

(No Model.)

G. H. WILLIAMS.
DIAL KNOB FOR COMBINATION LOCKS.

No. 473,686.

Patented Apr. 26, 1892.

FIG. 1.

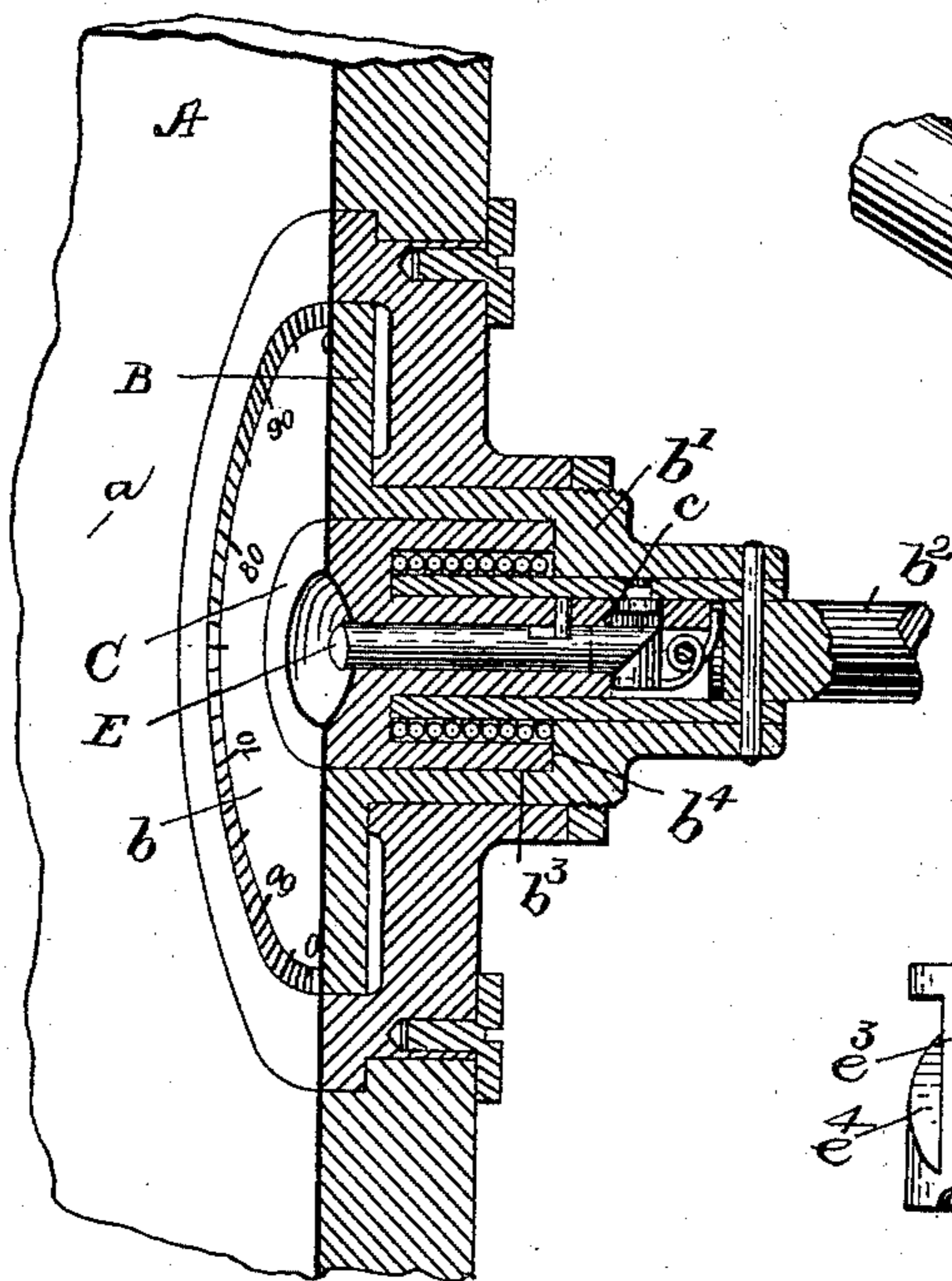


FIG. 3.

