extension, in which the central stem 70 of the T accommodates the body of the bases G1, G2, and the widened head 71 the aforementioned side ribs 45.

[0059] Adjacent to the inner end of the seat S, on the surface of the wall 1 and of the door 2, a recess 72 is provided, capable of accommodating the fin 46 projecting at the rear of the bases G1, G2, in such a way that it is placed flush with the abovementioned surface.

[0060] The fixing of the bases G1 and G2, respectively, in the wall 1 of the furniture item and in the door 2, takes place by means of a screw 55, which passes through the hole 47 provided in the fin 46 and screws into an underlying hole 73 provided in the recess 72.

[0061] Referring now to Figures 14-17, a second embodiment of the invention is described, which differs from the previous one only in the use of a different spring exerting a closing force on the hinge. The structure of the hinge remains substantially unchanged except for slight adjustments to accommodate the different type of spring, which will be briefly highlighted, using the same reference numerals to distinguish the elements described in the previous embodiment.

[0062] According to this embodiment variant, a torsion spring is used, preferably a double torsion spring, denoted by reference sign M', shown in isolation in Figs. 17a, 17b, 17c, which has been chosen and realised to exert an adequate closing force on the hinge, especially necessary in the embodiment shown, in which the decelerator D is on the opposite side, at a considerable distance therefrom.

[0063] The spring M', which is preferably in harmonic steel, comprises two helical windings 90 joined one to the other to form a central U-shaped portion and terminating with respective feet 91, oriented in the same direction. The central U-shaped portion is quite pronounced and has the end part 93 curved downwards, in the opposite direction to said feet 91.

[0064] As can be seen in Figures 14 and 16, the spring M' is mounted with its helical windings 90 on a pin P8, attached to the arm 10 of the fixed part C1 of the hinge and extending parallel to the pins P1-P7, with the feet 91 oriented towards the movable part C2 of the hinge, abutting against an upper abutment wall 95.

[0065] The central U-shaped part 92 of the spring M' rests, with its end curved downwards 93, on the connecting rod B1, exerting a force thereon that tends to make the hinge close.

[0066] In this case, a window 96 is provided in the connecting rod B1, in which the curved end 93 of the central part 92 of the spring M' is inserted in the transition from the open hinge position of Figs. 14, 15 to the closed hinge position of Fig. 16.

[0067] In the closed hinge position of Fig. 16, the connecting rod B1 is inclined in the opposite direction to the central part 92 of the spring M', which traverses it, exerting a force on the connecting rod that tends to keep the hinge closed.

[0068] The structure of the hinge remains substantially unchanged in this second embodiment, except for the displacement of the adjustment grub screw 52, the mounting and operation whereof remain unchanged, below the connecting rod B1, to allow the positioning of the spring M'. Access to the grub screw 52 is through the aforementioned window 96 provided in connecting rod B1.

[0069] Naturally, the spring M' can be positioned in such a way as to act between parts of the hinge different from those illustrated.

[0070] Having described the structure and the assembly of the hinge according to the invention, which may be provided with pre-assembled or separate bases G1, G2, two modes of mounting the hinge on the furniture item are now described.

[0071] A first mode is shown in Figures 6 to 12, in which the hinge is provided with the bases G1, G2 pre-assembled.

[0072] Starting from Fig. 6, the hinge part C1 is inserted in the seat S provided in the wall 1 of the furniture item, as indicated by the arrow shown thereon, and fixed by tightening the screw 55 shown in Fig. 7, arriving at the condition of Fig. 8.

[0073] Then the hinge portion C2 is inserted in the seat S of the door 2 and, after screwing of the corresponding attachment screw 55 shown in Fig. 9, the condition of assembled hinge of Fig. 10 is reached, where the protective covers 80, covering the screws, are also shown, which are applied by slotting and/or sliding (Fig. 11).

[0074] Fig. 12 shows the hinge in the closed condition of the door.

[0075] In the foregoing, only by way of example, the start saw insertion of hinge part C1 first.

[0076] Naturally, nothing changes by starting with insertion first of hinge part C2.

[0077] Fig. 13 shows a different method of assembly, in which the bases G1, G2 are first inserted in the corresponding seats S and attached by means of the screws 55, and subsequently the actual hinge assembly is mounted, as previously described, adjusting the inclination of the arm 10 by means of the screwing of the grub screw 52, and attaching the arm 10 and the cage 20 by means of the respective screws 51 and 50, with simultaneous longitudinal and transverse adjustment, respectively.

[0078] The hinge according to the invention has small dimensions: about 20 mm in width and 67 mm in length, and in such a small space the adjustments along the three Cartesian axes, the spring M and the damper D have been inserted. Moreover, its thickness is such that it can be accommodated in thicknesses of the wall 1 and of the door 2 of 16 mm.

[0079] From what has been stated, the advantages of the seven-pin 45° door hinge according to the invention are clear. In addition to its small dimensions and the presence of elastic closure and deceleration means, it

can be supplied completely pre-assembled or with separate support bases, leaving it up to the user to decide how to mount it.

[0080] Furthermore, the hinge can be mounted either in one direction or in the other in the two furniture item parts to be connected, thanks to the perfect symmetry of the two hinge parts C1, C2, which can be accommodated in the same housing S formed in the furniture item parts.

