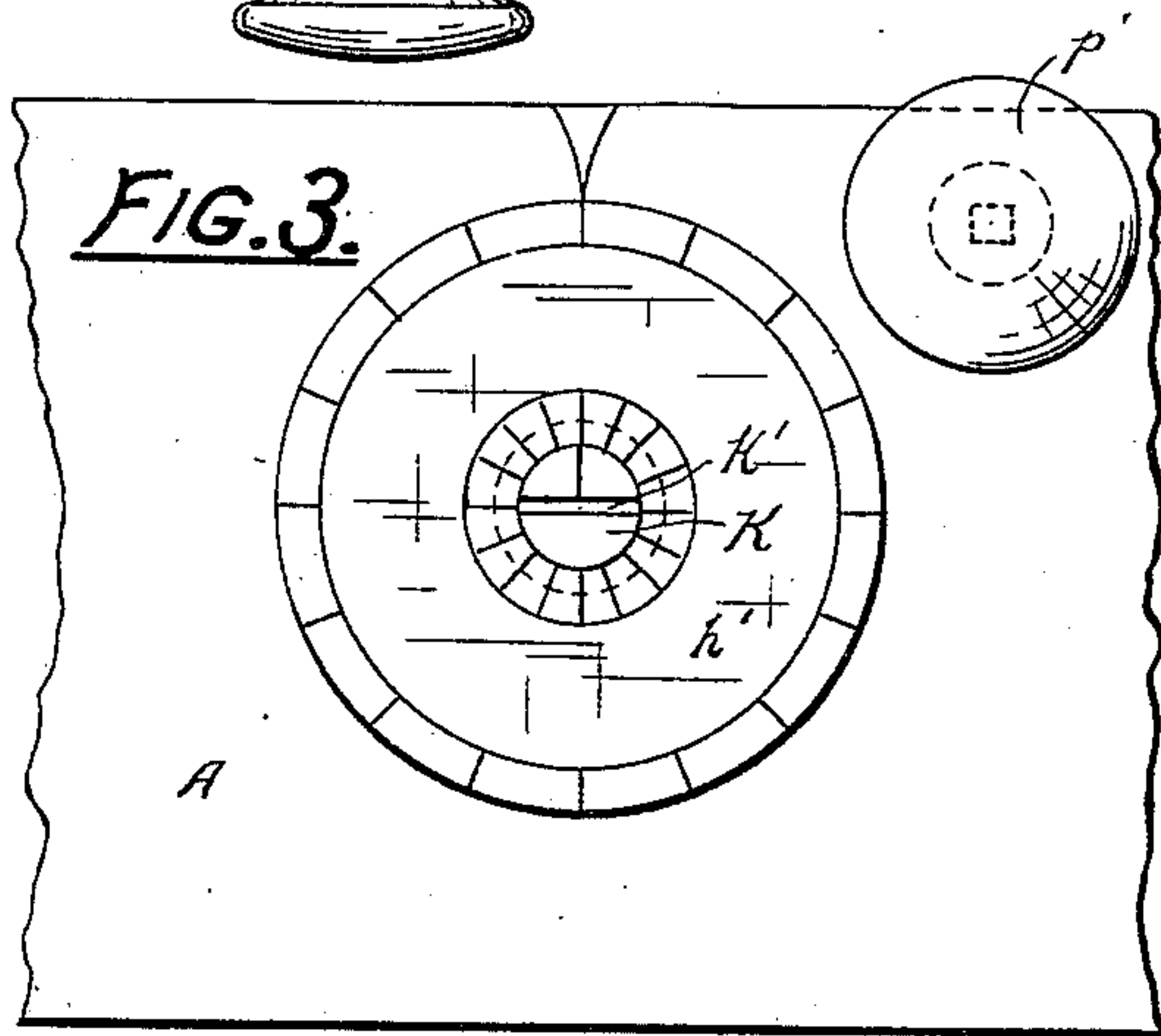
