

No. 682,975.

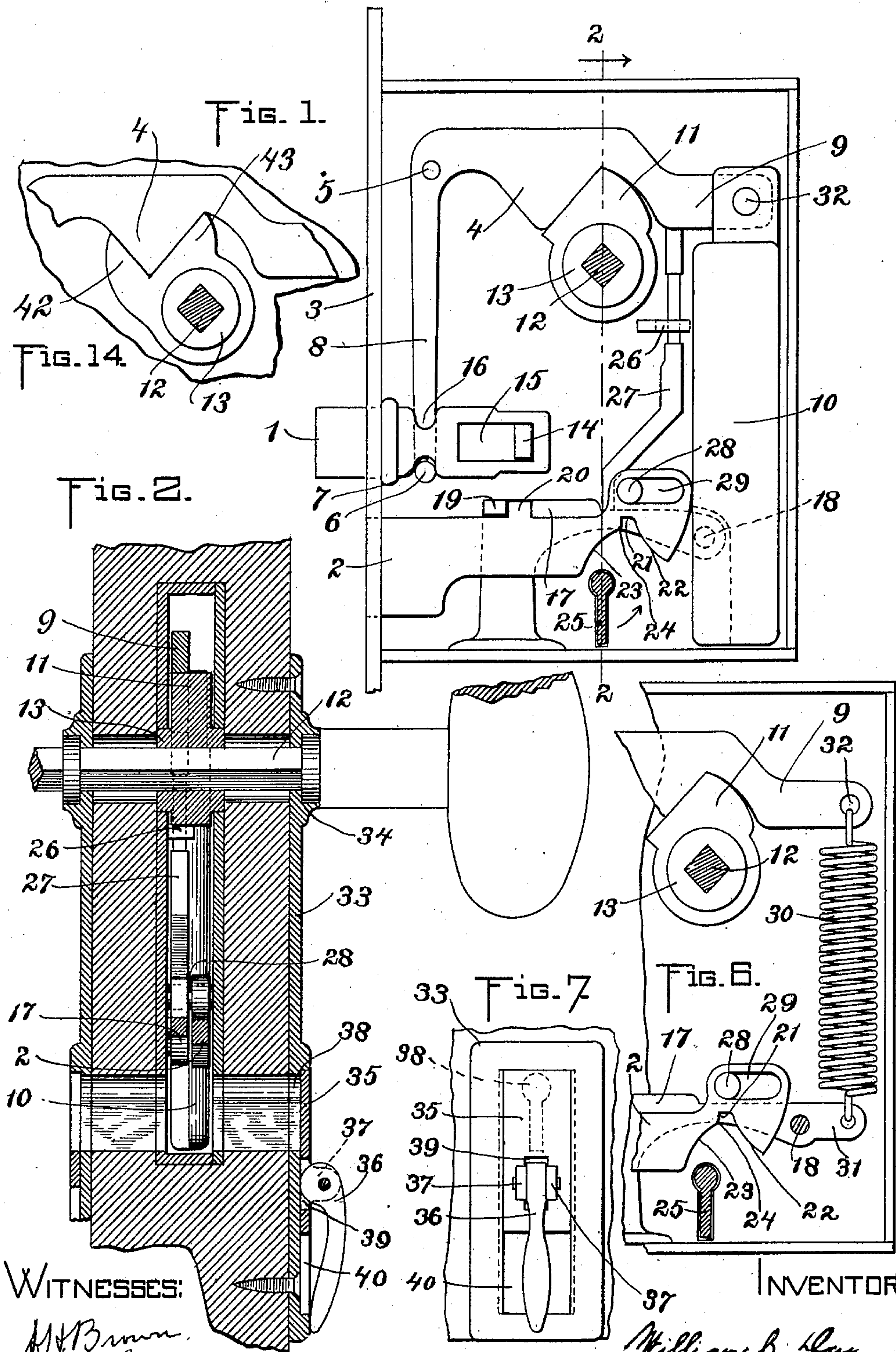
Patented Sept. 17, 1901.

