No. 721,322. PATENTED FEB. 24, 1903.

W. S. OBERHOLTZER.

LOCK.

APPLICATION FILED MAY 27, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

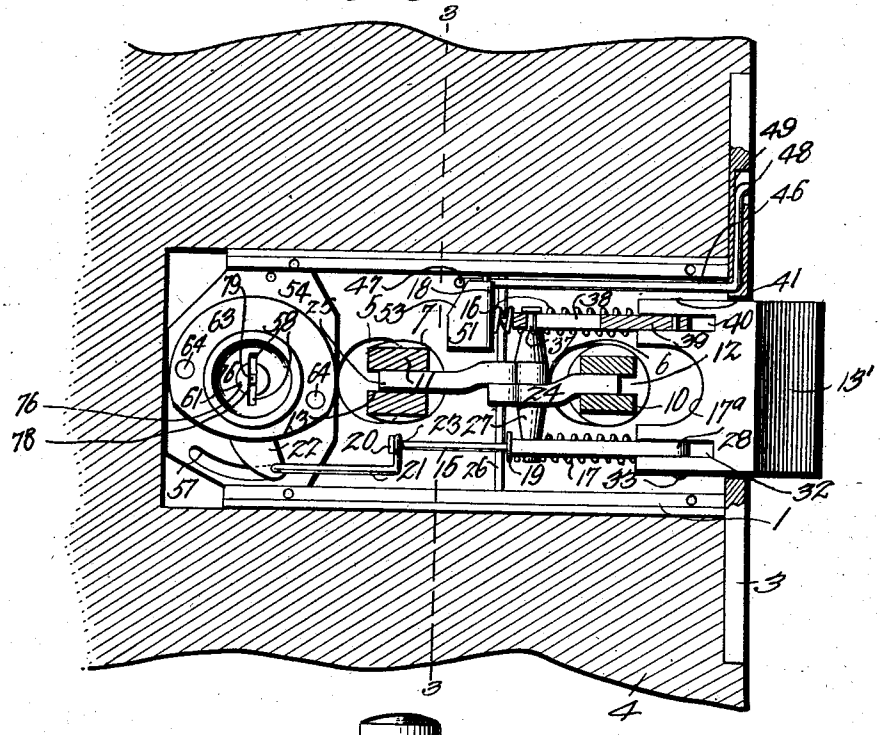
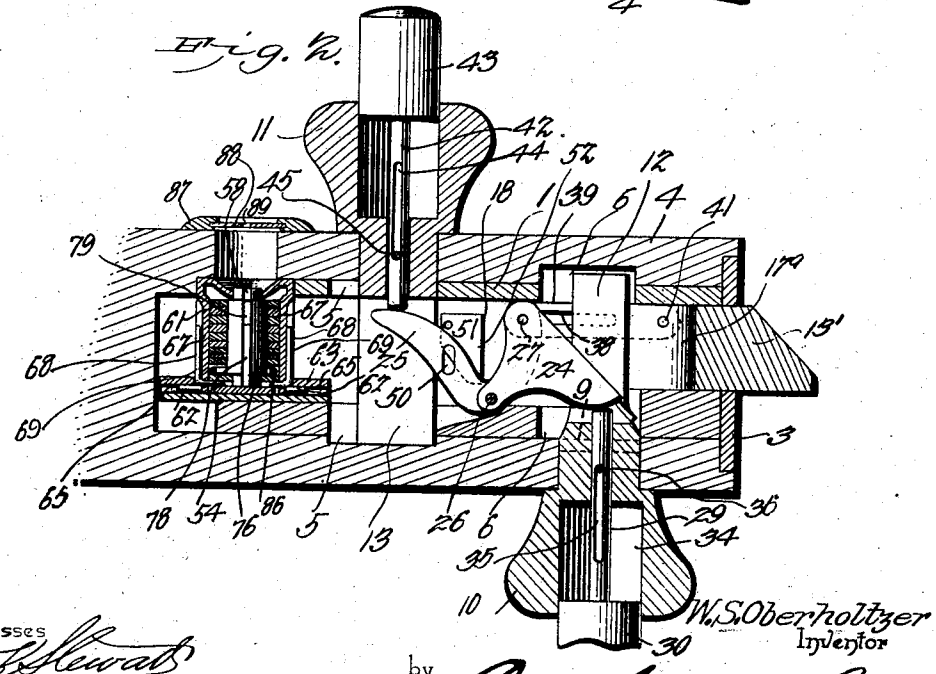


Fig. 2.



