Dec. 24, 1940. S. SEGAL 2,225,663

LOCK

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Fig. 1.

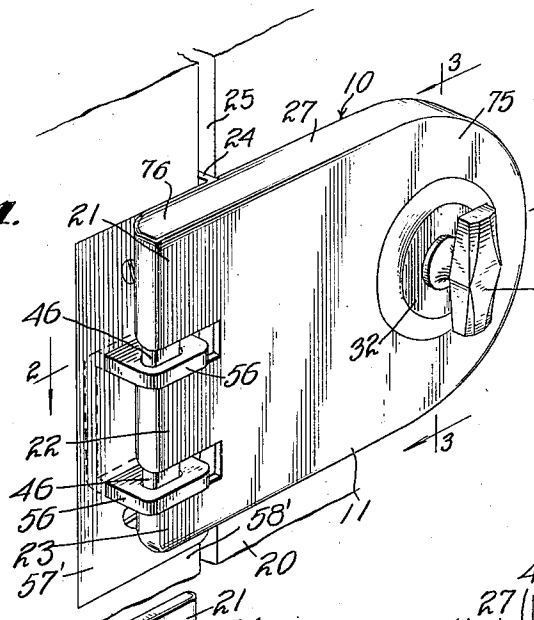


Fig. 13.

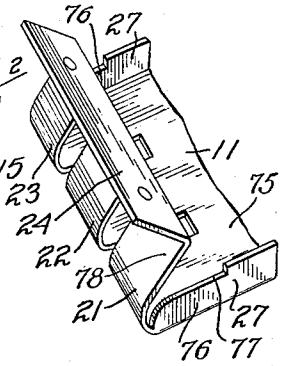


Fig. 3.

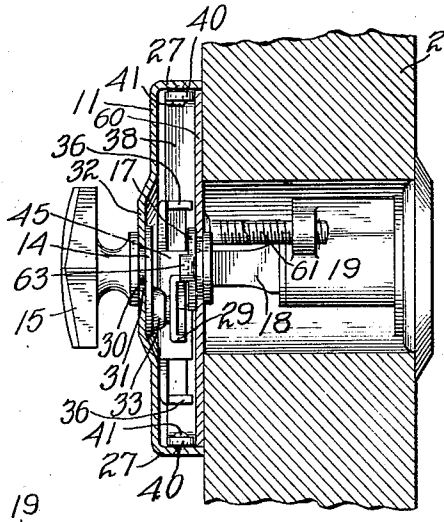


Fig. 10.

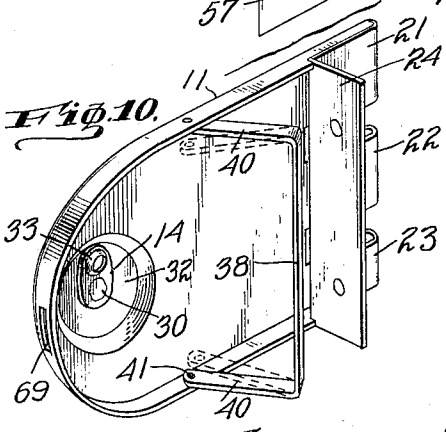
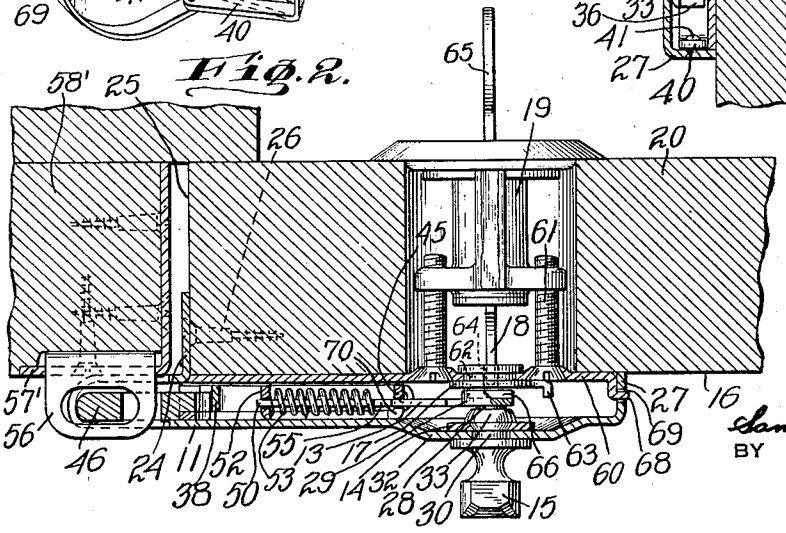


Fig. 2.



