Dec. 12, 1950 C. A. HILLGREN 2,533,582

LOCK

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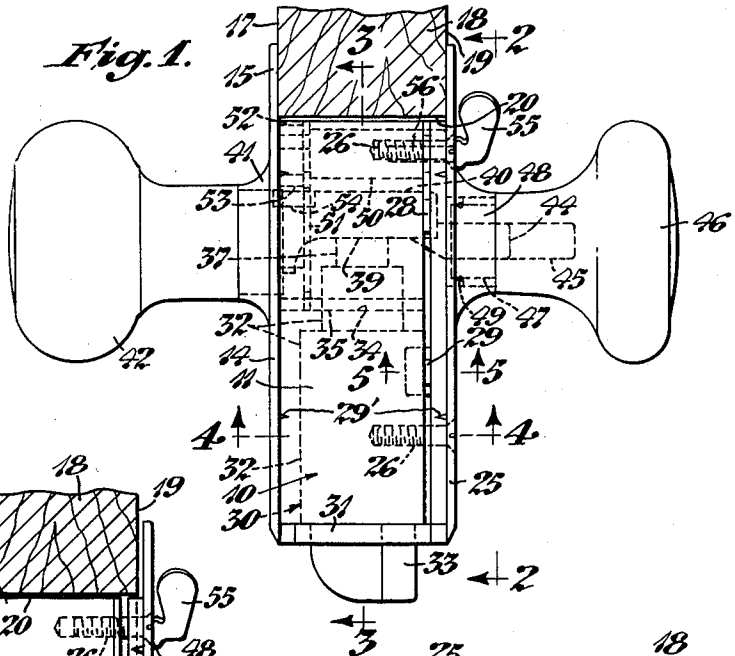


Fig. 1.

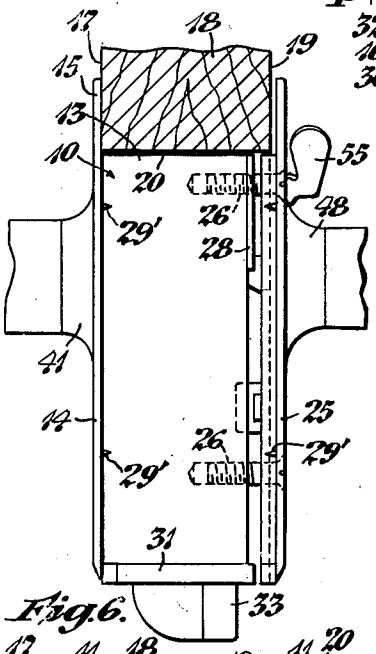


Fig. 6.

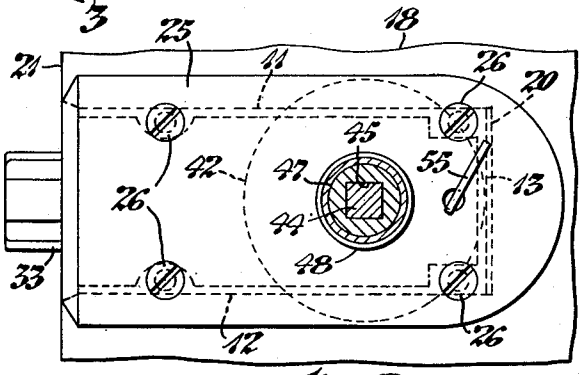


Fig. 2.

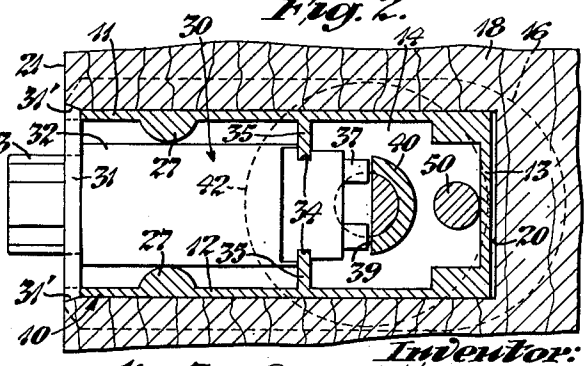


Fig. 3.

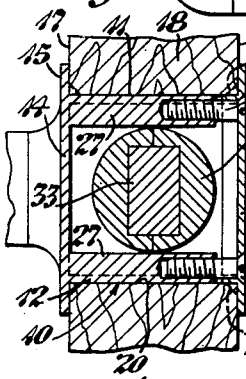


Fig. 4.

