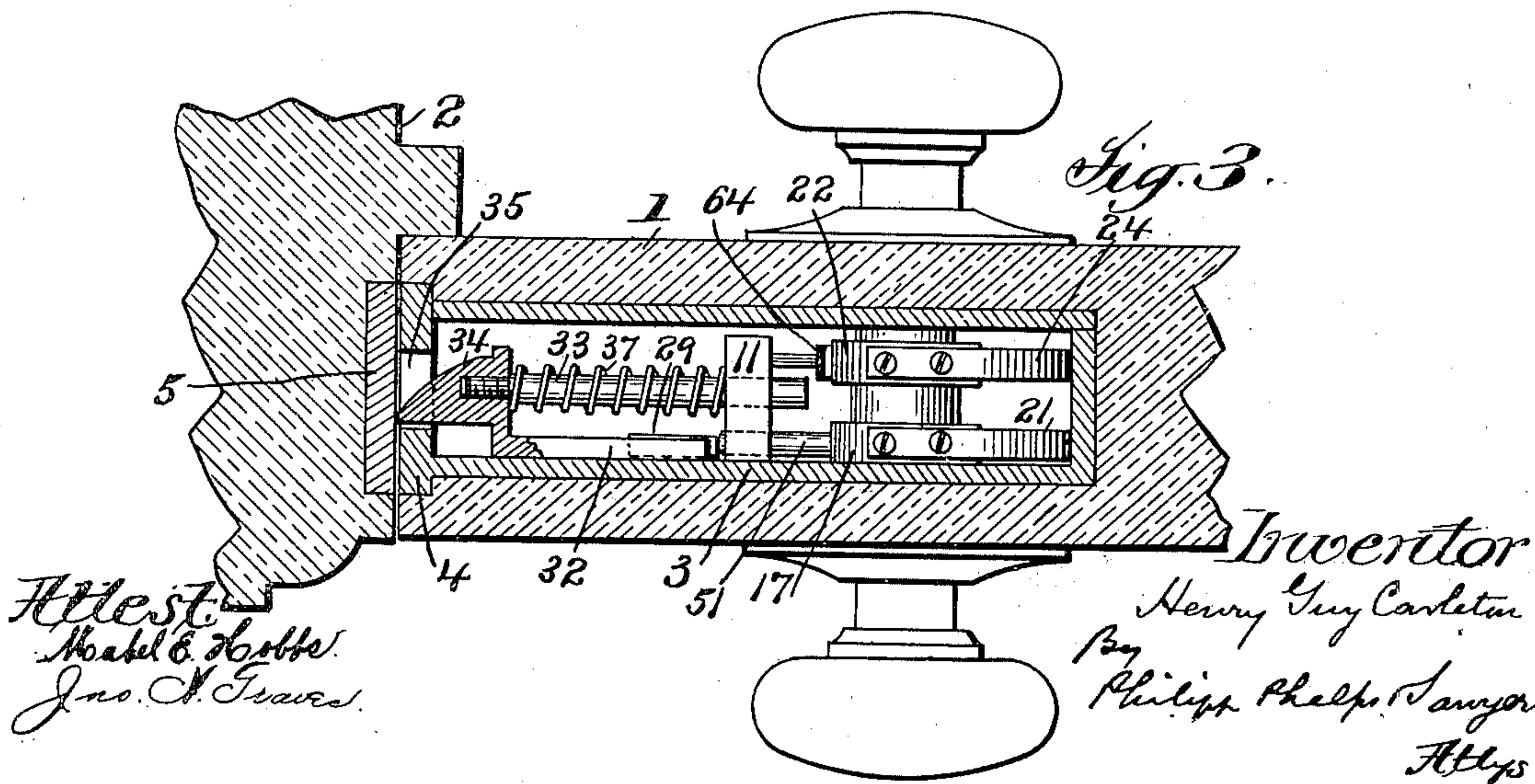
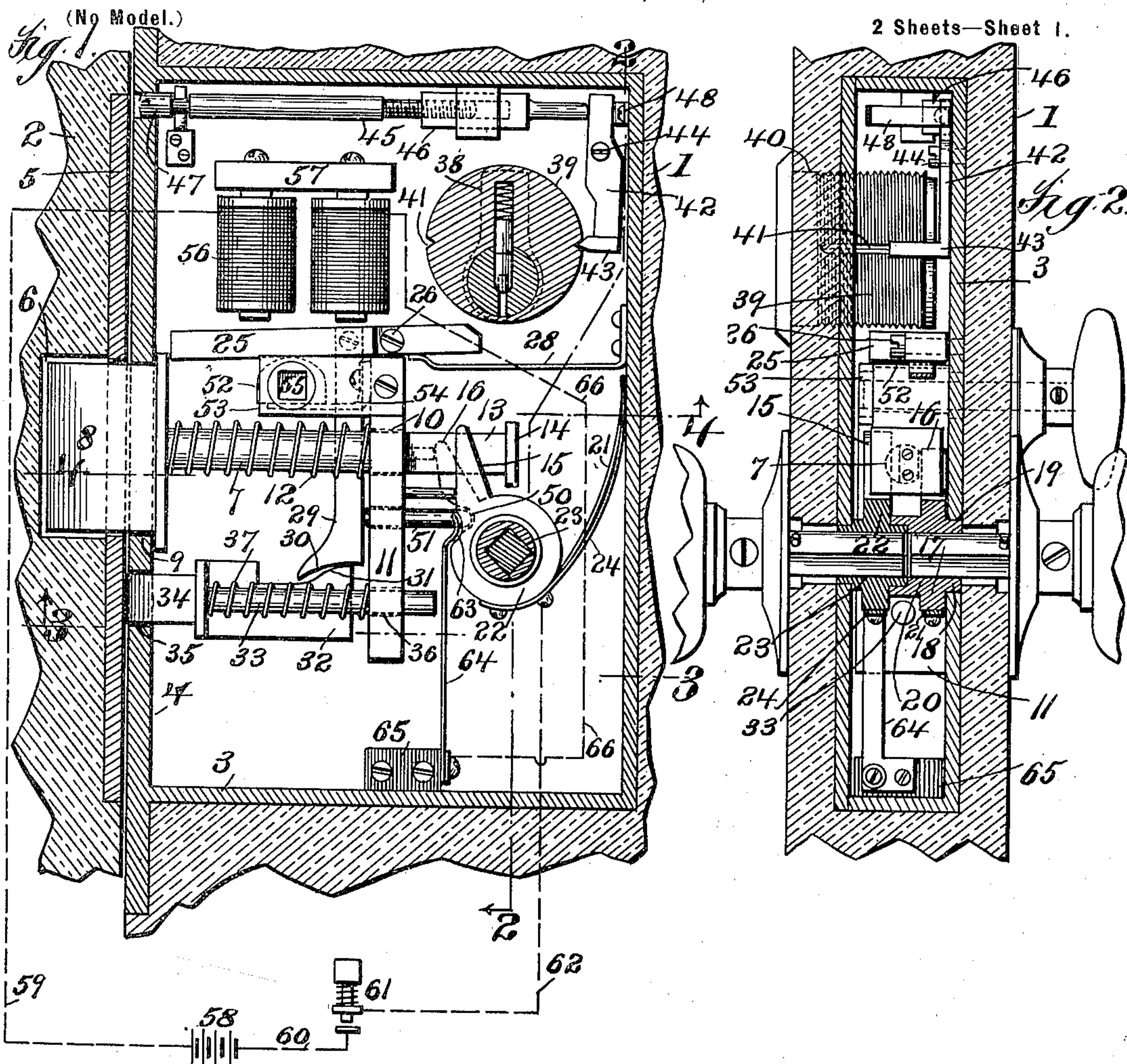


