(No Model.) 2 Sheets—Sheet 1.

H. W. SWEIGART & W. S. OBERHOLTZER.

LOCK.

No. 541,454. Patented June 18, 1895.

FIG. 1.

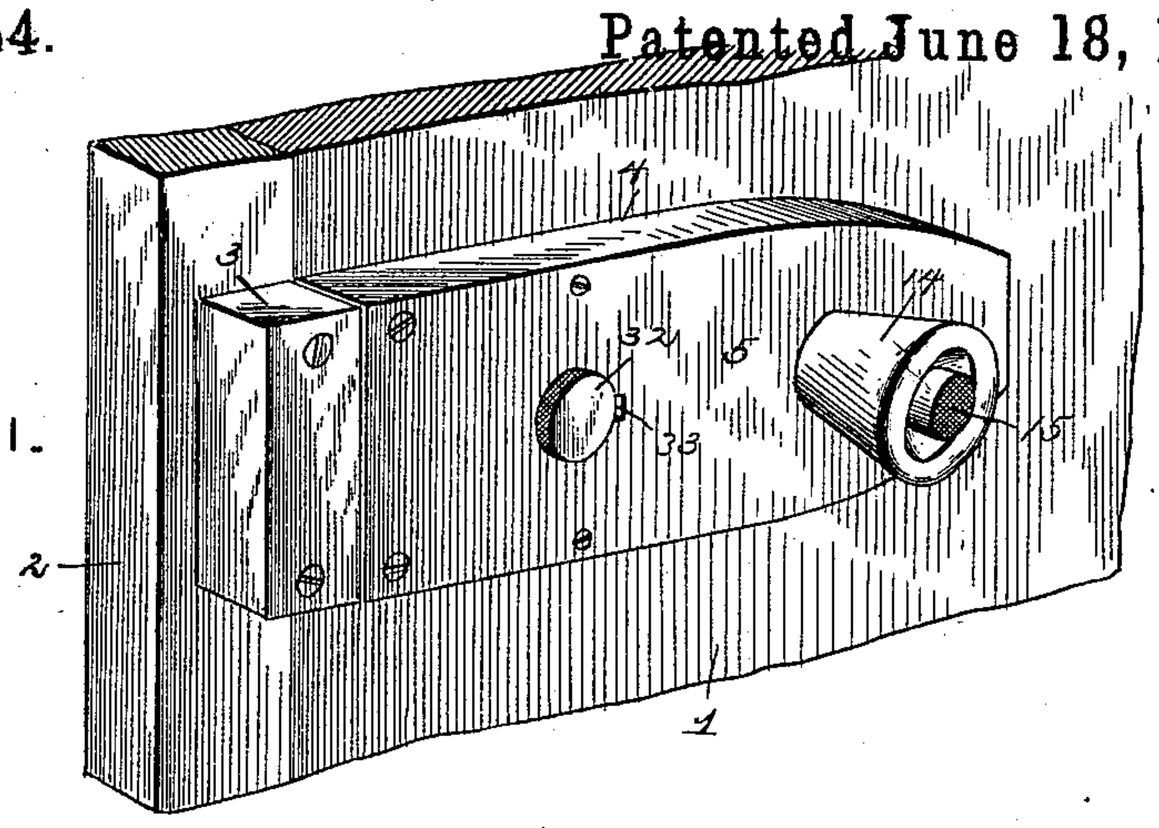


FIG. 2.

