

No. 785,132.

PATENTED MAR. 21, 1905.

F. J. VIEWEG.
LOCK.

APPLICATION FILED OCT. 21, 1903.

2 SHEETS—SHEET 1.

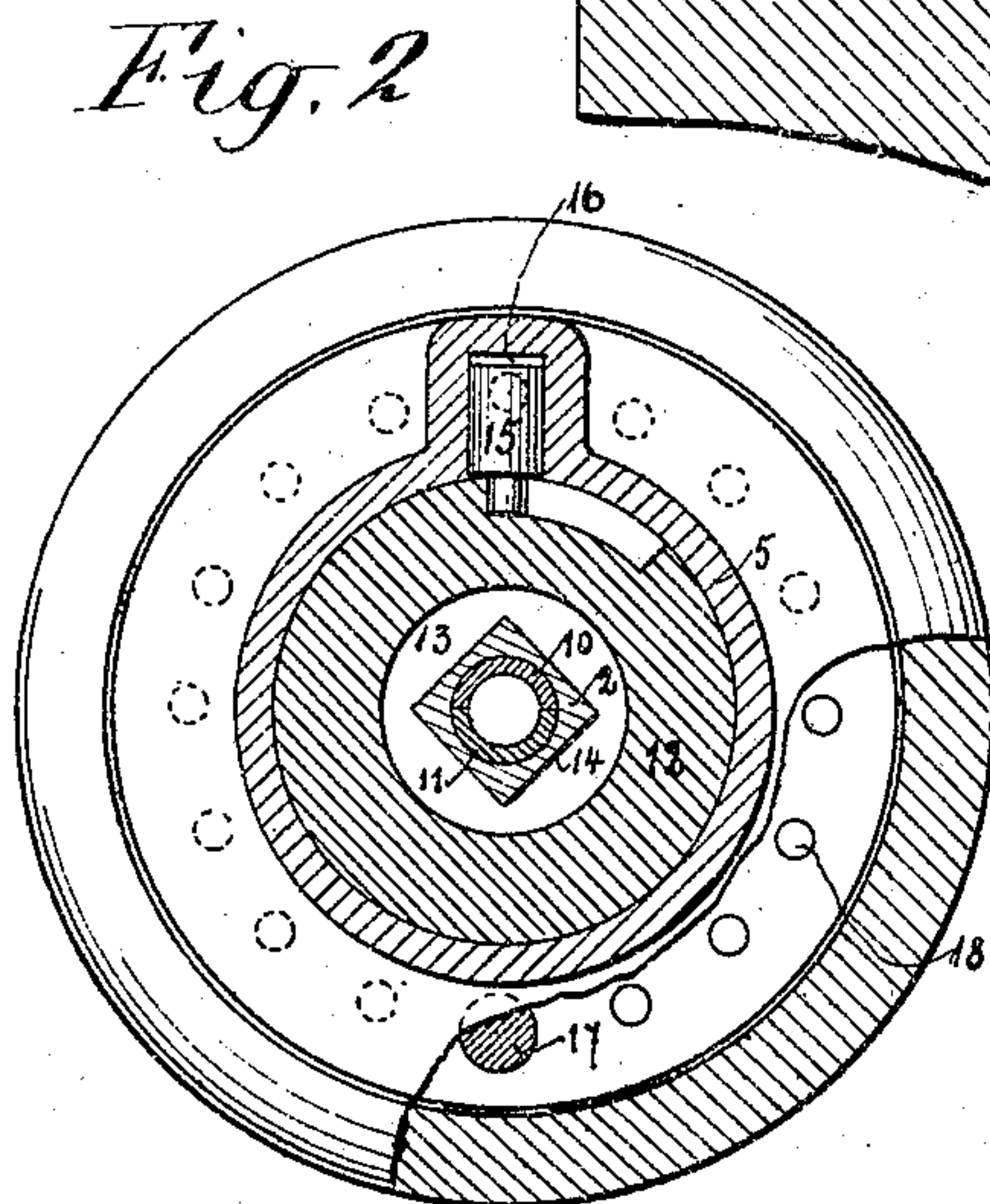
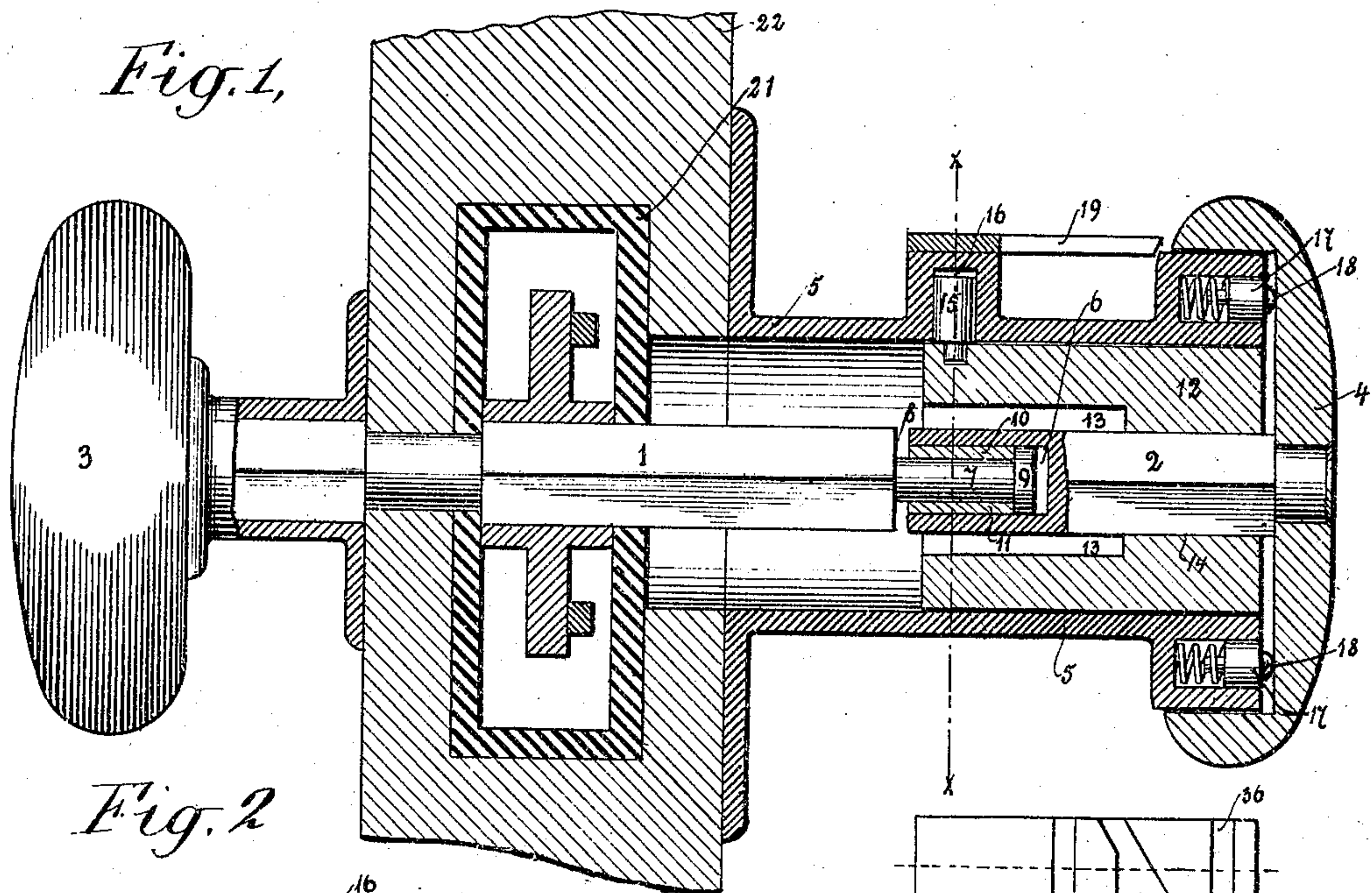


