

ELECTRIC STRIKE ASSEMBLY

TECHNICAL FIELD

This invention relates to door locking mechanisms, more particularly to electric door locking mechanisms commonly known as electric strikes.

Electric strikes, also known as electric door openers, electric releases and electric release strikes, are used to control access to buildings or areas. An actuation means (e.g. an electrically driven motor or solenoid) is used to either block or release a rotatable keeper to either prevent or allow release of a door's latch bolt, to lock the door or allow it to be opened.

Typically, electric strikes have two modes, namely a "fail-secure" mode (where the door is locked with the power removed, i.e. the actuation means must be triggered to allow the door to be opened), and a "fail-safe" mode (where the door is unlocked with the power removed, i.e. the actuation means must be triggered to prevent the door from being opened). Some strikes on the market have only one-mode capability, i.e. they are either fail-secure or fail-safe, while others are dual mode, i.e. the installer can select which mode is desired at the time of installation.

BACKGROUND ART

One known dual-mode electric strike, for example, available as GEM model GK-300 and ROFO 2400 series models, has a solenoid mounted on a holder, which is movable within the strike housing. A blocking element is directly attached to the plunger of the solenoid, to block movement of the keeper when the strike is in its locked position. A first screw, reachable from outside the housing, cooperates with a slot in the housing, to define the path along which the holder is movable. When the first screw is tightened, it fastens the holder to the housing, i.e. the holder cannot move. First and second holes are arranged on the housing, to alternately align with a second screw, also reachable from outside the housing, so that at each end position along the holder path of movement, one of a threaded third or fourth hole, both arranged on the holder, is aligned with either the first hole or the second hole, and the second screw can be inserted into the appropriate first or second hole and screwed into the visible third or fourth hole. The installer can configure the GEM strike in either the fail-safe or fail-secure mode by selecting which holes are used. However, doing so is a tedious and tricky process, requiring proper alignment of holes, careful removal and replacement of one screw, and careful loosening (without removal) of another screw.

There is a need for an electric strike which is more readily switchable between fail-secure and fail-safe modes, and which preferably offers other advantages over prior art strikes.

DISCLOSURE OF THE INVENTION

In view of the preceding, it is an object of the invention to provide an improved electric strike, which among other features, provides rapid and easy selection between fail-safe and fail-secure modes.

In the invention, a keeper is pivotably arranged in a housing. When prevented from pivoting from its home position, the keeper blocks movement of a latch bolt extending from a door, so that the door is locked. When the keeper is allowed to pivot, the latch bolt can push the keeper aside, so that the door can be opened. To prevent the keeper from pivoting, the keeper has at least one abutment, which a blocking surface or surfaces of a blocking element either contacts (door locked) or does not contact (door unlocked) when the keeper tries to pivot. The blocking element is movable by an actuation means, for example a solenoid, between a first (unenergized) position and a second (energized) position. The blocking element and blocking element actuation means are mounted in a holder, which in turn is slidably mounted in a housing, for movement between one of two holder positions, namely a fail-secure position and a fail-safe position. In the fail-secure position, the blocking surfaces are opposite the keeper's abutments in the unenergized position, and in the fail-safe position the blocking surfaces are opposite the keeper's abutments only when the actuator is energized. A two-position mode selector, set at the time of installation, establishes which of the two holder positions is used, i.e. whether the strike is installed in fail-safe or fail-secure mode. In the preferred embodiment, the mode selector is an eccentric, rotatable between two positions 180 degrees apart, accessible from outside the housing.

The strike preferably also has a latch bolt monitor arm pivotally mounted in the housing. When the latch bolt is in place in the strike, i.e. when the door is closed, the latch bolt depresses a plate which rotates the latch bolt monitor arm, bringing a cam into contact with the switch button of a microswitch, thereby indicating whether the door is open or closed.

The strike preferably also has a keeper microswitch arranged in the housing and cooperating with an indicator cutout arranged on the keeper to indicate when the keeper is either in its home position, or its rotated position, indicating opening of the door. The keeper microswitch is actuated when the keeper is in one position, and not actuated in the other keeper position, by a surface of the keeper depressing or not depressing the switch button of the keeper microswitch.

