

B. F. KLOHS.
PERMUTATION LOCK.
APPLICATION FILED JULY 16, 1909.

1,066,629.

Patented July 8, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

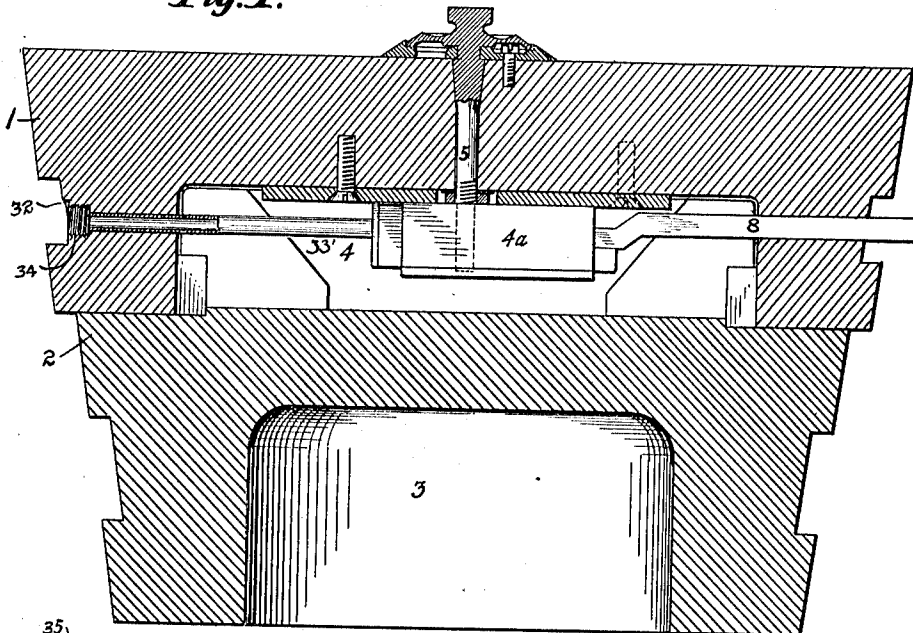
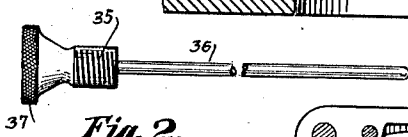


Fig. 2.

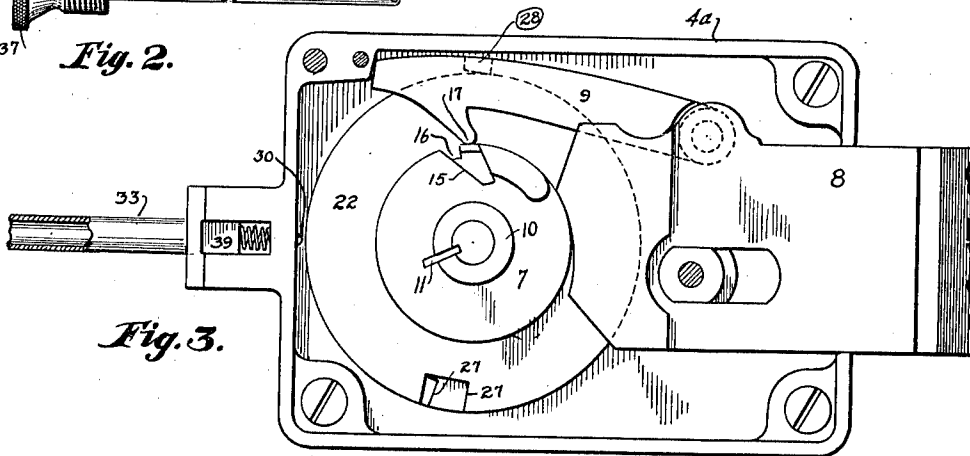


Fig. 3.

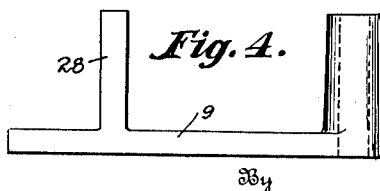


Fig. 4.

Witnesses
Jos. J. Hosler.
Sylvia Boron

Inventor
Bartholomew F. Klohs

Bond & Miller.
Attorney.

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3 SHEETS-SHEET 2.

