

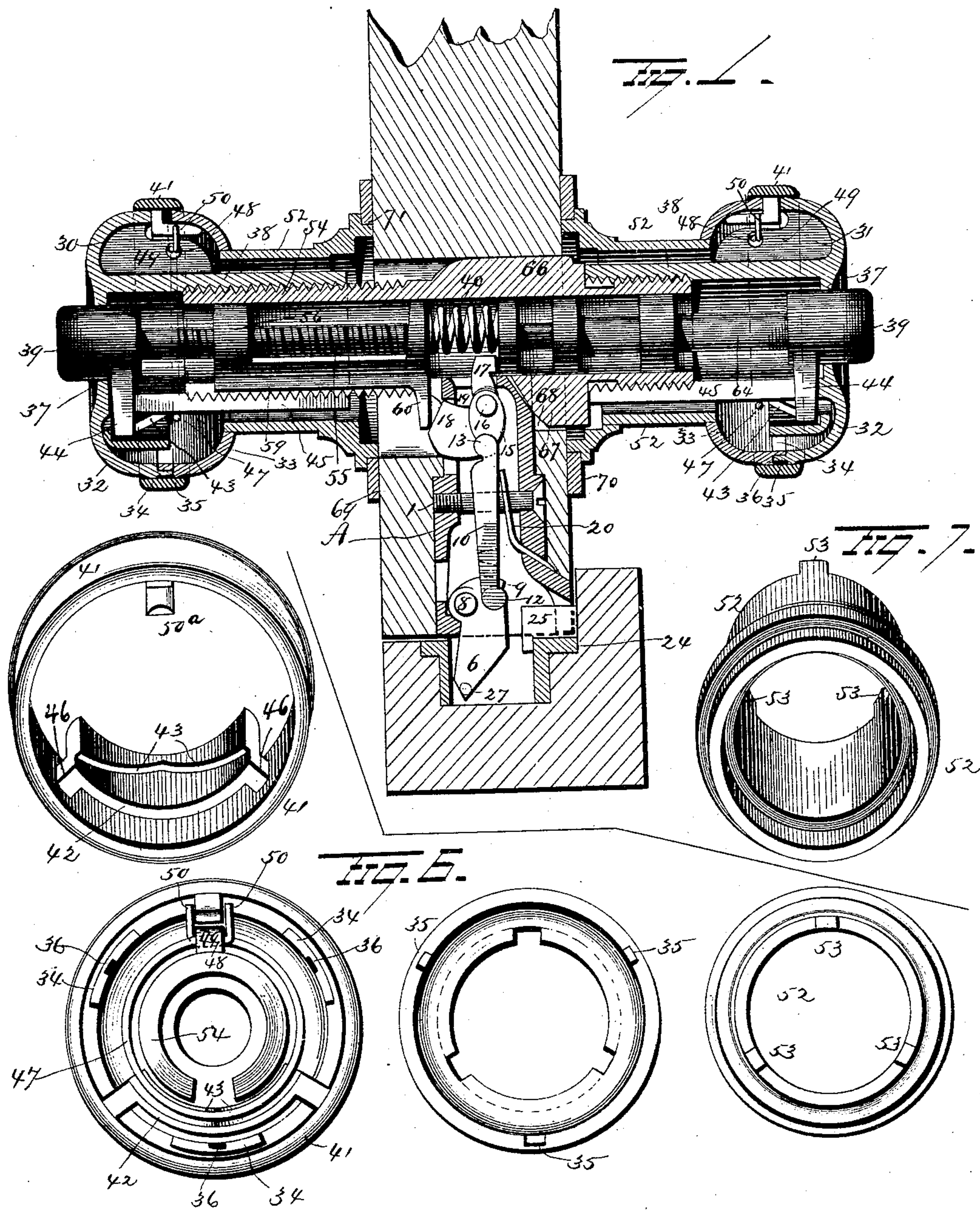
(Model.)

3 Sheets—Sheet 1.

G. H. VAN WINKLE.  
LATCH.

No. 452,738.

Patented May 19, 1891.



Witnesses  
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C. J. Downing,

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(Model.)

3 Sheets—Sheet 2.

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FIG. 2.

