No. 782,304. PATENTED FEB. 14, 1905.

A. S. WINSTON.

COMBINATION LOCK.

APPLICATION FILED SEPT. 20, 1902.

3 SHEETS—SHEET 1.

Fig. 1.

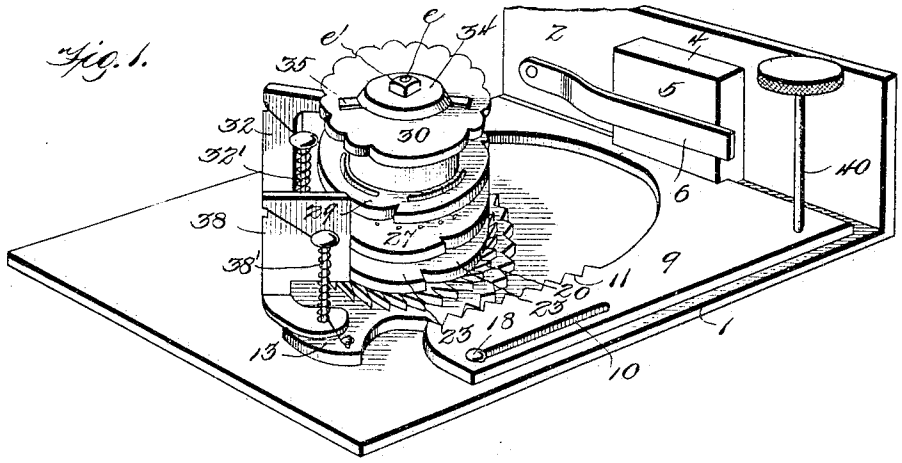
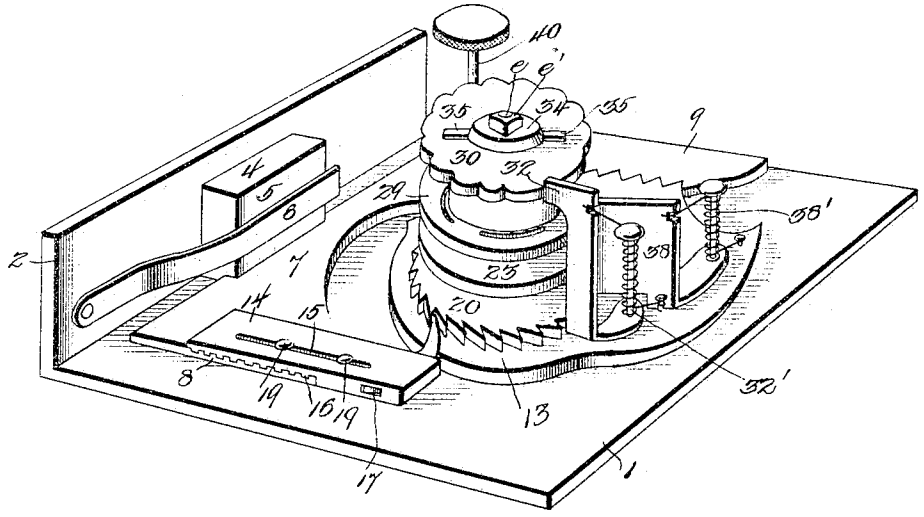


Fig. 2.



Witnesses
J. F. Moorhouse
J. E. Lambert

Inventor
Arthur S. Winston
by John S. Sargent
His Attorney

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3 SHEETS—SHEET 2.

Fig. 3.

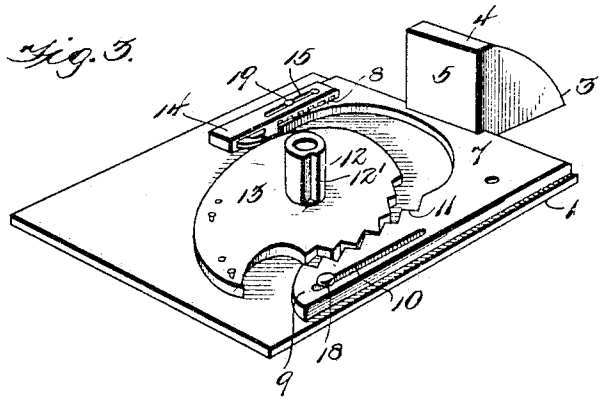


Fig. 4.

