

B. KOTKOVSKY.
VARIABLE SAFETY LOCK WITH CONTROLLING DEVICE.
APPLICATION FILED AUG. 1, 1910.

1,040,696.

Patented Oct. 8, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

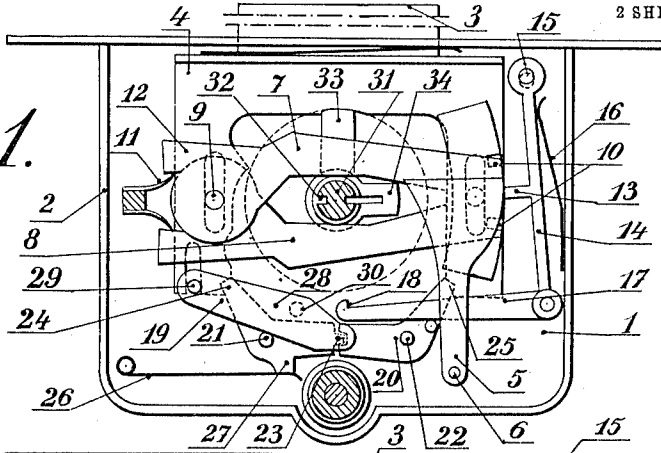


Fig. 2.

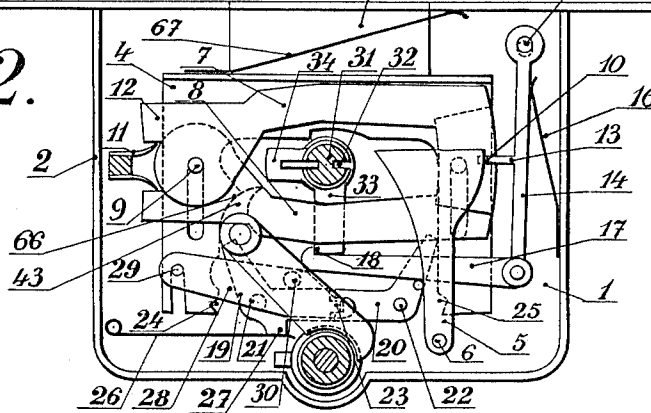
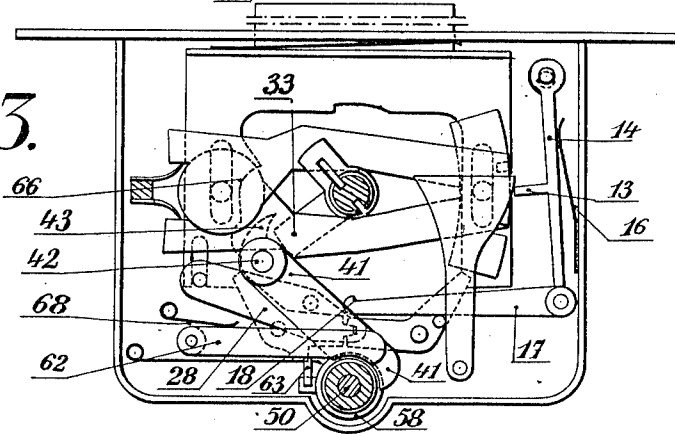


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

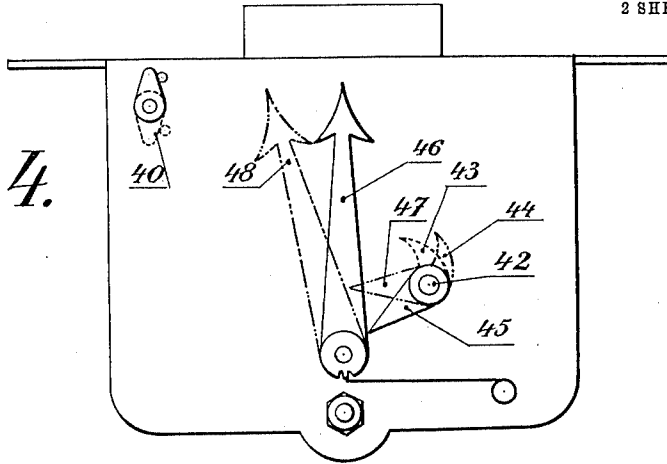


Fig. 5.