[0081] Naturally, the invention is not limited to the particular embodiment described above and illustrated in the accompanying drawings, but numerous detailed changes may be made thereto within the reach of the person skilled in the art, without thereby departing from the scope of the invention as defined in the appended claims.

Claims

1. Hinge (C) for opening and closing a door (2) bevelled at 45° with respect to a furniture item wall (1), also bevelled at 45°, said hinge (C) comprising a first hinge part (C1) and a second hinge part (C2), suitable for being accommodated in corresponding seats (S) provided in the wall (1) and in the door (2), each hinge part (C1) and (C2) comprising, respectively, a first shaped plate or arm (10) and a second shaped plate or cage (20), connected one to the other by means of four connecting rods (B1, B2, B3, B4) with planar conformation and seven axes or joint pins (P1, P2, P3, P4, P5, P6, P7), forming the actual hinge assembly, **characterised in that** said arm (10) and said cage (20) have a parallelepiped shape and are housed in corresponding separate bases (G1) and (G2), whereto they are fixed by means of respective screws (51), (50), and **in that** at least one lamina spring (M) or one torsion spring (M') are provided, placed between a pair of said connecting rods (B1, B2, B3, B4), or between one of said connecting rods and said arm (10) or said cage (20), exerting a force in the closing direction of the hinge, and a damper (D) actuated by at least one of said connecting rods (B1, B2, B3, B4), to slow down the closing of the hinge.

2. Hinge according to claim 1, **characterised in that** said torsion spring (M') is mounted on a pin (P8), attached to said arm (10) and acting on one (B1) of said connecting rods (B1, B2, B3, B4).

3. Hinge according to claim 2, **characterised in that** said spring (M') is a double torsion spring having a central U-shaped part (92) that acts on said connecting rod (B1).

4. Hinge according to claim 3, **characterised in that** said connecting rod (B1) has a window (96) through which a curved end (93) of said U-shaped central part (92) of the spring (M') can pass during the movements of opening and closing of the hinge.

5. Hinge according to claim 1, **characterised in that** said at least one lamina spring (M) has ends (M1, M2) bent in an arc on the same side in such a way that a first (M1) of these arched ends goes to engage with an external beaked protrusion (26) of one (B3) of said connecting rods, and a second end (M2) goes to engage with a distal end (28) of the flat surface of an adjacent connecting rod (B1).

6. Hinge according to claim 5, **characterised in that** said external beaked protrusion (26) is provided at one end of said connecting rod (B3), in proximity of which on the connecting rod (B3) a transversal slot (27) is provided for the possible passage of said first arched end (M1) of the lamina spring (M).

7. Hinge according to claim 5 or 6, **characterised in that** between said distal end (28) of the flat surface of the connecting rod (B1) and the corresponding joint pin (P1) a passage gap (29) is provided, suitable for accommodating said second arched end (M2) of the lamina spring (M).

8. Hinge according to any one of the preceding claims, **characterised in that** said damper (D) is an oil cylinder (30) placed in said cage (20) and is actuated by one (B2) of said connecting rods (B1, B2, B3, B4).

9. Hinge according to claim 8, **characterised in that** said connecting rod (B2) for actuating said damper (D), on the side turned towards the damper, has a recess (33), capable of partially accommodating its cylinder (30) in condition of closure of the hinge.

10. Hinge according to any one of the preceding claims, **characterised in that** said arm (10) is attached to the corresponding base (G1) by means of said screw (51) that traverses a longitudinal slotted hole (15) provided therein and is screwed into a threaded hole (61) of the base (G1), allowing longitudinal regulation determined by the length of the slot (15).

11. Hinge according to any one of the preceding claims, **characterised in that** said cage (20) is attached to the corresponding base (G2) by means of said screw (50) that traverses a transverse slotted hole (25) provided therein and is screwed into a threaded hole (43) of the base (G2), allowing transverse regulation determined by the width of the slot (25).

