

J. CASSINO.
Permutation Locks.

No. 153,744.

Patented Aug. 4, 1874.

Fig. 1.

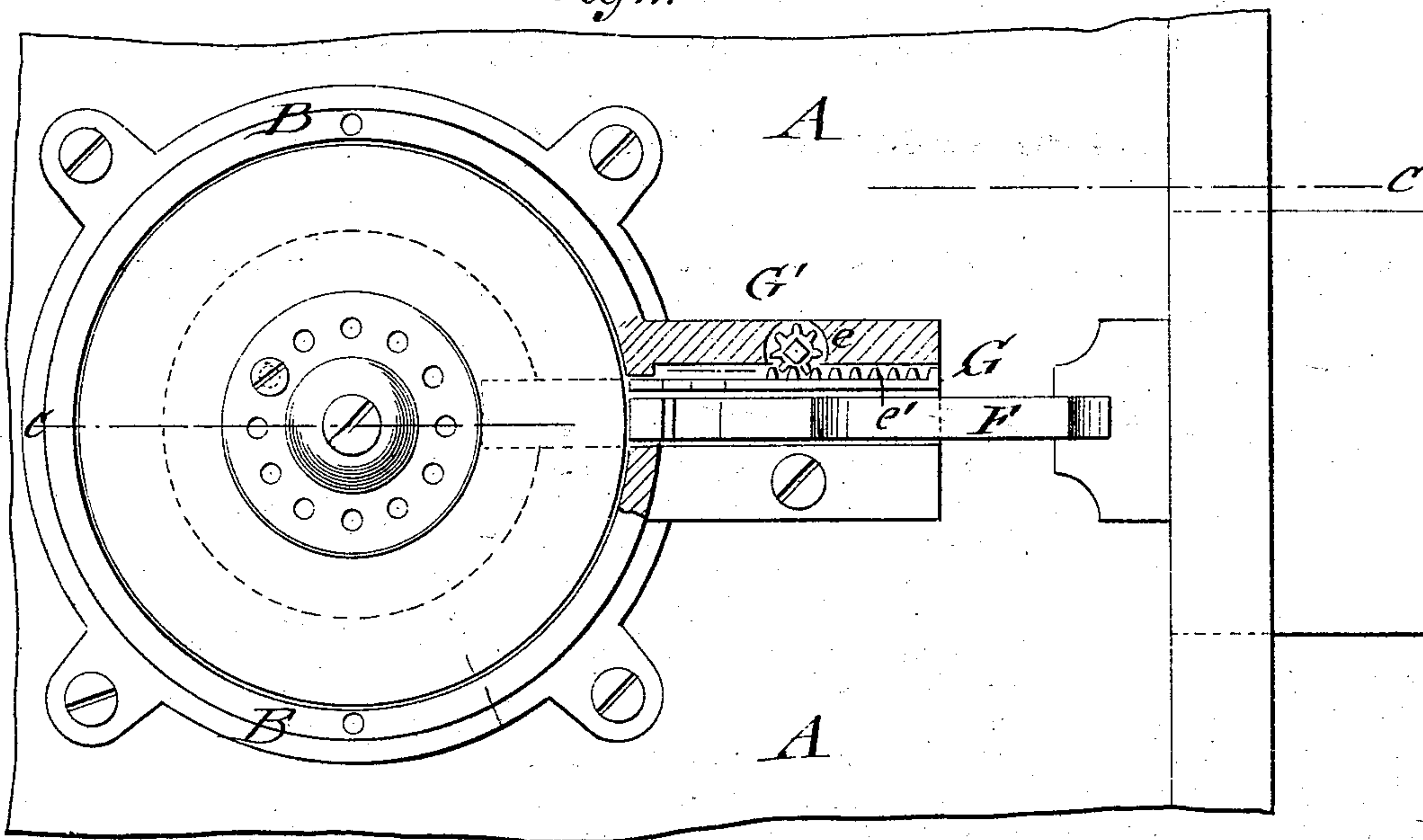


Fig. 2.

