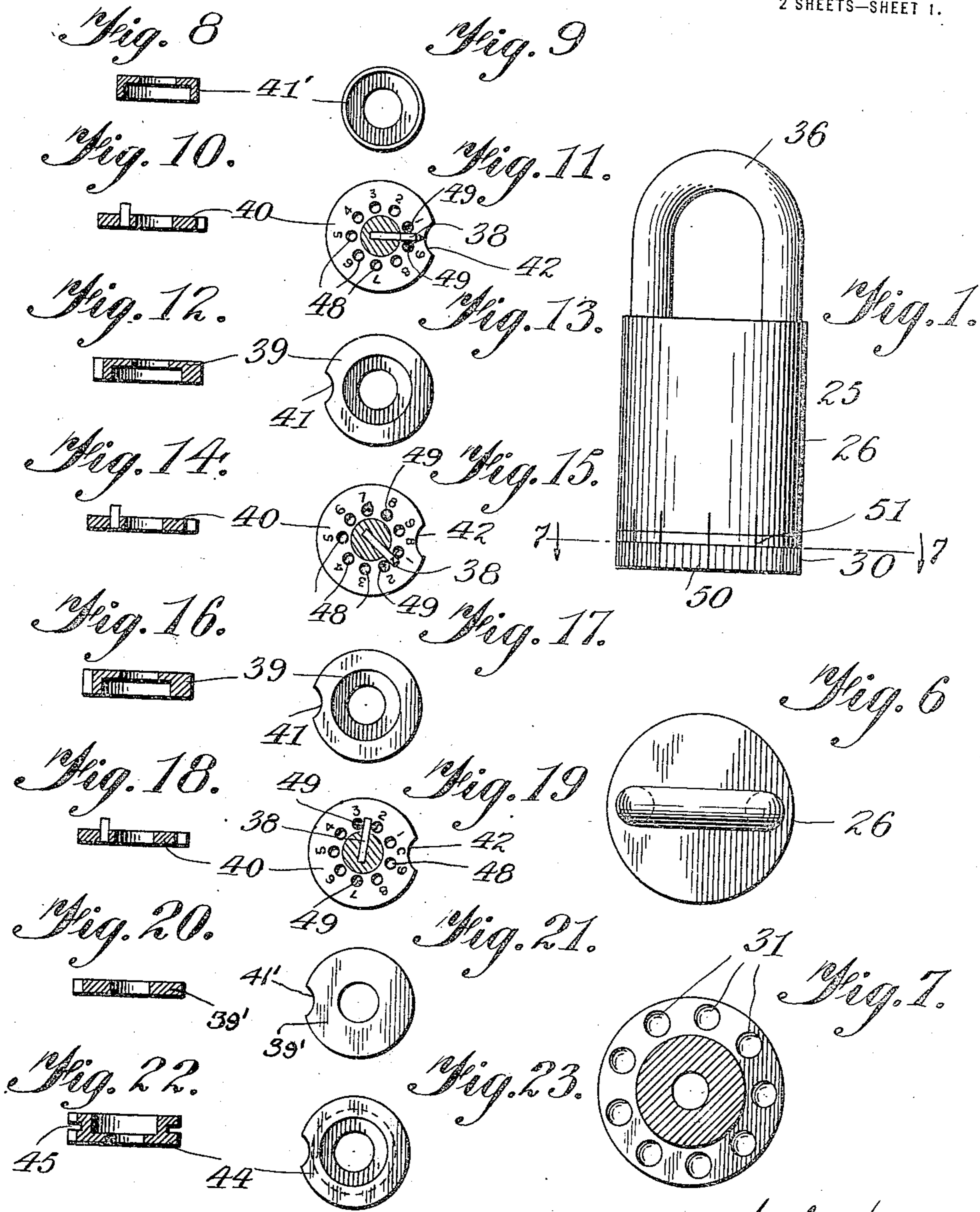


1,432,677.

Patented Oct. 17, 1922.
2 SHEETS—SHEET 1.



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By *William Clinton*
Attorney

Fig. 2.

