

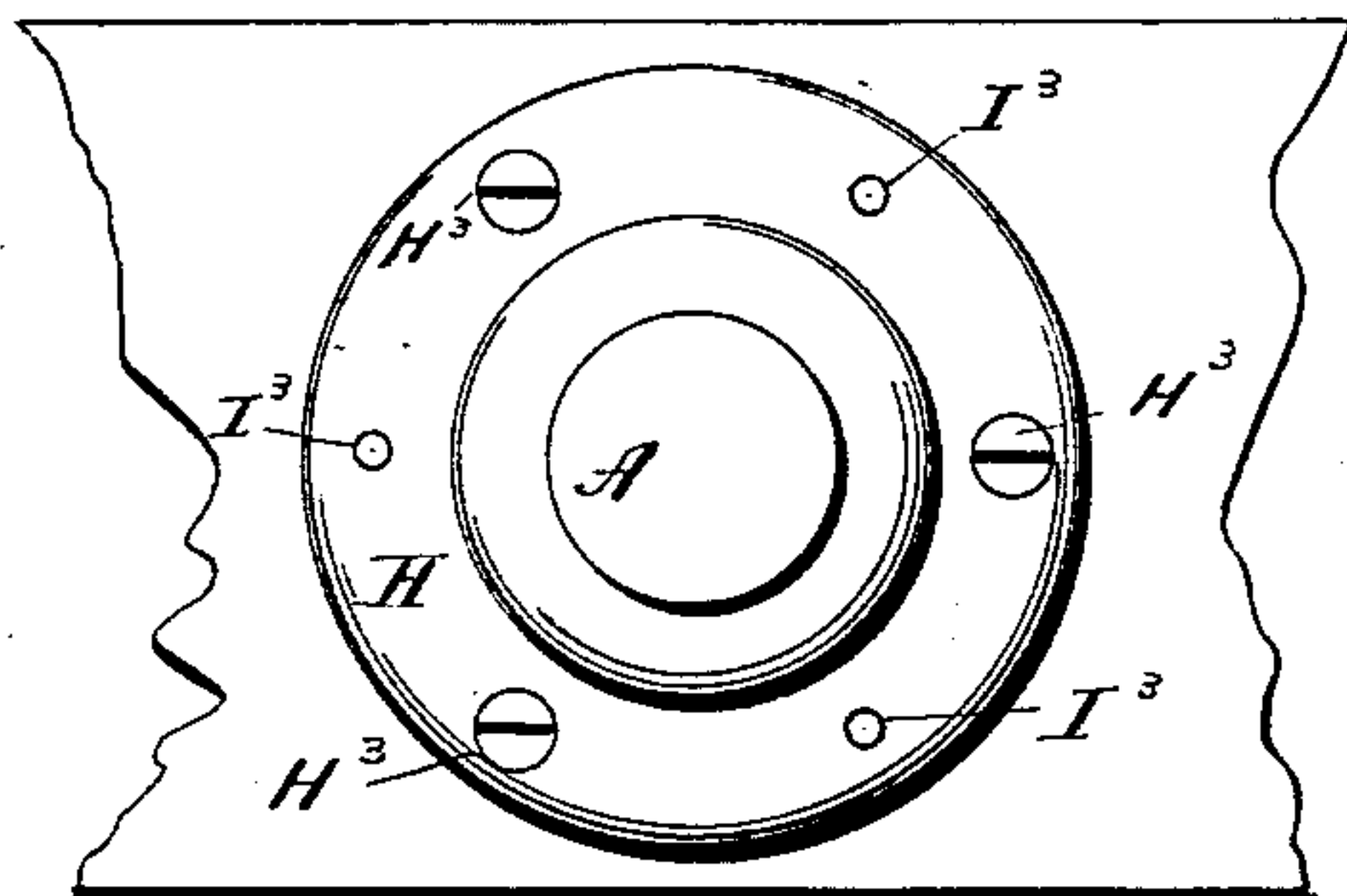
(No Model.)

