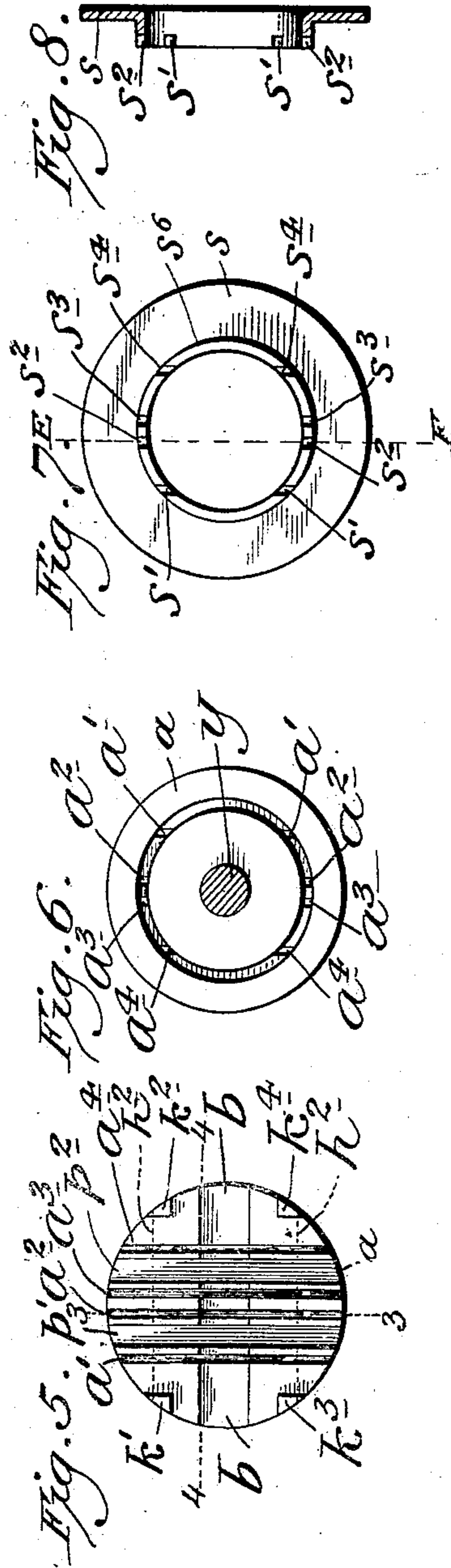


LOCK.

915,252.

