June 26, 1934. J. HOLTZMAN 1,964,058

MANUALLY OPERATED LOCK

Original Filed March 12, 1925

Fig. 1.

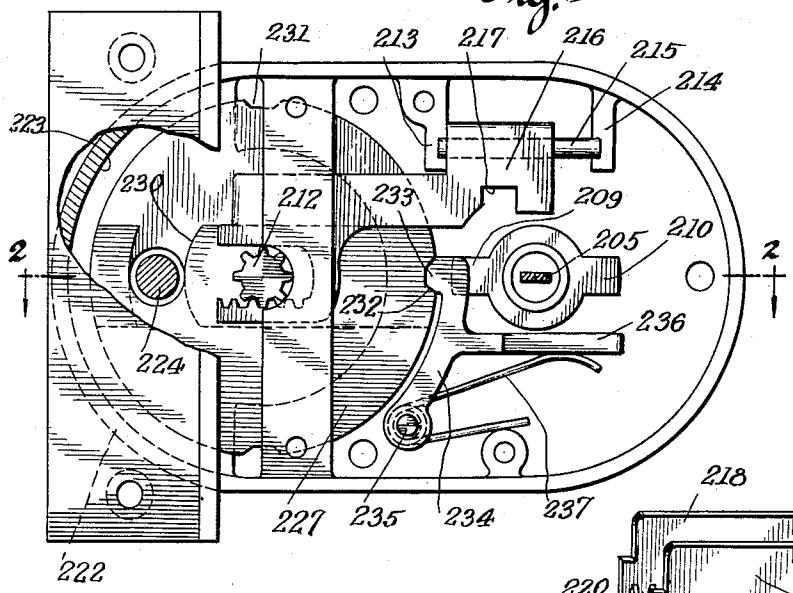


Fig. 3

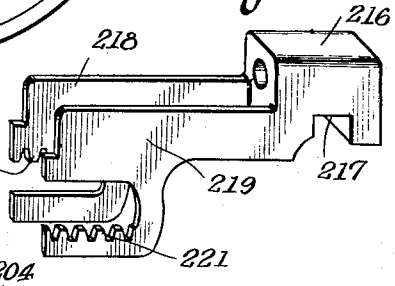
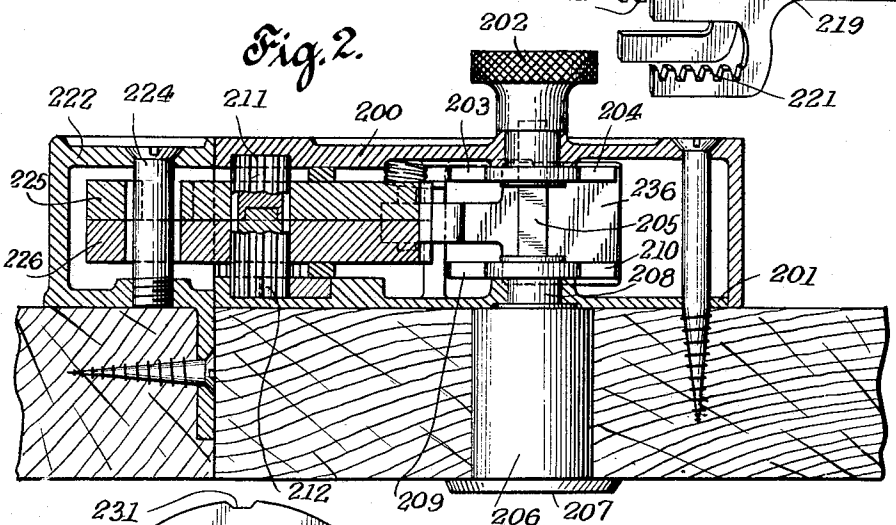


Fig. 2.



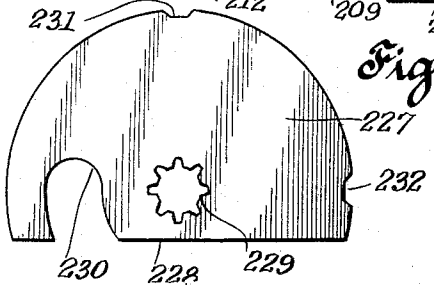


Fig. 4.

Inventor

John Holtzman

Patented June 26, 1934 1,964,058

UNITED STATES PATENT OFFICE

1,964,058

MANUALLY OPERATED LOCK

John Holtzman, New York, N. Y.

Original application March 12, 1925, Serial No. 14,980. Divided and this application December 24, 1930, Serial No. 504,517½

16 Claims. (Cl. 70—74)

My invention relates to manually operated locks of the type in which a lock mechanism, housed within a casing carried by a door or the like, co-operates with a keeper mounted upon a stationary fixture such as a door jamb, my purpose being to improve the efficiency of the lock and to render it positive in its action, as well as to increase the security which it affords.

