

(19)



(11)

**EP 3 337 941 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:  
**14.08.2019 Bulletin 2019/33**

(21) Application number: **16757053.0**

(22) Date of filing: **19.08.2016**

(51) Int Cl.:  
**E05B 63/00<sup>(2006.01)</sup> E05B 63/10<sup>(2006.01)</sup>**

(86) International application number:  
**PCT/GB2016/052579**

(87) International publication number:  
**WO 2017/029520 (23.02.2017 Gazette 2017/08)**

(54) **DOOR LATCH INSTALLATION**

**TÜRVERRIEGELUNGSINSTALLATION**

**INSTALLATION DE VERROU DE PORTE**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**

(30) Priority: **20.08.2015 GB 201514818**

(43) Date of publication of application:  
**27.06.2018 Bulletin 2018/26**

(73) Proprietor: **Assa Abloy Limited**  
**West Midlands WV13 3PW (GB)**

(72) Inventor: **MONAGHAN, Daniel**  
**Willenhall**  
**West Midlands**  
**WV13 3PW (GB)**

(74) Representative: **Abel & Imray**  
**Westpoint Building**  
**James Street West**  
**Bath BA1 2DA (GB)**

(56) References cited:  
**US-A- 4 854 620 US-A- 5 769 472**  
**US-A1- 2004 245 788**

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## Description

**[0001]** The present invention relates to a door latch installation for personnel doors for domestic or other applications.

## BACKGROUND

**[0002]** Installation of door latches in the edges of door panels, and the associated handles on either side of the panel for operation of the latch, has evolved over time. A presently employed construction in some territories, for example in the United States of America, involves drilling an edge-hole in the edge of the door to receive a latch body, and a cross-drilling through the side of the door panel to intersect the edge-hole, on a centre line of the cross-drilling that is either 60 mm or 70 mm distance from the door edge at which the edge-hole opens. This distance (the backset) dictates the latch to be used, which latch has an operation aperture at one of these distances from a face plate of the latch, the face plate being intended to be flush with the door edge. The operation aperture is adapted to receive a handle spindle of a door handle, which is either in the form of a knob or a lever. Knob handles have handle spindles employing a large backset (57mm, 70mm or more), so as to give room for a user's hand to engage the handle without contact with a door jamb when the door is closed. Lever handles employ a latch with a small backset (45mm or 57mm), since the lever should not project near the centre of the door and the user's hand does not need to envelope the lever near the door jamb. Which back set is preferred is frequently a matter of choice.

**[0003]** In the United States, the diameter of the cross-drilling is typically 55mm. The handles are secured to each other by cross screws that pass through the body of the latch. The cross screws (passing through the body of the latch) serve to further secure the position of the latch where its body is otherwise unsupported in the cross-drilling (although the latch is to some extent also supported by the handle spindle in the operation aperture of the latch). More importantly, however, they secure the position of the handles with respect to the door.

**[0004]** The handles each comprise a rose base in which is disposed the lever or knob with at least some degree of rotation ability with respect to the rose base, so that the lever/knob can rotate the handle spindle for operating the door latch. Usually, the knob or lever is spring-biased by a spring mounted in the rose base to return the knob or lever to a neutral position. This is generally horizontal with lever handles, but is not usually relevant with knob handles. Since the door latch is operated by turning the knob or handle, there is a corresponding rotational moment imposed on the rose base, so that if the latter is not well secured it can, over time, come loose and rotate also, leading to potential movement of the handle neutral position. The rose base must be larger (in diameter) than the diameter of the cross drilling, so that

the edges of the facing rose bases on either side of the door panel can clamp the door panel when the cross screws are engaged between the two handles. The cross screws, on passing through apertures in the latch body, are retained by the latch body to prevent the rose bases from rotation.

**[0005]** US4850620 discloses a doorlatch system in accordance with the preamble of claim 1.

It is an object of the present invention to provide an arrangement whereby a smaller diameter rose base may be employed.

## SUMMARY OF THE INVENTION

**[0006]** The present invention provides a door latch system for installation in a door panel having a crossing-drilling and an edge-hole intersecting the cross-drilling, the door latch system comprising the preamble of claim 1, characterised in that said extension sleeves are C-shaped along their section whereby the diameter of the part of the handle to be received in the cross-drilling is defined by a boss centred on said screw holes into which said cross screws are adapted to be screwed.

**[0007]** A jig is frequently employed to cut two the edge-hole and intersecting cross-drilling in precisely the correct locations and a suitable jig is more fully described in our copending application filed contemporaneously herewith under the title "Door Latch Installation Jig" (and incorporated in its entirety by this reference thereto).

**[0008]** Thus, the extension sleeves support the cross screws and are parts of the rose bases so that the rose bases directly engage the adaptor. Engagement between the extension sleeve of the rose bases and the adaptor is optimally so close as to inhibit bending moments between the adaptor and extension sleeve in a direction of rotation of the rose base about said operation axis. The adaptor may have notches in its edge to receive said extension sleeves.