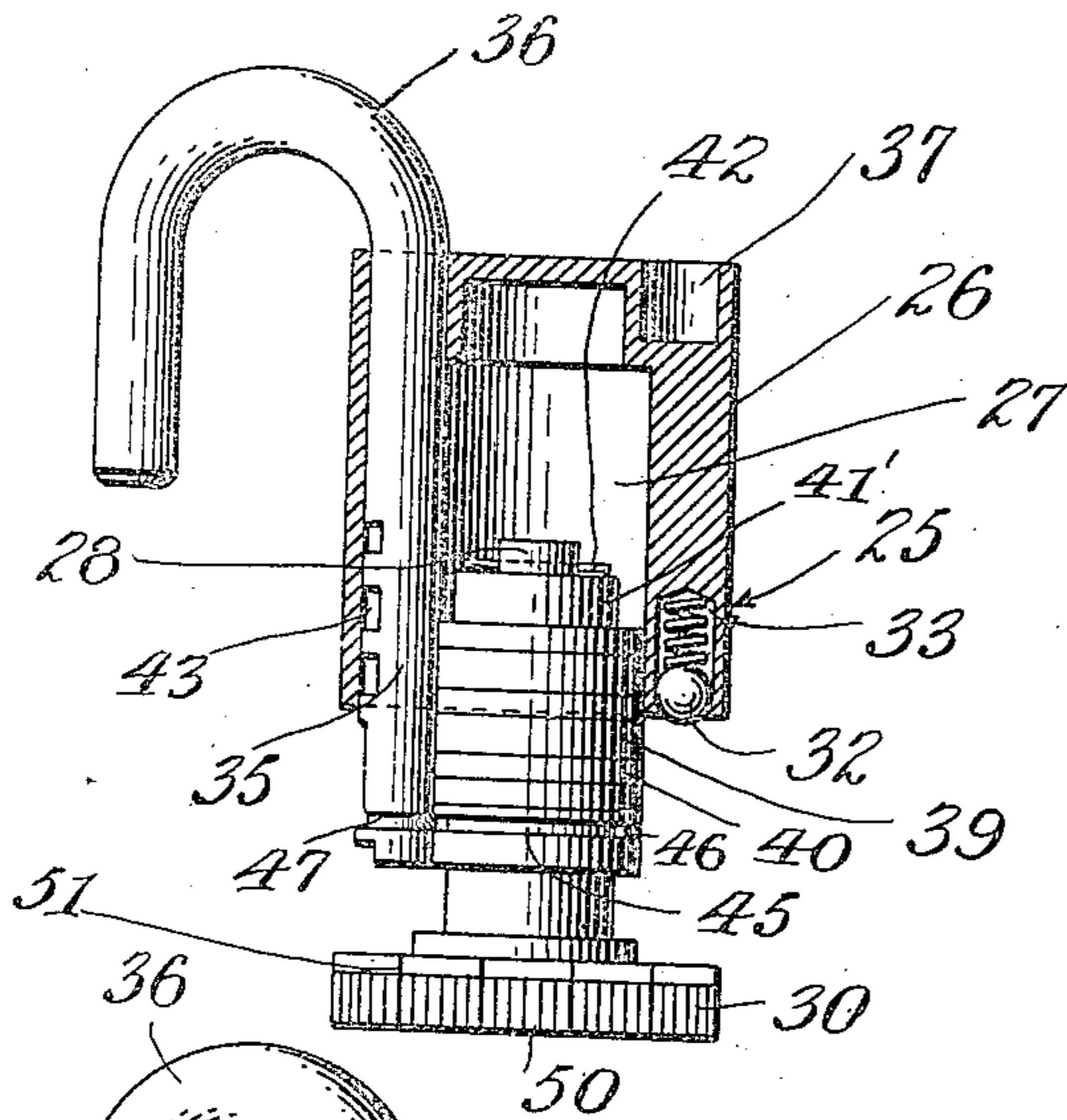
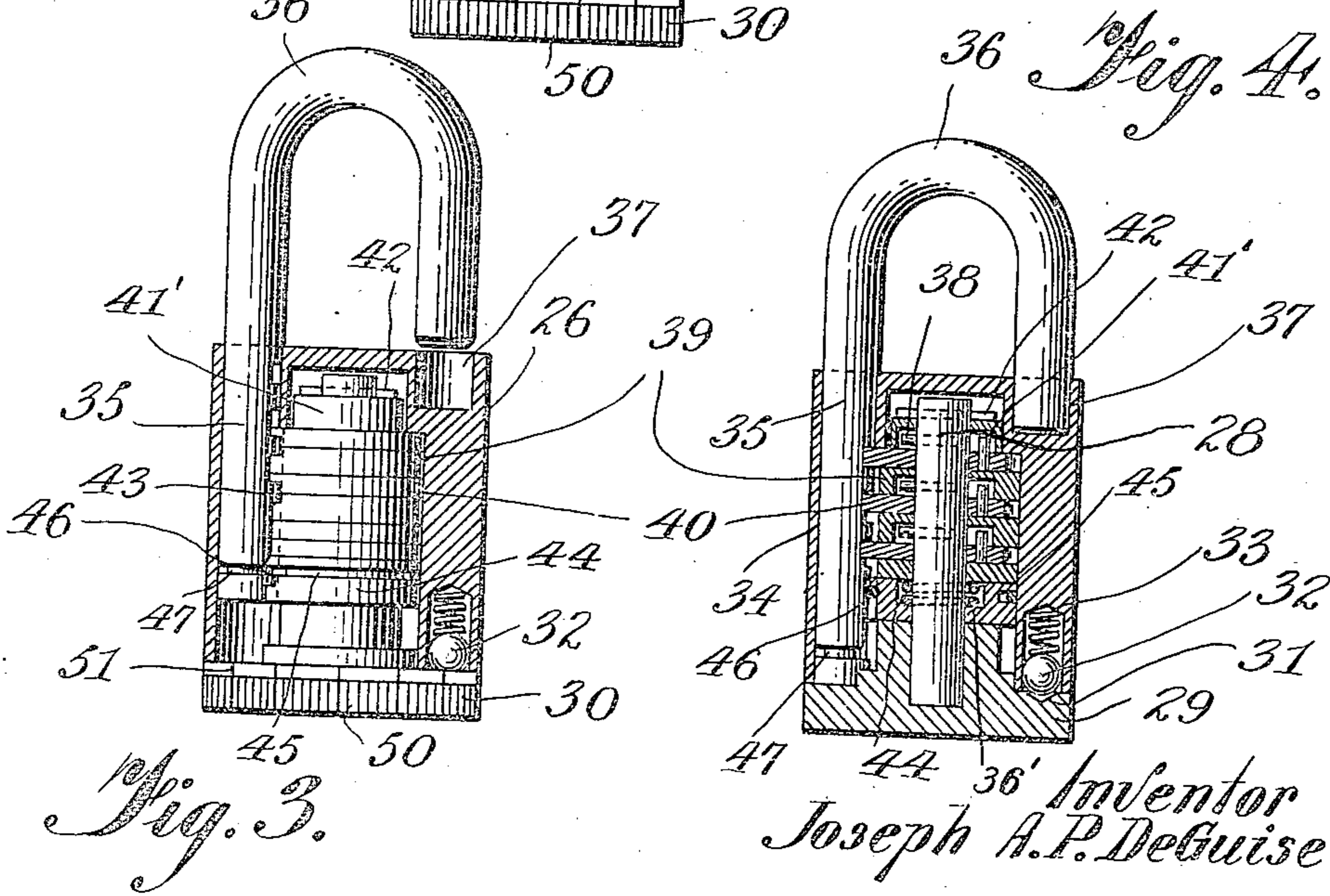