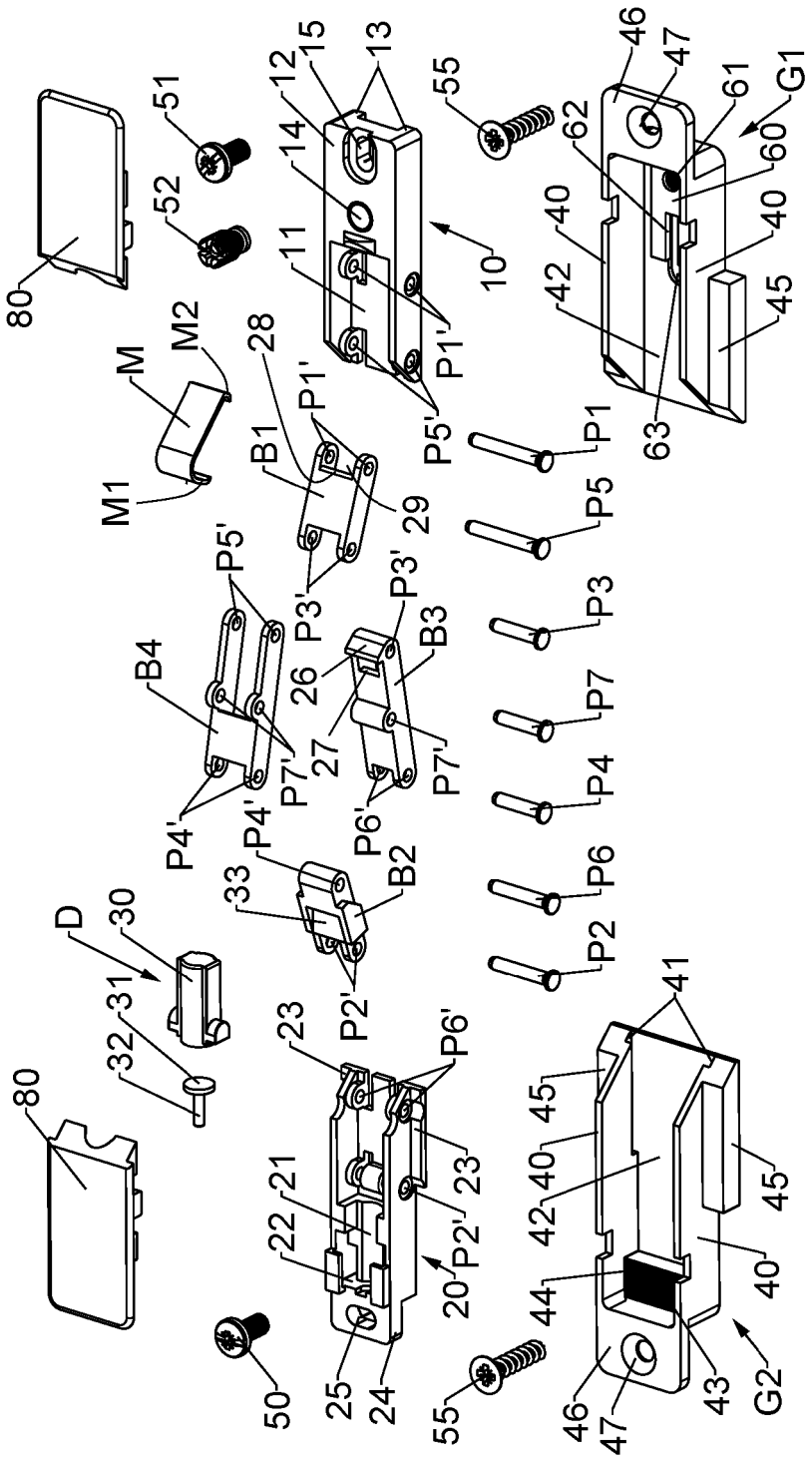
12. Hinge according to any one of the preceding claims, **characterised in that** a threaded hole (14) is provided in said arm (10), engaged by a grub screw (52) having a widened end (53), which is placed below a slot (62) provided in the base (G1) to give a greater or

smaller inclination to the arm (10), allowing an adjustment along an axis perpendicular to the above-mentioned longitudinal and transverse directions.

13. Hinge according to any one of the preceding claims, **characterised in that** said bases (G1, G2) have an identical external profile, such that they can be inserted in any one of the seats (S) provided in the furniture item wall (1) or in the door (2).

14. Hinge according to claim 13, **characterised in that** said bases (G1, G2) have a 45° front bevel and have, externally to their side walls (40), a pair of longitudinal ribs (45) designed to be inserted in a widening (71) of said seat (S) that has an inverted T-section, with longitudinal extension, said bases (G1, G2) having, at the rear, a protruding fin (46) with hole (47) for attachment to the wall (1) or to the door (2) by means of a screw (55).

15. Hinge according to any one of the preceding claims, **characterised in that** it provides protective covers (80) at least partially covering said hinge parts (C1, C2).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14
11
P5'
P1'
55
46
47
61
G1
62
60
40
42
45
63
P1
P5
P3
P7
P4
P6
P2
41
45
40
42
44
43
G2
46
47

