

No. 805,687.

PATENTED NOV. 28, 1905.

F. J. VIEWEG.

LOCK.

APPLICATION FILED JUNE 23, 1904.

2 SHEETS—SHEET 1.

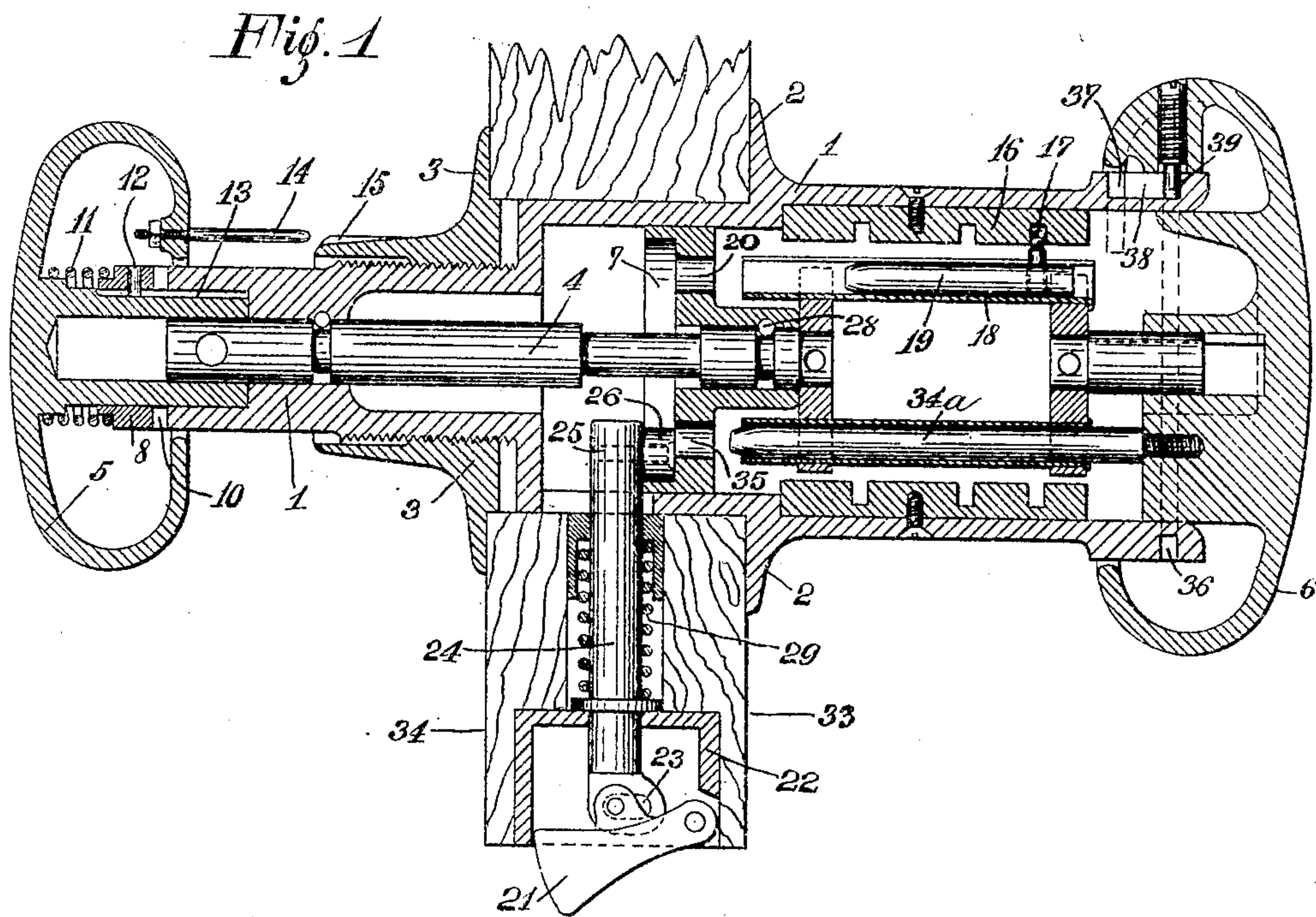


Fig. 3

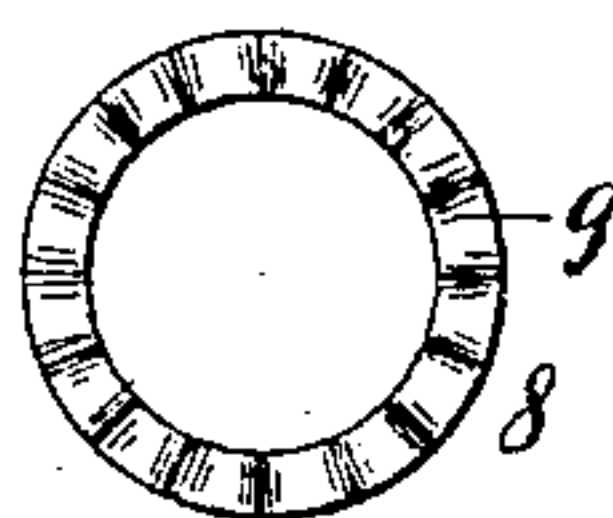


Fig. 4

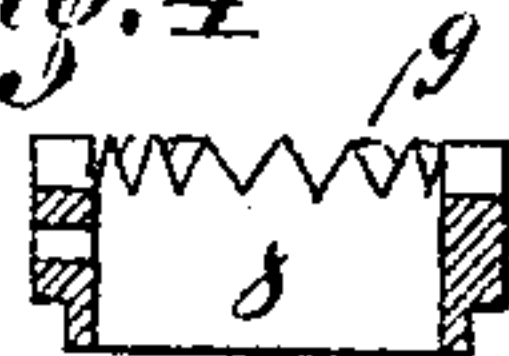


Fig. 2

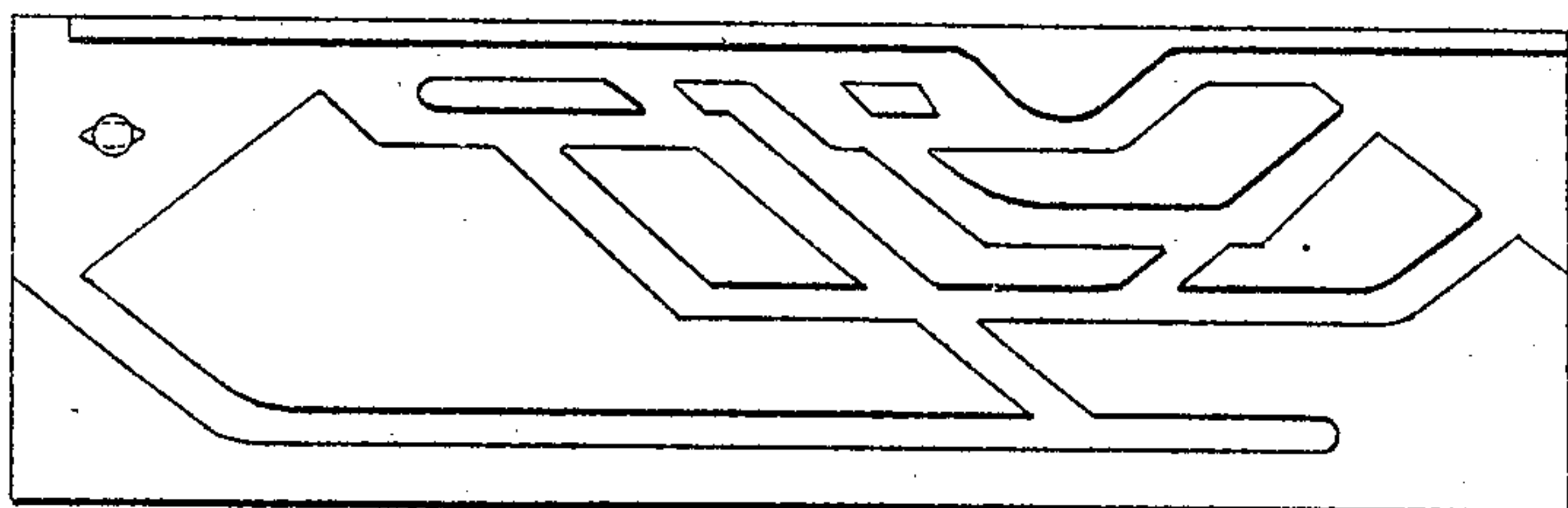
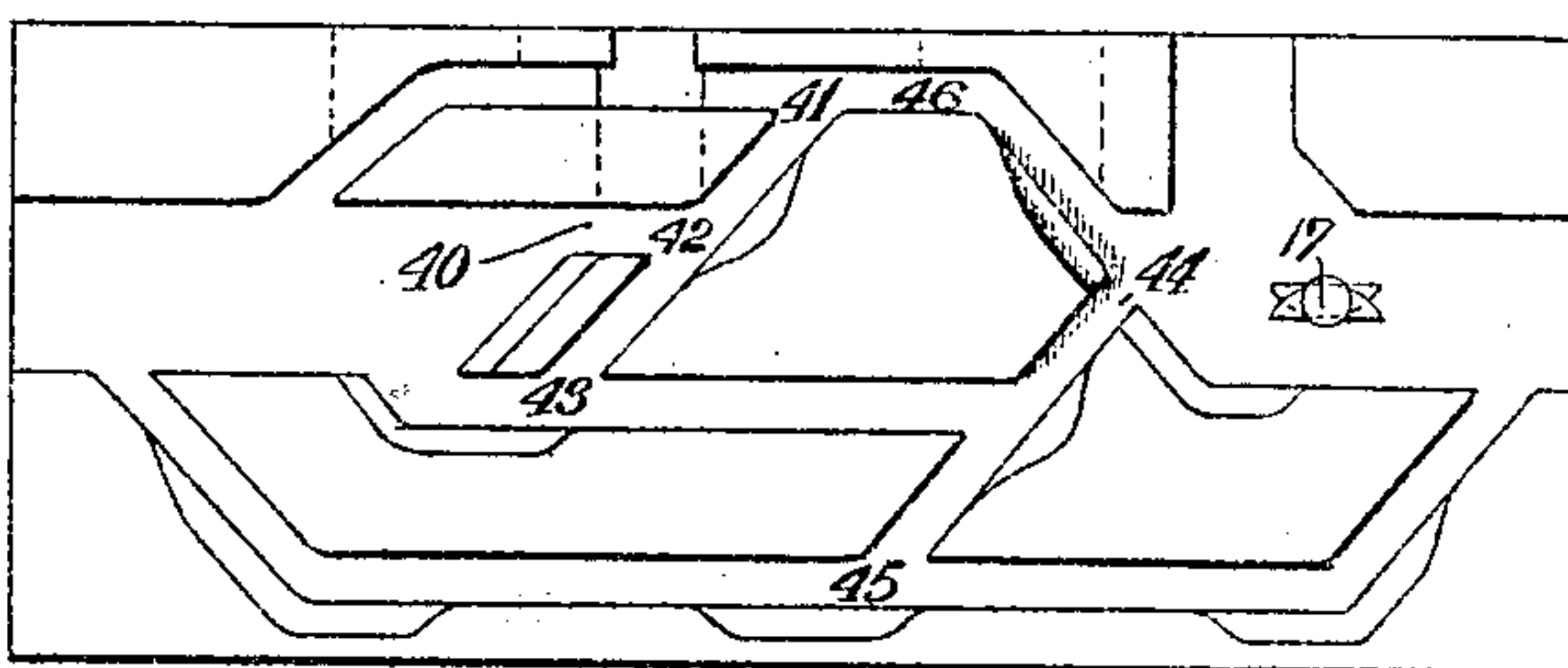


Fig. 10.

Witnesses
Evan Hongsberg
Annie W. Hermann

Fred J. Vieweg Inventor
By his Attorneys
Becker + Spaulding

F. J. VIEWEG.
LOCK.

APPLICATION FILED JUNE 23, 1904.

