

No. 804,113.

PATENTED NOV. 7, 1905.

G. K. GLENN.
LOCK.

APPLICATION FILED NOV. 1, 1904.

2 SHEETS—SHEET 1.

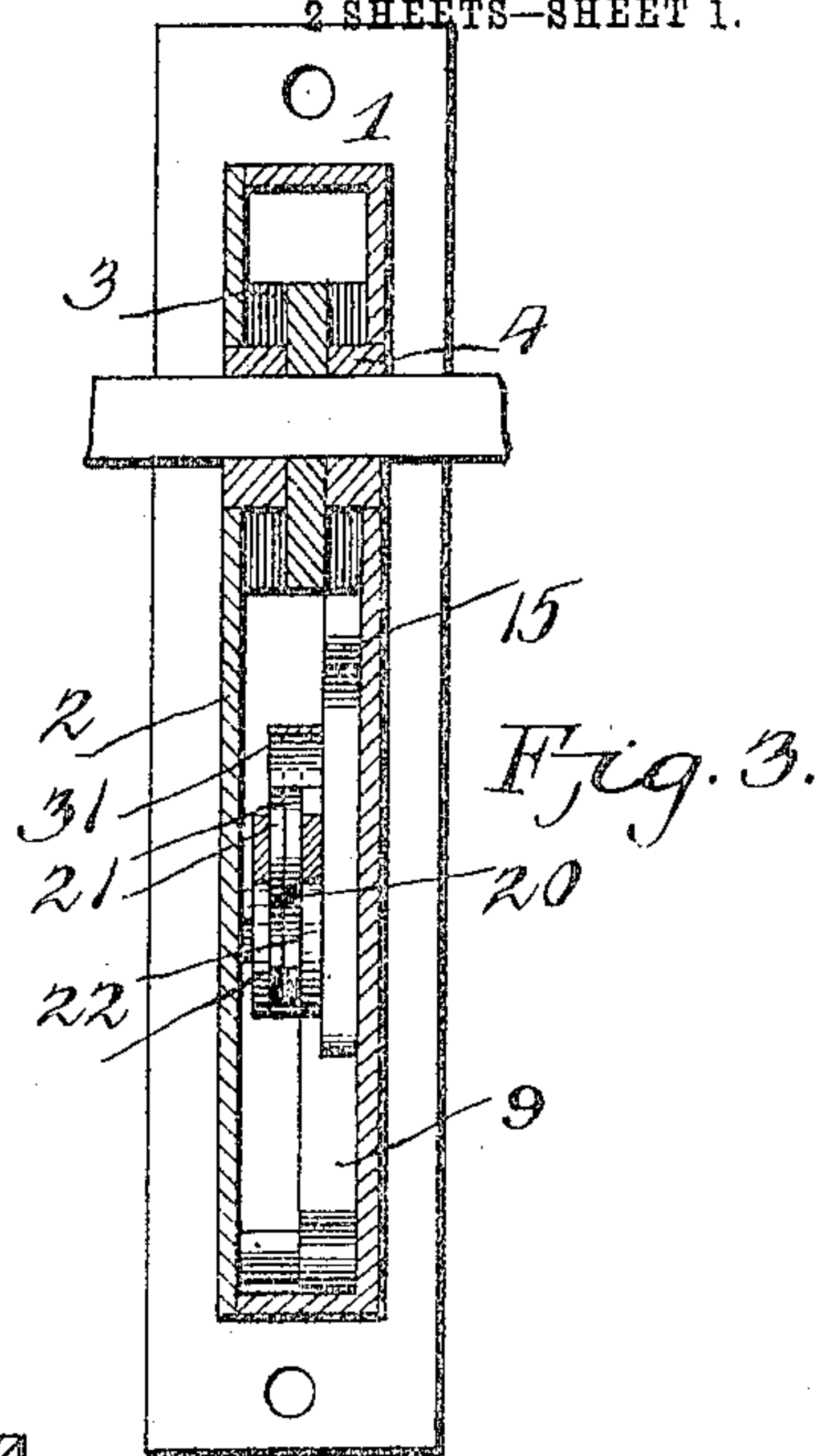
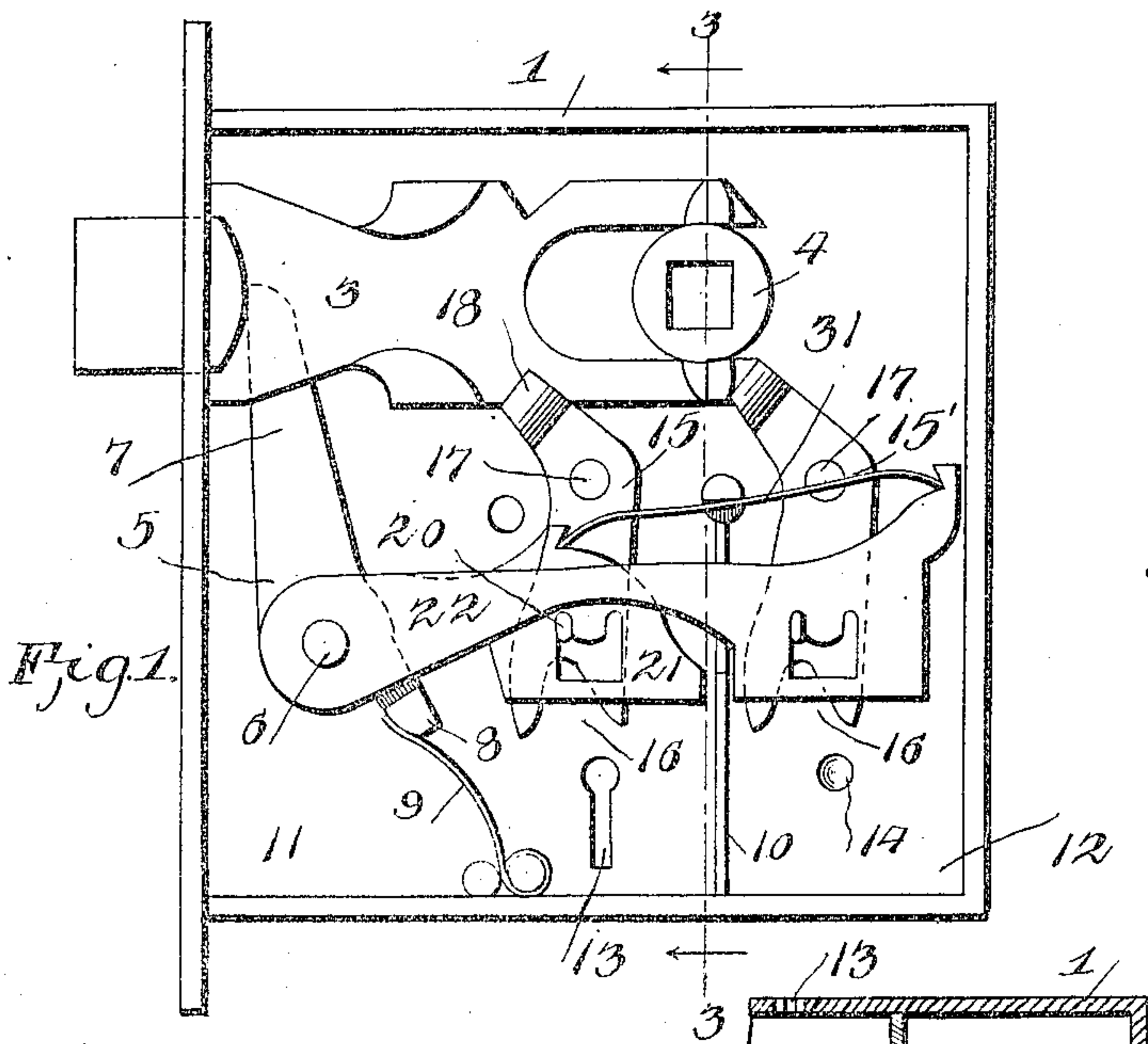


