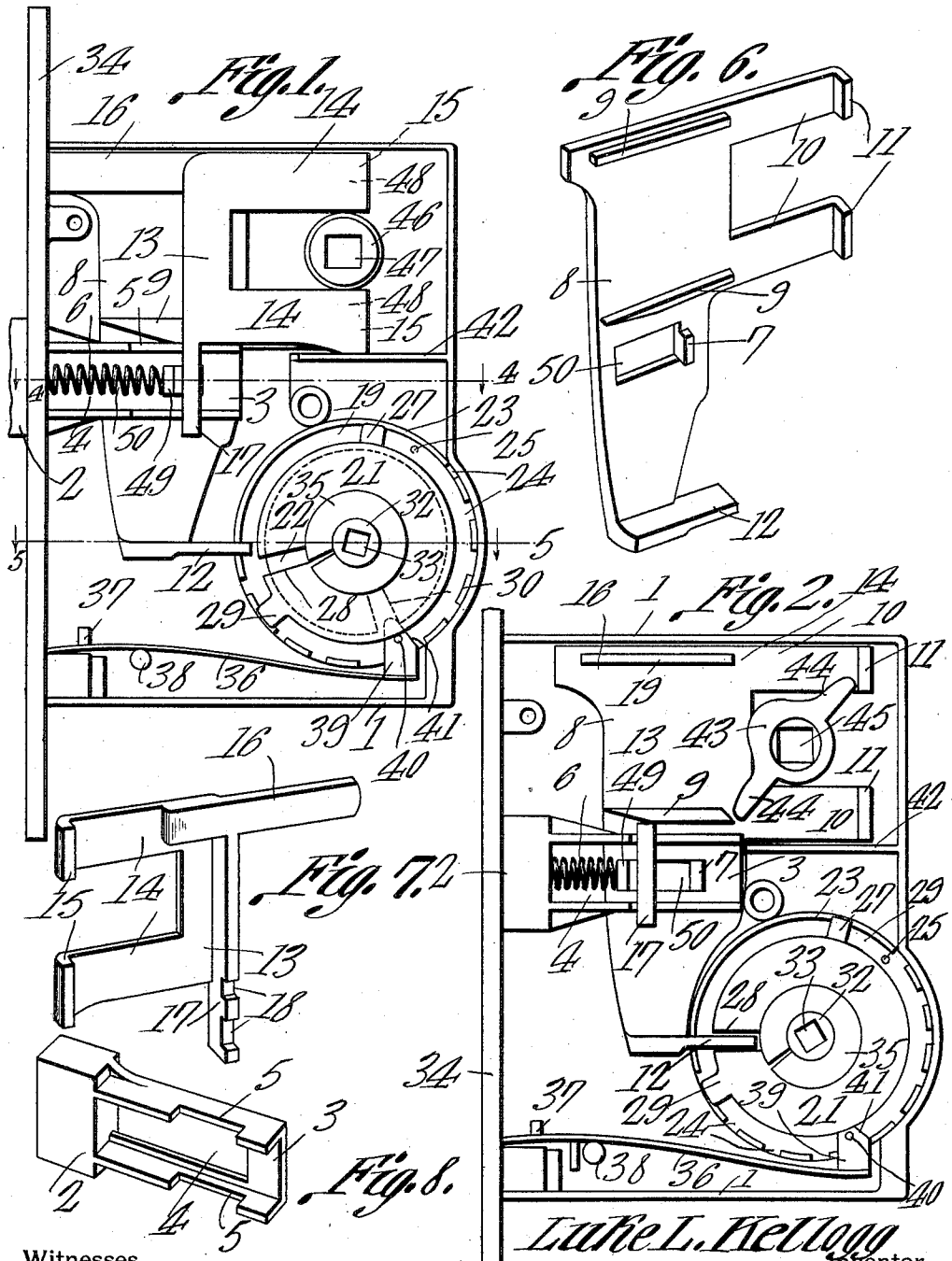
L. L. KELLOGG.

LOCK.

APPLICATION FILED SEPT. 25, 1911.

1,038,597. **Patented Sept. 17, 1912.**

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

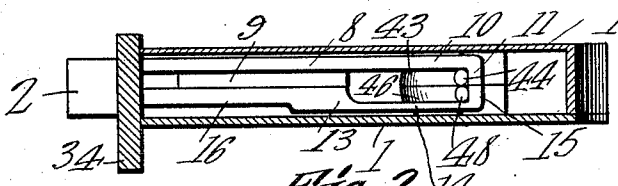

Fig. 3.

