United States Patent

Zawadzki

[15] **3,663,047**

[45] **May 16, 1972**

[54] RIGHT-LINE MOVEMENT PANIC EXIT DEVICE

[72] Inventor: **George Z. Zawadzki,** Indianapolis, Ind.

[73] Assignee: **Von Duprin, Inc.,** Indianapolis, Ind.

[22] Filed: **Aug. 5, 1970**

[21] Appl. No.: **61,110**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 32,971, Apr. 29, 1970, abandoned.

[52] **U.S. Cl.** **292/92,** 70/92, 292/21, 292/227

[51] **Int. Cl.** **E05c 3/16**

[58] **Field of Search** ..... 292/21, 53, 92, 93, 168, 166, 292/221, 227, DIG. 65; 70/92

[56] **References Cited**

UNITED STATES PATENTS

2,328,936	9/1943	White	292/93
3,120,032	2/1964	Burnette	292/92 X
3,432,631	3/1969	Deutscher	200/61.67

FOREIGN PATENTS OR APPLICATIONS

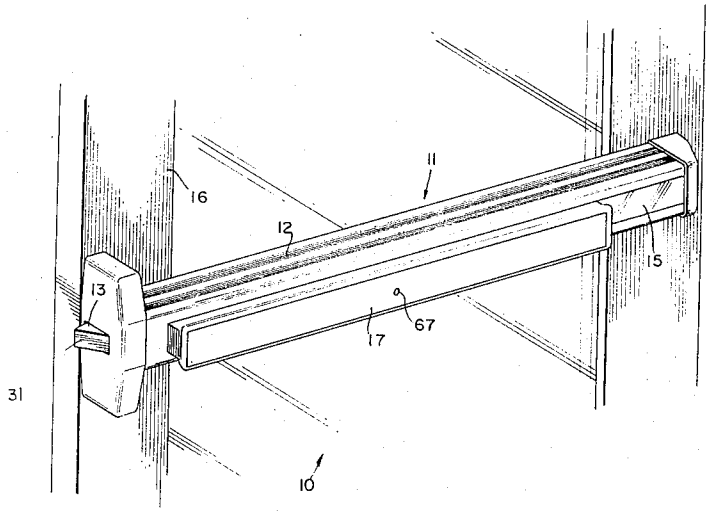
19,819	1914	Great Britain	292/93

Primary Examiner—Robert L. Wolfe
Attorney—Hood, Gust, Irish & Lundy

[57] **ABSTRACT**

A latch and actuator assembly, primarily intended for use as a panic exit device, in which a push bar substantially spanning the width of a hinged closure is mounted for bodily rectilinear movement in the closure-opening direction and perpendicularly toward the closure, one or more toggle-like linkages being interposed between the push bar and an actuator, mounted for movement transversely of the closure and operatively connected to a movable latch bolt, the actuator being biased toward bolt-projected position and being moved to bolt-retracted position by the elongation of the toggle-like linkages upon such movement of the push bar. In one form of the invention, the apices of two such toggle-like linkages are joined by a rigid stretcher; while in another and preferred form, a guide lip engages the roller at the apex of each toggle to confine that roller in contact with the inner surface of the push bar.

