Nov. 30, 1926. 1,608,860

W. F. J. PRELLE

CYLINDER LOCK

Filed Sept. 30, 1925

Fig. 1.

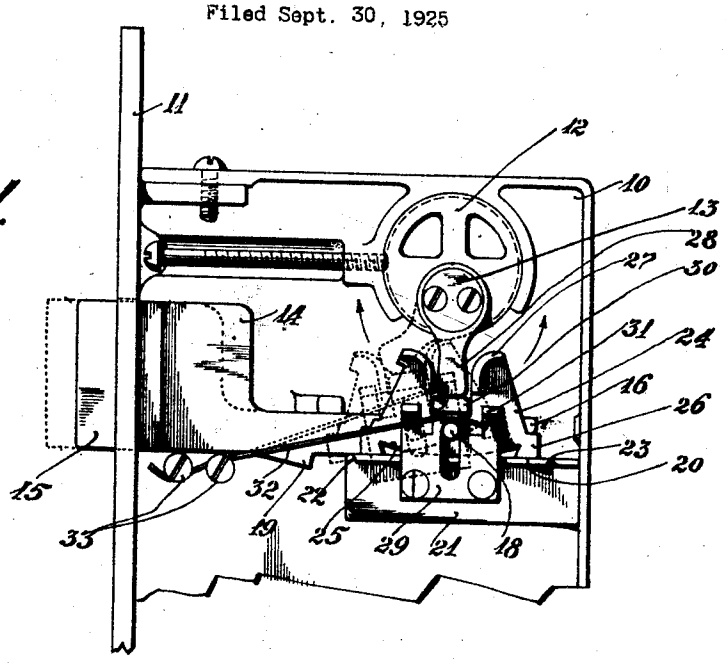


Fig. 2.

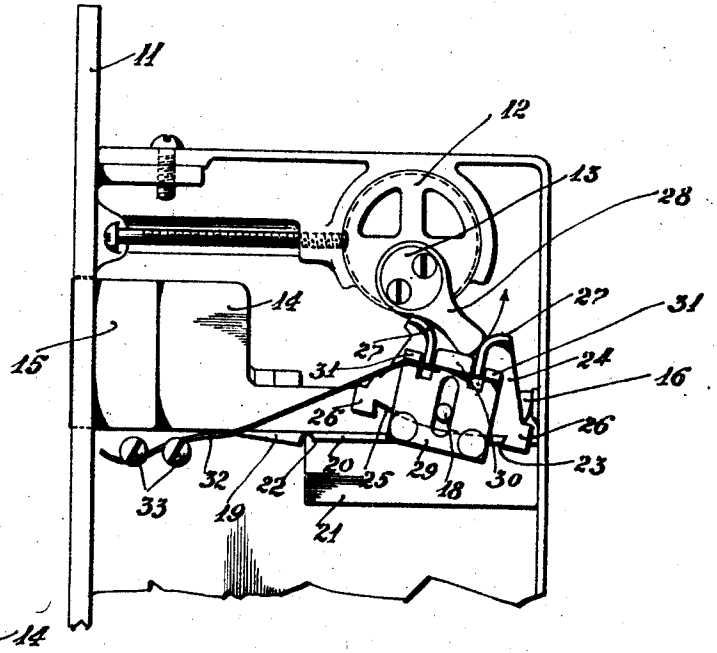
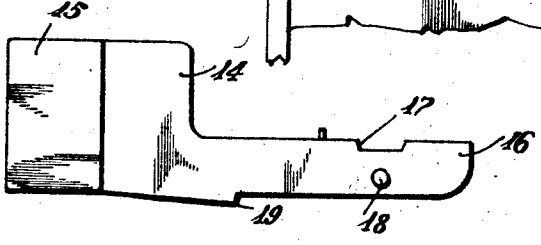


Fig. 3.



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Patented Nov. 30, 1926. 1,608,860

UNITED STATES PATENT OFFICE.

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CYLINDER LOCK.

Application filed September 30, 1925. Serial No. 59,463.

The invention relates to the actuating mechanism for bolts of locks, and among the principal objects in view are:—

To provide an improved and positive lock bolt actuating mechanism; to provide a self adjustable connection between a lock bolt and the lock tumbler; to provide an automatic locking means for retaining the bolt in extended or retracted positions; and generally to provide a novel and improved lock construction.

Drawings.

Figure 1 is an elevation of a lock casing showing the interior thereof with a lock constructed in accordance with the principles of the invention;

Figure 2 is a similar elevation illustrating the parts in the position assumed when the lock bolt is retracted;

Figure 3 is an elevation of the sliding bolt with which the lock is provided.

Description.

In detail the lock comprises the ordinary rectangular casing 10 associated with a door plate 11 and carrying a rotatable lock, carrying a lock barrel 12 equipped with a rotatable key plug 13 adapted for operation by the conventional form of lock key (not shown). The lock is further provided with a sliding bolt 14 provided at its outer end with a latch head 15 and having a reduced inner end extension in the form of an arm 16 the upper edge of which adjacent the inner end is transversely notched as at 17, and below the notch 17 the bolt end is provided with a laterally extending integral stud 18. Adjacent the forward end of the bolt arm the bottom edge thereof is formed with a rearwardly extending stop shoulder 19 which functions to arrest the retractive movement of the bolt.