3 SHEETS—SHEET 1.



C. E. Mulreany  
M. E. Lookey

INVENTOR,  
*Arthur Bayly Vane*,  
BY *Edgar Tate & Co.*  
ATTORNEYS

A. B. VANES.

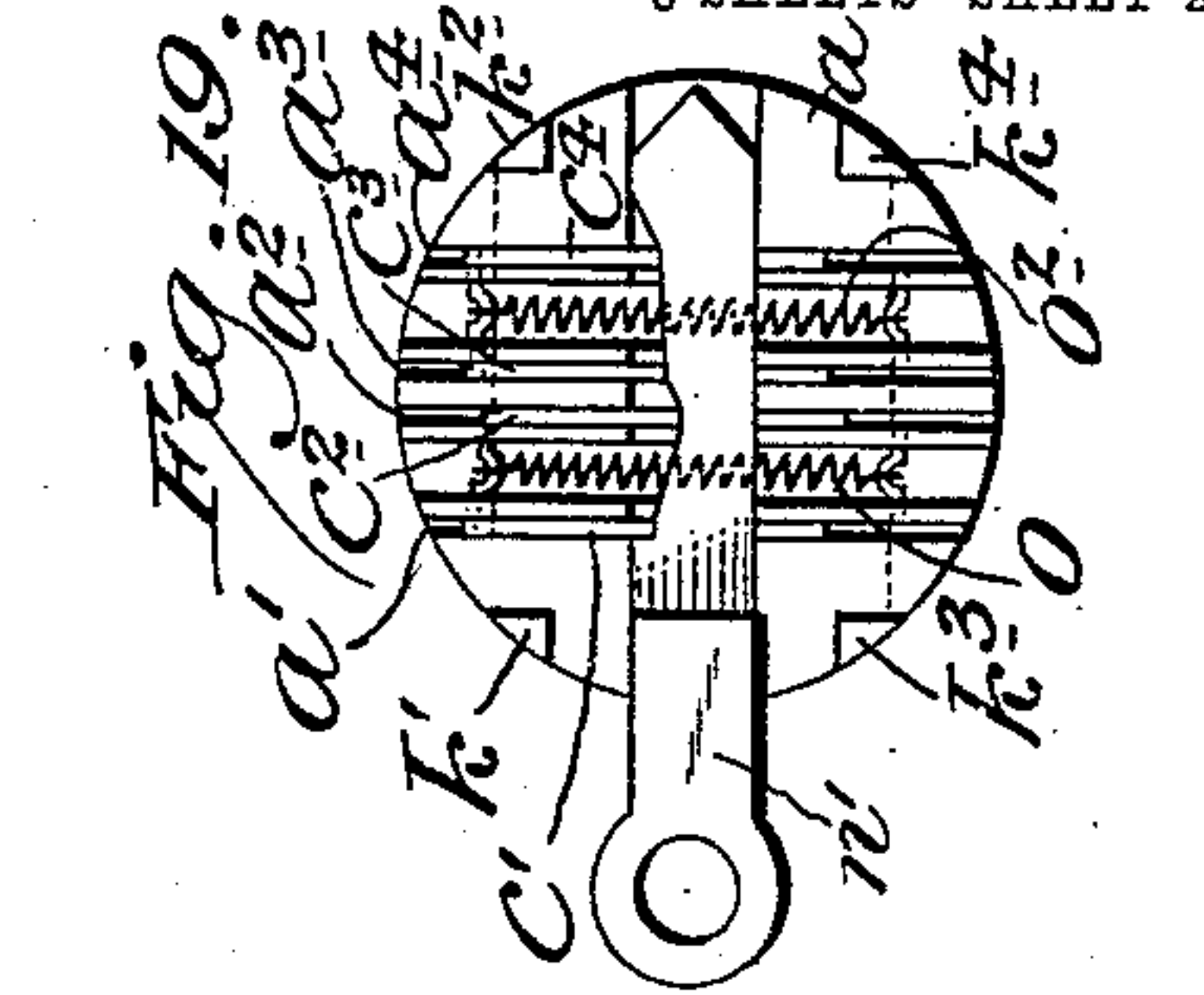
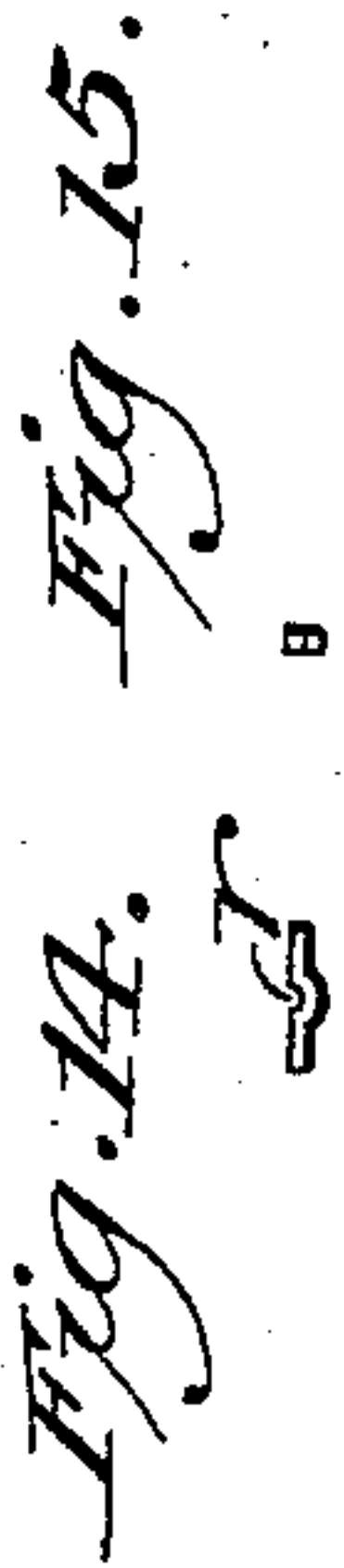
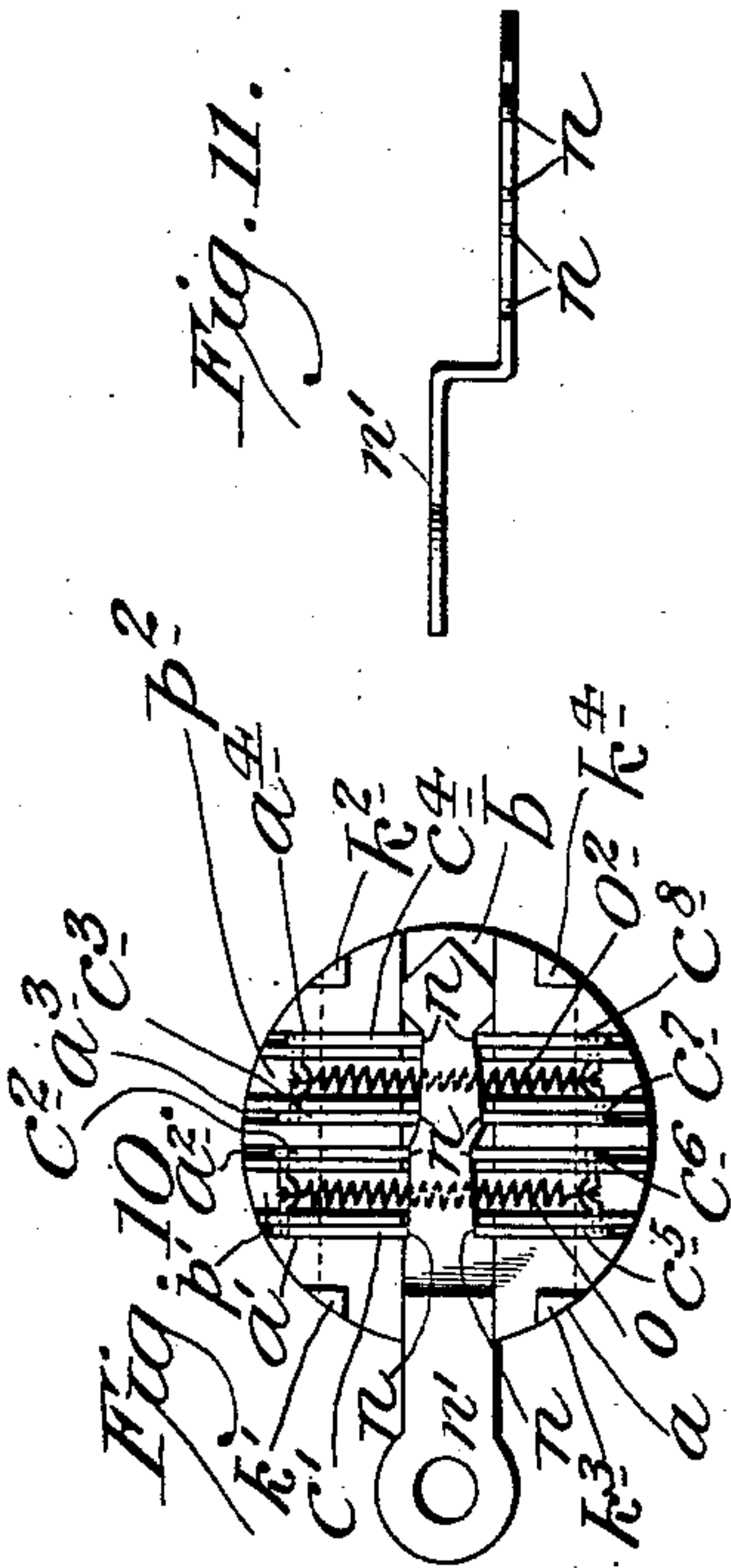
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APPLICATION FILED SEPT. 16, 1907.

