

W. J. DUNN.
DOOR LOCK.
APPLICATION FILED APR. 4, 1910.

1,058,043.

Patented Apr. 8, 1913.

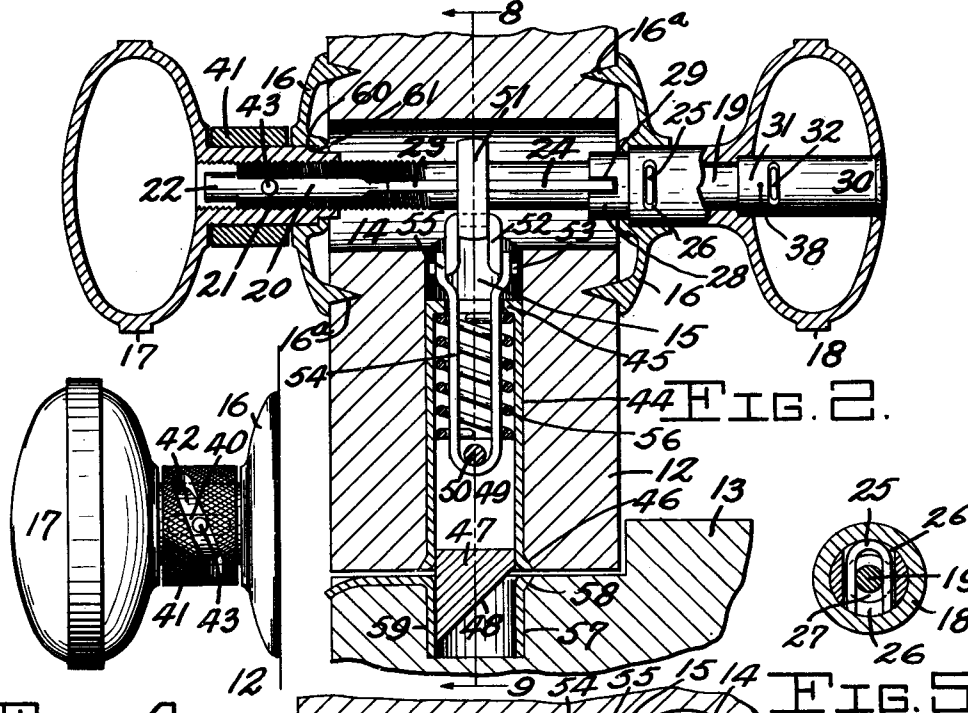
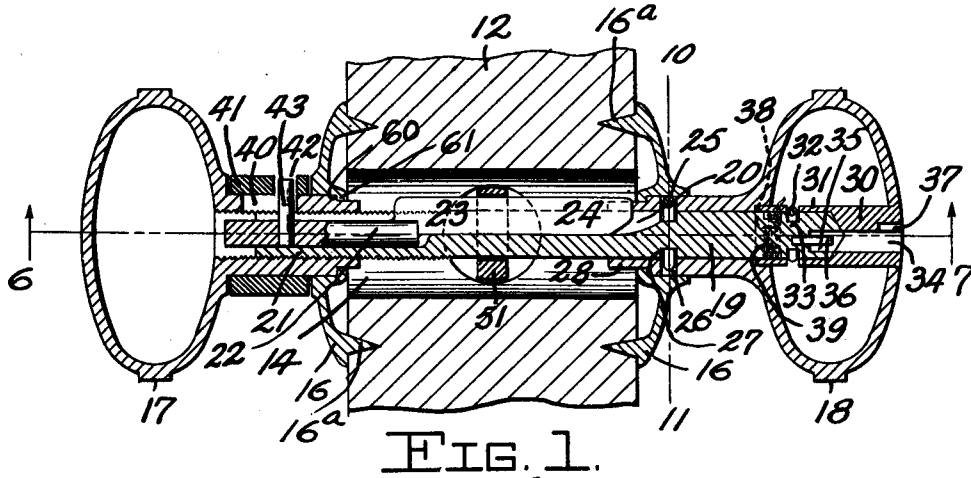
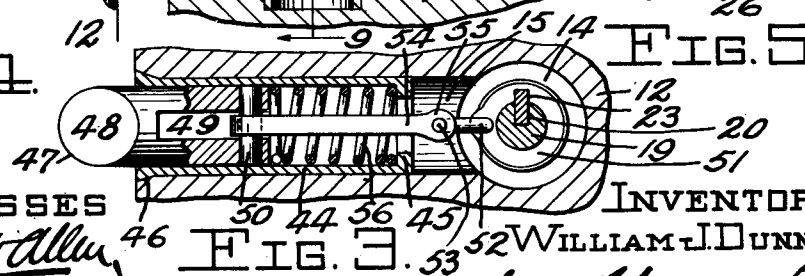


FIG. 4.