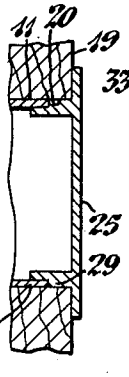


Fig. 5.

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2,533,582

LOCK

Carl A. Hillgren, Los Angeles, Calif.

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4 Claims. (Cl. 292—337)

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My invention relates generally to locks, and particularly to locking and latching devices for use on doors.

Locks commonly employed for latching and locking doors include a casing, or housing, which is held in a mortise in the edge of the door by means of screws, and which contains the bolt and the means for actuating the bolt. Knobs for operating the bolt-actuating means are carried by one or a pair of aligned spindles, which extend through a transverse aperture in the door and which are rotatable in bearings in the lock casing. It is a well recognized fact that the installation of a lock of this type in a door having a mortise for receiving the lock casing requires expert fitting which can be accomplished only by an experienced carpenter, or other craftsman. Moreover, it is often necessary to chisel out portions of the wood, or build up portions of the door adjacent the sides of the mortise, in order to obtain proper fitting and co-operation between the lock bolt and the keeper. Furthermore, the forming of the mortise in the wooden door is a time-consuming and costly operation and adds considerably to the price of the door. When the mortise, or rectangular opening, is provided in the edge of a metal door the structure is complicated, and the cost of fabricating the door is materially increased.

It is an object of my invention to obviate the faults of such prior locks by providing a door-locking and latching device which may be installed on a door without requiring that the door be mortised to receive the lock casing.

Another object is to provide a door lock which includes a rectangular box-like casing adapted to be slid into a slot of appropriate size cut in the edge of the door by a simple routing operation, the lock casing having flanges at its sides adapted to grip the opposite sides of the door adjacent the slot so as to retain the lock in place on the door.

Another object is to provide a lock of the character referred to, in which the flange at one side of the casing is formed as part of a closure plate which, in addition to providing an escutcheon plate, also serves to close the open side of the casing in which the lock-actuating mechanism is contained. The closure plate is preferably located against the inside surface of the door and fastened in place by screws, which are screwed into the casing to draw the clamping flanges of the lock into clamping engagement with the opposite sides of the door to positively retain the lock in place on the door. By this provision, the

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screws may be loosened sufficiently to release the clamping flanges, so that the entire lock can be withdrawn from the door by merely sliding it out of the slot.

Another object is to provide a lock of the type specified in which the flanges at the sides of the casing have inwardly directed barbs, or other projections, adapted to pierce the material of the door as the lock casing is clamped in place so as to positively lock the casing on the door.

Another object is to provide a lock of the type indicated in which the spindles for the knobs are rotatably mounted in the casing, which, in turn, is completely housed within the slot of the door. By this provision, the single slot receives the entire unitary structure, and it is thus unnecessary to drill transverse holes in the door through which the knob spindles may pass.

Another object is to provide a lock which can be readily installed on and removed from the door by the home owner, or other unskilled person, without the necessity of inserting or completely removing screws, or other extraneous fastening devices.

Another object is to provide a lock which is highly ornamental and which adds greatly to the appearance of the door on which it is installed, the lock completely concealing the edges of the slot in the door, and thus effecting the illusion of being, in some undeterminable manner, built into the door.

Another object is to provide a lock, of the type referred to, which is simple in construction and economical to manufacture, being composed of a minimum number of simple parts which lend themselves to mass-production methods and convenient assembly.

Further objects of the invention will be apparent from the following detailed description and from the drawing, which illustrates a preferred embodiment of the invention, by way of example. In the drawing:

Fig. 1 is a plan view of my improved door lock, showing it installed on a door which is shown in section to better illustrate the invention;

Fig. 2 is a cross-sectional view of the inner side of the lock, taken on line 2—2 of Fig. 1;

Fig. 3 is a longitudinal sectional view, taken on line 3—3 of Fig. 1;

Fig. 4 is a cross-sectional view, taken on line 4—4 of Fig. 1;

Fig. 5 is a cross-sectional view taken on line 5—5 of Fig. 1; and,

Fig. 6 is a view similar to Fig. 1, but showing the inner escutcheon plate, or clamping member,

loosened to permit installation of the lock on, or its removal from, the door.

