

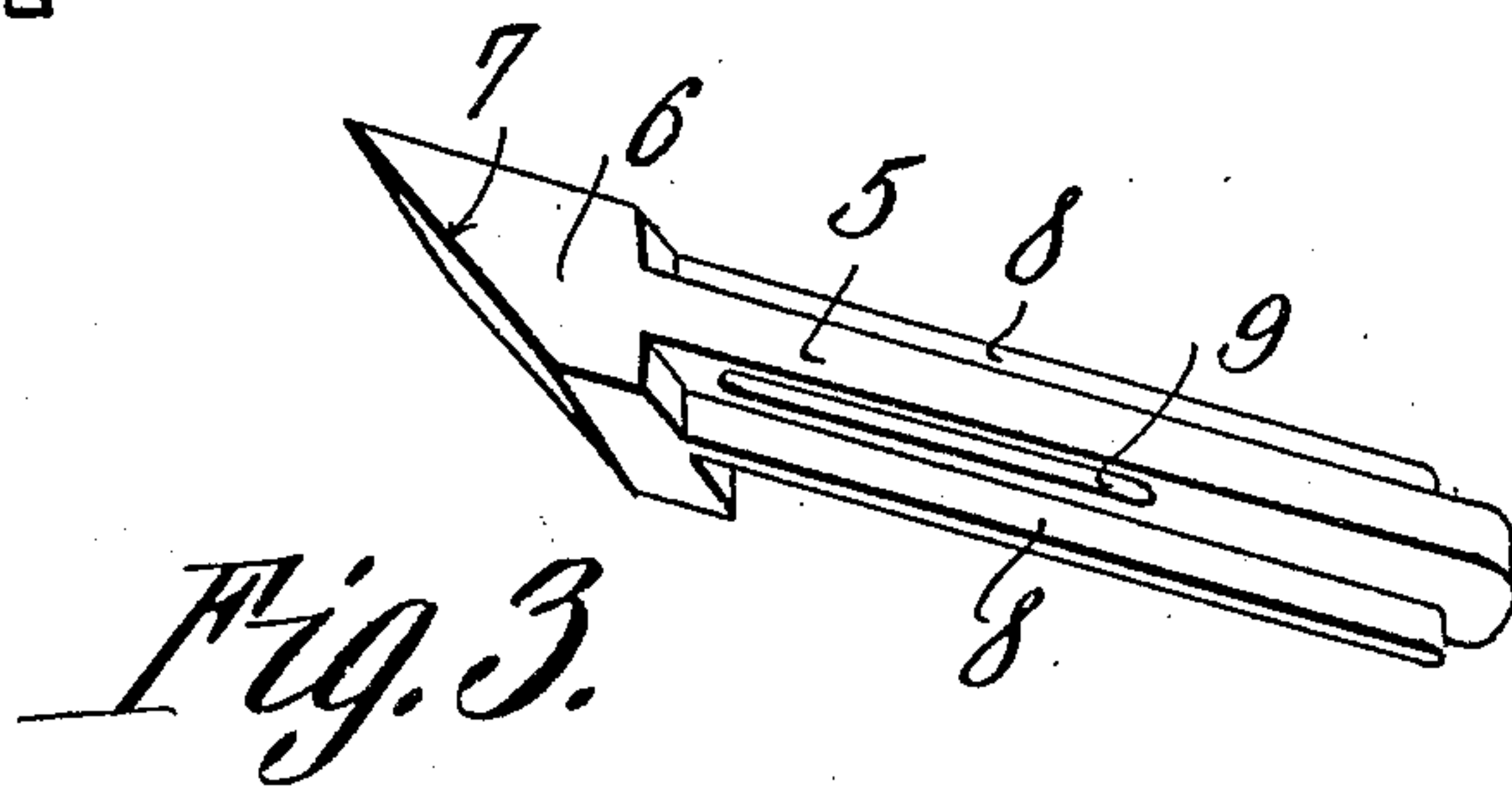