C. W. JUDSON.  
PERMUTATION LOCK.

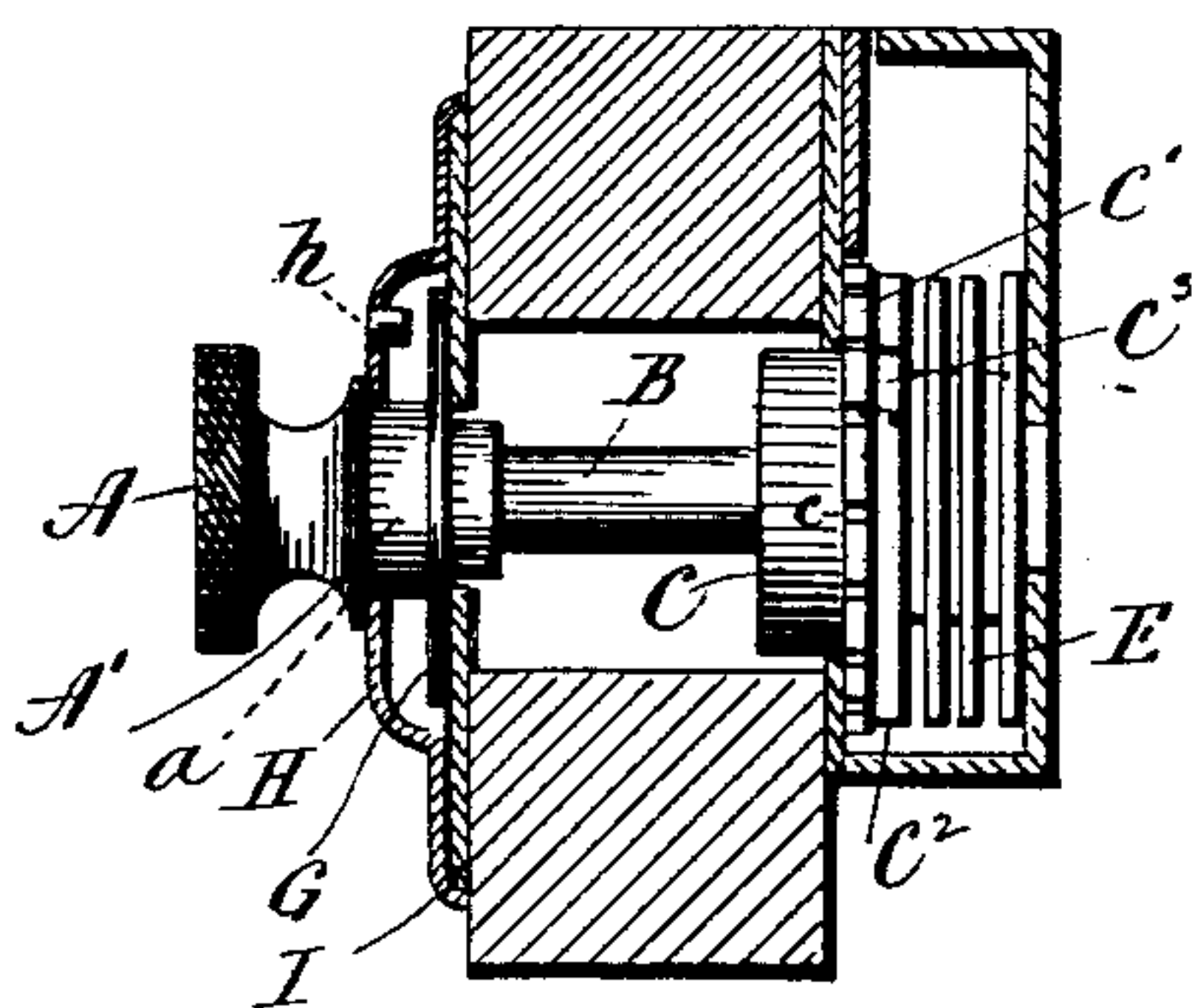
No. 587,586.

Patented Aug. 3, 1897.