**[0009]** Given that the system must be designed to accommodate door panels of different thickness (doors are typically between 35 and 45 mm thick) the rose bases do not clamp against one another when the cross screws are tightened. Rather, they are pulled together against opposite sides of the door panel. That is adequate to resist tension on the rose bases but if there is rotation pressure on the rose bases, the screw heads in the screw holes can relatively easily deform the rose bases and are not well positioned to resist such rotation. However, the fixed extension sleeves are so well disposed and hence are desirable.

**[0010]** However, by rendering the extension sleeves C-shaped in section, they can, at the same time, be relatively large and on a relatively large diameter, and yet enable the internal parts of the handle system to fit into a 40 to 50 mm cross-drilling. Certainly in the United Kingdom and in other countries, rose bases on door handles tend to be no more than about 50 or 60 mm in diameter, and typically (but non-exhaustively) about 50 mm (many

oblong rose bases can be less than 50 mm wide). To render the present arrangement useable in most situations, therefore, the diameter of a cross-drilling should be less 50 mm, say 45 mm. Thus if the contents of the latch system adapted to be within the cross drilling can be restricted to about 43 mm in diameter, this will fit in 44 mm cross-drillings, which can therefore accommodate the present system with all rose bases generally employed for door handles in the United Kingdom and many other countries.

**[0011]** In one embodiment, the screw holes of each rose base are adapted to receive the head of a screw which is freely rotatable in the screw holes and said boss is a separate sleeve, threaded from each end, to receive at each end one of said cross screws, said boss being received in a close sliding fit within each extension sleeve. Reception of the boss in each extension sleeve may be such a close sliding fit so as to inhibit bending moments between the boss and extension sleeve in a direction of rotation of the rose base about said operation axis.

**[0012]** This is the case for when the system is fitted to the thickest dimension of door for which the system is designed. At the same time, the extension sleeves and the boss are short enough not to contact one another when the system is fitted to the thinnest dimension of door for which the system is designed.

**[0013]** In another embodiment, the boss may be an integral part of one rose base and be integrated with the extension sleeve of said rose base. In that event, there is only one cross screw that is received in said integral boss/extension sleeve. Indeed, one rose base may have two integral boss/extension sleeves while the other has only screw holes for free retention of cross screws. Equally feasible, however, is each rose base having one integral boss/extension sleeve and one free screw hole, whereby the cross screw in the free screw hole of one rose base is arranged to be received in the integral boss/extension sleeve of the other rose base. The extension sleeve is present with the free screw hole.

**[0014]** In one embodiment, the screw holes are set to either side of a flange around a lever or knob reception bore of the rose base, said flange having a sufficiently large diameter that a cover plate with a corresponding central opening can be maneuvered around a lever after installation of the system in a door to cover heads of the cross screws.

**[0015]** In another embodiment, the latch body has a privacy button operable by a button on one rose base whereby the operation aperture may be rendered unrotatable by the handle or ineffective on rotation of the handle to operate the latch.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0016]** Embodiments of the invention are further described hereinafter with reference to the accompanying drawings, in which:

Figure 1 is a perspective exploded view of a latch system in accordance with an aspect of the present invention;

5 Figures 2a to d are respectively a plan view, perspective view, end view and side view of a latch system in accordance with an aspect of the present invention; and

10 Figure 3 is a section of the latch system shown in Figures 1 and 2, taken on the line III-III in Figure 2a.

### DETAILED DESCRIPTION

15 **[0017]** Figure 1 shows a latch system 1 in accordance with one embodiment of the present invention. A latch 10 is known per se and comprises a latch body 12 and an end plate 14. The end plate 14 is round and has a cylindrical section 16 adapted to be received in an edge bore (not shown) in the edge of a door panel (also not shown). The section 16 has knurls 18 adapted to be a press fit in the edge bore if that is appropriately sized. Typically, the section 16 and the edge bore have a diameter of about 25 mm. The end of the latch 10 has the usual latch member 20, adapted to engage a keeper in a door jamb and retain the door closed in known fashion. The latch body 12 has a longitudinal axis X and an operation aperture 22, which is rotatable in the body about an operation axis A which is orthogonal the longitudinal axis X. The operation aperture 22 has a backset B, being the separation of the axis X from the end plate 14. This is typically either 45 mm or 57mm, depending on the handle (not shown) to be employed with the door.

20 **[0018]** In a door with an edge bore, a cross drilling (not shown in Figure 1 but shown at 50 in Figure 3, in a door panel 52), is provided whereby the axis A of operation aperture 22 is arranged to be coincident with the cross-drilling. In the cross drilling 50, an adaptor 40 is first fitted in a close sliding fit in the cross drilling. It has a latch bore 42 arranged coincident with the latch axis X and with a cross section to receive the latch body (in this case substantially rectangular) when the latch is inserted in the edge bore. The adaptor also has a spindle hole 44 arranged coincident with the latch axis A. The bore 42 and the fitting of the adaptor in the cross drilling support the latch body in the cross-drilling, the support is against vertical movement and against rotation about the X axis. At the same time, the fitting of the latch in the edge bore supports the adaptor and prevents it from rotating about the A axis.