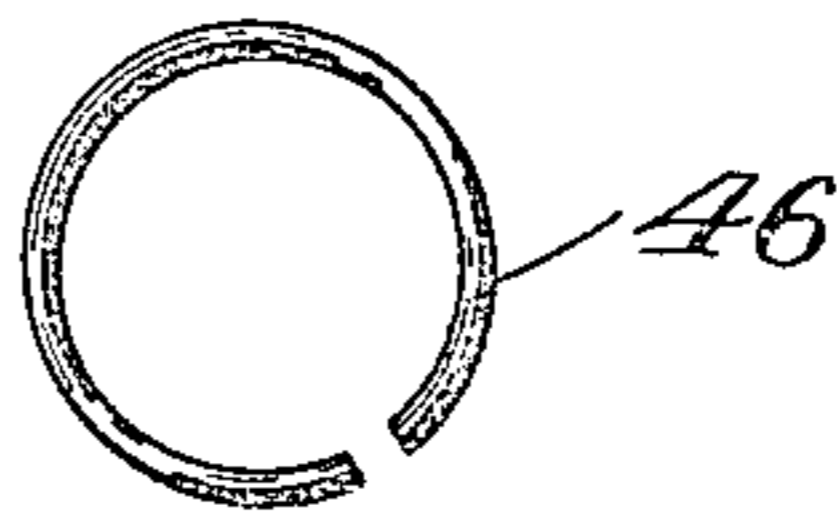