915,252.

Patented Mar. 16, 1909.

3 SHEETS—SHEET 2.



WITNESSES  
C. E. Mulreany  
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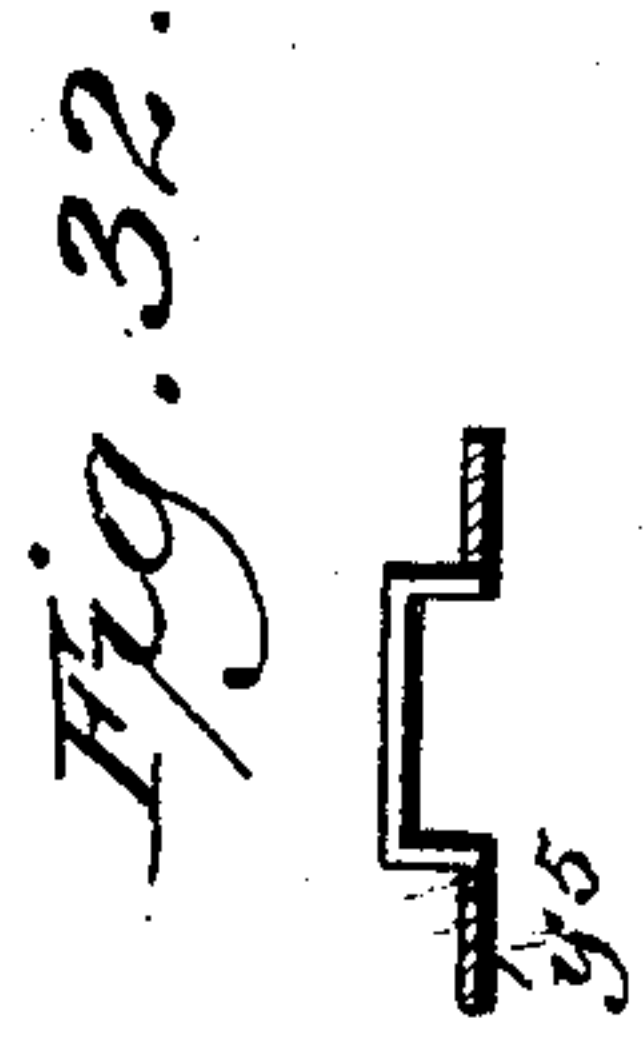
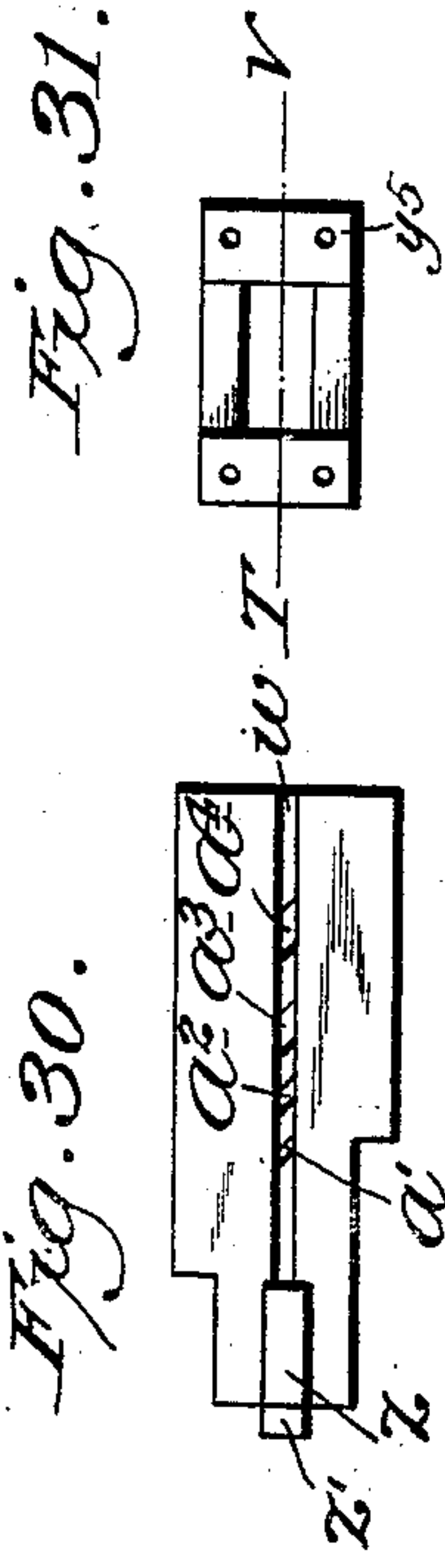