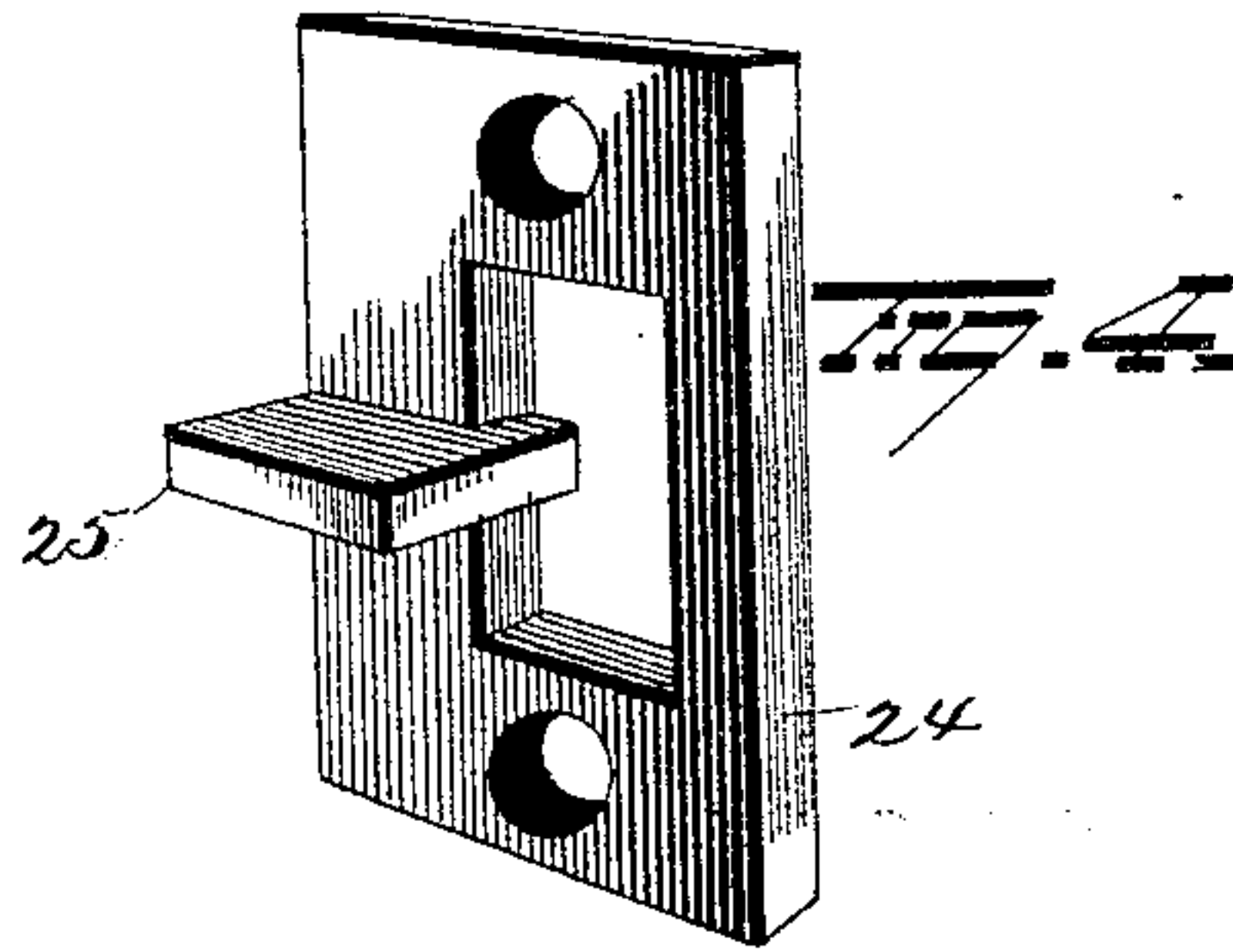
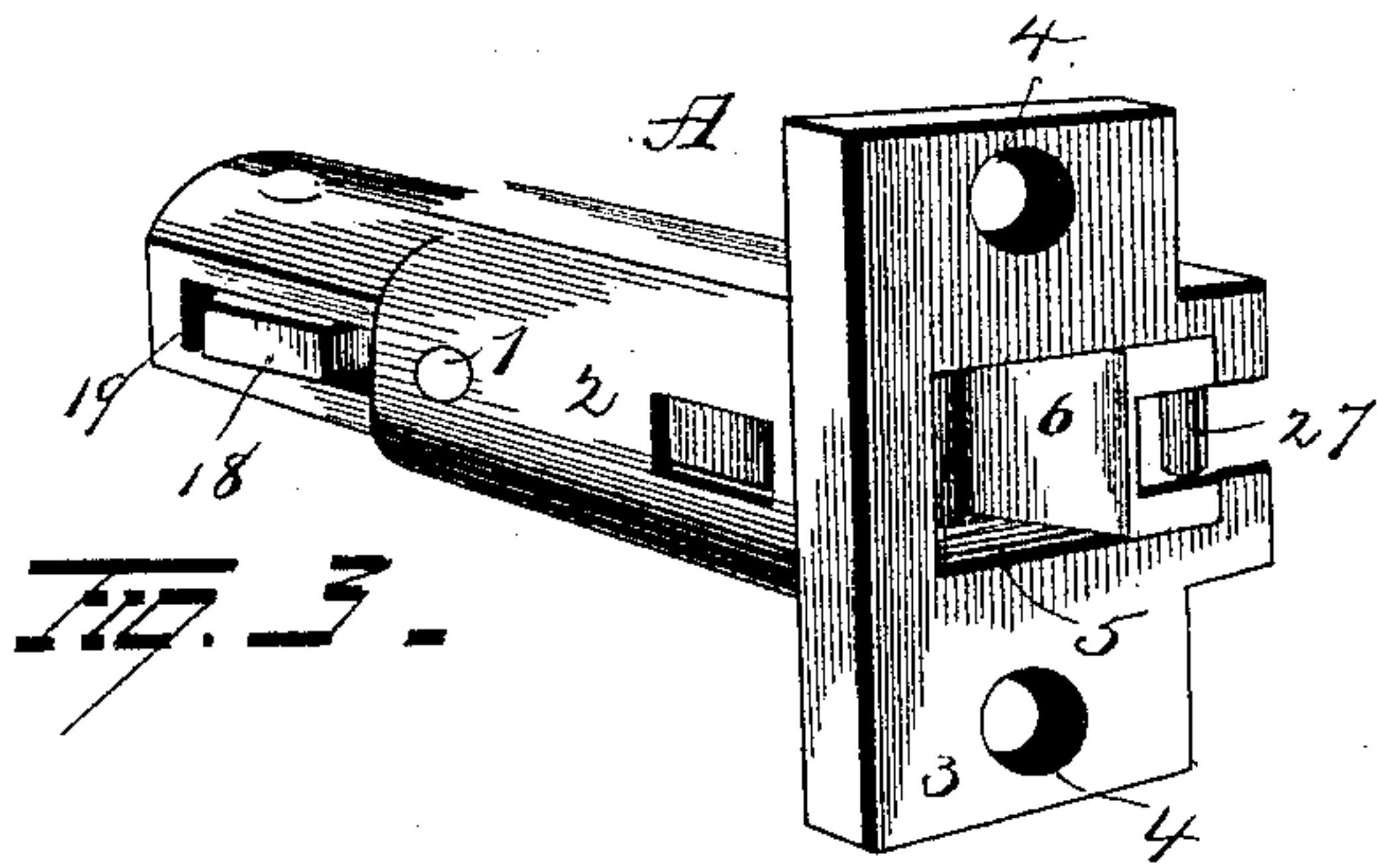