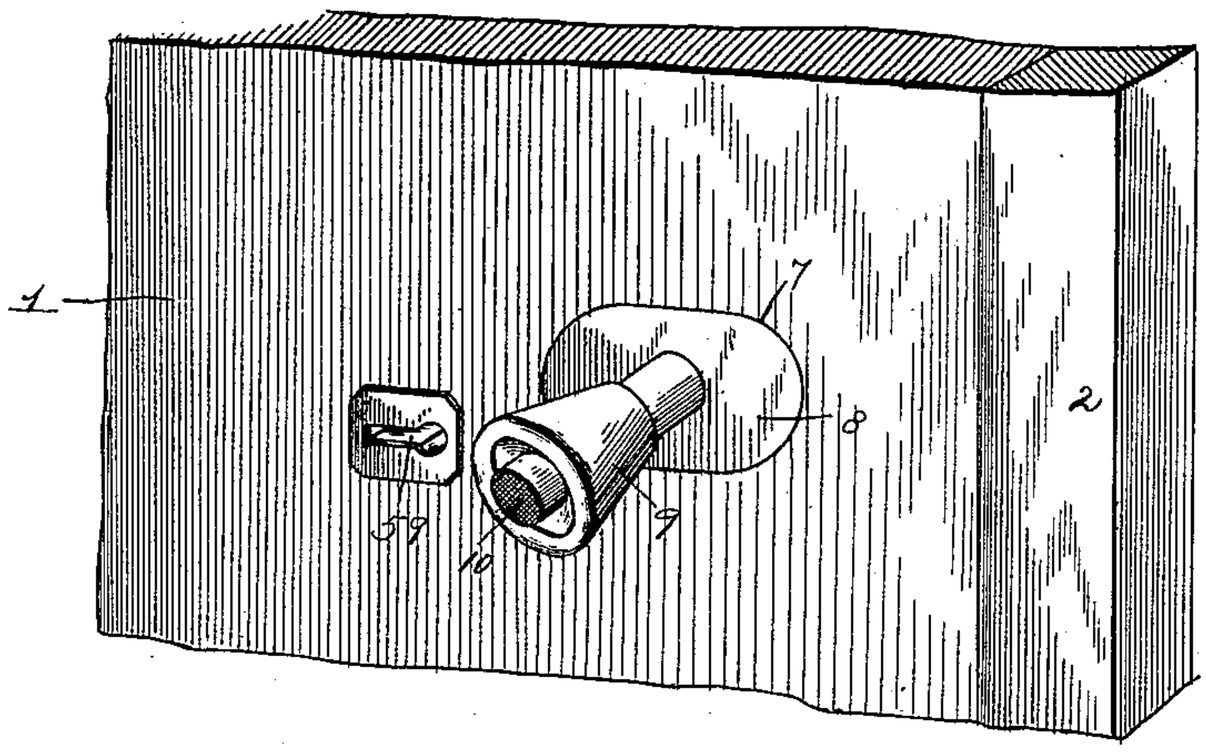
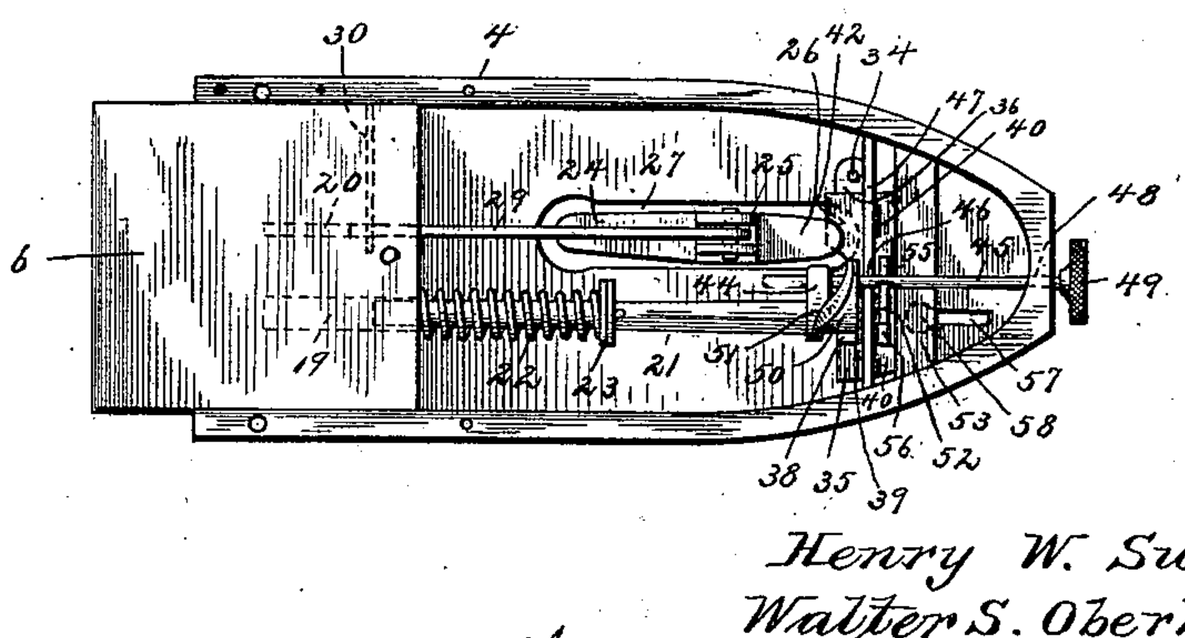


FIG. 3.



