

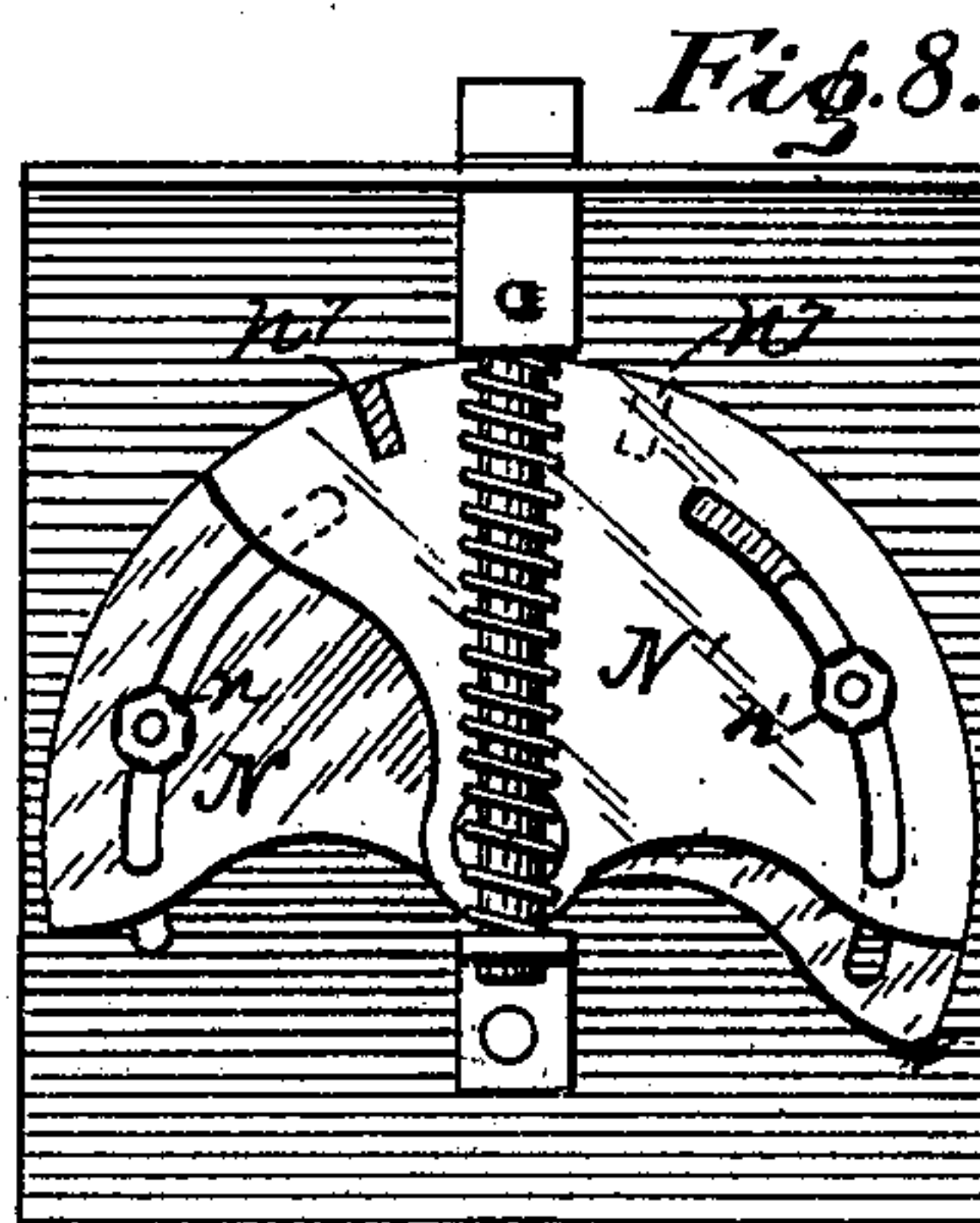
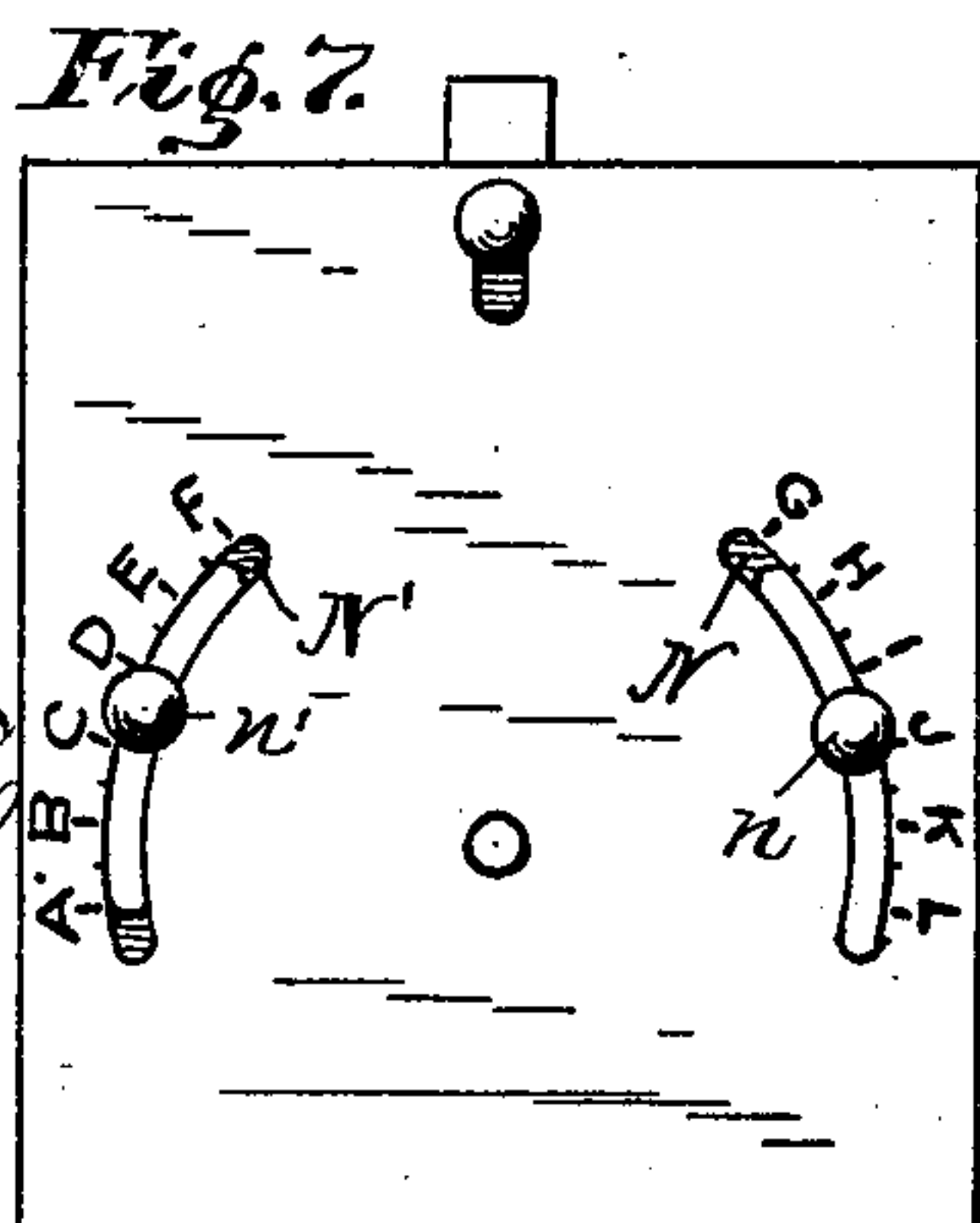
