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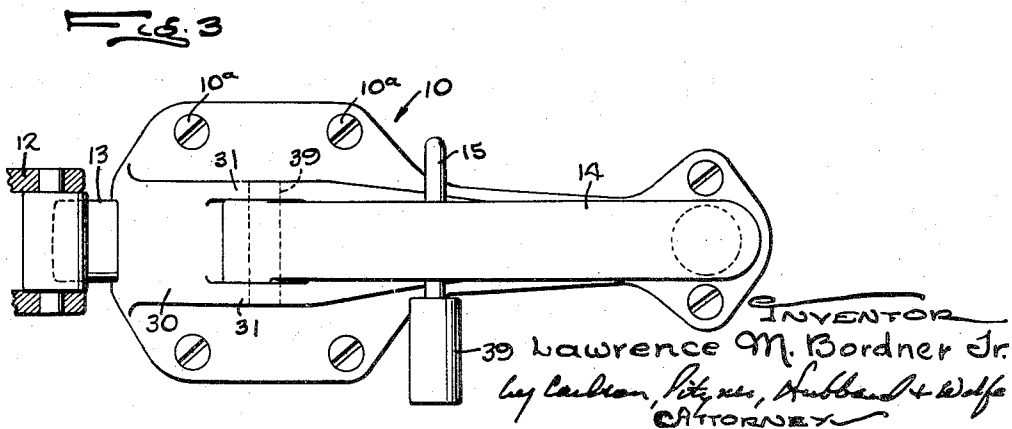
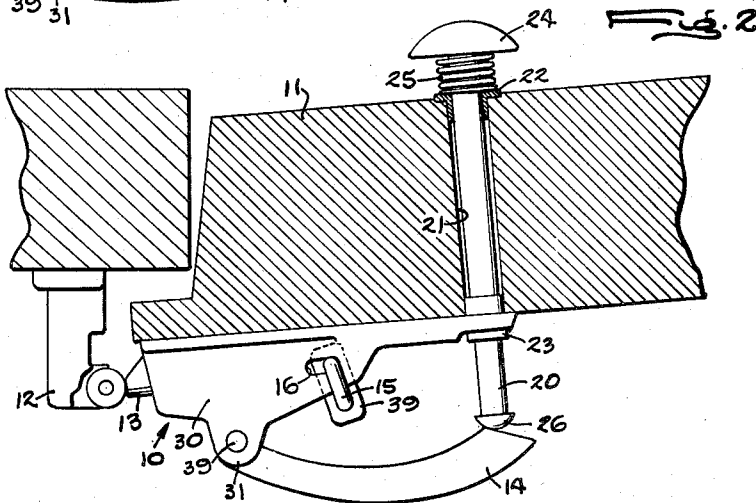
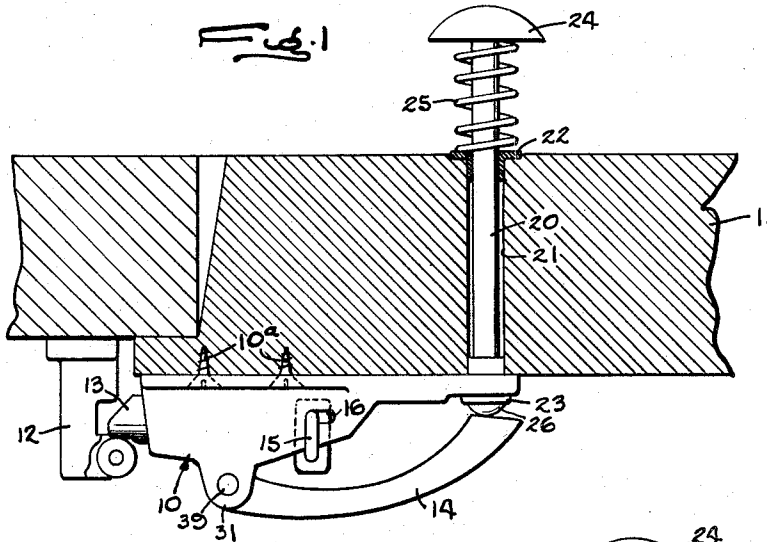
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SAFETY RELEASE LATCH