Witnesses
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D. R. Devens.

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(No Model.) 2 Sheets—Sheet 2.

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LOCK.

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FIG. 4.

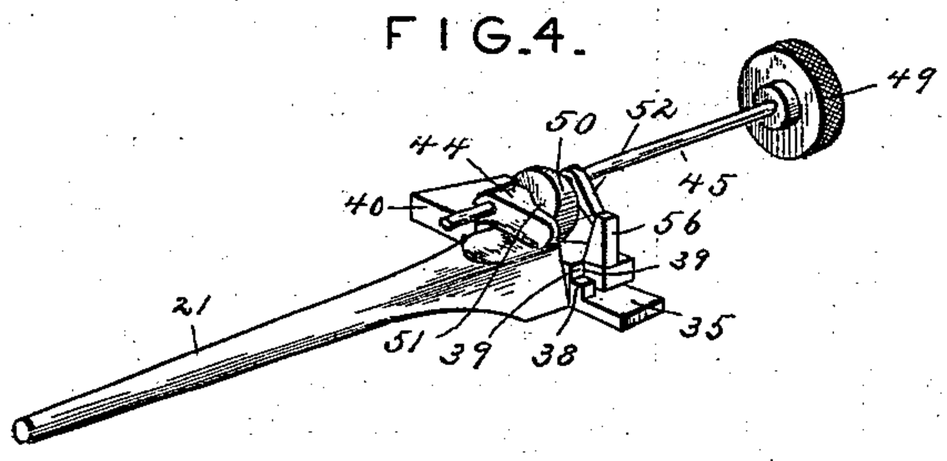


FIG. 5.