More particularly stated my invention contemplates a lock of the general type just mentioned, and in which the locking mechanism is provided with a pair of locking members in the form of armed disks, so constructed and arranged as to be rotated or rocked back and forth, in such manner as to grasp and release a stud mounted within the keeper.

This application is a division of my pending application for patent upon a Door lock, Serial No. 14,980, filed March 12, 1925.

Reference is made to the accompanying drawing forming a part of this specification and in which like reference characters indicate like parts throughout the several figures.

Figure 1 is a side view, partly an elevation and partly a section, showing my improved lock.

Figure 2 is a section on the line 2—2 of Figure 1, looking in the direction indicated by the arrows.

Figure 3 is a perspective of the bolt of the lock.

Figure 4 is a plan view of one of the locking disks.

The lock casing is designated generally by the numeral 200 and is closed on all of its sides except its front and bottom. A cover plate 201 is detachably fitted upon the bottom of the lock casing.

A revoluble knob 202 has a stem extending into the lock casing, and rigidly secured upon the inner end of this stem is a lever provided with arms 203 and 204. These arms are caused to rock whenever the knob is turned.

The stem of the knob is bored so as to snugly receive a flat bar 205, extending from the barrel of a cylinder lock 206. This barrel has an escutcheon 207 and a stem 208. To the stem 208 is firmly secured another lever, having a pair of arms 209 and 210.

Rotatably mounted and disposed centrally of the casing, near its front edge, are pinions 211 and 212, arranged respectively in the outer and inner sides of the casing. These pinions are in registry with each other, and have rotatable connections at their abutting ends, which are disposed in a plane corresponding substantially with the center line of the lock casing.

A pair of lugs 213 and 214, spaced apart and located upon one side of the casing, have set in them a rod 215, upon which is slidably mounted the head 216 of a controller. This head is provided with a recess 217, which may be engaged by either of the two arms of the lever, in order to transmit rectilinear motion.

Extending toward the front of the lock are a pair of arms 218 and 219, spaced apart and at their outer ends provided with forks arranged to straddle the pinions 211 and 212. Formed upon the edges of these arms are racks 220 and 221, these racks being reversed in position relatively to each other as may be understood from Figure 3.

A keeper, designated generally by the numeral 222, is provided with a wall 223 of substantially convex form, which is open toward and is held rigidly upon the jamb of the door by means of a flange, in the usual manner.

Extending through this keeper is a stud 224, having the form of a screw. This stud forms part of the fastening mechanism of the lock, and serves as a limiting stop for the bolts 225 and 226.

Each bolt 225 and 226 consists of a flat plate provided with peripheral edges 227, curved arcuately and joined by a straight edge 228. This edge is tangential, and is provided with an opening 229, to fit around the teeth of the pinions upon which the disks are rigidly mounted.

Extending from the edges 228 are recesses 230, curved in proximity to the opening 229, and so proportioned as to loosely receive the stud 224, thus encircling the same when the mechanism is in the condition commonly described as locked.

The locking disks are rocked or turned in opposite directions, and may be actuated by either the knob or a key. When thus actuated they swing into the keeper or are retracted therefrom. When they are thus retracted they extend their straight edges 228 transversely across the open end of the lock casing.

Formed in the curved edges 227 are notches 231 and 232. Fitting into these notches is a detent 233, provided with teeth and disposed at the end of an arm 234, pivoted upon a pin 235 which is set in the lock casing.

Extending from the arm 234 is another arm 236, and pressing against this last mentioned arm is a portion of a spring 237. This spring has a coiled portion which encircles the pin 235.

The arm 236 is made sufficiently wide to be engaged by the arms of the actuating levers, so that the detent is first released and thereafter the

controller 216 is operated. The controller in turn moves the disks, which thus act as bolts, these disks being held in their adjusted positions by the detent 233.

The operation of my improved lock may be readily understood in the light of the foregoing description.

By the use of either the knob or a key as conditions may require, the movable parts of the lock mechanism are so actuated that the locking disks reach into the keeper and grasp the stud therein, or else release the stud and are withdrawn from the keeper.

This lock mechanism has a very strong grip, which is not easily released by breaking any part of the lock and is not easily disengaged in any other manner.

Except as above indicated, the construction and action of my improved lock are similar to those of other locks heretofore known in this art.

I do not limit myself to the particular construction illustrated and described, as variations may be made therein without departing from my invention, the scope of which is commensurate with my claims.

