

J. BLASZCZYK.

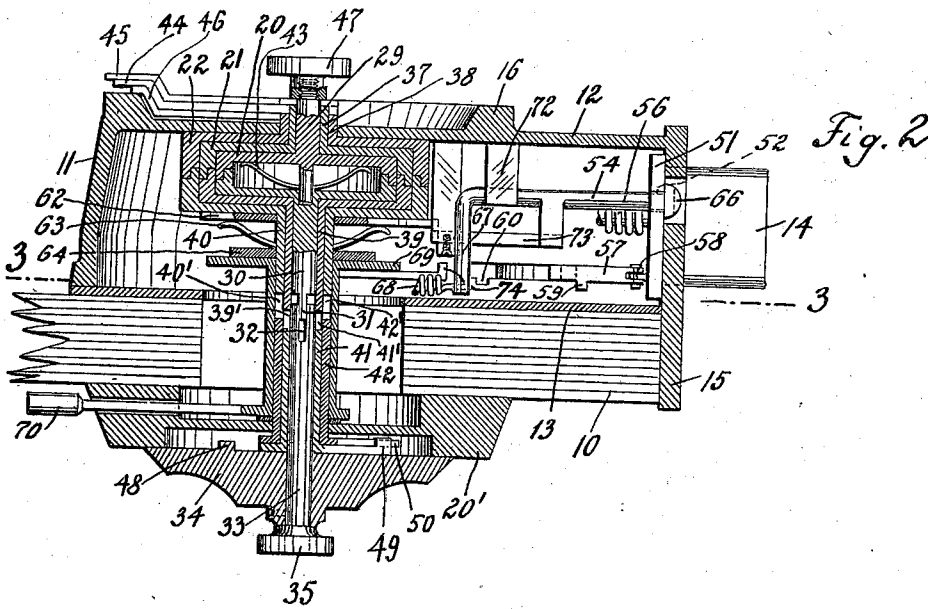
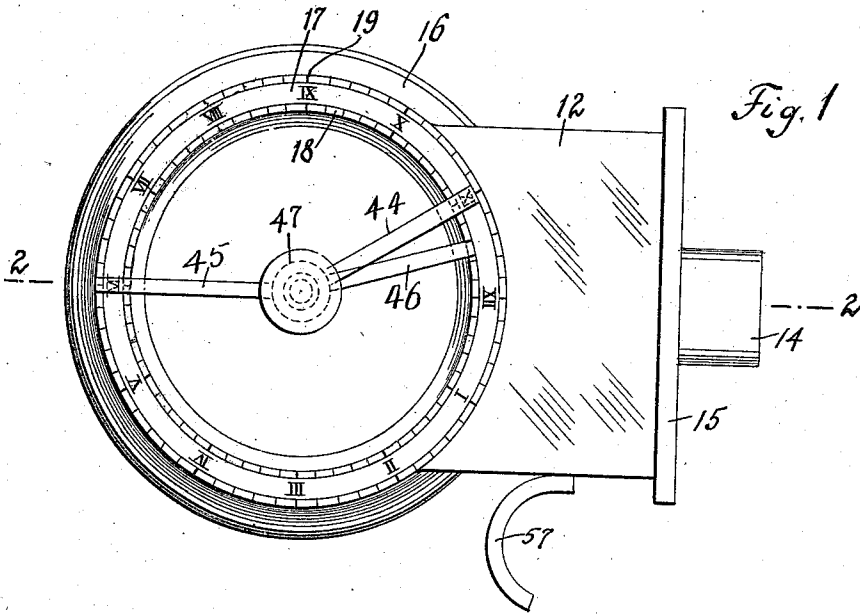
LOCK.

APPLICATION FILED JAN. 26, 1910.

974,636.

Patented Nov. 1, 1910.