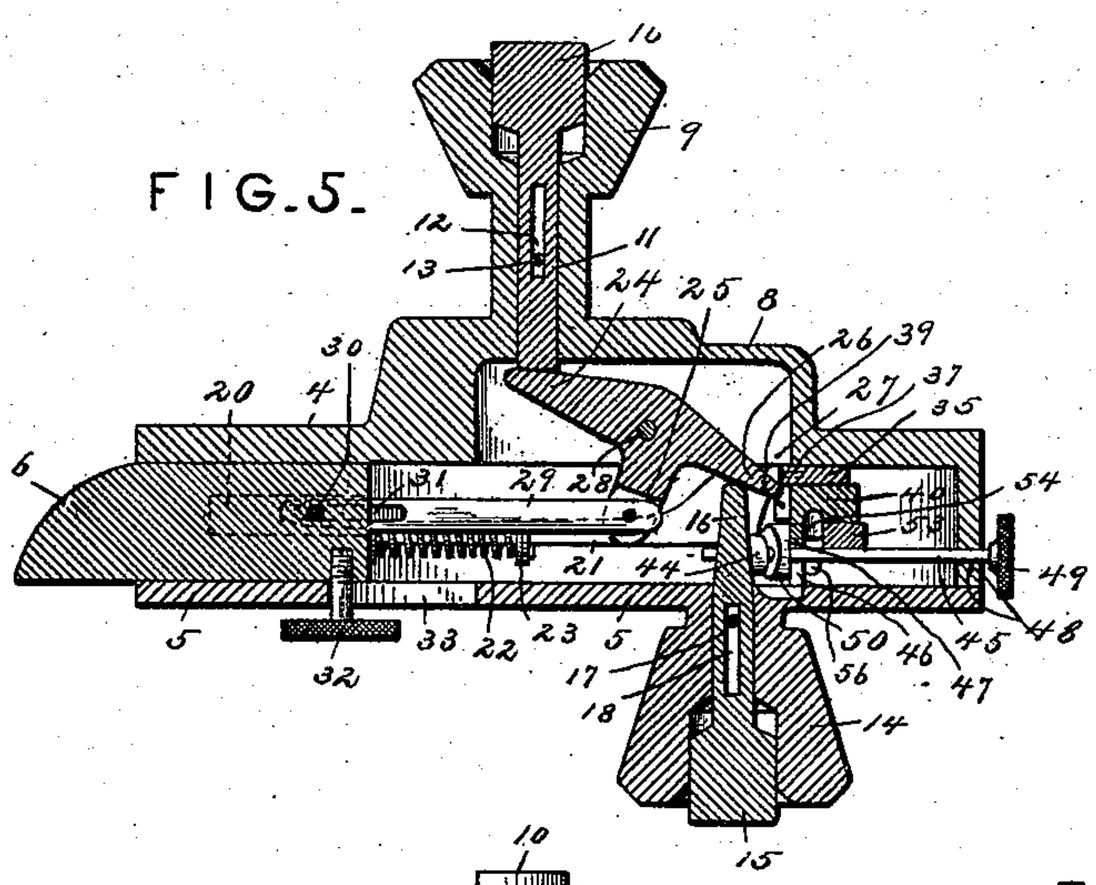


FIG. 6.

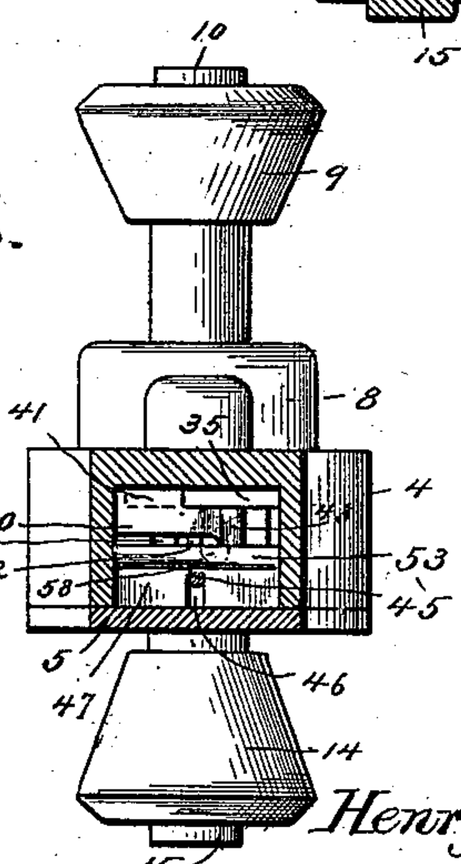


FIG. 7.

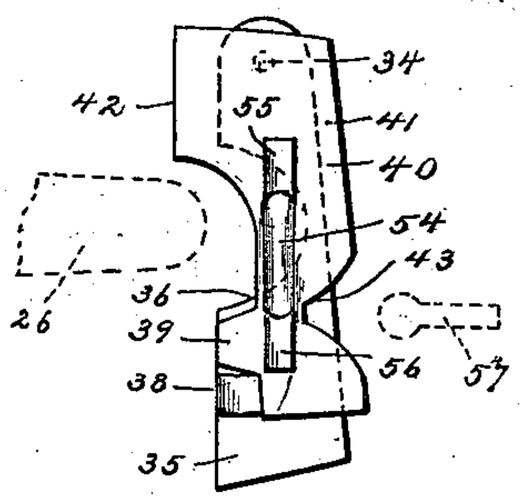
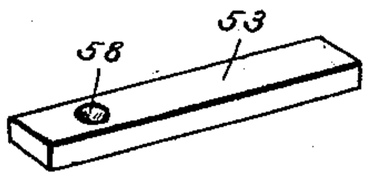


FIG. 8.



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UNITED STATES PATENT OFFICE.

HENRY W. SWEIGART, OF LEWISTOWN, AND WALTER S. OBERHOLTZER, OF GETTYSBURG, PENNSYLVANIA.

LOCK.

SPECIFICATION forming part of Letters Patent No. 541,454, dated June 18, 1895.

Application filed December 22, 1894. Serial No. 532,722. (No model.)

To all whom it may concern:

Be it known that we, HENRY W. SWEIGART, residing at Lewistown, in the county of Mifflin, and WALTER S. OBERHOLTZER, residing at Gettysburg, in the county of Adams, State of Pennsylvania, citizens of the United States, have invented a new and useful Lock, of which the following is a specification.

The object of this invention is principally to provide a lock which will be capable of use as a latch or temporary securing device, when it may be desired, or one which will be convertible, and which may be so made to operate as a lock or as a latch as the case may be.

