

(Model.)

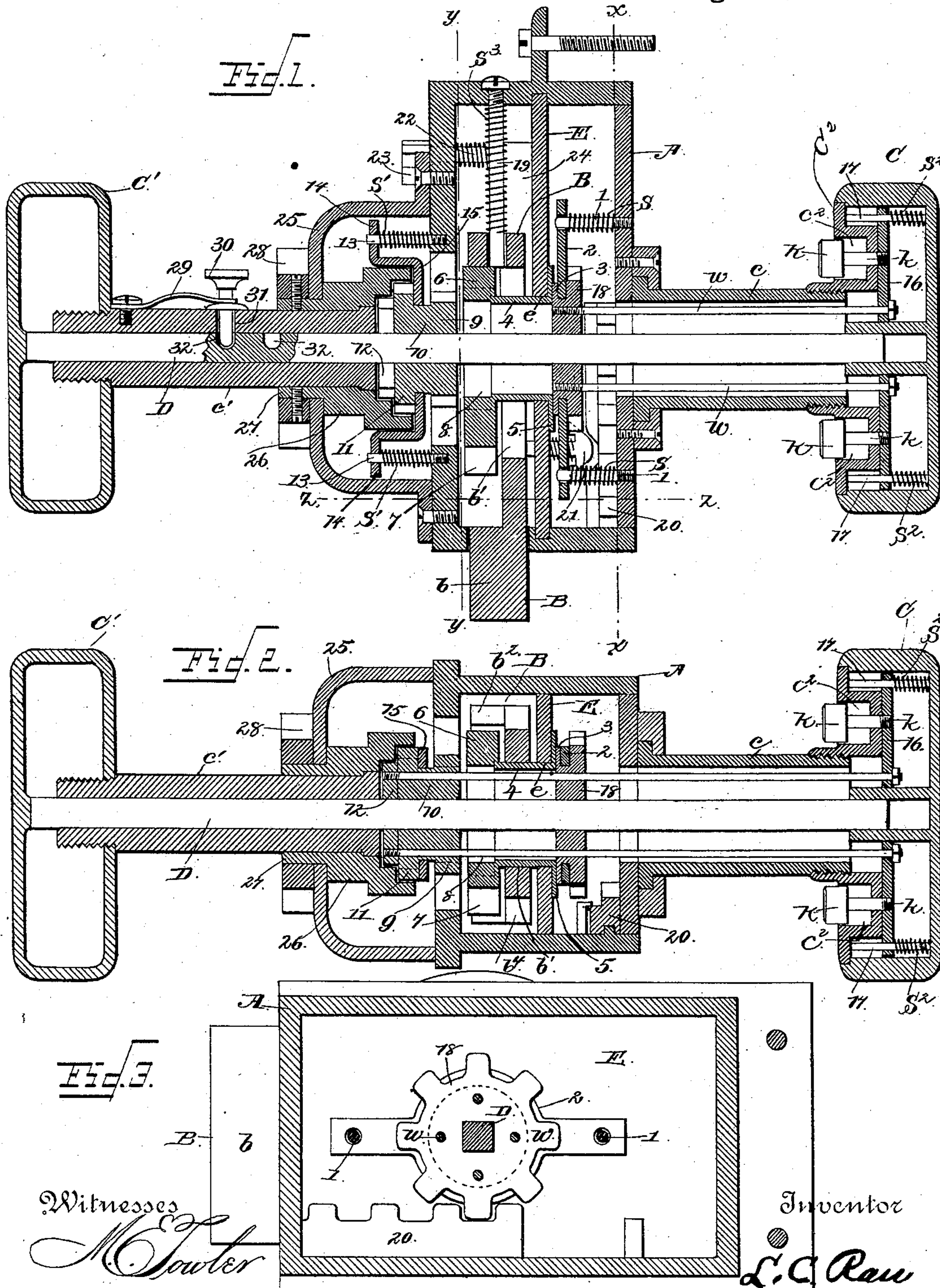
2 Sheets—Sheet 1.

L. C. RAU.

LOCK.

No. 369,030.