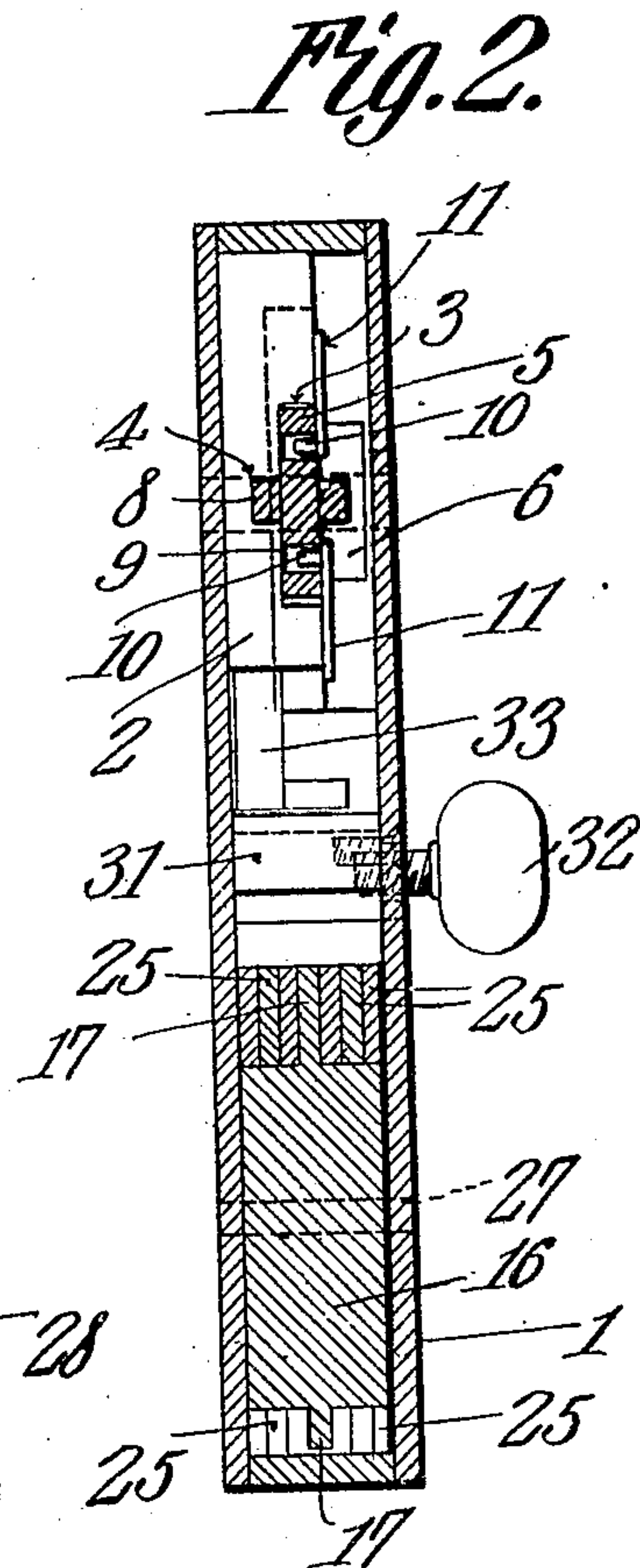
