

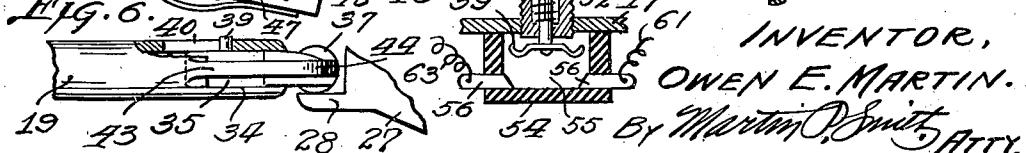
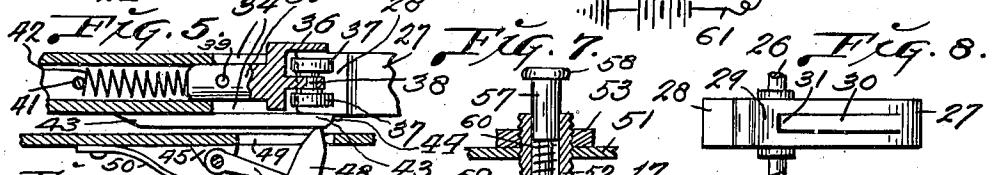
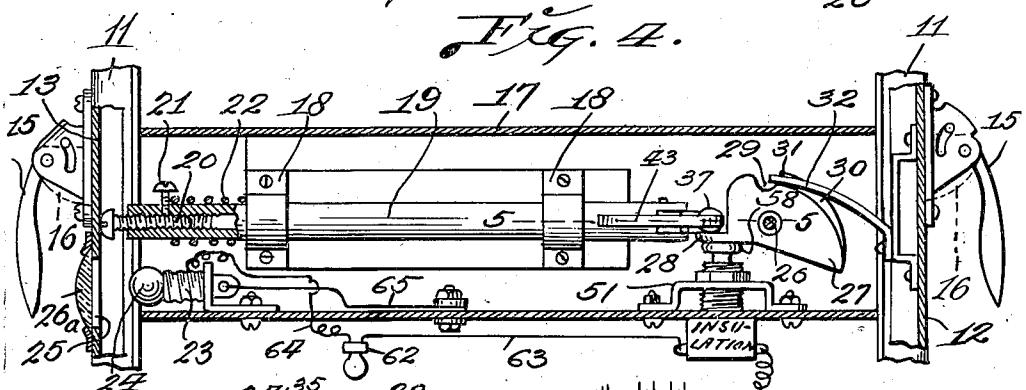
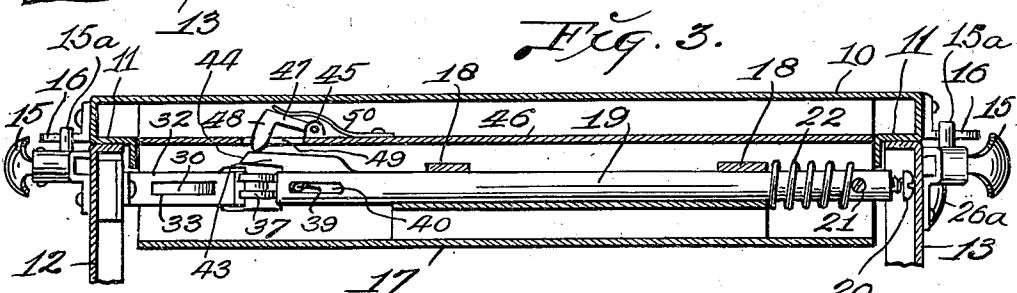
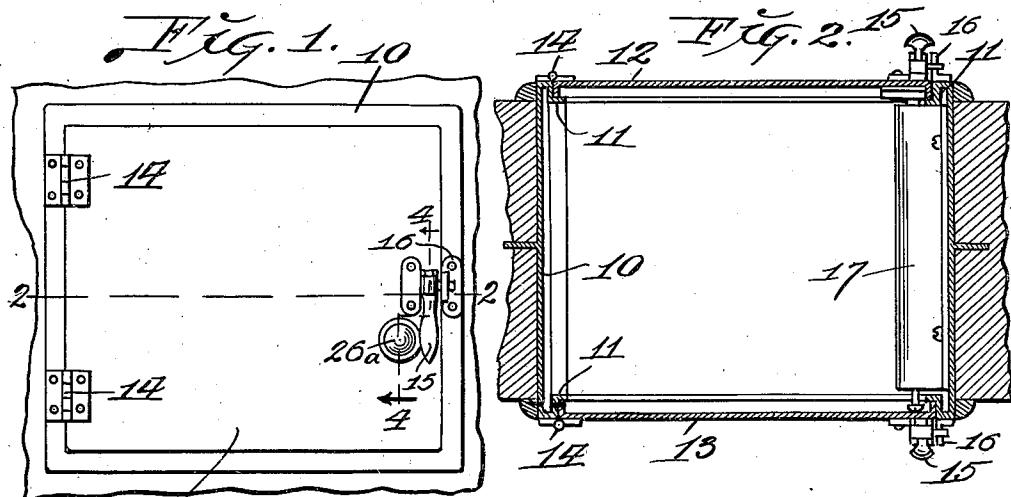
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SERVICE BOX OR CUPBOARD LOCK