The strike assembly includes a lip bracket attached to the housing, to allow on-site dimensional adjustment. The lip bracket preferably has profiled surfaces cooperating with similarly profiled surfaces on the housing, to provide stepwise adjustment of the relative position of the lip

bracket to the housing together with positive locking of the lip bracket to the housing when the lip bracket is secured to the housing. In the preferred embodiment, a particular saw-tooth engagement is used, as will be described in detail below.

As an anti-intrusion feature in the preferred embodiment, to prevent someone from inserting something to attempt to dislodge the blocking element and thereby open the door, the keeper is profiled so as to provide little or no clearance between it and the housing, and furthermore a lip is provided in the housing to catch anything inserted and the keeper is shaped to direct anything inserted to the area of that lip.

Further features of the invention will be described or will become apparent in the course of the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be more clearly understood, the preferred embodiment thereof will now be described in detail, as an example, with reference to the accompanying drawings, in which:

Fig. 1 is an exploded perspective rear view of a strike according to the preferred embodiment;

Fig. 2 is a partly assembled view corresponding to Fig. 1, where the blocking element, solenoid and holder have been assembled;

Fig. 3 is a further assembled view corresponding to Figs. 1 and 2, where the blocking element, solenoid, holder and keeper have been assembled into the housing;

Fig. 4 is a view corresponding to Fig. 3, but also showing a lip bracket and a face plate;

Fig. 5 is a view corresponding to Fig. 4, showing the housing assembly assembled with the lip bracket;

Fig. 6 is a view corresponding to Fig. 5, showing the completed assembly;

Fig. 7 is an exploded perspective view similar to Fig. 1, but viewing the front of the preferred embodiment;

Fig. 8 is a view corresponding to Fig. 7, further assembled;

Fig. 9 is a view corresponding to Fig. 8, fully assembled;

Fig. 10 is a sectioned top view showing the saw-tooth engagement between the housing and lip bracket;

Fig. 11 is a view showing the holder, solenoid, blocking element, mode selector and mode selector biasing spring;

Fig. 12 is a perspective view corresponding to Fig. 11, from a different angle;

Fig. 13 is a perspective view of just the holder;

Fig. 14 is a perspective view corresponding to Fig. 13, from a different angle;

Fig. 15 is a perspective view of the blocking element;

Fig. 16 is a perspective view of a fail-secure vs. fail-safe mode selector;

Fig. 17 is an elevation view of the Fig. 16 mode selector;

Fig. 18 is a perspective view of an alternative mode selector;

Fig. 19 is an elevation view of the alternative mode selector;

Fig. 20 is a perspective view of a latch monitor arm;

Fig. 21 is a sectional end view showing the latch monitor arm cam when the latch monitor arm is rotated outwardly;

Fig. 22 is a sectional end view showing the latch monitor arm cam when the latch monitor arm is depressed, triggering the latch monitor microswitch;

Figs. 23A-23E show a sequence of latch monitor operation as the door is closed, from the Fig. 23A position where the latch bolt is approaching the strike, to the Fig. 23E position where the latch bolt is fully extended and retained by the keeper;

Fig. 24 is a sectioned front view of the strike, in fail-safe mode, with the solenoid unenergized and the blocking element therefore in a position to allow the keeper to rotate;

Fig. 25 is a view corresponding to Fig. 24, with the solenoid energized and the blocking element therefore in a position to prevent the keeper from rotating;

Fig. 26 is a sectioned front view of the strike, in fail-secure mode, with the solenoid energized and the blocking element therefore in a position to allow the keeper to rotate;

Fig. 27 is a view corresponding to Fig. 26, with the solenoid unenergized and the blocking element therefore in a position to prevent the keeper from rotating;

Fig. 28 is a sectioned end view, showing various components previously described and in particular an anti-intrusion profile;

Fig. 29 is a perspective view of an alternative embodiment, illustrating a push-type solenoid instead of a pull-type solenoid;

Figs. 30A and 30B are side and rear views respectively, showing an alternative mode selector using a two-position lever, shown in fail-safe mode;

Figs. 31A and 31B are side and rear views respectively, corresponding to Figs. 30A and 30B, shown in fail-secure mode;

Figs. 32A and 32B are side and rear views respectively, showing another alternative mode selector using a two-position slide or button, shown in fail-safe mode; and

Figs. 33A and 33B are side and rear views respectively, corresponding to Figs. 32A and 32B, shown in fail-secure mode.