WITNESSES
Spert R. Waller
C. R. McHenry



INVENTOR
WILLIAM J. DUNN.
W. J. Dunn

UNITED STATES PATENT OFFICE.

WILLIAM J. DUNN, OF MONTREAL, QUEBEC, CANADA.

DOOR-LOCK.

1,058,043.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed April 4, 1910. Serial No. 553,373.

To all whom it may concern:

Be it known that I, WILLIAM J. DUNN, of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Door-Locks, of which the following is a full, clear, and exact description.

This invention relates to improvements in door latches and the object is to provide an inexpensive and durable latch lock which may be applied to a door with great ease and rapidity.

At the present time, the method of applying mortise latches or locks to doors is to cut a deep, narrow recess in the edge of the door to receive the lock and to bore a hole through the door, intersecting this recess, for the latch spindle. A second mortise is cut in the door jamb to receive the latch. Considerable difficulty and loss of time is experienced in fitting the lock into this recess and in attaching the lock, handle plates, etc., to the door and door jamb by means of screws. This invention aims to overcome these disadvantages by providing a latch-lock which may be inserted without the use of screws and without the necessity of forming the usual large recess in the edge of the door.

The device consists of a spring bolt inclosed in a cylindrical tube and connected to a removable spindle by a pair of pivotally mounted links. Inside and outside handles are provided, the latter of which is loose on the spindle and connected thereto by a sliding bar controlled from a helically grooved sleeve on the shank of the inner handle. A lock barrel is provided in the outside handle whereby a suitable key may be used to rotate the spindle to open the door from the outside.

In the drawings which illustrate my invention:—Figure 1 is a vertical section through the device. Fig. 2 is a horizontal section on the line 6—7 of Fig. 1. Fig. 3 is a vertical section on the latch proper on the line 8—9 of Fig. 2. Fig. 4 is a plan view of the inside handle showing the sleeve. Fig. 5 is a cross-section on the line 10—11 of Fig. 1 and shows the connection between the outside handle and the latch spindle.

In the above defined figures, 12 designates a door and 13 the joint therefor. A hole 14 is bored through the door near the edge thereof and a second hole 15 is bored in the edge of the door so as to connect with the

hole 14. The usual handle plates 16 are provided on each side of the door covering the ends of the hole 14 and forming bearings for the inside and outside handles 17 and 18 respectively. These plates are provided with a plurality of integral spikes 16^a projecting from their inner surfaces. The latch spindle 19 connecting the two handles is preferably round and provided with a radial slot 20 extending from the inner end of the spindle to a point within the shank of the outside handle 18. The inner end of the spindle is also bored out to form a tubular portion 21 adapted to contain the cylindrical end 22 of the spindle latch 23, the blade 24 of the latch lying in the slot 20 in the spindle. The outside handle 18 is loosely mounted on the spindle 19 so that it is free to turn thereon. This handle is prevented from coming off the spindle by a V-shaped pin 25 which is inserted through one of a pair of slots 26 in the shank of the handle and is adapted to engage a circumferential groove 27 formed on the spindle, as shown in Figs. 1 and 5. A small portion 28 of the handle shank projects through the plate 16 into the hole 14 in the door and is provided with a slot or notch 29 for the reception of the blade 24 of the spindle latch 23. It will be readily seen that when the blade of the spindle latch engages in the slot 29 of the outside handle, the handle will be rigidly connected to the spindle and when turned will rotate the spindle, but that when the blade 24 is withdrawn from the slot 29, the handle will be disconnected from the spindle in so far as the rotation of the spindle is concerned.

