

(No Model.)

C. W. PARSONS.

LOCK.

No. 318,388.

Patented May 19, 1885.

Fig. 1

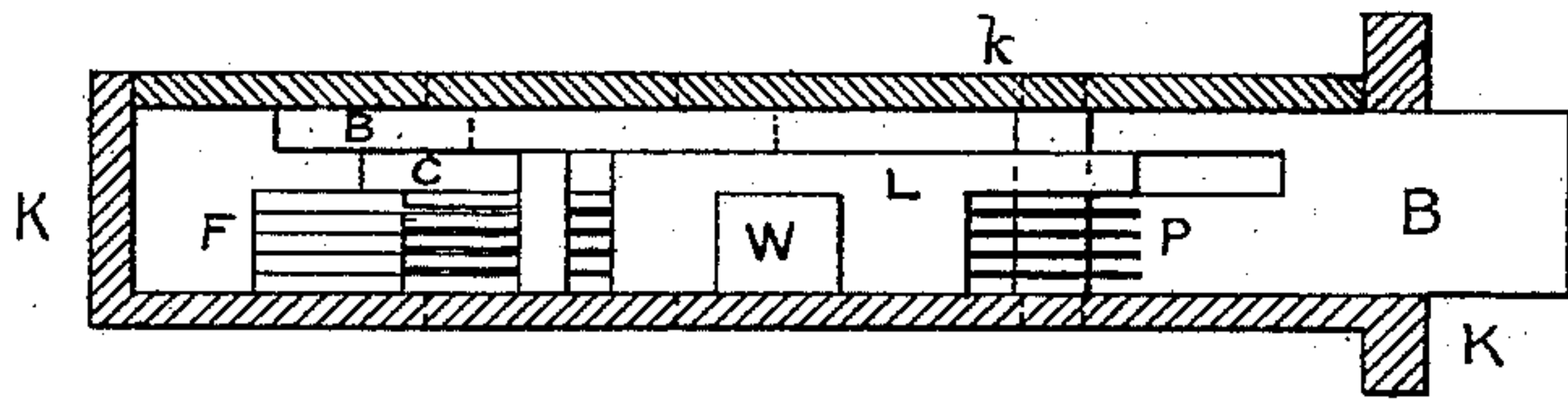


