

No. 644,813.

Patented Mar. 6, 1900.

G. W. WATSON & C. BEAN.

COMBINATION LOCK.

(Application filed Dec. 28, 1899.)

(No Model.)

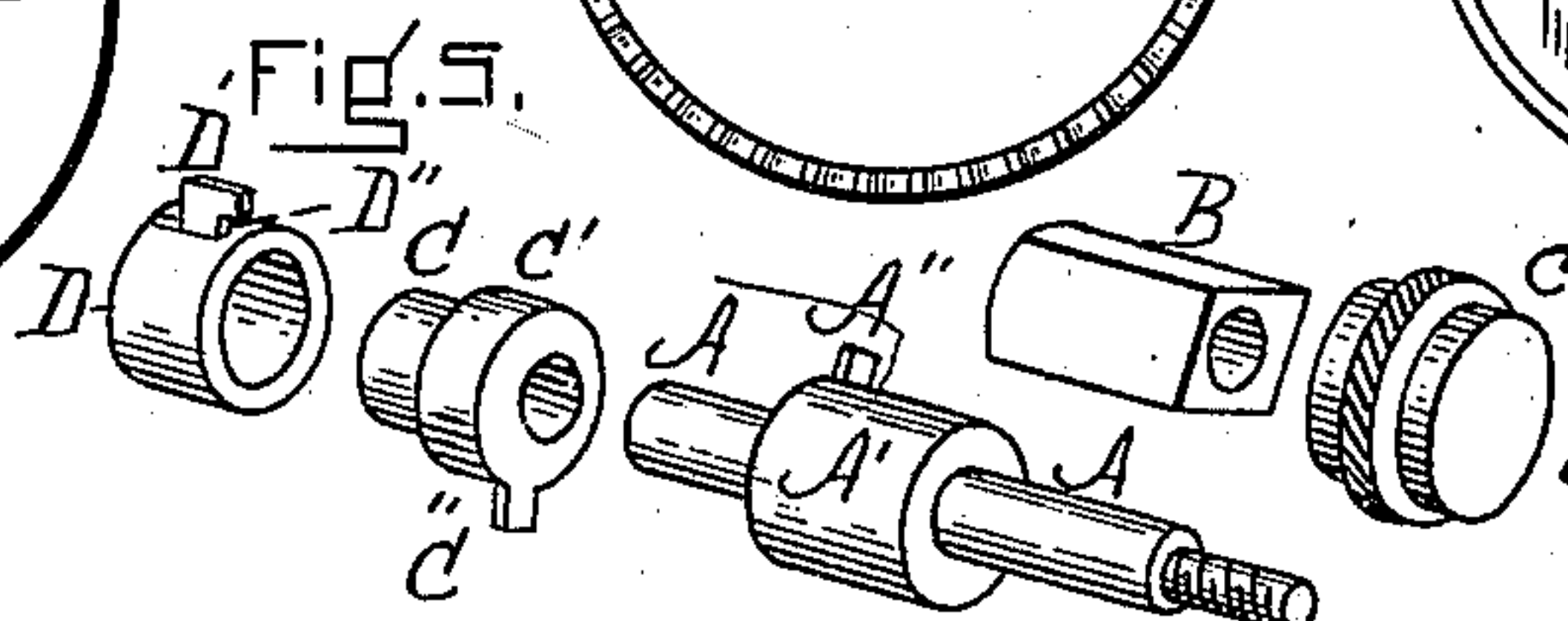