2 SHEETS—SHEET 2.

Fig. 5

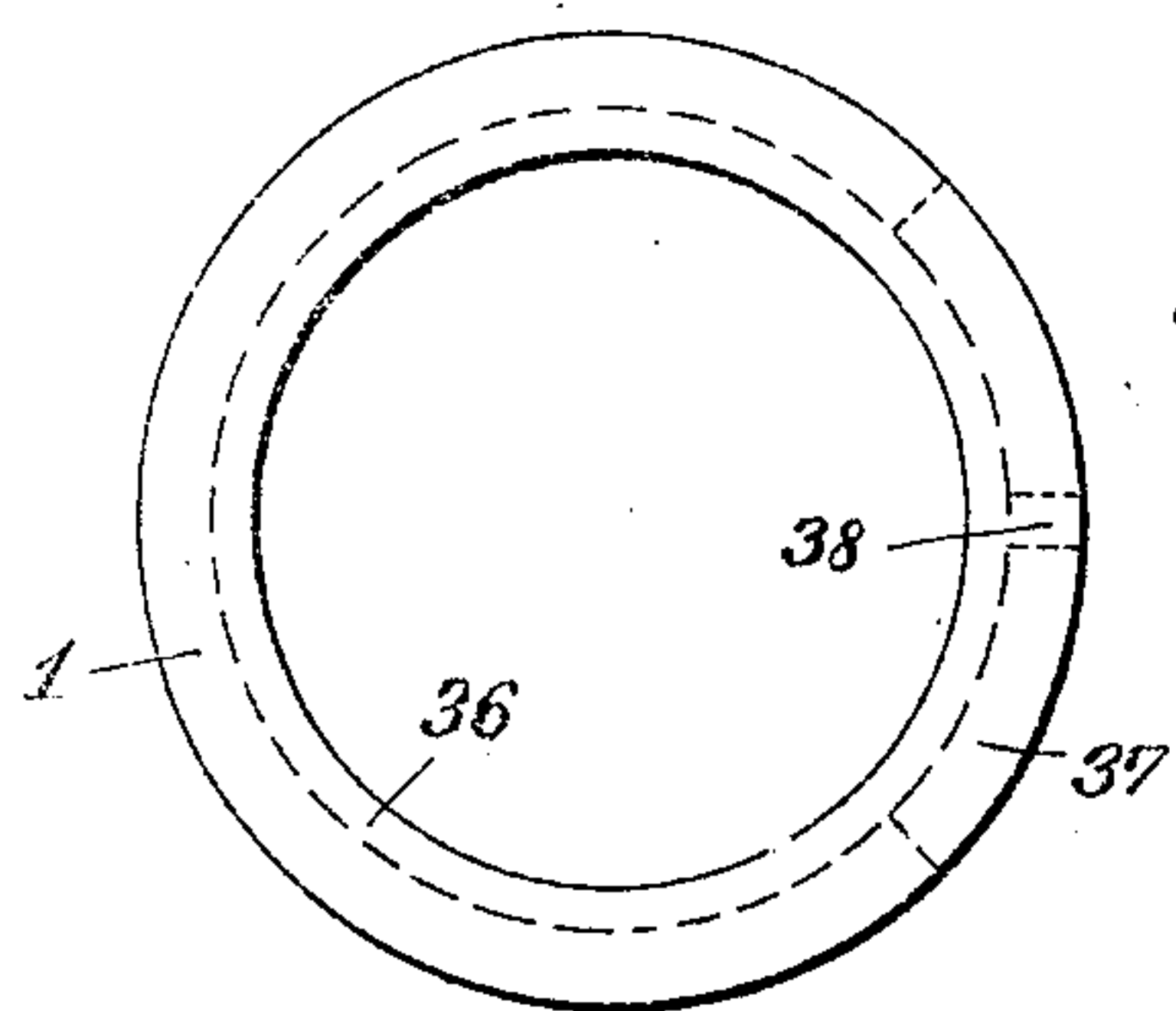


Fig. 6

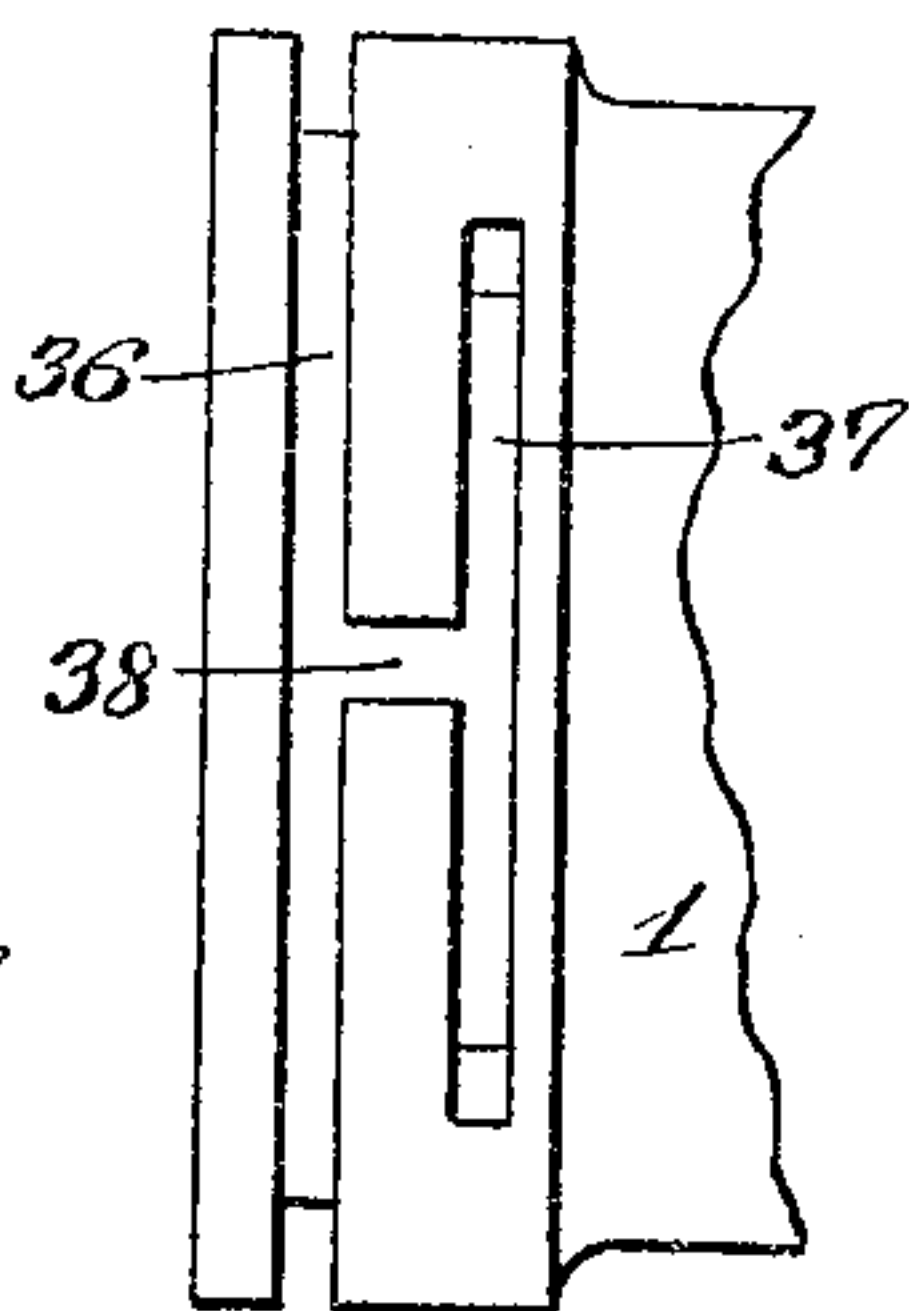


Fig. 7

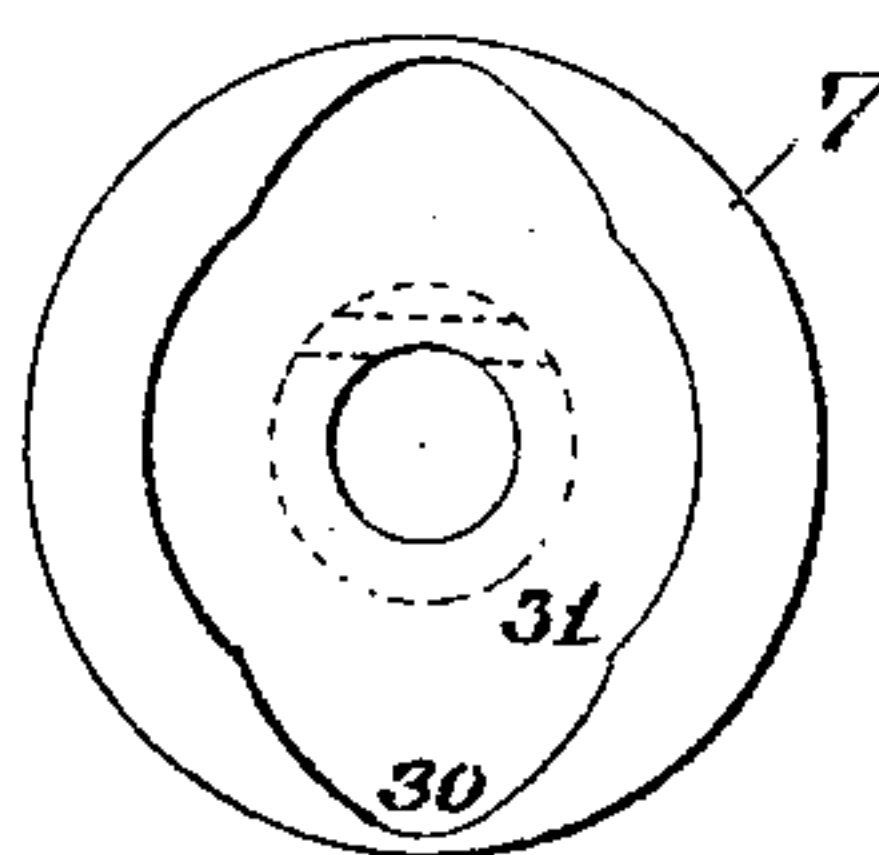


Fig. 9

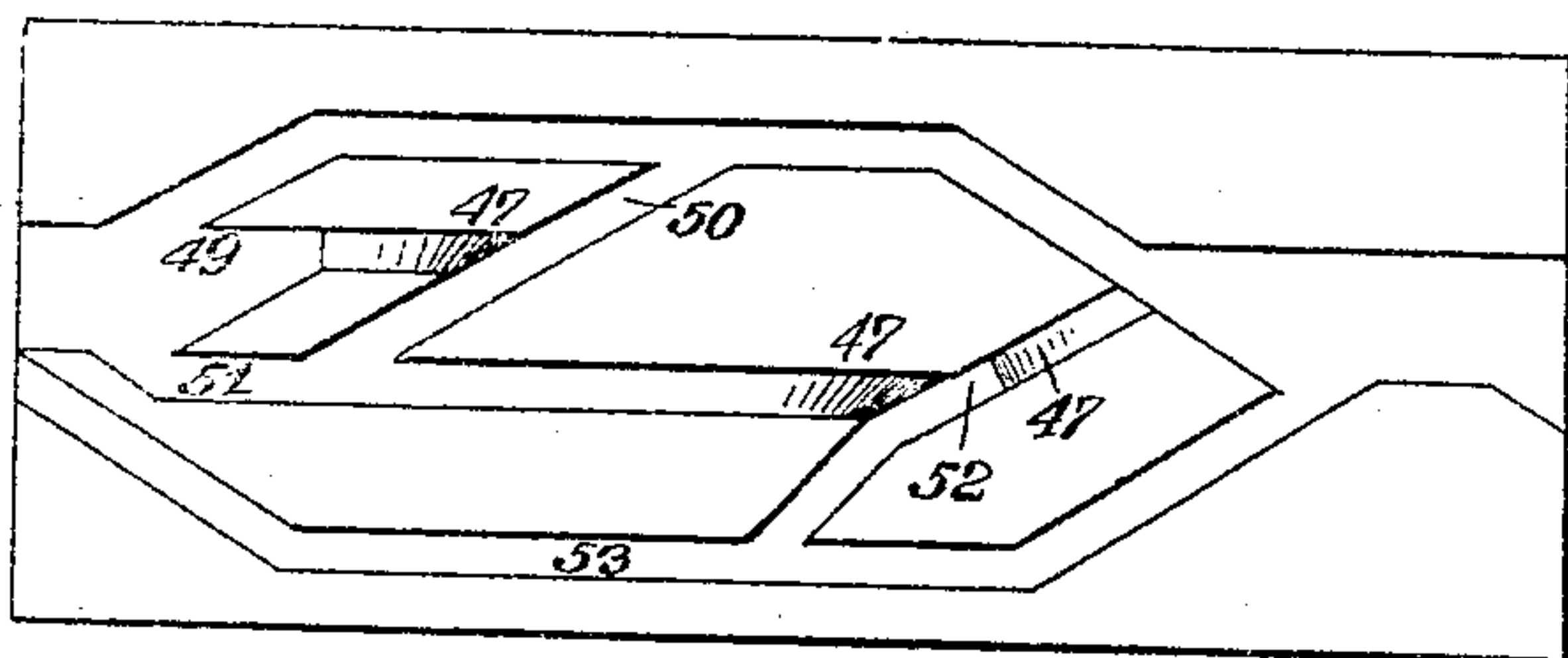
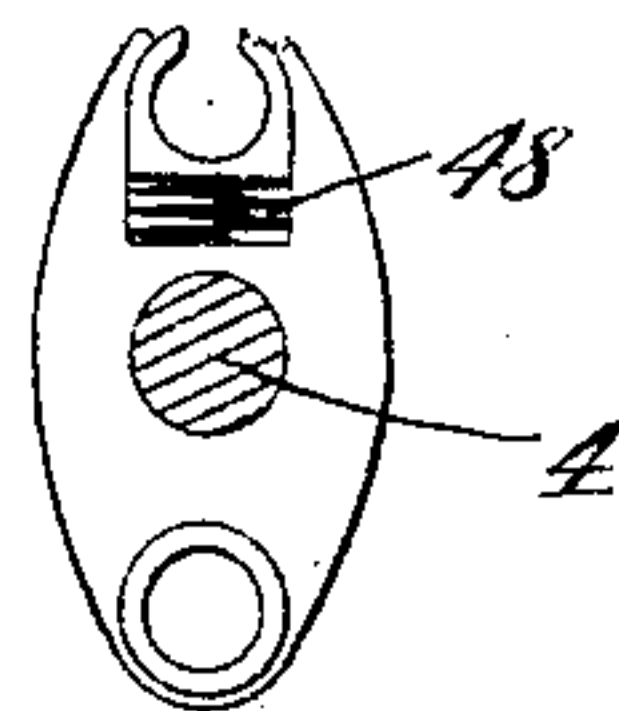


Fig. 8



Witnesses
Evan Honigberg
Anne W. Hermann

Fred J. Vieweg
Inventor

By his Attorneys
Becker & Spaulding

UNITED STATES PATENT OFFICE.

FRED J. VIEWEG, OF PLAINFIELD, NEW JERSEY.

LOCK.

No. 805,687.

Specification of Letters Patent.

Patented Nov. 28, 1905.

Application filed June 23, 1904. Serial No. 213,801.

To all whom it may concern:

Be it known that I, FRED J. VIEWEG, a citizen of the United States of America, and a resident of Plainfield, Union county, New Jersey, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My invention relates generally to locks, and comprises certain modifications of and improvements upon a lock for which I have recently applied for Letters Patent. In this prior application, Serial No. 177,834, I have shown and claimed, broadly, two members relatively movable and adapted to render the latch-bolt operative from both sides of the lock or one side only at will. I there show and claim as the specific embodiment of my invention a rotatable and movable collar and a fixed pin adapted to move the collar laterally when the latter rotates.

In this application, on the other hand, I show and claim the collar fixed and the pin movable. Improvements on this prior lock have been made and are embodied in this application, as will hereinafter appear. For the purposes of certain of these features of my invention I do not limit myself in this application to a fixed collar and a movable pin.

In this invention I have endeavored to render my prior lock as efficient and inexpensive as possible and to reduce to the lowest possible limit the number of working parts. The latch is reversible, and therefore adapted for either a right or left hand swing door. The lock can be used as a day or night latch at will and is operative by the door-knob alone, no key being necessary.

Other objects will define themselves as the more detailed description of the invention proceeds.

I have shown my invention in the accompanying drawings, to which I will refer in the following description. In these drawings I have designated like parts by like numerals, and it will of course be understood that changes may be made in the form or arrangement of parts there shown without departing from the spirit of my invention.

