

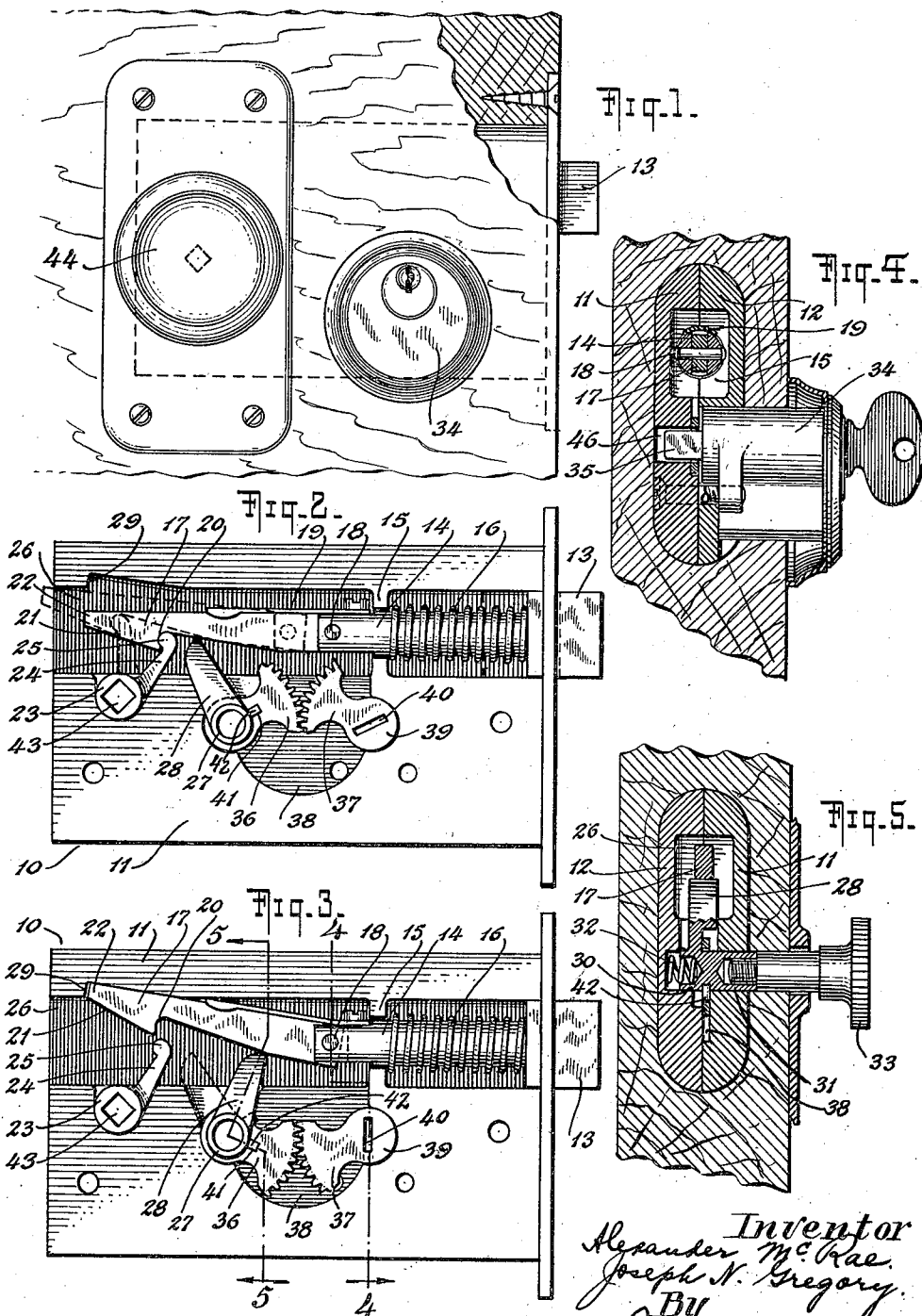
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A. McRAE ET AL

LOCK

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ALEXANDER McRAE, OF TORONTO, ONTARIO, CANADA, AND JOSEPH N. GREGORY,
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LOCK.

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To all whom it may concern:

Be it known that we, ALEXANDER McRAE, a citizen of the Dominion of Canada, residing in the city of Toronto, Province of Ontario, Canada, and JOSEPH N. GREGORY, a citizen of the United States of America, residing in the city of Buffalo, county of Erie, and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a full, clear, and exact description.

The principal object of our invention has been to provide a lock having comparatively few parts; being simple in its construction; and very durable.

Another object has been to provide a lock so constructed that the operating means may be disconnected so that it has no action upon the draw-bolt of the lock.

Furthermore, when our device is locked, it cannot be opened by forcing a thin object against the end of the draw-bolt.