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SERVICE BOX OR CUPBOARD LOCK

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My invention relates generally to locks and more particularly to a lock for service boxes or cupboards that are located in the walls and doors of residences, apartment houses, hotels, and the like, and which are for the reception of all delivered articles, packages, bottles of milk, garbage pails, and the like, and among the principal objects of my invention are to generally improve upon and simplify the construction of the existing forms of service boxes or cupboard locks, and to provide a lock that is entirely automatic in operation and in which the locking action is entirely dependent upon the movements and positions of the doors that close the opposite ends of the box or receptacle.

A further object of my invention is to provide a service box or cupboard lock that will function to automatically lock the outside door when the latter has been closed after a delivery has been made to the box or container, thereby making it impossible for the outside door to be opened until the inside has been opened for the purpose of removing the delivered package or article and again closed.

Further objects of my invention are to provide a service box or cupboard lock that is relatively simple in construction, positive in operation and which will afford a maximum degree of safety and protection for the articles and packages placed in the box or cupboard.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts that will be hereinafter more fully described and claimed as illustrated in the accompanying drawings in which:

Fig. 1 is an elevational view of a service box or cupboard equipped with my improved lock looking against the inside door of said box or cupboard.

Fig. 2 is a horizontal section taken approximately on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal section taken lengthwise through the center of the lock housing and showing the positions assumed by the parts of the lock when the outside door of the box is locked.

Fig. 4 is an enlarged vertical section taken on the line 4—4 of Fig. 1 and looking in the direction indicated by the arrows on said line.

Fig. 5 is an enlarged horizontal section taken on the line 5—5 of Fig. 4.

Fig. 6 is a side elevational view of the forward portion of the locking bolt with parts thereof in section.

Fig. 7 is a detail view of an electric switch utilized in connection with the lock.

Fig. 8 is a top plan view of the pivoted locking member that is effective in securing the outside door in closed position.

Referring by numerals to the accompanying drawing which illustrates and provides embodiment of my invention, 10 designates the body of a service box or cupboard which may be of any desired size and shape and preferably comprising four walls of sheet metal. This box or container may be located in a building wall, as illustrated in Fig. 2, or any door with one end of the housing opened on the exterior of the building or door, and the other end opened on the interior of the building or door.

The edges of the four walls of the box or housing are flanged inwardly as designated by 11, for the accommodation of an outside door 12, and an inside door 13, both doors being connected to one of the vertical walls of the box or housing by suitable hinges 14.

The free edges of the doors carry on their outer faces, conventional latches that include spring-pressed handles 15, and combined strikes and keepers such as 16 are secured to adjacent edges of the side walls of the housing 10 for the reception of the pins or bolts 15a that project laterally from the upper portions of the latch handles 15.

Suitably secured to the inner face of the side wall of the box or housing against which the free edges of the doors engage, is a horizontally disposed housing 17, preferably formed of sheet metal, and the open ends of which are positioned adjacent the doors 12 and 13.

Arranged within this housing are horizontally aligned bearings 18, and arranged to slide freely therethrough is a locking bolt 19, preferably of tubular construction. Screw-seated in the end of the bolt 19 adjacent the inside door 13, is a screw 20, the head of which is adapted to be engaged by said inside door when the same is in full closed position.