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LOCK

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Fig. 4.

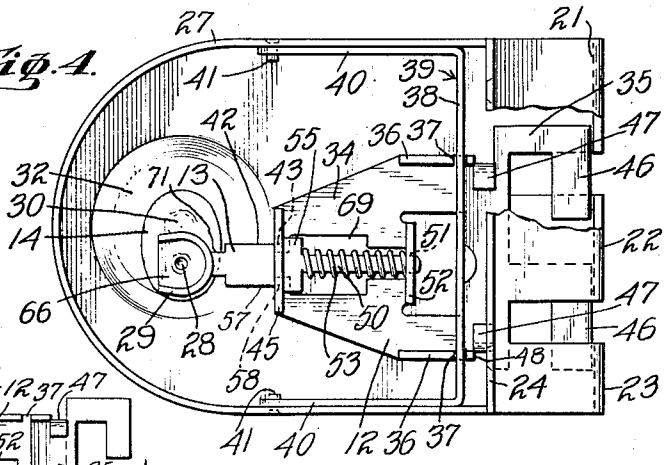


Fig. 11.

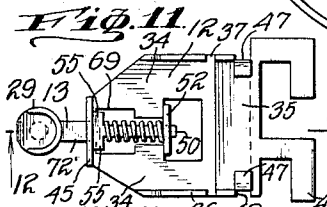


Fig. 5.

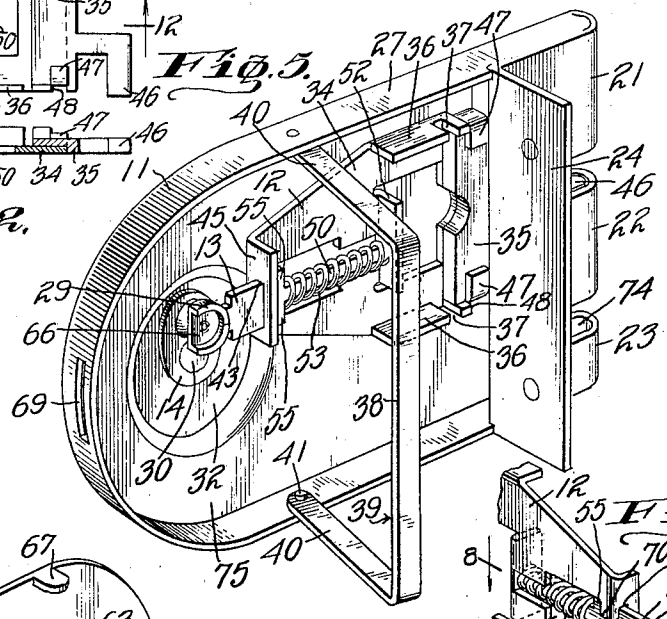


Fig. 12.

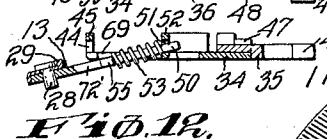


Fig. 9.

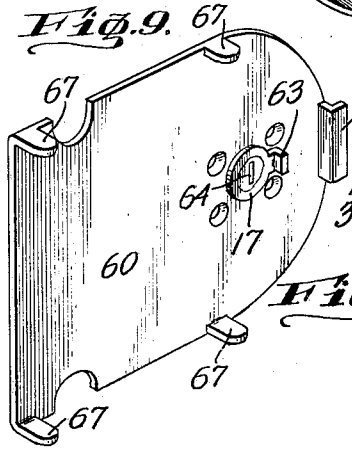


Fig. 6.

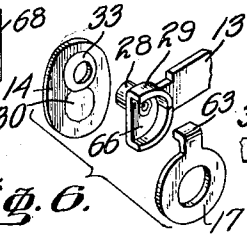


Fig. 7.

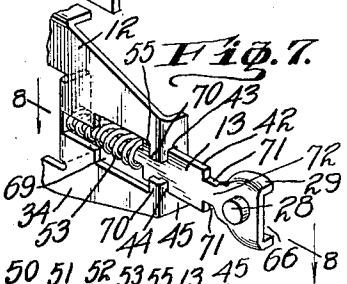
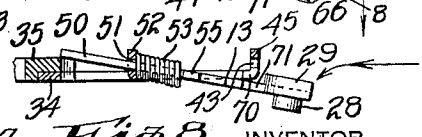


Fig. 8.