25 **[0019]** When the latch and adaptor are in place, the operation aperture 22 is adapted to receive in a sliding fit a square-section handle spindle 30, which has a longitudinal spindle axis Y, whereby, when assembled, operation axis A and spindle axis Y are coincident.

30 **[0020]** Two rose bases 60A,B are provided. As shown more clearly in Figure 3 each rose base mounts a handle knob 62A or a handle lever 62B. The form of the handle

lever or knob are incidental to the present invention and are shown only in dotted lines in Figure 3, but, whatever their form, they are mounted for (at least limited) rotation in the rose base 60A,B, through a rotary joint 64 comprising a cylindrical stem and flange 66, washer 69 and circlip 70, passing through a circular aperture 74 in the rose base 60A,B. A spring 76, acting between the knob/lever flange/stem 66 and the rose base 60A,B, can be arranged to bias the knob/lever 62A,B to a stop position. The knob/lever 62A,B has a drive aperture 63A,B to receive the ends of the handle spindle 30. The handle spindle passes freely through the spindle hole and through the operation aperture 22, whereby turning of the knob/lever 62A,B results in rotation about the axis Y of the spindle and operation of the operation aperture 22 to withdraw into the latch body 12 the latch member 20.

**[0021]** The rose bases 60A,B each have screw holes 68 to receive two screws 80. The screw holes are diametrically opposed. Their heads 81 are covered by a cap 82 having a central aperture 84. The central aperture needs to be as large as possible because it is intended to fit over the lever 62B. The cap may be screwed onto thread 86 on the rose base. The size of the aperture 84 needs to be large because it limits the design and shape of lever 62B that the latch system can accommodate, unless, that is, it is not required that the screw heads 81 be hidden, which, largely inevitably, must be left exposed where a knob 62A is employed as that will surely not pass through the aperture 84. As a result, the screws 80 need to be on as large a diameter as possible, and yet there is the restriction of the diameter of the cross drilling 50 if the rose base 60A,B is to cover the drilling completely.

**[0022]** In addition there is the requirement to restrain the rose bases from rotation under the effect of continual turning of the knob/lever 62A,B. For this, there are integral extension sleeves 90 that extend from the rose bases 60A,B around the screw holes 68 and are adapted to engage U-shaped slots 92 in the edges of the adaptor 40. The adaptor 40 is conveniently an injection-moulded plastics component. Internally, the extension sleeves are a close sliding fit over a boss 94 that is internally threaded at both ends and receives the screws 80. When they are tightened, the rose bases clamp the door panel around the cross-drilling 50. It is evident that the thickness T of the door panel is a variable parameter and the lengths of the sleeve extensions are such that an allowance L is provided so that the latch arrangement can accommodate door panels of thickness between (T-L) and T, which typically will be in the order of 35-45mm. The similar dimension L is also left between the screws 80, with sufficient thread provided in the boss to accommodate the thickness variation. The upper limit T of the allowable door panel thickness is of course dictated by the overlap between the screws 80 and the boss 94. However, in Figure 3, the boss 94 is screwed entirely onto the left-hand screw (in the drawing) and this does not leave more than a few turns of the thread for the right screw, or indeed much overlap between the boss and the right-hand ex-

tension sleeve 90. The arrangement could accommodate a wider door thickness, with as much overlap between the threads of the boss and right-hand screw, and between the right-hand extension sleeve and the boss, if the boss was not screwed tightly onto the left-hand screw. However, then, an important interengagement that does limit the door thickness, and is not improved by repositioning of the boss 94, is between the extension sleeves 90 and the adaptor slots 92. These desirably have a significant overlap so that there is less opportunity for lateral displacement between them.

**[0023]** It is apparent that an alternative arrangement could be as shown roughly crosshatched in Figure 3 at 80', where the left-hand screw, sleeve extension and boss are all integrated as part of the rose base 60A. Indeed, both screws, sleeve extensions and bosses on one rose base 60A could be integrated so that, on that rose base, no cap 82 would be required, since no screw heads 81 would be evident. However, this would involve different rose bases 60A,B, which might be undesirable and that could be avoided by having each rose base have one screw, sleeve extension and boss integrated while the other side of the rose base is as currently shown in Figure 3 (that is with screw hole 68, separate screw 80 and open sleeve extension 90).

