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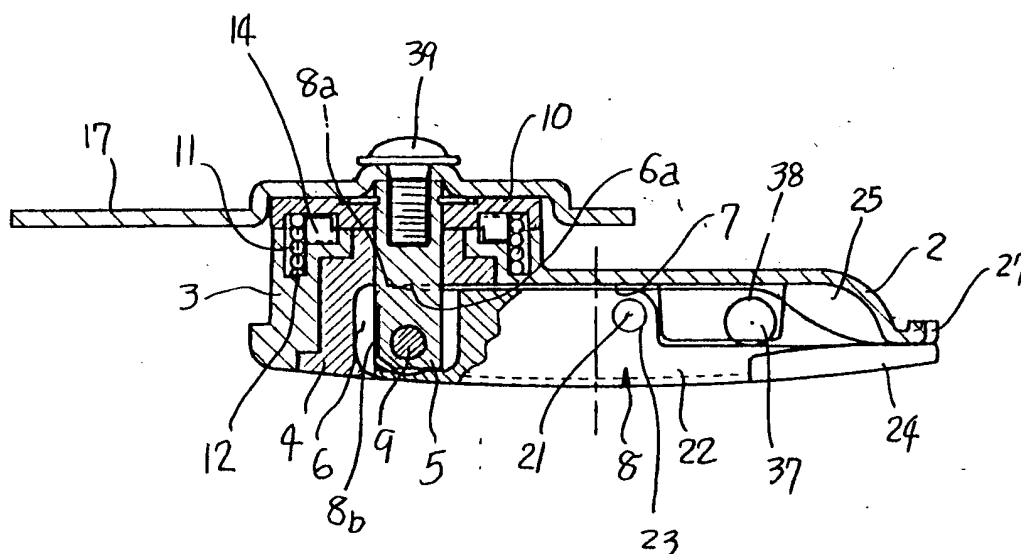
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(54) **Door locking handle assembly of the pull-out and swinging lever-action type**

(57) In a door locking handle assembly of the pull-out and swinging lever-action type, there is no risk of corrosion in an outer surface portion of an operating handle (8), which assures no damage in a connecting axle portion of the operating handle (8). In operation, a catch plate (17) is rotated and reaches a rear space of a socket member (16), i.e., reaches a position immediately be-

fore its locked position. In this position, when the operating handle (8) is pushed back so as to fall into a concave portion (7) of a stationary casing (2), a plurality of first engaging projections (13) of a bearing sleeve portion (3) are engaged with a plurality of second engaging projections (14) of a control disk (10) to guide the operating handle (8) smoothly to a properly aligned position of the concave portion (7) of the stationary casing (2).

FIG. 7



Description

[0001] The present invention relates to a door locking handle assembly of the pull-out and swinging lever-action type, which is used in locking, opening and closing a door provided in cabinets for containing various types of instruments therein.

[0002] A conventional type of the door locking handle assembly of the pull-out and swinging lever-action type has been already disclosed in Japanese Patent No. 2504714. The conventional door locking handle assembly comprises: a stationary casing fixedly mounted on a door, the stationary casing being provided with a bearing sleeve portion protruding from an end portion of its rear surface; a primary axle rotatably but not axially movably inserted in the bearing sleeve portion; a catch plate for engagement with and disengagement from a socket portion provided in a stationary frame element side, the catch plate being connected with a rear end portion of the primary axle; and, an operating handle having its base end portion pivoted to a connecting boss portion of the primary axle by means of a cross pivot which axially extends in parallel with the door, the boss portion protruding from a front end portion of the primary axle, wherein the operating handle is extendibly and retractably received in a concave portion of the stationary casing.

[0003] In this type of conventional door locking handle assembly, when the operating handle is pushed back into the concave portion of the stationary casing in a condition in which the catch plate is still not returned to its normal engaging position relative to the socket portion of the stationary frame element side, the operating handle has its outer surface portion slightly obliquely crossed with an inner edge portion of the concave portion of the stationary casing, and is then received in the concave portion in a manner such that the operating handle has its outer surface portion scratched with the inner edge portion of this concave portion. Due to this, the outer surface portion of the operating handle often gets an ugly scratch by which a painting layer and/or a metal-plated layer covering the outer surface portion of the operating handle are damaged which can cause the operating handle to corrode with rust.

[0004] Further, in the conventional door locking handle assembly, in a condition in which the operating handle is received in the concave portion of the stationary casing to prevent the primary axle from rotating, when the catch plate is subjected to excessively large torque produced by strong friction between the catch plate and the socket portion due to misalignment and/or variations in relative location thereof, all the torque transmitted from the catch plate is directly imposed on the primary axle and a connecting axle of the operating handle. Consequently, there has always been a strong risk of breakage in the connecting axle.

[0005] Consequently, it is an object of the present invention to provide a door locking handle assembly of the

pull-out and swinging lever action type, which is used in locking, opening and dosing a door provided in cabinets for containing various types of instruments therein.

[0006] According to a first aspect of the present invention, the above object of the present invention is accomplished by providing:

A door locking handle assembly of the pull-cut and swinging lever-action type comprising:

a flat stationary casing fixedly mounted on a door, the stationary casing comprising a bearing sleeve portion protruding from an end portion of its rear surface;

a primary axle rotatably but not axially movably inserted in the bearing sleeve portion;

a secondary axle coaxially inserted in the primary axle so as not to be rotatable but axially movable relative to the primary axle;

an operating handle extendibly and retractably received in a longitudinal groove portion of the primary axle and in a concave portion of the stationary casing, wherein the operating handle has its base end portion pivoted to a front end portion of the secondary axle by means of a cross pivot, and has a side surface of the operating handle abut against a bottom surface of the groove portion when the operating handle is received in the concave portion in a condition in which the side surface is spaced apart from the cross pivot by a first distance longer than a second distance between an end surface of the base end portion of the operating handle and the cross pivot;

a control disk non-rotatably fitted to a rear end portion of the secondary axle;

a spring interposed between an inner bottom portion of the bearing sleeve portion of the stationary casing and the control disk to urge and move the secondary axle rearward;

a plurality of first engaging projections protruding from the inner bottom portion of the bearing sleeve portion of the stationary casing and coaxially arranged on the same circle a center of which is formed by the primary axle, the first engaging projections assuming a bevel-gear-like shape as a whole and extending rearward;

a plurality of second engaging projections protruding from a front surface of the control disk and coaxially arranged on the same circle a center of which is formed by the secondary axle, the second engaging projections assuming a bevel-gear-like shape as a whole and extending forward; and

a catch plate connected with a rear end portion of the secondary axle, wherein the catch plate is engageable with and disengageable from a socket portion of a stationary frame element;

wherein, in a position immediately before a locked position where the catch plate rotates to reach a space disposed behind the socket portion, when the

operating handle is pushed back to fall into the concave portion of the stationary casing, the first engaging projections of the bearing sleeve portion are engaged with the second engaging projections of the control disk; and
 wherein, when the operating handle is pulled up and swung, the control disk is moved rearwardly by a distance equal to a difference between the first distance and the second distance and to have the second engaging projections of the control disk disengaged from the first engaging projections of the bearing sleeve portion of the stationary casing.