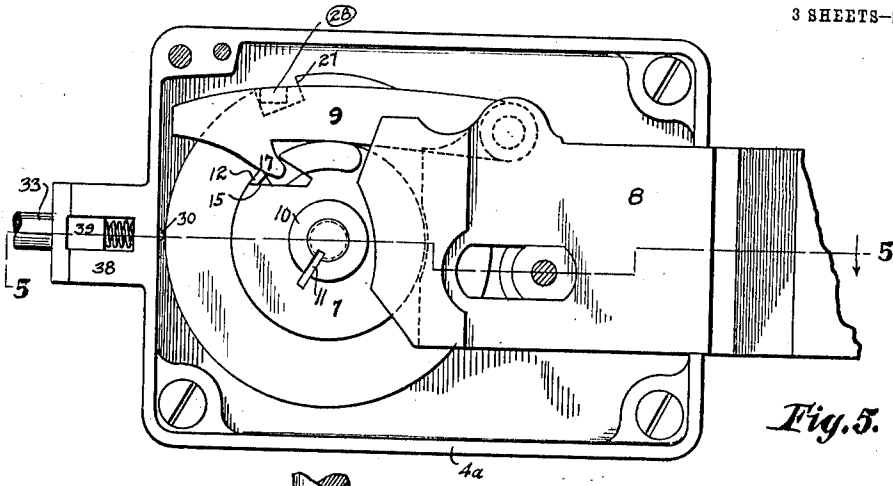


Fig. 5.

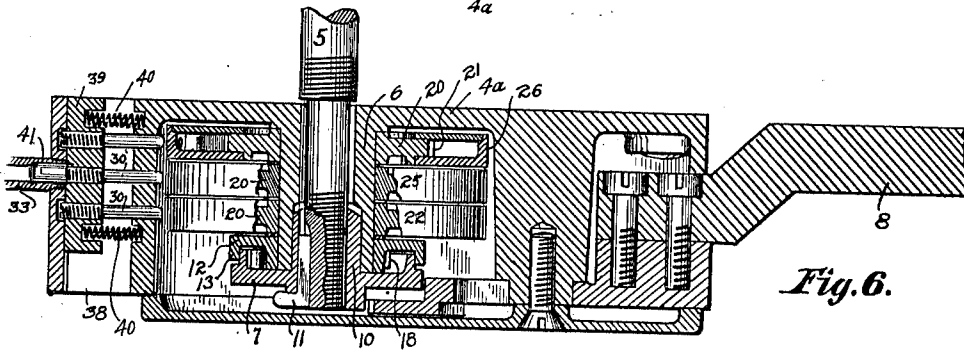


Fig. 6.

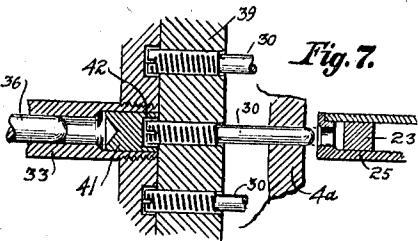


Fig. 7.

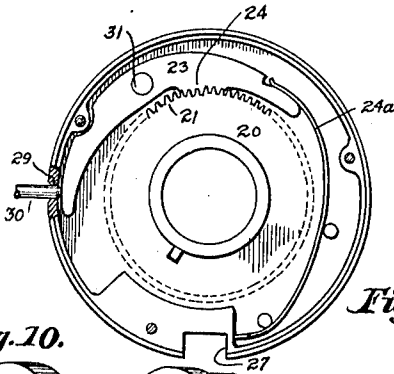


Fig. 12.

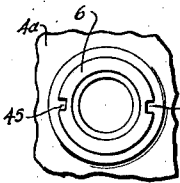


Fig. 8.

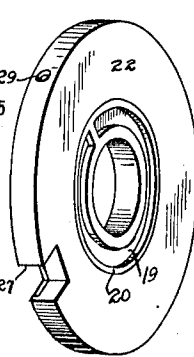


Fig. 9.

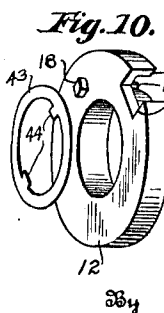


Fig. 10.

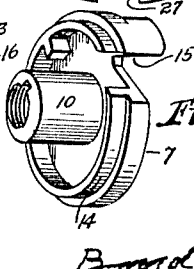


Fig. 11.

Witnesses
Jas. J. Hosler.
Sylvia Boron.

Inventor
Bartholomew F. Klohs
Bond & Miller

Attorneys

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3 SHEETS—SHEET 3.

Fig. 13.