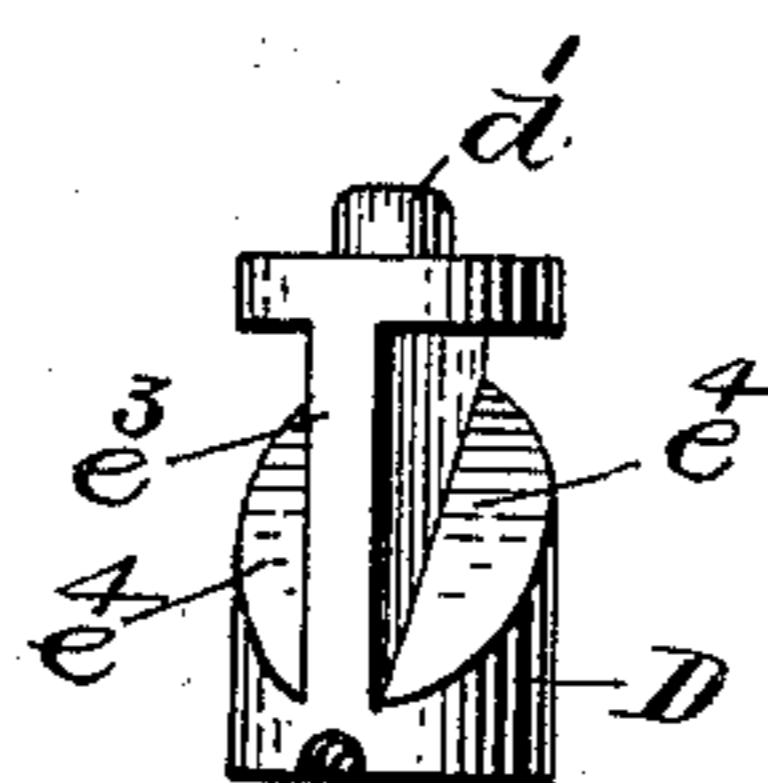
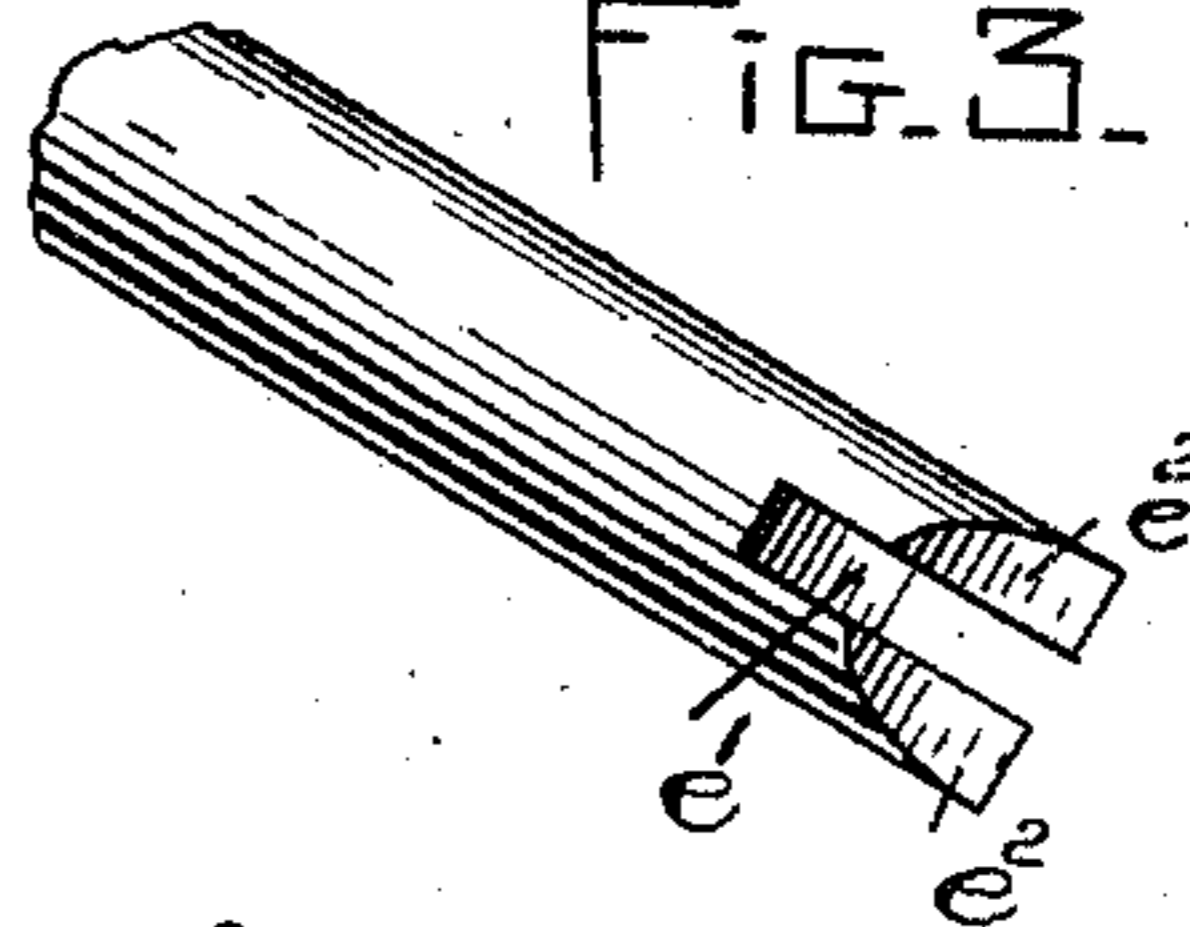