**[0024]** Finally, given the desire to have the screws 80 on the maximum dimension possible, the extension sleeves 90 are C-shaped in section, with the open part 90C facing away from the axis Y, whereby the maximum diameter D of the internal parts of the latch system 1 (ie, those parts within the cross-drilling 50) is defined by the position of the screws 80 and the thickness of the boss 94. One reason why the boss 94 may be provided as a separate component (as shown in the drawings), and not be integrated with the rose base 60A, is so that it can be provided in a relatively hard steel, and thereby be rendered thin, whereas the material of the rose bases 60A, B may desirably be of softer less expensive material, such as aluminum or brass. In one embodiment, the dimension D is 43 mm, with the diameter of the cross drilling being 45 mm and the diameter (or minimum dimension) of the rose bases being 49 mm so that, with the cap 82 attached the final diameter is 50 mm.

**[0025]** One benefit of the arrangement whereby the screws 80 and accompanying components are disposed above and below the latch body 12 is that existing latches 10 can be employed. One arrangement has a privacy button 100 that can affect operation of the latch 10. It may be actuated by pressing or turning and serve either to lock the operation aperture 22 (so that the knob/lever 62A,B cannot be turned) or to render its rotation disconnected from the latch member 20 so that that remains in the closed position despite turning of the knob/lever 62A, B. Where the privacy button is to be employed, one rose base 60A,B is provided with an actuator (not shown) to actuate the button 100. This is disposed at right angles (around axis Y) in the rose base and a slot 101 is provided in the adaptor to accommodate it.

[0026] Any of the above-described features can be used in any suitable combination with any of the other above-described features, and the present invention is not necessarily limited to the specifically described combinations.

[0027] Throughout the description and claims of this specification, the words "comprise" and "contain" and variations of them mean "including but not limited to", and they are not intended to (and do not) exclude other moieties, additives, components, integers or steps. Throughout the description and claims of this specification, the singular encompasses the plural unless the context otherwise requires. In particular, where the indefinite article is used, the specification is to be understood as contemplating plurality as well as singularity, unless the context requires otherwise.

[0028] Features, integers, characteristics, compounds, chemical moieties or groups described in conjunction with a particular aspect, embodiment or example of the invention are to be understood to be applicable to any other aspect, embodiment or example described herein unless incompatible therewith. All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive. The invention is not restricted to the details of any foregoing embodiments, but is defined by the appended claims.

## Claims

1. A door latch system (10) for installation in a door panel (52) having a crossing-drilling (50) and an edge-hole intersecting the cross-drilling, the door latch system comprising:

- a. a door latch (12) having a face plate (14) and a body (16), the body having a body axis (X) and including an operation aperture (22) at a desired backset (B) from the face plate, the operation aperture being arranged for rotation in the body about an operation axis (A) orthogonal to said body axis;
- b. an adaptor (40) to receive the door latch body;
- c. two handles (62A,B), each comprising a rose base (60A,B) and lever or knob rotatably disposed in the rose base; and
- d. a handle spindle (30) having a longitudinal axis, wherein:

the door latch system is adapted for installation in the door panel by:

- i) the latch body being configured to be received in the edge-hole with the face plate substantially

flush with the edge of the door;  
 ii) the adaptor being configured to fit with a close sliding fit in a door cross-drilling of between 40 and 50 mm, with a passage (42) to receive the latch body so as to support the latch body in the adaptor in the cross-drilling and so as to prevent rotation of the adaptor with respect to the latch body about said operation axis (A); and  
 iii) the operation aperture (22) and handle spindle (30) being configured so that the handle spindle passes through the operation aperture, whereby said operation axis and longitudinal axis are coincident, and is received in each handle or knob (62A,B), whereby rotation of the handle or knob results in rotation of the operation aperture about said axes and actuation of the latch, and wherein:

cross screws (80) are provided to clamp the rose bases together, each rose base comprising screw holes (68) disposed diametrically opposite one another on either side of said lever or knob, and so that said cross screws can be received through said cross-drilling (50) around the latch body (12) and through the adaptor (40), an extension sleeve (90) of the rose bases around each screw hole supporting said cross screws (80) and engaging the adaptor (92) to locate the rose bases rotationally around said axes with respect to the adaptor,  
**characterised in that** said extension sleeves (90) are C-shaped (90C) along their section whereby the diameter of the part of the handle to be received in the cross-drilling is defined by a boss (94) centred on said screw holes into which said cross screws are adapted to be screwed.

- 2. A door latch system as claimed in claim 1, wherein the screw holes (68) of each rose base are adapted to receive the head (81) of a screw which is freely rotatable in the screw holes and said boss (94) is a separate sleeve, threaded from each end, to receive at each end one of said cross screws (68), said boss being received in a close sliding fit within each extension sleeve (90).
- 3. A door latch system as claimed in claim 2, wherein reception of the boss (94) in each extension sleeve (90) is a close sliding fit to inhibit bending moments between the boss and extension sleeve in a direction of rotation of the rose base about said operation axis (A).
- 4. A door latch system as claimed in claim 1, 2 or 3, wherein the screw holes (68) are set to either side of a flange around a lever or knob reception bore

(74) of the rose base (60A,B), said flange having a sufficiently large diameter that a cover cap (82) with a corresponding central opening (84) can be manoeuvred around a lever after installation of the system in a door to cover the heads (81) of the cross screws (80).

