

(No Model.)

2 Sheets—Sheet 1.

W. NEHRING.
LOCK.

No. 482,970.

Patented Sept. 20, 1892.

FIG. I.

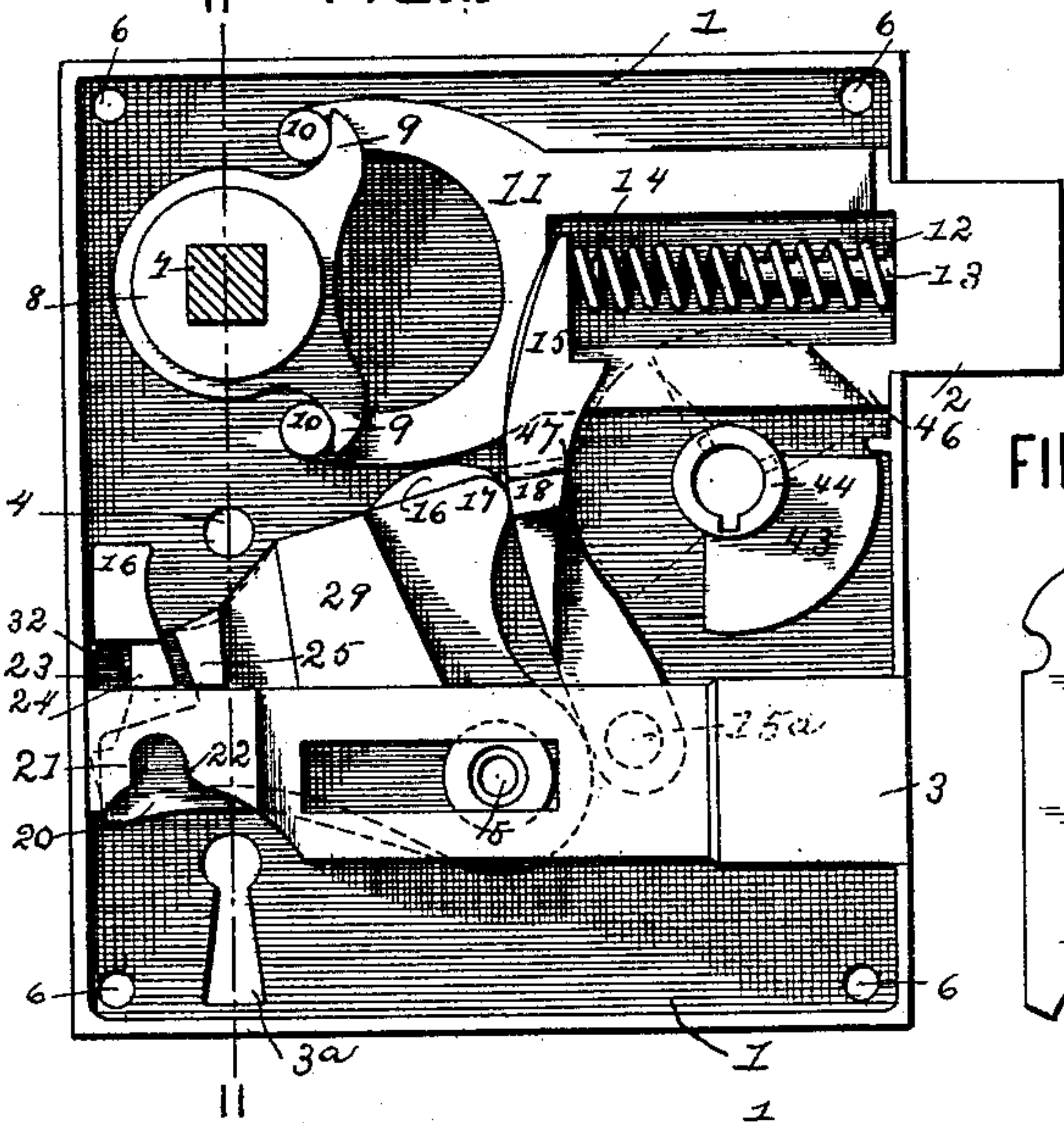


FIG. II.