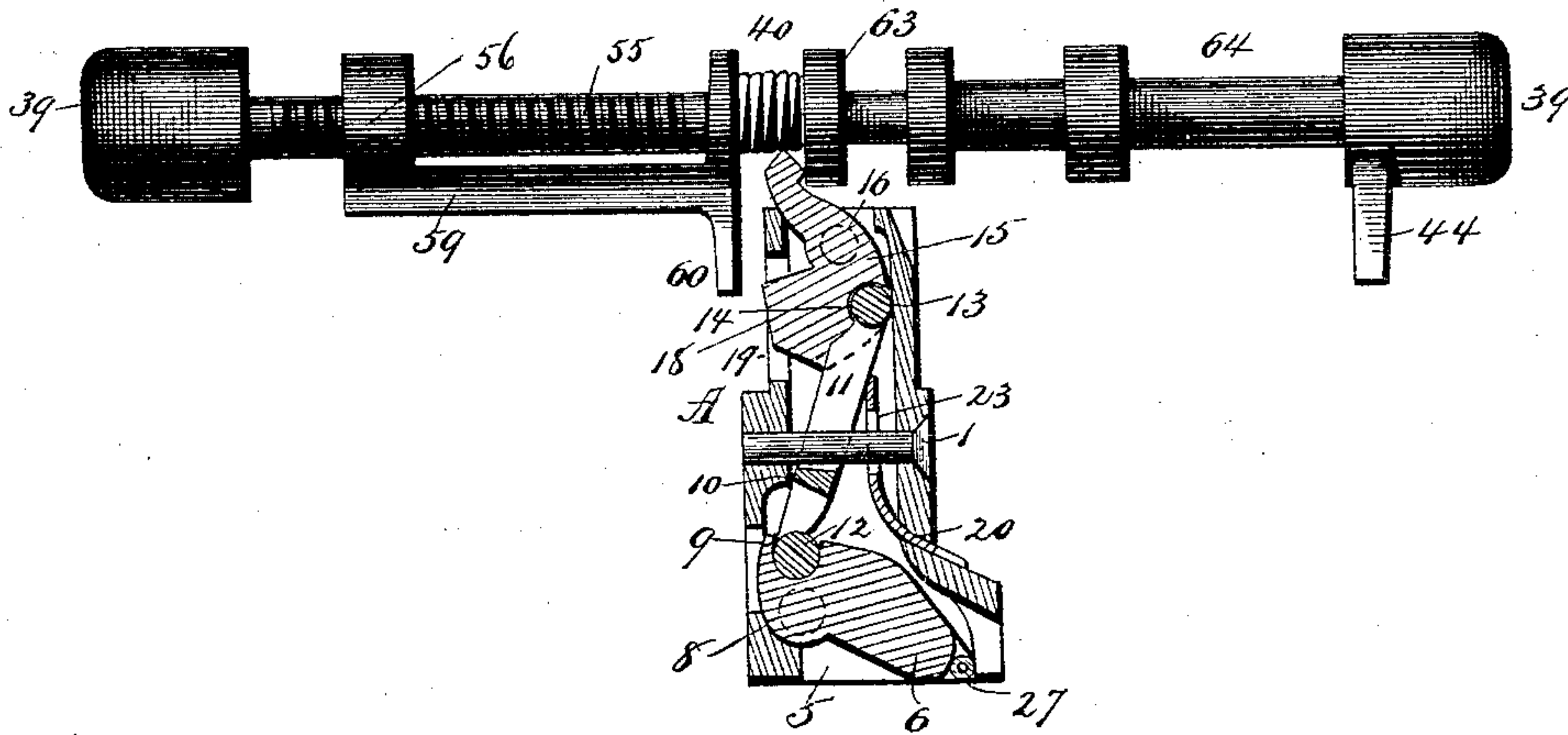
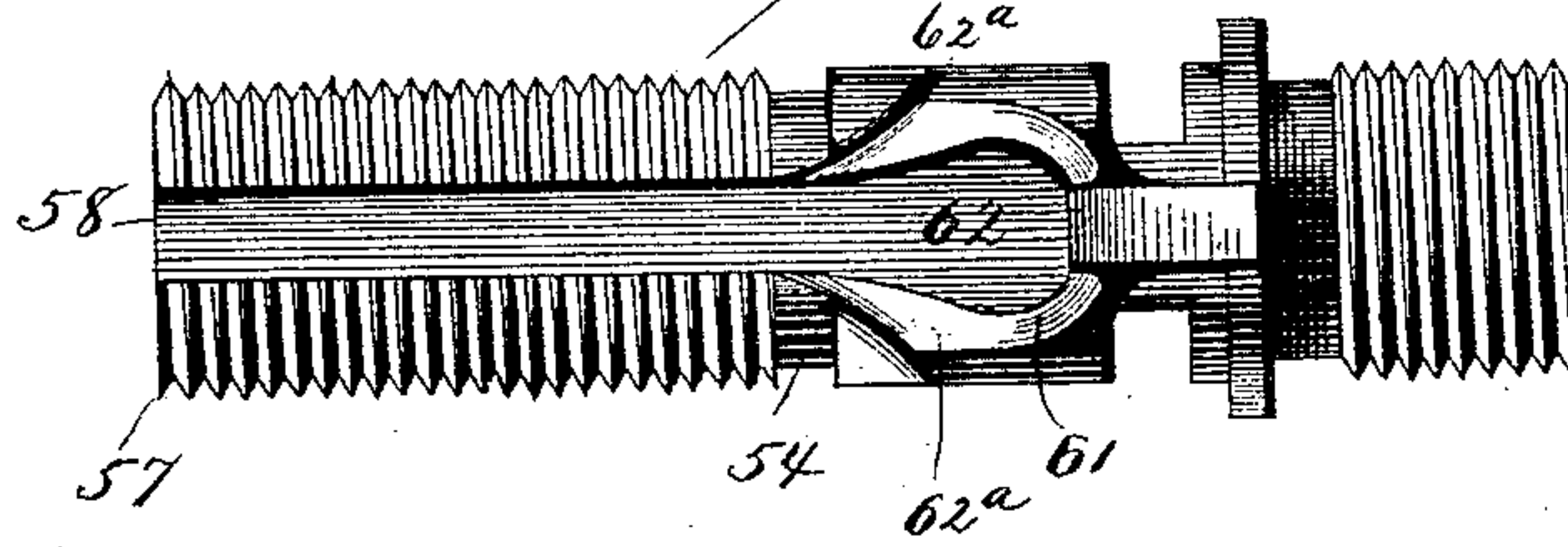


