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(54) Anti-opening safety device for drawers, door leaves of furniture and the like

(57) Anti-opening safety device (1) for drawers, door leaves of furniture and the like, comprising a supporting body (2) that can be fixed to the inner wall (3) of the front panel (4) of a drawer (5) or of a door leaf of an item of furniture or the like, the supporting body (2) being provided with at least one first portion (6) that is insertable in a through hole (7) defined in the front panel (4) of the drawer (5) and a second portion (8) that extends substantially at right angles to the first portion (6) and defines a first guide (9) which slideably accommodates a latch (10) that is movable by way of a spring mechanism from a position in which it is partially extracted from the second portion (8) and one end (11) of the latch (10) is engageable with a locking element (12a, 12b, 12c) defined at a beam (13) of the chest of drawers containing the drawer (5) or of the item of furniture comprising the door leaf, to a position in which it is retracted into the second portion (8) and the latch (10) is disengaged from the locking element (12a, 12b, 12c), means being further provided for the actuation (21) of the latch (10) which are accommodated within the first portion (6) and are accessible by a user from the outside of the front panel (4) of the drawer (5).

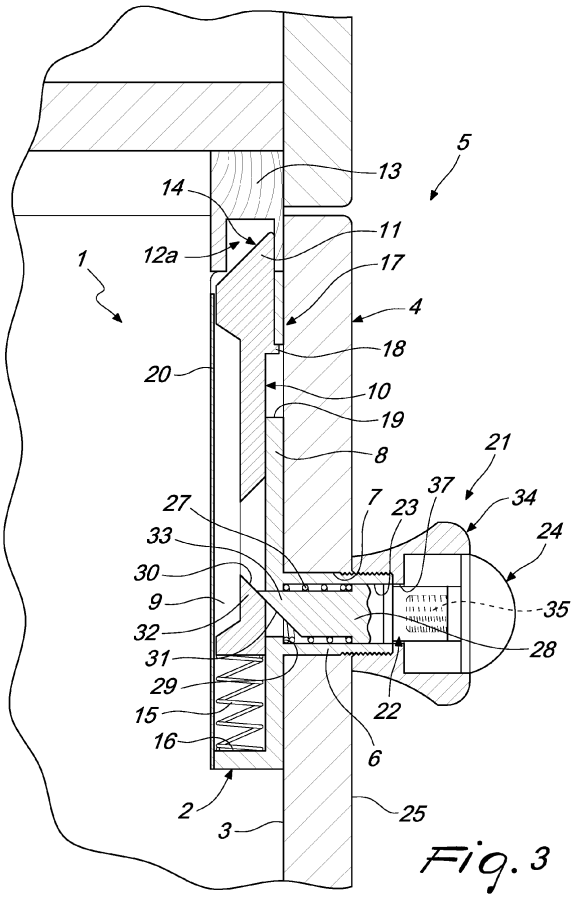

Fig. 3

EP 2 489 817 A2

Description

[0001] The present invention relates to an anti-opening safety device for drawers, door leaves of furniture and the like.

[0002] A large proportion of household accidents involving children is ascribable to the accidental overturning of drawers which, lacking safety locks, are opened by the children themselves.

[0003] In fact children, being possessed of great curiosity, pull open drawers in order to look at their contents to the point where they pull them out completely from their rails thus causing their falling to the ground.

[0004] In this manner, the objects contained in the drawer and the drawer proper strike the child who was responsible for opening it, thus causing, quite often, injury to the child.

[0005] Moreover, if the drawer contains hazardous objects such as, for example, cutlery, for kitchen drawers, or detergents, for bathroom or laundry room drawers, by opening the drawer the child can come into contact with objects that are highly hazardous to his/her safety.

[0006] This last eventuality is possible not only for objects contained in drawers but also for objects contained in items of furniture with door leaves that can be easily opened by a child.

[0007] The aim of the present invention is to devise an anti-opening safety device for drawers, door leaves of furniture and the like that prevents children from being able to open the drawers or door leaves on which such devices are installed while allowing, at the same time, the easy opening thereof by adults.

[0008] Within this aim, an object of the present invention consists in providing an anti-opening safety device that can be applied to most conventional drawers and door leaves.

[0009] Another object of the present invention consists in providing an anti-opening safety device that is provided with a simple structure, that is easy and practical to implement, safe in use and effective in operation, and at low cost.

[0010] This aim and these and other objects which will become better apparent hereinafter are achieved by an anti-opening safety device for drawers, door leaves of furniture and the like, characterized in that it comprises a supporting body that can be fixed to the inner wall of the front panel of a drawer or of a door leaf of an item of furniture or the like and is provided with at least one first portion that is insertable in a through hole defined in said front panel and a second portion that extends substantially at right angles to said first portion and defines a first guide which slideably accommodates a latch that is movable by way of a spring mechanism from a position in which it is partially extracted from said second portion, and one end of said latch is engageable with a locking element defined at a beam of the chest of drawers containing said drawer or of the item of furniture comprising said door leaf, to a position in which it is retracted into said second portion and said latch is disengaged from said locking element, means moreover being comprised for the actuation of said latch which are accommodated within said first portion and are accessible by a user from the outside of said front panel.