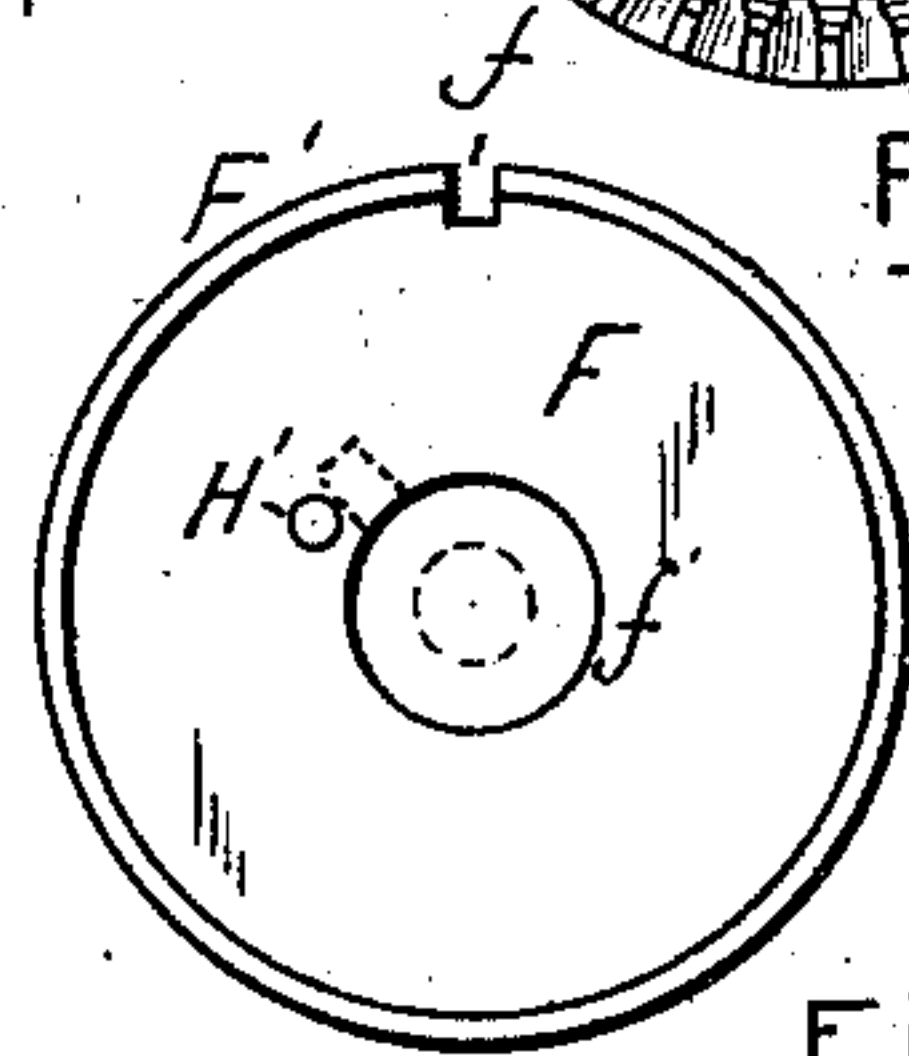