FIG. 5.



Witnesses

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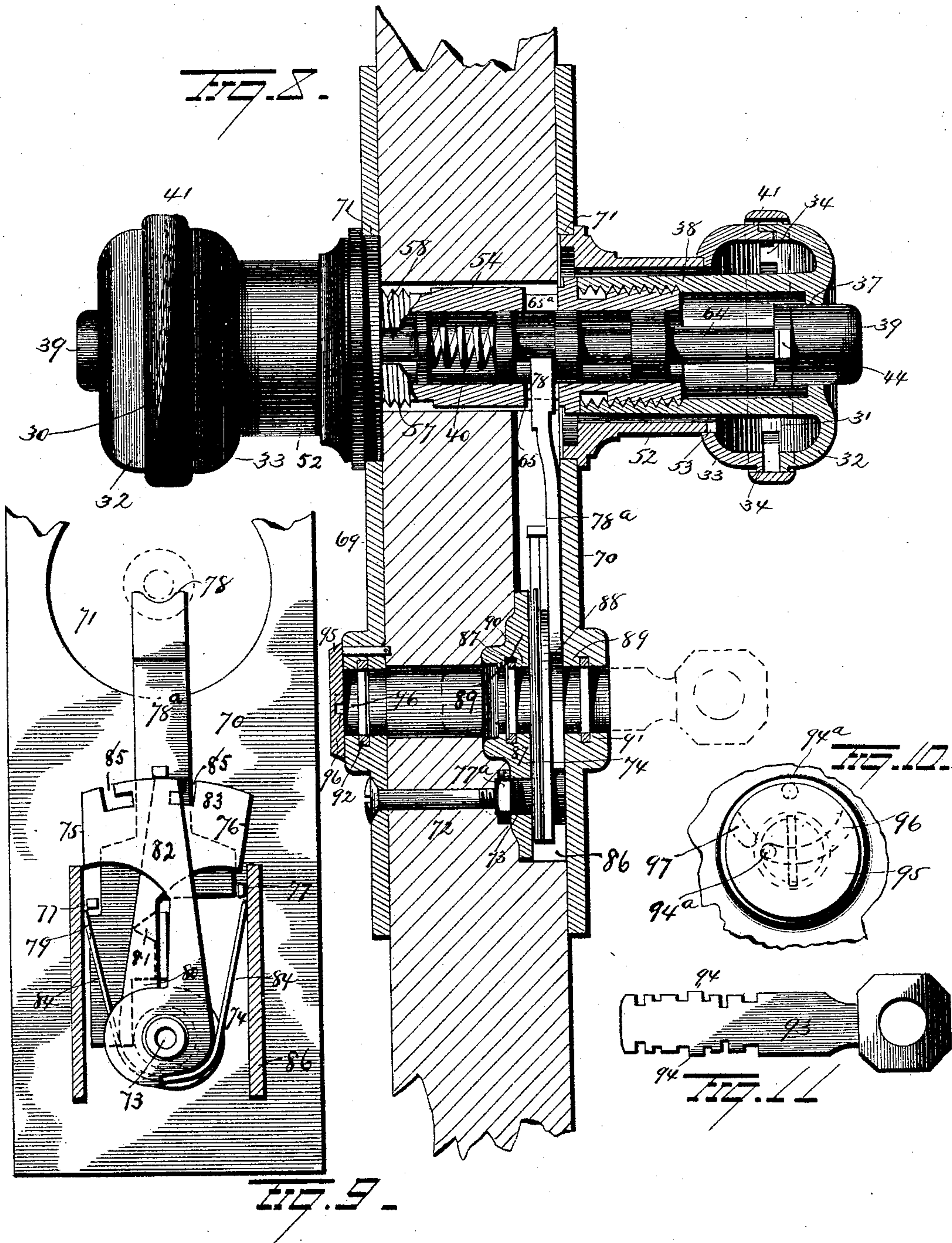
(Model.)

3 Sheets—Sheet 3.

G. H. VAN WINKLE.  
LATCH.

No. 452,738.

Patented May 19, 1891.



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# UNITED STATES PATENT OFFICE.

GEORGE H. VAN WINKLE, OF HORNELLSVILLE, ASSIGNOR OF ONE-HALF TO  
JOHN A. STEWART AND JAMES G. BAKER, OF ROCHESTER, NEW YORK.

## LATCH.

SPECIFICATION forming part of Letters Patent No. 452,738, dated May 19, 1891.

