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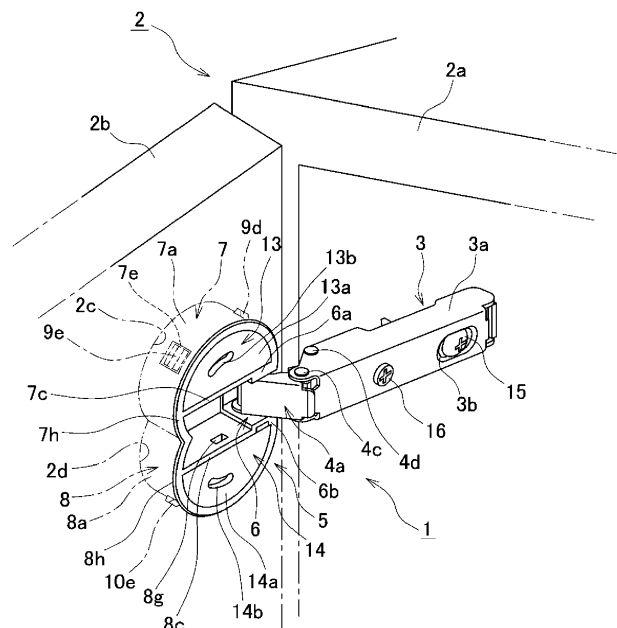
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(54) **SLIDE HINGE AND CABINET USING THE SAME**

(57) To provide a slide hinge which can ensure a reduction of time, labour and costs in boring, as well as to provide a cabinet using such a slide hinge, a solution is found in approaches that the attaching case is formed in the shape of a pair of circles of an identical diameter, with a segment of one circle overlapping that of the other, wherein the attaching case is provided in a direction perpendicular to the slide hinge main body, and it is provided with a housing portion capable of housing parts of the

coupling pieces, as well as of the slide hinge main body, on its central portion; that it is further provided with a pair of fixing means housing portions, sandwiching the housing portion; and that each of the fixing means housing portions is provided with a plurality of claw portions provided so as to be projectable from and retractable in its circumferential wall, and with diameter expanding means for allowing each of the claw portions to protrude from each of the circumferential walls.

FIG. 2



Description

TECHNICAL FIELD

[0001] The invention relates to a slide hinge also referred to as a concealed hinge which is used for opening and closing a door in furniture such as cabinets intended for use in common households or offices, as well as to a cabinet using such a slide hinge.

BACKGROUND ART

[0002] Some sorts of furniture, such as storage shed, large furniture, furnishing and storage box, are installed in common households, while other sorts are used in the office. For both categories of furniture, a cabinet is a representative item. The furniture as above described, and in particular cabinet, commonly uses a slide hinge structured as described in Japanese Laid-Open Patent Application No. 2003-90167 or Japanese Utility Model Registration No. 3090408. Namely, the publicly known slide hinge of this sort basically comprises a slide hinge main body attached to a cabinet main body so as to be adjustable relative to the latter in a slidable manner, a coupling case housed in attaching holes provided on the door side and fixed into the hole using attaching screws, and a coupling piece for coupling the coupling case to the hinge main body.

[0003] If a conventional slide hinge as above described includes a coupling case attached to a door of wooden solid material, attaching screws well fasten the coupling case onto the door, so that the door will not easily escape from the coupling case; in recent years however, a different type of doors is increasingly used, wherein the door comprises a core, e.g. honeycomb cardboard, on which attaching screws do not work well, and thin dressing boards stuck onto the both surfaces of the core.

[0004] Even if an attempt is made in this case to fix a coupling case of a slide hinge (which is to be attached to the door) onto a door with a core of honeycomb cardboard, on which screws do not work well, there has been a problem in that the coupling case cannot be firmly fixed onto the door or escapes from the door during usage after fixation.

[0005] To solve the problem, Japanese Laid-Open Patent Application No. 2014-88755 discloses a low-cost slide hinge which is devised to ensure that it can be also easily attached to a door or a cabinet main body using honeycomb cardboard, on which attaching screws do not work well, as well as to eliminate a risk of escape from the door after the fixation. Namely, the slide hinge disclosed in Japanese Laid-Open Patent Application No. 2014-88755 as described above comprises a slide hinge main body attached to a cabinet main body, a coupling case inserted into and fixed to attaching holes provided on the door, and coupling pieces for coupling the coupling case to the slide hinge main body, such that the coupling case and the slide hinge main body can open and close

relative to each other. The slide hinge is characterized in that a pair of attaching means which can be attached to the door side even without using attaching screws are provided, that each of the attaching means comprises a pair of attaching case members integrally connected to both side portions of the coupling case, locking plates, each having claw portions provided so as to protrude outward from each of the attaching case members, wherein each of the locking plates is housed in each of the attaching case members, and a diameter expanding means pushing out the claw portions of the locking plate, such that the claw portions protrude outward, and that the diameter expanding means comprises an operating plate having a plurality of pressurizing portions rotatably housed in each of the locking plates and protruding from its outer circumference and a shaft portion having a tool mounting portion above on its central portion, wherein a rotation angle of the operating plate is controlled by a stopper means within a predetermined range, and a cap having a bearing hole for pivotally supporting the shaft portion on a central portion of the cap, wherein the cap is attached to each of the attaching case members so as to be attachable and detachable. With such a structure, if the coupling case constituting the slide hinge is inserted together with attaching means into the attaching hole and the connecting holes provided on both sides of the attaching hole, and the operating plates are rotated, with tools such as a wrench are sequentially inserted into the tool mounting portions provided on respective operating plates, in order to insert and fix the coupling case to the attaching holes provided on the door composed, for example, honeycomb cardboard, on which nails or attaching screws do not work well, the pressurizing portions rotating together with the operating plates push outward claw portions provided on respective locking pieces of locking plates eat into a circumferential wall of the connecting hole. In this manner, the coupling case can be firmly fixed into the attaching hole without using attaching screws or nails, so as to eliminate a problem of escape after fixation.

[0006] However, attaching holes in the slide hinge of Japanese Laid-Open Patent Application No. 2014-88755, as mentioned above, which should be preliminarily provided on the door in order to insert and fix the coupling case forming the slide hinge to the attaching hole provided on the door, must include a circular hole corresponding to a contour of the coupling case as well as a pair of circular holes (their size is not identical to that of the one corresponding to the coupling case) corresponding to a contour of a pair of the attaching case members. Therefore, these attaching holes respectively require different tools, and their central positions are not always set in one line, so that there arises a problem of difficulty in providing a precision.

SUMMARY OF THE INVENTION

[0007] To solve the above-mentioned problem, an ob-

ject of the invention is to provide a slide hinge which makes it possible to bore, using a single tool, circular holes to be provided on the door side, etc. being an area for attachment, as well as facilitates alignment, so as to ensure a reduction of labor, time and costs in boring. A further object of the invention is to provide a cabinet using such a slide hinge.

[0008] To achieve the above-mentioned object, the invention according to claim 1 relates to a slide hinge comprising a slide hinge main body attached to one of a cabinet main body or to a door, an attaching case inserted into attaching holes provided on the other of the cabinet main body or to the door and fixed thereto, and a coupling piece for coupling the slide hinge main body and the attaching case such that these can open and close relative to each other; the slide hinge is further characterized in that the attaching case is formed in the shape of a pair of circles of an identical diameter, with a segment of one circle overlapping that of the other, wherein the attaching case is provided in a direction perpendicular to the slide hinge main body, and it is provided with a housing portion capable of housing parts of the coupling pieces, as well as of the slide hinge main body, on its central portion; and that further, it is provided with a pair of fixing means housing portions, sandwiching the housing portion; still further, each of the fixing means housing portions is provided with a plurality of claw portions provided so as to be projectable from and retractable in its circumferential wall, and with diameter expanding means for allowing each of the claw portions to protrude from each of the circumferential walls.

