

May 27, 1924.

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J. P. TIERNEY

COMBINATION LOCK AND BOLT DEVICE FOR DOORS

Filed Sept. 12, 1922

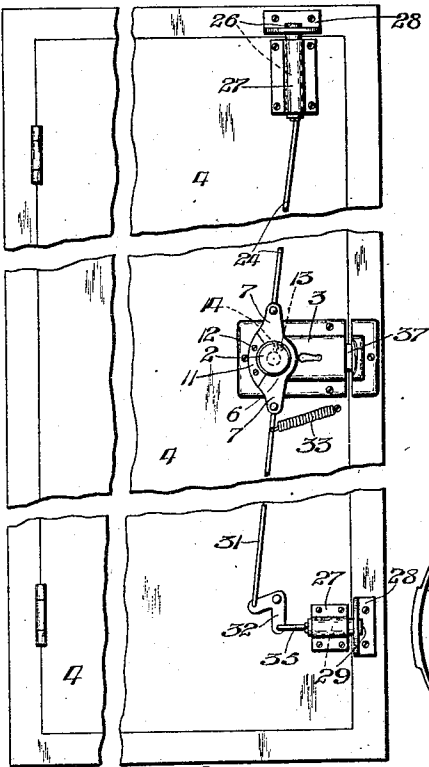


Fig. 1.

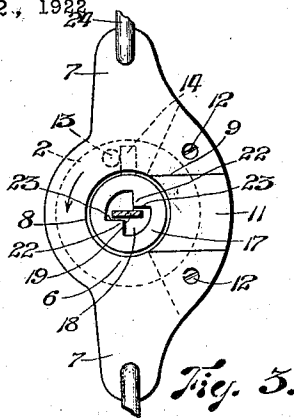


Fig. 3.

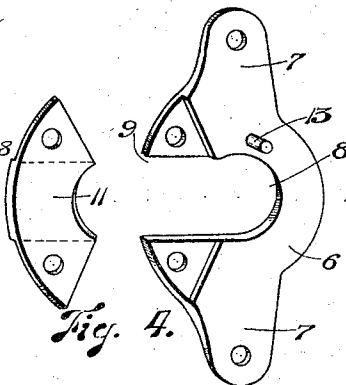


Fig. 4.

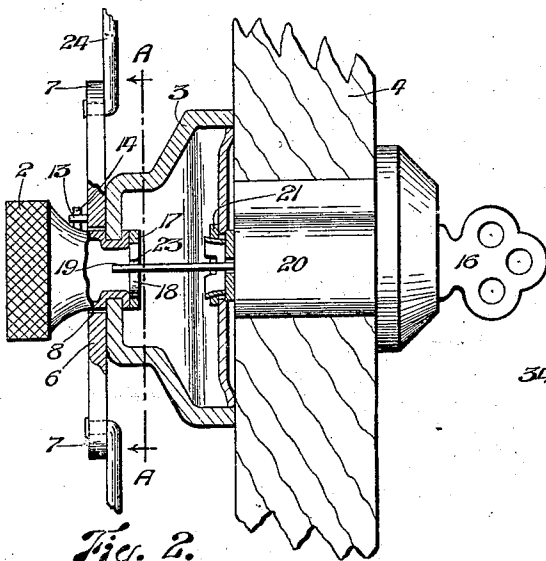


Fig. 2.

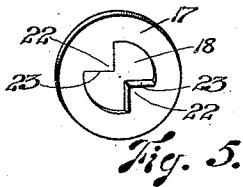


Fig. 5.

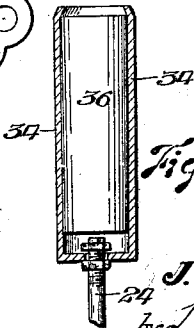


Fig. 6.

Inventor:
J. P. Tierney
by Lacey & Lacey
his Attorneys.

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UNITED STATES PATENT OFFICE.