Application filed September 13, 1889. Serial No. 323,846. (Model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. VAN WINKLE, a citizen of Hornellsville, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Latches and 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 combined locks and latches, the primary object being to provide an absolutely burglar-proof lock capable of being secured from either the inside or outside, so that the knob upon the outside is made fast, but the inside knob is so constructed that the door may be released from this side by simply pushing on the knob or turning its periphery.

Secondary objects are as follows: to furnish a neat durable lock and latch of easy and automatic adaptability to doors of different thicknesses and requiring only ordinary skill and ingenuity in affixing it to doors; to furnish a lock of such construction that the key will be just as effectual in accomplishing its work either edge up, and having its various wards so arranged that a different set operates upon the tumblers when inserted from the inside than from the outside, thus admitting of innumerable varieties of keys being made without a great deal of study or unusual complicity, and finally to so construct the various parts that the outside knob cannot be removed until the inside one has first been removed, and to provide for holding the key in the inside, so that it cannot be pushed out or turned from the outside.

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

In the accompanying drawings, Figure 1 is a horizontal sectional view through a door and its jamb, showing the internal mechanism with the lock locked. Fig. 2 is a view showing the mechanism unlatched. Fig. 3 is a detached view in perspective of the latch-casing. Fig. 4 is a similar view of the strike-

plate. Fig. 5 is a detached view of the shank 54. Fig. 6 shows the various parts of the knob disassembled. Fig. 7 is a view of one of the knob-roses. Fig. 8 is a vertical section through the door, lock, and escutcheon-plates. Fig. 9 is an interior view of the lock. Fig. 10 is a front view of the key-hole cover, and Fig. 11 is a view of the key.

A represents a two-part cylinder or casing recessed and slotted, as will be described and as the drawings indicate, in order to secure the complete and accurate performance of the functions of the latch. The two parts are secured together by a screw 1, which passes through a countersunk opening in one section and enters a screw-threaded opening in the other section. The section 2 of the casing A is provided with a face-plate 3, the latter having screw-holes 4 4 to receive screws which secure the casing within the mortise formed in the edge of the door, and with a recessed portion 5, in which the latch 6 rests when in a closed position. Semicircular depressions formed in the edge of this section form part bearings for the trunnions of the latch 6 and the operating-lever, and the complement of bearings is made by corresponding depressions in the meeting edge of the other section of the latch-casing.

The latch 6 is shaped substantially as shown in the drawings, and it is pivotally supported by laterally-projecting trunnions 8 8 on the bearings just described. This latch is provided at its extreme inner end with a hook 9, in which the rounded outer end 12 of the connecting-lever 10 is retained. To make room for its length and thickness this hook enters a slot in lever 10 when in one position, and its back enters a slot or recess in the casing when in the opposite position. This construction permits sufficient length and thickness to the hook without weakening the connecting-lever 10 where it joins the latch 6, so that when desiring to close or open the door without a snap the lever 10 is drawn back by means of its connection with the knob-stems. There is no danger of the joint formed by the connection of latch 6 and lever 10 being disconnected. The connecting-lever 10 is provided with a longitudinal slot 11, through



which the screw 1 passes, and is provided at its rear end with a bearing 13, which enters a socket 14 in the operating-lever 15. Said lever is formed substantially as shown and  
 5 pivoted at 16 within the casing A, with its rear end projecting out through the opening in the rear end of the casing to constitute a tripping-toe 17, and also with trip-lug 18 on one side which lies just within the slot 19 in the side of  
 10 and banks against the casing, thus relieving part of the strain on the pivots. A spring-plate 20 is located within the casing, and one end 21 is bifurcated and extends through and bears upon the outside of the casing. This gives a  
 15 broadened bearing and increased length and elasticity to the spring, so that its full strength is preserved. The opposite end of the spring exerts its pressure directly against the connecting-lever 10, forming a yielding fulcrum  
 20 for said lever. A slot 23 in the spring permits the screw to pass. Now it will be seen that when the toe 17 of the lever 15 is moved the length of its stroke or the lug 18 is depressed the end of the lever 10, adjacent to  
 25 the operating-lever 15, will move a short distance in the operation, and consequently cause the outer end of said lever 10 to bear against the portion of the latch 6 behind its trunnions. As soon as the outer end of the  
 30 lever 10 passes behind the center of the trunnions of the pivoted latch the spring 20 forces the lever 10 away from said spring and turns the pivotal latch around to a closed position. When the pivoted latch is in an open or locked  
 35 position, the lever 10, which connects the latch and lever 15, rests in such position as to prevent the possibility of the latch 6 moving to a closed position without first moving the lever 15, and hence when the latch is automati-  
 40 cally opened by coming in contact with the keeper, as will be hereinafter described, it will remain open until the position of the lever 15 is changed so as to admit of the slight backward movement of the lever 10.  
 45 The latch-casing is applied to the door without reference to the thickness of said door by bringing the outer edge of the recessed portion 5 of the face-plate 4 on a line or flush with the outer face of the door. The strike-  
 50 plate 24 (shown in Fig. 4) is secured in position corresponding to the position of the pivoted latch, and is provided preferably at or near its longitudinal center with an outwardly-projecting lug 25 on the strike-plate. The  
 55 lug 25 projects outwardly sufficiently far to allow for the shrinkage of the door and engage or come in contact with the convex back of the pivoted latch 6, and by projecting a short distance into the opening in the plate  
 60 the accidental misplacement of the latch is absolutely prevented. By thus placing the latch-casing in the door, as above described, and providing the strike-plate with lug 25 and the latch-casing with recess 5, the pivoted  
 65 lever can be operated from the lug 25 and no unsightly and otherwise objectionable lug projecting from the heel of the latch is required.

