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(54) Damping device for hinge assembly

Dämpfvorrichtung für eine Scharnieranordnung

Dispositif d'amortissement pour ensemble de charnière

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(56) References cited:
WO-A1-2012/024702 AT-A1- 506 643
DE-A1-102011 050 053 US-A1- 2008 109 987

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Description**FIELD OF THE INVENTION**

[0001] The present invention relates to a damping device, and more particularly, to a damping device for a hinge assembly.

BACKGROUND OF THE INVENTION

[0002] WO/2012/024702 A1 discloses a "DAMPING DEVICE FOR FURNITURE PARTS" and comprises a damping device used on furniture parts. The damping device 9 as disclosed in Figs. 4a and 4b of the prior invention comprises a housing 12, a slider 13 and a locking device 15, wherein the slider 13 has a locking member 19 extending therefrom.

[0003] Fig. 5a shows that there is a space between the piston 22 and the fluid chamber 21 of the slider 13, so that when the inclined abutment surface 16 of the slider is touched, the slider 13 moves relative to the piston 22 so as to have the damping feature.

[0004] Fig. 5c shows that the locking element 15a of the locking device 15 contacts the locking member 19 of the slider 13, so that the slider 13 retracts relative to the piston 22 and is positioned. Therefore, as shown in Fig. 6b, the slider 13 of the damping device 9 does not protrude automatically, so that the arm 7 cannot touch the slider 13, and no damping function is available.

[0005] However, the damping function is made by forcing the fluid chamber 21 of the slider 13 to move to the end having the piston 22, and the slider 13 is positioned by the contact between the locking element 15a of the locking device 15 and the locking member 19 of the slider 13. The action to force the slider 13 to move is necessary and which is an extra operation action.

[0006] The present invention intends to provide a damping device for a hinge assembly and improves the shortcomings of the conventional damping device.

SUMMARY OF THE INVENTION

[0007] The present invention relates to a hinge assembly and comprises a housing having a chamber defined therein, and an arm is pivotably connected to the housing. A spring is located in the chamber to provide to allow the pivotal movement between the housing and the arm. A damping device comprises a maintaining member secured in the chamber of the housing, and the maintaining member has a path in which a damper is located. The damper has a piston rod. An adjustment member is movably connected to the maintaining member and has a protruded portion which is protruded into the maintaining member and located corresponding to the piston rod of the damper.

[0008] When the adjustment member is moved to a first position relative to the maintaining member, the protruded portion of the adjustment member is located to-

ward the piston rod of the damper. When the housing is closed relative to the arm, the damper is pushed by the arm, so that the piston rod of the damper contacts the protruded portion of the adjustment member and retracts to perform damping function.

[0009] When the adjustment member is moved to a second position relative to the maintaining member, the protruded portion of the adjustment member is moved away from the piston rod of the damper. When the housing is closed relative to the arm, the piston rod of the damper cannot contact the protruded portion of the adjustment member, and no damping function is available.

[0010] Preferably, the adjustment member has a protrusion, the maintaining member has a top portion which has a first contact portion and a second contact portion on the periphery thereof. When the adjustment member is moved to the first position relative to the maintaining member, the protrusion of the adjustment member contacts the first contact portion of the maintaining member. When the adjustment member is moved to the second position relative to the maintaining member, the protrusion of the adjustment member contacts the second contact portion of the maintaining member.

[0011] Preferably, the first contact portion of the maintaining member is a fixed surface, and the second contact portion of the maintaining member is a resilient latch.

[0012] Preferably, a resilient member is connected between the maintaining member and the adjustment member, and the adjustment member is maintained at the first position in response to the resilient member.

[0013] Preferably, the maintaining member has a first hook, the adjustment member has a second hook, and the resilient member is hooked between the first and second hooks.

[0014] Preferably, both of the first and second contact portions of the maintaining member are two resilient latches.

[0015] Preferably, the maintaining member has a bottom portion which has a curved lip on the periphery thereof. The maintaining member has a body connected between the top portion and the bottom portion. The adjustment member has a top piece, a bottom piece and a side panel which is connected between the top and bottom pieces. The top piece of the adjustment member contacts the top portion of the maintaining member. The bottom piece of the adjustment member contacts the lip of the bottom portion of the maintaining member.

[0016] Preferably, the top piece of the adjustment member has an operation portion.

[0017] Preferably, the top portion of the maintaining member has a first index and a second index. The top piece of the adjustment member has a tip. When the adjustment member is moved to the first position relative to the maintaining member, the tip points the first index. When the adjustment member is moved to the second position relative to the maintaining member, the tip points the second index.

[0018] Preferably, the first index is represented by a

description "ON" marked thereon, and the second index is represented by a description "OFF" marked thereon.

[0019] Preferably, the path of the maintaining member has a linear guide section defined in the inside thereof. The damper has a stop which is located to contact an end of the guide section.

[0020] Preferably, the chamber of the housing has two positioning holes, and the maintaining member has two engaging members on two sides thereof. The two engaging members are engaged with the positioning holes to secure the maintaining member in the chamber of the housing.

[0021] Preferably, the chamber of the housing is defined by two side walls, an inner bottom, a front wall and a rear wall. The front wall is connected to the front end of the two side walls, the rear wall is connected to the rear end of the side walls. Each of the side walls of the housing has a pivotal hole. The two pivotal holes are located adjacent to the front wall. The arm has two cam portions and a reception portion which is connected between the two cam portions. A pivot extends through the pivotal holes and the reception portion to pivotably connect the arm to the housing.

[0022] Preferably, there are two springs which are torsion springs, and each spring has a first leg, a second leg and a coil portion connected between the first and second legs. The housing has two pin holes in the side walls, and the inner bottom has two lugs. Each lug has a through hole which is located corresponding to the pin hole corresponding thereto. The springs are connected between the side walls of the housing and the lugs. A pin extends through one of the pin holes, one of the coil portions of the springs and one of the through holes of the lugs to connect one of the springs to the housing.

[0023] Preferably, the two side walls each have an insertion hole, and the two respective second legs of the two springs are inserted into the two insertion holes.

[0024] One aspect of the present invention is to provide a mechanism for the user to easily and conveniently choose turning on or turning off the damping function of the damping device for the hinge assembly.

[0025] The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026]

Fig. 1 is an exploded view to show the damping device and the hinge assembly of the present invention; Fig. 2 is another exploded view to show the damping device and the hinge assembly of the present invention;

Fig. 3 is a partial cross sectional view of the hinge assembly of the present invention, wherein the

damping device is installed in the hinge assembly; Fig. 4 is a perspective view to show the adjustment member and the maintaining member of the present invention;

Fig. 5 shows that a resilient member is connected to the maintaining member and the adjustment member;

Fig. 6 is the perspective view of the hinge assembly wherein the adjustment member is moved to the first position relative to the maintaining member;

Fig. 7 shows that the adjustment member is moved to the first position relative to the maintaining member;

Fig. 8 shows that the adjustment member is moved to the second position relative to the maintaining member;

Fig. 9 is the perspective view of the hinge assembly wherein the adjustment member is moved to the second position relative to the maintaining member;

Fig. 10 shows that the corresponding position of the adjustment member, the damper and the piston rod when the housing is closed relative to the arm, wherein the damping function is not available;

Fig. 11 shows that the hinge assembly of the present invention is installed to the cabinet and the door, wherein the door is opened and the damping function is available;

Fig. 12 shows that the door is pivoted an angle during closing action relative to the cabinet, wherein the damping function is available;

Fig. 13 shows that the door is completely closed relative to the cabinet, wherein the damping function is available;

Fig. 14 shows that the door of the cabinet is opened, wherein the damping device is restoration and the damping function is available;

Fig. 15 shows a second embodiment of the maintaining member wherein the first contact portion contacts the adjustment member at the first position, and Fig. 16 shows the second embodiment of the maintaining member wherein the first contact portion contacts the adjustment member at the second position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0027] Referring to Figs. 1 to 3, the hinge assembly of the present invention comprises a housing 10, an arm 12, at least one spring 14, a maintaining member 16, a damper 18 and an adjustment member 20.

[0028] The housing 10 comprises two side walls 22, an inner bottom 24, a front wall 26 and a rear wall 28, wherein the side walls 22 of the housing 10 have two pivotal holes 30, and the two pivotal holes 30 are located adjacent to the front wall 26. The side walls 22 further have two pin holes 32 and two positioning holes 34. The inner bottom 24 is connected between the two side walls 22. Preferably, the inner bottom 24 is connected to the

side walls 22, the front wall 26 and the rear wall 28. The front wall 26 is connected to the front end of the two side walls 22, and the rear wall 28 is connected to the rear end of the side walls 22. The chamber 36 of the housing 10 is defined by the two side walls 22, the inner bottom 24, the front wall 26 and the rear wall 28. The inner bottom 24 has two lugs 38, and each lug 38 has a through hole 40 which is located corresponding to the pin hole 32 corresponding thereto.

[0029] The arm 12 is pivotably connected to the housing 10 and has two cam portions 42 and a reception portion 44 which is connected between the two cam portions 42. A pivot 46 extends through the pivotal holes 30 of the side walls 22 of the housing 10 and the reception portion 44 of the arm 12 to pivotably connect the arm 12 to the housing 10. An installation member 48 is connected to the arm 12 so as to be installed to a piece of furniture such as a cabinet.

[0030] The at least one spring 14 is located in the chamber 36 to provide a force to allow the pivotal movement between the housing 10 and the arm 12. In the embodiment, there are two springs 14 which are torsion springs. Each spring 14 has a first leg 50a, a second leg 50b and a coil portion 52 connected between the first and second legs 50a, 50b. Each spring 14 is connected between the side wall 22 and the lug 38. The housing 10 has two pin holes 32 in the side walls 22. A pin 54 extends through one of the pin holes 32, one of the coil portions 52 of the springs 14 and one of the through holes 40 of the lugs 38 to position one of the springs 14 in the chamber 36 of the housing 10. The first and second legs 50a, 50b of the two springs 14 respectively contact the cam portions 42 of the arm 12 and the side walls 22 of the housing 10. Preferably, each of the side walls 22 has an insertion hole 56, and the second legs 50b are inserted in the insertion holes 56. When the housing 10 is closed relative to the arm 12, the springs 14 provide a force to complete the closing action.

[0031] As shown in Figs. 1 and 4, the maintaining member 16 is secured in the chamber 36 of the housing 10 and has a top portion 58, a bottom portion 60 and a body 62 connected between the top and bottom portions 58, 60. The top portion 58 of the maintaining member 16 has a first index 64a and a second index 64b. Preferably, the first index 64a is represented by a description "ON" marked thereon, and the second index 64b is represented by a description "OFF" marked thereon. The rear wall 28 has a first contact portion 66a and a second contact portion 66b on the periphery thereof. The first contact portion 66a of the maintaining member 16 is a fixed surface, and the second contact portion 66b of the maintaining member 16 is a resilient latch. The bottom portion 60 of the maintaining member 16 has a curved lip 68 on the periphery thereof. The maintaining member 16 has two engaging members 70 on two sides thereof, and the two engaging members 70 are engaged with the positioning holes 34 to secure the maintaining member 16 in the chamber 36 of the housing 10. The body 62 of the main-

taining member 16 has a path 72. Preferably, the path 72 has a linear guide section 74 defined in the inside thereof. The damper 18 is located in the path 72 and located corresponding to the arm 12. The damper 18 has a piston rod 76 and preferably a stop 78, wherein the piston rod 76 contacts the adjustment member 20, and the stop 78 is located to contact an end of the guide section 74.