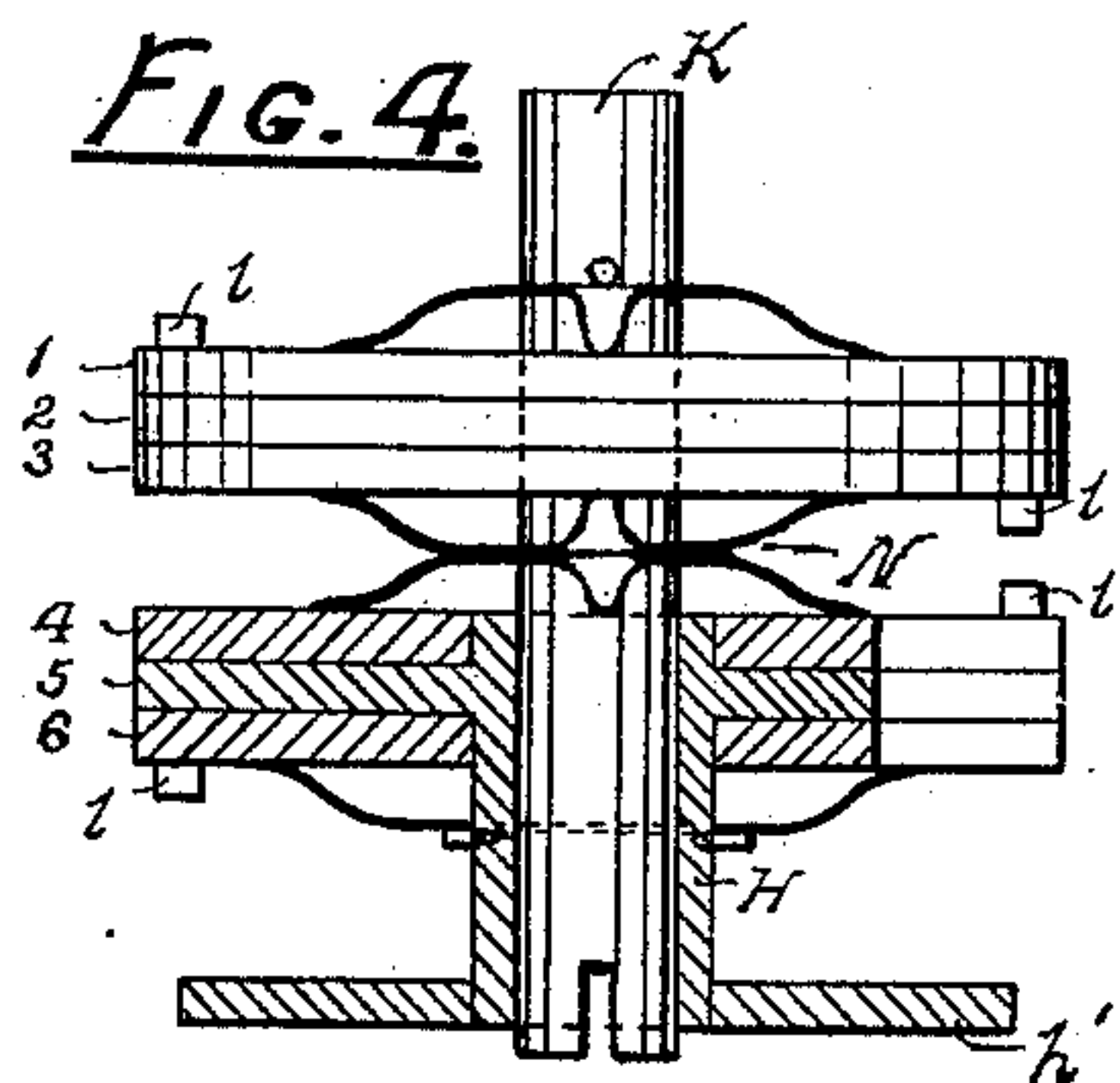
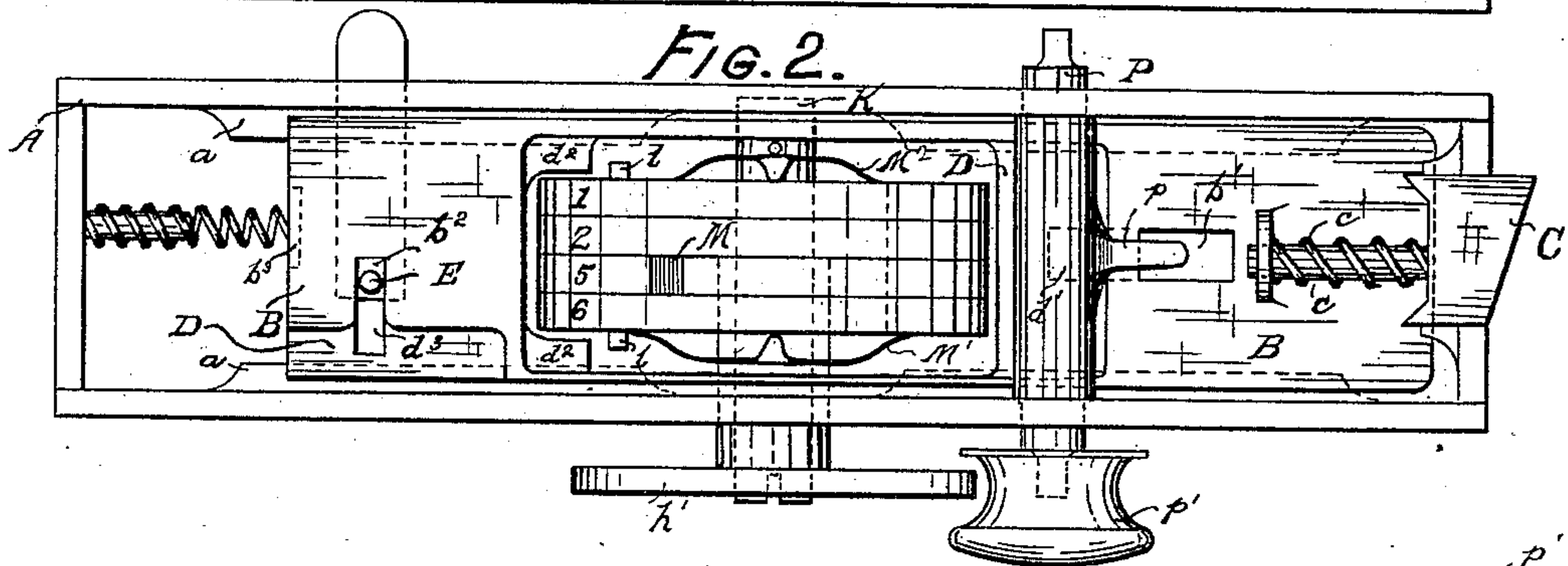