[0007] According to a second aspect of the present invention, the above object of the present invention is accomplished by providing:

The door locking handle assembly as set forth in the first aspect of the present invention, wherein:

the stationary casing is provided with a lock unit;

a cam plate is fixedly mounted on a rotor of the lock unit, the rotor extending rearward from a rear surface of the stationary casing;

a locking rod is received in the stationary casing so as to be extendible and retractable relative to the concave portion of the stationary casing;

a receiving hole is provided in a leg portion of the operating handle so as to be engagable with and disengagable from a front end portion of the locking rod;

a first drive projection is provided in the cam plate and engaged with a base end portion of the locking rod to move the locking rod to a position where the front end portion of the locking rod engages with the receiving hole; and

a second drive projection is provided in the cam plate and engaged with the base end portion of the locking rod to move the locking rod to a position where the front end portion of the locking rod is disengaged from the receiving hole.

[0008] By way of example only, a specific embodiment of the present invention will now be described, with reference to the accompanying drawings, in which:-

Fig. 1 is a front view of an embodiment of door locking handle assembly of the pull-out and swinging lever-action type of the present invention at a time when the door is in its locked condition;

Fig. 2 is a rear view of the door locking handle assembly of the present invention shown in Fig. 1;

Fig. 3 is a left side view of the door locking handle assembly of the present invention shown in Fig. 1;

Fig. 4 is a right side view of the door locking handle assembly of the present invention shown in Fig. 1;

Fig. 5 is a plan view of the door locking handle assembly of the present invention shown in Fig. 1;

Fig. 6 is a bottom view of the door locking handle

assembly of the present invention shown in Fig. 1; Fig. 7 is a cross-sectional view of the door locking handle assembly of the present invention, taken along the line A-A of Fig. 1;

Fig. 8 is a cross-sectional view of the door locking handle assembly of the present invention, taken along the line B-B of Fig. 2;

Fig. 9 is a cross-sectional view of the door locking handle assembly of the present invention, taken along the line C-C of Fig. 2;

Fig. 10 is a front view of a control disk used in the door locking handle assembly of the present invention shown in Fig. 1;

Fig. 11 is a rear view of the control disk shown in Fig. 10;

Fig. 12 is a bottom view of the control disk shown in Fig. 10;

Fig. 13 is a cross-sectional view of the control disk, taken along the line D-D of Fig. 10;

Fig. 14 is a cross-sectional view of the control disk, taken along the line E-E of Fig. 10;

Fig. 15 is a front view of the stationary casing used in the locking handle assembly of the present invention shown in Fig. 1;

Fig. 16 is a rear view of the stationary casing shown in Fig. 15;

Fig. 17 is a cross-sectional view of the stationary casing, taken along the line F-F of Fig. 16; and

Fig. 18 is a cross-sectional view of the stationary casing, taken along the line G-G of Fig. 15.

[0009] Hereinbelow, the present invention will be described in detail with reference to the accompanying drawings.

[0010] According to a first aspect of the present invention, in a door locking handle assembly of the pull-out and swinging lever-action type of the present invention, a flat stationary casing 2 is fixedly mounted on a door 1.

[0011] The stationary casing 2 is provided with a bearing sleeve portion 3 protruding from an end portion of its rear surface in a protruding manner.

[0012] A primary axle 4 is rotatably but not axially movably inserted in the bearing sleeve portion 3 of the stationary casing 2.

[0013] A secondary axle 5 is coaxially inserted in the primary axle 4 so as not to be rotatable but axially movable relative to the primary axle 4.

[0014] An operating handle 8 is extendibly and retractably received in a longitudinal groove portion 6 of the primary axle 4 and also in a concave portion 7 of the stationary casing 2, wherein the operating handle 8 has its base end portion pivoted to a front end portion of the secondary axle 5 by means of a cross pivot 9.

[0015] A side surface 8a of the operating handle 8 abuts against a bottom surface 6a of the groove portion 6 of the primary axle 4 when the operating handle 8 is received in the concave portion 7 of the stationary casing 2 in a condition in which the side surface 8a of the

operating handle 8 is spaced apart from the cross pivot 9 by a first distance D1 longer than a second distance D2 between an end surface 8b of the base end portion of the operating handle 8 and the cross pivot 9.

[0016] A control disk 10 is non-rotatably fitted to a rear end portion of the secondary axle 5.

[0017] A spring 11 is interposed between an inner bottom portion 12 of the bearing sleeve portion 3 of the stationary casing 2 and the control disk 10 to urge and move the secondary axle 5 rearward.

[0018] A plurality of first engaging projections 13 protrude from the inner bottom portion 12 of the bearing sleeve portion 3 of the stationary casing 2 and are coaxially arranged on the same circle a center of which is formed by the primary axle 4. The first engaging projections 13 assume a bevel-gear-like shape as a whole, and extend rearwardly.

[0019] On the other hand, a plurality of second engaging projections 14 protrude from in a front surface of the control disk 10 and are coaxially arranged on the same circle a center of which is formed by the secondary axle 5. The second engaging projections 14 assume a bevel-gear-like shape as a whole, and extend forwardly.

[0020] A catch plate 17 is connected with a rear end portion of the secondary axle 5, wherein the catch plate 17 is engageable with and disengageable from a socket portion 16 of a stationary frame element 15, as shown in Fig. 1.

[0021] In operation, in a position immediately before a locked position where the catch plate 17 rotates to reach a space disposed behind the socket portion 16, when the operating handle 8 is pushed back to fall into the concave portion 7 of the stationary casing 2, the first engaging projections 13 of the bearing sleeve portion 3 of the stationary casing 2 are engaged with the second engaging projections 14 of the control disk 10.

[0022] When the operating handle 8 is pulled forward and swung, the control disk 10 is moved rearwardly by a distance equal to a difference between the first distances D1 and the second distance D2 to have the first engaging projections 13 of the bearing sleeve portion 3 of the stationary casing 2 disengaged from the second engaging projections 14 of the control disk 10.

[0023] In the door locking handle assembly of the present invention having the above construction, as shown in Fig. 1, in a condition in which the door 1 is locked to the stationary frame element 15, the operating handle 8 is entirely received in the concave portion 7 of the stationary casing 2.

[0024] At this time, the catch plate 17 is engaged with the socket portion 16. As shown in Fig. 8, the secondary axle 5 compresses the spring 11 to assume its extreme frontward position, so that the second engaging projections 14 of the control disk 10 are engaged with the first engaging projections 13 of the bearing sleeve portion 3 of the stationary casing 2. Further, as shown in Figs. 7 and 8, the side surface 8a of the base end portion of the operating handle 8 abuts against the bottom surface 6a

of the groove portion 6 of the primary axle 4.

