

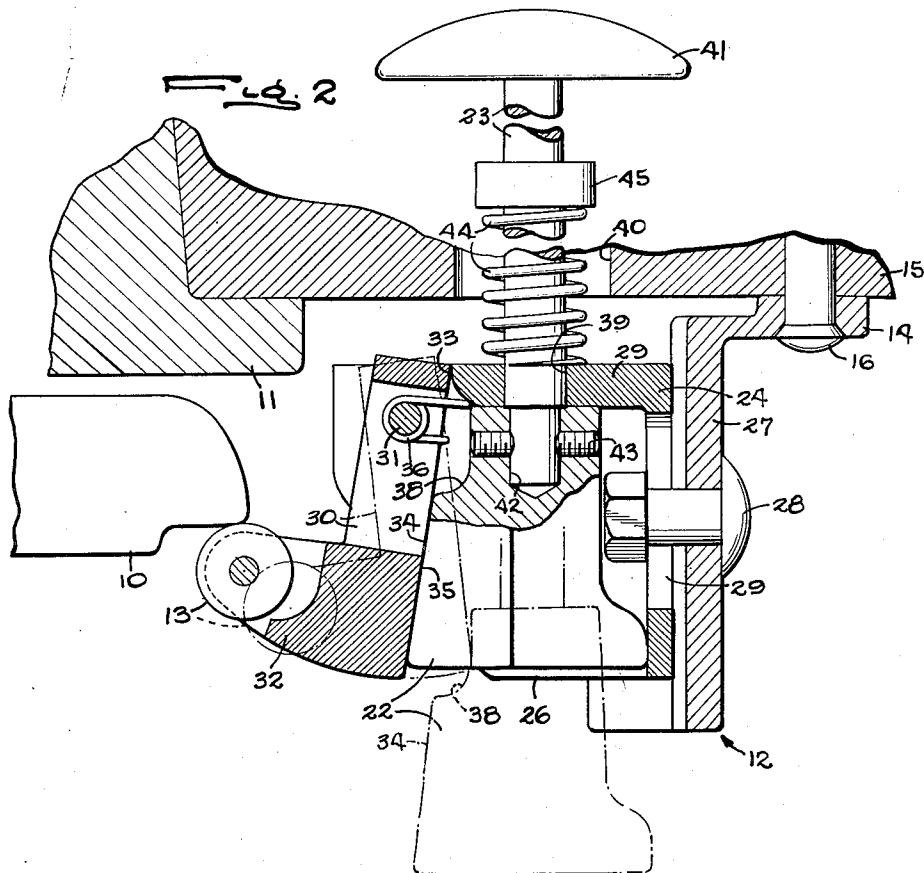
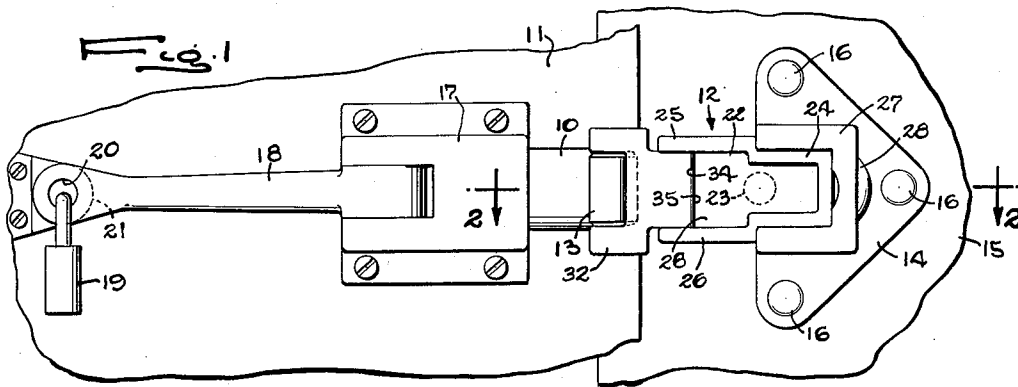
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KEEPER

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This invention relates to latches with a retractable bolt engaging a strike to hold a door closed and, more particularly, to a latch with a keeper whose strike may be moved from inside the door to release the bolt and permit the door to be opened so that a person trapped inside the door may escape even though the door is locked.

The general object of the invention is to provide a latch of the above character with a new and improved keeper which is comparatively simple in construction and inexpensive to manufacture, which is easy to operate and whose parts are automatically returned to the normal operative position after the door has been opened from the inside.

A more detailed object is to provide a keeper with a strike which is mounted to move away from the bolt but normally is held out for engagement with the latter by a member that is shiftable from inside the door to a position in which the strike may be moved away from the bolt, the member being yieldably urged toward the original position in which the strike engages the bolt.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is a fragmentary elevational view of a door with a latch embodying the novel features of the present invention.