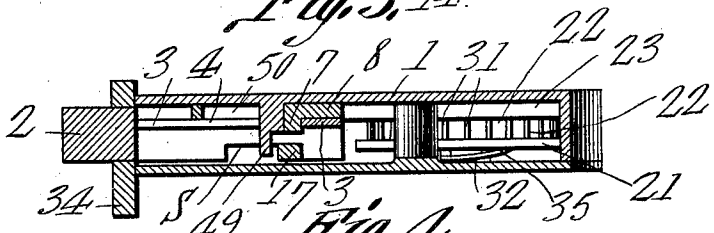

Fig. 4.

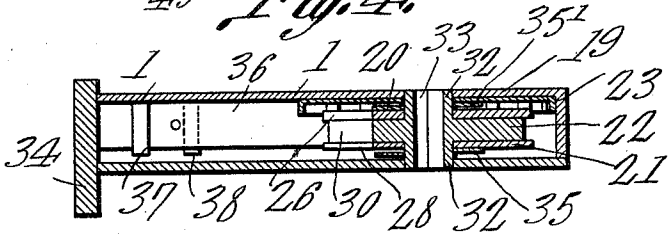

Fig. 5.

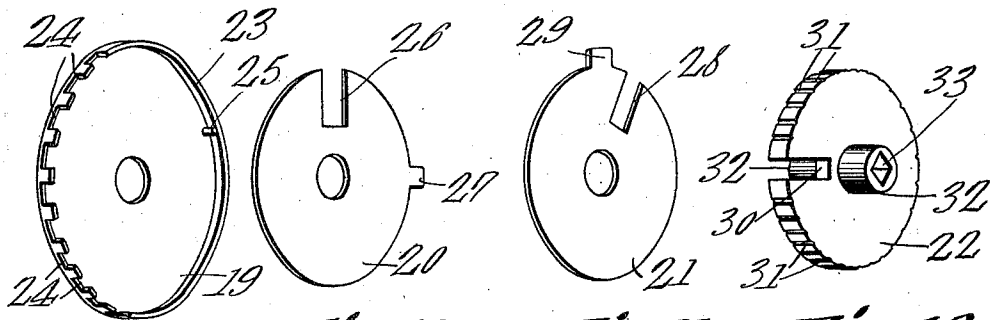

Fig. 9. Fig. 10. Fig. 11. Fig. 12.

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UNITED STATES PATENT OFFICE.

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LOCK.

1,038,597. Specification of Letters Patent. Patented Sept. 17, 1912.

Application filed September 25, 1911. Serial No. 651,236.

To all whom it may concern:

Be it known that I, LUKE L. KELLOGG, a citizen of the United States, residing at Fredonia, in the county of Chautauqua and State of New York, have invented a new and useful Lock, of which the following is a specification.

This invention relates to locks and particularly to permutation locks.

The objects of this invention are to provide for a simple, inexpensive and effective lock which requires the knowledge of the combination of the lock to open same; to provide convenient means for changing such combination; and provide a lock which may be unlocked from one side without the knowledge of the combination but requiring the knowledge of the combination to open same from the other side.

Further objects will be evident from the hereinafter description.

The invention resides in the novel construction and arrangement and combination of parts hereinafter described, and as shown in the accompanying drawings, in which similar reference characters indicate similar parts and in which:—

Figure 1 is a rear elevation of the lock with the rear wall of the casing removed and parts thereof broken away. Fig. 2 is a similar view, with the relative parts in open or unlocked position. Fig. 3 is a top view, the top wall being broken away. Fig. 4 is a section on the line 4—4 of Fig. 1. Fig. 5 is a section on the line 5—5 of Fig. 1. Figs. 6 to 12, inclusive, are perspectives of various parts of the lock.