[0025] In the locking condition described above, when the operating handle 8 is rotated on the cross pivot 9 so as to be pulled forward from the concave portion 7 of the stationary casing 2, as shown in Fig. 5, in place of the side surface 8a of the base end portion of the operating handle 8, an end surface 8b of the base end portion of the operating handle 8 now abuts against the bottom surface 6a of the groove portion 6 of the primary axle 4.

[0026] As a result, the secondary axle 5 is moved rearward to its rear position in parallel to the primary axle 5 by a distance equal to a difference between the first distance D1 and the second distance D2, and held in such rear position under the influence of a resilient force exerted by the spring 11. Due to this rearward displacement of the secondary axle 5, the second engaging projections 14 of the control disk 10 are disengaged from the first engaging projections 13 of the bearing sleeve portion 3 of the stationary casing 2 to permit the catch plate 17 to move, parallel to itself, to a position in a rear space disposed behind the socket portion 16 of the stationary frame element 15.

[0027] After that, as shown in Fig. 2, when the secondary axle 5 and the primary axle 4 are integrally rotated in a predetermined direction relative to the bearing sleeve portion 3 of the stationary casing 2 by means of the operating handle 8, a front end portion of the catch plate 17 is rotated so as to escape from the rear space of the socket portion 16 of the stationary frame element 15 to reach a position where the socket portion 16 of the stationary frame element 15 does not interfere with the front end portion of the catch plate 17. As a result, it is possible to open the door 1 by pulling the operating handle 8 forward. In this unlocked condition of the door 1, the primary axle 4 and the catch plate 17 are held in their unlocked positions under the influence of a resilient force exerted by the spring 11.

[0028] After the door 1 is closed, when the operating handle 8 is swung in the reverse direction to reach its locked position, the front end portion of the catch plate 17 integrally rotated with both the primary axle 4 and the secondary axle 5 enters the rear space of the socket portion 16 of the stationary frame element 15.

[0029] Then, the operating handle 8 is swung or rotated on the cross pivot 9 and received in the concave portion 7 of the stationary casing 2. At this time, since the secondary axle 5 and the control disk 10 are integrally pulled forward by a distance equal to the difference between the first distance D1 and the second distance D2, the second engaging projections 14 of the control disk 10 are engaged with the first engaging projections 13 of the bearing sleeve portion 3 of the stationary casing 2.

[0030] Through the above engagement established between these engaging projections 14 and 13, the operating handle 8 is properly positioned and therefore smoothly received in the concave portion 7 of the stationary casing 2. Further, the front end portion of the

catch plate 17 moves parallel to itself from the rear space of the socket portion 16 to a position near the socket portion 16, and is then engaged with the socket portion 16 without scratching any edge part of the socket portion 16 of the stationary frame element 15.

[0031] At this time, since the control disk 10 is pulled forward, the second engaging projections 14 of the control disk 10 are engaged with the first engaging projections 13 of the bearing sleeve portion 3 of the stationary casing 2.

[0032] In this embodiment of the present invention shown in the drawings, the operating handle 8 assumes a modified T-shaped form provided with a leg portion 22 pivoted to the secondary axle 5. The leg portion 22 of the operating handle 8 is provided with a grip portion 24 in its front end portion to which the grip portion 24 is connected at right angles.

[0033] As shown in Fig. 7, the stationary casing 2 is provided with a recess 25 in its front surface for receiving in the recess 25 the grip portion 24 of the operating handle 8. The recess 25 is provided with an oblique surface portion 26 for permitting users fingers to enter a space disposed behind the grip portion, as shown in Fig. 9.

[0034] Oppositely disposed from the recess 25 is a notch portion 27 (shown in Fig. 7) of the stationary casing 2, which portion 27 is formed in a side end portion of the stationary casing 2. In a fallen-down condition, the operating handle 8 has its grip portion 24 partially extended from the notch portion 27 of the stationary casing 2 to facilitate its gripping operation.

[0035] According to a second aspect of the present invention, in the door locking handle assembly as set forth in the first aspect of the present invention, the stationary casing 2 is provided with a lock unit 18, as shown in Fig. 8.

[0036] In this lock unit 18, a cam plate 20 is fixedly mounted on a rotor 19 of the lock unit 18. The rotor 19 extends rearward from a rear surface of the stationary casing 2.

[0037] A locking rod 21 shown in Fig. 9 is received in the stationary casing 2 so as to be extendible and retractable relative to the concave portion 7 of the stationary casing 2, as shown in dotted lines in Fig. 2.

[0038] A receiving hole 23 is provided in the leg portion 22 of the operating handle 8 so as to be engagable with and disengagable from a front end portion 21a of the locking rod 21.

[0039] As is clear from Fig. 2, a first drive projection 20a is provided in the cam plate 20 and engaged with a base end portion 21b of the locking rod 21 to move the locking rod 21 to a position where the front end portion 21a engages with the receiving hole 23.

[0040] A second drive projection 20b is provided in the cam plate 20 and engaged with the base end portion 21b of the locking rod 21 to move the locking rod 21 to a position where the front end portion 21a is disengaged from the receiving hole 23.

[0041] As is clear from Fig. 2 in dotted lines, the base

end portion 21b of the locking rod 21 is bent at right angles relative to the remaining portion of the locking rod 21.

[0042] In a condition in which the operating handle 8 is received in the concave portion 7 of the stationary casing 2 as shown in Fig. 3, the base end portion 21b of the locking rod 21 is pushed up by the first drive projection 20a of the cam plate 20. Consequently, the front end portion 21a of the locking rod 21 extends upward from a guide hole 29 in a wall portion of the concave portion 7 of the stationary casing 2 to enter the receiving hole 23 of the leg portion 22 of the operating handle 8 so as to be engaged with the receiving hole 23.

[0043] Due to such engagement between the locking rod 21 and the operating handle 8, the operating handle 8 is locked to the stationary casing 2 in a position where the operating handle 8 is received in the concave portion 7 of the stationary casing 2, which prevents the operating handle 8 from being illegally pulled out and swung and therefore helps prevent crime.

[0044] In operation, when a key 30 is inserted into the lock unit 18 to rotate the rotor 19 in a predetermined direction, the base end portion 21b of the locking rod 21 is pushed down by the second drive projection 20b of the cam plate 20. Due to this, the front end portion 21a of the locking rod 21 is disengaged from the receiving hole 23 of the leg portion 22 of the operating handle 8, so that the operating handle 8 is unlocked from the stationary casing 2, which makes it possible to pull forward or out the operating handle 8 from the concave portion 7 of the stationary casing 2 and to swing the operating handle 8.

[0045] As shown in dotted lines in Fig. 2, a longitudinal concave portion 31 is defined by a rear plate 28 in a position adjacent to the bearing sleeve portion 3 of the stationary casing 2. Mounted in this longitudinal concave portion 31 is a click pin 33 which is urged by a compression coil spring 32.

