June 13, 1950 C. W. FISCHER 2,511,253

LOCKING MECHANISM FOR CABINETS, INSTRUMENT CASES, AND THE LIKE

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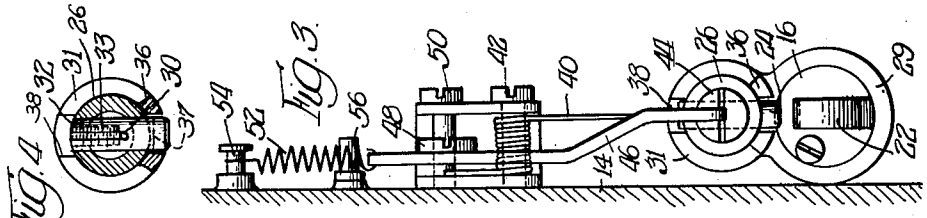


Fig. 4

Fig. 3

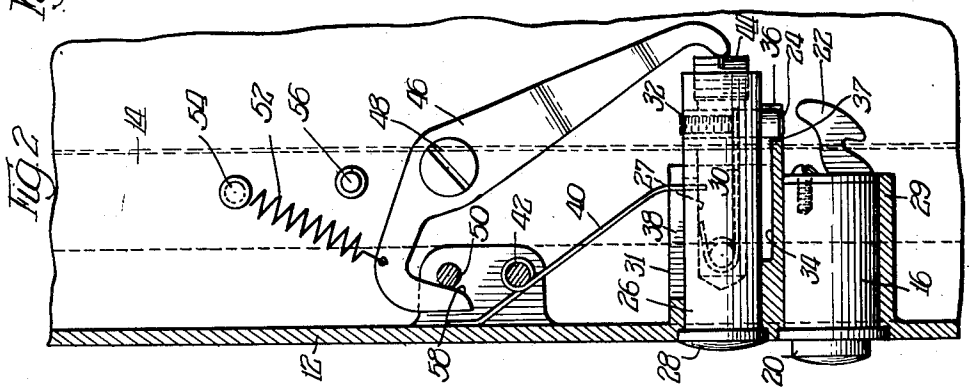


Fig. 2

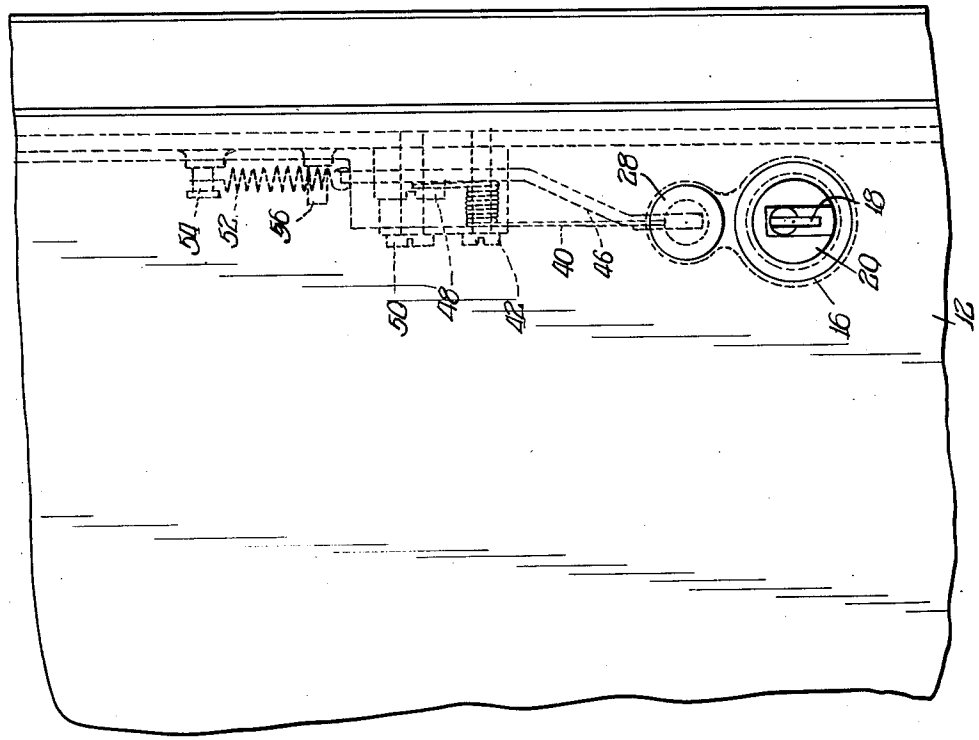


Fig. 1

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LOCKING MECHANISM FOR CABINETS, INSTRUMENT CASES, AND THE LIKE

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6 Claims. (Cl. 292—129)

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This invention pertains to locking mechanism for cabinets, instrument cases and the like.