Fig. 5.



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UNITED STATES PATENT OFFICE.

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PADLOCK.

Application filed May 7, 1921. Serial No. 467,675.

To all whom it may concern:

Be it known that I, JOSEPH ALEXIS PHILIPPE DE GUISE, a subject of the King of Great Britain, residing at Sorel, Province of Quebec, Canada, have invented certain new and useful Improvements in Padlocks; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to new and useful improvements in locks, and more generally to padlocks of the permutation type and particularly to an improvement on my former United States Patent No. 1,060,234 of April 29, 1913.

The primary object of the invention is the provision of a lock such as above referred to which can be operated in the dark or by blind or deaf persons without necessitating seeing the lock or listening for the sound of the tumblers thereof.

Another object of the invention is the provision of a lock such as above referred to, in which the number of various combinations is unlimited, and which can be quickly and easily changed without necessitating the using of a key or other tool.

A further object of the invention is the provision of a lock such as above referred to including a shackle and a series of tumblers arranged for locking the shackle in its closed position, together with a rotatable member by means of which the tumblers can be easily and readily turned for the purpose of releasing the shackle and permitting the lock to be opened.

A still further object of the invention is the provision of a lock such as above referred to, which will be comparatively simple and inexpensive to manufacture, strong and durable in its construction, reliable and efficient in use, and readily operated.

With the above and other objects in view, the present invention resides in the novel features of construction, formations, combinations, and arrangements of parts to be hereinafter more fully described, claimed, and illustrated in the accompanying drawings, forming a part of the present application, and in which:

Figure 1 is a side view of the lock constructed in accordance with the present invention;

Figure 2 is a vertical sectional view show-

ing the lock mechanism extended in order to change the combination;

Figure 3 is a similar view showing the shackle released;

Figure 4 is a similar view showing the shackle in locked position;

Figure 5 is a detail view of the locking spring;

Figure 6 is a top plan view of the lock;

Figure 7 is a horizontal sectional view taken on the line 7—7 of Figure 1; and,

Figures from 8 to 23 inclusive are detail views, illustrating in section and in plan view the various elements of the lock.

Referring now to the accompanying drawings by corresponding characters of reference throughout the several views, the numeral 25 designates in general my improved lock which consists of a cylindrical body portion 26 having a central recess 27 formed therein, in which is disposed a central shaft 28 which has secured at its lower end and rotatable therewith a thumb piece 29. This thumb piece 29 includes a milled head 30, the inner surface of which is provided with recesses 31 adapted to receive the lower side of the spring pressed ball 32 mounted in a recess 33 formed in one side of the cylindrical body portion 26.

A vertical passage of circular formation is shown at 34, and in this passage is slidably mounted and also arranged for rotation the long side 35 of a U-shaped shackle 36, and the opposite end of which is adapted for insertion within the socket 37 formed in the opposite side of the said body portion 26.

The shaft 28 is fixed to the thumb piece 29 and is rotatable therewith being provided with a plurality of laterally extending pins 38 which are arranged in spaced relation and are designed to fit within the washers 39. The tumblers 40 are spaced apart by the washers 39. These washers 39 and tumblers 40 are provided respectively with notches 41 and 42 arranged in their edges for cooperation with the notches 43 provided in the long side 35 of the shackle 36.

When the notches 41 and 42 are in alignment with the notches 43, the shackle may be released as shown in Figure 2, but when the notches are out of alignment with the notches in the shackle, as shown in Figure 4, the said shackle is retained in said locking position.

A retaining cap 41' fits over the upper

end of the shaft and is held in position by a key 42, while a lower cap 44 is positioned upon the lower end of the shaft and rests upon the thumb piece 29. This cap 44 is formed with a groove 45 in which may be inserted a circular spring key 46 which is normally sprung outwardly so that when the shackle is raised, as shown in Figure 3, this key will engage the groove 47 formed in the longer side of the shackle 36, thus preventing the total displacement of the shackle from the lock. A spring 36' engages the lower cap 44 and washer 39' interposed between the cap and lowest tumbler 40 forcing the tumblers together and causing them to frictionally engage each other and prevent their displacement. The washer 39' is provided with a notch 41' which functions in conjunction with the notches 41, 42 and 43, as stated above.

The tumblers 40 are each provided with a series of openings 48 in which may be positioned pins 49 arranged in the path of the pins 38 carried by the shaft 28.