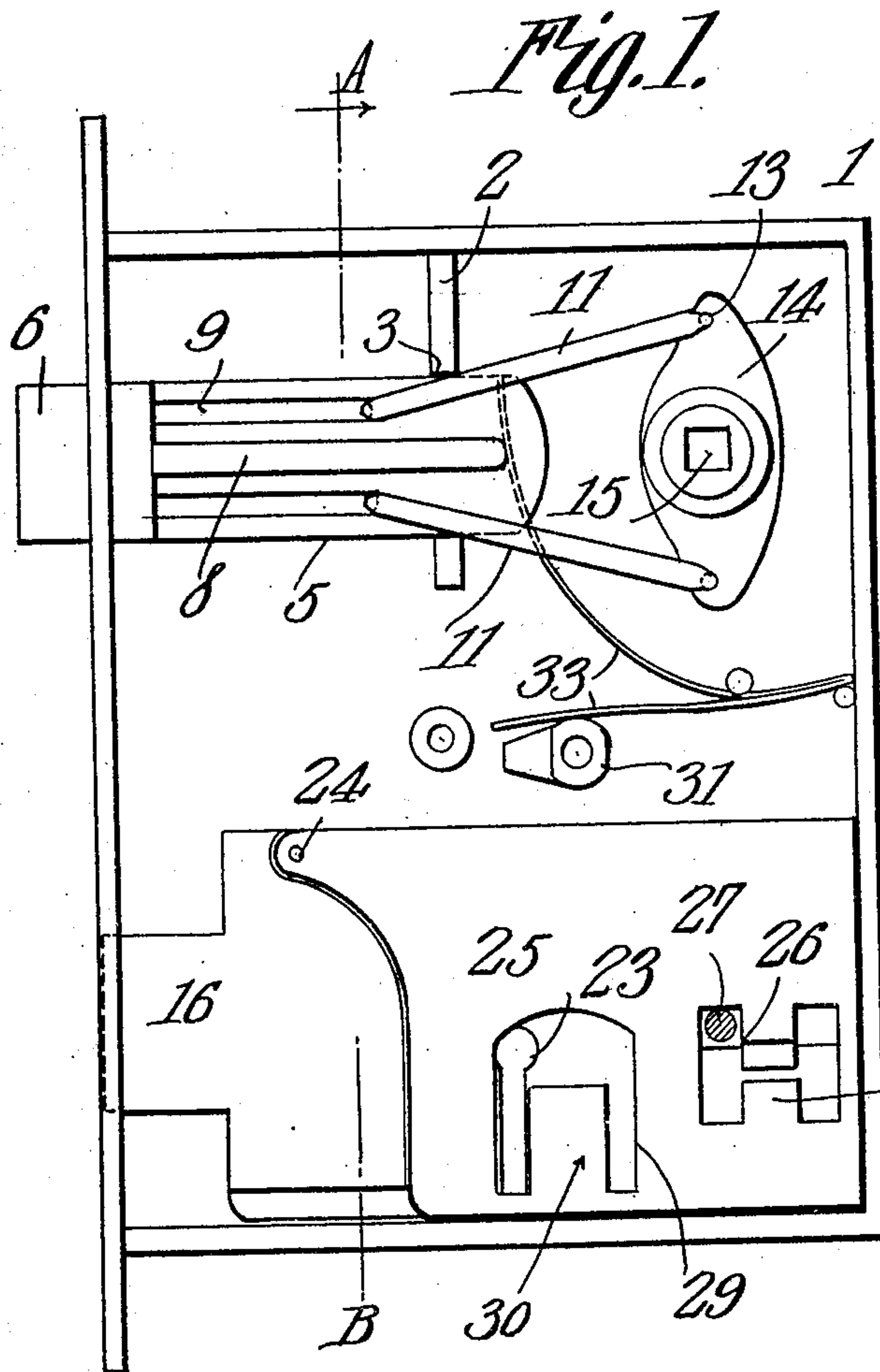
L. F. DAHL.
TUMBLER LOCK.