An object of the invention is to provide a locking mechanism which is particularly suited for cabinets and the like.

Another object is to provide a lock which does not have any exterior protrusions when the door is locked.

A further object is to provide a lock which is relatively inconspicuous when viewed from the outside of the door.

Another object is to provide a locking mechanism wherein the latch is positively held in latched position as distinguished from the usual type wherein the latching position is maintained by a spring.

A further object is to provide a locking mechanism having a cam action which has sufficient mechanical advantage between the lock and cam to compress a door gasket tightly.

Another object is to provide a locking mechanism which is readily adaptable to compensate for door gaskets of varying thickness.

A further object is to provide a locking mechanism wherein the movement of the latch from locked to unlocked position is spring actuated.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, drawing and claims appended hereto.

In the drawings, which illustrate an embodiment of the device and wherein like reference characters are used to designate like parts:

Figure 1 is a front elevation of a locking mechanism embodying the invention, as viewed from the outside of a door in locked position. The portions of the device positioned behind the door are shown in broken lines;

Figure 2 is a side elevation, partially in cross section, of the device in locked position;

Figure 3 is a rear elevation of the locking mechanism in locked position the same looking toward the left as viewed in Figure 2; and,

Figure 4 is a transverse sectional elevation of the the plunger and slide pin taken through the plunger pin 24 and the set screw 32 shown in Figure 2.

The locking mechanism is mounted on the door 12 and door frame 14. The push button type of key operated lock unit shown at 16 is of the type disclosed in Jacobi Patent No. 2,086,034, issued July 6, 1937. When a key is inserted in the key hole 18, and turned to unlock the unit, the head

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or push button 20 may then be pushed inwardly causing the bolt or pivoted pin engaging member 22 to move upwardly to engage slide or locking pin 24.

The plunger 26 is mounted adjacent and above the lock unit and is provided with a push button head 28. The housing 29 of the locking unit and the housing 31 of the plunger may be integrally formed or otherwise secured adjacent each other in the relationship shown in the drawings, or they may be separately mounted in the door. The slide pin 24 is mounted in the plunger 26 adjacent the inside end thereof. The plunger 26 is provided with a chamber 27 in which is mounted the coil spring 30, one end of which is secured to the stop engaging slide pin 24 by the set screw 32, the end of the spring being inserted in a longitudinal slot 33 in the pin and the set screw holding it against the end of the slot. The other end of the spring is seated against the side of chamber 27. The spring 30 urges the pin 24 outwardly of the plunger and toward the bolt 22. The plunger housing 31 is provided with a longitudinal channel 34 for accommodating the outer end of the pin 24 when it is sliding between locking and unlocking positions. On either side of the channel 34 at the end of the housing are lugs 36 which keep the pin 24 in alignment with channel 34 when the latter is extended from the plunger in locked position as shown in Figure 2 in which position the pin 24 engages the inner end of housing 31 between lugs 36, which pin engaging surface forms stop 37.

The upper side of the plunger housing 31 is provided with a longitudinal slot 38 for receiving the screw 32 when the plunger 26 is moving toward the left as viewed in Figure 2. The spring member 40 is secured to the inner face of door at 42, one end thereof engaging the inner face of the door, and the other end entering the slot 38 and being secured to the plunger 26 as by having the end extend within an opening in the plunger, thereby urging the latter outwardly toward unlocked position. The inner end of the plunger is provided with an adjusting screw 44.

A latching lever 46 is pivotally secured to the door frame at 48. The upper end of the lever is curved downwardly to hook over the pin or keeper 50 when the mechanism is in locked position, the pin engaging surface thereof having a cam face 58. The pin 50 is secured to the door and is in the same horizontal plane as the pivot screw 48. A tension spring 52 has one end hooked to the upper end of the lever 46 and the

other end is attached to the pin 54 on the door frame 14. The spring tends to lift the upper end of the lever 46 upwardly, urging it into unlatched position. A stop pin 56 on the door frame limits the upward movement of the upper end of the lever.

