

No. 698,812.

Patented Apr. 29, 1902.

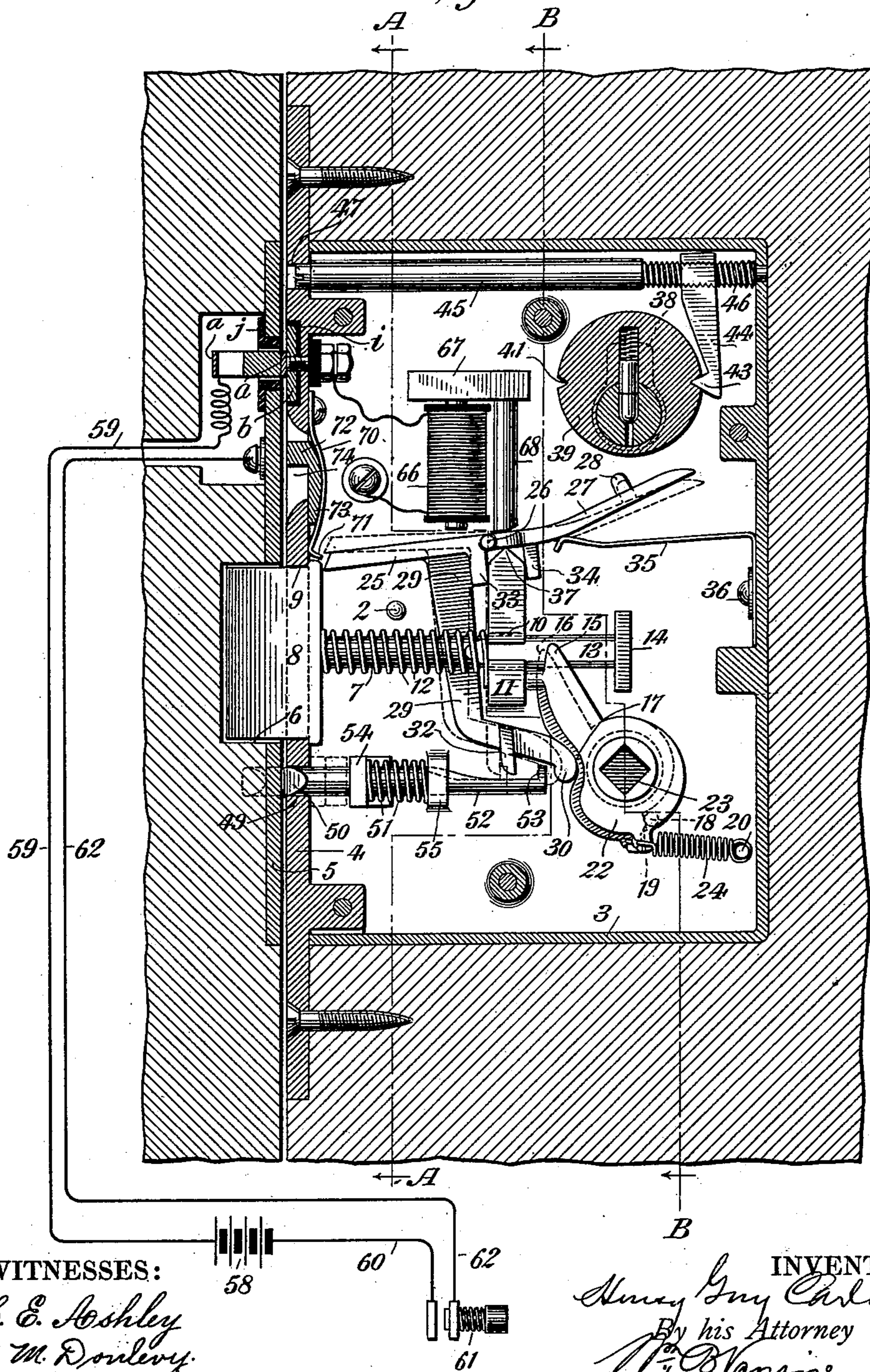
H. G. CARLETON.
LOCK.

(Application filed Apr. 17, 1901.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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Fig. 2.