[0032] The adjustment member 20 is movably connected to the maintaining member 16 and comprises a top piece 80, a bottom piece 82 and a side panel 84 connected between the top and bottom pieces 80, 82. As shown in Fig. 4, the top piece 80 of the adjustment member 20 contacts the top portion 58 of the maintaining member 16, and the bottom piece 82 of the adjustment member 20 contacts the bottom portion 60 of the maintaining member 16. Preferably, the bottom piece 82 contacts the curved lip 68 of the bottom portion 60. The top piece 80 of the adjustment member 20 has a tip 86 on the front end thereof, and the top piece 80 further has an operation portion 88 on the top thereof, such as a pair of bent portions, so that the user can easily shift the adjustment member 20 by the user's finger(s). As shown in Fig. 5, two bottom pieces 82 are separately arranged on the adjustment member 20. The side panel 84 has a protrusion 90 and a protruded portion 92. The protrusion 90 is located adjacent to the top piece 80 and located corresponding to the first and second contact portions 66a, 66b of the maintaining member 16. The protruded portion 92 which is protruded into the maintaining member 16 and located corresponding to the piston rod 76 of the damper 18, as shown in Fig. 6. The tip 86 points the first index 64a (ON) or the second index 64b (OFF) to indicate whether or not the protruded portion 92 of the adjustment member 20 contacts the piston rod 76 of the damper 18 to perform damping function.

[0033] As shown in Figs. 6 and 7, when the adjustment member 20 is moved to a first position relative to the maintaining member 16, the protrusion 90 of the adjustment member 20 contacts the first contact portion 66a of the maintaining member 16, the protruded portion 92 of the adjustment member 20 is located to face to the piston rod 76 of the damper 18, and the tip 86 points the first index 64a (ON) on the maintaining member 16. Consequently, when the housing 10 closes relative to the arm 12, the damper 18 is pushed by the arm 12, so that the piston rod 76 of the damper 18 contacts the protruded portion 92 of the adjustment member 20 and retracts to perform damping function. In one preferable embodiment, as shown in Figs. 5 and 7, a resilient member 94 is connected between the maintaining member 16 and the adjustment member 20. The maintaining member 16 has a first hook 21a, the adjustment member 20 has a second hook 21b, and the resilient member 94 is hooked between the first and second hooks 21a, 21b, so that the adjustment member 20 is maintained at the first position in response the force of the resilient member 94. As shown in Fig. 8, when the adjustment member 20 is

moved to the second position relative to the maintaining member 16, the protrusion 90 of the adjustment member 20 is moved away from the first contact portion 66a and contacts the second contact portion 66b, and the adjustment member 20 stretches the resilient member 94.

[0034] Fig. 9 shows that when the adjustment member 20 is moved to a second position relative to the maintaining member 16, the protruded portion 92 of the adjustment member 20 is moved away from the piston rod 76 of the damper 18, and the tip 86 points the second index 64b (OFF) of the maintaining member 16. As shown in Fig. 10, when the housing 10 is closed relative to the arm 12, although the damper 18 is moved by the arm 12 and shifts relative to the maintaining member 16, the piston rod 76 and the damper 18 are integrally moved toward the adjustment member 20 without any compression between the piston rod 76 and the damper 18. That is to say, the piston rod 76 cannot contact the protruded portion 92 of the adjustment member 20, so that no damping function is available.

[0035] As shown in Fig. 11, the arm 12 is connected to a cabinet 96 by the installation member 48, and the housing 10 is connected to a door 98. The user can adjust the adjustment member 20 to let the protruded portion 92 point the piston rod 76 of the damper 18, so that when the door 98 is moved to a closed position relative to the cabinet 96, as shown in Figs. 12 and 13, the arm 12 contacts the damper 18 whose piston rod 76 contacts the protruded portion 92 of the adjustment member 20. The piston rod 76 retracts relative to the damper 18 to have the damping function. Therefore, the door 98 is slowly and quietly closed relative to the cabinet 96.

[0036] Fig. 14 shows that when the door 98 is opened relative to the cabinet 96, the arm 12 is moved away from the damper 18, and the piston rod 76 extends and contacts the protruded portion 92 of the adjustment member 20 to move the damper 18 until the stop 78 of the damper 18 contacts the end of the linear guide section 74 of the maintaining member 16. At this position, the damper 18 can be pushed to perform damping function relative to the arm 12.

[0037] The second embodiment is disclosed in Figs. 15 and 16, wherein both of the first and second contact portions 67a, 67b of the maintaining member 16 are two resilient latches. When the adjustment member 20 is moved to the first position relative to the maintaining member 16, the protrusion 90 of the adjustment member 20 contacts the first contact portion 67a and is positioned. When the adjustment member 20 is moved to the second position relative to the maintaining member 16, the protrusion 90 of the adjustment member 20 moves away from the first contact portion 67a and contacts the second contact portion 67b and is positioned.

[0038] In view of the foregoing, the user can adjust the adjustment member 20 to have damping function or not based on the user's requirement. That is to say, the present invention provide a mechanism for the user to easily and conveniently choose turning on or turning off

the damping function of the damping device for the hinge assembly.

[0039] While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention as defined in the appended claims.

Claims

1. A hinge assembly comprising:

a housing (10) having a chamber (36) defined therein, an arm (12) pivotably connected to the housing (10), a spring (14) located in the chamber (36) to provide a force to allow the pivotal movement between the housing (10) and the arm (12);

a damping device having a maintaining member (16) secured in the chamber (36) of the housing (10) and the maintaining member (16) having a path (72), a damper (18) located in the path (72) and located corresponding to the arm (12), the damper (18) having a piston rod (76);

an adjustment member (20) movably connected to the maintaining member (16) and having a protruded portion (92), **characterized in that** the protruded portion (92) of the adjustment member (20) is protruded into the maintaining member (16) and located corresponding to the piston rod (76) of the damper (18);

when the adjustment member (20) is moved to a first position relative to the maintaining member (16), the protruded portion (92) of the adjustment member (20) is located toward the piston rod (76) of the damper (18), when the housing (10) is closed relative to the arm (12), the damper (18) is pushed by the arm (12), so that the piston rod (76) of the damper (18) contacts the protruded portion (92) of the adjustment member (20) and retracts to perform damping function, and

when the adjustment member (20) is moved to a second position relative to the maintaining member (16), the protruded portion (92) of the adjustment member (20) is moved away from the piston rod (76) of the damper (18), when the housing (10) is closed relative to the arm (12), the piston rod (76) and the damper (18) are integrally moved relative to the maintaining member (16) towards the adjustment member (20) and the piston rod (76) of the damper (18) cannot contact the protruded portion (92) of the adjustment member (20), so that no damping function is available.

2. The hinge assembly as claimed in claim 1, wherein the adjustment member (20) has a further protrusion (90), the maintaining member (16) has a top portion (58) which has a first contact portion (66a) and a second contact portion (66b) on a periphery thereof, when the adjustment member (20) is moved to the first position relative to the maintaining member (16), the protrusion (90) of the adjustment member (20) contacts the first contact portion (66a) of the maintaining member (16), when the adjustment member (20) is moved to the second position relative to the maintaining member (16), the protrusion (90) of the adjustment member (20) contacts the second contact portion (66b) of the maintaining member (16).
3. The hinge assembly as claimed in claim 2, wherein the first contact portion (66a) of the maintaining member (16) is a fixed surface and the second contact portion (66b) of the maintaining member (16) is a resilient latch.
4. The hinge assembly as claimed in claim 3, further comprising a resilient member (94) connected between the maintaining member (16) and the adjustment member (20), the adjustment member (20) maintained at the first position in response to the resilient member (94).
5. The hinge assembly as claimed in claim 4, wherein the maintaining member (16) has a first hook (21a), the adjustment member (20) has a second hook (21b), and the resilient member (94) is hooked between the first and second hooks (21a, 21b).
6. The hinge assembly as claimed in claim 2, wherein both of the first and second contact portions (67a, 67b) of the maintaining member (16) are two resilient latches.
7. The hinge assembly as claimed in claim 2, wherein the maintaining member (16) has a bottom portion (60) which has a curved lip (68) on a periphery thereof, the maintaining member (16) has a body (62) connected between the top portion (58) and the bottom portion (60), the adjustment member (20) has a top piece (80), a bottom piece (82) and a side panel (84) connected between the top and bottom pieces (80, 82), the top piece (80) of the adjustment member (20) contacts the top portion (58) of the maintaining member (16), the bottom piece (82) of the adjustment member (20) contacts the lip (68) of the bottom portion (60) of the maintaining member (16).
8. The hinge assembly as claimed in claim 7, wherein the top piece (80) of the adjustment member (20) has an operation portion (88).
9. The hinge assembly as claimed in claim 7, wherein the top portion (58) of the maintaining member (16) has a first index (64a) and a second index (64b), the top piece (80) of the adjustment member (20) has a tip (86), when the adjustment member (20) is moved to the first position relative to the maintaining member (16), the tip (86) points the first index (64a), when the adjustment member (20) is moved to the second position relative to the maintaining member (16), the tip (86) points the second index (64b).
10. The hinge assembly as claimed in claim 9, wherein the first index (64a) is represented by a description "ON" marked thereon and the second index (64b) is represented by a description "OFF" marked thereon.
11. The hinge assembly as claimed in claim 1, wherein the path (72) of the maintaining member (16) has a linear guide section (74) defined in an inside thereof, the damper (18) has a stop (78) which is located to contact an end of the guide section (74).
12. The hinge assembly as claimed in claim 1, wherein the chamber (36) of the housing (10) has two positioning holes (34), the maintaining member (16) has two engaging members (70) on two sides thereof, the two engaging members (70) are engaged with the positioning holes (34) to secure the maintaining member (16) in the chamber (36) of the housing (10).
13. The hinge assembly as claimed in claim 1, wherein the chamber (36) of the housing (10) is defined by two side walls (22), an inner bottom (24), a front wall (26) and a rear wall (28), the front wall (26) is connected to a front end of the two side walls (22), the rear wall (28) is connected to a rear end of the side walls (22), each of the side walls (22) of the housing (10) has a pivotal hole (30), the two pivotal holes (30) are located adjacent to the front wall (26), the arm (12) has two cam portions (42) and a reception portion (44) which is connected between the two cam portions (42), a pivot (46) extends through the pivotal holes (30) and the reception portion (44) to pivotably connect the arm (12) to the housing (10).
14. The hinge assembly as claimed in claim 1, wherein there are two springs (14) which are torsion springs and each spring (14) has a first leg (50a), a second leg (50b) and a coil portion (52) connected between the first and second legs (50a, 50b), the housing (10) has two pin holes (32) in the side walls (22), the inner bottom (24) has two lugs (38), each lug (38) has a through hole (40) which is located corresponding to the pin hole (32) corresponding thereto, the springs (14) are connected between the side walls (22) of the housing (10) and the lugs (38), a pin (54) extends through one of the pin holes (32), one of the coil portions (52) of the springs (14) and one of the through holes (40) of the lugs (38) to connect one of

the springs (14) to the housing (10).

15. The hinge assembly as claimed in claim 14, wherein the two side walls (22) each have an insertion hole (56) and the two respective second legs (50b) of the two springs (14) are inserted into the two insertion holes (56).