Witnesses

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

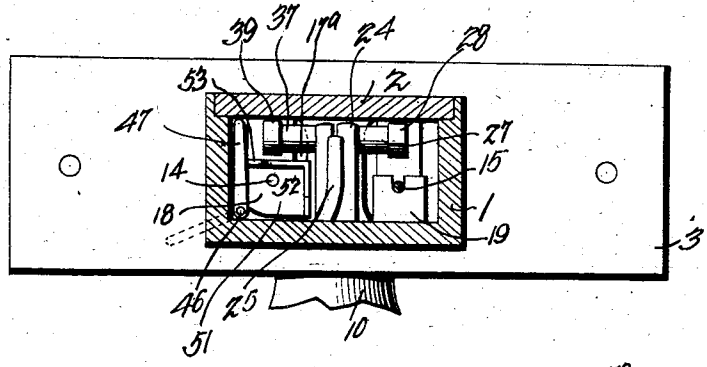


Fig. 4.

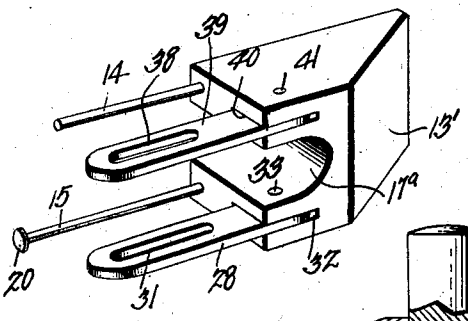


Fig. 5.

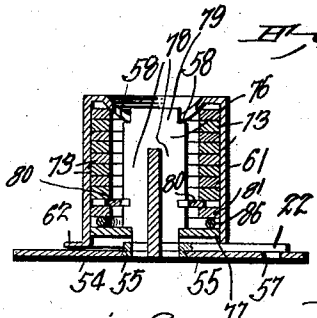


Fig. 9.

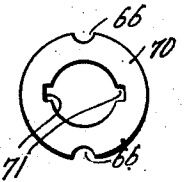


Fig. 8.

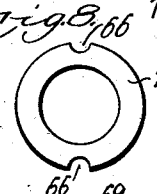
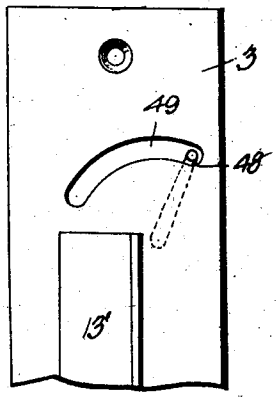


Fig. 7.



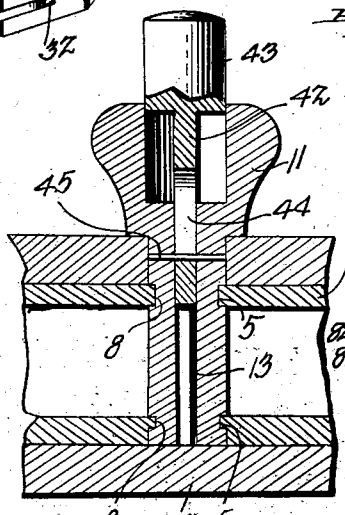


Fig. 11.

Fig. 6.

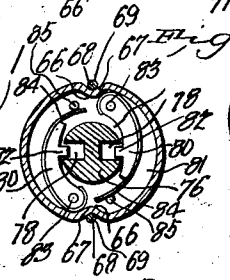


Fig. 10.

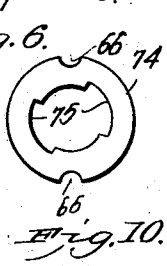
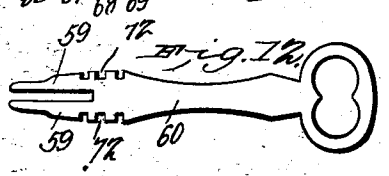


Fig. 12.