[0011] Further characteristics and advantages of the present invention will become better apparent from the detailed description of a preferred, but not exclusive, embodiment of an anti-opening safety device for drawers, door leaves of furniture and the like, according to the invention, which is illustrated, by way of non-limiting example, in the accompanying drawings, wherein:

Figure 1 is a partially sectional perspective view of an anti-opening safety device for drawers, door leaves of furniture and the like applied to a drawer, according to the present invention;

Figure 2 is an exploded perspective view of the anti-opening safety device shown in Figure 1;

Figure 3 is a sectional view of the drawer and of the anti-opening safety device shown in Figure 1 with the drawer closed;

Figure 4 is a sectional view of the drawer and of the anti-opening safety device shown in Figure 1 during the opening of the drawer;

Figure 5 is a sectional view of the drawer and of the anti-opening safety device shown in Figure 1 with the drawer open;

Figure 6 is a sectional view of a first different embodiment of the drawer shown in Figures 3 to 5 with the drawer open and with the anti-opening safety device according to the invention partially extracted;

Figure 7 is a sectional view of a second different embodiment of the drawer shown in Figures 3 to 5 with the drawer open and with the anti-opening safety device according to the invention retracted.

[0012] With reference to the figures, the anti-opening safety device for drawers, door leaves of furniture and the like, generally designated by the reference numeral 1, comprises a supporting body 2 that is substantially T-shaped and can be fixed to the inner wall 3 of the front panel 4 of a drawer 5 or of a door leaf of an item of furniture or the like.

[0013] More precisely, the supporting body 2 is provided with at least one first portion 6 that is insertable in a through hole 7 defined in the front panel 4 and a second portion 8 that extends substantially at right angles to the first portion 6 and defines a first guide 9 which slideably accommodates a latch 10.

[0014] The latch 10 is movable by way of a spring mechanism from a position in which it is partially extracted from the second portion 8 and one end 11 of the latch 10 is engageable with a locking element defined at a beam 13 of the chest of drawers of the drawer 5 or of the item of furniture comprising the door leaf, to a position in which it is retracted in the second portion 8 and the latch 10 is disengaged from the locking element.

[0015] Such locking element can be constituted by a cavity defined by the beam 13 and designated by the reference numeral 12a in Figures 1 to 5, or by the inner wall of the beam 13 and designated by the reference numeral 12b in Figure 6, or by a bracket fixed to the inner wall of the beam 13 and designated by the reference numeral 12c in Figure 7.

[0016] More specifically, the latch 10 is substantially elongated along the direction of sliding thereof in the first guide 9 with a substantially rectangular transverse cross-section.

[0017] Moreover, the end 11 of the latch 10 that is engageable with the locking element 12a, 12b or 12c is provided with an inclined face 14 directed toward the beam 13 of the chest of drawers or of the item of furniture, in such a manner as to allow the movement of the latch 10 from the position in which it is partially extracted to the position in which it is retracted following the contact of the inclined face 14 with the beam 13.

[0018] More precisely, such translational motion occurs in contrast to the action of a first helical spring 15 which is accommodated within the first guide 9 and interposed between the latch 10 and a first abutment wall 16 defined by the second portion 8 on the opposite side with respect to the end 11 of the latch 10 that is engageable with the locking element 12a, 12b or 12c.

[0019] Finally, means are provided of limiting the stroke 17 of the latch 10 in the first guide 9 in order to prevent the complete egress of the latch 10 from the second portion 8.

[0020] Such stroke limiting means 17 comprise an arrest pawl 18 protruding transversely from the latch 10 and slideably accommodated in a groove 19 with a closed profile, the edge of which acts as a mechanical stroke limit of the arrest pawl 18 which, being integral in translational motion with the latch 10, limits the movements of the latter.

[0021] In order to enable easy assembly of the supporting body 2, of the latch 10 and of the first helical spring 15, the first guide 9 is open on one side thereof opposite the first portion 6. This open side can conveniently be closed by a covering element 20 provided by a C-shaped profile that can be fitted over the second portion 8 of the supporting body 2.

[0022] According to the invention, means are also provided for the actuation 21 of the latch 10 which are accommodated within the first portion 6 and are accessible by a user from the outside of the front panel 4 of the drawer 5.

[0023] In more detail, such means for actuation 21 comprise a gudgeon pin 22 which is slideably accommodated in a second guide 23 defined in the first portion 6 and a button 24 which can be arranged on the outer wall 25 of the front panel 4 of the drawer 5 and is integral in translational motion with the gudgeon pin 22.

[0024] Advantageously, the gudgeon pin 22 is movable from an inactive position to a position of engagement with the latch 10, in contrast with the action of elastic means 26 which are accommodated within the supporting body 2, for the passage of the latch 10 from the position in which it is partially extracted to the position in which it is retracted.

[0025] More precisely, the elastic means 26, which have an elastic coefficient substantially equal to 3.8 N/mm, comprise a second helical spring 27 that is fitted over the gudgeon pin 22 and is interposed between a radially widened portion 28 of the gudgeon pin 22 and a second abutment wall 29 defined by the supporting body 2.

[0026] The value of the elastic coefficient mentioned above is such as to require a load substantially equal to 5 kilograms in order to compress the second helical spring 27 and obtain the complete retraction of the latch 10.

[0027] Advantageously, the gudgeon pin 22 and the latch 10 are associated with each other by way of two inclined planes 30 and 31 which are defined, respectively, on a central portion 32 of the latch 10 and on an end portion 33 of the gudgeon pin 22 facing in the direction of the latch 10 for the conversion of the translational motion of the gudgeon pin 22 into the translational motion of the latch 10.

[0028] In the proposed embodiment, a knob 34 is provided which is associable with the supporting body 2 at the first portion 6 in such a manner as to protrude from the front panel 4 of the drawer 5 on the side of the outer wall 25.

[0029] More precisely, the knob 34 accommodates the button 24 and is screwed onto a first portion 6 of the supporting body 2 which is threaded.

[0030] In fact, the first portion 6 is substantially cylindrical with a circular base and is insertable in the through hole 7 so that the front panel 4 of the drawer 5 can be interposed between and in contact with the supporting body 2, i.e. between the second portion 8, and the knob 34 screwed onto the first portion 6.