When the door is to be closed, the friction-roller 27 on the toe of the latch engages first with lug 25, and the latch is forced by this  
 70 contact and the movement of the door to turn on its trunnions. When by reason of this circular action of the latch the roller is relieved from contact with the lug, the turning of the latch is continued to that point where the  
 75 spring can force it to a locked position by its convex back sliding against said lug, and thus progressively with the closing action of the door the latch enters the opening in the strike-plate or keeper. Its beveled face hav-  
 80 ing contact with said keeper and thus being entered and secured by the mechanism inclosed in the latch-casing, it is impossible for the reaction caused by slamming the door to take place enough to displace the bolt. 85

When the pivoted latch is in the above-described open or locked position, the lever 10, which connects the latch and lever 15, rests in such a position as to prevent the possibility  
 90 of the latch 6 moving to a closed position until the lever 15 is first moved by the longitudinal action of the knob-stems. The latch thus formed is operated by means of the inside and outside knobs 30 and 31, and a detailed  
 95 description of these knobs and the immediately connected parts will follow. As the two knobs are substantially alike, one only will be described. It consists, substantially, in five separable parts. (Shown in Figs. 6 and  
 100 7). The parts 32 33 are similar in external appearance, and they go together to form the shell of the knob; but they are held slightly separated by spacing-blocks 34 34 in section 32, and to prevent their turning independ-  
 105 ently of each other the points 35 35 enter recesses 36 36, formed in the spacing-blocks. The part 32 has a circular hole 37 in its center, and surrounding the latter and integral with the inner wall of the part is an open sleeve 38.  
 110 The button 39, by means of which the latch is operated, is located within this sleeve 38, its outer end projecting loosely through the hole 37, where it is yieldingly held by the back pressure of a spring 40, interposed between  
 115 the buttons of the two knobs. In addition to this feature of operating the latch by a simple pressure on the buttons, the acquired impulse being to turn the knob in order to open a door, means is provided whereby a turn of  
 120 the knob will also withdraw the catch. To this end a peripheral ring 41 is interposed between the parts 32 33. A web 42 is formed integral with this ring and it lies in the space just outside of the sleeve 38, and is concentric with the inner wall of the ring and the  
 125 outer wall of the sleeve. This web carries a pair of oppositely-extending inclines 43 43, which impinge against the laterally-projecting lug 44 on the side of the button 39, lying in the slot 45 of the sleeve when the ring is  
 130 turned in either direction, thus forcing the button in, just the same as though direct pressure were exerted upon it. The ends 46 46 of the web, where it joins the ring, abut



against the spacing-blocks 34 34, to limit the turns of the ring. To return the ring to its normal position, a spring 47 extends loosely around the sleeve 38 and into the perforation 48 in the feather 49 on the sleeve. The ends 50 50 of the spring are bent outwardly, and the lug 50<sup>a</sup> on the ring lies between these ends, so that as the ring is turned in either direction its movement is counteracted by the spring, the result being to return the ring immediately upon being released to its normal position. The rose 52 fits closely around the sleeve 38, and it is provided with lugs 53 53, which enter openings in the part 33. Its end also extends slightly into the part 33, so that when the parts of the knob are assembled the appearance is as though the parts 32, 33, and 52 were all one integral piece. The sleeve 38 is screw-threaded inside in order to screw onto the hollow shank 54. The button 39 has a screw-threaded shank 55, which screws into the pusher 56. The latter forms an automatically adjustable extension on the end of the shank of the button, and, entering the shank 54, abuts against the spiral spring 40, previously referred to.

A feature of novelty in my present invention exists in this automatic adjustability of parts. It is necessary that two things should be provided for in the construction of a lock of this character—namely, that it should be applicable to doors of different thickness without requiring refitting and other adjustment by those unskilled in handling such parts, and also it is essential that the pusher should retain substantially the same relative position within the shank all the time the inner knob is being screwed onto the latter. By this construction both of these essentials are provided for. The threaded stem is first screwed a short distance into the pusher—say about five turns. The knob then is screwed onto the shank, the stem taking care of itself the rest of the way, as the stem-threads are so made that the pusher recedes just as fast as the knob advances; so the knobs may be quickly applied to doors of any thickness.

The shank 54 is hollow and screw-threaded at each end to receive the knobs. The end 57 is provided with an elongated slot 58, in which the rib 59 and the tripping-lug 60 on the pusher lie and are guided as they are moved back and forth. A recess 61 is made in the side of the shank opposite the inner end of the slot 58 to form a seat 62 for the end of the latch-casing. Two lugs 62<sup>a</sup>, one on either side of the elongated slot and the rib at the end of said slot, forming the walls of said seat, firmly hold the rear end of the latch-casing against lateral motion, and thus the pusher-lug has unobstructed access to the tripping-lug 18, thus constituting an essential feature where the device is to be used on thin doors. The inner toe 17 of the operating-lever 15 extends into the shank in proximity to the end 63 of the stem 64 of the outside knob-button, so that it is operated by