JAMES P. TIERNEY, OF ST. KILDA, MELBOURNE, VICTORIA, AUSTRALIA.

COMBINATION LOCK AND BOLT DEVICE FOR DOORS.

Application filed September 12, 1922. Serial No. 587,760.

To all whom it may concern:

Be it known that I, JAMES PATRICK TIERNEY, a subject of the King of Great Britain and Ireland, and a resident of the city of St. Kilda, a suburb of the city of Melbourne, in the county of Bourke, State of Victoria, Commonwealth of Australia, whose post-office address is 376 High Street, in the said city of St. Kilda, have invented a certain new and useful Improved Combination Lock and Bolt Device for Doors, of which the following is a specification.

This invention relates to the locking of doors and the like and its primary object is to provide a simple and efficient device for attachment to the ordinary key operated latch lock whereby the closing of the door, and consequent shooting of the latch or bolt of the lock, causes an additional co-operating bolt or bolts to be automatically shot on the inside of the door, said bolts being withdrawn as the door is unlocked by the key from the outside.

By the above means an effective safeguard against unauthorized opening of the door from the outside by forcing the lock is provided the door being held firmly by bolts at or near the top and bottom in addition to the lock at the middle. This also renders it extremely difficult to insert a jimmy or the like between the door and door frame to force the lock as may be done with comparative ease when the door is held merely at a single point by the lock.

A further object of the invention is to provide a sliding bolt which comprises a tubular casing enclosing a member which is freely rotatable in said casing so that the bolt cannot be sawn through by the introduction of a saw between the door and door frame, owing to the oscillation of said rotatable member when the saw makes contact therewith.

Referring to the drawings which form part of this specification:—

Figure 1 is a view looking at the inside of a door fitted with the invention, parts being broken away for convenience of illustration.

Figure 2 is an enlarged part sectional side view taken vertically through the lock.

Figure 3 is a section taken on line A—A of Figure 2, the latch casing being omitted.

Figure 4 is a perspective view of the bolt operating element which freely embraces the knob or handle of the lock. The two parts

of said element are separated for convenience of illustration.

Figure 5 is an enlarged perspective view of a disc which is attached to the inner end of the knob and is provided with a specially shaped opening to accommodate the metal tape or extension of the rotary key cylinder.

Figure 6 is an enlarged sectional view of a sliding bolt having an internal rotatable member.

According to the invention there is freely mounted on the ordinary knob or handle 2 which projects from the lock or latch casing 3 on the inside of the door 4, a bolt-operating element which preferably comprises a plate 6 having a circular central portion or boss and two opposite arms 7 outstanding radially therefrom. A circular central hole 8 in said boss freely accommodates the aforesaid knob 2, this hole being provided on one side with an open mouth or gullet 9 whereby the bolt-operating element or plate 6 may be slipped over the knob. The open mouth 9 is then closed by a detachable section 11 which is attached by screws 12 or the like to the element 6 over the mouth 9 thereof so that the knob is completely but freely encircled by said bolt-operating element.

Outstanding from the face of the bolt-operating element 6 is a pin or projection 13 which is adapted to be engaged by another pin or projection 14 outstanding radially from the knob 2 so that when the latter is turned by the key in one direction (namely to the left in Figure 3) the bolt-operating element is turned to withdraw the sliding bolts from their sockets as hereinafter described, whereas when the knob is turned by hand in the opposite direction the two pins are disengaged and the bolts are unaffected.

The knob 2 is turned from the outside of the door by the usual key 16 through the medium of a plate or disc 17 which is attached, in accordance with the invention, to the inner end of the knob within the latch casing 3. Said plate or disc is furnished with a central opening 18 to accommodate the usual inwardly projecting metal tape or extension 19 of the rotary key cylinder which is disposed in the escutcheon 20. In accordance with the invention this metal tape or extension 19, which turns with the key, is left sufficiently long to extend into the opening 18 of the disc 17 as seen in Figure 2 instead of being cut off short just

inside the latch operating cam 21 as in ordinary locks of this type.