Patentansprüche

1. Eine Scharnierbaugruppe, umfassend:

ein Gehäuse (10) mit einer Kammer (36) in diesem; einem Ausleger (12), der drehgelenkig am Gehäuse (10) befestigt ist; einer Feder (14), die in der Kammer (36) befestigt ist, um für die Drehbewegung zwischen dem Gehäuse (10) und dem Ausleger (12) eine Kraft auszuüben; einem Dämpfer, der in der Kammer (36) montiert ist und ein Halteringsglied (16) aufweist, das in der Kammer (36) des Gehäuses (10) befestigt ist, wobei das Halteringsglied (16) mit einem Durchlass (72) gebildet und ein Dämpfer (18) in diesem Durchlass (72) in Übereinstimmung mit dem Ausleger (12) angeordnet ist; der Dämpfer (18) mit einer Kolbenstange (76) gebildet ist; einem Justierteil (20), das beweglich am Halteringsglied (16) befestigt und mit einem vorstehenden Teil (92) gebildet ist, **dadurch gekennzeichnet, dass** der vorstehende Teil (92) des Justierteils (20) in das Halteringsglied (16) ragt und in Übereinstimmung mit der Kolbenstange (76) des Dämpfers (18) angeordnet ist; beim Bewegen des Justierteils (20) in eine erste Position zum Halteringsglied (16) der vorstehende Teil (92) des Justierteils (20) auf die Kolbenstange (76) des Dämpfers (18) zu angeordnet wird, wenn das Gehäuse (10) zum Ausleger (12) geschlossen und der Dämpfer (18) mit dem Ausleger (12) angeschoben wird, damit die Kolbenstange (76) des Dämpfers (18) mit dem vorstehenden Teil (92) des Justierteils (20) in Berührung kommt und eingezogen wird, um eine dämpfende Funktion auszuüben, und beim Bewegen des Justierteils (20) in eine zweite Position zum Halteringsglied (16) der vorstehende Teil (92) des Justierteils (20) von der Kolbenstange (76) des Dämpfers (18) wegbewegt wird, wenn das Gehäuse (10) zum Ausleger (12) geschlossen wird, die Kolbenstange (76) und der Dämpfer (18) zum Halteringsglied (16) auf den Justierteil (20) zu integral verschoben werden, wobei die Kolbenstange (76) des Dämpfers (18) nicht mit dem vorstehenden Teil (92) des Justierteils (20) in Berührung kommen kann, so dass keine dämpfende Funktion ausgeübt wird.

2. Die Scharnierbaugruppe nach Anspruch 1, wobei der Justierteil (20) weiter mit einem Überstand (90) gebildet ist; das Halteringsglied (16) weist einen oberen Teil (58) auf, der mit einem ersten Kontaktteil (66a) und einem zweiten Kontaktteil (66b) an dessen Peripherie gebildet ist; beim Verschieben des Justierteils (20) in die erste Position zum Halteringsglied (16) der Überstand (90) des Justierteils (20) mit dem ersten Kontaktteil (66a) des Halteringsgliedes (16) in Berührung kommt; beim Verschieben des Justierteils (20) in die zweite Position zum Halteringsglied (16) der Überstand (90) des Justierteils (20) mit dem zweiten Kontaktteil (66b) des Halteringsgliedes (16) in Berührung kommt.
3. Die Scharnierbaugruppe nach Anspruch 2, wobei der erste Kontaktteil (66a) des Halteringsgliedes (16) als eine feste Fläche und der zweite Kontaktteil (66b) des Halteringsgliedes (16) als einen elastischen Riegel gebildet sind.
4. Die Scharnierbaugruppe nach Anspruch 3, weiter umfassend eine Feder (94), die zwischen dem Halteringsglied (16) und dem Justierteil (20) befestigt ist; der Justierteil (20) in der ersten Position als Reaktion auf die Feder (94) festgehalten wird.
5. Die Scharnierbaugruppe nach Anspruch 4, wobei das Halteringsglied (16) eine erste Feder (21 a) aufweist, der Justierteil (20) eine zweite Feder (21 b) aufweist und die Feder (94) zwischen der ersten und zweiten Feder (21a, 21b) eingehakt ist.
6. Die Scharnierbaugruppe nach Anspruch 2, wobei sowohl der erste als auch der zweite Kontaktteil (67a, 67b) des Halteringsgliedes (16) als zwei elastische Riegel gebildet sind.
7. Die Scharnierbaugruppe nach Anspruch 2, wobei das Halteringsglied (16) mit einem unteren Teil (60) gebildet ist, der an dessen Peripherie eine gebogene Lippe (68) aufweist; das Halteringsglied (16) mit einem Körper (62) gebildet ist, der zwischen dem oberen Teil (58) und dem unteren Teil (60) befestigt ist; der Justierteil (20) mit einem oberen Stück (80), einem unteren Stück (82) und mit einer Seitenverkleidung (84) gebildet ist, wobei letzteres zwischen dem oberen und dem unteren Stück (80, 82) befestigt ist; das obere Stück (80) des Justierteils (20) mit dem oberen Teil (58) des Halteringsgliedes (16) und das untere Stück (82) des Justierteils (20) mit der Lippe (68) des unteren Teils (60) des Halteringsgliedes (16) in Berührung kommen.
8. Die Scharnierbaugruppe nach Anspruch 7, wobei das obere Stück (80) des Justierteils (20) mit einem Betätigungsteil (88) gebildet ist.

9. Die Scharnierbaugruppe nach Anspruch 7, wobei der obere Teil (58) des Halterungsgliedes (16) einen ersten Zeiger (64a) und einen zweiten Zeiger (64b) aufweist; das obere Stück (80) des Justierteils (20) mit einer Spitze (86) gebildet ist; beim Verschieben des Justierteils (20) in die erste Position zum Halterungsglied (16) die Spitze (86) den ersten Zeiger (64a) und beim Verschieben des Justierteils (20) in die zweite Position zum Halterungsglied (16) die Spitze (86) den zweiten Zeiger (64b) ausrichtet.
10. Die Scharnierbaugruppe nach Anspruch 9, wobei der erste Zeiger (64a) mit einer Kennzeichnung "ON" (EIN) und der zweite Zeiger (64b) mit einer Kennzeichnung "OFF" (AUS) bezeichnet sind.
11. Die Scharnierbaugruppe nach Anspruch 1, wobei der Durchlass (72) des Halterungsgliedes (16) auf einer Innenseite mit einer linearen Führungskomponente (74) gebildet ist; der Dämpfer (18) mit einem Anschlag (78) gebildet ist, der so angeordnet ist, damit er mit einem Ende der Führungskomponente (74) in Berührung kommt.
12. Die Scharnierbaugruppe nach Anspruch 1, wobei die Kammer (36) im Gehäuse (10) zwei Positionierlöcher (34) aufweist; das Halterungsglied (16) auf dessen beiden Seiten mit zwei Eingriffteilen (70) gebildet ist; die beiden Eingriffteile (70) mit den Positionierlöchern (34) in Eingriff sind, um das Halterungsglied (16) in der Kammer (36) im Gehäuse (10) sicher zu befestigen.
13. Die Scharnierbaugruppe nach Anspruch 1, wobei die Kammer (36) im Gehäuse (10) mit zwei Seitenwänden (22), einer inneren Bodenfläche (24), einer vorderen Wand (26) und mit einer hinteren Wand (28) gebildet wird; die vordere Wand (26) an einem vorderen Ende der beiden Seitenwände (22) und die hintere Wand (28) an einem hinteren Ende der Seitenwände (22) befestigt sind; jede der Seitenwände (22) des Gehäuses (10) eine Scharnierbohrung (30) aufweist; die beiden Scharnierbohrungen (30) angrenzend an der vorderen Wand (26) gebildet sind; der Ausleger (12) zwei Nocken (42) und einen Aufnahmeteil (44) aufweist, der zwischen den beiden Nocken (42) befestigt ist; ein Drehzapfen (46) durch die Scharnierbohrungen (30) und durch den Aufnahmeteil (44) ragt, um drehgelenkig am Ausleger (12) des Gehäuses (10) befestigt zu werden.
14. Die Scharnierbaugruppe nach Anspruch 1, wobei zwei Federn (14) vorgesehen sind, die als Torsionsfedern gebildet sind, wobei jede Feder (14) mit einem ersten Bein (50a), einem zweiten Bein (50b) gebildet ist und eine Spule (52) zwischen dem ersten und zweiten Bein (50a, 50b) befestigt ist; das Gehäuse (10) in den Seitenwänden (22) zwei Bolzenlöcher

(32) aufweist; die innere Bodenfläche (24) zwei Ösen (38) aufweist; jede Öse (38) ein durchgehendes Loch (40) aufweist, das in Übereinstimmung mit dem entsprechenden Bolzenloch (32) gebildet ist; die Federn (14) zwischen den Seitenwände (22) des Gehäuses (10) und den Ösen (38) befestigt sind; ein Bolzen (54) durch einen der Bolzenlöcher (32) ragt; eine der Spulen (52) der Federn (14) und eines der durchgehenden Löcher (40) der Ösen (38) mit einer der Federn (14) am Gehäuse (10) befestigt sind.

15. Die Scharnierbaugruppe nach Anspruch 14, wobei die beiden Seitenwände (22) je ein Einsteckloch (56) aufweisen und die beiden jeweiligen zweiten Beine (50b) der beiden Federn (14) in die beiden Einstecklöcher (56) eingeführt sind.

Revendications

1. Un ensemble de charnière comprenant :

un boîtier (10) comportant une chambre (36) définie dans celui-ci, un bras (12) relié de façon pivotante au boîtier (10), un ressort (14) situé dans la chambre (36) fournissant une force permettant le mouvement pivotant entre le boîtier (10) et le bras (12) ;

un dispositif d'amortissement situé dans la chambre (36) comportant un élément de maintien (16) fixé dans la chambre (36) du boîtier (10) et l'élément de maintien (16) comportant une trajectoire (72), un amortisseur (18) situé dans la trajectoire (72) et situé en correspondance avec le bras (12), l'amortisseur (18) comportant une tige de piston (76) ;

un élément de réglage (20) relié de façon mobile à l'élément de maintien (16) et comportant une partie en saillie (92), **caractérisé en ce que** la partie en saillie (92) de l'élément de réglage (20) est en saillie dans l'élément de maintien (16) et située en correspondance avec la tige de piston (76) de l'amortisseur (18) ;

lorsque l'élément de réglage (20) est déplacé vers une première position par rapport à l'élément de maintien (16), la partie en saillie (92) de l'élément de réglage (20) est située en direction de la tige de piston (76) de l'amortisseur (18), lorsque le boîtier (10) est fermé par rapport au bras (12), l'amortisseur (18) est poussé par le bras (12), de sorte que la tige de piston (76) de l'amortisseur (18) est en contact avec la partie en saillie (92) de l'élément de réglage (20) et se rétracte pour réaliser la fonction d'amortissement, et

lorsque l'élément de réglage (20) est déplacé vers une seconde position par rapport à l'élément de maintien (16), la partie en saillie (92)