APPLICATION FILED SEPT. 14, 1908.

Patented Feb. 23, 1909.

2 SHEETS—SHEET 1.

913,622.



Witnesses

Herbert A. Lawson

Inventor

Lendis F. Dahl.

By

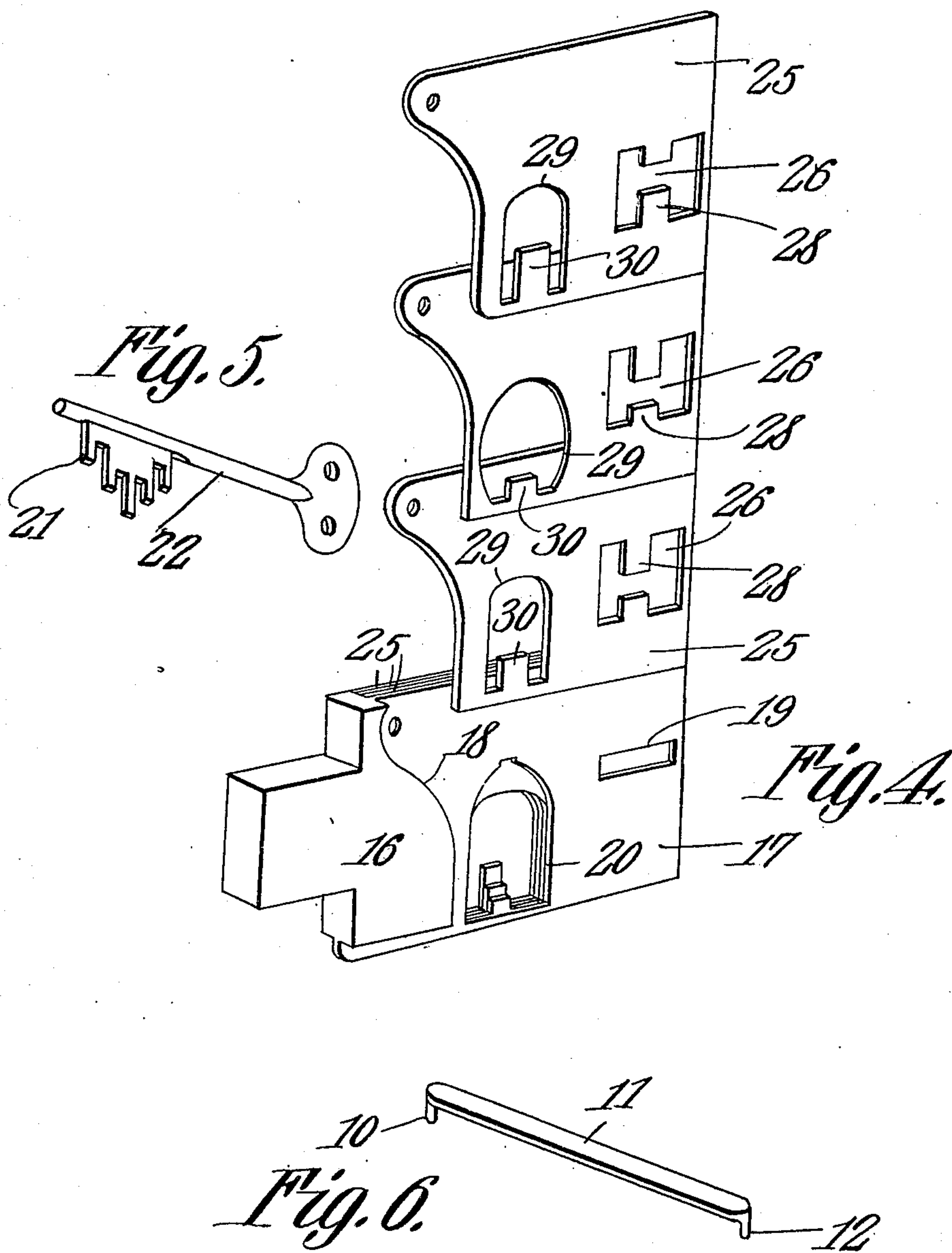
Cashner & Co.

Attorneys

913,622.

L. F. DAHL.
TUMBLER LOCK.
APPLICATION FILED SEPT. 14, 1908.

Patented Feb. 23, 1909.
2 SHEETS—SHEET 2.



Witnesses
E. J. Blount
Herbert D. Lawson.

Inventor
Lendis F. Dahl.
By
C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

LENDIS FREDRICK DAHL, OF SNOHOMISH, WASHINGTON, ASSIGNOR OF ONE-HALF TO
GEORGE W. PARR, OF SNOHOMISH, WASHINGTON.

TUMBLER-LOCK.

No. 913,622.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed September 14, 1908. Serial No. 453,011.