No. 656,808.

Patented Aug. 28, 1900.

H. G. CARLETON.
LOCK.

(Application filed Feb. 10, 1900.)



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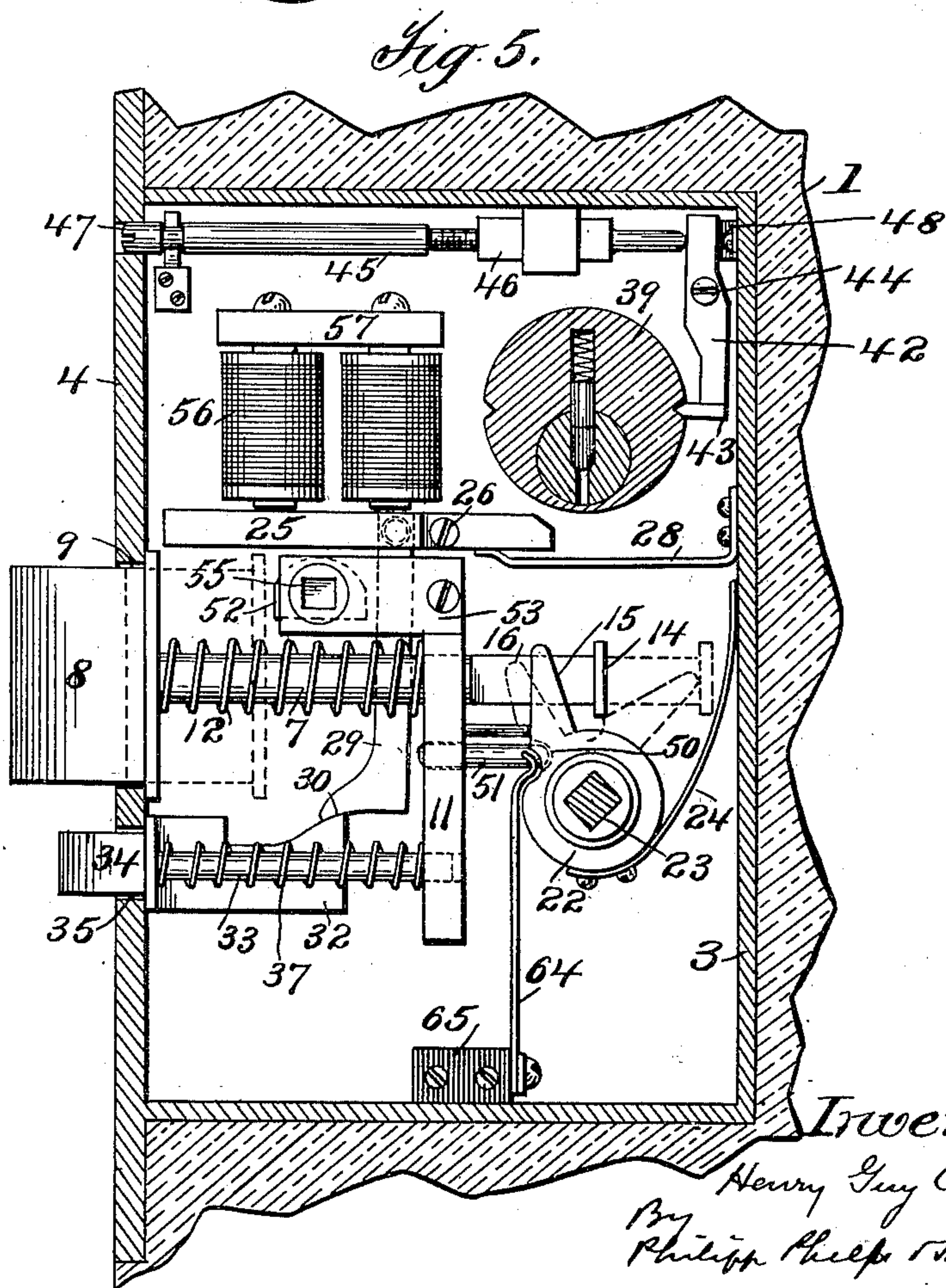
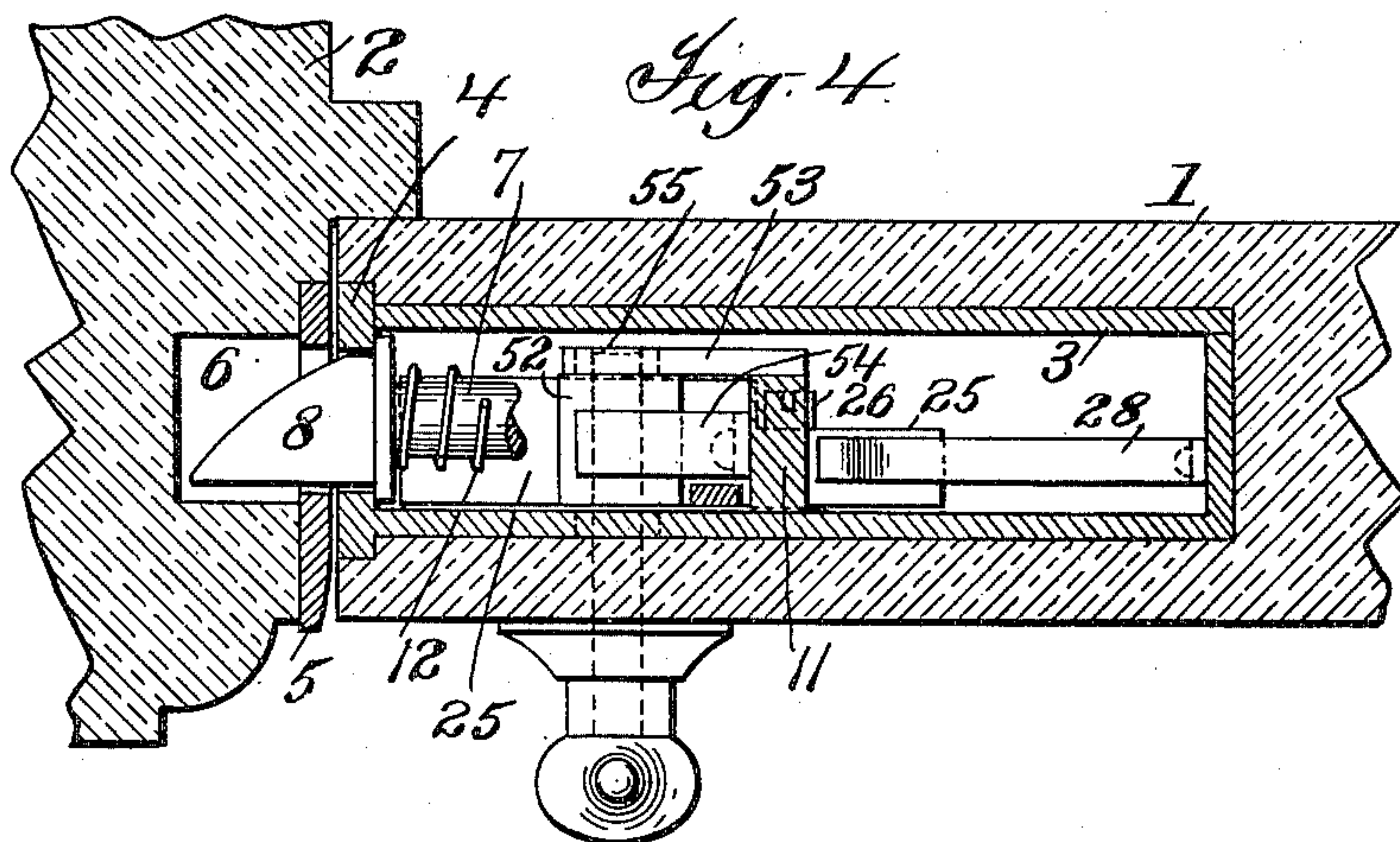
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(Application filed Feb. 10, 1900.)