Referring specifically to the drawings, 1 designates the casing or box which is secured to the face plate 34. A latch bolt 2 is mounted to slide through an opening in the face plate 34 and has the inner channel shaped stem 3, the flanges of which are disposed rearwardly which is the rear side of Figs. 1 and 2. Elongated notches 5 are cut in the flanges of the stem 3 and an elongated slot 4 is cut in the back thereof. A latch operating plate 8 is slidably arranged on the inner face of the front of the casing 1 and passes in under the stem 3 and has a slot 50 registering with the slot 4 of the stem 3. An upstruck stud 7 on the plate 8 at the inner end of the slot 50 projects into the slot 4 of the stem. A stud 49 projects from the front side of the casing and passes through the slot 50 and a coiled spring 6 is compressibly disposed between the stud 49 and latch bolt to normally press same outward. 42 designates a wall or partition which extends from the rear end of the casing to a position in back of the stem 3. The plate 8 has the upper parallel and inwardly projecting arms 10 which have inturned lips 11 at their extremities, and a lower horizontal tongue 12 projecting inwardly therefrom. A latch operating plate 13 is slidably arranged on the inner face of the back of the casing and at the top thereof and has parallel and inwardly projecting arms 14 opposite the respective arms 10 and also corresponding inturned lips 15 at their extremities. This plate 13 has the upwardly and outwardly projecting bar 16 and a depending finger 17 which passes through the notches 5 of the stem and has notches 18 which engage the flanges. The plate 8 has inner ribs 9—9 on which the plate 13 rests. The arms 10 and 14 are slidable between the top of the casing and the partition 42, and between the said arms are pivoted the rockers 43 and 46 respectively. The forward rocker 43 has fingers 44 which engage the lips 11 and the rear rocker 46 has fingers 48 which engage the lips 15. The said rockers 43 and 46 are movable independently of each other and have alining square apertures 45 and 47, respectively, forming key sockets. A square key is insertible through either side of the casing to engage one or the other of the rockers. The foregoing plates 8 and 13 and rockers 43 and 46 respectively, form the latch bolt operating mechanism which are operated by the insertion of a key from the respective sides of the lock.

The permutation locking mechanism comprises disk members 20, 21, and 22 having open radial slots 26, 28 and 30 respectively. The disk 22 is sandwiched between the disks 20 and 21 and has the bosses 32 at the sides thereof, passing through central apertures in the disks 20 and 21 and through the front and rear walls of the casing. A square key socket 33 passes through the bosses 32, and disk 22 has a plurality of suitably spaced notches 31 in the periphery thereof. The said disks are concentric with each other, the inner disk 22 being slightly smaller in dimension than the outer disks 20 and 21, and a disk 19 of larger diameter is disposed on the inner face of the front side of the casing and has its inturned flange 23 around the periphery thereof in which are cut a

plurality of notches 24. A stop pin 25 projects from the inner face of the disk 19 adjacent the flange 23. The disks 20 and 21 have the respective lugs 27 and 29 on their peripheries. A split ring washer 35 is arranged between the rear wall of the casing and the disk 21 and a similar spring washer 35′ is arranged between the disks 19 and 20. These spring washers press the disks 20 and 21 at a proper tension against the disk 22 to form a suitable friction therebetween, whereby upon the disk 22 being turned the other disks are revolved therewith unless constrained against rotation. A leaf spring 36 is secured to the casing by means of lugs 37 and 38 which carries the dog 39 which is pressed against the disk 22 by the said spring and which has a beveled face 41. A stop pin 40 projects forwardly from the dog 39.

The tongue 12 of the latch bar operating plate 8 passes through one of the notches 24 of the disk 19 and is in a radial position with the axis of the tumblers 20, 21 and 22.

The operation of the device is as follows: As stated, the bolt 2 is normally pressed or pushed outward by the spring. By inserting a key from the inside of the lock to engage the socket 47 the rocker 46 can be swung to carry the plate 13 inward, one of the fingers 48 engaging one of the lips 15, and the finger 17 in the notches 5 of the bolt stem strikes the inner end of the notches to carry the bolt inward against the tension of the spring thus opening the lock. On the other hand, should it be required to open the lock from the front, the key must be first inserted in the socket 33 to set the tumblers into proper position. When looking from the rear, the disk 22 is first turned clock-wise until the dog snaps into the slot 30 thus bringing the parts to a starting position. The disk 22 is then turned further clock wise carrying the disk 20 and 21 therewith, the lug 27 of the disk 20 striking the lug 25 to limit the movement of the disk 20 or constrain same against rotation whereupon as the disk 22 is turned the slot 30 thereof may be brought into registration with the slot 26 of the disk 20. The disk 22 is then reversed thereby carrying the disks 20 and 21 therewith, the slots 30 and 26 of the disks 22 and 20 remaining in registration, and upon the disk 22 being turned sufficiently the lug 29 of the disk 21 strikes the stop 40 and retards or arrests the movement of the disk 21 thereby permitting the disk 22 as the same is rotated to be advanced relative to the disk 21 to bring the slot 30 thereof into registration with the slot 28 of the disk 21, thus bringing the slots of the three tumblers or disks into registration whereupon by reversing the disk 22 into alinement with the tongue 12 the lock is free to be opened. The tongue 12 in engaging in one of the notches 24 also serves as a stop to limit the movement of the tumblers or disks 20 and 21, the lugs 27 and 29 being adapted to strike the said tongue as will be apparent. As the disk 22 is rotated the dog 39 snaps into the notches 31 and cause clicks which can be heard by the operator and the counting of which enables him to turn the disk a suitable distance one way and then another to set the parts as stated. Thus by the manipulation of the disk 22 the slots 26, 28 and 30 are made to coincide and then by inserting a key in the slot 45 the rocker 43 can be operated to draw the plate 8 inward, the tongue 12 entering the slots 26, 28 and 30, to retract the latch bolt 2, the stud 7 engaging the end of the slot 4 of the stem. When the tumblers are not in set position the tongue 12 is stopped from inward movement thereby and naturally the plate 8 cannot be moved to open the lock. The lugs 29 and 27 strike the stop pins 40 and 25, respectively, and are prevented from undue rotation, or the movement of the same are limited thereby.