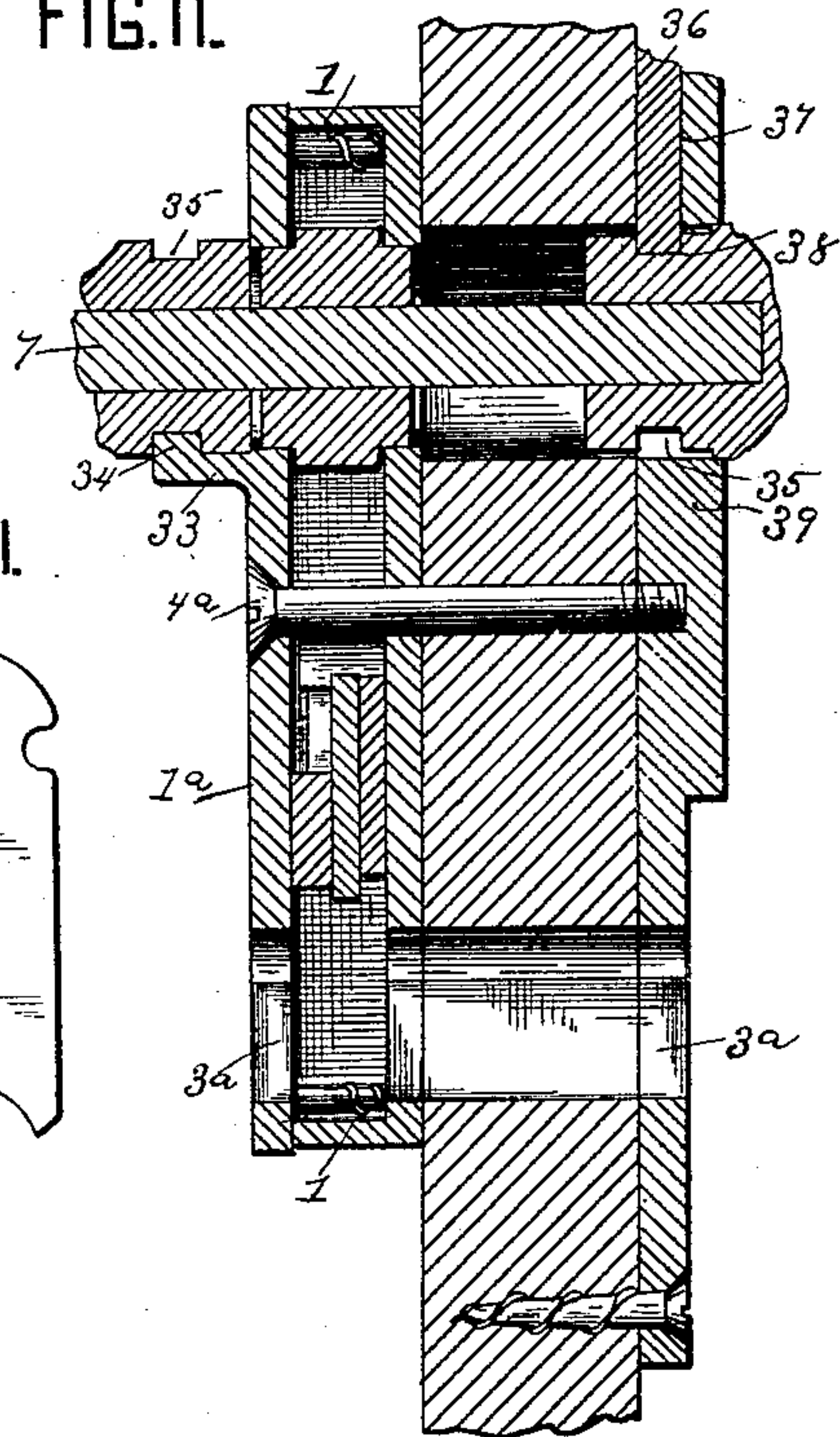


FIG. III.

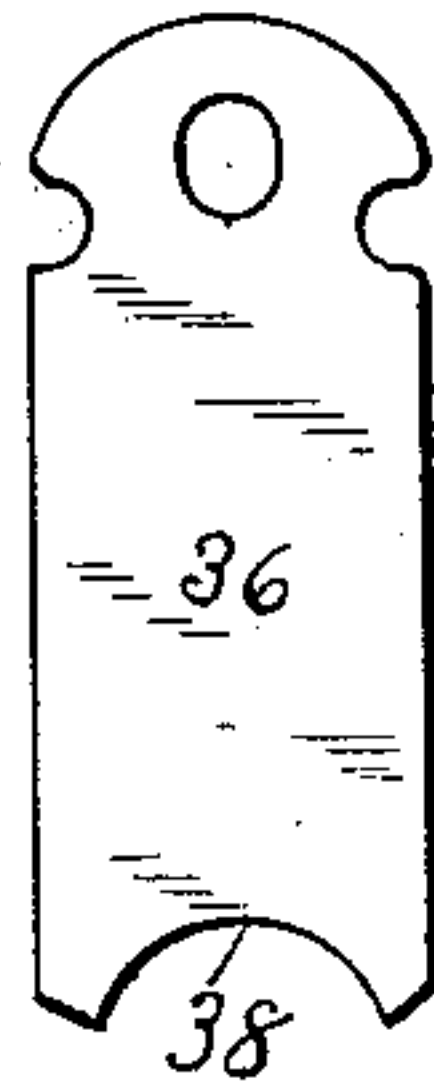


FIG. IV.