Fig. 3,

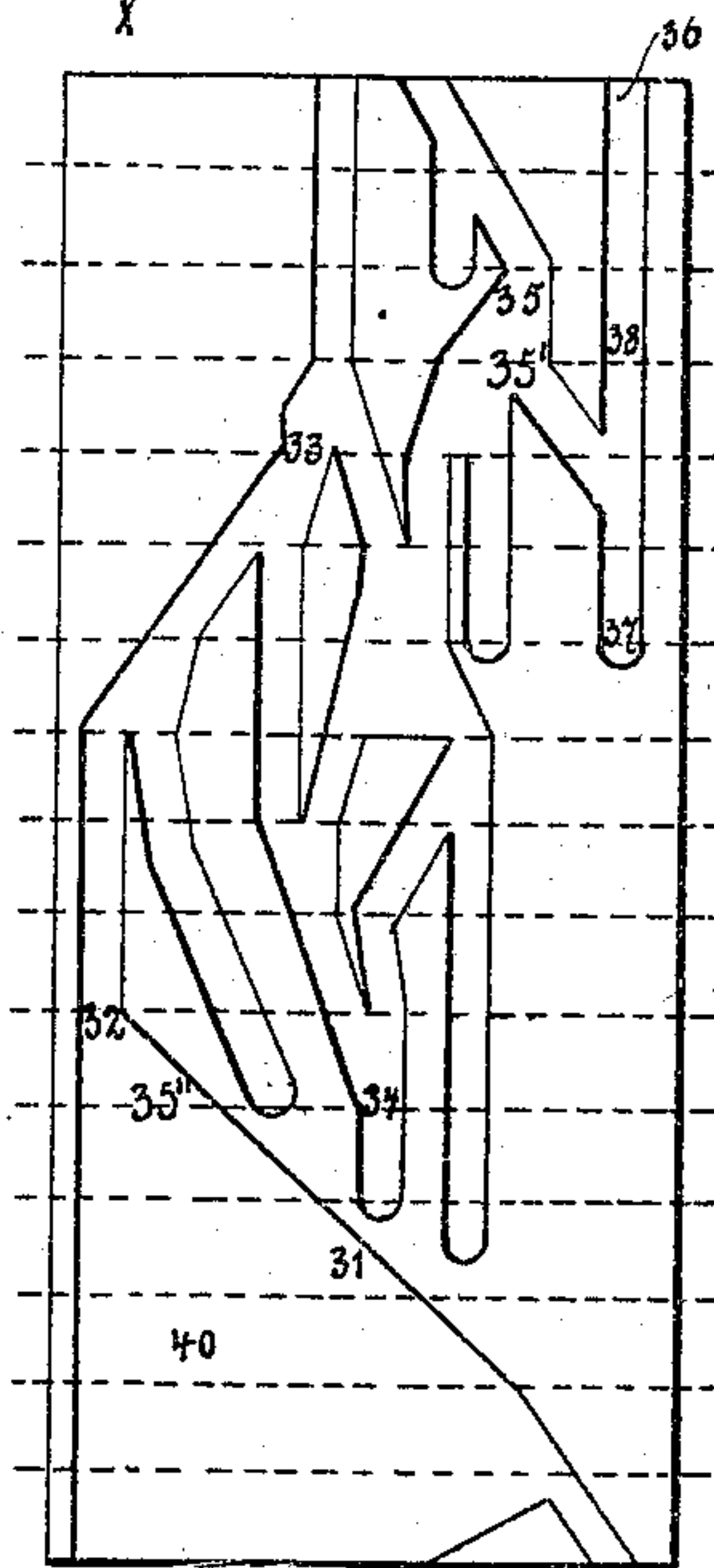
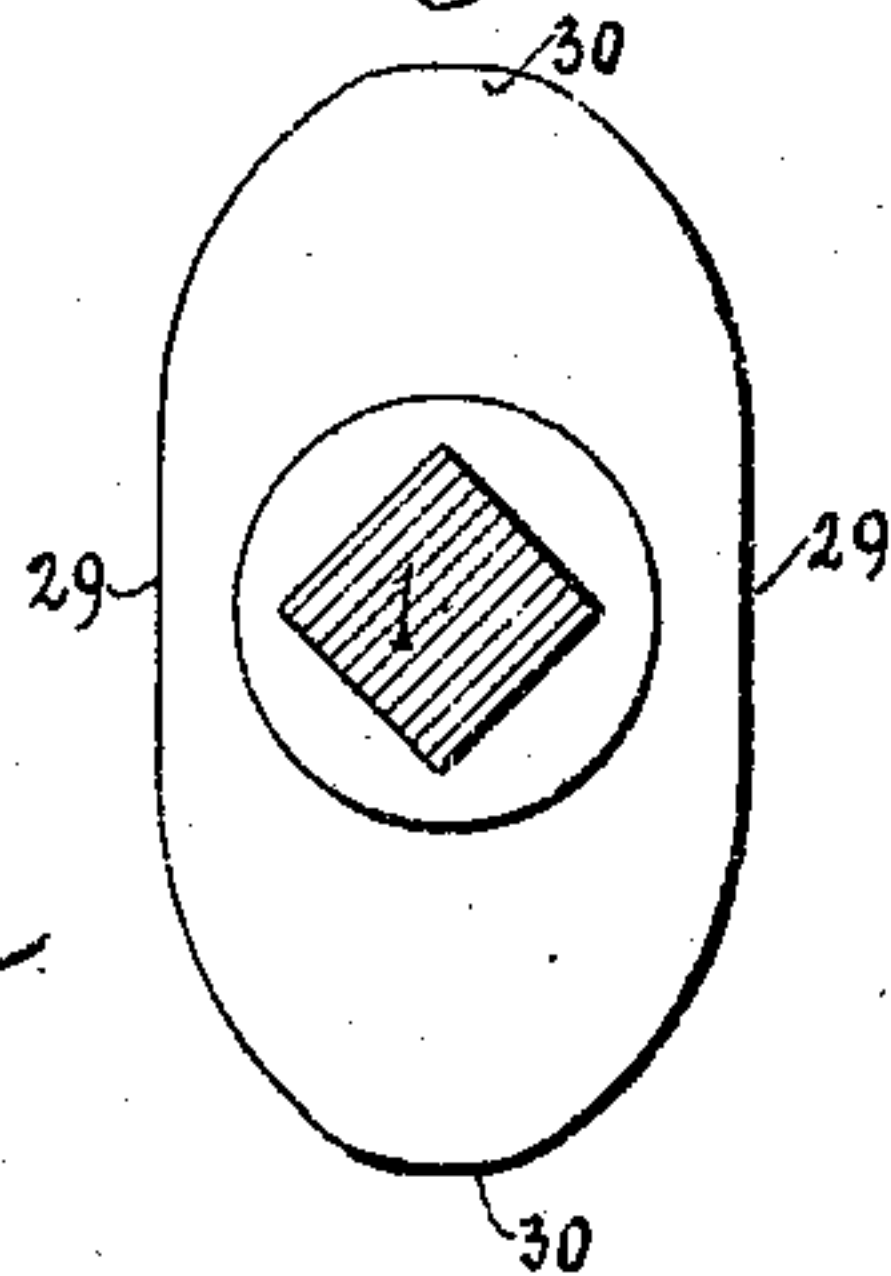