In order that the spindle may be rotated from the outside when the outside handle is disconnected, I provide a lock barrel 30 located centrally in the outside handle 18. It will be noted in Fig. 1 that the spindle 19 extends through the shank of the outside handle and approximately half way through the handle itself. The lock barrel 30 at its outer end is flush with the surface of the handle and at its inner end 31 is tubular and is revolvably mounted on the projecting extremity of the spindle 19. The lock barrel is independently revoluble with respect to the spindle but is held longitudinally rigid by a U-shaped member 32 engaging a groove 33 in the spindle, similarly to that shown in Fig. 5. A key aperture 34 is formed eccentrically through the barrel 30 and a similar aperture 35 is formed in

the end of the spindle and is adapted to register with the aperture 34 in the barrel. A center pin 36 may be located in the spindle aperture 35. A small recess 37 is formed in the key aperture for the reception of a
 5 ward on the key in order that the key may readily turn the barrel 30. In order that the key apertures 34 and 35 may be always in line to allow the easy insertion of the
 10 key, I provide a small helical spring 38 connecting the lock barrel and the spindle. This spring is preferably located in a shallow circumferential groove 39 formed in the spindle within the tubular portion 31
 15 of the barrel. One end of this spring is fixed to the spindle and the other end to the barrel, the spring being wound loosely three or four turns in the groove 39. Thus whichever direction the barrel is turned on
 20 the spindle, the spring is distorted and when the barrel is released the spring returns to its normal condition and rotates the barrel sufficiently to align the key apertures 34 and 35.

The inside end of the spindle is provided
 25 with a fine screw thread and the shank of the inside handle is internally threaded with a corresponding thread, so that the handle may be screwed out of the spindle. A longitudinal slot 40 is formed in the
 30 shank of the inside handle and the shank is surrounded by a loose sleeve 41 having therein a helical slot 42 extending approximately half around the sleeve. A pin 43 passes through the sleeve and shank slots 42 and
 35 40, and is forced into the cylindrical portion 22 of the spindle latch 23. By rotating the sleeve 41 on the handle shank the pin 43 is forced to move longitudinally of the spindle, by reason of the pitch of the
 40 helical slot 42, and thereby moves the spindle latch so that the blade 24 thereof engages or disengages the slot 29 in the shank of the outside handle.

The latch which holds the door closed is
 45 located in the hole 15 and comprises a cylindrical tube 44 of suitable length inserted in the hole 15. This tube 44 is provided at the inner end with an internal flange 45, and at the outer end with an external flange
 50 46 which prevents the tube being drawn through the hole 15 when the latch is operated. The latch bolt 47 is cylindrical in form and provided with a beveled outer end 48 in the usual manner. A horizontal
 55 slot 49 is formed in the latch bolt extending a suitable distance from the inner end and this slot is crossed at the inner end of the bolt, by a pin 50. A small crank disk 51 is located on the spindle 19, and is held
 60 against revolution thereon by the blade 24 of the spindle latch which projects beyond the circumference of the spindle and acts as a key, as seen in Figs. 1 and 3. A short U-shaped pin 52 having the extremities 53
 65 thereof outwardly turned, passes through

the side of the disk adjacent the latch. A long U-shaped connecting link 54, having the extremities 55 thereof apertured, is looped around the pin 50 of the latch bolt, and connects the same to the pin 52, the
 70 extremities 53 of which pass through the apertured extremities 55 of the link. A helical spring 56 of suitable strength is located in the tube 44 and slightly compressed between the inner end of the latch
 75 bolt and the flange 45 of the tube.

The latch plate on the door jamb 13 is replaced in this invention by a short tube 57 of the same diameter as the tube 44 and having an external flange 58 at the outer
 80 end similar to the flange 46. This tube 57 is forced into a shallow hole 59 bored in the door jamb.

When mounting the latch on a door, the
 85 holes 14 and 15 are bored in the door, as previously described, and the hole 59 is bored in the door jamb in such a position as to register with the hole 15. The two handle plates 16 are then placed in position to cover the ends of the hole 14, the spikes
 90 16^a holding them against revolution. The latch tube 44 containing the latch bolt and spring and carrying the crank disk 51, is then driven into the hole 15 until the outer end thereof is flush with the edge of the
 95 door, as seen in Fig. 2. The short tube 57 is also driven into the hole 59 in the door jamb in the same manner. The outside handle 18 carrying the latch spindle is placed in position, the spindle being passed through
 100 the disk 51. The spindle latch 23 is next inserted so that it keeps the disk 57 to the spindle and enters the slot 29 in the shank of the outside handle to hold the spindle against revolution independently of the out-
 105 side handle. The inside handle 17 carrying the sleeve 41 on its spindle is now screwed on to the threaded inner end of the spindle a sufficient distance. The inside handle is adjusted until the slot 40 in the shank there-
 110 of registers with the slot in the spindle, and the pin 43 is then passed through the helical sleeve slot 42 and slots in the handle shank and spindle and driven into the cylindrical
 115 portion of the spindle latch. By reason of the fine threads on the spindle, the handles may be adjusted to turn easily without there being enough slack motion to cause rattling. It will be easily understood from Fig. 1,
 120 that when the pin 43 is in place it holds the inside handle against revolution on the spindle so that when the handles are once adjusted they cannot work either tight or loose. It will be seen in Figs. 1 and 2 that
 125 the shanks of both handles are shouldered at 60 and that these shoulders bear against similar shoulders 61 below the surface of the plates 16, in the usual manner.

