Jan. 29, 1929. 1,700,129

W. F. HAUSMANN

LOCK

Filed Dec. 28, 1927

Fig 1

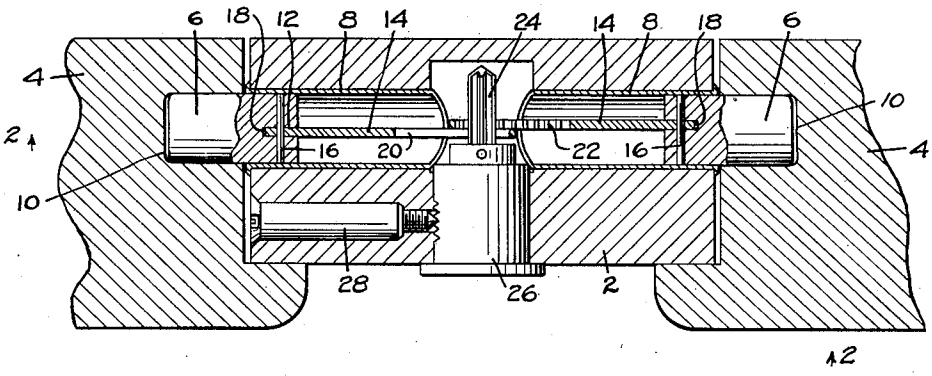


Fig 2

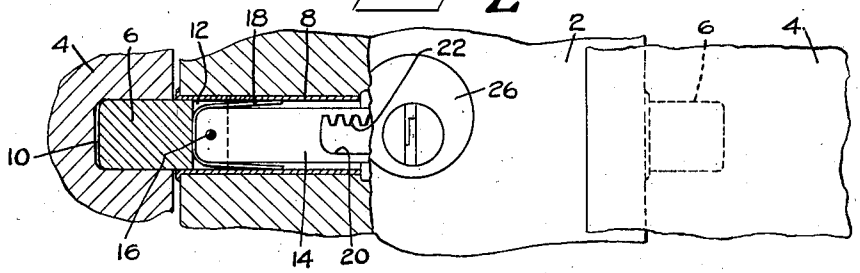
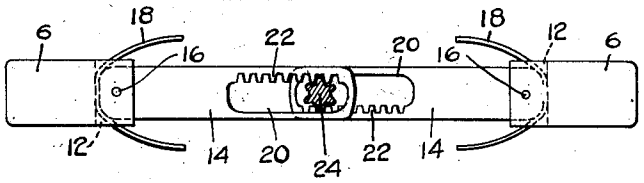


Fig 3



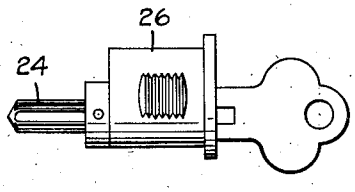


Fig 4

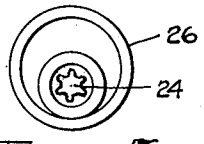


Fig 5

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UNITED STATES PATENT OFFICE.

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LOCK.

Application filed December 28, 1927. Serial No. 242,990.

My invention relates to locks, and has special reference to locks of the sliding bolt type.

One of the objects of my invention is to provide novel and improved lock bolt actuating mechanism.

Another object of the invention is to provide an actuating mechanism for a lock bolt or bolts in which there is provision of means for insuring smooth and easy operation and for compensating for variations in construction and assembly of parts.

Another object of the invention is to provide a lock, particularly adapted for locking and unlocking two doors simultaneously, which is simple, strong and durable in construction, and reliable in operation, and which is adapted to be easily installed in the mullion between the doors.

With these and other objects in view, the several features of the invention will be clearly understood from the following description and accompanying drawings, in which:

Figure 1 is a transverse sectional view, partly in elevation, of my improved lock and portions of two doors and a mullion between them in which the lock is shown installed;

Fig. 2 is a sectional elevation taken on the line 2—2 of Fig. 1;

Fig. 3 is a detail side view of the lock bolts and their actuating mechanism;

Fig. 4 is a detail side view of a pin tumbler cylinder lock for controlling the operation of the lock bolts; and

Fig. 5 is an inner end view of the pin tumbler lock illustrated in Fig. 4.

My improved lock is illustrated in the drawings as installed in a mullion 2 for two doors 4. As shown, the lock is provided with two oppositely arranged lock bolts 6 that are mounted to slide in cylindrical bushings 8 mounted in the mullion. The bolts are adapted to be projected into locking recesses 10 in the doors and retracted therefrom simultaneously. The inner end of each lock bolt is provided with a transverse slot 12 which receives the outer end of a link 14 pivoted on a pin 16 extending through the side walls of the slot. A bowed wire spring 18 is centrally held between the outer end of each link and the adjacent wall of the slot with its ends projecting inwardly and with its projecting portions arranged in sliding engagement with the inner surface of the associated bushing, the spring yieldingly pressing against the bushing and causing the bolt to float.

The inner end portions of the links 14 overlap and are provided with elongated slots 20. One wall of each of the slots 20 is provided with a series of rack teeth 22, the two series of rack teeth being oppositely arranged. A pinion 24 extends through the slots 20 and engages both series of rack teeth 22. The pinion is held in engagement with the rack teeth by the plain surfaces of the opposite sides of the slots. The pinion 24 is secured on the end of the usual key-operated plug of a pin tumbler lock cylinder 26 mounted in the mullion, the lock cylinder being held in place by means of the usual set screw 28.

