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(54) Opening and closure device particularly for shutters

(57) An opening and closure device, particularly usable for shutters of a window or French door, the shutters having a first panel (4a) that is pivoted on opposite sides to a jamb (3) and to a second panel (4b). The device comprises a box-like body (5) that is associated with the first panel and is suitable to contain a mechanism (6) for moving two arms (22a,22b). The arms protrude approximately horizontally on opposite sides and their free ends are associated with the jamb (3) and the second panel (4b). Means for the selective locking of the arm movement mechanism are provided.

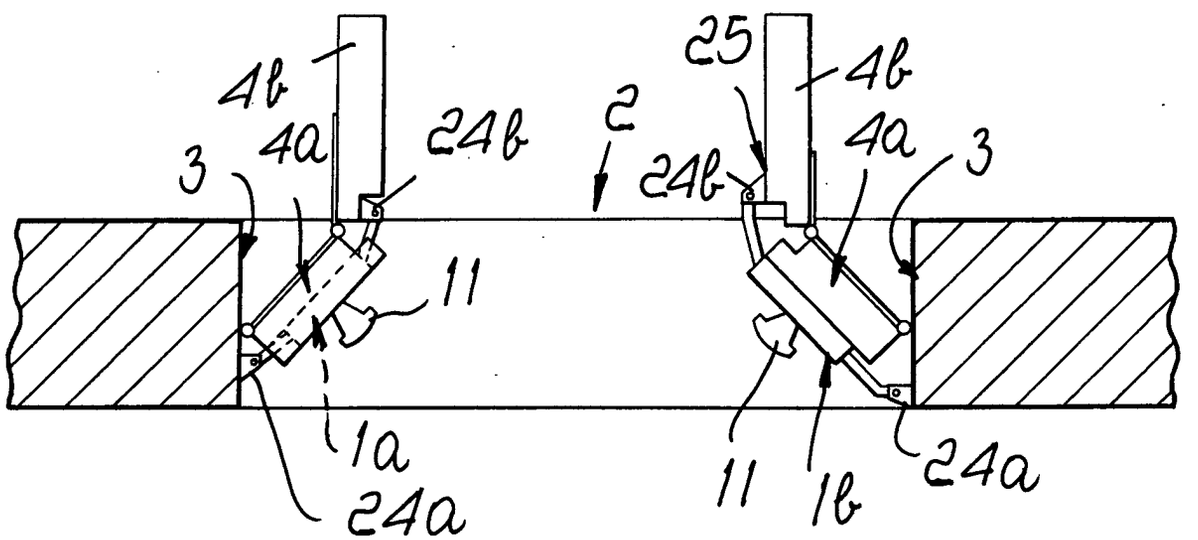

Fig. 10

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Description

[0001] The present invention relates to an opening and closure device, particularly suitable for use for example with shutters and/or blinds of windows and French doors.

[0002] Currently, when using blinds and shutters, there is in fact the problem of having to lock them temporarily in the open position.

[0003] This locking is required by the possible presence of wind, which tends to rotate the blind at least partially and therefore to close it partially.

[0004] In the case of strong and sudden wind, the blind or shutter can close violently, consequently causing sudden discomfort for the user and producing a possible danger for people located proximate to said shutter.

[0005] The sudden and violent closure of the blind or shutter can also entail the breakage or damage of parts thereof, with consequent replacement or repair expenses.

[0006] As a partial solution, devices for temporarily locking the shutter or blind in the open position are known and comprise for example a bracket, which protrudes from the external face of the wall in which the window is provided, approximately in the vicinity of the lower edge of the blind.

[0007] A rod protrudes below said bracket, is pivoted to a pivot and can rotate upward so as to be arranged in front of the blind.

[0008] The known type of device described above also comprises means for temporarily locking the rotation of said rod, thus preventing movement of the shutter in the closed position.

[0009] The main drawback of these known types of device is that they are very awkward and difficult to activate for the user, because the user has to lean out of the window or turn the rods by going outside (for example in the case of ground-floor windows).

[0010] The fact of having to lean out beyond the windowsill to open the blinds and to lock them can also cause a dangerous condition for the user.

[0011] Another important drawback of known devices is that they do not allow to lock the blind or shutter in an intermediate position.

[0012] Another important drawback consists in that said brackets, by protruding from the wall of the building, not only hinder and inconvenience people walking close to the wall but have a severe impact on the aesthetic pleasantness of the dwelling.

[0013] Another drawback is that because of their very position, such known types of device are subject to damage caused by impacts with objects, such as for example vehicles, and to the deterioration caused by the action of the atmospheric agents to which they are exposed.

[0014] The aim of the present invention is to solve the above-mentioned problems, eliminating the drawbacks of the cited known art, by providing a temporary locking device for shutters or blinds that allows to achieve locking in a chosen position that is intermediate between the closed position and the open position.

[0015] Within this aim, an object of the invention is to provide a device that allows to achieve locking in a manner that is easy and convenient for the user.

[0016] Another object is to provide a device that allows to open and lock the blind in a single movement.

[0017] Another object is to provide a device that allows to lock and release the blind in a manner that is fully safe for the user.

[0018] Another object is to provide a device that does not harm the aesthetic pleasantness of the building.

[0019] Another object is to provide a locking device that is free from breakages or malfunctions caused by impacts or by the action of atmospheric agents.

[0020] Another object is to provide a device that is structurally simple and has low manufacturing costs.

[0021] This aim and these and other objects that will become better apparent hereinafter are achieved by an opening and closure device, particularly for shutters provided with a first panel that is pivoted laterally to a jamb and, on the opposite side, to at least one second panel, characterized in that it comprises a box-like body that is associated at, or proximate to, said first panel and is designed to contain a mechanism for moving a first arm and a second arm which protrude approximately horizontally on opposite sides, the free ends of said arms being associated with said jamb and said second panel, means being provided for the selective locking of said movement mechanism.

[0022] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a particular embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figures 1 and 2 are respectively a front perspective view of the device according to the invention and a schematic front perspective view thereof without the box-like body;

Figures 3 and 4 are respectively a rear perspective view of device according to the invention and a schematic rear perspective view thereof without the box-like body;

Figure 5 is a front view of the device according to the invention;

Figure 6 is a side sectional view of the device of the invention, with the knob in the movement position;

Figure 7 is a side sectional view of the device of the invention with the knob in the locking position;

Figure 8 is an exploded perspective view of the invention;

Figure 9 is a plan view of two constructive embodiments of the invention, applied to a pair of closed shutters;

Figures 10 and 11 are plan views of the two embod-

iments of Figure 9, applied to two shutters arranged respectively in an intermediate position and in a fully open position;

Figures 12 to 14 are plan views of third and fourth embodiments, in which the box-like body is arranged outside the shutter;

Figures 15 and 16 are respectively a rear perspective view of a second embodiment of the invention and a schematic rear perspective view of the invention without the box-like body;

Figure 17 is an exploded rear perspective view of a third embodiment of the invention.

[0023] With reference to the figures, and particularly to Figures 1 to 11, the reference numeral 1 designates an opening and closure device, particularly usable for example with shutters or blinds for windows and French doors.

[0024] In the embodiment shown in the figures, the invention is associated with a window, designated by the reference numeral 2, which is rotatably associated with a jamb 3 and is advantageously constituted by a first panel 4a, which is pivoted laterally to the jamb 3 and is articulated on the opposite side to a second panel 4b whose dimensions are advantageously approximately equal to those of the first panel 4a.

[0025] The opening and closure device 1 comprises a hollow box-like body, designated by the reference numeral 5, which is associated at, or proximate to, the first panel 4a.

[0026] In particular, the box-like body 5, which is preferably shaped like a parallelepiped, can be for example recessed in the first panel 4a or associated with the front surface thereof.

[0027] Figures 9 to 11 each illustrate two different solutions for the connection of the device 1 to the first panel 4a: in particular, the reference numeral 1a designates the left device, which is recessed in a complementarily shaped seat formed in the first panel, and the reference numeral 1b designates the right device, which is instead associated at the rear with the front surface of the respective first panel 4a, for example by way of mechanical means of a known type.

[0028] Likewise, Figures 12 to 14 illustrate a device 1c, in the left part, and a device 1d in the right part; in both of these devices 1c and 1d, the box-like body 5 is associated at the outer side of the first panel 4a.

[0029] In particular, the device 1c is recessed in a complementarily shaped seat formed on the outer surface of the first panel 4a.

[0030] The device 1d is instead associated with the outer surface of the first panel 4a and thus protrudes outward.

[0031] As shown in Figures 1 to 8, the hollow box-like body 5 is suitable to contain a movement mechanism, designated by the reference numeral 6, which is constituted by a pinion 7, which can rotate freely about a first pivot 8.

[0032] The first pivot 8 is arranged at right angles to the rear surface 9 of the box-like body 5, which is the surface for resting on the first panel 4a.

[0033] At a first end 10a, the first pivot 8 is associated so that it cannot rotate with a knob, designated by the reference numeral 11, which protrudes outside the box-like body 5 so that it can be activated by the user.

[0034] The second end 10b of the first pivot 8 is threaded, so that it is associable within a complementarily threaded first hole 12 formed axially within a disk-like body, designated by the reference numeral 13.

[0035] The disk-like body 13 is conveniently arranged within a complementarily shaped first seat 14 formed in the rear surface 9 of the box-like body 5.