- de l'élément de réglage (20) est déplacée à l'écart de la tige de piston (76) de l'amortisseur (18), lorsque le boîtier (10) est fermé par rapport au bras (12), la tige de piston (76) et l'amortisseur (18) sont intégralement déplacés par rapport à l'élément de maintien (16) en direction de l'élément de réglage (29) et la tige de piston (76) de l'amortisseur (18) ne peut pas être en contact avec la partie en saillie (92) de l'élément de réglage (20), de sorte que nulle fonction d'amortissement n'est disponible.
2. L'ensemble de charnière selon la revendication 1, dans lequel l'élément de réglage (20) comporte une autre saillie (90), l'élément de maintien (16) comporte une partie supérieure (58) qui comporte une première partie de contact (66a) et une seconde partie de contact (66b) sur sa périphérie, lorsque l'élément de réglage (20) est déplacé vers la première position par rapport à l'élément de maintien (16), la saillie (90) de l'élément de réglage (20) est en contact avec la première partie de contact (66a) de l'élément de maintien (16), lorsque l'élément de réglage (20) est déplacé vers la seconde position par rapport à l'élément de maintien (16), la saillie (90) de l'élément de réglage (20) est en contact avec la seconde partie de contact (66b) de l'élément de maintien (16).
 3. L'ensemble de charnière selon la revendication 2, dans lequel la première partie de contact (66a) de l'élément de maintien (16) est une surface immobile et la seconde partie de contact (66b) de l'élément de maintien (16) est un élément de verrouillage élastique.
 4. L'ensemble de charnière selon la revendication 3, comprenant en outre un élément élastique (94) relié entre l'élément de maintien (16) et l'élément de réglage (20), l'élément de réglage (20) maintenu à la première position en réponse à l'élément élastique (94).
 5. L'ensemble de charnière selon la revendication 4, dans lequel l'élément de maintien (16) comporte un premier crochet (21a), l'élément de réglage (20) comporte un second crochet (21b), et l'élément élastique (94) est accroché entre les premier et second crochets (21a, 21b).
 6. L'ensemble de charnière selon la revendication 2, dans lequel à la fois la première et la seconde parties de contact (67a, 67b) de l'élément de maintien (16) sont deux éléments de verrouillage élastique.
 7. L'ensemble de charnière selon la revendication 2, dans lequel l'élément de maintien (16) comporte une partie inférieure (60) qui comporte un rebord incurvé (68) sur une périphérie, l'élément de maintien (16) comporte un corps (62) relié entre la partie supérieure (58) et la partie inférieure (60), l'élément de réglage (20) comporte une partie supérieure (80), une partie inférieure (82) et un panneau latéral (84) relié entre les parties supérieure et inférieure (80, 82), la partie supérieure (80) de l'élément de réglage (20) est en contact avec la partie supérieure (58) de l'élément de maintien (16), la partie inférieure (82) de l'élément de réglage (20) est en contact avec le rebord (68) de la partie inférieure (60) de l'élément de maintien (16).
 8. L'ensemble de charnière selon la revendication 7, dans lequel la partie supérieure (80) de l'élément de réglage (20) comporte une partie fonctionnelle (88).
 9. L'ensemble de charnière selon la revendication 7, dans lequel la partie supérieure (58) de l'élément de maintien (16) comporte un premier marquage (64a) et un second marquage (64b), la partie supérieure (80) de l'élément de réglage (20) comporte une pointe (86), lorsque l'élément de réglage (20) est déplacé vers la première position par rapport à l'élément de maintien (16), la pointe (86) pointe vers le premier marquage (64a), lorsque l'élément de réglage (20) est déplacé vers la seconde position par rapport à l'élément de maintien (16), la pointe (86) pointe vers le second marquage (64b).
 10. L'ensemble de charnière selon la revendication 9, dans lequel le premier marquage (64a) est représenté par l'inscription "ON" reportée dessus et le second marquage (64b) est représenté par l'inscription "OFF" reportée dessus.
 11. L'ensemble de charnière selon la revendication 1, dans lequel la trajectoire (72) de l'élément de maintien (16) comporte une partie de guidage (74) linéaire définie en son intérieur, l'amortisseur (18) comporte un arrêt (78) qui est situé pour être en contact avec une extrémité de la partie de guidage (74).
 12. L'ensemble de charnière selon la revendication 1, dans lequel la chambre (36) du boîtier (10) comporte deux trous de positionnement (34), l'élément de maintien (16) comporte deux éléments d'engagement (70) sur deux de ses côtés, les deux éléments d'engagement (70) sont engagés avec les trous de positionnement (34) pour maintenir l'élément de maintien (16) dans la chambre (36) du boîtier (10).
 13. L'ensemble de charnière selon la revendication 1, dans lequel la chambre (36) du boîtier (10) est définie par deux parois latérales (22), un fond intérieur (24), une paroi avant (26) et une paroi arrière (28), la paroi avant (26) est reliée à une extrémité avant des deux parois latérales (22), la paroi arrière (28) est reliée à une extrémité arrière des parois latérales (22), cha-

cune des parois latérales (22) du boîtier (10) comporte un trou pivotant (30), les deux trous pivotants (30) sont situés de façon adjacente à la paroi avant (26), le bras (12) comporte deux parties de came (42) et une partie de réception (44) qui est reliée entre les deux parties de came (42), un pivot (46) se prolonge au travers des trous pivotants (30) et la partie de réception (44) pour relier de façon pivotante le bras (12) au boîtier (10).

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- 14.** L'ensemble de charnière selon la revendication 1, dans lequel il y a deux ressorts (14) qui sont des ressorts à torsion et chaque ressort (14) comporte un premier segment (50a), un second segment (50b) et une partie de bobine (52) reliée entre les premier et second segments (50a, 50b), le boîtier (10) comporte deux trous de goupille (32) dans les parois latérales (22), le fond intérieur (24) comporte deux tenons (38), chaque tenon (38) comporte un trou traversant (40) qui est situé en correspondance avec le trou d'axe (32) lui correspondant, les ressorts (14) sont reliés entre les parois latérales (22) du boîtier (10) et les tenons (38), une goupille (54) se prolonge au travers de l'un des trous de goupille (32), l'une des parties de bobine (52) des ressorts (14) et l'un des trous traversants (40) des tenons (38) pour relier l'un des ressorts (14) au boîtier (10).

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- 15.** L'ensemble de charnière selon la revendication 14, dans lequel les deux parois latérales (22) ont chacune un trou d'insertion (56) et les deux seconds segments respectifs (50b) des deux ressorts (14) sont insérés dans les deux trous d'insertion (56).

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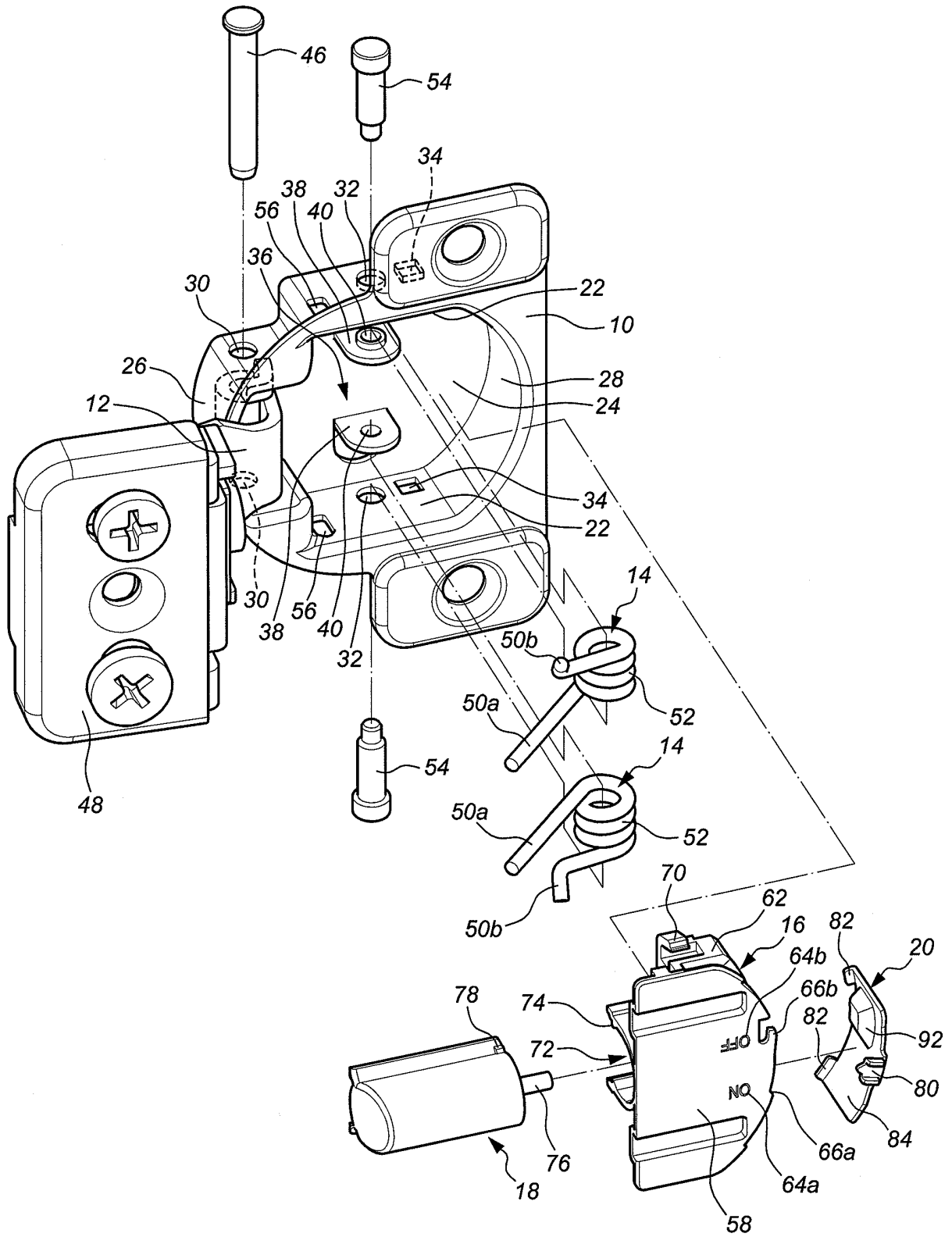