[0046] When the click pin 33 engages with a side concave portion 34 of the primary axle 4, the click pin 33 functions to report to the user the fact that the primary axle 4 reaches its locking position or its unlocking position. The rear plate 28 is fixedly mounted on the stationary casing 2 by means of screws 44, as shown in Fig. 2.

[0047] Another longitudinal concave portion 35 is defined by a bent plate 47 in a position adjacent to an upper portion of the rear surface of the stationary casing 2. Received in this longitudinal concave portion 35 is another click pin 37 which is urged by another compression coil spring 36.

[0048] When the click pin 37 engages with a side concave portion 38 of the front end portion of the operating handle 8, the click pin 37 functions to report to the user the fact that the operating handle 8 reaches its proper position in which it is received in the concave portion 7 of the stationary casing 2. The bent plate 47 is fixedly mounted on the stationary casing 2 by means of screws 48, as shown in Fig. 2.

[0049] The spring 11 for urging the control disk 10 is constructed of a compression spring, and disposed outside the array of the first engaging projections 13. The secondary axle 5 is constructed of a square rod element. On the other hand, the catch plate 17 is provided with a square hole 42 in its central portion. Through this square hole 42, the catch plate 17 is non-rotatably mounted on the secondary axle 5 and fixed thereto by fastening a screw 39. As shown in one-dotted chain lines in Fig. 2, a pair of locking rods 40, 41 are connected to opposite sides of the catch plate 17.

[0050] As shown in Fig. 8, the cam plate 20 is fixedly mounted on the rotor 19 of the lock unit 18 through a washer block 45 by fastening a screw 46. Both the first drive projection 20a and the second drive projection 20b of the cam plate 20 are bent forward, which enables these projections 20a, 20b to push the base end portion 21b of the locking rod 21.

[0051] In the door locking handle assembly of the present invention of the pull-out and swinging lever-action type having the above construction, in a position immediately before the locking position where the catch plate 17 reaches the rear space of the socket portion 16 of the stationary frame element 15, when the operating handle 8 is received in the bottom of the concave portion 7 of the stationary casing 2, the first engaging projections 13 of the bearing sleeve portion 3 of the stationary casing 2 are engaged with the second engaging projections 14 of the control disk 10.

[0052] As a result, the operating handle 8 is smoothly guided to a proper position aligned with the concave portion 7 of the stationary casing 2. Due to this, there is no risk that the inner edge portion of the concave portion 7 of the stationary casing 2 scratches the outer surface of the operating handle 8, which enables the operating handle 8 to be free from any corrosion caused by damage of its painting layer and/or metal-plated layer.

[0053] In receiving the operating handle 8 in the concave portion 16 of the stationary casing 2, the front end portion of the catch plate 17 moves parallel to itself from the rear space of the socket portion 16 of the stationary frame element 15 to approach the socket portion 16. Consequently, there is no fear that the catch plate 17 scratches the socket portion 16 in locking the door 1.

[0054] In unlocking the door 1 too, since the front end portion of the catch plate 17 moves parallel to itself to separate from the socket portion 16, there is no risk that the catch plate 17 scratches the socket portion 16 of the stationary frame element 15. Consequently, it is possible to have the catch plate 17 smoothly engaged with and smoothly disengaged from the socket portion 16 of the stationary frame element 15 in an easy manner.

[0055] Further, in the locking condition in which the operating handle 8 is received in the concave portion 7 of the stationary casing 2, even when the catch plate 17 is subjected to excessively large torque, it is possible to disperse such large torque throughout the first engaging projections 13 of the bearing sleeve portion 3 of the sta-

tionary casing 2 and the second engaging projections 14 of the control disk 10.

[0056] Due to such dispersion of torque, there is no risk that any connecting portion disposed between the operating handle 8 and the second axle 5 is broken, which remarkably improves in durability the door locking handle assembly of the present invention.

10 Claims

1. A door locking handle assembly of the pull-out and swinging lever-action type comprising:

a flat stationary casing (2) fixedly mounted on a door (1), said stationary casing (2) comprising a bearing sleeve (3) protruding from an end portion of its rear surface;

a primary axle (4) rotatably but not axially, movably inserted in said bearing sleeve portion (3); a secondary axle (5) coaxially inserted in said primary axle (4) so as not to be rotatable but axially movable relative to said primary axle (4); an operating handle (8) extendibly and retractably received in a longitudinal groove portion (6) of said primary axle (4) and in a concave portion (7) of said stationary casing (2), wherein said operating handle (8) has its base end portion pivoted to a front end portion of said secondary axle (5) by means of a cross pivot (9), and has a side surface (8a) of said operating handle (8) abut against a bottom surface (6a) of said groove portion (6) when said operating handle (8) is received in said concave portion (7) of said stationary casing (2) in a condition in which said side surface (8a) of said operating handle (8) is spaced apart from said cross pivot (9) by a first distance (D1) longer than a second distance (D2) between an end surface (8b) of said base end portion of said operating handle (8) and said cross pivot (9);

a control disk (10) non-rotatably fitted to a rear end portion of said secondary axle (5);

a spring (11) interposed between an inner bottom portion (12) of said bearing sleeve portion (3) of said stationary casing (2) and said control disk (10) to urge and move said secondary axle (5) rearward;

a plurality of first engaging projections (13) protruding from said inner bottom portion (12) of said bearing sleeve portion (3) of said stationary casing (2) and coaxially arranged on the same circle a center of which is formed by said primary axle (4), said first engaging projections (13) assuming a bevel-gear-like shape as a whole and extending rearward;

a plurality of second engaging projections (14) protruding from a front surface of said control

disk (10) in a protruding manner and coaxially arranged on the same circle a center of which is formed by said secondary axle (5), said second engaging projections (14) assuming a bevel-gear-like shape as a whole and directed forward; and
 a catch plate (17) connected with a rear end portion of said secondary axle (5), wherein said catch plate (17) is engageable with and disengageable from a socket portion (16) of a stationary frame element (15);
 wherein, in a position immediately before a locked position where said catch plate (17) rotates to reach a space disposed behind said socket portion (16), when said operating handle (18) is pushed back to fall into said concave portion (7) of said stationary casing (2), said first engaging projections (13) of said bearing sleeve portion (3) of said stationary casing (2) are engaged with said second engaging projections (14) of said control disk (10); and
 wherein, when said operating handle (8) is pulled forward and swung, said control disk (10) is moved rearward by a distance equal to a difference between said first distances (D1) and said second distance (D2) to have said first engaging projectings (13) disengaged from said second engaging projections (14) of said control disk (10).

said receiving hole (23).