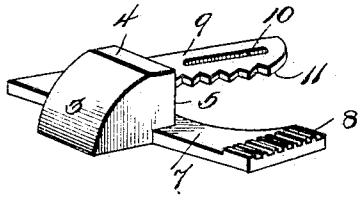


Fig. 6.

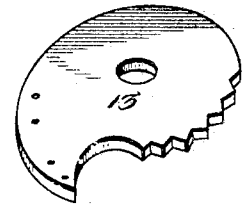


Fig. 5.

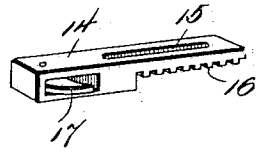


Fig. 7.

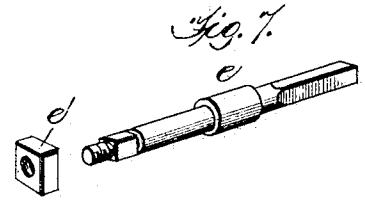
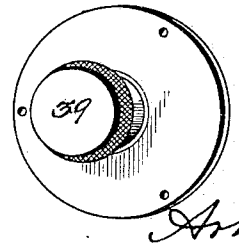


Fig. 8.



Witnesses
T. L. Mercklein
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No. 782,304. PATENTED FEB. 14, 1905.

A. S. WINSTON.

COMBINATION LOCK.

APPLICATION FILED SEPT. 20, 1902.

3 SHEETS—SHEET 3.

Fig. 9.

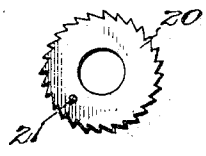


Fig. 10.

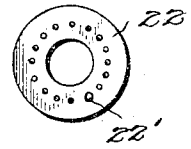


Fig. 11.

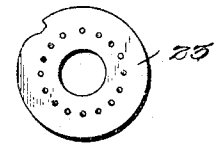


Fig. 12.



Fig. 13.

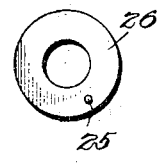


Fig. 14.

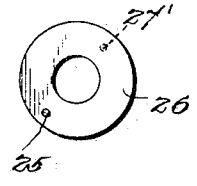


Fig. 15.

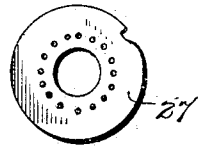


Fig. 16.

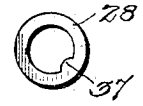


Fig. 17.

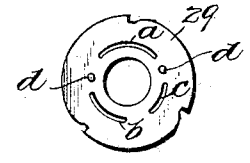


Fig. 18.

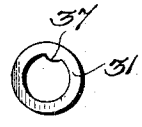


Fig. 19.

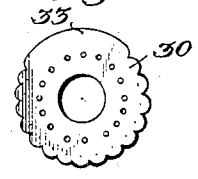
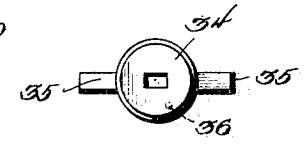


Fig. 20.



Witnesses

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Inventor

Arthur S. Winston

by Edward S. Duffield

Atty. Attorney

No. 782,304. Patented February 14, 1905.

UNITED STATES PATENT OFFICE.

ARTHUR S. WINSTON, OF MALVERN, ARKANSAS, ASSIGNOR OF ONE-HALF TO ENOCH H. VANCE, JR., OF MALVERN, ARKANSAS.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 782,304, dated February 14, 1905.

Application filed September 20, 1902. Serial No. 124,195.