[0009] A preferable embodiment according to claim 2 is characterized in that diameter expanding means are a pair of cam members, respectively rotatably provided in each of the fixing means housing portions.

[0010] A preferable embodiment according to claim 3 is characterized in that the claw portions are provided on a first and second engaging members housed in each of the fixing means housing portions, facing claw portion protruding and retracting window holes provided on each of the circumferential walls.

[0011] A preferable embodiment according to claim 4 is characterized in that an operating hole is provided on each of the cam members, wherein jig is inserted and the cam members are rotated therein. However, operating means which is provided on the cam members and operated by jig are not particularly limited to the above-mentioned operating hole.

[0012] A preferable embodiment according to claim 5 is characterized in that each of the fixing means housing portions is covered with a cap.

[0013] A preferable embodiment according to claim 6 is characterized in that the cap is provided with a guide groove for guiding the jig.

[0014] Still further, the invention according to claim 7 provides a cabinet which is characterised in that it uses a slide hinge according to one of claims 1 to 6.

[0015] The invention is constructed as described

above, thus in accordance with claim 1, an attaching case as described above, which is inserted into and fixed to attaching holes provided on a door made up e.g. of a honeycomb cardboard, is provided in a direction perpendicular to a slide hinge main body as described above, and formed in the shape of a pair of circular segments of an identical diameter, one upon the other. In this manner, the above-mentioned attaching holes can be easily bored by boring two holes wherein one is displaced from the other by using a single tool, so that it is possible to provide a slide hinge which can ensure a substantial reduction of labor, time and costs in boring, as well as to provide a cabinet using such a slide hinge.

[0016] If the invention is constructed as in claim 2, it is possible to provide a working effect that diameter expanding means can be easily housed in each of the fixing means housing portions, and that their structure will be simple.

[0017] If the invention is constructed as in claim 3, a plurality of claw portions are pressurized from the inside, depending on a rotation angular position of cam members rotatable provided in each of fixing means housing portions, so that the claw portions protrude from a circumferential wall of each of the fixing means housing portions and are locked onto a door board, so as to firmly maintain their protruding state. In this manner, a secure movement can be ensured with a simple structure.

[0018] If the invention is constructed as in claim 4, a rotation operation using jig can be easily and smoothly conducted.

[0019] If the invention is constructed as in claim 5, each of cam members in each of fixing means housing portions can be held using a cap so as to be smoothly and securely rotatable.

[0020] If the invention is constructed as in claim 6, a rotation operation using jig can be easily and accurately conducted within a proper angular range.

[0021] If the invention is constructed as in claim 7, as it uses a slide hinge according to each of claims 1 to 6, it is possible to provide a cabinet to which a door of a cardboard of honeycomb structure, for example, can be securely fixed with reduced labor/time and costs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022]

FIG. 1 shows an explanatory view illustrating a state of a slide hinge according to an embodiment of the invention prior to being attached to a cabinet;

FIG. 2 shows an explanatory view illustrating a state of a slide hinge as shown in FIG. 1 being attached to a cabinet;

FIG. 3 shows an exploded perspective view of a slide hinge as shown in FIG. 1;

FIG. 4 shows an explanatory view showing an attaching case in a slide hinge as shown in FIG. 1, as seen from various viewpoints;

FIG. 5 shows an explanatory view showing a slide hinge main body in a slide hinge as shown in FIG. 1, as seen from a viewpoint different from that in FIG. 1;

FIG. 6 shows an explanatory view illustrating a state of a jig being inserted into an operation hole of one of cam members as a slide hinge as shown in FIG. 1 is attached to a cabinet; and

FIG. 7 shows an explanatory view illustrating a state of a cam member being rotated by a predetermined angle by an operation of a jig.

EMBODIMENTS

[0023] Hereinafter, reference is made to the best mode for implementing the invention, based on the drawings. An embodiment as shown in the drawings assumes that a slide hinge according to the invention is applied to a cabinet in which a cabinet main body is made of a solid material such as wood on which nails or screws do work well, and honeycomb board having a cardboard core e.g., on which screws etc. do not work well, is used for a door. Based on this assumption, reference is made to an embodiment in which a slide hinge main body is attached to the cabinet main body, and an attaching case to the door. On the contrary, in case that a slide hinge according to the invention is applied to a cabinet in which a door is made of a solid material such as wood on which nails or screws do work well, and honeycomb board having a cardboard core e.g., on which screws etc. do not work well, is used for a cabinet main body, a slide hinge main body is attached to the door, and an attaching case to the cabinet main body. In short, hereinafter, reference is made to an embodiment in which an attaching case of a slide hinge according to the invention is attached to the door, but needless to say, the invention is also applicable to an embodiment in which an attaching case is attached to the cabinet main body; thus the invention encompasses the both cases. In the meantime, two of such slide hinges are normally used in such a door, one above and the other below, but hereinafter reference is made to one only, in order to avoid redundant explanations.

[EMBODIMENT]

[0024] In FIG. 1, a slide hinge 1 according to the invention comprises a slide hinge main body 3 attached to a cabinet main body 2a of a cabinet 2; an attaching case 5 inserted into and fixed to attaching holes 2c, 2d provided on a door 2b, one connected to the other; and a pair of a first coupling piece 4a and a second coupling piece 4b (see FIGS. 3 and 5) for coupling the attaching case 5 and the slide hinge main body 3, such that these can open and close relative to each other. As shown in the drawings, the attaching case 5 is formed in the shape of a pair of circles of an identical diameter, with a segment of one circle overlapping that of the other, wherein the attaching case is provided in a direction perpendicular to

the slide hinge main body 3, and it is provided with a housing portion 6 capable of housing parts of the pair of the first coupling piece 4a and the second coupling piece 4b, as well as of the slide hinge main body 3, on its central portion. It is further provided with a pair of a first and a second fixing means housing portions 7, 8, sandwiching the housing portion 6. In the first and the second fixing means housing portions 7, 8, a first and a second engaging members 9, 10 and a first and a second diameter expanding means 11, 12, both being fixing means for fixing the attaching case 5 to the attaching holes 2c, 2d provided on the door 2c, are respectively housed. The first and the second engaging members 9, 10 comprise a plurality of claw portions 9b, 9b; 10b, 10b on their respective main body portions 9a, 10a; these claw portions are formed so as to be projectable from and retractable in claw portion projecting and retracting window holes 7e, 7f (8e, 8f) provided on a circumferential walls 7a, 8a of the first and the second fixing means housing portions 7, 8. Inside a plurality of the claw portions 9b, 9b; 10b, 10b, diameter expanding means 11, 12 for allowing these claw portions to protrude from the circumferential walls 7a, 8a of the first and the second fixing means housing portions 7, 8 are provided; in an embodiment as shown in the drawings, cam members 11a, 12a is used as the diameter expanding means 11, 12. In the meantime, a pair of attaching holes 2c, 2d of a diameter identical to an outer diameter of the first and the second fixing means housing portions 7, 8 for housing the attaching case 5 comprising the first and the second fixing means housing portions 7, 8 to the attaching holes and fixing it thereto are provided on the door 2b, wherein a section of one attaching hole overlaps that of the other and both are thus connected to each other. Still further, the embodiment shows the attaching case 5 attached to the door 2, but if the cabinet main body 2a is made up of a material identical to that of the door 2b, it is also possible that the attaching case is attached to the cabinet main body 2a. Still further, it is also possible that claw portions are not provided on the first and the second engaging members 9, 10, but integrally moulded on claw portion projecting and retracting window holes 7e, 7f; 8e, 8f so as to be swingable. In this case, the first and the second engaging members 9, 10 as shown in the drawings can be omitted.