Fig. 2

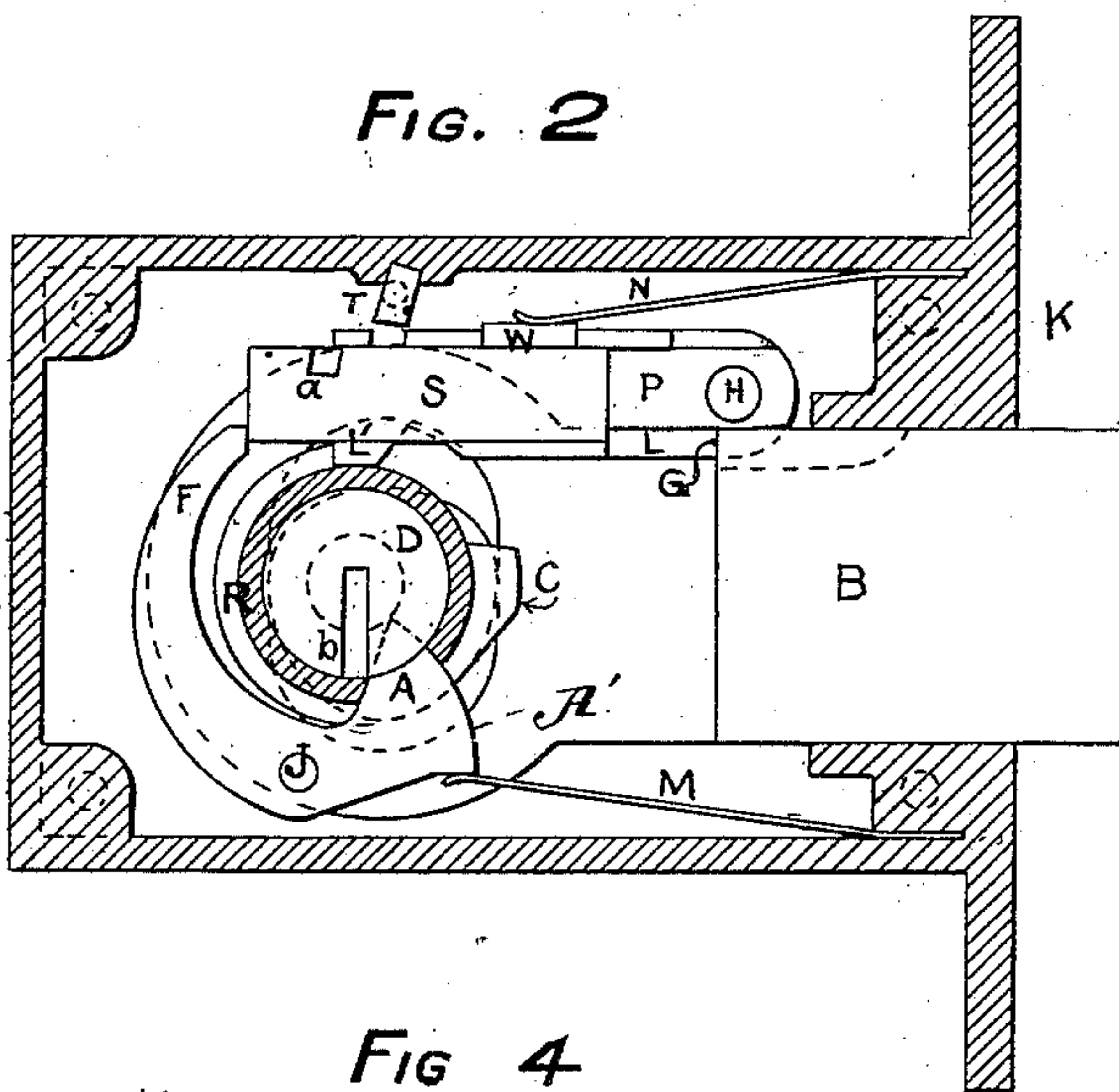


Fig. 4

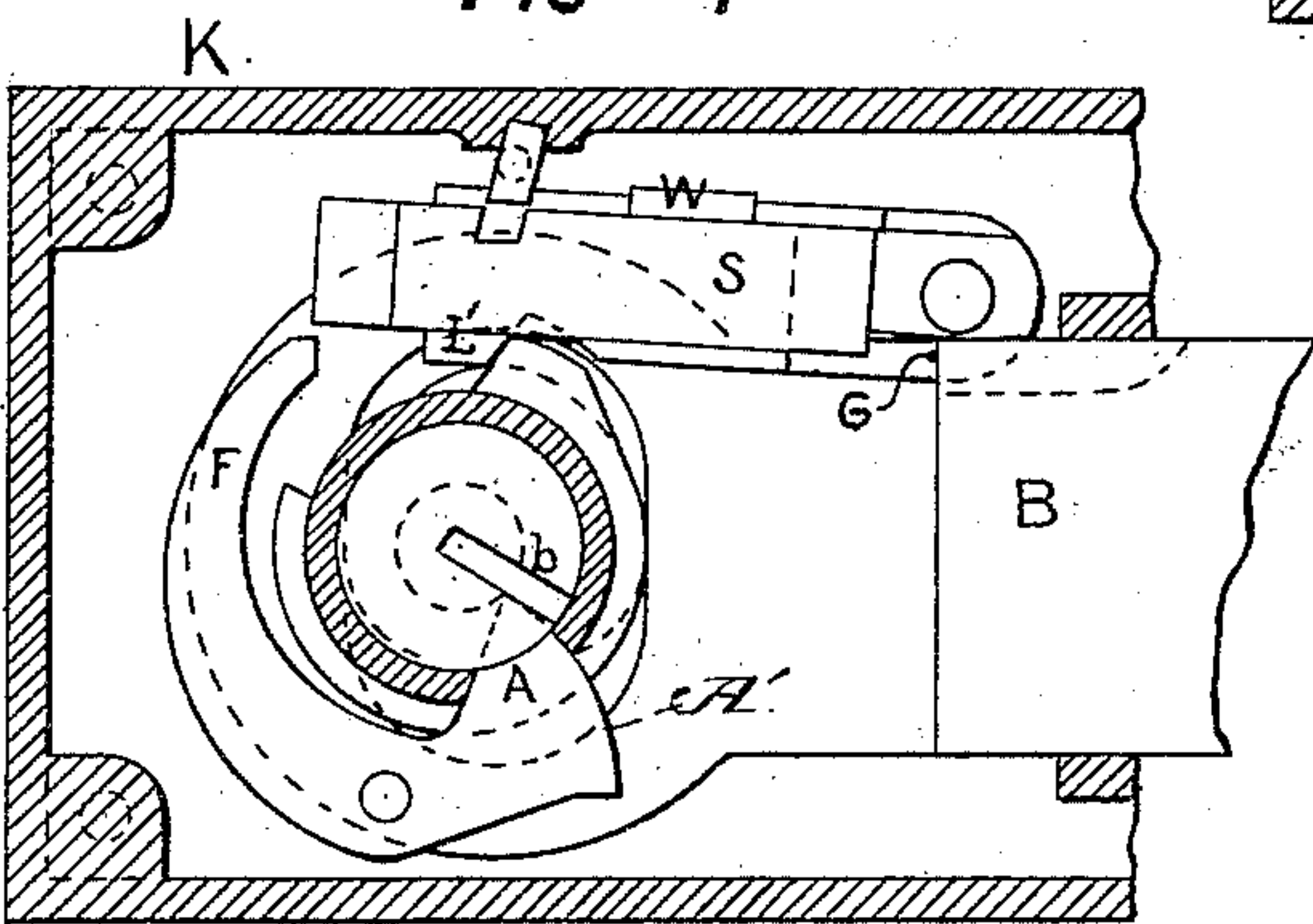


Fig. 8.