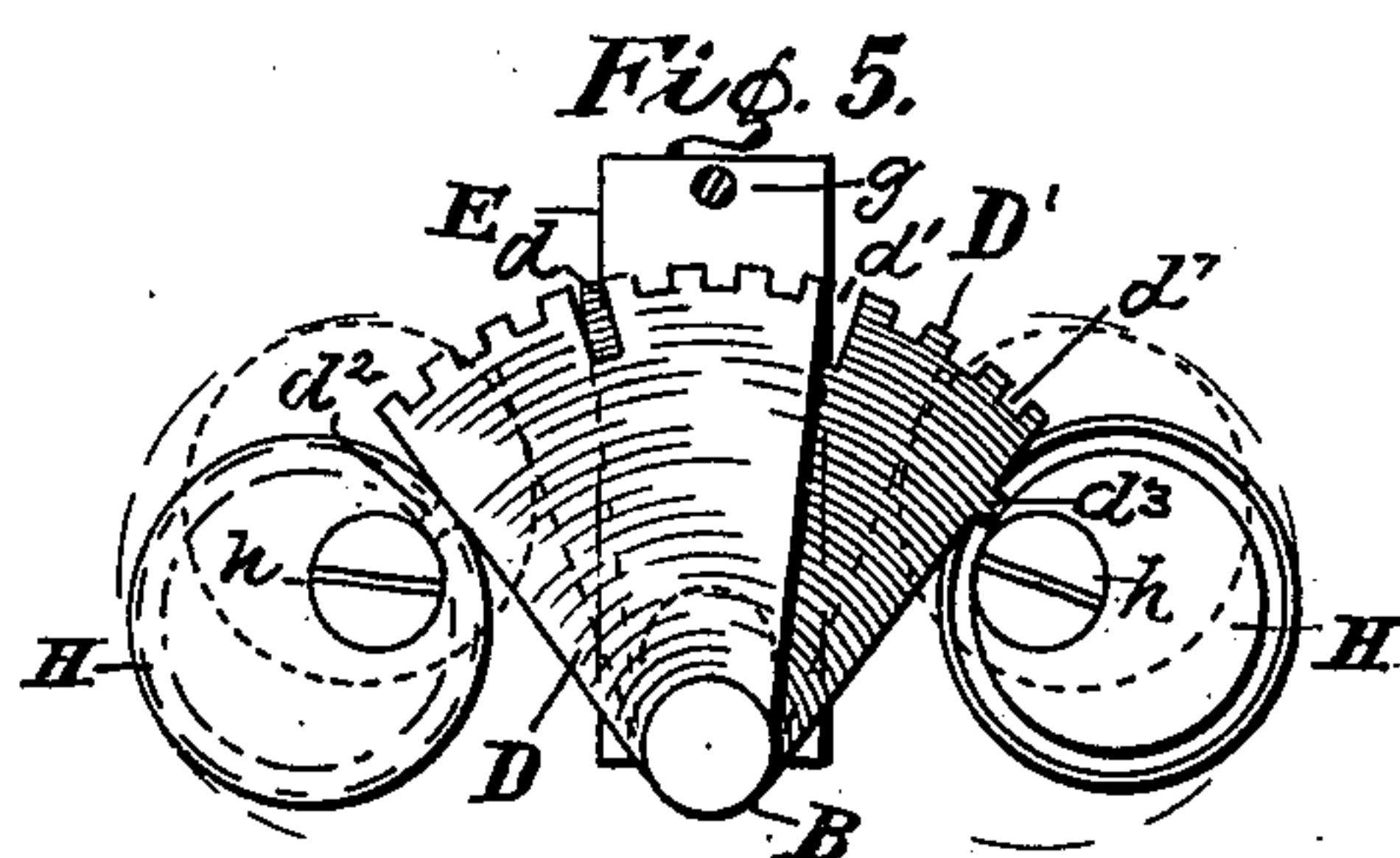