Witnesses
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UNITED STATES PATENT OFFICE.

WALTER S. OBERHOLTZER, OF MIFFLINTOWN, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO HENRY W. SWEIGART, OF LEWISTOWN, PENNSYLVANIA.

LOCK.

SPECIFICATION forming part of Letters Patent No. 721,322, dated February 24, 1903.

Application filed May 27, 1902. Serial No. 109,222. (No model.)

To all whom it may concern:

Be it known that I, WALTER S. OBERHOLTZER, a citizen of the United States, residing at Mifflintown, in the county of Juniata and State of Pennsylvania, have invented a new and useful Lock, of which the following is a specification.

The invention relates to improvements in locks.

The object of the present invention is to improve the construction of door-locks and to provide a simple and comparatively inexpensive one of great strength and durability, adapted to be readily arranged to enable it to be operated from the interior and exterior during the day-time and capable of being readily set to provide an efficient night-latch for preventing operation from the exterior without a key.

A further object of the invention is to provide a lock of this character in which the key will be reversible and adapted to operate the lock when either edge is at the top, so that it will not have to be placed in the lock in a particular position.

Furthermore, it is the object of the invention to provide a lock in which the bolt may be constructed larger than heretofore in order to afford greater strength and in which the knobs will be rigidly interlocked with the casing, so that they cannot wear out or become loose and fall off.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a vertical sectional view of a mortise-lock constructed in accordance with this invention and shown applied to a portion of a door. Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a sectional view on the line 3 3 of Fig. 1. Fig. 4 is a detail view of the bolt. Fig. 5 is a detail sectional view on the line 5 5 of Fig. 1. Fig. 6 is a sectional view on the line 6 6 of Fig. 5. Fig. 7 is a detail view of a portion of the face-plate of the lock, illustrating the arrangement of the outer arm or handle of the shaft for locking the outer push-button out of operation. Figs. 8, 9, and 10 are detail views of the fixed disks of the thimble of the lock. Fig. 11 is a sectional view illustrating the manner of interlocking the knobs with the casing. Fig. 12 is a detail view of the key.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a casing of a mortise-lock having a removable side plate 2 and provided at its outer end with a face-plate 3, which is arranged at the edge of a door 4 in the usual manner. The side plates of the casing are provided at opposite sides with inner and outer openings 5 and 6 of substantially the same configuration and having reduced portions 7 to receive inner and outer grooves 8 and 9 of inner and outer knobs 10 and 11. The inner and outer knobs are provided with slotted or bifurcated shanks 12 and 13, which are provided with the said grooves and which are introduced into the openings of the lock-casing before the lock is fully placed in the mortise of the door, so that when the lock is moved inward completely the grooved portions of the shanks of the inner and outer knobs will be received within the reduced portions of the openings 5 and 6. The reduced portions of the openings are provided with straight upper and lower edges, and the grooves of the shanks of the inner and outer knobs are provided with straight bottom or inner walls to engage the straight edges of the lock-casing, whereby the knobs will be rigidly interlocked with the casing. The lock-casing is secured in the mortise of the door by screws or other suitable fastening devices which pass through perforations of the face-plate, and these fastening devices securely hold the knobs in engagmeent with the lock-casing, and there is no liability of the knobs wearing out or becoming loose and dropping off. The face-plate is provided with an opening through which projects a bolt 13′, having a beveled outer face and adapted to engage a keeper automatically when the door is closed, and it is provided at one side of its inner end with a pair of longitudinal rods 14 and 15, receiving coiled springs 16 and 17, which normally hold the bolt in an extended position. The inner