- 5 5. A door latch system as claimed in any preceding claim, wherein engagement between the extension sleeve (90) of the rose bases (60A,B) and the adaptor (40) is so close to inhibit bending moments between the adaptor and extension sleeve in a direction of rotation of the rose base about said operation axis. 10
6. A door latch system as claimed in claim 5, wherein the adaptor has notches (92) in its edge to receive said extension sleeves. 15
7. A door latch system as claimed in any preceding claim, wherein the latch body (12) has a privacy button (100) operable by a button on one rose base whereby the operation aperture (22) may be rendered unrotatable by the handle or ineffective on rotation of the handle to operate the latch (10). 20

#### Patentansprüche

1. Türverriegelungssystem (10) zum Einbau in einem Türblatt (52), das eine Querbohrung (50) und ein die Querbohrung schneidendes Kantenloch besitzt, wobei das Türverriegelungssystem umfasst:
  - a. einen Türriegel (12) mit einer Stirnplatte (14) und einem Korpus (16), wobei der Korpus eine Korpusachse (X) besitzt und eine Betätigungsöffnung (22) bei einem gewünschten Dornmaß (B) bezüglich der Stirnplatte aufweist, wobei die Betätigungsöffnung zur Drehung in dem Korpus um eine Betätigungsachse (A) senkrecht zu der Korpusachse angeordnet ist; 35
  - b. einen Adapter (40) für die Aufnahme des Türriegelkorpus; 40
  - c. zwei Griffe (62A, B), die jeweils eine Rosettenbasis (60A, B) und einen in der Rosettenbasis drehbar angeordneten Hebel oder Knopf aufweisen; und 45
  - d. ein Drückerdorn (30) mit einer Längsachse, wobei: 50

das Türverriegelungssystem zum Einbau in das Türblatt dadurch angepasst ist, dass:

- i) der Riegelkorpus derart konfiguriert ist, dass er in dem Kantenloch so aufgenommen wird, dass die Stirnplatte mit der Kante der Tür im Wesentlichen bündig ist; 55
- ii) der Adapter derart konfiguriert ist, dass er in

eine enge Gleitpassung in einer Türquerbohrung im Bereich von 40 bis 50 mm passt mit einem Durchlass (42) zur Aufnahme des Riegelkorpus, so dass der Riegelkorpus in dem Adapter in der Querbohrung abgestützt wird, und so, dass eine Drehung des Adapters in Bezug auf den Riegelkorpus um die Betätigungsachse (A) verhindert wird; und  
 iii) die Betätigungsöffnung (22) und der Drückerdorn (30) derart konfiguriert sind, dass der Drückerdorn durch die Betätigungsöffnung verläuft, wobei die Betätigungsachse und die Längsachse zusammenfallen, und in jedem Griff oder Knopf (62A, B) aufgenommen ist, wobei die Drehung des Griffs oder Knopfes eine Drehung der Betätigungsöffnung um die genannten Achsen und eine Betätigung des Riegels zur Folge hat, und wobei:

Kreuzschrauben (80) vorgesehen sind, um die Rosettenbasen aneinander zu befestigen, wobei jede Rosettenbasis Schraubenlöcher (68) aufweist, die auf jeder Seite des Hebels oder Knopfes diametral gegenüberliegend und so angeordnet sind, dass die Kreuzschrauben durch die Querbohrung (50) um den Riegelkorpus (12) und durch den Adapter (40) aufgenommen werden können, wobei eine Verlängerungshülse (90) der Rosettenbasis um jedes Schraubenloch die Kreuzschrauben (80) trägt und mit dem Adapter (92) in Eingriff ist, um die Rosettenbasen drehbar um die Achsen in Bezug auf den Adapter anzuordnen, **dadurch gekennzeichnet, dass** die Verlängerungshülsen (90) längs ihres Querschnitts C-förmig (90C) sind, wobei der Durchmesser des Teils des Griffs, der in der Querbohrung aufgenommen werden soll, durch eine Nabe (94) festgelegt ist, die auf die Schraubenlöcher zentriert ist, in die die Kreuzschrauben einschraubbar sind.

2. Türverriegelungssystem nach Anspruch 1, wobei die Schraubenlöcher (68) jeder Rosettenbasis so beschaffen sind, dass sie den Kopf (81) einer Schraube aufnehmen, die in den Schraubenlöchern frei drehbar ist, und die Nabe (94) eine getrennte Hülse ist, die an jedem Ende ein Gewinde aufweist, um an jedem Ende eine der Kreuzschrauben (68) aufzunehmen, wobei die Nabe in einer engen Gleitpassung in jeder Verlängerungshülse (90) aufgenommen ist. 50
3. Türverriegelungssystem nach Anspruch 2, wobei die Aufnahme der Nabe (94) in jeder Verlängerungshülse (90) eine enge Gleitpassung ist, um Biegemomente zwischen der Nabe und der Verlängerungs- 55

hülse in einer Drehrichtung der Rosettenbasis um die Betätigungsachse (A) zu verhindern.