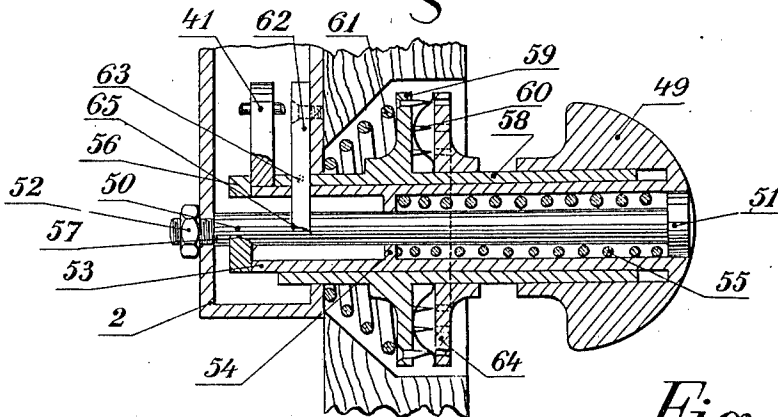
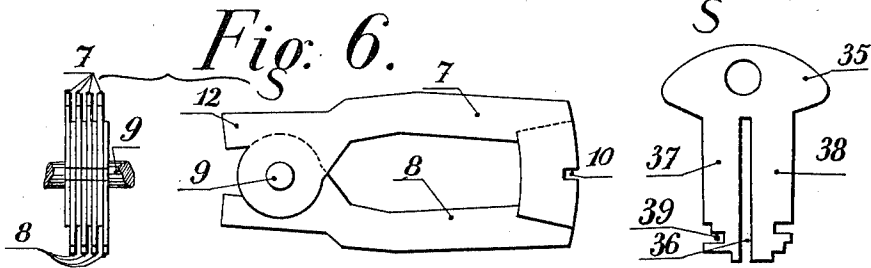


Fig. 7.



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UNITED STATES PATENT OFFICE.

BENJAMEN KOTKOVSKY, OF PARIS, FRANCE.

VARIABLE SAFETY-LOCK WITH CONTROLLING DEVICE.

1,040,696.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed August 1, 1910. Serial No. 575,021.

To all whom it may concern:

Be it known that I, BENJAMEN KOTKOVSKY, a subject of the Emperor of Russia, and resident of Paris, France, have invented certain new and useful Improvements in Variable Safety-Locks with Controlling Devices, of which the following is a specification.

This invention relates to a lock which possesses the following principal advantages: 1. If a false key or picklock is inserted in this improved door-lock it can turn around in the same infinitely without ever coming in contact with any piece offering absolute resistance, so that it is quite impossible to open the lock with the false key. 2. If the proper key should get lost the acting parts of the lock can be arranged by means of a special device in such a manner that the lock can be opened only by means of a second key specially constructed. 3. If anyone should try to open the lock with a picklock or with the double key for which the door lock is not adjusted, this is immediately registered by an indicating hand; this indicating hand further scratches the fingers of the person tampering with the lock or with the drawer, so that it will be easy to trace this person. These different effects are obtained by means of a tumbler spring lock.

The improved lock is shown by way of example in the accompanying drawings.

Figure 1 shows the improved lock in front view, the different parts being in locking position; Fig. 2 is a view similar to Fig. 1 the different parts being shown in open position. Figs. 3 and 4 show the mechanism for operating the indicating hand if a picklock is inserted. Fig. 5 shows the door knob. Fig. 6 shows the tumblers. Fig. 7 represents the key.

Upon the main plate 1 of the lock case 2 the bolt 3 is movably mounted; this bolt is enlarged by means of a plate 4 of the particular shape shown in Figs. 1 and 2 and conveniently guided in the lock case. A member 5 is placed upon said plate 4 and pivotally fixed upon the main-plate 1 by means of the pivot 6. The tumblers 7 and 8 (Fig. 6) which serve for preventing the opening of the lock by a picklock or false key are arranged over said member 5 and can swing around the axle 9. They have each a notch 10 at the end opposite the axle 9. Springs 11 bear against a shoulder 12