end of the bolt is recessed or bifurcated at 17ª to clear the shank of the inner knob, and the rods extend from the inner end of the bolt above and below the bifurcation, and their inner ends are arranged in upper and lower guides 18 and 19. The upper rod extends slightly beyond the upper guide, and the lower rod is extended considerably beyond the guide and is provided with a head 20 and is connected by a link or rod 21 with an oscillatory arm 22, adapted to be operated by a key, as hereinafter explained. The link or rod 21 is provided with an angularly-disposed eye 23, which embraces the lower rod 15 and which permits the bolt to reciprocate independently of the key-operated arm 22. The sliding spring-actuated bolt is retracted by a pair of bell-crank levers 24 and 25, fulcrumed on a vertical pin or pivot 26. The bell-crank lever 24 is fulcrumed at one end on the pin or pivot and is connected at its angle by a pivot 27 with a link 28, and its other end is engaged by a stem 29 of a push-button 30 of the inner knob 10. The pivot 27 is arranged in a slot 31 of the link 28, which is pivoted at its front or outer end in a recess 32 by a pin 33, and the slot 31 permits the bolt to be operated independently of the inner knob. The push-button 30 is arranged in a cylindrical recess 34 of the inner knob, and the stem 29, which engages the bell-crank lever 24, is provided with a longitudinal slot 35, which receives a pin 36, mounted on the shank of the inner knob and extending through the longitudinal slot of the stem 29 and limiting the movement thereof. The springs 16 and 17, which actuate the bolt, hold the push-button 30 normally in an extended position. When the push-button is moved inward, the bolt is retracted and the knob may be readily grasped to open the door.

The bell-crank lever 25 is fulcrumed at its angle on the pin or pivot 26, and one arm is provided with a pivot 37, which is arranged in a slot 38 of a link 39, located at the top of the bolt and pivoted in a recess 40 by a pin 41 or other suitable fastening device. The other arm of the bell-crank lever 25 extends into the slot or bifurcation of the shank of the outer knob and is engaged by a stem 42 of a push-button 43, which is adapted to be received within a recess of the outer knob 11.

The stem is provided with a slot 44, through which passes a pin 45, which is mounted on the shank of the outer knob for limiting the inward and outward movement of the push-button 43. When the outer push-button is forced inward, the bell-crank lever will be oscillated and the bolt will be retracted. The outer push-button is locked out of operation by means of a longitudinal shaft or rod 46, provided with inner and outer arms 47 and 48, the outer arm 48 forming a handle and being arranged within a recess 49 of the face-plate of the lock. The inner arm is adapted to be swung downward by partially rotating the shaft or rod, and when it is swung downward it is carried into a slot 50 of the bell-crank lever 25, whereby the latter is locked against movement to prevent the outer push-button from being forced inward. The slot 50, which is disposed transversely of the lock, is located adjacent to the shank of the outer knob, and the inner arm of the rod or shaft is supported by the shank of the outer knob when it is in engagement with the bell-crank lever 25. The outer arm is provided with a projection or lug to enable it to be readily operated, and the face-plate is provided with a curved opening communicating with the recess in which the outer arm is arranged and exposing the lug or projection to enable the same to be readily engaged by the finger. The inner arm of the shaft or rod is held against accidental movement to prevent it from being jarred from either of its positions by means of a yielding catch consisting of a plate 51 and upright and horizontal flanges 52 and 53, having beveled outer edges. The plate or body portion of the catch is provided with a perforation to receive the upper guide-rod, and it is engaged by the spring 16, which holds the catch in the position shown in Fig. 1 of the drawings, to support the inner arm 47 in an elevated position and out of engagement with the bell-crank lever 25. When the rod or shaft is rotated to swing the arm downward, the catch is forced inward against the action of the upper spring 16, and the said arm when in engagement with the slot of the bell-crank lever 25 is engaged by the beveled edge of the horizontal flange of the catch, and it is held in such position by the spring 16, so that there is no liability of the inner arm being accidentally thrown out of engagement with the bell-crank lever 25 or accidentally dropping into such engagement. The beveled flanges, which are arranged at right angles to each other, fit against the adjacent edges of the upper guide 18, and the catch is thereby prevented from rotating on the upper rod of the bolt.

The oscillatory arm 22 is pivotally mounted on a plate or support 54, preferably by means of a disk 55, which is mounted in a circular opening of a support or plate 54, and the movement of the arm is limited by the rod 21, which has its inner end 56 bent at an angle and arranged in a curved slot 57 of the plate or support 54. The arm is provided at its pivoted end with a pair of slots 58 to receive the sides 59 of the slotted inner end of a key 60, whereby when the key is partially rotated the arm will be oscillated to retract the bolt. Both sides of the key are designed to be the same in order that it may be readily introduced into the keyhole with either side uppermost.