Fig. 2.

Fig. 3.

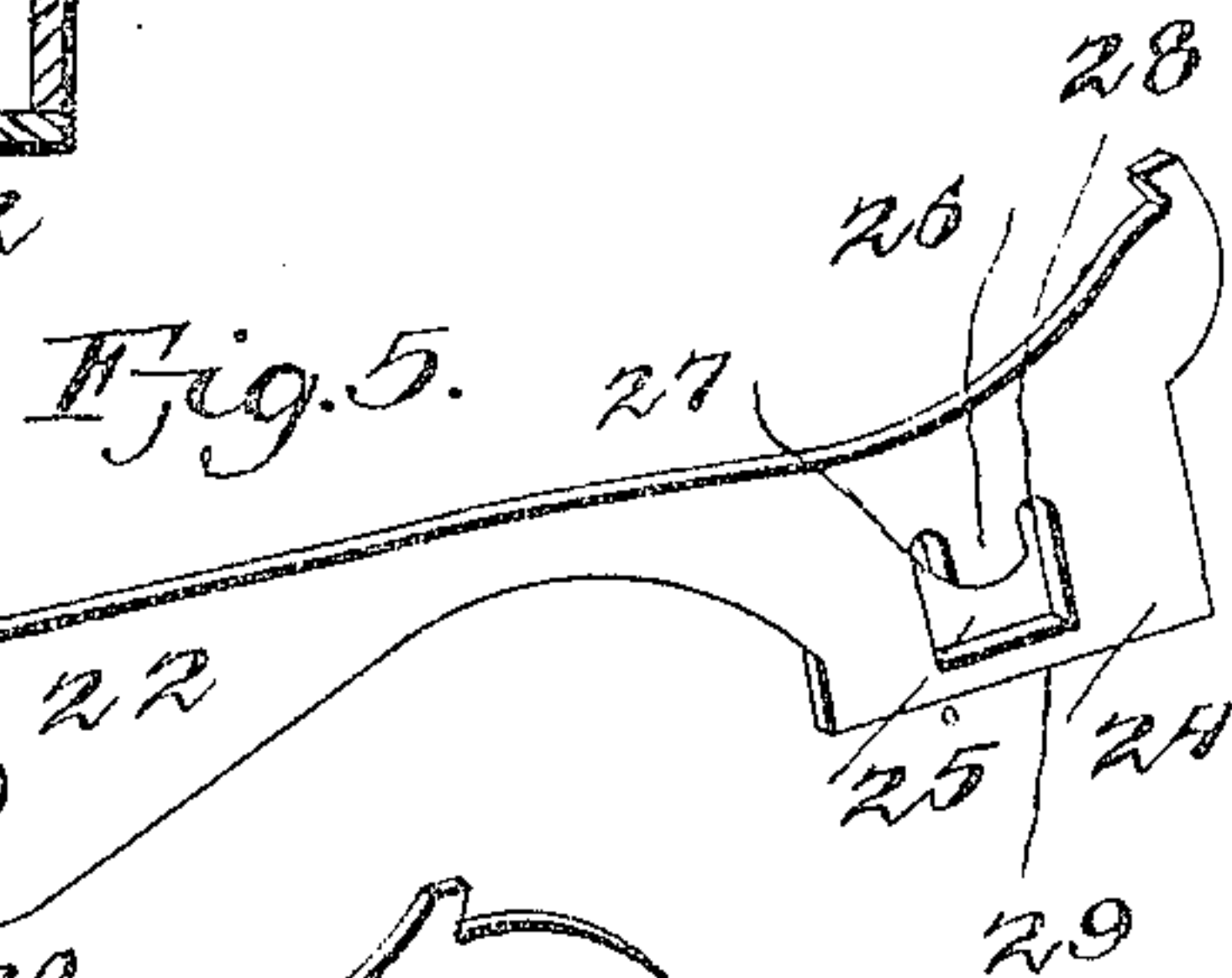
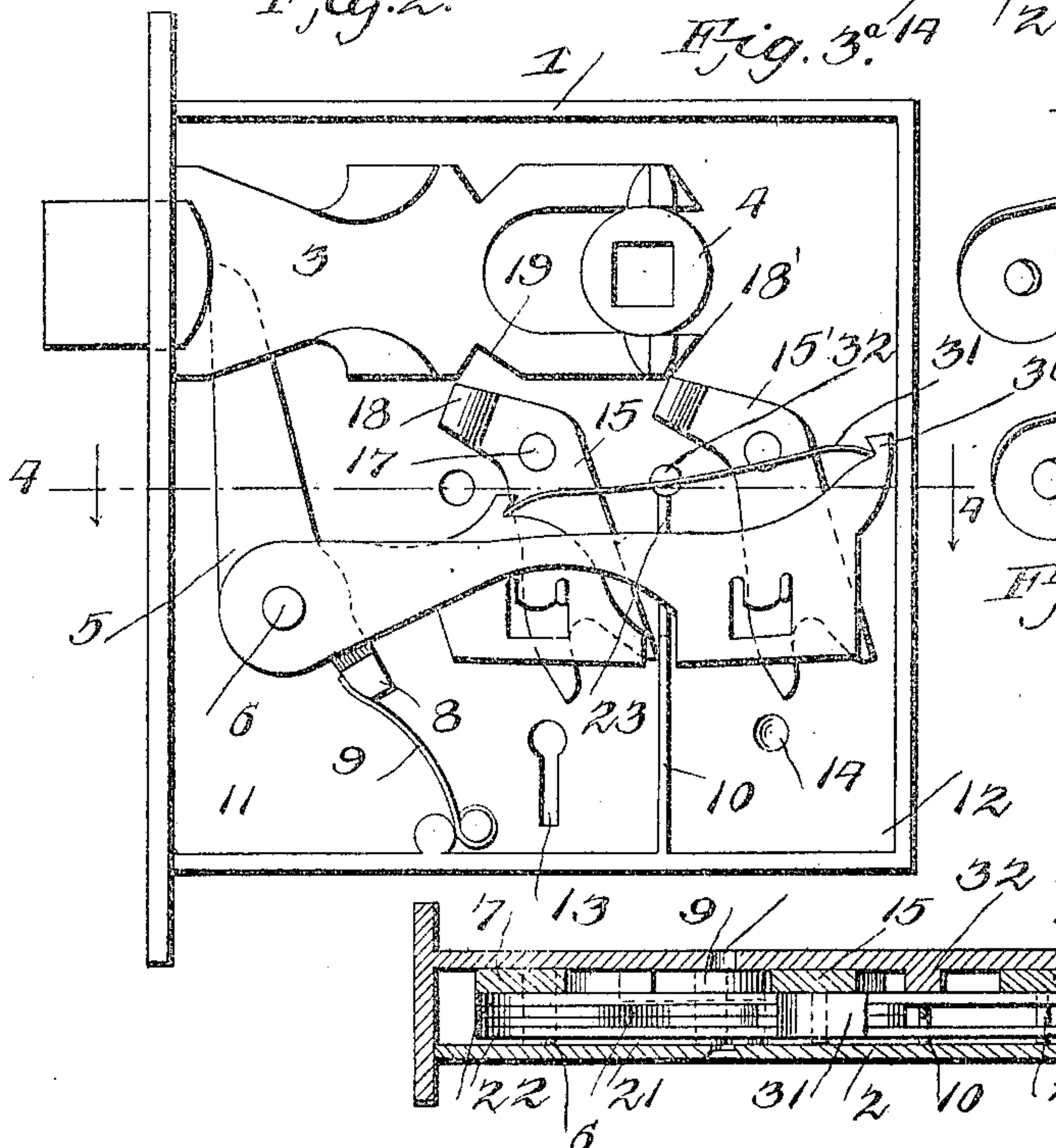
