

W. H. BACHTEL.
COMBINATION LOCK.

No. 172,905.

Patented Feb. 1, 1876.

Fig. 1.

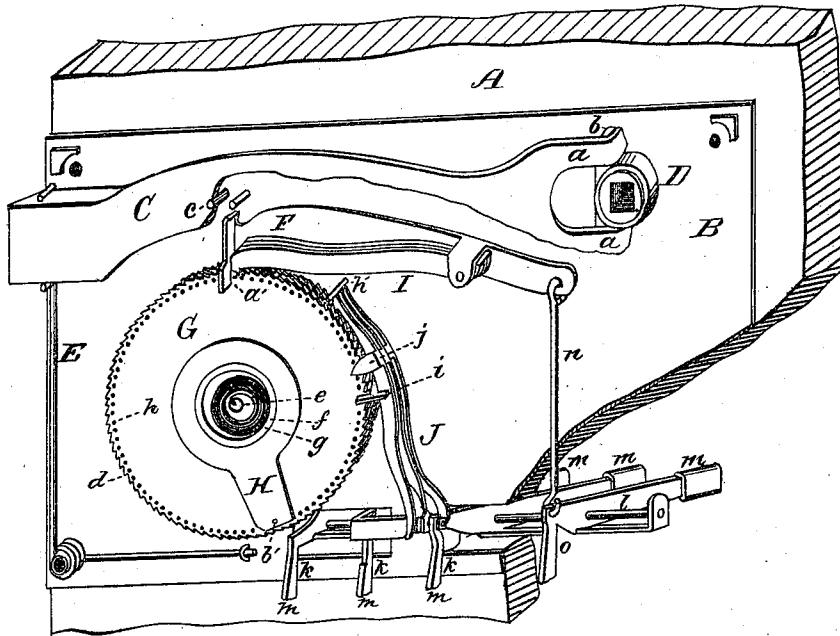
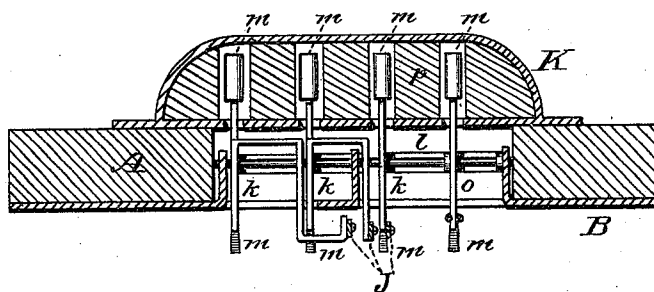


Fig. 2.



Witnesses;
Grenville Lewis
Nat. E. Oliphant.

Inventor
William H. Bachtel,
per Charles H. Fowler,
Attorney.

UNITED STATES PATENT OFFICE

WILLIAM H. BACHTEL, OF CANTON, OHIO, ASSIGNOR OF ONE-THIRD HIS
RIGHT TO L. S. ROYER, OF SAME PLACE.

IMPROVEMENT IN COMBINATION-LOCKS.

Specification forming part of Letters Patent No. **172,905**, dated February 1, 1876; application filed
January 19, 1876.

To all whom it may concern:

Be it known that I, WILLIAM H. BACHTEL, of Canton, in the county of Stark and State of Ohio, have invented a new and valuable Improvement in Combination - Locks; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of perspective view of my improved lock, with the cap removed to show the interior mechanism. Fig. 2 is a top view, showing the operating-levers and cap that covers them.

This invention has relation to combination-locks for doors and other purposes; and the object of my invention is to provide a perfect locking device, and one in which the combination may be varied as the case demands, and to provide a means whereby the levers for operating the lock will not effect the opening of the same when carelessly handled by parties unacquainted with the combination to which the lock is set, provision being made for throwing the several wheels back to their proper position if at any time, in operating the levers, the notches in the wheels pass beyond the dog, the construction and combination of the several parts by which the above results are accomplished being hereinafter described, and subsequently pointed out in the claims.

In the accompanying drawings, A is designed to represent a portion of a door, or the bed, to which the plate B is secured by screws or other suitable means, and to which the operating parts of the lock are connected. The bolt C has a bifurcated end formed by the two prongs *a*, turned down to catch over and bear against projecting arms *b* on the hub D, the latter being provided with a square hole for the reception of the spindle to which the knob is attached. Connected to the end of the bolt C is a suitable spring-rod, E, which operates to force the bolt forward to its place after being drawn back, the bolt also having cast upon its under side a notch or pins, *c*, which bear against the dog F, to prevent the bolt C from going back.

