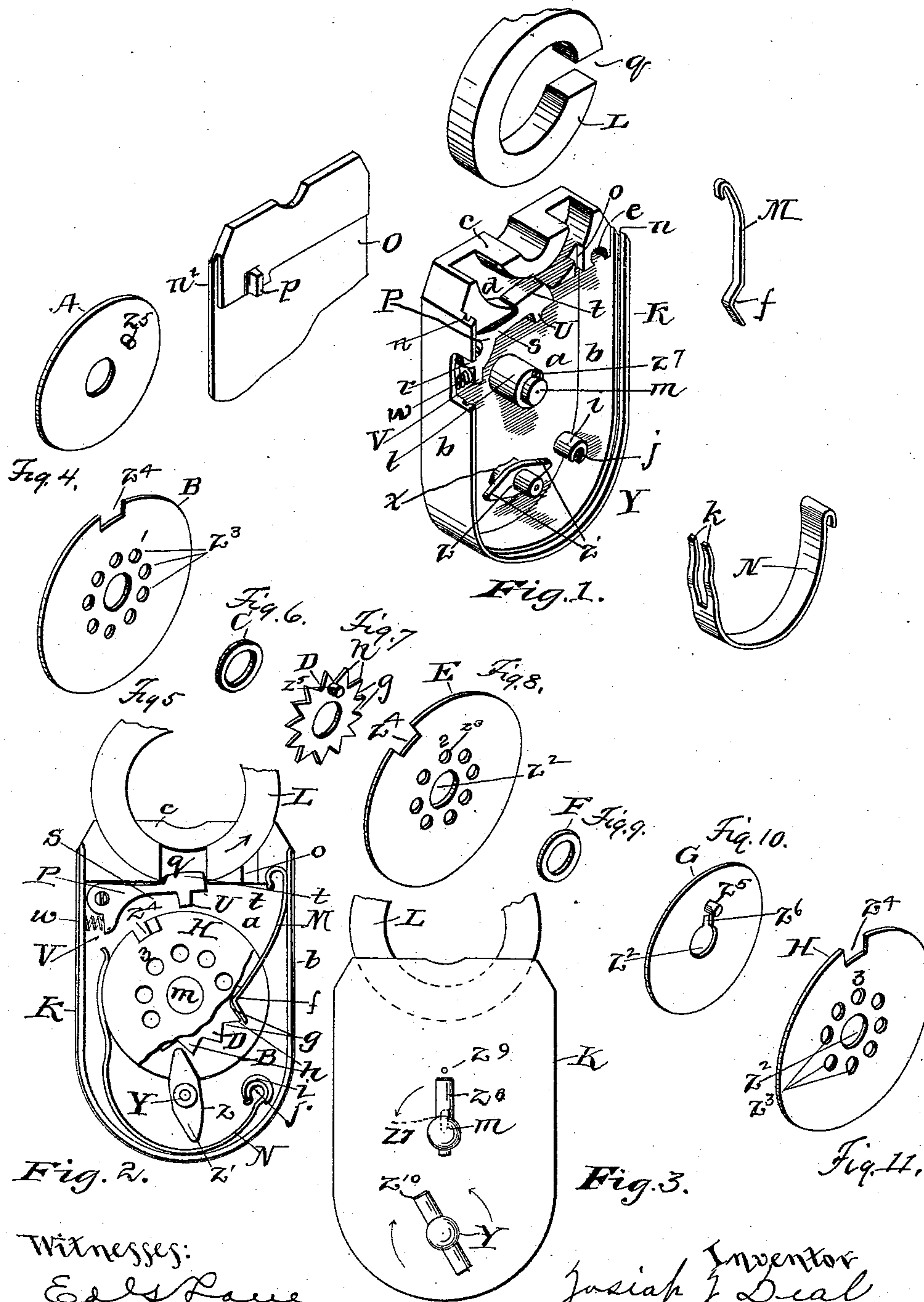


(No Model.)

J. J. DEAL.
PERMUTATION PADLOCK.

No. 486,665.

Patented Nov. 22, 1892.



Witnesses:

Edw. Lane

Chas. R. Miller

Inventor
Josiah J. Deal

By
W. K. Miller
Attorney

UNITED STATES PATENT OFFICE.

JOSIAH J. DEAL, OF CANTON, OHIO.

PERMUTATION-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 486,665, dated November 22, 1892.

Application filed October 29, 1891. Serial No. 410,174. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH J. DEAL, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have
5 invented a new and useful Improvement in Combination-Padlocks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

10 My invention relates to an improvement in combination-padlocks; and it consists of certain features of construction and combination of parts, as will be hereinafter described, and pointed out in the claims.

15 Figure 1 of the accompanying drawings is a perspective, comprising the lock-case, the shackle, removable lid or cover, and the lock-springs; Fig. 2, a plan showing the location of the several parts in the case; Fig. 3, a plan
20 of the front side of the lock, showing the turn-pin by which the combination is operated; and Figs. 4, 5, 6, 7, 8, 9, 10, and 11 are perspectives of the tumblers and spacing-washers hereinafter explained.