[0036] The disk-like body 13 is allowed only to perform an axial translational motion, since at least one element for locking its rotation with respect to the box-like body 5 is provided, said element being constituted for example by a pin 15 which is arranged parallel to the first pivot 8 within a second hole 16 formed axially in the disk-like body 13 and in a third hole, not shown, which is formed in the first seat 14.

[0037] In this manner, a rotation of the knob 11 on the part of the user is matched by an axial translational motion of the disk-like body 13.

[0038] The inner surface, designated by the reference numeral 17, of the disk-like body 13 is suitable to interact with a first bar 18a and a second bar 18b, which are arranged horizontally in opposite positions with respect to the pinion 7.

[0039] In particular, the bars 18a and 18b, arranged within two second seats 19a and 19b formed in the box-like body 5, are connected to the pinion 7 by means of a first set of teeth and a second set of teeth, designated by the reference numerals 20a and 20b respectively, which face each other.

[0040] The movement mechanism 6 thus allows to obtain a coordinated translational motion of the first and second bars 18a and 18b along the two seats 19a and 19b in two mutually opposite parallel directions.

[0041] A first arm 22a and a second arm 22b are pivoted at a third end 21a of the first bar 18a and at an opposite fourth end 21b of the second bar 18b and protrude at least partially on opposite sides outside the box-like body 5.

[0042] The first and second arms 22a and 22b are pivoted to the third and fourth ends 21a and 21b for example by means of second and third pivots 23a and 23b arranged along an approximately vertical axis.

[0043] The first and second free ends, designated by the reference numerals 24a and 24b, of the first and second arms 22a and 22b are associable, as shown in the examples of Figures 9, 10 and 11, at one end to the jamb 3 and at the opposite end proximate to, or at, the inner lateral edge 25 of the second panel 4b.

[0044] In particular, the first and second free ends 24a and 24b of the first and second arms 22a and 22b both have a rotatable head, designated by the reference nu-

meral 26a or 26b, which is advantageously prism-shaped and provided with fourth holes 27 for said connection, for example by way of first screws 28, to the inner lateral edge 25 of the second panel 4b.

[0045] In this manner, pressure on the part of the user on the first panel 4a forces the protrusion of the first and second arms 22a and 22b from the box-like body 5, whose movement is coordinated by the presence of the movement mechanism 6, which in this embodiment is constituted by the first and second bars 18a and 18b and by the pinion 7, which can rotate freely about the first pivot 8.

[0046] The shutter can be locked in the chosen position by activating the means for the selective locking of said movement mechanism 6, which are constituted in this case by the disk-like body 13, which in this embodiment acts on the flat surfaces, designated by the reference numerals 29a and 29b in Figure 4, provided at the rear of the first and second bars 18a and 18b.

[0047] The knob 11, which is suitable to move the disk-like body 13 and therefore activate the means for the selective locking of the movement mechanism 6, is advantageously removable, for example by way of a connection to the second end 10b of the first pivot 8 obtained by means of a second threaded screw 30, which is arranged axially within a fifth hole 31 of the knob 11 so as to engage in a sixth complementarily threaded hole 32 formed axially in the second end 10b of the first pivot 8.

[0048] In Figures 6 to 8, the reference numeral 33 designates an elastic clip, which can be associated with the first pivot 8 so as to prevent any extraction, particularly during assembly operations, of the first pivot 8 with respect to the box-like body 5.

[0049] The clip 33 also has the important function of preventing direct contact of the knob 11 with the front surface of the box-like body 5: when the locking means are activated, the clip 33 in fact abuts against the front surface of the box-like body 5 (as shown in Figure 7).

[0050] The device 1, moreover, can be provided with stroke limiting means, not shown, which are constituted for example by adjustable pins arranged within the pair of second seats 19a and 19b and suitable to ensure the locking of the opening of the blinds before the first panel 4a strikes the jamb 3 or before the second panel 4b strikes the outside wall, possibly damaging the plaster.

[0051] Moreover, depending on the type of shutter or blind with which it is associated, the device 1 can have, at the rear surface 9 of the box-like body 5, two lateral slots, designated by the reference numerals 34a and 34b in Figure 3, which allow a chosen rotation of the first and second arms 22a and 22b around the respective pivots 23a and 23b.

[0052] Operation is therefore as follows: with reference to Figure 1, it is possible to open the shutter simply by turning the knob into the release position and pushing said knob, or the first panel, until a rotation is imparted thereto.

[0053] The rotation of the second panel occurs automatically according to the coordinated movement of the pair of arms, entailing the opening of the shutter up to a chosen position.

[0054] By turning the knob into the closure position, the movement mechanism is locked and therefore the panels that constitute the shutter are also locked in the chosen position.

[0055] It has thus been found that the invention has achieved the intended aim and objects, a temporary locking device for shutters or blinds having been devised which allows to lock said shutters or blinds in a chosen position which may also be an intermediate position.

[0056] The invention may further be activated very rapidly by coordinating the action for opening the shutter with the action for locking and releasing said device.

[0057] In this manner, the user is not exposed to awkward and possibly dangerous situations, such as for example leaning out beyond the sill in order to achieve complete opening or locking or release of the blind.

[0058] Since the invention can be locked in any intermediate position, it can also allow to use the shutter as a screen for the sun or the wind.

[0059] Since it is possible to integrate the locking device into the very structure of the shutter, it is possible to improve the internal and external aesthetic pleasantness of the building.

[0060] Finally, the locking device is free from breakages caused by accidental impacts or from malfunctions caused by the action of atmospheric agents.

[0061] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

[0062] Thus, for example, it is possible to provide a device that has a movement mechanism that is constituted for example by a pulley system provided with a pair of pulleys between which there is a cable or a belt for connection to a pair of mutually opposite arms that can slide horizontally.

[0063] Figures 15 and 16 illustrate, for example, a second embodiment of the opening and closure device, designated by the reference numeral 101.

[0064] The device 101 comprises a hollow box-like body 105, which is shaped like a parallelepiped and can be associated or accommodated in the first panel.

[0065] The hollow box-like body 105 is suitable to contain a movement mechanism 106, which is constituted by two pulleys, designated by the reference numerals 140a and 140b, between which a belt 141 is guided.

[0066] The pulleys 140a and 140b have mutually parallel rotation axes, which lie approximately on the same plane approximately at right angles to the rear surface 109 of the box-like body 105.

[0067] In this manner, the belt 141 has upper and lower portions, designated by the reference numerals 142a and 142b respectively, which can slide in mutually opposite directions.

[0068] The upper portion 142a and the lower portion 142b are respectively associated with a first upper bar 118a and with a second lower bar 118b, which are arranged horizontally and in mutually opposite positions with respect to the belt 141.

[0069] The connection between the first and second bars 118a and 118b and the belt 141 can be provided advantageously by way of mechanical means of a known type, such as for example a screw 143.

[0070] The bars 118a and 118b are arranged within two second seats, designated by the reference numeral 119, which are formed in the box-like body 105.

[0071] The bars 118a and 118b have two opposite ends 121a and 121b, which are pivoted respectively to a first arm 122a and to a second arm 122b, which protrude at least partially on opposite sides externally and laterally with respect to the box-like body 105.

[0072] As an alternative, if the width of the first panel is approximately equal to the width of the box-like body 105, the first and second arms can retract fully into the box-like body 105.

[0073] The first and second arms 122a and 122b are in turn rotatably associable, like the previously described embodiments, with the jamb on one side and proximate to, or at, the inner lateral edge of the second panel of the shutter on the other side.

[0074] The temporary locking of the sliding of the bars 118a and 118b, and therefore the locking of the shutter in the chosen position, can be achieved advantageously by way of the activation of a knob 111, which protrudes outside the box-like body 5 and is associated so that it cannot rotate with a first end, not shown, of a first pivot 108.

[0075] The second end 110b of the first pivot 108 is threaded so that it can be associated within a complementarily threaded first hole 112, which is formed axially within a disk-like body 113 accommodated in a complementarily shaped seat formed in the rear surface 109 of the box-like body 105.

[0076] The disk-like body 113 is allowed to perform only an axial translational motion, since a pin 115 is arranged within a second hole 116 formed axially in the disk-like body 113 and within a third hole, not shown, which is formed in the seat of said disk-like body.

[0077] In this manner, a rotation of the knob 111 on the part of the user is matched by an axial translational motion of the disk-like body 113 toward the bars 118a and 118b, locking them against the box-like body 105, so as to lock their sliding.

[0078] As an alternative, it is also possible, for example, to provide for the use of a movement mechanism that is constituted by a chain system in which said chain, guided around two lateral sprockets, is provided with two mutually opposite blocks for connection to two separate and opposite horizontal arms.

[0079] Another constructive solution, shown in Figure 17, entails providing an opening and closure device 201 that comprises a hollow box-like body 205, which is shaped like a parallelepiped and can be associated or accommodated in the first panel.

[0080] The hollow box-like body 205 is suitable to contain a movement mechanism 206, which is constituted by a first pinion 207, which can rotate freely about a first pivot 208.

[0081] The first pivot 208 is arranged at right angles to the rear surface 209 of the box-like body 205.

[0082] At a first end, not shown, the first pivot 208 is associated so that it cannot rotate with a knob 211, which protrudes frontally from the box-like body 205.