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2 Sheets-Sheet 1



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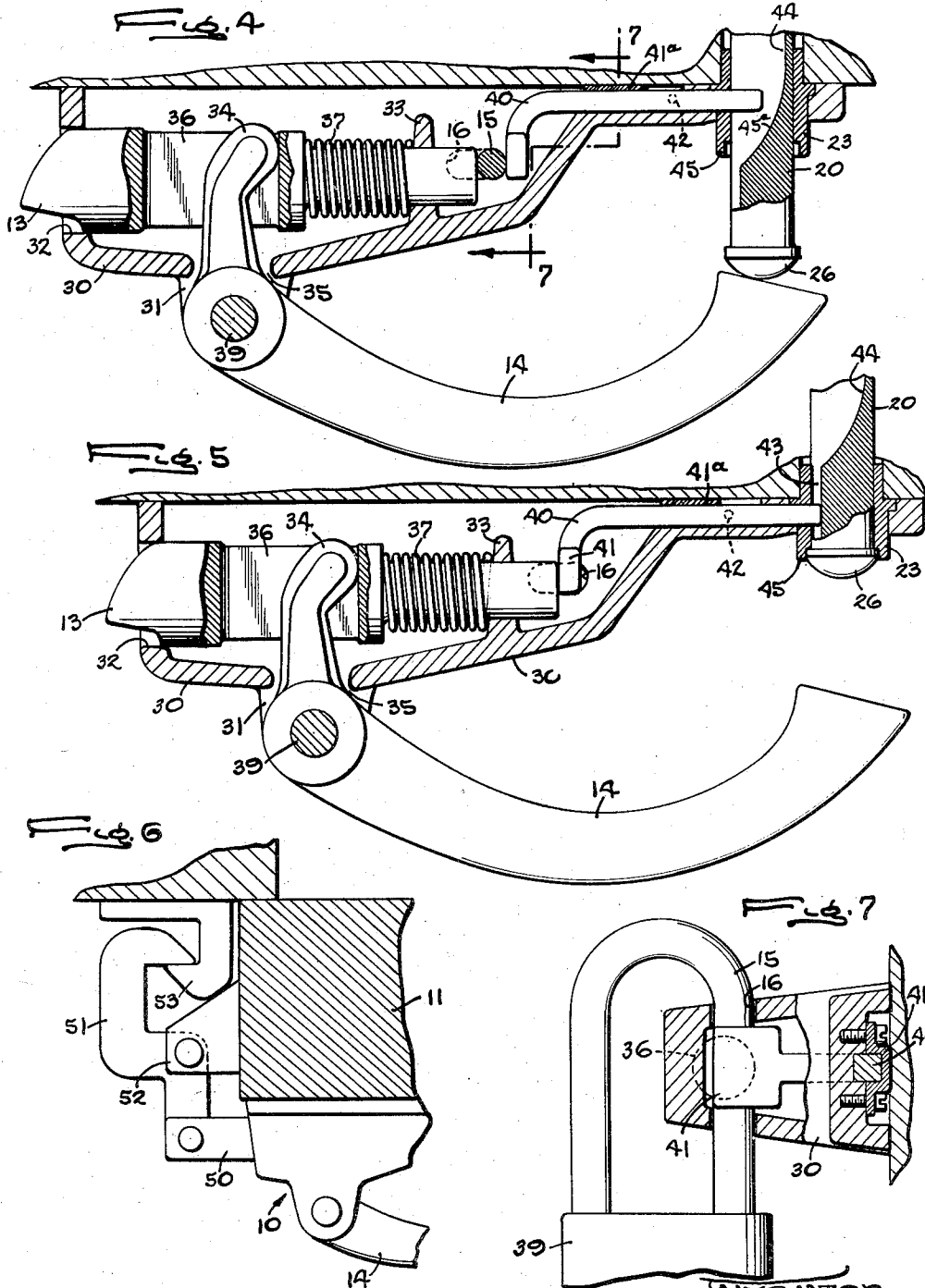
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SAFETY RELEASE LATCH

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4 Claims. (Cl. 292—92)

The present invention relates to latches, especially those latches adapted to lock refrigerator doors and the like, and more particularly to a latch of this character that may be unlocked and released from the inside of the door.

