

G. F. SMITH.

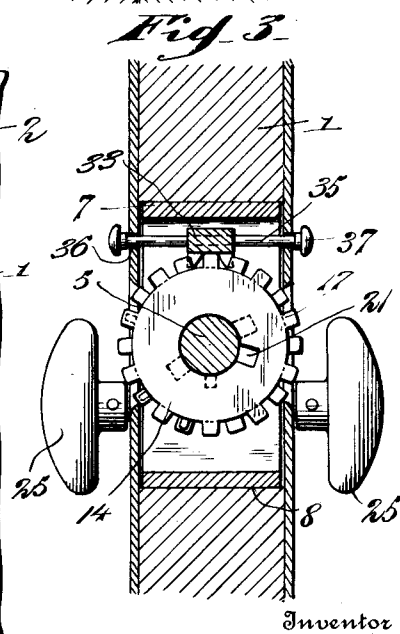
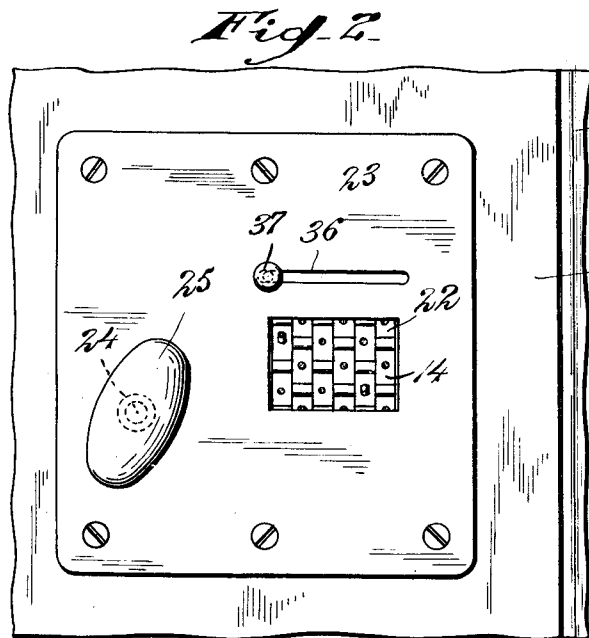
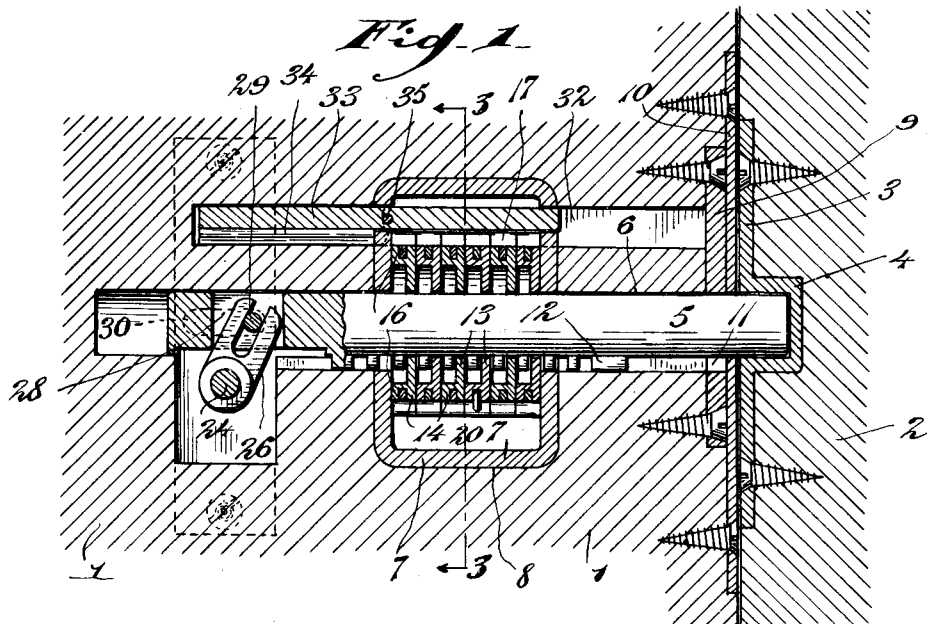
LOCK.