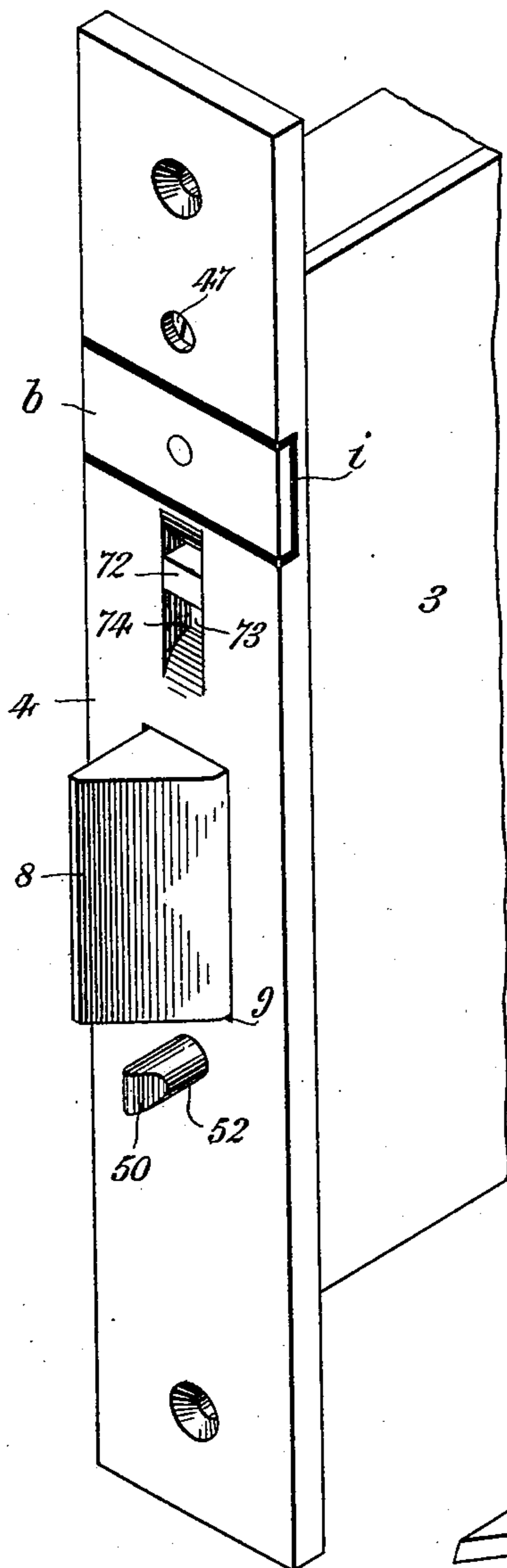


Fig. 3.