2. A door locking handle assembly as claimed in claim 1, wherein:

said stationary casing (2) is provided with a lock unit (18);
 a cam plate (20) is fixedly mounted on a rotor (19) of said lock unit (18), said rotor (19) extending rearward from a rear surface of said stationary casing (2);
 a locking rod (21) is received in said stationary casing (2) so as to be extendible and retractable relative to said concave portion (7) of said stationary casing (2);
 a receiving hole (23) is provided in a leg portion (22) of said operating handle (8) so as to be engageable with and disengageable from a front end portion (21a) of said locking rod (21);
 a first drive projection (20a) is provided in said cam plate (20) and engaged with a base end portion (21b) of said locking rod (21) to move said locking rod (21) to a position where said front end portion (21a) engages with said receiving hole (23); and
 a second drive projection (20b) is provided in said cam plate (20) and engaged with said base end portion (21b) of said locking rod (21) to move said locking rod (21) to a position where said front end portion (21a) is disengaged from

FIG. 1

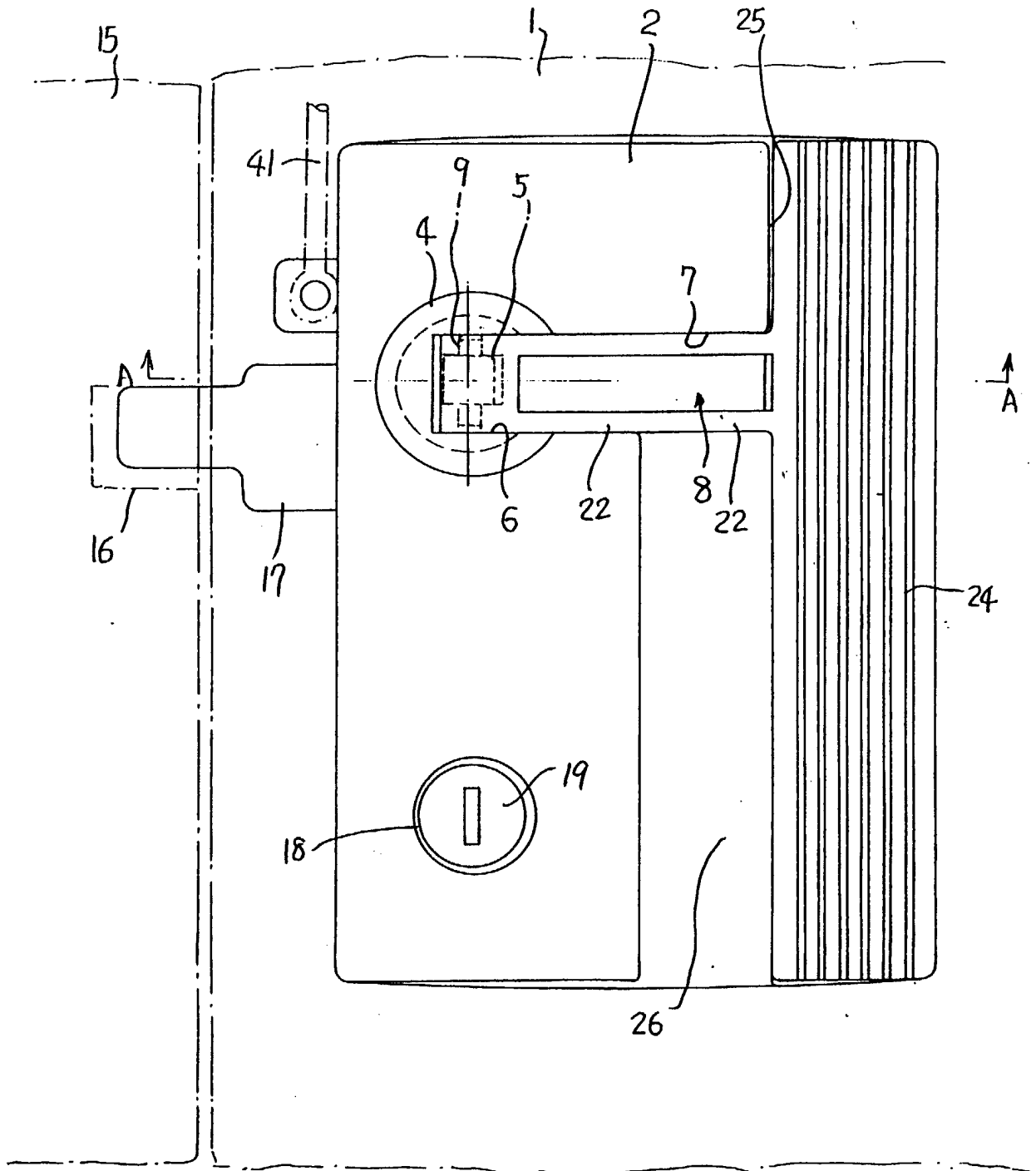


FIG. 2

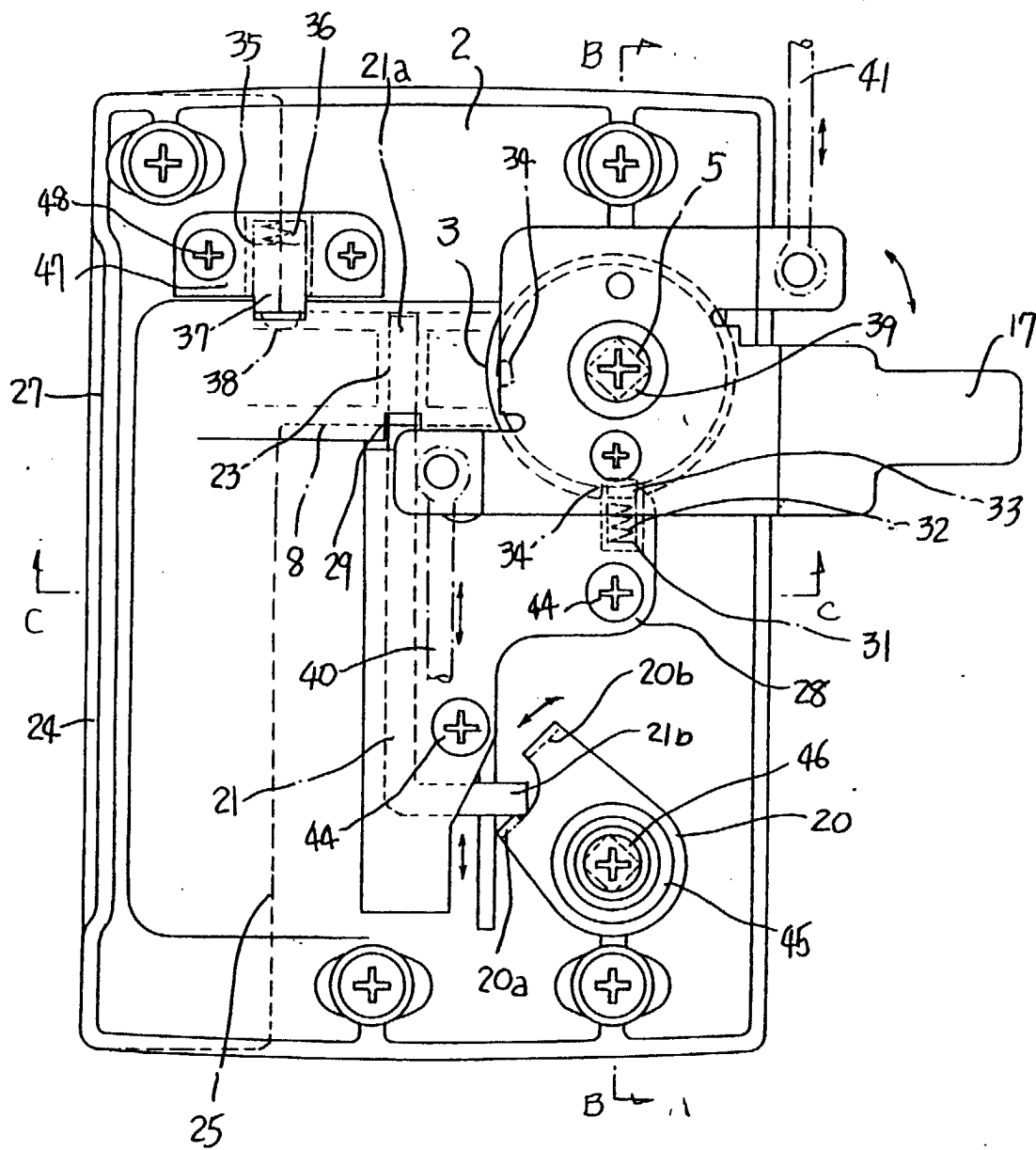


FIG. 3

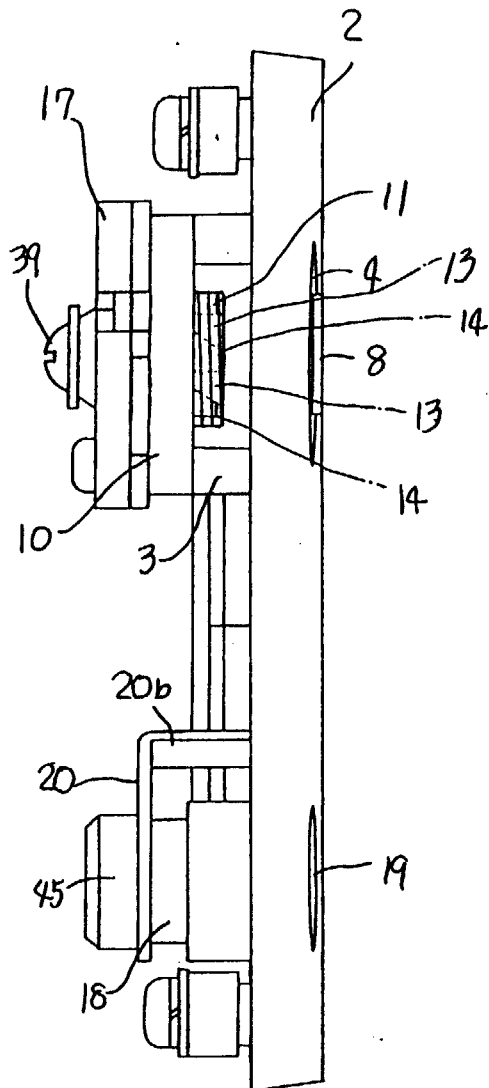