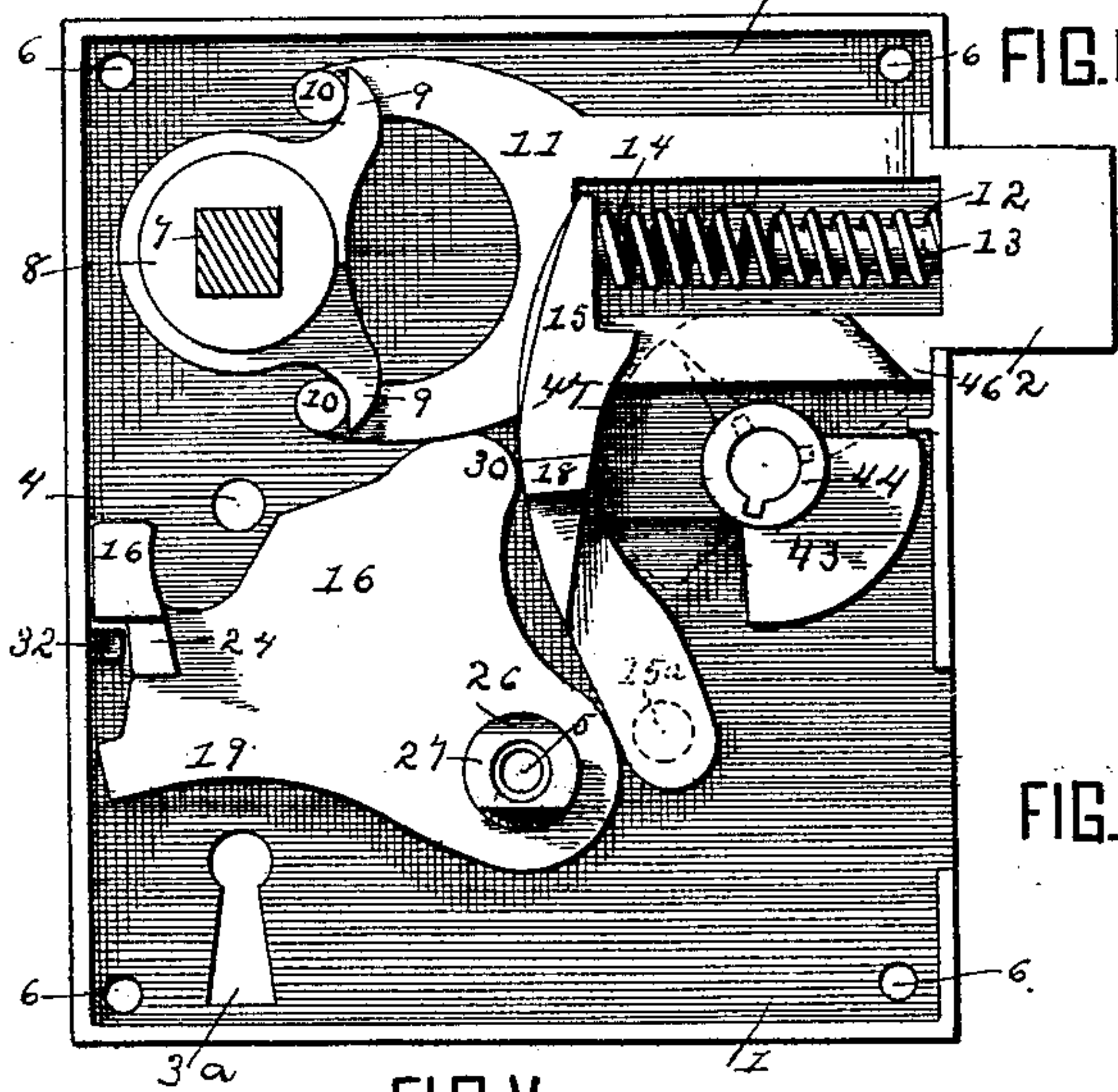


FIG. V.

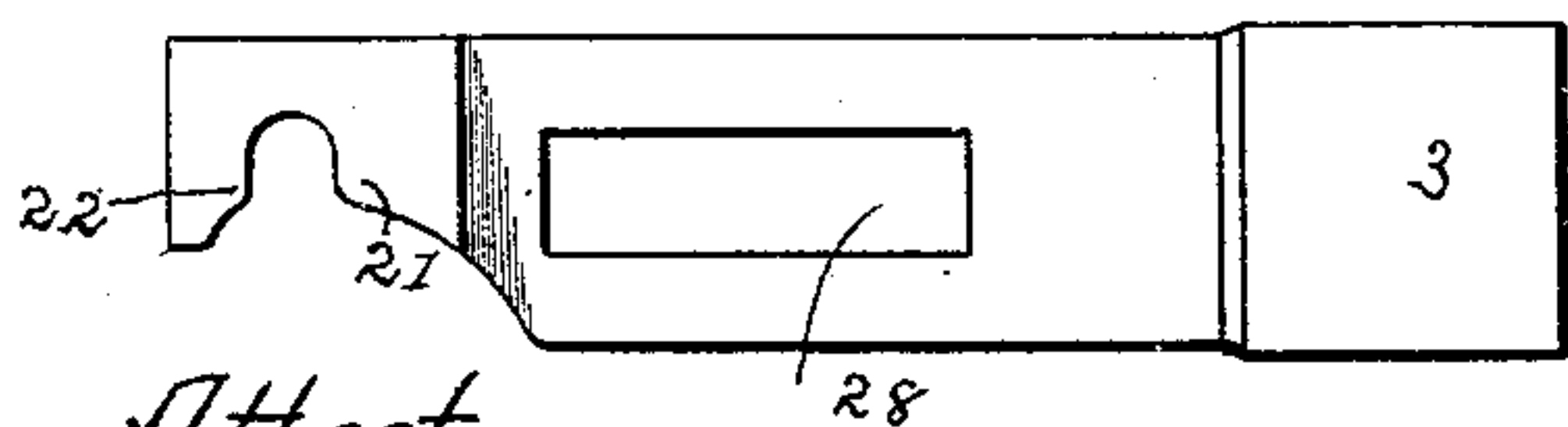


FIG. VI.