4. Türverriegelungssystem nach Anspruch 1, 2 oder 3, wobei die Schraubenlöcher (68) auf jeder Seite eines Flansches um eine Hebel- oder Knopfaufnahmebohrung (74) der Rosettenbasis (60A, B) angeordnet sind, wobei der Flansch einen ausreichend großen Durchmesser besitzt, damit eine Abdeckkappe (82) mit einer entsprechenden Mittelöffnung (84) um einen Hebel nach dem Einbau des Systems in einer Tür bewegbar ist, um die Köpfe (81) der Kreuzschrauben (80) abzudecken. 5
5. Türverriegelungssystem nach einem vorhergehenden Anspruch, wobei der Eingriff zwischen der Verlängerungshülse (90) der Rosettenbasen (60A, B) und dem Adapter (40) so eng ist, dass Biegemomente zwischen dem Adapter und der Verlängerungshülse in einer Drehrichtung der Rosettenbasis um ihre Betätigungsachse verhindert werden. 10 20
6. Türverriegelungssystem nach Anspruch 5, wobei der Adapter in seinem Rand Aussparungen (92) aufweist, um die Verlängerungshülsen aufzunehmen. 25
7. Türverriegelungssystem nach einem vorhergehenden Anspruch, wobei der Riegelkorpus (12) einen Privatbereichknopf (100) besitzt, der durch einen Knopf auf einer Rosettenbasis betätigbar ist, wodurch die Betätigungsöffnung (22) bei einer Drehung des Griffs zum Betätigen des Riegels (10) undrehbar durch den Griff oder wirkungslos bei Drehung gemacht werden kann. 30 35

## Revendications

1. Système de verrou de porte (10) destiné à être installé dans un panneau de porte (52) présentant un perçage transversal (50) et un trou de bord coupant le perçage transversal, le système de verrou de porte comprenant : 40
  - a. un verrou de porte (12) présentant une plaque avant (14) et un corps (16), le corps présentant un axe de corps (X) et comprenant une ouverture opérationnelle (22) située à une distance de recul souhaitée (B) à partir de la plaque avant, l'ouverture opérationnelle étant agencée pour tourner dans le corps autour d'un axe opérationnel (A) orthogonal audit axe de corps ; 45
  - b. un adaptateur (40) destiné à recevoir le corps de verrou de porte ; 50
  - c. deux poignées (62A, B), chacune d'elles comprenant une base de rosette (60A, B) et un levier ou un bouton disposé de manière rotative dans la base de rosette ; et 55

d. une tige de poignée (30) présentant un axe longitudinal, où :

le système de verrou de porte est adapté pour être installé dans le panneau de porte de la façon suivante :

- i) le corps de verrou est configuré pour être reçu dans le trou de bord, la plaque avant affleurant sensiblement le bord de la porte ;
- ii) l'adaptateur est configuré pour s'ajuster avec un ajustement coulissant serré dans un perçage transversal de porte compris entre 40 et 50 mm, avec un passage (42) destiné à recevoir le corps de verrou afin de supporter le corps de verrou dans l'adaptateur dans le perçage transversal, et afin d'empêcher une rotation de l'adaptateur par rapport au corps de verrou autour dudit axe opérationnel (A) ; et
- iii) l'ouverture opérationnelle (22) et la tige de poignée (30) sont configurées de telle sorte que la tige de poignée passe à travers l'ouverture opérationnelle, grâce à quoi ledit axe opérationnel et l'axe longitudinal coïncident, et soit reçue dans chaque poignée ou bouton (62A, B), grâce à quoi une rotation de la poignée ou du bouton se traduit par une rotation de l'ouverture opérationnelle autour desdits axes et par l'actionnement du verrou, et où :

des vis transversales (80) sont prévues pour serrer ensemble les bases de rosette, chaque base de rosette comprenant des trous de vis (68) disposés diamétralement opposés les uns par rapport aux autres des deux côtés dudit levier ou dudit bouton, et de telle sorte que lesdites vis transversales puissent être reçues à travers ledit perçage transversal (50) autour du corps de verrou (12) et à travers l'adaptateur (40), un manchon d'extension (90) des bases de rosette autour de chaque trou de vis, supportant lesdites vis transversales (80), et venant en prise avec l'adaptateur (92) pour localiser les bases de rosette en rotation autour desdits axes par rapport à l'adaptateur, **caractérisé en ce que** lesdits manchons d'extension (90) sont en forme de C (90C) le long de leur section, grâce à quoi le diamètre de la partie de la poignée à recevoir dans le perçage transversal est défini par un bossage (94) centré sur lesdits trous de vis dans lesquels lesdites vis transversales sont adaptées pour être vissées.