[0025] FIG. 2 shows a slide hinge according to the invention attached to a cabinet 2; as shown in the drawings, a slide hinge main body 3 is attached to a cabinet main body 2a with attaching screws 15, 16 to be screwed into screw holes 2e, 2f (a cabinet main body with no screw holes 2e, 2f is also possible), and an attaching case 5 is housed into and fixed to attaching holes 2c, 2d provided on the door 2b and connected with each other.

[0026] In the embodiment, the door 2b is made up of thin dressing plywood plates stuck on both surfaces of e.g. honeycomb cardboard core, but the door 2b is not limited thereto, but also applicable to a door made up of one of other materials on which nails or attaching screws do not work.

[0027] As per a slide hinge main body 3 as well as a first coupling piece 4a and a second coupling piece 4b, their structures are not particularly limited, but various known structures are also applicable. In the meantime, as the ones in the embodiment are further analytically explained, in FIG. 1 to 3 and 5, an outer frame member 3a of a slide hinge main body 3 is a metal pressed part or a moulded piece of synthetic resin which is finished in the shape of elongated piece having a U-shaped cross section, wherein screw holes 3b, 3c into which attaching screws 15, 16 are inserted are provided.

[0028] To one end of an outer frame member 3a of a slide hinge main body 3 close to reader in the drawings, respective inner end portions of a first coupling piece 4a and a second coupling piece 4b, both made by metal, are rotatable coupled using a first hinge pin 4c and a second hinge pin 4d.

[0029] As stated above, the attaching case 5 is a moulded piece of synthetic resin which is provided with a housing portion 6 capable of housing parts of the pair of a first coupling piece 4a and a second coupling piece 4b, as well as of a slide hinge main body 3, on its central portion; it is also provided with a pair of a first fixing means housing portion 7 and a second fixing means housing portion 8, sandwiching the housing portion 6, which are integrally provided. To coupling portions 6a, 6b shaped on edges of the housing portion 6 so as to be thicker than the rest of the housing portion, respective outer end portions of the first coupling piece 4a and the second coupling piece 4b are coupled so as to be rotatable using a U-shaped coupling pin 4e. Namely, as the U-shaped coupling pin 4e is inserted through a coupling pin inserting opening 6g (see FIG. 3) bored on a circumferential wall 7a of the first fixing means housing portion 7, one pin portion 44 thereof is inserted through a coupling hole 6c bored on the coupling portion 6a of the housing portion 6 into a coupling hole 43 provided on outer end side of the second coupling piece 4b, and further into a coupling hole 6d bored on the coupling portion 6b. The other pin portion 45 of the U-shaped coupling pin 4e is inserted through a coupling hole 6e bored on the coupling portion 6a of the housing portion 6 into coupling holes 41, 42 provided on outer end side of the first coupling piece 4a, and further into a coupling portion 6f bored on the coupling portion 6b. In this manner, the slide hinge main body 3 is coupled to the attaching case 5 via the first coupling piece 4a and the second coupling piece 4b, so as to be rotatable within a predetermined angular range. Since the method to couple the slide hinge main body 3 to the attaching case 5 via the first coupling piece 4a and the second coupling piece 4b itself is known as stated above, and known means of different structure are also applicable, a detailed explanation is omitted.

[0030] As shown in the drawings, the attaching case 5 is formed in the shape of a pair of circles of an identical diameter, with a segment of one circle overlapping that of the other, wherein the attaching case is provided in a direction perpendicular to the slide hinge main body 3,

and is provided with a first fixing means housing portion 7 and a second fixing means housing portion 8 so as to face each other, sandwiching the housing portion 8, on its central portion. As shown in FIG. 3, a first fixing means 70 consisting of a first engaging member 9, a first diameter expanding means 11 and a first cap 13 is provided on the first fixing means housing portion 7, and a second fixing means 80 consisting of a second engaging member 10, a second diameter expanding means 12 and a second cap 14 is equally provided on the second fixing means housing portion 8. The first fixing means housing portion 7 and the first fixing means 70 provided on it, and the second fixing means housing portion 8 and the second fixing means 80 provided on it respectively have an identical or mirror symmetric shape, and both pairs of components are assembled in the same manner. So hereinafter, reference numerals of components of one of these pairs are added in parentheses to the ones of the other pair, eventually reference is only made to one of the pairs.

[0031] A first fixing means housing portion 7 (second fixing means housing portion 8) comprises a semicircular arc shaped circumferential wall 7a (8a), a partition wall 7c (8c) leading to a coupling portion 6a (6b) and a semicircular arc shaped guide wall 7d (8d); on the circumferential wall 7a (8a), a crawl portion projecting and retracting window holes 7e, 7f (8e, 8f) are formed, on the partition wall 7c (8c), an engaging hole 7g (8g) for locking a cap 13 (14) to be described below, and on an outer circumference of a top opening wall, a flange 7h (8h) for preventing the entire first fixing means housing portion 7 (second fixing means housing portion 8) from retracting in an attaching hole 2c (2d). Further, only on the circumferential wall 7a of the first fixing means housing portion 7, a coupling pin inserting opening 6g is provided.

[0032] A first engaging member 9 (second engaging member 10) is made up of flexible synthetic resin material, and comprises a half moon shaped main body portion 9a (10a) and crawl portions 9d, 9e (10d, 10e) erected at a predetermined interval from its outer circumferential edge portion 9c (10c); its main body portion 9a (10a) is placed on a bottom plate 7b (8b) of the first fixing means housing portion 7 (second fixing means housing portion 8), and the first engaging member 9 (second engaging member 10) is housed into the first fixing means housing portion 7 (the second fixing means housing portion 8), with its inner circumferential edge 9b (10b) being in contact with an outer circumferential surface of the guide wall 7d (8d). In such a housed state, the crawl portions 9d, 9e (10d, 10e) are shaped so as to come to positions corresponding to crawl portion projecting and retracting window holes 7e, 7f (8e, 8f). Since the raw material of the first engaging member 9 (second engaging member 10) is flexible synthetic resin material, an external force from the inside to the outside is applied on the crawl portions 9d, 9e (10d, 10e) in order to incline these crawl portions outward, so that they protrude outward from the crawl portion projecting and retracting window holes 7e,

7f (8e, 8f), while by removing this external force, they can return into the crawl portion projecting and retracting window holes 7e, 7f (8e, 8f).

[0033] In an embodiment as shown in the drawings, a first diameter expanding means 11 (second diameter expanding means 12) is formed as a first cam member 11a (second cam member 12a); this first cam member 11a (second cam member 12a) comprises a main body portion 11b (12b), an outer circumferential edge 11c (12c), pressurising portions 11d, 11e (12d, 12e) swollen from the outer circumferential edge, an inner circumferential edge 11f (12f) and an operating hole 11g (12g); it is placed and housed so as to be movable in a circumferential direction inside crawl portions 9d, 9e (10d, 10e) on a main body portion 9a (10a) of a first engaging member 9 (a second engaging member 10). In such a housed state, the inner circumferential edge 11f (12f) of the first cam member 11a (second cam member 12a) is slidably contacted with an outer circumferential surface of the guide wall 7d (8d), so that the rotation movement in a circumferential direction as described above can smoothly take place.