Patented Aug. 30, 1887.



Witnesses

*M. Fowler*  
*E. G. Siggers*

Inventor

*L. C. Rau*

By *his* Attorneys

*C. A. Snowdon*



(Model.)

2 Sheets—Sheet 2.

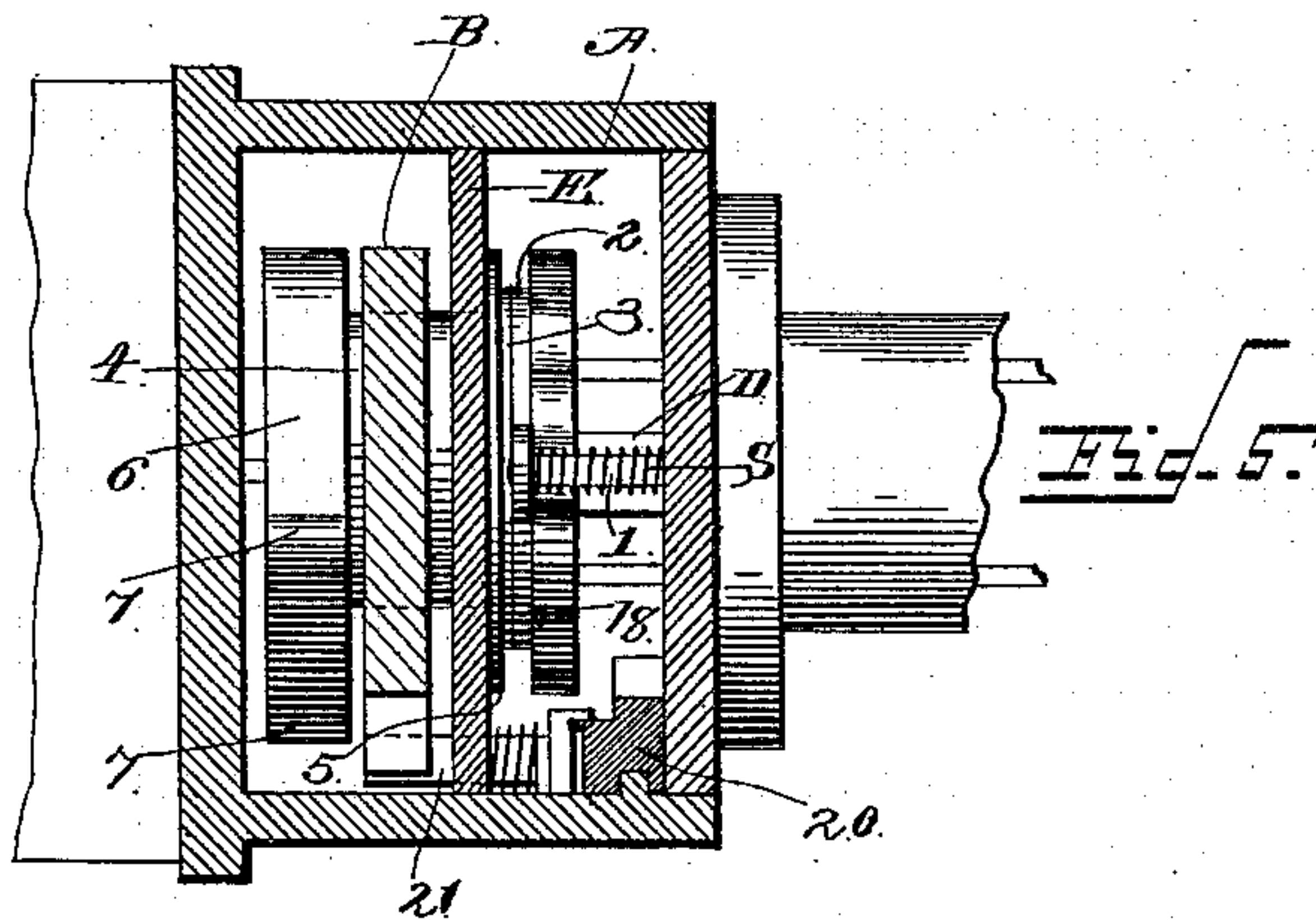
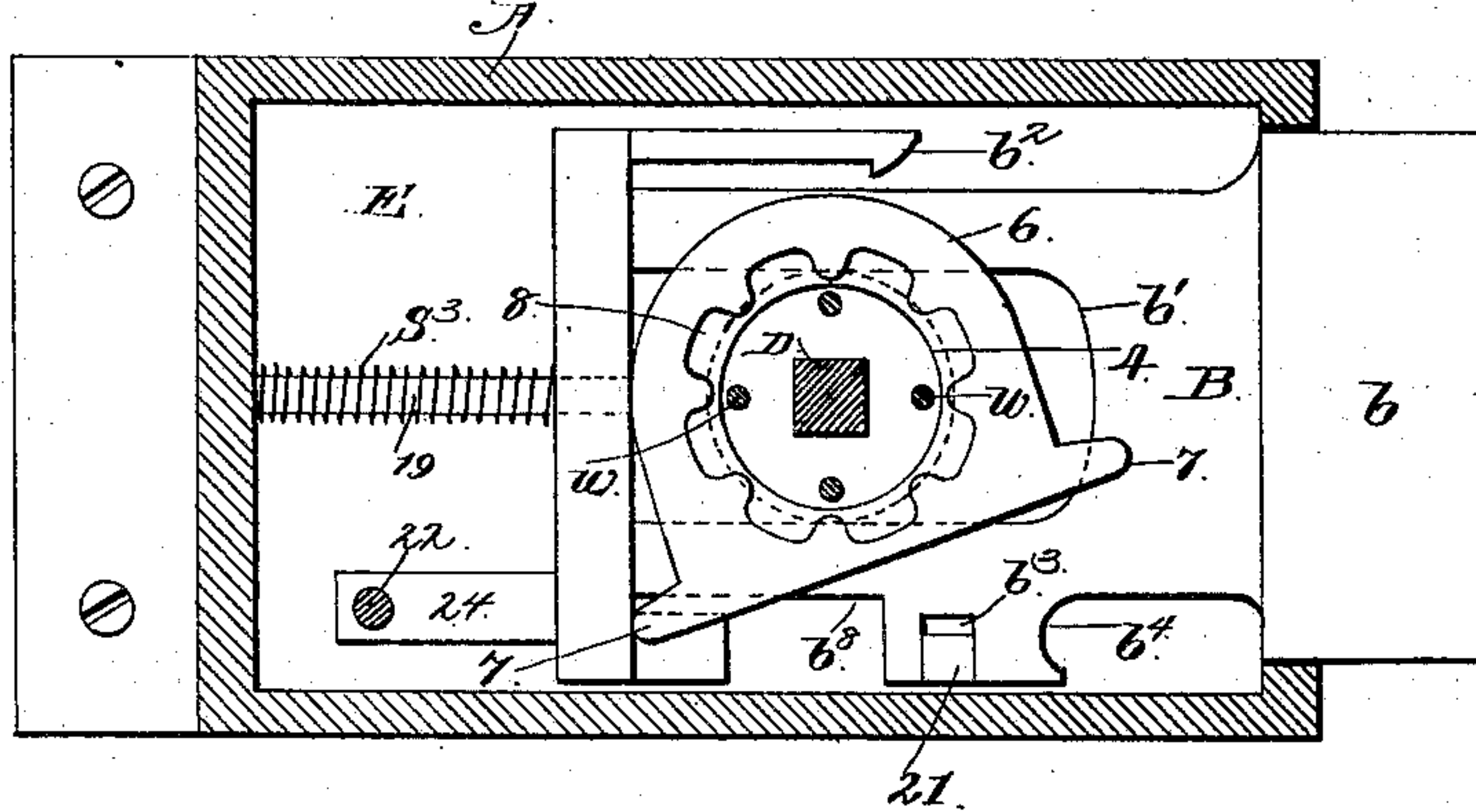
L. C. RAU.