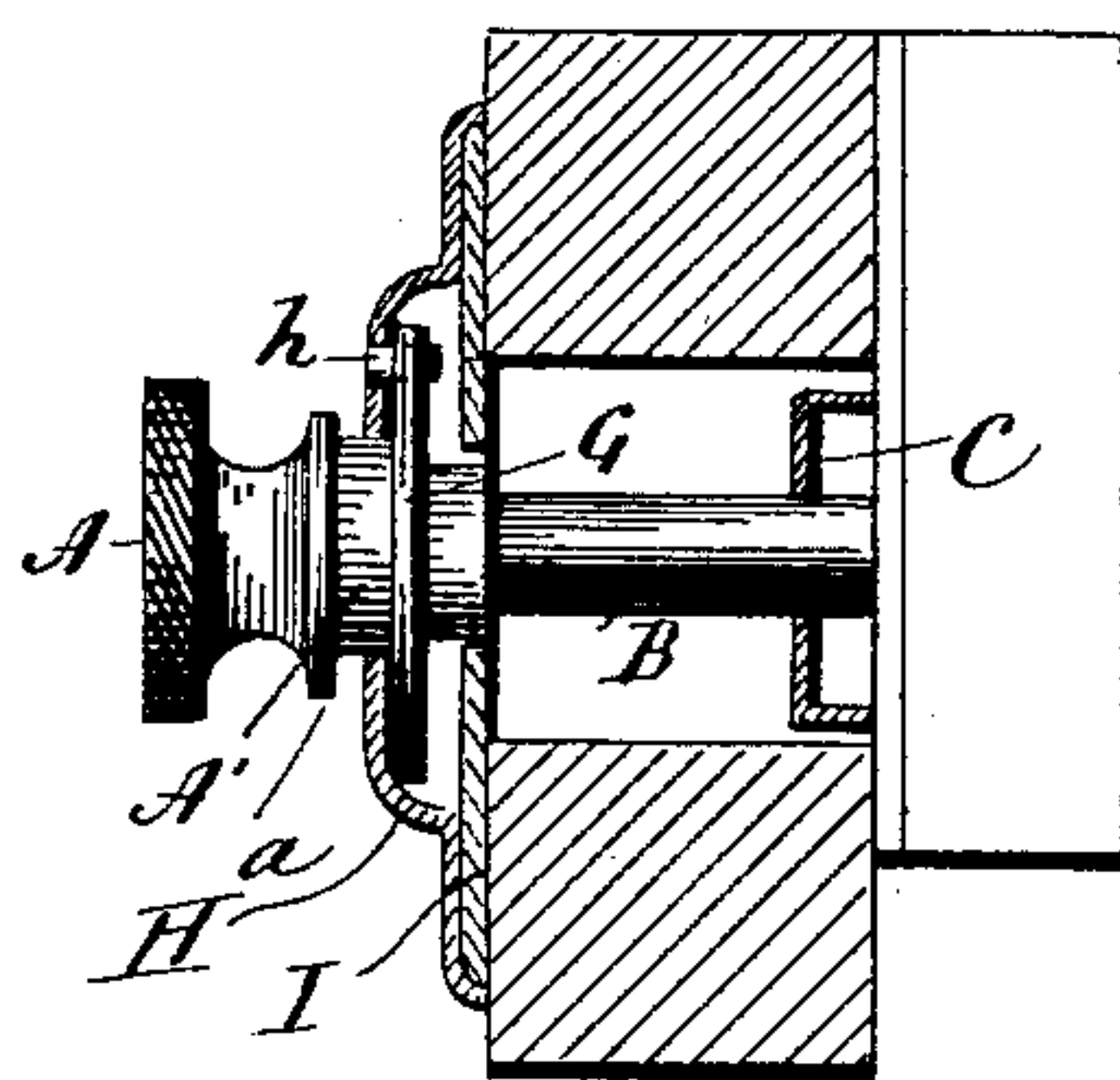
*Fig. 1*



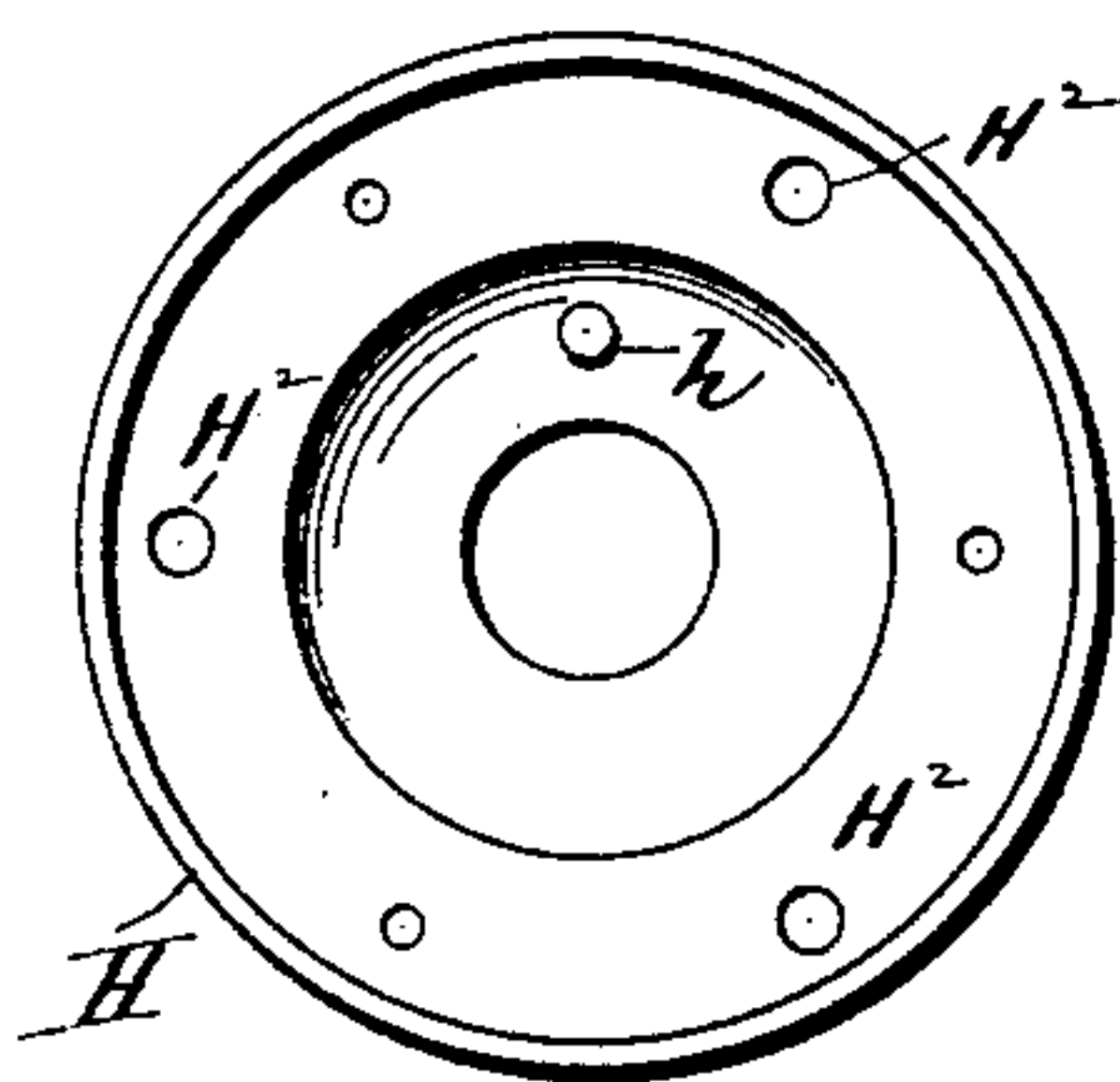