[0083] The second end 210b of the first pivot 208 is threaded, so that it can be associated within a complementarily threaded first hole 212 formed axially within an oval plate 213, which is arranged within a complementarily shaped first seat 214 formed in the rear surface 209 of the box-like body 205.

[0084] In the plate 213 there are also two additional holes 250a and 250b, which are provided laterally and in mutually opposite positions with respect to the first hole 212.

[0085] The additional holes 250a and 250b are suitable for the placement of pivots, not shown, for the free pivoting of two second pinions 251a and 251b, which are advantageously mutually identical, are arranged laterally in mutually opposite positions with respect to the first pinion 207, and mesh with it.

[0086] The second pinions 251a and 251b further mesh respectively with a first set of teeth and with a second set of teeth, designated by the reference numerals 220a and 220b, which are formed respectively in an upper region and in a lower region of two bars 218a and 218b, which are conveniently accommodated in a pair of second seats, designated by the reference numeral 219, which are formed in the box-like body 205.

[0087] The movement mechanism 206 thus allows to obtain a coordinated translational motion of the first and second bars 218a and 218b along the respective seats 219 in two parallel and mutually opposite directions, so as to achieve the coordinated movement of the two arms, designated by the reference numerals 222a and 222b, which are associated with said bars 218a and 218b.

[0088] As in the previously illustrated embodiments, the temporary locking of the device 201 can be achieved by means of a rotation of the knob 211 so as to place the plate 213 in abutment against the rear surfaces of the bars 218a and 218b.

[0089] In all of the embodiments described above, it is possible to have a box-like body that is provided with rear slots so as to facilitate the protrusion of the arms or, as an alternative, it is possible to have a box-like body that lacks one or both slots according to the dimensions of said box-like body and the shape of the arms.

[0090] Finally, as mentioned earlier, if the box-like body is approximately as wide as the first panel, the first and/or second arms can protrude from the box-like body only temporarily, retracting fully into the box-like body

when the shutter is closed.

[0091] The materials used and the dimensions that constitute the individual components of the invention may of course be more pertinent according to specific requirements.

[0092] The various means for performing certain different functions need not certainly coexist only in the illustrated embodiment but can be present per se in many embodiments, including ones that are not illustrated.

[0093] The disclosures in Italian Patent Application No. TV2002A000010 from which this application claims priority are incorporated herein by reference.

[0094] 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 opening and closure device, particularly for shutters provided with a first panel that is pivoted laterally to a jamb and, on the opposite side, to at least one second panel, **characterized in that** it comprises a box-like body that is associated at, or proximate to, said first panel and is meant to contain a mechanism for moving a first arm and a second arm which protrude approximately horizontally on opposite sides, the free ends of said arms being associated with said jamb and said second panel.

2. An opening device, particularly for shutters provided with a first panel that is pivoted laterally to a jamb and, on the opposite side, to at least one second panel, **characterized in that** it comprises a box-like body that is associated at, or proximate to, said first panel and is meant to contain a mechanism for moving a first arm and a second arm which protrude approximately horizontally on opposite sides, the free ends of said arms being associated with said jamb and said second panel, means being provided for the selective locking of said movement mechanism.

3. The device according to claims 1 or 2, **characterized in that** said hollow box-like body, which is advantageously shaped like a parallelepiped, is suitable to contain a movement mechanism, which is constituted by a pinion that is free to rotate about a first pivot.

4. The device according to claim 3, **characterized in that** said first pivot is arranged at right angles to the rear surface of said box-like body, which constitutes the surface for resting against said first panel.

5. The device according to claim 4, **characterized in that** said first pivot is associated, at a first end, so that it cannot rotate, with a knob that protrudes externally and frontally to said box-like body, so as to allow activation on the part of the user.

6. The device according to claim 4, **characterized in that** said first pivot has a second threaded end that is associated within a complementarily threaded first hole that is formed axially within a plate or a disk-like body.

7. The device according to claim 6, **characterized in that** said disk-like body is arranged at least partially within a complementarily shaped first seat, which is formed in said rear surface of said plate or box-like body.

8. The device according to one or more of the preceding claims, **characterized in that** it comprises at least one element for locking the rotation of said disk-like body with respect to said box-like body, so as to allow only the axial translational motion of said disk-like body.

9. The device according to claim 8, **characterized in that** said locking element is constituted by a pin, which is arranged parallel to said first pivot within a second hole that is formed axially in said disk-like body and in a third hole formed in said first seat.

10. The device according to one or more of the preceding claims, **characterized in that** a rotation of said knob on the part of the user is matched by an axial translational motion of said disk-like body.

11. The device according to one or more of the preceding claims, **characterized in that** the internal surface of said disk-like body interacts with a first bar and a second bar, which are arranged approximately horizontally in opposite positions with respect to said pinion.

12. The device according to claim 11, **characterized in that** said first and second bars are arranged within two second seats, which are mutually superimposed and formed in said box-like body, so as to constitute guides for the sliding of said first and second bars along said box-like body.

13. The device according to claim 12, **characterized in that** said first and second bars are connected to said pinion by way of a first set of teeth and a second set of teeth, which face each other.

14. The device according to one or more of the preceding claims, **characterized in that** said first arm, which protrudes at least partially from said box-like

body, is pivoted at a third end of said first bar.

15. The device according to one or more of the preceding claims, **characterized in that** said second arm, which protrudes at least partially from said box-like body, is pivoted at a fourth end of said first bar.

16. The device according to claims 3, 14 and 15, **characterized in that** said first and second arms, which are pivoted respectively to said first and second bars, protrude on opposite sides from said two second seats.

17. The device according to one or more of the preceding claims, **characterized in that** said movement mechanism allows a coordinated translational motion of said first and second arms along two mutually opposite parallel directions.

18. The device according to one or more of the preceding claims, **characterized in that** said first and second arms are pivoted to said third and fourth ends by means of a second pivot and a third pivot, which are arranged along an axis that is approximately vertical.

19. The device according to one or more of the preceding claims, **characterized in that** the free end of each one of said first and second arms has a rotatable head, which is associable with said jamb or with the inner lateral edge of said second panel.

20. The device according to one or more of the preceding claims, **characterized in that** a pressure on said knob or on said first panel on the part of the user forces the protrusion of said first and second arms from said box-like body, according to a combined rotary and translational motion that is coordinated by said movement mechanism.

21. The device according to one or more of the preceding claims, **characterized in that** said means for selective locking of said movement mechanism are constituted by said disk-like body or plate, which acts by friction on a pair of surfaces formed to the rear of said first and second bars.

22. The device according to one or more of the preceding claims, **characterized in that** said means for selective locking of said movement mechanism can be activated and deactivated by way of the rotation of said knob on the part of the user.

23. The device according to one or more of the preceding claims, **characterized in that** it comprises stroke limiters which are constituted by separate pins which can be positioned selectively along said pair of second seats, so as to allow to lock the opening of said shutters in the chosen position.

24. The device according to one or more of the preceding claims, **characterized in that** said box-like body is provided, at the rear, with two mutually opposite slots which are suitable to allow the rotation of said first and second arms with respect to said third and fourth ends of said first and second bars.

25. The device according to one or more of the preceding claims, **characterized in that** said hollow box-like body is recessed within said first panel.

26. The device according to one or more of the preceding claims, **characterized in that** said hollow box-like body is associated, by way of mechanical means, with the front surface of said first panel.

27. The device according to one or more of the preceding claims, **characterized in that** said box-like body has, at its rear surface, two lateral slots which are formed proximate to said first and second arms so as to facilitate their rotation about said second and third pivots.

28. The device according to one or more of the preceding claims, **characterized in that** said movement mechanism is constituted by a rack system, which is provided with a central pinion that meshes with a first upper toothed bar and with a second lower toothed bar, said first and second arms being pivoted to two opposite ends of said bars.

29. The device according to claims 1 and 12, **characterized in that** said movement mechanism comprises two second pinions, which are arranged laterally to said first pinion and interact with it in order to transmit motion to said first and second bars.

30. The device according to one or more of the preceding claims, **characterized in that** said pair of second pinions meshes with a first set of teeth and a second set of teeth, which face each other and are formed in said first and second bars, so as to impart an opposite translational motion to said first and second bars.

31. The device according to one or more of the preceding claims, **characterized in that** said two second pinions are freely pivoted to two respective pivots, which are associated transversely between said box-like body and said plate or disk-like body.

32. The device according to one or more of the preceding claims, **characterized in that** said movement mechanism is constituted by a chain system, in which said chain, guided around two lateral sprockets, has a pair of mutually opposite blocks for con-

nection to said first and second arms.

33. The device according to one or more of the preceding claims, **characterized in that** said movement mechanism is constituted by two pulleys between which a belt is guided, said first and second bars being associated with said belt.

34. The device according to claims 1 and 33, **characterized in that** said two pulleys have mutually parallel rotation axes which lie approximately on the same plane and are approximately perpendicular to the rear surface of said box-like body.

35. The device according to claims 1 and 33, **characterized in that** said belt has an upper portion and a lower portion, which can slide in mutually opposite directions and are respectively associated with said first and second bars.

36. The device according to one or more of the preceding claims, **characterized in that** a pressure on said knob or on said first panel on the part of the user forces the retraction of said first and second arms with respect to said box-like body, according to a combined rotary and translational motion that is coordinated by said movement mechanism.