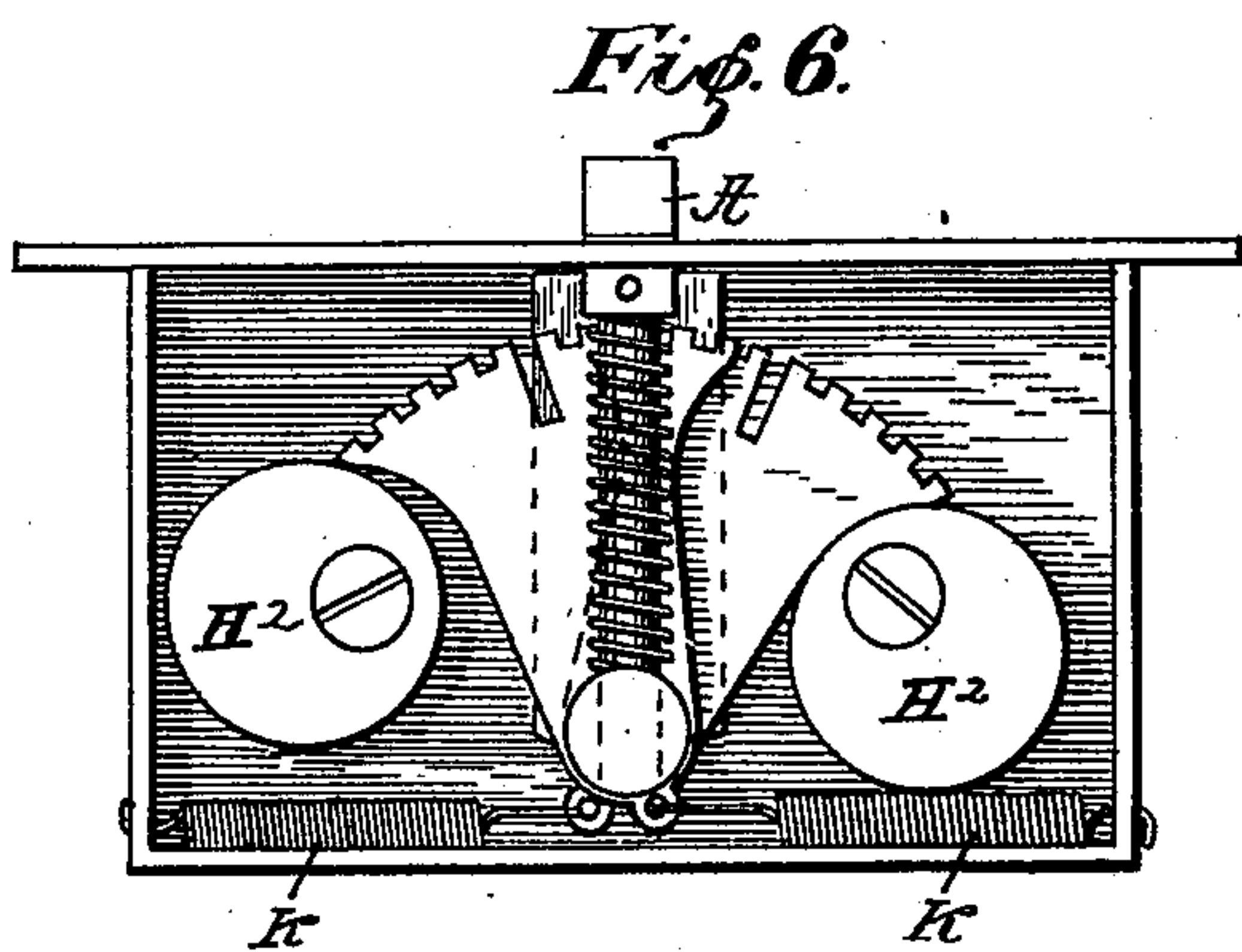
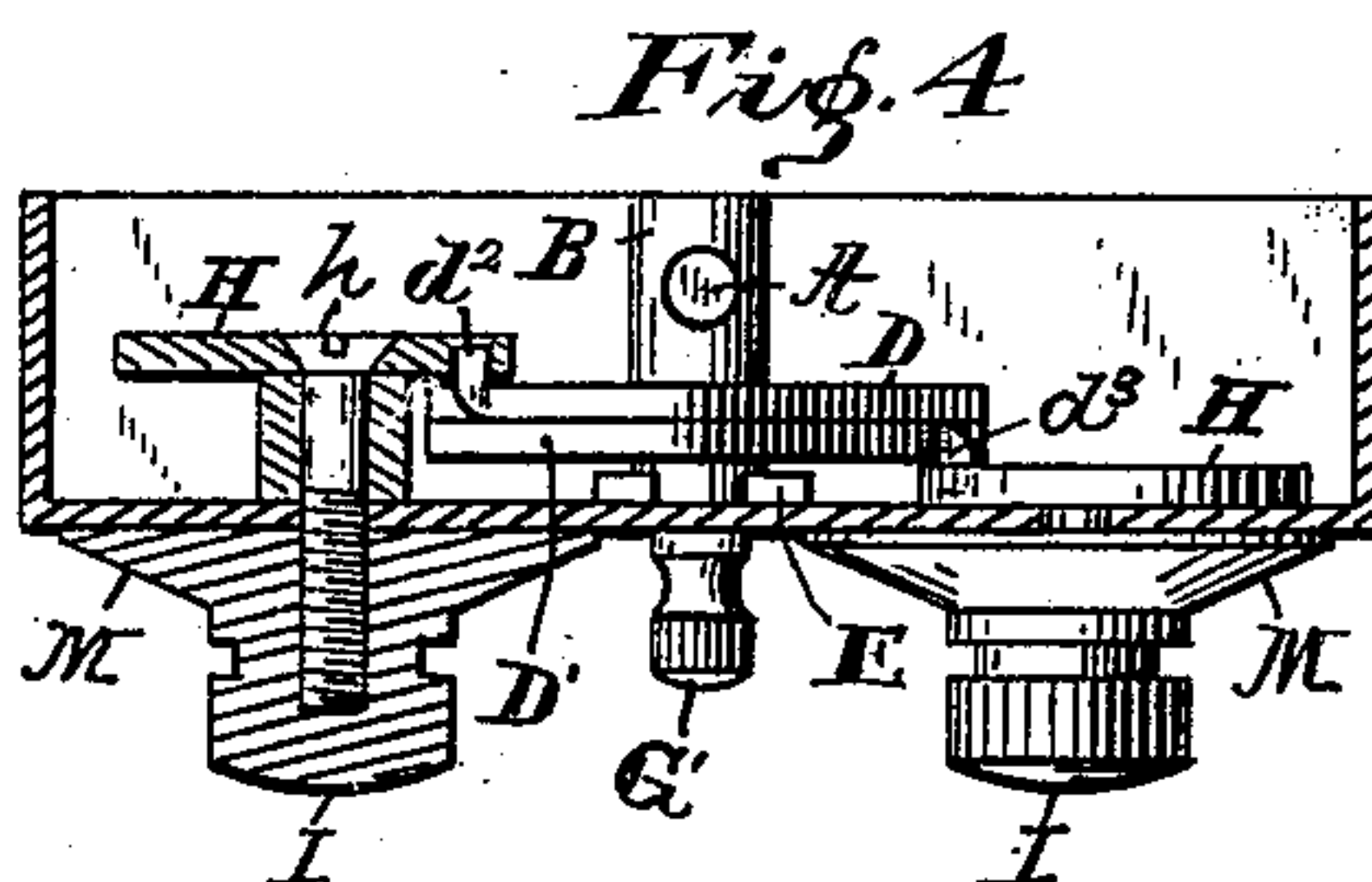
