July 3, 1928. 1,675,594

A. BOUCHERY

LOCK

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Fig. 1.

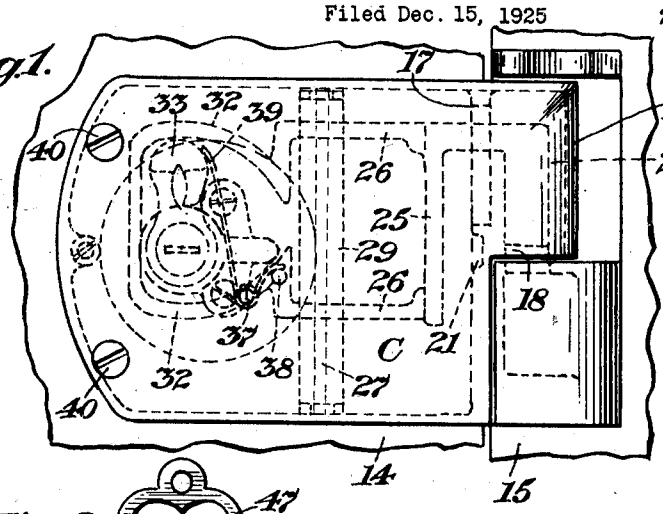


Fig. 2.

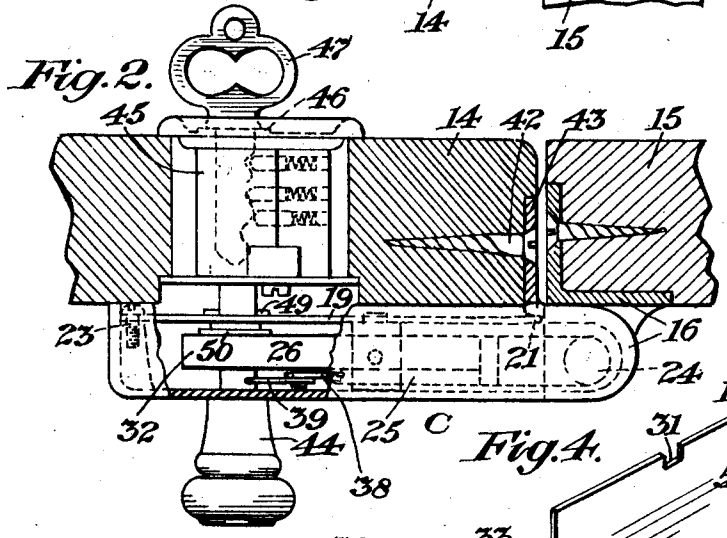


Fig. 5.

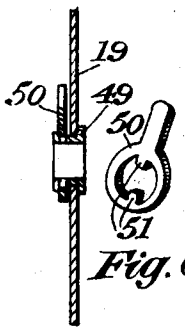


Fig. 6.

Fig. 4.

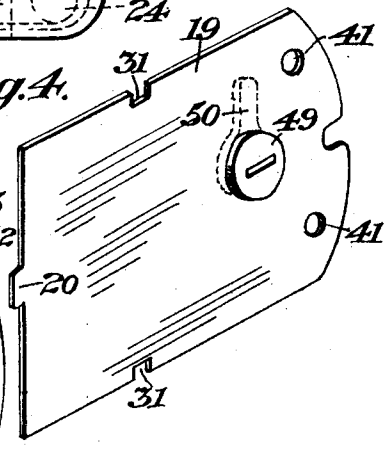
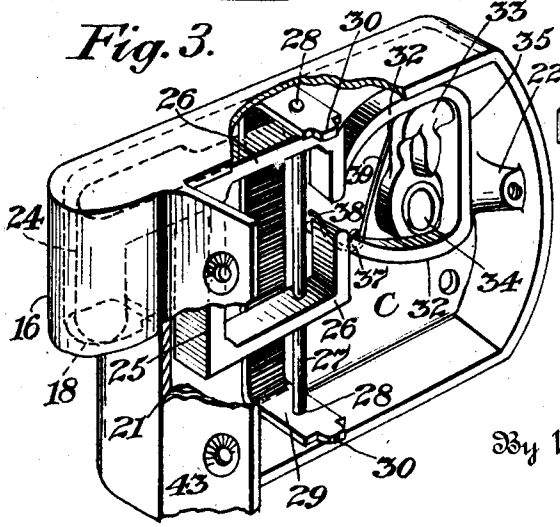


Fig. 3.