[0031] Advantageously, the button 24 is substantially mushroom-shaped with a threaded stem 35 that is screwed into a threaded hole 36 defined in the gudgeon pin 22 and the knob 34 comprises an opening 37 for the passage of the threaded stem 35 and of the gudgeon pin 22.

[0032] Operation of the anti-opening safety device for drawers, door leaves of furniture and the like, according to the present invention, is the following.

[0033] Starting from the closed drawer configuration shown in Figure 3, by applying sufficient force to the button 24 to defeat the elastic reaction of the helical springs 15 and 27, the gudgeon pin 22 is pushed against the latch 10 which, thanks to the two inclined planes 30 and 31, retracts inside the first guide 9 thus disengaging from the locking element 12a, 12b or 12c.

[0034] With the latch 10 disengaged from the locking element 12a, 12b or 12c, by pulling the knob 34 it is possible to open the drawer 5 as shown in Figures 4 and 5.

[0035] Differently, starting from the open drawer con-

figuration shown in Figure 5, by pushing the drawer 5 the inclined face 14 comes into contact with the beam 13 thus making the latch 10 enter the first guide 9.

[0036] As soon as it is positioned below the locking element 12a, 12b or 12c, as a result of the elastic action of the first helical spring 15, the latch 10 snaps, engaging its end 11 with the locking element 12a, 12b or 12c.

[0037] In practice it has been found that the anti-opening safety device for drawers, door leaves of furniture and the like, according to the present invention, achieves the intended aim and objects in that it allows the opening of the drawer or of the door leaf on which it is applied only by defeating the elastic action of the helical spring fitted over the gudgeon pin.

[0038] More precisely, the second helical spring is dimensioned to supply an elastic reaction that is sufficiently high to not allow a child to compress it.

[0039] At the same time, the elastic coefficient of such second helical spring must be kept below a maximum acceptable value so as to allow an adult to actuate the button of the gudgeon pin.

[0040] Another advantage of the anti-opening safety device for drawers, door leaves of furniture and the like consists in that it is flexible and versatile in use.

[0041] In fact, it can be applied to any conventional drawer or door leaf without particular constructional restrictions and without requiring particular structural modifications, and moreover it can operate arranged in any orientation.

[0042] The anti-opening safety device for drawers, door leaves of furniture and the like, thus conceived, is susceptible of numerous modifications and variations all of which are within the scope of the appended claims.

[0043] In practice the materials employed, as well as the dimensions and shapes, may be any according to requirements without extending beyond the scope of protection of the appended claims.

[0044] The disclosures in Italian Utility Model Application No. MI2011U000056 from which this application claims priority are incorporated herein by reference.

[0045] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An anti-opening safety device (1) for drawers, door leaves of furniture and the like, **characterized in that** it comprises a supporting body (2) that can be fixed to the inner wall (3) of the front panel (4) of a drawer (5) or of a door leaf of an item of furniture or the like and is provided with at least one first portion (6) that is insertable in a through hole (7) defined in said front panel (4) and a second portion (8) that extends substantially at right angles to said first portion (6) and defines a first guide (9) which slideably accommodates a latch (10) that is movable by way of a spring mechanism from a position in which it is partially extracted from said second portion (8) and one end (11) of said latch (10) is engageable with a locking element (12a, 12b, 12c) defined at a beam (13) of the chest of drawers containing said drawer (5) or of the item of furniture comprising said door leaf, to a position in which it is retracted into said second portion (8) and said latch (10) is disengaged from said locking element (12a, 12b, 12c), means moreover being comprised for the actuation (21) of said latch (10) which are accommodated within said first portion (6) and are accessible by a user from the outside of said front panel (4).

2. The device (1) according to claim 1, **characterized in that** said means for actuation (21) comprise a gudgeon pin (22) which is slideably accommodated in a second guide (23) defined in said first portion (6) and a button (24) which can be arranged on the outer wall (25) of said front panel (4), integral in translational motion with said gudgeon pin (22) and movable from an inactive position to a position of engagement with said latch (10), in contrast with the action of elastic means (26) which are accommodated within said supporting body (2), for the passage of said latch (10) from said position in which it is partially extracted to said position in which it is retracted.

3. The device (1) according to claims 1 and 2, **characterized in that** said gudgeon pin (22) and said latch (10) are associated with each other by way of two inclined planes (30, 31) which are defined, respectively, on a central portion (32) of said latch (10) and on an end portion (33) of said gudgeon pin (22) facing in the direction of said latch (10) for the conversion of the translational motion of said gudgeon pin (22) into the translational motion of said latch (10).

4. The device (1) according to one or more of the preceding claims, **characterized in that** it comprises a first helical spring (15) which is accommodated within said first guide (9) and is interposed between said latch (10) and a first abutment wall (29) defined by said second portion (8) on the opposite side with respect to said end (11) of said latch (10) that is engageable with said locking element (12a, 12b, 12c).

5. The device (1) according to one or more of the preceding claims, **characterized in that** it comprises a knob (34) that is associable with said supporting body (2) at said first portion (6) in such a manner as to protrude from said front panel (4) on the side of said outer wall (25), said knob (34) accommodating

said button (24).

6. The device (1) according to one or more of the preceding claims, **characterized in that** said elastic means (26) have an elastic coefficient that is substantially equal to 3.8 N/mm.

7. The device (1) according to one or more of the preceding claims, **characterized in that** said elastic means (26) comprise a second helical spring (27) which is fitted over said gudgeon pin (22) and is interposed between a radially widened portion (28) of said gudgeon pin (22) and a second abutment wall (29) defined by said supporting body (2).