21 Claims, 11 Drawing Figures



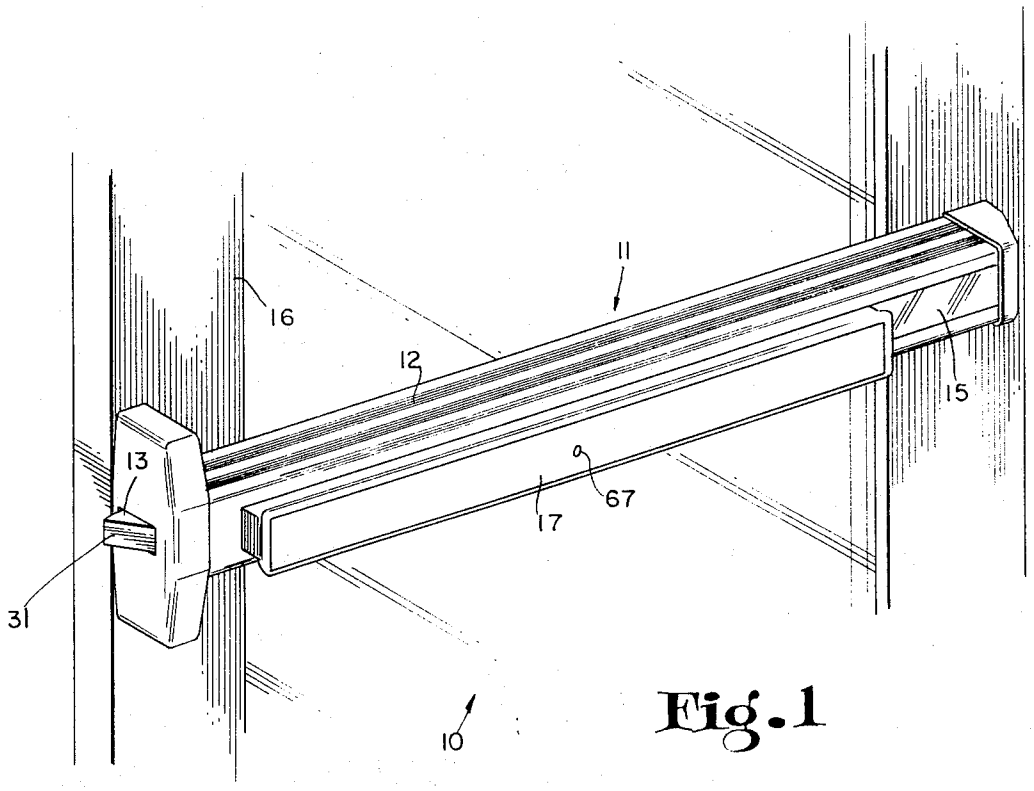


Fig. 1

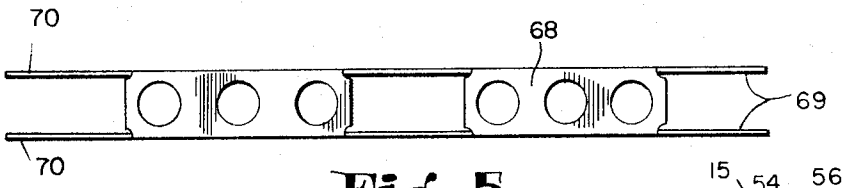


Fig. 5

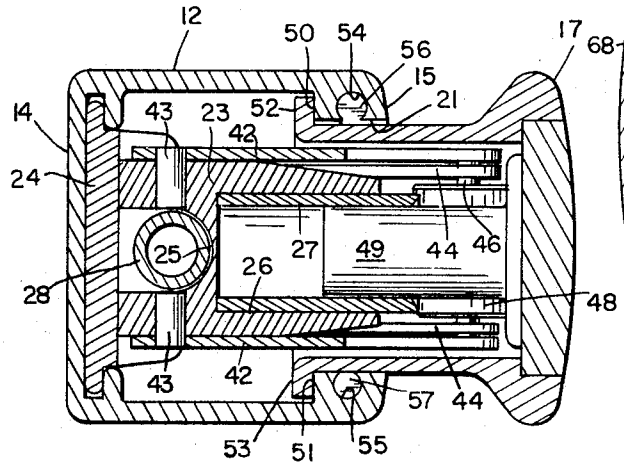


Fig. 4

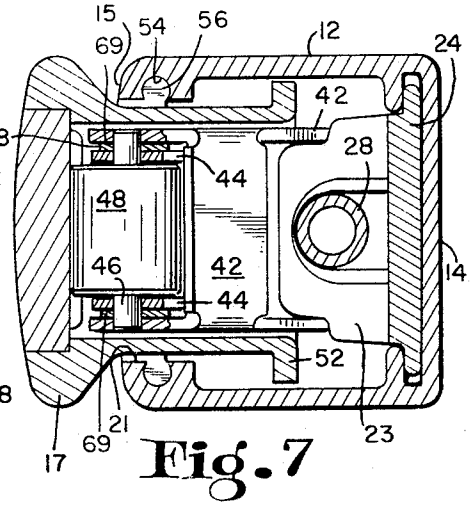


Fig. 7

INVENTOR.
GEORGE Z. ZAWADZKI
BY
Hood, Gust, Irish & Lundy
ATTORNEYS

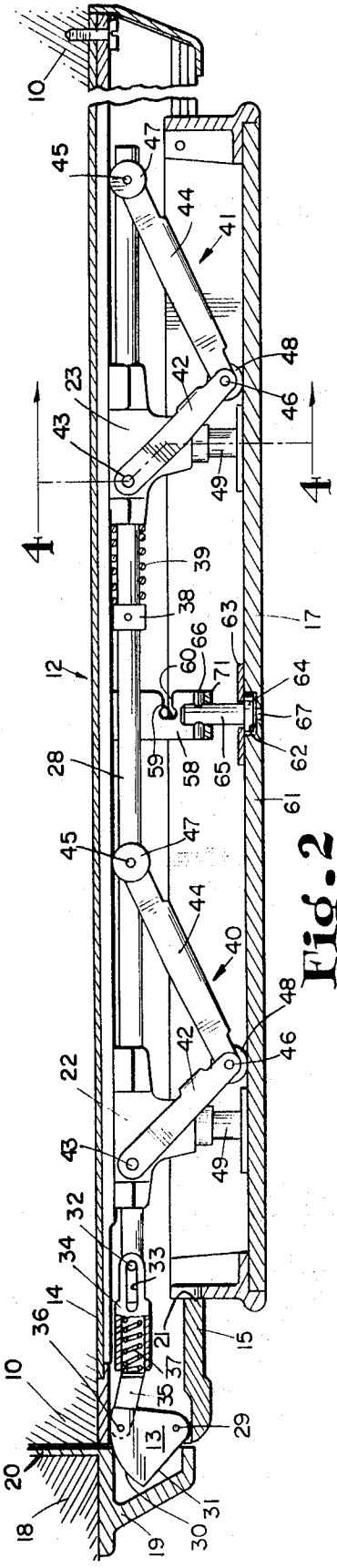


Fig. 2

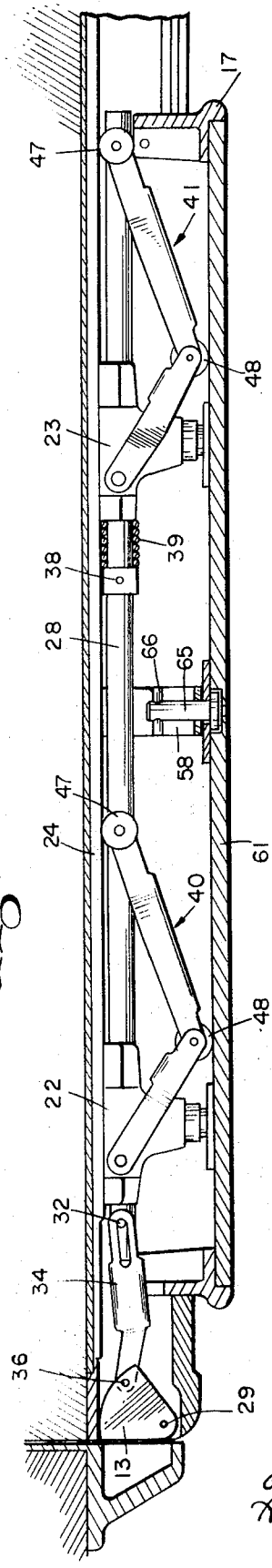


Fig. 3

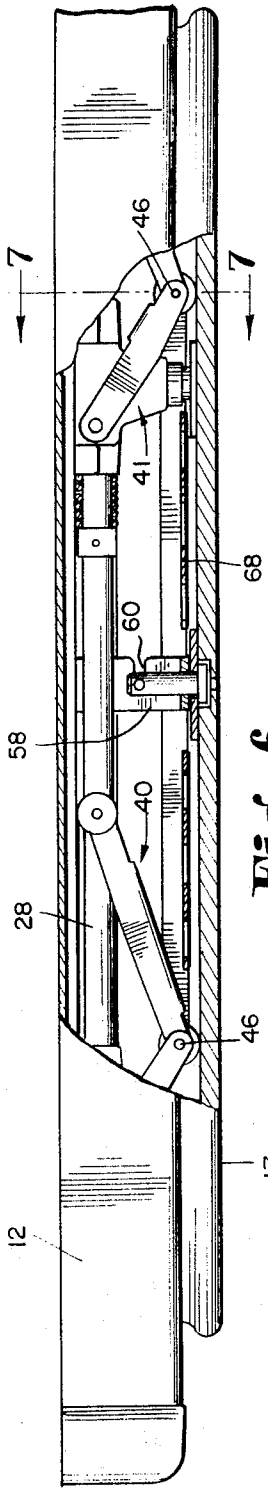


Fig. 6

INVENTOR.
GEORGE Z. ZAWADZKI