Mounted upon the plate or support 54 is a cylindrical casing or thimble 61, provided at its lower end, which is open, with a series of lugs 62 and receiving a collar or ring 63, which is secured to the plate or support 54 by suitable fastening devices 64, blocks or pieces

65 being interposed between the collar or ring to offset the lower end of the thimble or casing 61 from the support 54 to provide an aperture or opening for the arm 22. Within the thimble or casing is arranged a series of disks which are provided at their outer edges with notches 66 to receive interior ribs 67, formed by exteriorly indenting or grooving the sides of the casing or thimble, as clearly shown in Fig. 6. The exterior groove also receives the shanks 68 of pins 69, which engage the innermost disk, as hereinafter explained. Any suitable number of disks may be provided, and they are designed to prevent the operation of a lock by a key not belonging to the same or by the use of any other device, such as a wire or the like. The disk 70 is provided at opposite sides with notches 71, extending outward from a central circular opening of less width than the key, and the latter is provided with opposite notches 72 to receive the solid portions of the disk 70, lying between the inner notches 71. This disk 70, which is fixed within the thimble or casing, will prevent the rotation of a key not provided with notches 72. The disk 70 is spaced from the outer end of the sleeve or thimble by means of spacing-disks 73, interlocked with the thimble or casing and provided with central openings of the diameter of the key to permit the latter to turn freely in them. The rotary movement of the key is limited by a disk 74, provided with a central opening of less diameter than the width of the key and having opposite recesses 75, receiving the side edges of the key and forming opposite shoulders for engaging the same. The disk 74 is interlocked with the thimble or casing by the means heretofore described. Within the series of disks is mounted a rotary post 76, having reduced inner and outer ends, which are journaled in the outer end of the casing and in an inner disk 77, provided with a central opening of the same diameter as the reduced inner end of the post. The post is provided with side grooves 78, and it has a slotted or bifurcated outer end, the slot or bifurcation 79 permitting the key to be forced inward, and the slot 79 of the post and the slot or bifurcation of the key may vary in depth to change the character of the key and the lock, so that the key of one lock will not fit another. The grooves of the post register with the slots of the arm 22, and the post is locked against rotation by a pair of pivoted tumblers 80, mounted on a disk 81 and provided with inwardly-extending lugs 82, which project into the grooves and which are adapted to be engaged by the side portions 59 of the slotted or bifurcated inner end of the key, said side portions 59 being tapered and adapted to force the tumblers outward. The tumblers 80, which are pivoted at their opposite ends by studs 83 of the disk 81, are engaged by spring 84, having curved portions extending around the pivoted ends of the tumblers and interposed between the same and the thimble or casing. The springs are curved, and they also engage studs or projections 85. The springs are capable of a limited longitudinal movement to permit the tumblers to be forced outward beyond the grooves of the rotary post by the key. The inwardly-extending portions or lugs 82 of the tumblers will form stops and limit the inward movement of a key not provided with a tapered portion. The disks are held together by means of a spring 86 of approximately circular form, interposed between the bearing-disk 77 and the disk 81, as clearly shown in Fig. 5 of the drawings. The door is designed to be provided with an escutcheon-plate 87, having a swiveled disk 88, provided with a slot 89.

It will be seen that the lock, which is adapted to be constructed either as a mortise or rim lock, possesses great strength and durability, as the bolt is adapted to be constructed of an increased size and as the other parts are large in proportion and are supported by one another. The inner and outer knobs are rigidly interlocked with the lock-casing, and their slotted shanks receive and support the adjacent arms of the bell-crank levers, which are operated by the push-buttons of the said knobs. The lock is adapted to be operated at either the inner or outer side of a door by the push-buttons, and the push-button of the outer knob is capable of being readily locked out of operation, so that the lock can be operated from the exterior by a key only. The lock mechanism proper is exceedingly simple in its construction; but the key-operated mechanism is complicated, and it is practically impossible to pick the lock.