8. The device (1) according to one or more of the preceding claims, **characterized in that** said first portion (6) is substantially cylindrical with a circular base with the part directed toward said knob (34) being threaded for the screwing thereon of said knob (34), said first portion (6) being insertable in said through hole (7) so that said front panel (4) can be interposed between and in contact with said supporting body (2) and said knob (34) screwed onto said first portion (6).

9. The device (1) according to one or more of the preceding claims, **characterized in that** said button (24) is substantially mushroom-shaped with a threaded stem (35) screwed into a threaded hole (36) defined in said gudgeon pin (22), said knob (34) comprising a first opening (37) for the passage of said threaded stem (35).

10. The device (1) according to one or more of the preceding claims, **characterized in that** said latch (10) is substantially elongated along the direction of sliding in said first guide (9) and is substantially rectangular in cross-section with said end (11) that is engageable with said locking element (12a, 12b, 12c) being provided with an inclined face (14) facing in the opposite direction from said button (24) in such a manner as to permit the movement of said latch (10) from said position in which it is partially extracted to said position in which it is retracted following the contact of said inclined face (14) with said beam (13) of said chest of drawers or of said item of furniture.

11. The device (1) according to one or more of the preceding claims, **characterized in that** it comprises means of limiting the stroke (17) of said latch (10) in said first guide (9) in order to impede the complete egress of said latch (10) from said second portion (8).

