

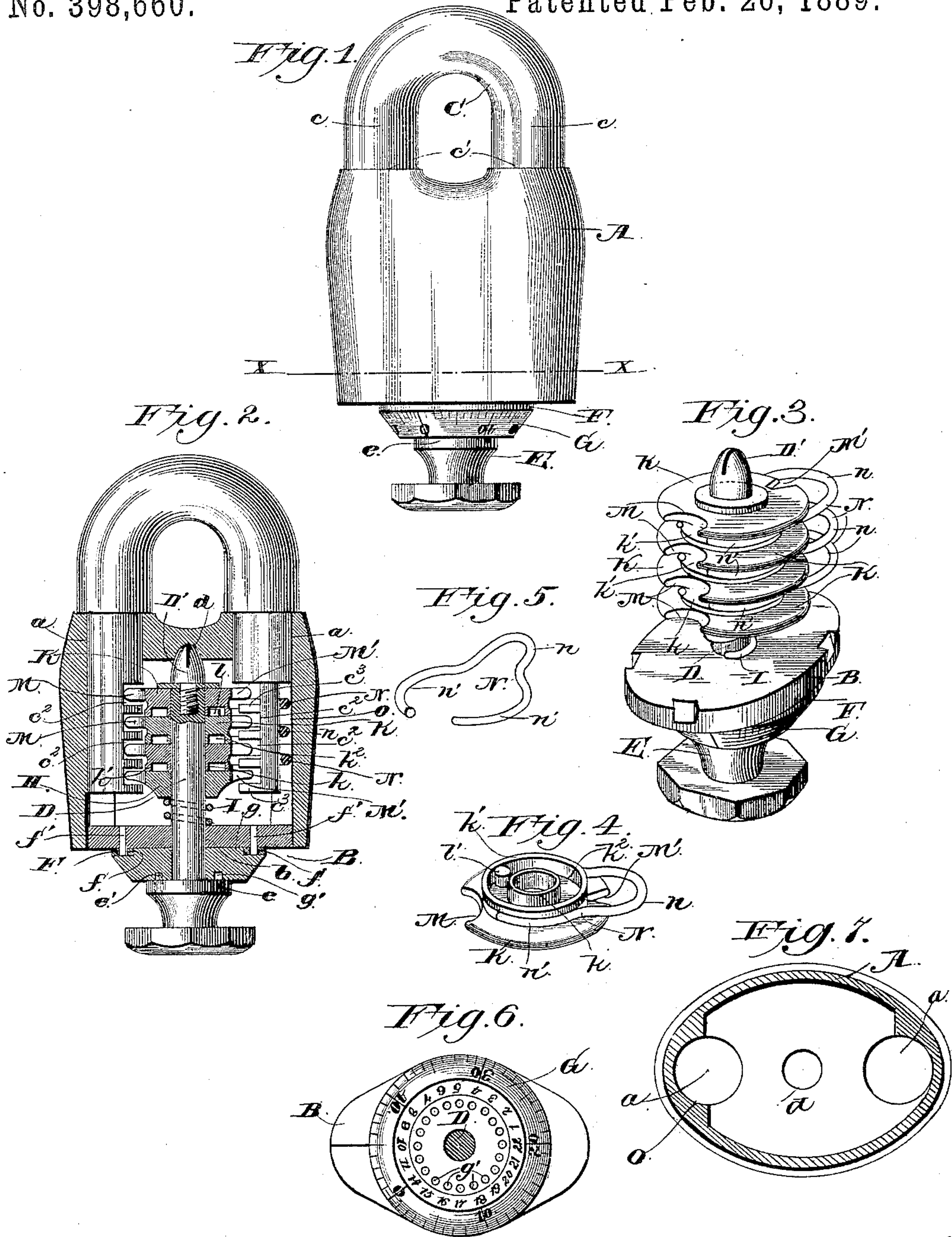
(Model.)

G. F. SEISER, C. R. JOHNSON & M. B. PERRY.

PERMUTATION PADLOCK.

No. 398,660.

Patented Feb. 26, 1889.



Witnesses

M. Fowler.
C. E. Doyle.

Inventors/
George F. Seiser
Calvin B. Johnson and
Morgan B. Perry

By their Attorneys

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

GEORGE F. SEISER, CALVIN R. JOHNSON, AND MORGAN B. PERRY, OF PORT ROYAL, KENTUCKY.

PERMUTATION-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 398,660, dated February 26, 1889.

Application filed June 13, 1888. Serial No. 276,927. (Model.)

To all whom it may concern:

Be it known that we, GEORGE F. SEISER, CALVIN R. JOHNSON, and MORGAN B. PERRY, citizens of the United States, residing at Port Royal, in the county of Henry and State of Kentucky, have invented new and useful Improvements in Permutation-Padlocks, of which the following is a specification.

This invention relates to improvements in permutation-padlocks, having for its object to provide a simple, cheap, durable, and reliable lock of this class; to provide improved means for holding the tumblers in place on the arbor or spindle when the lock is being manipulated or opened, and which shall prevent the disarrangement of the same when the staple is temporarily removed from the lock, and to provide simple and improved means for changing the combinations.