BY
Hood, Gust, Irish & Lundy
ATTORNEYS

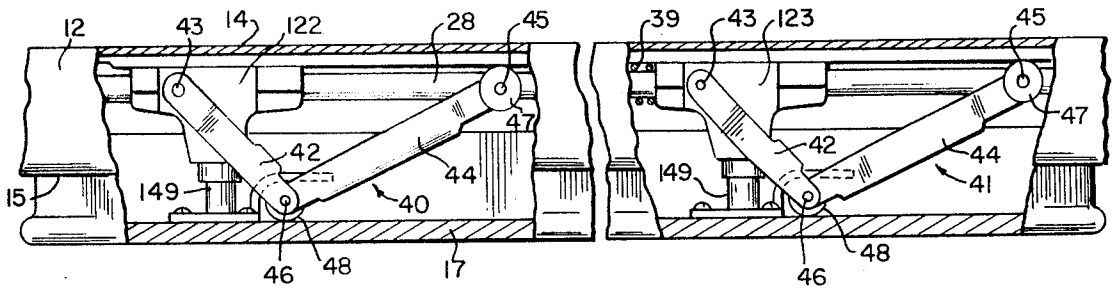


Fig. 8

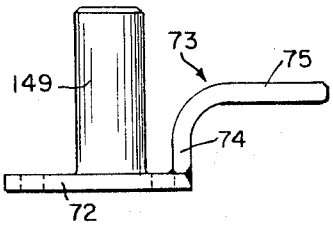


Fig. 9

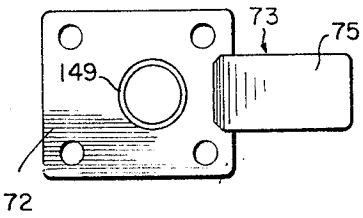


Fig. 10

Fig. 11

INVENTOR.
GEORGE Z. ZAWADZKI
BY
Hood, Gust, Irish & Lundy
ATTORNEYS

RIGHT-LINE MOVEMENT PANIC EXIT DEVICE

This is a continuation-in-part of my copending application, Ser. No. 32,971, filed Apr. 29, 1970 and now abandoned for Right-Line Movement Panic Exit Device.