(No Model.)

2 Sheets—Sheet 2.



Attest:
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UNITED STATES PATENT OFFICE.

HENRY GUY CARLETON, OF NEW YORK, N. Y., ASSIGNOR TO THE
CARLETON ELECTRIC COMPANY, OF SAME PLACE.

LOCK.

SPECIFICATION forming part of Letters Patent No. 656,808, dated August 28, 1900.

Application filed February 10, 1900. Serial No. 4,709. (No model.)

To all whom it may concern:

Be it known that I, HENRY GUY CARLETON, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Locks, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to certain improvements in locks.

In certain classes of locks it is desirable to so arrange the movable engaging locking member, which usually is a sliding bolt, as to render it impossible to force it back either by cutting away the jamb or by the insertion of a thin instrument between the jamb and the door. Various devices have been constructed for the purpose of thus locking the locking-bolt or other movable engaging member; but these devices as usually constructed are objectionable, because they require a separate locking operation in order to throw them into operative position.

25 One of the objects of this invention is to produce a new and improved lock which shall embody devices operating to prevent any unauthorized movement of the movable engaging member when the parts of the lock are engaged.

A further object of the invention is to produce a new and improved lock which shall embody devices operating to prevent any unauthorized movement of the movable engaging locking member when the parts of the lock are engaged, said devices being controlled by means which are automatically thrown into operation by the closing of the door or other part to which the lock is attached.

40 A further object of the invention is to produce a new and improved lock which shall embody devices operating to prevent any unauthorized movement of the movable engaging locking member when the parts of the lock are engaged and in which improved means are provided for throwing said devices out of operation when it is desired to open the lock.