Inventor

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By his Attorney

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July 3, 1928. 1,675,594

A. BOUCHERY

LOCK

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Fig. 7.

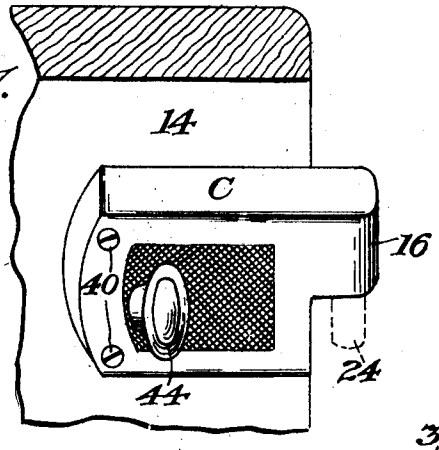


Fig. 8.

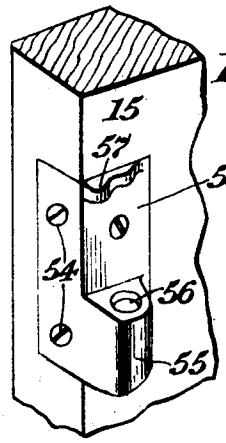


Fig. 9.

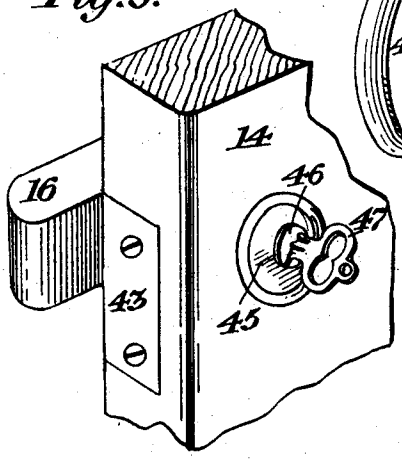
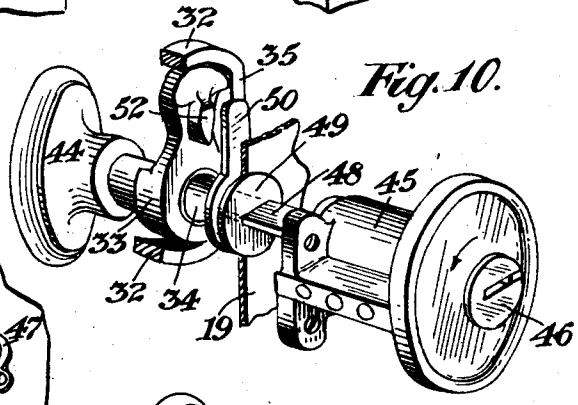


Fig. 10.



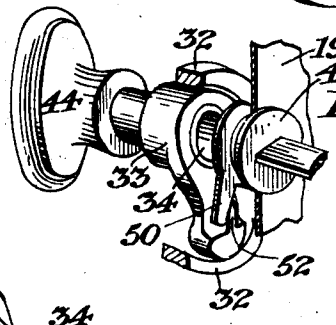


Fig. 11.

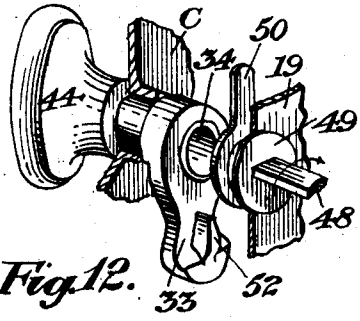


Fig. 12.