The invention consists in a certain novel construction and arrangement of parts for service, fully set forth hereinafter in connection with the accompanying drawings, wherein—

Figure 1 is a side view of a padlock embodying our improvements. Fig. 2 is a longitudinal central sectional view of the same, showing the parts arranged in the unlocked position. Fig. 3 is a detail perspective view of the arbor, the cap-plate, and the tumblers. Fig. 4 is a like view of one of the tumblers. Fig. 5 is a like view of one of the springs. Fig. 6 is a like view of the dial having the numbers or characters of the combination thereon. Fig. 7 is a transverse sectional view of the case on the line xx of Fig. 1.

Referring to the drawings, A designates the inclosing shell or case of the improved lock, which is provided at one end with the openings a , and the opposite end of the same is left open for the reception of the cap-plate B, which may be secured rigidly in place in any preferred manner.

The legs c of the staple C are provided with the shoulders c' to prevent them from being introduced too far into the case through the openings a , and they are further provided on their inner sides with notches c^2 , that correspond in number with the tumblers employed. The inner side of one of the legs c

is tapered, so that the studs or projections c^3 on this leg are tapered, whereas the corresponding studs or projections on the other leg are segmental in shape.

The spindle or arbor D is mounted in a bearing, b , in the cap-plate, and the removable tip D' on the upper end of the spindle or arbor is tapered, and is mounted in a socket, d , in the upper end of the case between the openings a , and on the exposed or outer end of the spindle or arbor is arranged the head or knob E.

An annular bearing-plate, F, is arranged on the outer side of the cap-plate, and is provided with apertures f to receive studs f' on the cap-plate.

G represents the dial carrying the numbers or characters of the combination, which bears and rotates on the said annular plate, and is provided with a shoulder, g , which fits within the plate. The shoulder e of the head or knob which bears on the dial is provided with a small pin, e' , which is adapted to engage one of the sockets g' , which are arranged in an annular series around the arbor or spindle. The sockets in this series are numbered or provided with other suitable distinguishing characters, and when the pin e' is engaged in one of these sockets the dial rotates with the head or knob. The cap-plate is provided with a suitable indicating-mark, with which to align the characters on the dial.

H designates a rigid tumbler, which is mounted on the arbor or spindle near the cap-plate, and a spring, I, is coiled on the arbor or spindle between the cap-plate and the said tumbler to draw the knob or head tightly against the dial and hold the pin e' in engagement with the desired socket.

K K represent the removable tumblers, of any desired number, (three being shown in the drawings,) which are mounted on the arbor or spindle, and are provided with the depending sleeves k , which bear, respectively, on the tumblers immediately below and hold the latter properly spaced on the arbor. The tumblers are further provided near their peripheries with the depending annular flange k' , and in the grooves or channels k^2 , which are thus formed by the flanges and the sleeves,

are arranged the pins U . The upper sides of the rigid and removable tumblers, with the exception of that at the upper end of the arbor or spindle, are provided with similar pins, 5 U , to travel in the grooves or channels U^2 and engage the pins on the lower sides of the tumblers immediately above. At diametrically-opposite points in the peripheries of the tumblers are formed the notches $M M'$, the former 10 of which are curved or segmental, while the latter are V-shaped. The notches M and the notches M' are respectively aligned, and the legs of the staple may then be passed into the case through the openings $a a$ and inserted 15 until the shoulders on the legs bear against the outer side of the case. It will be evident that when the arbor is rotated the rigid tumbler is similarly actuated, and the engaging-pins on the removable tumblers enable the 20 latter to be turned in the same way, so that their notches may be aligned. It will be observed that the notches M are designed to receive the leg of the staple having the segmental studs or projections, and the notches 25 M' are designed to receive the legs having V-shaped studs or projections.

$N N$ represent springs, of a number corresponding to the tumblers, and they consist of the loops n , adapted to receive the leg of the 30 staple, and the curved arms $n' n'$, integral with the loops and embracing the annular flanges of the tumblers. The loops are received in a longitudinal depression or groove, O , in the side of the shell or case, (being thus 35 prevented from turning with the tumblers,) and the arms bear tightly against the opposite sides of the said flanges, and thus hold the tumblers in any desired position.

Various means have heretofore been employed 40 to secure the springs in place and prevent them from turning with the tumblers; but the above construction, which consists in providing the springs with loops which engage the above-mentioned depression or groove O , 45 obviates the necessity of supplemental securing devices.