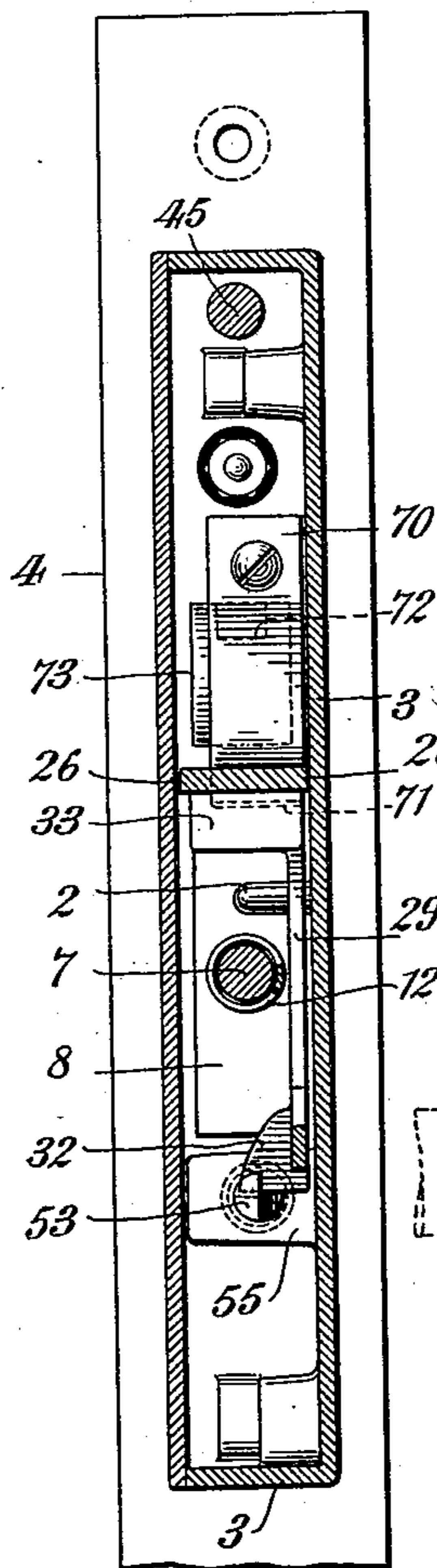
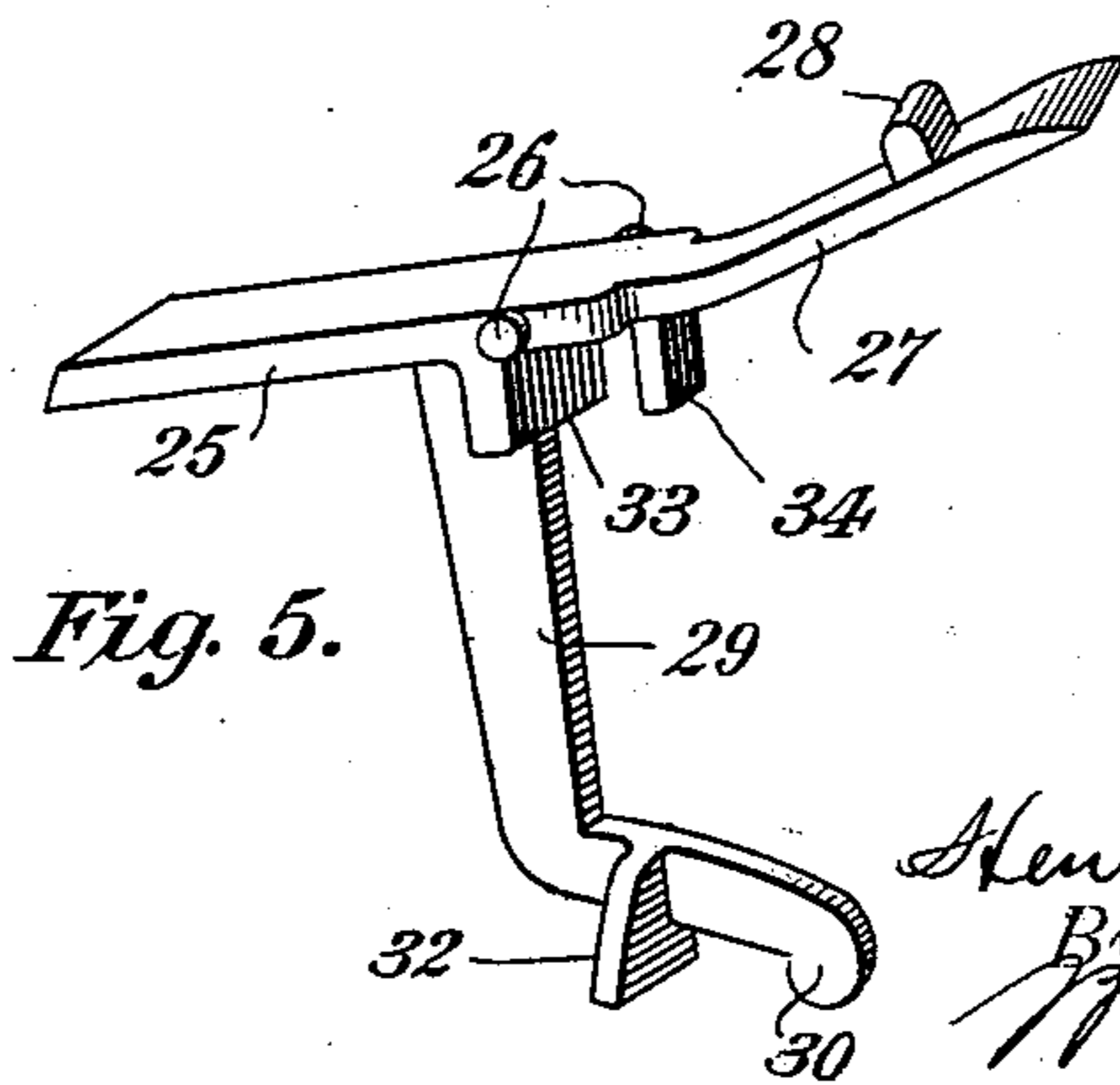
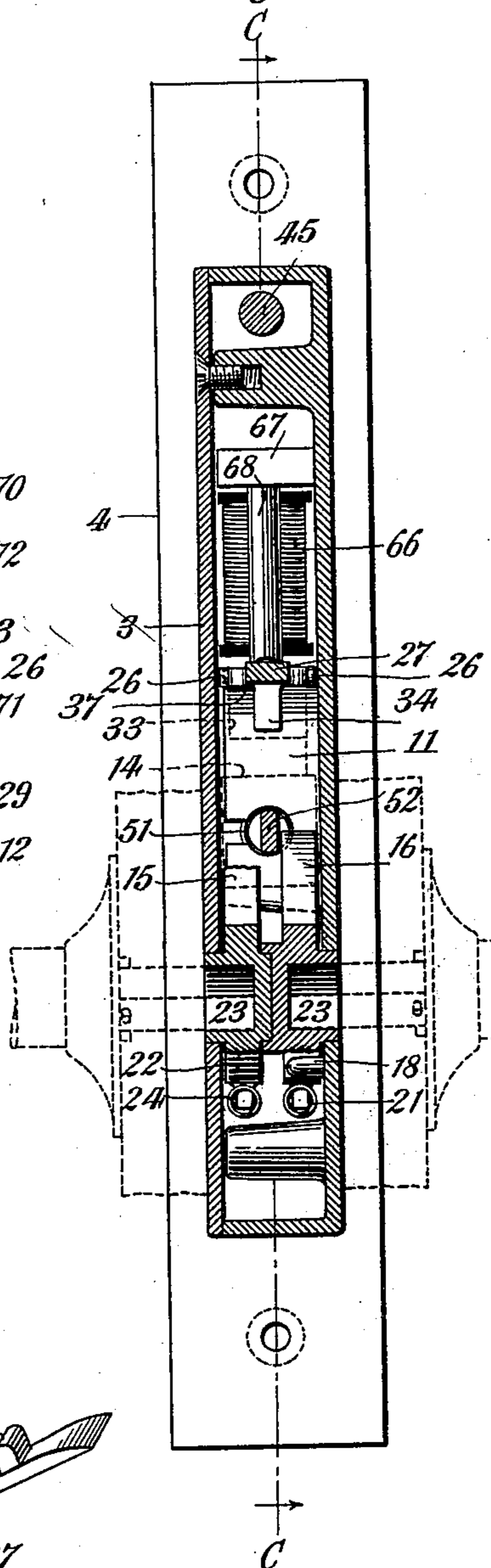