2 SHEETS—SHEET 1.



WITNESSES:

Ernest K. ...
J. Burnbaum

John Blaszczyk INVENTOR
BY *Ligmond Herzog*
his ATTORNEY

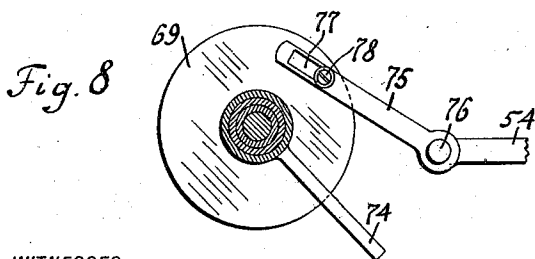
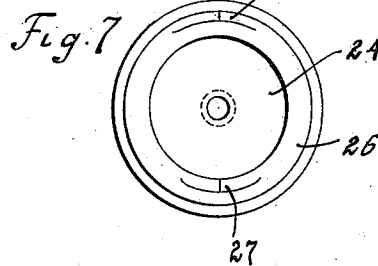
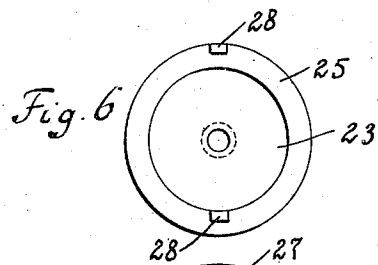
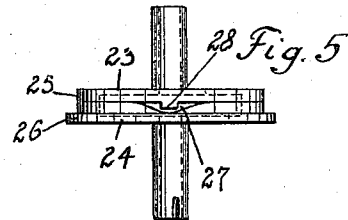
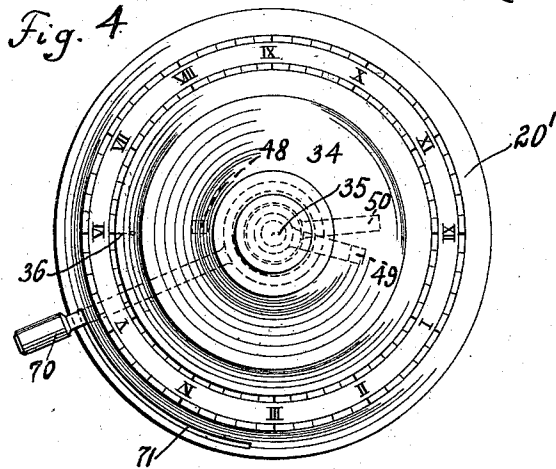
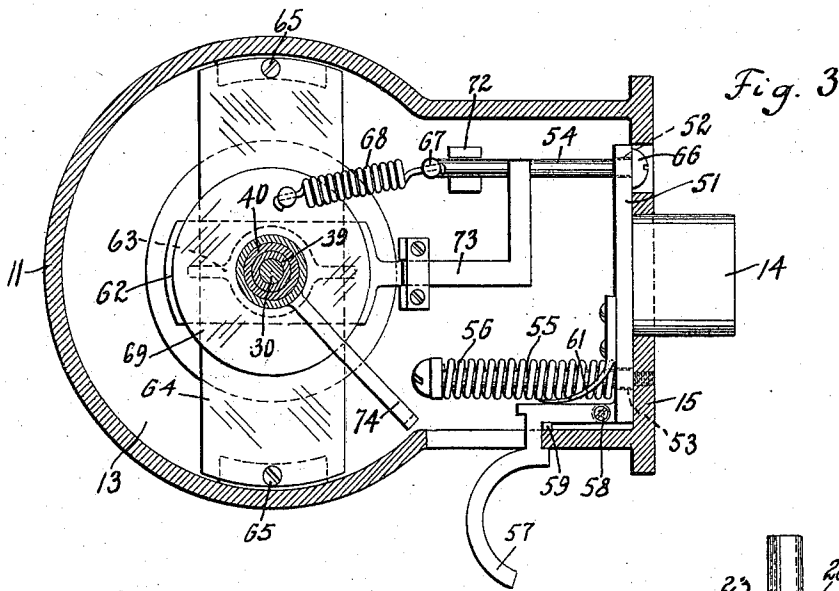
J. BLASZCZYK.
LOCK.