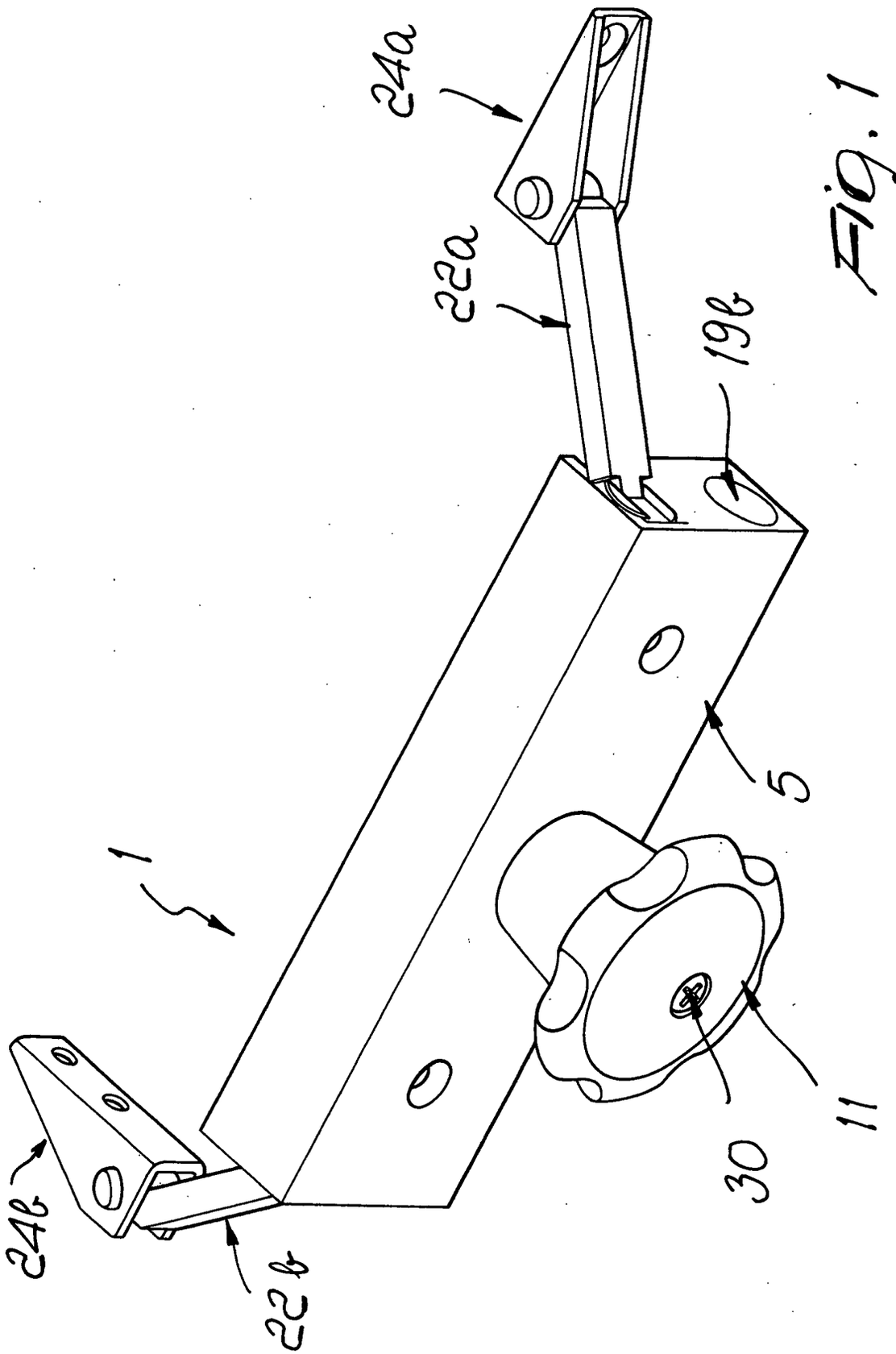
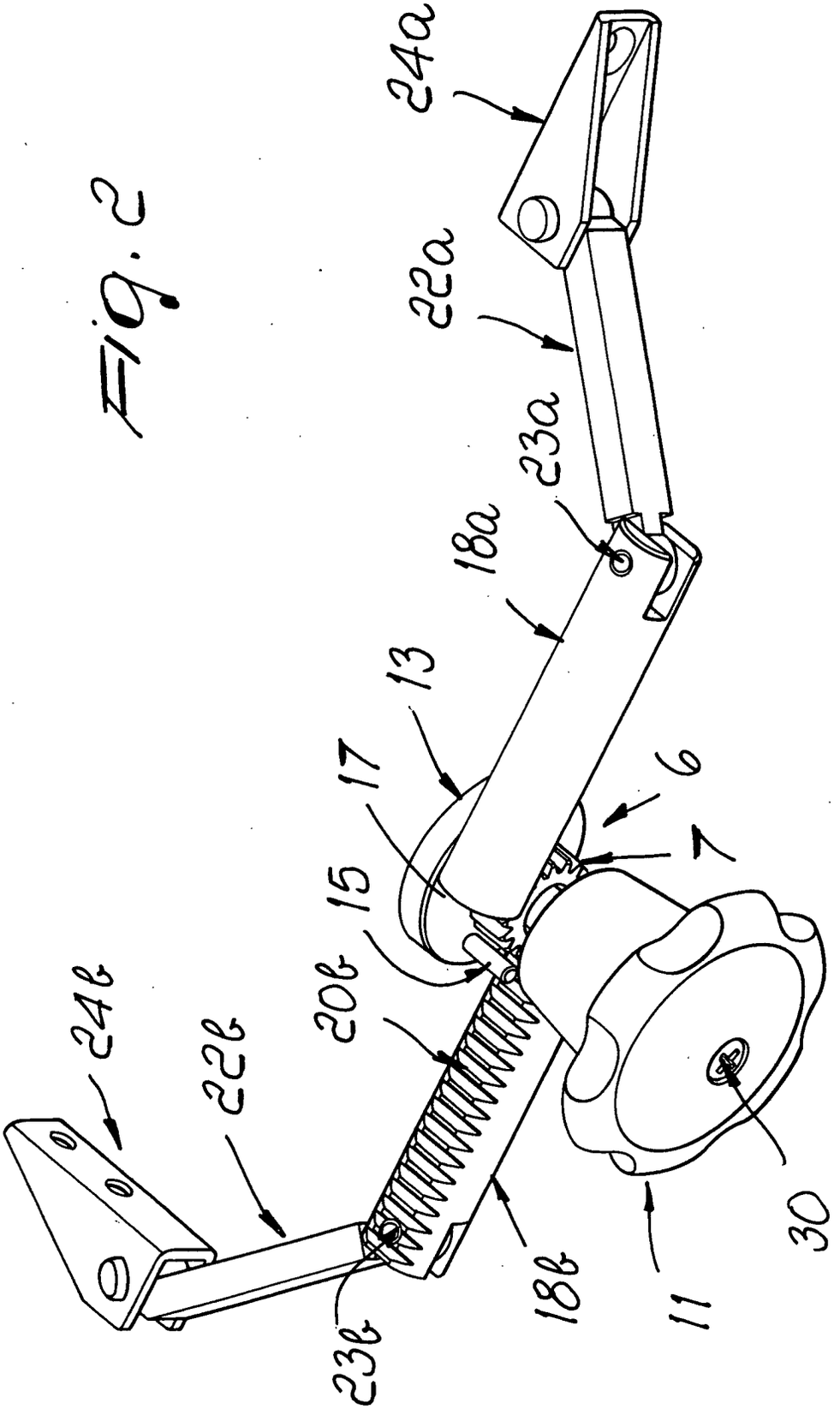


