Nov. 2, 1965 N. B. FERNANDEZ ETAL 3,215,262

LOCK

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Fig. 1

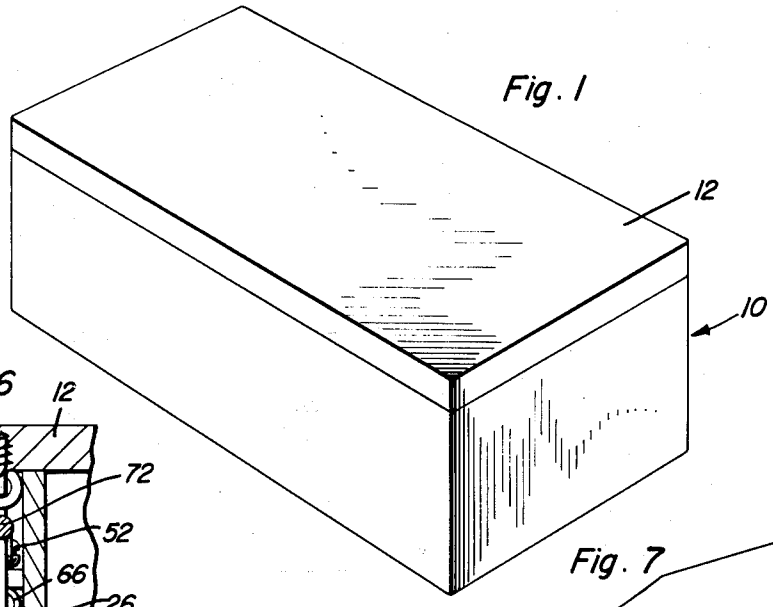


Fig. 6

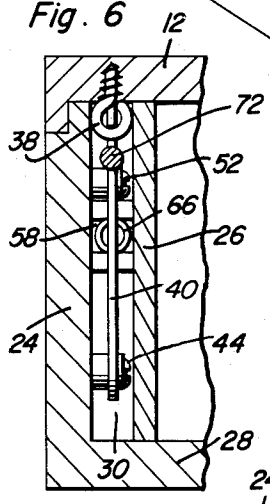


Fig. 7

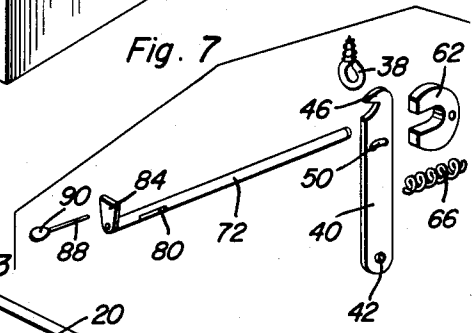
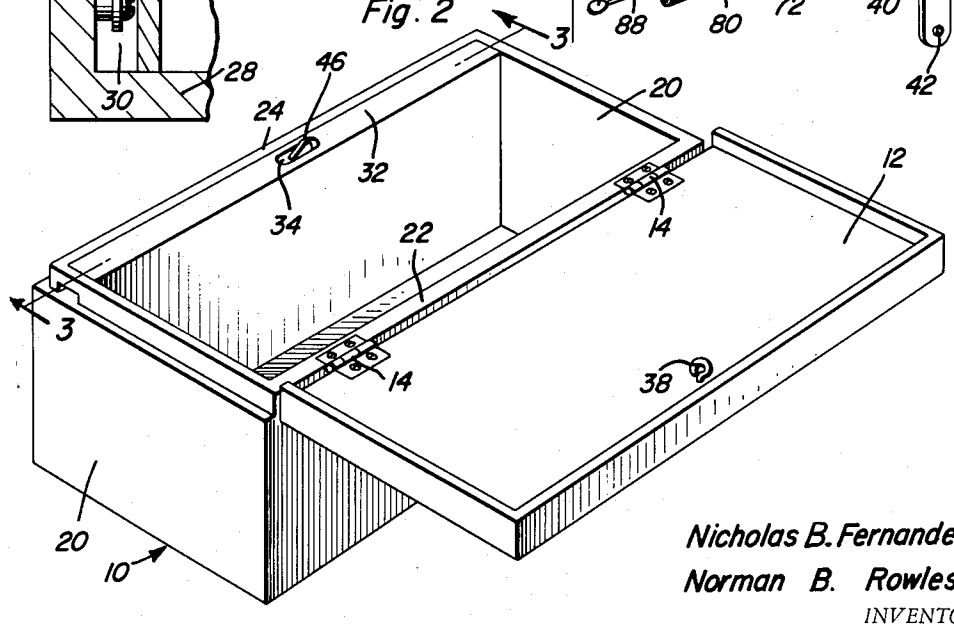