Refering to the drawing in detail, my improved lock device comprises a rectangular box-like casing 10 having a top wall 11, a bottom wall 12, an end wall 13, and a side wall 14, thus providing an open outer end opposite the inner end wall 13 and an open side opposite the side wall 14. The side wall 14 projects beyond the top, bottom, and end walls 11, 12, and 13, in a flange 15, which is rounded, as shown at 16. The side wall 14 thus forms, in effect, an escutcheon plate adapted to be disposed against one side or the outer surface 17 of a door 18 which also has an inner surface 19. The door 18 is pivoted in the usual way and is otherwise conventional in form except that it is not provided with the usual rectangular recess or mortise for receiving the lock. In accordance with the present invention, a slot 20 is cut in the edge 21 of the door 18, the slot being of a width capable of receiving the lock casing 10 which is slid thereinto in the manner best illustrated in Figs. 3 and 6. The casing 10 fits snugly within the slot 20, and when so installed on the door the flange 15 of the side wall or escutcheon plate portion 14 of the casing rests against the outer surface 17 of the door, and covers the edges of the slot at this side of the door.

The inner open side of the casing is adapted to be closed by an inner escutcheon plate 25 which is of the same shape and size as the plate portion 14 to adapt it to overlie the edge of the slot 20 to conceal the same. The inner plate 25 is attached to the side of the casing 10 by means of screws 26 which are screwed into tapped holes in transverse bosses 27, see Fig. 4. The plate 25 is held slightly spaced from the edge of the open side of the casing 10 by a thin plate 28 (Figs. 1 and 6) and a small bosses 29 formed on the plate 25 and abutting the side of the casing 10 (Fig. 5). The plate 28 is designed and located to hold the spindle 40 in place, as will appear hereinafter.

It will be apparent from the above that by loosening the screws 26 the plates 14 and 25 may be moved apart to adapt the lock casing 10 to be slid into the slot 20, or removed therefrom. When the screws 26 are tightened, the plates 14 and 25 are drawn toward each other and thus serve as clamping plates to retain the lock casing on the door. Preferably the flange 15 and the plates 25 are provided with relatively thin sharp ribs or barbs 29^1 which are adapted to penetrate the material of the door adjacent the slot 20 as the sides of the lock are drawn toward each other so as to positively lock the casing against outward sliding movement.

Held within the lock casing 10 is a latch or bolt asembly 30 which includes a substantially square plate 31 adapted to be disposed between the plates 14 and 25 and to close the open outer end of the casing. The plate 31 is preferably beveled at its upper and lower edges, as shown at 31^1, so as to engage the upper and lower surfaces of the slot 20 and, in effect, cover the seam between the casing and the slot, as shown in Fig. 3, and to cover up saw cuts which may result when fitting the lock. The assembly 30 also includes a cylindrical housing or barrel 32 secured to the plate 31 and disposed within the casing 10. The barrel 32 serves as a bearing for a reciprocable latch bolt 33, which has its outer beveled end projecting from the plate 31 and adapted to slide across the usual keeper plate,

not shown, which is mounted on the door jamb and which has an opening for receiving the latch bolt. The latch or bolt assembly 30 is substantially the same as that disclosed in my pending application, Serial No. 608,160, filed August 1, 1945, and entitled Lock, to which reference is made for a detailed description thereof. In the present improved lock, the inner reduced end of the barrel 32 is provided with slots 34 in its opposite sides, the slots being adapted to receive ledges 35 formed on the interior of the casing 10 so as to retain the bolt assembly within the casing. Since the slots 34 are disposed equidistantly from the axis of the barrel 32, it is possible to insert the latch bolt assembly in the casing 10, before the casing is inserted in the slot 20 of the door, with either slot uppermost so as to position the beveled end of the latch bolt toward the left as shown in Fig. 1, or toward the right, so that the same lock can be installed on oppositely pivoted doors. A bolt-actuating element 37 is slidable in the barrel 32 and is adapted to pivot a rocker, which, in turn, retracts the latch bolt 33 against the action of a spring, these latter parts being shown in detail in my prior application, referred to above.

The inner end of the actuating element 37 is adapted to be engaged by the flat surface 39 of an outer transverse spindle 40, which is rotatable in a bearing boss 41 on the outer escutcheon plate 14. The spindle 40 carries a knob 42 on its outer projecting end, and this knob is preferably provided with a key cylinder which is adapted to lock the spindle against rotation, such spindle-locking mechanism not being herein shown since it may be of any suitable type commonly employed in door locks of this general nature.

The spindle 40 has an axial extension 44 of square cross-section adapted to be received in a square hole 45 in an inner knob 46, this knob having a hub 47 rotatable in a circular boss 48 on the escutcheon plate 25 and held in place axially by a snap-ring 49. It is thus seen that the spindle 40 may be rotated by turning either knob, so that the latch bolt 33 can be retracted either from the outside or inside of the door to permit opening of the latter.