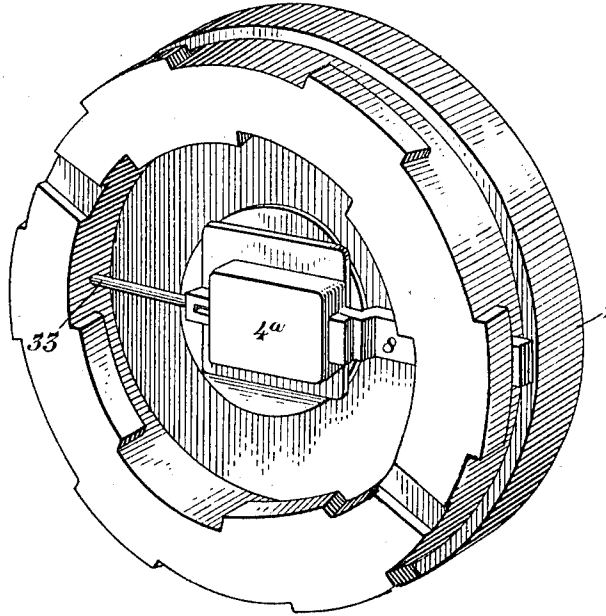
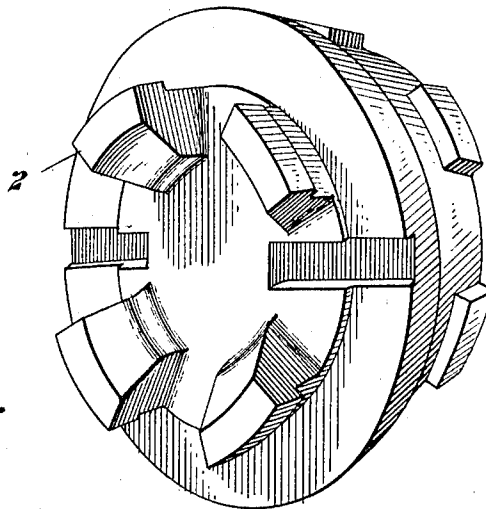


Fig. 14.



Witnesses

J. H. Bishop.

Sylvia Boron.

Inventor

Bartholomew F. Klohs.

By Bond & Miller

Attorneys

UNITED STATES PATENT OFFICE.

BARTHOLOMEW F. KLOHS, OF CANTON, OHIO, ASSIGNOR TO THE DIEBOLD SAFE & LOCK COMPANY, OF CANTON, OHIO, A CORPORATION OF OHIO.

PERMUTATION-LOCK.

1,066,629.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BARTHOLOMEW F. KLOHS, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Permutation-Locks; and I do hereby declare the following to be 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.

My invention relates more particularly to means for setting the combination of permutation locks and is specifically designed to be used in connection with doors for safes.

The particular kind or class of safe doors to which my invention is adapted for use are circular doors wherein time locks are to be employed in connection with combination or permutation locks.

With these objects in view the invention consists in providing devices whereby access can be had to the necessary parts of the combination or permutation locks carried by the circular door from the periphery of such circular door.

In the drawings forming a part of this specification, and in which like numerals of reference indicate similar parts, Figure 1 is a horizontal section of a circular door, showing the combination or permutation lock properly connected thereto, showing the bolt extended. Fig. 2 is a detached view of the entering rod. Fig. 3 is a rear view of the combination lock showing the rear plate removed and illustrating the bolt in locked position with reference to the lock proper. Fig. 4 is a top view of the bolt hook. Fig. 5 is a view similar to Fig. 3 showing the bolt unlocked. Fig. 6 is a horizontal section taken on line 5—5, Fig. 5. Fig. 7 is a view showing a portion of the entering rod, its tube and a sectional view of the head carrying fingers, a portion of the lock body or housing, also showing a portion of one of the tumblers and illustrating one of the releasing fingers in proper relative position with reference to the entering aperture of one of the tumblers. Fig. 8 is an end view of the tumbler bearing or sleeve showing all of the tumblers removed and illustrating a portion of the lock housing. Fig. 9 is a perspective view of one of the tumblers or disks. Fig. 10 is a view showing the bolt hook riding disk and a spacing washer in proper

alinement therewith. Fig. 11 is a detached view of the bolt actuating disk. Fig. 12 is a front elevation of one of the tumblers showing the setting disk or wheel and its retaining lever and spring also showing one of the releasing fingers properly entered and in position to release the holding lever. Fig. 13 is a detached perspective view of the outer member of the door showing the lock case and its different parts properly connected. Fig. 14 is a detached perspective view of the inner member.