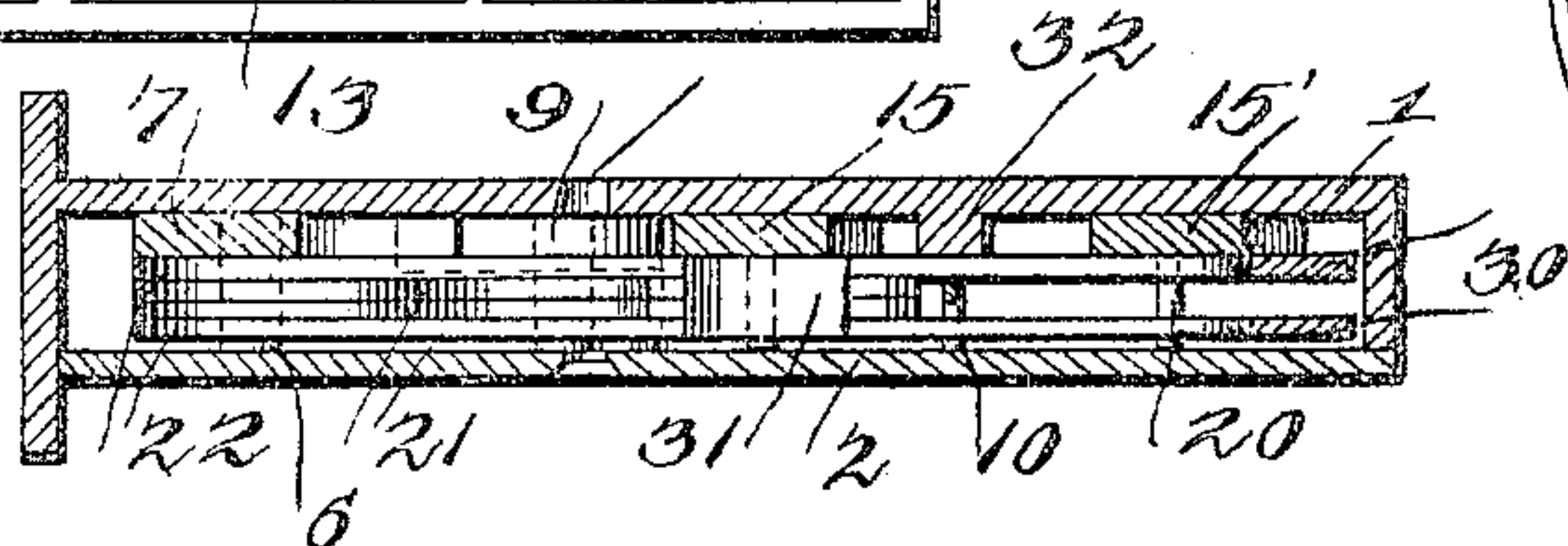
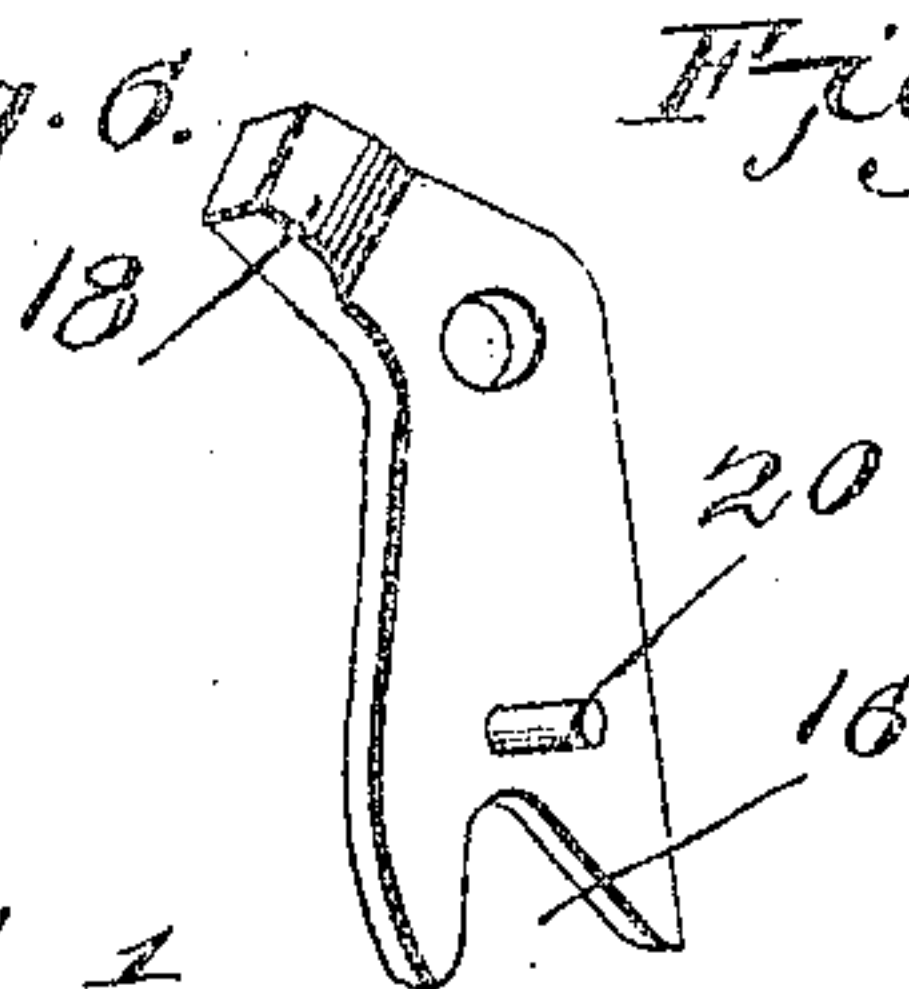