To all whom it may concern:

Be it known that I, ARTHUR S. WINSTON, a citizen of the United States, residing at Malvern, in the county of Hot Spring and State of Arkansas, have invented certain new and useful Improvements in Combination-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.

This invention relates to certain improvements in permutation-locks; and it consists in the novel construction and arrangement of its parts, as hereinafter shown and described.

In the accompanying drawings, Figure 1 is a perspective view of my lock. Fig. 2 is a perspective view of the same, showing more clearly the automatic tumbler-throwing device. Fig. 3 is a perspective view of a portion of the case, showing the spindle-sheath, automatic tumbler-throwing device, bolt, and gear-disk for drawing the bolt within the case. Fig. 4 is a perspective view of the bolt. Fig. 5 is a perspective of the adjustable automatic tumbler-throwing device. Fig. 6 is a perspective view of the gear-disk. Fig. 7 is a perspective of the operating-spindle. Fig. 8 is a perspective view of the face-plate and knob. Fig. 9 is a face view of a ratchet-wheel. Fig. 10 is a face view of a perforated pin-carrying disk. Fig. 11 is a face view of a perforated tumbler used in the lock. Fig. 12 is a face view of one of the washers used in the lock. Fig. 13 is a face view of a second perforated pin-carrying disk. Fig. 14 is a view of the opposite side of the same disk, as shown in Fig. 13, the lower pin being shown by dotted circle. Fig. 15 is a face view of a second perforated tumbler used in the lock. Fig. 16 is a face view of a second washer used in the lock. Fig. 17 is a face view of a slotted tumbler used in the lock. Fig. 18 is a face view of a third washer used in the lock. Fig. 19 is a face view of a serrated disk used in the lock. Fig. 20 is the top face view of a top washer with lower pin, the pin being shown by dotted circles.

The ratchet-wheel, tumblers, washers, serrated disk, and pin-carrying disks are placed on the spindle-sheath in the order as above numbered in the figures.

The construction illustrated in Figs. 1 and 2 may be employed as a lock for a post-office box, door, desk, trunk, night-latch, safe, or cabinet, its supporting casing-plate 1 being of suitable shape to correspond to the character of the lock.

12 designates a hollow stationary spindle carried by the casing-plate 1 and serving as a support for the ratchet-wheel, tumblers, pin-carrying disks, washers, and the serrated disk. The tumblers 23, 27, and 29 are circular in form, having peripheral notches for the reception of the spring-actuated fence 38.

4 designates the bolt. The rear part of this bolt is cut down perpendicularly, leaving a rear wall 5. A flat spring 6 is attached to the perforated flange 2 of the casing-plate 1 (which flange stands at a right angle to the face of said plate) and bears against the said wall 5 and throws the lock-bolt out. Said bolt is made integral with the plate 7, one arm, 9, of which is provided with a gear-rack 11 and also with a slot 10, and the other arm, 8, has its face serrated to mesh with the serrated portion of the automatic tumbler-throwing device 14, Fig. 5. The set-screws 19 pass through the longitudinal slot 15 into threaded holes in the serrated arm 8. Lying between these two arms 8 and 9 and journaled on the spindle-sheath 12 is a gear-disk 13, which said gear is adapted to mesh with the gear 11 of the rack-arm 9. The object of the slot 15 in the part 14 is for greater convenience in adjusting the automatic tumbler-throwing device, so as to give the tumblers a long or short throw. Said device 14 is also provided with a spring-pawl 17, which is pivoted in the end of said device. On the inward movement of the bolt 4 this pawl 17 is pressed inward by the ratchet-wheel 20; but on the outward movement of said bolt the spring-pawl 17 engages the ratchet-teeth on the said ratchet-wheel, causing the wheel to revolve. As said ratchet-wheel is attached to the lower tumbler 23 by means of the pin 21, which passes through one of the holes in the disk 22 into