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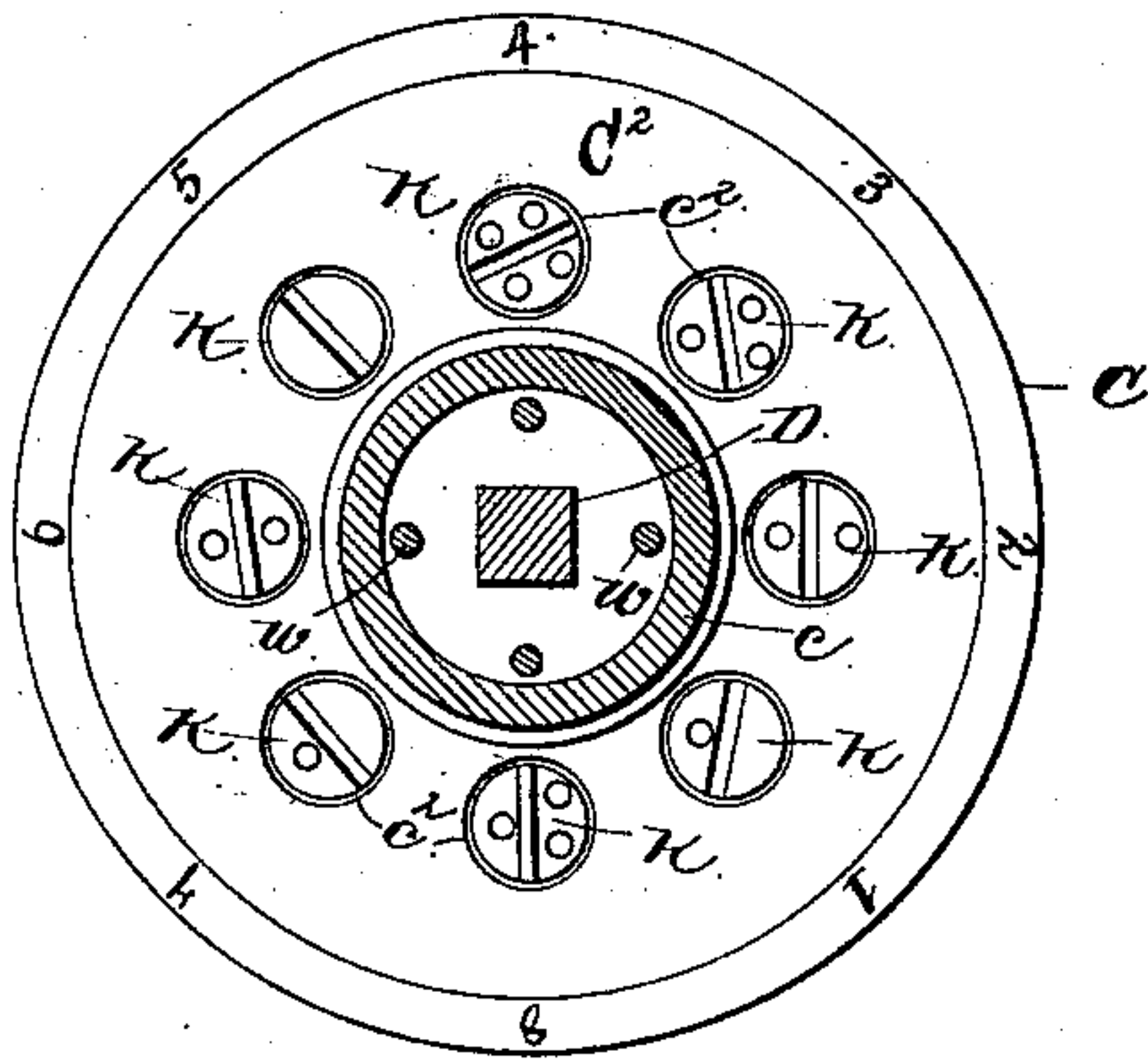
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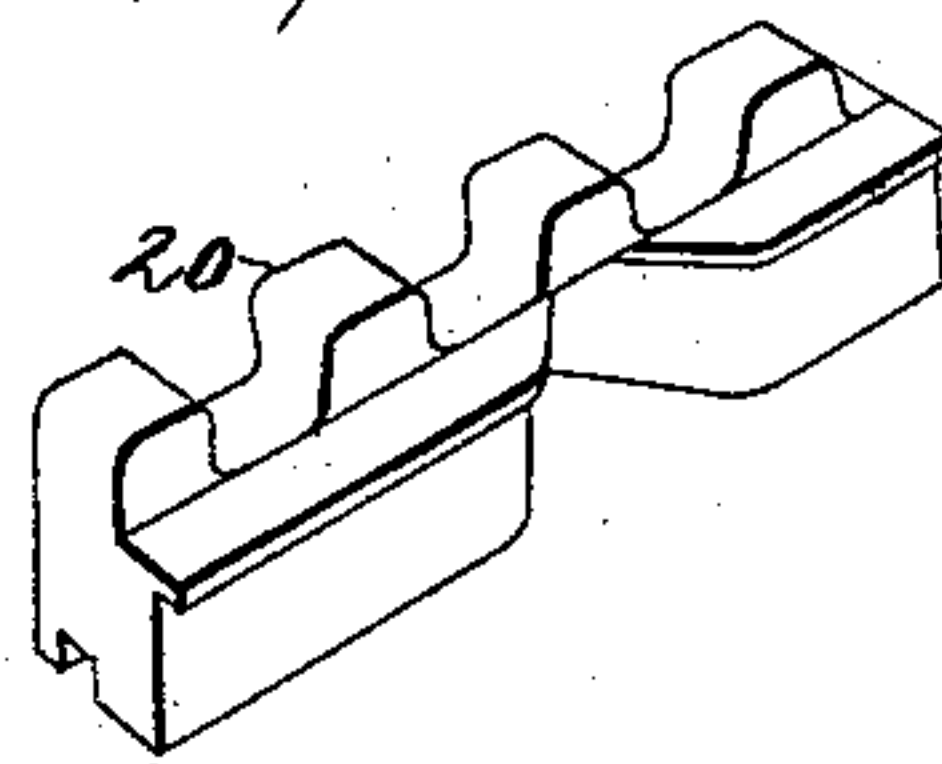
*Fig. 4.*