A further object of the invention is to produce a new and improved lock which shall

embody devices to prevent any unauthorized movement of the movable engaging member when the parts of the lock are engaged and in which key-operated means are employed for throwing said devices out of operation when it is desired to open the lock. 55

A further object of the invention is to produce a new and improved lock which is simple and cheap in construction and efficient in operation, which shall embody devices operating to prevent any unauthorized movement of the movable engaging locking member when the parts of the lock are in operative position, the said devices being thrown into operation by the closing of the door or other part which carries the lock, and in which either mechanical or electrical means, or both, may be used to release said devices. 60 65

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter fully described and then specifically pointed out in the claims hereunto appended. 70

In the accompanying drawings, which form a part of this specification, and in which like characters of reference indicate the same parts, Figure 1 is a sectional side elevation of a lock constructed in accordance with the invention, said lock being shown in position in a door or other movable part. Fig. 2 is a sectional elevation on the line 2 2 of Fig. 1 looking in the direction of the arrow in that figure. Fig. 3 is a plan view on the line 3 3 of Fig. 1. Fig. 4 is a similar view on the line 4 4 of Fig. 1. Fig. 5 is a sectional elevation of the lock shown in Fig. 1, but with the parts in the position they assume when the door or other part to which the lock is attached is open. 75 80 85

Referring to the drawings, which illustrate one concrete embodiment of the invention, 1 indicates a door or other analogous part, and 2 the jamb against which the door closes. 90

3 indicates a lock-casing which is provided with a face-plate 4, said casing in the form shown being arranged to be set into a mortise or recess in the door and the ends of the face-plate projecting over the edges of the recess and being flush with the edge of the door, as is usual. The jamb of the door is provided 100

with the usual striker-plate 5, said plate having an opening 6, with which the movable locking-bolt of the lock engages.

In the lock shown and as is usual the movable locking member consists of a sliding bolt 7, the enlarged head portion 8 of which projects through an opening 9 in the face-plate 4. The stem portion 7 of the bolt may be supported in any usual or desired manner. As shown, said stem portion passes through an opening 10 in a block 11, which is secured to the casing of the lock in any suitable manner, as by screws. The stem portion 7 is surrounded by a spring 12, said spring bearing at one end against the block 11 and at its other end against the enlarged head portion 8 of the bolt. The enlarged head portion 8 of the bolt has that edge which comes in contact with the striker-plate as the door closes beveled off, as is usual, so that the bolt is readily forced back against the stress of the spring 12 as the door is closed.

Any suitable withdrawing mechanism may be provided for the movable engaging part or bolt. In the construction shown the rear portion 13 of the bolt 7 is flattened and carries a plate 14, said plate being secured to the flattened portion of the bolt 7 in any suitable manner, as by a screw. The plate 14 projects on each side of the flattened portion 13 and into the path of two cams 15 and 16. The cam 16 is carried on a collar 17, said collar having a projecting portion 18, which extends through an opening 19 in the side of the lock-casing. The projecting portion 18 has a squared opening 20 to receive a knob-shaft. The collar 17 has further connected to it a bearing-spring 21, which normally holds the cam 16 away from the plate 14. The cam 15 is mounted on a collar 22, which preferably has a projecting portion taking into a suitable recess in the collar 17, the construction being such that the two collars turn independently of each other. The collar 22 is further provided with a squared opening 23 to receive a knob-shaft or other suitable operating member and is held away from the plate 14 by means of a suitable bearing-spring 24. By this construction it will be seen that the cams 15 and 16 will be separately operated by their knob-shafts to withdraw the locking-bolt.

In order to prevent the locking-bolt from being moved in an unauthorized manner—such, for instance, as by the insertion of a thin blade between the jamb and the door—said bolt is provided with a locking member. This locking member may be widely varied in construction, location, and arrangement. In the construction shown, however, the locking member consists of a lever 25, said lever being pivoted in the casing in any suitable manner, as on a screw 26. The lever 25 is so located that when in its locking position it takes behind the enlarged head 8 of the bolt 7. While the lever may be so positioned

as to fall into locking position by gravity when the mechanism is so disposed as to permit it, a suitable spring—as, for instance, a leaf-spring 28—is preferably provided which bears against the under side of the rear portion of the lever.