The present invention is directed primarily to the panic exit device field, and primarily to that form of device known as a rim latch assembly, though it may be used also in the vertical rod type assembly, as will appear. Conventionally, such a rim latch assembly comprises a pair of casings, mounted respectively near the opposite edges of a door and upon the interior surface thereof, a panic bar spanning the door and suspended from downwardly and inwardly curved arms having their upper ends pivotally supported in the respective casings, that casing near the free edge of the door housing a retractable latch bolt and mechanism providing an operative connection between the adjacent panic bar arm and the latch bolt whereby, upon movement of the panic bar downwardly and toward the door in an arc centered upon the pivot axes of the arms, the latch bolt will be retracted. Such devices have been almost universally used, without substantial change in the features above described, for many decades, although it has long been recognized that, as a consequence of the pivotal suspension of the panic bar, the devices have been subject to damaging wear in ordinary use, but more particularly to damage as a result of mischievous vandalism.

The primary object of the present invention is to improve such devices in such a way as to extend their normal life and to guard to a considerable degree against deliberate damage. To that end, I have evolved a structure in which the pivotally supported panic bar is replaced by a push bar which is adequately supported for bodily rectilinear movement in a direction perpendicular to the surface of the door, in which said push bar is adequately supported upon large bearing surfaces for such rectilinear movement and in which all of the moving parts of the assembly are effectively housed against tampering.

Thus, a further object of the invention is to provide a sturdy assembly of the character described in which all of the moving parts are protected against such tampering as might result in damage or excessive wear.

A further object of the invention is to provide a system of the character described in which the parts are so proportioned and designed that the push bar is provided with a large mechanical advantage over the latch bolt, so that pressures, no matter how or where applied to the interior surface of a closure, cannot establish such frictional forces as to prevent retraction of the latch bolt by a reasonable degree of pressure exerted directly upon the push bar.

Still another object of the invention is to apply such a push bar and actuator system to a vertical rod type latch assembly.

Still further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific construction illustrated and described, so long as the scope of the appended claims is not violated.

FIG. 1 is a fragmentary perspective view of a door, showing an embodiment of my assembly mounted in an operative position thereon;

FIG. 2 is an enlarged, horizontal sectional view of an embodiment of my invention, illustrating fragments of a door, a door frame, a keeper and a strike plate, the parts being illustrated in door-latched condition;

FIG. 3 is a similar section showing the parts in latch-retracted position;

FIG. 4 is an enlarged section taken substantially on the line 4—4 of FIG. 2 and looking in the direction of the arrows;

FIG. 5 is a bottom plan view of an optionally usable stretcher;

FIG. 6 is a top plan, fragmentary view of the assembly of FIG. 1, parts of the housing being broken away to show the stretcher of FIG. 5 in place;

FIG. 7 is a section taken substantially on the line 7—7 of FIG. 6 and looking in the direction of the arrows;

FIG. 8 is a fragmentary section, taken on the plane of FIG. 2 and showing a modified form of device in which the rollers at the apices of the toggle devices are confined against separation from contact with the push bar;

FIG. 9 is an enlarged illustration of the roller-confining means;

FIG. 10 is a bottom plan view of the element illustrated in FIG. 9; and

FIG. 11 is a fragmentary vertical section showing a means whereby any one of the assemblies illustrated in FIGS. 2, 6 and 8 may be applied to actuate a vertical rod type latch assembly.

Referring more particularly to the drawings, the reference numeral 10 generally designates a door or other hinged closure while the reference numeral 11 generally indicates an embodiment of a latch and actuator assembly of the "panic" type and embodying my invention. A housing means 12 is proportioned and designed to span the door transversely, usually at about hip height, and a latch bolt 13 is mounted in the housing means for movement between the projected position illustrated in FIG. 1 and a retracted position.

The housing means 12 is formed to provide a rear surface 14 and a front surface 15, and the rear surface 14 of said housing means is suitably secured to the interior surface 16 of the closure 10 and a push bar 17 penetrates the front surface 15 of said housing means. The free edge of the closure 10 is adapted to mate with a surface of the door frame 18, upon which is mounted a suitable keeper 19 and a strike plate 20.

The forward surface 15 of the housing means 12 is formed with an opening 21 (see FIGS. 2 and 4) through which the push bar 17 penetrates with a comfortable sliding fit.

Within the housing means 12 there are mounted two identical guide units 22 and 23, spaced apart longitudinally of the housing means; and floor means 24 is disposed within the housing means for a purpose which will appear. Each of the units 22 and 23 is formed to provide a longitudinally extending guide surface 25, said guiding surfaces being coaxially aligned longitudinally of the housing means; and each such unit is further formed to provide a guiding surface 26 which extends forwardly upon an axis perpendicular to the floor means 24. Preferably, but not necessarily, a bushing 27 is provided for each guide surface 26.