APPLICATION FILED JAN. 26, 1910.

974,636.

Patented Nov. 1, 1910.

2 SHEETS—SHEET 2.



WITNESSES:
Ernest E. Eisinger
S. Birnbaum

John Blaszczyk INVENTOR
BY Sigmund Herzog
his ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN BLASZCZYK, OF NEW YORK, N. Y.

LOCK.

974,636.

Specification of Letters Patent.

Patented Nov. 1, 1910.

Application filed January 26, 1910. Serial No. 540,224.

To all whom it may concern:

Be it known that I, JOHN BLASZCZYK, a subject of the Czar of Russia, and a resident of the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a specification.

The present invention relates to improvements in locks, and more particularly to that class which is termed "permutation locks".

One of the objects of the invention is to provide a permutation lock, the general arrangement of which embraces great simplicity, both in construction and manipulation, and offers at the same time ample security and a very great number of possible combinations.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in the novel construction, arrangement and combination of parts, hereinafter fully described, illustrated in the accompanying drawings and pointed out in the appended claims, it being understood that various changes in the size, form and construction of the several parts may be made without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a lock embodying the features of the invention, Fig. 2 is a section taken on line 2, 2 of Fig. 1; Fig. 3 a section taken on line 3, 3 of Fig. 2; Fig. 4 is a front elevation of the outer dial plates; Fig. 5 a front elevation of one set of the cooperating tumblers; and Figs. 6 and 7 are plan views of the tumblers illustrated in Fig. 5. Fig. 8 is a front elevation of a modified detail of construction.

In the said drawings, the numeral 10 represents the wall of a safe- or other door, or parts upon or in which the lock is mounted. The lock casing is indicated at 11, attached to the inner side of the door in any suitable manner; its front plate being indicated at 12 and the back plate at 13. The casing incloses the locking mechanism, the locking bolt 14 of which protrudes through a hole in the face plate 15, and may be moved by hand from the inside, or by an actuating lever

from the outside, as will be hereinafter fully described.

The dial plate of the lock is shown at 16 and forms part of the cap plate 12. The dial plate is provided with three sets of graduations 17, 18 and 19, of a suitable number. For instance, in the case illustrated, the dial 17 is marked with twelve equal divisions, and the dials 18 and 19 each with sixty, corresponding thus to the hours, minutes and seconds of a clock dial. To the outer side of the door is attached a dial plate 20' graduated in the same manner as the dial plate 16. To each dial corresponds a set of cooperating, independently movable tumblers; more particularly to the three dials 17, 18 and 19 correspond three sets of cooperating tumblers 21, 22 and 20. Each set of tumblers comprises two disks 23 and 24, provided with peripheral flange portions 25 and 26, respectively, which, when engaged with each other, form a casing, as clearly shown in Figs. 2 and 5. In the flange portion 26 and, preferably, at diametrically opposite points are formed recesses 27, 27', adapted to be engaged by projections 28, 28' upon the flange portion 25, fixing thereby the relative positions of the coacting tumbler sets.

The tumbler set 20 is attached to the spindle portions 29 and 30, of which the portion 29 protrudes through an opening in the cap plate 12 of the lock, while the portion 30 is provided with a finger 31, engaging a recess 32 in a spindle portion 33, to which is attached a disk 34, resting upon the dial plate 20' and being provided with a knob 35, to rotate the same. The disk 34 is provided with a zero mark 36, for the purpose hereinafter to be described. The tumbler set 20 is arranged within the tumbler set 21, and both sets within the set 22, the disk 23 of which contacts with the inner side of the cap plate 12. The disk 23 of the tumbler set 21 is attached to a sleeve 37, in which the spindle 29 is journaled; said sleeve 37 being journaled in a sleeve 38, attached to the disk 23 of the tumbler set 22. The disks 24 of the tumbler sets 21 and 22 are fastened to sleeves 39 and 40, respectively, arranged in a similar manner with respect to the spindle 30 as the sleeves 37 and 38 of the corresponding disks 23 in relation to the spindle 29. The sleeves 39 and 40 are provided with teeth

39' and 40' engaging recesses 41' and 42' of sleeve sections 41 and 42, respectively, encircling the spindle section 33. A leaf spring 43 is arranged within the tumbler set 20 for a purpose to be described.