W. C. DAY.  
LOCK AND LATCH.

(Application filed Mar. 6, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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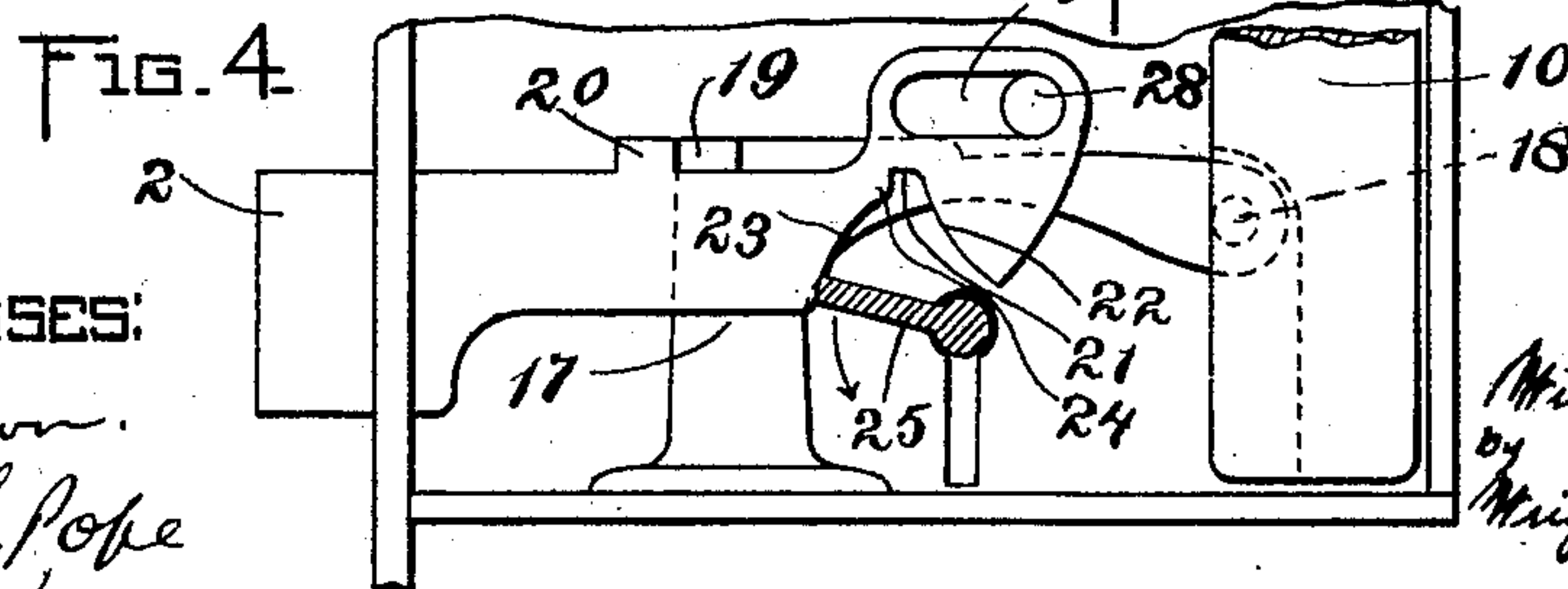
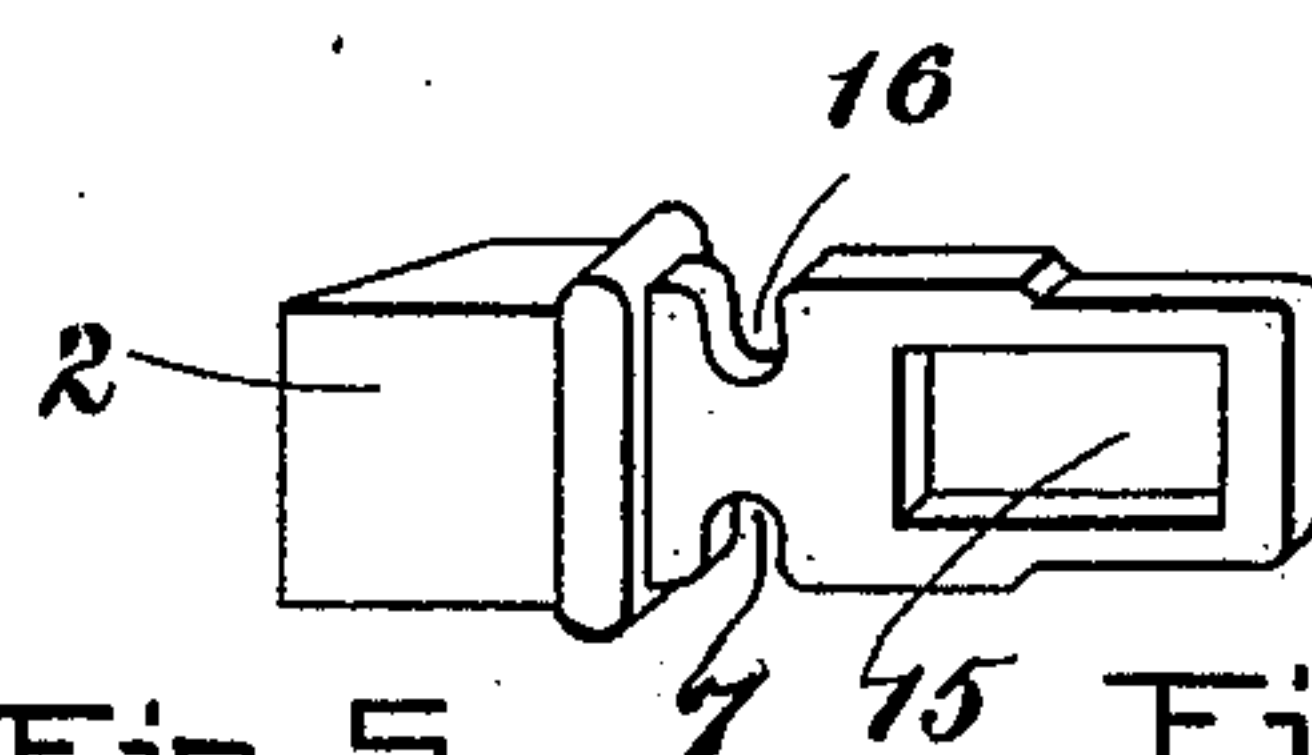