An actuator rod 28 is slidably guided in the surfaces 25 of the units 22 and 23 for rectilinear, axial movement longitudinally of the housing means 22, and it will be seen that the line of movement of the element 28 is perpendicular to the axes of the guiding surfaces 26.

As is most clearly illustrated in FIGS. 2 and 3, the latch bolt 13 in the illustrated embodiment of my invention is pivotally mounted upon a pivot pin 29 supported within the housing means 12, for rocking movement between its projected position illustrated in FIG. 2 and its retracted position illustrated in FIG. 3. Said bolt 13 is formed with a blocking surface 30 which, when the parts are in the positions of FIG. 2, will affirmatively prevent opening movement of the closure 10 in a clockwise direction about its right-hand, hinged edge. Said bolt is further formed with a camming surface 31 which, as the closure 10 moves toward closed position, will engage the strike plate 20 to turn the bolt 13 in a clockwise direction about its pivot 29 until the latch bolt reaches registry with the socket of the keeper 19.

Adjacent its left hand end, the actuator element 28 carries a transverse pin 32 which is received in an elongated slot 33 in each of a pair of arms at one end of a sleeve 34 which terminates at its other end in a clevis 35 pivotally connected to the latch bolt 13 at 36. A spring 37 within the sleeve 34 bears upon the extremity of the actuator rod 28 to hold the sleeve 34 normally in the position illustrated in FIGS. 2 and 3 in which the pin 32 is engaged in the proximal ends of the slots 33. However, the connection is such that the bolt 13 may be turned in a clockwise direction from its illustrated position in FIG. 2, by compression of the spring 37, without affecting the position of the actuator rod 28.

A collar **38** is suitably secured to the actuator **28** and an expansion spring **39** is sleeved on the actuator **28** to bear at one end against the collar **38** and at its other end against the guide unit **23**, thereby biasing the actuator element **28** toward the left, as viewed in FIG. **2**. Thus it will be seen that the actuator element **28** is normally held in its position illustrated in FIG. **2**, wherein the latch bolt **13** is disposed in its projected position. Under these circumstances, the latch bolt **13** will normally stand in its projected position, and it will be moved to the retracted position of FIG. **3** upon movement of the actuator element **28** toward the right against the tendency of the spring **39**.

In the embodiment of the invention illustrated in FIGS. **2–7**, two toggle-like linkages **40** and **41** establish a one-way operative connection between the push bar **17** and the actuator element **28**. Since these linkages are identical, only one will be described in detail.

Each such linkage comprises a first lever **42**, one end of which is oscillably mounted upon pivot means **43** fixed with respect to the associated guide unit **22** or **23** upon an axis perpendicular to the line of movement of the element **28** and parallel with the floor means **24**. A second link **44** has one end oscillably mounted upon a pivot **45** fixed to the element **28** upon an axis parallel with the axis of the pivot means **43**. The distal ends of both links **42** and **44** are pivotally joined by pivot means **46** upon an axis parallel with the axes of the pivot means **43** and **45**. Preferably, a roller **47**, bearing upon the floor means **24**, is journalled on the pivot means **45** and a second roller means **48**, bearing upon the internal surface of the push bar **17**, is journalled on the pivot means **46**. It will be understood that each lever **42** and **44** comprises a pair of arms straddling the associated members.

Fixed to the internal surface of the push bar **17** are two posts **49** proportioned and designed for telescopic association with the surfaces **26** (or the bushings **27**) and having a snug, sliding fit therein of substantial longitudinal extent so that the push bar is effectively supported thereby for bodily, rectilinear movement perpendicularly toward and away from the surface **16** of the closure **10**. The parts are so proportioned and designed that, when the actuator element **28** is at the left hand limit of its stroke under the influence of the spring **39**, the rollers **48** bear upon the internal surface of the push bar **17** to hold the push bar at the outer limit of its path of movement. As is most clearly illustrated in FIG. **4**, the housing means is formed to provide opposite, rearwardly facing shoulders **50** and **51**, while the push bar **17** is formed with laterally extending lips **52** and **53** cooperating with said shoulders to limit forward movement of the push bar **17** under the influence of the spring **39**, the actuator element **28** and the toggle-like linkages **40** and **41**. Preferably, but not necessarily, the opening **21** is guarded by grooves **54** and **55** receiving rubberoid strips **56** and **57** which bear against the upper and lower surfaces of the push bar **17** to guard against binding thereof and to protect the interior of the housing means against dust, moisture and the like.

Now, it will be apparent that the parts will normally stand in the positions illustrated in FIG. **2**. When pressure toward the surface **16** of the closure **10** is exerted upon the push bar **17**, said bar will be moved upwardly as viewed in FIG. **2** to elongate the toggle-like linkages **40** and **41**, thereby moving the actuator element **28**, with great mechanical advantage, toward the right against the tendency of the spring **39** whereby the pin **32** will carry the sleeve **34** toward the right to turn the latch bolt **13** from the projected position of FIG. **2** into the retracted position of FIG. **3**. Thus, the closure **10** will be released for opening movement. As soon as pressure is withdrawn from the push bar **17**, the spring **39** will return the parts to the positions illustrated in FIG. **2**, wherein the latch bolt **13** projects beyond the free edge of the closure **10**.