one of the holes in the lower tumbler 23, it also throws the peripheral notch in the lower tumbler 23 out of engagement with the spring-actuated fence 38. This breaks the operative connection between the bolt and said tumbler 23. The plate 7 is held to plate 1 by a pin 18, which passes through the slot 10 of said plate 1. The gear-disk 13 is the device which works the bolt when the spring-actuated fence 38 is in engagement with the peripheral notches of the several tumblers and in setting up the lock is placed upon the spindle-sheath first. The ratchet-wheel 20 is put on next in setting up the lock. It has a pin 21, which passes through one of the perforations in the tumbler 23, and in rotating the tumbler engages the lower pin 27′ in the disk 26. The lower tumbler 23 is provided with a peripheral notch and with perforations through which pin 21 on the ratchet-wheel 20 and pin 22′ on the disk 22 pass. The washer 24 has a lip or projection in its center hole to fit in the groove in the spindle-sheath 12. This washer is put on between the tumbler 23 and the disk 26. The disk 26 has two pins 25 and 27′. The lower pin 27′ engages the two pins 21 and 22′, (which pass, as already described, through the perforations in the lower tumbler 23,) when the revolving spindle *e* is rotated in order to bring the notch of the said tumbler 23 in engagement with the fence 38. The upper or top pin 25 enters one of the perforations in the second or middle tumbler 27. These perforations in the second tumbler are for the purpose of changing the positions of the peripheral notches of the said tumbler with relation to the gear-disk 13, thereby changing the combination of the lock when desired. The second or middle tumbler 27 is provided with a peripheral notch and perforations, through one of which the top pin 25 in the disk 26 passes. The washer 28 is similar to washer 24 and is located upon the tumbler 27. The tumbler 29 has three or more peripheral notches. Each of said notches has one side wall extending substantially in alinement with the radius of the tumbler and the opposite wall at an angle thereto, so when the fence 38 enters one of these notches (which only can be done when the notches in the other tumblers are in alinement with each other and the notches of said tumbler 29) it is held rigid with the said tumbler 29 while being turned to the right, and by turning the revolving spindle *e* to the left or opposite direction the notch of the tumbler 29 passes away from the fence 38, and the periphery thereof lifts said fence out of the notches of the lower tumblers, and the spring 6 throws the bolt and the lower tumblers are revolved. Tumbler 29 has slots *a*, *b*, and *c* of different lengths, also two top pins *d* to enter the perforations of the serrated disk 30, and in setting up this tumbler on the spindle-sheath 12 the top pin 25 in the disk 26, which passes through one of the perforations in the tumbler 27, enters one of the slots *a*, *b*, or *c*, and in rotating the spindle *e* the tumbler 29 rotates the tumbler 27 when the said pin in disk 26 reaches the end of the slot in the tumbler 29. The washer 31 is placed between the disk 30 and the tumbler 29.

The serrated disk 30 has on its periphery a smooth place 33, by which the starting-point of the click is determined. It also has perforations or holes to receive the two pins *d* in the tumbler 29. The serrations of the said disk are made on the arc of a circle, so that the pawl 32, which engages said serrations, may move in either direction around the disk 30. The top washer 34 has two springs 35, one extending from each side. This washer is put on the revolving spindle *e* and presses down on the disk 30 when secured by the nut *e′*. The washer 34 has a pin 36 extending from its lower face and passing through one of the perforations in the disk 30 when the revolving spindle *e* is turned opposite said disk 30. Washers 24, 28, and 31 have each a projection 37, which fits in the groove 12′ in the spindle-sheath 12. That part of the revolving spindle *e* which works in the spindle-sheath 12 is round.

On the gear-disk 13 are pivoted a spring-actuated pawl 32 and a spring-actuated fence 38, operated by springs 32′ and 38′, respectively. Pawl 32 produces the sound or jar sufficiently to permit the operator to determine the position of the tumblers caused by said pawl passing over the serrations or notches around the periphery of the disk 30 when rotated. The spring-actuated fence 38 enters the notches of the tumblers 23, 27, and 29 when in alinement, and when in this position it will be readily seen that by turning the revolving spindle *e* to the left the radially-extending side of the notch in the tumbler 29 holds the spring-actuated fence 38 rigid or secure, forcing the gear-disk 13 to draw the bolt 4 within the casing 1.

