No. 728,755. PATENTED MAY 19, 1903.

M. C. PATRICK.

COMBINED LOCK AND LATCH.

APPLICATION FILED AUG. 13, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

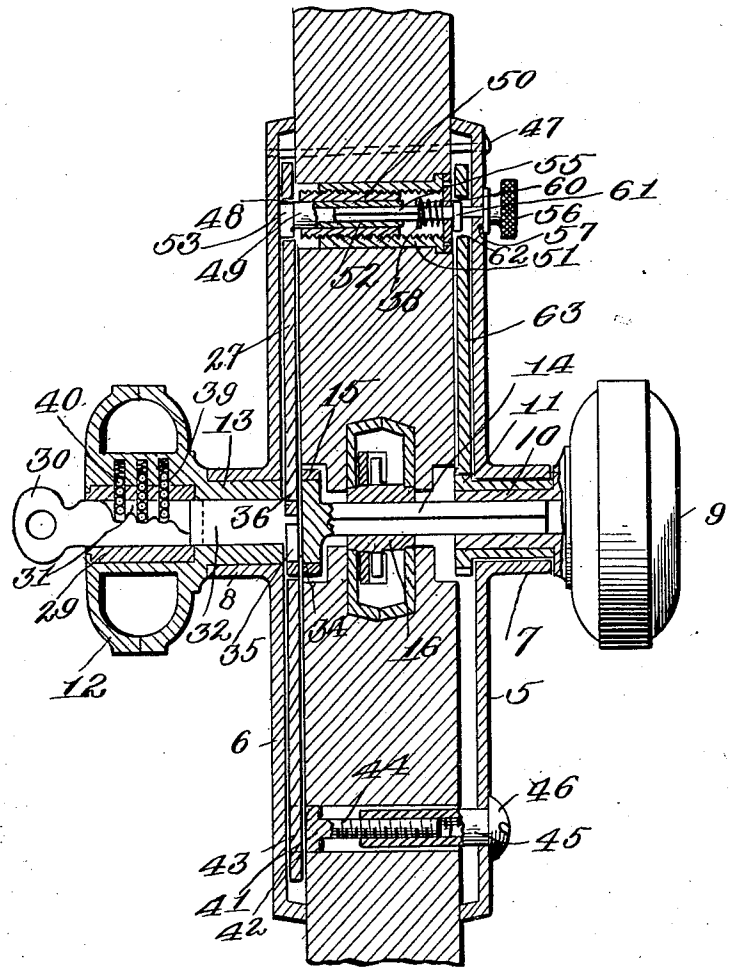


Fig. 2.

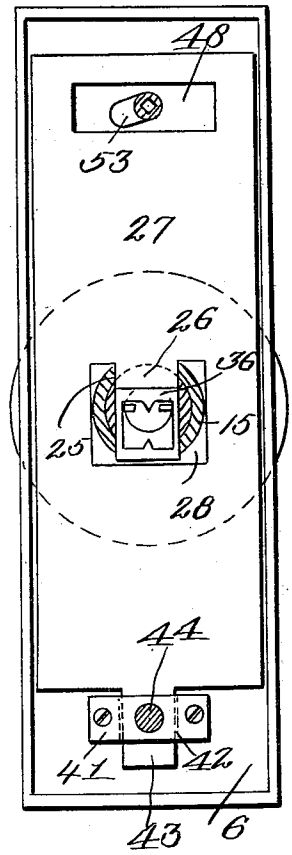
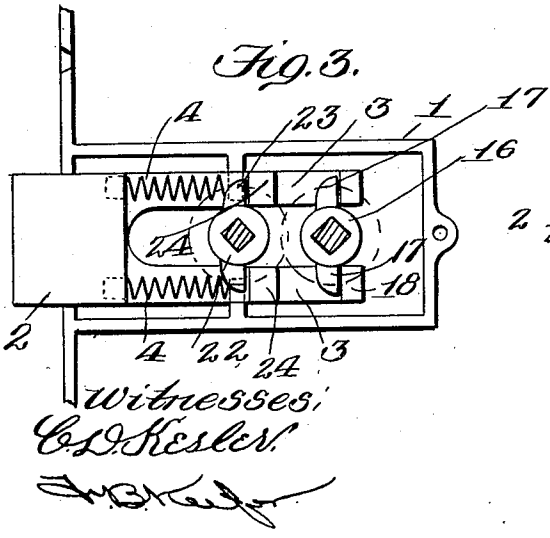
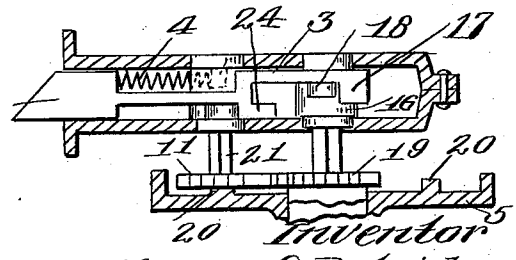


Fig. 3.