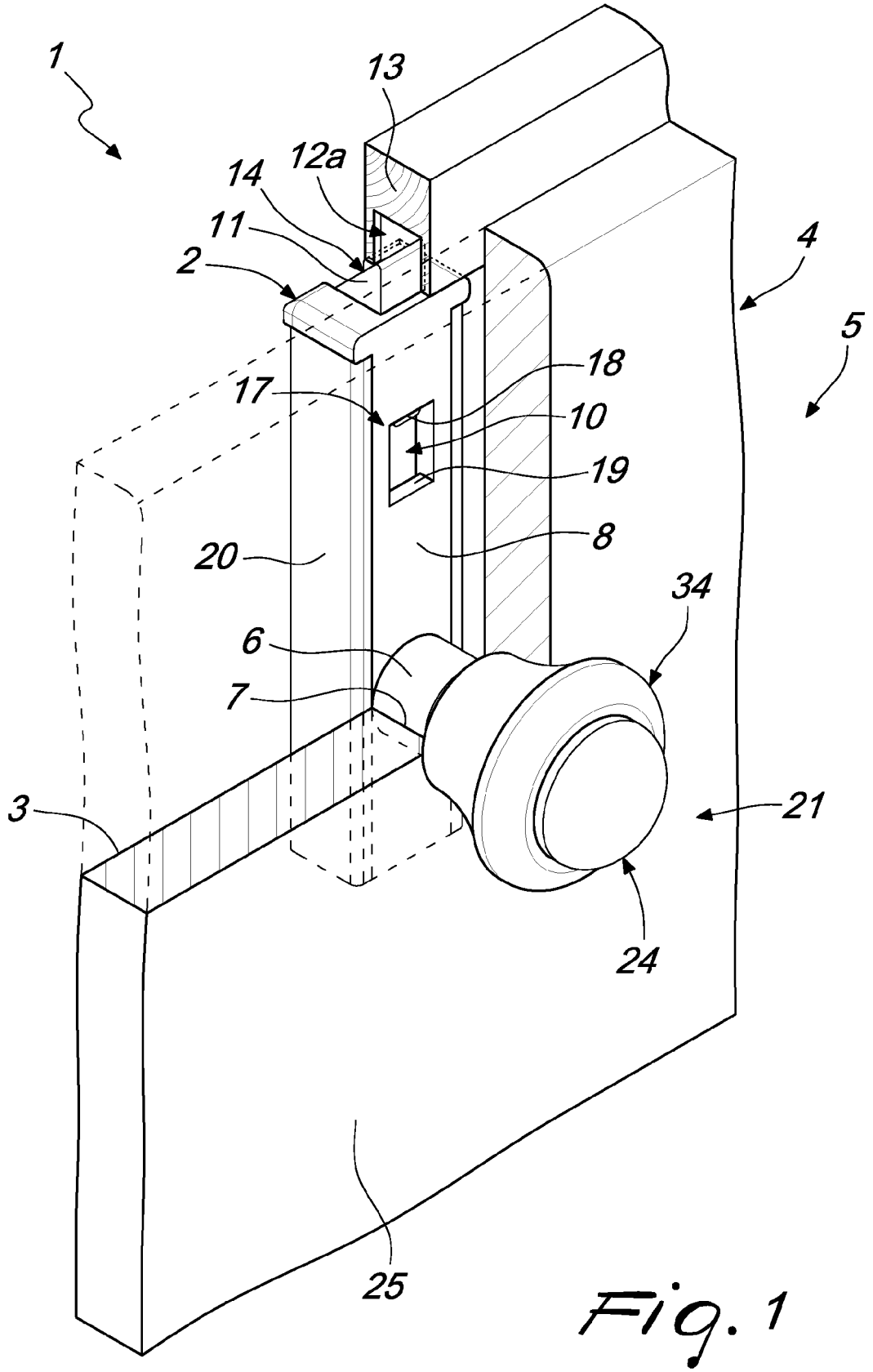

Fig. 1

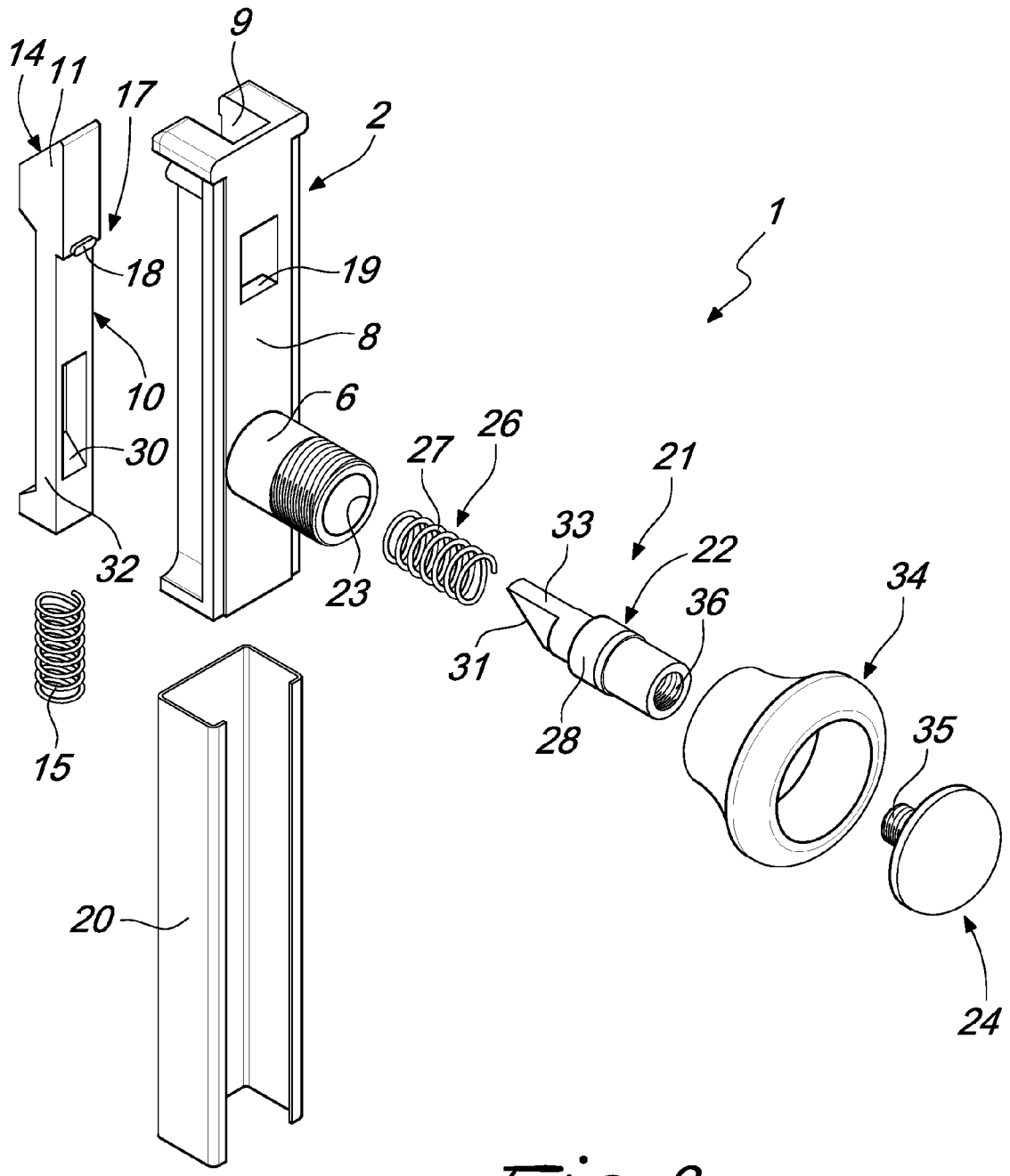

Fig. 2

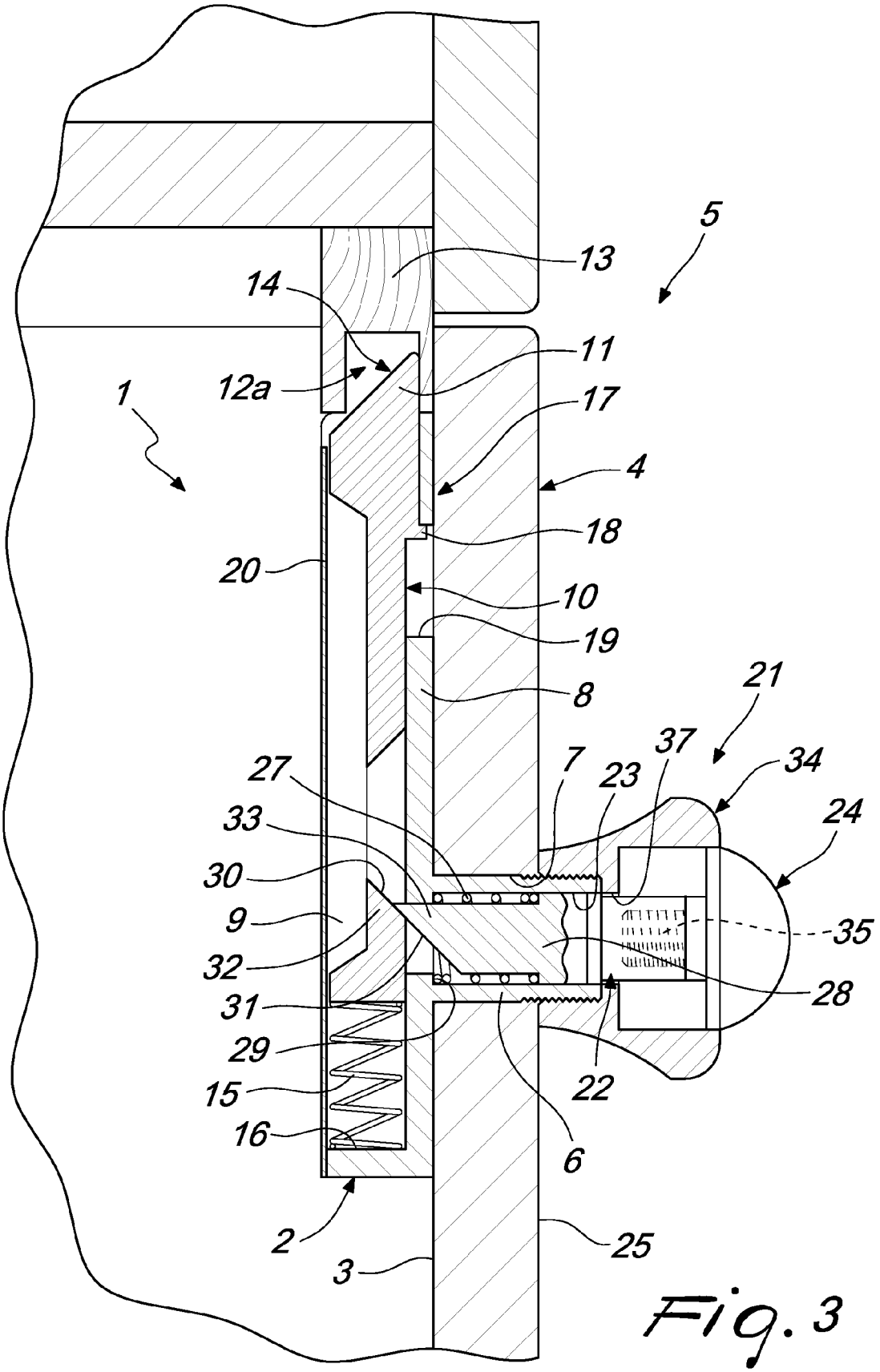
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Fig. 3