Fig. 4.



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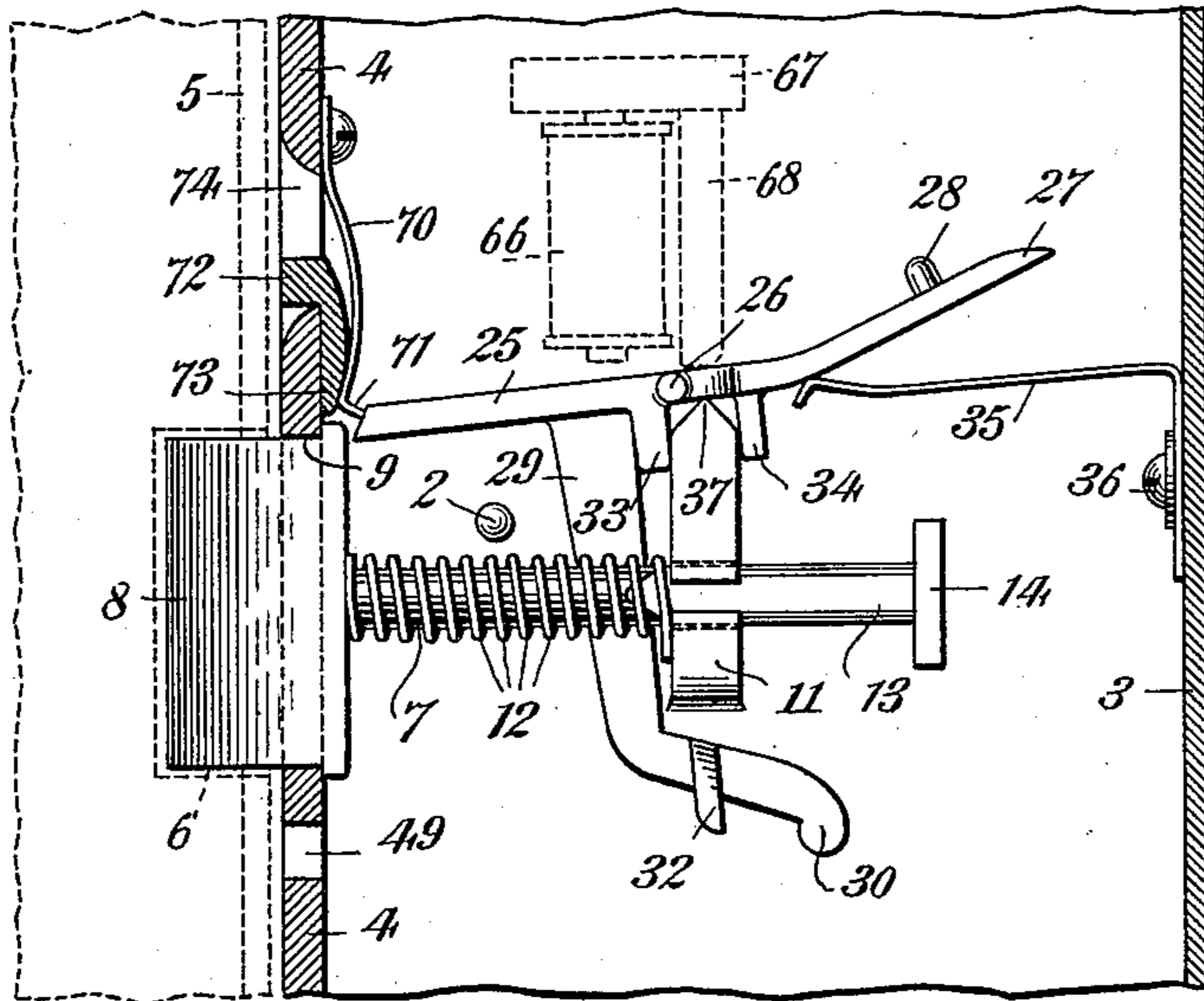