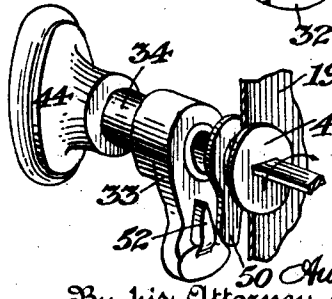


Fig. 13.

Inventor

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By his Attorney

John O. Seifert

Patented July 3, 1928. 1,675,594

UNITED STATES PATENT OFFICE.

AUGUST BOUCHERY, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO JOHN O. SEIFERT, OF AUBURNDALE-FLUSHING, NEW YORK.

LOCK.

Application filed December 15, 1925. Serial No. 75,485.

This invention relates to locks for doors and the like of the type wherein a tongue or pintle is arranged for sliding movement in a projection extending from one end of the lock casing to have movement in a direction transversely of the lock casing by a carrier therefor arranged in the body of said casing imparted thereto by means of a hand operated knob or a key actuated means as disclosed in the prior Patent No. 1,215,470, granted to me February 13th, 1917, and it is the primary object of the present invention to provide an improved construction and arrangement of lock casing, bolt carrier and actuating means therefor to not only greatly cheapen the cost of manufacture and facilitate the assembling of the lock, but also to increase the efficiency thereof.

In locks for doors and the like of the permutation type wherein the bolt is adapted to be actuated or moved to locking and unlocking position by key actuated means from the outside of the door, and the bolt being operated from the inside of the door by a hand operated knob, and particularly where the doors serve as a barrier for access to a building, such as a store, a method in surreptiously removing goods therefrom is to gain access to the store as through a window or otherwise and then release the door from the inside by actuating the lock bolt by the hand operated knob, when the goods are taken from the store or other place to a conveyance exterior of the building. To provide against this key operated means have been provided to actuate the lock bolt both from the exterior and interior of the door.

It is a further object of the invention to provide a lock embodying bolt actuating means operable by key actuated means and a hand knob, the means operative by the key not only actuating the bolt to move the bolt to locking and unlocking position but also being operative to set the bolt actuating means to lock the bolt actuator against manipulation by the hand knob when the bolt is in locking position and thus prevent the actuation of the lock from the inside of the door to release the same when the bolt has been moved to locking position by the key operated means from the exterior of the door, or to set the bolt actuating means with the bolt in locking position so that the bolt actuating means may be actuated by the hand knob to move the bolt to locking and unlocking position from the inside.

Other objects and advantages will hereinafter appear.

In the drawings accompanying and form a part of this specification I have shown an embodiment of the invention wherein Figure 1 is a front elevation of my improved lock showing the same mounted on a door and in relation to a keeper for engagement of the lock bolt mounted on the door frame, only so much of the door and door frame being shown as is essential to an understanding of the invention.

Figure 2 is a view looking at the top of Figure 1 with the door and door frame in section and the lock casing partly broken away and in section and with the keeper in section.

Figure 3 is a perspective view looking at the rear of the lock casing with a cover plate for the open back of the casing removed and the casing partly in section to show the construction and mounting of the bolt and a carrier frame therefor and also the bolt actuator.

Figure 4 is a perspective view of the closure plate for the open back of the lock casing and showing a dog mounted thereon to couple key operated means to the bolt actuator to actuate the latter.

Figure 5 is a cross sectional view of the cover plate to show the manner of mounting the dog thereon.

Figure 6 is a perspective view of the dog mounted on the casing plate.

Figure 7 is a perspective view of the lock showing the manner of mounting the same upon the door.

Figure 8 is a perspective view of the keeper to show the manner of mounting the same upon the door frame.

Figure 9 is a perspective view looking at the rear of Figure 7 to show the mounting of the lock upon the door and also the relation of the key operated means therefor.

Figure 10 is a perspective view to show the relation of the bolt actuator to the bolt carrier when in unlocking position to be actuated by the hand operated knob or the key

operated means to impart movement to the bolt to move it to locking position.

Figure 11 is a perspective view of the parts shown in Figure 10 but with the key barrel removed and showing the bolt actuator moved by the key operated means and positioned with the bolt in locking position, and said key operated means set to prevent actuation of the bolt actuator by the hand knob.