[0034] A first cap 13 (second cap 14) comprises a semicircular main body portion 13a (14a) corresponding to a semicircular top opening of a first fixing means housing portion 7 (second fixing means housing portion 8), a guide groove 13b (14b) into which a jig to be described below is inserted, a locking piece 13c (14c) engaged with an engaging hole 7g (8g) so as to prevent a escape of the first cap 13 (second cap 14); in this manner and also as the outer circumferential edge, etc. of the first cap 13 (second cap 14) stuck and reinforced on the top opening of the first fixing means housing portion 7 (second fixing means housing portion 8) if necessary, the first cap 13 (second cap 14) is attached to the first fixing means housing portion 7 (second fixing means housing portion 8). In such an attached state, the first cam member 11a (second cam member 12a) is rotatably held along the guide wall 7d (8d), as sandwiched between a main body portion 9a (10a) of the first engaging member 9 (the second engaging member 10) and the first cap 13 (second cap 14). Still further, in the attached state, dimensions, etc. of respective components are set, such that a stroke of movement of the operating hole 11g (12g) as accompanied by rotation movement of the first cam member 11a (second cam member 12a) overlaps the guide groove 13b (14b) of the first cap 13 (second cap 14).

[0035] Next, reference is made to the procedure to attach the slide hinge 1 according to the invention to the cabinet 2, as shown in FIGS. 1 and 2. First, the slide hinge main body 3 is attached to the cabinet main body 2a with the attaching screws 15, 16. Next, the attaching case 5 of the slide hinge 1 is inserted into the attaching holes 2c, 2d provided on the door 2b, such that the crawl portions 9d, 9e (10d, 10e) does not protrude from the crawl portion projecting and retracting window holes 7f, 7f (8f, 8f) of the first fixing means housing portion 7 (second fixing means housing portion 8). FIG. 6B shows how

to arrange the first cam member 11a (second cam member 12a) in the first fixing means housing portion 7 (second fixing means housing portion 8), under this initial state. FIG. 6B shows the state of the inside without the first cap 13 (second cap 14) for the sake of illustration. In this state, each of the pressurising portions 11d, 11e (12d, 12e) of the first cam member 11a (second cam member 12a) is not in contact with each of the crawl portions 9d, 9e (10d, 10e) of the first engaging member 9 (the second engaging member 10), and these crawl portions do not protrude from the crawl portion projecting and retracting window holes 7e, 7f (8e, 8f) of the first fixing means housing portion 7 (second fixing means housing portion 8).

[0036] Then, as shown in FIG. 6A, the handle 17b of the jig 17 is held, the operating pin 17a inserted through the guide groove 13b of the first cap 13, and the tip of the operating pin 17a inserted into the operating hole 11g of the first cam member 11a; here, the operating pin 17a of the jig 17 is shifted clockwise so as to rotate and shift the first cam member 11a clockwise. In this manner, as shown in FIG. 7B, the pressurising portions 11d, 11e of the first cam member 11a pressurise the crawl portions 9d, 9e of the first engaging member 9 from the inside to the outside, such that the latter are pushed out; therefore, these crawl portions protrude from the crawl portion projecting and retracting window holes 7e, 7f of the first fixing means housing portion 7, and eat into the honeycomb circumferential wall on the attaching hole 2c of the door 2b of the cabinet, so that the first fixing means housing portion 7 of the attaching case 5 is firmly fixed onto the door 2b. In the rotation movement of the first cam member 11a, the inner circumferential edge 11f of the first cam member 11a moves along the guide wall 7d while being in slidable contact therewith, so the first cam member 11a can be smoothly shifted.

[0037] The above also applies to fixation to the second fixing means housing portion 8, the operating pin 17a inserted through the guide groove 14b of the second cap 14, and the tip of the operating pin 17a inserted into the operating hole 12g of the second cam member 12a; here, the operating pin 17a of the jig 17 is shifted anticlockwise so as to rotate and shift the second cam member 12a anticlockwise. In this manner, as shown in FIG. 7B, the pressurising portions 12d, 12e of the second cam member 12a pressurise the crawl portions 10d, 10e of the second engaging member 10 from the inside to the outside, such that the latter are pushed out; therefore, these crawl portions protrude from the crawl portion projecting and retracting window holes 8e, 8f of the second fixing means housing portion 8, and eat into the honeycomb circumferential wall on the attaching hole 2d of the door 2b of the cabinet, so that the second fixing means housing portion 8 of the attaching case 5 is firmly fixed onto the door 2b. In this case also, in the rotation movement of the second cam member 12a, the inner circumferential edge 12f of the second cam member 12a moves along the guide wall 8d while being in slidable contact therewith,

so the second cam member 12a can be smoothly shifted.

[0038] In the meantime, in the rotation operation of the first cam member 11a (second cam member 12a) using the jig 17, in order to prevent these cam members from rotating more than is necessary, it is possible that the length of the guide groove 13a (14a) provided on the first cap 13 (second cap 14) is appropriately set so as to limit the operating range of the jig 17, and that here the function of stopper is given to terminal end portions of the guide groove 13a (14a). Still further, the jig 17 can be a screwdriver.

[0039] Still further, though not shown in the drawings, a stopper means can be also formed by providing a convex portion for limiting the rotatable range of the first cam member 11a (second cam member 12a) on the main body portion 13a (14a) of the first cap 13 (second cap 14), and other various means are also possible.

[0040] The invention is constructed as described above, thus it is suitably applicable as a slide hinge wherein it can be easily attached to various sorts of furniture such as cabinets for use in common household or office and at low costs, as well as to a cabinet using such a hinge.

Claims

1. A slide hinge (1) comprising a slide hinge main body (3) attached to one of a cabinet main body (2a) or to a door (2b), an attaching case (5) inserted into attaching holes (2c, 2d) provided on the other of the cabinet main body (3) or to the door (2b) and fixed thereto, and coupling pieces (4a, 4b) for coupling the slide hinge main body (3) and the attaching case such that these can open and close relative to each other;
characterized in that the attaching case (5) is formed in the shape of a pair of circles of an identical diameter, with a segment of one circle overlapping that of the other, wherein the attaching case (5) is provided in a direction perpendicular to the slide hinge main body (3), and it is provided with a housing portion (6) capable of housing parts of the coupling pieces (4a, 4b), as well as of the slide hinge main body (3), on its central portion; that it is further provided with a pair of fixing means housing portions (7, 8), sandwiching the housing portion; and that each of the fixing means housing portions (7, 8) is provided with a plurality of crawl portions (9b, 9b; 10b, 10b) provided so as to be projectable from and retractable in its circumferential wall (7a, 8a), and with diameter expanding means (11, 12) for allowing each of the crawl portions (9b, 9b; 10b, 10b) to protrude from each of the circumferential walls (7a, 8a).
2. The slide hinge according to claim 1, **characterized in that** the diameter enlarging means (11, 12) are a pair of cam members (11a, 12a), respectively rotat-

ably provided in each of the fixing means housing portions (7, 8).