In the drawings, Figure 1 is a longitudinal sectional view of a lock employing my invention. Fig. 2 is a view of a collar forming a feature of my invention and here shown rolled out flat with a labyrinth of grooves on its inner circumference. Figs. 3 and 4 are detailed views of Fig. 1, showing means for determining the passage of the pin through the

grooved collar. Figs. 5 and 6 are detailed views of the frame shown on Fig. 1. Fig. 7 is a detailed view of a member for operating the latch-bolt. Fig. 8 is a sectional view showing a modification of Fig. 1. Fig. 9 shows a modification of the collar shown in Fig. 2. Fig. 10 shows a further modification of the collar shown in Fig. 2.

In my former application, above referred to, I provide a broken or two-part spindle, one part of which is operative as to the latch mechanism at all times, the other of which is not so operative until joined to the first spindle by the movable collar. In the present instance I have used only one spindle, which can be rotated at all times from either side of the lock, and I employ means for uniting or disuniting this spindle with the latch mechanism direct by the rotation of either knob. I am enabled to render the outer knob operative or inoperative not only when on the outside, but also when on the inside, of the door. Likewise I am enabled to render the inner knob operative or inoperative not only when on the inside, but also when on the outside, of the door. By an independent auxiliary device operative from the inside I can render both knobs operative without necessitating the use of the combination-collar to that end, so that a lock may be used as a day-latch, if desired.

In Fig. 1 I have shown my lock attached to a door and contained in the frame 1, cast integral with an inner escutcheon 2, the outer escutcheon 3 being in threaded engagement with the frame, so that the lock may be readily applied to doors of different thicknesses. The frame extends through a transverse hole in the door, and a portion of my latch mechanism is contained in a hole bored inwardly from the stile to the lock-frame, thereby doing away with the usual mortising of the door and avoiding the structural weakness which results therefrom. Through the lock-frame extends the spindle 4, connected to the outer knob 