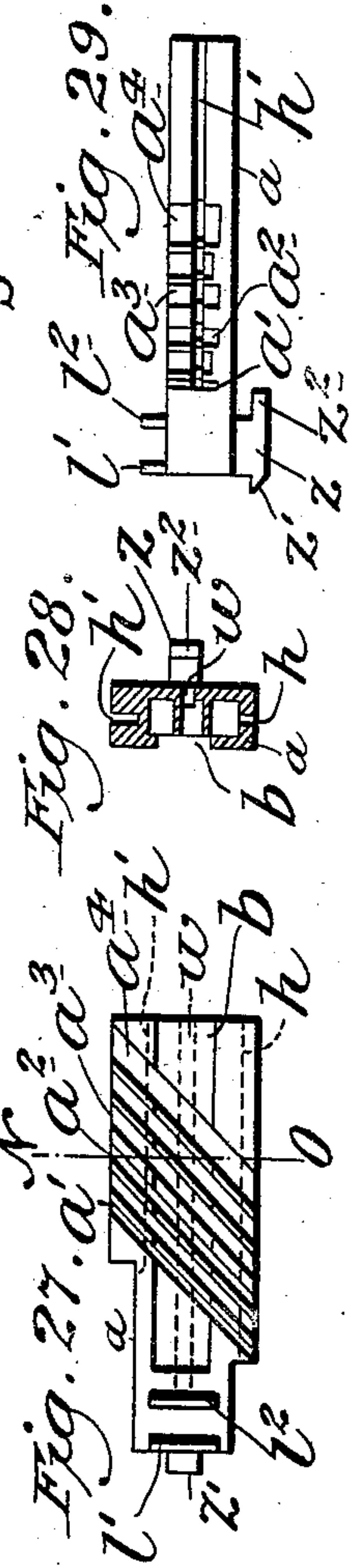
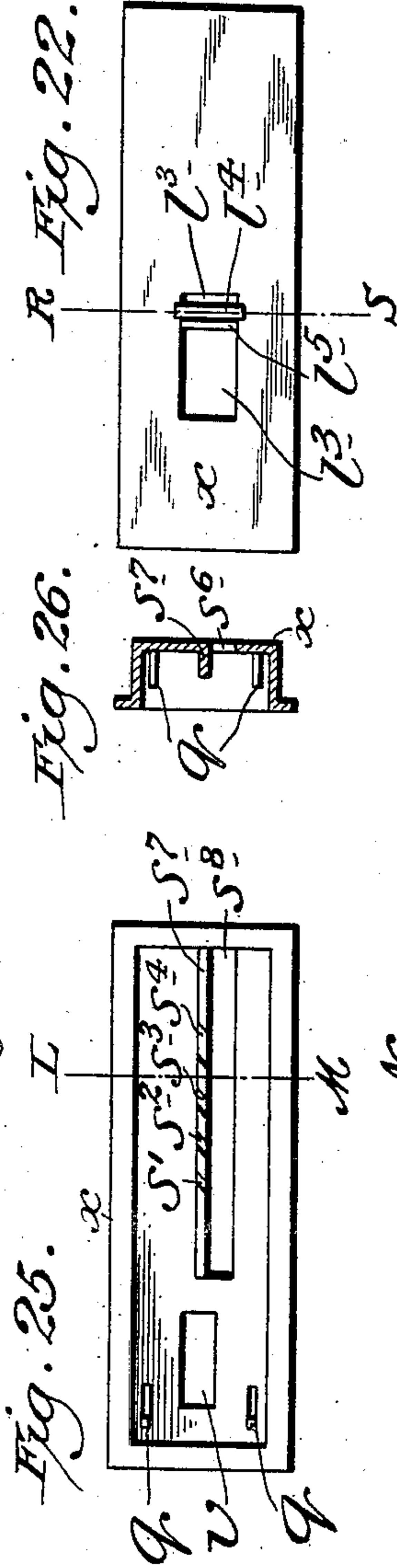
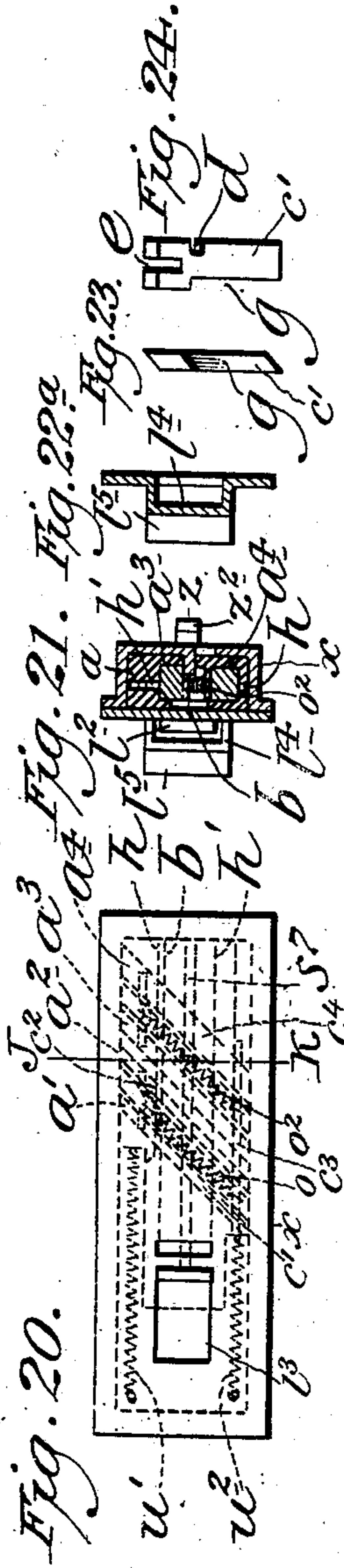
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3 SHEETS—SHEET 3.