FIG. 1

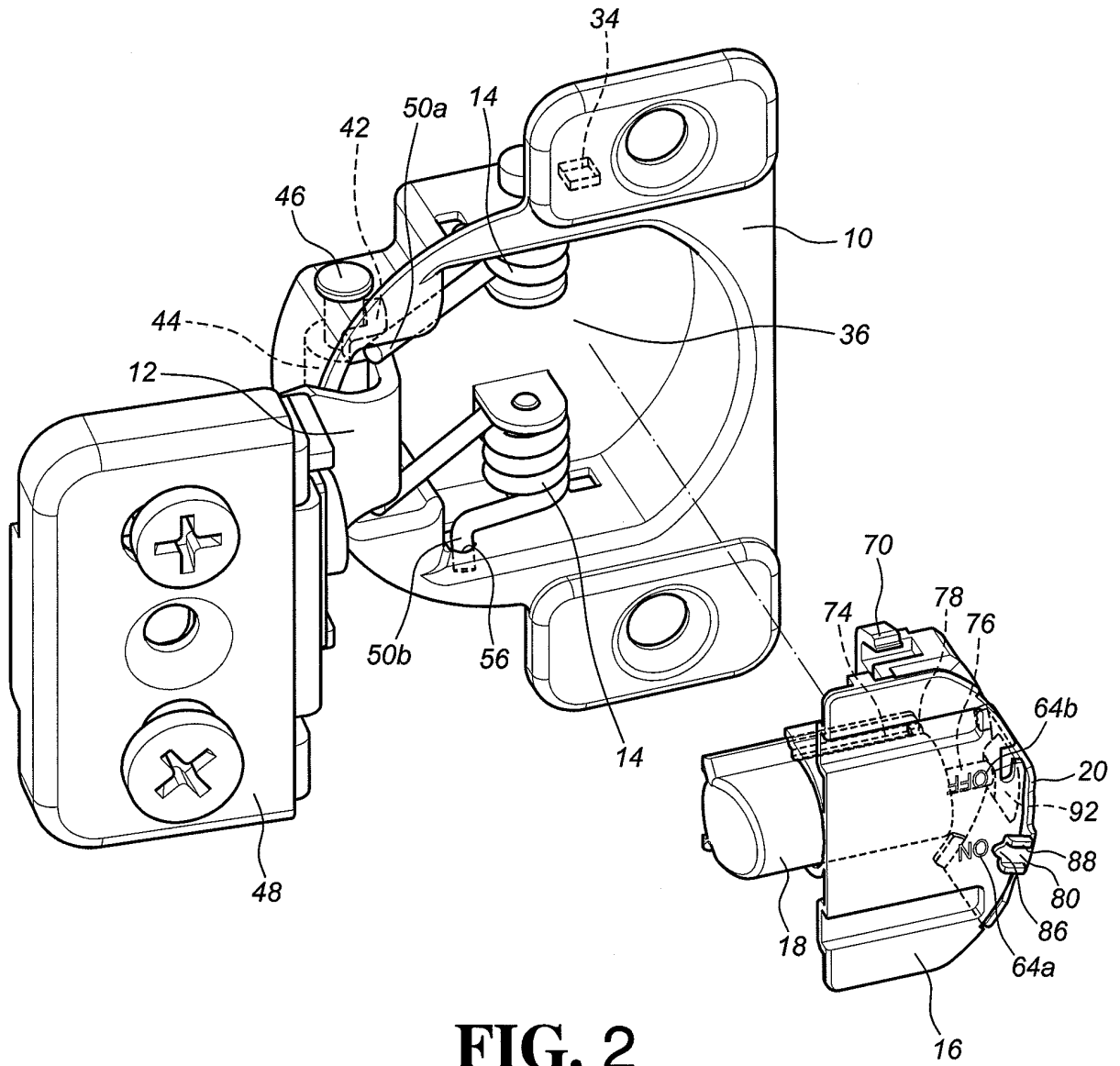


FIG. 2

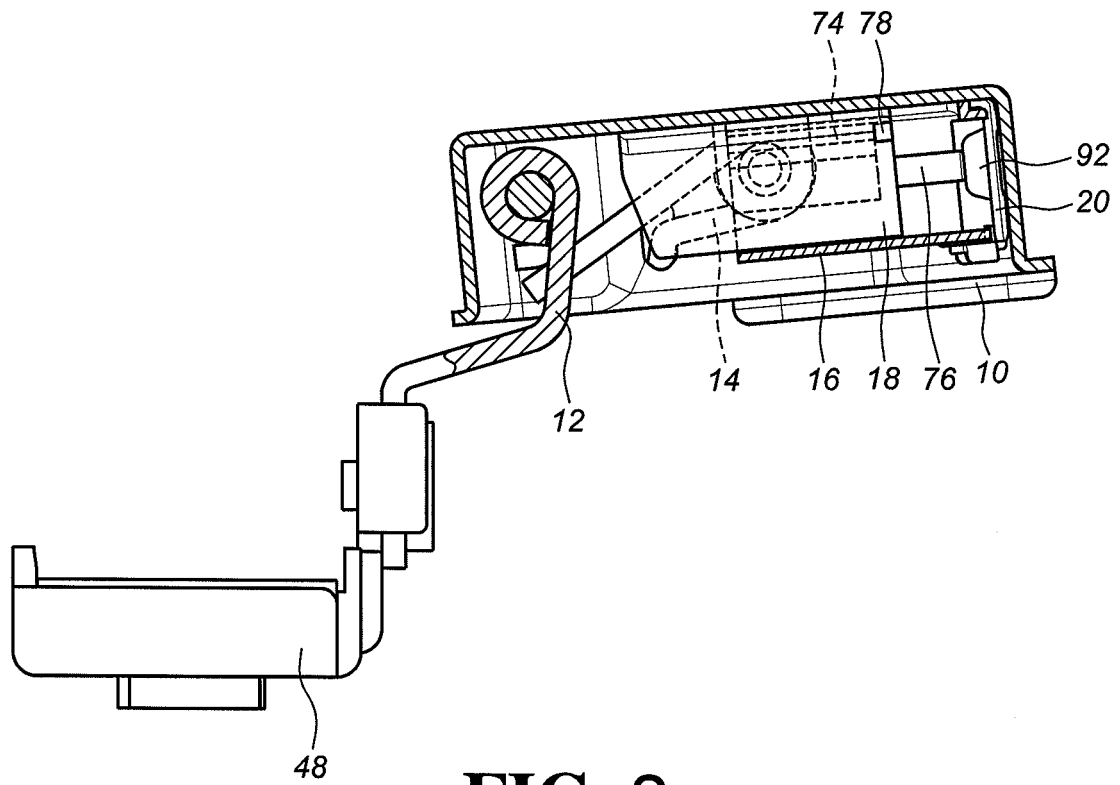


FIG. 3

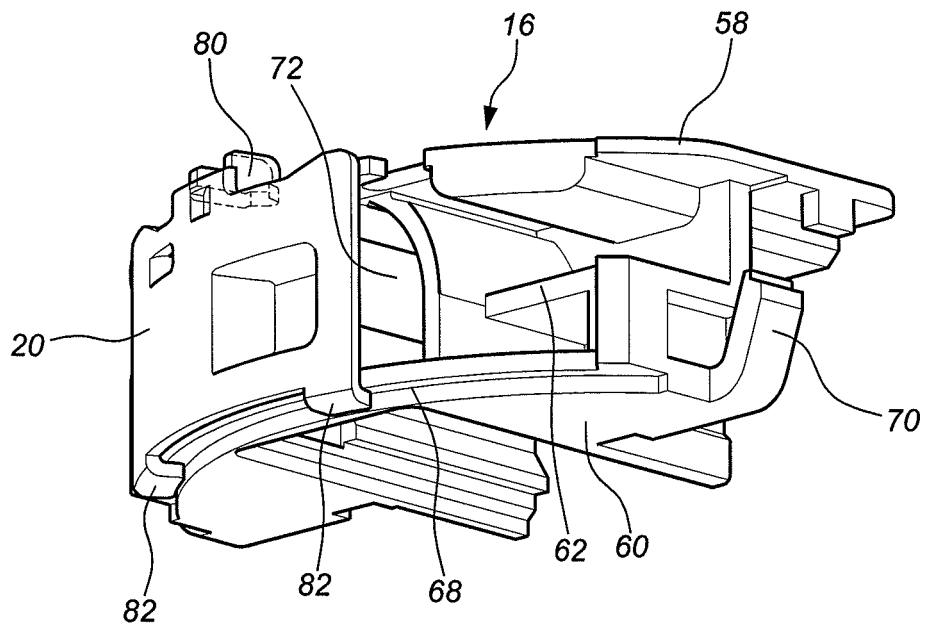


FIG. 4

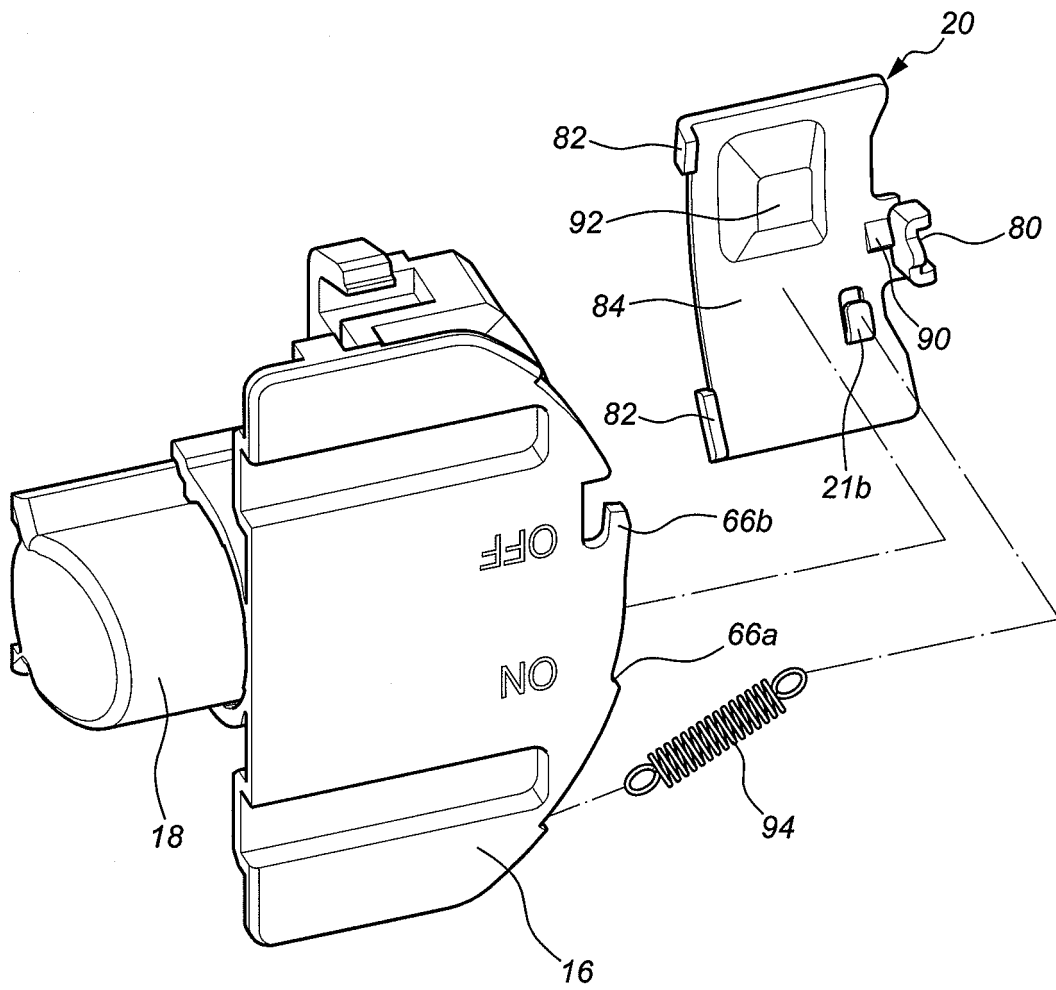


FIG. 5