The locking member or lever is necessarily provided with a controlling means by which its operation is regulated, and in the present construction this controlling means is so arranged as to permit the locking member or lever to be automatically thrown into locking position with respect to the movable engaging part or bolt 7, when said movable engaging part or bolt is in operative position—that is to say, when the door or other part which carries the lock is closed. The controlling means for the locking member may also be varied widely in construction. In the lock shown the said locking member or lever is provided with an arm 29, which is secured thereto at any suitable point, the point being, however, preferably near the pivotal point of the lever. The lower end of the arm 29 is provided with a cam-face 30. This cam-face 30 in the construction shown lies in the path of a cam 31, which is connected to a cam-slide 32. The cam-slide 32 is preferably carried on a part or stem 33, said part or stem having an enlarged head 34, which projects through an opening 35 in the face-plate. The rear portion of the stem 33 passes through an opening 36 in the block 11, before described, and this stem is thrown forward by means of a spring 37, which bears at one end against the enlarged head 34 and at the other end against the block 11. The enlarged head 34 is preferably so arranged as to come in contact with the striker-plate when the door or other part carrying the lock is closed and to be forced inward by the said striker-plate. To this end therefore the head 34 is beveled off, as shown, the bevel being similar to that on the enlarged head 8 of the bolt 7. The beveled side of the head 34, however, is arranged at a more obtuse angle to its straight side than is the beveled side of the enlarged head 8. The purpose of this variation of the angles is to cause the head of the bolt 7 to come in contact with the striker-plates slightly in advance of the head 34 and so cause the movement of the bolt to begin a little before the movement of the stem 33. The cam 31 is so arranged as to come in contact with the cam-face 30 when the stem 33 is in its forward position or with its enlarged head protruding from the lock. When the parts are in this position—that is, with the cam 31 in contact with the cam-face 30—the arm 29 is rocked forward and the lever or rocking member 25 is rocked upward, so that its end is above the enlarged head 8 of the bolt 7, and therefore does not prevent the movement of the bolt. When, however, the stem 33 is pushed inward, as shown in Fig. 1, which is the position it will occupy when the door or other

part carrying the lock is closed and the bolt 8 is in engagement with the opening in the striker-plate, the cam 31 will be out of contact with the cam-face 30. In this position of the parts, which is the position shown in Fig. 1, the locking member or lever 25 will be rocked downward and its forward end will lie behind the shoulder formed by the enlarged head 8 of the bolt. With the parts in this position it is obvious that there can be no movement of the bolt 8.

It may be here remarked that while it is convenient and is the preferred form of the invention to cause the controlling means for the locking member to be operated by a part which projects from the lock-casing in a position to be struck by the striker-plate, the invention is not confined to such constructions. The part which projects from the lock-casing and operates the controlling means might be differently arranged. It is desirable, however, so far as this part of the invention is concerned, that the controlling means be provided with a part which projects from the lock-casing, so as to operate the locking member by contact with the jamb or a part carried thereby or connected thereto. The construction shown, however, is compact, neat, and efficient and embodies the preferred form of the invention.

Any suitable means may be provided for operating the locking member so as to permit the sliding bolt to be withdrawn by its withdrawing mechanism. As shown herein, however, the rear end of the lever 25 lies in the path of a cam 38, said cam being mounted in the cylinder 39 of an ordinary pin-lock. The cylinder 39 passes through a circular aperture 40 in the door or other part which carries the lock and engages a threaded opening in the side of the lock-casing. The rear portion of the lever 25 is wide enough so as to allow for varying adjustments of the cylinder for different thicknesses of doors—that is to say, when the door is thick the cylinder need not project so far into the lock-casing as when the door is thin.

Any suitable means may be provided for holding the cylinder in its proper position in the lock-casing and in the door. Preferably, however, the cylinder is provided with longitudinal grooves 41 on its sides, and there is pivoted in the lock-casing a lever 42, which has a projecting sharpened edge 43, arranged to take into one of the grooves 41. The lever 42 is pivoted at 44 to the lock-casing, and the end opposite the end which carries the projection 43 lies in the path of a screw-rod 45, which is threaded into a suitable bearing 46, contained in the lock-casing. The end of the screw-rod 45 is provided with a nicked head 47, which lies in a countersunk recess in the face-plate. It will be seen that when the cylinder 39 is in proper position by screwing in the screw-rod 45 the lever 42 will be turned about its pivot 44 and its sharpened edge 43 caused to engage one of the grooves 41, and

thus lock the cylinder in position. A suitable bearing-spring 48 is arranged to give the lever 42 a movement in opposition to that produced by the screw-rod, so that the sharpened edge 43 will be moved out of the groove 41 when it is desired to remove the cylinder.