With this construction it will be apparent that upon turning the pinion 24 by means of the key-operated plug, the lock bolts may be simultaneously projected into the locking recesses 10 in the door and retracted therefrom. It will also be apparent that the mechanism for operating the lock bolts including the pivoted links 14, the pinion for operating the links, and the springs 18 which maintain the lock bolts in floating condition insures smooth and easy operation of the lock bolts, and the springs serve to compensate for any variations in the construction and assembly of parts.

The construction of my improved lock is such that it may be easily installed in the door mullion. This may be accomplished by merely providing a cylindrical bore extending transversely completely through the mullion for receiving the bushings 8 in its ends, and a cylindrical bore intersecting the bore for the bushings for receiving the pin tumbler lock cylinder. When the bushings have been inserted, the two bolts with their associated parts may be inserted in the bushings with the inner end portions of the links 14 overlapping as described. The pin tumbler lock cylinder with the pinion 24 secured to its key-operated plug, may then be inserted with the pinion extending through the elongated slots 20 and engaging the two series of rack teeth. The inner end of the pinion may be pointed as shown to permit it to be more easily passed through the slots 20. The set screws 28 may be screwed in to tightly hold the lock cylinder in position.

While my improved lock as illustrated in

the drawings is particularly adapted for locking two doors simultaneously by means of two bolts, it will be apparent that by omitting one of the bolts and its actuating link or rack the lock may be adapted for locking a single door by means of a single bolt. It will also be apparent to those skilled in the art, that my invention permits various other modifications to be made without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. A lock having, in combination, a lock bolt, a bushing in which the lock bolt is mounted to slide into and out of locking position, a link having one end pivotally connected with the inner end of said bolt, a spring carried by said bolt and having portions in yielding sliding engagement with opposite portions of the inner side of said bushing, and means engaging the inner end portion of said link for projecting and retracting the bolt.

2. A lock having, in combination, a bushing, a lock bolt mounted to slide in said bushing into and out of locking position, said bolt having a transverse slot in its inner end, a link having one end pivoted in said slot, a spring comprising a bowed wire having its central portion held between said end of said link and the adjacent wall of said slot and having its projecting end portions in yielding sliding engagement with opposite portions of the inner side of said bushing, and means engaging the other end portion of said link for projecting and retracting the bolt.

3. A lock of the class described having, in combination, two oppositely disposed lock bolts, a bushing in which each of said bolts is mounted to slide, links having their outer ends pivotally connected with the inner ends of said bolts, respectively, said links having their inner ends overlapping and being provided with elongated slots, one of the longitudinal walls of each of said slots being provided with a series of rack teeth and the two series of rack teeth being oppositely arranged, a pinion engaging both series of rack teeth to cause the bolts to be projected and retracted upon turning the pinion in opposite directions, the wall of each of said slots opposite said series of teeth serving to maintain the teeth in engagement with said pinion, and key-controllable mechanism for rotating said pinion.

4. A lock of the class described adapted to be installed in a mullion between two doors for locking and unlocking both doors simultaneously having, in combination, bushings mounted in opposite end portions of an aperture extending transversely through the mullion, bolts mounted in said bushings and adapted to be simultaneously projected and retracted, links having their outer ends pivotally connected with the inner ends of said lock bolts, the inner ends of said links overlapping and provided with elongated slots, one longitudinal wall of each of said slots being provided with a series of rack teeth, and the two series of rack teeth being oppositely arranged, a pinion engaging both series of rack teeth to cause the lock bolts to be projected and retracted simultaneously upon turning the pinion, the wall of each slot opposite said series of teeth serving to maintain the teeth in engagement with said pinion, and a pin tumbler cylinder lock mounted in said mullion for operating said pinion.

5. A lock having, in combination, a lock bolt, a bushing in which said bolt is mounted to slide, a link having one end pivotally connected with the inner end of said bolt and having its other end provided with an elongated slot, one of the longitudinal walls of said slot being provided with a series of rack teeth, a pinion engaging said teeth to cause the bolt to be projected and retracted upon turning the pinion in opposite directions, the wall of said slot opposite said rack teeth serving to maintain the teeth in engagement with said pinion, and key-controllable mechanism for rotating said pinion.

6. A lock having, in combination, two oppositely disposed lock bolts, a bushing in which each of said bolts is mounted to slide, links having their outer ends pivotally connected with the inner ends of said bolts, respectively, said links having their inner ends overlapping and being provided with elongated slots, one of the longitudinal walls of each of said slots being provided with a series of rack teeth, and the two series of rack teeth being oppositely arranged, a pinion engaging both series of rack teeth to cause the bolts to be projected and retracted upon turning the pinion in opposite directions, a spring carried by each of said bolts having portions in yielding sliding engagement with the inner side of the associated bushing, and key-controlled mechanism for rotating said pinion.

7. A lock having, in combination, a lock bolt, a bushing in which the lock bolt is mounted to slide into and out of locking position, resilient means carried by said bolt and arranged in yielding sliding engagement with opposite portions of the inner side of said bushing, and means for actuating the bolt.

In testimony whereof, I have signed my name to this specification this 23rd day of December, 1927.

WILLIAM FREDERICK HAUSMANN.