Figure 12 is a view of the parts shown in Figure 11 with the bolt actuator in position, actuated either by the hand knob or key operated means, to move the bolt to locking position, and the key operated bolt actuating dog set by its operated means to permit of the bolt actuator to be operated by the hand knob to move the bolt to locking or unlocking position; and

Figure 13 is a perspective view of the parts shown in Figures 11 and 12 with the bolt actuator positioned with the bolt in locking position, moved thereto either by the hand knob or key operated dog through the bolt actuator to impart movement to the latter to move the bolt to unlocking position.

Similar characters of reference designate like parts throughout the different views of the drawings.

The embodiment of the present invention is shown for use in connection with a door hingedly supported to swing on a vertical axis at one longitudinal edge, but it will be obvious that the application of the invention is not limited to such use, the door being indicated at 14 and the door frame at 15. The lock casing, designated in a general way by C, is of hollow structure, of rectangular shape and open at the back with a convexedly formed projection 16 extending from one end as a continuation of one side and extending for substantially one-half the width of the lock casing and opening into the lock casing, as at 17, and having an opening in the underside, as at 18, for a purpose to be hereinafter described. The opening in the back of the casing is closed by a plate 19 secured thereto by engaging a lug 20 projecting from one end of the plate under a shoulder formed in the end wall of the casing adjacent the projection 16, as shown at 21, and the other end resting upon a boss 22 at the end of the casing opposite to the projection 20 and secured to the casing by a screw 23 engaging a recess in said latter end of the closure plate and threaded into the boss 22.

The bolt is in the form of a tongue or pintle 24 integral with a frame 25 and whereby it is mounted in the casing to engage in the casing projection 16 to extend in a plane parallel with the length of the door and have movement transversely of the lock casing to be projected from the projection opening 18 and drawn thereinto by the movement of its carrier frame. The bolt carrier frame has a rectangular portion 26 whereby it is slidably mounted upon a rod 27 engaging in perforations in the opposite longitudinal members of said frame, said rod being mounted at its ends, as at 28, in the legs of a U-shaped member 29. The portion of this U-shaped member between the legs is of a length substantially the width of the casing and is engaged in the casing to lie contiguous to the inner surface of the front wall thereof with the legs extending to and of a length substantially the same as the width of the casing, the terminals of the legs being undercut, as at 30, to be engaged in opposite recesses 31 in the closure plate whereby said U-shaped member is held against lateral movement. Oppositely curved portions 32 extend from the end of the rectangular portion of the frame 26 opposite to the bolt 24, the inner surface of said extended portions 32 being in the arc of a circle whose center is the axis of an actuator for the bolt carrying frame in the form of an arm 33 fixed on a tubular member 34 rotatably mounted in the front wall of the casing and on a line extending longitudinally and centrally through the casing. The outer ends of said curved portions are connected, as at 35. In assembling the bolt in the lock casing the bolt carrying frame 25 is first mounted on the rod 23 and the latter secured in the legs of the U-shaped member 29. In this condition the bolt end of the frame is canted downwardly and passed through the opening 17 between the projection 16 and lock casing when the opposite end is readily engaged over the actuator 33 with the U-shaped member 29 in contiguous relation to the front wall of the casing. The closure plate is then secured to the casing as hereinbefore described when the bolt frame may be manipulated through the actuator 33 to move the bolt to locking position by projecting it from the opening 18 of projection 16, or to unlocking position by drawing the bolt into the lock projection 16. When the bolt is moved to locking position the actuator 33 through the rotation thereof rides along the upper curved portion 32 and onto the lower of said portions, and vice versa when the bolt is moved to unlocking position. The bolt is retained in unlocking position by resilient means comprising a strand of resilient wire 36 wound intermediate its ends around a pin 37 fixed in the casing with one end engaging a fixed abutment 38 while the opposite end 39 slidably engages with the actuator. The lock is secured to the door by screws 40 passing through the lock casing and openings 24 at the end opposite to the bolt engaging projection 36 and threaded into the door, and by screws 42 engaging openings in a flange 43 being a continuation of the end wall of the lock casing at the juncture of the bolt engaging projection 16 and arranged at right angles to the back of the casing, said flange