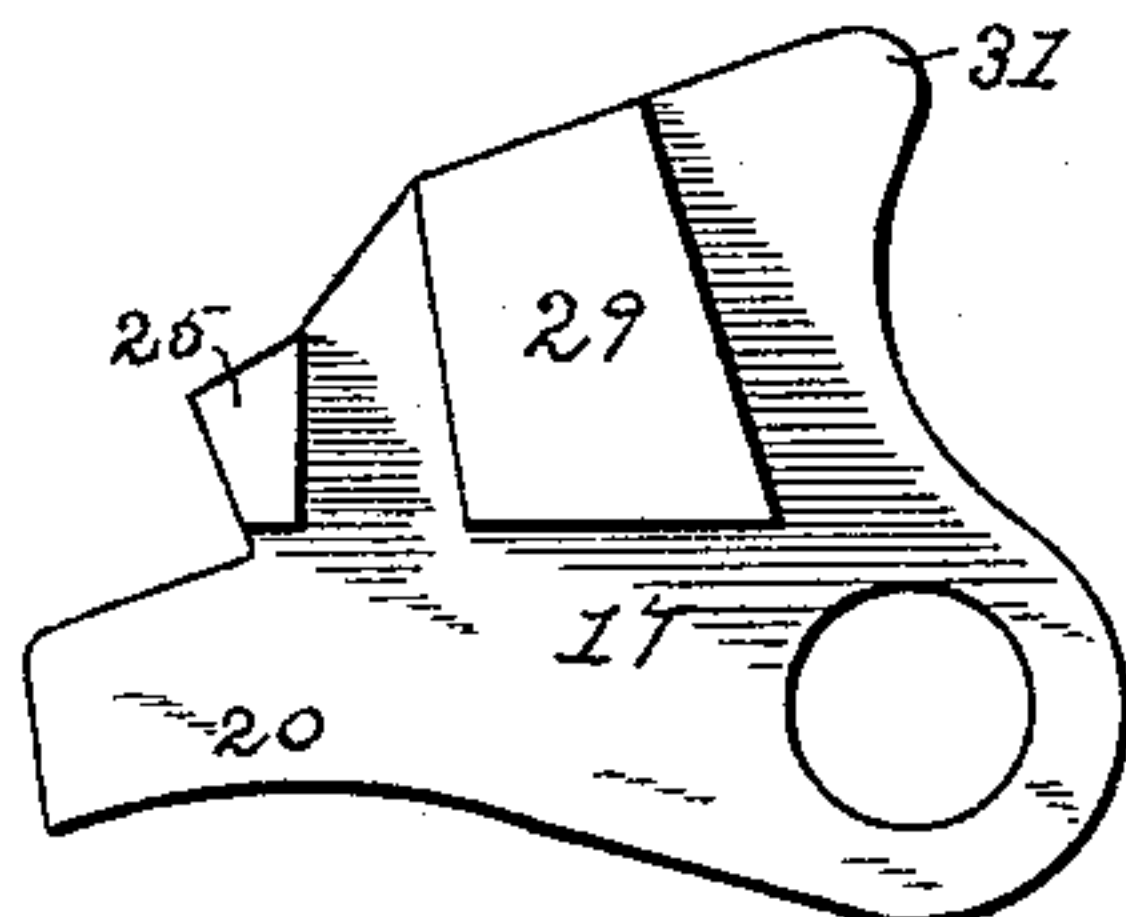
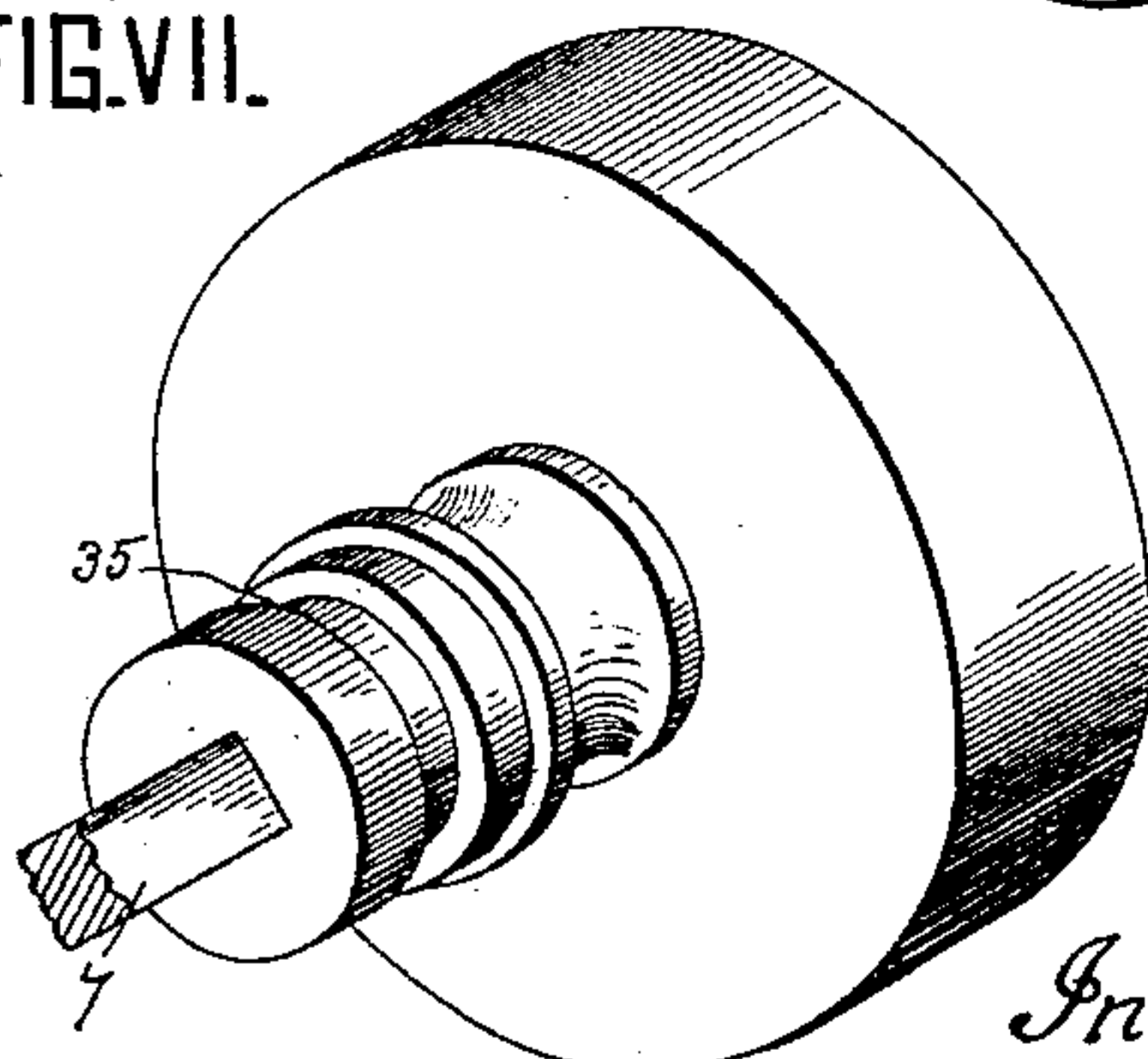