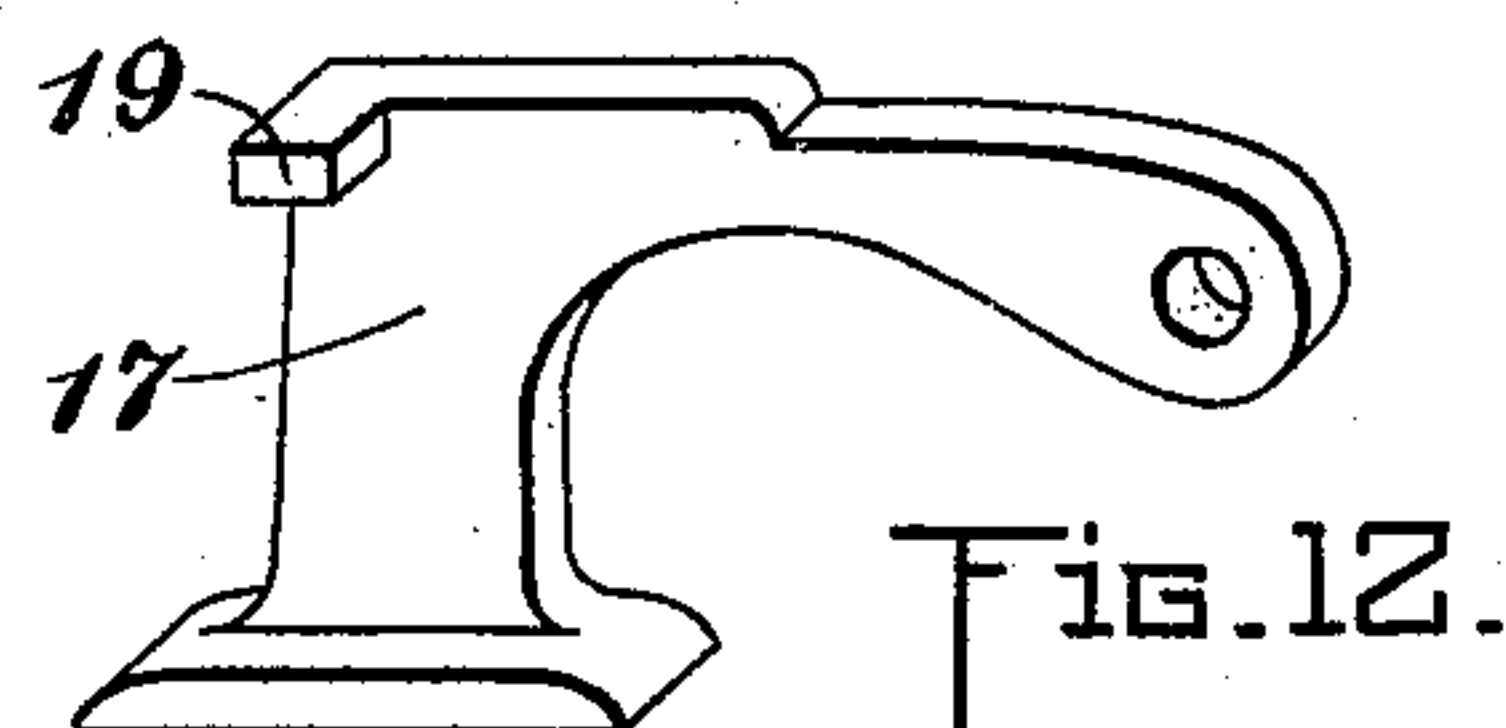
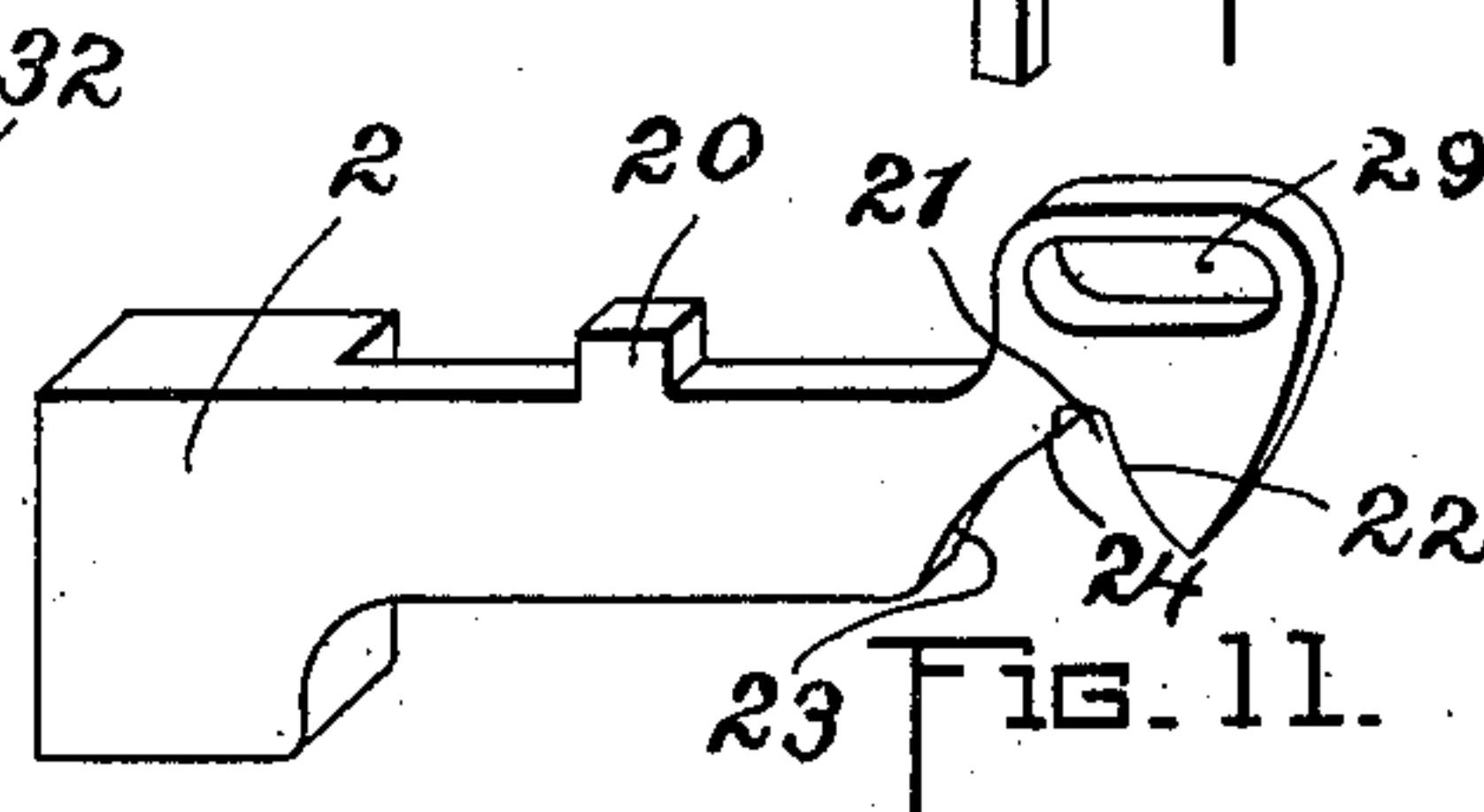