FIG. 4

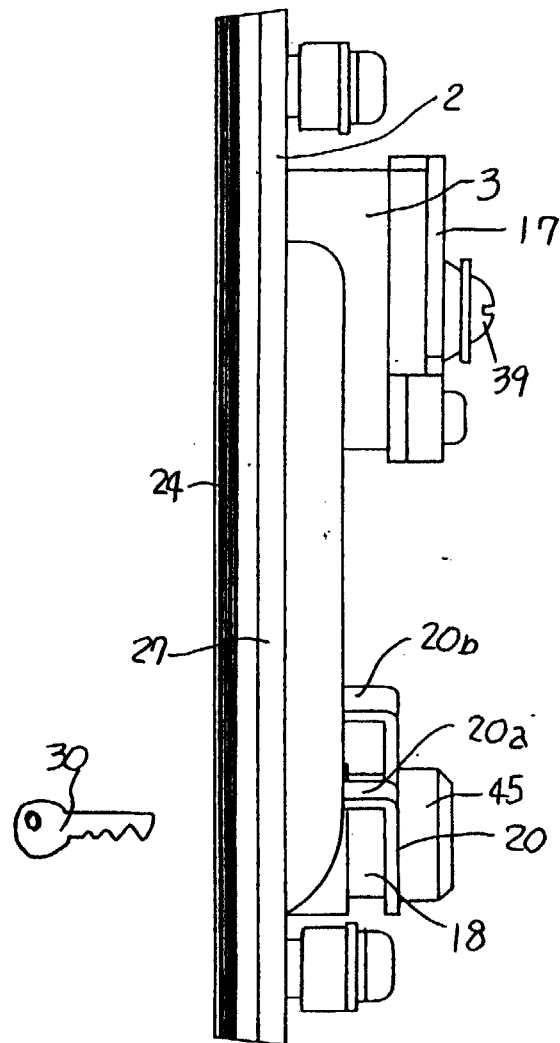


FIG. 5

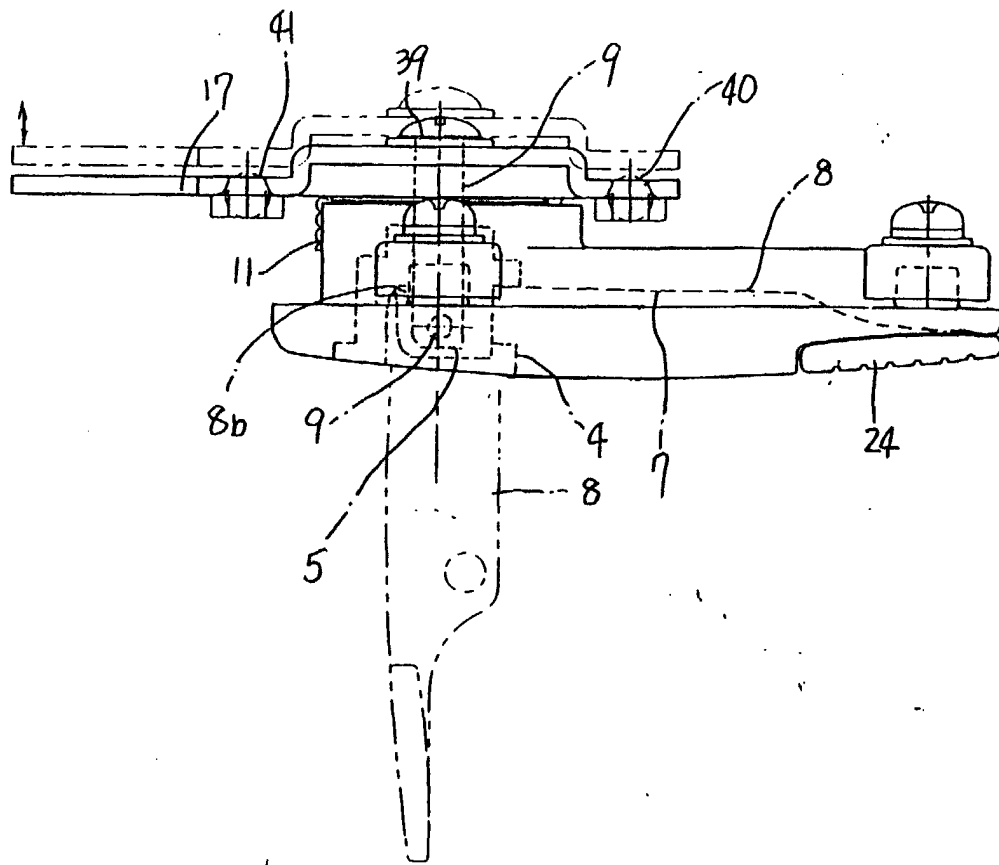


FIG. 6

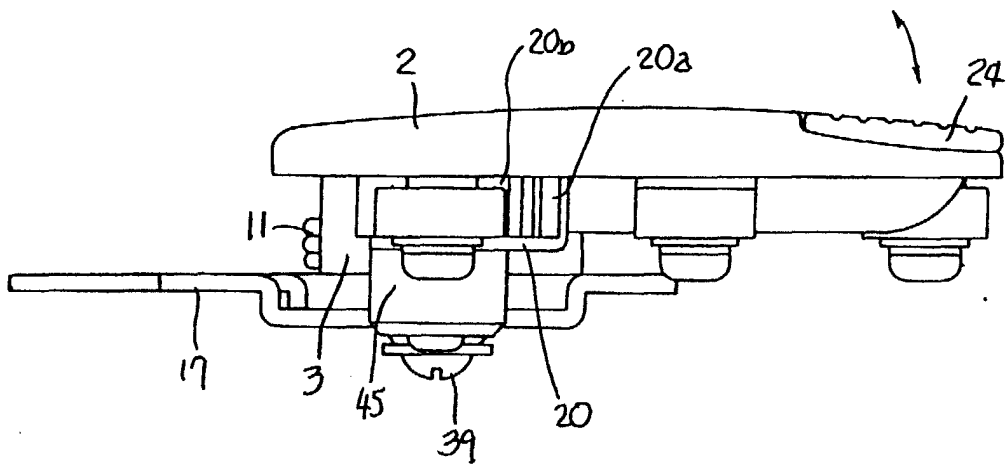


FIG. 7

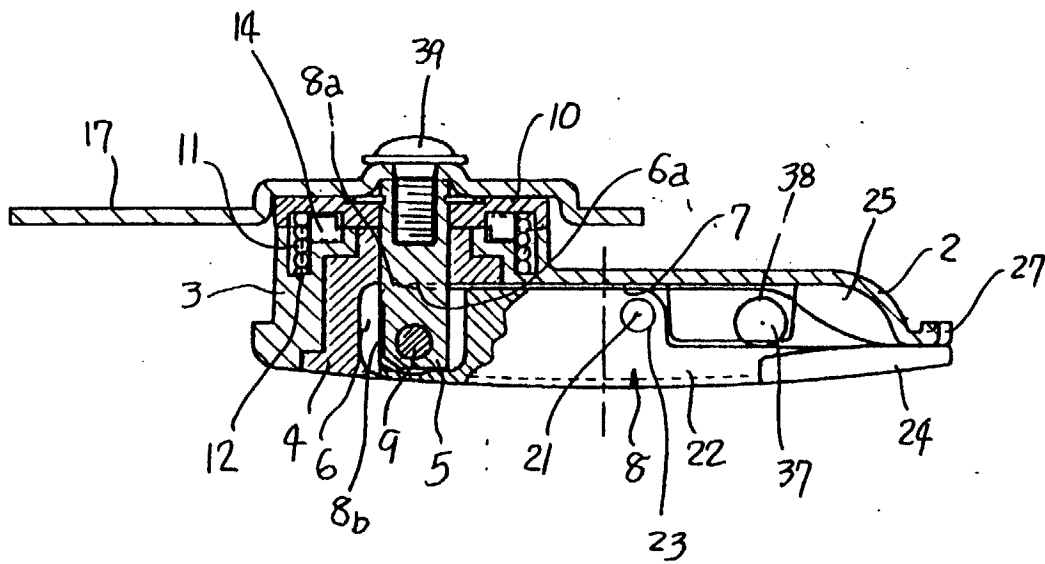


FIG. 8

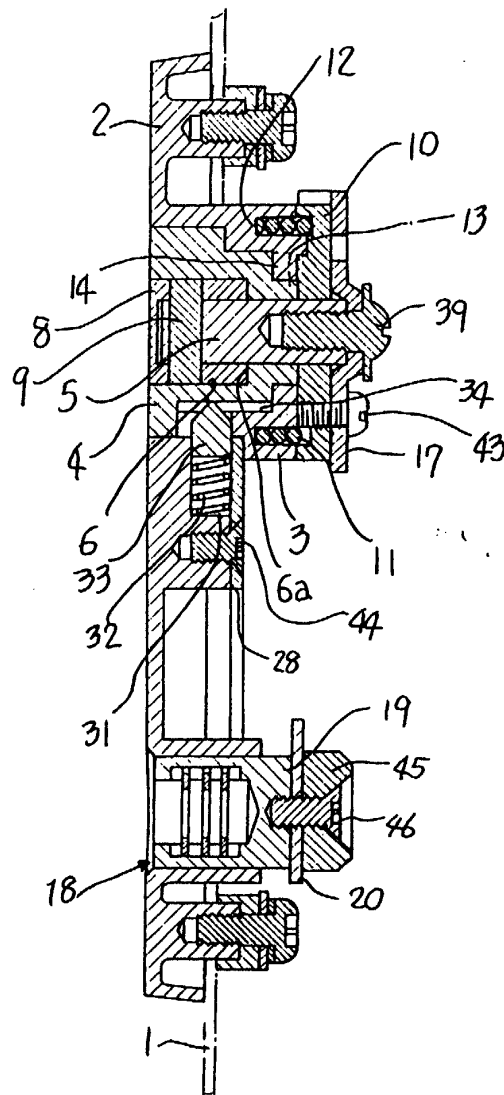


FIG. 9

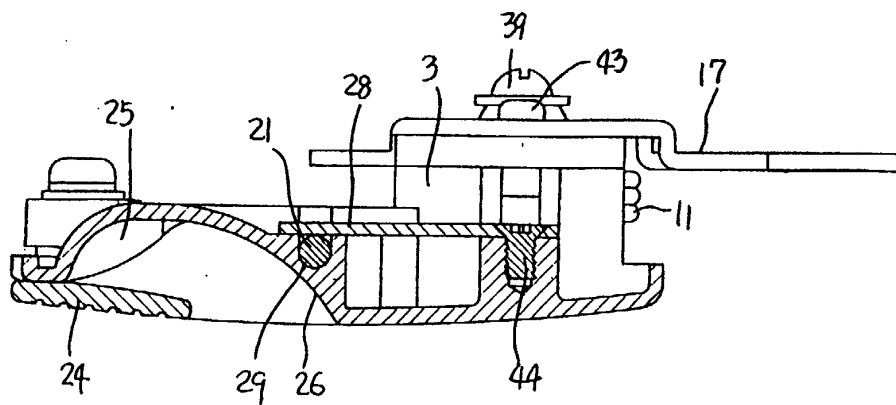


FIG. 10

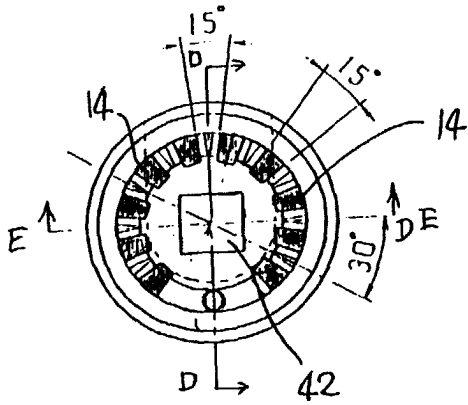


FIG. 11

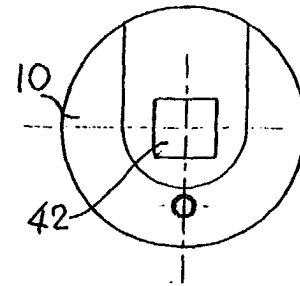


FIG. 12

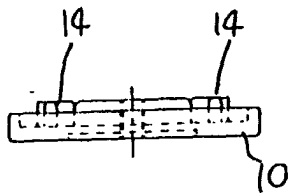


FIG. 13

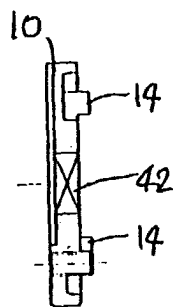


FIG. 14

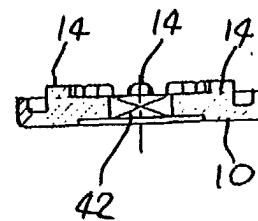


FIG. 15

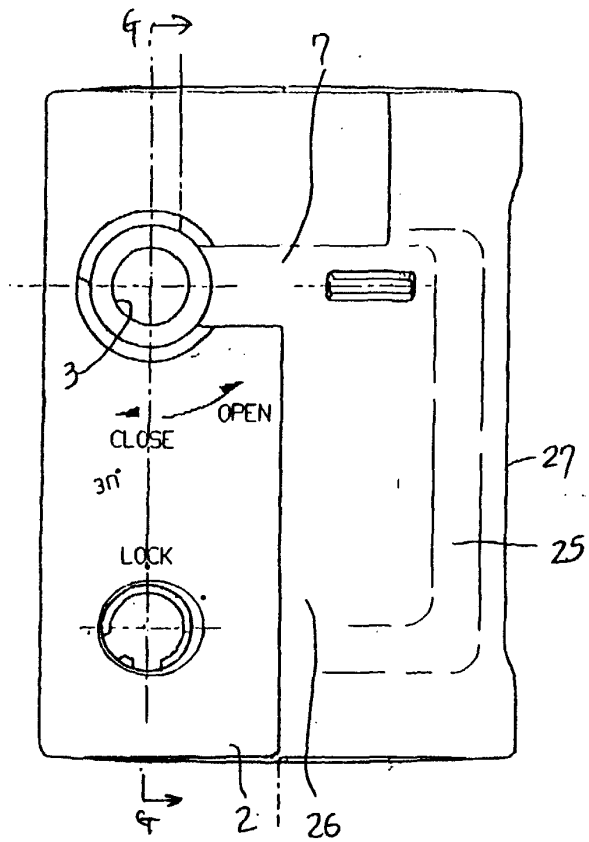


FIG. 16