Fig. 2 is an enlarged fragmentary sectional view taken along the line 2—2 in Fig. 1.

For purposes of illustration, the invention is shown in the drawings embodied in a latch comprising a bolt 10 mounted on a door 11 and held in latched position by a keeper 12 including a strike 13 which engages the bolt and herein is a roller supported by a base 14, the latter being attached to the frame 15 of the door as by bolts 16. Preferably the bolt 10 slides toward and away from the strike in a bracket 17 secured to the door and is operated by an elongated handle 18 as is conventional in latches of this type. A padlock 19 looped through a hole 20 in the outer end of the handle 18 and a hasp 21 on the door prevents the bolt from being retracted out of engagement with the strike and thus locks the door closed.

Latches of the type shown often are used on doors for refrigerated storage rooms and the like in which the door is the only exit from the room. In order that a person locked in the room may escape, the strike 13 is mounted on the support 14 to move between an active or bolt engaging position and an inactive position away from the bolt and may be shifted to the inactive position from the inside of the door 11, but not from the outside, so that the bolt is released and the door may be opened from the inside even though the padlock 19 is in place.

In accordance with the present invention, the keeper 12 is constructed in novel manner so as to require comparatively few and simple parts, to be operated easily from inside the door 11 and, after release of the strike 13 from the inside, to return the latter to the active position automatically and condition the latch for normal use.

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To these ends, the strike bears against a member 22 which may be shifted from a first to a second position, shown respectively in full and broken lines in Fig. 2, to permit the strike to be moved away from the bolt and is yieldably urged toward the first position so that the strike normally is held out in the active position for engagement with the bolt 10. The member 22 is moved to the second position from inside the door to release the strike from the bolt by means of an actuator 23 operatively connected to the member and extending through the door frame 15 but is enclosed in a housing 24 so that it cannot be moved from the outside. When the member is shifted to the second position by the actuator, the strike is released and is cammed out of engagement with the bolt as the door is pushed open.

Herein, the member 22 is generally flat and slides in the housing 24 toward and away from the door frame 15 in a plane perpendicular to the latter. To support the member for such sliding, the housing is U-shaped in cross section with the sliding member disposed between the upper and lower legs 25 and 26 of the U and with the bight of the U received in and bolted to a complementally shaped portion 27 projecting out from the base 14. If desired, the bolt 28 fastening the housing to the base may project through a slot 29 in the housing to permit the strike 13 to be adjusted relative to the bolt 10. At its inner end, the housing is closed by a wall 29 (Fig. 2) which serves as an abutment limiting the inward sliding of the member and thus determining the first position of the latter. The outer ends of the legs 25 and 26 define an opening 28 (Fig. 1) through which the member slides to the second position and these ends of the legs overhang the member slightly to prevent the member from being gripped and pulled to the second position from outside the door 11. In this way, the size of the housing is kept at a minimum, being only slightly longer than the member 22, and, at the same time, it precludes release of the strike 13 and unauthorized opening of the door when the lock 19 is in place.

While the strike 13 may slide toward and away from the bolt 10, it is preferred to mount the strike on an arm 30 which is pivotally connected to the housing 24 and swings between the active and inactive positions illustrated respectively in full and broken lines in Fig. 2. In the present instance, the arm 30 is fast on an upright pin 31 spanning and journaled in the legs 25 and 26 of the housing so that the arm swings about a vertical axis. Projecting laterally from the outer free end of the arm and toward the bolt 10 is a bifurcated finger 32 which supports the roller 13. In the active position, the inner end of the arm abuts against the end 33 of the wall 29 which thus limits the outward swing of the arm and locates the roller properly for engagement with the bolt.

Herein, the member 22 is given generally a wedge shape, that is, it has a tapered edge surface 34 engaged by the back 35 of the arm 30 and inclined inwardly and away from the bolt 10. When the wedge 22 is in the inner or first position, the surface 34, which extends along the major portion of the wedge, is flat against the arm surface 35 so that the wedge serves as a rigid backing for the arm when the latter is in the active position. At its inner end, the arm is notched or stepped as indicated at 38 to permit the arm to swing into the notch and carry the strike 13 out of engagement with the bolt.

If desired, the strike 13 may be biased toward the active or bolt engaging position. For this purpose, a torsion spring 36 coiled around the pin 31 with one end hooked to the arm 30 and the other end anchored to the housing 24 tends to turn the arm clockwise as viewed in Fig. 2. Such turning is limited by the stop 33 which, together with the spring 36, holds the arm and hence the strike in the active position.