The spindle 40 may be locked against rotation from the inside of the door by means of a finger-operated latch, which may be of a construction similar to that shown in my above mentioned pending application. Suffice it to explain that the latch includes a shaft 50, rotatable in the strip or plate 28 which holds the spindle 40 in place, and a second strip 51 within the casing 10, the shaft 50 having a pin engageable in a slot in a movable latching plate 52. The plate 52 has a lug 53 which is adapted to enter a recess 54 in the side of the spindle 40 to prevent rotation of the spindle. The shaft 50 is adapted to be rotated by means of a finger lever 55, which has an inner extension in the form of a key 56 receivable in a socket in the end of the shaft. This finger-operated latch is more specifically shown and described in my copending application, Serial No. 608,160.

It will be observed from the foregoing that my invention provides a lock which can be readily installed on wooden or other doors by simply sliding the lock casing into a slot in the edge of the door and tightening a few screws. By this construction expert fitting of the lock in the door is unnecessary, and the installation and removal of the lock may be accomplished by a person unskilled in the art. As a particular feature of in-

vention, the several parts of the lock, including the casing, bolt assembly, spindle, knobs, etc., are assembled to provide a unitary structure which remains intact at all times, it being noted that disconnection of the spindle and knobs from the lock to permit installation on the door, as in conventional locks, is unnecessary since the entire unit can be slid into place on the door. This is an extremely desirable and important feature, since the parts of the lock can be assembled in proper relationship at the manufacturing plant and this relationship need not be disturbed. By the use of my lock, the door is provided with a single slot which can be easily and inexpensively cut in the edge of the door, so that the cost of the door is materially reduced. This constitutes an important contribution to the art since it eliminates the usual transverse spindle aperture, heretofore believed necessary. My lock is simple in construction, economical to manufacture, is pleasing in appearance, and highly efficient in use.

While I have herein shown and described my improved lock as embodied in a preferred form of construction, by way of example, it will be apparent that various changes might be made therein without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

1. A lock adapted for installation on a wooden door having a slot in an edge thereof, including: a box-like casing having one open side and a side wall constituting a first escutcheon plate disposed against one side of the door and engageable with portions of the door adjacent the slot; a spring-actuated latch bolt slidable in said casing and normally projecting from an end thereof; manually operable spindle means rotatable in said casing and adapted upon rotation to retract said bolt into said casing; a second escutcheon plate disposed against the opposite side of the door and adapted to engage portions of the door adjacent the slot, said second plate having bosses projecting from its inner face and engaging the upper and lower surfaces of said slot of said door, the inner ends of said bosses abutting the upper and lower edges of said open side of said casing; clamping means connected between said second plate and said casing and operative to draw said plates toward each other so as to clamp said lock in place in the slot; a first set of thin, rib-like barbs formed integrally with and extending diagonally between said first escutcheon plate and said casing; and a second set of thin, rib-like barbs formed integrally with and extending diagonally between said second escutcheon plate and its said bosses, said first and second sets of barbs cutting into the wood at the upper and lower corners of said slot of said door.

2. A lock adapted for installation on a door having a slot in an edge thereof, including: a box-like casing having one open side and a side wall constituting a first escutcheon plate disposed against one side of the door and engageable with portions of the door adjacent the slot, said casing having vertically spaced, transversely extending ledges and an open end disposed adjacent said edge of said door; a latch bolt slidable relative to said casing and normally projecting through said open end thereof; manually operable spindle means rotatable in said casing and adapted upon rotation to retract said bolt into said casing; a second escutcheon plate disposed against the opposite side of the door and adapted to engage portions of said opposite side of the door adjacent the slot; and a barrel surrounding said latch bolt and providing a bearing therefor, said barrel having vertically spaced, transversely extending slots adapted to receive said ledges when said barrel is slid into said casing through said open side thereof, said barrel having a plate portion adapted to close said open end of the casing, said second escutcheon plate retaining said barrel within said casing.

3. A lock as defined in claim 2, in which the upper and lower edges of said plate portion are inwardly bevelled.

4. A lock as defined in claim 2 in which said ledges are disposed horizontally, in which said latch bolt has a bevelled vertical corner at its end, said corner being offset laterally from the vertical axis of the bolt and adapted to engage a keeper plate of a door frame so as to cam the bolt inwardly into said casing, and in which said slots extend horizontally and are disposed equidistantly from the axis of the barrel so that said barrel can be disposed in said casing with either of its said slots disposed uppermost to locate its said bevelled vertical corner at either side of said vertical axis and thus adjacent either side of the door.

CARL A. HILLGREN.

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