5, seated loosely in the inner knob 6. The spindle is rotatable at all times by either of the knobs, as will appear hereinafter. This spindle passes loosely through the roll-back 7 and is therefore inoperative as to the latter until some means is employed for uniting the two. For this uniting means I have chosen a member having cam-surfaces and another member adapted to engage therewith, one member being fixed while the other is movable in relation to it, one member being adapted to unite the spindle with the roll-back.

These cam-surfaces are shown in the drawings in the form of grooves.

The uniting means are operative outside of the lock and their relative movements can be determined by any suitable means, as a dial-plate. Since, however, it is not desirable to have the means for determining the relative movement of the uniting members visible to an uninitiated person when the combination is being operated, I have in this instance preferred to place these means within the knob. In my prior application I employed as such means a series of indents on the inner face of the knob and spring-seated pins mounted on the frame and adapted to slip in and out of the indents. I have found in practice that this construction produces a click as the pin engages with the indents and that an uninitiated person present when the combination is worked may learn the combination by sound. To avoid this objection, I have shown in Fig. 1 (and more in detail in Figs. 3 and 4) a thimble 8, located inside of the knob and having a number of teeth 9, normally kept in engagement with corresponding notches 10 on the frame by means of spring 11. The thimble is rotated with the knob by means of the pin 12, which moves in a slot 13 of the knob, thereby allowing lateral play to the thimble. When the knob is rotated, the teeth disengage, compressing the spring and causing a resistance at each tooth, so that the relative movement of the uniting members can be determined. When these members are in their starting position, the pointer 14 will be in alinement with a mark 15 on the escutcheon 3. It will thus be seen that I have provided means for determining the relative movement of the uniting members, which produce no sound and are invisible, so that there is no danger of an unauthorized person learning the combination, the relative movement of the members being determined by the sense of touch alone.