APPLICATION FILED NOV. 20, 1912.

1,062,513.

Patented May 20, 1913.

2 SHEETS—SHEET 1.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## LOCK.

1,062,513.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed November 20, 1912. Serial No. 732,542.

*To all whom it may concern:*

Be it known that I, GEORGE F. SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Locks, of which the following is a specification.

This invention relates to locks and more particularly to permutation locks.

10 One of the principal objects of the invention is to provide a simple and efficient structure of this character whereby the combination may be rapidly set up and the tumblers locked in set position.

15 Another object of the invention is the provision of a lock of this character so constructed and arranged within the door that the tumblers may be set directly from either side of the door.

20 Still another object of the invention is the provision of a lock of this character wherein the tumblers or bolt locking disks are exposed through opposite sides of the door in such position that they may be manipulated 25 directly, provision being made for changing the combination without removing the lock from the door or disassembling its parts.

Further objects of this invention will appear as the following specific description is read in connection with the accompanying 30 drawings which form a part of this application, and in which:—

Figure 1 is a vertical sectional view through the lock shown applied to a door. Fig. 2 35 is a detail elevation of the door showing the lock applied thereto. Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 1. Fig. 4 is a view similar to Fig. 1 with the disks arranged so as to permit the bolt to slide 40 in either direction. Fig. 5 is a vertical sectional view on the line 5—5 of Fig. 4 on a somewhat reduced scale. Fig. 6 is a section on the line 6—6 of Fig. 4. Fig. 7 is an enlarged detail side elevation. Fig. 8 is a 45 perspective view of one of the tumblers. Fig. 9 is a perspective view of the locking bolt. Fig. 10 is a perspective view of the tumbler lock.

Referring more particularly to the drawings, 1 represents an ordinary door and 2 the door frame provided, in this instance, with a keeper plate 3 having a socket 4 to receive a sliding locking bolt 5 as will be hereinafter described. This locking bolt is slidably 55 mounted in a channel 6 formed in the door and in a casing 7 secured within the recess

or aperture 8 also formed in the door and extending upon opposite sides of the channel 6. The bolt 5 is guided in its movements by the casing 7 and by the guiding and face plates 9 and 10, the former having 60 a slot 11 communicating with the aperture therein for the purpose of permitting the locking keys 12 to pass through the same. The locking keys are all formed integrally with the bolt as shown in Figs. 1 and 4 65 and are alined upon the under side thereof, being arranged in spaced relation so as to permit the free rotation of the webs 13 of the tumblers 14 to pass therebetween when the bolt is in projected or retracted position. 70 Each tumbler is constructed of a web 13 centrally apertured as shown at 15 and an annular integral ring 16 having a plurality of projections 17 separated by recesses 18 in the base of which is formed sockets 75 19 for the reception of pins 20 the purpose of which will be hereinafter described. Communicating with the aperture 15 in each disk is a radially extending slot or notch 21 adapted to permit the passage of the keys 80 12 when all of the tumblers have their slots 21 alined.

The tumblers are all exposed through openings 22 in the escutcheon plates 23 secured to opposite sides of the door and journaled in these plates is a rock shaft 24 85 having manipulating knobs 25 and an intermediate bifurcated lever 26 secured to its center portion. This lever enters a longitudinal slot 28 in the bolt 5 and has its legs 90 straddling a transverse pin 29 extending across the slot and having one of its ends or terminals arranged in a guiding slot 30 formed in one of the side plates 31 secured to the door beneath the escutcheon plate 23. 95 This pin engaging the end walls of the slot 30 limits the movement of the bolt 5 as will be readily understood and at the same time prevents the same from turning in the door.