The door latches commonly installed on the heavy doors of refrigerators or coolers are mounted on the outside of the unit. In many instances it is desirable to lock the units from outside entry and the use of padlocks to secure such latches is well known. However, as a safety precaution, it is highly desirable to provide means for unlocking and releasing the latch from the inside of the door so that the door may be opened by a person inadvertently trapped within the unit. Due to the cold and airtight enclosure, characteristic of refrigerators, this problem of providing a simple, fast, and reliable safety release is of particular importance.

It is an object of the invention to provide an improved safety release latch that may be unlocked and released from the opposite side of the door that is reliable, simple, and inexpensive. It is a further object to provide a latch of the above type whose parts return automatically to their engaged and locked positions after having been opened from the inside.

It is a more detailed object to provide a latch of the above type that utilizes an ordinary padlock to lock the latch, but which requires only the straight line actuation from the inside of the door of a simple unitary plunger both to free the latch from the padlock and to release the latch.

It is also an object to provide a latch of the above type whose safety release device does not require modification or redesign of the normal latching parts nor a change in their mounting or installation.

Other objects and advantages of the invention will become apparent upon reading the attached detailed description and upon reference to the drawings, in which:

Figure 1 is a sectional view of a door assembly showing a latch according to the invention in latched and locked position.

Fig. 2 is similar to Fig. 1 showing the door being opened from the inside.

Fig. 3 is an elevation view of the latch shown in Fig. 1.

Fig. 4 is a transverse sectional view of the latch of Fig. 1 being unlatched from the inside of the door.

Fig. 5 is similar to Fig. 4 with the latch being unlatched from the outside of the door.

Fig. 6 shows a modification of the Fig. 1 latch.

Fig. 7 is a section taken on line 7—7 of Fig. 4.

While the invention will be described in connection with a preferred embodiment, it will be understood that we do not intend to limit the invention to that embodiment, but, on the contrary, intend to cover such alternative embodiments and constructions as may be included within the spirit and scope of the appended claims.

Turning first to Figs. 1 and 3, there is shown a latch 10 secured to a door 11 by screws 10a. A strike 12 is

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mounted on the wall adjacent to the latch, so that the end of a bolt 13 will latchingly engage the strike 12 when the door is closed. The latch is provided with a handle 14 which is pivotable to withdraw the bolt 13 from the strike so that the door may be opened.

As shown in more detail in Figs. 4 and 5, the latch 10 comprises a housing 30 having two spaced lugs 31 between which the handle 14 is pivoted on a pin 39. The bolt 13 is slidably supported at one end in an opening 32 formed in the housing and at the other end by a bracket 33 formed on the inside of the housing 30 and integral therewith. The handle 14 carries a finger 34 which extends through an opening 35 in the housing and into a slot 36 formed in the bolt. A coil spring 37 surrounding a portion of the bolt 13 bears against the bracket 33 and a shoulder on the bolt so as to urge the bolt outwardly of the housing. Pulling the handle out away from the door causes the finger 34 to bear on the end of slot 36 to retract the bolt, as shown in Fig. 5.

To lock the door, the latch housing 30 is provided with a slot 16 extending therethrough which is adapted to receive the hasp 15 of a padlock 39. The details of the locking arrangement will be described in further detail. It will suffice for the present to say that when the padlock is in place, the hasp blocks movement of the rear end of the bolt so that the bolt 13 cannot be retracted from the strike 12 and thus prevents the door from being opened.