of each of the tumblers so that the ends of the tumblers near the axle 9 are pushed away from said axle, the opposite ends of the same being placed the one over the other. An arm 13 of a lever 14 pivoted at 15 is continually pushed by a spring 16 against the free ends of the tumblers, so that said lever is maintained in its locking position, that is to say its arm 13 being in engagement with the notch 10 of the tumblers when the lock is unlocked (Fig. 2). At the free end of lever 14 a lever 17 is hinged the free end of which forms a hook 18. Two angular levers 19 and 20, pivoted at 21 and 22 mesh at their adjacent ends the one with the other by means of the small toothed sectors 23. The free ends of said levers can penetrate into the notches 24, 25 of the plate 4 of the bolt. A spring 26 acts upon a shoulder 27 of the angular lever 19 so that the free ends of said angular levers are separated and moved outward. A flat piece 28 adapted to oscillate around a pivot 29 bears with its stud 30 upon the inner arm of the angular lever 19. At the center of the lock between the tumblers, a socket 31 for the key is arranged. This socket has longitudinal slots 32 for the passage of the key bit. The socket has at its lower part two perpendicular arms 33, 34 of different length and situated in different planes; the arm 33 is situated in the same plane as the bolt plate 4 and the arm 34 in that of the member 5.

The improved safety lock operates as follows:—To operate the lock the key has to be inserted in the socket 31 and more particularly in the longitudinal slots 32 of the same. This key 35 (Fig. 7) is made of a flat piece of metal and has a longitudinal central slot 36. The two shanks 37, 38 have at the lower ends superposed notches 39 of different depth. There are as many notches 39 at the end of each shank as there are tumblers in the lock. If the lock is unlocked (Fig. 2) the arm 13 engages with all the notches 10 of all the tumblers 7, 8. The arm 33 of the key socket is in its lowest vertical position. To lock the lock the key is turned through 180° in the direction from right to left. The arm 33 acts upon the bolt plate 4 lifting the same against the action of the spring 67. At the same time the short arm 34 of the socket acts upon the member 5 whereby the arm 13 is withdrawn from the notches 10 of the tumblers. The spring

26 causes the angular levers 19, 20 to oscillate so that their ends engage with the notches 24, 25 of the bolt plate 4, maintaining said bolt in the locking position. The lock 5 being closed, that is to say, all its parts being in the locking position (Fig. 1), the key has to be turned from left to right for unlocking the lock. After the key has been turned for 90° all the notches 39 of its 10 shanks bear against the tumblers 7, 8 and have pushed the same so that all the notches 10 of said tumblers are superposed. The arm 13 enters said notches, being pushed by the action of the spring 16. The end 18 of 15 lever 17 moves up the inclined edge of the piece 28 so that it comes in contact with the perpendicular arm 33. If the arm 33 is being turned farther the arm 33 of the socket acts upon the lever 17 and pushes the same back, so that the flat piece 28 upon 20 which said lever acts in its turn, exerts by its stud 30 a pressure upon the inner arm of the articulated angular levers 19, 20 which swinging around their pivots release the bolt plate 4. The bolt being thus re- 25 leased can go back under the action of the spring 67.

The axle 15 around which the lever 14 pivots is mounted upon an eccentric fixed at the end of a hand knob 40. This eccentric 30 can be turned by means of the hand knob 40 for 180° whereby the axle 15 is displaced. The arm 13 being displaced with the axle 15 is no longer in the required position to penetrate into the notches 10 when the same are superposed, in consequence of the key being 35 turned through 90°. If the eccentric has been thus displaced a second key has to be used, the notches 39 of which are arranged so that they bring the notches 10 of the 40 tumbler into the proper position.

The arrangement which has been just described greatly increases the security of the improved lock, as it permits of the immediate alteration of the lock if a key has been 45 lost, two sets of keys being of course provided for each lock. The hand knob 40 is mounted on the outer surface of the mainplate so that it is accessible only from inside the drawer. 50

There is further connected with this improved lock an indicating device which registers any attempt at opening the lock with a false key or with a picklock. This mechanism consists of a lever 41 (Fig. 3) adapted 55 to oscillate around the pivot 42 and prolonged beyond its pivot by a pointed finger 43. If any attempt is made to open the lock with a false key or picklock the notches 60 of the tumblers do not coincide properly to permit the arm 13 penetrating into the same. Herefrom follows that the end 18 of the lever 17 does not go up the incline of the flat piece 28 and consequently the long 65 arm 33 of the socket 31 does not come in

contact with this end 18 of said lever so that, instead of being stopped it continues to revolve. This arm 33 therefore will come in contact with the finger 43 which is brought to the position 44 (Fig. 4). An 70 arm 45 of the lever 41 acts upon the indicating hand 46 and pushes the same into the position 48 (Fig. 4) itself assuming the position 47. This displacement of the indicating hand clearly shows that an attempt at 75 fraudulently opening the lock has been made.