Fig. 2



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Fig. 3

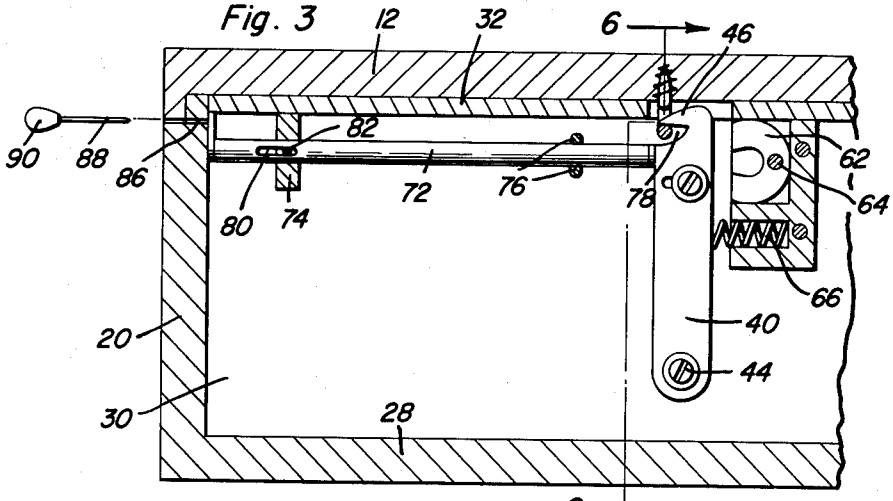


Fig. 4

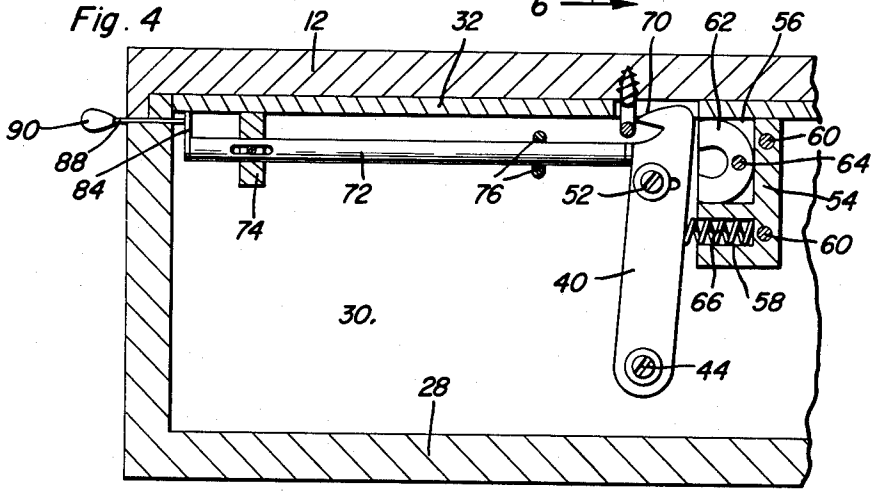
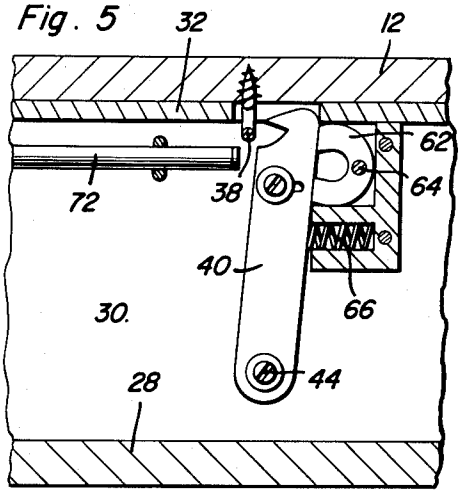


Fig. 5



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LOCK

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5 Claims. (Cl. 206—1.5)

This invention comprises a novel and useful lock and more particularly pertains to a box or cabinet having a concealed lock for retaining its cover in a closed position.