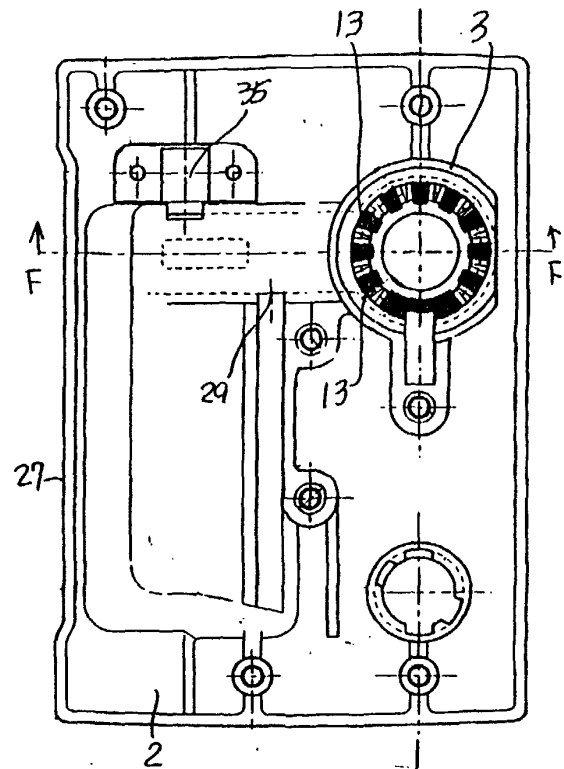


FIG. 18

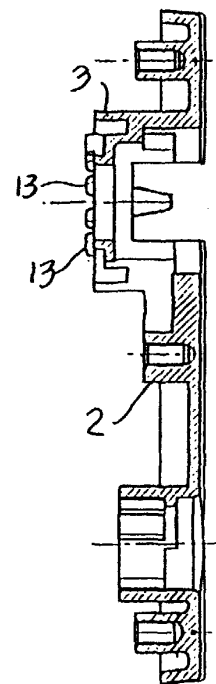
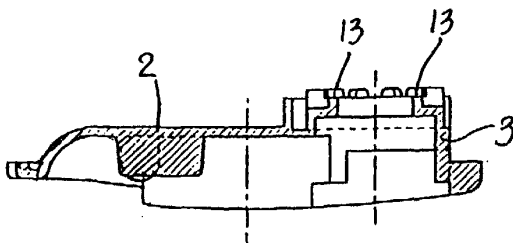


FIG. 17





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 30 6178

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			E05B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 March 2000	Examiner Pieracci, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

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The members are as contained in the European Patent Office EDP file on
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24-03-2000

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