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UNITED STATES PATENT OFFICE

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LOCK

Samuel Segal, Brooklyn, N. Y.

Application August 7, 1937, Serial No. 157,835

17 Claims. (Cl. 70—131)

The present invention deals with locks of the type attached to doors and having a bolt adapted to removably interlock with a keeper mounted on the frame of the door. The chief object of the invention is to provide a simplified, sturdy, efficient, and improved jimmy proof lock embodying a number of practical improvements and comprising few principal parts which may be constructed of sheet metal and readily assembled by unskilled operators. Other objects, advantages, and features of the invention will be apparent as it is better understood by reference to the following detailed description considered in connection with the accompanying drawings in which:

Fig. 1 is a perspective view of the lock according to the invention shown mounted on a swingable door and interlocked with a keeper attached to the frame of the door.

Fig. 2 is a horizontal sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 1.

Fig. 4 is an inside elevational view of the lock shown partly broken away.

Fig. 5 is a perspective view of the lock showing the interior thereof and illustrating the pivoted bail or loop in an open position and disconnected from the conveniently removable shiftable bolt.

Fig. 6 illustrates an exploded but fragmentary view of the selectively driven cranks common to and cooperating with one end of a connecting bar adapted to be reciprocated longitudinally of the lock casing for shifting the bolt vertically of the casing.

Fig. 7 is a fragmentary perspective view of the bolt and its connecting bar.

Fig. 8 is a sectional view taken on the line 8—8 of Fig. 7, however illustrating the manner in which the connecting bar of the bolt is positioned during assembly thereof.

Fig. 9 is a perspective view of the lock closure plate.

Fig. 10 is a view similar to Fig. 5 however showing the bolt removed from the lock casing.

Fig. 11 is an elevational view of a bolt according to the invention cooperating with a slightly modified but removable connecting bar.

Fig. 12 is a sectional view taken on the line 12—12 of Fig. 11, illustrating the manner in which the connecting bar of the bolt may be attached or removed therefrom and

Fig. 13 shows in perspective the manner in which part of the sheet metal plate is bent to form the lock casing.

The lock 10 according to the invention includes a casing 11, a bolt 12, actuating means in the form of a connecting bar 13 for operating the bolt, selective driving means 14 controlled by handle 15 accessible on the inside door face 16, and selective driving means 17 controlled by a tongue 18 of a rotatable key receiving conventional cylinder lock 19 accessible on the outer face of the door 20. The casing 11, if desired may be of a suitable sheet metal, appropriately stamped and formed to take the form illustrated and is characterized by spaced sockets 21, 22 and 23 and the transverse wall 24 adapted to be fastened to a side face 25 of door 20 by screws 26.

With the transverse plate 24 anchored to the side face 25 of the door, peripheral rim 27 of casing 11 is against the inner face of the door, and the crank arm or driving means 14 is properly positioned in respect to stud 28 extending from socket 29 integral with reciprocable connecting bar 13. Crank arm 14 is fixedly fastened to the rotatable shank 30 of handle 15. Specifically however shank 30 is journalled in opening 31 of boss 32 of casing 11. If therefore control handle 15 is rotated, the crank arm 14 is rotated.

Integral with and projecting from crank arm 14 is an annular collar 33 which removably receives stud 28 of socket 29. Thus if crank arm 14 is rotated, connecting bar 13 is reciprocated longitudinally of the casing.

Advantage is taken of the reciprocation of connecting bar 13 to reciprocate the slidable bolt 12 vertically of the casing. To permit such operation, bolt 12, in the form of a stamped plate 34 to which is anchored studded block 35, includes upper and lower overhanging lugs 36 having vertically alined notches 37 in which the cross bar 38 of the bail or U shaped loop 39 is positioned, the latter having its resilient arms 40 removably snapped on and pivoted to studs 41 at opposed portions of the peripheral rim 27. As shown in Fig. 4 however, loop 39 is in its closed position, to wit, interlocked with the notches 37 of lugs 36. If therefore bar 13 is reciprocated longitudinally of the casing, the side 42 thereof cooperates with a wall 43 of the rectangular shaped slot 44 of lug 45 to slidably shift driving bolt 12 vertically in one direction relative to the casing and along the track or cross bar 38 of loop 39. In other words upon rotation of crank 14 from its position shown in Fig. 4 to its position illustrated in Fig. 5, the bolt 12 is moved from a locked position to an unlocked position, that is, studs 46 of the studded block 35 anchored to plate 34 of bolt

12 are shifted from sockets 22 and 23 to sockets 21 and 22 respectively. It should be noted that the plate 34 of the bolt 12 is provided with lugs or hooks 47 receivable and anchored in notches 48 in the studded block 35. In effect hooks 47 are fixedly fastened to upper and lower parts of the studded plate 35 and the latter therefore bodily shift with plate 34 when connecting bar 13 is actuated.

