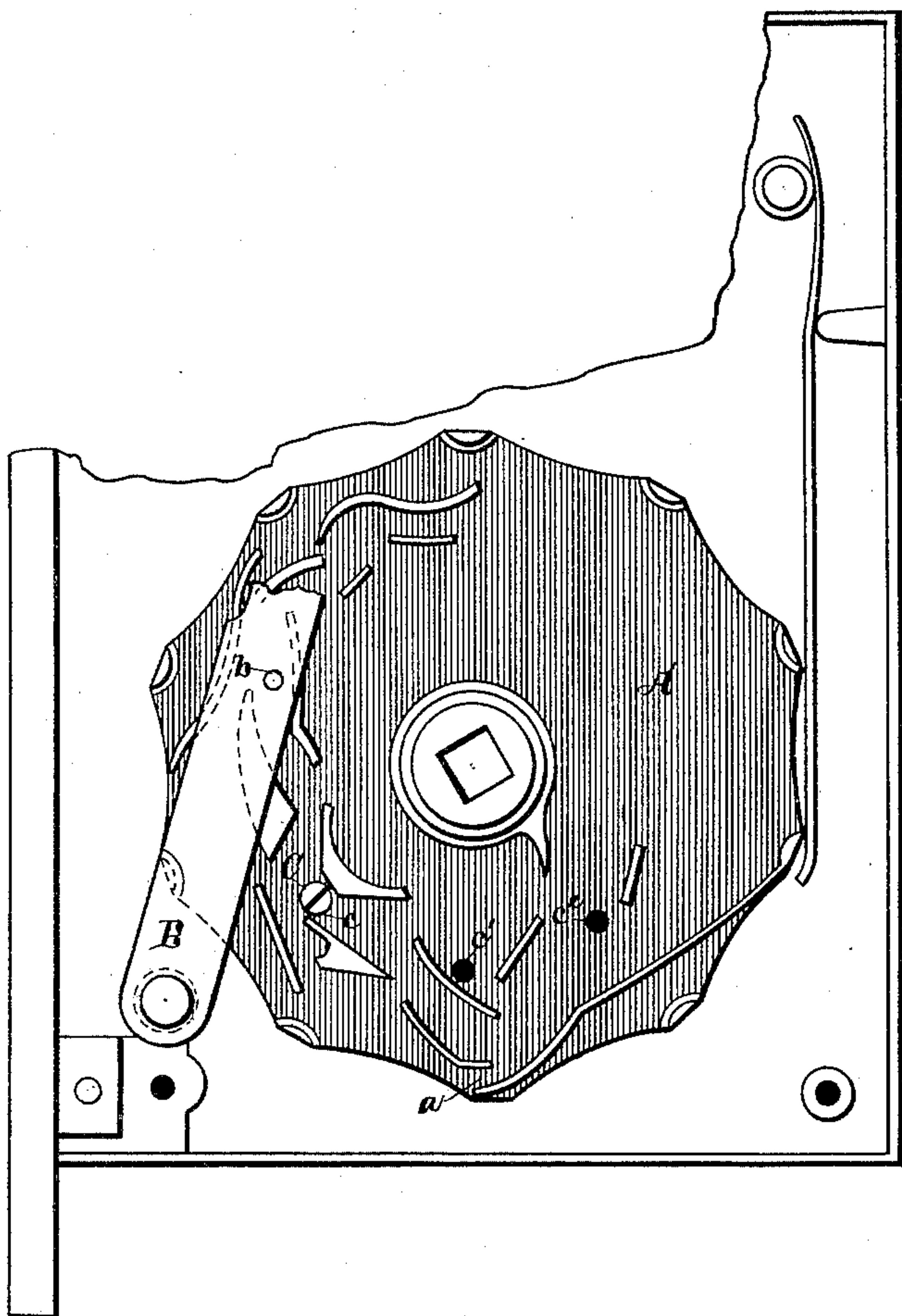


(No Model.)

B. J. DOUDS.
PERMUTATION LOCK.

No. 431,451.

Patented July 1, 1890.



Witnesses.

B. S. Lowrie

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UNITED STATES PATENT OFFICE.