The mechanism contained in the cylinder 39 is, as has been indicated, of the ordinary pin-lock type, and such mechanism being well known it is not necessary to describe it further than to say that when the proper key is inserted in the lock the cam 38 will be rotated and will strike the end of the locking member or lever 25, rocking it upward, in the construction shown, so as to cause its operating end to move from behind the shoulder formed by the enlarged head 8. In the lock shown the construction is such that the knob which operates the cam 15 is located on the outside of the door or the side in which the escutcheon-plate of the cylinder 39 is located. When, therefore, the cam 38 has been turned by the proper key to operate the locking member before described, the bolt may be withdrawn by turning the knob which rotates the cam 15. If, however, an attempt is made to turn the knob without operating the key, the locking member prevents any movement of the bolt.

Locks of the class to which the lock forming the subject of this application belongs are ordinarily used on outer doors, and it is desirable in such cases to arrange the lock so that the knob located on the inside of the door will open the lock without necessitating the use of a key or other similar device. It is desirable, therefore, to arrange a releasing device which shall be operated in connection with the withdrawing mechanism. The releasing device which is to operate in connection with the withdrawing mechanism may be variously constructed. In the lock shown the collar 17 is formed to provide a cam 50, and this cam operates on a releasing-pin 51, which in the construction shown passes through a perforation in the block 11, before referred to, and has its end lying in proximity to the arm 29. With this construction when it is desired to open the door from the inside the knob which turns the collar 17 is operated, and as the said collar rotates the cam 50 strikes the head of the pin 51 and pushes the same forward against the arm 29. This causes a forward movement of the arm 29 and rocks the locking member or lever 25 upward from behind the shoulder formed by the enlarged head 8 of the bolt 7. Inasmuch as the cam 16 is normally held away from the plate 14 by means of a spring 20, this movement of the releasing-pin 51 takes place before the cam 16 strikes the plate 14. The releasing-pin 51 is therefore thrown forward and the arm 29 and locking member or lever 25 is operated before the cam 16 begins to withdraw the bolt.

It is desirable in locks of the class to which this invention relates to provide some means

for temporarily suspending the operation of the locking member. While various means may be devised for this purpose, in the construction shown in the drawings there is provided a rotating cam 52, which lies beneath the locking member or lever 25 and which has one end journaled in the side of the lock-casing and its other end in a plate 53, which extends from the block 11. This cam is provided with the usual flattened side, against which bears a spring 54, and the journal of the cam is provided with a square opening 55, in which is mounted a small knob-shaft, the knob of this shaft of course lying on the inside of the door. When it is desired to temporarily suspend the operation of the locking member, the cam 52 is given a quarter-turn, so that its eccentric portion is brought against and raises the lever 25, thus moving it from its position behind the shoulder formed by the enlarged head 8 of the bolt 7. In this position the bolt can be withdrawn by either withdrawing mechanism.

It is frequently desired in locks of the class to which this invention relates to provide means by which the lock may be placed in condition to be opened from a distance. Thus, for instance, in apartment-houses and in other similar places the lock which controls the entrance-door is arranged so that it may be operated from any apartment in the house. In order to adapt the lock for use in such locations, there are preferably provided electrical devices by which the locking member may be operated. The lock herein shown is provided with a magnet 56, which is supported on a suitable bracket 57, secured to the lock-casing, and the lever 25 is constructed from metal and arranged to form the armature for the said electromagnet. It is obvious that when the magnet is energized the locking member will be moved out of its locking position. Any suitable circuit may be employed to energize the magnet. In the construction shown there is provided a battery 58, from which a wire 59 is led to the magnet. From the other side of the battery a wire 60 leads to any suitable circuit-closer—as, for instance, a push-button 61. From the button 61 there is led a wire 62. While this wire might run directly to the battery, in the lock shown the circuit is so arranged as to be open at two points. The wire 62 therefore connects with any suitable part of the lock—as, for instance, the spring 24 of the collar 22. The collar 22 is provided with a recess 63, and lying in this recess is a contact-spring 64, said spring being secured in an insulating-block 65, mounted in the lock-casing. The end of the spring 64 does not touch the collar 22 when the parts are in their normal position. As soon, however, as the collar 22 is rotated by its knob it comes in contact with the end of the spring 64. From the spring 64 a wire 66 is led to the magnet. The construction being as described, it will be seen that as soon as the switch 61 is operated a rotation of the collar

22 will cause the circuit to be closed through the spring 64 and the wire 66 to the magnet, which will immediately attract the locking member or lever 25, which forms its armature. The further movement of the collar 62 will cause the cam 15 to strike the plate 14 and withdraw the bolt.