2. Système de verrou de porte selon la revendication 1, où les trous de vis (68) de chaque base de rosette sont adaptés pour recevoir la tête (81) d'une vis qui

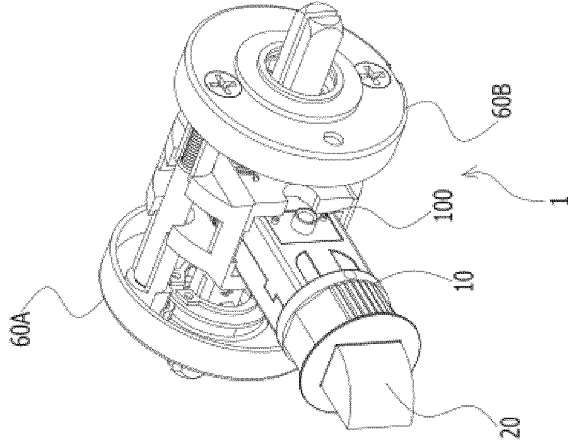
peut tourner librement dans les trous de vis, ledit bossage (94) est un manchon distinct, fileté à partir de chaque extrémité, pour recevoir à chaque extrémité l'une desdites vis transversales (68), ledit bossage étant reçu dans un ajustement coulissant serré dans chaque manchon d'extension (90). 5

3. Système de verrou de porte selon la revendication 2, où la réception du bossage (94) dans chaque manchon d'extension (90) est un ajustement coulissant serré pour empêcher des moments de flexion entre le bossage et le manchon d'extension dans une direction de rotation de la base de rosette autour dudit axe opérationnel (A). 10  
15
4. Système de verrou de porte selon l'une quelconque des revendications 1 à 3, où les trous de vis (68) sont placés d'un côté ou de l'autre d'une bride autour d'un alésage de réception de levier ou de bouton (74) de la base de rosette (60A, B), ladite bride présentant un diamètre suffisamment grand pour qu'un chapeau de couverture (82) avec une ouverture centrale correspondante (84), puisse être manoeuvré autour d'un levier après l'installation du système dans une porte pour couvrir les têtes (81) des vis transversales (80). 20  
25
5. Système de verrou de porte selon l'une quelconque des revendications précédentes, où la mise en prise entre le manchon d'extension (90) des bases de rosette (60A, B) et l'adaptateur, (40) est serrée pour empêcher des moments de flexion entre l'adaptateur et le manchon d'extension dans une direction de rotation de la base de rosette autour dudit axe opérationnel. 30  
35
6. Système de verrou de porte selon la revendication 5, où l'adaptateur présente des encoches (92) dans son bord pour recevoir lesdits manchons d'extension. 40
7. Système de verrou de porte selon l'une quelconque des revendications précédentes, où le corps de verrou (12) présente un bouton d'intimité (100) opérationnel par un bouton sur une base de rosette, grâce à quoi l'ouverture opérationnelle (22) ne peut pas être tournée par la poignée, ou la rotation de la poignée est rendue inefficace pour actionner le verrou (10). 45  
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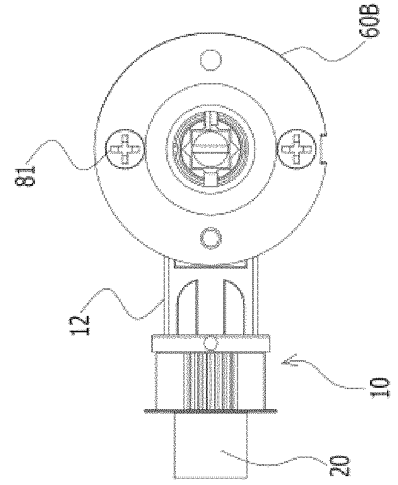
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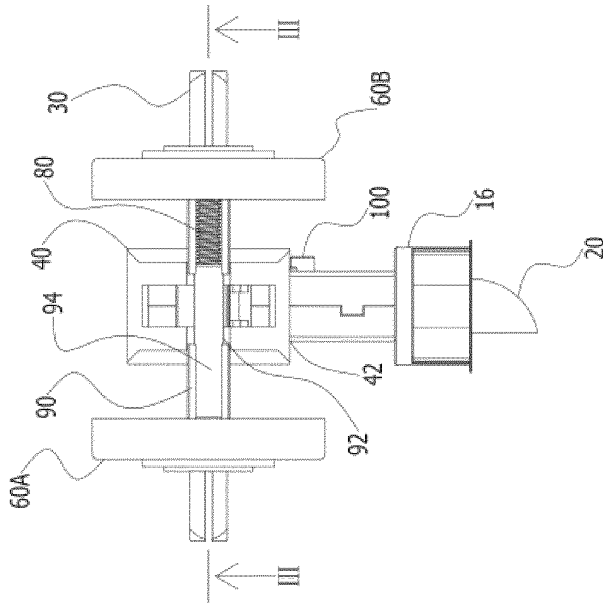
**FIGURE 2B**