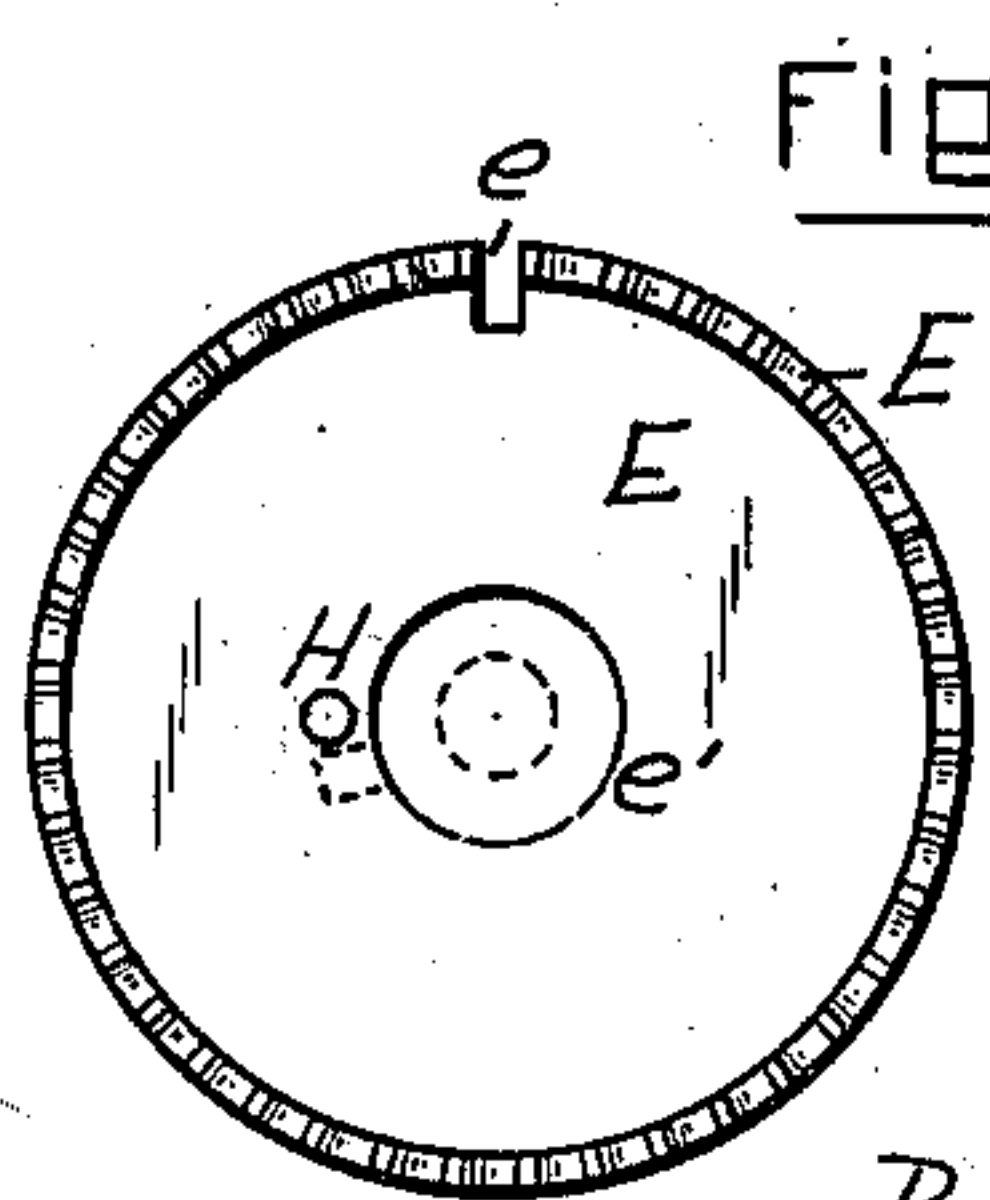
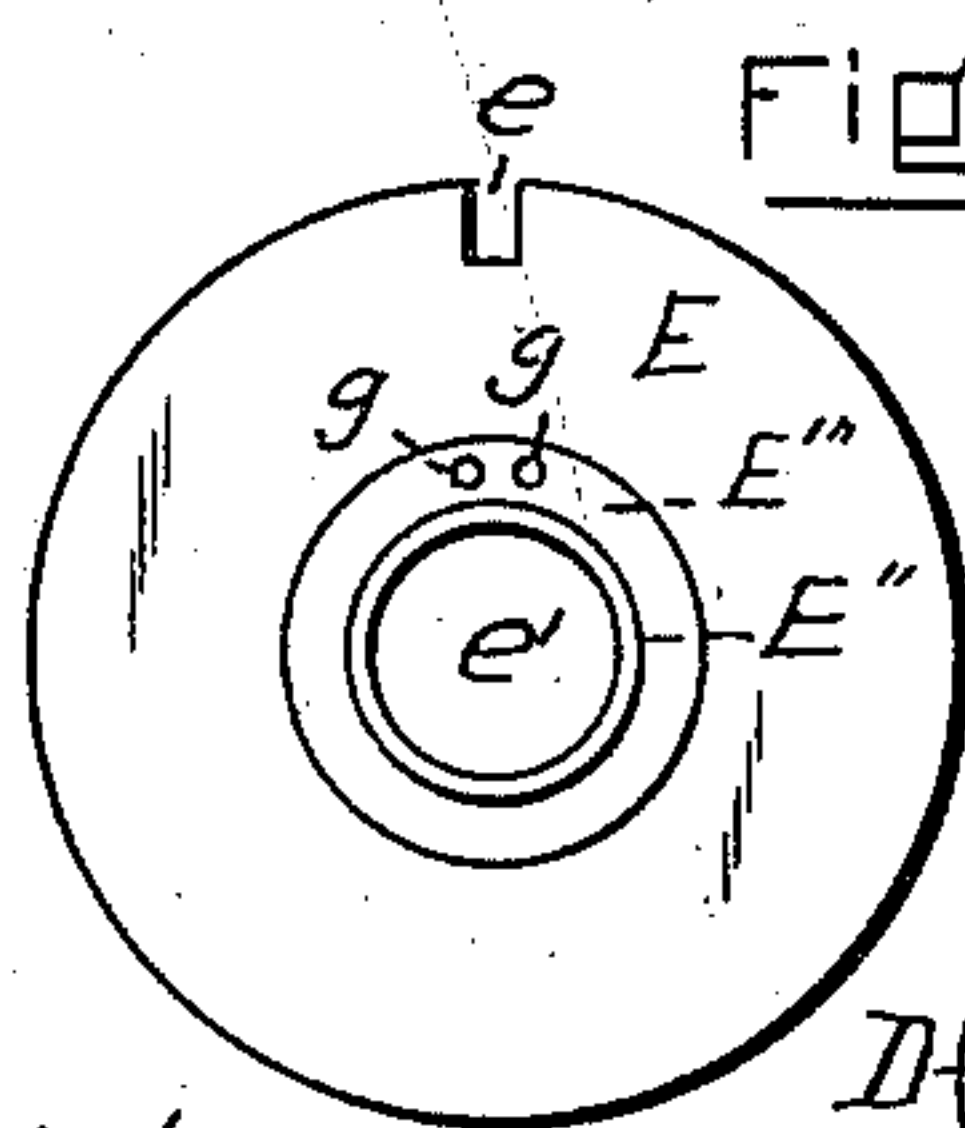