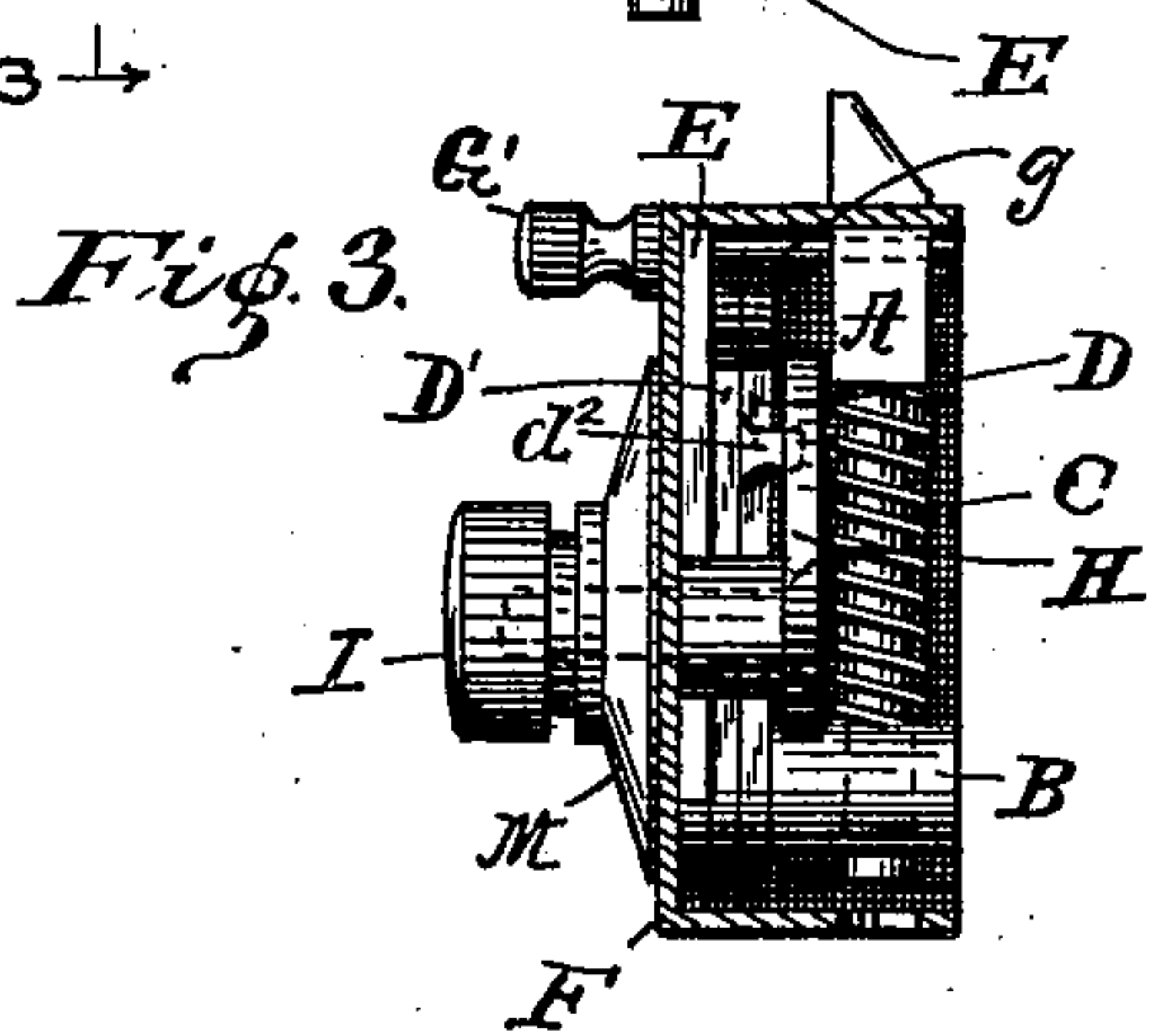
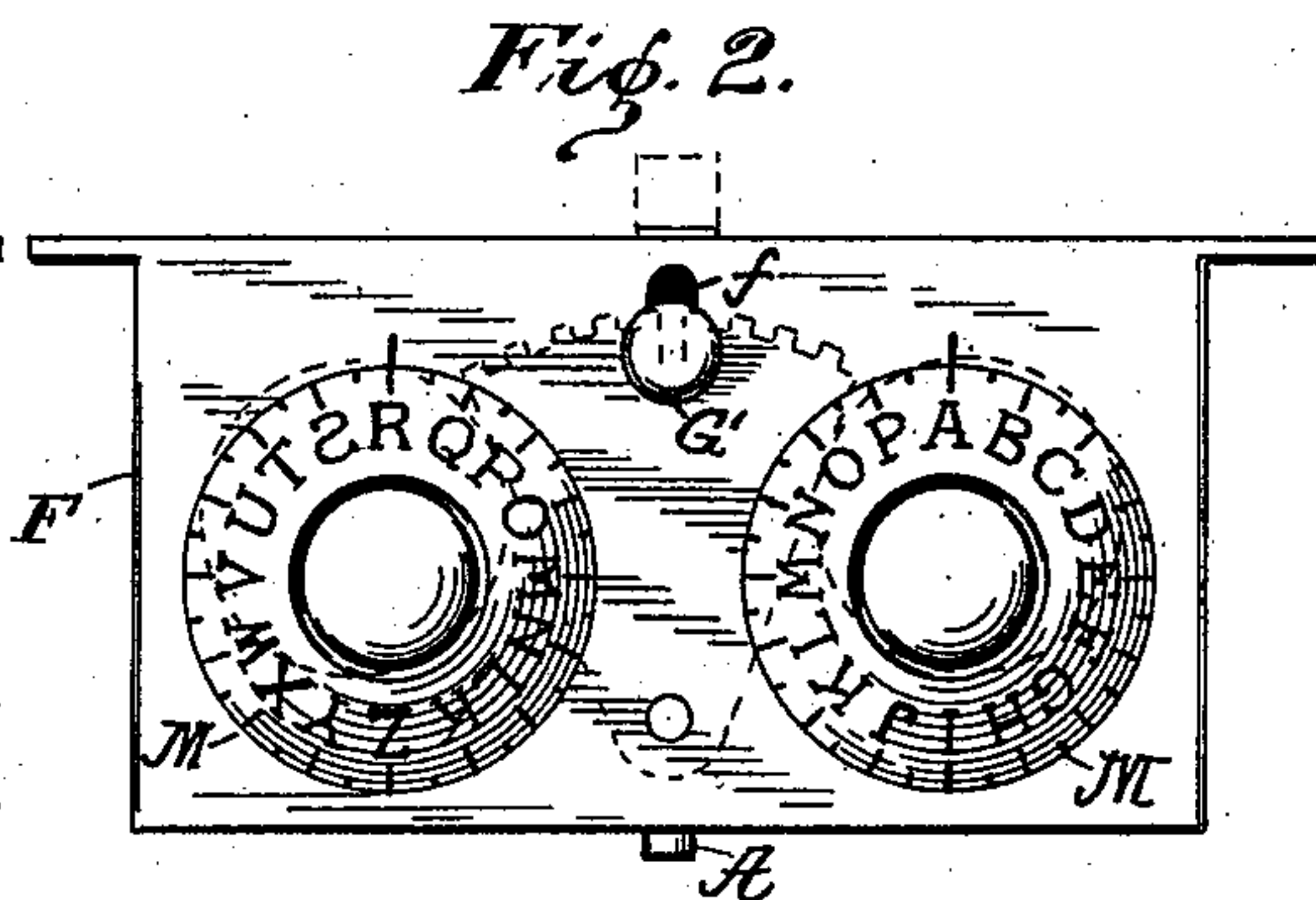