Screw 20 may be screwed into or out of the end of bolt 19 and a set-screw 21 that passes through the wall of bolt 19 is utilized for securing the screw 20 in its adjusted position.

Screw 20 provides simple and effective means for adjusting the effective operating length of the locking bolt 19 and by adjusting said screw inwardly or outwardly, the positions occupied by the parts carried by the opposite end of said locking bolt may be adjusted so as to co-operate in proper relation with associated parts of the lock.

ing mechanism and particularly the mechanism that locks the outer door after the same has been closed.

Surrounding bolt 19 and interposed between screw 21 and the adjacent bearing 18 is an expansive spring 22 that normally urges bolt 19 toward the inside door 13.

Mounted on the bottom of housing 17 below the end of bolt 19 that carries spring 22 is a socket 23 for a small electric lamp 24, and formed in the door 13 immediately in front of this lamp 24, is an opening 25 that is closed by a disc or lens 26a of transparent material, preferably glass, and which may be of distinctive color, for instance red or green.

The construction just described serves as a visible signal for indicating that the outer door of the box or cupboard has been opened, an article or package deposited therein and again closed.

Mounted to swing freely on a horizontally disposed pin 26 within the end of housing 17 adjacent the outer door 12, is a locking block 27 substantially semicircular in shape and the pin on which this block is mounted is positioned forwardly from the center thereof in order that the outer end portion of said block or that portion adjacent the outer door 12, will tend to swing downwardly by gravity.

Formed on the forward lower corner of block 27, is an outwardly projecting lip 28 and formed in the upper face of said block above and to the rear on said lip is a notch 29.

When the outer door 12 is open and the heavy end of block 27 is swung downward to its limit of movement, the notch 29 is directly in the path of travel of the forward end of a strike that is carried by the inside of the outer door and which is about to be described.

Formed on top of block 27 to the rear of notch 29 is a rib 30 and the forward end thereof terminates in a hook 31 that is positioned directly above the rear portion of the notch 29.

Secured to the inner face of the outside door 12 and projecting into the open end of housing 17 is a combined strike and keeper 32 formed of metal having a certain degree of resiliency, and formed in this strike and keeper is a slot 33 that receives the forward portion of rib 30 and the hook 31 thereon when the outer door is closed. (See Fig. 4.)

The outer end of bolt 19 or the end opposite the end that carries screw 20 is provided in the sides of its wall with short longitudinally disposed slots 34 and arranged for sliding movement in its slotted end is a shank 35 carrying on its outer end a head 36. This head is notched for the reception of a pair of anti-friction rollers 37, the latter being carried by a horizontally disposed shaft 38 that is mounted in head 36 between the notches therein.

To limit the movement of shank 35 and head 36 in both directions, a pin 39 is seated in shank 35 and projects through a short longitudinally disposed slot 40 that is formed in the wall of the bolt 19. Interposed between the rear end of shank 35 and a pin 41 that is seated in the bolt 19 is an expensive coil spring 42 that normally tends to force the shank and head forwardly in the forward end of the bolt.

Formed integral with the side of bolt 19 at the forward end thereof and projecting a short distance forwardly therefrom is a longitudinally disposed rib 43, the forward end of which is curved or inclined as designated by 44 and when

shank 35 carrying the rollers 37 is at its outer limit of movement, the forward end of rib 43 is in direct transverse alignment with the outer peripheral surfaces of the rollers 37 as illustrated in Figs. 3, 5, and 6.

A bracket 45 projects from a partition 46 that extends lengthwise within housing 17 and pivoted to said bracket is a latch 47 carrying on its forward end a laterally projecting finger 48 that extends through a slot 49 that is formed in said partition 46. A spring 50 is suitably mounted on partition 46 and bears against the outer edge of latch 47, thus normally tending to force the finger 48 through the slot 49. This finger 48 is positioned so that when it is moved forward to its limit of movement by the spring 50, the finger 48 overlies the lip 28 on the end of block 27 and when the bolt 19 is moved to its forward limit of movement so that the head 36 and rollers 37 overlie lip 28, rib 43 that is carried by the bolt engages the end of finger 48 and thereby swings latch 47 outwardly against the resistance offered by spring 50, so as to disengage finger 48 from lip 28.