Fig.1

Fig.2

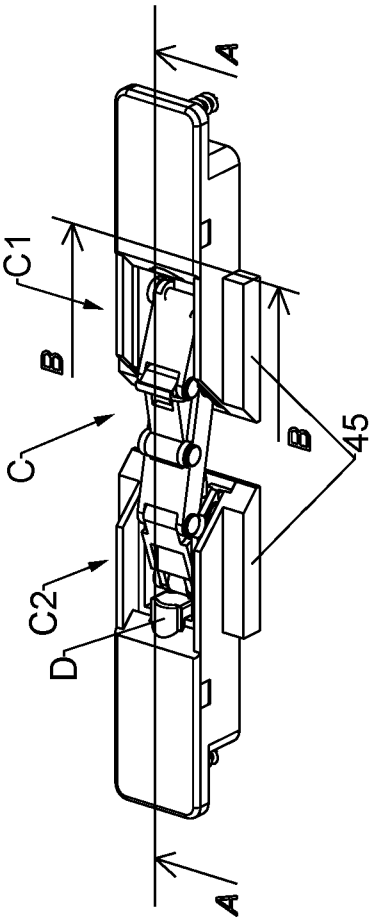
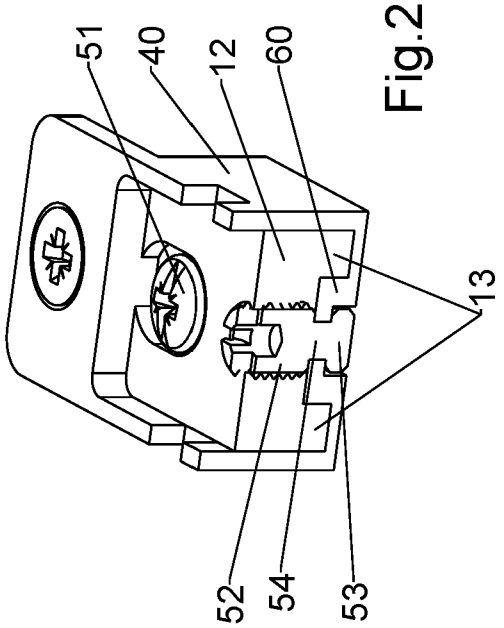
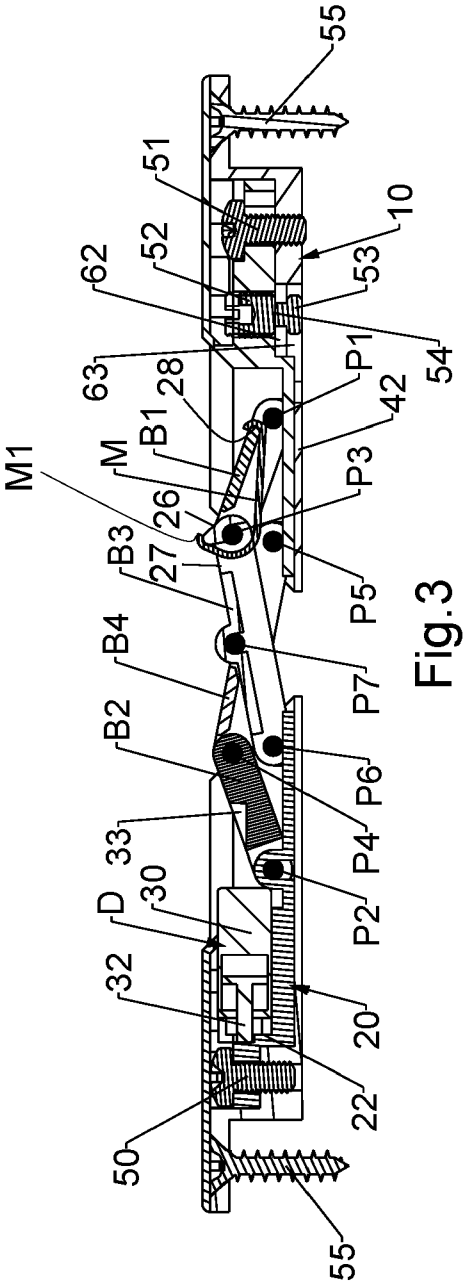


Fig.2a

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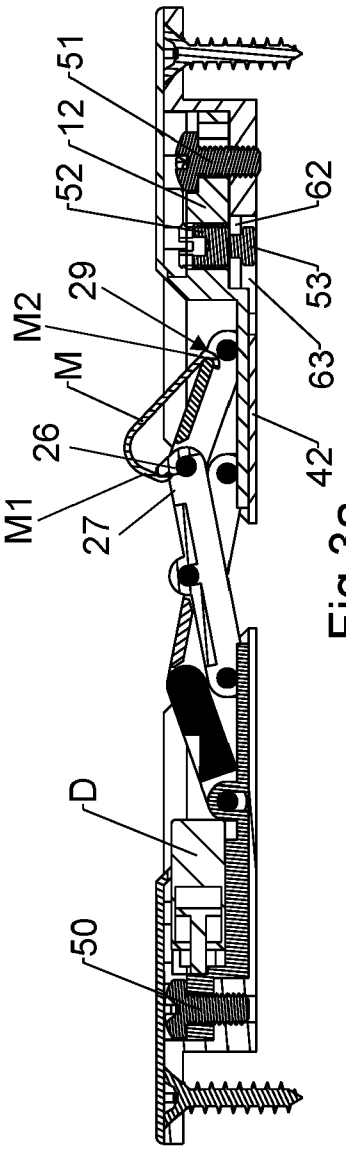
10
62
52
53
54
63
28
P1
42
B1
M
P3
M1
26
B3
27
P5
B4
P7
B2
P6
33
P4
D
30
P2
32
20
22
50
55

Fig.3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12
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62
53
63
M2
29
M
26
42
M1
27
D
50