BYRON J. DOUDS, OF KENT, OHIO.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 431,451, dated July 1, 1890.

Application filed November 18, 1889. Serial No. 330,707. (No model.)

To all whom it may concern:

Be it known that I, BYRON J. DOUDS, of Kent, in the county of Portage and State of Ohio, have invented certain new and useful
5 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 pertains to make and use the
10 same.

My invention relates to improvements in permutation-locks, and is designed as an improvement on a lock for which United States Letters Patent No. 396,273 were granted to
15 me January 15, 1889, and to which reference is hereby made.

The improvement consists, essentially, in a movable stop connected with the cam-disk, such stop constituting the starting-point from
20 which the combinations are counted, and by shifting this stop to other predetermined points of the cam-disk the combinations of the lock are thereby changed. The theory of the lock described in the aforesaid patent involves
25 a rotating disk having on the one face thereof a series of (imaginary) concentric paths, in which a pin operates, the pin being connected with a vibrating lever, with cams on the face of the
30 disk for engaging such lever-pin for deflecting the same from one path to another, the arrangement of cams being such that commencing at a given stop or starting point and turning the cam-disk first in the direction
35 away from such starting-point and then turning the disk backward and forward according to the combination of the cams the lever-pin will be deflected from one concentric path to another and will eventually find its way
40 into the extreme inner or outer path, usually the latter, where cams are arranged to engage the pin, and thereby shift the lever to the extreme of its throw, such extreme movement of the lever being utilized, for instance, in the aforesaid patent in withdrawing the
45 bolt. In other cases—for instance, where the bolt is operated by a knob-spindle—the extreme movement aforesaid of the vibrating lever is utilized in shifting a tumbler for locking and unlocking the bolt mechanism, such
50 latter appliance of locking-tumbler having been made the subject of application for Letters Patent bearing even date herewith. The

lock described in the aforesaid patent, together with various subsequent modifications thereof, is largely used, for instance, on doors
55 of dwellings, stores, &c., and on office-desks, and for various other purposes where it is necessary for some servant, clerk, or other confidential employé to be intrusted with the
60 knowledge of the combination, and in case such employé should be discharged it would be at least desirable to change the combination. For this purpose I employ a movable
stop or starting-point, with provisions at predetermined points on the cam-disk for attaching
65 the stop. The stop preferably consists of a small stud, the cam-disk having different screw-threaded holes for receiving the stud, and by changing the stud from one hole to another the combination of the lock is changed.
70

In the accompanying drawings the figure shows an outline of the face of the cam-disk, with different holes therein for receiving the stop that constitutes the starting-point.

A represents the cam-disk, and B the vibrating lever, the latter having a pin *b*, that
75 is successively engaged by the different cams on the disk, while the latter is being rotated in the one direction or the other.

C is a stop constituting the starting-point
80 in computing the combinations of the lock. This stop is preferably a small stud operated by a screw-driver.

Disk A is provided with a series of screw-threaded holes located at different points—for
85 instance at *c c' c''*, &c.—each hole being adapted to receive stud C. The cams on the disk are arranged in different combinations, commencing, respectively, at the different holes as starting-points, but each combination leading
90 to (preferably) the outside path—for instance at *a*, where cams are located for giving an extreme movement to the vibrating lever, such extreme movement of the lever being utilized for various purposes, as aforesaid.
95

When it is desired to change the combination of the lock, stud C is changed to another hole, in which case a person knowing only the previous combination will have no advantage
100 over a novice in attempting to open a lock.

What I claim is—

In a permutation-lock, the combination, with rotating cam-disk and vibrating lever, the

disk having different combinations of cams
for shifting the lever, of a movable stop con-
stituting the starting-point in computing the
combinations, provisions being had on the
5 cam-disk for shifting the stop from one point
to another to serve as starting-points succes-
sively for the different combinations of the
lock, substantially as set forth.

In testimony whereof I sign this specifica-
tion, in the presence of two witnesses, this 14th 10
day of May, 1889.

BYRON J. DOUDS.

Witnesses:

F. E. POISTER,
GEO. O. RICE.