In operation, to open the door 12 which pivots on hinges not shown, a key is inserted in the key hole 18 and turned to unlocked position. The push button head 20 of the lock unit 16 is then pushed inwardly, which causes the bolt 22 to move upwardly, engaging the slide pin 24 and moving it upwardly into the plunger 26, so that it disengages the stop 37 at the end of casing 31 and compresses spring 30. When the end of slide pin 24 has been pushed inwardly beyond the end of the casing, it will be in a position to enter the channel 34. The plunger is then free to be moved outwardly by the lower end of the latching lever 46. The upper end of lever 46 is pulled upwardly by spring 52, thereby moving the cammed face 58 of the lever from in front of the pin 50. At the same time the lower end of the lever which engages the adjusting screw 44 pushes the plunger 26 outwardly until the slide pin 24 reaches the end of channel 34, which acts as a stop. The movement of the lever 46 is limited by the upper end engaging the stop pin 56. The pressure of the lower end of the lever against the plunger will impart an opening impetus to the door after the upper end 58 has moved from in front of the pin 50.

To close and lock the door 12, pressure is placed on the push button head 28 of the plunger 26 to move the door toward closed position. The pressure of spring 40 against the plunger tending to hold it outwardly in unlocked position is sufficient so that the door may be moved to a closed position without appreciably moving the plunger inwardly. Continued pressure on push button 28 after the door has reached closed position, moves the plunger inwardly and the adjusting screw 44 engages the lower end of lever 46, and causes the upper hooked end 58 to move into locking engagement with pin 50 as shown in Figure 2. Slide pin 24 moves to the end of channel 34 and then is pushed outwardly by spring 30. The pin 24 is then in engagement with stop 37 at the end of housing 31 which acts to prevent the plunger 26 from being moved outwardly.

As previously pointed out the pivot point 48 of the lever 46 is in the same horizontal plane as the pin 50 with the result that there is an even distribution of the pull between the parts. This is particularly important where there is a gasket or sealing element between the door and frame as there is considerable leverage exerted to compress the gasket when the plunger is pushed inwardly against the lower end of lever 46. The camming action of the under face 58 of the hooked portion of the upper end of lever 46 on the pin 50 draws the door tightly closed. The adjusting screw 44 may be screwed inwardly to shorten the overall length of the plunger 26, consequently the lower end of lever 46 will not be moved as much when the plunger is in locked position and the cam face 58 of the upper end of the lever will not be moved as far down against pin 50, thereby lessening the pressure of the door against the gasket. Where the gasket has become worn, or to compensate for differences in sizes of gaskets, the adjusting screw 44 may be screwed outwardly with the result that the downward movement of the cam face 58 against pin 50 will be increased.

While the lock unit 16 is described as being key operated it is obvious that a push button unit which does not require a key could be used in place of the key operated unit.

It is to be understood that I do not wish to be limited by the exact embodiment of the device shown, which is merely by way of illustration and not limitation, as various and other forms of the device will, of course, be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In combination with a closure and frame therefor, a keeper on said closure, locking mechanism for the closure comprising a latching member pivotally mounted on said frame and adapted to engage said keeper on said closure, resilient means biasing said latching member toward unlatched position, a housing mounted on said closure having an opening leading to the exterior thereof, means slidably extending through said opening and housing and interengaging with said latching member for moving the latching member to latched position, means for locking said latching member in said latched position, said third named means including releasable means carried by said second named means and engageable with the end of said housing to hold said second named means in locking relation to said latching member, resilient means urging said second named means toward unlatched position, and means carried by said closure and actuatable from the exterior thereof and engageable with said releasable means for disengaging the same from the end of the housing, whereby said last named resilient means actuates said second named means to unlatched position and said first named resilient means actuates said latching member to unlatched position.

