

Long & Hathaway,

Permutation Lock,

No 39,056,

Patented June 30, 1863.

Fig. 3.

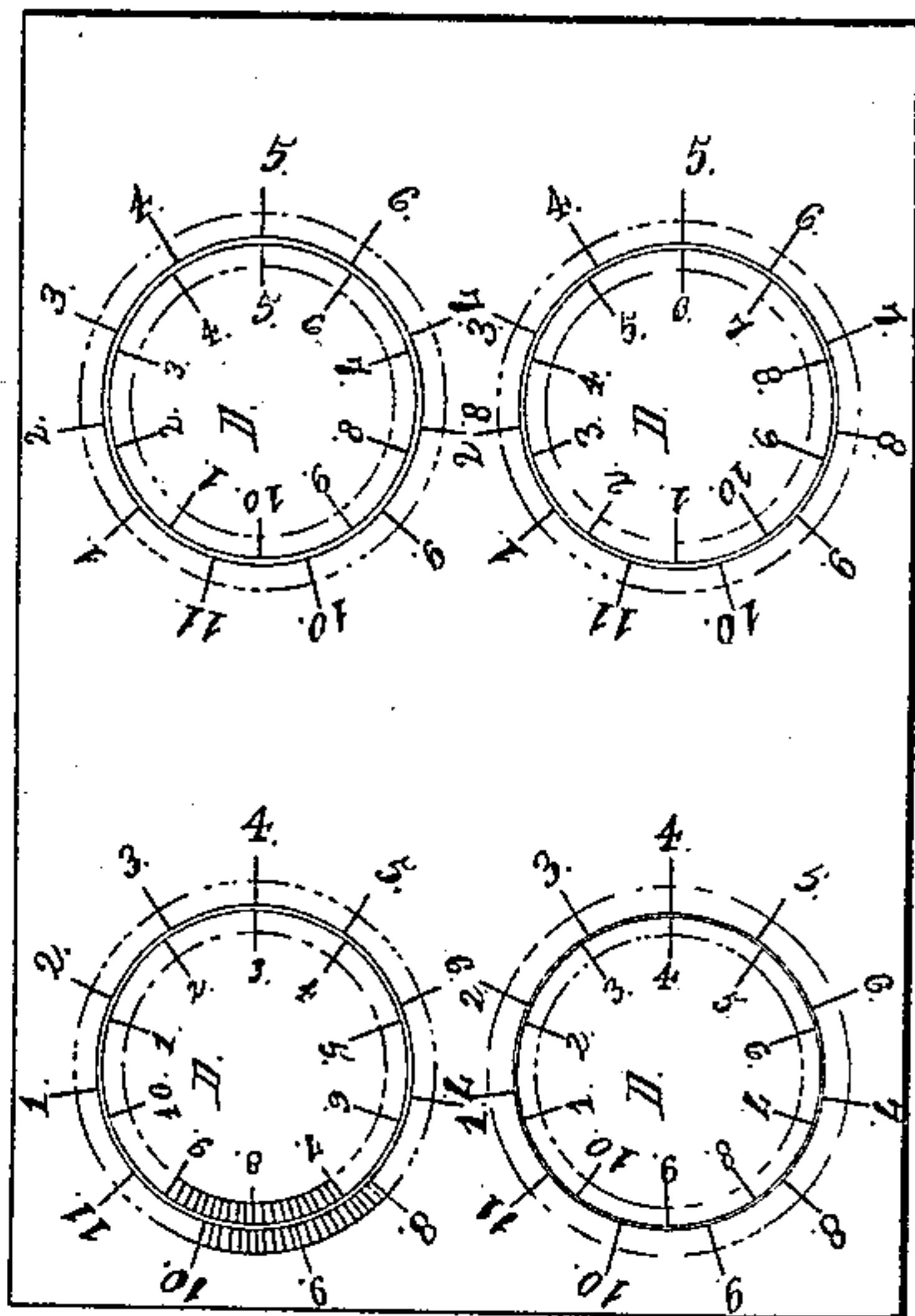


Fig. 1.