the latter, and the lug 18 is in position to be struck by the lug 60 on the pusher from the other button. Instead of the stem of the outside button being screw-threaded it is not adjustable, but has two collars thereon, which normally lie opposite the opening 65 in the shank to receive the lock-bolt. There is also a like opening 65<sup>a</sup> on the opposite side of the shank, so that the bolt may be received on either right or left hand doors. The shank is provided with ribs 66, which prevent its turning in the hole made for it in the door. The outside knob is first screwed to the shank, where it is held fast by a lug 67, entering a recess 68, so that it cannot be removed from the outside until the inside knob has first been taken off. When the knobs are on, they are essentially rigid, the only movable parts being the buttons and the rings. The spring 40 of course throws the buttons out as far as possible in the knobs, removing the tripping device from the latch mechanism; but the primary use of the spring 40 is to return the outer push-button stem to a position where the lock-bolt can enter when the door is open and the lever 15 could not return it. A pair of oblong escutcheon-plates 69 and 70 are placed on the door. These plates are substantially alike in construction, they having circular openings 71 at their upper ends, through which the shank of the knobs pass and in which the inner ends of the roses of the knobs are fitted. The contact of these roses is sufficient to hold the plates fast to the door, and, as previously stated, the outer knob is held fast always until the inner one is removed, and the appearance is as if the knobs were absolutely rigid. The lower ends are held securely in place by means of a single screw 72, which enters the internally-threaded post 73, projecting inwardly from the outer plate 70, so that the screw is invisible from the outside, and hence the latch and lock are both proof from being picked or broken from the outside when locked. The lock is affixed to the inner face of the outside escutcheon-plate 70. Of this lock 78<sup>a</sup> is the slide-bolt. Portions of the edges 75 and 76 are parallel and confined between the lugs 77 77, while the rear end is guided by the post 73. The outer or free end 78 of the bolt 78<sup>a</sup> is recessed and extends part way across the opening 71 in position to enter the opening 65 in the shank and engage the stem of the outer knob to lock the latter. A shoulder 79 on one edge of the bolt limits its outward movement and a shoulder 80 on the rear end abuts against the post to limit the rearward movement. The broadened portion of the bolt is cut away, so that the portion left extends about half across the key-way, and in the middle of this portion the V-shaped notch 81 is formed to constitute a bearing for the key, whereby the bolt is slid back and forth. The movement of the bolt is controlled by a pair of spring-actuated tumblers 82 and 83, which are pivoted at one



end on the post 73 and spread outward normally by the tension of the springs 84 84. The outer or free ends of these tumblers are each provided with an L-shaped notch 85, which extend in opposite directions from each other, and are normally held out of alignment by the action of the two springs. The tumblers are cut out in the middle to receive the key, and this portion constitutes wards for the engagement of the key by means of which the notches are made to register, and the bolt is thrown out or in by the contact in the V-shaped notch. The case 86 of the lock encompasses these parts, and it is retained in position by the post 73, which enters a hole in it and the lugs 77 77, the outer edges of which fit against the inner edge of the casing, and is fastened by nut 77<sup>a</sup>. The rotary disk 87 of this casing being inside the door and out of reach, its slot is retained in vertical alignment with the slots in the outer and inner disks by a small spring 88, and wards 89 and 90 are formed on either side of the disk; also, the edges of the outer escutcheon-plate around the keyway form a ward. Rotary slotted disks 91 and 92 are placed on the escutcheon-plates to act in conjunction with the inner disk as rotary bearings for the key.

The key 93 has duplicate sides, so that it will operate equally well with either edge. Furthermore, the key is divided, as it were, into two parts, separated by the projections 94 94 near the middle, so that the end of the key operates upon the tumblers and bolt when inserted from the inside and the inner portions perform when inserted from the outside. Thus different portions of the key operate from opposite sides on the same tumblers to lock or unlock the latch.

The inside rotary disk is provided with a pin 94<sup>a</sup>, and a key-hole cover 95, pivoted to the piece which holds the disk in place, is provided with a semicircular recess 96, which receives the pin as it is turned over the hole. This cover is also furnished with a notch 97, which receives the pin to lock it so that a key cannot be inserted from the outside, thus taking the place of a dead lock. The key is thus fastened by locking the door as usual without quite completing the half-turn. The cover is then turned until the notch or recess 97 in the edge drops over the pin, which has the effect of locking the key against turning. Not only is the disk locked but the key is held when in this position by the wards in the lock so that it cannot be pushed out from the outside.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction herein set forth; but

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

1. The combination, with a strike-plate having an opening therein and a rectangular lug integral with one side of the plate, said lug extending partly across the opening and a short distance into the opening, of a pivoted latch having an anti-friction roller therein adapted to strike the lug when the door is closed, whereby the latch is swung outward on its pivot and locked in such position, substantially as set forth.

2. The combination, with a latch-casing having a slot therein and a pivoted latch having a hook therein near its end, of an operating-lever pivoted within the casing, a lever connecting the operating-lever and latch, and a spring bent at or near its center and having one end protruding through the slot in the casing and bearing at the other end against the connecting-lever for holding the latch open or closed, substantially as set forth.

3. The combination, with a latch-casing having an opening in its rear end and side and a pivoted latch having a hook thereon near its pivoted end, of an operating-lever pivoted within the casing and having tripping-toes extending through the opening in the rear end and side, knobs having devices connected therewith for striking these tripping-toes protruding through the side and end of the casing, a lever connecting the operating-lever and latch, and a spring bearing against the connecting-lever for holding the latch open or closed, substantially as set forth.

4. The combination, with a strike-plate having an outwardly-projecting lug thereon, of a casing, a pivoted latch, a connecting-lever, and an operating-lever having tripping-toes protruding through a side and end of the casing, and mechanism for striking said lever from its side or end in order to close the latch, substantially as set forth.

5. The combination, with a latch-casing and a pivoted latch having a hook therein near the pivotal point, of an operating-lever pivoted within the casing and projecting through one end and side thereof, a lever connecting the operating-lever and latch, a spring bearing against and forming a fulcrum for said connecting-lever, and longitudinally-sliding spindles or stems having devices thereon adapted to have contact with the operating-lever at the side and end to close the latch, substantially as set forth.

6. The combination, with a two-part casing having openings and bearings therein and a latch pivoted therein, of an operating-lever partly located within said casing and projecting through one end and side thereof, a lever connecting the latch and operating lever, a screw connecting the two parts of the casing and passing through a slot in the connecting-lever, and a bent spring, one end of which protrudes loosely through a slot in the casing, said spring bearing against and forming a fulcrum for the connecting-lever, substantially as set forth.