Fig. 1

Fig. 2



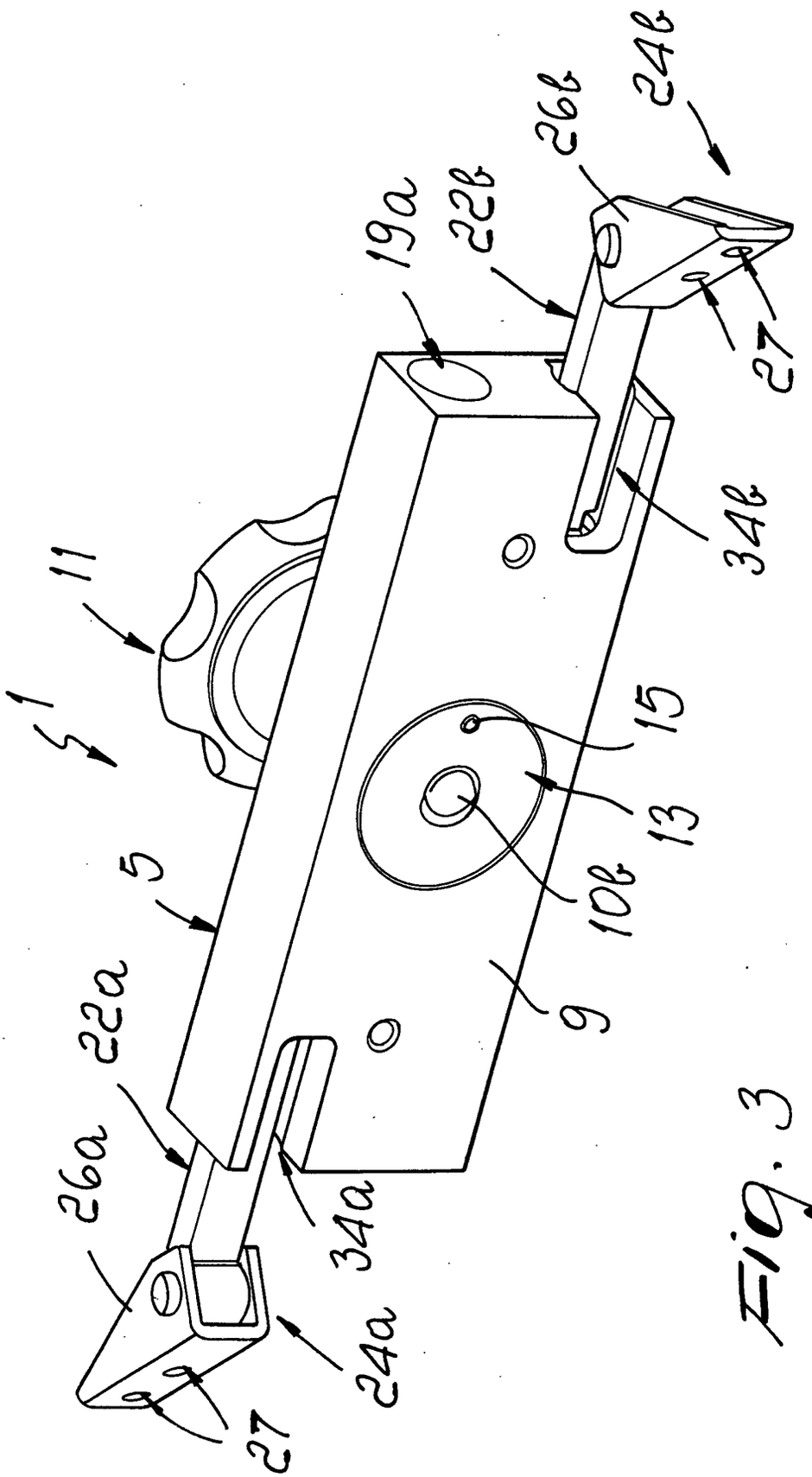
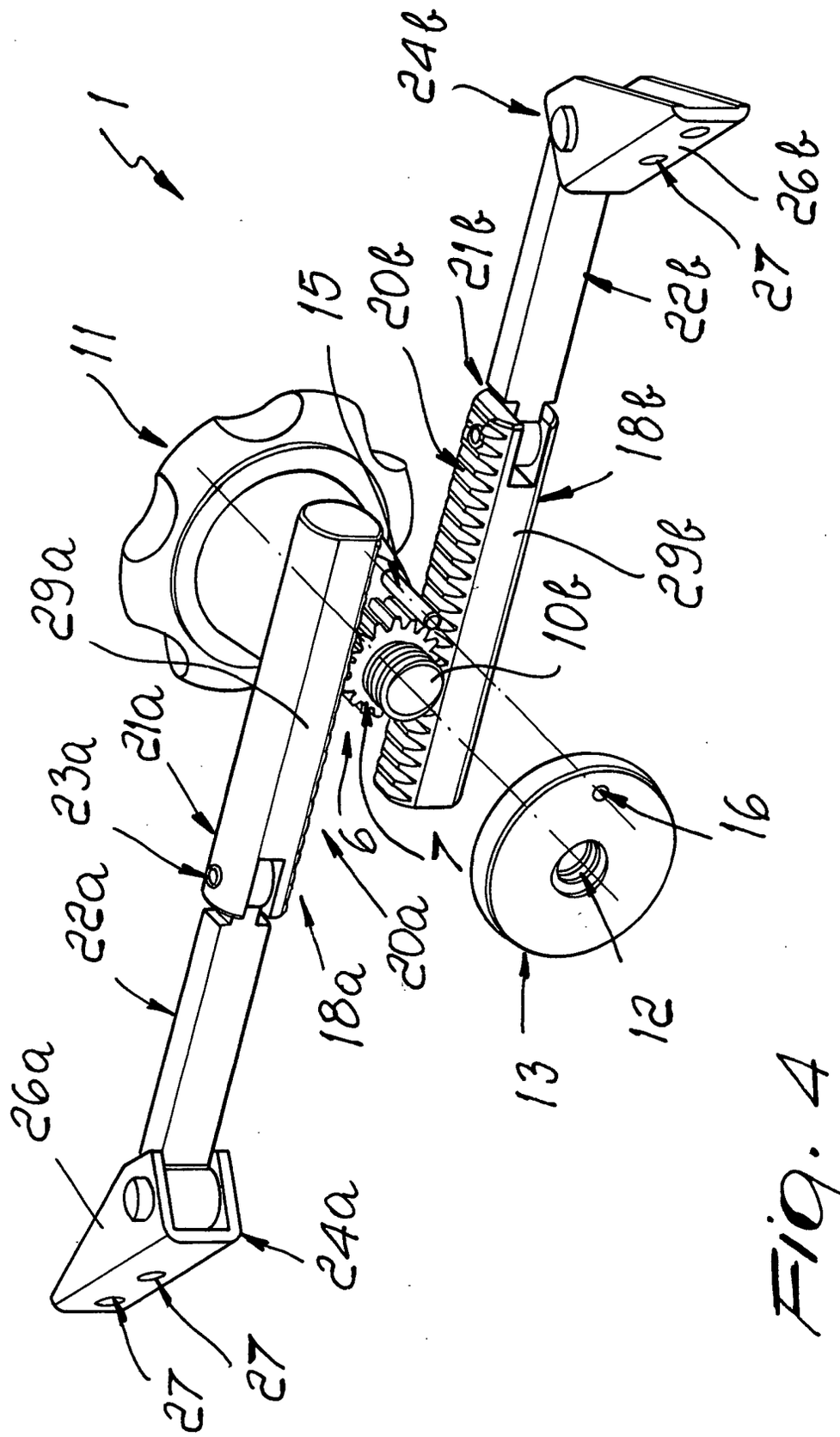


Fig. 3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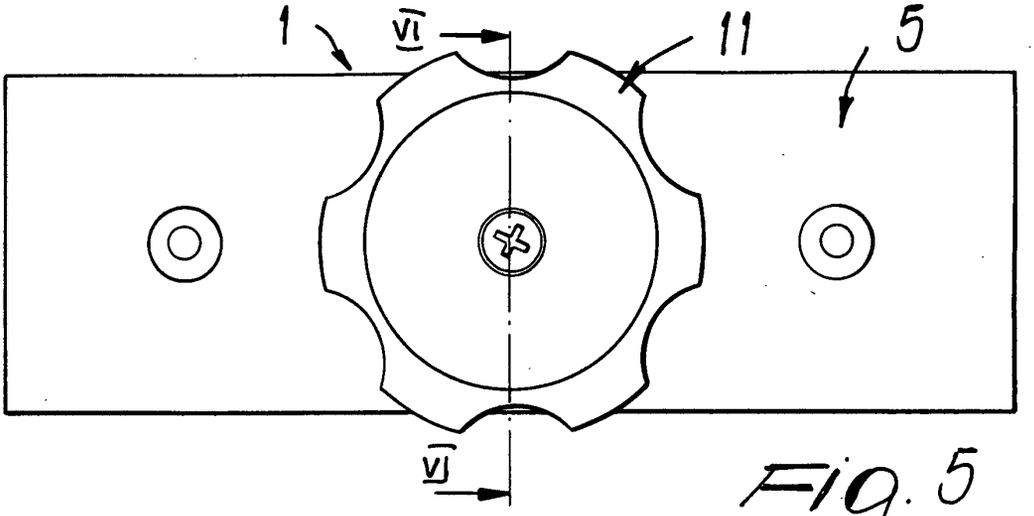
20a
16
13
12

Fig. 4



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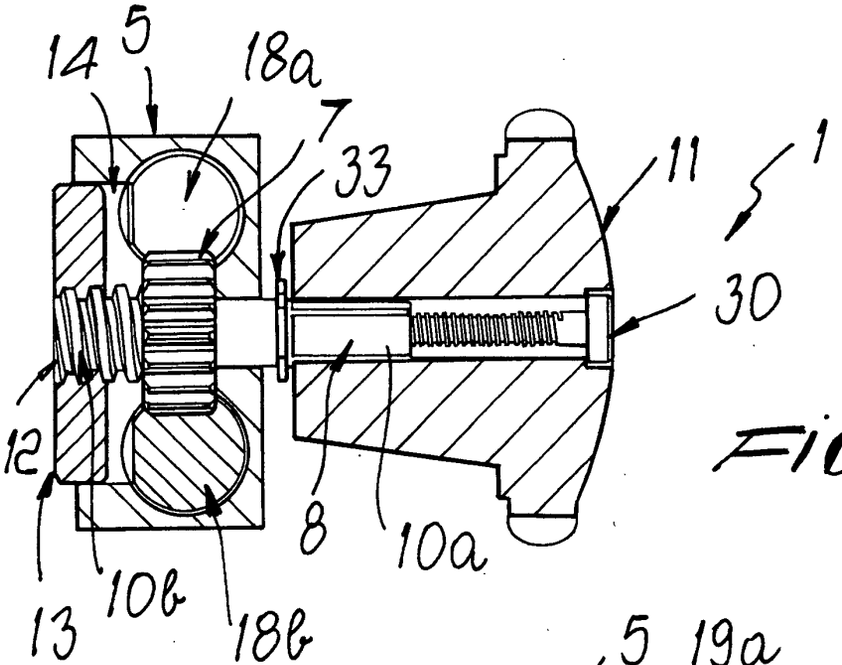