It is often advantageous for various reasons to retain the cover of a box or cabinet in a closed position by a locking mechanism which is completely concealed and affords no visible means for access thereto or for operation thereof. Among such desiderata are the novelty value of the arrangement, the protection of the locking mechanism against damage or deterioration through normal usage or other conditions and the increased security afforded to the contents of the box or cabinet.

It is therefore the primary purpose of this invention to provide a concealed lock mechanism especially adapted for use in selectively locking the closures of boxes or cabinets and which will afford no visible means of operation.

A further object of the invention is to provide a device in accordance with the foregoing objects wherein the lock mechanism and its operating means shall be of extremely simple yet efficient and dependable construction.

Still another purpose of the invention is to provide a device in accordance with the preceding objects wherein the locking mechanism and its operating means shall be completely concealed, hidden and housed in a secret compartment within the interior of the box or cabinet.

An additional object of the invention is to provide a locking mechanism in accordance with the foregoing objects in which the latch means shall be spring-urged to its closure locking position together with means for retaining the latch means out of contact with the latch keeper so that the box cover may be repeatedly opened and closed when desired.

A still further purpose of the invention is to provide a locking mechanism in accordance with the immediately preceding object wherein the locking mechanism is capable of alternative or selective operation to release the latch means from the keeper for but a single opening and closing of the cover of the box or alternatively for retaining the latch in a release position for repeated openings and closings of the cover of the box.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view showing a box in which the locking mechanism in accordance with this invention has been embodied, and illustrating the lack of visual indication of the locking means or locking mechanism or a lock releasing means;

FIGURE 2 is a perspective view of the box of FIGURE 1 in its cover open position;

FIGURE 3 is a fragmentary view in vertical longitudinal section taken substantially upon the plane indicated by the section line 3—3 of FIGURE 2 through the hidden lock mechanism compartment of the box and showing the position of the locking mechanism therein, with the latch being in its locking position and with the position of the lock mechanism key being shown in preparation for its use;

FIGURE 4 is a view similar to FIGURE 3 but showing the position of the parts after the key has been utilized

to disengage the latch to permit but a single operation of opening and closing the lid of the box;

FIGURE 5 is a fragmentary view similar to FIGURE 3 but showing the position of the latch when the latter is moved into and retained in its release position for repeated openings and closings of the box lid;

FIGURE 6 is a further detail view in vertical transverse section taken substantially upon the plane indicated by the section line 6—6 of FIGURE 3 and showing the position of the parts in the latch-engaged position of the mechanism; and

FIGURE 7 is an exploded perspective view of the various components of the lock, its actuating mechanism and the lock key.

Although the concealed lock and lock operating mechanism of this invention may be employed in many different environments, it suffices for an understanding of this mechanism and one manner of its use to depict and disclose its mounting in a box or cabinet. Accordingly, the numeral **10** designates generally any suitable form of box or cabinet having a conventional top, lid, cover or closure **12** which latter may be secured as by hinges **14** to one of the walls of the box. As shown in FIGURE 2, this box may have a pair of end walls as at **20**, a back wall **22** to which the hinges **14** are secured together with a front wall **24** which is opposite the back wall.

In accordance with this invention there is provided a hidden or secret compartment within the box in which the lock mechanism and its operating means is concealed and protectively housed. Thus, there is provided as shown best in FIGURE 6, a partition **26** which extends vertically from the bottom **28** of the box upwardly to the top of the front wall **24** in a position to be engaged by the underside of the cover **12** when the latter is in its closed position as shown in FIGURE 6. In addition, the partition **26** is extended across the entire length of the box between the two end walls so as to completely close off a relatively narrow lock compartment **30** which is disposed immediately adjacent to the front wall **24**. The partition **26** further has a top wall as at **32** which overlies the compartment **30** as will be best apparent from a consideration of FIGURES 3–5. This partition top wall **32** is provided at any suitable location thereon with an opening **34** therethrough and a latch keeper in the form of an eye screw **38** or any other member carried by the lid **12** is adapted to project downwardly through the opening **34** into the compartment **30** where it is engageable by the latch means for locking the lid in a manner to be subsequently set forth.