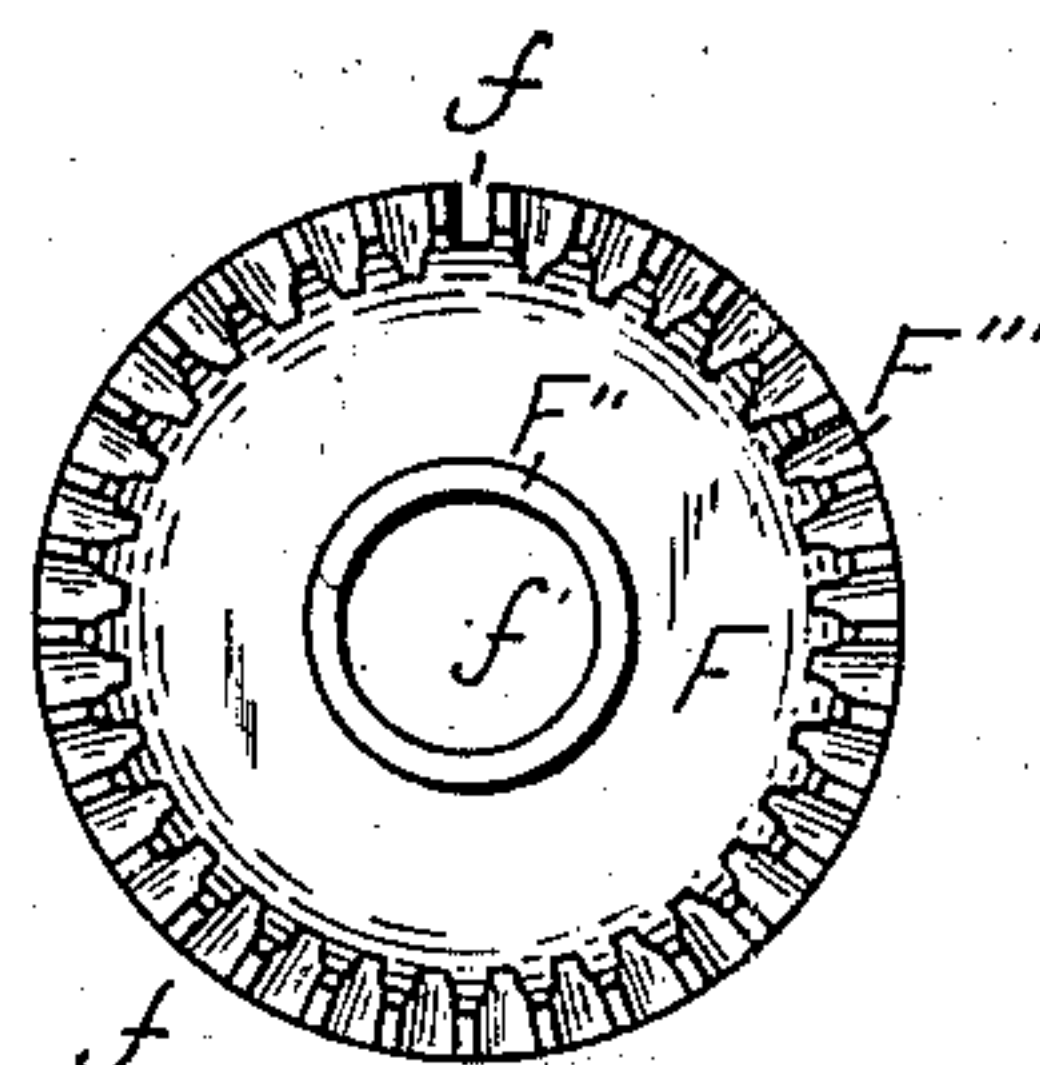
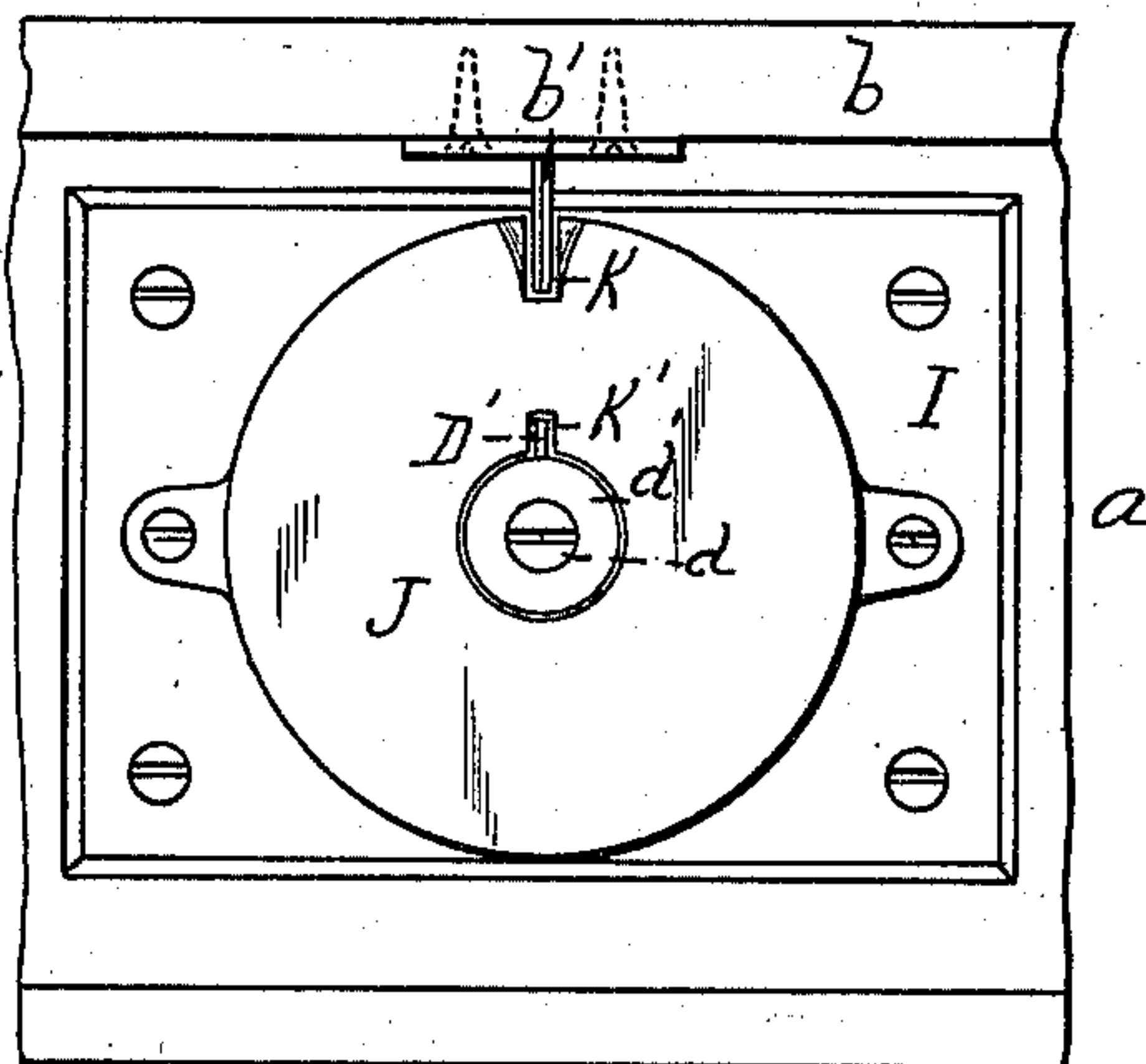