The opening 18 in the plate or disc 17 is provided with diametrically opposite V-shaped projections 22 forming opposed shoulders 23 which are engaged by the tape or extension 19 to turn the knob 2 to the left in Figure 3 and thus, by engagement of the pins 13 and 14, withdraw the sliding bolts hereinafter described when the key is turned to unlock the door from the outside. It will be evident moreover that owing to the shape of the opening 18 the knob may be turned by hand in the same direction, that is to the left in Figure 1, independently of the key and its extension 19 which would otherwise prevent the knob being turned from inside the door unless the key were in the lock to release the key cylinder.

Connected by a rod 24 or the like to one of the aforesaid arms 7 on the bolt-operating element 6 is an upper sliding bolt 26 which slides in a suitable guide 27 on the door and is adapted to engage a corresponding socket or retainer 28 on the door frame.

A lower sliding bolt 29 may be similarly connected by a connecting rod 31 to the second or lower arm 7 of the bolt-operating element, and either or both of these bolts may be disposed in a vertical position or they may extend horizontally between the door and door frame as shown in the case, of the lower bolt in Figure 1. In the latter case the rod or connection 31 between the bolt and bolt-operating element is attached at its lower end to one arm of a bell crank lever 32 or the like. The other arm of this lever is connected by a short horizontal rod 35 with the lower sliding bolt 29 so that the circumferential movement of the knob carrying the bolt-operating element is converted into the horizontal sliding movement of the bolt.

The sliding bolts are normally forced into their sockets or retainers 28 by the action of a suitably arranged spring 33 which may be connected at one end to one arm of the bolt-operating element or one of the connecting rods and at its other end to the door as in Figure 1. By making one end of the spring detachable it may be disconnected so that the sliding bolts 26, 29 will remain in their withdrawn or inoperative position when the door is open, and the latch lock may, if desired, be used independently of said bolts.

In accordance with the invention each aforesaid sliding bolt preferably comprises a tubular casing 34 (Figure 6) within which a rotatable member or core 36 is freely mounted. This rotatable member may be either solid or hollow and in the event of a saw being introduced between the door and door frame with the object of severing the bolt, it will, on passing through the tubular

casing 34, come into contact with the rotatable member 36, which will thus oscillate with the saw and render it impracticable to cut through the bolt. This special construction of the bolt constitutes a feature of the invention and its utility will be readily apparent.

The invention operates as follows. When the door is to be locked the bolts 26, 29 are held back in their withdrawn position against the action of the controlling spring 33 by turning either the key or the knob so that the bolt-operating element 6 is turned with the knob owing to the engagement of the pins or projections 14, 13. As the door closes and the key or knob is released the latch 37 is shot in the ordinary way by the pressure of the usual internal spring in the latch casing 3. At the same time the spring 33 causes the bolts 26 and 29 to automatically shoot into their sockets or retainers 28 thus securely locking the door at a number of separate points. When the key 16 of the lock is turned to withdraw the latch 37 and open the door from the outside the bolts 26, 29 are also withdrawn against the action of the spring 33 owing to the engagement of the key extension 19 with the shoulders 23 and consequent turning of the knob which in turn presses its outstanding pin or projection 14 against the companion pin 13 on the bolt-operating element 6. The latter is thus turned to the left in Figure 3 with the knob and the bolts 26 and 29 are withdrawn from their retainers 28, thereby permitting the door to open.

To open the door from the inside the knob 2 may be independently turned by hand in the direction of the arrow in Figure 3, the opposed shoulders 23 of the disc 17 thereby moving away from the key cylinder extension 18 which remains fixed until the key is inserted in the lock.