WITNESSES  
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M. E. Doodie

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ATTORNEYS



# UNITED STATES PATENT OFFICE.

ARTHUR BAYLY VANES, OF UITENHAGE, CAPE COLONY.

## LOCK.

No. 915,252.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed September 16, 1907. Serial No. 392,993.

*To all whom it may concern:*

Be it known that I, ARTHUR BAYLY VANES, a subject of the King of Great Britain, and residing at Uitenhage, in the district of Uitenhage and Colony of the Cape of Good Hope, have invented certain new and useful Improvements in Locks, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide a lock, secure in action and of simple construction.

A further object being to provide a lock which can be converted into a spring latch or a positive lock.

The said device is fully disclosed in the following specification of which the accompanying drawings form a part in which like reference characters indicate similar parts, and in which;—

Figure 1 is a front elevation of my improved lock, Fig. 2 a section on the line A—B of Fig. 1, Fig. 3 a section on the line 3—3 of Fig. 1, Fig. 4 a section on the line 4—4 of Fig. 1, Fig. 5 a face view of a body member forming part of the construction shown in Figs. 1 and 2, Fig. 6 a view of the opposite face of the body member shown in Fig. 5, Fig. 7 a face view of a locking ring forming a part of my improved lock, Fig. 8 a section on the line E—F of Fig. 7, Fig. 9 an elevation of a face plate forming a part of my improved lock, Fig. 10 an elevation showing parts of my improved lock assembled and showing said parts in an unlocked position, Fig. 11 an edge view of a key which I employ, Fig. 12 an elevation of a tumbler forming a part of my improved lock, Fig. 13 an edge view of the same, Fig. 14 an elevation of a cross bar forming a part of my improved lock, Fig. 15 an end view of the same, Fig. 16 a transverse vertical sectional view of a modified form of my improved lock, Fig. 17 a face view of a locking ring forming a part of the construction shown in Fig. 16, Fig. 18 a section on the line G—H of Fig. 17, Fig. 19 an elevation showing parts of the lock shown in Fig. 16 assembled and showing said parts in an unlocked position, Fig. 20 an elevation of a further modification, Fig. 21 a vertical transverse section on the line J—K of Fig. 20, Fig. 22 an elevation of a face plate forming part of the construction shown in Figs. 20 and 21, Fig. 22<sup>a</sup> a section