In the accompanying drawing, 1 represents the outer member of the door and 2 the inner member, which members are connected together by interlocking lugs. The inner member 2 is provided with the chambers 3 and 4, which chambers are for the purpose of receiving the time lock and the permutation or combination lock.

The combination or permutation lock housing 4^a is secured to the outer member 1 of the door proper in the usual manner, but may be secured to the inner member 2 without departing from the nature of the invention.

The outer member 1 is provided with the usual lock spindle 5, which lock spindle is for the purpose of actuating the various disks or tumblers in the usual manner.

The lock housing 4^a is provided with the usual sleeve or thimble 6 upon which thimble the various tumblers or disks are loosely mounted, except the innermost one or the disk 7, which is securely mounted upon the spindle 5, said disk being for the purpose of actuating the bolt 8 by means of the bolt hook 9.

The disk 7 is provided with the hub 10, which hub is for the purpose of providing a means for securely connecting the disk 7 to the spindle 5 by means of a suitable key 11. Upon the sleeve or thimble 6 is loosely mounted the disk 12, which disk is provided with the flange 13, which flange is formed of such a diameter that it will lap over the reduced flange 14 formed upon the disk 7. The disks 7 and 12 are each provided with the notches or recesses 15 and 16, which notches are for the purpose of allowing the hook 17 located upon the bolt hook 9 to drop into the recesses 15 and 16 when they are brought into proper alinement with the notches formed in the various disks located upon the sleeve 6, which disks will

hereinafter be more fully described. The disk 12 is provided with the usual pick-up pin 18, which pick-up pin is located in the annular groove 19 formed in the disk 20, which pin is for the purpose of picking up or rotatably connecting the disk 20 with the spindle 5. The disk 20 is provided upon its periphery with a series of teeth 21, which teeth are spaced from each other and are for the purpose of rotatably connecting the chambered disk 22 with the disk 20 by means of the pivoted lever 23 having teeth 24.

It will be understood that when the lever 23 is in engagement with the disk 20 the disks 20 and 22 will rotate in unison when any given disk is picked up by means of the spindle. For the purpose of holding the lever 23 in proper engagement with the disk 20 the spring 24^a is provided, which spring normally presses the lever or holding bar 23 in proper engagement with the disk 20.

It will be understood that by pivoting the lever or holding bar 23 intermediate its ends that a rocking movement can be imparted, which rocking movement disconnects the disk 20 from the chambered disk 22 and when the lever 23 is brought out of engagement with the disk 20 said disk 20 can be rotated so as to change the specific combination.

The mechanism for changing the combination has more specific reference to the present invention and hence it is deemed unnecessary to specifically describe the manner of picking up the various chambered disks 25 and 26, as their construction is substantially the same as the construction of the disks 20 and 22 together with their devices for disconnecting and connecting the various disks including pick-up pins the lever or holding bar and spring. When it is desired to change the combination the various tumblers are picked up by the spindle in the ordinary manner using the proper combination. When the various tumblers are brought into position so that the notches 27 will be in proper alinement and directly below the lateral arm 28 carried by the bolt hook 9 said lateral arm is free to drop into said notches and at the same time the hook 17 will fall into the notches 15 and 16 and when in such position the apertures 29 are in such a position with reference to the releasing fingers 30, that said releasing fingers when moved endwise as hereinafter described will press against the levers or releasing arms 23 and rock said releasing arms upon their pivots 31 and disengage said levers from the disks 20 and while the levers 23 are thus disengaged any desired combination can be made.

In order to provide means for operating or manipulating the fingers 30, a suitable entrance passage 32 is provided in the

outer door section 1, which may consist of a tube embedded in the outer door section and extending to the housing 38. The door section 1 is provided with a screw threaded aperture 34, which aperture is for the purpose of receiving the screw threaded head 35 formed upon the end of the rod 36, said rod being provided with a suitable knob 37, which knob is for the purpose of rotating the rod 36.

At one side of the lock housing proper is located the integral housing 38, which housing is for the purpose of holding the finger head 39, to which finger head are adjustably attached the releasing fingers 30, which releasing fingers are adjustably attached to the head 39 by means of suitable screw threads.