The wheels, as represented at G, may be of any number, arranged one above the other, and formed upon their outer edge with serrations or teeth *d*. If desired, in place thereof, small holes may be made near the edge, which would be considered an equivalent to the teeth or serrations *d*. These wheels G are secured upon a central recessed shaft, *e*, and each wheel has formed upon its upper face a recess, *f*, for the reception of coiled spring *g*, one end of which fits in a recess in the central shaft *e*, and the other end is attached to the wheel. Under every tooth *d* of each wheel is formed a small hole, *h*, into which fits a pin, *b'*, projecting from the under side of the cam H, for the purpose of setting the several wheels to the desired combination. A notch, *a'*, is formed in each of the wheels for the reception of the dog F, the latter having pivoted thereto pawls I, in number corresponding to the number of the wheels G. Ratchets J, working within recesses in a plate, *i*, are for operating the several wheels G, each of said ratchets being provided with a cam, *j*, against which the end of the cam H strikes when brought in contact, and throws the ratchets out of gear with the teeth *d* upon the wheels G. A pin, *h'*, secured to the plate B holds the ratchets J off of the notches or teeth *d* on the wheels G, for the purpose of allowing the wheels to run back when the dog F and pawls I are raised by the lever *o* and connecting-rod *n*. The plate *i* has also recesses upon its inner end to retain the wheels in position and guide them in their rotation upon the shaft *e*, and also acts as a stop for the cam H, to prevent the wheels from making over a single rotation when moved in either direction. The ratchets J are pivoted to bent levers *k*, working upon a horizontal fulcrum or rod, *l*, the levers extending out from the inner and outer sides of the door, and have formed upon each of their ends finger-keys *m* for operating them. The pawl F has connected to one end a rod, *n*. Said rod also connects with a lever, *o*, similar to the levers *k*, the purpose of said lever, together with the pawl, being described in the operation of the invention. To protect the levers from being seen while being operated upon during the process of opening the lock, and thereby preserve the secret of the combination, a cap, K, is placed

over the levers and secured to the outside of the door by any suitable means. This cap has partitions *p* upon each side of the levers, so as to prevent them from becoming injured by bending or pressing them sidewise.

The operation and the manner of setting the lock will be understood from the following description and explanation. In setting the wheels it will be necessary to remove all the wheels but the one to be first set, the setting of them being as follows: The first wheel, *G*, to be set is brought around, so as to leave as many teeth *d* as desired between the notch *a'* of the wheel and the dog *F*, counting from the left of the dog to the notch, the number of teeth representing the number of times the levers *k* are required to be raised. After this wheel is thus set upon the central shaft *e*, the cam *H* is placed on the wheel, with its pin *b'* in the hole *h*, directly below the plate or stop *i*. Each of the other wheels is set in a similar manner. After the several wheels have been set to the combination desired, the lock is opened in the following manner, each lever *k* being raised by pressing upon the keys *m* the desired number of times, according to the setting of the wheel, when the ratchets *J* will bring the wheel around, so that the notch *a'* of each wheel will be in line under the dog *F*, the dog, by its own weight, falling down within said notches and releasing the bolt *C*. If, by accident, the wheels should be turned too far around and bring the recesses *a'* beyond the dog *F*, all that will be necessary to place the wheels again in position to operate them will be to raise the lever *o*, which, by means of the connecting-rod *n*, will lift the dog *F*, together

with the pawls *I*, and release them from the teeth *d*, when the springs *g* will force the wheels back, so that the cams *H* will be in position directly under the plate or stop *i*.

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

1. The wheels *G*, with teeth *d* and notch *a'*, in combination with the dog *F*, pawls *I*, and ratchets *J*, substantially as and for the purpose set forth.

2. In combination with the wheels *G*, formed with holes *h*, the cams *H*, with pins *b'* and springs *g*, and the stop or plate *i*, substantially as and for the purpose specified.

3. The ratchet *J*, with cam *j*, and the pin *h'*, in combination with the wheel *G* and the cam *H*, substantially as and for the purpose specified.

4. In combination with a bolt, *C*, formed with pins *c*, and the spring-rod *E*, the dog *F*, pawls *I*, and ratchet-wheels *G*, constructed to operate substantially as and for the purpose set forth.

5. In combination with wheels *G*, cams *H*, and the springs *g*, the dog *F*, having pivoted thereto pawls *I*, and the ratchets *J*, the dog and ratchets being pivoted to levers *o* *k* upon the rod *l*, and operating substantially in the manner specified.

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

WILLIAM H. BACHTEL.

Witnesses:

NAT. E. OLIPHANT,
THOMAS C. CONNOLLY.