FIG. 4.

FIG. 2.

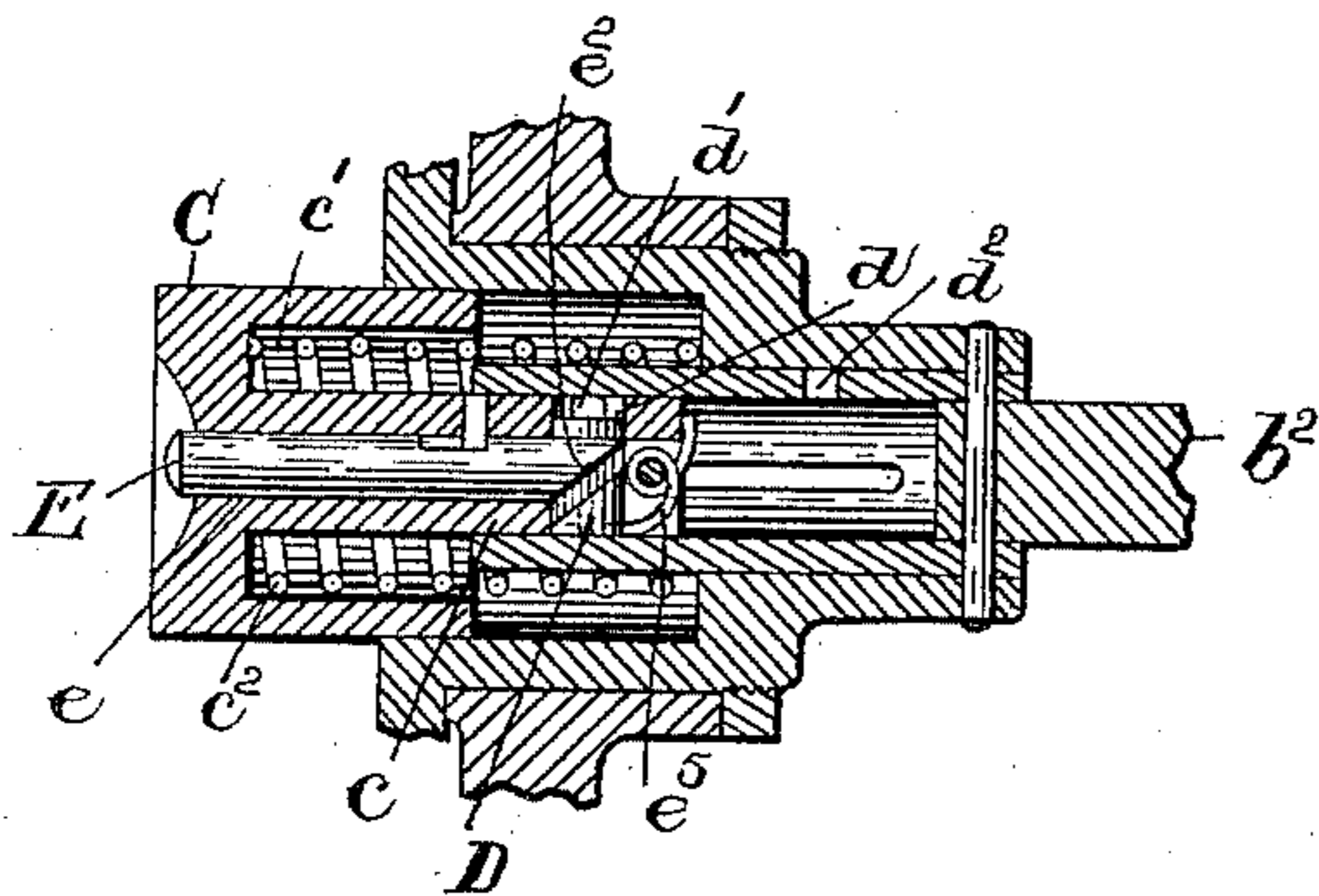
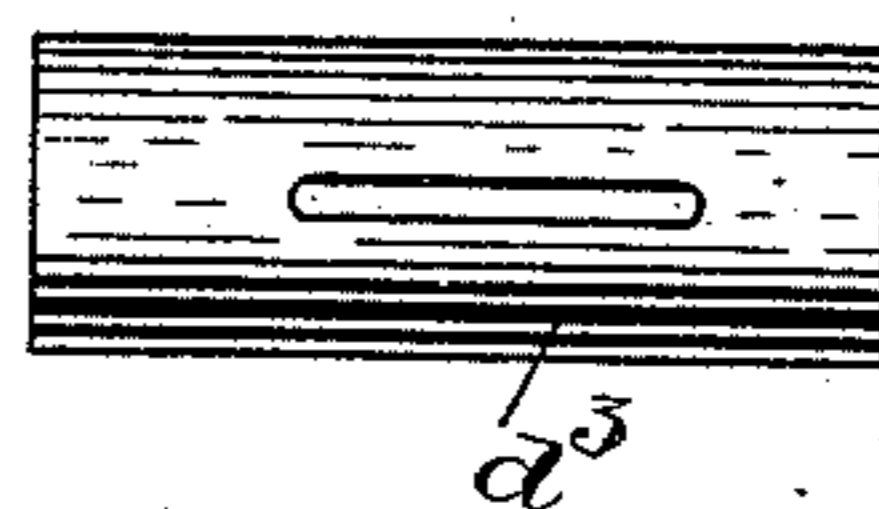