For the uniting means I employ a collar having a labyrinth of grooves and a pin adapted to engage in these grooves. It will be readily understood that either the collar or the pin may be moved in relation to the other to join the spindle and the roll-back. In the present application, however, I have shown the collar fixed and the pin movable in relation to the collar. The collar is indicated by 16, secured in any suitable way to the frame 1. The inner circumference of this collar is provided with cam-surfaces, in the present instance in the form of circumferential grooves, and through the grooves travels the pin 17, the cam-surfaces moving the pin laterally in a manner easily understood. It will be seen that it is necessary to give this pin a rotary motion, so that the cam-surfaces of the collar may act to move it laterally. Furthermore, it is desired to impart this rotary motion by the rotation of the spindle.

This may be accomplished in any suitable way, as by fashioning a portion of the spindle in a channel shape. On this portion I secure a slotted tube 18, in which moves a pin 19, connected to pin 17. As the spindle rotates it carries this tube and with it the pin 17, the cam-grooves of the collar forcing it laterally until the pin 19 is in engagement with an aperture 20 of the latch-cam 7. The spindle and latch mechanism are now united, and the continued rotation of the spindle from either side operates the latch. In like manner when the spindle is properly rotated the cam-grooves of the collar will operate to withdraw the pin 19 and render the latch mechanism again inoperative from both sides of the door.

The latch mechanism may be of any suitable construction; but I here show it in a preferred form, in which latch 21 operates in a suitable pocket 22, inserted in the stile of the door. This latch is slidably connected, by means of slot 23, to a latch-bolt 24, connected, by a detachable pin 25, to a latch-arm 26, contacting with the cam-shaped sides of a depressed portion of the roll-back 7. The latter is held in position by means of pin 28, and the latch-arm is held snugly against the sides of the depressed portion of the roll-back and the latch in its closed position by spring 29.

Fig. 7 shows the construction of the roll-back in detail. When the latch-arm 26 moves from 30 to 31, the latch will be withdrawn.

It will be seen that, as shown in the drawings, the latch mechanism is adapted for a left-hand-swing door. If, however, it be desired to attach the lock to a right-hand-swing door, it will be seen that the latch and latch-bolt can be readily reversed by removing pin 25. The bolt, latch, and latch-pocket 22 can then be turned over, the bolt connected again to the latch-arm by insertion of pin 25. The latch is now adapted for a right-hand-swing door and will be pivoted on the opposite side of the door—that is, on side 34 instead of side 33.

From the foregoing it is evident that by the uniting means I can render my latch mechanism operative or inoperative as to both sides of the door from either side of the door. In case it should be desired to use my lock as a day-latch I have provided independent auxiliary means operative from one side of the lock adapted to render the latch mechanism operative from both sides of the lock. While this means may take various forms, I have here shown it to consist of a clutch 34^a, connected to the knob 6 and carried by a channel-shaped extension of the spindle. Since this clutch connects the knob 6 and the spindle, it will be readily understood that both knobs and the spindle rotate together. When now it is desired to use my lock as a day-latch, the clutch 34^a is thrown into engage-

ment with the aperture 35 of the roll-back, and when in such engagement it will be seen that the latch is operated from either side of the door. The clutch 34^a is brought into or
 5 out of engagement by any suitable means allowing play to the knob. This may be by a cam-groove or, as I have shown in Figs. 5 and 6, by parallel grooves 36 and 37, connected at a proper point by the groove 38. A
 10 pin 39, attached to the knob, prevents the play of the latter until the proper point is reached—that is, until the pin 39 is opposite to the groove 38. When it is desired to lock or unlock the door from the inside by employ-
 15 ing the combination, the knob 6 must be allowed to rotate freely, and the pin 39 will then be moving in the groove 36, which extends all the way around the frame, and the clutch at this time is out of engagement with
 20 the roll-back. If now it is desired to throw the clutch into engagement with the roll-back, the pin 39 is brought to the groove 38 by rotating the knob, its location at that point being determinable by any suitable means, as
 25 notches on the knob and frame. When at this point, the knob can be pushed in, carrying with it the clutch into engagement with the roll-back. The lock can now be operated by either knob, the latch being withdrawn by a
 30 turn of forty-five degrees in either direction. The groove 37 is limited to ninety degrees, so that a positive stop may prevent the locking of the door inadvertently. On returning the pin to groove 36 the door can be locked by
 35 half a revolution.

It will be seen that in the position of the parts, as shown in Fig. 1, the latch mechanism is inoperative by either knob and that it can only be rendered operative by leading the
 40 pin 17 through the secret passage formed by the grooves on the inner circumference of the collar until the pin 19 joins the spindle to the roll-back. An examination of these grooves will show that only the initiated can lead the
 45 pin to a proper position for connecting the latch mechanism and the spindle. It will also be seen that the combination by which the lock can be opened may be varied by changing the length or the number or the arrange-
 50 ment of grooves on the collar. Collars having different lengths or shapes of grooves may at any time be substituted. This labyrinth of grooves may obviously be variously formed or applied. I have found in practice
 55 that it is best to provide some means for causing the pin to necessarily take the proper course when the combination is properly operated and to necessarily take the wrong course when improperly operated. While
 60 this result may be accomplished in various ways, I have shown in Fig. 2 a construction which I prefer. The portion of the pin 17 engaging in the grooves is preferably made elongated in form, about three times as long
 65 as the width of the grooves, and in the form

of two superimposed opposed segments, as shown in Fig. 2. By this construction the grooves may be arranged to cross each other, which economizes space, removes obstructions to the pin, and yet results in the pin neces-
 70 sarily taking the right grooves when unlocking, if properly operated, and necessarily going wrong if the rotation of the knob is not reversed at the proper time. The length of the pin bridges intersecting grooves, so that
 75 the right groove will be kept. The opposed rounded portions of the segments insure proper travel on the right and left hand turns, while a clearance in the grooves is allowed for the projecting part of the pin in making
 80 the turns, this clearance in some cases being on top, in other cases beneath, the surface of the collar, as indicated by the full and dotted lines in Fig. 2. It will be noted that the seg-
 85 ments lie in different places, the clearances in the collar denoted in the full lines being adapted to allow the upper segment to pivot, while the clearances beneath the surface of the collar and denoted by the dotted lines allow the lower segment to pivot at the proper
 90 places. The clearances provided in this instance do not extend to the full depth of the grooves except those located at the edge of the collar and which are beneath the surface thereof. In Fig. 10, however, I have shown
 95 the clearances of equal depth with the grooves, and I do away with all clearances beneath the surface of the collar. By this modified construction I do not need a pin having these
 100 superimposed opposed segments and I employ in its stead an elongated pin having both of its sides sufficiently rounded to pivot at the proper places in the groove labyrinth and yet of sufficient length to bridge the inter-
 105 secting grooves into which it is not desired to lead the pin.

Referring to Fig. 2, 40 indicates the starting-point of the combination. In this instance the combination is 2 3 6—i. e., the knob is turned two points to the left, three to
 110 the right, and six to the left, when on reversing the knob the door may be opened. In this operation the pin travels from 40 to 41, pivoting at 42, and from 41 to 43, from 43 to 44, and from 44 to the parallel groove 45
 115 when the pin 19 will enter the aperture 20 of the latch-cam connecting the spindle 7 and the inner or outer knob with the latch mechanism. It will be understood that the pin in traveling from 40 to 41 can pivot at 42, but when
 120 returning from 41 bears on the opposite side of the groove, and since its length is greater than the width of the grooves will receive support from the closed portion, so as to carry it by the opening, preventing its re-
 125 turn to 40, and causing it to go along the incline to the parallel groove at 43. Likewise it will be seen that if the motion of the knob should not be reversed at 41 the pin will go into the parallel groove at 46 and is prevented
 130

from returning to 41 owing to its increased length. By examining the remaining grooves it will be seen that the pin must necessarily follow the right path when the rotation of the knob is reversed at the proper time, and also that it must necessarily go the wrong way when the combination is not properly operated. In Fig. 9 I have shown a modification of these cam-grooves. Certain sections of these grooves are tapered, as at 47, the pitch of such sections being about one-half the depth of the grooves. The spring 48, Fig. 8, allows the pin 17, which in this instance is round, to adapt itself to the taper. The combination is 2 2 4—*i. e.*, the pin 17 travels from 49 to 50, to 51, to 52, and upon here reversing the motion of the knob the pin 17 travels to groove 53 and moves the pin 19 into engagement with the latch-cam 7. It will be seen that in this instance on reversing the motion of the pin at 50 it is prevented from returning to 49 by the taper and is caused to take the incline toward 51. Examining the remaining grooves the same condition will be found—*i. e.*, the pin must necessarily find the right groove for unlocking when properly operated, and it must necessarily go wrong if the motion of the knob is not reversed at the proper time.