Figs. 1-6 show a progressive build of the strike as seen from the rear; Figs. 7-9 are similar, but from the front.

BEST MODE FOR CARRYING OUT THE INVENTION

In the preferred embodiment of the invention, a keeper 1 is pivotably arranged in a housing 2, and is pivotable between a rotated position where the latch bolt 3 of a door 4 can be removed from the strike to open the door, and a home position (best seen in Fig. 23A) where the keeper, if prevented from moving, blocks removal of the latch bolt and thus keeps the door locked. When the keeper is allowed to pivot, the latch bolt can push the keeper aside, so that the door can be opened. The keeper pivots on two trunnions 6 at opposite ends thereof, which fit into slots 8 in the housing (see Fig. 7) and which are trapped there by surfaces 10 on a lip bracket 12 (see Fig. 4). The keeper is biased towards its home position by a suitable biasing means such as a corrosion-resistant torsion spring 14.

For the door to be locked, i.e. for the keeper to be prevented from pivoting, the keeper has at least one and preferably several abutments 16, which blocking surfaces 18 of a blocking element 20 either oppose (door locked) or do not oppose (door unlocked) when the keeper tries to pivot. In the preferred embodiment, there are two blocking surfaces 18, but obviously there could be only one, or there could be more than two, subject to obvious space constraints. The blocking element is movable by an actuation means, for example a solenoid 22, between a first (unenergized) position and a second (energized) position. In the preferred embodiment, the solenoid is a "pull" type solenoid, although a "push" type can be used instead, as described later below and as illustrated in Fig. 29. The solenoid has electric feeding wires (not shown) routed inside the housing and to external terminals 26. Preferably but not necessarily, the solenoid is dual wound and has four wires, to provide flexibility through an option to connect for either 12 or 24 volts DC or AC. For illustration purposes, the solenoid is shown without its typical insulating cover.

The blocking element 20 and solenoid 22 are mounted in a holder 30. The solenoid pulls a plunger 32, against the biasing force of a spring 34, which preferably is made of stainless steel for corrosion resistance. The plunger has a disc portion 36 on the distal end thereof, and a relief area 38 which fits into a slot 40 in a plate at the end of the blocking element. This ties the blocking element to the movement of the plunger, so that when the solenoid is actuated, the blocking element is pulled towards the solenoid, thus moving the blocking surfaces 18 either into or out of engagement with the abutments 16 of the keeper, depending on which mode was selected at the time of installation. In the fail-secure mode actuation of the solenoid moves the blocking surfaces out of engagement (i.e. they normally do block in a power-off mode, so the door is locked), whereas in the fail-safe mode actuation of the solenoid moves the blocking surfaces into engagement (i.e. they normally do not block in a power-off mode, so the door is unlocked).

The blocking element is guided at one end by the solenoid plunger **32**, and at the other end on the rear side by a tab **42** in a slot **43** under a guide rail **44**, and on the front side by a projection **46**, which extends under a guide **47** on the holder.

The holder **30**, in which the blocking element **20** and solenoid **22** are mounted, in turn is slidably mounted in the housing **2**, for movement between one of two holder positions, namely a fail-secure position and a fail-safe position. The holder is held in place front to back by being trapped between the housing and a rear plate **48**, and has alignment protrusions **49** which cooperate with alignment slots **50** arranged in the rear plate and in the housing. The rear plate is secured to the housing by screws **52** through holes **53** in the rear plate into holes **54** in the housing.

In the fail-secure position, the blocking surfaces **18** are opposite the keeper's abutments **16** in the unenergized position, and in the fail-safe position the blocking surfaces are opposite the keeper's abutments only when the actuator is energized. A two-position mode selector, for example an eccentric **60**, establishes which of the two holder positions is used, i.e. whether the strike is installed in fail-safe or fail-secure mode. The mode is set by the installer at the time of installation.

In the preferred embodiment, the mode selector **60** is rotatable via a slotted head **61** between two positions 180 degrees apart, projecting through a hole **68** in the housing and therefore accessible from outside the housing. The preferred mode selector has an eccentric disc portion **63**, and a pin **62** extending centrally therefrom. Rotating the head 180 degrees, using a screwdriver or even a small coin, results in the eccentric disc portion **63** and pin **62** being in one of two spaced-apart positions. Since the disc portion **63** fits into a slot **64** in the back of the holder **30**, its displacement by rotation of the selector results in the holder sliding in the housing from one position to another, i.e. from a fail-secure position, to a fail-safe position. The pin **62** fits into a slot **65** in the holder **30**, and serves to keep the mode selector in whichever position is selected, by virtue of the spring **72** acting on the pin to keep it biased towards the appropriate end of the slot **65**. Preferably the dimensions are arranged so that any load from the holder is borne by the disc portion **63** rather than by the pin **62**.