FIG. 5.



WITNESSES.

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DIAL-KNOB FOR COMBINATION-LOCKS.

SPECIFICATION forming part of Letters Patent No. 473,686, dated April 26, 1892.

Application filed July 20, 1891. Serial No. 400,163. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. WILLIAMS, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Dial-Knobs for Combination-Locks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to a combination-lock for safes, boxes, &c., in which the dial-face is flush or substantially flush with the surface of the door or other part bearing the lock, and which dial is adapted to be turned by a turning knob or device which is normally held in a recess or cavity in the dial with its outer surface flush with the outer surface of the dial, completely closing or covering the opening to the cavity and concealing it, if desired, and which turning knob or device is adapted to be moved outward from said cavity to project in front of the face of the dial and provide means for turning the dial.

It further relates to a dial and knob or turning device of the character above specified, having a spring for automatically moving it outward and a latch for locking it in the cavity against the pressure of the said spring.

In the drawings, Figure 1 is a view in perspective and section, representing a portion of the dial and a safe-door and representing the dial as flush with the face of the safe-door. Fig. 2 is a view in vertical section, showing a portion of the dial and its operating-knob, the knob being moved outward in relation to the face of the dial. Fig. 3 is a view in perspective, enlarged, of the inner end of a latch-operating pin, hereinafter referred to. Fig. 4 is a view in perspective, enlarged, of the knob-latch. Fig. 5 is a view in plan of a sleeve, to which reference is hereinafter made.