Fig. 4



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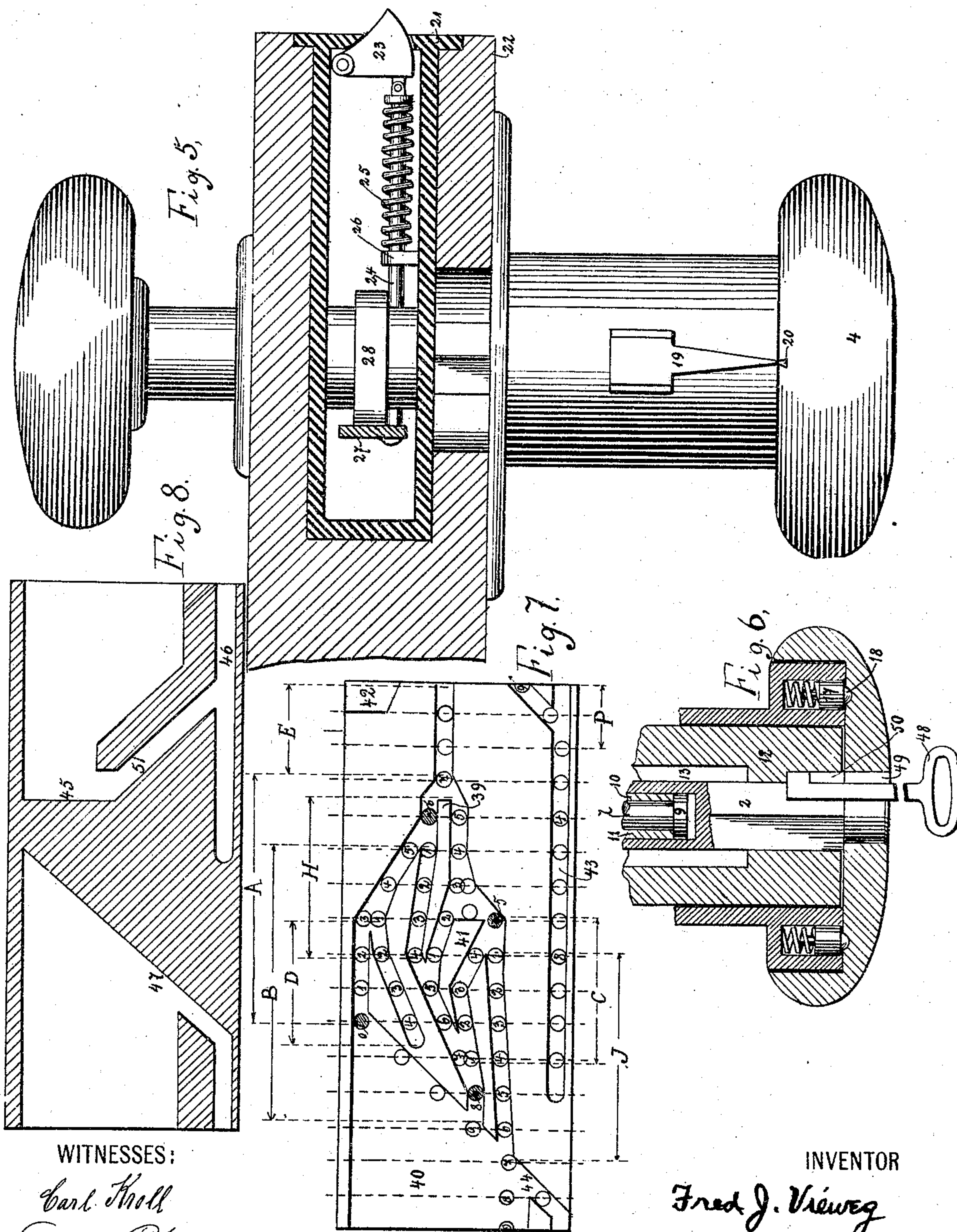
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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE.

FRED J. VIEWEG, OF PLAINFIELD, NEW JERSEY.

LOCK.

SPECIFICATION forming part of Letters Patent No. 785,132, dated March 21, 1905.

Application filed October 21, 1903. Serial No. 177,834.

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 has more particular reference to means for operating the same, as will appear hereinafter.

The object of my invention is to provide a simple efficient lock compact in form and inexpensive in construction, adapted to be operated without the use of a key and requiring only one bolt, which can be used as a day-latch or night-latch at will.

Other features and uses will become evident from the accompanying description.

It is obviously impossible to present in drawings accompanying this application all possible constructions and arrangements of parts in my invention. In the accompanying drawings I have embodied my invention in a preferred form and arrangement of parts; but I desire it to be understood that changes in the construction and arrangement of parts may of course be made within the scope of the claims.

In the drawings, Figure 1 is a vertical view for the most part in section and showing my lock attached to the stile of a door. Fig. 2 is a cross-section on line *xx* of Fig. 1, parts being broken away. Fig. 3 is a view of a collar or sleeve constituting a feature of my invention. This sleeve or collar is here represented as rolled out flat, showing a labyrinth of grooves on its outer circumferential surface. Fig. 4 is a detail view in cross-section of a double cam used in operating the latch-bolt. Fig. 5 is a top plan view of my lock as attached to a stile of a door, this view being also partly in section. Fig. 6 is a detail view indicating the manner in which a key can be used, if desired, in connection with my lock. Fig. 7 is a modification of Fig. 3, showing the grooves of the collar tapered and not all of the intermediate passages being blind, as in the case of Fig. 3. Fig. 8 shows another modification of the collar shown in Fig. 3 and is adapted for a lock employing a key.

Like characters of reference indicate corresponding parts in the several views.

My invention relates broadly to a lock having a spindle broken into two or more parts, with means for uniting or disuniting the parts at will. While it is obvious that the spindle may be broken into more than two parts, I prefer in practice to break the spindle into only two parts, and I have so illustrated my invention in the accompanying drawings. For the 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 two parts of the spindle. These cam-surfaces are shown in the drawings in the form of grooves. It is obvious that the means which unite the parts serve to disunite them. In other words, these means may be said to control the operative relation of one part of the spindle to the latch mechanism. In the claims the word "control" used in this connection is intended to cover these means which serve to both unite the parts of the spindle and also to disunite them. While I have shown my uniting means on one side of the lock only, it is obvious that it could be duplicated on the other side of the lock without constituting invention. These means are preferably carried in a hollow sleeve and their movement in relation to each other is controlled by some suitable means operative outside of the lock and can be determined by any suitable means, as a dial-plate. In the present instance, however, I have preferred to use means as shown in Figs. 1 and 2. This consists of a series of indents on the inner face of the knob and spring-seated pins mounted laterally in a recess formed by an extension of the fixed sleeve. By keeping the spindle members slightly out of lateral contact sufficient lateral movement is allowed for said pins to slip in and out of the indents. These indents, moreover, correspond to certain divisions on the member provided with a labyrinth of grooves and indicate the relative movement of the two uniting members before mentioned. In Fig. 1 these elements are shown, 1 and 2 indicating the two parts of the spindle, carried, respectively,