There is further connected with the improved lock a device which is designed to scratch the fingers of the person who should attempt to open the lock with a false key. 80 This mechanism is shown in Fig. 5 and it operates after the person, believing that he has succeeded to open the lock tries to pull out the drawer in pulling at the hand knob. 85 This mechanism is constructed as follows. A rod 50 is fixed by means of a nut 52 upon the lock case 2. A tube 53 mounted upon said rod 50 carries at its outer end the hand knob 49. This tube 53 is guided upon the 90 rod 50 by means of a diaphragm 54. A spiral spring 55 surrounding the rod 50 is inclosed between the enlarged head 51 of said rod and the diaphragm 54, so that the hand knob 49 is constantly pulled toward the 95 drawer. The tube 53 terminates at its inner end in a ring 56 which has a slot with inclined surface 57 at one end. The lever 41 which is normally lowered serves as abutment for said ring 56. A sleeve 58 fixed 100 upon a disk 59 is mounted upon the tube 53. Said disk 59 has sharp points 60. A spring 61 presses against the disk 59 and tries to push the same toward the hand knob 49. 105 The disk 59 is however maintained in inoperative position by means of a lever 62 which is maintained by a spring 67 (Fig. 3). In front of the disk 59 a plate 64 is mounted which has holes for the passage of the points 60. This plate 64 is kept at a certain distance of the disk 59 by means of a blade spring. This mechanism operates as follows:—If the false key inserted in the lock 110 has acted upon the finger 43 as has been hereinbefore explained the lever 41 is lifted 115 at the same time. This lever has thus released the tube 53 and the hand knob so that if said knob is pulled the ring 56 of the tube 53 acts with the inclined plane 57 upon an inclined plane 65 of the lever 62 which releases a finger 63 of sleeve 58. The disk 59 120 under the action of its strong spring 61 is rapidly pushed forward so that the points or prongs 60 passing through the perforations of the cover plate 63 scratch the fingers 125 of the person tampering with the lock. In order to prevent this scratching mechanism from operating when the lock is normally unlocked, the bolt plate 4 has a shoulder 66 130 which acts upon the finger 43 (Fig. 2) if the

bolt is withdrawn, maintaining thus the lever 41 in the position in which it locks the scratching mechanism.

I claim:—

5 1. An improved safety lock comprising in combination with the lock bolt, two series of
tumblers arranged in opposite directions
upon said lock bolt and each having a notch
at its free end, a locking lever pivotally
10 mounted in the lock case engageable with
said notches when the same are superposed,
an eccentrically arranged axle carrying said
locking lever, a special key for bringing said
tumblers to the registering position, and
15 springs fixed to the lock casing and acting
upon said tumblers, substantially as de-
scribed and shown and for the purpose set
forth.

20 2. An improved safety lock comprising in
combination a hand knob, a tube upon which
said hand knob is mounted, a ring at the end
of said tube, a rod fixed in the lock case and
surrounded by said ring, a spiral spring sur-
rounding said rod, an enlarged head of said
25 fixed rod and a diaphragm carried by said

tube serving as abutments for said spring, a
sleeve loosely mounted upon said tube, a disk
with pointed prongs fixed upon said sleeve, a
cover plate in front of said disk and having
perforations for the passage of said pointed 30
prongs, a strong spiral spring for pushing
said disk suddenly forward, and a lever for
maintaining said sleeve in inoperative posi-
tion, an indicating device connected with
said sleeve and a lever of said indicating de- 35
vice for locking said tube, so that if after a
fraudulent attempt to open the lock with a
false key said lever has been removed the
disk is released as soon as the hand knob is
being pulled, the pointed prongs penetrating 40
through the perforations of the cover plate
scratching the hand of the person tampering
with the lock, substantially as described and
shown and for the purpose set forth.

In witness whereof I have hereunto set 45
my hand in the presence of two witnesses.

BENJAMEN KOTKOVSKY.

Witnesses:

DEAN B. MASON,

ALBERT DE CASSALADO.

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