The operation of the lock is as follows: Assuming the parts to be in the position shown in Fig. 1, in which neither knob operates the latch, if it be desired to open the door from the outside the knob (and thereby the spindle 4 and pin 19) is moved according to the combination, when pin 19 will engage with the latch-cam 7 and the rotation of either knob will operate the latch. If it be desired to again lock the door from the outside while outside of the door, a half-revolution in either direction will draw the pin out of engagement with the latch-cam, thereby rendering the outer knob inoperative as to the latch mechanism. Since clutch 34^a connects spindle 4 permanently to inner knob 6, the rotation of the latter causes the pin 19 to travel and locks or unlocks the door in exactly the same manner as in the case of the outer knob. If, now, it be desired to open the door from the inside without the use of the combination, the pin 39 in the knob is brought into groove 37, as previously described, throwing clutch 34^a into engagement with the latch-cam and rendering the knob 6 (and knob 5) operative as to the latch mechanism. This furnishes a ready means of exit from the inside in case the door is locked. If it is desired to leave the door locked, the clutch is easily withdrawn after the door is opened, and on closing the door it is left locked with the parts in the position shown in Fig. 1. It will thus be seen that I can lock or unlock the door from either side and can lock or unlock the door from the inside as to the outside, and I am enabled to open the door by the inside or outside knob independently

of the locking mechanism if it is desired to use the lock as a day-latch.

Having thus described my invention, what I claim is—

1. In a lock in combination, latch mechanism, a rotatable knob, and means controlled by the rotation of the knob from either side of the door adapted to render the latch mechanism inoperative and operative as to both sides of the door.

2. In a lock in combination, latch mechanism, a rotatable knob, means controlled by the rotation of the knob from either side of the door adapted to render the latch mechanism inoperative and operative as to both sides of the door, and independent means operative at all times from one side of the door adapted to render the bolt operative as to both sides of the door.

3. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, and means actuated by the rotation of said spindle and adapted to bring said spindle into and out of operative relation with said latch mechanism.

4. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, means operative from either side of the door adapted to unite and disunite said spindle and latch mechanism, and independent means operative at all times from one side of the door adapted to unite and disunite the spindle and latch mechanism.

5. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, a movable member, and means actuated by the rotation of the spindle adapted to move said member to unite and disunite the spindle and latch mechanism.

6. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, a movable member, and means actuated by the rotation of said spindle adapted to move said member to unite and disunite the spindle and latch mechanism, and independent means operative at all times from one side of the door adapted to unite and disunite the spindle and latch mechanism.

7. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, two members relatively movable by the rotation of the said spindle, said members being adapted to unite and disunite the spindle and the latch mechanism.

8. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, two members relatively movable and adapted to unite and disunite the spindle and the latch mechanism, means actuated by the rotation of the spindle adapted to move one of said members, and independent means operative at all times from one side of the door adapted to unite and disunite the spindle and latch mechanism.

9. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, a collar and a pin, movable in relation to each other and adapted to unite
5 the spindle and latch mechanism.

10. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, a fixed collar and a movable pin, said pin being adapted to unite and dis-
10 unite the spindle and latch mechanism, and means actuated by the rotation of the spindle adapted to move said pin.

11. In a lock in combination, latch mechanism, a spindle rotatable at all times from either
15 side of the door, a fixed collar and a movable pin, the latter being adapted to unite and disunite the spindle and the latch mechanism, means actuated by the rotation of the spindle adapted to move the pin, and independent
20 means operative from one side of the lock adapted to unite and disunite the spindle and the latch mechanism.

12. In a lock in combination, latch mechanism, a spindle rotatable at all times from either
25 side of the door, a pin connected loosely to said spindle, and a collar adapted to move said pin laterally to unite and disunite the spindle and the latch mechanism.

13. In a lock in combination, latch mechanism, a spindle rotatable at all times from either
30 side of the door, a pin connected loosely to said spindle and a collar adapted to move said pin laterally to unite and disunite the spindle and the latch mechanism, and independent
35 means operative from one side of the door adapted to unite the spindle and the latch mechanism.

14. In a lock in combination, latch mechanism, a spindle rotatable at all times from either
40 side of the door, a collar having a labyrinth of grooves, a pin connected loosely to said spindle and adapted to engage in said grooves, said pin and collar being relatively movable and adapted to unite and disunite the spindle
45 and the latch mechanism.

15. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, a collar having a labyrinth of grooves, a pin adapted to engage in said
50 grooves, loosely connected to said spindle, and movable thereby, said pin being adapted to unite and disunite the spindle and the latch mechanism, and independent means operative from one side of the door adapted to unite and
55 disunite the spindle and the latch mechanism.

16. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, a collar having a labyrinth of grooves, a pin adapted to engage in said
60 grooves and movable by the rotation of said spindle, a knob connected to said spindle and adapted, when rotated, to cause the pin and the grooved collar to travel with relation to each other to unite and disunite the spindle
65 and the latch mechanism, and independent

means operative from one side of the door adapted to unite and disunite the spindle and the latch mechanism.

17. In a lock in combination, latch mechanism, a spindle rotatable at all times from either
70 side of the door, a collar having a labyrinth of grooves, a pin adapted to engage in said grooves and movable by the rotation of the spindle, a knob connected to the spindle and adapted, when rotated, to cause the pin and
75 grooved collar to travel with relation to each other, and which, when turned a variably-predetermined number of times and a variably-predetermined distance in opposite directions, will cause said pin to take certain passages
80 through said labyrinth and to move a predetermined distance to unite the spindle and the latch mechanism.

18. In a lock in combination, latch mechanism, a spindle rotatable at all times from either
85 side of the door, a collar having a labyrinth of grooves, a pin adapted to engage therein and movable by the rotation of the spindle, a knob connected to the spindle and adapted, when rotated, to cause the pin and the grooved
90 collar to move with relation to each other, and which, when turned a variably-predetermined number of times and a variably-predetermined distance in opposite directions, will cause said pin to take certain passages through
95 said labyrinth and to move a predetermined distance to unite the spindle and the latch mechanism, and independent means operative from one side of the door adapted to unite and disunite the spindle and the latch mechanism.
100

19. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, a collar having a series of cam-surfaces, a pin adapted to engage there-
105 with, said spindle being adapted to move the pin in relation to the collar, whereby the spindle and the latch mechanism are united or disunited.

20. In a lock in combination, latch mechanism, a spindle rotatable at all times from either
110 side of the door, a collar having a series of cam-surfaces, a pin adapted to engage therein, said pin being loosely connected to said spindle and movable in relation to said collar and adapted to unite and disunite the spindle
115 and the latch mechanism, and independent means operative from one side of the door adapted to unite and disunite the spindle and the latch mechanism.

21. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, a pin movable thereby, a collar having a labyrinth of cam-surfaces adapted to move the pin laterally to unite and disunite
120 the spindle and the latch mechanism.
125

22. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, a pin movable thereby, a collar having a labyrinth of cam-surfaces adapted to move the pin laterally to unite and disunite
130

the spindle and the latch mechanism, and independent means operative from one side of the door adapted to unite and disunite the spindle and the latch mechanism.