As the door moves toward closed position, the surface **31** of the latch bolt **13** will meet the strike plate **20** to cam the latch bolt in a clockwise direction, thus moving the sleeve **34**, against the tendency of the spring **37**, to the right, the slots **33** permitting such movement of the sleeve **34** without affecting the actuator element **28**. As soon as the latch bolt **13** comes into registry with the socket of the keeper **19**, the spring **37** will move the sleeve **34**, and thus the latch bolt, to the left as viewed in FIG. **2**, to engage the latch bolt in said keeper socket.

Fixedly mounted relative to the housing and preferably substantially midway in the length of the push bar, there is provided a U-shaped element **58** comprising a pair of forwardly extending legs, only one of which is shown, and a connector **71** joining the distal ends of said legs. Said legs are respectively formed with oppositely opening notches **59**, each of which defines a shoulder **60** facing the rear of the housing means **12**. A plate **61**, constituting the forward face of the push bar **17**, is formed on its interior surface with a socket **62** for the reception of the enlarged head **64** of an adjustable member or post **65**, a retainer plate **63** being secured to the plate **61** to retain said head in said socket while permitting oscillation of the member **65** about its own axis. The member **65** penetrates the connector **71** of the U-shaped element **58** and, near its distal end, carries a transverse pin **66**. Normally, the pin **66** assumes a position substantially parallel with the actuator element **28**. However, when the push bar **17** is in the position of FIG. **3**, the pin **66** registers with the notches **59** so that, if the member **65** is turned through 90°, the ends of the pin **66** will enter said notches to bear upon the shoulders **60**, thus retaining the push bar **17** in a position to hold the latch bolt **13** in its retracted position. As shown, the plate **61** is formed with an opening **67** providing access to a kerf or polygonal socket in the outer face of the head **64** whereby said member **65** may be manipulated by a suitable tool.

In some instances, it may be desirable to provide a rigid connection between the pivots **46** of the toggle-like linkages **40** and **41**. In FIG. **5**, I have illustrated a connector bar or stretcher **68** which may be formed from sheet metal to provide separated arms **69** perforated for mounting on the pivot **46** of the linkage **41** and separated arms **70** perforated for mounting on the pivot **46** of the linkage **40**. Thus canting of the push bar **17** and consequent binding of the posts **49** will be inhibited.

An alternative, and preferred, form of means for affirmatively preventing such canting and binding is illustrated in FIGS. **8–10** wherein I have shown an assembly generally similar to that illustrated in FIGS. **2** and **3**. The posts **49**, **49**, however, are replaced by posts **149**, **149** which are carried by bases **72**, **72** to each of which is secured a retainer, indicated generally by the reference numeral **73** and comprising a rearward extension **74** and a lateral guide lip **75**. The height of each extension **74** is substantially equal to the diameter of the associated roller **48** and the length of each guide lip **75** exceeds the travel path of the associated roller **48**. Thus, the retainers **73** coact with the rollers **48** to establish an affirmative two-way operative connection between the push bar **17** and each of the toggle-like devices **40** and **41**. These two-way connections thus affirmatively enforce a constant attitude of the push bar as it moves bodily rectilinearly toward and away from the housing floor and prevent any canting of the push bar such as might tend to cause a binding effect between the posts **149** and their respective guiding surfaces **26** or bushings **27**, even though the latch-retracting force exerted upon the push bar might be concentrated near one end or the other of the bar.

The description thus far has been directed to an actuator mechanism as applied to a rim-type latch assembly; but it will be obvious that it is equally applicable, without substantial change, to a mortise type. In FIG. **11**, I have illustrated the manner in which the mechanism of FIGS. **2**, **3**, **6** or **8** may be applied to the actuation of a vertical rod type latch mechanism.

Such a mechanism conventionally includes a case **80** guidingly receiving an upper, reciprocable element **81** connected to a latch retractor rod **82**, and a lower element **83** connected to a lower latch retractor rod **84**. The upper element **81** is formed with a slot or socket **85** and the element **83** is formed with a similar slot or socket **86**.

According to the present invention, a first lever **87** is oscillably mounted upon a pivot pin **88** fixed with respect to the case **80**. The distal arm **89** of the lever **87** carries a roller **90** which is received within the slot or socket **85** to provide a driving connection between said lever and the element **81**. The proximal arm **91** of the lever **87** is pivotally connected at **92** to one end of a link **93**, the other end of which is pivotally supported upon a pin **94** fixed to a sleeve element **134** similar to the element **34** of FIG. **2**. Said sleeve element **134** is slidable on the actuator element **28** and is formed with a longitudinal slot **133** receiving a transverse pin **132** fixedly carried by the element **28**. A spring **137** yieldably urges the sleeve **134** toward the left as viewed in FIG. **11**.

A second lever **95** is oscillably mounted upon the pin **88** and the distal arm **96** thereof carries a roller **97** operatively engaged in the slot or socket **86** of the element **83**. The proximal arm **98** of the lever **95** is pivotally connected at **99** to one end of a link **100**, the other end of which is pivotally connected to the pin **94**.