*Fig. 2*



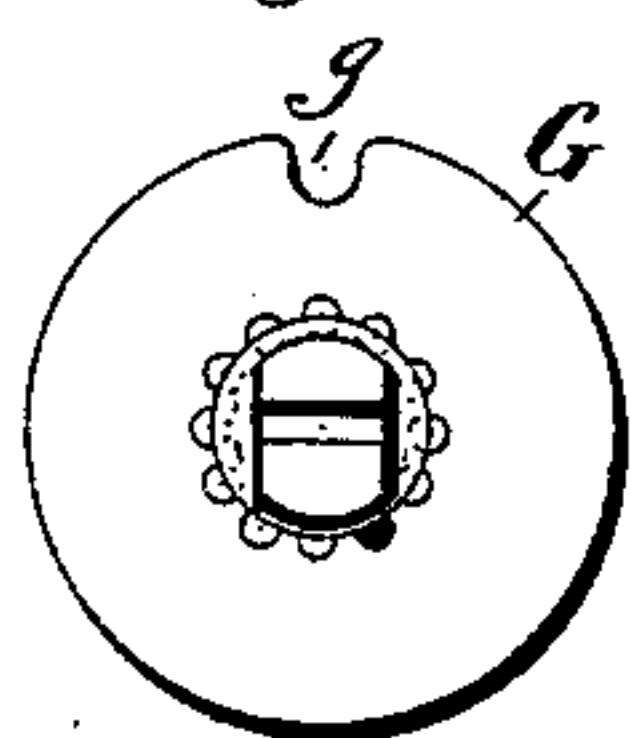
*Fig. 3*