by the knobs 3 and 4. In this instance spindle member 1 passes through the lock proper and part way into a stationary sleeve 5, which is suitably attached to the door, while spindle member 2, on the other hand, does not extend as far as the lock proper. It is necessary for the edges of these spindle members at certain times to be in alinement and yet for them to be capable of independent operation. Any suitable means may be used to accomplish this end. In the present instance I have formed a recess 6 in spindle member 2, adapted to receive a tenoned portion 7 of spindle member 1, the collar 9 preserving the alinement of the spindle members and yet allowing either to rotate independently of the other. As previously stated, a space 8 is left between the ends of the spindle members to allow of sufficient lateral movement for the operation of the indents and pins before mentioned.

10 and 11 are bushings attached to the spindle member 2 and within its recess and inside of collar 9. These bushings serve positively to limit the lateral movement of spindle member 2.

For the uniting means I employ a device in the form of a collar having a labyrinth of grooves and a pin adapted to engage in these grooves. Although either the collar or the pin might be moved in relation to the other in such a manner as to unite the spindle members, I have preferred in the present instance to employ a collar as a direct means of uniting the members, and have therefore shown the pin fixed and the collar movable in relation to the pin. In another application, however, filed June 23, 1904, Serial No. 213,801, I have shown and claimed a fixed collar and a movable pin. In the form shown in this application 12 represents the collar moving in the sleeve 5, carried by the spindle member 2 and rotatable thereby. This collar has a chambered portion 13 of sufficient diameter to allow the angular spindle members to rotate freely therein. It is also provided with an angular hole 14, adapted to engage with either or both of said members. On its outer circumference is a series of grooves. (Shown more in detail in Figs. 3, 7, and 8.) A pin 15, mounted in a recess 16 in sleeve 5, engages with these grooves and is adapted to move the collar 12 laterally as the latter rotates until the spindle member 1 engages with the angular hole in said collar, when the latch mechanism will become operative by the knob 4.

17 indicates spring-seated pins suitably mounted in a recess formed by a vertical extension of the sleeve 5 and adapted to engage with the indents 18, formed on the inner face of the knob.

When the pin and collar are in a position suitable for operating the combination, extension-piece 19 will be in alinement with a marked groove 20, Fig. 5, on knob 4.

The latch mechanism may be of any suit-

able construction or arrangement and is here shown in a conventional form contained in a suitable pocket 21, inserted in the stile 22 of the door. The mechanism in this instance consists of a pivoted latch 23, operated by a rod 24, normally holding the latch closed by means of spring 25, seated on the base 26. This rod is connected with a bolt-plate 27, which in turn is operated by a double cam 28, seated snugly against it by means of the flat portions 29. This cam 28 has its ends flattened at 30, Fig. 4, for the purpose of offering resistance when the lock is in its open position, so that the lock will not be inadvertently closed. It will be seen that in the position of the parts indicated in Fig. 1 the outer spindle is inoperative as to said latch mechanism and can only be brought into operative relation thereto by leading the pin 15 through the secret passage formed by the grooves on the circumferential surface of the collar, and by examining these grooves it will be seen that only the initiated can lead the pin to a proper position for connecting the collar to the latch mechanism. 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 arrangement of grooves on the collar. Of course collars having different length or shape of grooves may at any time be substituted.

Fig. 3 shows a construction which I prefer, in which all the grooves are of equal depth and in which pin 15 need be allowed no vertical play. It will be noted that in this form none of the grooved sections can run into the incline 31, as the pin in such event might take the wrong direction when locking. If the pin be considered at 32, (the starting-point,) the operative combination would be "6 7 9." In other words, the pin is moved to position 33, then to position 34, and again to position 35, where the rotation of the collar is again reversed. When at point 35', the angular hole of the collar begins to engage with the spindle member 1, and from this point the pin travels into groove 36 to position 37. The bolt has now been withdrawn by means of the cam 28, (cam withdraws the bolt by a three-sixteenths revolution of the knob 4,) and the cam stands at such an angle with relation to the bolt-plate that upon releasing the knob 4 the spring 25 will return the cam to its flat place 29, and consequently the pin to the original starting-point in groove 36 at a point indicated by 38. Spindle members 1 and 2 have both made one-half a revolution while the door was being locked, and spindle member 1 is kept in that position by means of bolt-spring 25, the pin meantime moving from 38 to 35". During the operation of opening the lock the pin travels from point 35" to 35', the spindle member 2 meantime making one-half revolution in the original direction more than in

the opposite direction, and at the latter point the angular hole in the collar begins to engage with spindle member 1. Since spindle member 1 has made one-half a revolution and spindle member 2 a complete revolution, the edges of the two spindle members will be in alinement at that time, the spindle members being square in this instance, and upon being joined by the collar 12 the lock is ready for use as a day-latch.