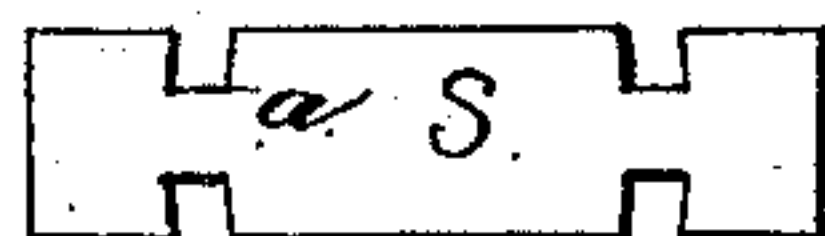


Fig. 3

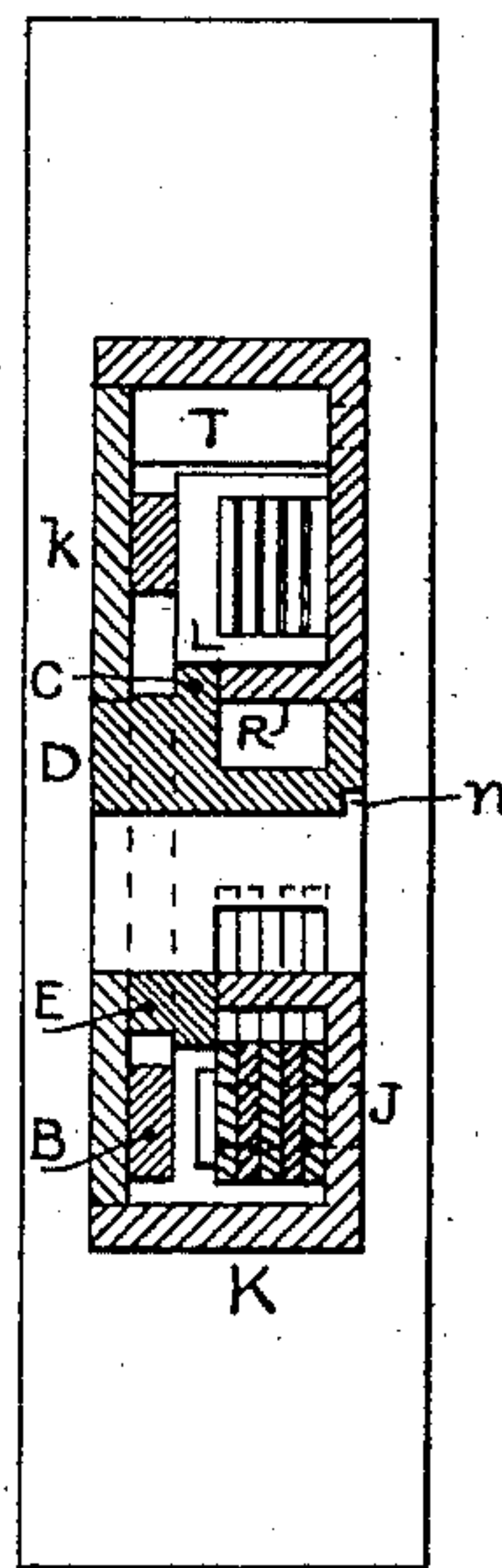


Fig. 5