These, as well as other advantages which will be apparent to those skilled in the art, have been accomplished by the device shown in the accompanying drawings, of which:

Fig. 1 is an exterior view of the lock in place attached to a door.

Fig. 2 is an interior view of the lock with one-half of the cover removed, showing the parts in their unlocked positions.

Fig. 3 is a similar view showing the parts in their locked positions.

Fig. 4 is a transverse, sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is a transverse, sectional view taken on line 5—5 of Fig. 3.

The device comprises a body 10 formed preferably of two halves 11 and 12, which are secured together by any suitable means. 13 is the draw-bolt which is slidably mounted within the body and provided with a stem 14. The inner end of the stem is slidably supported by a wall 15, a half of which is formed in each of the halves 11 and 12 of the body. A helical spring 16 is disposed about the stem 15 and serves, in a well known manner, to keep the draw-bolt 13 pushed outwardly to its normal position, as shown in the drawings. The draw-bolt 13 is, of course, provided with the usual beveled face.

17 is a draw-bolt arm which has its inner

end disposed within a vertical slot formed in the inner end of the stem 14. This draw-bolt arm is disposed in a recess 26 and a pivot pin 18 connects the inner end of the draw-bolt arm with the stem 14, whereby the arm is pivotally united with the stem so as to permit of oscillation of the arm in a vertical plane. 19 is a flat spring which is rigidly secured at its inner end to the stem 14 and has its outer end bearing on top of the arm 17, whereby it is normally pressed downwardly to a position in line with the stem 14. This draw-bolt arm is provided with a shoulder 20 and with an inclined surface 21, connecting the shoulder with the end 22 of the arm. 23 is the operating tumbler of our device which is pivotally mounted in suitable bearings provided in the halves 11 and 12 of the body 10. This operating tumbler is provided with a tumbler arm 24, having preferably a cylindrically shaped end 25. This end is engageable with the shoulder 20 of the draw-bolt arm 17, when the arm occupies the normal position or that shown in Fig. 2. It is clear that when the draw-bolt arm 17 is in this position, the draw-bolt 13 may be drawn into the lock by the rotation of the tumbler 23.

Releasing means are provided for the tumbler 23, whereby the draw-bolt arm 17 may be held in the position shown in Fig. 3. These means comprise a release tumbler 27 which is rotatably mounted in the body 10 and is preferably arranged between the operating tumbler 23 and the end of the stem 14. This release tumbler is provided with a release lug 28 which, when the release tumbler is rotated to the position shown by the full lines in Fig. 3, will raise the draw-bolt arm 17 upwardly and hold it in the position shown by the full lines in this figure. The release tumbler 27 is preferably limited in its motion, whereby the lug 28 will be prevented from moving beyond a predetermined point. A central aperture 43 of the usual polygonal shape is formed in the operating tumbler 23, whereby it may be operated by the door knob 44. A shoulder 29 is formed at the upper side of the recess 26, and the outer end 22 of the draw-bolt arm is engageable with this shoulder when the arm is held in its locked position, as shown in Fig. 3. Thus the

draw-bolt can not be forced inwardly by any thin object placed between the door jamb and the beveled face of the bolt.

The release tumbler 27 is provided at one side with a trunnion 30 and at the opposite side with a trunnion 31, by which it is rotatably disposed in the body 10 of the lock. The trunnion 30 is provided with a central aperture in which a helical spring 32 is disposed. This spring normally maintains the release tumbler in the position shown in Fig. 5. The trunnion 31 is interiorly screw-threaded and a knurled release knob 33 is screw-threaded thereto. The recess formed in the body in which the release lug 28 operates is slightly wider than the width of the release lock, for purposes hereinafter described, and the knurled knob 33 provides means for rotating the release tumbler and pushing it axially against the tension of the spring 32 when desired.

The release knob 33 is disposed at the inside of the door and provides means for locking the device from the interior only. So as to be able to actuate the lock from the exterior of the door, we provide a lock barrel 34 preferably of the well known pin tumbler type which is secured in a suitable recess formed in the portion of the lock which faces the exterior of the door. 35 is the operating tab of the lock barrel which is disposed in a suitable recess 46 formed in the opposite portion of the lock body. The axis of the lock barrel 34 and the axis of the release knob 33 are preferably at some distance from each other, and are connected by means of gear segments 36 and 37. These segments are disposed in a shallow recess 38 of a depth substantially equal to the thickness of the segments. The hub portion 39 of the segment 37 is disposed in a suitable circular recess within which it may be oscillated, and a slot 40 is formed at the center of this hub portion through which the operating tab 35 of the lock barrel is passed. The gear segment 36 is rotatably disposed upon the trunnion 31 of the release tumbler 27. It is provided with a radial slot 41 with which a pin 42 is engageable. The pin 42 is carried by the trunnion 31 and is pressed into engagement with the slot 41 by means of the spring 32, when the pin is in registering position with the slot. Thus the actuation of the release knob and the lock barrel are somewhat independent of each other.