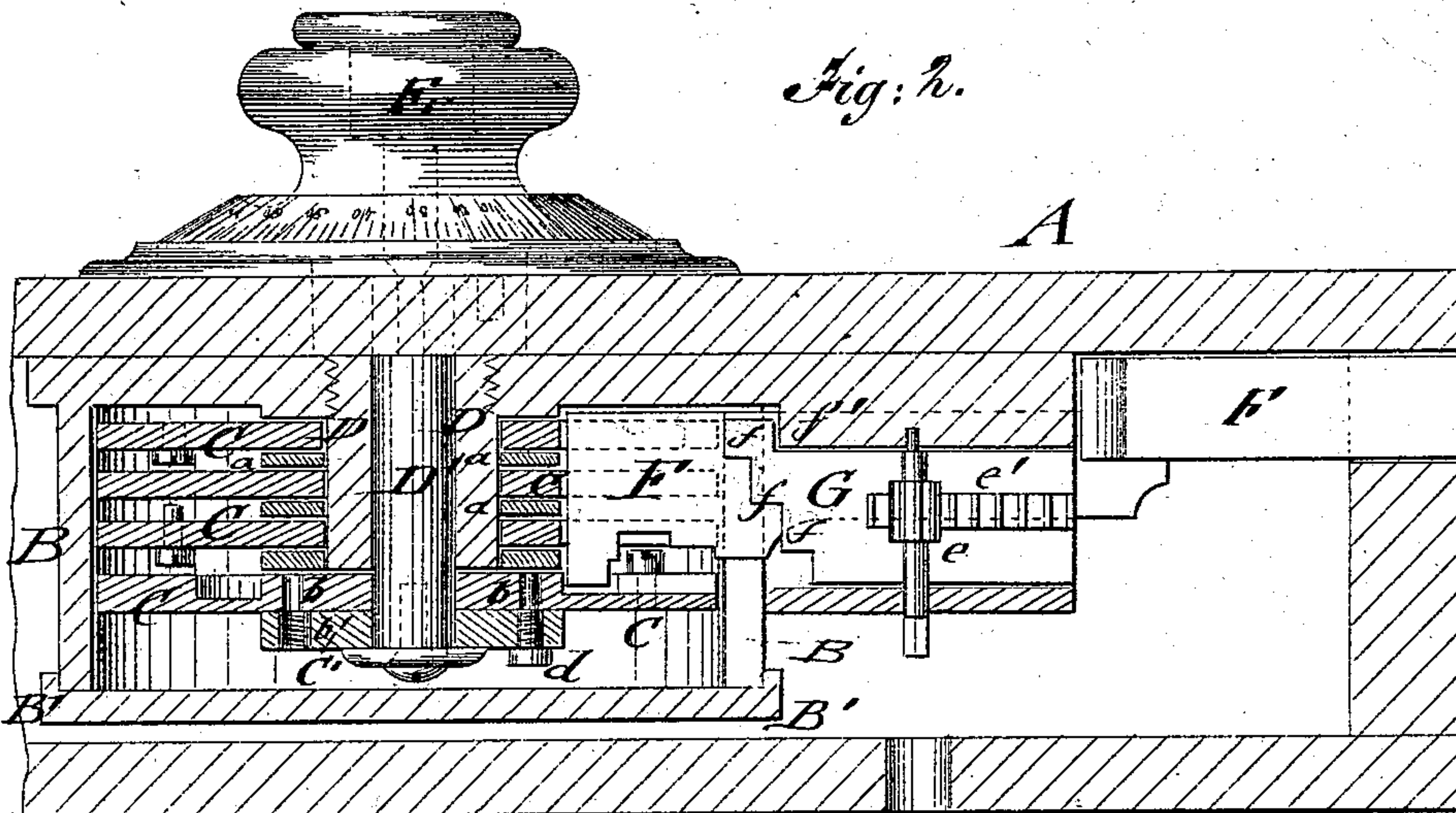
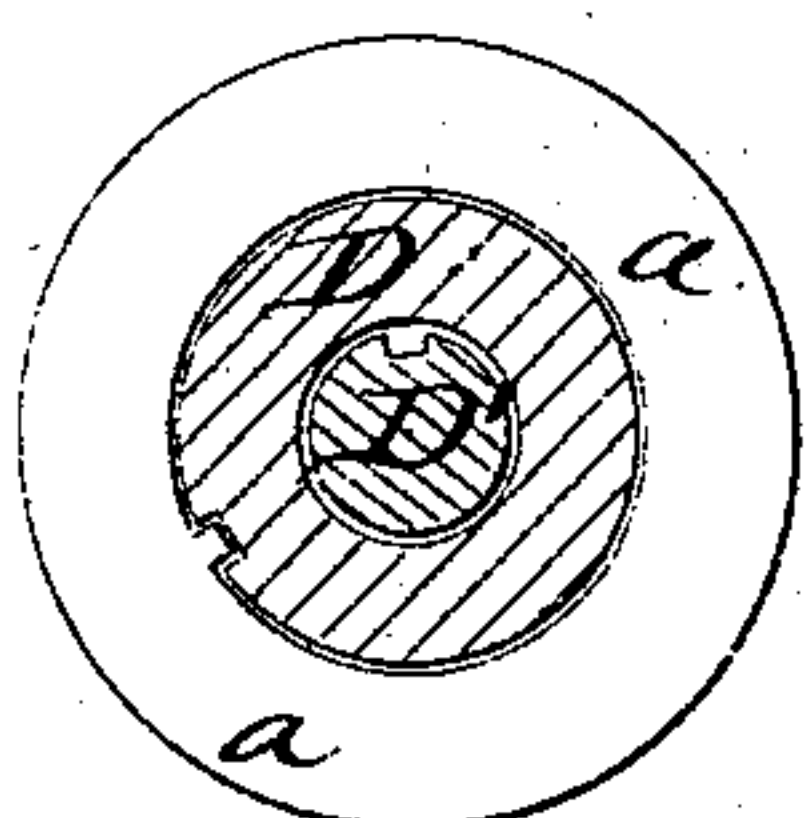