The operation of the latch is very simple. As long as the blade 24 remains in the slot 130

29 of the outside handle, the latch may be operated in the usual manner by either handle. When it is desired to make the door openable from the inside only, the sleeve 41 is rotated to withdraw the blade 24 of the spindle latch from the slot 29 of the outside handle. The outside handle then rotates freely on the spindle but will not turn the same to operate the latch, while the inside handle remains fixed to the spindle. When the spindle is turned by either handle it carries the disk 51 with it so that the latch bolt 47 is drawn back through the medium of the pin 52 and link 54, compressing the spring 56, as will be readily understood from Figs. 2 and 3. When the outside handle is disconnected from the spindle the latch may be operated by means of a suitable key inserted in the key apertures 34 and 35 which connects directly with the spindle and will rotate the spindle when turned. The pin 36 in the key aperture 35 in the spindle is for the purpose of preventing the introduction of any instrument, other than the proper key, to rotate the spindle. Any such instrument introduced in the key aperture 34 of the lock barrel, will be ineffectual, as the barrel revolves independently of the spindle and outside handle. The pin 25 connecting the outside handle to the spindle is kept in place when the latch is mounted on a door by the flange 62 of the outside handle plate 16. When the door is closed without turning the spindle, the latch bolt is forced back by its beveled end engaging the jamb plate. The bolt recedes and compresses the spring but does not operate the rest of the mechanism as the pin 50 moves between the arms of the link and the slot 49 in the bolt prevents the bolt from shifting the link, as will be seen in Figs. 2 and 3.

No screws are used in assembling the parts of the latch nor in attaching the same to a door. Moreover, the tedious operation of mortising a lock recess in the door and a latch recess in the door jamb is eliminated, as these recesses are replaced by simple auger holes which may be made with great ease and accuracy in a few seconds, and which do not weaken the door and jamb as do the mortised recesses. Furthermore, there is no keyhole to be made or keyhole

plate to be adjusted. The latch is simple in construction and not liable to get broken or out of order, and may be manufactured at small cost.

Other advantages will be obvious to those skilled in the art to which the invention relates.

Having thus described my invention, what I claim is:—

1. In a latch lock, a revoluble spindle, an inside handle rigid therewith, an outside handle revolubly mounted on said spindle, a disk mounted on the spindle between said handles, a latch, a link connecting the latch and disk, a bar holding said disk and outside handle against revolution on the spindle, and a revoluble sleeve on the inside handle for shifting said bar to allow the outside handle free revolution on the spindle.

2. In a latch lock, a slotted spindle, an inside handle mounted at one end thereof, an outside handle revolubly mounted at the opposite end of said spindle, a disk mounted on the spindle between said handles, a latch, a link connecting the disk and latch, a bar mounted in said spindle slot holding the disk and outside handle against revolution, a pin carried by said bar holding the inside handle against revolution on the spindle, and a revoluble sleeve on the inside handle engaging said pin for shifting the bar to allow the outside handle free revolution on the spindle.

3. In a latch lock a revoluble spindle, a handle at each end thereof, a crank disk mounted on the spindle between said handles, a tube, a slotted latch bolt slidable therein, a pin crossing the rear end of said slot, a U-shaped pin in the periphery of said disk having the extremities thereof outwardly turned, a U-shaped link hooked around the bolt pin and having the extremities thereof pivotally mounted on the outwardly turned extremities of the disk pin, and a helical spring in the tube compressible on the retreat of the bolt.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM J. DUNN.

Witnesses:

STUART R. W. ALLEN,
E. R. MCKENZIE.