FIG. VII.



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FIG.VIII.

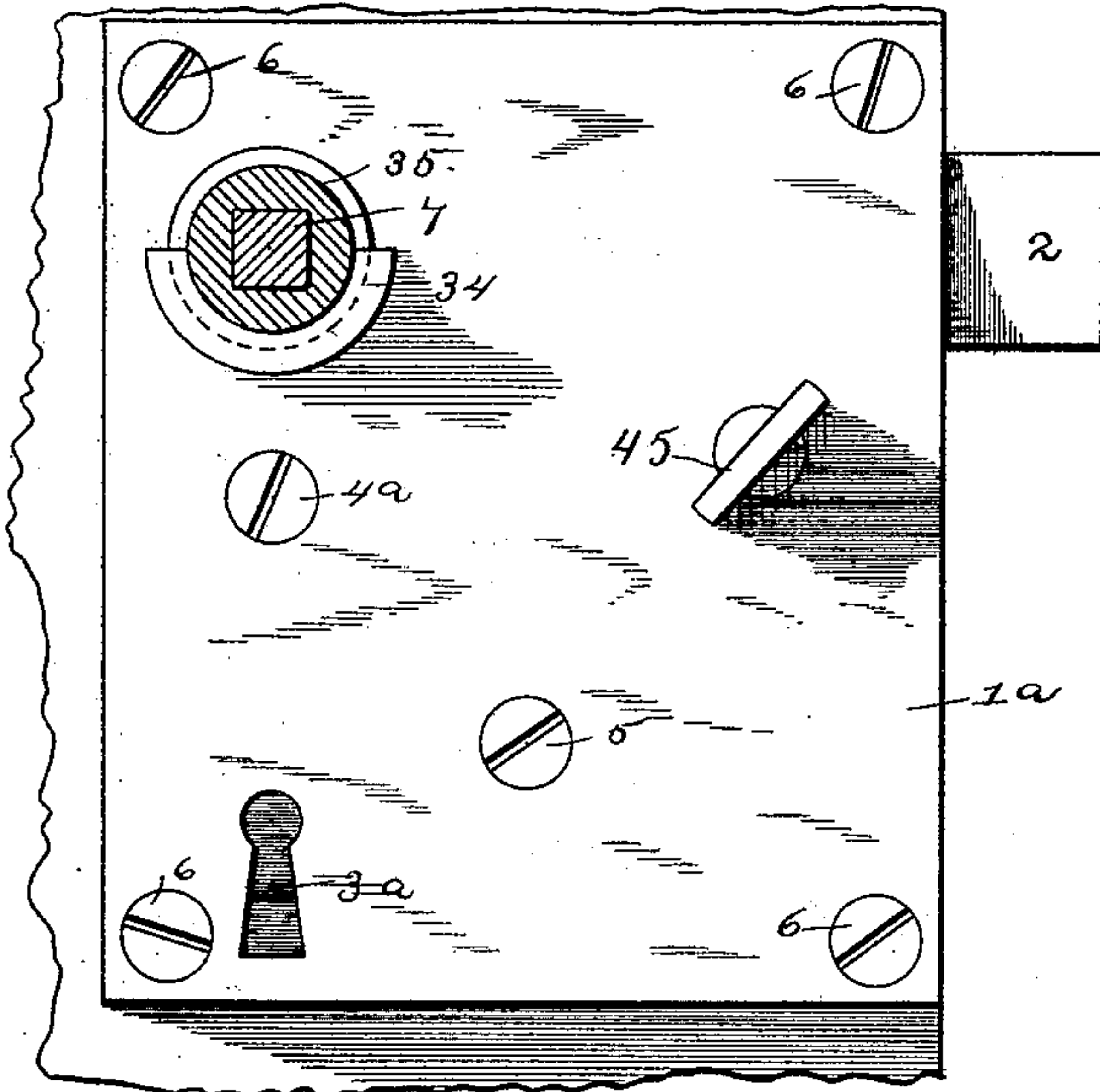
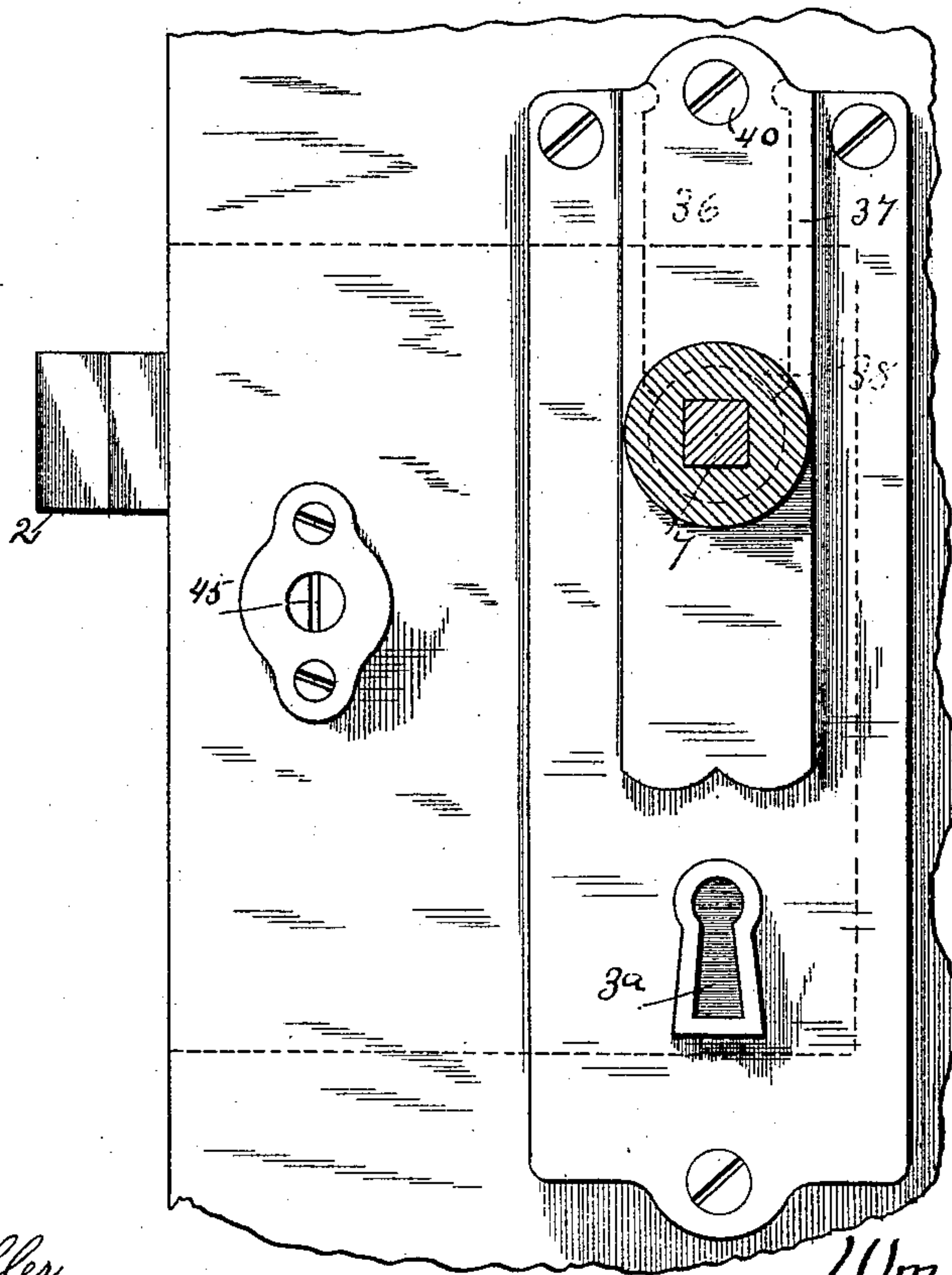


FIG.IX.



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UNITED STATES PATENT OFFICE.

WILLIAM NEHRING, OF EVANSVILLE, INDIANA.

LOCK.

SPECIFICATION forming part of Letters Patent No. 482,970, dated September 20, 1892.