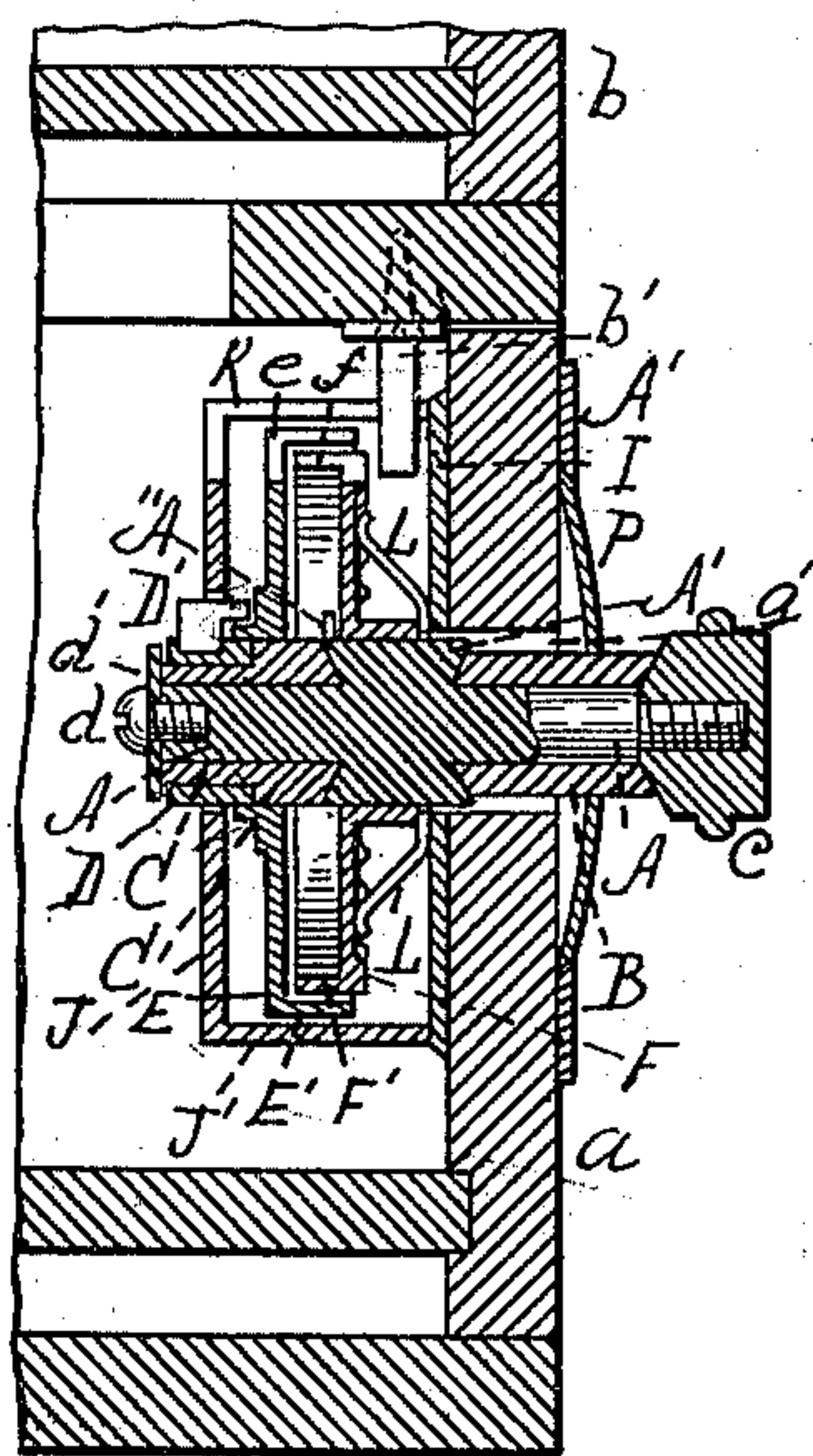
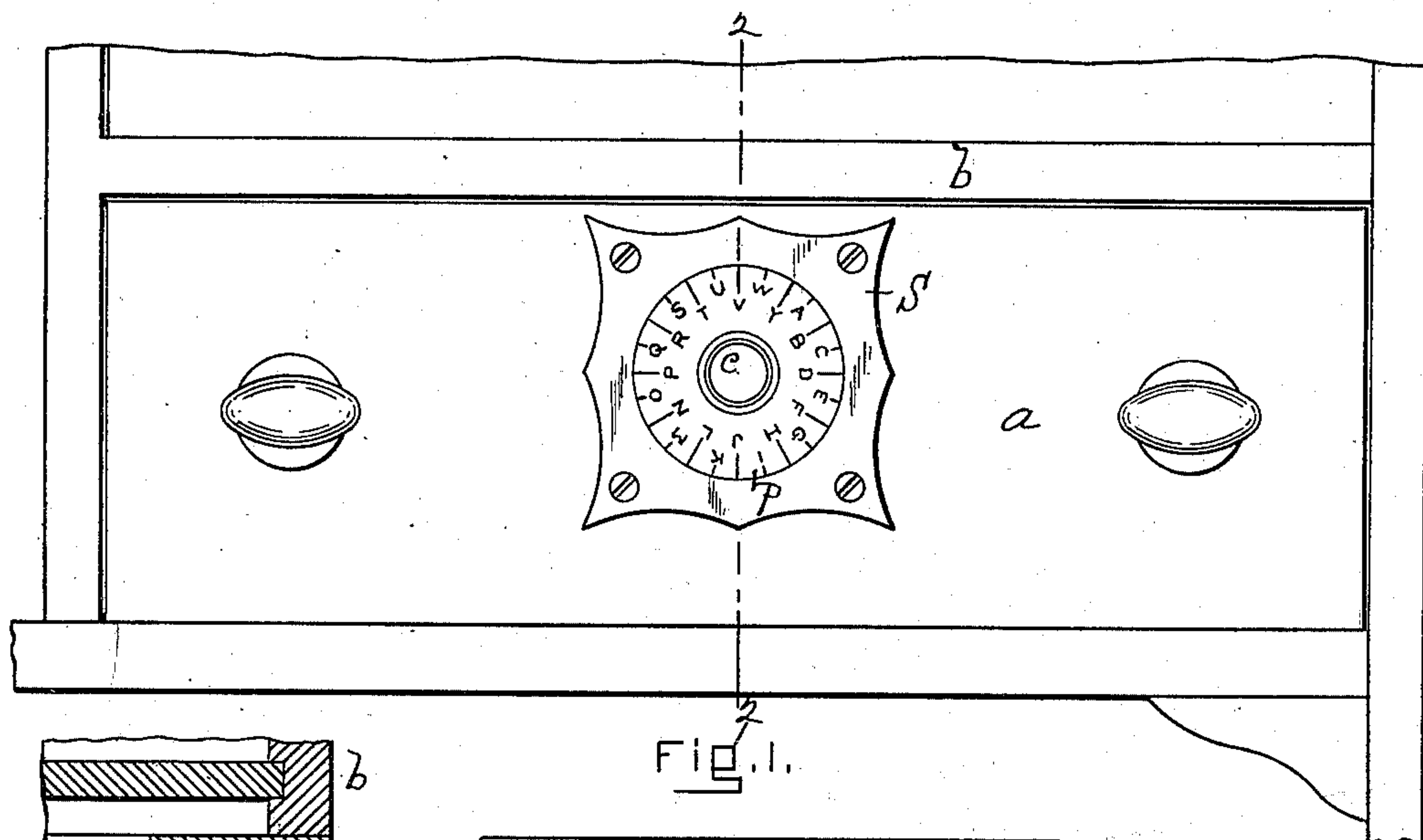