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

1. A door lock comprising a casing, a pair of pinions mounted within said casing and in registry with each other, a slide located within said casing and movable relatively thereto, said slide being provided with a pair of spaced forks extending therefrom and formed to encompass said pinions, said forks being provided upon their opposite sides with racks, means to actuate said slides, locking disks fixed upon said pinions and having recesses to enable them to encompass a stud in a keeper from opposite directions, and a detent engaging said locking disks for the purpose of holding them in their respective positions of adjustment.

2. A door lock comprising a casing, a pair of pinions mounted within said casing and in registry with each other, a slide movably mounted within the casing and provided with a pair of forks spaced apart and extending from said slide so as to encompass said pinions, said forks having racks upon their opposite sides, means to actuate said slides, locking disks fixed upon said pinions, said locking disks having recesses for enabling them to encompass a stud in a keeper from opposite directions, means for actuating said slide from either side of said casing, detents for locking said discs and mechanism carried by said slide for releasing said detents prior to actuation of said slide.

3. A door lock comprising a casing, a pair of pinions mounted within said casing in alignment with each other, a movable slide within said casing, said slide being provided with a pair of forks formed to encompass said pinions, said forks being provided with oppositely disposed racks meshing with the respective pinions, means for actuating said slide, locking discs having apertures provided with toothed edges for receiving said pinions therethrough whereby said discs will revolve with the respective pinions, said discs having means to encompass a stud in a keeper from opposite directions upon the operation of said slide.

4. A door lock comprising a casing, a pair of pinions mounted within said casing and in alignment with each other, locking discs having toothed apertures to receive the respective pinions therein whereby the discs will revolve with the respective pinions, said discs having means for encompassing a stud in a keeper from opposite directions, a slide located within said casing and having forks straddling said discs, each fork constructed to encompass one of said pinions, said forks having rack teeth oppositely disposed on the respective forks, said rack teeth meshing with the respective pinions and adapted, upon the operation of said slide, to simultaneously revolve said disks in opposite directions.

5. In a lock, the combination of a casing, a pivotal bolt mounted in the casing, a slide mounted in said casing, a bar to guide said slide to move rectilinearly, a slot formed in said slide, an arm rotatably mounted in the front wall of the casing and engaging in said slot for moving the slide, means formed integral and upstanding from the inner wall of the casing for guiding said slide, means connecting said slide and bolt for rocking the latter on its pivot for interlocking engagement with the keeper, said slide being interposed and guided between the inner wall of the casing and the pivotally mounted bolt, a cover plate detachably secured to the lock casing, said cover plate adapted to maintain the mechanism and said bolt against lateral displacement in the casing and manually actuated means to operate said mechanism for rocking the bolt into locked position with a keeper.

6. In a lock, the combination of a casing, a bolt pivotally mounted in said casing and adapted to move in a curved path to interlock with a keeper, mechanism to operate said bolt, said mechanism including a slide, a bar mounted in said casing and guiding said slide to move in a straight line path, said slide having a slot formed therein, a rotatable arm mounted in the front wall of the casing and arranged to engage said slot for moving said slide to rock the bolt on its pivot, means connecting said slide and bolt for rocking said bolt in both directions, a cover plate detachably secured to the lock casing, said cover plate adapted to maintain said bolt in its arcuate path and maintain the mechanism and said bolt against lateral displacement in the casing, and manually operated means to operate said mechanism for rocking the bolt into locked position with a keeper, and additional means integral with the casing for guiding said slide in its movement for rocking the bolt on its pivot.

7. A lock having a pair of curved bolts movable to curved paths and overlying each other, movable in opposite directions, said bolts adapted to embrace a stud from opposite directions, mechanism to operate said bolts, said mechanism including a reciprocating slide, a bar fixed to said casing to guide said slide, a detent mounted in said casing to lock said bolts in operative and inoperative positions, a double ended arm mounted in said casing to operate said slide for transmitting rotary motion to said bolts and arranged with one end to operate said detent to release said bolts prior to the actuation of said slide and with the other end moving said slide, a knob connected to said arm to turn the same, another arm rotatably mounted in said casing to reciprocate said slide, and key operated mechanism extending from the casing to turn said second arm to operate the bolts.

8. A lock having a pair of curved bolts adapted to move in arcuate paths and having a common axis of rotation and disposed one behind the other, said bolts adapted to engage around a stud

in a keeper, mechanism to operate said bolts including a slide, a bar fixed to the casing and causing said slide to move rectilinearly in opposite directions, key operated means to actuate said slide, a pivotally mounted detent adapted to engage said bolts to lock them in operative and inoperative position, said key operated means operating said detent to release said bolts prior to the actuation of said slide and means connecting said slide and bolts to operate said bolts.