Application filed September 28, 1891. Serial No. 407,040. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM NEHRING, a citizen of the United States, residing at Evansville, in the county of Vanderburg, in the State of Indiana, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My present invention has for its object to provide a simple, effective, and durable means for securing the latch-bolt and the locking-bolt in projected positions at the same time, or for securing the locking-bolt in projected position independently of the latch-bolt; to provide an improved combination-tumbler or two tumblers in combination which are engaged and elevated independently by different parts or wards of the key-bit and both of which must be raised before the locking-bolt can be withdrawn; to mount the knobs in the locking-plate and escutcheon, respectively, and secure them therein without the use of screws and screw-holes, so that they may be made to fit any thickness of door, and to so construct and arrange the parts of the lock that a single spring may be employed for projecting the latch-bolt and returning the tumbler or tumblers to normal position when not engaged by the key.

In carrying out my invention I employ, in combination with the usual latch and locking-bolts, a pivoted lever, one end of which is engaged by the projecting spring, causing said spring to project the latch-bolt, and this lever is also engaged by the tumblers, whereby it is held in proper relation to the latch-bolt for projecting it through the medium of the above-mentioned spring, and whereby said tumblers are kept in normal position by the influence of said spring upon the pivoted lever. I also employ a cam or eccentric mounted upon a suitable spindle (provided on the outside with a turning-knob) and which when turned in a certain position engages the pivoted lever and prevents its rocking on its pivot, which is necessary in the movement of the tumbler by the key, and when turned further in the same direction, without wholly disengaging itself from the pivot and lever, it engages behind the latch-bolt, and thus prevents the movement of said latch-bolt as well as the movement of the tumblers. Through the tumblers said cam prevents the with-

drawal of the locking-bolt. In order to adapt the parts of the combined tumbler to operate to engage the locking-bolt independently, said parts are constructed in the form of two thin plates movable independently, and each is provided with a shoulder in the same or about the same plane as a portion of the locking-bolt and adapted to intercept said bolt unless the tumblers are raised by the key. Being raised independently by different portions of the key, the necessity of having a key of the proper form will be understood. In securing the knobs one or both are adapted to receive more or less of the knob-spindle in order to allow the knobs to come farther apart or nearer together, as may be necessary with different thicknesses of the door. The lock and a lock-plate provide journaled bearings for the respective knobs, and in one part a semi-annular flange is provided, which engages in the annular groove around the periphery of the knob-shank, while the other is provided with a vertically-movable key having a semicircular recessed end which slides in a socket in the escutcheon or lock to which it may be applied, and engages by said end a circumferential channel or groove in the shank of the opposite knob.

The lever-locking cam, bolts, and tumblers may all be provided with the usual lugs or formed of sufficient thickness to cause the face-plate of the lock to engage them and hold them in their respective positions or form journaled bearings for them. The pivot upon which the tumblers are mounted is provided with a square or oblong head, which receives a correspondingly-formed slot in the locking-bolt.

In order that my invention may be fully understood, I will describe the same with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved lock in normal position, the face-plate and knob being removed and the spindle being shown in section. Fig. 2 is a vertical transverse section on the line 2 2, Fig. 1, the escutcheon and a portion of the door being likewise shown. Fig. 3 is a side elevation of the key which enters the escutcheon and engages the groove in the knob for holding said knob in place. Fig. 4 is a view similar to Fig. 1, except that the locking-bolt and one of the

tumblers are removed. Figs. 5 and 6 are side elevations of the locking-bolt and the front tumbler, respectively. Fig. 7 is a perspective view of the knob, showing the annular groove by which it is retained in position. Fig. 8 is a front elevation of the face-plate of the lock, in which is formed the semi-annular journal-bearing for one knob. Fig. 9 is a similar view of the escutcheon, showing the journal-bearing for the other knob and the securing-key.

1 represents the lock-casing, in which are mounted latch-bolt 2 and locking-bolt 3 and which is provided with screw-holes 4 and 5 for the reception of screws which secure the ordinary face-plate 1^a. One screw only is shown, (see Fig. 2,) and this screw 4^a passes entirely through the lock and door and enters the escutcheon. 7 represents the knob-spindle, and 8 the latch-controlling nut upon said shank, which carries the horns 9, adapted to engage the upturned ends 10 of the bifurcated portion 11 of said latch-bolt.

12 represents a spiral spring, which is seated around a core 13, carried by the forward end of the latch-bolt and engages at its other end the stud 14 on the upper end of the lever 15, which is pivoted at 15^a.

16 and 17 represent two parts or two tumblers of the compound tumbler. These are pivoted upon a lug 26. These tumblers engage behind the lever 15 and hold said lever in normal position against the spring 12, said tumblers themselves being also held down by means of said spring and lever, and the tumblers are limited in downward movement by a stop 32 and the locking-bolt 3. Since the lever 15 is sustained against spring 12 by cams 16 and 17 and said cams are likewise forced downward by said lever, it will thus be seen that spring 12 serves to keep both the latch-bolt and the compound tumbler in their normal positions.

19 represents the part of cam 16 and 20 the part of cam 17, which are engaged by the bit of the key when the same is turned in the lock.