When the parts are in the positions shown in Fig. 3, it will be seen that the draw-bolt arm will be held in its elevated position, and that the shoulder 20 will lie in a position where it cannot be engaged with by the tumbler arm 24. The door knob 44 may thus be freely rotated without causing the draw-bolt 13 to be operated. When, however, the lug 28 of the release tumbler is

moved to the position shown in Fig. 2, the draw-bolt arm 17 will be pressed into its other position or that shown in Fig. 2 by the spring 19. In this position the arm 24 of the operating tumbler 23 will be engageable with the shoulder 20, and serve to operate the draw-bolt 13 when the door knob 44 is turned. It will be seen that when the draw-bolt arm 17 is in the position shown in Fig. 3, that the draw-bolt 13 will be prevented from being forced inwardly by the fact that the end 22 of the arm lies opposite the shoulder 29 formed in the body, thus serving to lock the draw-bolt in the position shown and preventing its being forced inwardly by any thin object passed between the door and the door jamb.

The draw-bolt arm 17 may be moved to the positions shown in Figs. 2 and 3 either from the outside of the door or from the inside thereof. The device remains normally in its locked position, and when it is to be unlocked from the exterior of the door, the key is inserted in the lock barrel 34 and turned. When the key is turned, the release tumbler will be moved to the position shown in Fig. 2 through the medium of the gear segments 37 and 36. It is, of course, assumed that the pin 42 is in engagement with the slot 41 of the gear segment 36, so that the motion given to the gear segment 36 will be transmitted to the release tumbler 27. If, however, this pin is not in engagement with its groove, the device has been unlocked from the inside of the door and the insertion and turning of the key will simply move the gear segments to the point where the pin will engage with the slot 41. When the key is moved back to the position where it can be withdrawn, the device will be locked. It will be seen that when the key is withdrawn from the lock barrel 34, the gear segments 36 and 37 will be held in the positions shown in Fig. 3 and the device will be locked. When it is desired to unlock the device from the interior, the release knob 33 is pushed inwardly against the tension of the spring 32 thereby pushing the pin 42 out of engagement with the slot 41. The knob may then be rotated so as to move the arm 28 of the release tumbler to the position shown by the dotted lines in Fig. 3, whereby the device will be locked. When the release knob 33 is moved in the reverse direction, the pin 42 will automatically engage with the slot 41 when the arm 28 of the release tumbler has been moved to the position shown by the full lines in Fig. 3, whereby the device will be locked.

Obviously, some modifications of the details herein shown and described may be made without departing from the spirit of our invention or the scope of the appended

claims; and, we do not, therefore, wish to be limited to the exact embodiment herein shown and described, the form described being merely a preferred embodiment thereof.

Having thus described our invention, what we claim is:

1. A lock characterized by having a body, a draw-bolt slidably mounted in the body, a draw-bolt arm pivotally attached to the draw-bolt and movable within a recess formed within the body, a shoulder formed by the recess, the end of the arm being engageable with the shoulder, and means for holding the arm in a position where it will be engageable with the shoulder of the recess, whereby, when so engaged, the draw-bolt will be locked against inward movement.

2. A lock characterized by having a draw-bolt, a draw-bolt arm pivotally carried by the draw-bolt, an operating tumbler engageable with the arm, a release tumbler engageable with the arm, and means for actuating the release tumbler, comprising a release knob at one side of the lock, and key controlled means at the other side of the lock.

3. A lock characterized by having a

draw-bolt, a draw-bolt arm pivotally carried by the draw-bolt, an operating tumbler engageable with the arm, a release tumbler engageable with the arm, a release knob arranged at one side of the lock and connected to the release tumbler, key controlled means on the opposite side of the lock, and means connecting the release tumbler with the key controlled means, whereby the release knob and the release tumbler may be operated independently of the lock controlled means.

4. A lock characterized by having a draw-bolt, a draw-bolt arm pivotally carried by the draw-bolt, an operating tumbler engageable with the arm, a release tumbler engageable with the arm, a release knob arranged at one side of the lock and connected to the release tumbler, key controlled means on the opposite side of the lock, gear segments connecting the release tumbler with the key controlled means, and means for disconnecting the release tumbler from the segments, whereby the release knob and the release tumbler may be operated independently of the key controlled means.

In testimony whereof, we have hereunto signed our names.

ALEXANDER McRAE.
JOSEPH N. GREGORY.