5 23. In a lock in combination, latch mechanism, a door-knob and means actuated by the rotation of the said knob adapted to render the latch mechanism operative or inoperative from both sides at will.

10 24. In a lock of the character described, a roll-back provided with an aperture, a spindle, a member connected to the knob and carried by the spindle and adapted to engage with the aperture of the roll-back to connect
15 the latter with the spindle and knob.

25. In a lock of the character described, a roll-back provided with an aperture, a spindle, a member carried by the spindle, a knob laterally movable and connected to said member, the latter being adapted to engage with
20 the aperture of the roll-back to connect the latter with the spindle and knob.

26. In a lock of the character described, a roll-back provided with an aperture, a spindle, a member carried thereby, a knob connected to said member and laterally movable and adapted, by its lateral movement, to bring the member into or out of engagement with the aperture to unite or disunite the roll-back
25 and the spindle and knob.

27. In a lock of the character described, a roll-back provided with an aperture, a spindle, a member carried thereby, a knob laterally movable and connected to said member, and adapted, by its lateral movement, to bring
30 said member into or out of engagement with the aperture, means adapted to allow the free rotation of the knob when the member is out of engagement with the aperture and to positively limit its rotation when the member is
35 in engagement with the aperture.

28. In a lock of the character described, a roll-back provided with an aperture, a spindle, a member carried thereby, a knob connected to said member, and adapted to move
40 the latter into or out of engagement with the aperture, a pin fixed to said knob, grooves adapted to receive the pin and to permit the free rotation of the knob when the member
45 is out of engagement with the aperture and to limit the rotation of the knob when the member is in engagement with the aperture.

29. In a lock of the character described, a roll-back provided with an aperture, a spindle, a member carried thereby, a knob connected to said member, and adapted to move
50 the latter into or out of engagement with the aperture, a pin fixed to said knob, grooves adapted to receive the pin and to permit the free rotation of the knob when the member
55 is out of engagement with the aperture and to limit the rotation of the knob when the member is in engagement with the aperture, and means for determining when the member
60 and aperture are in alinement.

30. In a lock of the character described, a roll-back provided with an aperture, a spindle, a member carried by the spindle, a knob laterally movable and connected to said member, the latter being adapted to engage with
70 the aperture of the roll-back to connect the latter with the spindle and knob, and means for determining when the member and aperture are in alinement.

31. In a lock of the character described, a roll-back provided with an aperture, a spindle, a member carried thereby, a knob laterally movable and connected to said member, and adapted, by its lateral movement, to bring
75 said member into or out of engagement with the aperture, means adapted to allow the free rotation of the knob when the member is out of engagement with the aperture and to positively limit its rotation when the member is
80 in engagement with the aperture, and means for determining when the member and aperture are in alinement.

32. In a lock of the character described, the combination with means for operating the same, of latch mechanism comprised in part
85 of a member having a depressed portion, the sides of which form cam-surfaces, a latch-arm connected to a latch and adapted to engage with said cam-surfaces.

33. In a lock of the character described, the combination with means for operating the
90 same, of latch mechanism comprised in part of a member having a depressed portion, the sides of which form cam-surfaces, a latch-arm detachably connected to a latch and adapted to engage with said cam-surfaces.

34. In a lock of the character described, the combination with means for operating the
95 same, of latch mechanism comprised in part of a member having a depressed portion, the sides of which form cam-surfaces, a latch-arm adapted to engage with said cam-surfaces, a latch, a spring-seated latch-bolt connecting
100 said latch and latch-arm and adapted to hold the latch-arm against the cam-surfaces and the latch in its closed position.

35. In a lock of the character described, the combination with means for operating the
105 same, of latch mechanism comprised in part of a member having a depressed portion, the sides of which form cam-surfaces, a latch-arm adapted to engage with said cam-surfaces, a latch, a spring-seated latch-bolt slidably connected to said latch and removably connected
110 to said latch-arm adapted to hold the latter against the cam-surfaces and the latch in its closed position.

36. In a combination-lock, means for determining the operation of the combination, comprising: a knob, a member rotated by said
115 knob and provided with a plurality of teeth, another member provided with indents adapted to receive said teeth and a spring adapted to keep said teeth and indents normally in engagement.

37. In a combination-lock, means for determining the operation of the combination, comprising: a knob, a thimble carried by said knob and provided with a plurality of teeth, a frame having a series of indents adapted to receive said teeth and a spring adapted to keep said teeth and indents normally in engagement.

38. In a combination-lock, means for determining the operation of the combination, comprising: a knob, having a slot, a thimble provided with a plurality of teeth, a pin sliding loosely in said slot and connecting said thimble and knob, a lock-frame having a series of indents adapted to receive said teeth, and a spring adapted to keep said teeth and indents normally in engagement.

39. In a combination-lock of the character described, latch mechanism, a spring, means for uniting and disuniting said spindle and latch mechanism, comprised in part of a collar having a labyrinth of grooves, a pin adapted to engage therein, and means adapted to keep the pin in the proper course when the combination is properly operated and to cause the pin to take the wrong course when the combination is not properly operated.

40. In a combination-lock of the character described, latch mechanism, a spindle, means for uniting and disuniting said spindle and latch mechanism comprised in part of a collar having a labyrinth of grooves, a pin adapted to engage therein, the portion of said pin in engagement with the grooves having a length greater than the width of the grooves, clearances formed in the collar at certain points in the labyrinth adapted to permit the pin to pivot freely.

41. In a combination-lock of the character described, latch mechanism, a spindle, means for uniting and disuniting said spindle and latch mechanism comprised in part of a collar having a labyrinth of grooves, a pin adapted to engage therein, the portion of said pin in engagement with the grooves having a length greater than the width of the grooves.

42. In a combination-lock of the character described, latch mechanism, a spindle, means for uniting and disuniting said spindle and latch mechanism comprised in part of a collar having a labyrinth of grooves, a pin adapted to engage therein, the portion of said pin in engagement with the grooves having a length greater than the width of the grooves, and being formed of two superimposed opposed segments, and clearances formed in the collar at certain points in the labyrinth adapted to permit the pin to pivot freely.

43. In a combination-lock of the character described, latch mechanism, a spindle means for uniting and disuniting said spindle and latch mechanism comprised in part of a collar having a labyrinth of grooves, a pin adapted to engage therein, the portion of said pin in engagement with the grooves having a length

greater than the width of the grooves, and being formed of two superimposed opposed segments, clearances formed in the surface of the collar adapted to permit the upper segment to pivot at certain points in the labyrinth and other clearances formed beneath the surface of the collar adapted to permit the lower segment to pivot at certain points in the labyrinth.

44. In a lock in combination, latch mechanism, a rotatable knob, means controlled by the rotation of the knob adapted to render the latch mechanism operative or inoperative as to both sides of the door, and independent means operative at all times from one side of the door adapted to render the bolt inoperative as to both sides of the door.

45. In a lock in combination, latch mechanism, a spindle rotatable from either side of the door, means actuated by the rotation of said spindle adapted to unite and disunite said spindle and latch mechanism, and independent means operative at all times from one side of the door adapted to unite and disunite said spindle and latch mechanism.

46. In a lock in combination, latch mechanism, a spindle, means actuated by the rotation of said spindle adapted to unite and disunite said spindle and latch mechanism, and independent means operative at all times from one side of the door adapted to unite and disunite said spindle and latch mechanism.

47. In a lock in combination, latch mechanism, a spindle rotatable at all times from either side of the door, means actuated by the rotation of said spindle and adapted to bring said spindle into and out of operative relation with said latch mechanism, and independent means operative at all times from one side of the door, adapted to unite and disunite said spindle and latch mechanism.

48. In a lock in combination, latch mechanism, a spindle, means actuated by the rotation of said spindle and adapted to bring said spindle into and out of operative relation with said latch mechanism, and independent means operative at all times from one side of the door adapted to unite and disunite said spindle and latch mechanism.

49. In a lock in combination, latch mechanism, a spindle, means adapted to unite the spindle and latch mechanism, and independent means operative at all times from one side of the door adapted to unite and disunite the spindle and latch mechanism.