on the line R—S of Fig. 22, Fig. 23 an edge view of a tumbler forming part of the construction shown in Figs. 20 and 21, Fig. 24 a face view of the same, Fig. 25 an inside view of a casing forming a part of the construction shown in Figs. 20 and 21, Fig. 26 a section on the line L—M of Fig. 25, Fig. 27 a face view of a body member forming a part of the construction shown in Figs. 20 and 21, Fig. 28 a section on the line N—O of Fig. 27, Fig. 29 a bottom plan view of the body member shown in Fig. 28, Fig. 30 a view of the opposite face of the body member shown in Fig. 28, Fig. 31 a bottom view of a catch, and;—Fig. 32 a section on the line T—V of Fig. 31.

In the drawings *a* designates a body member provided in its front face with deep transverse parallel grooves or channels *a*<sup>1</sup>, *a*<sup>2</sup>, *a*<sup>3</sup> and *a*<sup>4</sup> and a shallow groove or channel *b* intersects the said deep grooves and is adapted to receive a key as will hereinafter appear. Diametrically opposite grooves or channels *h* and *h*<sup>1</sup> are provided in the periphery of the body member *a*, the purpose of which will be described hereinafter.

An annular groove *w* is formed in the rear face of the body member *a*, and intersects the deep grooves *a*<sup>1</sup>, *a*<sup>2</sup>, etc., and said body member is also formed with a backwardly ranging bar *y*, adapted, when rotated, to operate a locking bolt (not shown), the body member *a* is further provided with projections *k*<sup>1</sup>, *k*<sup>2</sup>, *k*<sup>3</sup> and *k*<sup>4</sup>, and the object of these projections is to operate in connection with recesses *m*<sup>1</sup>, *m*<sup>2</sup>, *m*<sup>3</sup> and *m*<sup>4</sup> formed in a face plate *m*<sup>5</sup>, and said face plate is further provided with another recess *t* adapted to receive a key as will be later explained.

Slidably mounted in the deep grooves *a*<sup>1</sup>, *a*<sup>2</sup>, etc., are tumblers *c*<sup>1</sup>, *c*<sup>2</sup>, *c*<sup>3</sup>, *c*<sup>4</sup>, *c*<sup>5</sup>, *c*<sup>6</sup>, *c*<sup>7</sup> and *c*<sup>8</sup>, and these tumblers have side recesses *d*, corner recesses *g*, tongues *f* and recesses *c*. The tumblers are mounted in the grooves *a*<sup>1</sup>, *a*<sup>2</sup>, etc., so that the recesses *d* are on the rear sides the tongues *f* and recesses *c* at the outer ends thereof and the corner recesses *g* at the inner ends and front sides of said tumblers. Resting in the grooves or channels *h*, and *h*<sup>1</sup> and bridging the grooves or channels *a*<sup>1</sup>, *a*<sup>2</sup>, etc., are cross bars *r*, and the ends of each of said cross bars rest in the recesses *c*, of a pair of tumblers *c*<sup>1</sup>, *c*<sup>2</sup>, etc. The cross bars *r* are also connected with opposite ends of spiral springs *o* and *o*<sup>2</sup>, and these springs exert an



inward pull on the cross bars and normally hold the inner ends of the oppositely arranged tumblers together.

All of the elements heretofore described are placed in a suitable housing or casing  $x$ , said casing being open at the rear and having an inwardly directed annular flange at the front thereof, said flange having recesses  $x^2$  and  $x^3$  adapted to receive a key at diametrically opposite points. The rear portion of the casing or housing  $x$  is flanged, and said flange carries pins  $x$  and  $x^1$ , and is countersunk to receive a locking ring  $s$ , and the rear face of the locking ring is flush with the rear face of the casing or housing  $x$ , as shown. The locking ring  $s$  is provided with an annular flange  $s^6$ , having parallel grooves or notches  $s^1, s^2, s^3$  and  $s^4$  which correspond with the deep grooves or channels  $a^1, a^2$ , etc., and are adapted to receive the tumblers  $c^1, c^2$ , etc., when the lock is in its normal or locked condition.

A cranked key  $n^1$  is used in connection with my improved lock, and said key is provided in its opposite sides at the front thereof with notches or depressions  $n$ , and these notches or depressions are so placed that when the key is thrust into the lock and is "home" or in an operative position each of said notches will be under a tumbler. The notches  $n$  are of varying depths, and care must be taken to have the distance between the notches correspond with the distance between the tumblers. Before the body member  $a$ , and the parts carried thereby are inserted into the casing and before the notches  $d$  are cut in the tumblers  $c^1, c^2$ , etc., the key with its series of notches is thrust into the shallow groove  $b$  and between the inner ends of the tumblers until said tumblers and said notches register, the tumblers being forced apart to a greater or less degree corresponding to the depth of their respective notches.