25 Similar letters of reference indicate corresponding parts in all of the figures of the drawings.

K represents the lock-case, which, as shown in Fig. 1, is preferably made of cast metal, and
30 is substantially of the form shown, having a face portion *a* and sides *b*. At the shackle end of the case is provided a block or lug portion *c*, in which is provided a circular groove or race-way *d* to receive the shackle L and in which
35 the shackle is turned to release whatever may have been held therein or thereby. There is also provided in the block *c* a circular socket *e*, in which is secured one end of the rack-spring M, the free end of said spring having
40 a V-shaped bend *f* adapted to the space *g* between the rack-teeth *h*. There is also provided a stud *i*, having therein a circular socket *j* to receive one end of the tumbler-brake spring N. The free end of said spring is bi-
45 furcated, the prongs *k* to rest on the periphery of the tumblers B and H, as shown in Fig. 2. There is also provided, as shown in Fig. 1, an inwardly-projected hub *l*, in which is journaled the turn-pin or turn-button *m*.
50 About the outer edge of the side *b* is provided a groove *n* to receive the edges *n'* of the back of the case. To secure said back in position,

a groove *o* is formed in the block *c* (cutting into the groove *d*) to correspond with a lug *p* on the inside of the lid. To place the lid O in
55 the case K, the shackle is turned in the race-way to bring the opening over the groove *o* and the edges of the lid passed into the side groove. The lug *p* of the lid, entering the opening in the shackle, will pass in with and through to
60 the opening into the groove *o*, the lug resting in the groove inside of shackle, in which position it is locked by the shackle, closing over the end of the groove and the lug, and cannot be removed until the lock is opened and
65 the shackle turned to let the lug pass out.

The spring-actuated locking-bar P has a perforated body portion *r*, a forwardly-projected bar or arm *s*, having at the upper side end portion a lug *t* to enter into the opening
70 *q* in the shackle, a downwardly-projected lug U to rest on the peripheries of the tumblers, and a tail-piece V, projected at one side of the body at right angles with the arm S, said tail-piece to rest on one end of a coil-spring
75 *w*, the other end of the spring resting on the side of the case. The energy of the spring is exerted to hold the lug *t* in the opening *q* in the shackle. The lug *u* resting on the tumblers, the shackle cannot be turned. The case
80 K is also provided with an inwardly-projected hub *x*, in which is journaled a turn key or button *y*, having on its inside end portion a T portion *z*, the ends of which are adapted to engage teeth *h* of the wheel D, as will be
85 hereinafter explained. I prefer this form of device for rotating the rack-wheel over a driver having a continuous engagement with the teeth of the rack-wheel, as the movement can be noted distinctly for counting.
90

The tumblers A B E G H and the toothed wheel D are preferably made from sheet metal and are formed as shown, having a central perforation *z*², encircled by a series of small perforations *z*³, peripheral notches *z*⁴, and stud-
95 pins *z*⁵ and placed in the case about the hub *l* in the following order: The tumbler A is first placed on the hub, the pin *z*⁵ projecting outwardly. Tumbler B is next passed over the hub *l* and down onto tumbler A. The pin
100 *z*⁵ is passed into the small perforation next or under the figure "1" on the face of the tumbler. Washer C is next passed onto the hub, which is followed by the rack-wheel D. The

pin z^5 in the rack-wheel projects from each side, the projection from the lower side to engage the pin on tumbler A. Tumbler E is now passed over the hub, the pin z^5 on the rack-wheel to enter the small perforation z^8 under the figure "2." Washer F is next placed on the hub, followed by tumbler G, which is provided with a cut-out keyway for feather z^7 at the inner end of the turn-key m . Tumbler H is now passed on the hub, the pin z^5 on the tumbler in the first perforation z^3 to the left of the one under the figure "3." When the tumblers are so placed in the case, the spring M resting in the notches on the tumbler or rack D and the spring N as a brake on the edges of the tumblers B, E, and H, the peripheral notches z^4 may be brought in line under the lug U on the locking-bar P. To rotate the shackle or unlock, the pin m is turned in the direction of the arrow until the finger z^8 reaches the dot z^9 . Pin Y is then turned to the right one notch or click of the spring m on the rack-wheel. This movement will carry the notch z^4 on tumbler B under the lug U. Then one revolution or two clicks to the left will carry the notch z^4 on tumbler H under the lug U. Now turn the pin one and a half turns or three clicks and the notch z^4 in tumbler E will be brought into line under the lug U, so that the shackle L may be turned in its groove to allow the opening q to pass out of the case to release the lock. To lock the shackle, turn it back into position shown in Fig. 2. The spring W will throw the lug t into the opening q . The combination may then be distributed by turning either

of the pins m or y , and the arm P will be locked in the shackle, as shown in Fig. 2.

Having thus fully described the nature and object of my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a lock-case having a face portion a , side b , having at its outer edge a groove n , a stud i , having a circular recess j therein to support the spring N, a head-block c , circular raceway d , groove o , extending from the body of the lock to the raceway, a hub l to support the tumblers, and pin m , of the shackle L, locking-bolt P, tumblers A B E G H, rack-wheel D, springs M and N, and turn-pins m and y , the latter having a cross-bar z , the ends of which are adapted to engage and rotate said rack to register the notches z^4 under the lug U to release the shackle, substantially as set forth.

2. The combination, with a lock-case having a face portion a and sides b , grooved at their outer edge to receive a sliding lid or back, of a block end portion c , having therein a circular raceway d and a groove o , a locking-bolt P, a lid or back provided with an outwardly-projected lug p , adapted to slide in the groove o , and a shackle to turn in said raceway to engage the end of the lug p to lock and hold the lid in the case, substantially as set forth.

In testimony whereof I have hereunto set my hand this 9th day of October, A. D. 1891.

JOSIAH J. DEAL.

Witnesses:

W. K. MILLER,
CHAS. R. MILLER.