being adapted to engage at the edge of the door with the screws 42 extending into said edge of the door. The lock is secured on the inner side of the door and the bolt is adapted to be thrown into and out of locking position by a hand knob 44 fixed to the end of the carrier 34 for the bolt actuator 33 extending through the front wall of the casing. To operate the bolt actuator from the outer side of the door key operated means is provided. This may be of any conventional form of permutation lock mounted in an opening in the door coaxially with the actuator 33 and including a tumbler carrying cylinder 45 and slotted barrel 46 for the engagement of a key 47, the key barrel being held against rotation when the key is removed by tumblers as is usual. The key barrel is operatively connected to the actuator 33 by a bar 48 secured at one end to the key barrel and the opposite end engaging a correspondingly formed opening in a carrier 49 rotatably mounted in the closure plate for a dog 50. The dog 50 is mounted on the end of the carrier 49 extended through the closure plate within the casing by engaging nibs 51 extending oppositely and inwardly from a collar portion of the dog in a transverse slot in said projecting portion of its carrier and then peening the material of the carrier over said collar portion of the dog. An abutment in the form of a lug 52 projecting from the side of the actuator arm 33 opposite to the dog 50 and eccentric to the axis of the actuator is arranged in the path of movement of the dog and is engaged by the dog as movement is imparted thereto through its connection with the key barrel 46 as the latter is rotated by a key to actuate the bolt carrier frame and move the bolt to locking and unlocking position by the key.

As stated, it is an object of the invention to provide a construction of lock wherein the bolt is adapted to be manipulated to move it to locking and unlocking position by either a hand knob from the inner side of the door, or by key operated means from the outer side of the door, and the key operated means being adapted to be set to prevent the actuation of the bolt actuator by the hand knob when the bolt has been moved to locking position, or set to permit the actuation of the bolt actuator by the hand knob when the bolt has been moved to locking position by the key operated means. This result is produced by the arrangement of operatively connecting the key operated means to the bolt actuator through the dog 50 and the abutment 52 on the actuator.

The normal position of the parts with the bolt in unlocking position is as shown in Figures 3 and 10 with the actuator 33 extending upward from its carrier and the dog 50 engaging at the right side of the actuator abutment 52. In this position the bolt actuator may be actuated at will to move the bolt to either locking or unlocking position by the hand knob. When the bolt actuator is actuated by the key operated means to actuate it to move the bolt to locking position the dog engages with the actuator abutment 52 thereby moving the actuator to the left as viewed in Figure 10 to the position shown in Figure 11. The dog is retained in this position by the tumbler pins co-operating with the key barrel when the key is withdrawn with the result that the bolt actuator is held against actuation by the hand knob 44. When the dog is in the position shown in Figure 11 a complete revolution will have been given to the dog and the key is in position to be withdrawn from the key barrel. To permit of the actuation of the bolt actuator by the hand knob after the bolt has been moved to locking position by the key operated means, as just explained, reverse movement is imparted to the dog by the key from the position shown in Figure 11 to that shown in Figures 12 and 13 so that the dog engages at the side of the abutment 52 opposite to that shown in Figure 11.

To perform the function of latching or locking the door the bolt tongue or pintle 24 co-operates with a keeper 53 fixed to the door frame (Figures 12 and 8). This keeper is of rectangular shape in cross section to embrace the corner formed by the edge and one face of the door frame and secured thereto by screws 54 engaged in openings in both angular portions of the keeper, as shown in Figure 8. A hollow lug 55 projects from one angle portion of the keeper to project from the door frame and has an opening 56 to the interior thereof. The keeper is of a length substantially the same as the width of the lock casing and the projecting lug 55 is of a length substantially one-half the keeper and arranged to fit in the angle portion formed by the casing projection 16 and shaped to conform to said casing projection. At the end of the keper opposite to the projection lug there is provided a lug 57 between which lug and the projection 55 the projecting portion 16 of the casing is adapted to engage with the door in closed position. This lug 57 prevents any canting movement of the door in an attempt to distort the door in its frame when closed to lift the bolt from the keeper lug 55 and thus open the door.