As so far described, the arrangement is such that when the lid of the box is open, all that can be seen is the opening **34** and the immediately adjacent portion of the latch lever disposed therebeneath.

Referring next primarily to FIGURES 3–5 in conjunction with FIGURE 7, it will be observed that the latch mechanism consists of a flat metallic strip **40** comprising a latch lever which is apertured as at **42** at its lower extremity for attachment as by fastening screw **44** to the front wall **24** near the lower end of the compartment **30**. At its upper end, the latch member is provided with a hook **46** which is so positioned that upon swinging movement of the latch into the position shown in FIGURE 3, the hook **46** will be caused to engage in the eye of the eyescrew **38** or the latch keeper and thus securely lock the lid **12** upon the box **10**. Intermediate its ends and closely adjacent to the latch hook **46**, the latch member **40** is provided with an arcuately and transversely extending slot **50** through which is secured a fastener such as a screw **52** also engaged in the front wall **24** and which thus limits the swinging movement of the latch lever between the latch position as shown in FIGURE 3, the single

operation position of FIGURE 4 and the fully released position of FIGURE 5.

There is further provided in the compartment **30** a mounting bracket or housing **54** which is L-shaped in configuration and which provides a relatively large chamber **56** in its upper portion and a relatively smaller chamber **58** at its lower portion. These chambers consist of slots extending transversely throughout the entire width of the bracket **54** with the slots being closed at opposite ends by the front wall **24** and by the partition **26**. Fasteners such as those indicated at **60** serve to secure the member **54** in position. As noted in FIGURES 3–5 the chambers or recesses **56** and **58** open toward the latch lever **40**. A permanent horseshoe-type of magnet **62** is secured in the recess **56** as by a fastener screw or the like **64** with its two poles being disposed closely adjacent to the latch lever. Received in the recess or compartment **58** is a compression spring **66** which bears against the side of the latch lever **40** and yieldingly urges it toward its latching position.

The arrangement is such that in the latch position, the spring retains the lever in the position shown in FIGURE 3 with the latch hook **46** being engaged in the retainer **38**. At this time, the latch lever is too far removed from the magnet **62** to be affected by the latter. Consequently, the latch is retained in its locked position. When the latch lever is moved to intermediate position as shown in FIGURE 4 so that the hook **46** is disengaged from the retainer eye **38**, the lid may be raised. However, when the latch actuating means is released the spring **66** will be effected to again move the lever into its latching position so that when the lid is again closed downwardly, the latch retainer eye **38** will bear upon the camming surface **70** upon the top of the latch hook, remove the latch lever sufficiently so as to pass therebeneath and the spring will then again engage the latch hook in the latch retainer and lock the lid of the box. During this operation the latch lever is still too far from the magnet to be retained by the latter.

However, when the latch lever is actuated to its extreme position as shown in FIGURE 5 so that the latch lever is actuated to its extreme position as shown in FIGURE 5 so that the latch lever is brought into contact with the magnet the latter will now hold and retain the latch lever against resistance of the spring **66** in its release position. At this time, the lid can be raised or lowered repeatedly since the latch lever will be ineffective and the spring thereof will be ineffective to again engage the latch and thus lock the lid of the box.

In order to effect this selective actuation of the latch lever, there is provided an actuating rod **72** which is journaled through an apertured lug **74** and between guide pins **76**, each disposed in the upper portion of the compartment **30** and extending transversely thereof. The end of the latch actuating rod **72** is adapted to abut against the latch lever **40** just below the latching notch **78** thereof. An elongated slot as at **80** adjacent the extremity of the rod **72** is engaged by a guide pin **82** disposed transversely therethrough and through the guide lug **74** to prevent rotation of the latch lever rod and to limit its reciprocatory movement.

At its extreme end, the latch lever rod is provided with an actuating or footplate **84** which is disposed closely adjacent to the associated end wall **20** and which may slide upon the top wall **32** of the compartment **30**. The member **84** comprises the actual means by which reciprocatory movement is imparted to the actuating rod **72** and thus produces operation of the latch to its releasing positions.