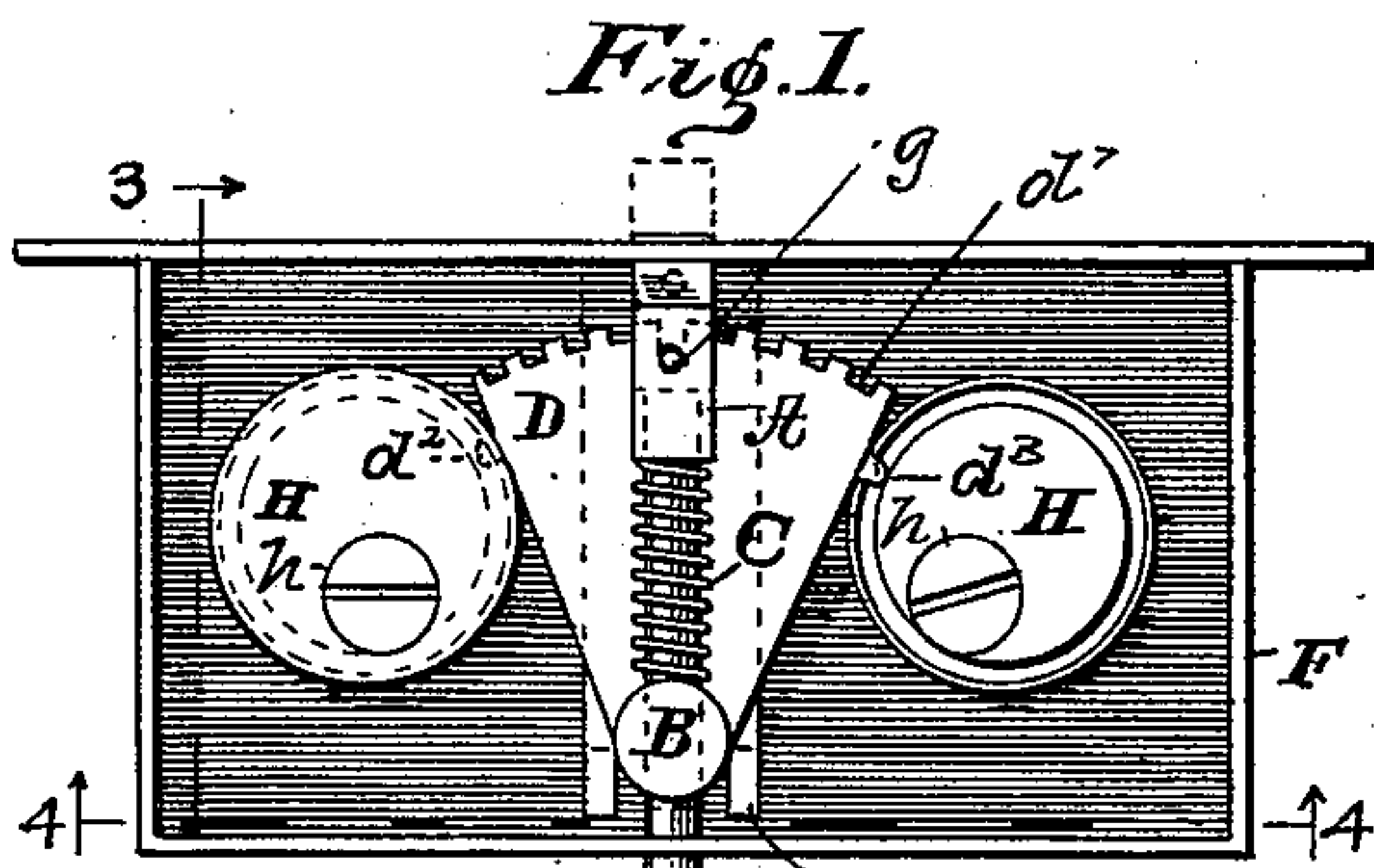
(No Model.)