Fig. 6.

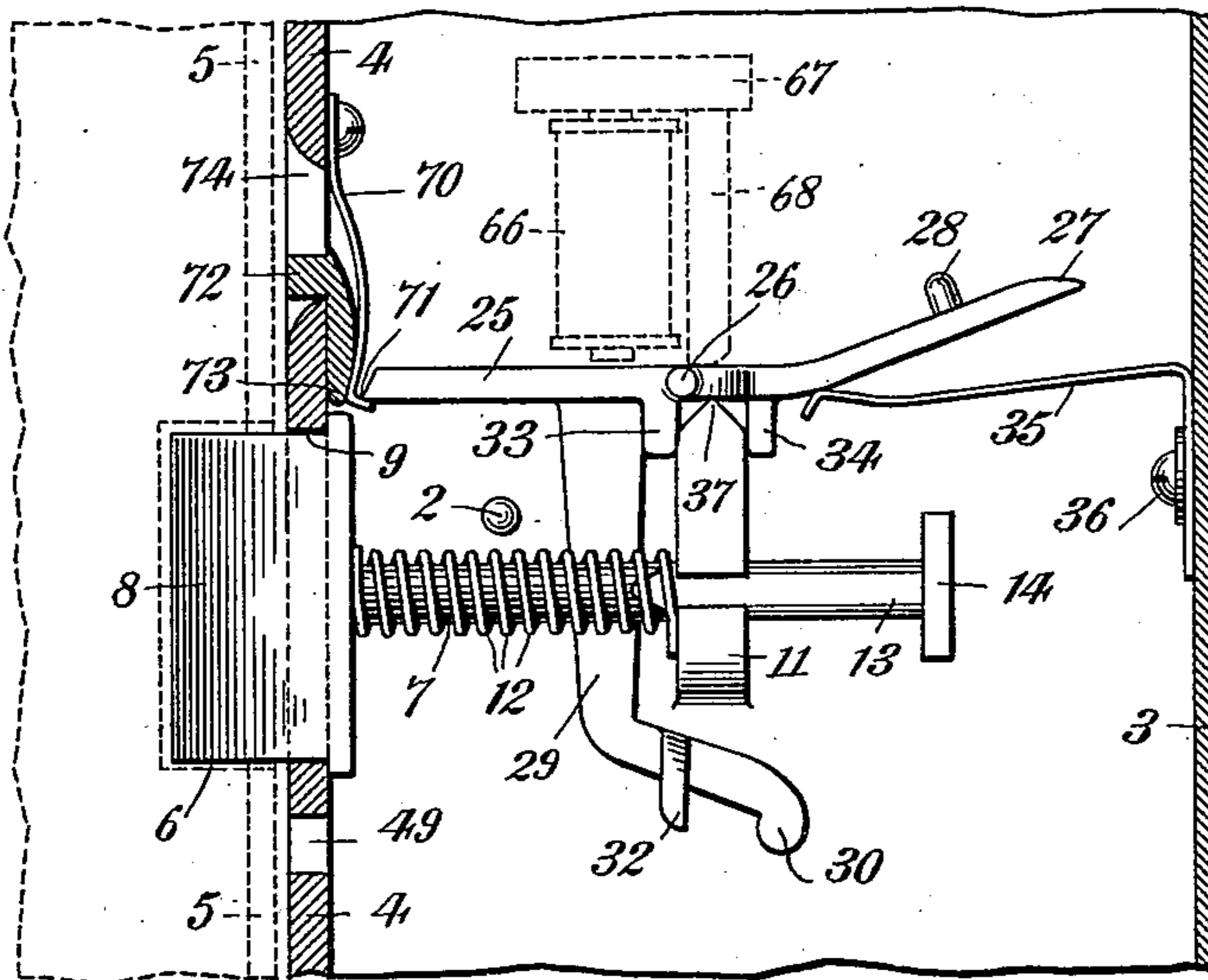


Fig. 7.