The works of this lock are put on a post-office box on the inside, and the revolving spindle *e* has secured on the square end a knob 39 in the form of a disk with a milled periphery, which knob is located on the exterior of the lock-box for manipulating the lock. There is also a rod 40, with a milled knob, extending from the plate 7, which carries the bolt 4, which rod projects through the lock-casing for convenience in opening the lock from the inside of the door. The lock-bolt 4 can be operated by said rod 40 at will without working the combination.

The combination of this lock can be easily and quickly changed by simply removing the nut *e′*, on the revolving spindle *e* from the inside of the lock-box, taking off the top washer 34, and changing the position of the pins *d* in the tumbler 29 to different perforations in the disk 30. Combinations can also be made by changing the position of the pins on the

disks 22 and 26 to different perforations in the tumblers 23 and 27.

To unlock the bolt, the milled knob 39 on the face-plate is first turned to the right until the lower pin 27 on the disk 26 engages one of the pins in the ratchet-wheel 20, or pin 22′, which passes through the perforations in the tumbler 23, and the notch on that tumbler 23 is brought opposite the fence 38. Turn to the left until the notch on the tumbler 27 is also brought opposite the fence 38 by means of one of the end walls in the circular slots *a*, *b*, and *c* in the tumbler 29 engaging the top pin 25 in the disk 26, which passes through one of the perforations in the tumbler 27. Turn again to the right until one of the notches on the tumbler 29 engages the said spring-fence 38, which of course is done by the top washer 34 entering one of the perforations in the disk 30, and said disk 30 is in turn secured to tumbler 29, as already explained. This is easily done by rotating the knob to the proper number of clicks on which the lock is set.

The lock is easily put up and the combination determined, as shown in Figs. 1 and 2.

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

1. The combination of the casing-plate 1, having a perforated right-angle flange 2; a bolt 4, having a rear wall 5; a plate 7, integral with said bolt and having a serrated arm 8, and a slotted and gear-racked arm 11; a spring 6, secured to the inner face of the flange 2, its free end working against the wall 5, of the bolt 4; a tumbler-throwing device 14, adjustably secured on the serrated portion of the arm 8; a spindle-sheath 12, secured to, and rising from the center of said casing-plate 1, and provided with a longitudinal groove 12′; a gear-disk 13, working around said sheath, against the face of said casing-plate, and provided with a gear-rack provided with gear, adapted to mesh with the gear 11, of the rack-arm 9; ratchet-wheel 20; a pin-carrying disk 22; a perforated and notched tumbler 23; a washer 24; a perforated pin-carrying disk 26; a perforated and notched tumbler 27; a washer 28; a notched and slotted tumbler 29; a washer 31; a serrated disk 30, and a top washer 34, placed over said disk and around said sheath in the order named; pin 21, in the ratchet-wheel 20; pin 21′, in the disk 22; pin 25 and 27′, in the disk 26; pins *d*, in the disk 29; pin 36, in the disk 34; a spring-actuated fence 38, adapted to catch in the notches of said tumblers; a pawl 32, adapted to catch in the notches of the serrated disk 30; revolving spindle *e*, passing through the plate 1, and sheath 12, having on one end a knob and on the other a nut, whereby the parts of said lock are held together, substantially as shown and described and for the purposes set forth.

2. In a lock, tumblers; a ratchet attached to said tumblers; a spring-actuated bolt having serrations, and a pawl carried by said bolt adapted to engage and operate said ratchet, and a means of adjusting the position of the pawl upon the bolt, consisting of a serrated plate carrying said pawl and adapted to engage the serrations of the bolt.

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

ARTHUR S. WINSTON.

Witnesses:
SARA MCKEE VANCE,
EVA VANCE JERNIGAN.