No. 643,958. Patented Feb. 20, 1900.

A. R. FERGUSSON.

LOCK.

(Application filed June 14, 1899.)

(No Model.) 2 Sheets—Sheet 1.

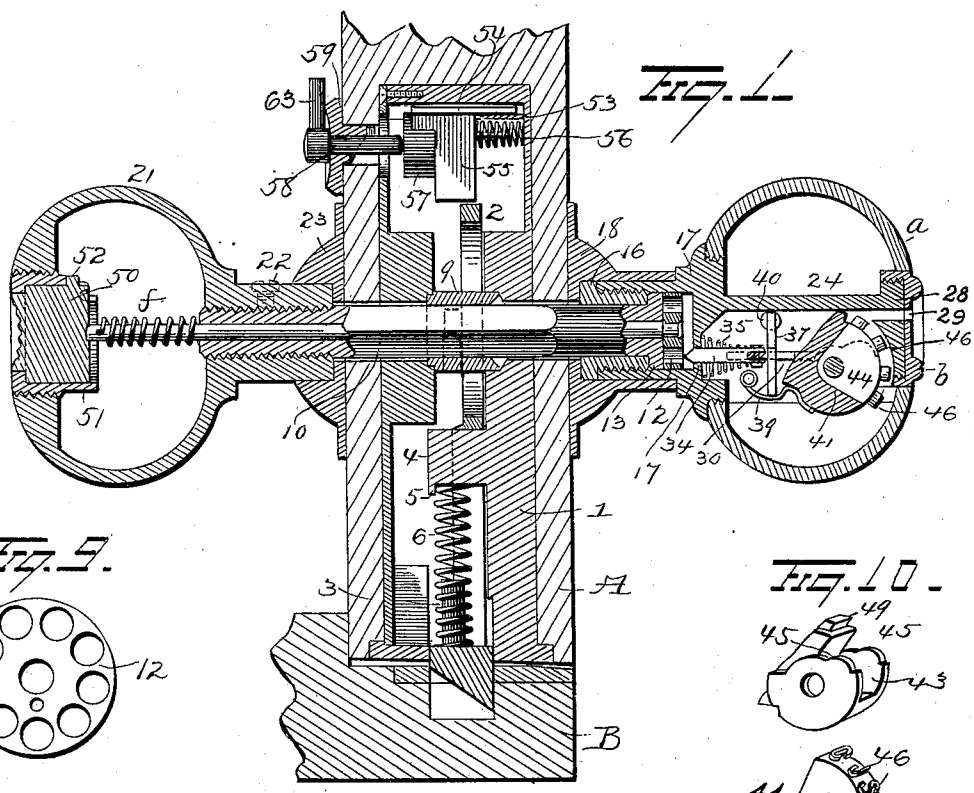


Fig. 1.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

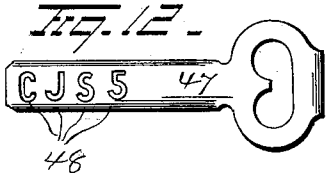
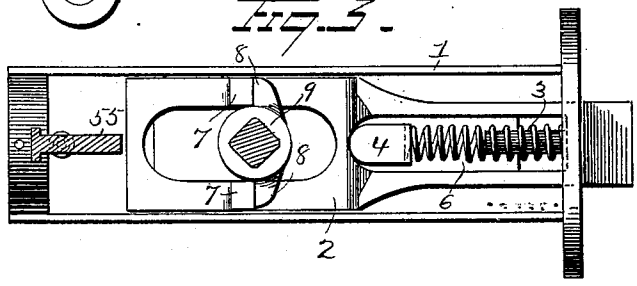


Fig. 3.



WITNESSES

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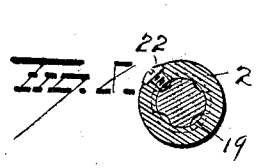


FIG. 1.

FIG. 2.

FIG. 5.

FIG. 6.

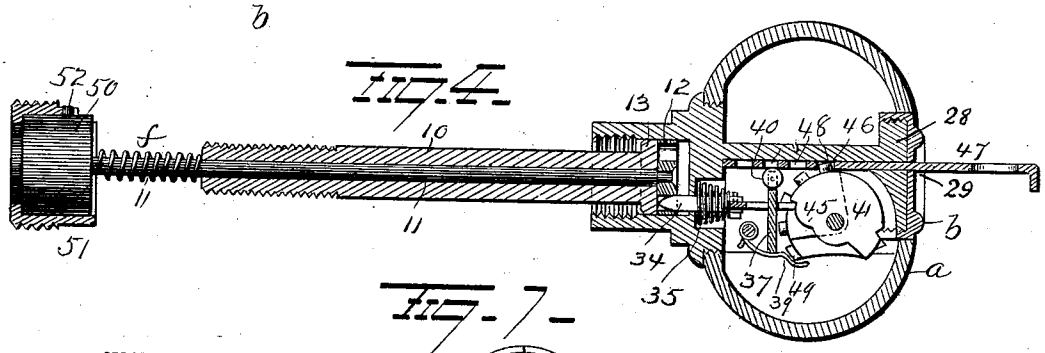


FIG. 4.