Fig. 6.

Fig. 7.



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Fig. 4.

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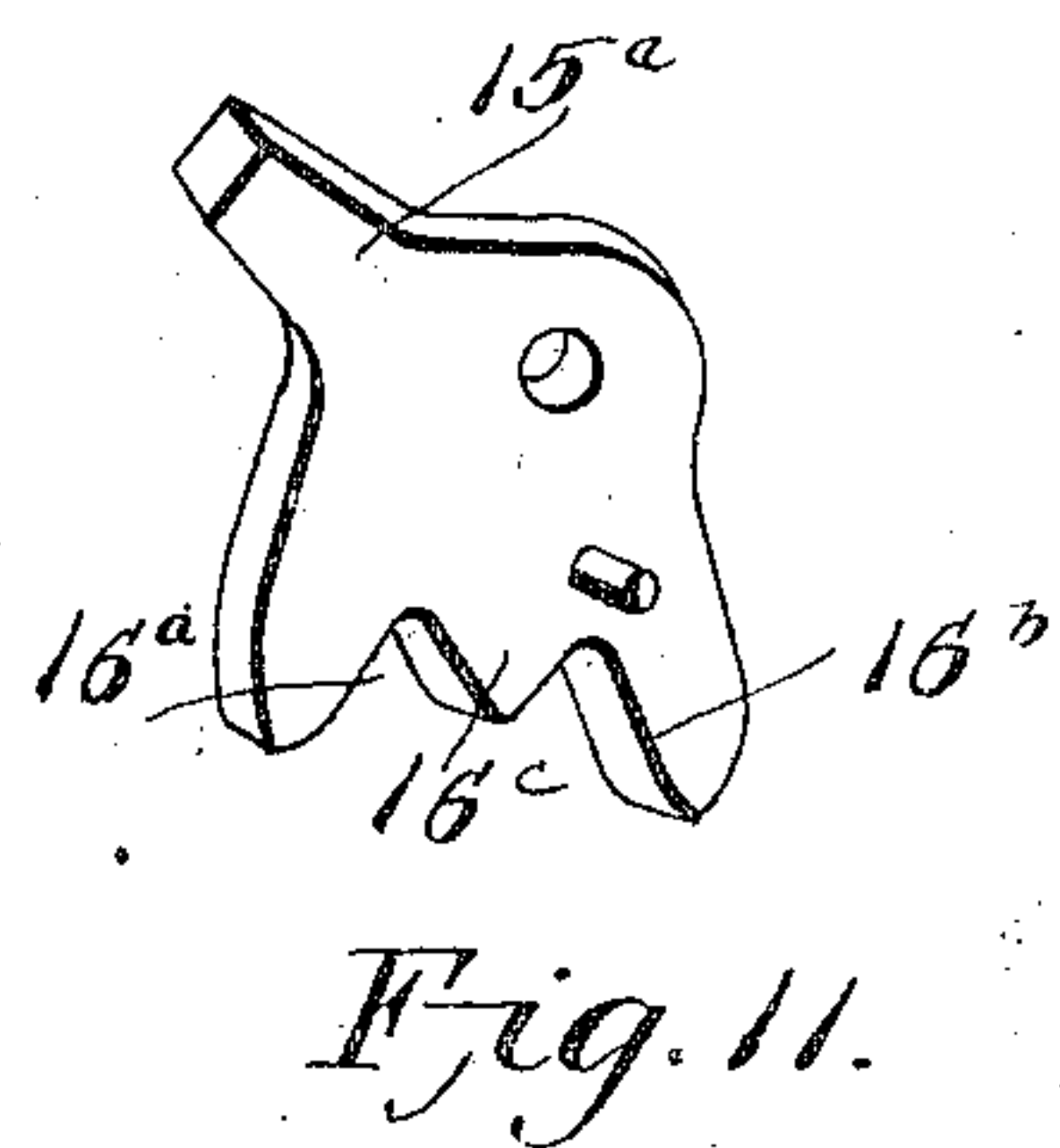
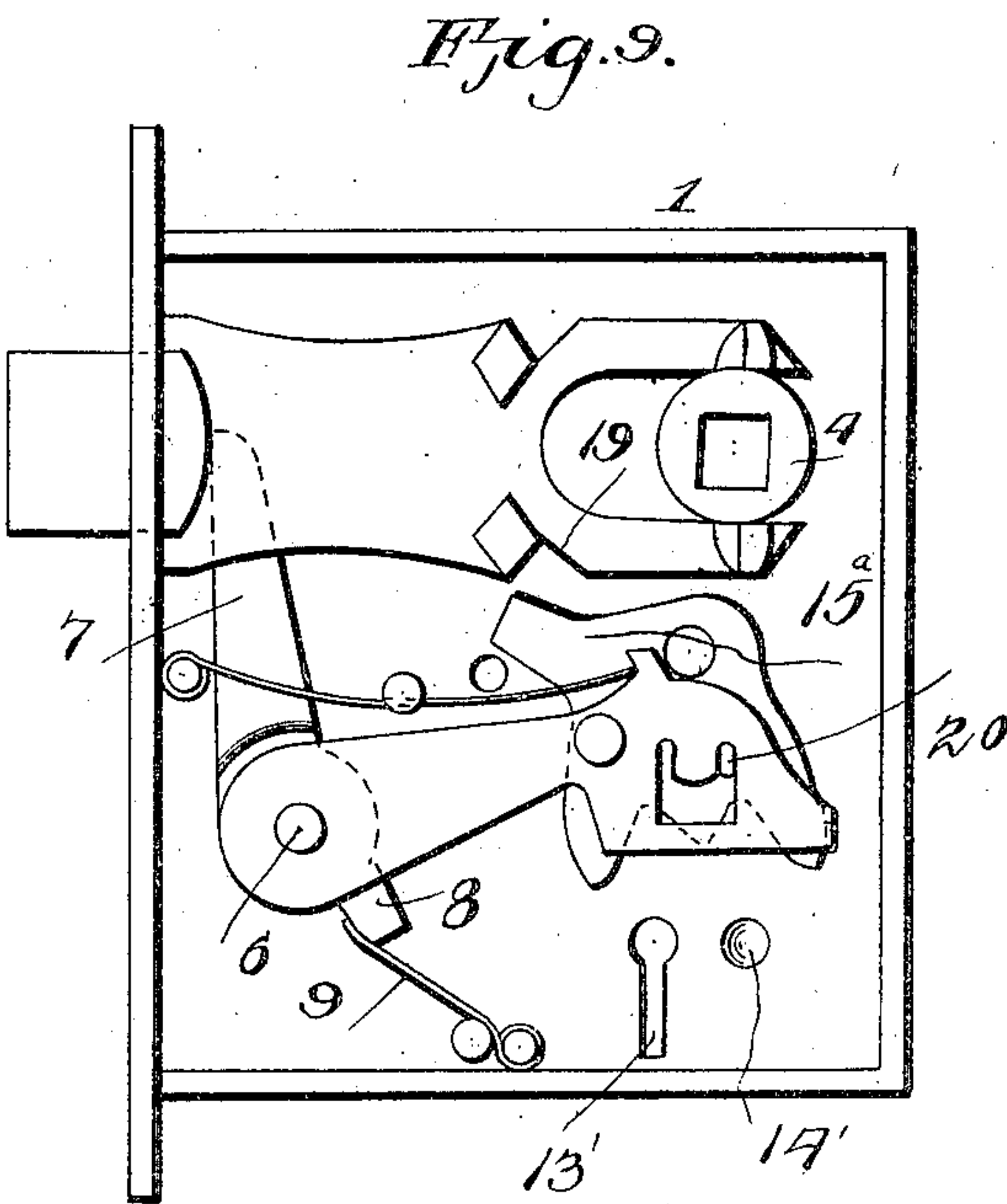
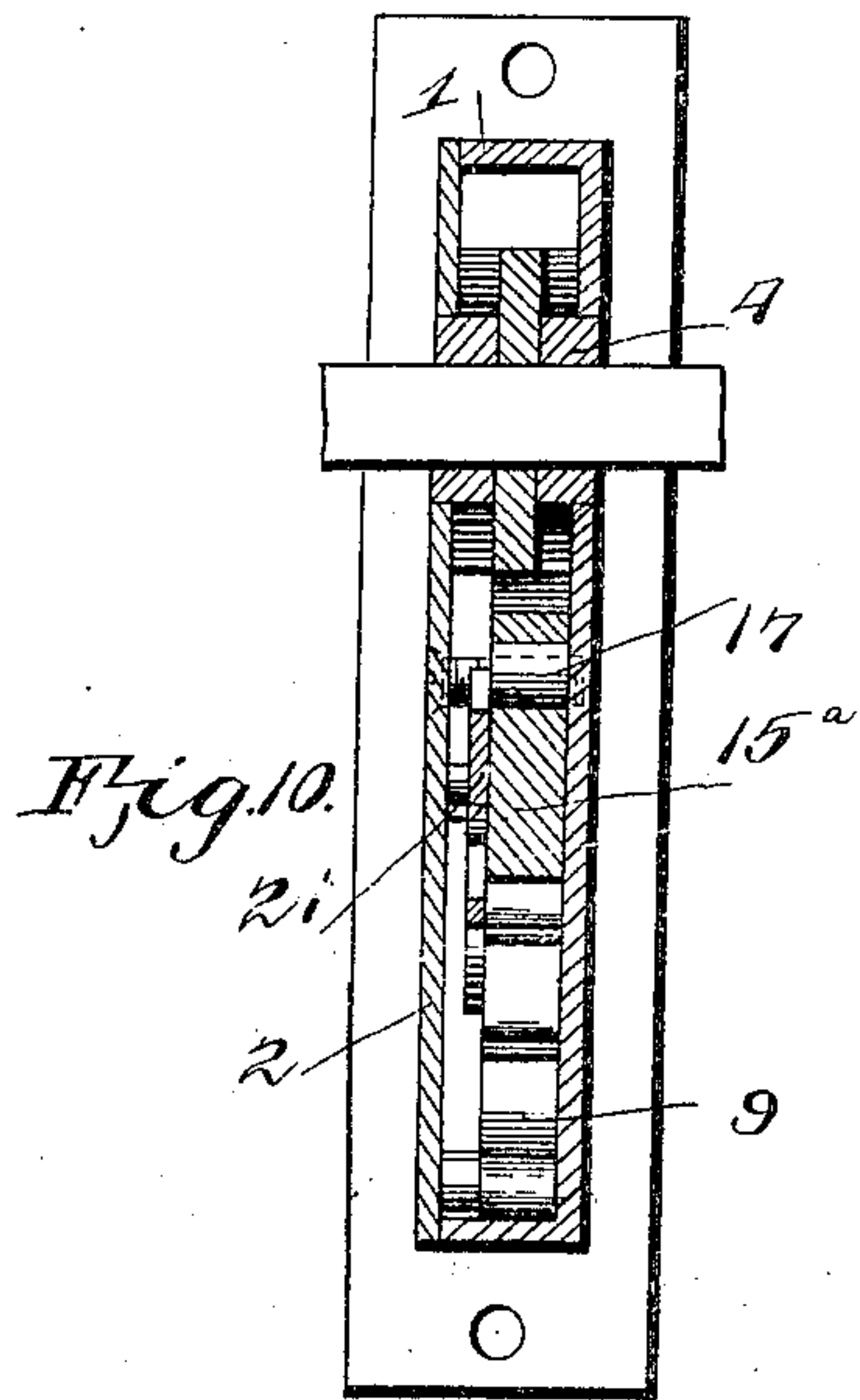