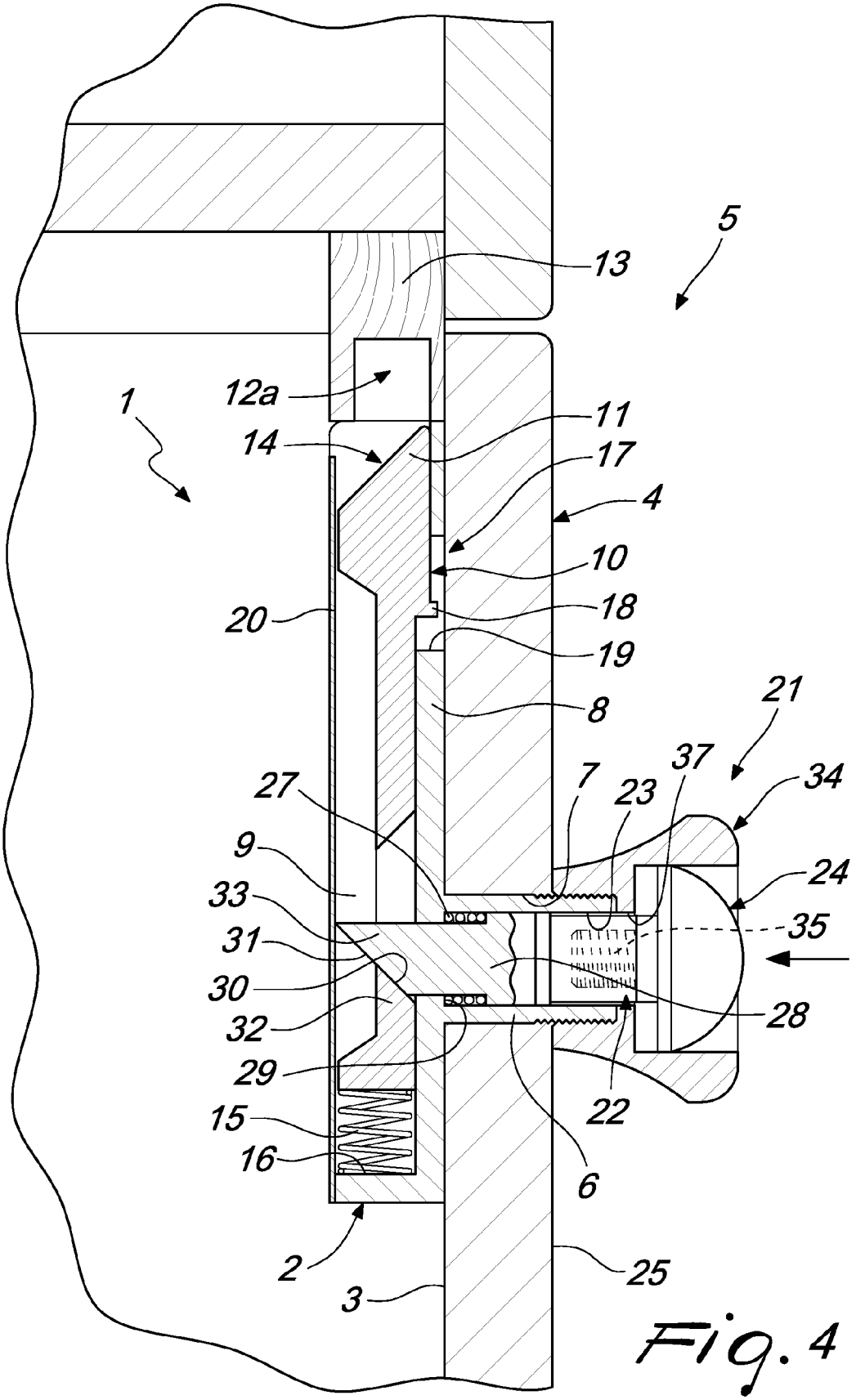
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Fig. 4