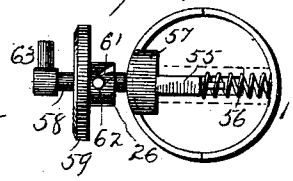


FIG. 7.

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UNITED STATES PATENT OFFICE.

ALAN ROBB FERGUSSON, OF NEW YORK, N. Y., ASSIGNOR TO THE FERGUSSON LOCK COMPANY, OF NEW JERSEY.

LOCK.

SPECIFICATION forming part of Letters Patent No. 643,958, dated February 20, 1900.

Application filed June 14, 1899. Serial No. 720,518. (No model.)

To all whom it may concern:

Be it known that I, ALAN ROBB FERGUSSON, a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in locks, and more particularly to knob-locks, one object of the invention being to provide improved means for locking a knob to its spindle and releasing the same therefrom.

A further object is to provide a device of the above-mentioned character which will effectually prevent "picking."

A further object is to provide improved means for preventing the operation of the bolt by either knob.

A further object is to provide a knob-lock which will be simple in construction, comprise but few parts, comparatively cheap to manufacture, and most effectual when in use.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in section showing the bolt locked against movement by either knob. Fig. 2 is a similar view showing the device in position to be operated by either knob. Fig. 3 is a detail view of the casing and bolt. Fig. 4 is a sectional view showing the position of the parts when the key is inserted. Figs. 5 and 6 are detail views, partly in section, of the knob on the outside of the door, showing parts of the lock mechanism. Fig. 7 is a detail view of the bolt-locking mechanism. Fig. 8 is a view on the line $x\ x$ of Fig. 2. Fig. 9 is an enlarged detail view of the disk 12. Figs. 10 and 11 are detail views of the tumbler, and Fig. 12 is a detail view of the key for operating the locking mechanism in the outside knob.

A represents a door, and B a jamb. The door A is bored to receive a casing 1, in which a locking-bolt 2 is disposed. The lock-bolt 2 is provided with a pin or projection 3, and the casing 1 is provided with a shoulder 4, having a socket 5 therein for the reception of a coiled spring 6, adapted to normally press the locking-bolt outward to its locked position. The bolt 2 is also provided with shoulders 7, against which oppositely-disposed lugs 8 on a sleeve 9 are adapted to abut. The sleeve 9 is made with an angular bore for the reception of the angular portion of a spindle 10. The spindle 10 is disposed in openings in the casing 1 and in the door and is made hollow, and a rod 11 is mounted in the spindle and is provided on one end with a disk 12. The disk 12 is made the same size as a head 13 on the end of the spindle, and a pin 14 is provided in a hole in the disk to permit of longitudinal movement of the disk, but prevent any rotating movement thereof independent of the spindle. An externally-screw-threaded sleeve 16 is disposed on the spindle just back of the head 13, and my improved knob-shank 17 is screwed onto the sleeve 16, and said sleeve and knob-shank are mounted in an escutcheon 18, secured to the outside of the door.

The inner end of the spindle is screw-threaded and provided with longitudinal grooves 19, and a knob-shank 20, having a knob 21 thereon, is screwed on the end of the spindle and secured against independent movement by a screw 22, passing through the knob-shank and having its end in one of the grooves 19. The knob-shank 20 is disposed in an escutcheon 23, secured to the inside of the door.

The knob-shank 17, within the knob a, is made in the form of an open frame 24, comprising longitudinally-disposed sides 25, 26, and 27 and end section 28, having a slot or keyhole 29 therein. The sides 25 and 26 of the frame 24 are slotted, as shown, for the accommodation of a slide 30. The slide 30 is made with two arms 31, having inwardly-projecting lugs 32 thereon, and said arms 31 are provided with diametrically-opposite recesses 33 for a purpose more fully hereinafter explained. A locking-pin 34 is secured to the slide 30 and projects through an opening in the knob-shank, and a coiled spring 35 is disposed on the pin and is adapted to bear, respectively,

against the knob-shank and slide 30 to normally hold said slide and pin in their inward position. The sides 25 and 26 of the frame 24 are provided with transverse grooves 36 for the accommodation of a sliding shutter 37. The shutter 37 is also adapted to move in the recesses 33 in the slide 30, and said shutter is held against the section 27 by a spring 39, which latter also bears against a tumbler 41 to hold same in place against accidental displacement, and the shutter 37 is provided on its end which bears against the section 27 with a roller 40.