To all whom it may concern:

Be it known that I, LENDIS F. DAHL, a citizen of the United States, residing at Snohomish, in the county of Snohomish and State of Washington, have invented a new and useful Tumbler-Lock, of which the following is a specification.

This invention relates to locks for doors and the like and its object is to provide a lock utilizing a series of flat tumblers so as to require a key the bit of which corresponds with the tumblers.

A further object is to provide means carried by each of the tumblers for closing or partly closing that portion of the key-hole located below the key, this closing operation being produced as soon as the key is given a partial rotation, the insertion of any pick or other implement in addition to a key, as is sometimes done by unauthorized persons, being thus positively prevented.

A further object is to provide a lock having a reversible latch bolt the position of which can be readily changed to convert the lock into either a right-hand or a left-hand lock.

With these and other objects in view, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is an elevation of the lock with one of its face-plates removed. Fig. 2 is a section on line "A—B", Fig. 1, both face plates being shown in section. Fig. 3 is a perspective view of the latch-bolt detached. Fig. 4 is a perspective view of the bolt and its tumblers, some of the tumblers being shifted out of their normal positions. Fig. 5 is a detail view of a key to be used in connection with the tumblers. Fig. 6 is a perspective view of one of the links of the latch.

Referring to the figures by characters of reference 1 designates a lock casing of any preferred construction, and arranged within this casing and preferably formed integral therewith is a guide rib 2 having a recess 3 extending longitudinally therein and provided with a central notch 4. Slidably

mounted within the recess 3 is a flat tongue 5 extending from the head 6 of the latch bolt, said head having its free end beveled as indicated at 7. Longitudinal ribs 8 are formed upon opposite faces of the tongue 5 at the center thereof and either of these ribs is designed to travel within the notch 4 according to the position assumed by the latch bolt within the lock. Should the head 6 be arranged with its beveled face 7 at one side thereof the rib 8 at the other side will be positioned within the notch 4, but should the position of the bolt head be reversed the other rib 8 will rest within the notch 4. It will be seen therefore that the bolt can be reversed so as to make the lock either a right-hand or a left-hand lock. Longitudinal slots 9 are formed within the tongue 5 at opposite sides of ribs 8 and these slots are engaged by lugs 10 formed at one end of links 11. Lugs 12 are formed at the other ends of these links and fit within openings 13 formed in opposite end portions of a wing 14 mounted upon the knob spindle 15.

Slidably mounted within the casing is a locking bolt 16 from which extends a thin flat plate 17, there being shoulders 18 formed by the head at its point of conjunction with the plate 17. A longitudinal slot 19 is formed within the free end portion of the plate 17 and a substantially semi-elliptical opening 20 is formed within the tongue between the ends thereof. This opening is designed to receive the bit 21 of a key 22 when the bolt 16 is retracted. In other words, the opening is normally located between the key-holes 23.

A pivot-pin 24 extends through the plate 17 close to the upper portions of the shoulders 18 and mounted on this pin are series of tumblers 25, each tumbler being in the form of a flat plate so shaped as to normally rest by gravity upon one of the shoulders 18 and, when thus positioned, having its edges registering with the corresponding edges of the plate 17. Any desired number of these tumblers may be placed at each side of the plate 17 and formed within the free end portion of each tumbler is a double T-shaped slot 26 a portion of which is designed to normally register with a portion of the slot 19. These

normally registering portions of slots 19 and 26 have a transversely extending locking pin or screw 27 extending through them, said pin or screw being also utilized to fasten the face plate of the lock in position. The opposed tongues 28 formed by the slot 26 are of different lengths in the different tumblers so that the necessary vertical movement of the tumblers, in order to bring the middle portions of the slots 26 into register with slot 19, varies.

Each of the tumblers 25 has an opening 29 formed therein and normally registering with the opening 20 in plate 17. The openings 29 in the different tumblers differ in contour and each opening has a tongue 30 extending thereinto from its lower edge. These tongues are of different lengths and are spaced from the opposite side walls of the openings 29. By providing the tongues it becomes impossible to rotate the bit of an inserted key unless said bit is shaped so as to pass the tongues 30 of the different tumblers.