The invention, which may be readily applied to existing door locks of the kind indicated, provides a reliable fastening for the doors of "lock-up" shops and the like, where owing to the door being closed from the outside it is not practicable to operate internal bolts by hand.

It will be obvious that the particular construction described and illustrated may be altered or modified in various respects without departing from the spirit and scope of the invention as defined by the appended claims.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a combined lock and bolt device for doors, the combination with a latch lock having a rotary key cylinder at its outer side and a metal tape or extension projecting inwardly from said cylinder, of a rotary knob or handle at the inner side of the latch lock,

and a plate on the end of said knob to receive the end of said key cylinder extension, said plate having an opening therethrough to accommodate the key cylinder extension, and diametrically opposite projections on the wall of said opening forming pairs of opposed shoulders to be engaged by said extension.

2. A combined lock and bolt device for doors comprising a latch lock having means whereby its knob or handle at the inside of the door may be turned by a key from the outside thereof, a co-operating sliding bolt or bolts disposed at a distance from said lock, an outstanding projection on said knob or handle, a bolt-operating element freely mounted on the knob and operatively connected with said bolts, and a second projection carried by said bolt-operating element and adapted to be engaged by the said projection on the knob whereby the bolt or bolts may be moved by the turning of the key in the lock.

3. A combined lock and bolt device for doors comprising a latch lock having means whereby its knob or handle at the inside of the door may be turned by a key from the outside thereof, a co-operating sliding bolt or bolts disposed at a distance from said lock, a projection on said knob, a bolt-operating element freely mounted on said knob and operatively connected with said bolts, a second projection carried by said bolt-operating element and adapted to be engaged by the projection on the knob whereby the bolt or bolts may be moved by the turning of the key in the lock, and means whereby said knob may be turned by hand to withdraw the latch and bolts independently of the turning of the key.

4. A combined lock and bolt device for doors comprising in combination a latch lock having means whereby its knob or handle at the inside of the door may be turned by a key from the outside thereof, co-operating sliding bolts disposed above and below said lock and at a distance therefrom, an outstanding projection on said knob, a bolt-operating element comprising a plate which freely surrounds the knob and has outstanding arms, a second projection carried by said bolt-operating element and adapted to be engaged by the first named projection on the knob, and connecting rods operatively con-

necting said arms of the bolt-operating element with said sliding bolts for the purpose set forth.

5. A combined lock and bolt device for doors comprising a latch lock having means whereby its knob or handle at the inside of the door may be turned by a key from the outside thereof, a co-operating sliding bolt or bolts disposed at a distance from said lock, a bolt-operating element comprising a plate which has a central hole to freely accommodate said knob having an open mouth on one side of said plate and a detachable section adapted to fit into said open mouth to close said hole after the plate has been placed on the knob, connecting rods operatively connecting the bolt-operating element with said bolts and engaging abutments or projections on the knob and the bolt-operating element whereby the latter may be turned in one direction with the knob and the knob may be turned in the opposite direction independently of the bolt-operating element.

6. A combined lock and bolt device for doors comprising a latch lock having means whereby its knob or handle at the inside of the door may be turned by a key from the outside thereof, a co-operating sliding bolt or bolts disposed at a distance from said lock, a bolt-operating element freely mounted on said knob, engaging projections on the knob and bolt-operating element, a lever pivoted on the door and connected to one of said bolts which moves in a substantially horizontal plane, and a rod connecting said lever with the bolt-operating element for the purpose set forth.

7. A combined lock and bolt device for doors comprising in combination a latch lock having means whereby its knob or handle at the inside of the door may be turned by a key from the outside thereof, a co-operating sliding bolt or bolts disposed at a distance from said lock and operatively connected with said knob whereby the turning of the latter will withdraw said bolt or bolts, and a controlling spring adapted to normally shoot said bolts into their sockets or retainers on the door frame.

In testimony whereof I affix my signature.

J. P. TIERNEY.

Witness:

DOUGLAS J. M. KNOWLES.