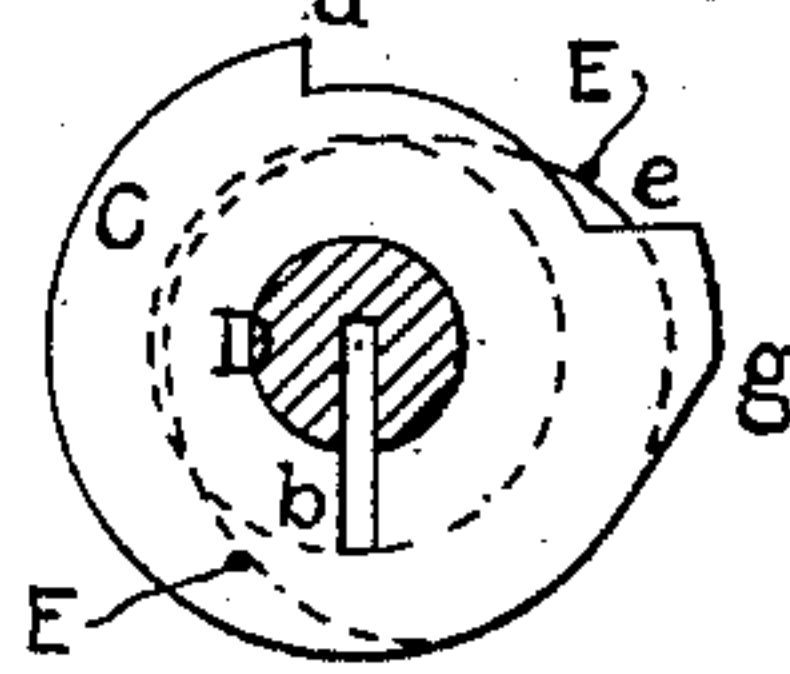


Fig. 6

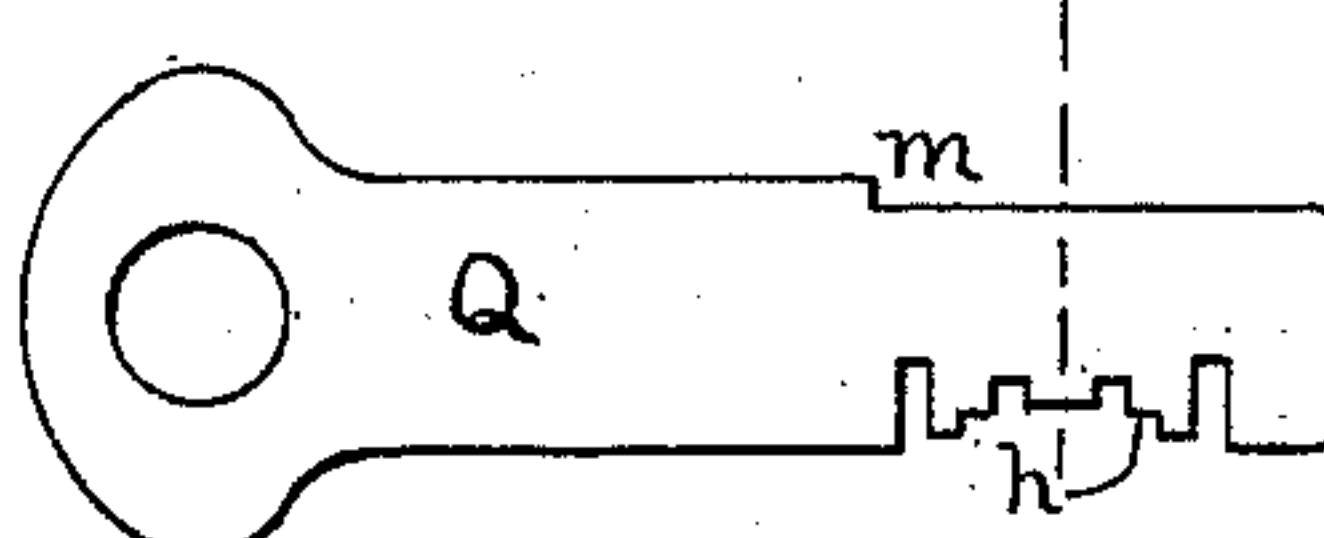


Fig. 7.