Witnesses:
C. D. Kesler.
J. B. Kesler Jr.

Fig. 4.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

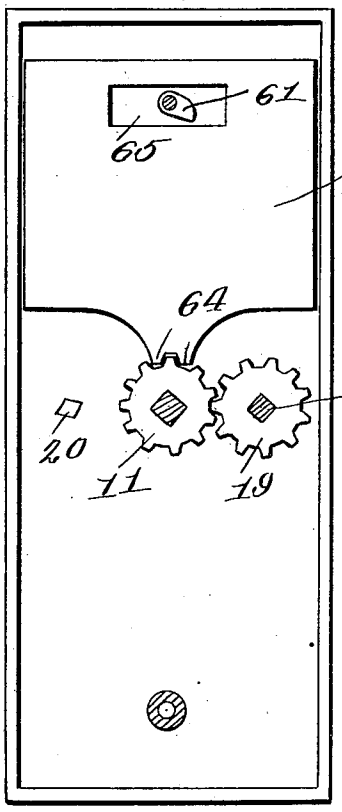


Fig. 6.

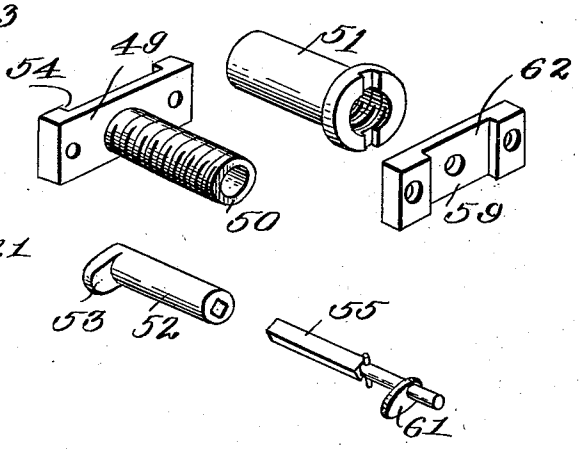


Fig. 7.

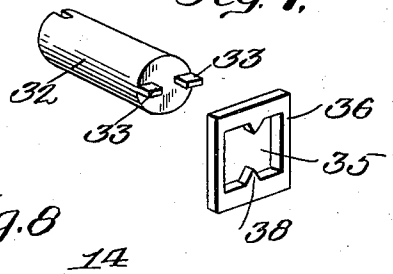
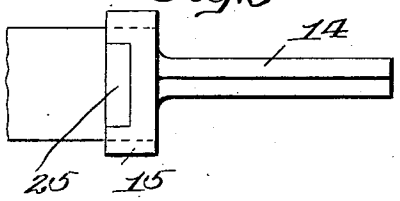


Fig. 8



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 728,755. Patented May 19, 1903.

UNITED STATES PATENT OFFICE.

MARCUS C. PATRICK, OF SEATTLE, WASHINGTON.

COMBINED LOCK AND LATCH.

SPECIFICATION forming part of Letters Patent No. 728,755, dated May 19, 1903.

Application filed August 13, 1902. Serial No. 119,569. (No model.)

To all whom it may concern:

Be it known that I, MARCUS C. PATRICK, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented new and useful Improvements in a Combined Lock and Latch, of which the following is a specification.

This invention relates to a combined lock and latch of that type in which the key-operated mechanism is inclosed in the knob and operates to prevent the latter from being operated, so that the bolt of the lock cannot be drawn back from the outside; and the object of the invention is to provide a device of this character which is simple in construction and which consists of a comparatively few parts and which is effective and positive in action.