The preferred embodiment of the mode selector requires installation from inside the housing. In an alternative embodiment, shown in Figs. 18 and 19, the mode selector **60'** has a pin **62** offset from the head, and a cylindrical portion **69**. This selector can be inserted through the hole **68** from outside the housing, but requires internal installation of a clip (not shown) in a groove **70** in the cylindrical portion, to prevent it from subsequently falling out. In this alternative embodiment, the pin **62** itself takes any load from the holder.

The two-position mode selector is a key feature of the invention, in that it provides a very simple means for the installer to switch between modes, simply by rotating the selector.

Once the selector is in the desired position, it of course is highly desirable that it should remain there. Accordingly, in the preferred embodiment, a biasing means is provided so that the selector is biased to remain in whichever one of its two positions is selected. In the preferred embodiment, that biasing means is a spring **72** which is arranged to push the pin towards either end position (in this case by pushing at roughly 90 degrees to a diameter line drawn between the two end points), as seen best in Figs. 11 and 12. (In Fig. 12, the spring is shown in the position it would be in if the pin **62** was present, though without the pin it in fact would be sprung across the slot, since it pushes the pin away from the position the spring is shown in.) The spring **72** is a torsion spring in the preferred embodiment, mounted on a post **74**, but clearly it could be any other suitable arrangement, including for example a leaf spring positioned to act in the same direction.

Referring now to Figs. 7, 8 and 20-22, the housing further has a groove **80** in its front face for pivotably holding a latch monitor arm **82**. The latch monitor arm is generally elongate, having a first end with an extension **83** having a door latch bolt plate **84** at its distal end. At the opposite end of the arm is a microswitch cam **85**. When a door latch bolt is present in the strike, it will press the plate inwardly, and hence rotate the latch monitor arm, so that the microswitch cam then triggers a microswitch **86**, as seen in Figs. 21 and 22 in particular. A cover **87** protects the microswitch. The latch monitor arm **82** is biased outwardly by a latch arm biasing means, for example a torsion spring **88** (see Fig. 7).

Figs. 23A-23E show a sequence of latch monitor operation as the door **4** is closed, from the Fig. 23A position where the latch bolt **3** is approaching the strike, to the Fig. 23E position where the latch bolt is fully extended and retained by the keeper. In Fig. 23A, the door latch bolt is still outside the strike and the keeper, and the latch bolt plate **84** is in its raised position. In Fig. 23B, the door latch bolt has contacted the keeper and has begun to retract into the door. Fig. 23C shows full retraction of the door latch bolt into the door, and Fig. 23D shows the door latch bolt just past the keeper and starting to extend again, contacting the latch bolt plate. In Fig. 23E, the door latch bolt has pressed the latch bolt plate to its depressed position, causing the cam **85** to activate the microswitch **86**, thus allowing remote monitoring of the door status. Some of the details in these drawings do not correspond to the preferred embodiment, being from an earlier prototype, but the principle is the same.

A face plate **90** is secured to the lip bracket **12** by screws (not shown) through holes **93** in the face plate and into holes **94** in the lip bracket, and is used to secure the strike to the door jamb,

using screws through mounting holes 95. Face plate configuration can be varied as desired, to suit various new or existing door jamb configurations. The lip bracket preferably has profiled surfaces 96, cooperating with similarly profiled surfaces 97 on the housing, to provide stepwise adjustment coupled with positive locking of the lip bracket to the housing. The lip bracket is secured to the housing at the desired depth setting by screws (not shown) through slots 110 in the lip bracket into holes 111 in the housing. The profiles preferably are as shown in Fig. 10, i.e. complementary saw-tooth surfaces, with the mating surfaces being perpendicular or nearly so in the direction to oppose outward displacement of the housing (as indicated by the arrow) relative to the lip bracket (i.e. in the direction of pull for opening the door). The lip bracket may have several size variations to accommodate either 1/2 inch or 5/8 inch keepers (or of course any other size which might be adopted).