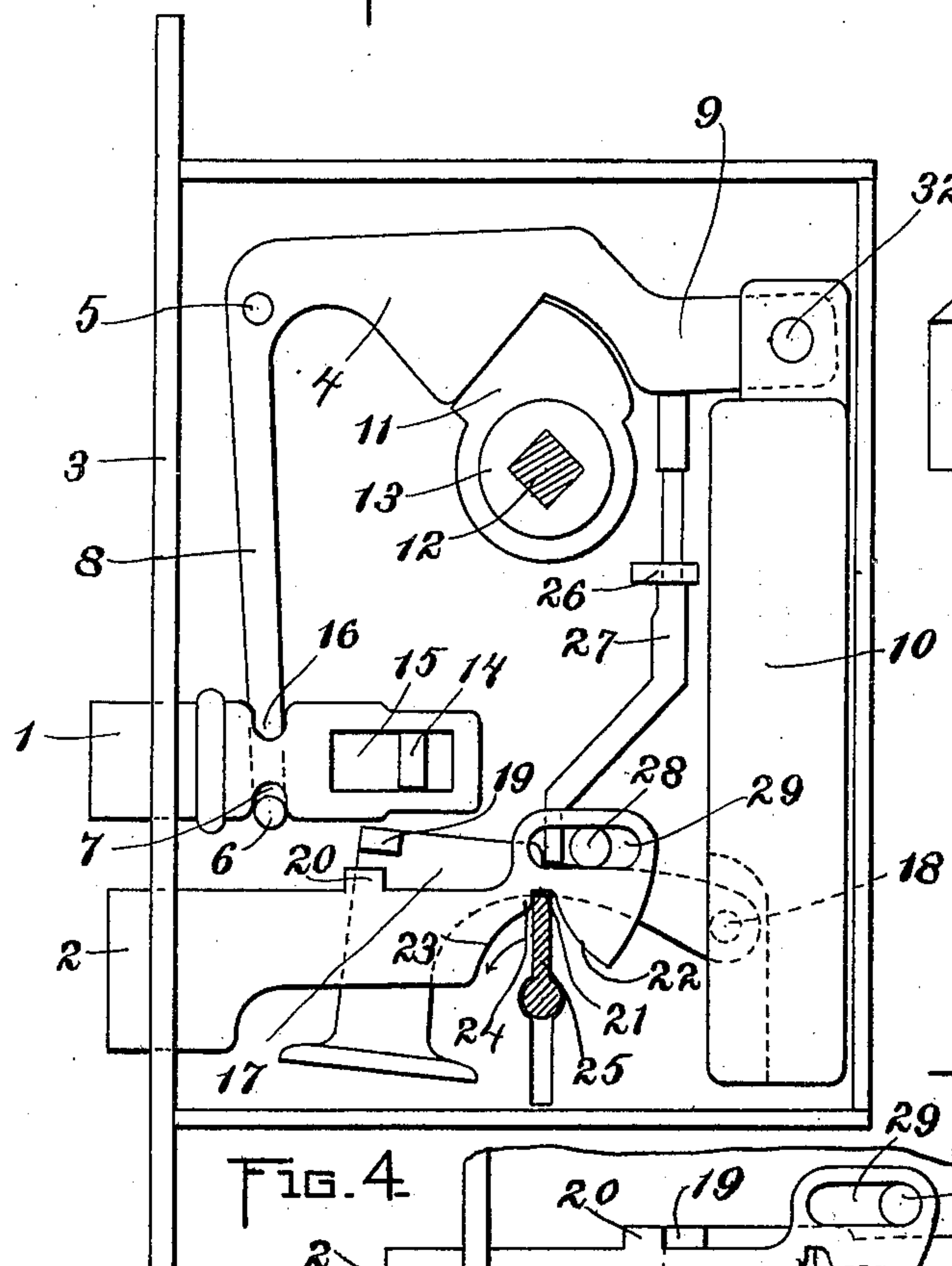
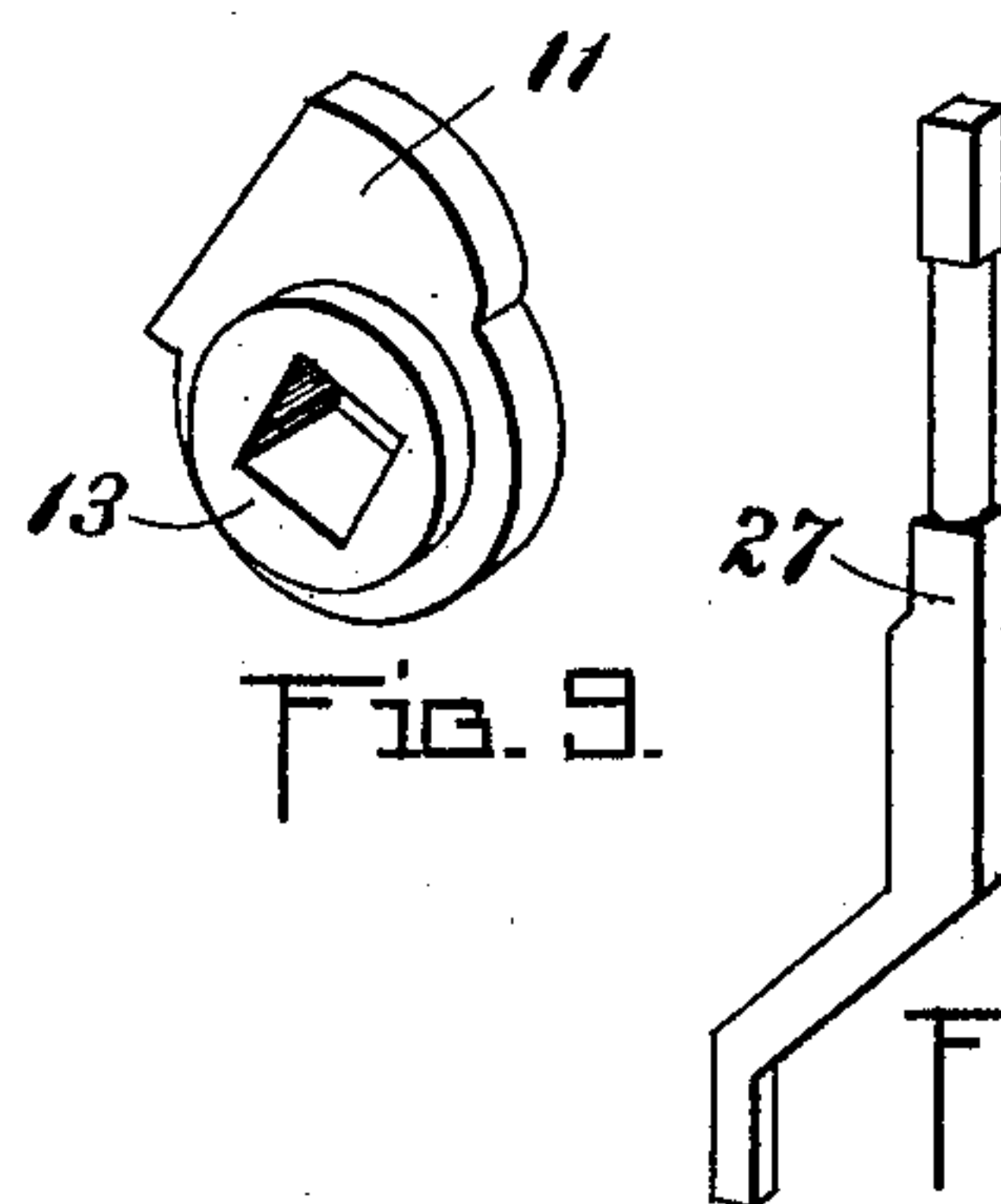
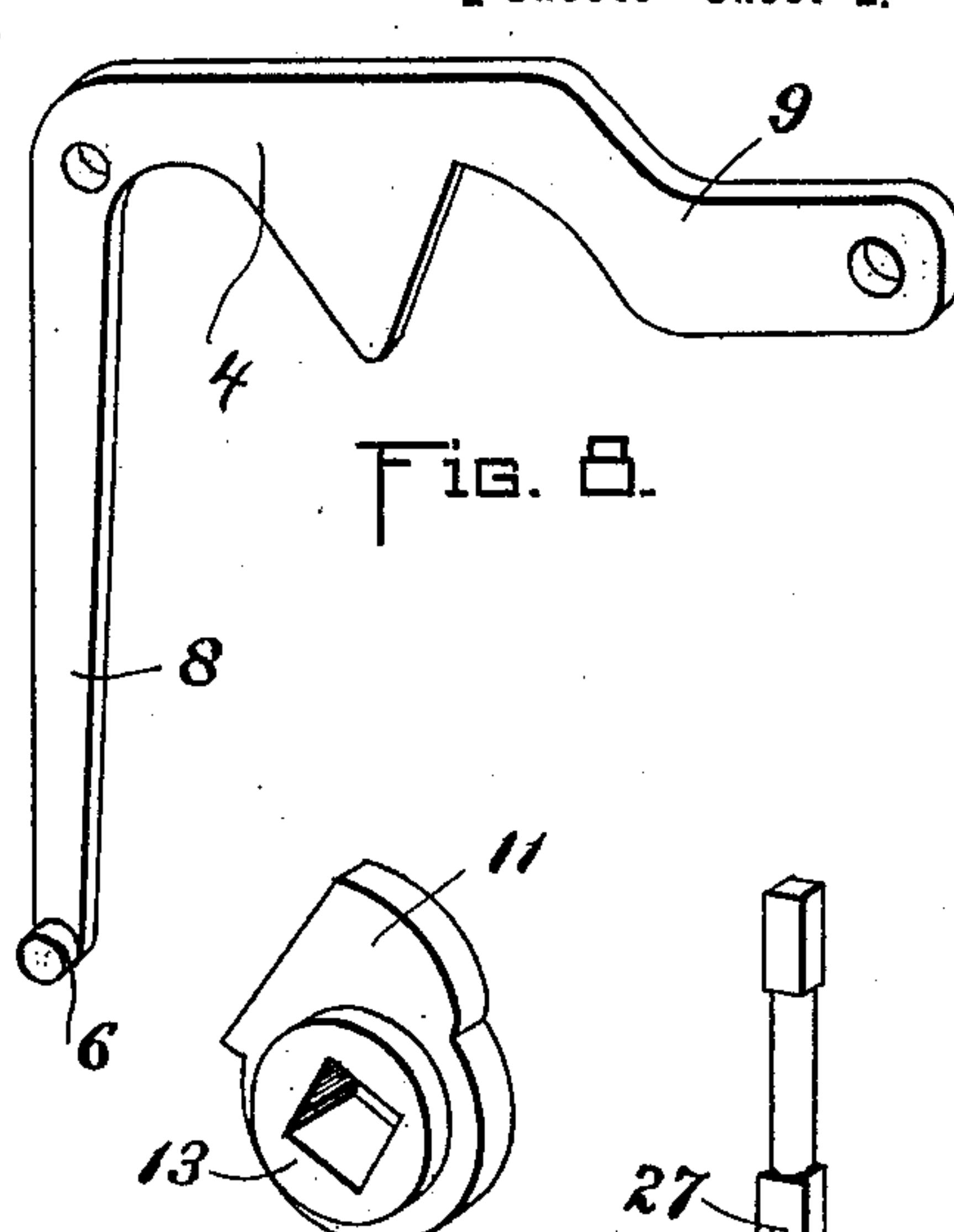