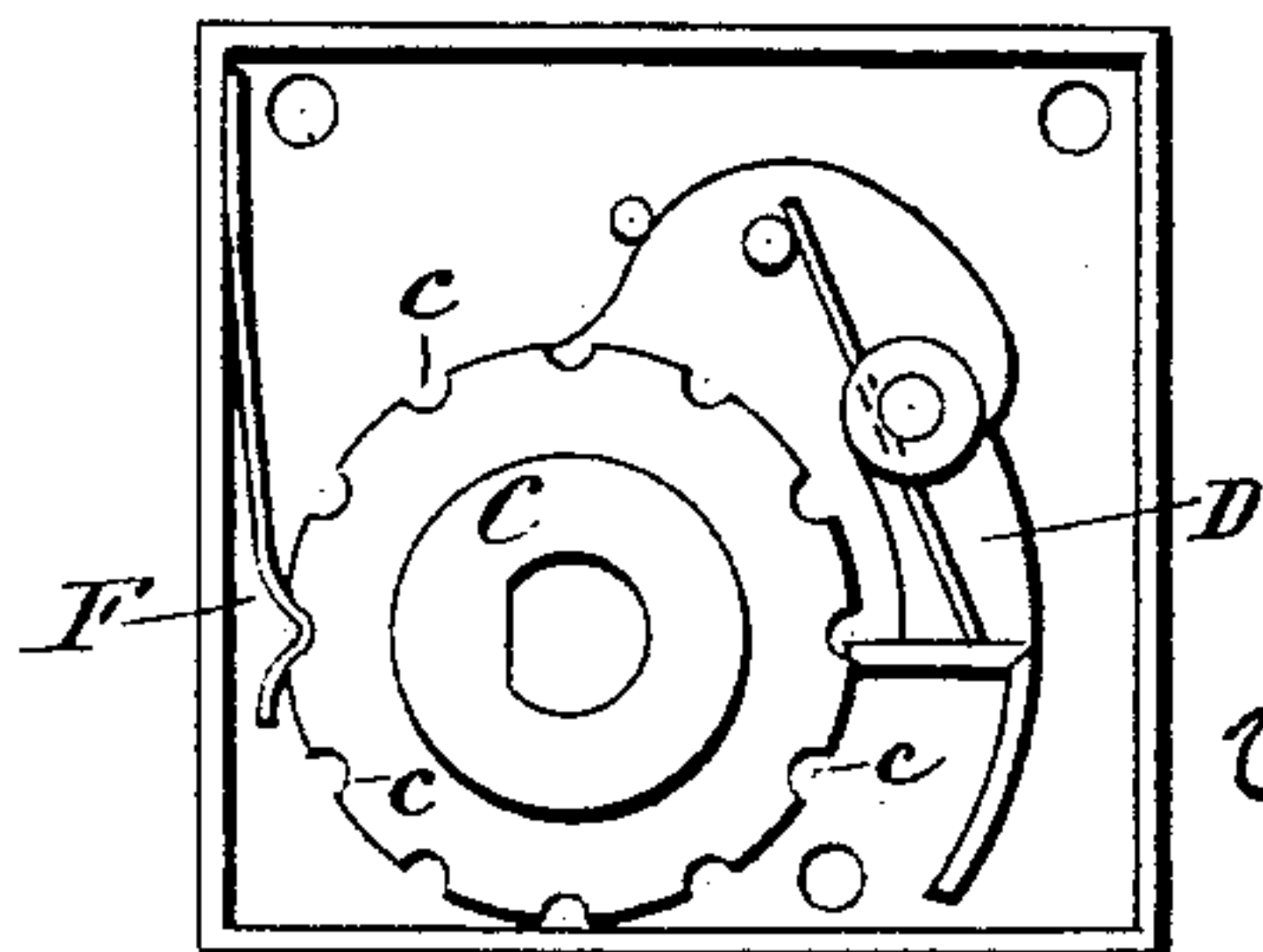
*Fig. 5*



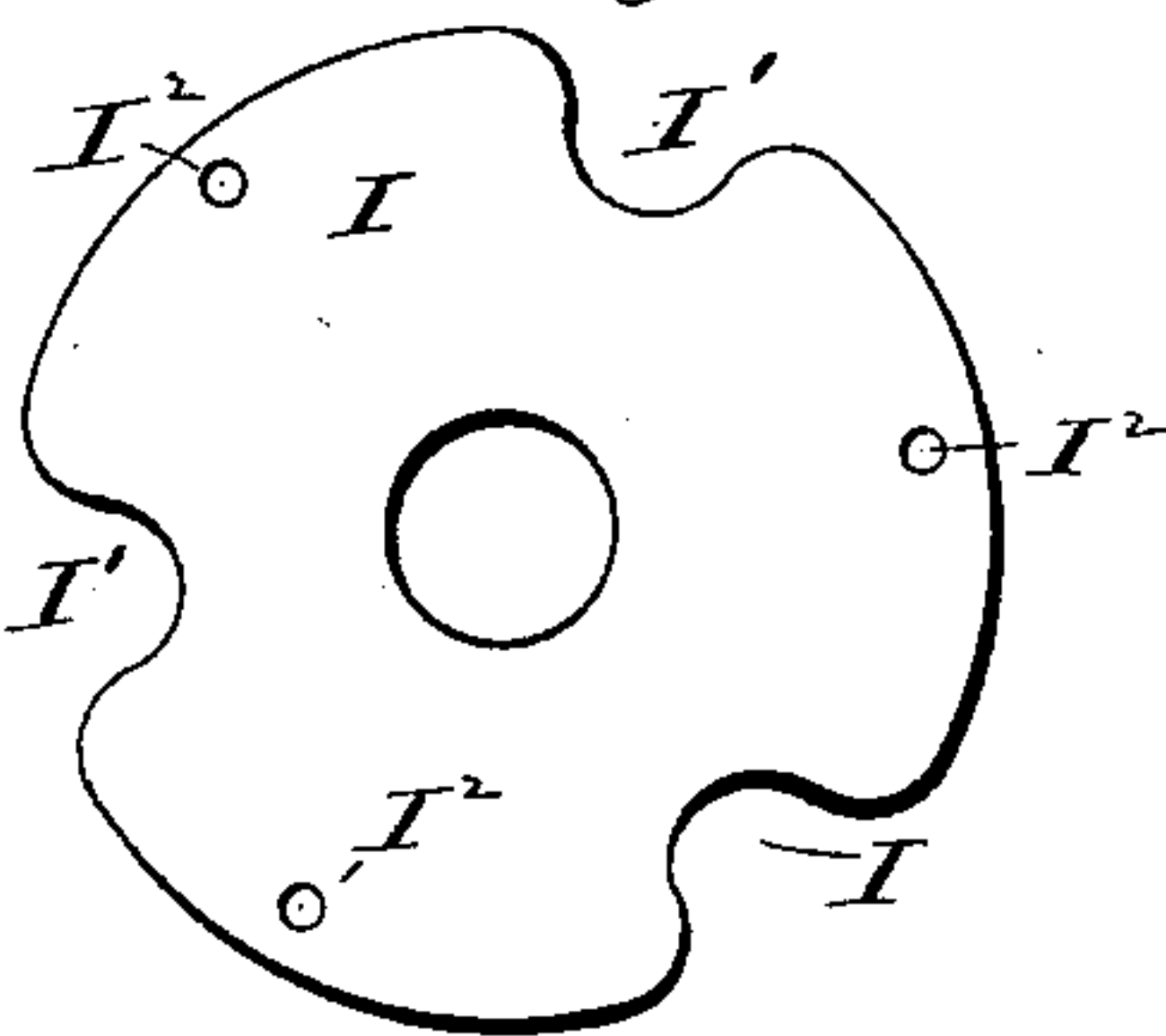
*Fig. 7*



*Fig. 4*



*Fig. 6*



Witnesses.  
J. H. Channing.  
Lillian D. Kelly.