To positively detect the keeper position in the strike, the keeper 1 advantageously has an indicator cutout 98 arranged to cooperate with a keeper microswitch 99, so that the keeper microswitch is actuated when the keeper is fully retracted, and off at any other position of the keeper. The cutout results in the microswitch not being activated when the keeper is in its home position, but rotation of the keeper brings the ramp out of the cutout into contact with the microswitch, to trigger it. This provides an indication of door opening, for statistical or other purposes.

Figs. 24 and 25 show the strike in its fail-safe mode, i.e. the keeper being unblocked when the solenoid is unenergized. Fig. 24 shows the solenoid unenergized, and Fig. 25 shows it energized. It can be seen that in the former position the blocking surfaces 18 are not aligned with the keeper abutments 16 (door free), whereas in the latter position they are (door locked).

Figs. 26 and 27 are similar, but showing the fail-secure mode, with the solenoid energized in Fig. 26 and the door unlocked, and the solenoid unenergized and the door locked in Fig. 27.

Referring now to Fig. 28, as an anti-intrusion feature in the preferred embodiment, to prevent someone from inserting something thin and flexible to attempt to dislodge the blocking element and thereby open the door, the keeper is profiled so as to provide little or no clearance between it and the housing, and furthermore a catch 100 is provided in the housing to block anything inserted and the keeper has a lip 102 shaped to direct anything inserted to the area of that catch.

It will be appreciated that the above description relates to the preferred embodiment by way of example only. Many variations on the invention will be obvious to those knowledgeable in the

field, and such obvious variations are within the scope of the invention as described and claimed, whether or not expressly described.

For example, in addition to possible variations specifically mentioned above, Fig. 29 shows a push-type solenoid **22'** instead of the pull-type of the preferred embodiment. The blocking element is guided by a blocking element guide pin **106**, and a spring **108** on the guide pin biases the blocking element towards the solenoid.

It should also be appreciated that the two-position mode selector could be configured differently, although the eccentric arrangement is preferred. For example, there could be a small pivotable two-position lever with a pin projecting from it, with the same two end positions as in the preferred embodiment, and a spring arrangement to bias the lever to either of the two positions. Or, there could be a small sliding bar with a pin projecting from it, again with the same two end positions and spring biasing. Or, instead of spring biasing into the end positions, there could be notches or ball-spring detents or the like which the movable selector elements would engage. Some further such examples are illustrated in Figs. 30A-33B, the key being that each mechanism results in the pin **62** moving from one end position to another, thus moving the holder **30** from one mode position to another, the pin or mode selector preferably being biased by any suitable means to then stay in the selected position. In Figs. 30A-31B, the mode selector **60'** is a small lever, pivotable between two positions, with a pin **62** extending into the housing and engaging the holder **30** as in the preferred embodiment. In Figs. 32A-33B, the mode selector **60''** is a small button, slidable between two positions, again with a pin **62** engaging the holder **30**.

Some additional features or advantages are as follows:

- a. The strike lends itself equally well to left or right hand jamb installation.
- b. Since the pivotal keeper is trunnion mounted, a separate hinge shaft is not required.
- c. The keeper position is laterally adjustable for physical installation variables, using the lateral adjustment possibility of the housing relative to the lip bracket.
- d. The strike has a compact design. The total thickness is typically 1-3/16" for a 5/8" keeper (3/4" maximum latch projection), and 1-1/16" for a 1/2" keeper (5/8" maximum latch projection).

The choice of materials is not part of the invention per se. However, the keeper is preferably ferrous metal injection molded, investment cast or bar extruded, and provided with a suitable

coating to provide a corrosion-resistant keeper. The holder is advantageously metal injection molded or investment cast and suitably surface treated for corrosion resistance. The housing is preferably investment cast or die cast and/or powder metal formed, and suitably plated to provide a corrosion-resistant housing. The blocking element is preferably made of stainless steel to provide a non-magnetic material, and is advantageously surface treated, e.g. plated, for minimum co-efficient of friction. The latch monitor arm is advantageously die cast or investment cast. The lip bracket is preferably die cast and/or investment cast. Advantageously, an aesthetically pleasing surface finish is provided. The face plate is constructed of stainless steel or other materials of sufficient strength to achieve an aesthetically pleasing surface finishing which can withstand the required abuse during use.

