

Aug. 27, 1957

D. R. WOMER
LOCK AND LATCH DEVICE

2,803,956

Filed June 4, 1954

2 Sheets-Sheet 1

Fig. 1

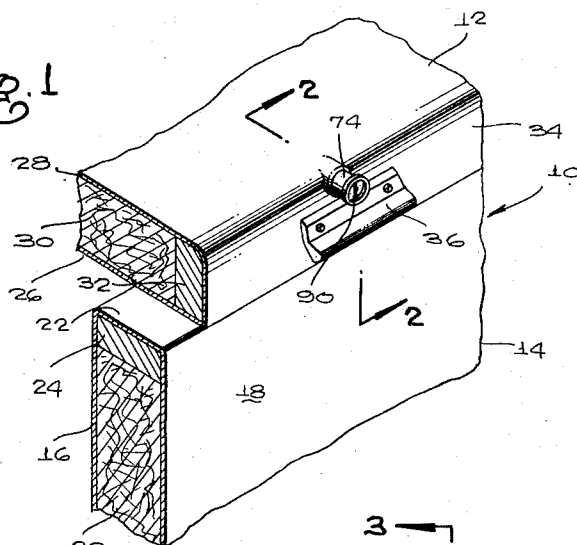


Fig. 2

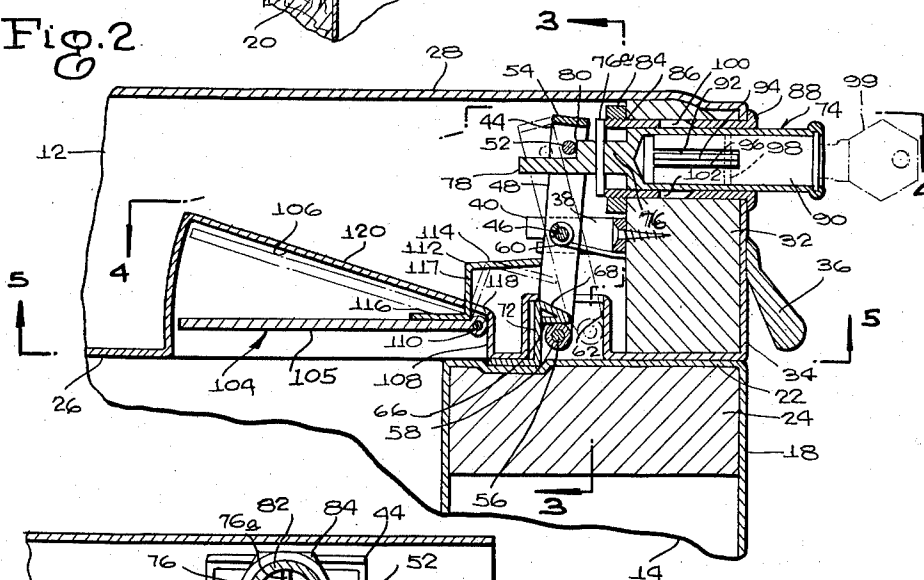
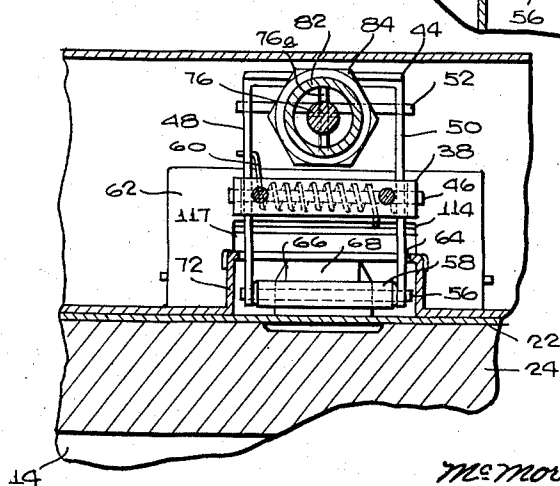


Fig. 3



INVENTOR.
DAVID R. WOMER
BY

McMorrow, Berman + Davidson
ATTORNEYS

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2,803,956

LOCK AND LATCH DEVICE

David R. Womer, New Bloomfield, Pa.