Charles W. Judson  
Inventor.  
By Atty: Earl Seymour



# UNITED STATES PATENT OFFICE.

CHARLES W. JUDSON, OF TERRYVILLE, CONNECTICUT, ASSIGNOR TO THE  
EAGLE LOCK COMPANY, OF SAME PLACE.

## PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 587,586, dated August 3, 1897.

Application filed February 15, 1897. Serial No. 623,493. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. JUDSON, of Terryville, in the county of Litchfield and State of Connecticut, have invented a new  
5 Improvement in Permutation-Locks; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of  
10 the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in front elevation of the escutcheon and operating-button of a lock constructed in accordance with my invention;  
15 Fig. 2, a view of the lock in vertical central section on the line *a b* of Fig. 1 with the button at the limit of its inward thrust; Fig. 3, a similar but less comprehensive view with the button at the limit of its outward move-  
20 ment; Fig. 4, a detached partial view, in inside elevation, of the lock mechanism and designed to show the click-wheel thereof, the click-spring, and the pawl coacting with the wheel; Fig. 5, a detached view, in inside elevation, of  
25 the escutcheon; Fig. 6, a similar view of the escutcheon-plate; Fig. 7, a detached view in elevation of the inner end of the stem and the inner face of the coupling-collar.

My invention relates to an improvement in  
30 that class of permutation-locks which are constructed and arranged so that the user is guided in unlocking them by an audible click which he counts in rotating the finger-button in one direction or the other, according as the  
35 lock may be set. It is necessary in these locks to establish a fixed point from which the clicks are to be counted.

The object of my present invention is to produce simple, convenient, durable, and ef-  
40 fective mechanism for indicating such starting-point not visually or audibly, but mechanically and positively.

With these ends in view my invention consists in the combination, with a lock mechanism containing means for producing a click,  
45 of a longitudinally-movable operating-button, which at one end of its thrust is locked against rotation in either direction to form a starting-point for counting the clicks.

My invention further consists in certain 50 details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

For the illustration of my invention I have shown it as applied to what is known as a 55 "permutation cabinet-lock," but it is also applicable to padlocks or still other forms of locks.

In carrying out my invention, as shown, I employ an operating-button A, having a hub 60 A', to which is attached a stem B, having one flat face, and entering and coupled for rotation with the hollow hub C of the lock mechanism. The said hub is rigidly connected to a click-wheel C', which is rigid with a coup- 65 pling-wheel C<sup>2</sup>, the notch C<sup>3</sup> of which receives the coupling-pawl D of the lock mechanism proper, the said coupling-pawl also coacting with notched tumblers E, which do not need particular description, but of which it may 70 be said that they are rotated by the turning of the operating-button in one direction or the other, so as to bring their notches into alinement with the pawl D for the unlocking of the lock and out of alinement therewith 75 for the locking of the same.

The click-wheel C' is formed with shallow notches *c*, which coact with a click-spring F to produce a distinctly-audible click as the click-wheel is turned and the spring "snaps," 80 so to speak, into the said shallow notches, from which, however, it is lifted out with little effort by the continued turning of the button in one direction or the other. The clicking sounds thus produced are sufficiently separated from 85 each other by the spacing between the notches *c* to enable the clicks to be easily counted. It is necessary, however, in order to manipulate the lock so as to unlock it to know from what point the counting of the clicks must be be- 90 gun. For that purpose I form the coupling-collar G, interposed between the button A and the stem B, with a peripheral notch *g*, receiving a pin *h*, extending inwardly from the inner face of a struck-up circular escutcheon 95 H, centrally struck up to form a boss, the interior of which forms a shallow chamber H', which is provided with screw-holes H<sup>2</sup> for se-



curing it in place by means of screws  $H^3$ , as shown in Fig. 1.

