

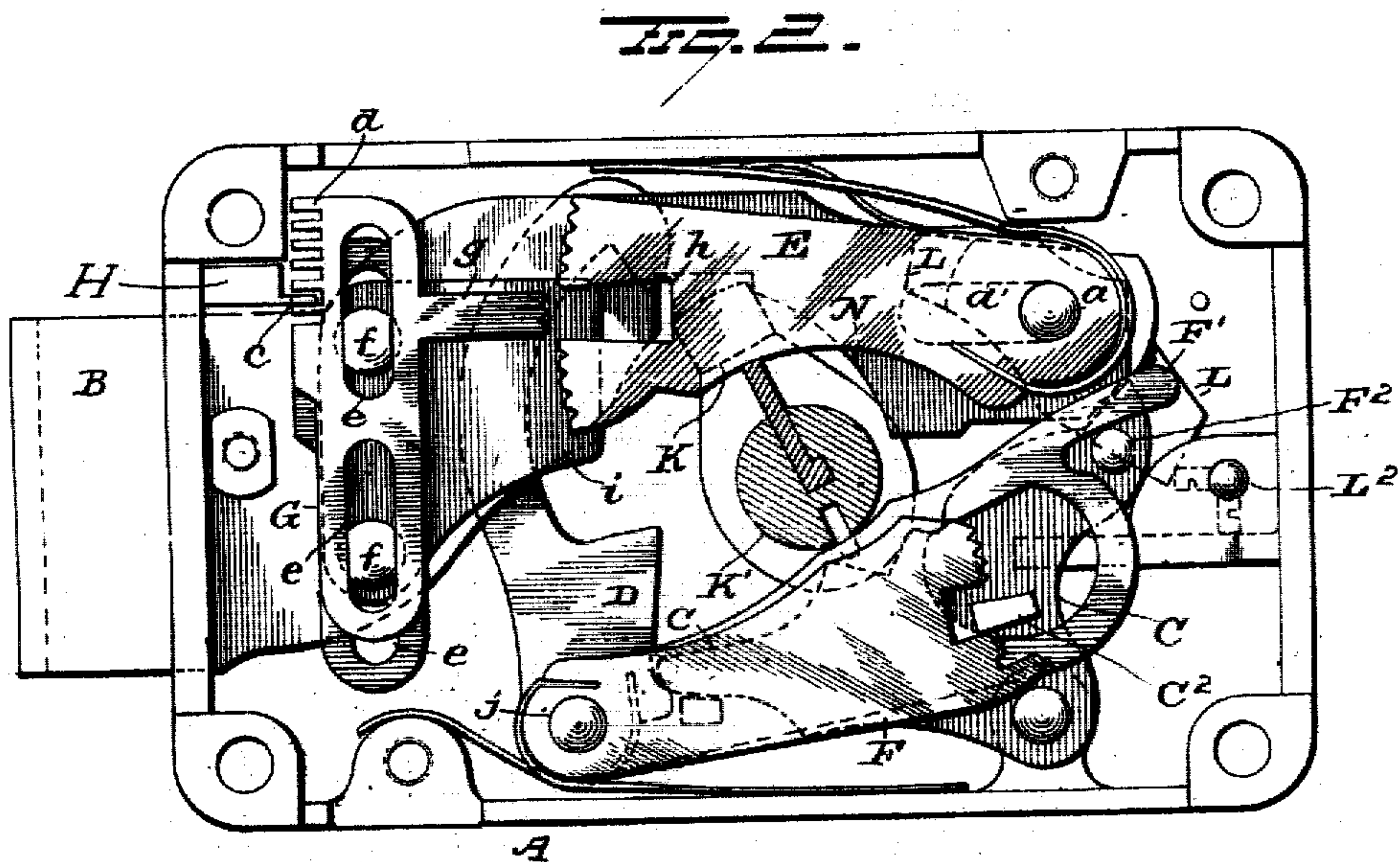
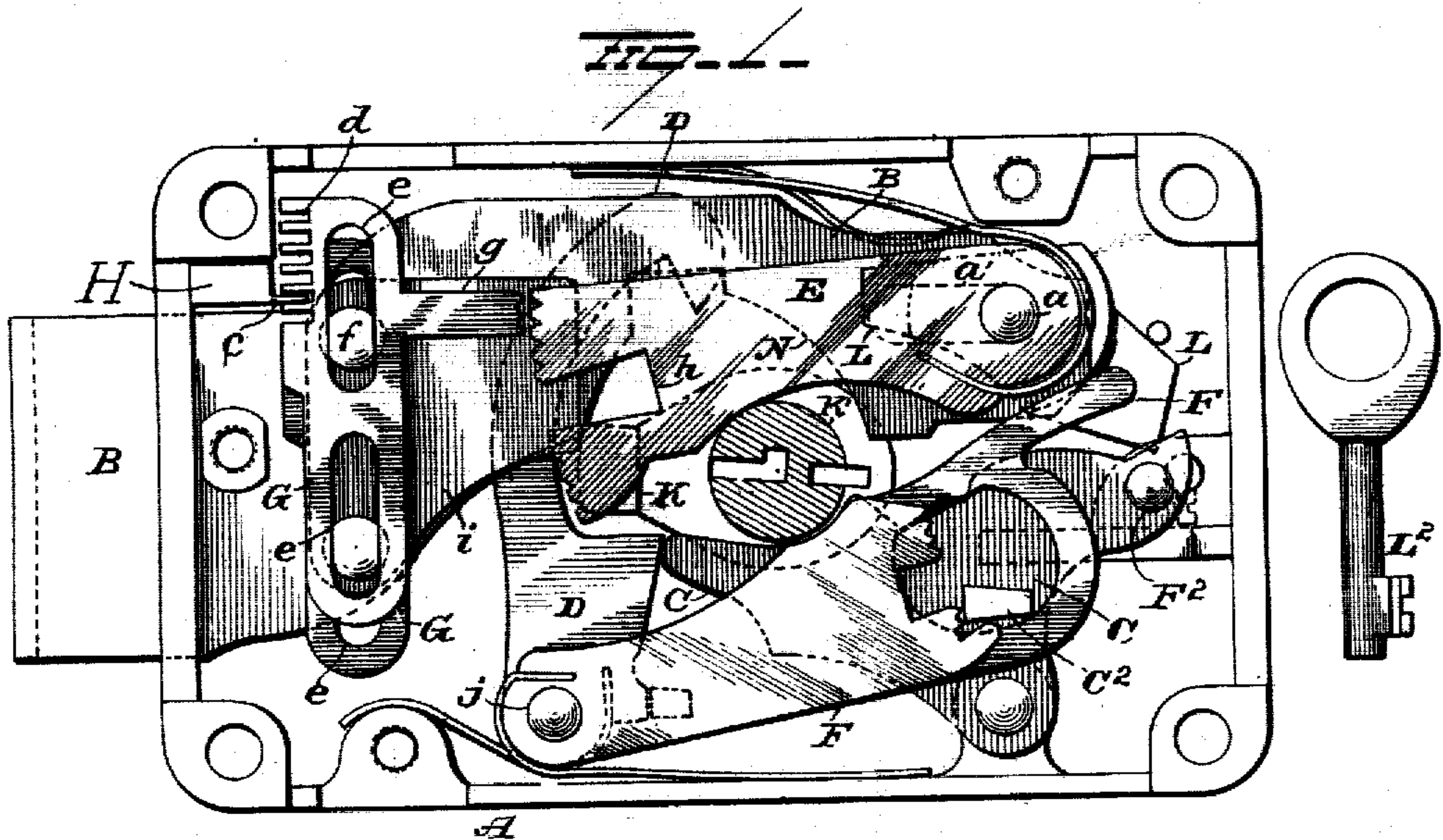
No. 814,335.