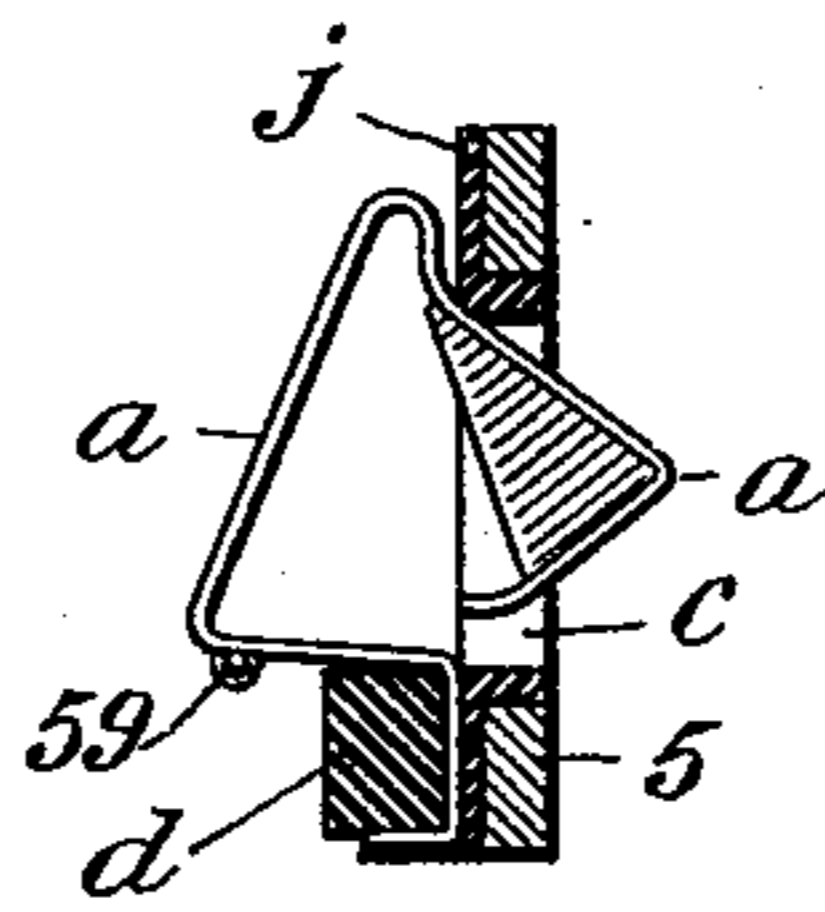


Fig. 8.

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UNITED STATES PATENT OFFICE.

HENRY GUY CARLETON, OF NEW YORK, N. Y.

LOCK.

SPECIFICATION forming part of Letters Patent No. 698,812, dated April 29, 1902.

Application filed April 17, 1901. Serial No. 56,182. (No model.)

To all whom it may concern:

Be it known that I, HENRY GUY CARLETON, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My invention is an improvement upon the lock shown and described by me in United States Letters Patent No. 656,808, dated August 28, 1900. The lock includes a movable engaging part, a locking member, a controlling device consisting of a spring-pressed reciprocating bolt, and three separate and distinct means for operating the locking member to unlock the door. One of these is the key and cylinder or any well-known form of key. Another is an arrangement of cams, usually operated by knob and spindle, and the third is an electromagnet, which may be operated from a distant point.

I provide a device constituting the locking member, consisting of a three-armed lever supported upon a knife-edge bearing. One arm constitutes an armature for the electromagnet. A second arm projects into the path of the cam forming part of the key apparatus, while the third arm engages with the controlling device and projects into the path of a cam operated by knob and spindle from the interior side of the door. I also provide a means for catching and holding the locking member in either of its two positions. This consists of a detent operated by a sliding block in the face-plate of the lock. I also provide certain other novel and useful parts, improvements, and combinations fully described, illustrated, and pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a sectional side elevation of a lock containing my improvements. Fig. 2 is an isometric view of the face-plate with a section of the lock-casing. Fig. 3 is a cross-section on the line A A, Fig. 1, looking in the direction of the arrow. Fig. 4 is a cross-section on the line B B, Fig. 1, looking in the direction of the arrow. Fig. 5 is a perspective view of the locking member or three-armed lever. Fig. 6 is a section on the line C C, Fig. 4, looking in the direction of the arrow and showing the lock-

ing member depressed. Fig. 7 is a similar view, the locking member being in its elevated position. Fig. 8 shows the electrical contact-spring located in the striker-plate.