Fig. 6

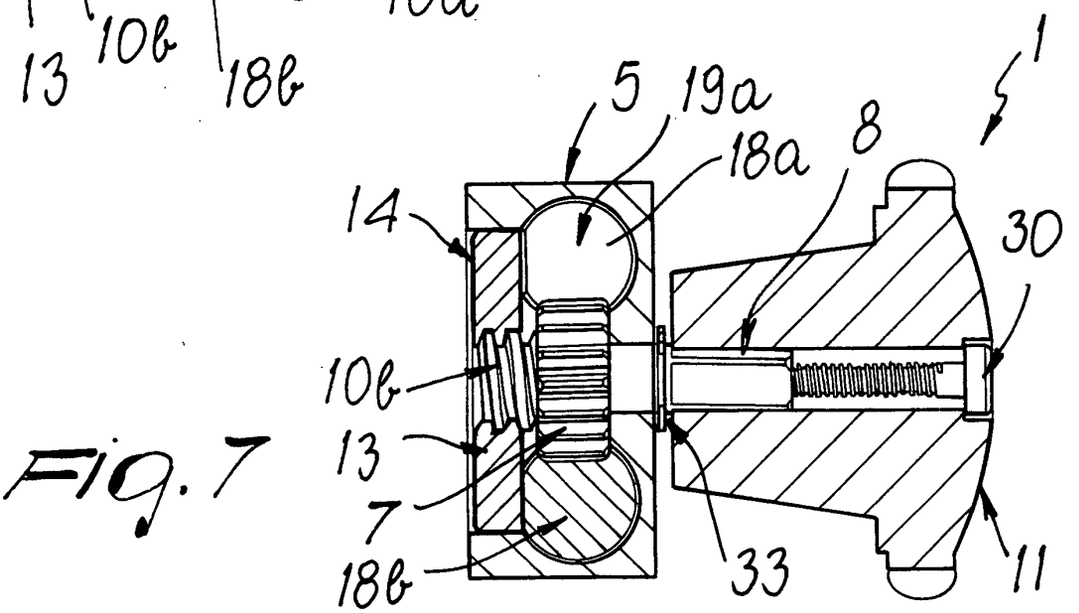

Fig. 7

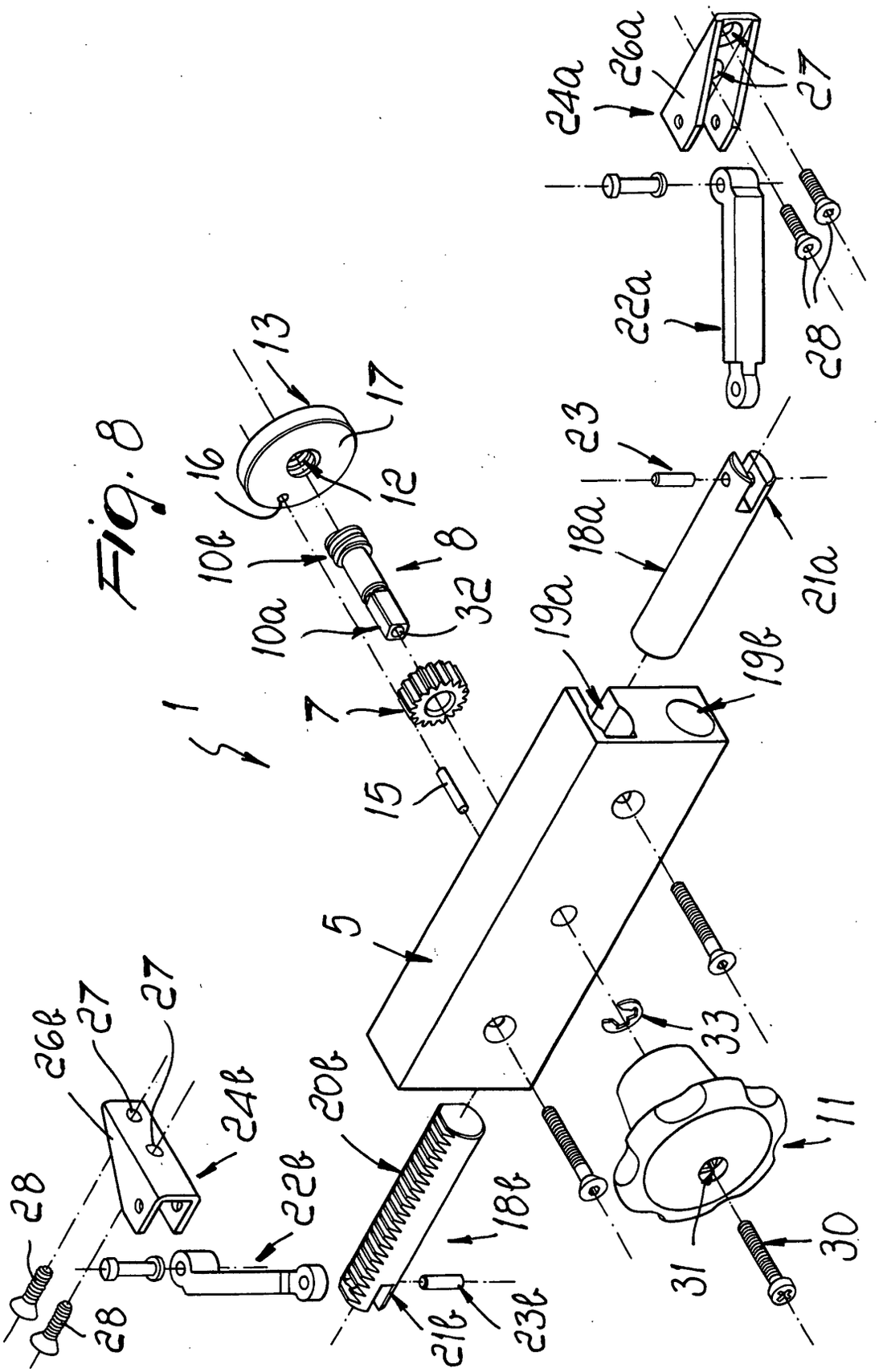
Fig. 8
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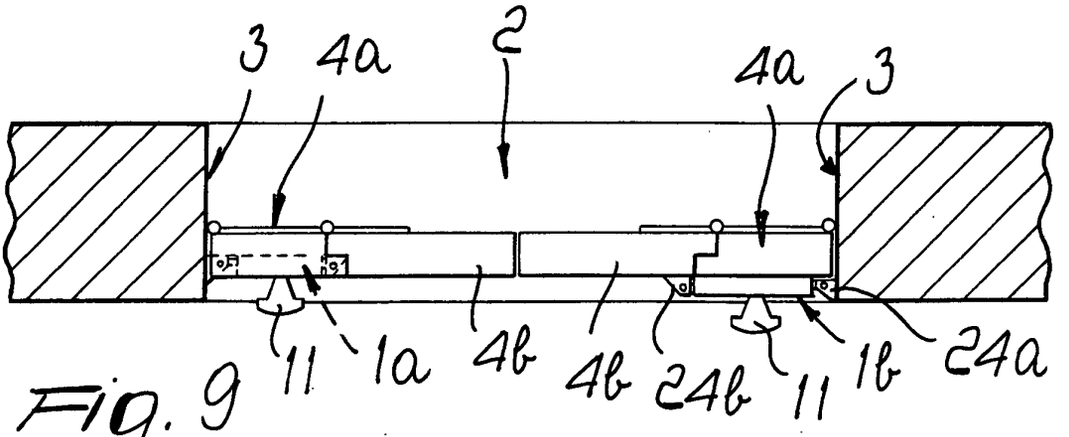