2. In combination with a closure and frame therefor, a keeper on said closure, locking mechanism for the closure comprising a latching member pivotally mounted on said frame having one leg provided with a locking cam adapted to engage said keeper, and another leg being adapted to be moved to move said first named leg, resilient means biasing said latching member toward unlatched position, a housing mounted on said closure having an opening leading to the exterior thereof, means slidably extending through said opening and housing and interengaging with the second named leg of said latching member for moving the latching member to latched position, said second named means including a plunger slidably mounted in said housing and having one end engageable with the second named leg of said latching member, a locking pin provided on said plunger engageable with said housing to maintain said plunger in latched position, resilient means urging said pin toward latched position, resilient means urging said plunger toward unlatched position, and a bolt carried by said closure and actuatable from the exterior thereof for moving said pin to inoperative position whereby said last named resilient means actuates said plunger to inoperative position and said first named resilient means actuates said latching member to unlatched position.

3. In combination with a closure and frame therefor, a keeper on said closure, locking mechanism for the closure comprising a latching member pivotally mounted on said frame having one leg provided with a locking cam adapted to engage said keeper, and another leg being adapt-

ed to be moved to move said first named leg, resilient means biasing said latching member toward unlatched position, a housing mounted on said closure having an opening leading to the exterior thereof, means slidably extending through said opening and housing and interengaging with the second named leg of said latching member for moving the latching member to latched position, said second named means including a plunger slidably mounted in said housing and having one end engageable with the second named leg of said latching member, a locking pin provided on said plunger engageable with said housing to maintain said plunger in latched position, resilient means urging said pin toward latched position, resilient means urging said plunger toward unlatched position, and a bolt carried by said closure and actuatable from the exterior thereof for moving said pin to inoperative position whereby said last named resilient means actuates said plunger to inoperative position and said first named resilient means actuates said latching member to unlatched position, said housing having a portion for receiving said pin when said plunger is in inoperative position and for maintaining said pin in inoperative position.

4. In combination with a closure and frame therefor, a keeper on said closure, locking mechanism for the closure comprising a latching member pivotally mounted on said frame having one leg provided with a locking cam adapted to engage said keeper, and another leg being adapted to be moved to move said first named leg, resilient means biasing said latching member toward unlatched position, a housing mounted on said closure having an opening leading to the exterior thereof, means slidably extending through said opening and housing and interengaging with the second named leg of said latching member for moving the latching member to latched position, said second named means including a plunger slidably mounted in said housing and having one end engageable with the second named leg of said latching member, a locking pin between said plunger and housing to maintain said plunger in latched position, resilient means urging said pin toward latched position, resilient means urging said plunger toward unlatched position, and a bolt carried by said closure and actuatable from the exterior thereof for moving said pin to inoperative position whereby said last named resilient means actuates said plunger to inoperative position and said first named resilient means actuates said latching member to unlatched position.

5. In combination with a closure and frame therefor, a keeper on said closure, locking mechanism for the closure comprising a latching member pivotally mounted on said frame and adapted to engage said keeper on said closure, resilient means biasing said latching member toward unlatched position, a housing mounted on said closure having an opening leading to the exterior thereof, means slidably extending

through said opening and housing and interengaging with said latching member for moving the latching member to latched position, means for locking said latching member in said latched position, said third named means including releasable means carried by said second named means and engageable with the end of said housing to hold said second named means in locking relation to said latching member, resilient means urging said second named means toward unlatched position, and means carried by said closure and actuatable from the exterior thereof and engageable with said releasable means for disengaging the same from the end of the housing, whereby said last named resilient means actuates said second named means to unlatched position and said first named resilient means actuates said latching member to unlatched position, said housing having a portion for receiving said pin when said plunger is in inoperative position and for maintaining said pin in inoperative position.

6. In combination with a closure and frame therefor, a keeper on said closure, locking mechanism for the closure comprising a latching member pivotally mounted on said frame and adapted to engage said keeper on said closure, resilient means biasing said latching member toward unlatched position, a housing mounted on said closure having an opening leading to the exterior thereof, means slidably extending through said opening and housing and interengaging with said latching member for moving the latching member to latched position, means for locking said latching member in said latched position, said third named means including releasable means between said second named means and housing movable to hold said second named means in locking relation to said latching member, resilient means urging said second named means toward unlatched position, and means carried by said closure and actuatable from the exterior thereof and engageable with said releasable means for moving the same to inoperative position whereby said last named resilient means actuates said second named means to unlatched position and said first named resilient means actuates said latching member to unlatched position.

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