When the bolt 16 is retracted the locking pin or screw 27 is positioned in front of the upper tongues 28 of the different tumblers. It is, therefore, obviously impossible to slide the bolt 16 unless the different tumblers are raised different distances so as to cause the middle portions of their slots 26 to register with the slot 19 in the plate 17. To effect this result it is necessary to so shape the bit 21 of the key as to cause it to lift the tumblers different elevations, said bit being at the same time capable of moving between the upwardly projecting tongues 30. When the key is rotated within the lock the bit thereof will pass tongues 30 and then swing upwardly against the upper walls of the openings 29 and 20. The bit is so shaped as to lift the tumblers different distances so as to cause the middle portions of their slots 26 to register with slot 19 whereupon said bit will push against the wall of opening 20 and slide plate 17 and bolt 16 longitudinally, said bolt carrying the tumblers with it. As the bolt is shifted in this manner the pin or screw 27 assumes a position within the rear ends of the slots 19 and 26 and when the bit 21 moves downwardly so as to permit the tumblers 25 to drop by gravity, the tongues 28 on the various tumblers will assume positions in front of the pin or screw 27 so as to positively prevent the bolt 16 and the tumblers from being retracted into the lock. It will be noted that during the movement of the bolt the tongues 30 assume positions between the key-holes and thus prevent the insertion of picks, etc.

In order to prevent the bolt 16 from being shifted even upon the insertion of the proper key, a button 31 is mounted to rotate within the casing and has a knob 32 connected to it and extending beyond the casing, whereby

the button can be shifted so as to contact with the upper edges of the tumblers and thus prevent said tumblers from being elevated. Springs 33 are arranged within the casing and designed to bear against the latch bolt tongue 5 and the button 31 respectively. The springs will thus operate to hold the latch bolt normally projected and to hold the button either in contact with or shifted from the tumblers 25.

To further guard against unauthorized actuation of the lock, the tumblers may be made of different thicknesses. Should the tumblers fail to drop by gravity the bit of the key will move downward into contact with the tongues 30 and force the tumblers into their proper positions. The slots 26 have been shown provided with straight walls, but it is to be understood that whenever necessary these walls can be curved. Although the lock has been shown combined with a latch it is to be understood that the latch portion of the device may be dispensed with if desired.

What is claimed is:—

1. In a lock the combination with a sliding bolt having a plate extending therefrom and apertured for the reception of a key-bit; of tumblers pivotally connected to and carried by the plate, said tumblers having apertures disposed to register with the aperture in the plate to receive a key-bit.
2. In a lock the combination with a sliding bolt; of tumblers pivotally connected to the bolt and having key bit-receiving openings therein and normally in position to receive a key, said openings being of different contours, and a tongue projecting into each opening.
3. In a lock the combination with a sliding bolt having a plate extending therefrom and apertured for the reception of the bit of a key, said plate being slotted in the direction of its movement; of tumblers pivotally connected to the plate and having key-bit-receiving openings normally registering with the corresponding opening in the plate, there being tongues extending into the openings within the tumblers, angular slots within the tumblers and normally positioned with portions thereof in register with the slot in the plate, and a retaining device extending through the registering portions of said slot, said device being fixed relative to the bolt and tumblers.
4. The combination with a sliding bolt and a plate extending therefrom, there being shoulders at the point of contact between the bolt and the plate; of flat tumblers pivotally connected to the plate and normally resting by gravity upon the shoulders, said tumblers and the plate having key-bit-receiving openings normally registering, tongues of different proportions within the openings of the tumblers, there being a straight slot within

the plate and irregular slots within the tumblers, portions of the slots registering at all times, and a relatively fixed retaining device extending through the registering portions
5 of the slots, said tumblers being shiftable to different degrees to permit longitudinal movement thereof upon the retaining device.

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

LENDIS FREDRICK DAHL.

Witnesses:

A. M. DALE,

J. DEK. BROWN.