21 and 22 are respectively the forward and rear shoulders of the locking-bolt, which are engaged by the bit of the key in projecting and withdrawing the bolt. As will be seen upon reference to Fig. 1, the key cannot reach these shoulders until the tumblers are lifted. In order to prevent the projection of the bolt 3 before the tumblers are lifted, a shoulder 23 on said bolt is adapted to engage either one of the lugs 24 25 on the respective tumbler which happens to be in the plane of movement of said shoulder 23. Inasmuch as the tumblers are lifted independently by different parts of the key it will be understood that a key not made to fit might succeed in lifting one of the tumblers; but the other tumbler would remain to oppose the forward movement of the bolt.

26 represents the lug upon which the tumblers are pivoted, and this carries upon its

upper end the elongated head 27, over which the bolt 3 is adapted by a slot 28 to fit. This lug 26 has formed in it the screw-hole 5 for the reception of one of the face-plate screws.

29 is a lug upon tumbler 17, which rests upon the upper edge of the sliding bolt and acts as a stop for said tumbler.

30 and 31 represent the forward bearing ends of tumblers 16 17, both of which bear against the rear side of lever 15, said lever being made thick enough for this purpose.

32 is the stop which arrests the downward movement of the tumbler 16.

38 represents the socket or journal-bearing formed in the lock-plate and provided with an upwardly-opening semi-annular bearing for the knob, which has the inwardly-extending semi-annular flange 34, which enters the annular groove 35 in the knob.

36 represents a key inserted in a socket 37 in the escutcheon and adapted to engage the annular groove 35 of the other knob by its lower concave end 38, said other knob being inserted in a journal-bearing 39 in said escutcheon. Key 36 is held against disengagement with the knob by means of a screw 40, which passes through the outer wall of the socket 37, as well as said key, and enters the door. From this construction it will be observed that it is simply necessary to set the knob in the bearing in the escutcheon and insert the spindle (which is usually carried by the other knob) to pass the other knob into its socket and to drop the key in place and secure the key by a screw. Both knobs will thereby be securely held in place and prevented from displacement by any ordinary use to which the knobs are put.

The nut 8 in the interior of the lock is journaled at 41 and 42 in the rear plate and face-plate of the lock, respectively, and inasmuch as the spindle fits neatly in this nut said spindle will be held against lateral play, and through the spindle the said nut will assist in holding the knob against movement in any way, except in rotating.

43 is a cam or eccentric mounted upon a hollow spindle 44, which is journaled in the front and back lock-plates.

45 are turning-knobs mounted upon the opposite ends of the hollow spindle 44 for shifting the cam 43 to its different positions from either side of the door.

46 is a shoulder formed on the outer lower edge of the latch-bolt, against which the cam 43 is adapted to engage for holding the latch in locked position.

47 is a curved cut-away portion of the pivoted lever 15, formed concentric with the center of motion of the locking-cam for allowing its free movement. When this cam is in its normal position, (shown in full lines in Figs. 1 and 4,) the latch-bolt and locking-bolt can both be operated. When it is in its intermediate position, as shown in dotted lines in these figures, the locking-bolt cannot be operated, and when it is in its raised position,

also shown in dotted lines, neither the locking-bolt nor latch-bolt can be moved.

Having thus described my invention, what I claim is—

5 1. The combination, with a lock having a latch-bolt, a locking-bolt, and a suitable tumbler for the locking-bolt, of a pivoted lever engaging said tumbler and a cam adapted to engage said pivoted lever and latch-bolt and
10 prevent the movement of both the locking-bolt and latch-bolt, substantially as and for the purpose set forth.

2. The combination of the latch-bolt, the locking-bolt, the tumbler for the locking-bolt,
15 a pivoted lever engaging said tumbler, and a spiral spring having its respective ends engaged by said pivoted lever and the latch-bolt, substantially as and for the purposes set forth.

20 3. The combination of the latch-bolt, the locking-bolt, the tumbler for the locking-bolt, the pivoted lever, a spiral spring located between the latch-bolt and the pivoted lever, and a locking device, said tumbler being en-
25 gaged by the pivoted lever and said locking device being adapted to prevent the movement of said pivoted lever, all substantially as set forth.

30 4. The combination of the latch-bolt, the locking-bolt, the tumbler, the pivoted lever

engaged on one side by the tumbler, the spiral spring located between the opposite side of said lever and the forward end of the latch-bolt, and the locking-cam mounted upon a
35 suitable axis and adapted to be moved in front of the lever independently of the latch-bolt and also to be moved in front of said lever and behind the latch-bolt at the same time, substantially as and for the purposes set forth.

5. The combination of a lock having a bearing, a knob adapted to turn in said bearing, the socket in connection with said bearing, and the key mounted in said socket, said knob
45 having an annular groove in which the end of the key fits, all substantially as and for the purposes set forth.

6. The combination of journaled bearings, the knob adapted to fit in said bearings and provided with an annular groove, one of said
50 bearings being provided with a semi-annular flange adapted to fit in a groove in the knob and the other being provided with a socket, with a key in said socket adapted to enter the groove and the other knob, all substan-
55 tially as and for the purposes set forth.

WILLIAM NEHRING.

Witnesses:

LOUIS J. HERMAN,
JAMES T. WALKER.