3. The slide hinge according to claim 1 or 2, **characterized in that** the crawl portions (9b, 9b; 10b, 10b) are provided on a first and a second engaging members (9, 10) housed in each of the fixing means housing portions (7, 8), facing crawl portion protruding and retracting window holes (7e, 7f; 8e, 8f) provided on each of the circumferential walls (7a, 8a).
4. The slide hinge according to claim 2 or 3, **characterized in that** an operating hole (11g; 12g) is provided on each of the cam members (11a, 12a), wherein a jig (17) is inserted and rotated therein.
5. The slide hinge according to any one of claims 1 to 4, **characterized in that** each of the fixing means housing portions (7, 8) is covered with a cap (13, 14).
6. The slide hinge according to claim 5, **characterized in that** the cap (13, 14) is provided with a guide groove (13b, 14b) for guiding the jig (17).
7. A cabinet **characterized in that** it uses a slide hinge (1) according to any one of claims 1 to 6.

FIG. 1

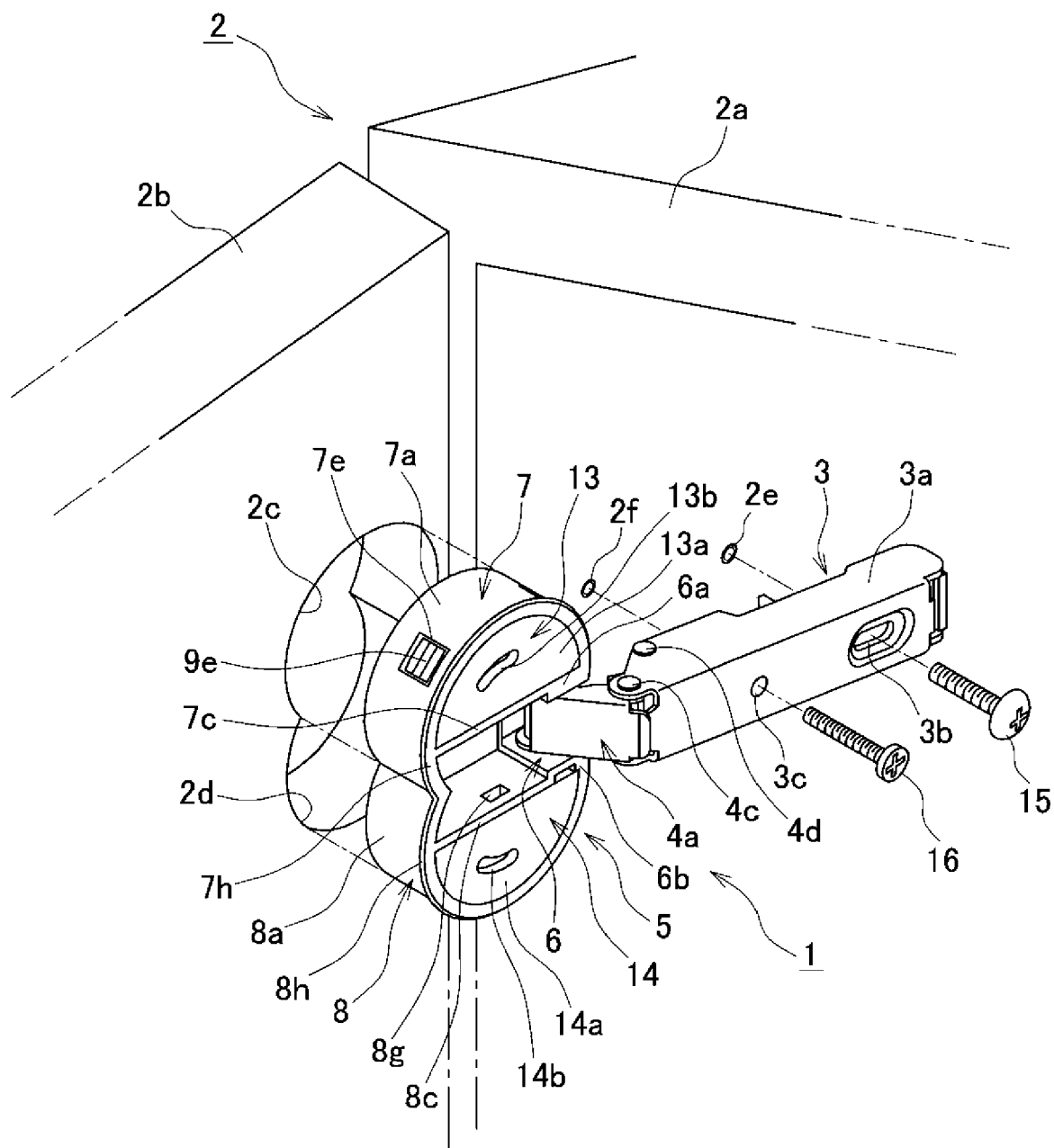


FIG. 2

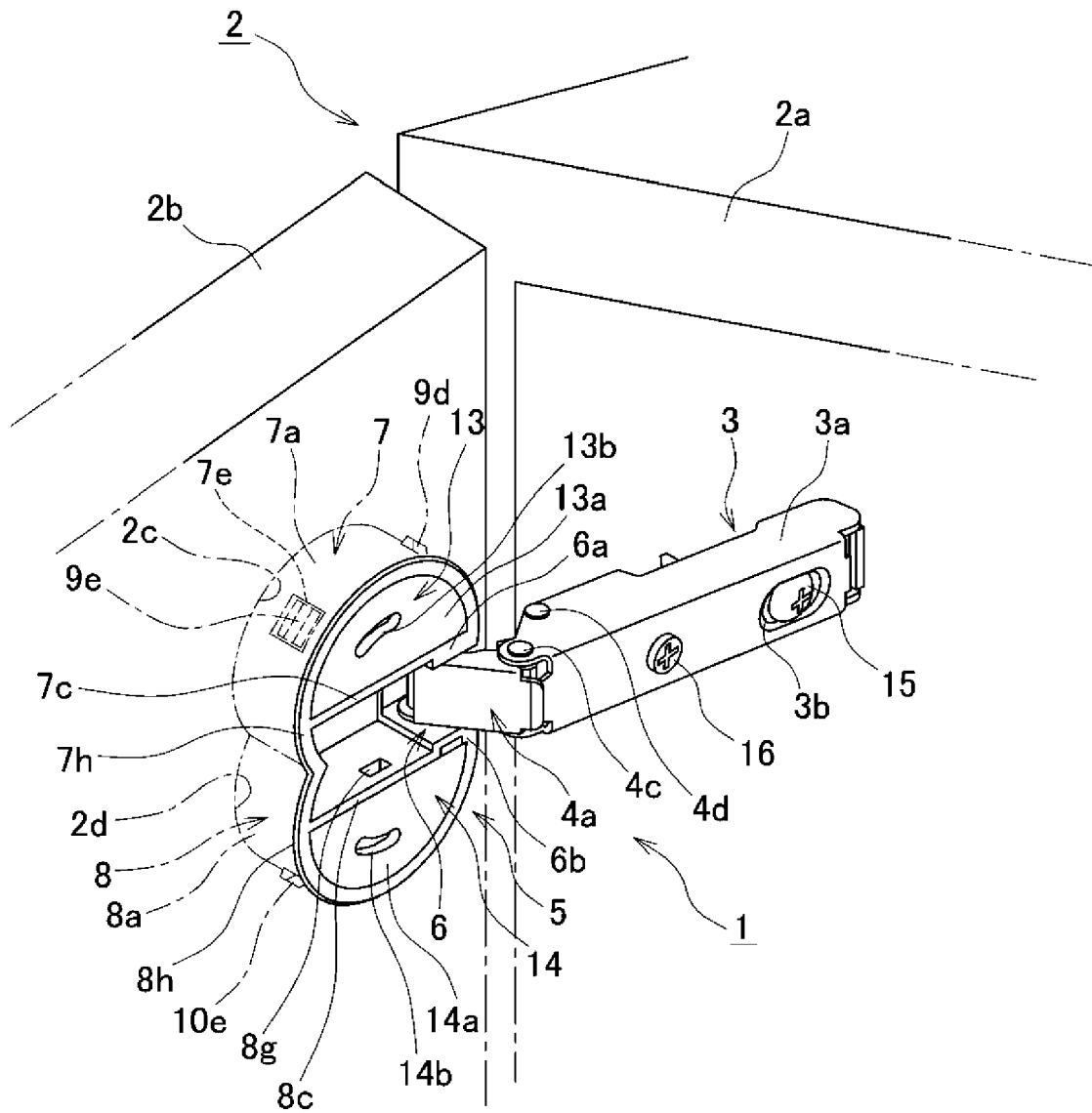


FIG. 3

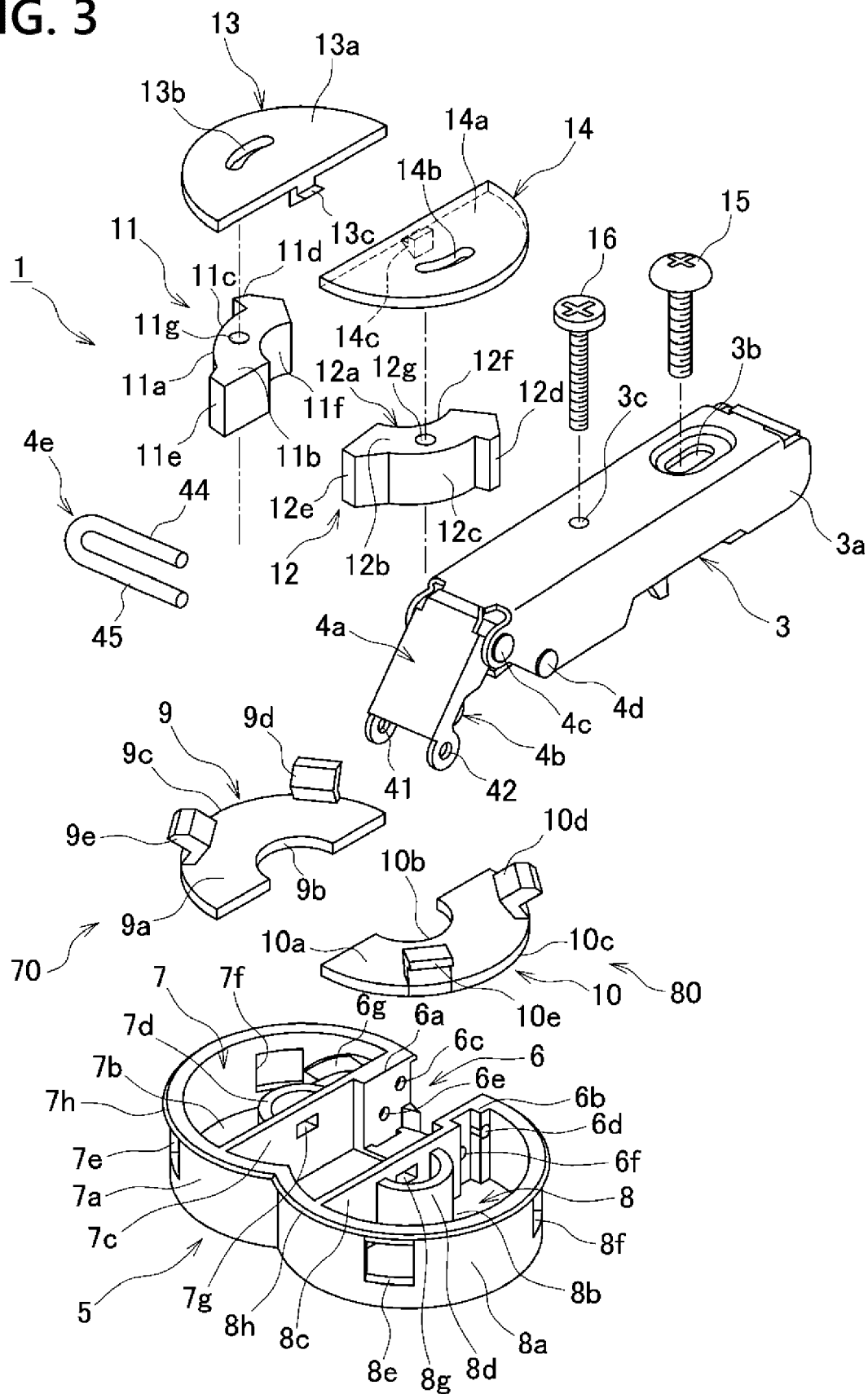


FIG. 4A

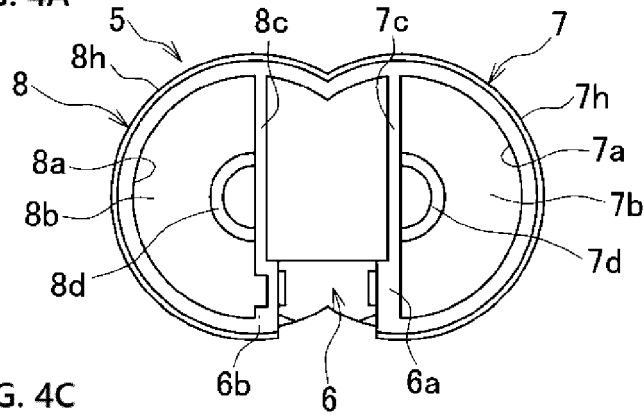


FIG. 4B

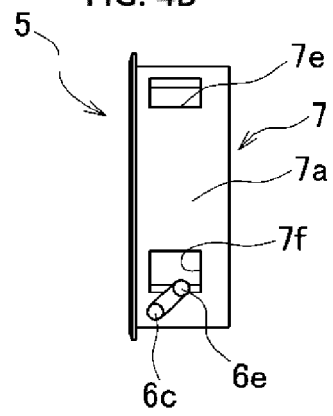


FIG. 4C

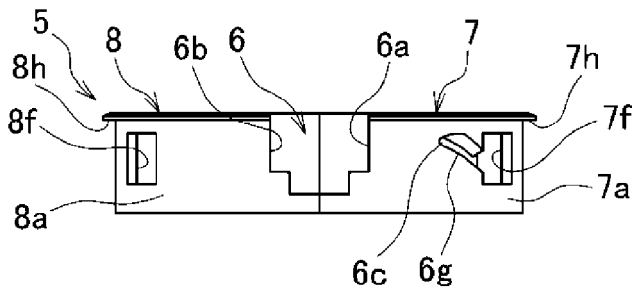


FIG. 4E

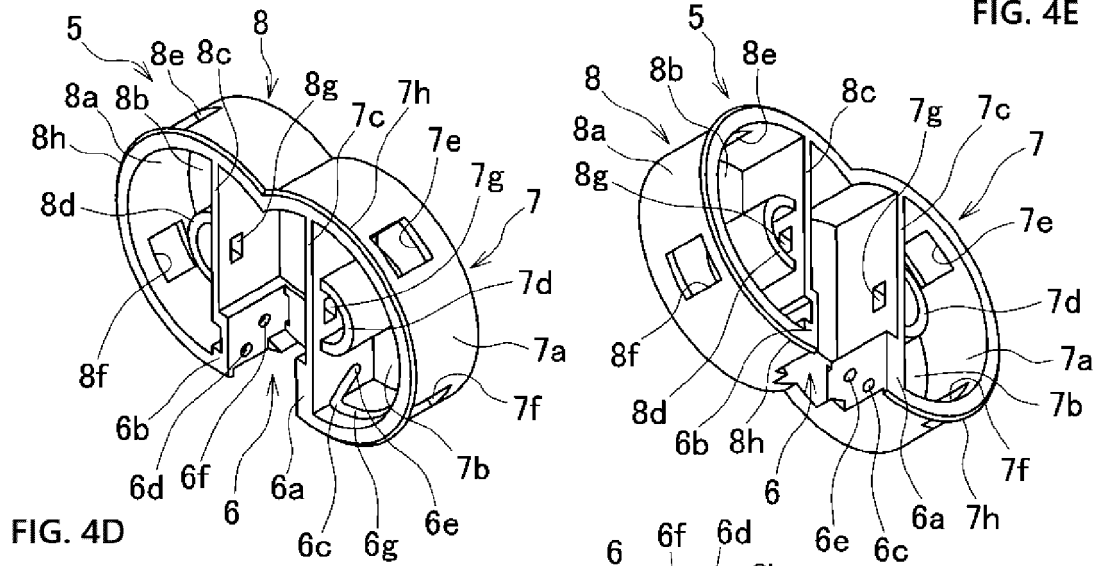


FIG. 4F

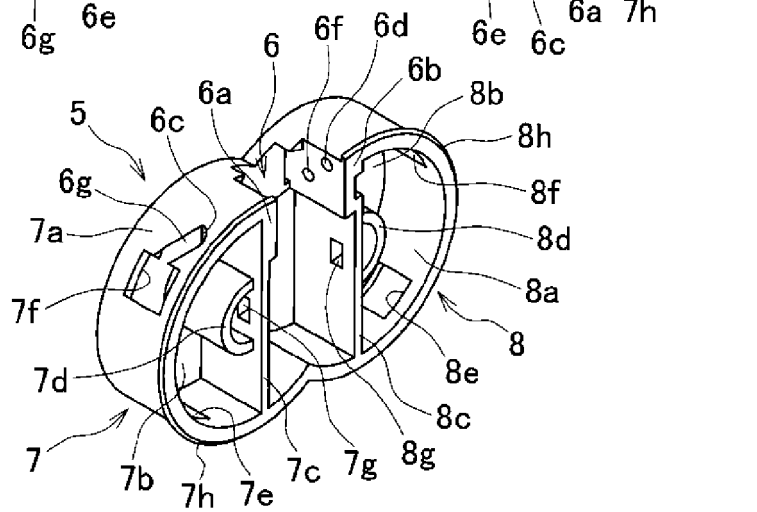


FIG. 5