In Fig. 7 I have shown another form of grooved surface wherein the grooves have a varying depth and where the pin 15, engaging therewith, must be allowed sufficient vertical play to conform to the varying depth of said grooves. The position of the grooves is determined, as in Fig. 3, by dividing the circumference of the collar into an equal number of divisions to correspond with indents 18 on the knob 4 and forming them of a length and degree of angle suitable for any predetermined combination. For the purpose of explaining this I have divided the grooves into a number of sections and a number of divisions and shown the pin 15 in its various positions while in engagement with said grooves. The pin is shaded where the motion of the collar is reversed in order to show the path of the pin to move the collar to join the spindle members. In this particular instance the combination is "6 8 5." In other words, the knob 4 is turned six points to the left, the spring-seated pins 17 entering each indent 18 while the knob rotates, causing sufficient resistance to enable the points to be counted. The knob is then moved eight points to the right and again to the left for five points, when the lock will open by turning the knob a distance to the right. The pin 15 will always take a path of least resistance, so that if the knob were not turned at the right time the pin would follow the wrong groove. For example, should the operator turn the knob at division "4" or "5" in section A the pin will enter into section D, or should he go on to division "7" the pin will enter section E, and if reversed there it will strike obstruction 39, or should the motion be reversed at either division "1," "2," or "3" in section A the pin will return again to its original position, but turning the knob at division "6" of section A the pin will enter section B. If now the motion is reversed at either division "1," "2," "3," or "4," the pin will return to section A, or should it be reversed at division "5," "6," or "7" the pin will enter section H, and if continued in the same direction will follow section E and pass into recess 40 and to the original position at section A, division "0", or should the motion be reversed at either division "1" or "2" of section H the pin will reënter section B, or should it be continued beyond division "8" of section B the pin will pass out into the recess 40, or should it be reversed on reaching division "3," "4," or "5" of section H the

pin will strike obstruction 41, but should it be turned at division "8" of section B the pin will follow section C, and upon reversing the knob at division "5" of section C the pin will enter section J, and by continuing the same rotation the lock will open. Should the motion not be reversed at division "5" of section C, the pin 15 will go into section E or else strike obstruction 41. When any of such obstructions are met, it is necessary to reverse knob 4 and bring the pin to the original position at section A, division "0."

For the pin 15 to perform its function of moving the collar 12 laterally it will be seen that the grooves cannot be of a steeper angle than forty-five degrees. As the grooves can be varied through at least ten divisions of the circumference of the collar, the sum of the divisions taken, "2," "3," "4," &c., at a time will be over one thousand. In other words, according to the well-known laws of combinations an uninitiated person would in this instance have only one chance in over a thousand to open the lock. It will of course be seen in connection with Fig. 7 that it is necessary to make portions of the grooves deeper than others to avoid having pin 15 take the wrong course at certain points of the labyrinth—as, for instance, at division 7 of section J or division 9 of section B. Recess 42 is simply for the purpose of placing the pin in position when assembling the parts.

The operation of the lock in its different positions will now be explained, reference being made more particularly to Fig. 3 of the accompanying drawings. When the lock is in its open position, the pin 15 of Fig. 1 will move in groove 36. Since this groove is in a parallel line, circumferentially, the collar cannot move laterally while the pin remains in groove 36. The bolt can now be withdrawn by turning either knob three-sixteenths revolution in either direction. If it is desired to lock from the outside, the knob will be turned about one-half a revolution to the left; if from the inside, to the right, when pin 15 will move the collar far enough toward the outer knob 4 to disengage spindle 1 from the square hole of the collar, thereby allowing the outer spindle 2 and knob 4 to idly revolve. In the former case when it is desired to lock the door from the outside pin 15 will travel from point 38, groove 36, along the incline 31 until it has disengaged the inner spindle 1 from the square hole of the collar, when knob 4 is of course inoperative. During this process the double cam is turned from one flat face to the other, withdrawing the bolt, but leaving it in its locked position after the one-half turn has been made. When it is desired to open the lock from the outside, the mark on knob 4 is brought into alinement with the extension-piece 19, which will locate pin 15 at point 32, when the lock can be opened by rotating the knob, as previously described,

thereby locating pin 15 at point 35'. The spindle 2 makes a one-half revolution more to the right than to the left while operating the combination, and consequently the edges of the spindle members are in alinement and spindle member 1 capable of engaging with the square hole in the collar. It is at this point that the square hole joins the spindle 1, and as its lateral motion is of the same speed as its rotary motion at this point, since the angle of the groove or cam running from 35' to groove 36 is forty-five degrees, it will engage with spindle member 1 before the alinement is lost. To facilitate the engagement of spindle member 1 and the square hole, the former may be tapered slightly at the end where the square hole engages with it, or the square hole of the collar may be tapered larger, or both. In this case the groove referred to may be of a less angle than forty-five degrees. The pin will now continue in groove 36 to point 37, when the bolt will be withdrawn, and upon releasing the door-knob the bolt will be returned to its closed position by means of spring 25 and simultaneously the pin to its original position at point 38. The lock is now in position to be used as a day-latch.

Fig. 8 shows an arrangement of grooves which is adapted for a lock employing a key. It will be seen that so long as pin 15 is in any position on the face 45 the collar cannot be moved laterally. When the lock is used as a day-latch, the pin 15 will move in groove 46. When the door is locked, the pin travels from groove 46 to the cam-face 47, thus disengaging spindle member 1 in the square hole of the collar and rendering the outer spindle member 2 inoperative. To open the lock, the motion of the knob 4 is reversed until the pin 15 strikes the face 45. At this point a key 48 must be inserted in groove 49 of the knob, Fig. 6, and through groove 50 of the collar to engage with a shoulder formed in the latter. By a lateral motion of this key collar 12 is pushed a sufficient lateral distance to bring the pin 15 into groove 51, when by rotating the key or the knob the pin will be drawn from groove 51 to groove 46, at the same time engaging spindle member 1 with the square hole in the collar, when the bolt will again become operative by means of the knob, and the bolt is in position to be used as a day-latch. It will of course be understood that the position and shape shown in this figure can be varied without departing from the spirit of the invention.