For the purpose of normally holding the head 39 against the outer end of the housing 38 and the releasing fingers 30 out of contact with the periphery of the various chambered disks the springs 40 are provided, which springs are located between the lock housing and the finger head 39. When it is desired to release the disks 20 the rod 36 is placed in the entrance passage 32 and the screw threaded portion 35 entered in the screw threaded aperture 34 and rotated in the direction to move toward the head 39. The hollow tube 33 is connected to the housing 38, preferably by screw threads and in which tube is located the movable block 41 which movable block is so located with reference to a given finger 30 that its chambered end 42 will come over the exposed end of the releasing finger located in alinement with the block 41. When the block 41 is moved by means of the rod 36 the head 39 will together with the releasing fingers be moved toward the lock housing and when moved a sufficient distance the inner ends of the releasing fingers will enter the apertures 29 formed in the various chambered disks, thereby locking the chambered disks against rotation and at the same time releasing the various toothed disks 20 at which time said toothed disks can be rotated independent of the chambered disks and when in this condition, the combination can be changed after which the rod 36 is removed, which disconnects the releasing fingers and by the action of the springs 24^a and the levers or holding arms 23 the chambered disks and the toothed disks are automatically and rotatably connected together and the combination or permutation lock used as before but the new combination must be employed to release the lock bar 8.

For the purpose of properly spacing the various tumblers apart, and at the same time preventing the accidental rotation of any given chambered disk, the washers 43 are provided, which washers are held against rotation by means of the lugs 44, which lugs

are seated in the grooves 45 formed in the sleeve 6. It will be understood that washers such as 44 should be placed between all of the disks.

5 It will be understood that the number of teeth upon the disks 20 should correspond with the number upon the graduated dial; that is to say if there are a hundred numbers upon the graduated dial there should
10 be a hundred teeth upon the disks.

For the purpose of preventing the bolt 8 from being pushed in when the door is opened the bolt hook 9 is extended rearward so as to engage the lock casing 4^a as illustrated in Fig. 3.
15

For the purpose of providing means for connecting or assembling the different parts and especially the lock bolt 8, the inner and outer door members are connected together
20 by interlocking lugs, the lock bolt 8 and the hollow tube 33 being carried by the outer door member 1. Said parts being assembled before the door members 1 and 2 are locked together.

25 Having fully described my invention what I claim as new and desire to secure by Letters Patent, is—

1. In a combination lock, a lock spindle, a door, said lock spindle carried by said
30 door, a series of chambered disks, toothed disks located within said chambered disks, said disks carried by the spindle, means for connecting the toothed disks and chambered disks to rotate together, said chambered
35 disks provided with apertures, a head carrying fingers, said fingers adapted to enter the apertures of the chambered disks and means for moving said head toward the chambered disks, substantially as and for the purpose
40 specified.

2. The combination with a door, of a permutation mechanism carried by said door, said permutation mechanism consisting of toothed and non-toothed disks toothed levers
45 carried by the non-toothed disks, said toothed levers adapted for engagement with the toothed disks, mechanism adapted to actuate the bolt of the permutation lock, said

means consisting of fingers normally disconnected from said disks but adapted by
50 forward movement to engage and operate said toothed levers, substantially as described.

3. The combination with a door, of a permutation mechanism carried by said door,
55 said permutation mechanism consisting of toothed and non-toothed disks, levers adapted for engagement with the toothed disks, a bolt and mechanism adapted to actuate the bolt, said non-toothed disks provided with apertures adapted to register
60 with each other when the bolt is released, releasing fingers, a head carrying the releasing fingers, a rod detachably connected to the door, said rod provided with a screw threaded portion and a threaded aperture located in the door, said rod adapted to actuate the finger head and the releasing
65 fingers when moved in one direction, substantially as and for the purpose specified. 70

4. The combination with a door, of a permutation mechanism carried by said door, said permutation mechanism consisting of toothed and non-toothed disks, levers carried by the non-toothed disks and adapted
75 for engagement with the toothed disks, mechanism adapted to actuate the lock bolts, said non-toothed disks provided with apertures, said apertures adapted to register with each other when the bolt is released, a head and
80 releasing fingers carried by the head, a rod detachably connected to the door, said rod adapted to actuate the finger head and the releasing fingers when moved in one direction and means for removing the releasing
85 fingers and head in the opposite direction when the rod is removed, substantially as and for the purpose specified.

In testimony that I claim the above, I have hereunto subscribed my name in the
90 presence of two witnesses.

BARTHOLOMEW F. KLOHS.

Witnesses:

A. G. DIEFENBACH,
E. G. BOCKINS.