As a safety precaution which is well known in the art, means are provided to permit the handle 14 to be pivoted by a person on the inside of the door. These means comprise a plunger 20 extending through a hole 21 in the door and aligned with the end of handle 14. Two collars 22, 23 mounted at each end of the hole 21 provide bearing surfaces to slidably support the plunger. On the inside end of the plunger a rounded head 24 is formed which provides a convenient surface against which the pressure of a person's hand can be exerted to slide the plunger outwardly. Urging the plunger to its normal Fig. 1 position is a coil spring 25 surrounding the plunger and bearing on collar 22 and the underside of head 24. A small head 26 formed on the outside end of plunger 20 engages collar 23 and serves as a stop against the urging of spring 25. As can be seen in Fig. 2, a person on the inside of the latched door 11 can push plunger 20 outwardly which causes head 26 to bear on the inside end of handle 14, thus pivoting the handle and unlatching the door.

In accordance with the present invention, the plunger 20 is provided with means that cooperate with elements of the latch 10 to render ineffective the blocking action of the padlock hasp 15 so that the door may be opened from the inside whether the latch is padlocked or not. When the latch is padlocked, the hasp 15 of the lock prevents the bolt from moving to the right in Figs. 4 and 5, as was discussed above. To prevent the hasp itself from being carried to the right by the sliding bolt a blocking member 40 is provided. Member 40 is L-shaped and has its short leg flared to form a target 41, shown in Fig. 7, which is disposed across slot 16 to confine hasp 15 to one end of the slot. The blocking member is, however, slidably carried within the housing 30 so that it may slide to the right, as shown in Fig. 4, and allow hasp 15 to be moved to the other end of slot 16 thus permitting the bolt to be retracted from strike 12 to unlatch the door. Supporting the blocking member for sliding movement is a strap 41a bolted to the housing. A pin 42 extending from the member 40 engages the strap and limits the sliding movement of the member toward the left in Figs. 4 and 5.

In keeping with the invention, the sliding movement of blocking member 40 is controlled by plunger 20. In

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the normal Fig. 5 position the end of member 40 fits within a shallow groove 43 formed in the side of plunger 20. The blocking member cannot then slide toward the right since its end abuts the bottom of groove 43. The member 40 can thus block the padlock hasp 15 and prevent the bolt from being retracted. When the plunger 20 is pushed outwardly, the groove 43 adjacent member 40 deepens to form a well or recess 44. The slot receives the end of member 40 and permits it to slide far enough to the right, as shown in Fig. 4, to allow the bolt 13 to be retracted thereby unlatching the door.

It can therefore be seen that when plunger 20 is pushed outwardly by a person locked on the inside of door 11, the plunger engages and pivots the handle 14 to withdraw the bolt 13 from the strike 12, and also in the same movement, releases the blocking member 40 for sliding movement so that if there is a padlock hasp in the path of the withdrawing bolt the hasp may move along with the bolt to allow the formerly locked door to open. While the release of blocking member 40, and the pivoting of handle 14 to withdraw the bolt, both occur as a result of simply pushing plunger 20 outwardly, it is inherent that the parts be proportioned so that the blocking member is released before the bolt is withdrawn far enough to be arrested by the unreleased blocking member 40. Pushing plunger 20 outwardly, therefore, causes the following sequence to occur: the handle 14 pivots slightly to take up any slack between the parts and to move the bolt 13 toward hasp 15; recess 44 releases blocking member 40 for sliding movement; handle 14 pivots to withdraw the bolt 13 from strike 12; and finally, as plunger 20 is slid as far as it can move, further pressure causes the now unlocked door to swing open. It will be noted that collar 23 is formed with an extending lip 45 which surrounds the edge of plunger head 26 and prevents the plunger from being grasped from the outside of the door to circumvent the padlock.

It is a feature of the invention that all of the latch parts return to their normal positions after the locked latch has been opened from the inside of the door. After the plunger 20 has been released the spring 25 returns it to its Fig. 1 position. The spring 37 urges bolt 13 to its extended position, and in so doing, pivots handle 14 to its normal, Fig. 1, position. As the plunger 20 is retracted by its spring a cam surface 45a formed between the bottoms of the slot 44 and the groove 43 cams the blocking member to the left in Fig. 4 so that it again assumes the normal Fig. 5 position.