Application June 4, 1954, Serial No. 434,371

1 Claim. (Cl. 70—146)

This invention relates to locks for cabinets and more particularly to a releasable inter-engaging latch on the cabinet closure which will releasably secure the cabinet closure to the open side of the cabinet and includes means carried by the closure whereby the closure may be brought out of securing engagement in its closing relation to the cabinet from the interior of the cabinet.

It is an object of this invention to provide a latch and lock device in which there is provision whereby a person getting trapped in the cabinet, more particularly of the refrigerator or deep freeze type, will be enabled to open the door of the cabinet from the interior thereof.

It is a further object of this invention to provide a lock for the device which will be operative only when the door or closure is in closing relation to the cabinet so that it cannot be opened without first releasing the lock mechanism.

Yet another object of this invention is to provide a lock for the cabinet closure which may be operative to be moved into locking relation without the use of a key.

Other objects and advantages will become apparent from a consideration of the following detailed description, forming the specification, and taken in conjunction with the accompanying drawings, in which:

Figure 1 is a fragmentary perspective view of a cabinet where the closure therefor is in closing relation to the open side of the cabinet;

Figure 2 is a cross sectional view taken on line 2—2 of Figure 1;

Figure 3 is a cross sectional view taken on line 3—3 of Figure 2;

Figure 4 is a cross sectional view taken on line 4—4 of Figure 2;

Figure 5 is a cross sectional view taken on line 5—5 of Figure 2; and

Figure 6 is a cross sectional view similar to Figure 2 showing the lock mechanism in its locked position.

With continued reference to the drawings, there is shown a portion of a chest cabinet, indicated generally by the reference numeral 10, and having an open top with a cover or closure 12 movable into closing relation with respect to the open top of the cabinet. The cabinet 10 is shown as having a front wall 14 having inner and outer walls 16 and 18 in spaced parallel relation and containing therebetween the usual insulation material 20 and connected together at the top by a longitudinally extending top wall 22 which may be considered to define a jamb, and a reinforcing bar 24 which extends longitudinally across the upper end of the outer wall or side 18 between the inner and outer walls and immediately below the jamb or top wall 22.

The door or closure in the present illustration, also comprises a pair of spaced parallel inner and outer walls 26 and 28 having the usual insulation material 30 therebetween and a reinforcing bar 32 which extends longitudinally across the door closure 12 adjacent the free end 34 or end wall remote from the end of the door

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closure which is hinged to the cabinet, and in underlying relation to the free end or end wall 34 as shown in Figure 1. When the door closure is brought into relation with the open top of the cabinet, it will be seen that the free end 34 of the closure will be coplanar with the outer wall 18 of the front side 14 of the cabinet.

The free end 34 has secured thereto, intermediate its ends, a lift handle 36 which extends externally outwardly therefrom to provide a hand grip whereby the closure may be moved into and out of closing relation with the open top of the cabinet.

A generally U-shaped bracket 38 has its bight portion secured to the inner surface of the bar 32 intermediate its ends between the inner and outer walls 26 and 28 of the door closure 12 with the spaced parallel legs 40 and 42 extending outwardly therefrom in a direction away from the free end 34 of the closure or door and in parallel relation to the inner and outer walls 26 and 28.

A latch 44 is carried on a shaft 46 which extends between the legs 40 and 42 of the bracket 38 intermediate the ends of the legs and is journaled adjacent its opposite ends in the respective legs, the shaft being disposed horizontally intermediate the ends of the legs 48 and 50 of the latch 44 so that the latch is connected to the closure 12 for rocking movement in an arcuate path about said shaft as an axis.

At this point, it will be apparent that a portion of the insulation 30 in the door closure 12 has been removed to provide a chamber between the inner and outer walls thereof in which the lock and latch device, parts of which have already been described, may be disposed.

A cross rod 52 extends between the legs 48 and 50 of the latch 44 adjacent the bight or top cross bar 54 and in spaced parallel relation to the shaft 46. The opposite ends of the cross rod 52 are supported in the respective legs 48 and 50. It will be noted that the cross bar 54 is disposed adjacent the outer wall 28 of the closure 12.