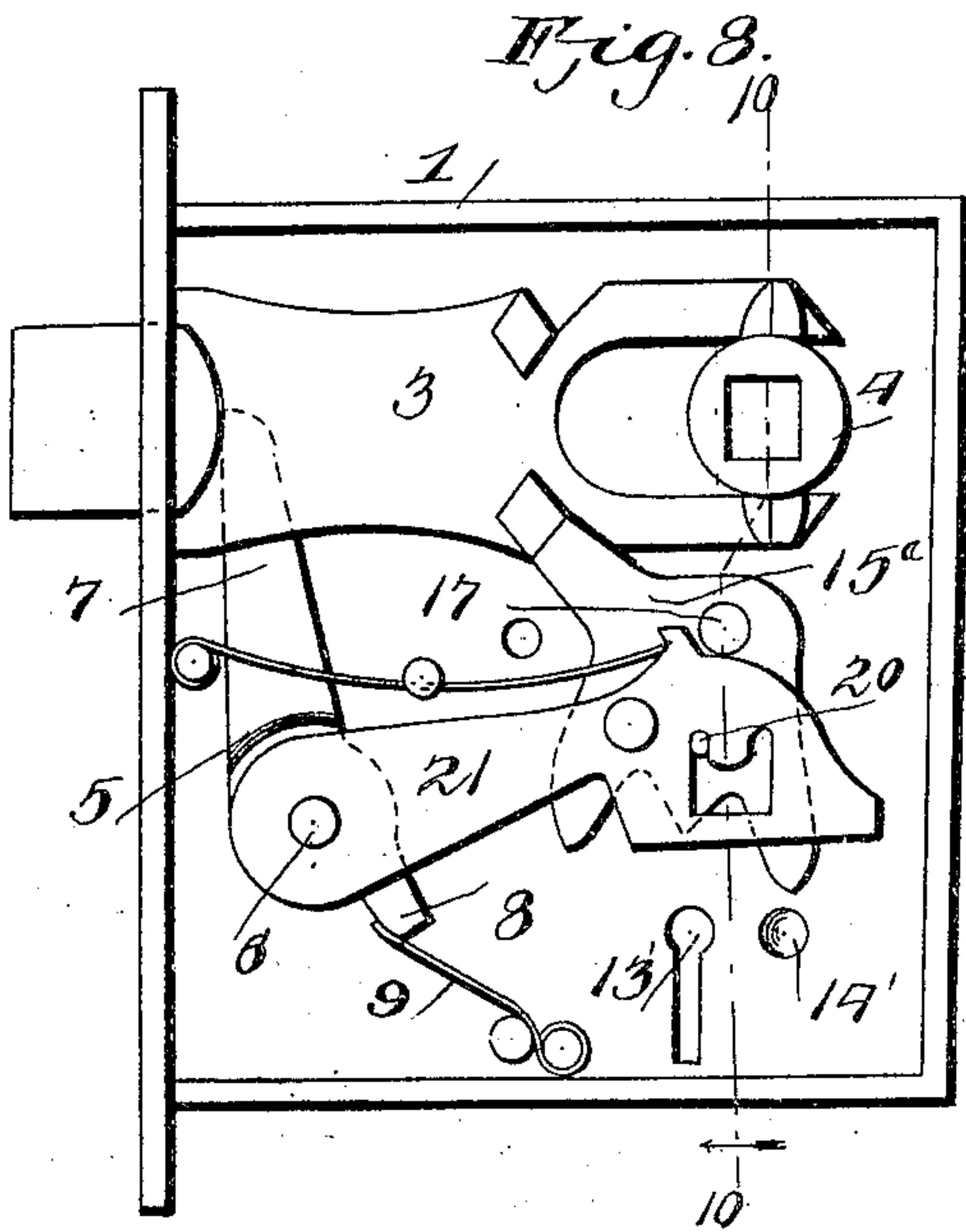
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GEORGE K. GLENN, OF PASADENA, CALIFORNIA.