*Fig. 5.*



*Fig. 7.*



Witnesses

*M. Fowler*  
*E. G. Siggers*

Inventor

*L. C. Rau*

By his Attorneys

*C. A. Howland*



# UNITED STATES PATENT OFFICE.

LOUIS CARL RAU, OF GALVESTON, TEXAS.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 369,030, dated August 30, 1887.

Application filed June 13, 1887. Serial No. 241,190. (Model.)

*To all whom it may concern:*

Be it known that I, LOUIS CARL RAU, a citizen of the United States, residing at Galveston, in the county of Galveston and State of Texas, have invented a new and useful Improvement in Locks, of which the following is a specification.

My invention relates to an improvement in locks; and it consists in the novel construction, arrangement, and combination of the parts of the same, which will be more fully hereinafter described, and pointed out in the claims.

The object of my invention is to provide a lock for doors, safes, drawers, and the like, the bolt of which is adapted to be unlocked from the outside by means of a combination, and while being released will instantly ring the door-bell by means of connecting wires, and which, when operated from the inside, can be opened without giving the signal on the bell, and in either operation the parts of the lock will automatically return to their position and lock the bolt in the striker-plate unless otherwise adjusted. I attain this object by the mechanism illustrated in the accompanying drawings, wherein like letters and figures of reference indicate similar parts in the several views, and in which—

Figure 1 is a horizontal section of my improved lock. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a transverse vertical section of the same on the line  $x x$  of Fig. 1. Fig. 4 is a similar view on the line  $y y$  of Fig. 1. Fig. 5 is a longitudinal vertical section of the lock on the line  $z z$  of Fig. 1. Figs. 6 and 7 are detail views of parts of the lock.