The operation of the lock is as follows: It will be understood that the upper tumbler (or that near the upper or free end of the arbor) 50 must be adjusted first, owing to the fact that all the tumblers must be turned in order to turn the upper one. Then the next lower tumbler is adjusted, and so on, the rigid tumbler being the last one to be adjusted. In order 55 to turn the upper tumbler, it will be understood that the arbor must be rotated until the pins on the upper sides of the tumblers have engaged the corresponding sides of the lower pins on the adjacent tumblers, and all 60 the tumblers are therefore rotated in the same direction. Having thus arranged the tumblers, the arbor is rotated until the first character of the combination is aligned with the indicating-mark on the cap-plate, (thus adjusting the upper tumbler.) Then the arbor 65 is turned in the reverse direction a number of times equal to the tumblers which are unset

(namely, three in the lock shown in the drawings) in to cause the second tumbler to rotate, and then the second character of the combination is aligned with the indicating-mark, 70 (thus adjusting the second tumbler.) Then the arbor is turned in the reverse direction a number of times equal to the unset tumblers, (namely, two,) and the third character of the 75 combination is aligned with the indicating-mark, (thus adjusting the third tumbler,) and so on until all the loose tumblers are set, after which the rigid tumbler is adjusted without disturbing the loose tumblers and by aligning 80 the last character of the combination with the indicating-mark. The segmental notches of the tumblers are now all aligned, and the V-shaped notches are also aligned, so that the studs or projections on the inner sides of the 85 legs of the staple are disengaged, and the staple may be removed.

The springs will hold the tumblers firmly in place until the staple is replaced, when the arbor may be turned a number of times to 90 throw the notches of the tumblers out of alignment with the legs of the staple, and the lock is adjusted.

To change the combination, the staple is removed, (the combination cannot be changed 95 while the staple is locked in place,) the head or handle on the arbor is drawn out against the force of the spring I , and the pin e' is engaged in a different socket, thus changing all the numbers or characters of the combination. 100 The combination is thus changed without removing any of the parts of the lock or opening the case or shell of the same, and may be changed as often as the lock is unlocked. The combination cannot be changed while the 105 staple is in the lock, for the reason that in order to detach the pin e' from the socket of the dial it is necessary to draw the arbor or spindle outward. This also draws the tumblers toward the lower end of the case, and if their 110 edges are engaged in the notches in the legs of the staple they cannot be moved. The legs of the staple cannot be drawn down, owing to the shoulders above mentioned, which bear on the upper end of the case around the openings $a a$. 115

Having thus described the invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In a permutation-padlock, the case having 120 a suitable longitudinal depression or groove, O , the arbor mounted in the case, the staple having suitable legs to enter the case, and the notched tumblers mounted on the arbor and adapted to engage notches in the legs of the 125 staples, in combination with the springs having loops fitting in and held from movement by the depression or groove O , and the spring-arms embracing the tumblers, substantially as and for the purpose specified. 130

2. In a permutation-padlock, the case, the arbor, and the rigid tumbler on the arbor, in combination with the movable tumblers mounted on the arbor and having the annu-

lar flanges k' , and the springs having curved arms embracing the flanges and held from movement in the case, substantially as specified.

5 3. In a permutation-lock, the combination, with the arbor mounted in a suitable case and the shackle having its arms fitted in suitable openings in the case, of the tumblers mounted on the arbor to engage notches in the arms of
10 the shackle and provided in their under sides with annular grooves, the pins l' in the said grooves, the pins l on the upper sides of the tumblers fitting and operating in the grooves of the superimposed tumblers, and the springs
15 secured in the case and provided with arms embracing the tumblers, all substantially as specified.

4. In a permutation-padlock, the combination, with the arbor mounted in a suitable
20 case, the shackle having its arms inserted in the case, and the rigid tumbler H and revoluble tumblers K, arranged on the said arbor and engaging the shackle, of the revoluble dial G, mounted on the arbor outside the case and
25 bearing on the adjacent end of the latter, the head or knob on the outer end of the arbor provided with a pin engaging a perforation in the outer side of the said dial, and the spring I, coiled on the arbor between the rigid tumbler
30 and the adjacent end of the case to normally hold the head or knob on the arbor pressed against the dial, substantially as specified.

5. In a permutation-padlock, the combination, with the arbor mounted in a suitable case
35 and having tumblers mounted thereon, and the shackle having its arms inserted in the case and engaged by the said tumblers, of the annular bearing-plate F, secured on the opposite end of the case from the shackle, the revoluble dial G, mounted on the arbor without the

case, and having a shoulder, f , fitting within the said plate and provided in its outer side with sockets g' , the head or knob on the outer end of the arbor bearing against the dial G, and provided with a pin, e' , engaging the sockets g' , and the spring I, arranged on the arbor and bearing at opposite ends against one of the tumblers and the adjacent end of the case to normally hold the head or knob in contact with the dial, substantially as specified.
50

6. In a permutation-padlock, the combination, with the longitudinally-movable arbor D, mounted in a suitable case and provided with a head or knob, E, provided with a pin, e' , the
55 revoluble dial G, mounted on the arbor without the case, bearing against one end of the case and provided with sockets g' to receive the pin e' , whereby the arbor and dial are locked together, the tumblers H and K, arranged on the arbor and provided with engaging-pins l' , and the spring I, coiled on the arbor between the tumblers H and the adjacent end of the case, of the shackle having
60 its arms fitting in openings in the case and provided with notches c^2 , in which the tumblers engage and fit snugly, whereby when the shackle is locked in place longitudinal movement of the arbor is prevented and the pin e' cannot be withdrawn from the socket g' in
70 which it is engaged, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

GEORGE F. SEISER.
CALVIN R. JOHNSON.
MORGAN B. PERRY.

Witnesses:

J. B. PEEL,
J. S. COBLIN.