When the tumblers  $c^1, c^2$ , etc., are in the position just described, a suitable circular cutter is passed through the annular groove  $w$ , and notches  $d$  are cut in the rear sides of the tumblers, and these notches will be at different points along the inner sides of the several tumblers so that in order to bring the notches  $d$  in all of the tumblers into registration with the annular groove  $w$  again, the same key  $n^1$  or a similar one must be used. When the notches are all in registration with the annular groove  $w$ , the body member  $a$  and parts carried thereby will be free to rotate on the locking ring  $s$ , but should one of the tumblers  $c^1, c^2$ , etc., be out of registration with the annular groove  $w$ , it will engage one of the notches  $s^1, s^2$ , etc., of said locking ring, and the body member will be locked against rotation. After the notches  $d$  are cut in the tumblers  $c^1, c^2$ , etc., the key  $n^1$  is withdrawn and the parts assembled as shown in Figs. 1 and 2, and when it is desired to unlock the

parts so that the body member  $a$  carrying the bar  $y$  may be revolved the key is inserted into one of the recesses  $x^2$  or  $x^3$ , through the notch  $t$ , and into the shallow groove  $b$  under the face plate  $m^5$ , and the cranked or offset portion of said key is used as a handle to rotate said body member and said bar  $y$ .

The pins  $x-x^1$  are embedded into the wall of the box, vault or other receptacle, on which it may be desired to employ my lock, and screws or other fastening devices (not shown) are passed through the flanges of the casing  $x$  and locking ring  $s$  into said wall to securely hold the lock in position.

In Figs. 16 to 19 inclusive, I have shown a slightly modified construction which constitutes a combined lock and latch, and in which the body member  $a$  employed in the lock just described is retained. The annular flange  $s^6$  of the locking ring  $s$  in this construction has but one set of parallel notches  $s^1, s^2$  etc., and said flange is cut away as at  $s^5$  for more than half of its circumference, and the object of this construction will be hereinafter pointed out. The tumblers  $c^1, c^2$  etc., in this form of construction, are arranged singly in the grooves or channels  $a^1, a^2$  etc., and are adapted to be operated by a key  $n^1$  having notches on but one of its sides as clearly shown in Fig. 19, and are of the same form as the tumblers previously shown and described, except that they are longer. In this construction I also employ the cross bars  $r$ , and springs  $o$  and  $o^2$  to hold the tumblers  $c^1, c^2$  etc. in the operative or locked position. When it is desired to unlock the body member  $a$  from the locking ring  $s$ , to revolve said body member and bar  $y$ , the key  $n^1$  is thrust into the lock, forcing said tumblers outwardly until the notches  $d$  thereof register with the annular groove  $w$  in said body member, and there being no obstruction in said annular groove  $w$ , at this time, said body member can be revolved to operate a locking bolt attached in any suitable manner to the bar  $y$  carried by said body member. Before the key  $n^1$  is withdrawn, if the body member  $a$  and the parts carried thereby, are given a half turn, and said key  $n^1$  is withdrawn at the opposite side of the casing  $x$ , the tumblers  $c^1, c^2$  etc. will overlie the cut away portion  $s^5$  which is the same depth as the notches  $s^1, s^2$  etc., and said body member may be given approximately a half turn by means of the knob or handle  $i$ , formed on the face plate  $m^5$  as clearly shown in Fig. 16, and in this condition the device operates simply as a latch, similar to an ordinary door latch and when it is desired to make a lock of the device, all that is necessary is to insert the key, give the body member and parts carried thereby a half turn, and withdraw the key, and the tumblers  $c^1, c^2$  etc. will be caused to interlock with the notches  $s^1, s^2$  etc., when the parts will be locked.