Fig. 4.

Fig. 3.

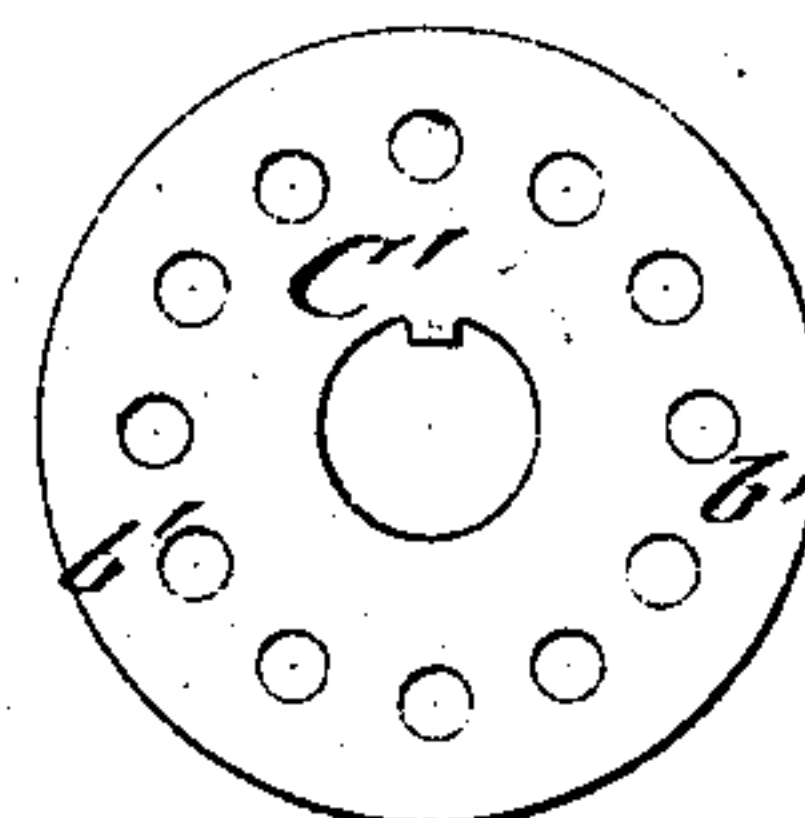
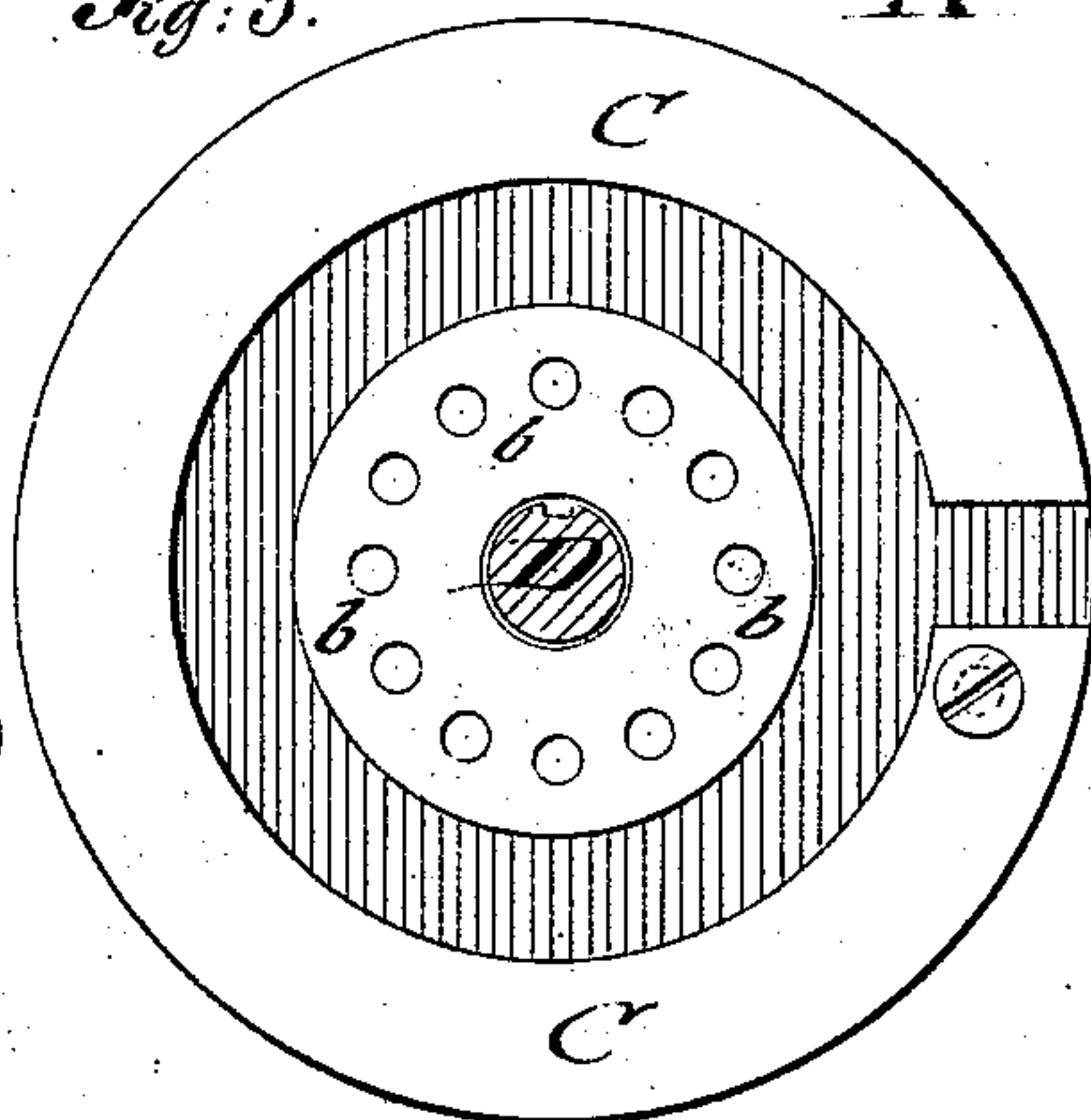
A

Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEPH CASSINO, OF GREENVILLE, MISSISSIPPI.

IMPROVEMENT IN PERMUTATION-LOCKS.

Specification forming part of Letters Patent No. **153,744**, dated August 4, 1874; application filed June 6, 1874.

To all whom it may concern:

Be it known that I, JOSEPH CASSINO, of Greenville, in the county of Washington and State of Mississippi, have invented a new and Improved Combination-Lock, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a rear view of my improved combination-lock with cap-piece detached; Fig. 2, a horizontal longitudinal section of the same on line *c c*, Fig. 1; and Figs. 3, 4, and 5, respectively, are detail views of the uppermost tumbler, washer, and combination adjusting-plate.