Fig.3a

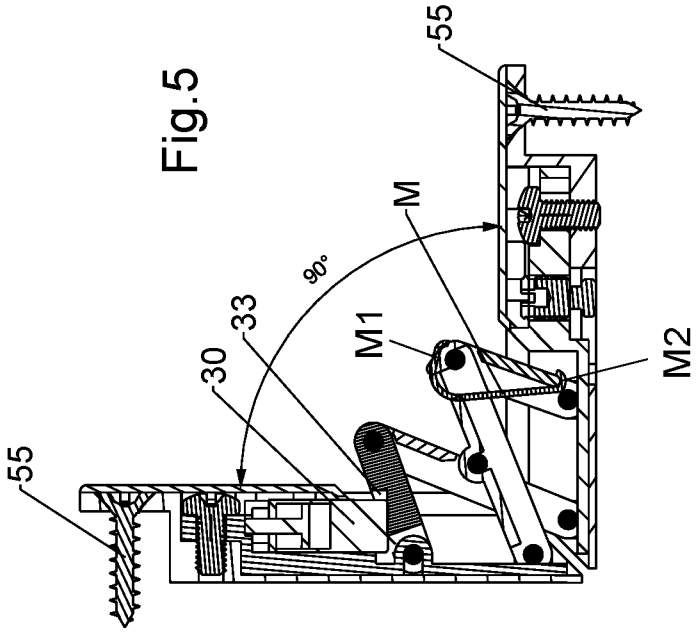


Fig.5

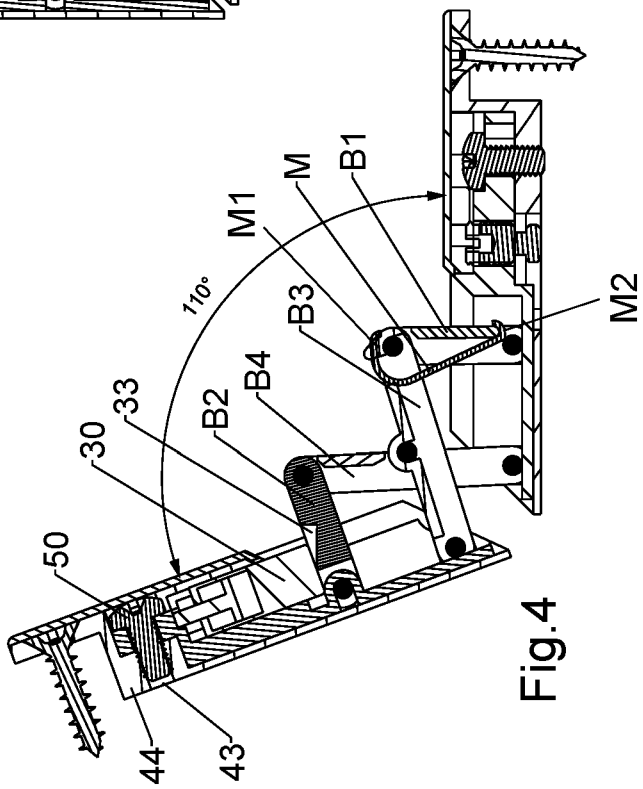


Fig.4

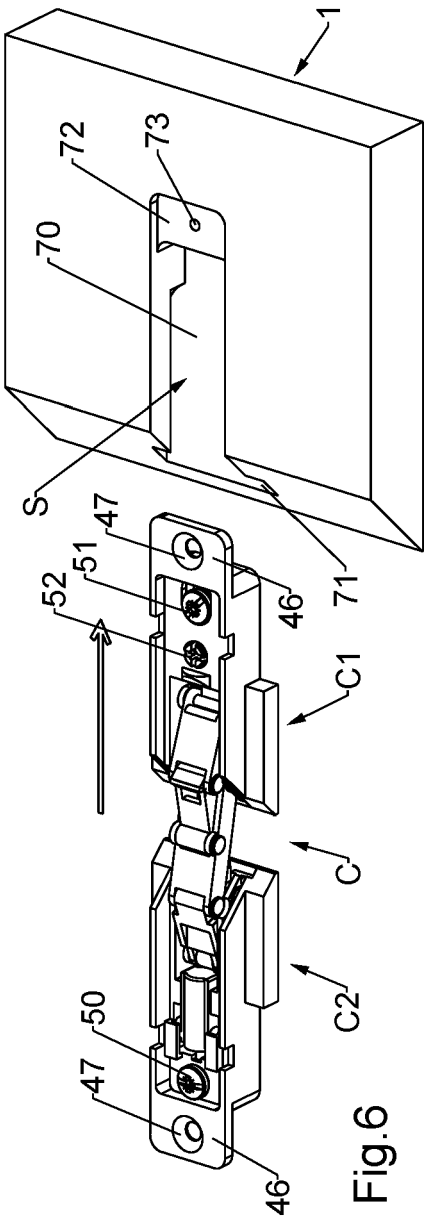


Fig.6

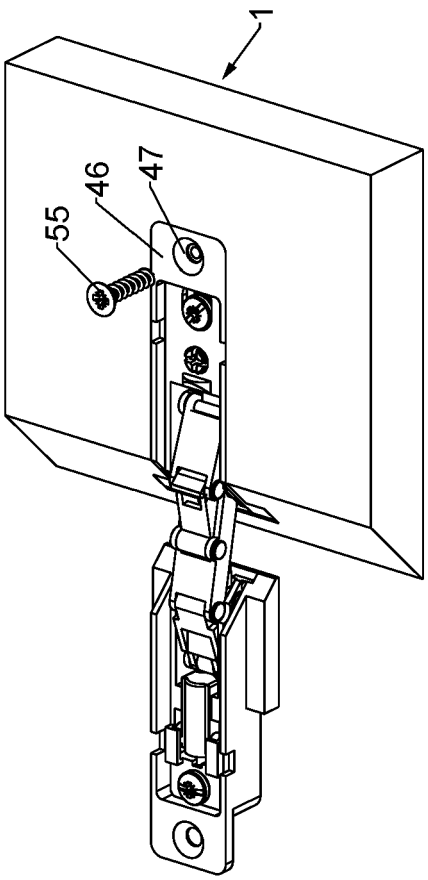


Fig.7

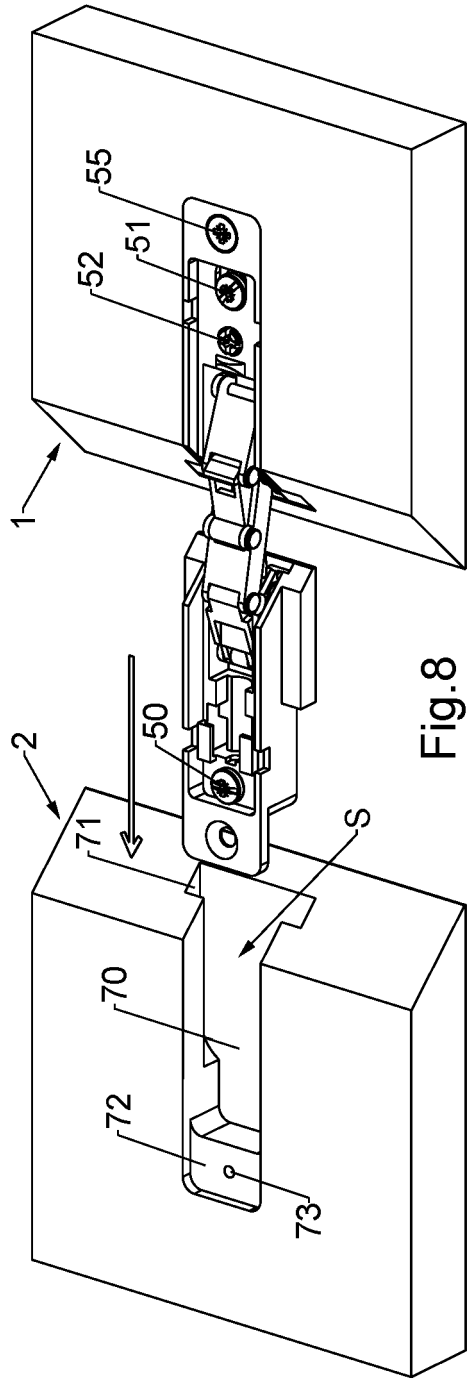


Fig.8

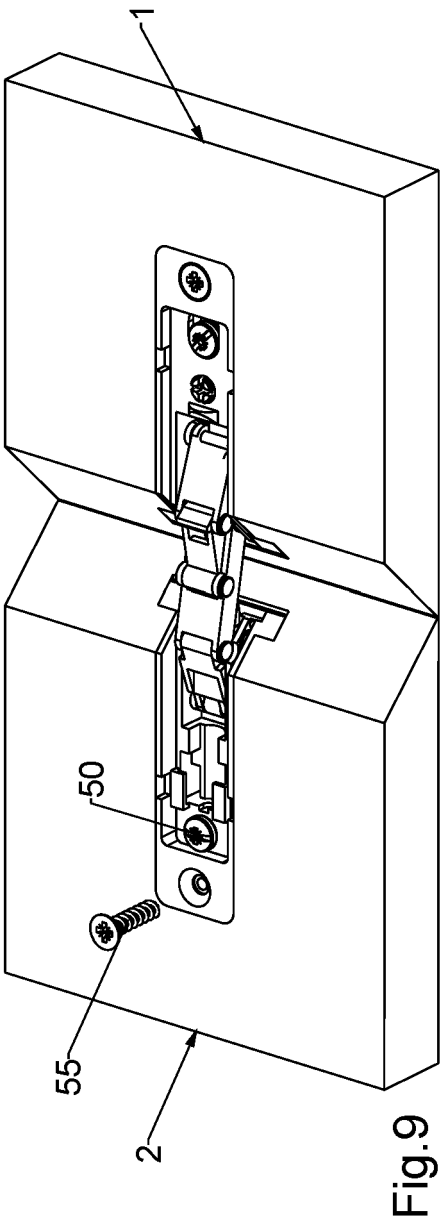


Fig.9

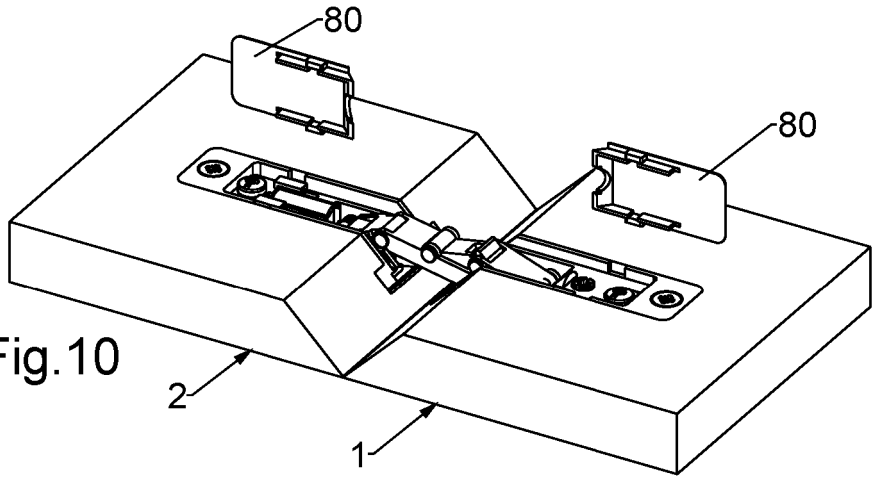


Fig.10