Reciprocable bar 13 is provided with a reduced non-circular stem 50 having one end slidably guided in a corresponding non-circular opening 51 of a lug 52 projecting from plate 34. Abutting lug 52 is one end of a coiled spring 53 which also surrounds stem 50. The other end of spring 50 abuts a stop shoulder 55 of an expanded part of bar 13.

When therefore crank arm 14 is rotated from the position shown in Fig. 4 towards its position in Fig. 5, bar 13 driven longitudinally of the casing but towards track 38 of loop 39. Therefore the upper face 42 of bar 13 cooperates with the upper face 43 of the guide opening 44 and hence the bolt is slidably shifted along the track 38 and spring 53 is compressed until crank arm 14 starts to pass its dead centre at which time spring 53 expands, and acts against stop lugs 55, causing the bar 13 to slidably and automatically retract and the crank arm 14 is driven to its upper position shown in Fig. 5, in which case the studs 47 of the bolt are shifted to the upper part of the casing and are in an unlocked relation with the eyes 56 of the keeper 57' attached to the frame 58'. It is apparent therefore that the driven bar 13 makes one complete cycle when the bolt is shifted from its locked to its non-locking position. This is also true where the bolt is shifted from a non-locking position to its locked position in which case lower side 57 of bar 13 acts against wall 58 of guide opening 44 in lug 45 (Fig. 4) to slide the bolt downwardly relative to the casing. During such operation, the bolt is slidably guided by bar 38 of loop 39, the spring 53 is first progressively compressed and after the dead centre of the crank arm 14 is reached, spring 53 expands thus automatically retracting bar 13 which is limited in its retraction by stop lugs 55 striking lug 45 and hence the bolt 12 has been thrown to its locking position.

A plate 60 serving as a closure for the lock casing 11 is attached to the inner face of the door and screws 61 carried by plate 60 hold the key controlled cylinder lock 19 in its proper position. Rotatably carried by plate 60 is the slotted collar 62 to which is attached the driving means 17 having crank arm 63. Tongue 18 of cylinder lock 19 interlocks with slot 64 of collar 62 (Fig. 2). By this arrangement the bolt 12 may be controlled at the outside of the door and independently of the handle 15. Therefore with a properly bitted key 65 inserted in key controlled lock 19, tongue 18 may be rotated. Hence driving member 17 is rotated and its crank 63 enters socket 29 fixedly attached to connecting reciprocable bar 13. If the key be rotated in one direction, the bolt is moved from an unlocked to a locked position and if rotated in an opposite direction the bolt is moved from a locked to a non-locked position.

Closure plate 60 is also provided with lugs 67 and the offset lug 68 which removably interlocks with the walls of the elongated opening 69 at one end of the lock casing and serves as means to position the casing longitudinally of the plate 60 while lugs 67 are receivable within the lock casing and cooperate with its peripheral rim 27 to position the casing 11 vertically of plate 60.

According to the invention illustrated in Figs. 4, 5, 7 and 8, the spring controlled connecting bar 13 may be readily assembled with plate 34 of the bolt. In this connection spring 53 is threaded on shank or stem 50. Thereafter the latter is inserted on a bias into non-circular opening 51 of lug 52 (Fig. 8). Subsequently bar 13 is moved inwardly causing stop lugs 55 to compress spring 53 and stop lugs 55 enter into opening 69. Further movement of the bar 13 in the same direction causes notches 71 thereof to receive lips 70 thus permitting the insertion of the reduced portion 72 of bar 13 into guide opening 44 of lug 45 at which time spring 53 is allowed to expand, thus shifting the body of the bar 13 to slidably interlock with non-circular guide opening 44 of lug 45. To remove bar 13 from plate 34, the former is moved to compress spring 53 until lips 70 register with notches 71 at which time reduced portion 71 can be removed from guide opening 44 and stem 50 from lug 52.