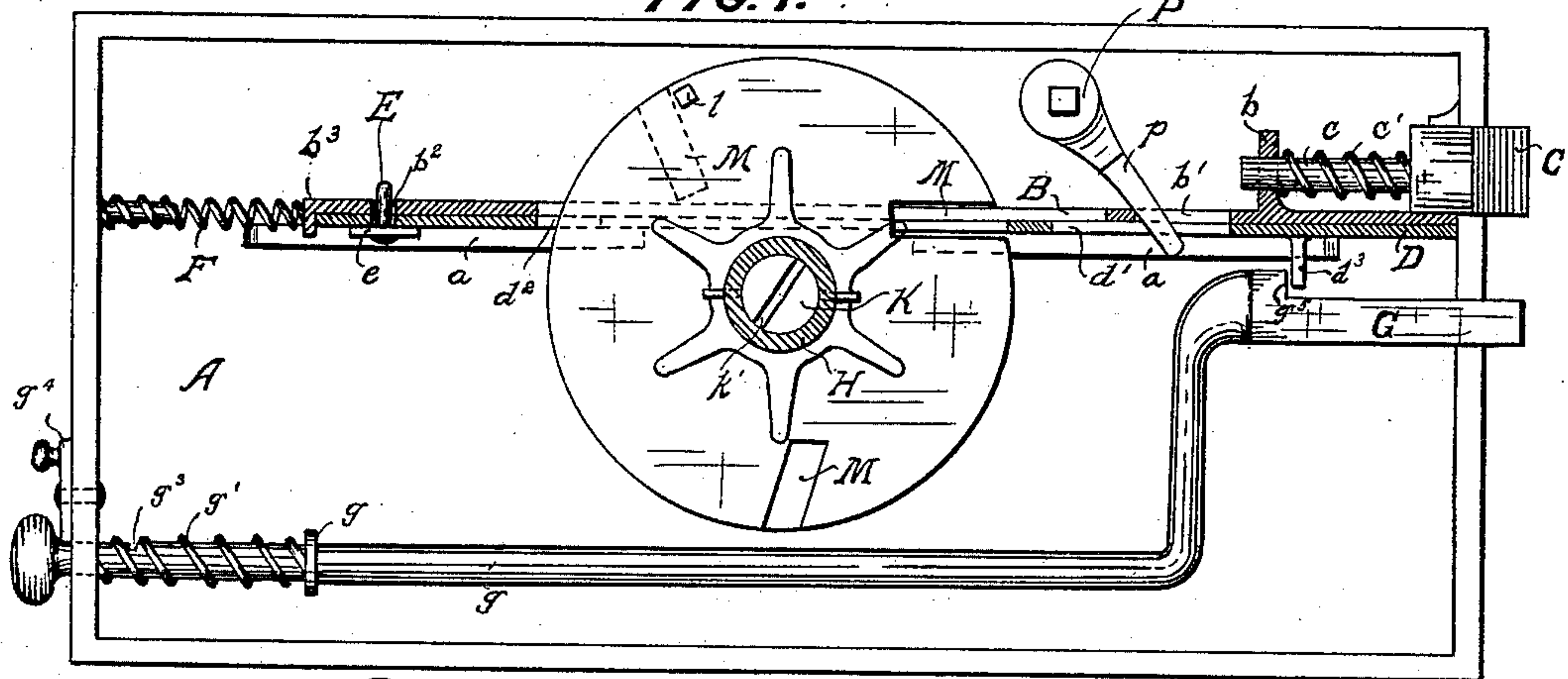