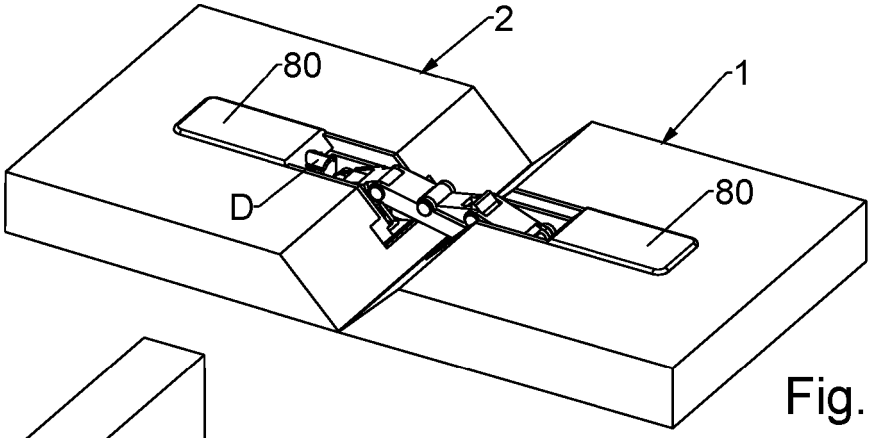


Fig.11

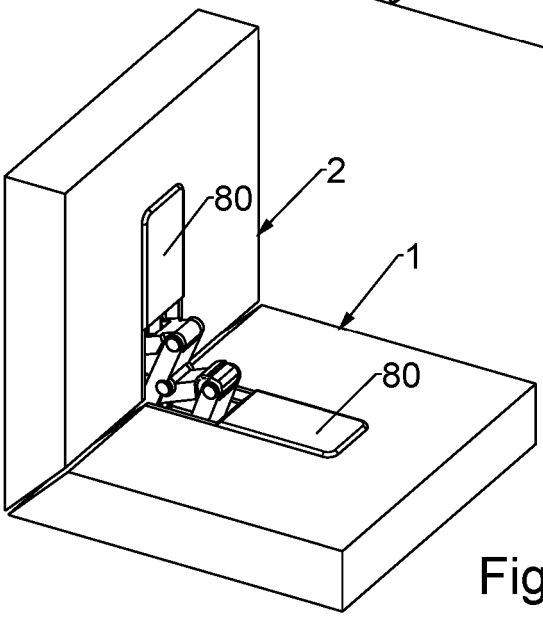


Fig.12

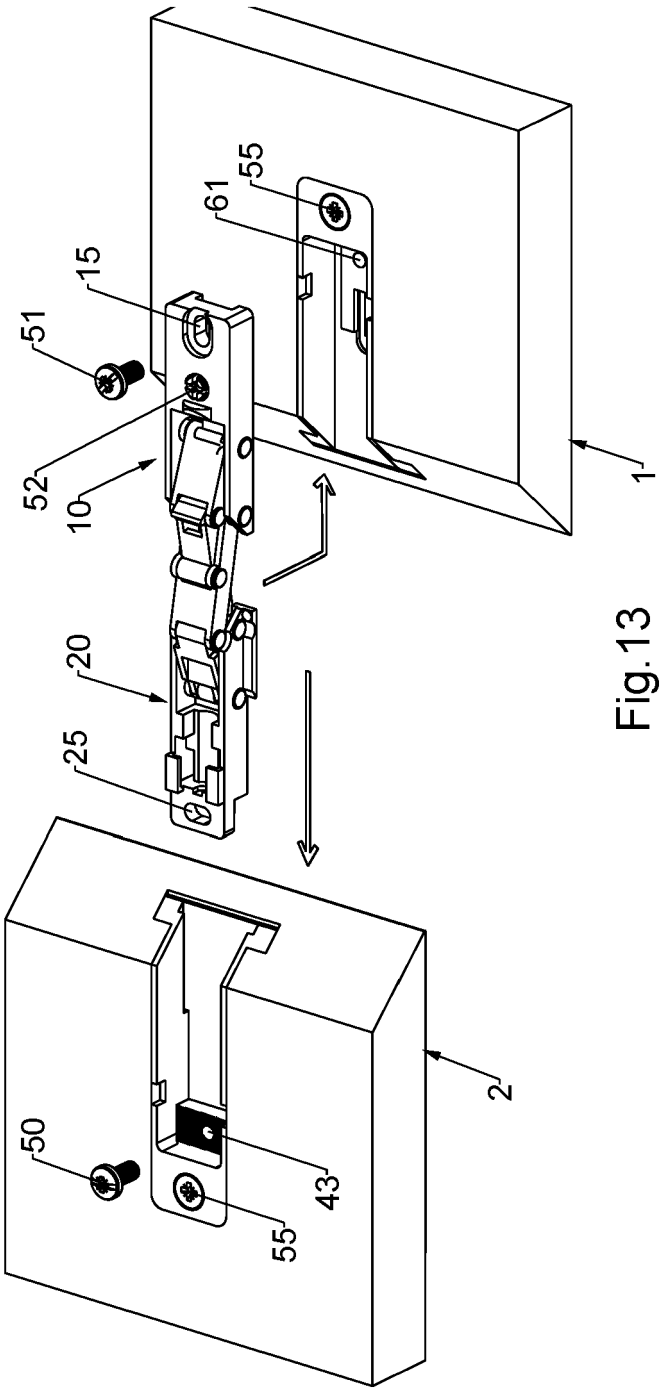


Fig.13

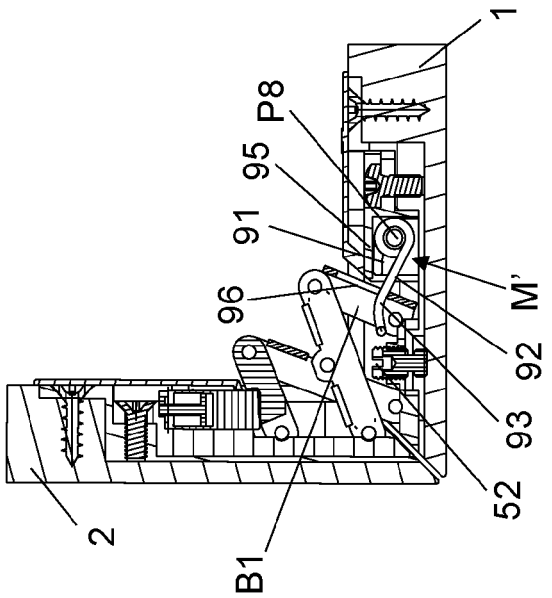
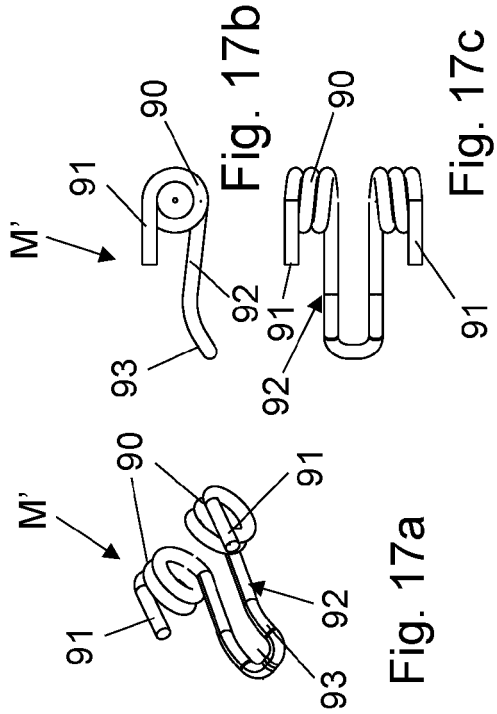


Fig. 16



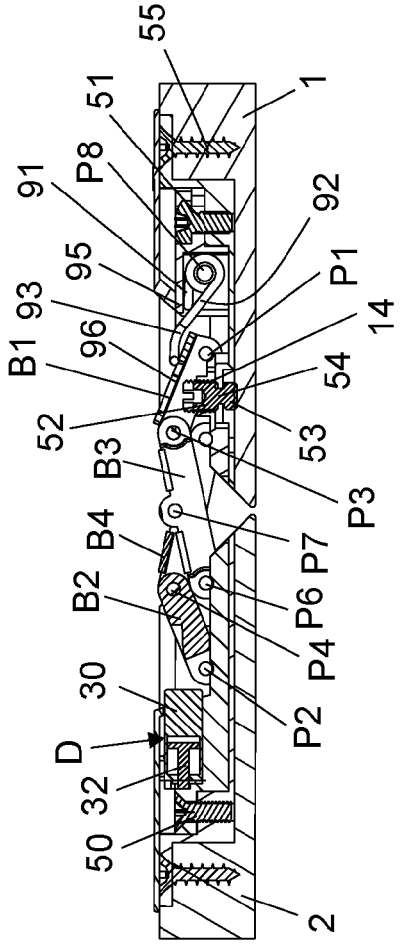


Fig. 14

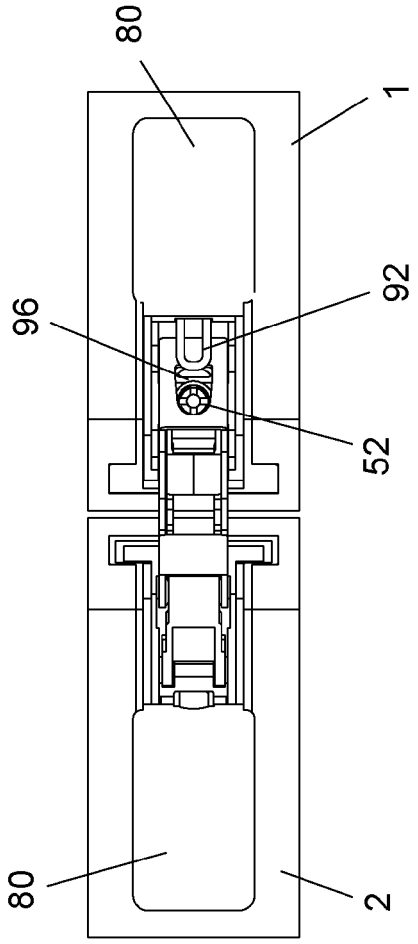


Fig. 15

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EUROPEAN SEARCH REPORT

Application Number
EP 24 19 1669

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Y	* column 3, line 55 - column 6, line 3 *	15 2-7,	E05D3/16 E05D7/04
	* figures *	12-14	E05F1/12
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A	* figures *	1	
	* paragraph [0026] *		
	* paragraphs [0030], [0031] *		
	* paragraphs [0044] - [0052] *		

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A	* paragraphs [0035], [0036] *	1	TECHNICAL FIELDS SEARCHED (IPC)
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	* page 9, lines 12-21 *		
	* figures *		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	17 January 2025	Mund, André

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