LOCK.

No. 804,113.

Specification of Letters Patent.

Patented Nov. 7, 1905.

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To all whom it may concern:

Be it known that I, GEORGE K. GLENN, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented new and useful Improvements in Locks, of which the following is a specification.

My invention relates to improvements in locks; and its primary object is to provide a lock which is simple of construction, reliable and efficient in use, and comparatively inexpensive of production.

Another object is to provide a lock which may be so adjusted that the locking-bolt cannot be retracted from the outside either with a proper key or with any surreptitious instrument except by entirely destroying the lock or surrounding door structure.

With these and other objects in view the invention consists of the features of construction, combination, and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of a double form of lock embodying my invention—*i. e.*, a lock having two sets of tumblers adapted to be opened by keys inserted through unaligned keyholes, the cover of the lock-casing being removed and the bolt-tumblers shown projected for locking the bolt. Fig. 2 is a similar view showing the bolt-tumblers retracted to permit the bolt to have movement. Fig. 3 is a vertical cross-section taken on the line 3 3 of Fig. 1. Fig. 3^a is a fragmentary horizontal section through the casing, showing the arrangement of the keyholes. Fig. 4 is a horizontal section taken on the line 4 4 of Fig. 2. Figs. 5 and 6 are views of one of the long and one of the short controlling-tumblers. Fig. 7 is a similar view of one of the bolt-locking tumblers. Fig. 8 is a view similar to Fig. 1 of a modified arrangement, showing a single form of lock—*i. e.*, a lock provided with but one set of bolt locking and controlling tumblers, the bolt being locked by the bolt-locking tumbler. Fig. 9 is a similar view showing the bolt-locking tumbler retracted. Fig. 10 is a section on the line 10 10 of Fig. 8, and Fig. 11 is a detail view of the bolt-locking tumbler employed in the single form of lock.

Referring now more particularly to the drawings, the numeral 1 represents the body portion of the lock-casing; 2, the cover-plate

thereof; 3, the sliding bolt, and 4 the knob or tumbler shaft, whereby the bolt is retracted. The bolt is projected by a bell-crank lever 5, fulcrumed on a stud or pin 6 within the casing and provided with a long arm 7, movably connected with the bolt 3, and a short arm 8, the latter being engaged by a spring 9, which serves to project the long arm 7 and bolt 3.

Below the bolt 3 the casing is divided by a transverse partition 10, forming two chambers 11 and 12, and the body portion of the casing and the cover-plate 2 are formed with keyholes 13 and 14, communicating, respectively, with said chambers to admit of the insertion of keys from the interior and exterior to effect the operation of the tumblers governing the bolt 3. Disposed in the two chambers 11 and 12 are twin tumblers 15 15', each of which is provided in its lower edge with a substantially V-shaped recess 16 to receive the bit of the key, the opposite side walls of said recess forming abutments to permit the tumbler to be swung in opposite directions on its pivot pin or stud 17. The pivot pin or stud 17 passes through an opening disposed at the upper end of the tumbler, and from the said upper end of the tumbler projects an obliquely and laterally extending nose or locking portion 18, the locking portion 18 of the tumbler 15 being adapted to engage a notch 19, formed in the bolt 3, and the corresponding locking portion of the tumbler 15' to engage a shoulder 18' on the bolt 3 to lock said bolt in projected position. At a point above the notch or recess 16 each tumbler 15 or 15' is provided with a pin or projection 20, forming a coupling member to engage keepers in a controlling-tumbler, as hereinafter described. For convenience in distinguishing the tumblers 15 15' from the controlling-tumblers now to be described I shall hereinafter term said tumblers 15 15' "bolt-locking tumblers," as their sole function is to engage and lock the bolt 3 in projected position, while the function of the controlling-tumblers is to engage and hold or lock the said bolt-locking tumblers in either of the positions to which they may be adjusted to lock the bolt against movement or permit it to be operated by the knob-tumbler 4 without interference.

Pivoted on the stud 6 in the chamber 11 are two sets of controlling-tumblers 21 22, the tumblers 21 being comparatively short and adapted to coact with the tumbler 15, while the tumblers 22 are much longer and have ex-

tended shanks, which pass through a slot 23 in the upper portion of the partition 10 and permit the acting portions of said tumblers 22 to occupy the chamber 12 and coact with the tumbler 15' therein. Any number of these tumblers 21 and 22 may be used; but in the present instance I have shown a pair of each, the tumblers of each pair being disposed in parallel relation and adapted to have simultaneous movement and the tumblers 21 being disposed to move within the space between the shanks of the pair of tumblers 22. Of course the sole purpose of employing a plurality of tumblers in each set is to adapt the same for use in connection with keys having bits of different forms, the use of different numbers of tumblers in different locks of the same character requiring the use of different keys to operate said locks. In practice it is preferred to employ but a single locking-tumbler 15 or 15' in connection with one or more coacting controlling-tumblers; but, if desired, a plurality of locking-tumblers may be employed or varied in form or structure to suit the form of key to be used in connection therewith.