To the spindle 29 and the sleeve sections 37 and 38 are attached hands 45, 44 and 46, in any suitable manner, outside of the cap plate 12 of the lock, and pointing to the graduations of the dials. A knob 47, in screw threaded engagement with the spindle 29, bears against the hand 45, whereby the disks 23 of the tumbler sets may be firmly held against rotation, when said knob is screwed up tight. Upon the rotatable disk 34 is arranged a projection 48, adapted to coact with a lever 49, attached to the sleeve section 41, while the said lever 49 can coact with a lever 50 upon the sleeve section 42.

The locking bolt 14 is mounted upon a plate member 51, which is provided with holes 52 and 53, engaged by a bar 54 and a spindle 55, respectively, allowing thus of a sliding movement of the locking bolt relative to said bar and spindle, which latter is attached to the face plate 15. A spring 56 upon the spindle 55 tends to hold the locking bolt in its projected position. An operating handle 57 is pivotally attached at 58 to the plate member 51 and provided with a finger 59, adapted to enter a recess 60 in the casing. A spring 61, attached to the plate member 51, tends to hold the finger 59 in engagement with the recess 60, when once engaged. It will be observed that the locking bolt 14 can be withdrawn from its socket by means of the handle 57, irrespective of the positions of the tumblers or other parts of the lock, and will be held in such retracted position as the finger 59 enters the recess 60.

A secondary tumbler, comprising a plate 62, is slidably mounted upon the sleeve section 40 and kept by means of a leaf spring 63, bearing against the tumbler 62 and a stationary plate 64, against the disk 24 of the tumbler set 22. The plate 64 is fastened, for instance by means of screws 65, 65, to the casing.

The rod 54, above mentioned, is provided at its outer end with a head 66, in engagement with the plate member 51, to retract the locking bolt when said rod is moved inwardly. The other end of the rod 54 is bent at right angles to the body thereof, as shown at 67, and is engaged by a spring 68, attached to a disk 69, resting against the plate 64 and being provided with an actuating lever 70, protruding through a slot 71 in the dial plate 20' at the outer side of the door. The rod 54 is guided in its movement by a bracket 72, attached to the face plate 12 of the casing, and carries a suitably bent arm 73, extending toward the axis of the spindle section 30 to a point which

corresponds to the distance of the outermost point of the secondary tumbler 62 relative to said axis, and in a plane into which the secondary tumbler 62 is shifted when the projections 28 are disengaged from the recesses 27 of the coacting tumbler sets. To the disk 69 is fixedly attached a lever 74, which, when shifted, is adapted to disengage the finger 59 of the actuating lever 57 from the recesses 60 in the lock case.

The operation of the device is as follows: In order to set a certain combination, the hands 44, 45 and 46 are set to point to certain numerals upon the three dials 17, 19 and 18, whereby the projections 28 upon the disks 23 of the tumbler sets are disengaged from their corresponding recesses 27, and set at angular distances relative to each other which correspond to the angular positions of the hands. The disks 24 of the tumbler sets which are held against rotation by friction are thus shifted in the direction of their longitudinal axes toward the plate 64, whereby the secondary tumbler 62 is brought opposite to the arm 73, preventing thus the retracting of the locking bolt by means of the operating lever 70 from outside. The knob 47 is then screwed up tight, whereby the disks 23 are firmly kept in their respective positions. In closing the door and disengaging by means of the operating lever 70 the projection 59 of the actuating lever 57 from the recess 60, the bolt 14 is projected into its socket and the door thus kept securely closed. It will be observed that the recesses 32, 41' and 42', which are engaged by the teeth 31, 39' and 40', allow the shifting, in the direction of their longitudinal axes, of the disks 24 relative to the non-shiftable spindle 33 and sleeves 41 and 42.