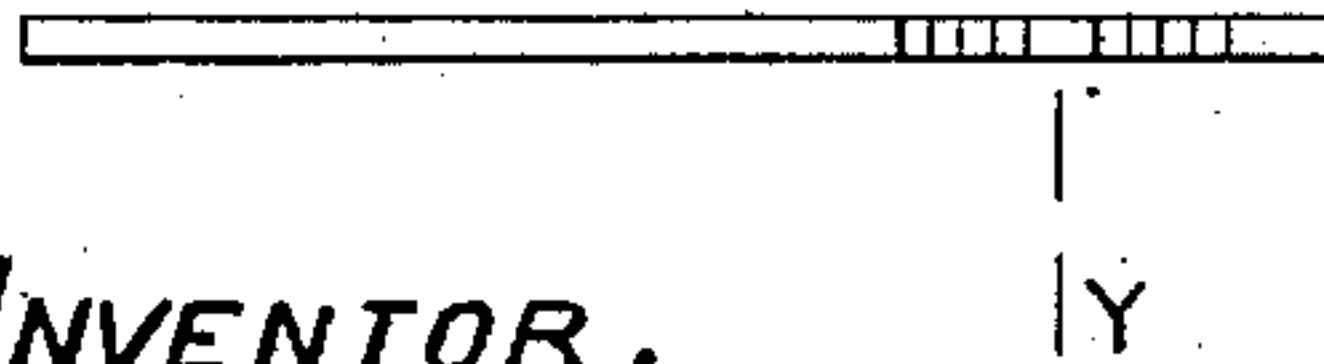
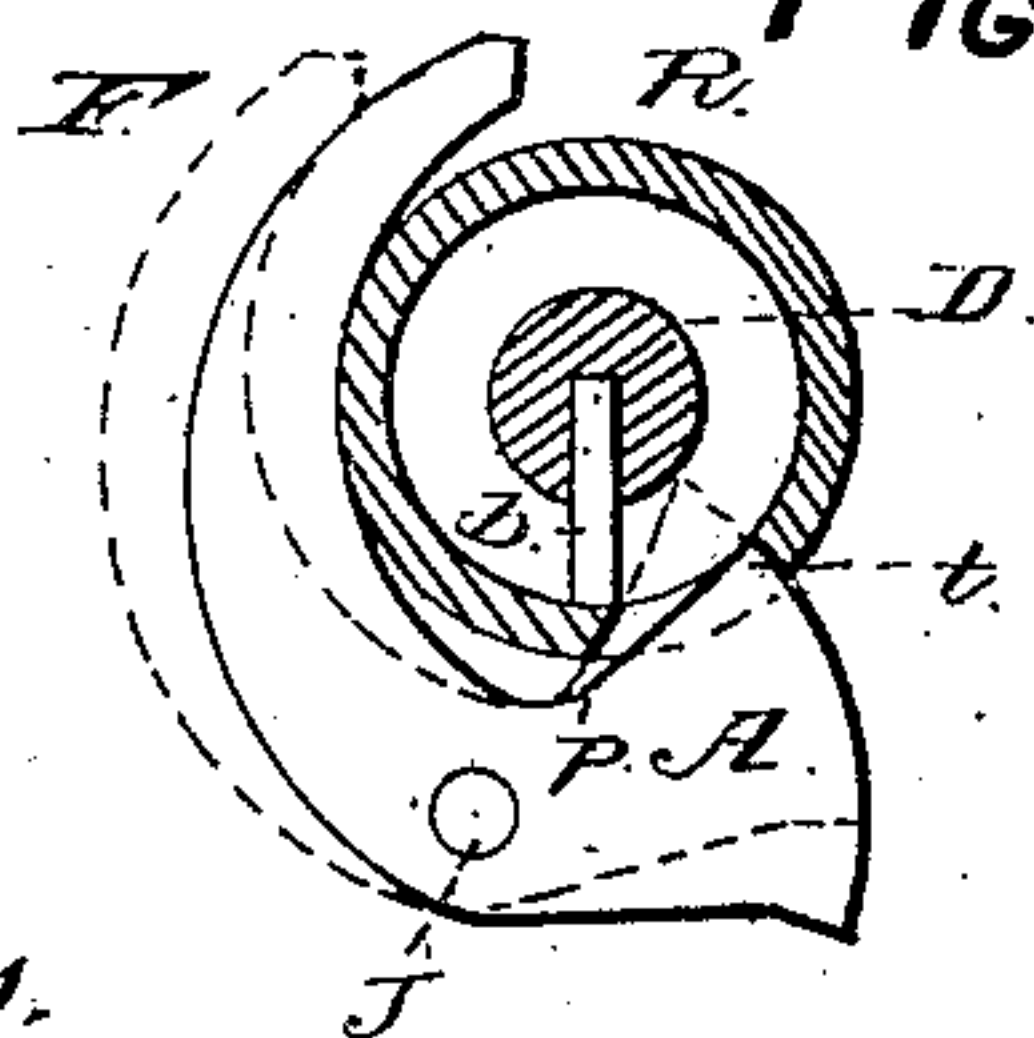


Fig. 9.



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CALVIN W. PARSONS, OF SCRANTON, PENNSYLVANIA, ASSIGNOR OF ONE-FOURTH TO ARTHUR C. LOGAN AND CHARLES E. CHITTENDEN, BOTH OF SAME PLACE.

LOCK.

SPECIFICATION forming part of Letters Patent No. 318,388, dated May 19, 1885.

Application filed January 21, 1884. (No model.)

To all whom it may concern:

Be it known that I, CALVIN W. PARSONS, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented a new and useful Improvement in Keyed Locks, of which the following is a specification.

The objects of my invention are, first, to make a lock that cannot be picked; second, to provide means for easily changing the parts of the lock to suit a different key when such change is desired. I attain these objects by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a top or edge view of the lock with the top of the case removed. Fig. 2 is a side view with the side of the case removed. Fig. 3 is a cross-section of the lock through the axis of the barrel. Fig. 4 is a partial side view, with the side of the case removed, showing the parts in different position from that shown in Fig. 2. Fig. 5 is a cross-section of the barrel, showing the cams on its end. Fig. 6 is a side view, and Fig. 7 is an edge view, of the key. Fig. 8 is a detail view of one of the slides provided with a plurality of notches; and Fig. 9 is a detail view representing the manner of obstructing or closing the break in the chamber, presently described.