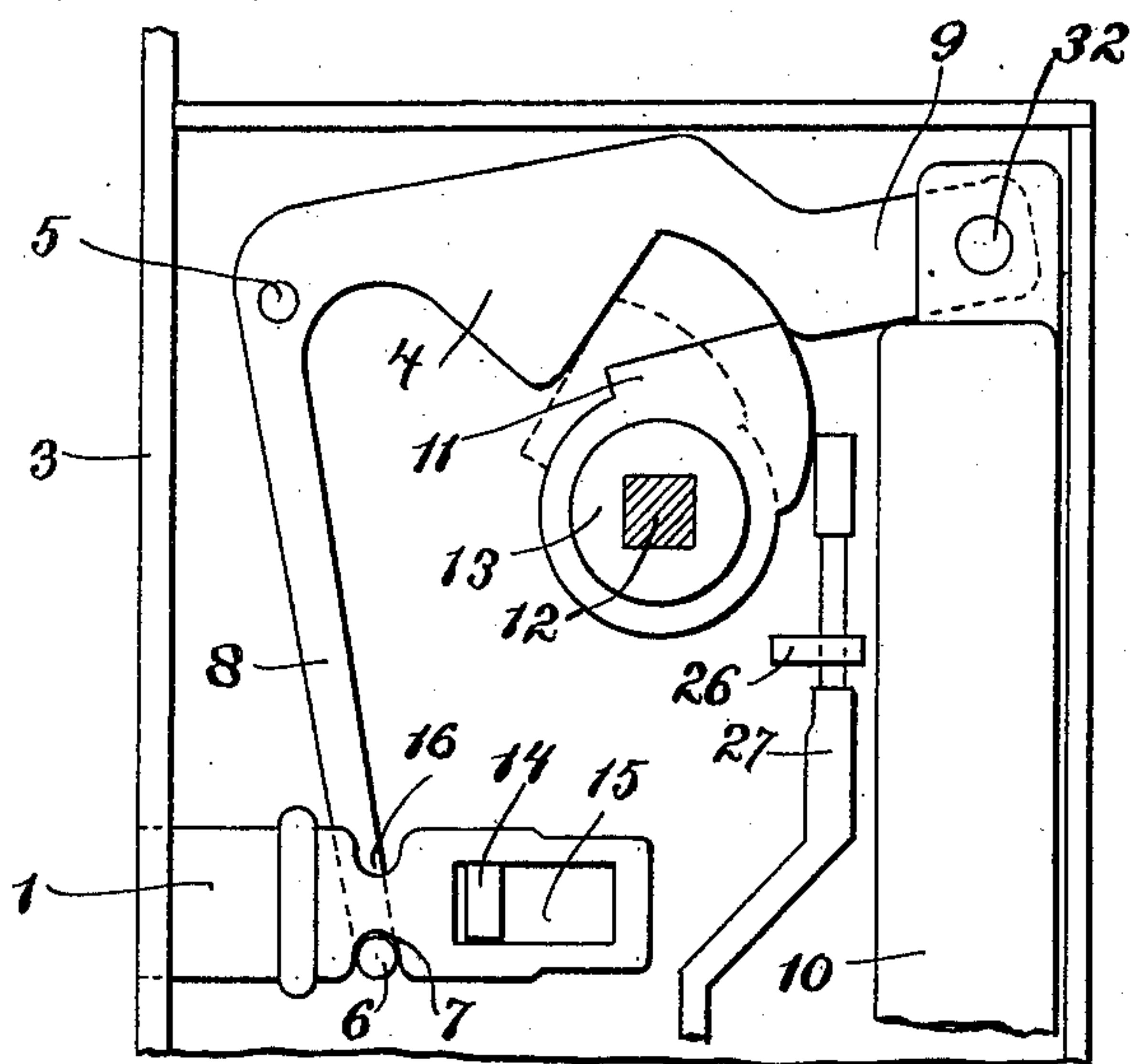
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# UNITED STATES PATENT OFFICE.