7. The combination, with a two-part casing having slots therein and bearings in its meeting edges, of a pivoted bevel-faced and a convex back latch having a roller in its outer end and a hook in its pivoted end, an operating-lever having a toe in its side and one on its end projecting through slots in the casing, a lever connecting the pivoted latch and the operating-lever, a spring bent near its middle and extending into a narrow slot in the casing and at its opposite or free end bearing upon and forming a fulcrum for the connecting-lever, and a screw extending through the slots in the connecting-lever and spring for holding the parts together, substantially as set forth.

8. The combination, with a latch and longitudinally spring-actuated sliding spindles or stems for operating the latch, of a bolt having a movement at right angles to the spindles and adapted directly to engage one spindle and lock it against movement, substantially as set forth.

9. The combination, with a latch and a pair of longitudinally-sliding spindles having an interposed spring between them, of a sliding bolt having a movement in a plane at right angles to the plane in which the spindles move and adapted to lock one of them against movement, substantially as set forth.

10. The combination, with a latch, of a pair of knobs and a screw-threaded shank to which they are removably attached, one of the knobs having an extensible stem adapted to automatically regulate itself to suit doors of different thicknesses, substantially as set forth.

11. The combination, with a latch, of a pair of knobs, a shank to which they are removably attached, and spring-cushioned buttons in the knobs, one of said buttons having an extensible stem adapted to automatically accommodate itself to suit doors of different thicknesses, substantially as set forth.

12. The combination, with a latch, a hollow screw-threaded shank, and a pair of knobs removably secured to said shank, of push-buttons in the knobs for operating the latch, and a peripheral ring on the knobs, having oppositely-extending inclines for operating the buttons, and springs for returning the rings and buttons to their normal positions upon being released, substantially as set forth.

13. The combination, with a latch, a hollow screw-threaded shank, and a pair of knobs removably secured to the shank, of push-buttons in the knobs, one of said buttons having a screw-threaded stem, and a pusher therein adapted to recede in the shank proportionately as the knob advances, substantially as set forth.

14. The combination, with a latch-casing and a latch, of a hollow screw-threaded shank having a recess therein to form a seat for the end of the casing, push-buttons, one of said buttons having a screw-threaded stem, a pusher thereon adapted to recede in the shank as the knob advances and the other stem

having an opening therein, and a locking-bolt adapted to enter said opening to prevent the movement of the button, substantially as set forth.

15. The combination, with a latch-casing and latch pivoted therein, of a hollow slotted screw-threaded shank having a seat formed in one side for the inner end of the casing, knobs removably secured to the shank, said knobs having push-buttons therein and peripheral rings capable of operating the buttons, and springs for forcing the said buttons and peripheral rings to their normal positions, one of said stems being screw-threaded and having a pusher which fits inside the hollow shank and its elongated slot and the other having a recess to receive a locking-bolt, substantially as set forth.

16. The combination, with a shank, of a knob consisting of a two-part shell, a rose, a peripheral ring, a button having a lateral lug thereon, and oppositely-extending inclines for operating said button, substantially as set forth.

17. The combination, with a shank, of a knob consisting of a two-part shell, the parts interlocking with each other and separated by suitable spacing-blocks, a peripheral ring having oppositely-extending inclines therein, a spring having outwardly-projecting ends adapted to be engaged by a lug on the ring to return the latter to its normal position, a rose, a button having a threaded stem, and a self-adjusting pusher on the stem, substantially as set forth.

18. The combination, with a latch having an operating-lever and knobs, of a sliding locking-bolt, tumblers, and a key adapted to operate on the same tumblers from either side of the lock to release or secure the bolt, substantially as set forth.

19. The combination, with a latch having an operating-lever and knobs for controlling said latch, of a sliding locking-bolt, spring-actuated tumblers adapted to engage or release the bolt, and a key having duplicate edges and one end adapted to operate on the tumblers when the lock is operated from one side and the other end or part of the key to control the same tumblers when operated upon from the other side of the door, substantially as set forth.

20. The combination, with a slide-bolt having a lug thereon, and a pair of spring-actuated tumblers having L-shaped notches in their outer ends to receive or release the lug on the bolt, of rotary slotted bearings on either side of the tumblers, and a key adapted to slide the bolt and operate on the same tumblers from either side of the door, substantially as set forth.

21. The combination, with a slide-bolt having a lug thereon, and guides and shoulders for controlling its movements, of a pair of pivoted spring-actuated tumblers having oppositely-extending L-shaped notches in their outer ends for engaging or releasing the lug,



rotary bearings on each side of the tumblers, and a key having duplicate edges and adapted to operate on the same tumblers from either side of the door, substantially as set forth.

5 22. The combination, with a latch and reciprocating stems for controlling the latter, of a reciprocating slide-bolt moving at right angles to the movement of the stems and adapted for engagement with the stem or one  
10 of the stems, spring-actuated tumblers, and a key for operating the tumblers and sliding the bolt.

23. The combination, with a pair of escutcheon-plates, one of which has a threaded post  
15 thereon on one side and a rotary disk held by a spring on the other, a slide-bolt held loosely between the lugs and post, spring-actuated tumblers, and a key for operating the tumblers, substantially as set forth.

24. The combination, with an escutcheon- 20 plate, of a rotary disk having a pin thereon, of a pivoted key-hole cover having a notch therein adapted to receive the pin when the disk is turned in a certain direction, substantially as set forth.

25. The combination, with the wards and rotary slotted disks, one of said disks having a pin therein, of a key and a key-hole cover adapted to engage the pin and prevent the re-  
30 moval of the key, substantially as set forth.

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

GEORGE H. VAN WINKLE.

Witnesses:

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JOHN M. GOODRICH.