INDUSTRIAL APPLICABILITY

The strike is suitable for buildings requiring egress/ingress control such as commercial buildings, hospitals, warehouses, and educational facilities, as non-limiting examples. The latch and keeper monitor means are used for traffic intelligence, when the strike is connected to a building security system, for instance.

CLAIMS:

1. An electric strike for a door, comprising:
 - a housing;
 - a keeper pivotally arranged in said housing, positioned to prevent withdrawal of a door latch bolt when prevented from pivoting, and to allow withdrawal of said door latch bolt when allowed to pivot;
 - a holder slidably arranged in said housing;
 - a blocking element slidably arranged in said holder having blocking surfaces opposing abutments of said keeper for selectively preventing rotation of said keeper, movable between a blocking position wherein rotation of said keeper is prevented and a non-blocking position wherein rotation of said keeper is allowed, biased towards one of said positions;
 - a two-position mode selector operable from outside said housing for slidably moving said holder between a fail-secure and a fail-safe position, said blocking surfaces blocking rotation of said keeper when in said biased position when said holder is in said fail-secure position, and allowing rotation of said keeper when in said biased position when said holder is in said fail-safe position; and
 - actuation means mounted in said holder for moving said blocking element away from said biased position, to block or unblock said keeper.
2. An electric strike as in claim 1, wherein said mode selector comprises an eccentric rotatable through 180 degrees, said eccentric having a pin extending therefrom engaging a slot in said holder, eccentric motion of said pin thereby displacing said holder between two end positions corresponding to the position of said pin at opposite ends of 180 degrees of rotation.
3. An electric strike as in claim 1, further comprising means for biasing said mode selector into whichever of said two positions is selected.
4. An electric strike as in claim 2, further comprising means for biasing said mode selector into whichever of said two positions is selected.
5. An electric strike as in claim 4, wherein said means for biasing said mode selector is a spring positioned to act on said pin in a direction roughly 90 degrees to a diameter line drawn between end points of said pin's 180 degree travel.
6. An electric strike as in claim 1, further comprising a latch monitor lever arm pivotally mounted in said housing, said latch monitor lever arm having an extension therefrom with a plate positioned to be depressed when a latch bolt is present in said strike, to thereby rotate

said latch monitor lever arm from a home position to which it is biased, said rotation bringing a cam extending from said latch monitor lever arm into gradual contact with a switch button on a microswitch, thereby signalling whether or not a latch bolt is present.

7. An electric strike as in claim 1, further comprising a lip bracket securable to said housing along an interface at any of a plurality of possible relative positions, and a face plate securable to said lip bracket and securable to a door jamb for installation of said strike.

8. An electric strike as in claim 7, wherein said interface has complementary saw-tooth projections from said housing and said lip bracket, said projections having mating surfaces which are generally perpendicular to said interface in a direction to oppose outward displacement of the housing relative to said lip bracket.

9. An electric strike as in claim 1, wherein said actuation means is a pull-type solenoid connected to said blocking element, and said blocking element is biased away from said solenoid.

10. An electric strike as in claim 1, wherein said actuation means is a push-type solenoid and said blocking element is biased towards said solenoid.

11. An electric strike as in claim 1, wherein said keeper and said housing are shaped so as to provide substantially no gap therebetween when said keeper is in a home position blocked by said blocking element, and wherein said keeper has a lip and said housing has a catch, said lip being positioned to direct any flexible inserted item towards said catch, said catch blocking further insertion.

12. An electric strike for a door, comprising:

a housing;

a keeper pivotally arranged in the housing;

a holder slidably arranged in the housing;

a blocking element slidably arranged in the holder, wherein the blocking element is configured to selectively prevent a rotation of the keeper and allow the rotation of the keeper;

a two-position mode selector operable from outside the housing, wherein the two-position mode selector is configured to selectively move the holder from a first position to a second position and from the second position to the first position; and

an actuator configured to selectively move the blocking element, wherein when the holder is in the first position, the blocking member allows the rotation of the keeper when the actuator is energized and prevents the rotation of the keeper when the actuator is not energized, wherein when the holder is in the second position, the blocking member prevents the rotation of the keeper when the actuator is energized and allows the rotation of the keeper when the actuator is not energized.