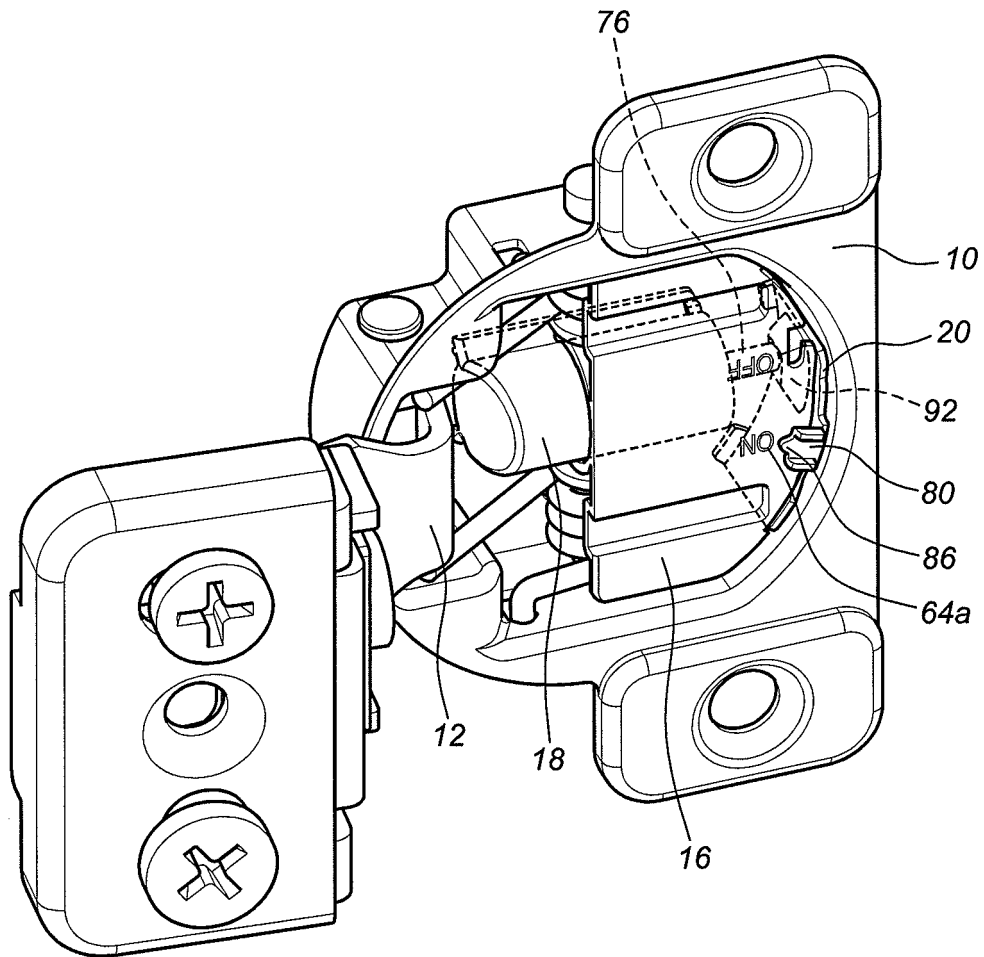


FIG. 6

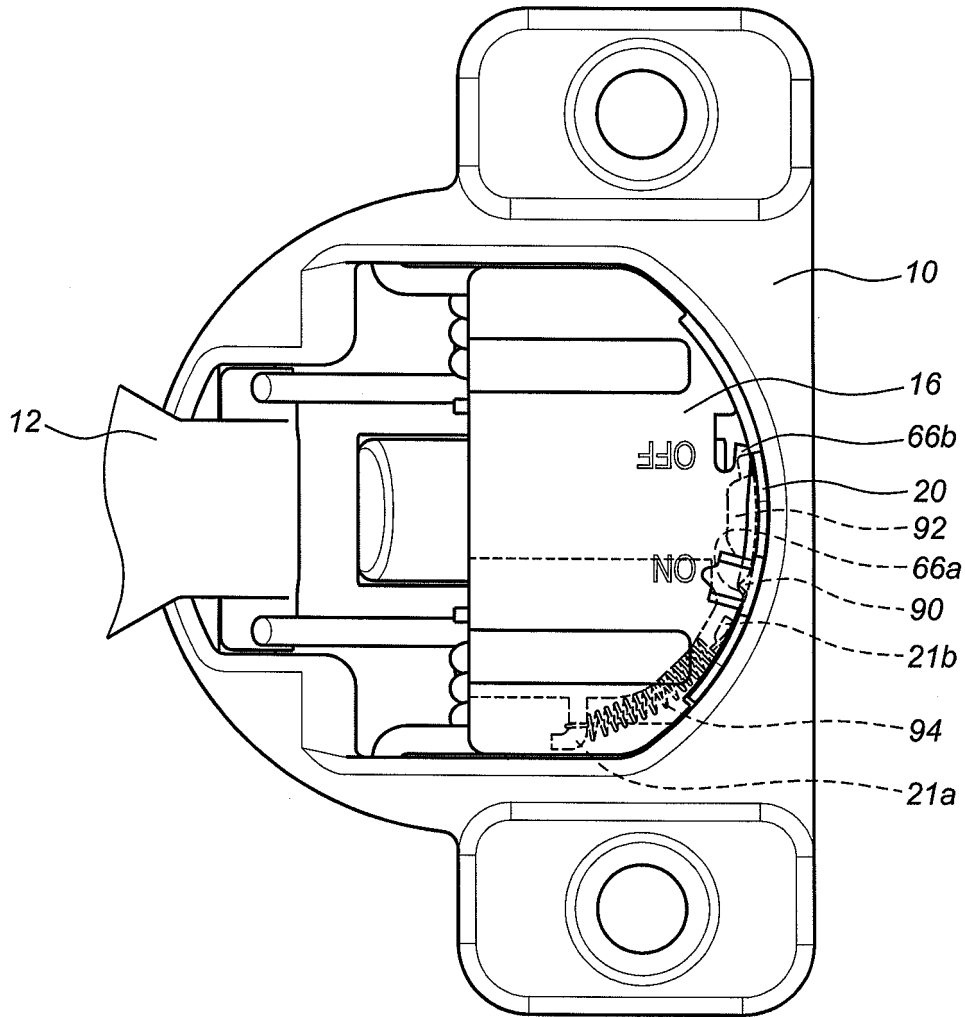


FIG. 7

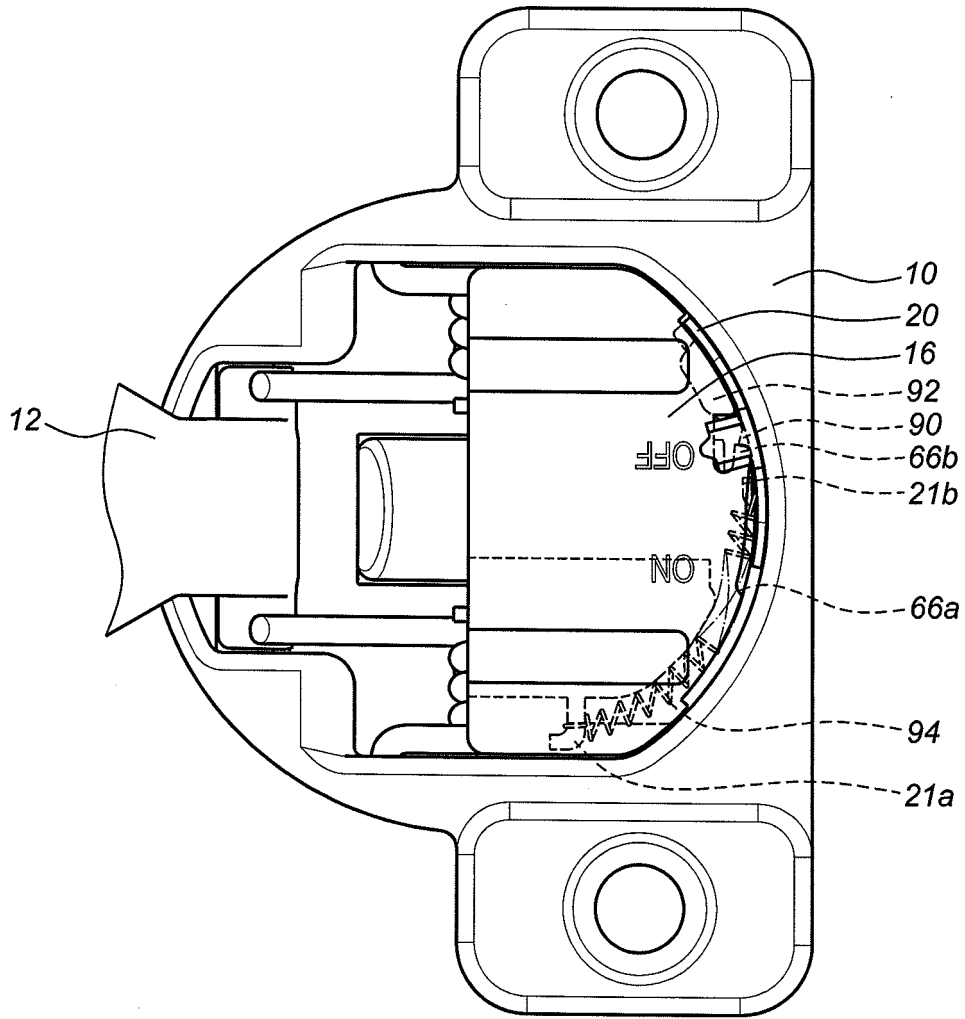


FIG. 8

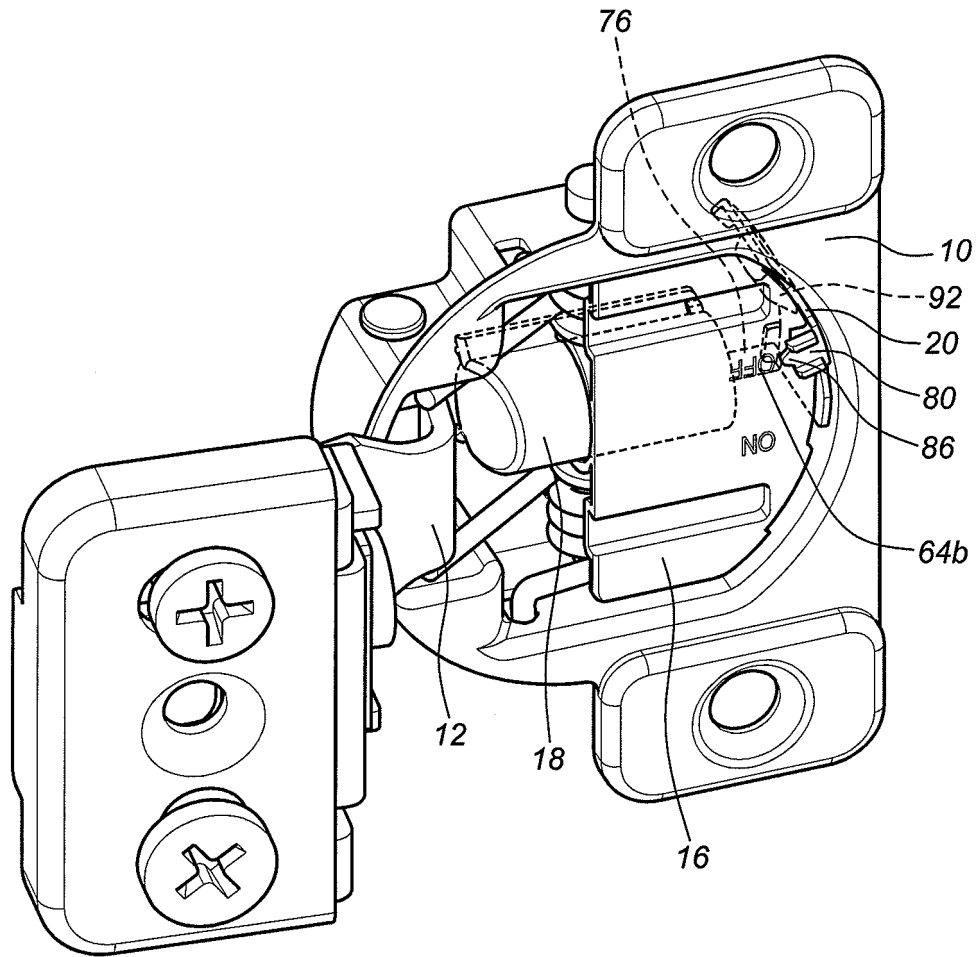


FIG. 9