A indicates the box or casing; B, the bolt mounted in connection therewith; C and C', the knobs upon the outside and inside portion of the door; D, the central operating-bar, and  $c$  and  $c'$  the tubes or casings surrounding the bar D between the lock-case or boxing and the knobs C C'.

The bolt B is constructed with an enlarged portion,  $b$ , which is adapted to engage with the striker-plate, and the inner portion thereof, which is situated within the box or casing A, is constructed of thinner metal than the outer portion,  $b$ , and provided with a central elongated recess,  $b'$ , to allow the said bolt to

slide over the operating parts of the lock, and is also provided with projecting arm  $b^2$  in its upper portion, by which the said bolt is drawn back from the striker-plate by the engagement therewith of a tumbler-plate when the combination has been set, as will be more fully hereinafter set forth. The under edge of the said bolt B is provided with recessed portions  $b^3 b^4 b^5$ , which are adapted to pass over parts of the mechanism of the lock without engaging therewith, and thereby not interfering with the operation thereof, as the said bolt is slid into the lock-casing or outwardly therefrom into the striker-plate. In the lock-casing A a divisional plate, E, is mounted, having a central circular recess,  $e$ , therein, to permit of the free revolution of the mechanism passing there-through.

In the outer face-plate of the casing A two studs or pins, 1 1, are rigidly mounted, which are encircled by coiled springs S S, and upon the outer ends of which an apertured plate or yoke, 2, engages and has movement thereon in a horizontal plane. On the face of this plate 2, farthest away from the knob C, a washer, 3, is mounted, which is provided with a central aperture just large enough for the passage therethrough of the bar D, and with smaller apertures on each side of the central aperture, for purposes which will be more fully hereinafter described. Resting in the circular recess of the central division-plate and surrounding the central bar, D, is a cylinder, 4, having a flange, 5, adapted to bear against the washer 3. This cylinder 4 is of considerable diameter, and on its opposite end has a tumbler-plate, 6, secured or formed therewith. The periphery of this plate 6 is plano-convex in configuration, the edges of the plane surface of which are provided with projections 7, the upper one of which strikes against the projecting arm  $b^2$  of the bolt, and when the combination has been set is adapted to slide the said bolt back from the striker-plate and release the same. The central portion of this plate 6 is provided with a recess, 8, extending therethrough, which has the configuration of a cog or spur wheel, and which is adapted to receive a cog-tumbler, 9, rigidly secured upon or formed with one side of a collar, 10, the opposite side of which collar has a larger cogged tumbler, 11, formed therewith, and on the other



side of the cogged tumbler 11 a split cog-tumbler, 12, is mounted separate from said parts. The collar 10 and cogged tumbler 11 and 12 are not so secured upon the bar D as to prevent a sliding movement thereof, but to guard against a revolution of the said parts upon the said bar, they are formed with square bearing-recesses in their central portion.

Upon the side of the lock-casing adjacent to the tumblers 11 and 12 two studs or pins, 13, are mounted, which are encircled by coiled springs S', and over the ends of which the arms 14 of a circular apertured plate or yoke, 15, engage, the aperture in the plate 15 being engaged by the collar 10 between the cog-tumblers 9 and 11. This plate 15 is depressed below the plane of extension of the arms 14, so that it may readily engage with the collar 10, as hereinbefore set forth.

In the knob C, which is rigidly secured to the outer end of the cylinder or tube *c*, a sliding plate, 16, is mounted, which has movement on guide-rods 17, secured between the two faces of the knob and encircled by coiled springs S<sup>2</sup>. This plate 16 has two wires, *w w*, secured thereto, which extend through the tube *c*, adjacent to the central bar, D, and are secured in the washer 3, passing through a series of apertures formed in a cog-tumbler, 18, secured to or formed with the washer 3, mounted upon the central bar, D, and having sliding movement only thereon. In connection with the plate 16 also are a series of combination-keys, K K, mounted on suitable rods, *k*, which are secured to the plate 16, passing through the inner face-plate, C<sup>2</sup>, of the knob C. These combination-keys K are to be ranged in series in a circular line on the inner sides of the face-plate, and are to be provided with suitable marks, indentations, or projections upon their outer surfaces for identification for the purpose of releasing the lock by one knowing the combination, which is set by pressing the proper keys, K, into the knob C by means of the hand and fingers. There will be a great many more of these keys used than are necessary for the operation of the parts of the lock, this duplication being used for the purpose of a blind to mystify any one trying to enter the door upon which the lock is used not knowing the combination. If it is found desirable, the inner periphery of the knob C may be formed with a series of numbers or other characters situated adjacent to the keys K, and the combination of numbers being known the door may be readily opened. The plate C<sup>2</sup> is formed with a series of depressions, *c*<sup>2</sup>, into which the heads of the keys K may be pressed when operating the combination of the lock to release the bolt B from the striker-plate.