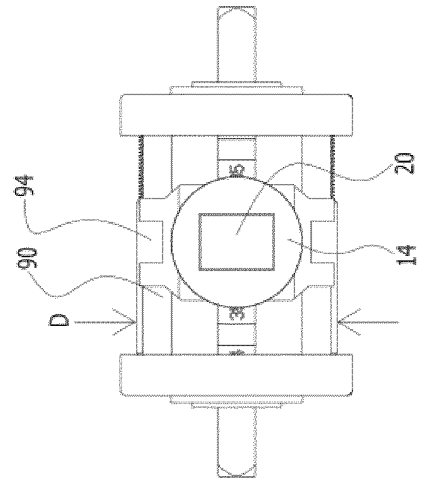
**FIGURE 2D**

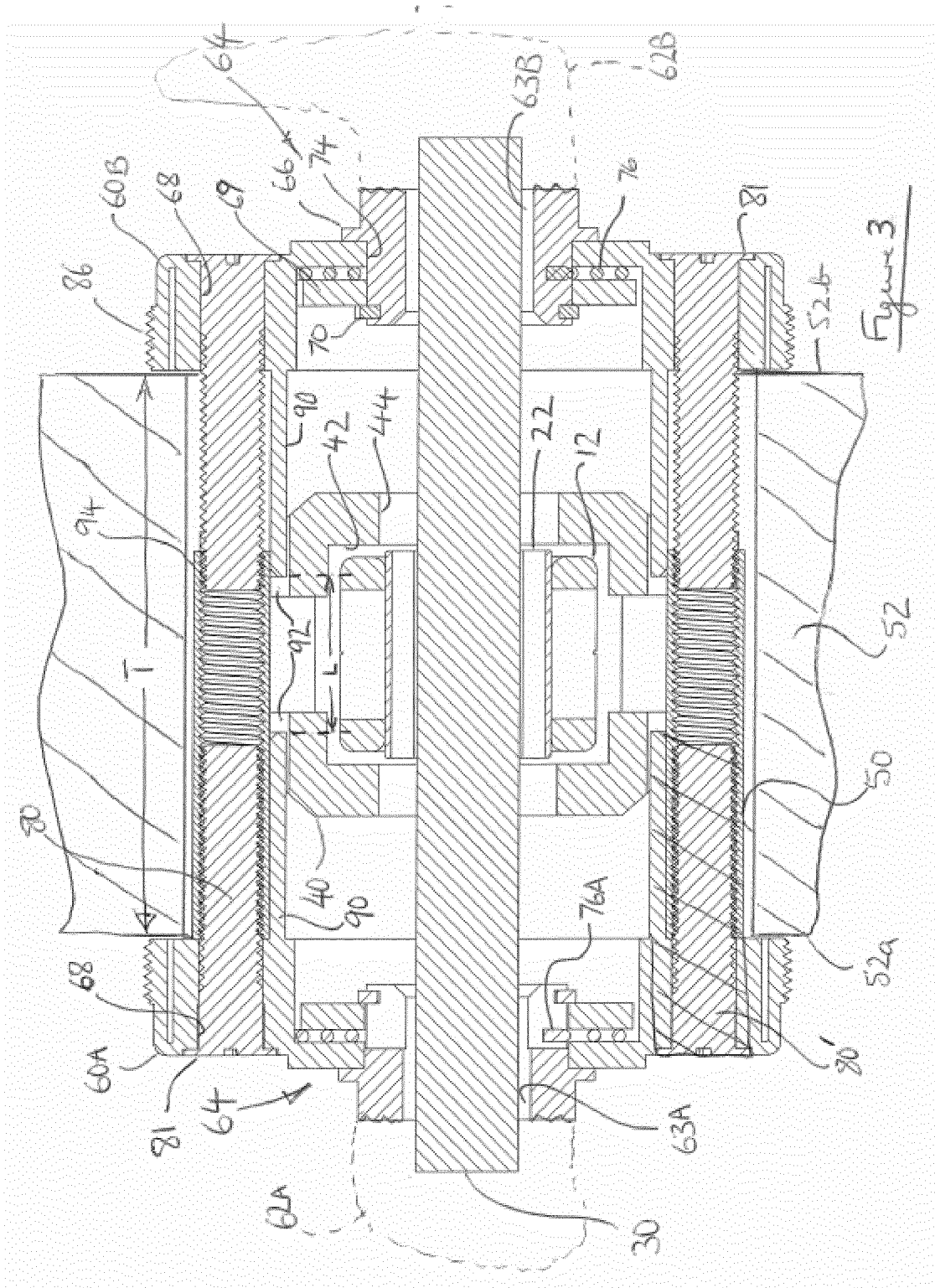


**FIGURE 2A**



**FIGURE 2C**





**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- US 4850620 A [0005]