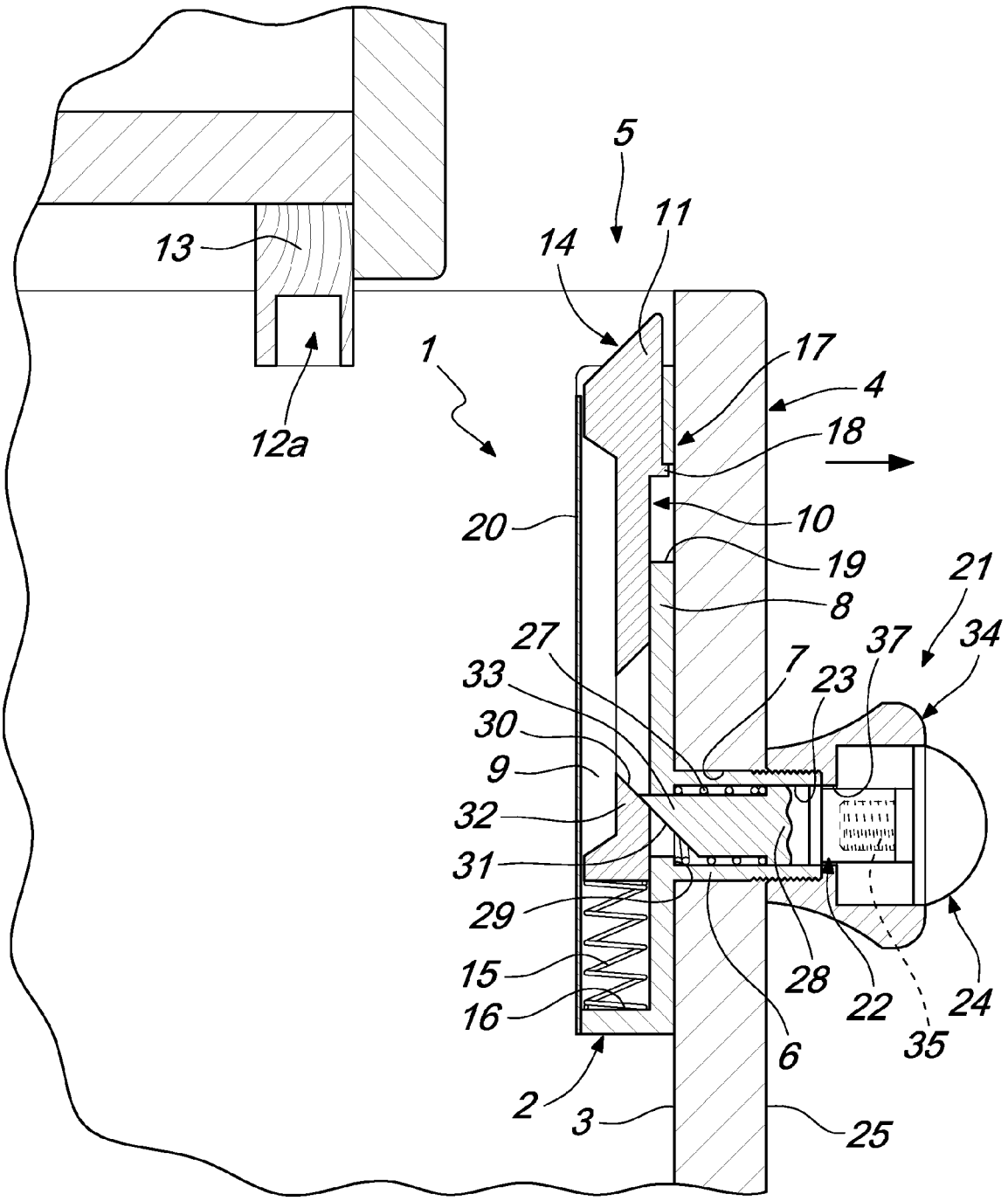
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Fig. 5

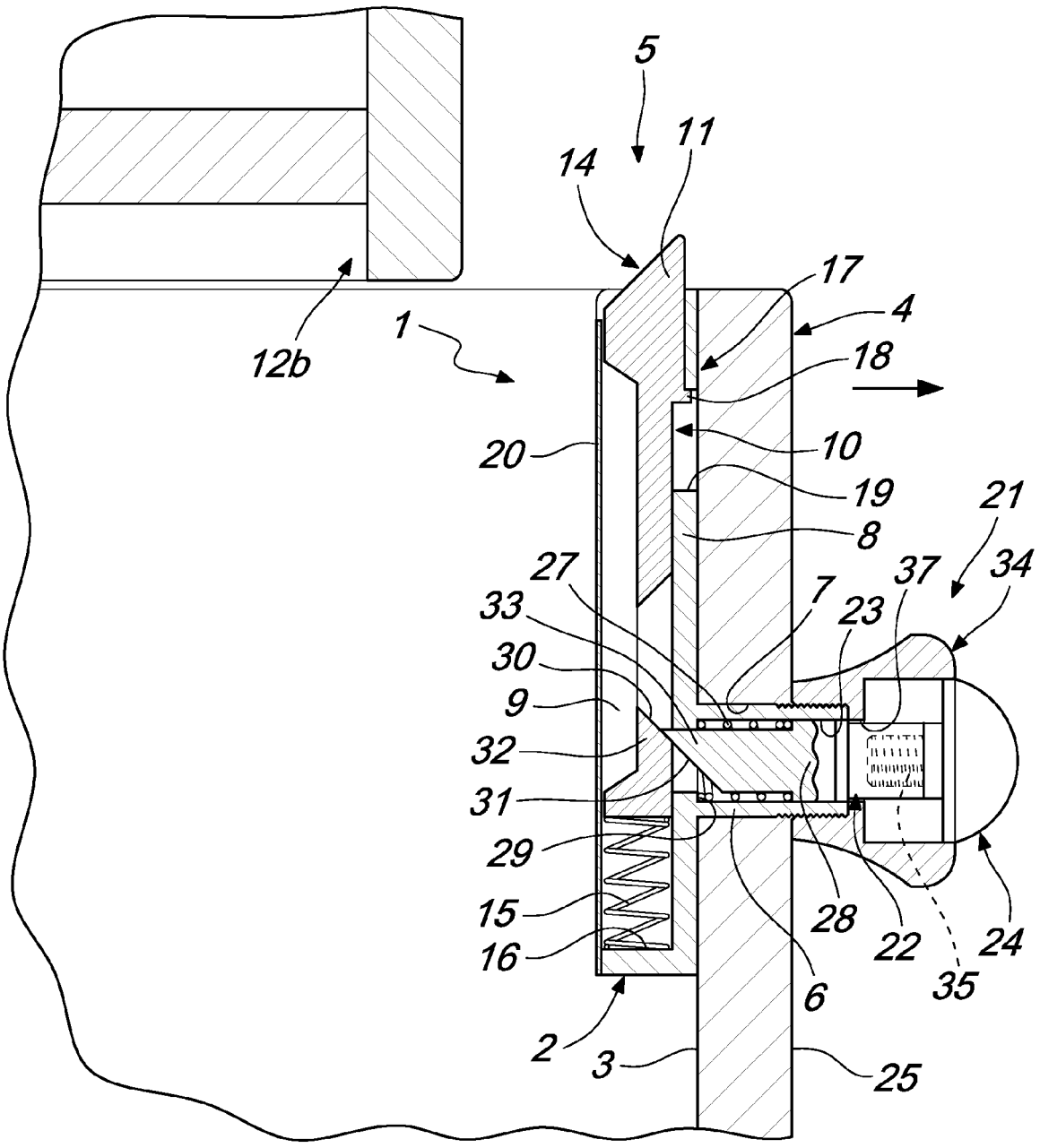
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Fig. 6