The forward end of the sliding bolt 14 is supported through the door plate 11, the rear end of the bolt comprising the arm 16 being slidably supported over the laterally extending horizontal flange 20 of a supporting plate 21 mounted in the lock casing. The flange 20 terminates at each end in shoulders 22 and 23 forming respectively the forward and rear terminals of the flange, which shoulders are spaced inwardly of the ends of the supporting plate. In the travel of the bolt the shoulder 19 engages the shoulder 22 of the flange 20 to limit the rearward or retractive movement of the bolt.

Mounted on the arm 16 of the lock bolt and pivoted over the stud 18 is a rocking plate 24 of substantially triangular formation with its bottom edge 25 arcuately formed and terminating at each end in anchor legs 26. Substantially at its upper apex the plate 24 is provided with an inwardly extending slot flanked by laterally extending ears 27 formed on the plate and outturned at their outer edges as illustrated clearly in Figure 2. An operating arm 28 carried by the key plug 13 extends into the slot of the plate 24 being guided and retained therein between the ears 27, and coacting with the curved surfaces of the plate ears to impart the necessary longitudinal movement to the bolt for its operation. This cycle of operation is best illustrated in Figure 1 wherein the arrows indicate the direction of movement of the arm 28, the lock bolt and mechanism being shown in full lines at intermediate position, and in dotted lines in fully extended position. In Figure 2 the bolt and mechanism is shown at the limit of its retracted position.

Slidably mounted on the plate 24 is a plate 29 substantially rectangular in formation and provided at its upper end with a laterally extending center pad 30 and laterally extending side edge flanges 31. Between the flanges 31 and center pad 30 the plate 29 is inwardly slotted to receive the parallel portions of the ears 27, as best illustrated in Figure 2, whereby free sliding movement of the plate 29 may be obtained. An upwardly acting spring bar 32 having one end secured by attaching screws 33, is mounted within the lock casing to dispose its free end under the center pad 30 and flanges 31 of the plate 29, and bearing thereagainst. The free end of the spring bar is bowed at its point of engagement, and is of a length sufficient so that in the intermediate position of the bolt as shown in Figure 1, the bowed portion of the spring bar bears beneath the center pad 30 of the plate 29.

As shown in Figure 2 the bolt 14 is locked in retracted position by means of engagement of the rocking plate leg 26 over the shoulder 23 of the supporting flange 20. In this position of the parts, the locking en-

gagement is maintained through the spring action of the bar 32 bearing against one of the plate ears 27 to rock the plate on its pivot 18 into proper position. Upon rotation of the key plug 13 for extension of the bolt, the arm 28 bears against the center pad 30 of the plate 29 forcing the same downwardly against the action of the spring bar 32, while at the same time bearing against the forward ear 27 of the rocking plate to rock the plate 24 lifting the leg 26 out of its engagement behind the shoulder 23. Under continued movement of the arm 28 by reason of its disposition between the plate and ears 27, the plate will be slid forwardly along the supporting flange 20 with both of the legs 26 sliding freely over the surface thereof. During this movement of the mechanism the center pad 30 of the plate 29 seats in the notch 17 of the bolt arm whereby the rocking plate and bolt are moved forwardly to the limit of extended position of the bolt 14.

Although the bolt 14 has reached the limit of its extended position, the arm 28 continues to move into the position shown in dotted lines in Figure 1 bearing upon the forward ear 27 to rock the plate 24 upon its pivot stud 18 and thereby forcing the forward plate leg 26 into engagement with the shoulder 22 of the flange 20, whereby the bolt 14 is locked against retractive movement.

In the ordinary construction of similar types of locks, there is generally a direct connection between the lock bolt and the key plug carried arm. It frequently happens that the key plug arm becomes worn and slips out of engagement with its recess in the lock bolt. In the present invention the provision of the spring bar 32 acting upon the plate 29 and ears 27 of the plate 24, maintains a positive connection at all times between the key plug arm and lock bolt, automatically compensating for loose play and wear.

Claims.

1. In a lock, a casing, a lock bolt slidably disposed within said casing, a key plug, an operating arm carried by said key plug, a rocking plate pivotally mounted on the inner end of said bolt, means carried by said plate for locking said bolt in retracted and extended positions, spaced guide ears formed on said plate at opposite sides of said operating arm to provide operating connection between said arm and the plate for moving said plate, and a bolt engaging member slidable on said plate for operative connection between said plate and bolt.

2. In a lock, a casing, a bolt slidable therein, a supporting plate mounted in said casing, a flange extending laterally from said plate and supporting the inner end of said bolt, a rocking plate pivotally secured on the inner end of said bolt, legs carried by said plate for locking engagement with opposite ends of said flange upon rocking of said plate, said plate having formed thereon integrally spaced guide ears, a key plug in said casing and an operating arm carried by said key plug disposed between the ears of said rocking plate for operative engagement therewith to rock said plate, and a bolt engaging member slidably mounted on said plate and recessed for guiding engagement with said plate ears, for operative connection between said plate and bolt.

3. In a lock, a casing, a bolt slidable therewithin, a bolt supporting flange arranged in said casing, a horizontal flange extending laterally from said plate for supporting the inner end of said bolt in slidable relation, a rocking plate pivotally attached to the inner end of said bolt, means on said rocking plate for locking engagement with the opposite ends of said supporting plate flange, a supplemental plate slidably disposed on said rocking plate and spaced guide ears formed on said rocking plate, said supplemental plate being slotted to receive portions of said ears, a spring in said casing and bearing against said supplemental plate and the ears of said rocking plate for retaining said rocking plate in locked engagement with said bolt supporting plate flange, a lock key plug in said casing, a bolt operating arm carried by said key plug and engaged between the guide ears of said rocking plate for moving said plate and bolt.

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