(Model.)

L. HOUCK.
PERMUTATION LOCK.

No. 429,092.

FIG. 1. Patented May 27, 1890.



WITNESSES

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LAFAYETTE HOUCK, OF BIRDSBOROUGH, PENNSYLVANIA.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 429,092, dated May 27, 1890.

Application filed June 4, 1889. Serial No. 313,038. (Model.)

To all whom it may concern:

Be it known that I, LAFAYETTE HOUCK, a citizen of the United States, residing at Birdsborough, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Permutation-Locks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a form of permutation-lock which is intended to be suitably applied not only to safes and vaults, but also to doors and drawers, or wherever it is important to employ a thoroughly secure lock. It may also be readily adapted to a padlock, as well as the more ordinary forms of permutation-locks.

The invention consists not only in the novel construction and arrangement of the permutation mechanism, but in the peculiar arrangement of the main bolt, whereby it may be set to operate with or without the combination, and also in the use therewith of a supplemental bolt, which may be thrown into or out of engagement with the main bolt.

The features are more fully described hereinafter, and specifically pointed out in the claims.

Figure 1 is a front view of a lock embodying my invention, the front plate of the case being removed. Fig. 2 is a top view of the same with the top plate removed. Fig. 3 is an outside front view showing the index-wheel and operating-handle. Fig. 4 shows the permutation mechanism separate and partly in section, six disks being represented instead of four, as in Fig. 2.

A represents the lock-casing; B, the main bolt-plate, to which the bolt-head C is attached by means of its shank *c*, which passes through a lug *b* on the bolt-plate, being backed by a spring *c'*. This plate B extends to near the opposite end of the lock, being slotted where it passes the permutation-disks, hereinafter described, and is backed by a spring F, which presses against the end *b³*. A plate D, similar in general shape to the bolt-plate B, is

immediately under it and rests upon brackets *a* on the casing. A detent E on a plate *e*, which is movable from the inside face of the lock, passes through a slot *d³* in the plate D, and may be thrown into engagement with a slot *b²* in the bolt-plate, thus compelling the two plates to move together. The shaft P, when turned by the handle *p'* on either face of the lock, causes an arm *p*, which passes through slots *b'* and *d'* in plates B and D, to withdraw the bolt-head C, either by moving the bolt-plate B alone, or, when the detent E connects the two, both the plates B and D, providing the latter is not stopped by the permutation mechanism, which I will now describe.