Obviously as the thumb piece is turned around in various directions, the pins 38 will strike against the pins 49, thus rotating the tumblers 40 to bring the notches 42 in alignment with the notches 43 for permitting the release of the shackle, while the spring pressed ball 32 will hold the thumb piece 29 against any undesired displacement.

Indicating marks 50 are provided upon the periphery of the milled head 30, while corresponding indicating marks 51 are provided upon the lower end of the cylindrical body portion 26.

In operation, the shackle 36 when locked is in the position shown in Figure 4, and when it is desired to release the same, the thumb piece 29 is turned in either direction which causes the upper pin 38 to strike against the upper pin 49 of the upper tumbler 40. As this tumbler is turned to register with the notch 43 in the shackle, it will be noted that the remaining notches 43 being somewhat larger will permit the slight upward movement of the shackle 36 to the position shown in Figure 3, thereby locking the upper tumbler 40 against movement and preventing further turning of the member 50. The shackle is pressed downwardly again, after which the thumb piece 29 may be rotated to bring the other notches in the tumblers 40 into alignment with the notches 43 to permit the turning of the shackle as desired.

When it is desired to change the combination, the shaft 28 is moved downwardly to the position shown in Figure 2 by exerting a slight pressure upon the thumb piece 29. When in this position, the key 46 may be removed and the tumblers and shaft re-

tion 26. It is next necessary to remove the key 42 and the cap 41', which permits the tumblers to slip from the shaft after the pins 38 are removed. It is then a simple matter to remove the pins 49 placing them in the other openings 48, which changes the combination to any which might be desired, and as each of the openings 48 is marked, as shown in the drawings, these numbers appearing thereon will indicate the new combination which can be either marked down or memorized by the operator.

From the foregoing description, taken in connection with the accompanying drawings, it will be manifest that a permutation padlock is provided which will fulfil all of the necessary requirements of such a device, and it should be understood in this connection that various minor changes in the specific details of construction can be resorted to within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described the invention, what I claim as new and desire to protect by Letters Patent is:—

1. A lock of the type described, comprising a body portion, a shaft rotatable therein, tumblers mounted upon the shaft, caps mounted upon the shaft and retaining the tumblers in position, a shackle carried by the body portion and cooperating with the tumblers, and a locking means carried by one of the caps for engagement with the shackle and preventing the displacement of the latter.

2. A lock of the type described, comprising a body portion having a cylindrical recess therein, said body portion having sockets therein, a shackle positioned within said sockets, a shaft rotatable in the cylindrical recess, tumblers mounted upon the shaft, caps mounted upon the shaft engaging the opposite ends of the tumblers for preventing displacement of the latter, pins projecting from the shaft, pins projecting from the tumblers in the path of the first mentioned pins, a spring locking device carried by one of the caps, and said shackle having a groove therein for engagement therein with the said locking device, as and for the purposes set forth.

3. A lock of the character described, comprising a cylindrical body having a recess therein, a shaft rotatable within the recess, a thumb piece carried by the shaft, a shackle mounted within the body portion, tumblers surrounding the shaft and operated thereby, said tumblers engaging notches formed in the shackle for locking the shackle against displacement, said tumblers also having notches therein in alignment with the notches in the shackle for releasing said shackle, pins projecting from the tumblers, pins pro-

jecting from the shaft for engagement with the first mentioned pins and rotating the tumblers, a spring lock carried by one of the caps for engagement with a notch provided in the shackle, said thumb piece having a plurality of recesses therein and a spring pressed ball carried by the body portion for projection into the recesses.

4. A lock of the character described, comprising a cylindrical body having a recess therein, a shaft rotatable within the recess, a thumb piece carried by the shaft, a shackle mounted within the body portion, tumblers surrounding the shaft and operated thereby, said tumblers engaging notches formed in the shackle for locking the shackle against displacement, said tumblers also having

notches therein in alignment with the notches in the shackle for releasing said shackle, pins projecting from the tumblers, pins projecting from the shaft for engagement with the first mentioned pins and rotating the tumblers, a spring lock carried by one of the caps for engagement with a notch provided in the hasp, said thumb piece having a plurality of recesses therein, a spring pressed ball carried by the body portion for projection into the recesses and a spring surrounding the shaft within the lower cap, as and for the purposes set forth.

In witness whereof I have hereunto set my hand.

JOSEPH ALEXIS PHILIPPE De GUISE.