2 Sheets—Sheet 1.

L. C. THOMPSON.  
COMBINATION LOCK.

No. 602,114.

Patented Apr. 12, 1898.



Witnesses  
C. Schlegel  
L. A. Minturn

Inventor  
Lewis C. Thompson  
By  
Joseph A. Minturn  
Attorney.

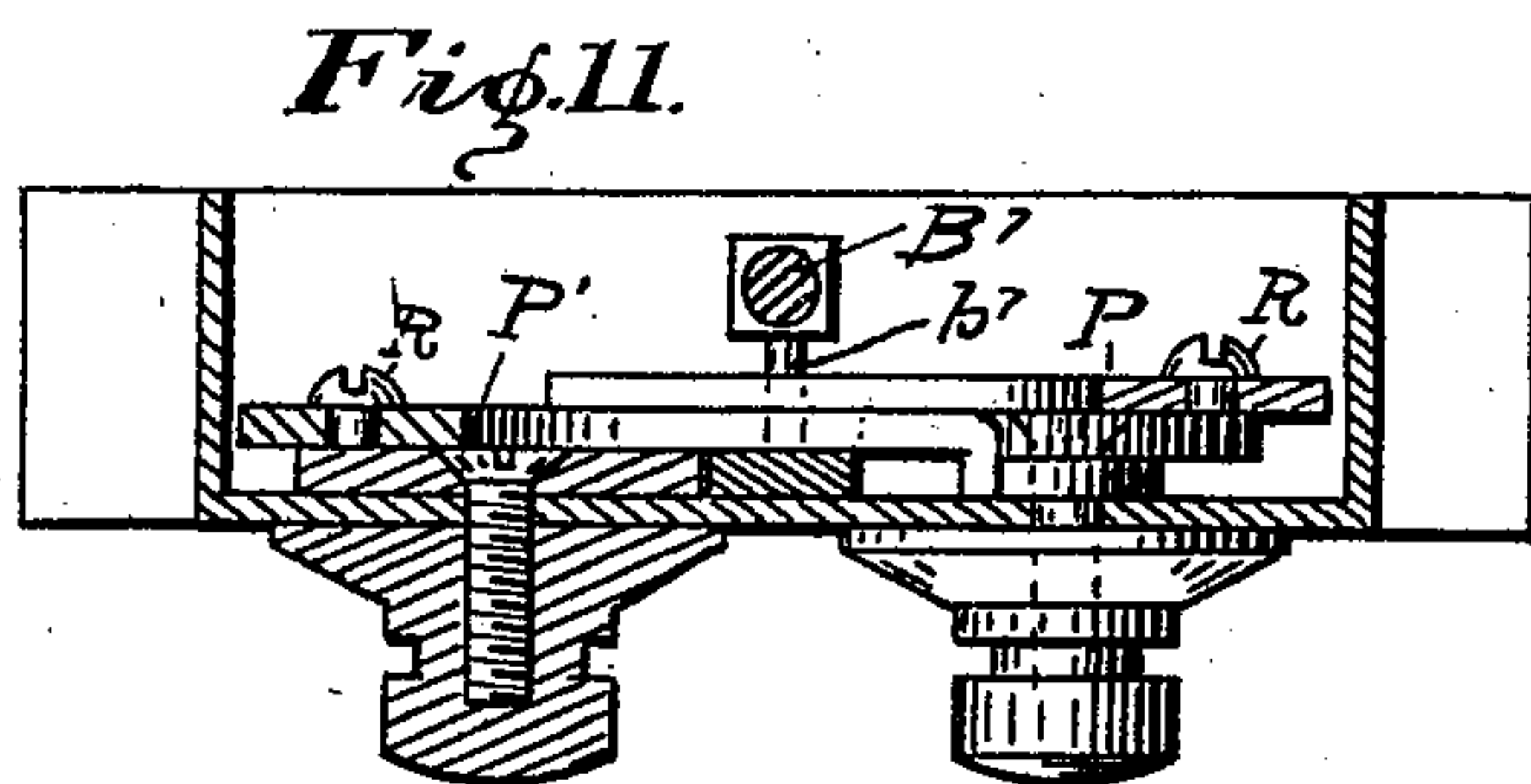
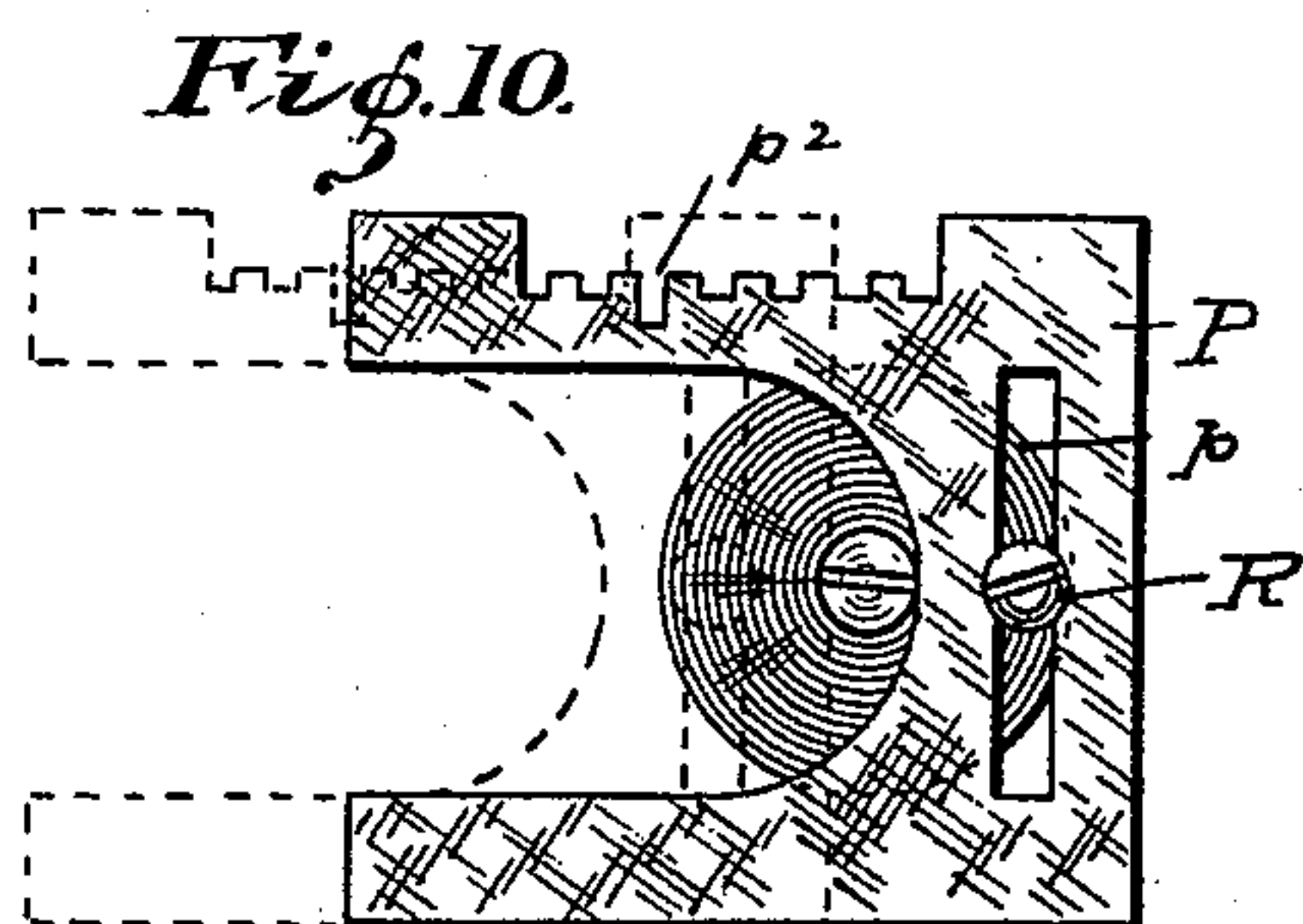
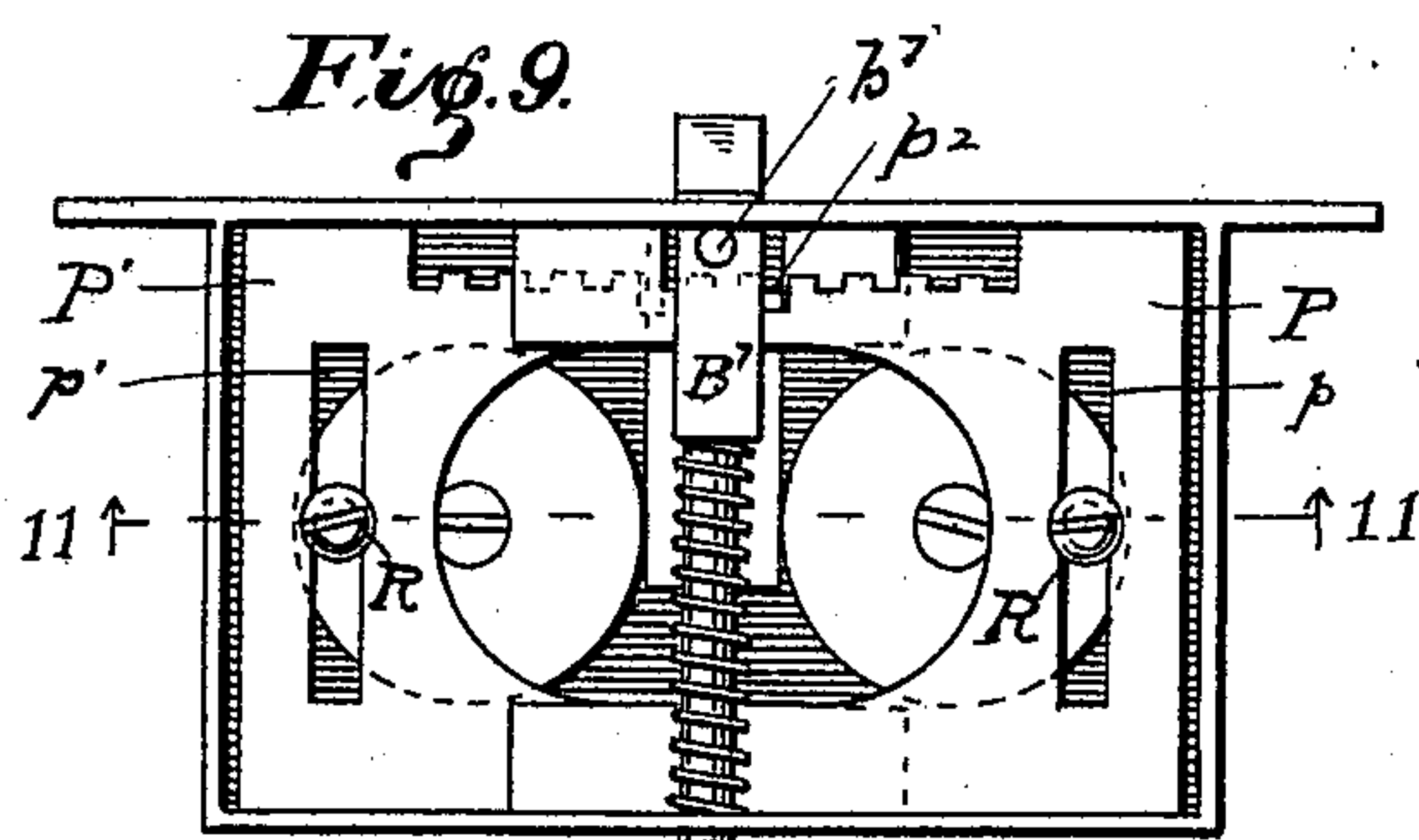
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2 Sheets—Sheet 2.