In the form according to Figs. 11 and 12, the connecting bar 13 may be readily attached to plate 34 by first inserting one end of stem 50 in opening 51 of lug 52. Thereafter the bar is manually moved to compress the spring 53 until stop lugs 55 are within opening 69 to permit shank 72' to enter non-circular guide opening 44 after which manual pressure is removed permitting spring 53 to expand, thus causing shank 72' to be slidably moved in opening 44 until stop lugs 55 abut lugs 45. If desired, bar 13 may be quickly disconnected from plate 34 by moving the bar inwardly against spring 53. Thereafter shank 72' is tilted to be free of opening 44 after which stem 50 may be readily withdrawn from opening 51 of lug 52.

Having assembled the connecting bar to the bolt, the latter may be quickly assembled with the lock casing. In this connection, loop 39 is first swung to its open position shown in Figs. 5 and 10. In such relation, the interior of the casing except for the rotatable crank 14 and the swiveled arms 40 of the loop is free and clear of any encumberances (see Fig. 10). Therefore the bolt may be quickly positioned and inserted within the casing. To this end the studded block 35 is first slidably inserted in part within the gap 74 (Fig. 5) formed by the interconnecting sockets 21, 22, and 23 and wall 75 of the casing. Thereafter stud 28 is inserted into the bore of collar 33. Subsequently loop 39 is swung to its closed position, that is, its arms 40 enter grooves 37 of lugs 36. The bolt is now properly positioned and slidably locked in the casing.

With the bolt and casing assembled, the casing may be readily attached to the closure plate 60 which is fastened to the inner surface of the door. To this end, opening 69 in the peripheral rim 27 of the casing is first moved over offset lug 68 to removably interlock therewith.

Thereafter the upper and lower parts of rim 27 are shifted towards the door to removably straddle lugs 67 of the plate 60. It follows that the lock casing is now properly positioned in respect to the door. In such relation, transverse flange 24 is against edge face 25 of the door and upon insertion of screws 26, the lock casing is fastened to the door.

When the casing is assembled and fastened to the door, the bolt 14 may be controlled by key 65 to rotate crank 63 which as previously set forth is utilized to actuate the connecting bar 13 for

shifting the bolt vertically of the casing. Since with the present arrangement, the interior of the lock casing is free of the usual posts and lugs, the bolt may be readily positioned and set therein, the lock may therefore be readily assembled even without resorting to skilled operators and, since the bolt which may be in part or in whole of a suitable durable stamping, it need not have an appreciable thickness and consequently the lock casing does not require appreciable depth, and it follows that a relatively thin although durable jimmy proof lock is provided.

As a further advantage, it should be noted that the lock casing 11 if desired may be made from a single plate which is suitably stamped out in a single operation to provide the front wall 75 as shown and its peripheral rim 27 which embodies reduced portions or attenuated spacer means 76 defining alined recesses 77 for receiving upper and lower margins of the slotted rear wall 78 which is integral with the front wall 75. After wall 78 is bent over and against the spacer means 76, overhanging flange or wall 24 which is integral with the body of the casing extends substantially normal to the rim 27 and the marginal portions of the back wall 78 are welded to the rim 27 in any well known manner. Thus secured the reduced portions 76 provide closure means for the end sockets 21 and 23.

By the present arrangement, it is apparent that a dominant feature of the invention is realized in the provision of a simplified and improved lock which is characterized by a swingable member adapted to readily open or close. If opened, the bolt may be readily positioned in respect to the casing. If closed the swingable member can be conveniently shifted to interlock with the bolt to slidably guide the latter vertically of the casing and another feature of the invention is concerned with the provision of control means for actuating a reciprocable bar removably mounted on the bolt and adapted to shift the latter relative to the swingable member upon rotation of the control means.

Various changes may be made in details of construction and arrangement of parts without departing from the spirit of the invention or sacrificing any of the advantages thereof.

I claim:

1. In a lock for a door and frame, the combination of, a casing adapted to be mounted on said door, a bolt within said casing, a swingable member connected to said casing and having means to slidably guide said bolt, actuating means, and means for controlling said actuating means for shifting said bolt to removably interlock with a keeper adapted to be mounted on said frame.

2. In a lock for a door and frame, the combination of, a casing adapted to be mounted on said door, a bolt within said casing, a loop having a pivoted connection with said casing and including means adapted to interlock with said bolt for slidably guiding the latter relative to said casing, actuating means for said bolt, and selective means for controlling said actuating means for shifting said bolt to removably interlock with a keeper adapted to be mounted on said frame.