When the knobs K are depressed in opening the combination, the wires running from said knobs to the split cog-tumbler 12 are drawn inward, drawing the said cogs 9, 11, and 12 and the yoke 15 inward toward the knob C. In this operation the inner cog-tumbler,

9, is thrown into the central recess, 8, of the tumbler-plate 6, when the knob may be turned and the projections on the tumbler-plate engage with the projecting arm of the bolt and spring the same back upon its guide-rod 19, which is encircled by a coiled spring, S<sup>3</sup>, and thereby release the bolt from the striker-plate, and the lock may be readily opened. Before this can be accomplished, however, the wires *w w*, connected to the washer 3, are drawn backward, drawing the said washer, the plate or yoke 2, and the cog-tumbler 18 backward therewith against the studs or pins 11 and the coiled springs S, as hereinbefore set forth. In drawing these parts backward toward the knob C the cog-tumbler 18 is drawn into a sliding rack-plate, 20, mounted in connection with the lower portion of the casing of the lock. The said rack-plate 20 acts as bearing or rest for the cog-tumbler 18 when drawn toward and engaging the same, the headed pin 21 being drawn into a recess formed in the plate 20 and holding the same until the cog-tumbler 18 engages with the said plate. By this means a bearing is provided for the tumbler 18, which steadies the movement thereof, as will be readily understood, and slides when the said tumbler is revolved. In addition to this means of safety for securing the bolt a permanent latch is formed with the inside of the lock, and consists of a bar or rod, 22, to the outer end of which an operating rod or strip, 23, is secured, and to the inner end of which a locking bolt or strip, 24, is attached, which is adapted to bear against the rear portion of the bolt B, and when resting thereagainst the operation of the combination on the outside will fail to release the bolt, and an attempt to open the lock is frustrated by the use of the device just described.

On the inner portion of the lock-casing, and inclosing the cog-tumblers 11 and 12 and the yoke 15, a circular plate, 25, is constructed concavo-convex in form and having a central seat-plate, 26, which is provided with cog-cavities corresponding in configuration to the cog-tumblers 11 and 12, said cog-cavities being formed integrally with one end of a collar, 27, the other end of which has a bell-cog, 28, secured thereto. When the outside knob is turned, the central bar, D, of necessity will revolve therewith, revolving the cog-tumblers 11 and 12, which rest in the cavities heretofore described, and consequently turn the bell-cog 28 and strike the gong situated at a convenient distance from the lock on the internal portion of the door or in the house. By this means it will be seen that as soon as an attempt is made to turn the outside knob the bell-cog 28 will begin the revolution, and the gong or door-bell be rung thereby, and the occupant of the house will be notified of the attempt to open the door. This will be the operation from the outer side of the door.

To operate the lock from the inside of the house the operation will be as follows: Secured in connection with the casing *c'* is a