It will be understood that the constructions by which the several features of the invention are carried into effect may be varied widely. The invention is not, therefore, to be limited to the specific constructions which have been herein described. Furthermore, it is also to be understood that certain features of the invention are capable of use independently of the other features and that such independent use is contemplated.

What is claimed is—

1. In a lock, the combination with the movable engaging part, of a locking member therefor, controlling means for the locking member including a part extending outside the lock-casing, means independent of the controlling means for operating the locking member, and a magnet for also operating the locking member, substantially as described.
2. In a lock, the combination with the movable engaging part, of a locking member therefor, controlling means for the locking member including a part extending outside the lock-casing, a withdrawing mechanism for the movable member, a releasing device for the locking member operated from the withdrawing mechanism, and a magnet for also operating the locking member, substantially as described.
3. In a lock, the combination with the bolt, of a striker-plate, a locking member for the bolt, a slide projecting from the lock-casing in position to be operated by the striker-plate, means intermediate the locking member and the slide whereby the position of the slide determines the position of the locking member, and a magnet for operating the locking member, substantially as described.
4. In a lock, the combination with the bolt, of a striker-plate, a locking member for the bolt, a slide projecting from the lock-casing in position to be operated by the striker-plate, means intermediate the locking member and the slide whereby the position of the slide determines the position of the locking member, key-operated means for operating the locking member, and a magnet for operating the locking member, substantially as described.
5. In a lock, the combination with the bolt, of a striker-plate, a locking member for the bolt, a slide projecting from the lock-casing in position to be operated by the striker-plate, means intermediate the locking member and the slide whereby the position of the slide determines the position of the locking member, key-operated means for operating the locking member, a withdrawing mechanism for the bolt, a releasing device for the locking member operated by the withdraw-

ing mechanism, and a magnet for also operating the locking member, substantially as described.

6. In a lock, the combination with the bolt, 5 of a striker-plate, a locking member for the bolt, a slide projecting from the lock-casing in position to be operated by the striker-plate, means intermediate the locking member and the slide whereby the position of the 10 slide determines the position of the locking member, key-operated means for operating the locking member, a withdrawing mechanism for the bolt, a releasing device for the locking member operated by the withdrawing 15 ing mechanism, a magnet for also operating the locking member, and means for temporarily suspending the operation of the locking member, substantially as described.

7. In a lock, the combination with the bolt, 20 of a pivoted locking member therefor, a striker-plate, a cam-slide projecting from the lock-casing in position to be operated by the striker-plate, an arm connected with the locking member in the path of the slide, a withdrawing mechanism for the bolt, and a releasing-pin operated by the withdrawing 25 mechanism, substantially as described.

8. In a lock, the combination with the bolt, 30 of a pivoted locking member therefor, a striker-plate, a cam-slide projecting from the lock-casing in position to be operated by the striker-plate, an arm connected with the locking member in the path of the slide, a withdrawing mechanism for the bolt, a releasing-pin operated by the withdrawing mechanism, 35 and key-operated means for operating the pivoted locking member, substantially as described.

9. In a lock, the combination with the bolt, 40 of a striker-plate, a magnet, a pivoted locking member for the bolt which forms the arma-

ture of the magnet, a striker-plate, a cam-slide projecting from the lock-casing in position to be operated by the striker-plate, an 45 arm connected with the locking member in the path of the slide, a withdrawing mechanism for the bolt, a releasing-pin operated by the withdrawing mechanism, and key-operated means for operating the locking member, substantially as described. 50

10. In a lock, the combination with a striker-plate, of a sliding bolt which engages the 55 striker-plate, a locking member for the bolt, controlling means for the locking member, said means including a slide projecting from the lock-casing in position to be engaged by the 60 striker-plate, and means whereby the striker-plate is caused to move the bolt before it moves the slide, substantially as described.

11. In a lock, the combination with a striker- 60 plate, of a slide-bolt having that face which comes in contact with the striker-plate as the lock is closed lying at an angle to the opposite side, a locking member for the bolt, 65 means for operating the locking member including a slide which projects from the lock-casing in position to be engaged by the striker-plate, said slide having the side which comes 70 in contact with the striker-plate arranged at an angle to its opposite side, said angle being more obtuse than the angle of the face of the locking-bolt, whereby the striker-plate operates the bolt before it operates the slide, substantially as described.

In testimony whereof I have hereunto set 75 my hand in the presence of two subscribing witnesses.

HENRY GUY CARLETON.

Witnesses:

T. F. KEHOE,
MABEL E. HOBBS.