A second object is to provide such a device with push-buttons to effect the operation thereof, as distinguished from rotating spindles and sliding buttons.

To this end the invention consists in certain novel features and details of construction and arrangement of parts as hereinafter fully described, illustrated in the drawings and finally embodied in the claims.

In the drawings, Figure 1 represents a perspective view of the inside of a door and showing our improvements applied thereto; Fig. 2, a similar view of the opposite side of a door; Fig. 3, a plan view of a lock constructed after the manner of our invention and having the inner side plate removed; Fig. 4, a perspective view of the mechanism for locking the bell-crank, the same being shown as in operative adjustment, but detached from the casing of the lock; Fig. 5, a section taken horizontally through the push-buttons; Fig. 6, a view looking into the rear end of the casing and showing the said rear end broken away, so as to illustrate, further, the means for locking the bell-crank; Fig. 7, a detail plan view of the swinging and tumbler plates, showing them detached; Fig. 8, a detail perspective of one of the brace-bars of our invention.

The reference numeral 1 indicates the door to which our improvements are shown as applied, and 2 the frame thereof, which carries the keeper 3, as is usual.

4 indicates the casing of the lock, which is formed of cast metal, and which has a removable side plate 5, secured over its otherwise open side by means of screws or other suitable fastening devices. The outer end of the casing 4 is open, so as to permit the bolt 6 to pass freely in and out of the casing, as the operation of the lock may require.

Formed in the door 1 is the opening 7, through which the projection 8 of the outer side of the casing projects, and this projection has formed integral therewith, or rigidly secured to it, the tube 9. The outer end of this tube is enlarged to form a suitable head. Operating within the tube is the button 10, which is reciprocally mounted in place, and which has its inner end reduced to form a projection 11, which extends into the interior of the casing 4, and which is adapted to engage the bell-crank thereof, as will be more fully described hereinafter.

The projection 11 is formed with a longitudinal slot 12, through which the pin 13 passes, said pin being rigidly secured within the tube 9, so as to limit the movements of the projection 11 and consequently the button 10. The side plate 5 is also provided with an enlarged tube 14, and this projects outwardly from the side plate and carries the button 15. The inner end of this button is extended to form a projected portion 16, which is also adapted to engage with the bell-crank of the casing. Located within the tube 14 is the cross-pin 17, which fits in a longitudinal slot 18 in the button, and whereby the button is held in place so as to be capable of a limited movement.

The bolt 6 is rectangular in cross-section and is formed with two longitudinal passages 19 and 20, extending through its inner portion. The passage 19 is adapted for the reception of the guide-rod 21, which is slidably mounted therein and which has an expansive spiral spring 22 embracing it and bearing against the inner side of the bolt, so as to give the same a tendency outward and toward the keeper 3.

23 indicates a collar or washer, which is mounted on the guide-rod 21, and which has the inner extremity of the spring 22 bearing against it, all of which is for a purpose that will be understood.

The bell-crank comprises three arms, 24, 25, and 26. Arms 24 and 26 are longitudinally aligned with each other, while the arm 25 is extended at right angles from the arms 24 and 26, or perpendicularly. The bell-crank is located within a cavity 27, formed in the

projection 8, and is capable of swinging therein, as may be seen by reference to the drawings. The arm 24 projects into the reach of the projection 11 of the button 10, so that when said button is pushed in the arm will be engaged and the bell-crank oscillated accordingly.

28 indicates the fulcruming pin of the bell-crank, and this is passed through the projection 8, and serves to pivotally mount the same.

The arm 25 of the bell-crank is bifurcated and has a pin passed through the bifurcated portion, which pin is pivotally connected to the link 29, said link being passed between the bifurcations of the arm 25. By these means the link 29 is pivotally connected to the bell-crank, and the link extends outwardly and into the passage 20 of the bolt 6, where the link is formed with a slot 31 re-receiving the pin 30. By these means the link is connected to the bolt so as to be capable of a limited movement thereon, all of which will be understood. Thus it will be seen that upon the oscillation of the bell-crank the link 29 will be moved accordingly, and the bolt 6 operated similarly.

The button 15, and its projected portion 16 are arranged so that they will be capable of engagement with the arm 26 of the bell-crank, so that upon pushing the button inward the bell-crank will be oscillated.