WILLIAM C. DAY, OF RUMFORD FALLS, MAINE, ASSIGNOR TO GEORGE W. RIDLON, OF WEST PARIS, MAINE.

## LOCK AND LATCH.

SPECIFICATION forming part of Letters Patent No. 682,975, dated September 17, 1901.

Application filed March 6, 1901. Serial No. 50,128. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. DAY, of Rumford Falls, in the county of Oxford and State of Maine, have invented certain new and  
5 useful Improvements in Locks and Latches, of which the following is a specification.

This invention relates to locks and latches such as are ordinarily used for fastening doors, and has for its object to provide an efficient and simple mechanism compactly arranged adapted to operate both the latch and the latch-bolt.

The invention consists in the improvements hereinafter described and claimed.

15 In the drawings illustrating this specification, Figure 1 is a side elevation of a latch-and-lock mechanism embodying my invention, the parts being shown in their normal positions. Fig. 2 is a section on the line 2 2  
20 of Fig. 1, showing the mechanism in place in a door. Fig. 3 is a view similar to Fig. 1, showing the latch-bolt retracted and the corresponding positions of the latch-operating mechanism. Fig. 4 is a similar view showing the locking-bolt partially projected and  
25 corresponding positions of the other parts of the mechanism. Fig. 5 shows the locking-bolt wholly projected. Fig. 6 is an elevation similar to Fig. 1, showing a modified form of the apparatus. Fig. 7 is a side view of an  
30 appliance shown in section in Fig. 2 for excluding dust and water from the lock. Figs. 8 to 13 represent perspective views showing in detail the several parts of the device. Fig. 14 represents a fragmentary view showing a modification.

The same reference characters designate the same parts in all the figures.

Referring to the drawings, the apparatus  
40 is provided with a latch-bolt 1 and a locking-bolt 2, the former having one of its outer faces beveled in the usual manner, each adapted to be projected through a slot in the front plate 3 of the lock-casing. The latch-  
45 bolt 1 is operated by a bell-crank lever 4, pivoted at 5 to the casing, one arm 8 of which carries a stud 6, so placed as to engage a recess 7 in the shank of the latch-bolt 1. From the other arm 9 of the bell-crank lever 4 is hung a  
50 weight 10, pivoted at 32, which acts to hold the lever 4 in the position it takes when the

latch-bolt is projected to its fullest extent, as shown in Fig. 1. To retract the latch-bolt, the arm 9 of the bell-crank lever is raised from this position by means of a cam 11, 55 formed on the hub 13, journaled in the side plates of the casing and operated by the spindle 12, to which the door-knobs are attached. The cam 11 is formed with two inclined faces, one of which is plane and the other slightly curved, and projects into a recess having similar inclined surfaces in the arm 9 in order that rotation of the spindle 12 in either direction may cause the cam 11 to operate so as to raise the arm 9 of the bell- 65 crank lever 4 and withdraw the latch-bolt 1. Too great travel of the latch-bolt in either direction is prevented by a stud 14, fast to the casing, which projects through a slot 15 in the shank of the latch-bolt and limits the travel of the same. The latch-bolt shank is 70 also provided with a recess 16 opposite the recess 7 and similar to it in every respect, by means of which the latch-bolt is rendered reversible—that is, the same latch-bolt may be 75 used with its beveled face toward either side of the lock desired. Thus one form of lock may be applied to doors swinging in either right or left hand rotation, for in case a lock as assembled is not suited for some particu- 80 lar door by reason of the latch-bolt being situated with its beveled surface facing the wrong way, all that is required is simply to remove the latch-bolt, turn it over, and replace it.