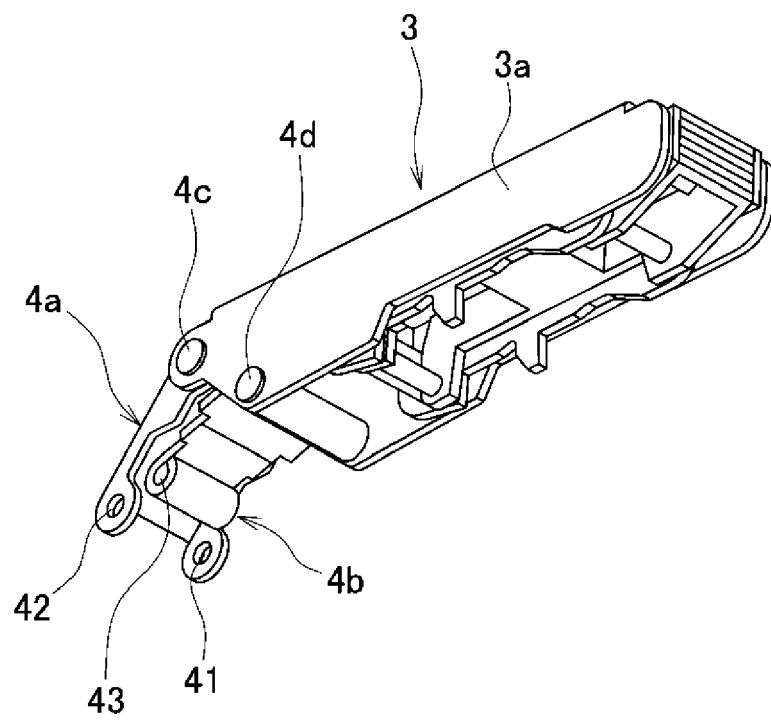


FIG. 6A

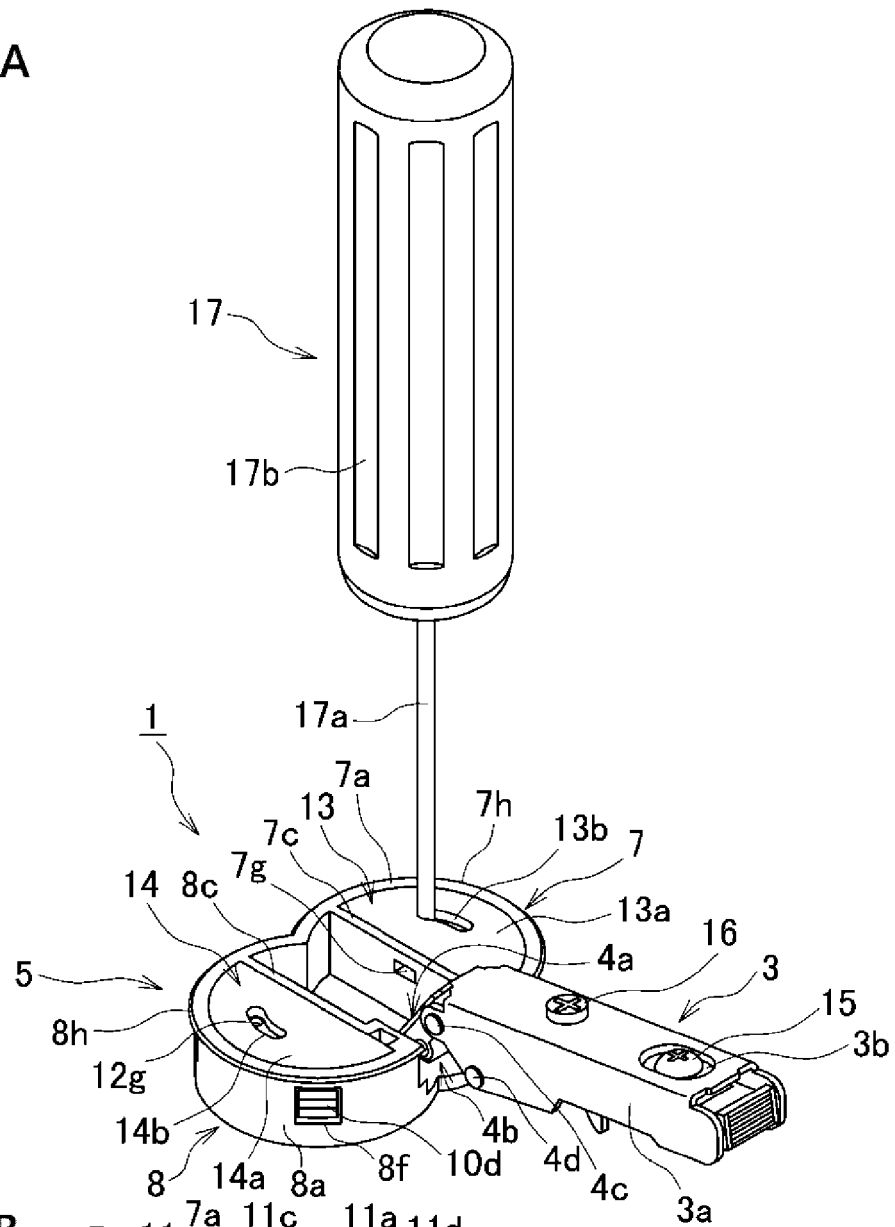


FIG. 6B

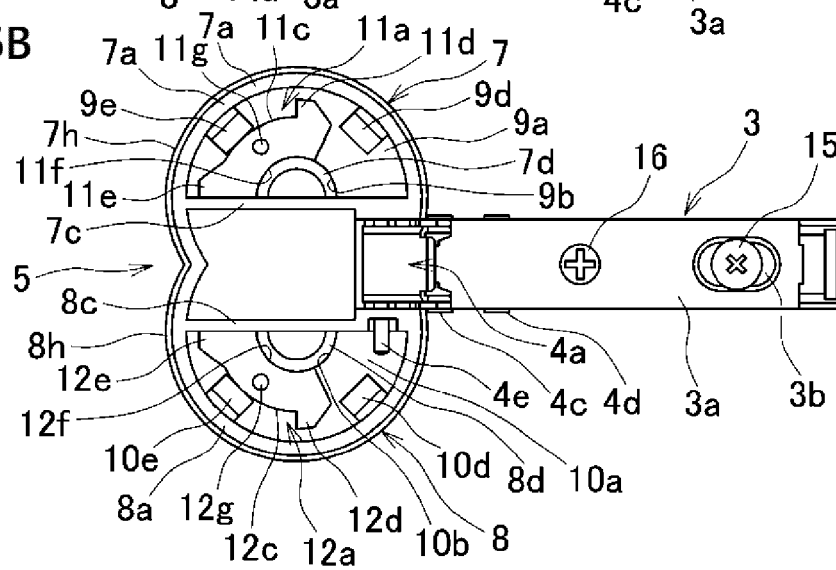


FIG. 7A

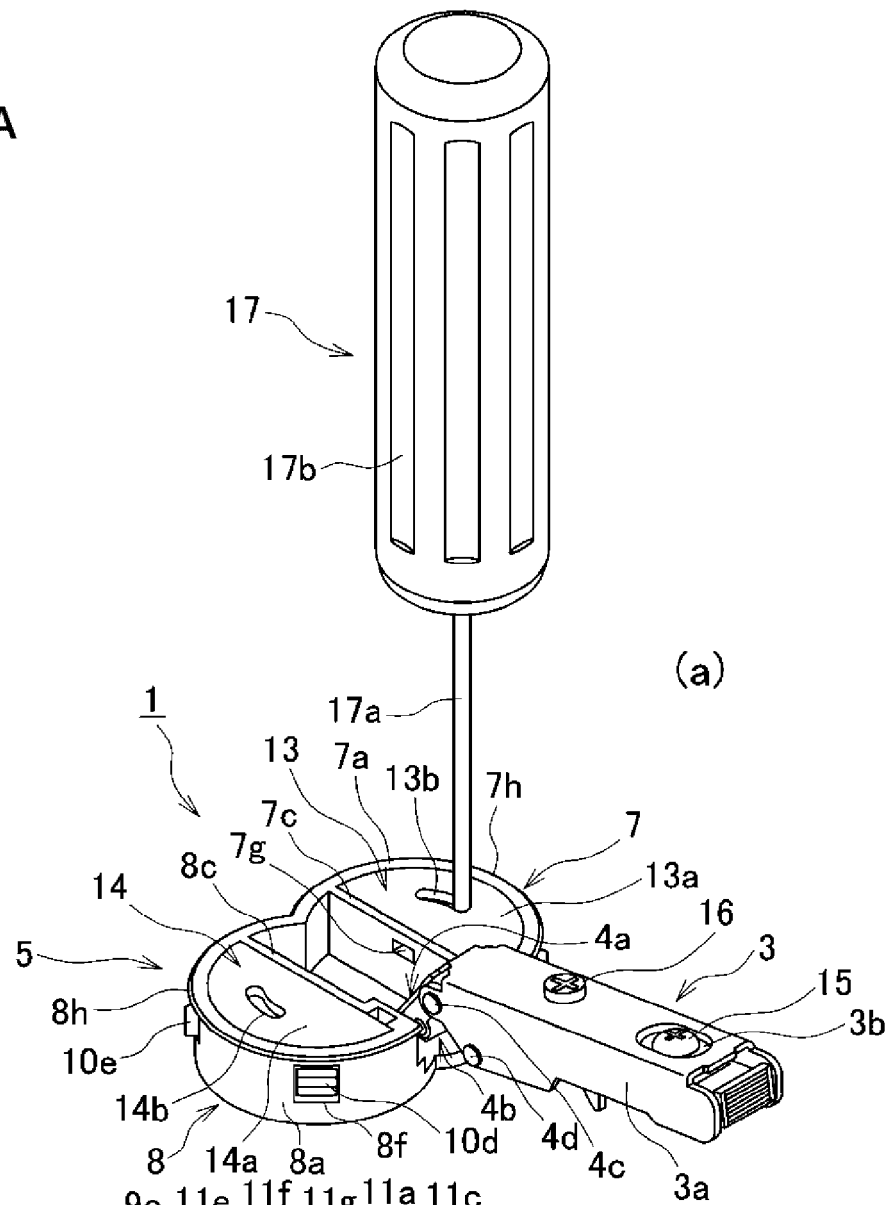
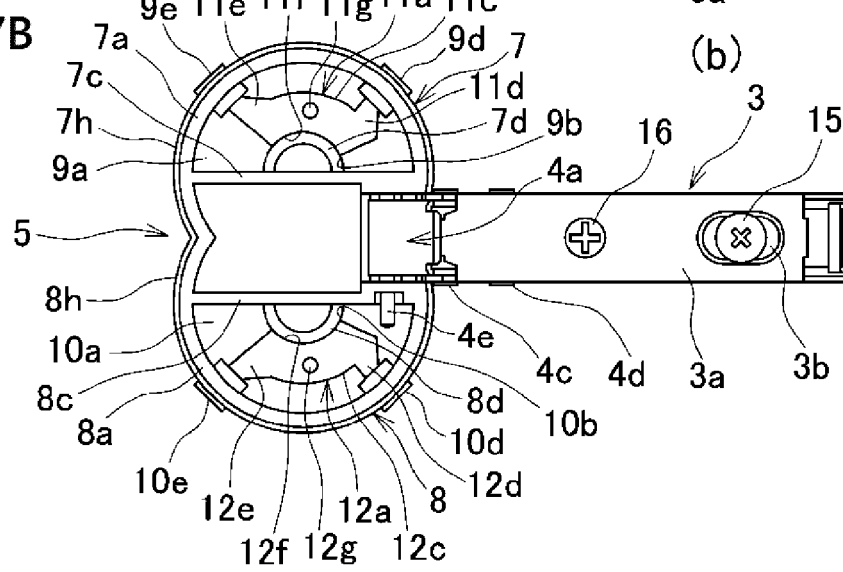


FIG. 7B





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			TECHNICAL FIELDS SEARCHED (IPC)
			E05D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 6 August 2018	Examiner Rémondot, Xavier
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