The free or lower ends of the legs 48 and 50 of the latch 44, remote from the cross bar 54 has journaled therein the opposite ends of a latch element or roller shaft 56 which is in spaced parallel relation to the shaft 46 and carries thereon for rotation therewith, a latch roller 58 normally engaging a keeper 66. Spring means is provided operatively connected to the latch 44 for biasing the roller 58 into engagement with the keeper 66. Specifically, this means embodies a coil 60 which is encirclingly carried on the shaft 46 and has one end thereof secured behind the leg 48 of the latch 44 and in the other end thereof secured under the bight section or portion of the bracket 38 so that the latch 44 is normally urged in its arcuate path of movement by this yielding or resilient means in one direction wherein the latch roller 58 moves away from the free edge 34 of the closure.

The inner wall 26 of the door closure 12 is provided with a recessed well 62 the bottom or end wall of which is provided with an opening 64 therethrough through which the lower end of the leg of the latch may extend into the well 62. The keeper 66 is mounted on the cabinet open top for cooperation with the latch 44 and is normally engaged by the roller 58, the keeper 66 including an inclined striker plate or surface 68 and a latch roller retaining plate or surface 70 which is disposed in underlying relation to the striker plate 68 and extending perpendicularly from the upstanding portion 72 with the striker plate and the retaining plate being integrally formed so that a triangular projection is carried by the upstanding portion 72 of the keeper 66 and projects in the well 62 in a direction toward the free edge 34 of the closure 12. A plunger 74 extends transversely inwardly from the edge of the closure 12 adjacent the jamb 22 and has a portion adjacent one end within the closure

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and spaced from the edge thereof and has the portion adjacent the other end projecting outwardly of the closure 12. The portion of the plunger 74 within the closure 12 is positioned between the legs 48 and 50 of the latch 44 and below and adjacent the top crossbar 54. A projection 76 is carried by the portion of the plunger 74 within the closure 12 and is provided with engaging means, embodying a shoulder 78, engaging the crossbar 52 so that upon movement of the plunger 74 in its rectilinear path in a direction toward the latch 44, the shoulder 80 will bear against the cross rod 52 and cause the latch 44 to move in its arcuate path in a direction to move the latch from the solid line position shown in Figure 2 to the dotted line position shown in the same figure. Whereupon the latch roller 56 may be guided downwardly along the inclined surface of the striker plate 68 to the juncture of the striker plate with the latch roller retaining plate, at which time the latch roller will engage under the retaining plate under the urging of the spring 60 so that the closure 12 will be in releasably secured engagement in closing relation to the open top of the cabinet 10.

The plunger 74 rides in a casing 82 extending transversely through the reinforcing bar 32 and secured therein by a nut 84 which is threadingly received on the externally threaded end 86 of the casing so that the enlarged head 88 of the casing will engage the outer surface of the free edge 34 adjacent the outer wall 28 of the closure 12. The plunger 74 is preferably tubular and the casing 82 also being in the form of a tube the interior diameter of which is of a diameter to closely receive the plunger 74 for sliding movement therethrough in a rectilinear path parallel to the inner and outer walls of the closure and perpendicular to the free edge 34. A pin 76a is carried by the projection 76 and extends transversely therethrough and therebeyond to opposite sides thereof. The pin 76 defines a stop member limiting movement of the plunger 74 in its rectilinear path of movement in one direction, to the right as viewed in Figures 2 and 6, by engagement with the adjacent end of the casing 82. Thus, the plunger 74 cannot be removed from the casing 82 by moving it to the right as viewed in Figures 2 and 6.

The barrel portion 90 is provided with a slot 92 which extends transversely therethrough and houses therein a pair of locked arms 94 and 96 which are pivotally mounted adjacent one end upon a transversely extending pivot pin 98 and spring urged to move in arcuate paths in opposite directions, but normally prevented from so doing by being in contact with the interior of the casing 82. However, upon rotation of the barrel portion 90 of the plunger 74 in the casing 82 by a key 99, having the necessary notches therein to correspond with the usual type of tumblers contained in the lock barrel 90, the lock arms 94 and 96 will be urged to move in their arcuate paths in opposite directions so as to enter openings 100 and 102 formed in the casing 82 to thus prevent movement of the plunger 74 in one direction in its rectilinear path to engage the cross rod 52 and thereby prevent movement of the latch 44 in its arcuate path so that in the case where the latch roller 58 is in engagement under the retaining plate 70, the door or closure 12 will be locked in closing relation with respect to the open top of the cabinet 10. The arms 94, 96 constitute releasable lock means carried by the plunger 74 for holding the plunger 74 in a position in which the other end portion projects outwardly from the free edge of the closure 12. Upon reverse rotation of the barrel portion 90 of the plunger 74 within the casing 82 by the key 99 the lock means embodying the arms 94, 96 are actuated to release position out of the openings 100, 102, permitting the plunger 74 to be movable inwardly by pressure of the thumb or finger of a user to rock the latch 44 about its axis and shift the roller 58 out of engagement with the keeper 66.