50. In a lock in combination, latch mechanism, a spindle, a movable member, means actuated by the rotation of said spindle adapted to move said member to unite and disunite the spindle and latch mechanism, and independent means operative at all times from one side of the door adapted to unite and disunite the spindle and latch mechanism.

51. In a lock in combination, latch mechanism, a spindle, two members relatively mov-

able and adapted to unite and disunite the spindle and the latch mechanism, and means operative at all times from one side of the door adapted to unite and disunite the spindle and latch mechanism.

52. In a lock in combination, latch mechanism, a spindle, two members relatively movable and adapted to render the latch mechanism operative or inoperative, and independent means operative at all times from one side of the door adapted to render the latch mechanism operative or inoperative.

53. In a lock in combination, latch mechanism, a spindle, a collar and a pin, movable in relation to each other and adapted to render the latch mechanism operative or inoperative, and independent means operative at all times from one side of the door adapted to render said latch mechanism operative or inoperative.

54. In a lock in combination, latch mechanism, a spindle, a collar and a pin, movable in relation to each other and adapted to unite and disunite the spindle and latch mechanism, and independent means operative at all times from one side of the door adapted to unite and disunite the spindle and latch mechanism.

55. In a lock in combination, latch mechanism, a spindle, a fixed collar and a movable pin, said pin being adapted to unite and disunite the spindle and latch mechanism, and means actuated by the rotation of the spindle adapted to move said pin, and independent means operative at all times from one side of the door adapted to unite and disunite the spindle and the latch mechanism.

56. In a lock in combination, latch mechanism, a spindle, a pin connected loosely to said spindle, and a collar adapted to move said pin laterally to unite and disunite the spindle and the latch mechanism, and independent means operative at all times from one side of the door adapted to unite the spindle and the latch mechanism.

57. In a lock in combination, latch mechanism, a spindle, a collar having a labyrinth of grooves, a pin adapted to engage in said grooves, loosely connected to said spindle, and movable thereby, said pin being adapted to unite and disunite the spindle and the latch mechanism, and independent means operative from one side of the door adapted to unite and disunite the spindle and the latch mechanism.

58. In a lock in combination, latch mechanism, a spindle, a collar having a labyrinth of grooves, a pin adapted to engage in said grooves and movable by the rotation of said spindle, a knob connected to said spindle and adapted, when rotated, to cause the pin and the grooved collar to travel with relation to each other to unite and disunite the spindle and the latch mechanism, and independent means operative from one side of the door adapted to unite and disunite the spindle and the latch mechanism.

59. In a lock in combination, latch mechanism, a spindle, a collar having a labyrinth of grooves, a pin adapted to engage therein and movable by the rotation of the spindle, a knob connected to the spindle and adapted, when rotated, to cause the pin and the grooved collar to move with relation to each other, and which, when turned a variably-predetermined number of times and a variably-predetermined distance in opposite directions, will cause said pin to take certain passages through said labyrinth and to move a predetermined distance to unite the spindle and the latch mechanism, and independent means operative from one side of the door adapted to unite and disunite the spindle and the latch mechanism.

60. In a lock in combination, latch mechanism, a spindle, a collar having a series of cam-surfaces, a pin adapted to engage therewith, said pin being loosely connected to said spindle and movable in relation to said collar and adapted to unite and disunite the spindle and the latch mechanism, and independent means operative from one side of the door adapted to unite and disunite the spindle and the latch mechanism.

61. In a lock in combination, latch mechanism, a spindle, a pin movable thereby, a collar having a labyrinth of cam-surfaces adapted to move the pin laterally to unite and disunite the spindle and the latch mechanism, and independent means operative from one side of the door adapted to unite and disunite the spindle and the latch mechanism.

62. In a lock in combination, latch mechanism, a spindle, a movable member, and means actuated by the rotation of the spindle adapted to move said member to bring the spindle into and out of operative engagement with the latch mechanism.

63. In a lock in combination, latch mechanism, a spindle, two members relatively movable by the rotation of said spindle and adapted thereby to bring the spindle into and out of operative engagement with the latch mechanism.

64. In a lock in combination, latch mechanism, a spindle, a collar and a pin, movable in relation to each other and adapted to bring the spindle into and out of operative engagement with the latch mechanism.

65. In a lock in combination, latch mechanism, a spindle, a fixed collar and a movable pin, said pin being adapted to unite and disunite the spindle and latch mechanism, and means actuated by the rotation of the spindle adapted to move said pin.

66. In a lock in combination, latch mechanism, a spindle, a pin connected loosely to said spindle, and a collar adapted to move said pin laterally to unite and disunite the spindle and the latch mechanism.

67. In a lock in combination, latch mechanism, a spindle, a collar having a labyrinth of grooves, a pin connected loosely to said spin-

dle and adapted to engage in said grooves, said pin and collar being relatively movable and adapted to unite and disunite the spindle and the latch mechanism.

5 68. In a lock in combination, latch mechanism, a spindle, a collar having a labyrinth of grooves, a pin adapted to engage with said grooves, a knob connected to said spindle and adapted, when rotated, to cause the pin and
10 grooved collar to travel with relation to each other to unite and disunite the spindle and the latch mechanism.

69. In a lock in combination, latch mechanism, a spindle, a collar having a labyrinth of
15 grooves, a pin adapted to engage in said grooves and movable by the rotation of the spindle, a knob connected to the spindle and adapted, when rotated, to cause the pin and grooved collar to travel with relation to each
20 other, and which, when turned a variably-predetermined number of times and a variably-predetermined distance in opposite directions, will cause said pin to take certain passages through said labyrinth and to move a prede-
25 termined distance to unite the spindle and the latch mechanism.

70. In a lock in combination, latch mechanism, a spindle, a collar having a series of cam-surfaces, a pin adapted to engage therewith,
30 said pin and collar being relatively movable and adapted to unite and disunite the spindle and the latch mechanism.

71. In a lock in combination, latch mechanism, a spindle, a pin movable thereby, a collar
35 having a labyrinth of cam-surfaces adapted to move the pin laterally to unite and disunite the spindle and the latch mechanism.

72. In a lock in combination, latch mechanism, a door-knob, means adapted to render said
40 latch mechanism operative or inoperative from both sides at will, said means being actuated solely by the said knob and adapted to effect such change.

73. In a lock in combination, latch mechanism, a door-knob, means adapted to render said
45 latch mechanism operative or inoperative from both sides at will, said means being actuated solely by the said knob and adapted to effect such change, and independent means operative

on one side of the door adapted to render said 50 latch mechanism operative or inoperative.

74. In a lock in combination, latch mechanism, a door-knob, means adapted to operate said latch mechanism from both sides of the door, and means actuated by the rotation of
55 the door-knob adapted to render said latch mechanism inoperative and operative from both sides of the lock at will.

75. In a lock in combination, latch mechanism a door-knob, means adapted to operate
60 said latch mechanism from both sides of the door, and means actuated by the rotation of the door-knob adapted to render said latch mechanism inoperative and operative from both sides of the lock at will, and independent
65 means operative on one side of the door adapted to render said latch mechanism operative or inoperative.

76. In a lock in combination, latch mechanism, a door-knob, and means actuated by the
70 rotation of the said knob adapted to render the latch mechanism operative or inoperative from both sides at will, and independent means operative on one side of the door adapted to render said latch mechanism operative or in-
75 operative.

77. In a lock, means for operating said lock comprising in part: a fixed collar, a pin movable in relation thereto, and means adapted to move said pin.
80

78. In a lock, means for operating said lock comprising in part: a fixed collar having a labyrinth of grooves, a rotatable pin adapted to engage therein, and to be moved lengthwise as it rotates, and means for rotating said pin.
85

79. In a lock, means for operating said lock comprising in part: a fixed collar having a labyrinth of grooves, a rotatable pin adapted to engage therein and to be moved lengthwise as it rotates, means for rotating said pin, and
90 means for determining the passage of said pin through the grooves.

Signed at New York this 20th day of June, 1904.

FRED J. VIEWEG.

Witnesses:

JOHN H. HAZELTON,

RAYMOND C. SPAULDING.