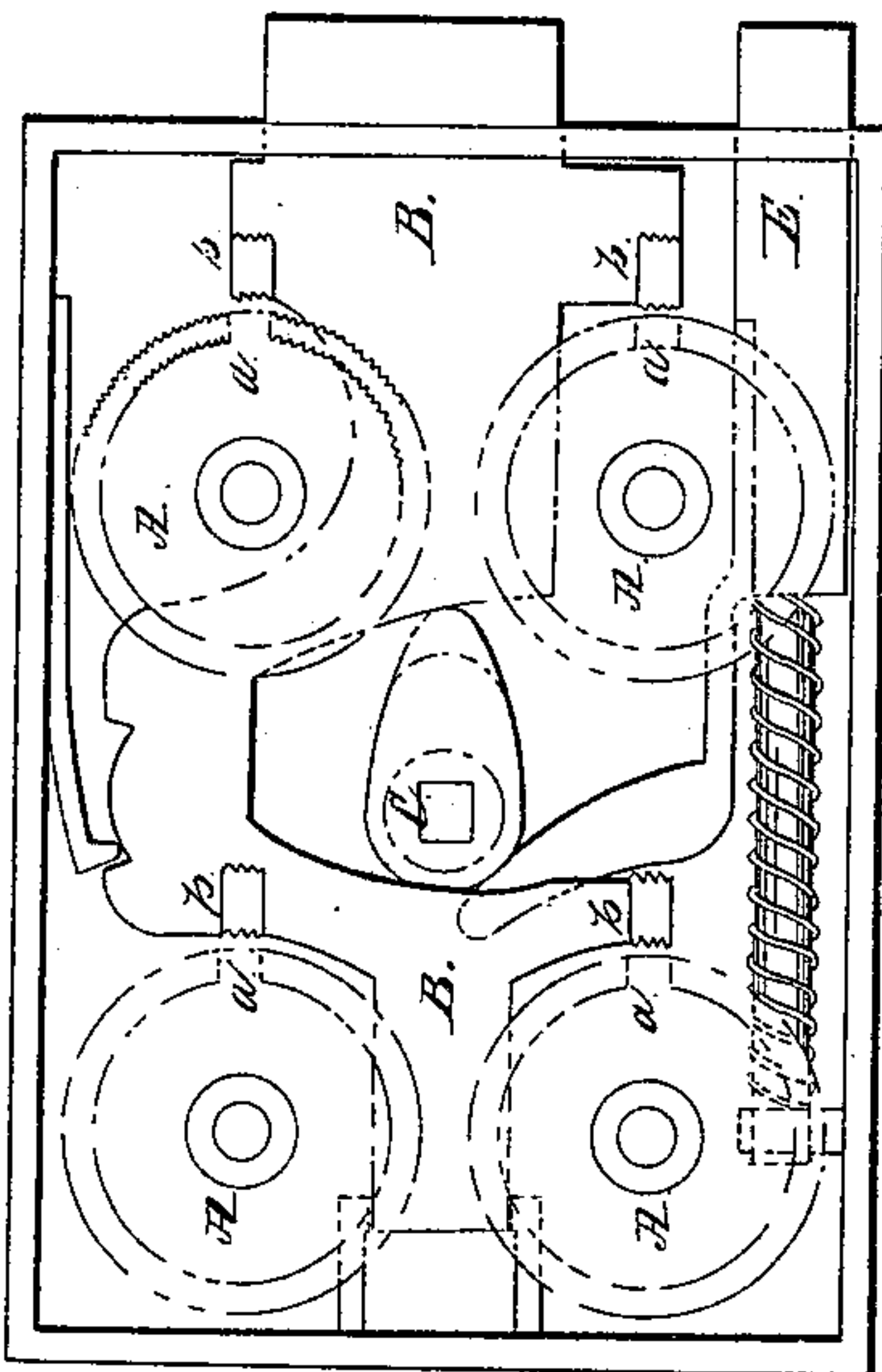