The objects and advantages of the invention will be set forth at length in the following description, and the novelty thereof will form the basis of the claims succeeding said description, and said invention is clearly illustrated in the following drawings, forming a part of this specification, in which—

Figure 1 is a longitudinal central sectional elevation of a combined lock and latch including my improvements. Fig. 2 is an inside face view of the outer escutcheon-plate and with certain coöperating parts in sectional elevation. Fig. 3 is a sectional elevation of the bolt-casing and parts inclosed thereby, the spindles, hereinafter more particularly described, being shown in cross-section. Fig. 4 is a sectional plan view of the same, a portion of the inner escutcheon-plate being also shown. Fig. 5 is a view corresponding to Fig. 2, but illustrating the inner escutcheon-plate. Fig. 6 is a perspective view of the spindle for actuating the locking and dead-locking plates and certain coöperative parts, the several elements being shown as separated. Fig. 7 is a similar view of a plug and actuator, the same being shown as being detached. Fig. 8 is an elevation of the outer knob.

Like characters refer to like parts in all the figures of the drawings.

Referring to the drawings, the numeral 1 indicates a casing for the bolt 2, said bolt being of a sliding kind and its working end being adapted to enter a catch or keeper plate set into a mortise in the frame of the door. Likewise the casing 1 for the bolt is fitted into a mortise in the door. As the keeper-plate for the bolt forms no part of the present invention I have not deemed it necessary to illustrate the same. The outer end or head of the bolt is beveled, as is the custom in this class of devices, while the inner end of the said bolt is bifurcated to form arms 3, disposed in parallelism. The bolt is normally held in its effective position by means of a parallel coil-spring 4 bearing against the same and against suitable stops in the casing 1.

The inner and outer escutcheon-plates are denoted, respectively, by 5 and 6, and they are adapted to be secured to the corresponding faces of the door. Said plates are provided centrally, or substantially so, with bosses 7 and 8, respectively, which, if desired, may be formed integral with the respective escutcheon-plates.

The numeral 9 indicates the inner knob, the spindle of which is rotatably fitted in the inner boss 7, the inner end of said knob-spindle, which is denoted by 10, being surrounded by a gear 11, suitably secured thereto and which prevents the withdrawal of the knob-spindle 10 from its boss. This is one of the purposes of the gear 11. Another one will be hereinafter set forth. The outer knob is denoted by 12, its spindle 13 being rotative in the outer boss 8. Said spindle 13 has upon its inner end a squared extension or shank 14, which is adapted to enter the similarly-shaped bore of the hollow spindle 10 of the inner knob, so that the two knobs, as will be understood, are rotatably connected, whereby when one is turned the other will be likewise operated. It will be obvious that the squared extension 14 is slidably fixed in the bore of the hollow spindle 10, whereby the distance between the escutcheon-plates can be regulated to adapt the improved device to doors of different thicknesses.

It will be evident that the spindle 13 for the outer knob is cylindrical for a part of its length, and the cylindrical portion is made in two diameters, that portion of least diameter, which is inside of the outer escutcheon-plate, being surrounded by a collar or ring 15, suitably attached thereto—as, for example, by means of screws—and which prevent the withdrawal of the outer-knob spindle 13.

The square extension or shank 14 of the outer-knob spindle extends through a square perforation in the hub 16, such hub being provided with arms 17, adapted to coöperate with the lugs 18 on the arms 3 of the sliding bolt, the parts being so arranged that when the outer-knob spindle is turned by the knob 12 one or the other of said arms 17 will engage a lug 18, so as to draw back the sliding bolt 2.

The gear 11, to which reference has been made, meshes with the pinion 19, adapted to rotate upon one of the studs 20, two of such studs being shown at opposite sides of the inner escutcheon-plate, so as to make the lock either a right or left hand one. The square shank or shaft 21 extends centrally inward from the pinion 11 and projects through a square perforation in the hub 22, said hub being provided with arms 23, like the arms 17, hereinbefore described, and which are adapted to coöperate with the lugs 24 upon the arms 3 of the bolt, it being seen that each arm carries two lugs situated at different points in its length. When the inner knob is turned, the square shank, through intermediate meshing gears 11 and 19, will be turned so that one or the other of the arms 23 by acting against the coöperating lug 24 can draw back the bolt. What might be considered the outer lugs 24 have undercut inner faces, so as to allow an ample swing for the arms 17.