Each controlling-tumbler 21 or 22 is formed with a depending bit or lobe 24, provided with a slot 25 to receive the coupling-pin 20 on the coacting locking-tumbler, and the upper wall of this slot is provided with a reduced tongue or extension 26, which extends downwardly into said slot to a point about midway of the depth thereof and divides the upper portion of the slot to form opposite keeper notches or recesses 27 and 28. The lower edge of the bit or lobe 24 constitutes a key-engaging portion 29, which extends below the upper portion of the V-shaped slot or recess 16 in the locking-tumbler, so that the key will first engage said portion 29 and raise the controlling-tumbler and then engage one of the walls or abutments of said recess 16, as will be readily understood. When the bolt is locked by either locking-tumbler, the coupling member 20 engages the keeper 27 in the coacting controlling-tumbler, as shown in Fig. 1, and when the locking-tumbler is retracted the coupling portion 20 engages the keeper 28 of the controlling-tumbler, whereby the locking-tumbler when moved to either of its positions by the key will be retained in such position for subsequent operation in the reverse direction, so that it cannot accidentally move out of the proper position it should assume when the bolt 3 is either locked from retraction or is disengaged from the locking-tumbler, so that it may be retracted by the shaft-tumbler 4. The controlling-tumblers 21 and 22 are provided at their free ends with undercut shoulders 30, receiving the ends of a plate-spring 31, which is fixed intermediate of its ends to a post or stud 32 on the casing, one end of the spring thus serving to hold the tumblers 21 and the other end the tumblers 22 in engaging position, while permitting

them to have vertical movement to engage and release the pins from the keeper notches or recesses 27 and 28.

The operation of the form of lock shown in Figs. 1 to 7, inclusive, will be readily understood from the foregoing description. When the key is inserted in one of the keyholes—say, for instance, the keyhole 13—and turned to the left in Fig. 2, the edge of the bit will first engage the edge 29 of the tumblers 21 and lift said tumblers, thus disengaging the pin 20 from the keeper 28, and the further movement of the key will cause the bit to engage the body portion or wall of the recess 16 of the tumbler 15 to the left of the plane of the pin 20, thus swinging the tumbler 15 until the pin 20 comes opposite the keeper 27 in the tumblers 21, at which point the bit of the key will move out of engagement with the locking-tumbler and controlling-tumbler and the latter will drop down, thus bringing the pin 20 into engagement with the keeper 27. When the tumblers are so adjusted, the bolt 3 will be locked against retraction, as shown in Fig. 1, and if with the parts in this position the key be turned in the reverse direction to that previously described the controlling-tumbler will again be elevated and release pin 20 from the notch 27, and the locking-tumbler will be swung in the opposite direction until the pin is brought into register with the keeper 28, whereupon the controlling-tumbler will drop down and bring the pin and keeper into locking or coupling engagement. As before described, the two keyholes 13 and 14 are located in opposite sides of the casing to permit of the insertion of a key from the inside or outside, and it will be observed that the construction and arrangement of the tumblers is such as to permit the tumbler controlled from the inside being projected to hold the bolt 3 against inward movement, and when so projected the lock cannot be operated from the outside, as the engagement of an outside key with its cooperating set of tumblers will not retract the inside tumblers or release the bolt, so that it can be drawn inward by the knob or tumbler 4. Hence when the locking-tumbler controlled by the inside key is in engagement with the bolt the lock cannot be unlocked from the outside either with the proper key or with any surreptitious instrument, and the bolt can only be withdrawn by entirely demolishing or destroying the lock-casing or surrounding door structure.

In the form of my invention illustrated in Figs. 8 to 11, inclusive, I have disclosed a "single" type of lock—namely, a lock employing but a single set of locking and controlling tumblers. The tumblers in this construction do not differ materially from those shown in connection with the structure disclosed in Figs. 1 to 7, inclusive, except that the locking-tumbler 15^a is provided in its lower edge with a pair of V-shaped notches or re-

cesses 16^a 16^b, separated at their upper portions by an intervening V-shaped projection 16^c, this construction of the recesses forming opposite sets of walls or abutments so disposed as to be engaged by the bits of a key inserted through the keyhole 13' from the inside or through the keyhole 14' from the outside. It is thought that the operation of this form of the invention will be readily understood without further description. In either form the invention is simple in construction, composed of relatively few parts, is comparatively inexpensive of production, and is, further, reliable and efficient in action.

While the preferred forms of the invention are disclosed herein, it will of course be understood that variations in the construction and arrangement of the parts may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new is—

1. In a lock, the combination of a casing, a bolt, a swinging bolt-locking tumbler provided with a portion to be engaged by a key and a coupling projection, and a swinging controlling-tumbler having opposite keepers adapted to be automatically engaged by said projection at the limits of the reverse movements of said tumblers to lock said locking-tumbler in projected or retracted position, and adapted to be adjusted by the key to disconnect said projection from one or the other of said keepers, substantially as described.

2. In a lock, the combination of a casing, a bolt, a swinging bolt-locking tumbler provided with a portion to be engaged by a key, and a coupling projection, and a pivoted controlling-tumbler formed with a slot therein having communicating recesses or keepers to receive said projections and lock said locking-tumbler in projected or retracted positions, said controlling-tumbler having a portion be-

low the slot adapted to be engaged by a key to lift said tumbler and bring said projection into and out of engagement with said keepers, the projection being automatically engaged with the keepers alternately at the limits of the reverse movements of said tumblers.

3. In a lock, the combination of a casing having keyholes in the opposite sides thereof disposed out of alinement, a bolt, locking means to engage the bolt, said locking means having portions for operation by keys inserted through said keyholes, and controlling means, said locking and controlling means being provided with interengaging members whereby the locking means may be secured in projected or retracted position.

4. In a lock, the combination with a casing provided with keyholes in the opposite sides thereof, said keyholes being disposed out of alinement, a bolt, and sets of locking and controlling tumblers governed, respectively, by keys inserted through said holes from the inside and outside, each set of tumblers comprising a locking-tumbler having a projection, and a controlling-tumbler having keepers co-acting with said projection to hold the locking-tumbler in projected or retracted position.

5. In a lock, the combination of a casing, a sliding bolt, a swinging bolt-locking tumbler adapted to engage and lock the bolt in projected position, and a swinging controlling-tumbler, said tumblers being provided with interengaging means brought into operative engagement by reverse swinging movements thereof to hold the locking-tumbler in projected or retracted position.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE K. GLENN.

Witnesses:

GEO. W. COLLIS,
FLOYD R. JAMES.