The lock is shown applied to a door. It is set into a mortise or recess. The lock-casing 3 is provided with face-plate 4. A striker-plate 5 is on the jamb. Said plate has an opening 6, which the engaging member enters. The engaging member consists of a sliding bolt 7 with enlarged head portion 8 projecting through opening 9 in face-plate 4. The stem 7 of the bolt passes through opening 10 in block 11, secured to the casing of the lock in any suitable manner. The stem 7 is surrounded by spring 12, bearing at one end against block 11 and at the other against the head 8 of the bolt. The head 8 where it comes in contact with the striker-plate is beveled off, so that the bolt is readily forced back against the stress of spring 12. The rear portion 13 of bolt 7 is flattened and carries a plate 14, secured to it in any suitable manner. Plate 14 projects on each side of the flattened portion 13 and into the path of two cams 15 and 16. The locking member consists of a three-armed lever 25 27 29. This lever is supported pivotally upon knife-edge 37, formed on block 11 between the lugs 33 and 34. Arm 25 constitutes the armature of electromagnet 66, the pole 68 of which is located in inductive proximity to arm 25, so that it is magnetized through keeper 67 whenever current flows in the circuit containing coil of magnet 66. This circuit extends from battery 58 via conductor 59 to contact-spring *a*, located in an aperture in the striker-plate 5. This spring *a* is held in position by a block of insulating material *d* and projects through an opening *c*, having a bushing *j*, of insulating material, to engage with insulated conducting-plate *b*, set in the insulating material *i* in the face-plate 4. The circuit passes from the spring *a* to the plate *b*, through magnet-coil 66 to the casing of the lock, thence through the bolt 8 to the striker-plate 5, conductor 62, circuit-closer 61, and wire 60 to battery. The lever 25 is influenced by gravity and the flat spring 35, fixed to lock-casing 3 at the point 36, to take up its position behind the bolt-head 8, as shown in Figs. 1 and 6. There is a controlling device for this locking

member consisting of the circular bolt 49, reciprocating in the bearing formed in block 55 and circular aperture in face-plate 4. There is a stop 54 fixed to this bolt, and spring 51, surrounding the bolt and having one end supported on the block 55 and the other end on the block 54, tends to constantly press the bolt outward. The cross-section of this bolt 49 is circular, and the aperture in the face-plate 4 closely fits the outline of the bolt. It results from this that dust and dirt cannot enter the lock through the opening in the face-plate. The beveled or inclined surface at the engaging-point of the controlling member 49 and the striker-plate 5 may be upon either the striker-plate or the end of the bolt. I have shown it upon the end of the bolt; but the bevel is too short to permit an open passage through the face-plate when the door is closed. The end 52 of the bolt 49 is cut away and provided with a projection 53, which engages with a projection 32 on the lever 29 of the locking device. This operates to hold lever 25 elevated while door is open. When the door is closed, the controlling device is pressed back against the stress of spring 51 and the arm 25 is free to drop into position behind the bolt-head 8. When arm 25 is caused to take its elevated position as by the operation of the magnet, or the cam on the key-cylinder, or the cam 16, and the door is open, the projection 53 engages with the part 32, the locking device is held in its unlocked position.

35 The key-cylinder 39 engages the door and lock-casing with a screw-thread. There are two grooves, like 41, extending longitudinally on the surface of key-cylinder 39, with which the tooth 43 at the end of the traveling nut 44 engages. A bolt 45 has a screw-thread 46 and a slotted head 47. By turning bolt 45 tooth 43 on nut 44 may be caused to engage with a groove 41 in the cylinder 39 to hold it against displacement. The key-cylinder 39 carries a cam or projecting arm 38, which may be turned in either direction to cause it to engage with arm 27, which is thereby depressed. The multiple-armed lever or locking member is thereby caused to assume the elevated or dotted-line position, freeing the bolt 7. The cam 38 cannot turn completely around, as the projection 28 on the arm 27 blocks it against complete rotation.