Latch 47 ensures a locking effect auxiliary to the locking effect obtained by the bolt 19 and is designed to engage lip 28 and hold block 27 against rotation during the time that the bolt 19 is retracted or moved to its limit of rearward movement, which condition exists whenever the inside door 13 is open.

Secured to the bottom of housing 17 below that portion of block 27 that carries lip 28 is a bracket 51 and screw seated therein and in the bottom of the housing is a vertically disposed tube 52 that is retained in its vertically adjusted position by a lock nut 53 that bears on bracket 51. Suitably secured to the underside of the bottom of housing 17 is a block 54 of insulation in which is formed a pocket 55. Seated in the block 54 are metal contacts 56 the inner ends of which project into the lower portion of pocket 55.

Arranged for sliding movement through tube 52 is a plunger 57 provided on its outer end with a head 58 and carried by the lower end of this plunger within pocket 55 is a contact spring 59 having upturned ends that are adapted to engage the inner ends of the contacts 56 as plunger is moved downward to its limit of movement. Plunger 57 is normally forced upward by an expansion spring 60 that is located within tube 52 which bears against a shoulder on the plunger. (See Fig. 7.)

The contact just described is positioned so that when block 27 is swung upon its axis to move lip 28 downward, the plunger is depressed so as to cause contact spring 59 to engage the inner ends of contacts 56. Leading to one contact 56 from a suitable source of electric current supplied is a conductor 61 and leading from the other contact 56 to a lamp socket 62 that may be located at any point adjacent or remote from the box or cupboard is a conductor 63 leading from socket 62 to one of the contacts of socket 23 is a conductor 64, and leading from the other contact of said socket 23 to ground, preferably the housing 17, is a conductor 65.

The operation of my improved service box or cupboard lock is as follows:

A person making delivery of an article or package into the box opens the outer door 12, assuming that the inner door 13 is fully closed, and after placing the parcel or package within the box closes and latches the outer door. During the final part of the closing movement of the

outer door, the forward end of the strike 32 engages the shoulder at the forward end of notch 29 in block 27, it being understood that said block is occupying a substantially upright position due to the preponderance of weight of the block on one side of its axis, and as a result of this engagement of the strike with the block the latter is swung on its axis into a substantially horizontal position as illustrated in Fig. 4 and in so doing the end of lip 28 in its downward movement engages on the upper outer surfaces of the rollers 37, thereby forcing said rollers and the shank 35 carrying the same away from the pivoted block 27 so that said shank enters the tubular bolt 19 against the yielding resistance of spring 42.

As the end of lip 28 passes the rollers 37, the shank 35 carrying the rollers will be projected outwardly by spring 42 and thus the rollers are moved into position on top of lip 28, thereby maintaining the pivoted block 27 in its horizontal position.

When the outer door is fully closed, strike 32 overlies block 27 as illustrated in Fig. 4 and with the hook 31 and the forward portion of rib 30 projecting through the slot 33 in the strike. Thus after the outer door has been closed following the delivery of a package into the box, said door can not be opened until the inner door has been opened.

To obtain the delivered package or article from the box, the inside door 13 is unlatched and opened with the result that the tubular bolt 19 will be moved longitudinally away from the outer door and toward the inner door under the expansive action of spring 22 and such action withdraws the rollers 37 from their position above lip 28. While the tubular bolt 19 is at its limit of movement toward the outer door, with the rollers 37 resting on lip 28, the forward portion of rib 43 engages finger 48 and holds the same at its outer limit of movement against the pressure of spring 50, and as the tubular bolt 19 moves toward the inner door under the influence of spring 22 as just described the rollers 37 pass off lip 28, but just before doing so the end 44 of rib 43 moves away from the end of finger 48 so that the same is projected inwardly under the influence of spring 50 so as to occupy a position above lip 28.

The vertical thickness of finger 48 is considerably less than the diameters of the rollers 37 and for this reason the block 27 will tilt slightly from its horizontal position before the upper face of lip 28 engages the under face of finger 48 and as a result, the forward end of lip 28 is elevated slightly due to the tilting movement of block 27 so as to occupy a position in the path of travel of the rollers 37 when the same subsequently move with the tubular plunger 19 toward the outer door.