Similar letters of reference indicate corresponding parts.

The object of my invention is to furnish a combination-lock for safes, vaults, &c., which combines simplicity, cheapness, and strength with a considerable number of combinations, and admits the ready and convenient resetting to another combination when it is desired or advisable to change.

My invention consists of a combination-lock with a suitable number of tumblers, which are set by a perforated combination-disk and adjusting-screw, in connection with a recessed sliding bolt carried into the tumbler-slots by a key, operating a pinion and rack of the bolt. The corresponding numbers on the dial-plate of the knob produce the combination for setting the tumblers and throwing the main bolt into open position.

In the drawing, A represents the door of any safe, vault, or similar structure; B, a cylindrical casing or box screwed to the inner side of the outer wall of the door for inclosing the tumblers C, which are placed, with intermediate washers *a*, on the tubular projection D, and turned by the knob E and spindle D' in the customary manner. Knob E is provided with a face-dial subdivision, which is set on the index-marks of the dial-ring at the outside of door A. The uppermost or cap-tumbler C is applied to the spindle D', and has a number of perforations, *b*, arranged in a circle at some distance from the spindle. A disk, C', having a corresponding number of threaded perforations, *b'*, is keyed to the end of spindle D', and connected to any desired perforation of cap-tumbler C by a small detachable set-screw, *d*, producing thus a large number of different com-

binations in proportion to the number of perforations employed. The incasing-box B is closed by a cap-piece, B', applied by small connecting-screws. The side of the box B is recessed for the main bolt F and a smaller sliding bolt, G, which is guided in a suitably-grooved extension, G', of box B, parallel to the main bolt. The sliding bolt G is moved into either direction by a pinion, *e*, intermeshing with rack-teeth *e'* cast at the side of the bolt G'. The pinion *e* is turned by a key fitting on the shaft and projecting outside of guide-extension G. The end of the sliding bolt G, projecting into box B, is recessed to form steps *f*, as shown in Fig. 2, the extent of motion being defined in outward direction by a shoulder, *f'*, of extension G' in inward direction by the tumblers, into whose slots the corresponding steps of the bolt G enter.

The sliding bolt G serves for the purpose of setting the combination of the tumblers, in connection with the adjustable combination-disk, in the following manner: The inner covering-part of the door-wall is removed and the key (which is stored in the cavity) placed on the pinion-shaft. The key is then turned slowly to the left, so that the steps of the sliding bolt enter along the main bolt into the slots of the tumblers. The main bolt is then pushed out of the lock, and the cap-plate of the tumbler casing or box taken off, so that the perforated combination-disk may be adjusted by the small set-screw to any of the perforations of the cap-tumbler. This changes the combination of the lock, and the numbers corresponding therewith are obtained by turning the knob to the right until the upper tumbler strikes the step of the sliding bolt, the dial-figure opposite the smaller mark of the dial-ring, which is at a distance equal to the width of the tumbler-slots from the main index-points, constituting the last number of the combination. The dial is turned again to the right until it gets tight on the second step of the bolt, turning also slowly with the other hand the key, and moving the sliding bolt in outward direction until the dial is free to turn. The number of the dial at the side mark gives the next number of the combination. The dial is now turned to the left until held by the bolt, and the bolt moved slowly forward until the dial is free, the figure

at the main index giving this time the second number of the combination. Then turn dial to the right until held by the bolt, and take figure at small mark, which completes combination in the case of four tumblers. The key is then turned forward until the bolt is stopped by the shoulder of the extension. All the tumblers may now be swung around and the lock opened by setting them to the combination-numbers in the regular order, using, however, the main index to get the correct position of slots for main bolt.

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

As an improvement in combination-locks for safes, vaults, &c., the combination, with the slotted revolving tumblers of the same, of a sliding adjusting-bolt with recessed step end entering into the tumbler-slots and being operated by rack-teeth, intermeshing pinion, and key, for obtaining the combination-numbers of the tumblers, substantially as and for the purpose set forth.

JOSEPH CASSINO.

Witnesses:

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