3. In a lock for a door and frame, the combination of, a casing adapted to be mounted on said door, a resilient loop having arms pivoted to said casing, and a bolt within said casing and having means adapted to interlock with said loop to displaceably guide said bolt relative to said casing to disconnectably interlock with a keeper adapted to be mounted on said frame.

4. A lock associated with a keeper, comprising, in combination, a casing, a loop having arms pivotally and removably secured to spaced portions of said casing and comprising an intermediate portion interconnecting said arms, a bolt within said casing and having means adapted to slidably interlock with said intermediate portion to permit sliding said bolt along said intermediate portion for removably interlocking said bolt with said keeper.

5. A lock associated with a keeper, comprising, in combination, a casing, a loop, means carried by said casing pivotally and removably sustaining said loop, a bolt having a plurality of studs and including means adapted to be slidably guided by said loop, actuating means for driving said bolt along said loop and vertically of said casing to permit said studs to interlock with said keeper, and control means for operating said actuating means.

6. In a lock, a casing having a plurality of sockets, a bolt disposed within said casing and comprising a plurality of studs movably disposed in said sockets, a bail swingably carried by said casing and adapted to removably interlock with said bolt to shiftably guide the latter, and means for actuating said bolt.

7. In a lock, a casing, a bolt, a loop pivotally carried by said casing for slidably guiding said bolt, actuating means for said bolt, and means for operating said actuating means.

8. In a lock, a casing having a peripheral rim, a bolt within said casing, a loop having arms, means pivotally securing said arms to opposed portions of said rim to permit said loop in closing thereof to swing towards or in opening thereof to swing away from said bolt, said bolt having means adapted to interlock with said loop in a closed position thereof to permit said bolt to be shifted vertically of said casing, actuating means for said bolt, and control means for operating said actuating means.

9. In a lock, a hollow casing having a peripheral rim, a swingable loop pivotally connected to said rim, a bolt having means slidably interlocking with said loop, and means for shitfing said bolt relative to said loop.

10. In a lock, a casing, a crank rotatably sustained thereby, a handle for actuating said crank, a bail swingably mounted on opposed parts of said casing, and a bolt movably disposed within said casing and having means adapted to be actuated by said crank, said bail and bolt having complementary means for guiding displacement of said bolt relative to said bail upon manipulation of said handle.

11. In a lock, a casing, rotatable key controlled means, a crank actuated by said key controlled means, a bolt adapted to be actuated by said crank, and a swingable bar extending across said casing and interlocking with said bolt to permit the latter to slide vertically of said casing upon rotation of said key controlled means.

12. In a lock, a casing, a bolt within said casing, a connecting bar slidably guided by said bolt, spring means to resist movement of said bar relative to said bolt, a loop swingably connected to said casing for slidably guiding said bolt, and control means for actuating said bar against the resistance of said spring means to displace said bolt along said loop.

13. In a lock, a casing, a bolt movably disposed within said casing, a swingable member within said casing for guiding displacement of said bolt, a removable bar slidably mounted on and guided

by said bolt, spring means, a crank to actuate said bar against the resistance of said spring means to drive said bolt along said swingable member, and control means for operating said crank.

14. In a lock, a casing, a bolt therein, and a loop swingably and disengageably connected to said casing for guiding displacement of said bolt relative to said casing.

15. In a lock, a casing, a bolt therein, a reciprocable bar slidably guided by said bolt, spring means to resist movement of said bar, a member adapted to be swung away from said bolt to be opened or adapted to be swung towards said bolt to be closed in respect to said casing, means to swingably support said member, said member having means in the closed relation thereof for guiding displacement of said bolt relative to said casing, and control means cooperating with said bar to shift the latter against the resistance of said spring means to displace said bolt along said member.

16. In a lock, a casing having a plurality of sockets, a bolt disposed within said casing and comprising a plurality of studs movably disposed in said sockets, a U-shaped bail swingably carried by said casing and having spaced arms adapted to removably interlock with said bolt to shiftably guide the latter, and means for actuating said bolt.

17. In a lock, a casing having a plurality of sockets, a bolt disposed within said casing and comprising a plurality of studs movably disposed in said sockets, disconnectable swingable means carried by said casing to removably interlock with said bolt to shiftably guide the latter, crank operable means for actuating said bolt, and a spring controlled latch carried by said bolt.

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