It will be observed that the bell-crank will be oscillated in the same direction no matter what button is pushed. This is so owing to the fact that each button engages the bell-crank on opposite sides.

32 indicates a button, which is fixed to the bolt 6, and which has a head thereon projected through a longitudinally-elongated slot 33 in the side plate 5 of the casing. By these means the bolt 6 may be moved by direct application of power through the medium of the button 32. This button projects to the inside of the door and is not accessible from the outside.

34 indicates a stud, which projects from the inner side plate of the casing 4, and which has the swinging plate 35 mounted on it so as to be capable of swinging freely over the rear end of the cavity 27. The swinging plate 35 is formed with a notch 36 therein, and this notch is made to align with the rear end of the cavity 27 so that the said cavity will not be obstructed by the plate 35. Just below the notch 36 the plate 35 is formed with a transverse passage, in which the pin 37, of the enlarged rear end of the guide-rod 21, extends, and whereby the guide-rod and swinging plate are pivotally connected to each other. Formed integral with the plate 35 is the outwardly-projecting lug 38, and this lug is adapted to co-operate with the lug 39 of the tumbler-plate 40.

The tumbler-plate 40 comprises a transversely-extending flange 41, adapted to lie against the rear side of the plate 35, and to guide the tumbler-plate in its movements on said plate 35, which movements are performed in the operation of the tumbler-plate, all of which will be described hereinafter.

Formed on the front side of the tumbler-plate, and near its upper end, is a shoulder 42, which is adapted to lie, at times, over the notch 36 of the plate 35, and at other times to move inwardly over said notch. By these means the arm 26, of the bell-crank, may be engaged and disengaged, or, rather, held or released, as the conditions of the operation may require, and as will be better explained hereinafter.

Formed in the rear side of the tumbler-plate 40, and at the lower portion thereof, is the notch 43, which is provided to receive the wing of a key, so that the tumbler-plate may be moved vertically and as explained. Thus, as the wing of a key engages the rear side of the plate 35 and tumbler-plate 40, the said wing will fall into the notch 43, and as it swings will move the plate 35 forwardly, so as to disengage lugs 38 and 39, and thus permit the plate 40 to move vertically. As the key disengages the plate 35, the said plate will swing back, owing to the influence of the spring 22, which will place the lug 38 below the lug 39 and prevent the downward movement of the tumbler-plate 40.

Formed integral with, or rigidly secured to, the enlarged rear end of the guide-rod 21, is the upwardly-projected portion 44, which is perforated in a line longitudinal with the guide-rod, and which has the spindle 45 arranged within said perforation, so as to be rotatable therein. The spindle 45 is journaled within the open box 46, of the cross-bar 47, and in the bearing-opening 48, of the rear end of the casing. The rear extremity of the spindle 45 is provided with a milled head 49, whereby the spindle is rotated.

Fixed to the spindle 45, at a point between the portion 44 of the guide-rod 21 and the cross-bar 47, is the cam 50, which is arranged to operate against the beveled face 51 of the part 44 of the guide-rod 21, so as to push said guide-rod outwardly and against the tendency of the spring 22. This operation will result in a corresponding movement of the swinging plate 35, the purpose of which will be hereinafter explained.

52 indicates an arm, which is fixed to the spindle 45, and which is located directly rearward of the bar 47, a second bar, 53, being provided and passed across the casing at the interior and just outward from the spindle 45. This arm operates in a groove 54, formed in the outer side of the plate 40; and these grooves terminate in the upwardly-projecting arms 55 and 56. These arms are two in number and are slightly grooved on their adjacent faces so that the arm 52 of the spindle 45 may have a slight connection therewith. Thus, as the spindle 45 is oscillated or rocked, the arm 52 will be caused to stroke through the groove 54, and to alternately engage the out-

wardly-projecting arms 55 and 56, thus causing the tumbler-plate 40 to be reciprocated vertically, according to the direction in which the spindle 45 is being revolved.

Formed in the outer side of the casing 4 is the key-hole 57, which is provided to permit the entry of a key, and the bar 53 has formed on its under side a recess 58, which is in alignment with the key-hole 57, and which is adapted to receive and to hold the bar of the key in the operation of the same. This places the key so that its wing will be capable of engaging the plate 35, and the notch 43 of the plate 40, thus causing the said plates to be moved as has been described hereinbefore.