In Figs. 20 to 32 I have shown a further modified construction, and this form is particularly applicable to hand-bags and the like. This construction also constitutes a combined latch and lock as will be hereinafter described. The body member  $a$  in this form of construction has a sliding movement instead of a rotary movement, and said body member is provided with diagonally ranging parallel grooves or channels  $a^1$ ,  $a^2$ ,  $a^3$  and  $a^4$  of different widths, as clearly shown in Fig. 27, and a shallow longitudinal groove or channel  $b$  adapted to receive a key, intersects the grooves or channels  $a^1$ ,  $a^2$ , etc., and on the opposite side of said body member, from the groove  $b$ , a groove or channel  $w$  is formed and the top and bottom sides are provided with grooves or channels  $h$ — $h^1$ , and the function of all of these grooves or channels is the same as shown in the two forms previously described. The casing or housing  $x$  in this construction is rectangular in form, and is provided with apertures  $v$ , and  $s^8$  in the rear wall thereof and an aperture 13 in the front wall, said rear wall being also provided with inwardly directed pins  $q$  adapted to be connected with pull springs  $u^1$  and  $u^2$  the other ends of said springs being connected to the body member  $a$ , as shown in dotted lines in Fig. 20, and these springs operate to pull the said body member to the left. The material of the casing or housing  $x$  at the aperture  $s^{10}$  is turned up at a right angle to the wall thereof and forms a locking flange  $s^7$ , and said locking flange is formed with diagonally arranged parallel grooves or notches  $s^1$ ,  $s^2$ ,  $s^3$ , and  $s^4$ , and said notches are of different widths, as shown in Fig. 25, and the varying widths of these notches correspond to the varying widths of the channels or grooves  $a^1$ ,  $a^2$  etc. and to the varying widths of the tumblers  $c^1$ ,  $c^2$  etc. The body member  $a$  is further provided with spaced lugs or finger pieces  $l^1$  and  $l^2$  on one side, and on the opposite side with a projection  $z$ , said projection having at one end a beveled catch  $z^1$ , and at the opposite end a locking nose or lug  $z^2$ . The lugs or finger pieces are adapted to project through the aperture  $l^3$  and the projection  $z$  through the aperture  $v$ . The material taken from the casing  $x$  at the aperture  $l^3$  is turned up and forms a finger piece  $l^5$ , and an arch  $l^4$  is formed out of this material high enough to permit the finger piece  $l^2$  to pass thereunder, and the object of this construction will be described hereinafter. When assembling the parts the body member  $a$  is placed in the casing proper so that the groove  $w$  receives the locking flange  $s^7$  and the projection  $z$  goes through the aperture  $v$  the front or cover of the housing is then put in place so that the finger pieces  $l^1$  and  $l^2$  project through the aperture  $l^3$ . A suitable key (not shown), notched on one side is thrust into the groove or channel  $b$ , and operates to

raise the tumblers  $c^1$ ,  $c^2$  etc., so that each of the notches  $d$  thereof register with the locking flange  $s^7$  when the body member  $a$  and the parts carried thereby will be pulled to the left by the spring  $u^1$  and  $u^2$ , and this operation brings the beveled catch  $z^1$  under one side of a suitable keeper  $y^5$  (Figs. 31 and 32), and in this position forms a latch, all that is necessary to disengage said beveled catch from said keeper is to push the projecting finger piece  $l^2$  to the right as far as the finger piece  $l^5$ , when the catch will clear the keeper and the hand-bag or the like may be opened. In this operation the body member  $a$  does not travel to the right a sufficient distance to allow the tumblers to reach their respective notches in the locking flange  $s^7$ , said tumblers being so graduated in width that the widest one is on the extreme right, and cannot, of course, enter a narrower notch. When the finger piece  $l^2$  is released the springs  $n^1$  and  $n^2$  pull the body member  $a$  back to the left again, and the beveled catch  $z^1$  will snap under the keeper  $y^5$  when the hand-bag or the like is again closed. When it is desired to lock a hand-bag or the like, all that is necessary is to push the body member  $a$  to the right by manipulating the finger piece  $l^1$ , as far as the finger piece  $l^5$ , when the tumblers  $c^1$ ,  $c^2$  etc. will be over their respective notches  $s^1$ ,  $s^2$  etc. and will be drawn thereinto by the springs  $o$  and  $o^2$  thereby locking said body member against longitudinal movement, and at the same time brings the locking nose or lug  $z^2$  under the keeper  $y^5$  at the side opposite to that which the beveled catch  $z^1$  engages when the device is used as a latch only.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is;—

1. In a lock, a casing, a rotatable body member having parallel grooves in the front face thereof, tumblers mounted in said grooves, springs adapted to act on said tumblers, an intersecting groove in the front face of said body member, a face plate bridging said intersecting groove and forming a key slot, and a cranked key adapted to enter said slot whereby the tumblers are actuated and the body rotated.

2. In a lock, a body member having grooves, tumblers housed therein and having notches adapted to co-act with a notched flange and springs acting on said tumblers to keep said notches out of registration with said flange.

3. In a lock, a body member having parallel grooves in the front face thereof, a groove intersecting said parallel grooves and adapted to receive a key, springs and tumblers housed in said body member, a plate having a notched flange adapted to co-act with said tumblers and means for actuating said body member.



4. In a lock, a body member having parallel grooves in the front face thereof, a groove intersecting said parallel grooves, grooves in the side of said body member, a  
5 groove in the rear face of said body member adapted to receive a flange having parallel notches, tumblers co-acting with said notched flange and springs operating in connection with said tumblers.  
10 5. In a lock, a body member having parallel grooves of different widths, a groove intersecting said parallel grooves, a groove in the side of said body member adapted to receive a flange, said flange having parallel  
15 notches of different widths, tumblers of different widths adapted to co-act with said flange and springs operating in connection with said tumblers.

6. In a lock, a body member having parallel diagonal grooves of different widths, a  
20 groove intersecting said parallel diagonal grooves, a groove in the side of said body member adapted to receive a flange, said flange having parallel diagonal notches of  
25 different widths, tumblers of different widths adapted to co-act with said flange and springs operating in connection with said tumblers.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 14th day of August 1907.

ARTHUR BAYLY VANES.

Witnesses:

CHARLES PIENAAR,  
VINCENT ALBINO.