A solid spindle K is supported in the case and passes through a hollow spindle H. Both spindles project through one face of the lock and are adapted to be independently rotated, the spindle K being represented with a key-slot *k'* and the spindle H with an index-wheel *h'*. Within the case disks 2 and 3 are fixed, respectively, to said spindles K and H, and similar disks are loosely carried upon the same spindles and pressed into frictional contact with said fixed disks—the outer disks 1 and 6, which are the only ones shown in Fig. 2, by springs *M'* and *M²*, and the inner ones 3 and 4, which may also be employed, if preferred, as shown in Fig. 4, by intermediate springs N. Each of these disks is provided with one or more similar slots M, and in order to effect the withdrawal of the bolt-head C when the plates B and D are connected by means of the detent E it is necessary, as usual in this class of locks, to bring a slot in each disk in line with those of the other disks used, and also in line with the movement of plates B and D. In order to effect this object, when four disks are employed, as shown in Fig. 2, the index-wheel *h'* is turned to the left, carrying with it the fixed disk 5 and friction-disk 6 until a lug *l* on the latter rests upon a stop *d²*, when the further movement of the fixed disk alone, until the index points to a known division on the outer edge of the index-wheel *h'*, brings slots in the disks 5 and 6 in line. A similar movement of the inner shaft K by means of a key or knob, as preferred, will in like manner set the disks 1 and 2, the inside division on the index-wheel be-

ing used. Then, in order to bring four slots into line at the proper point to permit the withdrawal of the bolt, each shaft is to be turned separately to predetermined divisions 5 on the index-wheel, and the turning of the handle p' will withdraw the bolt. Instead of using four numbers to unlock, however, the fixed and friction disks may be properly set and only two numbers used ordinarily. The 10 operator, however, can change the combination in a moment from the outside, so as to require four numbers to unlock it.

When six disks are employed, as in Fig. 4, two additional numbers can be used in the 15 combination, the shafts K and H being each turned to the left to set one of the friction-disks with the fixed disk and to the right to set the other, two sets of lugs and stops being used. I prefer in this case to use two num- 20 bers for setting and changing the combination, leaving four numbers to unlock.

In addition to the main bolt I employ a supplemental bolt G, which extends through the case, so as to permit it to be held back when 25 the latch g^4 engages the notch g^3 . When it is desired to be brought into use, however, the spring g' presses it forward, and a pin d^3 on the plate D engages a shoulder g^5 , thus causing it to be withdrawn by the same move- 30 ment that withdraws the main bolt.

It is evident that the features of my invention may be considerably modified in adapting the same to different forms of locks, and I do not therefore limit myself to the particular construction herein described. 35

What I claim is—

1. In a permutation-lock, the combination of a hollow spindle carrying an index-wheel and slotted fixed and friction disks, and an 40 inner spindle carrying similar disks, said fric-

tional disks being provided with stop-lugs, all arranged and adapted to operate substantially as set forth.

2. In a permutation-lock, the combination, with the operating-handle and the bolt-plate 45 with spring-actuated head, of the slotted fixed and friction disks carried upon separate spindles, all adapted to operate substantially as set forth.

3. In a permutation-lock, the combination 50 of a hollow spindle carrying an outside index-wheel, and a loose disk or disks held in frictional contact with a similar fixed disk, an inner arbor carrying similar fixed and friction disks, and a bolt-plate and operating-handle, 55 said friction-disks being provided with stop-lugs, and both fixed and friction disks having one or more slots adapted to admit said plate when in line, all substantially as set forth.

4. The combination, with the bolt-plate having a spring-actuated head and the slotted disk-operating mechanism, of a supplemental plate D, adapted to be attached to said bolt-plate and to enter said slotted disks, all sub- 60 stantially as and for the purpose set forth.

5. The combination, with the bolt-plate and operating mechanism, of a supplemental plate D, attachable to said bolt-plate and engaging an independently-movable bolt G, all sub- 70 stantially as set forth.

6. The combination of the main bolt, the plate D, detent E, bolt G, springs F and g' , and operating mechanism, substantially as set forth.

In testimony whereof I affix my signature in 75 presence of two witnesses.

LAFAYETTE HOUCK.

Witnesses:

W. G. STEWART,
A. S. MORGANS.