By the construction and arrangement of lock and keeper and the mounting of the same upon the door and door frame it will be obvious that it will be impossible to remove the lock or the keeper from the interior of the door with the object of opening the door since the lock is securely held to the door by the screws engaging the openings in the lock flange 43. Also that access cannot be had to the screws 54 engaged in openings in that

portion of the keper opposite to the edge of the door and lock flange 43, and the screw passing through the other angle portion of the keeper since it will be below the lock projection 16.

While I have illustrated and described what may be the preferred embodiment of the invention, it will be obvious that various modifications may be made in construction and arrangement of parts, and that portions of the invention may be used without others and come within the scope of the invention.

Having thus described my invention, I claim:

1. In a lock, the combination of a casing, a locking bolt therein; a hand operated knob rotatably carried by the casing having operative connection with bolt actuating means within the casing operable by the manipulation of the knob to throw the bolt to locking and unlocking position; and a key barrel arranged with means for operative connection with the bolt actuating means operable through the movement of the key barrel by the manipulation of a key inserted therein, said connecting means of the barrel with the bolt actuating means being arranged to lock the actuating means against operation by the knob in one bolt locking position of the barrel and permit actuation of the bolt by the knob in another bolt locking position of the barrel.

2. In a lock, the combination of a casing, a locking bolt therein, a hand operated knob rotatably carried by the casing, a bolt actuating arm carried by the knob within the casing operable by the the rotation of the knob to throw the bolt to locking and unlocking position; a key barrel; means operative by the key barrel to co-operate with the bolt actuating arm to actuate the arm to throw the bolt to locking and unlocking position, said means being adapted to be held in one position by the key barrel when the bolt is in locking position to lock the bolt actuating arm against movement by the knob.

3. In a lock, the combination of a casing, a locking bolt therein, a hand operated knob rotatably carried by the casing; a bolt actuating arm carried by the knob within the casing operable by the rotation of the knob to throw the bolt to locking and unlocking position; a key barrel; means operative by the key barrel to co-operate with the bolt actuating arm to actuate the arm to throw the bolt to locking and unlocking position, said means being adapted to be held in one position by the key barrel when the bolt is in locking position to co-operate with the bolt actuating arm to hold the same against movement by the knob, and the bolt in locking position, and said means adapted to be positioned by the key barrel when the bolt is in locking position to free the bolt actuating arm and permit actuation of the bolt by the bolt actuating arm through the knob.

4. In a lock, the combination of a casing, a locking bolt therein, a hand operated knob rotatably mounted in the casing and having an arm fixed thereto within the casing operable by the rotation of the knob to throw the bolt to locking and unlocking position, said arm being arranged with a lug; a key barrel; a dog rotatable with the key barrel adapted to co-operate with the lug of the bolt actuating arm to actuate said arm to throw the bolt to locking and unlocking position, said dog being adapted to be positioned by the key barrel to co-operate with the arm lug when the bolt is in locking position to lock the arm against movement by the knob, and in another position to free the dog from the bolt actuating arm and to permit of actuation of the arm by the knob to move the bolt to locking and unlocking position.

5. In a lock, a casing having an open side with a removable closure therefor; a locking bolt mounted in the casing; a hand operated knob rotatably mounted in the casing having a bolt actuating arm fixed thereto within the casing; a dog rotatably carried by the closure plate for the open side of the casing coaxially with the arm; a key barrel adapted to have rotative movement on an axis coaxially with the bolt actuating arm and dog and arranged with means to operatively connect the barrel with the dog whereby said dog will participate in the movement of the key barrel, said dog being operable by the key barrel to co-operate with the bolt actuating arm to actuate the same to move the bolt to locking and unlocking position, and adapted to be positioned by the key barrel to co-operate with the bolt actuating arm to lock the arm against movement by the knob with the bolt in locking position, and adapted to be positioned in another position by the key barrel to permit the knob to impart bolt actuating movement to the arm.