The operating-button A and the stem B are longitudinally movable for a distance represented by the length of the hub  $A'$  of the button A, the inward thrust of the button and stem being stopped by the engagement of the foot  $a$  of the button with the outer face of the raised central portion of the escutcheon and the outward movement of the stem and button being stopped by the engagement of the coupling-collar G with the inner face of the centrally-raised portion of the escutcheon, which is deep enough to permit the collar to move back and forth for the required distance. The said collar is shut in by means of a disk-like escutcheon-plate I, having three equidistant notches  $I' I' I'$ , which clear the screws H, and having three small rivet-holes  $I^2 I^2 I^2$ , receiving the small rivets  $I^3 I^3 I^3$ , by means of which it is secured to the inner face of the escutcheon, as shown in Figs. 2 and 3. The said collar G is adjustable with respect to the button and stem for changing the combination of the lock; but as that adjustment has nothing to do with the present invention it will not be described or referred to further than to say that it may be effected by any approved devices.

Preparatory to operating a lock constructed in accordance with my invention the user grasps the operating-button and draws it outward, whereby the collar G is brought into contact with the pin  $h$ . The user then turns the button either to the right or to the left until the notch  $g$  of the collar is brought into line with the pin  $h$ , at which time the pin enters the notch, permitting the button and stem to be drawn outward a very little farther, whereby the collar, and hence the stem and button, are firmly locked against rotation by the pin, which, as aforesaid, is fixed in position in the escutcheon. A starting-point for counting is thus established. The button is then pushed inward and the collar disengaged from the pin, thus unlocking the button and stem and permitting them to be turned in either direction. The user now begins to count the clicks, for, having secured a starting-point from which to count them, he may intelligently manipulate the button so as to unlock the lock, provided only he knows the combination thereof; but without such a starting-point he could not turn the button one way or the other to any effect.

It will be obvious that a lock made under my invention may be operated as well by night as by day, as the positive locking of the button for the establishment of a starting-point from which to count depends neither upon vision or hearing, but only upon the sense of touch.

Instead of locking the operating button and stem by pulling it slightly outward for that purpose the construction might be reversed

and it might be locked by pushing it inward. It is apparent also, as aforesaid, that the buttons of padlocks and other forms of locks may be constructed and arranged on the same principle.

The locking mechanism may be widely varied, of course, as that has no direct connection with my present invention.

I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a permutation-lock, the combination with lock mechanism having means for producing an audible click, of a longitudinally-movable operating button and stem, and means for locking the said stem against rotation in either direction at one end of its thrust or movement for the establishment of a starting-point for counting the clicks.

2. In a permutation-lock, the combination with the lock mechanism, including means for producing an audible click, of a longitudinally-movable operating-button, an escutcheon in which the said button is mounted, and in which it has longitudinal movement, and provided with a fixed pin, and a coupling-collar connected with the button and engaged with the said pin when the button is moved in one direction, for locking the button against rotation and disengaged from the pin, when the button is moved in the opposite direction, for freeing the same and permitting it to be turned.

3. In a permutation-lock, the combination with an escutcheon having its central portion struck outwardly, and furnished with an inwardly-projecting pin, of a longitudinally-movable operating-button mounted for such movement in the escutcheon, and furnished with a notched coupling-collar engaged with the said pin through its notch when the button is moved outwardly, and disengaged from the pin when the button is moved inwardly, a stem connected with the button, and lock mechanism engaged by the said stem and including means for producing an audible click when the button and stem are rotated.

4. In a permutation-lock, the combination with an escutcheon having a central boss, the interior of which forms a shallow chamber, and furnished with a pin extending into the said chamber, of an operating-button longitudinally mounted in the said boss and provided with an inwardly-extending stem, a coupling-collar mounted upon the said operating-button, located within the chambered boss of the escutcheon, and coacting with the pin to lock the button against rotation when



the same is pulled outward, a plate secured to the inner face of the escutcheon and for covering the said collar, and a lock mechanism engaged by the said stem and including  
5 means for producing an audible click when the button, and hence the stem, are turned in one direction or the other.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES W. JUDSON.

Witnesses:

OTIS B. HOUGH,  
ERNEST E. BALDWIN.