The invention is represented as applied to a safe-door. A represents the door, a its outer surface; B, the dial, the outer surface b of which is flush with the surface a of the door. The dial has an inwardly-extending hub b' , which is connected with the spindle b^2 , operating the tumblers of the lock, and the cavity b^3 , extending inward from its front surface to the shoulder b^4 , and thence in reduced size through the hub. The recess preferably is

circular and it receives the knob C, which is of a size to fit the recess b^3 and which has the central extension c and a spring-receiving recess c' . A coiled spring c^2 bears against the shoulder b^4 and the knob and serves to push the knob outwardly from the recess. The knob also has a latch D, which has a lateral movement across the extension c , there being a hole d across the extension which holds the latch and in which it is movable. The latch has the engaging end d' , which enters a hole d^2 in the piece d^3 when the knob is in its closed or normal position. To release the latch and allow the spring to throw the knob outward, I have shown a push-pin E, contained in a central longitudinal hole e in the knob and having a limited range of movement therein. The inner end of this push-pin has a recess e' and inclined surfaces e^2 on each side of the recess, and the latch D has a reduced section e^3 , (see Fig. 4,) which enters the recess e' , and inclines e^4 , against which the inclines e^2 ride. A spring e^5 bears against the end of the latch and serves to move it at the proper time or when its latching end is in line with the hole d^2 .

When it is desired to unlock the safe or other article to which the invention is applied, the latch holding the knob in the dial-recess is released by pushing the latch-pin inward sufficiently to cause the inclines e^2 to ride upon the inclines e^4 of the latch, and thereby move the latch laterally in relation to the knob sufficiently to disengage its latching end d' from the engaging-hole d^2 , and the spring then moves the knob outward so that it projects sufficiently in front of the dial to serve as a handle or projection by means of which the dial may be turned. The closed position of the knob is represented in Fig. 1 and its operative position in Fig. 2.

I would not be understood as limiting the invention, however, to the especial form of knob moving and latching devices herein specified, as there are other obvious means for latching the knob in place and for releasing the latch. Neither would I be understood as limiting the invention to the construction employing a latch and push spring, as I consider that any construction employing a dial flush with a case and provided with a recess holding a movable knob adapted to be moved

and held flush with the surface of the dial contains some of the essential elements of my invention.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A combination-lock having its operating-dial flush with the surface of the article to which it is attached and a dial-turning knob or device held normally in a recess in the dial with its outer surface flush or substantially flush with the dial-surface and adapted to be moved outward from said surface to provide means for turning the dial, substantially as and for the purpose described.

2. The combination, in a combination-lock, of the dial having its face flush or substantially flush with the surface of the article to which it is attached and provided with a central cavity with a knob or turning device contained in said cavity, a spring for moving said knob or device outwardly, and a latch for locking said knob or device in its closed position, as and for the purposes described.

3. The combination, in a combination-lock, of a dial having a recess extending inward from its face and a turning knob or device contained in said recess and a spring for moving it outward therein, as and for the purposes described.

4. The combination, in a combination-lock, of the dial having a recess extending inward from its front plate, a turning knob or device contained in said recess and movable out-

wardly therefrom, and a latch for holding it in its closed position in said recess, substantially as described.

5. The combination, in a combination-lock, of the dial having a hole opening from its face, a knob or turning device contained in said hole, a spring for moving said knob or turning device outwardly, and a latch for holding said knob or turning device closed in said hole, as and for the purposes described.

6. The combination, in a combination-lock, of the dial-plate having a hole extending from its face, with a turning knob or device contained in said hole and movable lengthwise the hole, a spring for moving said knob or turning device outward, a latch for locking it in its closed position, and a latch-disengaging pin, substantially as described.

7. The combination, in a combination-lock, of the dial-plate having a central hole extending inward from its face, the knob having the central extension *c* and spring-holding cavity *c'* and pin-hole *e*, the laterally-movable latch *D*, carried in a hole in said extension and having the inclined surfaces *e⁴*, the piece *d³*, having the latch-hole *d²*, the knob-stop and latch-pin *E*, having the recess *e'* to receive a portion of the latch *D*, and the inclined surfaces *e²* to engage the inclined surfaces *e⁴* of the latch, as and for the purposes described.

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Witnesses:

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