Fig. 4.

WITNESSES
A. A. Bonney.
E. A. Swett.

Fig. 6.

INVENTORS

George W. Watson
Charles Bean
By their Atty,
Henry Williams

UNITED STATES PATENT OFFICE.

GEORGE W. WATSON AND CHARLES BEAN, OF PAWTUCKET, RHODE ISLAND.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 644,813, dated March 6, 1900.

Application filed December 28, 1899. Serial No. 741,799. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. WATSON and CHARLES BEAN, citizens of the United States, residing in Pawtucket, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Combination-Locks, of which the following is a specification.

This invention relates to combination-locks, particularly to the class adapted for drawers for desks, cabinets, &c., although it may be used for trunks or chests and in other places when a simple, secure, and inexpensive combination-lock is desired.

The nature of the invention is fully described below and illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a drawer in position with our improved lock applied thereto. Fig. 2 is a vertical section taken on line 2, Fig. 1. Fig. 3 is a rear elevation of the lock and a portion of the drawer. Fig. 4 is a rear elevation of the rear disk removed. Fig. 5 is a front elevation of the rear disk removed. Fig. 6 is a rear elevation of the front disk removed. Fig. 7 is a front elevation of the front disk removed. Fig. 8 is a perspective view in detail, showing the spindle and the parts thereon removed and separated.

Similar letters of reference indicate corresponding parts.

a represents an ordinary drawer bored at *a'*, and *b* the case into which it slides, provided with the bolt *b'*.

A represents a spindle screw-threaded at its outer end to receive the knurled knob *c*. This spindle is provided with an integral annular thickened portion *A'*, preferably beveled inward from its surface on the opposite sides, as shown in Fig. 2. Between this thickened portion *A'* and the knob *c* a square block *B* is placed, said block being bored in order to receive the spindle, and its ends fitting against the knob on the portion *A'*. On the spindle, behind the portion *A'*, is a collar *C*, formed with a flange *C'*, from which projects radially an engaging pin *C''*. The front end of this collar fits into the bevel on the rear side of the portion *A'*. On the collar *C*, behind its flange, is a sleeve *D*, provided with a locking projection *D'*, recessed at *D''*, as shown in Figs. 2 and 5. The portion *A'* of

the spindle is provided with a radial engaging pin *A''*. A screw *d* extends through a washer *d'* into the rear end of the spindle, overlapping the sleeve *D*.

E represents the rear disk, provided with the forwardly-extending horizontal peripheral flange *E'*, the edge whereof is provided with notches or convolutions, as indicated in Fig. 5. The edge of this disk is provided with a radial notch or recess *e*, extending through the flange, and it is formed centrally with a hole *e'*, whereby it is supported on the flange *C'* of the collar *C*, and next said hole it is provided with a rearwardly-extending annular flange *E''*, around which is a thickened annular portion *E'''*, provided with a pair of pins *g*. The flange *E''* overlaps the forward edge of the sleeve *D* and underlaps the forward projection of the lock *D'*. In front of the disk *E* is a disk *F*, somewhat smaller in diameter than the disk *E* and formed with a rearwardly-projecting annular peripheral flange *F'*, which extends inside the flange *E'* on the disk *E*. The front surface of the disk, near its edge, is provided with notches or convolutions *F'''*, as indicated in Fig. 7, and the disk is formed with a radial notch *f*, somewhat shallower than the notch *e*, extending through the flange *E'*. The disk *F* is formed with a central opening *f'*, whereby it surrounds the thickened portion *A'* of the spindle, and a flange *F''* extends forward around said opening, as shown in Figs. 2 and 7. The front or inner surface of the disk *E* is provided near its opening with the horizontal pin *H*, adapted to be engaged by the pin *C''* on the collar *C*, and the rear or inner surface of the disk *F* is provided near its opening with the horizontal pin *H'*, adapted to be engaged by the pin *A''* on the portion *A'* of the spindle. The inner side of the front of the drawer *a* is provided with a suitable plate *I*, to which is secured the box *J*, whose annular periphery *J'* is formed with the slot *K*, said slot extending for a short distance into the back of the box. The rear side of the box is provided with a suitable opening, whereby it fits around the sleeve *D*, such portion of the box being slotted at *K'*, to accommodate the lock *D'*. A light spring *L* lies between the disk *F* and the plate *I* and presses said disk normally rearward or inward. A dial *P*, suitably inscribed, fits upon