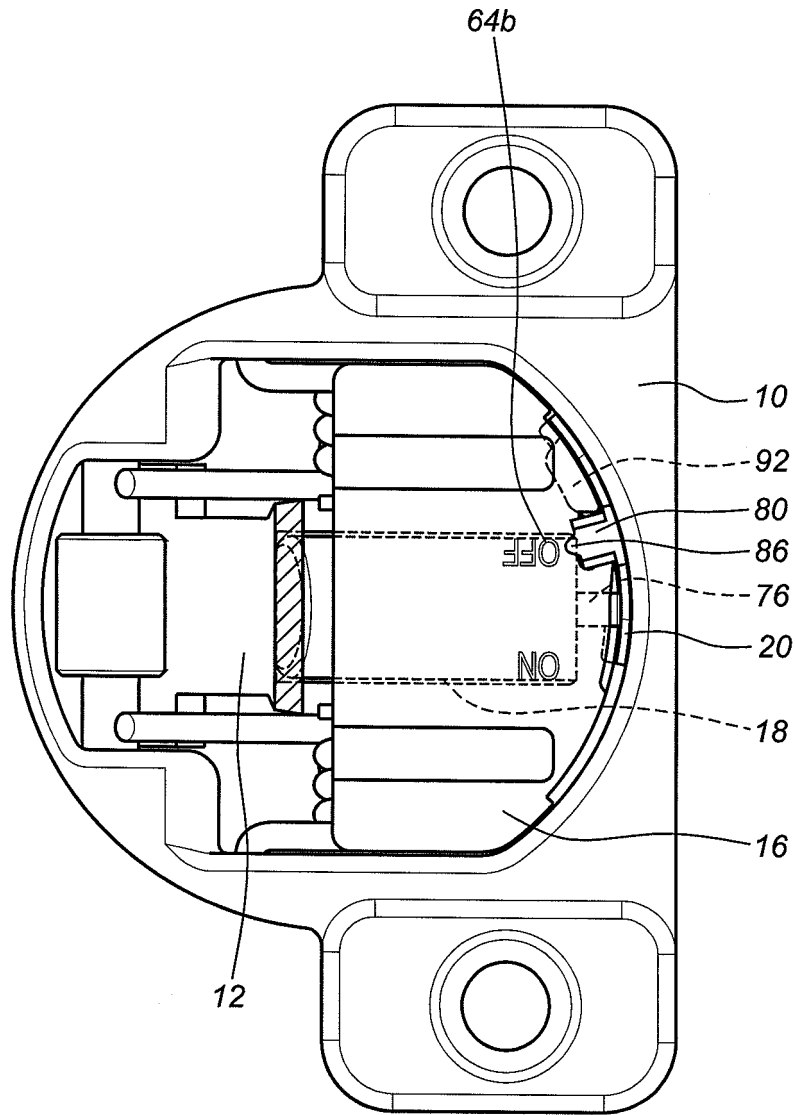


FIG. 10

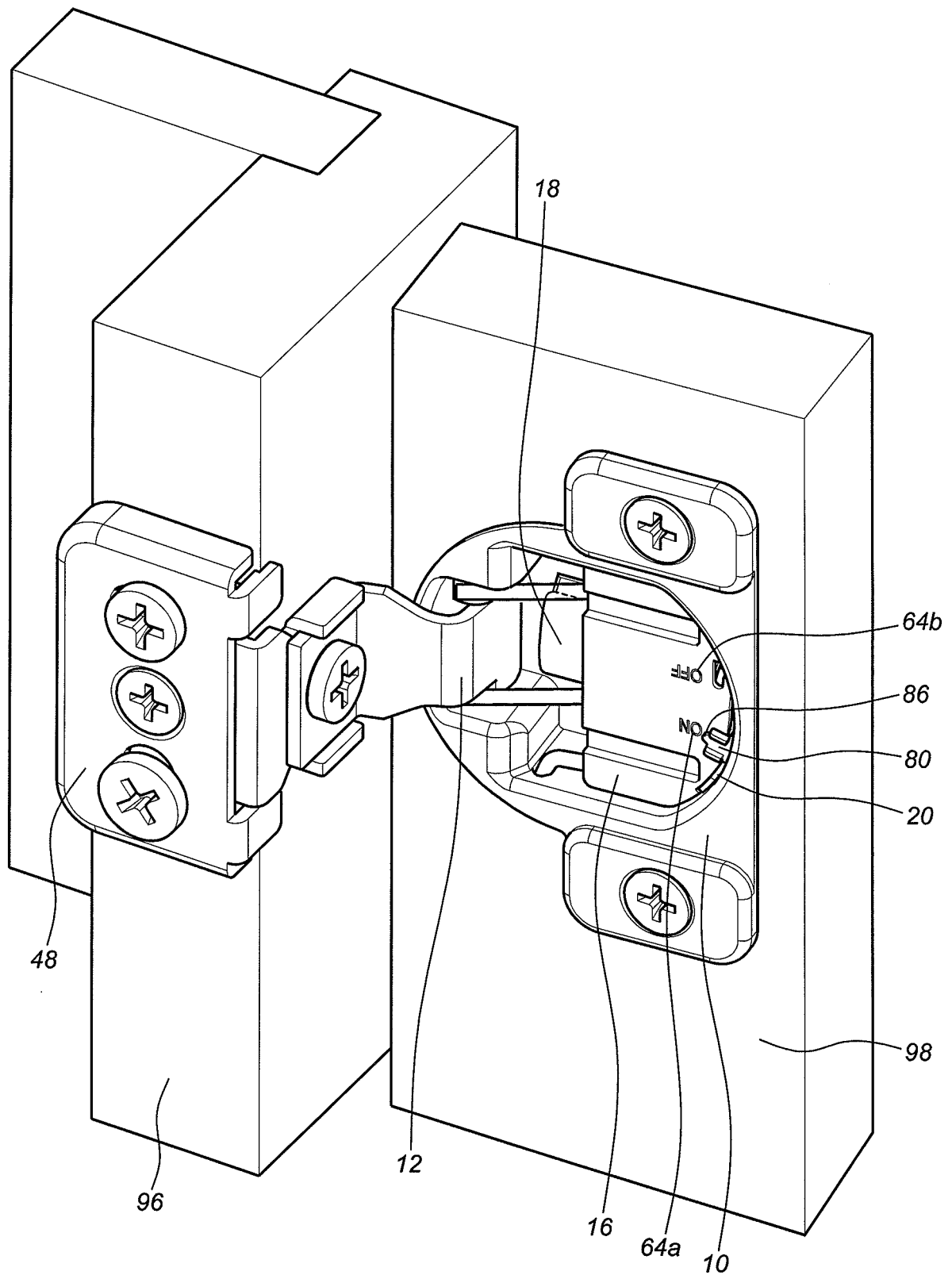


FIG. 11

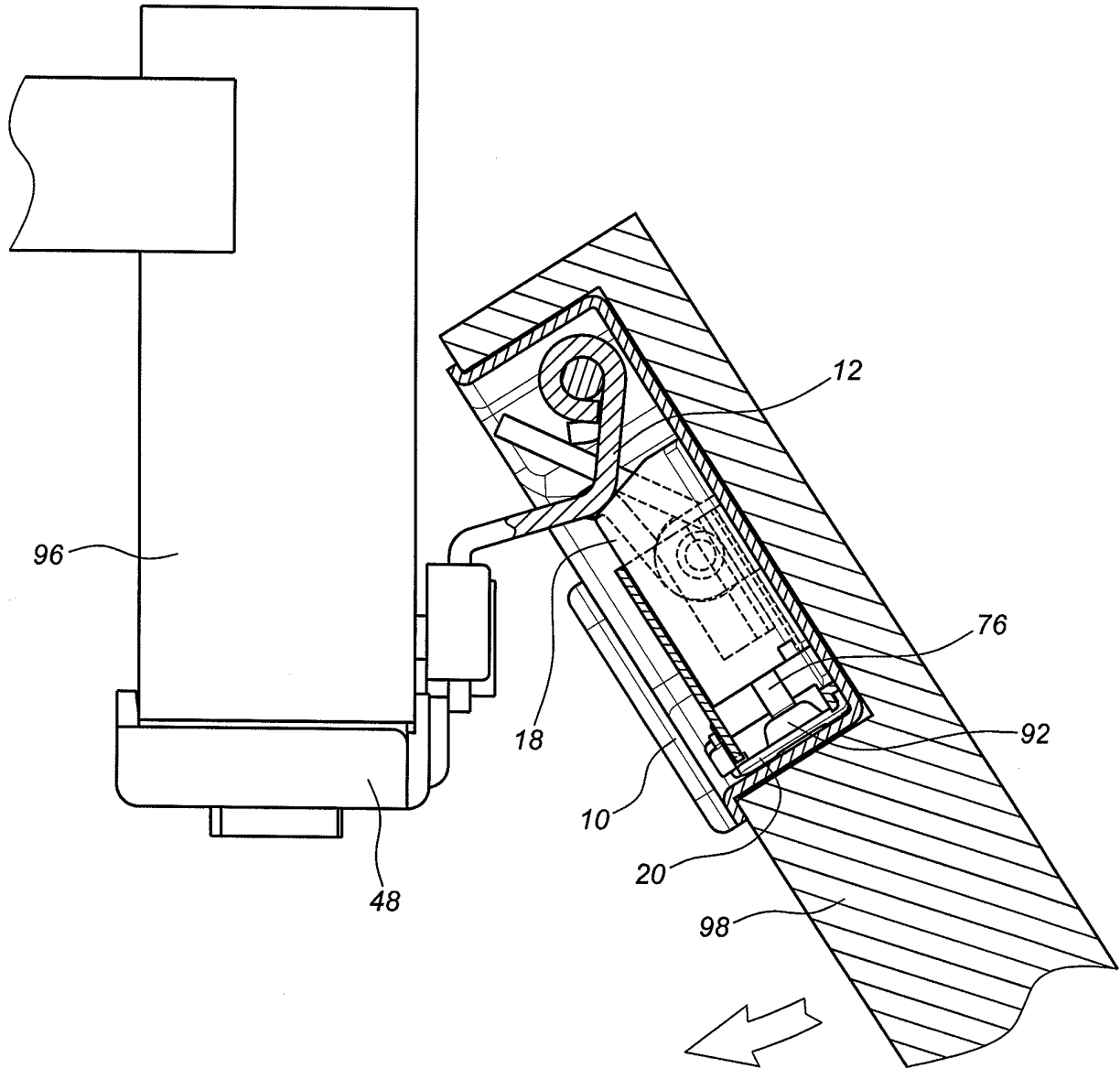


FIG. 12

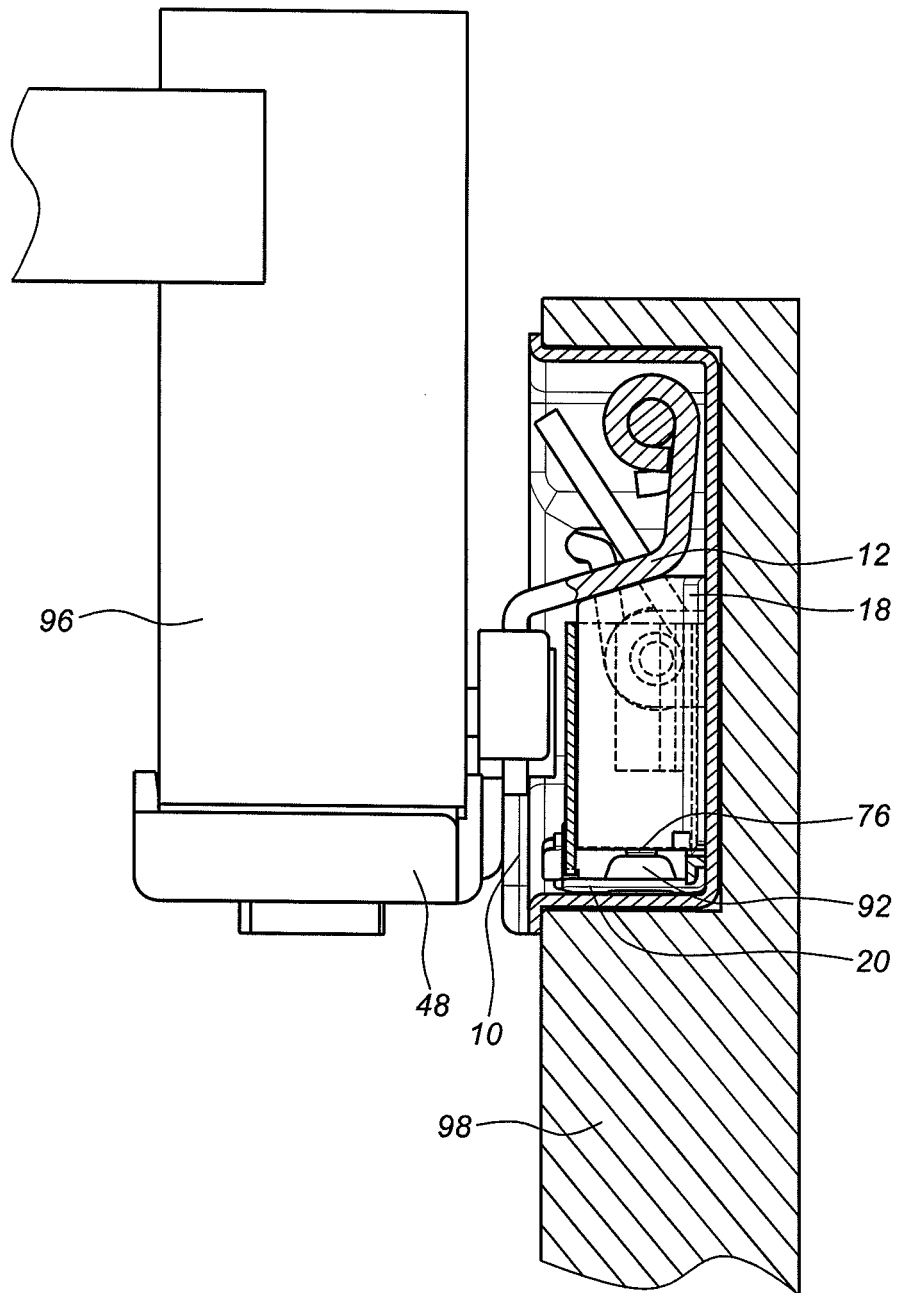


FIG. 13