The collar or ring 15, which, it will be remembered, is fastened to the outer knob-spindle, has diametrical opposite notches or slots 25, one of which is normally adapted to receive the tooth 26 of the sliding locking-plate 27, which is shown as being substantially rectangular and which operates against the outer escutcheon-plate 6. Said locking-plate 27 has at or near its center an enlarged slot 28, through which the outer knob-spindle and its collar 15 extends, it being seen that the tooth 26 depends from the upper wall of the slot 28. The locking-plate is of the gravity kind, its tooth or projection being adapted to fall into one or the other of the diametrically opposite slots 25, and when said tooth is situated in one of the slots it will be apparent that neither of the knobs can be turned. The locking-plate is lifted so as to carry the tooth 26 thereof out of a coöperating slot 28 by key-operated means, as will now appear.

A barrel 29 is fixedly secured in the outer knob 12, it having upon its closed outer end a keyhole-slot for the reception of the key 30. Said barrel is adapted to receive for rotary movement the cylinder 31, and the plug 32, also cylindrical in form, is set in the adjacent face of the cylinder 31. The inner end of the plug is provided at its outer edge with horns or projections 33, which extend into the channel 34, formed in the reduced cylindrical portion of the outer-knob spindle. These horns are also disposed in the slot 35 of the plate 36, slidable in said channel 34. Said plate 36 constitutes an actuator for the gravitative locking-plate 27, it being adapted to be operated through the intervention of the key 30 to lift the tooth 26 of said locking-plate out of the slot 25 in the collar 15, in which it may be seated, so as to release the knobs, so that they can be turned to draw back the bolt. When the plug 32 is turned by a key, the horns or projections 33 thereon engage the plate 36 and lift the same, whereby said plate by engaging the tooth 26 can move said tooth out of the slot 25. To prevent the plug 32 from being turned too far, the ends of the actuator or plate 36 are provided inside the same and centrally thereof with stops 38, adapted to be engaged by the horns for the purpose set forth.

The cylinder 31 and its barrel have coöperative pockets 39 to receive balls 40 in groups of different numbers, whereby when the proper key is introduced into the slot of the cylinder 31 such balls will drop into the notches or saddles of the key and permit the cylinder to be turned thereby, so as to operate the locking-plate 27 in a manner to effect the release of the knobs.

The escutcheon-plates are held to the door by any suitable means, one effective form of which will now be set forth. A block is shown at 41, it being fastened by screws or rivets to the inner surface of the outer escutcheon-plate 6 and having a slot 42, through which a tongue 43 at the lower end of the slidable locking-plate 27 projects. A threaded stud 44 projects from the block 41 and is adapted to receive an elongated nut 45, which extends through a perforation in the inner escutcheon-plate and terminates in the head 46. The block 41 with its threaded stud 44, in connection with the headed tubular nut 45, hold the plates together at one end thereof, screws 47 being provided to hold them together at the opposite end, such screws being passed through perforations in the inner escutcheon-plate and being tapped into the outer escutcheon-plate. The locking-plate 27 has near its upper end the enlarged slot 48, in which the block 49 is disposed, the tubular externally-threaded stud 50 extending inward from the block and adapted to receive the elongated nut 51, said nut having a slotted head by which it can be adjusted on the said tubular stud. This tubular stud forms a seat for the sleeve 52, said sleeve having a toe or cam 53 at its outer end adapted to work in the slot or channel 54 of the block 49, and the purpose of this toe or cam 53 is to operate the locking-plate 27 by engaging the upper wall of the slot 48 in said locking-plate, so as to lift the tooth 26 of said locking-plate out of its effective position. The bore of the sleeve 52 is square in cross-section and is adapted to slidingly receive a correspondingly-shaped portion of the shank 55, the said shank having a sliding movement in the sleeve, so as to adapt the two parts, which are in the nature of a unitary spindle, to doors of different

thicknesses. The shank 55 terminates at its inner end in the knob 56, by which the same, and hence the sleeve 52, can be operated, said knob having on its inner side a pin 57, adapted normally to be seated in the perforation in the inner escutcheon-plate and to be held therein by the spring 58 encircling the cylindrical portion of the shank 55 and bearing against a plate 59 and also against the projection 60 of said shank. The plate 59 is centrally apertured to receive said shank and is suitably secured to the inner face of the inner escutcheon-plate. Said shank 55 has a cam 61, adapted to work in the channel 62 of said plate 59 and to actuate the dead-lock plate 63. The dead-lock 63 is adapted to move by its own weight into its operative position, it having teeth 64 at its lower end adapted to engage the teeth of the gear 11, and it will be apparent that when such teeth are in engagement the gear, and consequently the knobs, cannot be turned. The dead-lock plate 63 has an enlarged slot 65, through which the shank 55 extends, said dead-lock plate being slidable against the inner escutcheon-plate.