By setting the tongue 12 into various notches 24 the combination can be readily changed on account of the shifting of the stop pin 25 which limits the movement of the tumbler 20.

The notches 24 in the flange 23 are so arranged that the arc between the stop 25 and the tongue 12 will always be greater than the arc between the tongue 12 and the stop 40 thus preventing the lug 27 from striking the tongue 12 upon the disks being turned counter-clock-wise to displace the disk 20 with respect to the disk 22 to bring the slots thereof out of coincidence.

It will therefore be seen that the lock can be readily opened from one side without a knowledge of the combination but requires the knowledge of the combination to open the same from the other side. The advantages of such a lock are obvious, it being only necessary in most cases to have a lock operable by means of the combination from one side, generally the outside or front thereof.

Having described the invention what is claimed is:—

1. In a lock, a latch bolt operating member having a tongue, a plurality of tumblers frictionally engaging each other and having open slots therein, one of the tumblers being operable whereby the other tumblers tend to move therewith, means for limiting the movement of the latter tumblers whereby the slots may be brought into registration to receive the tongue, and means for changing the limit of movement of one of the latter tumblers.

2. In a lock, a latch bolt operating member having a tongue, a plurality of tumblers frictionally engaging each other and having

open slots therein, one of the tumblers being operable whereby the other tumblers tend to move therewith, means for limiting the movement of the latter tumblers whereby the slots may be brought into registration to receive the tongue, and means cooperating with the operable tumbler for causing clicks as the said tumbler is rotated to assist in bringing the slots into registration.

3. In a lock, a casing, a latch bolt operating member arranged therein and having a tongue, three disk tumblers arranged in the casing and having open slots, the inner disk tumbler being operable from the outside of the casing and the outer disk tumblers being spring-pressed against the inner disk tumbler, means for limiting the movement of the outer disk tumblers whereby the slots may be brought into registration to receive the tongue, and means for changing the limit of movement of one of the outer tumblers.

4. In a lock of the character described, the combination with a casing and a latch bolt operating member having a tongue thereon, of three disk tumblers having open slots, the outer disk tumblers being limited in movement and spring pressed against the inner disk tumbler and the inner disk tumbler having a plurality of notches around its periphery and being operatable from the outside of the casing to bring the slots into coincidence with each other to permit of the passage of the tongue therein, and a spring-actuated dog-engaging the periphery of the inner disk.

5. In a lock of the character described, the combination with a casing and a latch bolt operating member having a tongue thereon, of three disk tumblers having open slots therein, the outer disk tumblers being spring pressed against the inner disk tumbler and each having a lug on the periphery thereof, and the inner disk tumbler having notches on the periphery thereof and having bosses which pass through the outer disk tumblers having a key socket therein, a spring pressed dog engaging the periphery of the inner disk tumblers, a disk arranged between one of the outer disk tumblers and the casing and having an inturned flange with notches therein, a stop pin for the corresponding disk tumbler carried by said disk, the said tongue being engageable in various notches of the said disk to shift said stop pin, and a stop pin for the other outer tumbler.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

LUKE L. KELLOGG.

Witnesses:
CHAS. M. R. MASTUM,
GEO. N. W. BUELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."