Conventionally, each of the rods **82** and **84** is provided with spring means (not shown) urging the rods to their illustrated, latch-projected positions. It will be clear that, when the push bar **17** is actuated, the actuator **28** will be moved toward the right and, through the engagement of the pin **132** with the right hand end of the slot **133**, the sleeve **134** and pin **94** will be entrained therewith. As the pin **94** moves toward the right, the link **100** will be swung in a counterclockwise direction and the link **93** will be swung in a clockwise direction to move the rollers **90** and **97** toward each other to retract the rods **82** and **84**, thus releasing the door for opening movement. When pressure on the push bar **17** is relieved, the parts will return to their illustrated positions.

As the door moves toward closed position, the upper and lower latch bolts will engage their respective strikes to move the rods **82** and **84** toward each other. Such movement will move the pivots **92** and **99** toward each other whereby, through the pin **94**, the sleeve **134** will be moved toward the right against the tendency of the spring **137**; but, because of the pin-and-slot connection **132-133** between the sleeve **134** and the actuator **28**, such movement of the sleeve **134** will not affect the actuator **28**. When the latches have passed their strikes, the spring **137** will return the sleeve **134** to its illustrated position, thereby projecting the latches into their respective sockets.

What I claim is:

1. A latch and actuator assembly comprising a housing means, a latch bolt movable between a projected position and a retracted position, an actuator element, means supporting said actuator element for movement within said housing means, a push bar having a portion disposed outside said housing means, means within said housing means for supporting and guiding said push bar for rectilinear movement toward and away from said actuator element, means providing an operative connection between said actuator element and said latch bolt to move said latch bolt toward its retracted position in response to movement of said actuator element in one direction, and means providing an operative connection between said push bar and said actuator element to move said actuator element in said one direction in response to movement of said push bar toward said actuator element, resiliently yieldable means resisting movement of said actuator element in said one direction, said means providing an operative connection between said actuator element and said latch bolt including a lost-motion connection permitting movement of said latch bolt toward its retracted position without resistance by said yieldable means.

2. The assembly of claim **1** including means in said lost-motion connection yieldably resisting retractive movement of said latch bolt relative to said actuator element.

3. A latch and actuator assembly comprising a housing means, a latch bolt movable between a projected position and a retracted position, an actuator element, means supporting said actuator element for movement within said housing means, a push bar having a portion disposed outside said housing means, means within said housing means for supporting and guiding said push bar for rectilinear movement toward and away from said actuator element, means providing an operative connection between said actuator element and said latch bolt to move said latch bolt toward its retracted position in response to movement of said actuator element in one direction and means providing an operative connection between said push bar and said actuator element to move said actuator element in said one direction in response to movement of said push bar toward said actuator element, said actuator element being guided for substantially rectilinear movement in a path substantially perpendicular to the line of movement of said push bar, resiliently yieldable means resisting movement of said actuator element in said one direction, said means providing an operative connection between said push bar and said actuator element comprising a first link having one end pivoted for oscillation about a first axis transverse relative to the line of movement of said actuator element and transverse relative to the line of movement of said push bar and fixed relative to said housing means, a second link having one end pivoted for oscillation about a second axis parallel with said first axis and fixed relative to said actuator element, pivot means connecting together the other ends of said links upon a third axis parallel with said first and second axes, and a roller journalled on said pivot means and bearing on said push bar.

4. A latch and actuator assembly comprising an elongated housing means having a rear surface adapted to be secured in transverse relation to the inner surface of a hinged closure and having an opposite front surface, a latch bolt movable between a projected position and a retracted position, two guide units fixed relative to said housing means, at points spaced longitudinally of said housing means, each guide unit being formed to provide a first guiding surface elongated longitudinally of said housing means and a second guiding surface elongated in a common direction perpendicular to the length of said housing means and toward the front surface of said housing means, an actuator element supported from said first guiding surfaces by telescopic association therewith for rectilinear reciprocation longitudinally of said housing means, a push bar penetrating the front surface of said housing means, means fixed relative to said push bar and supported from said guide units by telescopic association with both of said second guide surfaces for rectilinear reciprocation toward and away from the rear surface of said housing means, means providing an operative connection between said actuator element and said latch bolt to move said latch bolt toward its retracted position in response to movement of said actuator element in one direction, spring means biasing said actuator element in the opposite direction, and means providing an operative connection between said push bar and said actuator element to move said actuator in said one direction in response to movement of said push bar toward said rear surface of said housing means.

5. The assembly of claim **4** in which said means providing the operative connection between said push bar and said actuator element is a one-way connection, and cooperating means on said housing means and on said push bar for limiting movement of said push bar away from said rear surface of said housing means.

6. The assembly of claim **4** in which said means providing the operative connection between said push bar and said actuator element is a two-way connection.

7. The assembly of claim **4** in which said means providing an operative connection between said actuator element and said latch bolt includes a lost-motion connection permitting movement of said latch bolt toward its retracted position without affecting said actuator element.