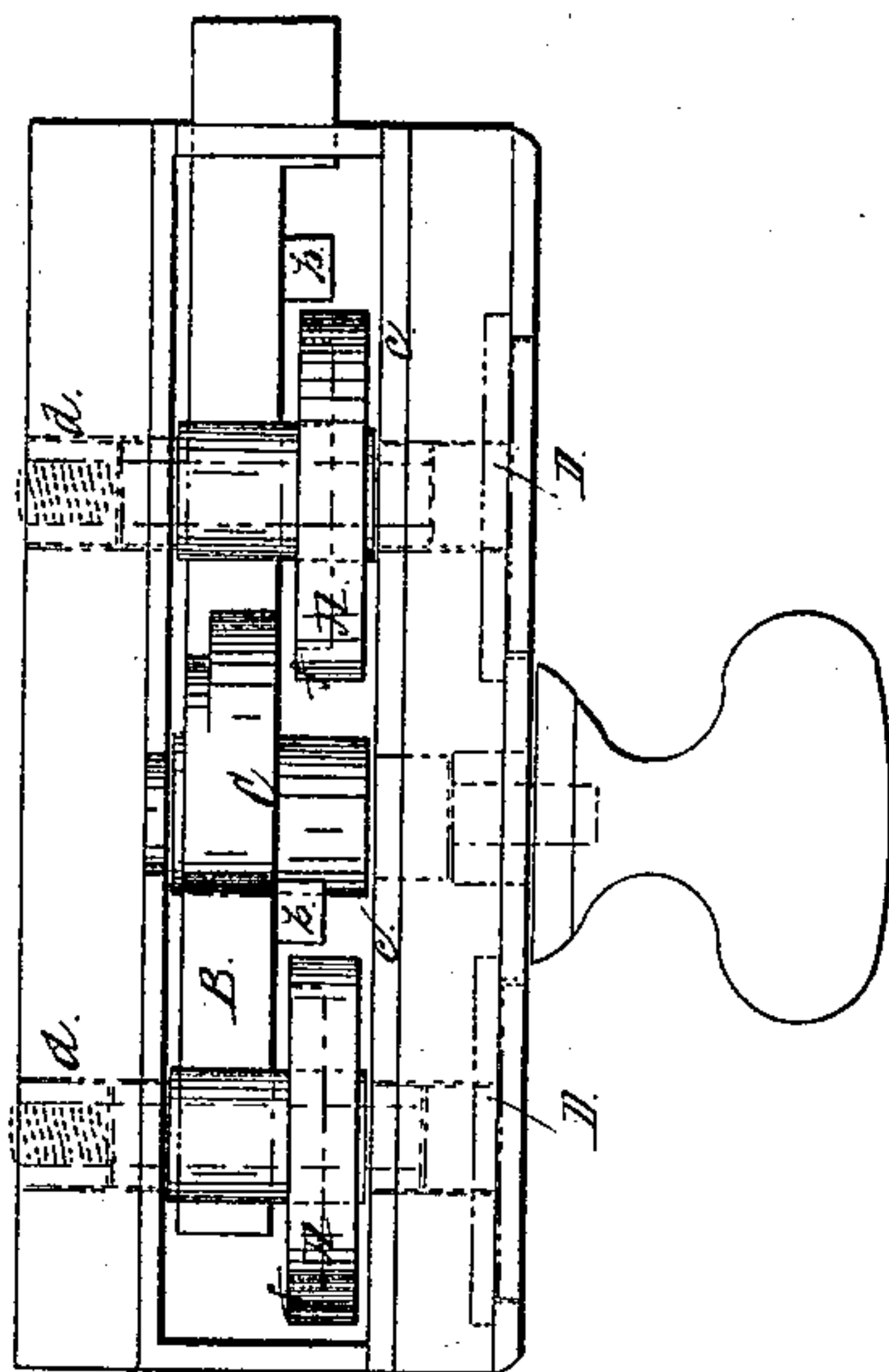


