

No. 635,969.

Patented Oct. 31, 1899.

A. McKENZIE.
COMBINATION LOCK.

(Application filed Jan. 24, 1899.)

(No Model.)

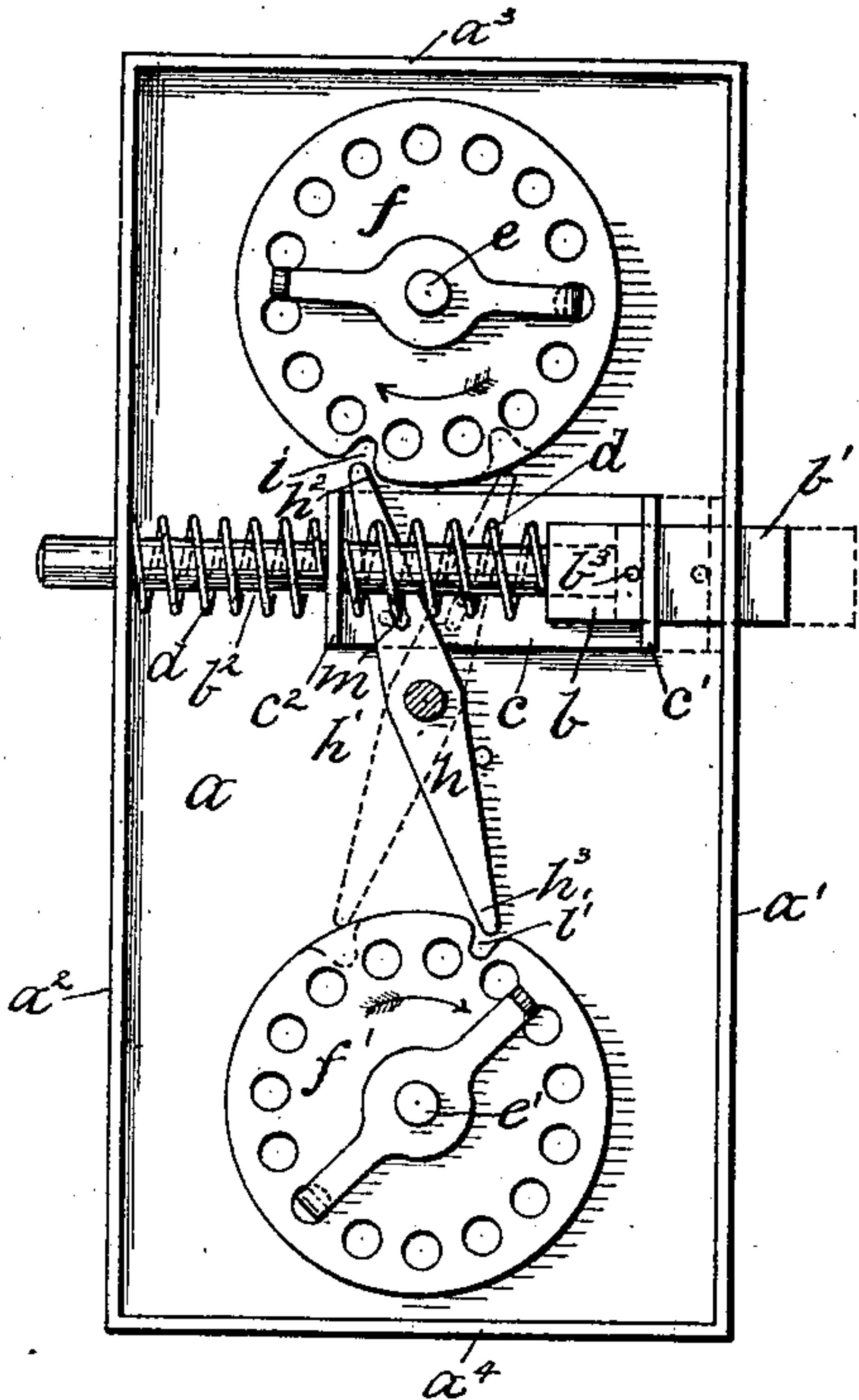


Fig. 1

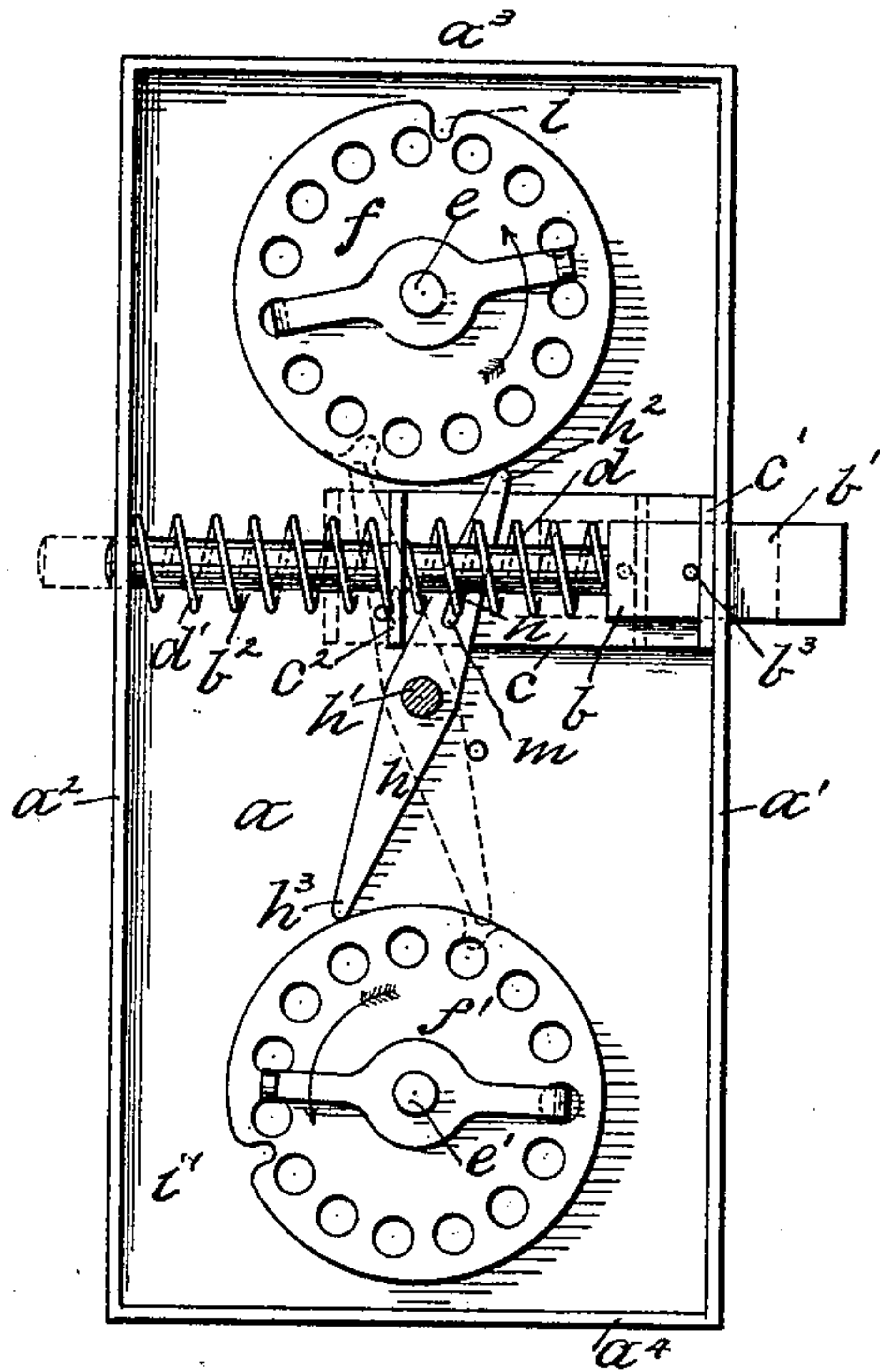


Fig. 2

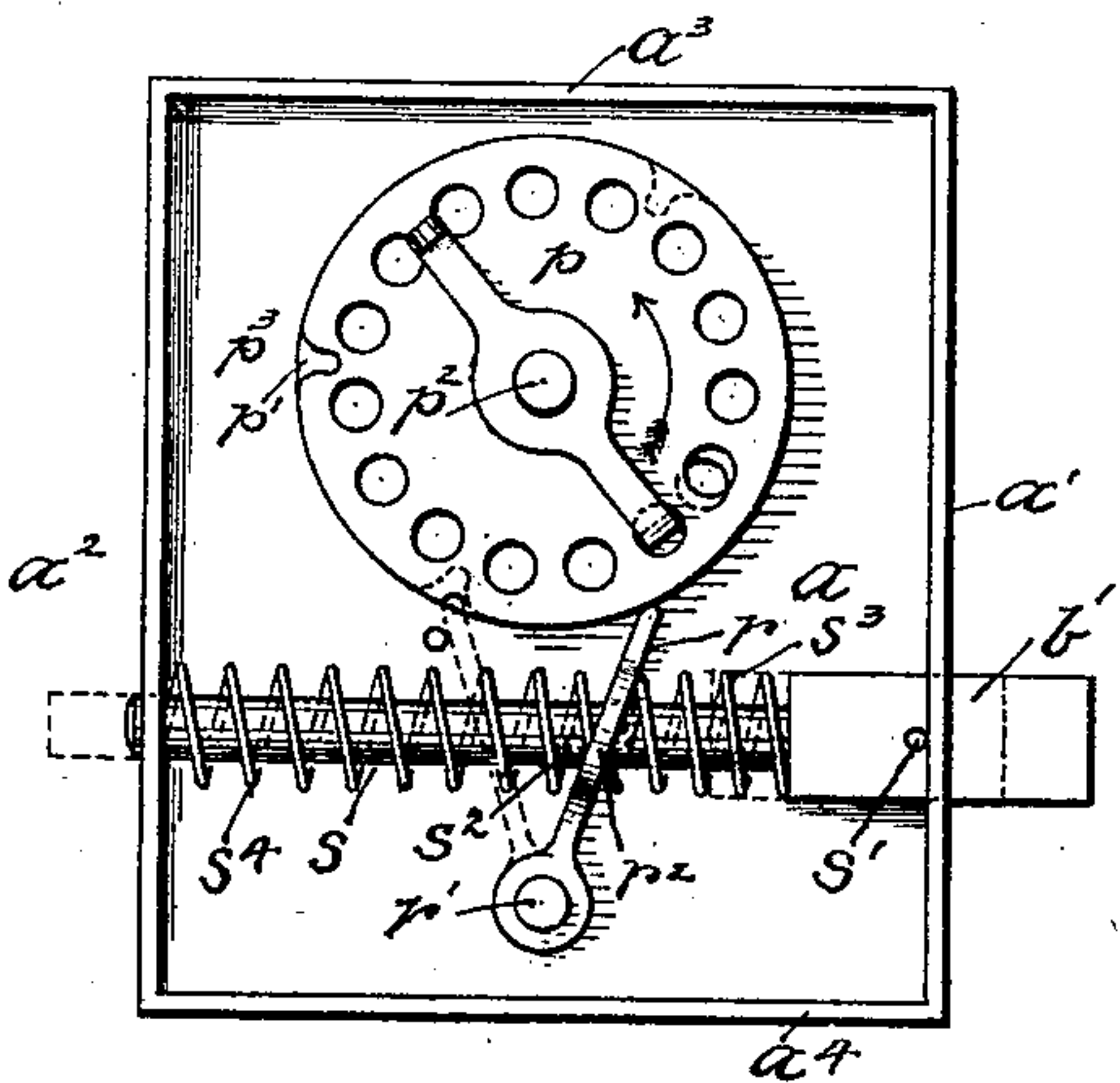


Fig. 3

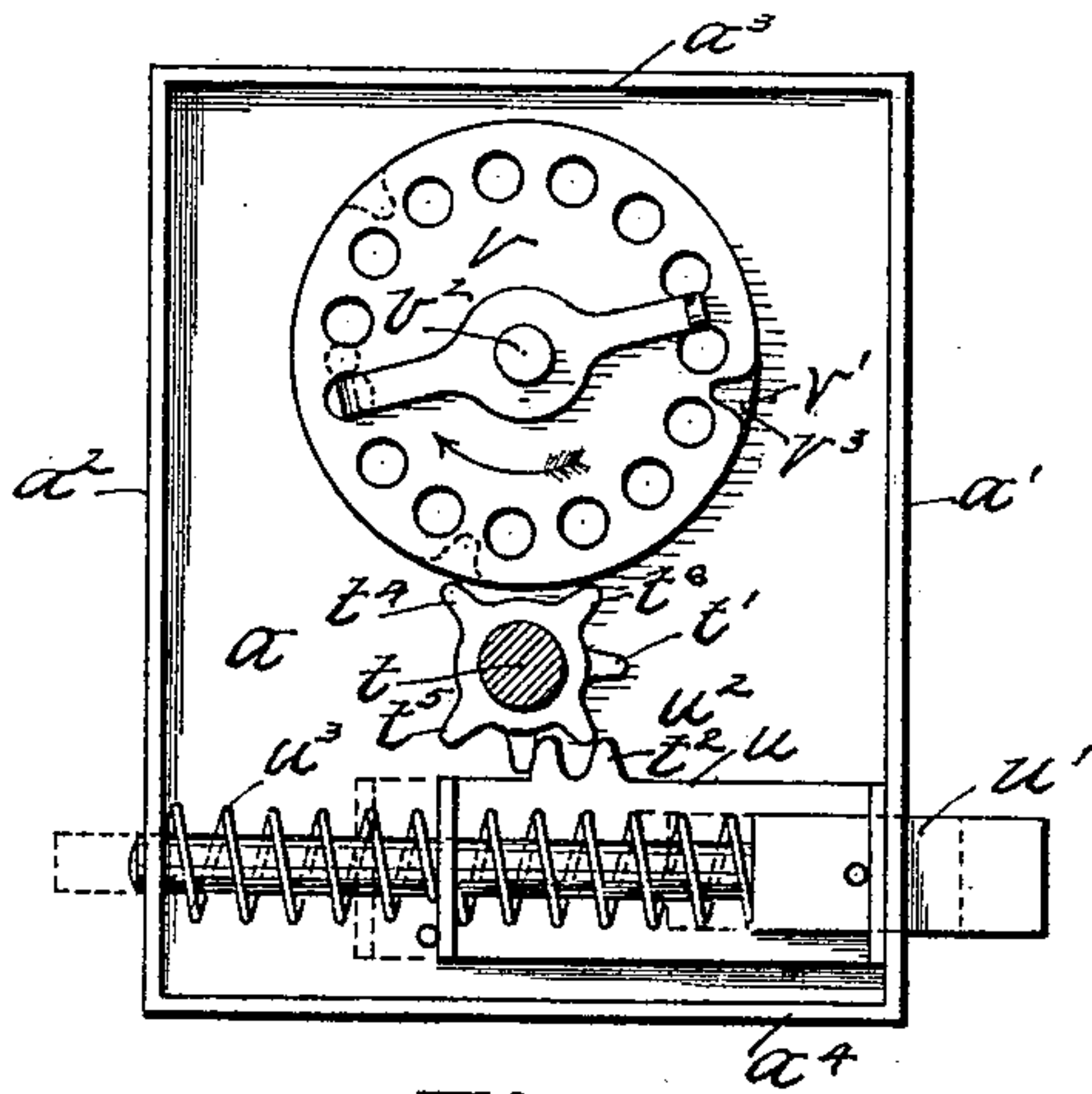


Fig. 4

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UNITED STATES PATENT OFFICE.

ANGUS McKENZIE, OF JAMESTOWN, NEW YORK, ASSIGNOR TO THE FENTON METALLIC MANUFACTURING COMPANY, OF SAME PLACE.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 635,969, dated October 31, 1899.

Application filed January 24, 1899. Serial No. 703,286. (No model.)

To all whom it may concern:

Be it known that I, ANGUS McKENZIE, a resident of Jamestown, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Combination-Locks; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to combination-locks, and has special reference to locks of that character employed as spring-latches and applicable for such purposes as door-latches, locks for post-office-lock-box doors, and like purposes.

In an application of even date herewith, Serial No. 703,285, I have described the broad principle of a combination-lock having a rotating disk and a lug or frame moving substantially tangentially or sidewise of the disk and operating to turn it when passing from engagement therewith, this lug being either part of a sliding or sidewise moving frame in which the spring-latch is mounted or intermediate between this frame and the disk, the object of the invention being to provide a combination-lock in which after the combination is set and the lock or latch withdrawn the combination will be broken through the quick movement imparted to the disk upon the release of the latch either by hand of the user or as the latch-bolt springs past the keeper in locking the door, so that the positive locking of the door will always be assured whether the operator turns the disk or not after closing the same. The present invention refers to one of the detail improvements embodied in such application and relates to a lock in which a sidewise-moving lug or finger is interposed between the sliding frame and the disk; and the invention embodied in the present application includes any form of interposed lug or finger in such position, and specifically includes a swinging arm or detent adapted to engage with one or more of these disks by moving sidewise thereof.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a top or plan view of the lock

embodying the present invention, in which the interposed member engages with two separate disks mounted on two separate posts, said figure showing the disks with the combination set in dotted lines and with the bolt withdrawn in full lines. Fig. 2 is a like view showing the position after the combination is broken and indicating the operation of the lock. Fig. 3 is a like view of another form in which the swinging finger engages with two disks upon the same post, showing the lock in full lines when the combination is broken or the door is locked and in dotted lines when the combination is set and the bolt withdrawn; and Fig. 4 is a view of another form of the invention in which the interposed member is a pinion engaging both with the sliding frame and disks.