To open the door from outside, first the disk 34 is rotated by means of the knob 35 until its zero mark registers with the numeral on the dial plate 20' which corresponds to the numeral to which the handle 44 points upon the dial 17, whereby the projection 48 will shift the lever 49 until the recesses of the tumbler set 21 register with the projections thereof. The disk 34 is then turned in the opposite direction until the zero mark of the disk 34 coincides with the numeral on the dial plate 20' which corresponds to the numeral to which the hand 46 points on the dial 18 and finally the disk 34 is turned until its zero mark registers with the numeral on the dial plate 20' which corresponds to the numeral to which the hand 45 points on the dial 19, whereby, of course, all recesses of the tumbler sets register with their corresponding projections, allowing thus the leaf spring 63 to move the secondary tumbler 62, together with all tumbler disks 24 toward the cap plate 12 of the lock, withdrawing thus the secondary tumbler

from the path of the arm 73. In shifting now the actuating lever 70, the locking bolt 14 is withdrawn from its socket, since the said locking bolt is connected by the rod 54 and spring 68 with the disk 69, to which the actuating lever 70 is fastened. Of course, instead of the spring 68, a slotted arm 75 (Fig. 8) may be pivoted at 76 to the rod 54; its slot 77 being engaged by a pin 78, carried by the disk 69.

It will be observed that the spring 43, arranged within the tumbler set 20, serves to prevent the person trying to open the door from feeling the positions to which the disk 34 must be shifted in order to set the combination.

It is to be noted that the disks 23 and the hands 44, 45 and 46 are moved only when the combination of the lock is to be changed.

What I claim is:

1. In a permutation lock, the combination with a lock case, of a locking bolt slidably arranged therein, a series of normally stationary tumblers, a series of rotatable tumblers adapted to be shifted in the direction of their longitudinal axes and corresponding in number to that of said stationary tumblers, one set of said tumblers being provided with projections and the other with recesses adapted to register with said projections, a secondary tumbler controlled by said rotatable tumblers and normally held in the path of said locking bolt, means for rotating said rotatable set of tumblers to bring said projections and recesses into registering positions, and means for shifting said rotatable tumblers in the direction of their longitudinal axes when said projections register with said recesses and for forcing said secondary tumbler out of the path of said locking bolt.

2. In a permutation lock, the combination with a lock case, of a locking bolt slidably arranged therein, a series of normally stationary tumblers, a series of rotatable tum-

blers adapted to be shifted in the direction of their longitudinal axes and corresponding in number to that of said stationary tumblers, one set of said tumblers being provided with projections and the other with recesses adapted to register with said projections, a secondary tumbler controlled by said rotatable tumblers and normally held in the path of said locking bolt, means for rotating said rotatable set of tumblers to bring said projections and recesses into registering positions, and means for shifting said rotatable tumblers in the direction of their longitudinal axes when said projections register with said recesses and for forcing simultaneously said secondary tumbler out of the path of said locking bolt.

3. In a permutation lock, the combination with a lock case, of a locking bolt slidably arranged therein, a series of normally stationary tumblers, a series of rotatable tumblers adapted to be shifted in the direction of their longitudinal axes and corresponding in number to that of said stationary tumblers, one set of said tumblers being provided with projections and the other with recesses adapted to register with said projections, a secondary tumbler controlled by said rotatable tumblers and normally held in the path of said locking bolt, means for rotating said rotatable set of tumblers to bring said projections and recesses into registering positions, and a spring for shifting said rotatable tumblers in the direction of their longitudinal axes when said projections register with said recesses and for forcing said secondary tumbler out of the path of said locking bolt.

Signed at New York, in the county of New York and State of New York, this 22nd day of Jan., A. D. 1910.

JOHN BLASZCZYK.

Witnesses:

GOTTLIEB HROULEZ,
S. BIRNBAUM.