85 The locking-bolt 2 is provided at the rear portion of its shank with a recess 21, having curved surfaces 22 and 23, on the latter of which a shoulder 24 is formed. It is operated in the usual manner by a key 25, which when 90 turned in the direction of the arrow in Fig. 1 slides along the surface 22 and engages the shoulder 24 and projects the bolt. Successive positions of the bolt and key are shown in Figs. 4 and 5. To prevent the bolt from 95 slipping freely in and out, there is provided a tumbler 17, pivoted to the casing at 18 and provided with a finger 19, which engages a projection 20 on the upper surface of the shank of the bolt. The lower surface of the 100 tumbler is formed as a cam and is so situated that the key 25 when being rotated



strikes it before engaging the shoulder 24. Motion of the key in the direction of the arrow, after coming in contact with the tumbler, raises the latter, and consequently the finger 19, carried by it, until when the key finally reaches the shoulder 24 the finger 19 is lifted entirely clear of the stop 20 and the bolt 2 is left free to be projected by further rotation of the key. The relative positions of bolt, tumbler, and key when the latter has proceeded through a half-revolution, are clearly shown in Fig. 4. Motion of the key beyond this point allows the tumbler to be lowered to its former position, where the finger 19 is again in position to engage the stop 20, but now in its rear, so that the bolt is prevented from slipping back. Rotation of the key in the other direction reverses the operation, raising the tumbler clear of the stop 20, retracting the bolt, and again lowering the tumbler. A stop 28 on the casing projects into a slot 29 in the shank of the bolt and serves to guide the bolt and also to prevent its moving too far in either direction for the key to enter properly the recess 21. The tumbler acts in opposition to the pressure of the key only by action of gravity. In order to cause it to act more effectively and better overcome resistance, the weight of the tumbler is supplemented by the weight 10. A strut 27, held in position by suitable guides 26, fixed to the casing, is placed with its lower end resting against the upper edge of the tumbler and its upper end pressing against the under side of the arm 9 of the bell-crank lever 4, so that when the tumbler is raised it acts through the strut 27 to raise the weight 10. Thus pressure enough is applied to the tumbler to cause it drop into place at the proper time and stay there.

I do not limit myself to the use of the weight 10 for the purpose of operating the latch-bolt 1 and the tumbler 17 in the manner described. The functions of this weight may equally well be performed by a spring 30, attached to the arm 9 of the bell-crank lever 4 at the point 32, and to an arm 31 formed on the tumbler 17 and extending rearwardly from the pivot 18. It is evident from an inspection of Fig. 6 that the spring resists upward movement of the arm 9 and also of the tumbler 17 in the same manner as does the weight 10.

In Figs. 2 and 7 is shown a plate 33, attached to the side of the door opposite the portion in which the lock is placed and provided with an escutcheon 34, formed on its upper portion to receive the knob-spindle 12, and a keyhole 38 in its lower portion. A dovetailed recess 40 is formed in the lower portion of the plate, in which is fitted a sliding plate 35, adapted to cover the keyhole and exclude dust, water, and other extraneous matter from it and the lock. The plate 35 is retained in position to cover the keyhole by a cam-lever 36, pivoted to ears 37 37 on the plate 35, the cam portion of the lever projecting through

a slot 39 in the plate 35 and bearing against the plate 33. When a key is to be inserted in the keyhole, the lever is released and the plate 35 allowed to drop below the keyhole.

It will be observed that the weight 10 is removably connected to the upper arm of the lever at 32, and being connected by a single pin the said weight may swing relatively to the lever in order that the weight is given vertical movement in practically a direct line, and therefore the casing of the mechanism need not be as large as would be required if the weight were integral with the lever or rigidly connected thereto. In the latter case the weight would necessarily have to swing, and the lower end thereof would have to be permitted to have a considerable lateral movement. When a spring is used, as shown at 30 in Fig. 6, even a lesser amount of room needs to be provided in the casing. Whether a weight or spring is employed, the removable connection thereof at 32 with the end of the lever enables it to be replaced by one of greater or lesser power, if desired, without changing the entire lever.

In Fig. 14 I show the hub 13 provided with a cam composed of two arms 42 and 43, between which is a recess the sides of which bear on the projection on the lever 4. These arms 42 43 constitute an equivalent of the cam 11 and are preferable to said cam, for the reason that they cause a quicker movement of the lever 4.

It will be observed that my entire lock-and-latch mechanism is very compactly arranged. I am enabled to produce such an arrangement by reason of the bell-crank lever being pivoted in the upper part of the casing near the front thereof, the lower arm 8 therefore extending vertically and occupying little room in said casing, and also by reason of the upper arm extending horizontally and owing to its location providing space below the outer end thereof for the weight or spring at the rear of the casing. The upper arm is therefore short, and the weight or spring occupies but slight lateral space in the casing.

What I claim is—

1. In a door lock and latch apparatus, a latch-operating mechanism comprising a latch-bolt, a bell-crank lever pivoted in the upper front part of the casing and having a lower arm engaging said latch-bolt and an upper arm extending rearwardly in the casing, means for operating said bell-crank lever so as to retract the latch-bolt, means detachably connected with the end of the upper arm for operating said lever to project the latch-bolt, a lock-bolt, a tumbler for retaining the lock-bolt in position, and a strut resting on the said tumbler and having its upper end adapted to be engaged and borne upon by said upper arm of the lever.

2. In a door lock and latch, a latch-operating mechanism comprising a latch-bolt, a bell-crank lever pivoted in the upper front part of the casing and having a lower arm extend-



ing substantially vertically in the front part  
of the casing and engaging said latch-bolt,  
and an upper arm extending horizontally and  
rearwardly in the casing and having a recess  
5 formed with inclined faces, a knob-spindle  
having a cam entering the recess of said bell-  
crank lever so as to retract the latch-bolt, a  
lock-bolt, a tumbler for retaining the lock-  
bolt in position, and means connecting the

end of the upper arm of said lever with the  
locking-tumbler.

In testimony whereof I have affixed my sig-  
nature in presence of two witnesses.

WILLIAM C. DAY.

Witnesses:

A. C. LIBBY,

WM. H. MITCHELL.