The case K contains a cylindrical chamber, R, and is closed on one side, in the usual manner, by the plate *k*. The chamber R contains a barrel, D, which has a slot, *b*, extending from end to end of the barrel, to receive the key Q. To the barrel are attached two cams, C and E. The cam E is what is commonly called a "triangular eccentric," and it works in an oblong slot in the inner end of the bolt B. Owing to the partial concentricity of its periphery, the backward and forward motions of the bolt B, which forms a yoke for the cam, are separated by an interval equal to sixty degrees of angular motion of the cam. During one of these intervals or "dwells" of the cam the barrel turns from the position shown in Fig. 2 to that shown in Fig. 4. A set of levers, A, which are pivoted on the pin J, project their ends through an opening in the wall of the chamber R into the barrel D. The op-

posite ends of the levers terminate in fingers F. A set of plates or slides, S, equal in number to the levers A, are held between the flanges of the bar L, which is pivoted on the pin H. Each one of the slides S has a notch, *a*, in its upper edge, and this notch is placed at different distances from the end of the several slides. The bar L has at its outer end a tooth, L', which bears upon the periphery of the cam C, Fig. 2. When the barrel D is rotated by means of the key Q, placed in the slot *b*, the steps *h* on the edge of the key, Fig. 6, displace the levers A, and the fingers F, which rest nearly or quite against the ends of the slide S, move each of the said slides endwise in their bearings through different distances, as the steps *h* on the edge of the key Q vary in height. When the barrel is turned to the position shown in Fig. 4, the key passes beyond the end of the levers A, and they are returned to the position shown in Fig. 2 by the spring M. The cam C also comes into contact with the tooth on the end of the bar L, and raises the bar to the position shown in Fig. 4. In this position the slides S bear with their upper edges against the tooth T, and their lower edges have passed beyond the ends of the fingers F, and can no longer be touched by the said fingers. They are now detached wholly from all connection with the key, and cannot be manipulated for the purpose of discovering the position of the notches *a* in the slides S by the process of "feeling," so called. If the slides have been properly moved by the key and the fingers F, the notches *a* in the slides will coincide with the tooth T, and will permit the bar L to be lifted still higher—sufficiently high to allow the projection *e g*, Fig. 5, of the cam to pass under and by the tooth on the bar L, thus permitting the further rotation of the barrel and the withdrawal of the bolt B; but if the notches *a* in the slides S do not coincide with the tooth T, the bar L cannot be raised higher than in the position shown in Fig. 4, and the barrel D cannot be rotated, because the cam C cannot pass by the tooth of the bar L. The face or step *d* of the cam prevents rotation in the reverse direction by striking against the

end of the bar L. If by accident or design one of the fingers F be moved under the end of one of the slides S, thus preventing the return of the bar L from the position shown in Fig. 4 to that shown in Fig. 2, the step or face *a* of the cam will strike the end of the bar L, and prevent rotation of the barrel in the reverse direction, which, if permitted, would draw the bolt B as readily as by moving in the proper direction. When the bolt B is drawn inward, a shoulder, G, formed on it strikes the ends of the slides S and pushes them all back to their former or zero position in the bar L. The zero position is that shown in Fig. 2. The slides S are held in any position in which they may be placed in the bar L by the friction of the block W on their edges, caused by the pressure of the spring N. This pressure is transmitted through the slides to the flange of the bar L, and it operates to hold the tooth on the end of the bar L against the cam C. The key Q has two sets of notches or steps, *h*, on its edge, which steps are arranged in reverse order on opposite sides of the line *x y*, Fig. 6. The shoulder or stop *m* on the edge of the key strikes the end of the barrel D when the key is inserted in the slot *b*, and thus operates to bring one set of the notches *h* into proper position to actuate the levers A. When the key is inserted from the other side of the lock, the shoulder *m* of the key strikes the bottom of the notch *n*, Fig. 3, in the barrel. This notch is necessary only when the line *x y*, Fig. 6, does not coincide with the middle of the barrel D.

To prevent the slides S from sticking together, and to prevent any one of the slides from accidentally moving its neighbor, thin plates P, Figs. 1 and 2, are interposed between them. The pin H passes through these plates, and thus keeps them all in place.