Having thus described my invention, what I claim is—

1. In a lock, the combination of a latch-bolt, a rotatable knob, and means controlled by the rotation of the knob from either side of the door adapted to render the bolt inoperative as to one side of the door.

2. In a lock, the combination of a latch-bolt, operative at all times from one side of the

door, a rotatable knob, and means controlled by the rotation of the knob from either side of the door, adapted to render the bolt inoperative as to one side of the door.

3. In a lock, the combination with a latch-bolt, a rotatable knob on one side of the door adapted to operate the latch-bolt at all times from its side of the door, and to render the bolt inoperative as to the other side of the door, and means controlled by the rotation of the knob on the other side of the door adapted to render said bolt both operative and inoperative at will from its side of the door.

4. In a lock in combination, latch mechanism, a broken rotatable spindle adapted to actuate the same, a device adapted to unite and disunite the members of said spindle, and means on one side of the lock adapted to move said device to unite and disunite the members, and means on the other side of the lock adapted to move said device to throw the opposite member out of operative relation to the said latch mechanism.

5. In a lock in combination, latch mechanism, a broken rotatable spindle adapted to operate the same, means adapted to throw one of the members of said spindle out of operative relation to the said latch mechanism but not the other, said means being operative from either side of the lock.

6. In a lock in combination, latch mechanism, a broken rotatable spindle, a movable collar mounted loosely on the spindle, and means adapted to move said collar to unite and disunite the spindle members.

7. In a lock in combination, latch mechanism, a broken rotatable spindle, one member of which is, the other of which is not normally adapted to operate said mechanism, a movable collar mounted loosely on the latter member, and means adapted to move said collar to unite and disunite the spindle members to enable both to operate said mechanism at will.

8. In a lock in combination, latch mechanism, a broken rotatable spindle, one member of which is, the other of which is not normally adapted to operate said mechanism, a movable collar mounted loosely on the latter member, and means operative from the said side of the door as the latter member adapted to move said collar to unite and disunite the two spindle members and enable both to operate said mechanism at will.

9. In a lock in combination, latch mechanism, a broken rotatable spindle, two members relatively movable, and adapted to unite and disunite the parts of the spindle.

10. In a lock in combination, latch mechanism, a broken rotatable spindle, a collar and a pin, movable in relation to each other, and adapted to unite and disunite the parts of the spindle.

11. In a lock in combination, latch mechanism, a broken rotatable spindle, one member of which is, the other of which is not normally

adapted to operate said mechanism, and a movable collar mounted loosely on the latter, and adapted to unite and disunite the two spindle members to enable the latter member to operate said mechanism at will.

12. In a lock in combination, latch mechanism, a broken rotatable spindle, a movable collar mounted loosely on the said spindle, and having an angular hole adapted to receive the members of said spindle, and means adapted to move said collar to unite and disunite said spindle members to enable both to operate said latch mechanism at will.

13. In a lock in combination, latch mechanism, a broken rotatable spindle, one of whose members carries a movable collar mounted loosely thereon, and having an angular hole adapted to receive the other member and means operative from the side of the former member, adapted to move said collar to unite and disunite said members at will.

14. A lock comprising: latch mechanism, a broken rotatable spindle, a collar mounted loosely on the spindle, and a pin adapted to move the collar laterally to unite and disunite the spindle members.

15. A lock comprising: latch mechanism, a rotatable spindle consisting of two opposed independent members, one of which is, the other of which is not normally adapted to operate said mechanism, a movable collar loosely mounted on the latter member operative from the same side of the lock as the latter member, and a pin adapted to move the collar laterally to unite and disunite the spindle members.

16. A lock comprising: latch mechanism, a broken rotatable spindle, a collar having a labyrinth of grooves, and a pin adapted to engage therein, said pin and collar being relatively movable and adapted to unite and disunite the members of said spindle.

17. A lock comprising: latch mechanism, a broken rotatable spindle, a movable and rotatable collar having a labyrinth of grooves, and a pin adapted to engage therein, and to move said collar laterally when the latter rotates.

18. A lock comprising: latch mechanism, a broken rotatable spindle, a collar having a labyrinth of grooves, a pin adapted to engage with said grooves, a knob and connections adapted to cause the pin and grooved collar to travel with relation to each other, to unite and disunite the said spindle members.

19. A lock comprising: latch mechanism, a rotatable spindle, consisting of two opposed independent members, one of which is, the other of which is not normally adapted to operate said mechanism, a movable and rotatable collar having a labyrinth of grooves, a pin adapted to engage with said grooves, a knob and connections adapted to cause the pin and the 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 di-

rections will cause said pin to take certain passages through the said labyrinth to move the collar a predetermined distance to unite the spindle members, and to enable either to operate said latch mechanism.