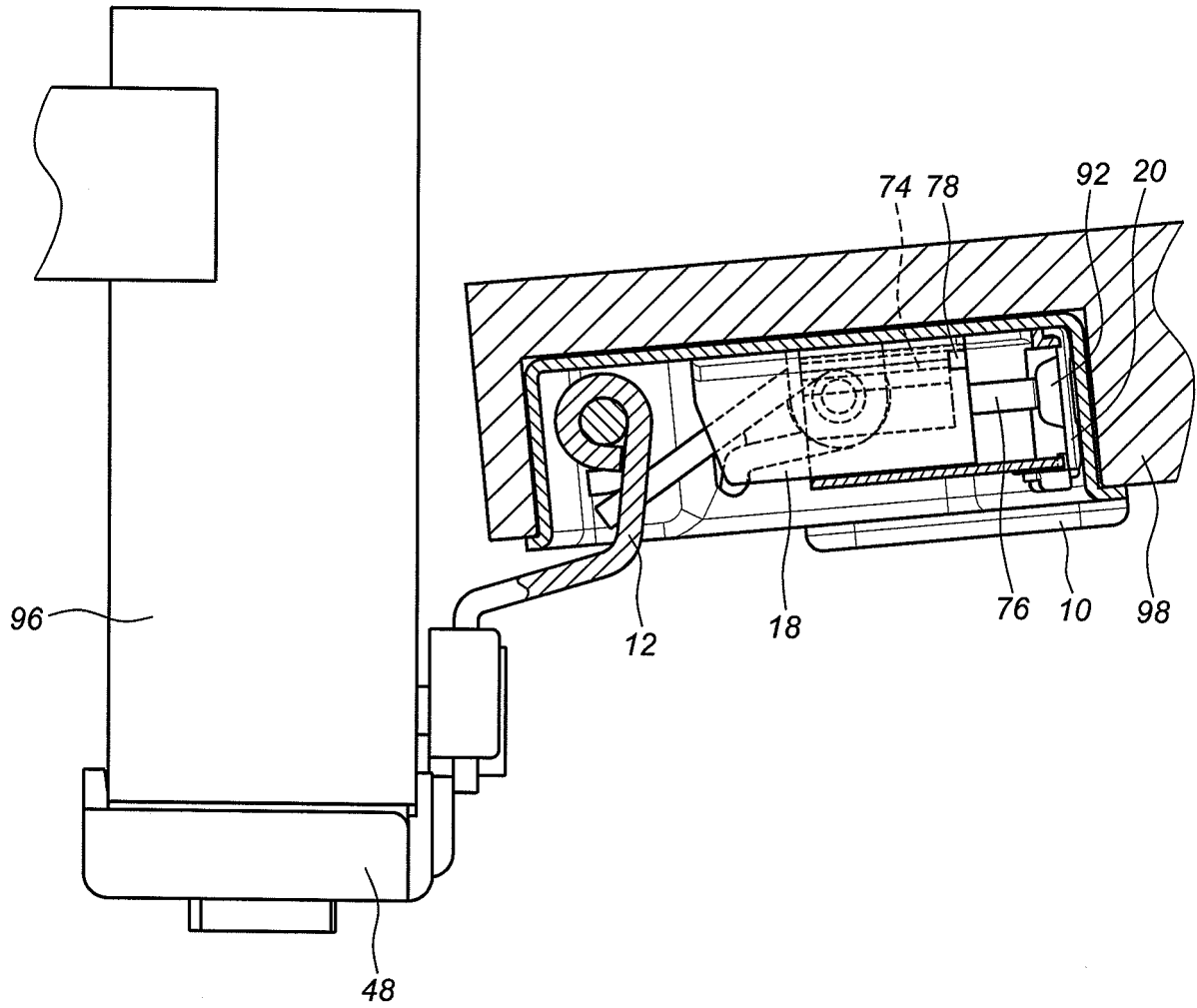


FIG. 14

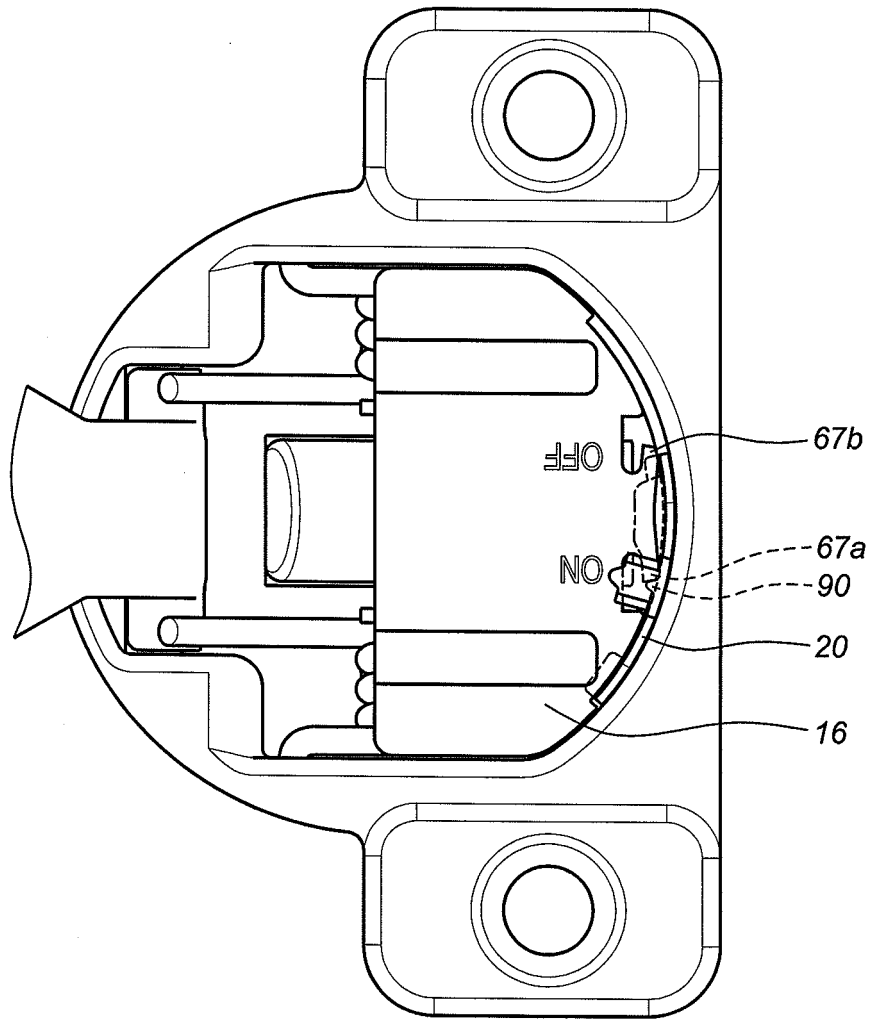


FIG. 15

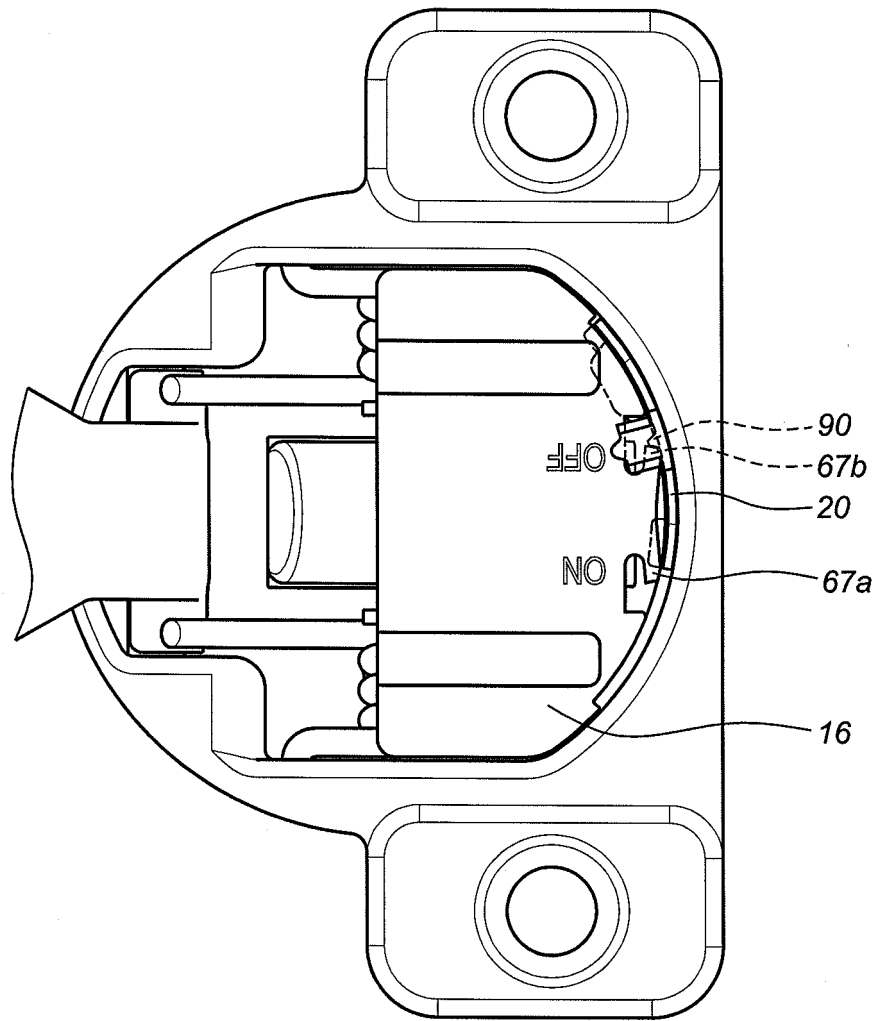


FIG. 16

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2012024702 A1 [0002]