Thus, at this stage of the operation, that is to say, with the inner door 13 opened, block 27 occupies a tilted position with respect to its horizontal position, with finger 48 positioned above lip 28 and with shoulder 31 positioned a short distance outwardly from the end of the slot 33 in strike 32 but still holding said strike so as to prevent the outer door from being opened.

After the inside door has been opened and the delivered package removed from the box, the inside door is closed, thereby moving tubular bolt 19 through its bearings toward the outer door, and following this movement, the forward end of rib 43 will engage the end of finger 48 to move

the same outwardly from its holding position above lip 28. Immediately before this releasing action, the rollers 37 had abutted the elevated end of the lip 28. Further movement of bolt 19 due to forcing the inner door to closed position results in a movement of the shank 35 into the bolt against the resistance of spring 42, and the rollers 37 will therefore not ride over onto the lip 28. The block is now free of both finger 48 and rollers 37 and is free to rotate, thus enabling the outer door to be opened when a delivery is made to the box.

Both inside and outside doors are held in their closed positions by the engagement of the spring held handles 15 with the keepers 16.

Thus it will be seen that I have provided a lock for service boxes and cupboards that is relatively simple in construction, inexpensive of manufacture and very effective in performing the functions for which it is intended.

The lock may be used with any type of box or cupboard having oppositely arranged doors, and, in addition to safeguarding the articles and packages placed in the box or cupboard, said lock automatically actuates visible signaling means whenever a delivery has been made to the box with which the lock is associated.

It will be understood that minor changes in the size, form and construction of the various parts of my improved service box or cupboard lock may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. The combination with a service box or cupboard having oppositely arranged doors, of a housing arranged within said box between the free edges of the doors, a block pivotally mounted within said housing and having a normal unlatched position, a strike carried by one of said doors and adapted to engage and rotate said block and to receive a portion thereof when said door is closed, a bolt mounted for sliding movement within said housing and adapted to be moved into position by the other one of said doors for latching said block to hold same against movement while engaged by said strike, a spring-pressed latch carried by said housing for engaging and maintaining said block in engagement with said strike and means carried by said bolt for effecting a disengagement of said spring pressed latch with said block.

2. The combination with a service box or cupboard having oppositely arranged doors, of a housing arranged within said box between the free edges of the doors, a block pivotally mounted within said housing and having a normal unlatched position, a strike carried by one of said doors and adapted to engage and rotate said block and to receive a portion thereof when said door is closed, a bolt mounted for sliding movement within said housing and adapted to be moved into position by the other one of said doors for latching said block to hold same against movement while engaged by said strike and adjustable means carried by one end of said bolt for varying the effective length thereof.

3. The combination with a box or cupboard having oppositely arranged doors, of a gravity locking block pivotally mounted within said housing and having a normal unlatched position, a strike carried by one of the doors of said box and adapted, when said door is closed, to engage said locking block and rotate the same to latch-

ing position and a bolt mounted for sliding movement within said box and actuated by the other one of said doors for engaging and latching said block against movement.

4. The combination with a box or cupboard having oppositely arranged doors, of a gravity locking block pivotally mounted within said housing and having a normal unlatched position, a strike carried by one of the doors of said box and adapted, when said door is closed, to engage and rotate said block into latching position, a bolt mounted for sliding movement within said box and actuated by the other one of said doors for engaging and holding said block against movement, an auxiliary latch for engaging and latching said block in position to engage said strike and means carried by said bolt for engaging said auxiliary latch and actuating same to release said block.

5. The combination with a service box or container having oppositely arranged doors, of a

block pivotally mounted within the box and having a normal unlatched position, a strike projecting inwardly from one of said doors and adapted, when said door is closed, to engage and 5 rotate said block to latching position and means actuated by the closing movement of the other door for latching said block in engagement with said strike.

6. The combination with a service box or container having oppositely arranged doors, of a block pivotally mounted within the box and having a normal unlatched position, a strike projecting inwardly from one of said doors and adapted, when said door is closed, to engage and 10 rotate said block to latching position, means actuated by the closing movement of the other door for latching said block in engagement with said strike and an auxiliary latch for maintaining said block in engagement with said strike.

20

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