Like letters indicate like parts in each of the figures.

As the details of the lock forming the subject-matter of the present invention are fully discussed in said application, Serial No. 703,285, I will only describe the general principles involved in the present invention.

The lock is secured within a suitable lock-case *a*, which may be secured to the plate forming the door of the post-office lock-box or may be closed by any suitable outer plate, this case being formed of metal and having the front wall *a'*, rear wall *a''*, top wall *a'''*, and bottom wall *a''''*. Extending through the front and back walls is the bolt *b*, having the head *b'* and the shaft *b''*. Mounted upon the shaft *b''* is the sliding frame *c*, which has the front end wall *c'* fitting around the bolt-head *b'*, which slides through it, a pin *b'''* on the bolt-head limiting the outward movement of the same through the front wall *c'* of the sliding frame. Surrounding the shaft *b''* and confined between the bolt-head *b'* and the rear wall *c''* of the sliding frame is the spring *d*, while around said shaft *b''* and between the rear wall *c''* of the sliding frame and the rear wall *a''* of the lock-case is the spring *d'*, the spring *d'* being weaker than the spring *d*, so that when the sliding frame *c* is free to move backward any pressure upon the bolt-head *b'* will carry that frame back with it, compressing the spring *d'* and compressing the spring *d* but slightly, if any. This way of mounting the sliding

frame and bolt is fully shown in said application, Serial No. 703,285. As shown in Figs. 1 and 2, located on each side of the sliding frame are the posts $e e'$, respectively, extending up from the body of the lock-case, and loosely mounted on these posts are the disks $f f'$, respectively, these disks being engaged and turned by means of suitable rotatable dials having portions thereof extending through the door of the post-office lock-box or front wall of the case in position to be turned by the user. The disks have formed in their edges gates or setting-slots $i i'$, respectively, and mounted on a suitable post at h' on the lock-case is the lever or arm h , the ends or fingers of which form lugs $h^2 h^3$, adapted to fit into the gates $i i'$ of the disks $f f'$ when the combination is properly set, as shown in dotted lines, Fig. 1. The lever or arm h is turned by a handle adapted to extend through the front face of the lock-case and providing for the turning of the same when the combination is set. This lever h may be connected to the sliding frame c in any suitable way, the drawings showing the lever h having a slot m formed in one arm thereof, which fits over a pin n on the body of the sliding frame, so that when the combination is set and the lever is turned by the handle as the ends or lugs $h^2 h^3$ of the lever pass into the gates $i i'$ through the pin n and slot m it will draw back the sliding frame c and with it will draw back the latch-bolt b and provide for the opening of the door.

The operation of the lock is practically as follows: To open the door, the operator turns the disks $f f'$ so as to bring the gates $i i'$ thereof into line with the lugs or fingers $h^2 h^3$ of the lever h , and as soon as they are brought to the proper position the combination is thus set. Through the handle the lever h is turned, in which case its fingers enter the gates $i i'$, turning the disks as the ends of the lever move substantially tangentially or sidewise of the disks and through the sliding frame c withdrawing the latch-bolt. As soon as the door is unlocked, if the operator releases the handle suddenly and so permits the spring d' to impart a quick motion to the sliding frame and the lever h , this motion will be imparted to the disks $f f'$, which as they rotate freely will be given a partial turn on the posts $e e'$, the gates swinging clear of the ends of the lever h and so breaking the combination by the free rotation of the disks through the motion imparted to them by the lever h . In case the user permits only a gradual forward movement of the lever h and sliding frame c , so that no swinging movement is imparted to the disks and the combination remains set, when the door is closed the contact of the inclined face of the head b' of the bolt with the strike-plate will force back the bolt and through the stronger spring d will force back the sliding frame c against the weaker spring d' , so also moving the lever h and the rotating disks back into the position of full lines in Fig. 1. As soon as the bolt-head passes

the head of the strike-plate and is free to shoot past the same the spring d' will impart the necessary quick movement to the sliding frame c and lever h and so impart the necessary swinging movement to the disks and cause the breaking of the combination as the lock is closed.