What is claimed is—

1. In a lock, the combination of a casing provided at opposite sides with openings having reduced portions with straight side edges, inner and outer knobs provided with grooves having straight edges, the grooved portions of the knobs being adapted to fit in the reduced portions of the openings of the casing whereby the knobs are rigidly interlocked with the casing and held against rotation, a bolt, and means movable independently of the knobs operating the same, substantially as described.

2. In a lock, the combination of a casing provided at opposite sides with openings having reduced portions with straight side edges, inner and outer knobs having slotted shanks arranged in the said openings and provided with grooves having straight edges, the grooved portions of the shanks being arranged in the reduced portions of the openings, whereby the knobs are rigidly secured to the casing, a sliding bolt, levers operating in the slots of the shanks and connected with the bolts, and means mounted on the knobs and movable independently thereof for engaging the levers, substantially as described.

3. In a lock, the combination of a casing, a sliding bolt, rods extending inward from the

bolt and guided on the casing, springs disposed on the rods and engaging the bolt, a key-operated arm, and a link or rod extending from the said arm to one of the rods of the bolt and slidably connected with the same to permit the bolt to move independently of the arm, and means for operating the bolt independently of the arm, substantially as described.

4. In a lock the combination with a sliding bolt, and knobs having push-buttons, of a pair of bell-crank levers fulcrumed on the casing and extending in opposite directions and having their opposite ends arranged to be engaged by the push-buttons, and links connecting the bell-crank levers with the sliding bolt, substantially as described.

5. In a lock, the combination of a casing, a sliding bolt provided with rods guided on the casing, springs disposed on the rods and engaging the bolt, links connected with the bolt and having slots, levers fulcrumed on the casing and having pivots arranged in the slots of the links said slots being adapted to permit the bolt to be operated independently of the levers, inner and outer knobs provided with push-buttons engaging the levers, and a key-operated arm connected with one of the rods, substantially as described.

6. In a lock, the combination of a casing, a sliding bolt, a lever connected with the bolt and provided with a slot, a push-button for operating the lever, and a rock-shaft having inner and outer arms, the inner arm being arranged to engage the slot of the lever, substantially as described.

7. In a lock, the combination of a casing, a sliding bolt, a lever connected with the bolt, a rod or shaft having inner and outer arms, the inner arm being arranged to engage the lever, and means for actuating the lever, substantially as described.

8. In a lock, the combination of a casing, a sliding bolt, a lever connected with the bolt and provided with a slot, a fixed knob having a slotted shank receiving the lever adjacent to the slot thereof, and a rock-shaft provided with an arm arranged to engage the slot, said arm being interposed between the shank of the knob and the lever when in engagement with the latter, substantially as described.

9. In a lock, the combination of a casing, a sliding bolt, bolt-actuating mechanism, a rod or shaft provided with an inner arm arranged to engage the bolt-actuating mechanism, and an automatically-operated spring-actuated catch provided with beveled flanges arranged to engage the arm of the rod or shaft to hold the latter in either of its positions, substantially as described.

10. In a lock, the combination of a casing, a sliding bolt having a rod, a spring disposed on the rod, bolt-actuating mechanism, a shaft provided with an inner arm arranged to engage the bolt-actuating mechanism, and a catch mounted on the rod and engaged by the spring and provided with means for engaging the arm of the shaft, substantially as described.

11. In a lock, the combination of a casing, a sliding bolt having a rod, a rectangular guide receiving the rod, bolt-actuating mechanism, a shaft provided with an arm arranged to engage the bolt-actuating mechanism, and a locking device mounted on the rod and engaged by the spring and provided with beveled flanges arranged at right angles and supported by the rectangular guide and arranged to be engaged by the arm of the shaft, substantially as described.

12. In a lock, the combination of a casing, a sliding bolt having a rod, a guide receiving the rod, bolt-actuating mechanisn, a shaft having an arm arranged to engage the bolt-actuating mechanism, a spring disposed on the rod, and a catch supported by the guide and engaged by the spring and provided with beveled portions arranged in the path of the arm of the shaft, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WALTER S. OBERHOLTZER.

Witnesses:

WM. H. WREN,

L. JOE KOCH.