The cams 53 and 61 are so disposed that they can lift the locking and dead-locking plates 27 and 63 out of their working position or so that one or both of said plates can drop into the effective position thereof.

To operate the shank 55, and hence the sleeve 52, to secure the action of said cams, the pin 57 will be withdrawn from its seat, so that the knob 56 can be turned, and when the desired operation has been effected the said pin will be automatically drawn into its seat by the action of the spring 58, in which condition it will be maintained by said spring.

The improved lock is simple and thoroughly effective, its parts can be easily made and quickly assembled, and by virtue of the mechanism set forth the lock can be so set that the knobs can be operated simply by turning the same without a key or they can be dead-locked or set so that they may be operated by the use of the proper key.

The invention is not limited to the exact construction hereinbefore set forth, for many variations may be adopted within the scope of the following claims.

Having described my invention, what I claim is—

1. In a combined lock and latch, the combination with a bolt, a knob, connections between the knob and the bolt for operating the latter, including intermeshing gears, a dead-locking device having teeth to mesh with one of the gears, and means for controlling said dead-locking device.

2. In a combined lock and latch, the combination with a bolt, a knob, key-operated means for effecting the operation of said knob, connections between the knob and the bolt for operating the latter, including intermeshing gears, a dead-locking device having teeth to mesh with one of the gears, and means for controlling said dead-locking device.

3. In a combined lock and latch, the combination with a bolt, a knob, connections between the knob and bolt for operating the latter, including intermeshing gears, a slidable plate having teeth to mesh with one of the gears, and means for controlling said slidable plate.

4. In a combined lock and latch, the combination with a bolt, a knob, connections between the knob and bolt for operating the latter, including intermeshing gears, a gravitative dead-locking plate having teeth to mesh with one of the gears, and means for controlling said dead-locking plate.

5. In a combined lock and latch, the combination with a bolt, a pair of knobs each having a spindle, one of said spindles being fitted into the other and being rotatively connected together, a hub on one of the spindles provided with means for actuating said bolt, a gear on the other spindle, and a second gear meshing with the first gear, a spindle connected with the second gear, a hub connected with said last-mentioned spindle and provided with means for actuating said bolt, a dead-locking device provided with teeth to mesh with the first-mentioned gear, and means for controlling said dead-locking device.

6. In a combined lock and latch, the combination with a bolt, a knob, connections between the knob and bolt for operating the latter, including intermeshing gears, a dead-locking device having teeth to mesh with one of the gears, a locking device for said knob, and a device having means to control both the locking device and the dead-locking device.

7. In a combined lock and latch, the combination with a bolt and knob, connections between the knob and bolt for operating the latter, a collar rotative with the hub and having a slot, a bolt provided with a tooth to enter said slot, key-operative means rotative with the knob for moving said tooth into its ineffective position, and means operable independently of said key-operative means for also moving said bolt into its ineffective position.

8. In a combined lock and latch, the combination with a bolt, a knob, connections between the knob and bolt for operating the latter, a collar connected with the knob for rotation therewith and having a slot, a bolt provided with a tooth to enter said slot, a key-operated actuator for said tooth, carried by the knob, said actuator serving to move the tooth into its ineffective position, and means operable independently of said actuator for also moving the tooth into its ineffective position.

9. In a combined lock and latch, the combination with a bolt, a knob, connections between the knob and bolt for operating the latter, a collar connected with the knob for rotating therewith and having a slot, a locking-plate provided with a tooth to enter said

slot, a slotted actuator carried by the knob and adapted to actuate said tooth, and a key-operated plug carried by the knob and having a projection fitted in the slot in said actuator, and adapted to operate the latter.

10. In a combined lock and latch, the combination with a bolt, a pair of rotatively-connected knobs, connections between the knobs and bolt for operating the latter, locking and dead-locking plates coöperative with the knobs and a spindle having means for controlling both the locking and dead-locking plates.

11. In a combined lock and latch, the combination with a bolt, a pair of rotatively-connected knobs, connections between the knobs and bolt for operating the latter, locking and dead-locking plates coöperative with the knobs, and a spindle consisting of two parts, one sleeved on the other, and each part having a cam, and the cam serving to control the respective plates, and one of the parts of the spindle being spring-operated.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MARCUS C. PATRICK.

Witnesses:
W. PARRY SMITH,
G. C. GREEN.