6. In a lock, a casing having an open side with a removable closure therefor; a locking bolt mounted in the casing; a hand operated knob rotatably mounted in the casing having a bolt actuating arm fixed thereto within the casing; a dog rotatably carried by the closure plate for the open side of the casing co-axially with the arm; a key barrel adapted to have rotative movement on an axis coaxially with the bolt actuating arm and dog and arranged with means to operatively connect the barrel with the dog whereby said dog will participate in the rotative movement of the key barrel, said dog being operable by the key barrel to co-operate with the bolt actuating arm to actuate the same to move the bolt to locking and unlocking position, and operable to be positioned by the key barrel to co-operate with the bolt actu-

ating arm to lock the bolt actuating arm against operation by the knob and to position to permit actuation of said arm by the knob to throw the bolt to locking and unlocking position.

7. In a lock, a locking bolt; bolt actuating means operative to throw the bolt to locking and unlocking position; knob manipulable means to operate the bolt actuating means to throw the bolt to locking and unlocking position; key manipulable means to operate the bolt actuating means to throw the bolt to locking and unlocking position, said means being arranged to be positioned by the key to hold the bolt actuating means against operation by the knob when the bolt is in locking position, and to be positioned by the key to permit actuation of the bolt actuating means by the knob.

8. In a lock, an open side casing, a bolt carrying frame to have movement transversely in the casing to project the bolt through and draw the same into an opening in the casing, a U-shaped member to be engaged in and extending transversely of and in contiguous relation to the front wall of the casing with the legs extending contiguous to the side walls of the casing and extending into the open side of the casing and of a length substantially the same as the depth of the casing and having the extremities reduced in width, a rod extending between and mounted in the legs of the U-shaped member and upon which the bolt is slidably mounted, a cover plate for the open side of the casing having a lip at one end for engagement in a recess in the casing and arranged at the opposite end for the engagement of securing means, and said plate having recesses in the opposite sides for the engagement of the reduced ends of the U-shaped member to position the latter in the casing.

9. In a lock, a frame arranged with a bolt to extend transversely thereof at one end, said frame embodying parallel longtudinally extending members whereby to mount the same to have transverse movement in a lock casing and having oppositely curved portions extended longitudinally from the end opposite to the bolt for the engagement of actuating means therefor.

10. In a lock, a bolt carrying and actuating frame embodying an intermediate rectangular portion arranged for mounting and guiding the same for transverse movement in a lock casing, a member extending in a line with a longitudinal member of said rectangular frame portion and arranged with a bolt to extend in a direction transversely of the frame, and oppositely curved portions extending from the end of said intermediate portion opposite to the bolt for the engagement of actuating means.

11. In a bolt carrying and actuating frame for locks as claimed in claim 10, a rod extending through the top and bottom members of the intermediate portion of the frame, and a U-shaped member in the legs of which member the rod is mounted at opposite ends to position and mount said frame in a lock casing.

12. In a lock, a casing, a locking bolt mounted therein, a bolt actuating arm rotatably carried by the casing and having an abutment projecting from the back eccentric to its axis of rotation, a hand knob operative to manipulate the bolt actuating arm to throw the bolt to locking and unlocking position, a dog rotatably carried by the casing coaxially with the arm, and rotatably key operated means to actuate the dog operative during the rotative movement thereof in one direction to engage at one side of the abutment to actuate the arm to move the bolt to locking position, and as reverse movement is imparted thereto by the key operated means said dog engaging at the side of the abutment to actuate the arm to move the bolt to unlocking position.

13. A lock as claimed in claim 12, wherein the dog during the rotative movement thereof in one direction is adapted to be positioned by the key operated means to cooperate with the arm abutment to hold the arm against movement by the knob when the bolt is in locking position and to position said dog with the bolt in locking position to permit of actuation of the arm by the knob to move the bolt to locking and unlocking position.

Signed at the city of New York in the county of and State of New York, this 16th day of November, 1925.

AUGUST BOUCHERY.