Fig. 9

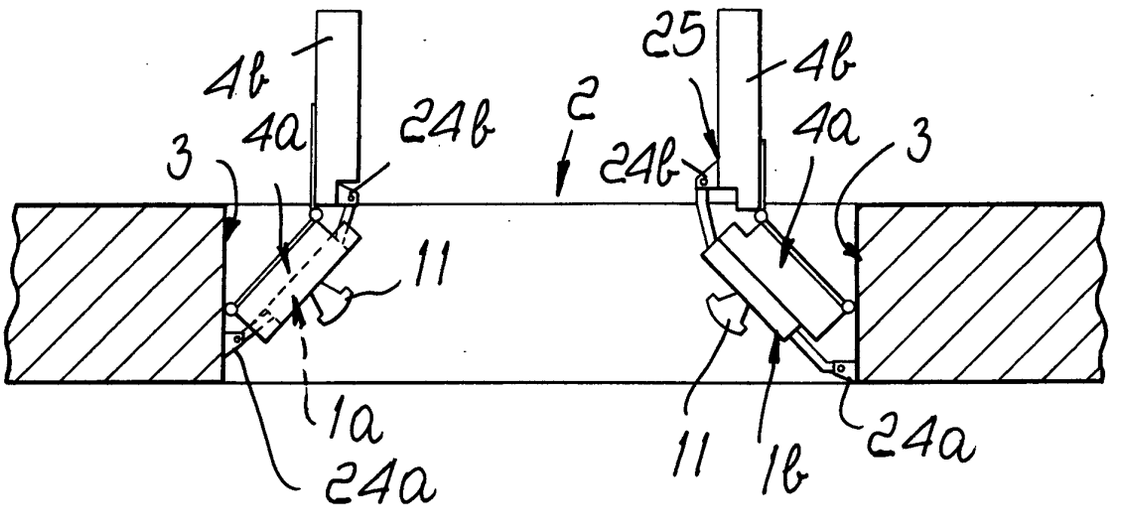


Fig. 10

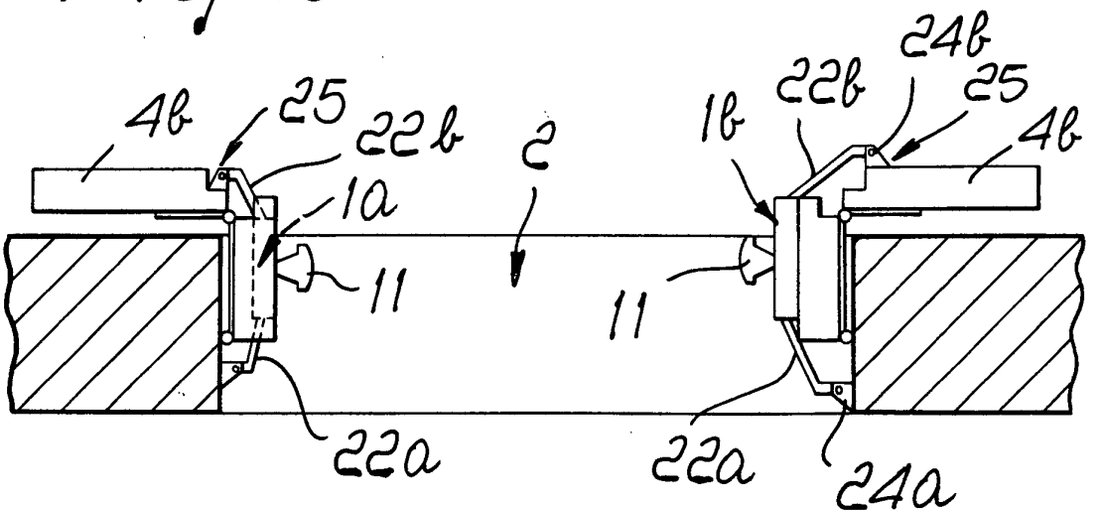


Fig. 11

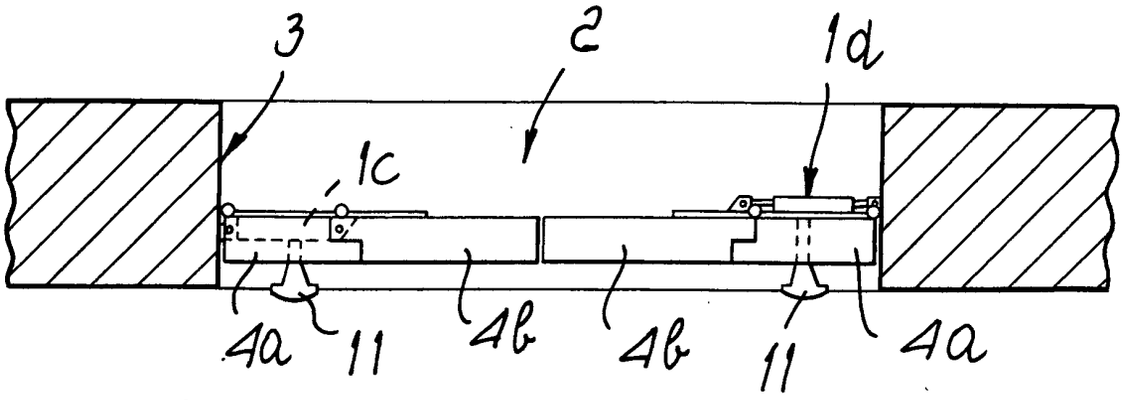


Fig. 12

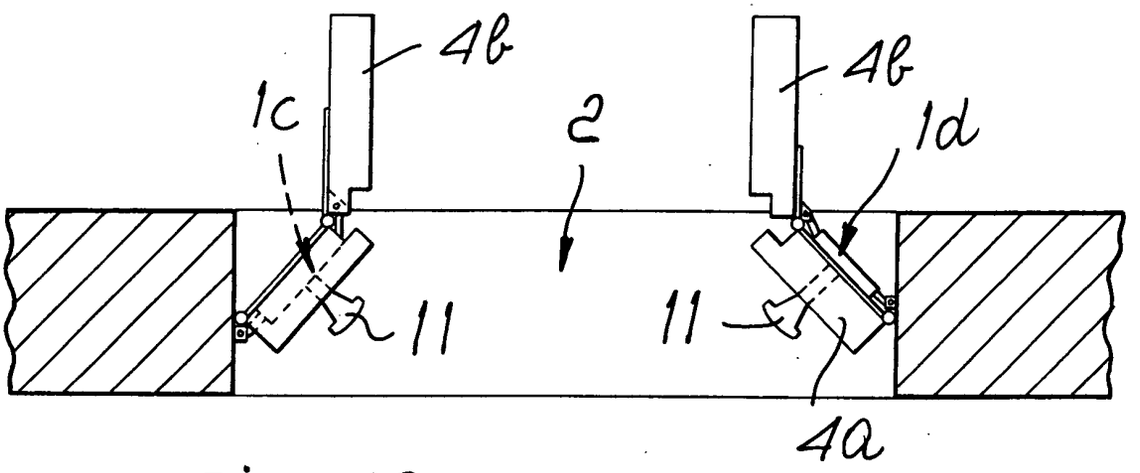


Fig. 13

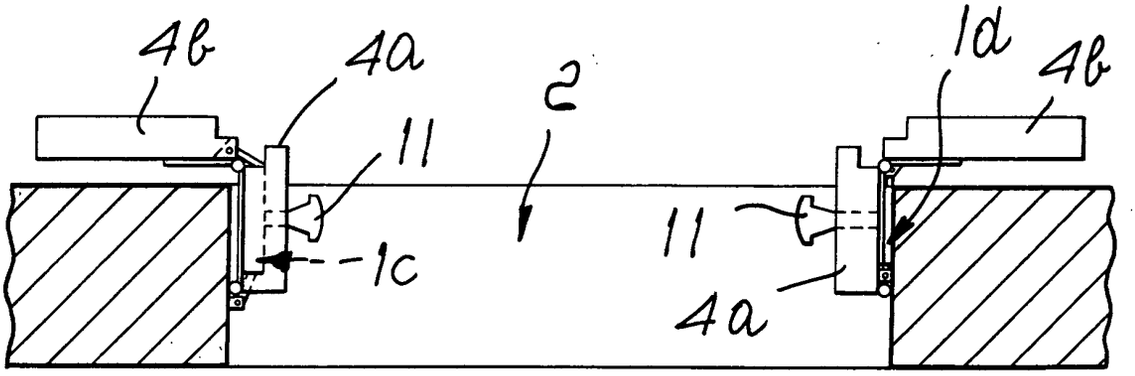