In Fig. 3 both disks are mounted upon the same post and are controlled in the usual way by a single dial. The two disks $p p'$ are mounted on the post p^2 , having the notches p^3 , which by turning are brought into line with each other and set in position for the entrance of the lever r . The lever r may be turned by a knob r' . It has formed therein an elongated slot r^2 , through which the spring-latch-bolt shaft s passes, a pin s' on the head of the latch-bolt pressing against the lock-case, and a pin s^2 , back of and engaging with the lever r . A spring s^3 is interposed between the lever r and the bolt-head and a weaker spring s^4 between the lever r and back wall of the lock-case. The operation is practically the same as that above described, differing only in the fact that both disks are set upon the same post and the sliding plate is dispensed with and that when the handle is released or the bolt shoots past its strike-plate the springs by acting directly on the lever cause the swinging of both disks upon the same shaft and so break the combination.

In the construction shown in Fig. 4 a pinion is employed between the sliding frame c and the disks. The sliding frame u , latch-bolt u' , and springs $u^2 u^3$ are the same as in Fig. 1, and the disks $v v'$, mounted on the post v^2 and having the notches v^3 , are the same as in Fig. 3. Between the sliding frame and disks and mounted in any suitable way is the pinion t , which has the teeth t' , engaging with the rack-teeth t^2 on the edge of the sliding frame, while on the other side of the pinion is the tooth t^4 , which is adapted to move sidewise into the gates v^3 of the disks when the disks are set in position, the tooth t^5 limiting the backward motion and the tooth t^6 the forward motion of the pinion as it swings in its course. In the operation of this form of the invention the combination is set in the usual way, bringing the gates in line with the tooth or lug t^4 , when upon the turning of the knob controlling the pinion the said tooth will swing sidewise into the gates of the disks, and if the knob is suddenly released the spring u^3 will throw forward the sliding frame u and impart a quick movement to the pinion, which will impart the necessary swing to the disks and turn the gates out of line with the lug of tooth t^4 and break the combination, and if the knob is gradually released, so that the combination still remains set, the quick release of the bolt as it passes the strike-plate in closing the door will impart the necessary swing to the disks, through the sliding frame and pinion, to cause them to turn and break the combination.

In any of the forms above described in

case the combination is broken by the quick release of the knob after opening the door it is of course to be understood that the spring or latch bolt mounted in the lock-case can be
 5 pressed back, compressing the spring *d* within the sliding frame or between the bolt and the lever, so that the door can be closed in the usual way. The constructions illustrated give an efficient form of combination-lock especially suited for post-office lock-boxes or
 10 like boxes or doors where the user is liable to be careless in closing the same and provide positive means for breaking the combination.

15 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a combination-lock, the combination of a rotating disk having a gate or setting-slot in the edge thereof, and a swinging member
 20 having a lug moving substantially tangentially of the disk and entering the gate and turning the disk, substantially as set forth.

2. In a combination-lock, the combination with a rotating disk having a gate or setting-slot in the edge thereof, of a lever having a
 25 lug swinging substantially tangentially of the disk and entering said slot and turning the disk, substantially as set forth.

3. In a combination-lock, the combination
 30 of a rotating disk, a sliding frame and an interposed member between the sliding frame and disk and having a lug moving sidewise of the disk and engaging with the disk and sliding frame and operating to turn the disk when
 35 passing from engagement therewith, substantially as set forth.

4. In a combination-lock, the combination with two rotating disks having slots therein mounted on separate posts, of a lever pivoted between the disks and swinging laterally of
 40 and entering the slots of and turning the disks, and a sliding frame controlled in its movement by said lever.

5. In a combination-lock, the combination with a rotating disk, of a sliding latch-bolt, a
 45 sliding frame controlling the bolt, a lever having a lug swinging sidewise of and engaging with the disk, and a sliding connection between the lever and sliding frame.

6. In a combination-lock, the combination
 50 with a rotating disk, of a sliding latch-bolt, a sliding frame controlling the bolt, a pin on said sliding frame and a lever swinging sidewise of and engaging with the disk and having a slot engaging with the pin on the slid-
 55 ing frame.

7. In a combination-lock, the combination of a lock-case, a rotating disk mounted therein, a latch-bolt sliding in the lock-case and a
 60 sliding frame mounted therein, springs confined between the bolt-head and sliding frame and sliding frame and lock-case, and a lever connected to the sliding frame and swinging sidewise of and engaging with the disk, sub-
 65 stantially as set forth.

In testimony whereof I, the said ANGUS McKENZIE, have hereunto set my hand.

ANGUS McKENZIE.

Witnesses:

FRANK R. RIDELL,
 A. F. WEBER.