Slidably mounted in the casing 7 and in 100 the channel 32 formed in the door is a tumbler locking bolt 33 having a groove 34 arranged in its underside to receive the projections 17 on the tumblers. This tumbler locking bolt is operated by a transverse pin 105 or rod 35 which passes through the bolt 33 and through slots 36 formed in the escutcheon plates, the outer ends of the pin or rod being provided with knobs 37 by which the same is manipulated. This tumbler lock is 110 utilized so that if the disks are set with

their slots 21, positioned to receive the passage of the keys the same may be moved to engage the projection on the set disk so as to prevent its rotation while the other disks are located to aline their slots with the slots of the previously set disks.

The sockets 19 may be normally filled by short screws which come out flush with the base of the recesses 18, which screws may be removed so that the pins 20 may be threaded or otherwise secured therein so that the combination may be conveniently changed. These pins locate the positions of the slots 21 as will be readily understood from the following: In Fig. 8 we will assume that the first recess 18 to the right of the topmost projection 17 is considered number 1 recess, therefore it will be seen that the pin in this figure is positioned in number 4 recess. Any suitable arrangement of alining the pins 20 across the openings 22 may be observed; in fact they may be arranged diagonally, straight across the opening 22 or in V-form across the opening or in any other suitable manner, it being understood that when all of the disks have their pins alined or arranged in the preferred form across the opening that the slots 21 will all be alined to permit the passage of the keys 12 and by manipulating the knobs 25 the bolt may be projected or retracted as desired. In setting up the combination from one side of the door, for instance, as viewed on the drawings, the left disk will be set first and the tumbler lock moved into engagement with the topmost projection 17, the next disk to the right will then be set and the tumbler lock moved into engagement with its topmost projection, this order being carried out until all of the disks have been set. In setting the tumblers from the opposite side of the door, it will be noticed that the right hand disk will be the initial disk set. The combination shown set up in Fig. 7 is 4-1-3-2-5-6, and in this instance it will be noted that the order in which the pins are arranged is by the position of the recesses 18, the first disk having its pin in the fourth position as shown at *a*, the second disk having its pin in the first position as shown at *b*, the third disk having its pin arranged in the third position as shown at *c*, the fourth disk having its pin in the second position as shown at *d*, the fifth disk having its pin arranged in the fifth position as

shown at *e*, while the last disk has its pin arranged in the sixth position as shown at *f*.

Having thus described the invention, what I claim as new is:—

1. In a lock, a casing, a bolt slidably mounted in the casing, locking tumblers journaled on the bolt and exposed through opposite sides of the casing, coacting means on the tumblers and bolt for locking the bolt, and means slidably mounted in the casing for locking the tumblers in set or unset position.

2. In a lock, a casing, a bolt slidably mounted in the casing and having a series of spaced and alined keys, tumblers rotating upon the bolt and having a notched web adapted to move between the keys, said tumblers exposed through the casing on opposite sides thereof and means for locking the tumblers in set or unset position against rotation in either direction.

3. In a lock, a casing, a bolt slidably mounted in the casing and having a series of spaced and alined keys, tumblers rotating upon the bolt and having a notched web adapted to move between the keys, said tumblers exposed through the casing on opposite sides thereof, projections on said tumblers and a locking member carried by the casing and adapted to engage said projections to lock the tumblers in set or unset position against rotation in either direction.

4. In a lock, a casing, a bolt slidably mounted therein, tumblers journaled upon the bolt and having notches therein, a series of alined and spaced keys on the bolt adapted to pass through the notches of the tumblers when all are alined, projections on the periphery of the tumblers, means slidably mounted in the casing for engaging the projections to lock the tumblers against rotation, said tumblers being exposed through the opposite sides of the casing and locating pins removably mounted in the tumblers and exposed through opposite sides of the casing whereby the combination may be changed without disconnecting the lock parts together with means for operating the bolt.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE F. SMITH.

Witnesses:

HARRY BRENNER,  
ROBERT F. SMITH.