With the closure or door 12 in closing relation to the open top of the cabinet 10 and with the latch 44 engaged by the keeper 66, and either with the lock means in opera-

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tive or inoperative position, it is possible to actuate the latch 44 so as to move it in its arcuate path out of the releasable engagement with the keeper 66 from the interior of the cabinet. To this end, there is provided a latch actuating lever 104 carried by the closure 12 in an elongated recess 106 in the inner wall 26 of the closure and adjacent the wall 108 of the recess adjacent the well 62, the recess 106 being formed in the inner wall 26 at a location adjacent the well 62 but on the side thereof remote from the free edge 34, for movement in a vertical arcuate path. The lever 104 is horizontally disposed and includes a pair of arms 105 and 114, the latter being offset at 112. The lever 104 is positioned so that the arm 114 is horizontally disposed and is in engagement with the legs 40 and 42 of the latch 44 between its axis of rotation, the shaft 46, and the roller 58 with the other arm 105 horizontally disposed and remote from the legs 40 and 42 of the latch 44. The lever 104 is connected between the arms 105 and 114 to the closure 12 by a hinge pin 110 for simultaneous movement of the arms 105 and 114 from the horizontal position, shown in solid lines in Figure 2, to positions at an angle to the horizontal, as shown in dotted lines in Figure 2. The lever 104, upon execution of the movements of the arms 105 and 114 from the horizontal position or positions at an angle to the horizontal, causing the arm 114 to bear against and move the latch 44 and shift the roller 58 out of engagement with the keeper 66 against the action of the coil spring 60, where upon the closure or door 12 will be capable of moving to an open relation with the open top of the cabinet 10. It should be noted that the intermediate portion 117 which extends between the adjoining ends of the fingers 114 and 116 and extends upwardly from the upper face of the actuating lever 104 in perpendicular relation thereto depends through an opening 118 in the end wall 120 of the recess 106 so as to permit movement in its arcuate path therethrough.

While there is shown and described the preferred embodiment of the invention, it is to be understood that the structure is susceptible to change and modification within the practicability of the invention and therefore should be limited only by the scope of the claim appended hereto.

What is claimed is:

A latch device for a chest cabinet having an open top and a cover movable into closing relation with the open top comprising a plunger extending transversely inwardly from an edge of said cover and having the portion adjacent one end within the cover and spaced from the edge thereof and having the portion adjacent the other end projecting outwardly of the edge of said cover, said plunger being mounted in said cover for sliding movement inwardly of the cover edge, a latch including a pair of legs and a bight extending between one of the adjacent ends of said legs positioned within the cover so that said one end portion of said plunger is between the legs and below and adjacent to the bight of said latch and having the legs of said latch intermediate the end thereof connected to said cover for rocking movement about a horizontal axis, a cross rod extending between and supported in the legs of said latch adjacent the bight thereof and engaging means on said plunger one end portion, a keeper on the open top mounted for cooperation with said latch, a latch element supported in the legs of said latch adjacent the free ends thereof normally engaging said keeper, releasable lock means carried by said plunger for holding the plunger in the position in which said other end portion projects outwardly from the free edge of said cover, said plunger upon actuation of said lock means to release position being movable inwardly to rock said latch about its axis and shift the latch element out of engagement with said keeper, spring means operatively connected to said latch for biasing the latch element into engagement with said keeper, and a horizontally disposed lever including a

pair of arms positioned so that one of the arms is horizontally disposed and in engagement with the legs of said latch between said latch axis and said latch element with the other arm horizontally disposed and remote from the legs of said latch, and connected between said arms to said cover for simultaneous movement of said arms from the horizontal positions to positions at an angle to the horizontal, said lever upon execution of the movements of said arms from the horizontal positions to positions at an angle to the horizontal causing said one arm to shift out of engagement with said keeper against the action of said spring means.

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