20. A lock comprising: latch mechanism, a rotatable angular spindle consisting of two opposed independent members, one of which is, the other of which is not normally adapted to operate said mechanism, a movable and rotatable collar having a chambered portion of sufficient diameter to allow the spindle members to rotate freely therein, and having at the end of said chamber an angular hole adapted to receive the opposed angular spindle member, and having a labyrinth of grooves, a pin adapted to engage in said grooves, a knob and connections adapted to cause the pin and the 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 through the said labyrinth to move the collar a predetermined distance to engage the opposed angular spindle member in the angular hole of the collar to unite the spindle members, and to enable either to operate said latch mechanism.

21. A lock comprising: latch mechanism, a rotatable angular spindle consisting of two opposed independent members, one of which is, the other of which is not normally adapted to operate said mechanism, a movable and rotatable collar having a chambered portion of sufficient diameter to allow the spindle members to rotate freely therein, and having at the end of said chamber an angular hole adapted to receive the opposed angular spindle member, and having a labyrinth of grooves, a pin adapted to engage in said grooves, a knob and connections adapted to cause the pin and the 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 through the said labyrinth to move the collar a predetermined distance to engage the opposed angular spindle member in the angular hole of the collar to unite the spindle members, and to enable either to operate said latch mechanism, and means adapted to indicate the progress of the said pin through the grooves.

22. A lock comprising: latch mechanism, a broken rotatable spindle, a collar having a series of cam-surfaces, a pin adapted to engage therewith, said pin and collar being relatively movable, and adapted to unite and disunite the members of said spindle.

23. A lock comprising: latch mechanism, a broken rotatable spindle, a movable and rotatable collar, having a labyrinth of cam-surfaces, and a pin adapted to engage therewith

to move said collar laterally when the latter rotates.

24. In a lock of the character described, means for operating said lock, comprising in
5 part: a rotatable and movable collar having a labyrinth of grooves, a pin adapted to engage therein and to move said collar laterally when the latter rotates, means adapted to rotate said collar, and means adapted to determine the
10 passage of said pin through said grooves.

25. In a lock of the character described, means for operating said lock, comprising in
15 part: a rotatable and movable collar, having a labyrinth of grooves, a pin adapted to engage therein, and to move said collar laterally when the latter rotates, a knob carrying a spindle member adapted to rotate said collar as the knob rotates, spring-seated pins in the one member, and indents in another member adapt-
20 ed to engage with each other to indicate the progress of the first-mentioned pin through said grooves.

26. In a lock of the character described, means for operating said lock, comprising in
25 part: a rotatable and movable collar having a labyrinth of grooves, a pin adapted to engage therein, and to move said collar laterally when the latter rotates, a knob carrying a spindle member adapted to rotate said collar as the
30 knob rotates, spring-seated pins in the one member, and indents in another member adapted to engage with each other to indicate the progress of the first-mentioned pin through said grooves, and means adapted to determine
35 the starting-point therefor.

27. In a lock of the character described, means for operating said lock, comprised in
40 part of a sleeve and a door-knob, relatively movable, one of said members having a series of indents and the other member having a spring-seated pin adapted to engage therein.

28. In a lock of the character described, means for operating said lock, comprised in
45 part of a collar having a labyrinth of grooves, a pin adapted to engage therein, means adapted to cause said pin and collar to travel one with relation to the other, a sleeve and a rotatable door-knob, one of said members hav-
50 ing a series of indents and the other having a spring-seated pin adapted to engage in said indents to indicate the progress of the first-mentioned pin through the said grooves.

29. In a lock in combination, a latch-bolt, a door-knob, and means actuated by the rota-
55 tion of the said door-knob adapted to operate said bolt from both sides or from one side only at will.

30. In a lock in combination, a latch-bolt, a plurality of spindles, bolt-actuating means

adapted to be operated thereby to move said
60 bolt, a door-knob, and means actuated by the rotation of said knob, adapted to bring into and throw out of operative relation with the said bolt-actuating means, one of said spin-
65 dles.

31. In a lock, in combination, a latch-bolt, a door-knob, means adapted to operate said
70 bolt from both sides or from one side at will, said means being actuated solely by the said knob, and adapted to effect such change.

32. In a lock in combination, a latch-bolt, a door-knob, means adapted to operate said
75 bolt from both sides of the lock, and means actuated by the rotation of said knob adapted to render the said bolt inoperative and oper-
80 ative from one side of the lock at will.

33. In a lock of the character described, a broken angular spindle, one member having
85 a recess adapted to engage with the collar extension of another member, a movable collar carried by the one member and provided with a chambered recess of sufficient diameter to allow said collar to rotate freely about the
90 opposite spindle member, and an angular hole adapted to engage said opposite spindle mem-
95 ber.

34. In a lock of the character described, a broken angular spindle, one member having
95 a recess adapted to engage with a collar extension of another member, a movable collar carried by one member and provided with a chambered recess of sufficient diameter to al-
100 low said collar to rotate freely about the opposite spindle member, an angular hole adapted to engage said opposite spindle member, means adapted to allow a lateral movement
105 between the members, and means adapted to positively limit said movement.

35. In a lock of the character described, a broken rotatable spindle, one of whose mem-
110 bers is provided with a recess adapted to engage with a tenoned portion of another member, said tenoned portion being of smaller diameter than said recess, a collar of the same diameter as
115 said recess formed on the said tenoned portion, and adapted to keep said members in alinement, means adapted to allow a lateral movement between the members, bushings
120 attached to the inner side of said recess, and adapted to positively limit the lateral move-
125 ment of said spindle members.

Signed at Plainfield, New Jersey, this 19th day of October, 1903.

FRED J. VIEWEG.

Witnesses:

HOWARD A. POPE,
H. B. MACDONALD.