In the present instance, the actuator 23 for sliding the wedge 22 is an elongated push rod rigidly fastened to the wedge and projecting through a hole 39 in the housing wall 29 and a hole 40 in the door frame 15. A knob or handle 41 is attached to the outer end of the rod 23 and the inner end is reduced in diameter and received in a bore 42 in the inner end of the wedge where it is held by set screws 43. Encircling the push rod is a coiled compression spring 44 which acts between the wall 29 of the housing 24 and a collar 45 fast on the rod 23 and urges the rod and hence the wedge inwardly so that all parts are returned to and normally retained in their active or usual positions shown in full lines in Fig. 2.

With the parts disposed in their normal active positions, the latch is used in the usual way, that is, it is released simply by operation of the handle 18. Should a person be closed inside the door 11, he may open the door, whether locked or not, merely by pushing the rod 23. Such pushing of the rod slides the wedge 22 out to its outer position and this disengages the wedge from the arm 30 and disposes the notch 38 opposite the end or heel of the arm. Then the door is pushed open from the inside and, during this, the bolt 10 cams the strike 13 away and swings the arm 30 into the notch so that the bolt may pass clear of the strike and the door may be opened completely. After the door is opened, the spring 36 swings the arm back to the active position and, when the push rod 23 is released, the spring 44 returns the rod back to its original position so that the parts again are in position for normal use.

It will be observed that the latch described above is comparatively simple, requiring essentially only the strike 13, the wedge 22, the push rod 23 and the spring 44. At the same time, it is easy to operate from inside the door 11, a manual pushing of the knob 41 being all that is necessary. When the handle is released, the parts automatically return to their normal operative positions without being specially set or adjusted.

I claim as my invention:

1. A keeper for a bolt type latch comprising a hollow support adapted to be mounted on the frame of a door adjacent the bolt of the latch and having an opening in the side opposite the door frame, a wedge disposed within said support and mounted to slide out away from the frame and through said opening, means yieldably holding said wedge in its normal position inside said support, a strike pivotally connected to said support and engaging a surface on said wedge, said surface being inclined to hold said strike in bolt engaging position when said wedge is in said normal position and permit the strike to swing in away from the bolt engaging position when the wedge slides out through said opening, and a push rod connected to and projecting from said wedge to extend through the door frame and permit sliding of the wedge from inside the door.

2. A keeper for a bolt type latch comprising a support adapted to be mounted on the frame of a door adjacent the bolt of the latch, a strike pivotally mounted on said support to swing between bolt engaging and bolt releasing positions, an abutment on said support engaging a part rigid with said strike in said bolt engaging position, a spring acting between said support and said strike and urging said strike toward said bolt engaging position and into engagement with said abutment, a member

mounted on said base for movement between first and second positions and operable in said first position to engage and hold said strike in said bolt engaging position, said member when in said second position being out of engagement with and spaced from said strike to permit the strike to swing toward said bolt releasing position, means yieldably urging said member toward said first position, and an actuator projecting outwardly from said member to extend through the door frame and connected to the member to permit the latter to be moved to said second position from inside the door.

3. In a bolt-type latch for a door, the combination of, a support adapted to be secured to the frame of the door adjacent the bolt of the latch, an arm pivotally mounted on said support to swing between bolt engaging and bolt releasing positions, a strike on said arm adapted to engage said bolt when the arm is in said bolt engaging position, a wedge mounted on said support behind said arm to slide from a first position outwardly away from said frame to a second position and having an inclined surface engaging the arm and permitting the latter to swing in to the bolt releasing position when the wedge slides out to said second position, a push rod connected to and projecting from said wedge to extend through the door frame to permit sliding of the wedge from inside the door, and means yieldably urging said wedge toward said first position whereby the wedge normally holds said arm in said bolt engaging position.

4. A keeper for a bolt type latch comprising a support adapted to be mounted on a door frame, a strike pivotally mounted on said support and having a part projecting outwardly and adapted for engagement with the bolt of the latch, a member movably mounted on said base for movement between first and second positions and operable in said first position to engage and hold said strike in bolt engaging position and in said second position to permit the strike to swing in away from the bolt engaging position, means yieldably urging said member toward said first position, and an elongated push rod projecting from said member to extend through said frame and movable axially to shift the member to said second position and permit the strike to swing away from the bolt engaging position.

5. In a bolt-type latch for a door, the combination of, a base adapted to be secured to the frame of the door adjacent the bolt of the latch, a strike mounted on said base to move between bolt engaging and bolt releasing positions, a member mounted on said base in a normal position in which the member engages said strike and holds the same in said bolt engaging position and shiftable away from said normal position to permit the strike to move to said bolt releasing position, means resiliently biasing said member toward said normal position, and a manually operable element connected to and projecting outwardly from said member to extend through the door frame and movable from the inside of the frame to shift said member away from said normal position.

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