The door 1 may be provided with an opening 59, matching with the key-hole 57 and through which a key may be inserted on its way to the casing 4.

Thus it will be seen that two separate and independent means are provided for reciprocating the plate 40, and for moving its shoulder 42 in the path of the arm 26 of the bell-crank, so as to lock the same. One of these means, and the one which is designed for operation from the inside of the door, is the spindle 45, which, upon rocking the same, moves the cam 50 into engagement with the portion 44 of the guide-rod 21, and reciprocates said rod. This moves the swinging plate 35 toward the bolt 6 and clears the lug 38 from engagement with the lug 39. Simultaneously with this operation of the cam 50 the arm 52 swings in the arc of a circle and strokes through the groove 54, so as to engage the arm 56, of the plate 40, and upon said engagement to move the plate downwardly, so as to cause the lug 39 thereof to be located below the lug 38 and be in engagement therewith. This moves the shoulder 42 in the path of the arm 26 of the bell-crank and locks the same so as to make it impossible for it to be reciprocated, which reciprocation is necessary to the inward movement of the bolt, since the bell-crank is connected to the bolt by means of the link 29.

To release the bell-crank by the above-described means, the spindle 45 should be rocked in the opposite direction, whereupon the cam 50 will again move the guide-rod 21 outwardly and the arm 52 will return the plate 40 to its normal position, so as to disengage the shoulder 42 and arm 26 of the bell-crank. The bell-crank will now be free to swing and to draw the bolt 6 back in the operation of the lock.

It will be observed that at each operation of the spindle 45 the guide-rod 21 performs a complete round trip, or, in other words, is pushed outwardly by the positive operation of the cam, and is returned by the expansive influence of the spring 22.

The second means for operating the plates 35 and 40 consists of the key, which is adapted to be passed through the openings 59 and 57, and to have its bar or stem located in the recess 58, so that the wing will be capable, upon the operation of the key, of engaging the rear sides of the plates 35 and 40. As the key engages the plate 35 it will push said plate toward the bolt 6, thus causing the guide-rod 21 to be reciprocated in the same direction. This swinging of the plate 35 will disengage the lugs 38 and 39; and simultaneously with the swinging of the plate 35, under the influence of the key aforesaid, the plate 40 will be moved downwardly, so as to place the shoulder 42 against the arm 26 of the bell-crank, and so as to place the lug 39 below the lug 38.

It will be understood that when the plate 40 has performed its downward movement, the spring 22 will operate to return the guide-rod 21, and, consequently, the plate 35, which will cause the lug 38 to move back in vertical alignment with the lug 39 and lock the plate 40. The reverse of the operation is performed by merely reversing the direction in which the key is moved, as was the case in the operation of the spindle 45, and as will be understood.

The operation of the mechanism for locking the bell-crank, and indirectly the bolt 6, being now understood, it will be easy to understand the direct operation of the bolt 6, which is performed when the bell-crank is free to swing, and by pushing the buttons 15 and 10 into engagement with the same. This will rock the bell-crank so as to invariably move the arm 25 outwardly, or toward the rear of the casing, and consequently draw the link 29 in a similar direction and move the bolt 6 inward. The bolt is pushed upward and into engagement with the keeper 3 by means of the spring 22, all of which will be understood. Thus we have a lock the bolt of which is normally ready to engage the keeper, and which is made to disengage it by pushing a button inwardly, which will result in the application of positive pressure tending to overcome the normal tendency of the bolt to project outward.

The spindle 45, with its head 49, being on the inner side of the door, is adapted to be the means for locking the door from the inside, as has been explained; while the key-hole 57, and of course the associated key, is the means for locking the device from the outside. When the bell-crank locking devices are in their passive condition the bell-crank will be free to move, as has been explained, and this condition will permit the lock to be freely operated, simply by pressing the buttons 15 and 10 inwardly. The stud 32 is provided as an auxiliary means for operating the bolt 6, and the lock may or may not have this attachment, as the manufacturer or user may prefer. It is entirely adjunctive to the invention, and it is not regarded as preferred against the buttons 10 and 15. It is illustrated and described, however, to show that such an arrangement is possible in our invention.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having described the invention, we claim—

1. In a lock, a bolt having a longitudinal passage and slidably mounted upon and in combination with a guide rod, an actuating spring bearing against said bolt, a bell-crank having an arm in connection with the bolt, and a button bearing against a second arm of the bell-crank and capable of oscillating the same so as to draw the bolt inwardly, substantially as described.