In Fig. 6, a modification of the latching arrangement is shown. In this arrangement the bolt of the previously discussed structure is replaced by an actuator 50 which is pivotally connected to a hook-shaped latching member 51. Member 51 is pivoted at approximately its midpoint between two spaced bracket portions 52 fixed to the outer edge of the door, and cooperates with a strike 53. As can be readily seen, the door in Fig. 6 will be unlatched when the actuator 50 is retracted within the housing 30, and thus the operation of the latch is identical to that described above.

While the present invention has been described in connection with the hasp of a padlock, it will be understood that the term "hasp," as used herein, is not limited thereto but would include any equivalent member lockingly insertable between the bolt and the blocking member whether or not forming a part of a padlock of conventional design.

I claim:

1. In a latch, the combination of, a housing adapted to be mounted on a door exteriorly thereof, an elongated bolt mounted in said housing for endwise sliding between projected and retracted positions, a handle mounted on said housing and operatively connected to said bolt to move the latter between said positions, said housing having a slot immediately behind said bolt for receiving the hasp of a lock and elongated in the direction of bolt

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movement to permit the hasp to move as the bolt is slid to the retracted position, a member mounted on said housing to engage the hasp and to slide with the bolt and the hasp as the bolt moves to the retracted position, an elongated bar extending transversely of the bolt and projecting interiorly of the door, an abutment surface on said bar engaging said member and preventing the member from sliding thereby to hold said bolt in the projected position, and means supporting said bar for endwise sliding to move said surface out of engagement with said member thereby to permit the member and the bolt to slide.

2. In a latch, the combination of, a support adapted to be secured to a door exteriorly thereof, an elongated bolt mounted on said support for endwise sliding between projected and retracted positions, a handle mounted on said support and operatively connected to said bolt to move the latter between said positions, a member disposed behind and spaced from said bolt to permit the bolt to move to the retracted position, means on said support for locating the hasp of a lock between and in abutting relation with said bolt and said member, said hasp and said member being movable on said support with said bolt as the latter slides to the retracted position, an element projecting interiorly of the door and normally engaging said member and preventing the member from moving thereby to lock the bolt in the projected position, and means mounting said element on said support for movement out of engagement with said member to permit the member to move and thereby permit sliding of the bolt to the retracted position.

3. In a latch, the combination of, a housing adapted to be mounted on a door exteriorly thereof, an elongated bolt mounted in said housing for endwise sliding between projected and retracted positions, a handle mounted on said housing and operatively connected to said bolt to move the latter between said positions, said housing having a slot immediately behind said bolt for receiving the hasp of a lock and elongated in the direction of bolt movement to permit the hasp to move as the bolt is slid to the retracted position, a member mounted on said housing to engage the hasp and to slide with the bolt and the hasp as the bolt moves to the retracted position, an elongated bar extending transversely of the bolt and projecting interiorly of the door, an abutment surface on said bar engaging said member and preventing the member from sliding thereby to hold said bolt in the projected position, and means supporting said bar for endwise sliding to move said surface out of engagement with said member thereby to permit the member and the bolt to slide, said bar being aligned with a part of said handle to engage and move the handle after said surface is moved out of engagement with said member thereby to retract said bolt.

4. In a latch, the combination of, a support adapted to be secured to a door exteriorly thereof, an elongated bolt mounted on said support for endwise sliding between projected and retracted positions, a handle mounted on said support and operatively connected to said bolt to move the latter between said positions, a member disposed behind and spaced from said bolt to permit the bolt to move to the retracted position, means on said support for locating the hasp of a lock between and in abutting relation with said bolt and said member, said hasp and said member being movable on said support with said bolt as the latter slides to the retracted position, an element projecting interiorly of the door and normally engaging said member and preventing the member from moving thereby to lock the bolt in the projected position, and means mounting said element on said support for movement out of engagement with said member and into engagement with said handle thereby to release the member and to move said handle and said bolt to the retracted position.

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