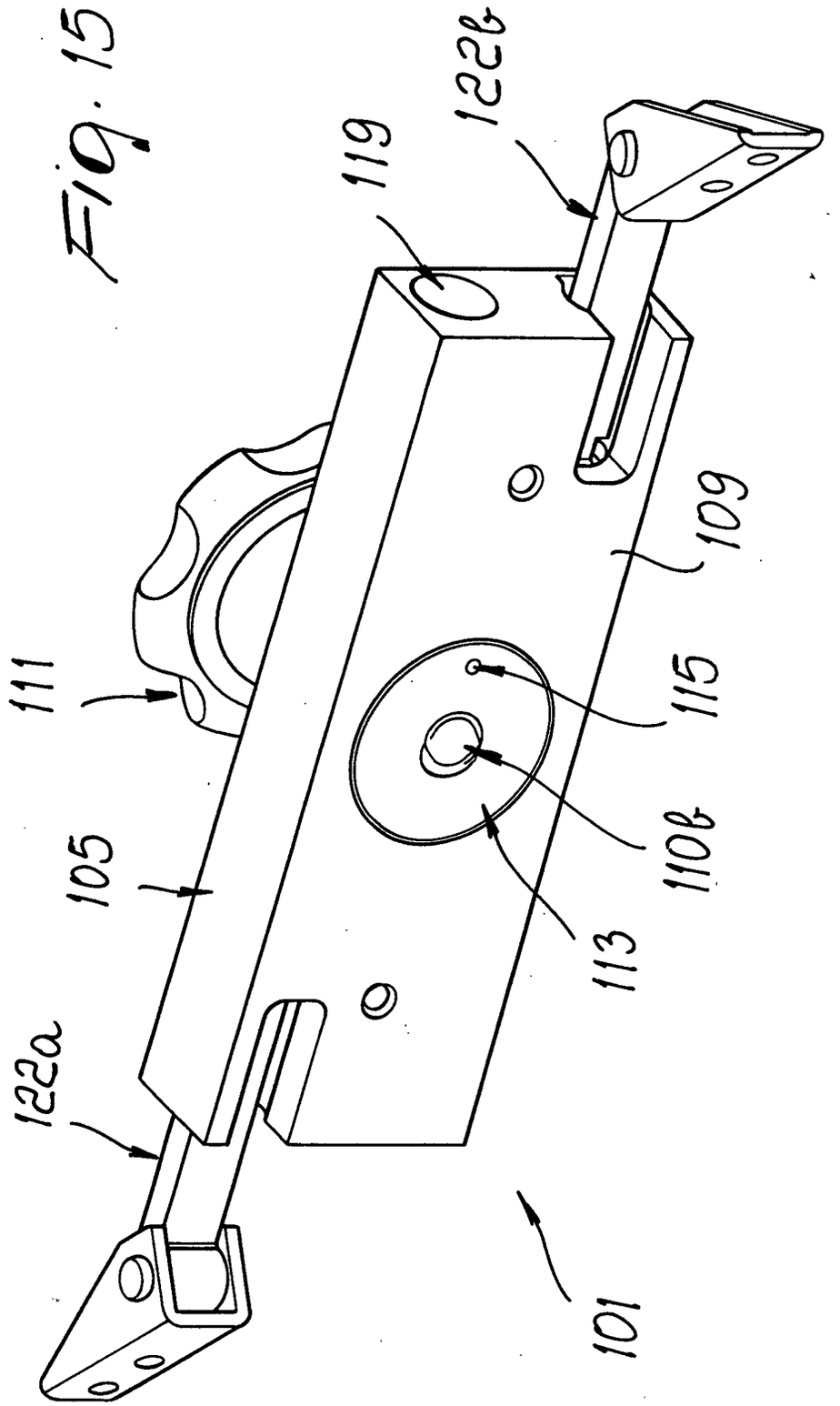
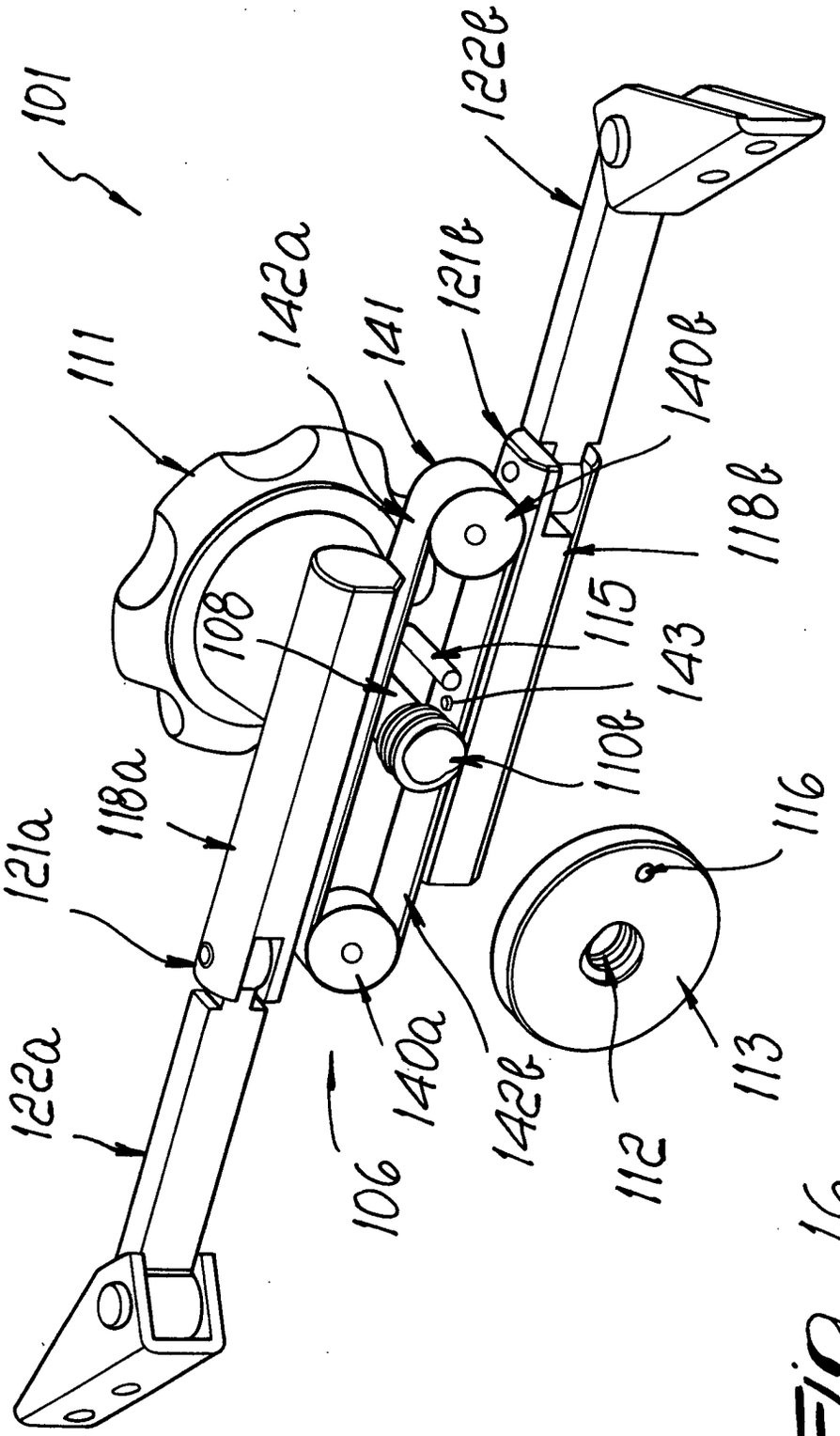


Fig. 14

Fig. 15

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106
112

Fig. 16

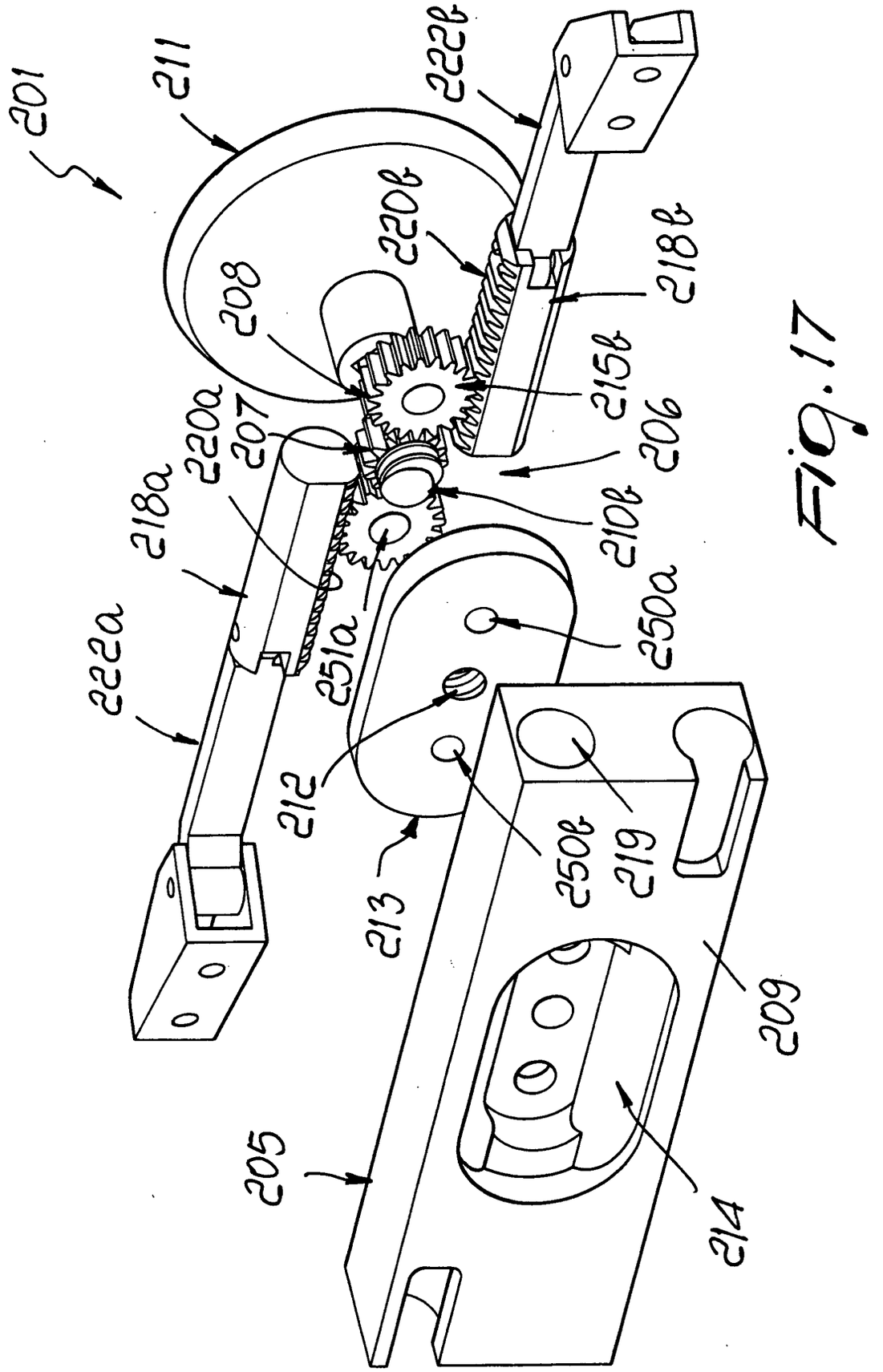
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Fig. 17