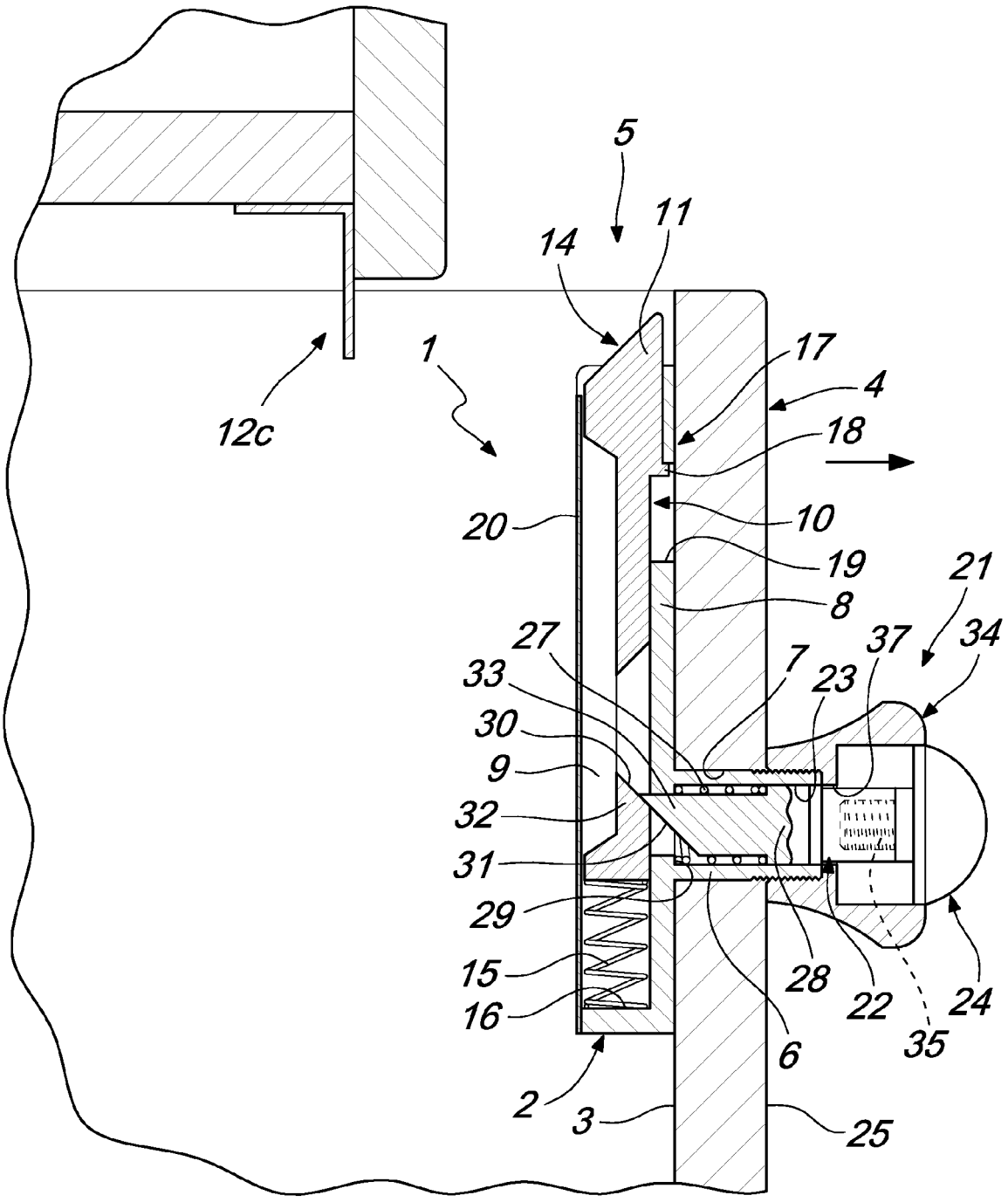
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Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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