8. The assembly of claim **4** in which said means providing an operative connection between said push bar and said actuator element comprises a first link having one end pivoted for oscillation about a first axis transverse relative to the line of move-

ment of said actuator element and transverse relative to the line of movement of said push bar and fixed relative to said housing means, a second link having one end pivoted for oscillation about a second axis parallel with said first axis and fixed relative to said actuator element, pivot means connecting together the other ends of said links upon a third axis parallel with said first and second axes, and friction-reducing means mounted to move with said pivot means and bearing on said push bar.

9. The assembly of claim 8 in which said friction-reducing means is a roller journalled on said pivot means.

10. The assembly of claim 9 including a guide lip fixed relative to said push bar and bearing upon said roller in a region substantially diametrically opposite the point at which the roller bears on said push bar.

11. The assembly of claim 4 in which said means providing an operative connection between said push bar and said actuator element comprises, for each guide unit, a first link, first pivot means carried by said guide unit and supporting one end of said first link for oscillation about a fixed axis transverse relative to the lines of movement of said actuator and of said push bar, a second link, a second pivot means fixed relative to said actuator element at a point more remote from said latch bolt than is the corresponding first pivot means and supporting one end of said second link for oscillation about a second axis parallel with said first axis, third pivot means connecting together the other ends of said links upon a third axis parallel with said first and second axes, and friction-reducing means mounted to move with each of said third pivot means and bearing on said push bar.

12. The assembly of claim 11 including means moving with said push bar and engaging each of said friction-reducing means to prevent significant separation between said friction-reducing means and said push bar.

13. The assembly of claim 11 including an element fixed relative to said housing means and formed to define a shoulder facing the rear surface of said housing means, and a member adjustably carried by said push bar and extending toward the rear surface of said housing means in cooperative registry with said last-named element, said last-named member being provided with means engageable, at times, with said shoulder to hold said push bar in latch bolt-retracted position and being accessible for adjustment from outside said push bar.

14. The assembly of claim 3 including longitudinally-extending floor means in said housing, said roller means bearing on said floor means.

15. The assembly of claim 11 including longitudinally extending floor means in said housing, and roller means journalled on each second pivot means and bearing on said floor means.

16. The assembly of claim 11 including means providing a rigid connection between the third pivot means associated with one of said guide units, and the third pivot means associated with the other of said guide units.

17. An actuating mechanism for a retractable latch comprising a rectilinearly movable retractor element, means yieldably biasing said element toward latch-projected position, guide means for said element, a push bar elongated in the direction of movement of said element, means guiding said push bar for rectilinear bodily movement in a direction perpendicular to the line of movement of said element, at least two toggle-like assemblies arranged between said push bar and said element, each such assembly comprising a first lever having one end pivoted upon a first axis transverse to the lines of movement of said element and said push bar and fixed relative to said guide means, a second lever having one end pivoted upon a second axis parallel with said first axis and fixed relative to said element, the other ends of said levers being pivoted together upon an axis parallel with and between said first and second axes, roller means journalled on said third axis, and means affirmatively holding said roller means always in operative engagement with said push bar.

18. A latch and actuator assembly comprising a housing means, a latch bolt movable between a projected position and a retracted position, an actuator element, means supporting said actuator element for movement within said housing means, a push bar having a portion disposed outside said housing means, means within said housing means for supporting and guiding said push bar for rectilinear movement toward and away from said actuator element, means providing an operative connection between said actuator element and said latch bolt to move said latch bolt toward its retracted position in response to movement of said actuator element in one direction, and means providing an operative connection between said push bar and said actuator element to move said actuator element in said one direction in response to movement of said push bar toward said actuator element, a second latch bolt, a rod for each latch bolt, said rods being substantially coaxially arranged with their remote ends operatively connected to said latch bolts respectively and their adjacent ends in confronting relation to each other, said rods being reciprocable toward each other to retract their respective bolts and away from each other upon projection of their respective bolts, the means providing an operative connection between said actuator element and said latch bolts including said rods.

19. The assembly of claim 18 in which said means providing an operative connection between said actuator element and said latch bolts further includes a pair of crossed levers pivoted, at their region of intersection, to oscillate about a fixed axis perpendicular to the line of movement of said actuator element, the distal end regions of said levers being operatively engaged with the adjacent ends of said rods respectively, link means connected to the proximal end of each of said levers, pivot means connecting said link means together, and means operatively connecting said actuator element to said pivot means.

20. The assembly of claim 19 in which said means operatively connecting said actuator element to said pivot means affirmatively entrains said pivot means upon latch-retracting movement of said actuator element but permits latch retraction under external influences without affecting said actuator element.

21. The assembly of claim 19 in which said means operatively connecting said actuator element to said pivot means comprises a sleeve longitudinally slidably mounted on said actuator element and formed with a radially opening, longitudinally extending slot therein, a fixed protuberance extending radially from said actuator element and confined in said slot, and means yieldably urging said sleeve, relative to said actuator element, toward said fixed axis, said pivot means being fixed relative to said sleeve.

* * * * *