Fig. 2.



Witnesses:

*A. S. Hathaway
Thomas Loring*

Inventors:

*Samuel N. Long
Matthias C. Hathaway*

UNITED STATES PATENT OFFICE.

SAMUEL N. LONG, OF CHATHAM, AND MATTHIAS E. HATHAWAY, OF
WAREHAM, MASSACHUSETTS.

IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. **39,056**, dated June 30, 1863; antedated
June 9, 1863.

To all whom it may concern:

Be it known that we, SAMUEL N. LONG, of Chatham, in the county of Barnstable and State of Massachusetts, and MATTHIAS E. HATHAWAY, of Wareham, in the county of Plymouth and State aforesaid, have invented a new and Improved Mode of Constructing Locks for Banks, Safes, &c.; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

Figure 1 represents a front elevation of the lock with plate *c* removed. Fig. 2 is a horizontal section through the guard-wheels *A A* and indicating-disks *D D*. Fig. 3 is an elevation of the indicating-plate containing the revolving disks.

The object of this invention is to obtain a lock which can be locked and unlocked only by the person having charge of the same or by information from that person, and also proof against destruction by the introduction of gunpowder or other explosives.

The nature of the invention consists in, first, an improved construction of guard-wheels; second, an improved manner of connecting the guard-wheels and index-plates; third, a peculiar combination of bolt and latch, with an eccentric for operating them simultaneously.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A A in the several figures represent guard-wheels constructed with serrated flanges *f f* with slots *a a* therein, the said slots being only of sufficient width to allow the passage of the guards *b b*. These wheels revolve easily on their journals in bearings formed in the plates or shell of the lock. The shafts or axes of these wheels are perforated, forming a sleeve which receives the axes of the disk-wheels.

D D are the indicating-disks, revolving easily on their axes in the sleeves of the guard-wheels, and which may be confined to the same by the nuts *d d*. These disks revolve in recesses formed in the indicating-plate, and their outer surface is marked in divisions of tenths or any convenient number,

which divisions are subdivided into tenths or other numbers. The surface of the indicating-plate, as represented in Fig. 3, immediately surrounding these disks, is marked in divisions of elevenths or other convenient number, (but differing from the numbers on the movable disks,) and these are also subdivided, as before.

The object of varying the numbers on the disks and plate is that but one division each on the plate and disk shall correspond at the same time.

B is the bolt, sliding in its bearings at each end, to which is attached the guards *b b*. These guards are located in line with the centers of the guard-wheels, and are provided with serrated edges corresponding to the flanges on the said wheels.

C is a cam by which the bolt is thrown when the guard-wheels are in position.

E is a supplementary bolt, serving the purpose of a latch when the bolt *B* is withdrawn, and may be moved by the cam *C* without reference to the bolt *B*.

We will now proceed to describe its operation. It will be seen from an inspection of the drawings that the bolt can be moved in either direction only when the guard-wheels are in the position represented in the drawings. It will be absolutely necessary, therefore, for the operator to know the position of the slots *a a* in reference to the divisions on the indicating-disks. To ascertain this, the plate *c* must be removed and the guard-wheels placed in the position represented. The bolt should then be thrown to the center of its motion and there retained. The plate *c* is then put on, and also the indicating-plate. The indicating-disks *D D* should then be introduced, and the nuts *d d* applied and screwed up firmly. By this means the indicating-disks are firmly secured to the guard-wheels. The coinciding divisions on the revolving and stationary circles should now be carefully noted, and to guard against mistakes should be committed to paper. It will now be clearly seen that by moving the bolt forward and then changing all or either of the revolving disks from the described position the bolt can only be thrown back by the person having knowledge of the coinciding divisions on the re-

volving and stationary disks described. Now, should it be suspected, or to guard against the liability, that the knowledge of those coinciding divisions has been obtained by some unauthorized person, the position of the slots *a a* in reference to the divisions on the indicating-disks may be changed and the lock restored to its former security. This is effected by bringing the bolt to the central position, as before described, and relaxing the nuts *d d*, then changing the revolving disks to some other coinciding divisions on the indicating-plate, which should be noted as before, after which, the nuts being set up, the lock is ready for operation as before; and the number of such changes which may be made are indefinite. It will be seen that by changing the revolving disks from the coinciding points when the bolt is thrown back, the guard-wheels are equally effective to prevent the motion of the bolts, thus preventing any unauthorized person from discovering the coinciding points which will allow the bolt to be moved.

In order to prevent any person from ascertaining the position of the slots in the flanges of the guard-wheels by pressing on the bolt by means of the knob and moving the guard-wheels by the indicating-disks to feel out their position, it will be seen that both the outer and inner sides of the flanges on the guard-wheels are serrated, and also the ends of the guards *b b*, and any pressure on the bolt

causes the teeth to interlock and effectually prevent the guard-wheels from being turned.

It will be understood that all the parts of this lock which are accessible to the operations of the burglar are composed of drill-proof materials; but should he succeed in removing any portion of the exposed parts, it will be seen that he is still left without any means for the introduction of gunpowder or other explosives, thus rendering it proof against any burglarious operations.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The guard-wheels A, constructed with annular flanges *f*, slotted at *a* and serrated on their inner and outer surfaces, all as herein shown and described, and for the purposes set forth.

2. The described combination of the guard-wheels A and index-wheels D with clamp-nuts *d*, for connecting or disconnecting them, as explained.

3. The combination of the bolt B, latch E, and cam C, all constructed and arranged as herein shown and described, so that the bolt and latch may be operated either simultaneously or separately, as explained.

SAMUEL N. LONG.

MATTHIAS E. HATHAWAY.

Witnesses:

A. S. HATHAWAY,

THOMAS SAVERY.