2. In a lock, the combination of a bolt having a longitudinal passage therein, a guide-rod arranged within the passage so that the bolt will be capable of movement thereon, an expansive spring surrounding the guide-rod and interposed between a stop on the guide-rod and the bolt so as to press the latter outward, a bell-crank having a connection with the bolt, and a button in engagement with the bell-crank and capable of rocking the same, substantially as described.

3. In a lock, the combination of a bolt having a spring tendency outward, a bell-crank having a connection with the bolt and capable of being rocked so as to draw the same inwardly, and means for locking the bell-crank so as to prevent the operation of the same, substantially as described.

4. In a lock, the combination of a bolt having a spring tendency outward, a bell-crank having connection therewith and capable of being rocked so as to draw the bolt inwardly, a tumbler-plate capable of reciprocating so as to engage and disengage the bell-crank and so as to lock and unlock the same, and means for reciprocating the tumbler-plate, substantially as described.

5. In a lock, the combination of a bolt having a normal tendency outward, a bell-crank connected to the bolt and capable of being rocked so as to draw the bolt inwardly, a tumbler-plate capable of being reciprocated so as to engage and disengage the bell-crank and so as to lock and unlock the same, a swinging plate mounted adjacent to the tumbler-plate and capable of locking the same in position, the swinging plate being also capable of moving to momentarily release the tumbler-plate, and means for operating the tumbler and swinging plates, substantially as described.

6. In a lock, the combination of a bolt having a normal tendency outward, a bell-crank connected to the bolt and capable of being rocked to draw the same inwardly, a tumbler-plate capable of reciprocating to engage and disengage the bell-crank and to lock and unlock the same, the tumbler-plate having a lug thereon, a swinging plate mounted adjacent to the tumbler-plate and also having a lug capable of engaging with the lug on the tumbler-plate, whereby the latter plate may be locked, the swinging plate being capable of operating to momentarily release the tumbler-plate, and means for operating the swinging and tumbler plates, substantially as described.

7. In a lock, the combination of a bolt, a guide-bar slidably connected therewith, an expansive spring embracing the guide-bar and having one end connected with the same and the other end with the bolt, a bell-crank having a connection with the bolt and capable of being rocked so as to draw the same inwardly, and means for locking the bell-crank so as to be incapable of operation, said means having the guide-rod directly connected therewith, so that the expansive spring of the same will serve to give them a normal tendency, substantially as described.

8. In a lock, the combination of a bolt, a guide-bar slidably connected therewith, an expansive spring embracing the guide-bar and connected to the same and to the bolt, a bell-crank having a connection with the bolt and capable of being rocked so as to move the bolt inward, a tumbler-plate capable of reciprocating so as to engage and disengage the bell-crank and so as to lock and unlock the same, a swinging plate mounted adjacent to the tumbler-plate and capable of locking the same and of swinging to momentarily release the tumbler-plate, the guide-rod being connected to said swinging plate so that the spring of the said rod will be capable of giving the swinging plate a tendency, and means for operating the swinging and tumbler plates, substantially as described.

9. In a lock, the combination of a bolt, a guide-rod slidably connected thereto, an expansive spring embracing the guide-rod and having connection with the same and with the bolt, a bell-crank connected to the bolt and capable of being rocked to move the same inwardly, a tumbler-plate capable of being reciprocated to engage and disengage the bell-crank and to lock and unlock the same, a swinging plate mounted adjacent to the tumbler-plate and capable of locking the same and of swinging to momentarily release it, the guide-rod being connected to the swinging plate so that the influence of the spring on the guide-rod will be transmitted to the swinging plate, a spindle, a cam thereon capable of engaging the guide-rod and of moving the same and consequently the swinging plate, whereby the latter is disengaged from the tumbler-plate, and an arm on the spindle and capable of engaging the tumbler-plate and of reciprocating the same, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

HENRY W. SWEIGART.
WALTER S. OBERHOLTZER.

Witnesses:
GEO. G. FRYSINGER,
T. B. REED.