9. A lock having a pair of curved bolts adapted to move in arcuate paths and having a common axis of rotation and being disposed one behind the other, said bolts arranged to embrace a stud of a keeper during their locking operation, mechanism to operate said bolts including a reciprocating slide movable in opposite directions, a rod on which said slide is mounted to be guided in its movement, a pair of lugs integral with the casing and having notches, said rod being held in said notches, key operated means to actuate said slide, and gear means connecting said slide and bolts to actuate the same.

10. A lock comprising a casing, a pair of curved bolts mounted in said casing overlying each other and having a common axis of rotation, means to actuate said bolts into either locked or unlocked position, a spring operated detent to retain said bolts in either locked or unlocked position, said actuating means including a reciprocative slide, a double ended arm to move said slide and operate said detent, and gear means connecting said slide and bolts to actuate the latter in relatively reverse directions.

11. A lock including a casing, a pair of curved bolts adapted to move in arcuate paths and having a common axis of rotation and being disposed one behind the other, and adapted to lockingly engage a member of a keeper, mechanism to operate said bolts, including a slide movable rectilinearly in opposite directions, a rod passing through said slide to guide it in its movement, a pair of lugs being integral with the lock casing, having notches, said rod having its terminals lodged in said notches to be held thereby, key operated means to actuate said slide and rack and gear means in said mechanism to operate the bolts.

12. In a lock the combination of a casing, a pair of bolts of substantially the same shape and size movably mounted in said casing, said bolts being mounted face to face and in sliding relation to the casing, each of said bolts having a hook for interlocking engagement with a keeper, mechanism to revolve said bolts simultaneously in opposite directions, said mechanism including a slide, adapted to be moved rectilinearly in a lengthwise direction of the casing to project said bolts into the keeper with one of said bolts overlying the other, means formed integral with the casing to guide said slide in its movement lengthwise of the casing, an arm rotatably mounted in the front wall of the casing to actuate said slide, a cover plate detachably secured to the casing, a second arm rotatably mounted in the cover plate to move the slide from outdoor side of the casing, spring means mounted in the casing to keep said bolts from being moved by external force applied to said bolts when projected out of the casing, and key operated means to rotate said second lever against the action of said spring means to project or retract said bolts.

13. In a lock the combination of a casing, a double bolt consisting of a pair of independently revolvable locking members, a slide movably mounted in said casing to actuate said locking members, one of said locking members having a hook extending in one direction and the other having a hook extending in the opposite direction, said locking members being mounted face to face in relation to each other, an arm rotatably mounted in the front wall of the casing to move the slide in lengthwise direction of the casing to revolve both locking members in unison in opposite directions, a cover plate detachably secured to the lock casing, a second arm rotatably mounted in the cover plate to move the slide and spring means mounted in the casing for keeping said locking members against forcible retraction applied to said members when projected out of the casing into the keeper, and a knob connected to the first arm to operate the lock against the tension of the spring means from the indoor side of the casing.

14. In a door lock a casing, a pair of hook-shaped bolts, mounted in the casing, a pinion connected to each of said bolts, a horizontally movable slide reciprocating within said casing, an arm rotatably mounted in the front wall of said casing to move said slide, a pair of toothed racks carried by said slide, said racks adapted to engage said pinions to rotate simultaneously said hook shaped bolts in opposite directions, said bolts adapted to straddle a member of a keeper from opposite directions, a cover plate detachably secured to the lock casing for guiding said bolts in their movement and keeping the mechanism from lateral displacement, a second arm rotatable in the cover plate, and key actuated means to turn said second arm to operate the lock.

15. In a locking mechanism the combination of a casing, a pair of independently revolvable locking members mounted within said casing, a slide horizontally movable within said casing, a pair of toothed racks carried by said slide, a pinion secured to each of said locking members, one of said locking members having a hook extending in one direction and the other having a hook extending in the opposite direction, said toothed racks adapted to engage simultaneously the pinions of both of said locking members to turn said members to straddle a member of a keeper, from opposite directions for interlocking engagement with the same, an arm mounted in the front wall of the casing to actuate said slide, a knob connected to said arm to turn said arm in both directions, a cover plate detachably secured to the casing for guiding and keeping said mechanism against lateral displacement when actuated by the knob.

16. In a locking mechanism the combination of a casing, a pair of hook shaped bolts rotatably mounted in said casing, each of said bolts having a hook for interlocking engagement with a keeper, a pinion secured to each of said bolts, a slide adapted to move rectilinearly in lengthwise direction of said casing, a pair of toothed racks carried by said slide, said racks adapted to simultaneously mesh with said pinions and adapted to actuate said bolts to cause them to straddle a member of a keeper from opposite directions, an arm rotatably mounted in the front wall of the casing to move the slide, means associated with said mechanism to keep said bolts in operative state, a cover plate detachably secured to the lock casing for guiding and keeping the mechanism against lateral displacement and key operated means to actuate the lock.

JOHN HOLTZMAN.