In order to effect actuation of the plate **84**, there is provided a relatively small bore or passage as at **86** through the side wall **20** and just below and preferably at the junction of the lower edge of the lid **12** with the upper edge of the wall **20** of the box. A key in the form of a pin **88** having a fingergripping head **90** thereon is insertable through this bore and against the plate **84** so that

by pushing upon the pin, the plate may be moved toward the right as viewed in FIGURES 3–5.

As previously mentioned, the arrangement is such that when the pin is moved and the latch actuating rod **72** is moved just a sufficient distance to disengage the hook **46** from the retainer eye **38**, the parts being shown in FIGURE 4, the lid may be raised. Releasing the pin will then allow the spring to move the latch lever into a locking position so that when the lid is closed the box will be again locked.

However, when the latch rod is moved still further toward the right, as by continuing the movement indicated in FIGURE 4, the latch lever was brought into junction with the magnet **56** and the magnet **62** will then be retained therein so that when the actuator rod **72** is released, the latch will be retained in its released position. Thus, the lid of the box will be repeatedly opened and closed without danger of locking the same.

If desired, a spring or other resilient means may be connected to the rod **72** to yieldingly urge it away from the latch lever. Such a spring may conveniently surround and be engaged with the rod and abut against either the lug **74** or the guide pin **76** to perform this function.

It will further be noted that the magnet **62** may be swivelly mounted upon its pin **64** so that it may turn sufficiently to adjust itself to the inclination of the lever **40** and thus securely grip the latter. This position is indicated clearly in FIGURE 5 denoting the establishing of a firm magnetic grip of the magnet upon the lever to retain it in its latch-releasing position.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A box having a lock compartment therein together with a closure movably mounted upon said box, said lock compartment having a top opening thereinto and a latch keeper on said cover movable into and out of said lock compartment through said top opening upon respective closing and opening movements of said closure, a latch mechanism disposed in said lock compartment and including a latch lever having a latch hook cooperating with said latch keeper, means pivotally mounting said latch lever for movement of said latch hook into and out of latching engagement with said latch keeper, means operatively connected to said latch lever and urging said latch hook toward latching engagement with said latch keeper, stop means engaging said latch lever and limiting it to pivotal movement from a fully latched position, through an intermediate latch release position and to an extreme latch release position, a latch release member guidingly mounted in said compartment for movement toward and from said latch lever with one portion of said member being engageable with said latch lever and operable to pivotally move the latter in a latch releasing movement toward said latch release positions, means manually operable from the exterior of said box for engaging another portion of said latch release member and effecting latch releasing movement thereof, retaining means in said compartment engageable by said latch lever only when the latter is in said extreme latch release position and retaining the latter in said extreme latch release position, said retaining means being a horseshoe magnet and at least a portion of said latch lever being of magnetizable material, and means pivotally mounting said magnet for oscillation thereby enabling its poles to adjustably and equally engage said latch lever portion.

2. The combination of claim **1** wherein said magnet is so positioned as not to engage the latch lever when the latter is in said intermediate latch release position.

3. The combination of claim 1 wherein said manually operable means comprises a pinhole opening through the wall of said box into said compartment and a latch actuator pin snugly slidably receivable through said pinhole opening into abutting engagement with said latch release member.

4. The combination of claim 3 wherein said member has an abutment surface engageable by said latch actuator pin and constituting a closure for said pinhole opening.

5. A lock mechanism comprising a latch lever pivotally mounted at one end for swinging movement and having a latch hook at its other end, a latch keeper engageable by said hook, spring means on the opposite side of said lever from said hook and continuously urging said latch hook toward said latch keeper, a latch release rod on the same side of the latch lever as said latch hook and mounted for guided axial movement toward and from said latch lever and engageable with said latch lever for moving the latter against said spring means and out of engagement with said keeper, magnetic retainer means inoperable upon initial movement of said lever into keeper disengaged position and being operable upon further movement of said lever past said keeper disengaged position to an extreme release position in engagement with said retainer, said retainer maintaining the latch lever in the extreme release position.

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