the block B and is adapted to rotate in the plate S.

In the drawings (see Figs. 2 and 3) the parts are represented as unlocked and the bolt *b'* is free to pass through the notches *e* and *f*, so that the drawer can be opened or closed at pleasure. To lock the drawer, simply turn the spindle by means of the knob *c* in either direction. To unlock it, the dial must be rotated to the left until the pin *C''* engages the pin *H* and rotates the disk *C* until its slot *e* is in line with the bolt and to the right until the pin *A''* engages the pin *H'* on the disk *F* and rotates said disk until its slot *f* is in line with the bolt and with the slot *e*. In unlocking, when the rear disk is to be rotated the spindle must be pushed in so as to move the locking-bolt *D'* rearward from between the pins *g* on the rear side of the dial *E*; but when the front disk is to be rotated the spindle is drawn forward, as shown in Fig. 2, so that while the front disk is being rotated the rear disk will be held stationary, being held by the bolt *D'* between the pins *g*, and not be affected by the spindle. As soon as the slots in both disks are brought under the slots *K* the drawer can be unlocked.

To change the combination, turn the front disk until its slot *f* is coincident with the slot *K*, leaving the pins *H'* and *A''* in contact. Then remove the knob *c* and rotate the dial until the desired letter registers with a mark on the plate *S*. Return the knob to its position. Then push the spindle to the length of its traverse in order to withdraw the bolt *D'* from between the pins *g* and turn the rear disk until its slot *e* is under the slot *K*, leaving the pins *C''* and *H* in contact. Then turn the dial until the desired letter is reached. While the knob is being replaced, the disks may be prevented from rotation by inserting a flat instrument through the slot *K* into the slots *e* and *f*.

By reason of the notched or convoluted front edge of the flange on the disk *E* and of the convoluted portion on the front surface of the disk *F* near its periphery tampering with the lock by means of a wire or other instrument is rendered difficult, as there are no smooth portions whereby the openings may become apparent. The entire circumference being uneven, a person attempting to tamper with the lock cannot tell when he reaches the slot. Should pressure be brought to bear by pulling the drawer forward, the bolt would

catch in the corrugations, so that the spindle could not be turned until the pressure is removed.

In operation the friction between the part *A'* and the parts *C'* and *B* is sufficient to keep said parts in engagement while the spindle is being turned.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a combination-lock, in combination, the spindle *A* formed with the annular thickened portion *A'* provided with the pin *A''*; the disk *F* provided with the flange *F'*, notch *f* and pin *H'*, said disk being supported by the portion *A'*; the case formed with the slot *K*; the dial; and the block *B* on the spindle and in engagement with the dial, substantially as described.

2. In a combination-lock, in combination, the spindle *A*, *A'*; the collar *C*, *C'* on said spindle and provided with the pin *C''*; the disk *E* supported on said collar and provided with the flange *E'*, notch *e* and pin *H*; the dial; and the case formed with the slot *K*; substantially as set forth.

3. In a combination-lock, in combination, the spindle *A*, *A'*; the collar *C*, *C'* on said spindle and provided with the pin *C''*; the disk *E* supported on said collar and provided with the flange *E'*, notch *e*, pin *H* and pins *g*; the sleeve *D* on the spindle and provided with the lock *D'* adapted to extend between the pins *g*; the dial; and the case formed with the slots *K* and *K'*, substantially as described.

4. In a combination-lock, in combination, the spindle *A*, *A'*; the collar *C*, *C'* on the spindle next the thick portion *A'*; the sleeve *D* on the spindle next the collar and provided with the lock *D'*; a knob on the front end of the spindle; the block *B* on the spindle between the knob and the thick portion *A'*; the disk *F* provided with the notch *f*, mounted on the portion *A'* of the spindle and adapted to be engaged thereby; the disk *E* provided with the notch *e*, mounted on the collar and adapted to be engaged thereby; and the spring *L* between the front disk and the wall to which the lock is secured, substantially as set forth.

GEORGE W. WATSON.
CHARLES BEAN.

Witnesses:

LUCY E. WATSON,
GEORGE A. WATSON.