The spring M may be one single plate-spring, or may be a set of springs, one for each of the levers A.

The slides S may be provided with two or more sets of notches similar to notches *a*. The extra set of notches may be similarly placed in a number or set of locks, thus permitting the use of a master-key. The extra set of notches may serve another purpose, as when the key has been lost or has fallen into improper hands, the slides S may be moved and turned end about, or "end for end," thus bringing the extra set of notches into play, and adapting the lock to a new key, or an extra key, which may be furnished with the lock. Two other sets of notches may be placed in the opposite edges of the slides, making four sets of notches, thus allowing the lock to be changed three times without supplying any new parts. Should a greater number of changes be required, a new set of slides S and corresponding keys, Q, can, in consequence of their simple forms, be supplied at small expense.

It is manifest if one only of the slides S or any number thereof less than all be supplied

with a plurality of notches, the change of said slide or slides, while it will not effect so extensive a change in the mechanism as if all were varied, still it will render necessary a key of different formation from that formerly used, and is within the scope of my invention.

It will be noticed that the extremities A' of levers A are formed in the arc of a circle struck from the pivots J. This extremity A' fits snugly against the wall of the barrel-slot, and closes said slot, no matter to what point the lever may be adjusted. I thus prevent any access to the interior of the lock through the key-hole.

What I claim as my invention, and wish to secure by Letters Patent, is—

1. In a lock, the combination, with the levers A, actuated by a proper key, so as to make their arms F move unequally, and the spring or springs M, acting on the levers in an opposite direction to said key, of the slides S, supported by and moving longitudinally on the bar L, pivoted at H, substantially as specified.

2. In a lock, the combination, with the levers A, provided with the arms F, and barrel D, having attached the cam C, provided with detent-points *d* and *e g*, of the tooth T and slides S, provided with the notches *a*, and sliding between the lateral flanges of the bar L, provided with tooth L', and pivoted at H, substantially as specified.

3. In a lock, the combination, with the levers A, provided with arms F, slides S, provided with notches *a*, bar L, provided with detent L', and the tooth T, of the barrel D, having attached the cam-rollers C and E, and the bolt B, sliding in the case K, and having in it a proper slot to be reciprocated by the cam E, substantially as specified.

4. In a lock, the combination of the cam C, having the stops *d* and *e g*, and the bar L, pivoted at H, and provided with tooth L', of the slides S, spring N, and block W, substantially as specified.

5. In a lock, the combination, with the bar L, partitions P, pivoted together with the bar L at H, and the slides S, moving longitudinally between said partitions, and having their lower front corners below the edges of the partitions and bar, of the bolt B, provided with the shoulder G, which, when the bolt is drawn in, impinges on said lower corners of the slides and brings the latter into proper position, substantially as specified.

6. The combination, with the levers A, of the longitudinally movable slides S, each of which is provided with a notch, *a*, and one or more of which is provided with a plurality of said notches, and capable of adjustment into different position, whereby the lock may be adapted for operation by keys of different formation, substantially as set forth.

7. In a keyed lock, the combination of the slides S, the levers A, the cam E, having that portion of its periphery farthest from its center of rotation concentric with the same, and covering approximately sixty degrees of arc, and

the cam C, having points *d e*, the said points being formed a distance apart not greater than the concentric or idle part of cam E, substantially as and for the purposes specified.

- 5 8. The combination, in a lock, with the chamber R, having an opening in one side, of the levers A, pivoted as described, and having their ends operating through the opening in the side wall of the chamber R, the contour
10 of said ends being formed of arcs of circles concentric with the pivot J, whereby said levers wholly close and obstruct the opening in the wall of the chamber R, and prevent all access to the interior of the lock, substantially
15 as set forth.

9. In a lock, the combination of the levers A, the bars L, the slides S, supported by and movable along the bars L, and the ward or tooth T, all arranged and operating substantially as set forth, whereby the slides may be
20 detached from and moved beyond possible contact with the levers before the said slides are presented to the ward or tooth T, as and for the purposes specified.

CALVIN W. PARSONS.

Witnesses:

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