The tumbler 41 is revolubly mounted on an arbor 42, disposed at its ends in the sides 25 and 26 of the frame 24, and said tumbler is made with two sides, each having a cam edge 45, as shown, and a V-shaped recess 43 therein for the reception of a similarly-shaped block 44. The block 44 and cammed sides of the tumbler are provided with alined holes for the accommodation of the arbor 42. The block 44 is provided on its outer edge with a series of projections 46, preferably in the form of letters or numerals, and a key 47 is provided with cut-out portions 48 to correspond with the projections on the block. It will thus be seen that the combination can readily be changed by simply reversing the block. A projection 49 is provided on the tumbler, against which the end of the key when inserted is adapted to abut. A keyhole-guide *b* is screwed on the end of the knob-shank, and the hollow knob *a* is screwed on the knob-shank, and said knob *a* is provided with a recess *c* for the reception of a blind key *d*, loosely mounted in the knob-shank, and a screw *e* is adapted to be screwed into the knob-shank to hold the key in position to lock the knob and shank together and prevent any unauthorized removal of the knob.

From the construction and arrangement of parts above described it will be seen that when the key is inserted into the knob it will be moved tangentially to the tumbler, and the projections 46 on the tumbler meshing with the cut-out portions of the key the tumbler will be rotated. During the rotation of the tumbler the key engages the shutter 37 and moves the same laterally to release the slide, and then the completion of the movement of the tumbler by the key will cause the slide to be moved forwardly by engagement therewith of the cams 45 and project the pin 34 into one of the holes in the disk 12 on the spindle. The withdrawal of the key will cause a reversal of the movements above described and the consequent unlocking of the knob from the spindle.

The other end of the rod 11 projects into the knob 21 and is provided with a coiled spring *f*, secured at one end to the rod 11 and adapted at its other end to bear against the knob-shank 20. The free end of the rod 11 is disposed against a button 50, loosely mounted in a sleeve 51, screwed into the end of the knob. The sleeve 51 is made with an annular flange on its outer end to limit the outward movement of the button, and the sleeve is cut out on one side to form two shoulders in different planes for the reception of a pin or lug 52 on the side of the button. The pin normally rests on one of said shoulders, and when the button is pushed inward and turned to one side the pin or lug 52 will engage the other shoulder and the rod 11 will be moved so as to cause the disk 12 thereon to be held in engagement with the locking-pin 34.

The casing 1 is provided near its inner end with a partition 53 for the accommodation of a plate 54 on a block 55, and a spring 56 is disposed between the block and casing to normally hold the block out of the path of the bolt 2. The block 55 is made with an enlarged head 57, against which an arbor 58 abuts. The arbor 58 is disposed in an escutcheon 59, having an inwardly-projecting sleeve 60 thereon, the latter provided with a spiral slot 61 for the reception of a lug or projection 62 on the arbor, and the said arbor is provided on its outer end with an arm 63 for conveniently turning the same. It will thus be seen that when the arbor 58 is turned the lug 62, moving in the slot 61, will force the arbor and block 55 inward and force the latter in the path of the bolt 2 and prevent any movement of the bolt.

Various slight changes might be resorted to in the general form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. The combination with a spindle and a revoluble tumbler having a cam thereon, of a slide having a portion actuated by said cam and a locking-pin projecting from the slide and adapted to engage the spindle.

2. The combination with a spindle, of a revoluble tumbler having a cam, peripheral projections on said tumbler adapted to mesh with a key moved tangentially thereto, a slide engaged by said cam and a locking-pin projecting from said slide and adapted to engage the spindle.

3. In a knob-lock, the combination with a knob, a spindle and a locking-bolt adapted to be operated by the spindle, of a revoluble tumbler in the knob, a slide mounted in the knob, a locking-pin projecting from the slide to lock the spindle to the knob, cams on the tumbler to operate the slide and a shutter mounted in the knob and normally locking the slide.

4. In a lock, the combination with a knob, a spindle and a locking-bolt adapted to be operated by the spindle, of a tumbler revolu-

bly mounted in the knob, a cam at each side of the tumbler, a slide embracing the tumbler and engaging said cams, a locking-pin projecting from said slide and adapted to engage the spindle and a shutter in the knob adapted to normally lock said slide.

5. In a knob-lock, the combination with a knob, a spindle and a locking-bolt operated by the spindle, of a locking-pin, a slide to which said pin is secured, a tumbler for operating said slide and locking-pin, a shutter having recesses therein for the passage of the slide, and a spring adapted to force the shutter to position with the recesses out of alinement with the slide and prevent any movement of the slide until the shutter has been operated.

6. In a knob-lock, the combination with a locking-bolt, of a hollow spindle, knobs on the respective ends of said spindle, a rod in the spindle adapted to be locked to the outer knob, the inner end of the rod disposed in the inner knob, a button in said inner knob, a spring normally holding said rod against the button, a sleeve in said knob having a cut-out portion to form shoulders, and a lug or projection on the button adapted to be held against either one of said shoulders to hold the rod in or out of engagement with the outer knob.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALAN ROBB FERGUSSON.

Witnesses:
JOHN MCLEAN,
JNO. T. BECK.