I have arranged two cams in parallel planes to be operated by knobs and spindles, one from the outside, the other from the inside, of the door. The knob on the outside of the door is connected by its spindle with the hole or opening 23 in the cam-disk 22, and the projection 15 on cam-disk 22 is in position to engage with the plate 14 when the knob is turned, and to thus withdraw the bolt-head 8 if the locking member is held in its unlocked or elevated position either by the magnet, the key-cylinder, or the controlling device; but it cannot do so otherwise. The cam 16, however, is in the plane of the projection 30 on

arm 29. This projection 30 when arm 25 is depressed rests in the curved recess 17 of the cam-surface. The cam projection 16 is in position to engage with the plate 14, so that when the cam-disk is turned by the knob on the inside of the door the cam-surface moves the three-armed lever, and thus elevates the arm 25 as the projection 30 rides upon the cam-surface, and immediately following this the projection 16 engages the plate 14 to withdraw the bolt-head 8. A spring 24, having one end fixed to pin 20 on the lock-casing and its other end fixed to the cam 22, serves to hold the cam in the position shown, while a similar spring having one end fixed to the pin 20 and its opposite end connected with the other cam-disk retains the cam in the position shown, resting against stop 18.

It is to be noticed that the spindles of the knob enter apertures 53 in each of the two cam-disks described and that a wall or partition separates the opening in one cam from that in the other, so that a spindle or tool cannot be passed through from the outside of the door to engage with the cam designed to be operated from the inside of the door, as might be done were it not for this wall or separating-partition.

On the compound lever forming the locking member there are lugs 33 and 34 upon each side of the knife-edge bearing-point, and there are trunnions 26 on said lever in position to engage with the lock-casing 3, all arranged to prevent displacement of the locking device.

To provide for blocking and holding the device in an unlocked position, I locate a spring-detent 70 on the inside of face-plate 4. The free end of detent 70 is hooked, as shown at 71, and the end of locking-lever 25 is slightly beveled. The detent 70 is parallel with a slot or opening 74 in face-plate 4. A block 72, having a curved interior contact-surface 73, slides up and down in slot 74. When block 72 is at its upper limit of movement, detent 70 by virtue of its resilience takes position against face-plate 4, its hooked end 71 being free and clear of lever 25, which is free to assume either its elevated or depressed position. When lever 25 is in its elevated position, as shown in Fig. 7, and block 72 is moved to its lower limit, hook 71 engages the under side of lever 25 and blocks it in an unlocked position. When lever 25 is in its depressed position, locking the engaging device, and block 72 is moved to its lower limit, the hooked end 71 of detent 70 engages the beveled end of the lever 25, as shown in Fig. 6, blocking the locking device in a locked position. This would be the result of inserting a tool between the face-plate and striker-plate, as might be done by an unauthorized person for the purpose of unlocking the door, the only possible movement of the block 72 being from its upper to its lower limit, with the result that the locking device would be more securely held.

I have shown and described a key and cylinder; but any form of key or key apparatus may be used, and I have shown and described three actuating devices; but I may employ
 5 any two of the devices shown in connection with the multiple-armed lever.

What I claim, and desire to secure by Letters Patent, is—

1. In a lock, the combination with the movable engaging part, of a locking member there-
 10 for, consisting of a three-armed lever, supported on a pivot, and a separate actuating device for each arm of said lever.

2. In a lock, the combination with the movable engaging part, of a locking member there-
 15 for, consisting of a pivotally-supported lever having three arms, one forming an armature for an electromagnet, the second forming an engaging-point for a key-operated cam and
 20 the third forming an engaging-point for a knob-operated cam; an electromagnet, a key-operated device and a knob-operated cam for actuating said lever.

3. In a lock, the combination with the movable engaging part, of a locking member there-
 25 for, means for shifting said locking member consisting of two separately-movable cams, a spindle-seat or opening in each cam to receive spindles entering from opposite direc-

tions, respectively, operating-knobs and a
 30 wall or partition separating the openings or spindle-seats.

4. In a lock, the combination with the movable engaging part, of a locking member there-
 for, consisting of a multiple-armed lever, a
 35 knife-edge support therefor, and trunnions engaging with the casing of the lock.

5. In a lock, the combination with the movable engaging part, of a locking member there-
 for, consisting of a multiple-armed lever, a
 40 knife-edge bearing or support therefor with a pair of lugs and a pair of trunnions located at right angles to each other to prevent displacement.

6. In a lock, the combination with the movable engaging part, of a locking member there-
 45 for, consisting of a lever having a plurality of arms or engaging-points and a knife-edge support or bearing for said lever fixed upon
 50 the lock-casing.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY GUY CARLETON.

Witnesses:

A. M. DONLEVY,
 C. E. DAVIDSON.