L. C. THOMPSON.  
COMBINATION LOCK.

No. 602,114.

Patented Apr. 12, 1898.



Witnesses  
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# UNITED STATES PATENT OFFICE.

LEWIS C. THOMPSON, OF INDIANAPOLIS, INDIANA.

## COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 602,114, dated April 12, 1898.

Application filed June 21, 1897. Serial No. 641,536. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS C. THOMPSON, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Combination-Locks, of which the following is a specification.

The object of this invention is to provide a simple and inexpensive permutation-lock in which the combination can be quickly and easily changed when desired and which cannot be picked or worked by a person not acquainted with the combination.

Referring to the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is an inside view of the case from the back thereof, showing the inside mechanism of the lock; Fig. 2, a view of the front of the lock, showing the bolt-stud and the two knobs with their index-rings; Fig. 3, a transverse section of the lock-case on the line 3 3 of Fig. 1, and Fig. 4 a longitudinal section of same on the line 4 4 of Fig. 1; Fig. 5, a detail showing the tumbler-plates and actuating-cams for operating same. The tumblers in this view are in position required for locking, and the unlocked position is shown by the dotted lines. Fig. 6 shows a modified construction in which the tumbler-plates are forced out against the cams by means of springs; Figs. 7 and 8, front outside and back inside views, respectively, of a modified construction in which the tumbler-plates are moved by means of knobs which project outside within reach; Fig. 9, a modification in which the tumblers are two plates having an oppositely-reciprocating movement actuated by means of crank-pins; Fig. 10, a detail showing one of the plates and the crank-wheel to operate it, and Fig. 11 a longitudinal section on the line 11 11 of Fig. 9.

A represents the bolt, the rounded inner end of which is projected through a suitable opening in the post B and is pressed out by the spring C between the shoulder on the bolt and the post. Placed between the bolt A and the inner wall of the case and pivotally secured to the post B are two tumbler-plates D and D', and between the inner tumbler and the wall of the casing is the plate E. A stud-pin g connects the plate E with the bolt A,

and the pin is projected through the slot f in the front wall of the case F and terminates on the outside with the knob G'. By pressing on the knob G' with sufficient force to overcome the tension of the spring C of the bolt the bolt A will be forced into the case. The function of the tumbler-plates D and D' is to arrest the inward movement of the stud-pin g, except when registering slots d and d', in a radial line from the pivotal center of the plates, are brought simultaneously into the path of the stud-pin. The diameters of the segments D and D' are preferably equal and are sufficient to form a lock for the bolt by arresting the inward movement of the pin g. H are slotted cams, which are adjustably fastened by means of the screws h to the knobs I on the outer front of the case. The cams will be moved by turning the knobs I. The spurs d<sup>2</sup> and d<sup>3</sup>, integral with the plates D and D', respectively, but on opposite sides of the plates from each other, are bent down into the slot of the adjacent cam, and when the cams are moved by turning the outside knobs I the tumbler-plates will be moved around their common pivot.

M are index-rings secured to the spindles of the knobs on the outside of the case and rotating with the knobs. Their action and use are so well understood that further description is unnecessary.

By moving the tumblers and at the same time pressing the stud-pin against the tumblers a sensitive touch would recognize when the pin came opposite the notch and the lock could be picked or opened by one not knowing the combination, and to prevent this I prefer to provide the notches d' along the entire periphery of the plates, any one of which will give the same sensation in the operation above described which would be given by the notches d and d'; but the notches d' will not be of sufficient depth to let the bolt back far enough to release it from its striking-plate.

By loosening the screws h the index-rings M can be rotated without moving the cams. This provides easy means for changing the combination of letters required in opening the lock.

In the modification shown in Fig. 6 the tumbler-plates are pressed inwardly by the cams



H<sup>2</sup>, and are forced constantly in the opposite direction by the springs K, in the manner as clearly shown in the drawings.

The modification shown in Figs. 7 and 8 is intended for post-office boxes and other receptacles requiring a more inexpensive lock than the forms above described. In this modification the plate N is provided with the knob *n*, which projects through a slot in the wall of the case concentric with the pivotal point of the tumbler, and the tumbler-plate N' has a like knob *n'*, which projects through a slot in the plate N and thence through a slot in the wall of the case, and the two plates N and N' will be shifted by pressing the knobs *n* and *n'* in the required direction. The two plates will have the radial notches *n'* for the stud-pin to drop into and may have their peripheries notched in the manner described for the other forms of the lock to prevent picking. In this form of lock the index will be placed on the outer face of the lock along the slots in the manner as shown, and to enable the combination to be changed the plates N and N' will be slotted to allow the position of the knobs *n* and *n'* to be changed on the plates which carry them. To this end they will be bolted in the manner as shown in the drawings.

In the modification shown in Figs. 9, 10, and 11, Sheet 2, the two tumblers, instead of oscillating around a common center, have a reciprocating movement, actuated by a crank-pin mounted on the inner end of spindle of the index-knobs and working in a transverse slot in the reciprocating plates.

P and P' are the plates having the transverse slots *p* and *p'* and having the notches *p*<sup>2</sup> for the stud-pin *b*<sup>7</sup> of the bolt B<sup>7</sup>. R is the crank-pin, working in the slots *p* and *p'*, respectively. The drawings fully illustrate the construction of this modified form of my invention.

Having thus fully described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. In a permutation-lock, a bolt actuated by a stud-pin, a stud-pin accessible from the outside of the lock and arrested in its movement by tumblers, a pair of movable tumbler-plates having slots which register with each other at certain positions of the plates to allow the stud-pin to pass into them, thereby

permitting the maximum stroke of the stud-pin, a pair of knobs on the outside of the case mounted on separate spindles, said knobs having index-rings and means consisting of cranks or cams on the inner ends of their spindles for independently moving the tumbler-plates, as and for the purposes specified.

2. A bolt actuated by a stud-pin, a stud-pin accessible from the outside of the lock and checked in its movement by tumblers, a pair of tumbler-plates moving about a common center and having slots which register with each other at certain positions of the plates to allow the stud-pin to pass into them thereby permitting the maximum movement of the said pin and means for moving the tumbler-plates from the outside of the lock-case, into an ascertained position consisting of a pair of spindles, one for each tumbler-plate, having outside knobs and crank or cam connections between the inner end of each spindle and its respective plate, all substantially as described.

3. In a permutation-lock, a pair of tumbler-plates moving about a common pivotal point and having a series of notches in the peripheries of the plates, spindles having knobs on the outside of the case, said spindles being connected with the tumbler-plates by means substantially as described whereby rotary movement of the knobs will impart reciprocating movement to the plates.

4. A bolt actuated by a stud-pin, a stud-pin accessible from the outside of the lock and checked in its movement by tumblers, a pair of tumbler-plates having slots which register with each other at certain positions of the plates to allow the stud-pin to pass into them thereby permitting the maximum movement of the said pin, a pair of knobs on the outside of the case having index-rings said knobs and rings being mounted on revoluble spindles, cams adjustably secured to the inner ends of the spindles for moving the tumbler-plates substantially as described and for the purposes specified.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 11th day of June, A. D. 1897.

LEWIS C. THOMPSON. [L. S.]

Witnesses:

JOSEPH A. MINTURN,  
C. SCHLEGEL.