spring-plate, 29, to the free end of which a vertically-arranged pin or bolt, 30, is secured, which passes through an aperture, 31, formed in the said casing *c'*, and is adapted to engage with recesses 32, formed in the bar D. The knob *C'* and the casing *c'* are adapted to slide upon the bar D, and by removing the pin 30 and raising it against the action of the spring 29 the knob and casing may be shoved inward toward the lock against the cog-tumbler 12, which, being arranged, as hereinbefore described, in connection with the yoke 15, presses the said yoke inward, throwing the cog-tumbler 9 in contact with the tumbler-plate 6 and against the cylinder 4, which presses the yoke 2 outward toward the knob C and releases the bolt B, as hereinbefore set forth. Thus it will be seen that the lock may be opened either from the inside or the outside, that it has been arranged to be opened by the combination, or it may be opened from the inside without the operation of the combination, as just described; but in passing through the door upon which this form of lock may be used in either direction the bell-cog may be so arranged that it will give a signal at the turning of either the inside or the outside knob, so that a notice will be given to the occupants of the house, either when a person attempts to enter the house or to pass therefrom. It will also be observed that the parts of the lock are so constructed that they will return to their normal position through the medium of the yokes and springs, as described, and for the purposes specified.

The novelty and utility of my device being obviously apparent, it is not necessary to further enlarge upon the same herein.

It is obvious that many minor variations in the construction and arrangement of parts may be made and substituted for those shown and described without departing in the least from the nature and principle of my invention.

I do not wish to be limited to the use I may make of my invention, as I am aware that it can be advantageously employed in other places besides doors. I contemplate applying it on tills and safes.

Having thus described my invention, I claim—

1. In a combination-lock, the combination, with the knob C and the bar D, of the wires *w*, the yoke 2, the tumbler 18, and washer 3, the cylinder 4, the rack-plate 20, and the headed pin 21, substantially as described.

2. The combination, with the bolt B, of the guide-rod 19, encircled by a coiled spring, *S*<sup>3</sup>, situated in the rear thereof and in connection therewith, the cylinder 4, over which said bolt B has movement, the tumbler-plate 6, having projections 7, and the projecting arm *b*<sup>2</sup> on the bolt B, adapted to be engaged

by the projections 7 on the plate 6, substantially as described.

3. The combination, with the tumbler-plate 6, having an aperture therein, of a cog configuration, the cog-tumbler 9, the collar 10, the cog-tumblers 11 and 12, the yoke-plate 15, and the bar D, substantially as described.

4. The combination, with the bar D, of the casing *c'*, adapted to slide thereon, and the bell-actuating cog 28, mounted on said sliding casing *c'*, substantially as described.

5. The combination, with the bar D, having the recesses 32, of the sliding casing *c'*, the flat spring 29, connected to said casing, the pin 30, carried by said spring, the knobs C and *C'*, and the intermediate mechanism described, substantially as set forth.

6. The combination, with yokes 2 and 15, the tumbler-plate 6, and the tumblers 9 and 12, of the rods 1 and 13, having movement through the ends of the yokes, and the coiled springs surrounding said rods, substantially as described.

7. The combination, with the knobs C and *C'*, bar D, tumblers 18, 9, and 12, and spring-actuated yokes 2 and 15, of the plate *C*<sup>2</sup>, the keys K, the plate 16, the rods 17, having coiled springs *S*<sup>2</sup>, and the wires *w w*, substantially as described.

8. The combination, with the knobs C and *C'*, of the rod D, the cog-tumblers 9, 11, and 12, the yoke 15, the yoke 2, and the wires *w w*, substantially as described.

9. The combination, with the knob C, of the inner face-plate, *C*<sup>2</sup>, having the depressions *c*<sup>2</sup>, the keys K, the plate 16, the wires *w*, the washer 3, and the yoke-plate 2, substantially as described.

10. The combination, with the tumblers 9, 11, and 12, the collar 10, the yoke 15, of the casing surrounding said parts having the central cog-apertured seat, substantially as described.

11. The combination, with the knobs C and *C'*, the bar D, the wires *w*, and the casing *c'*, of the yoke 2, washer 3, the cylinder 4, the tumbler-plate 7, the cog-tumblers 9, 11, and 12, the yoke 15, and the bolt B, substantially as described.

12. The combination, with the plate 16, having keys K, operating in conjunction therewith, of the sectional cog-tumbler 12, and the wires connecting said tumbler to the plate 16, substantially as described.

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

LOUIS CARL RAU.

Witnesses:

CHAS. NASLER,  
I. LOVENBERG.