PATENTED MAR. 6, 1906.

W. H. TAYLOR.
CHANGEABLE COMBINATION KEY LOCK.

APPLICATION FILED JULY 1, 1905.

2 SHEETS--SHEET 1.



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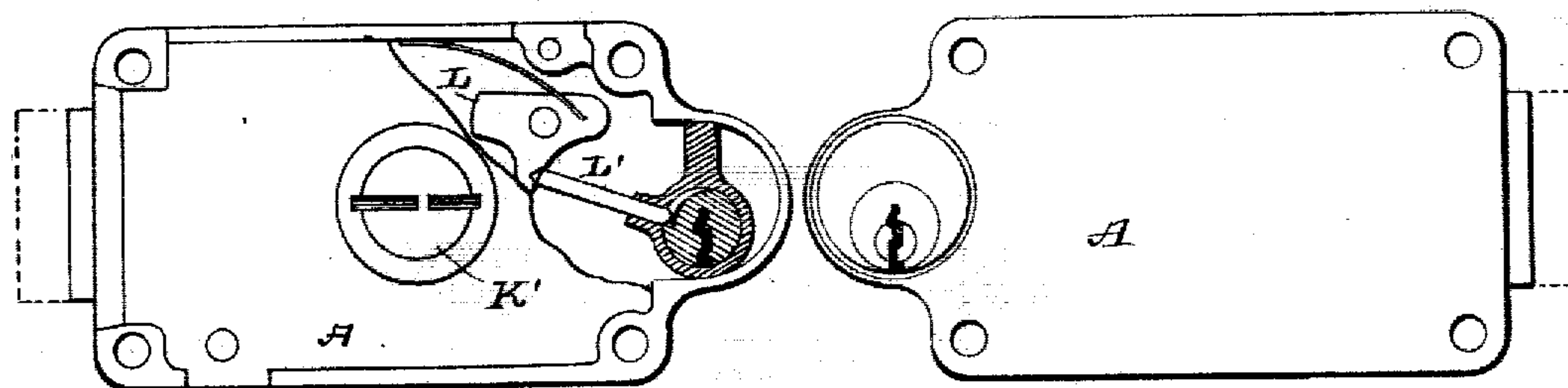
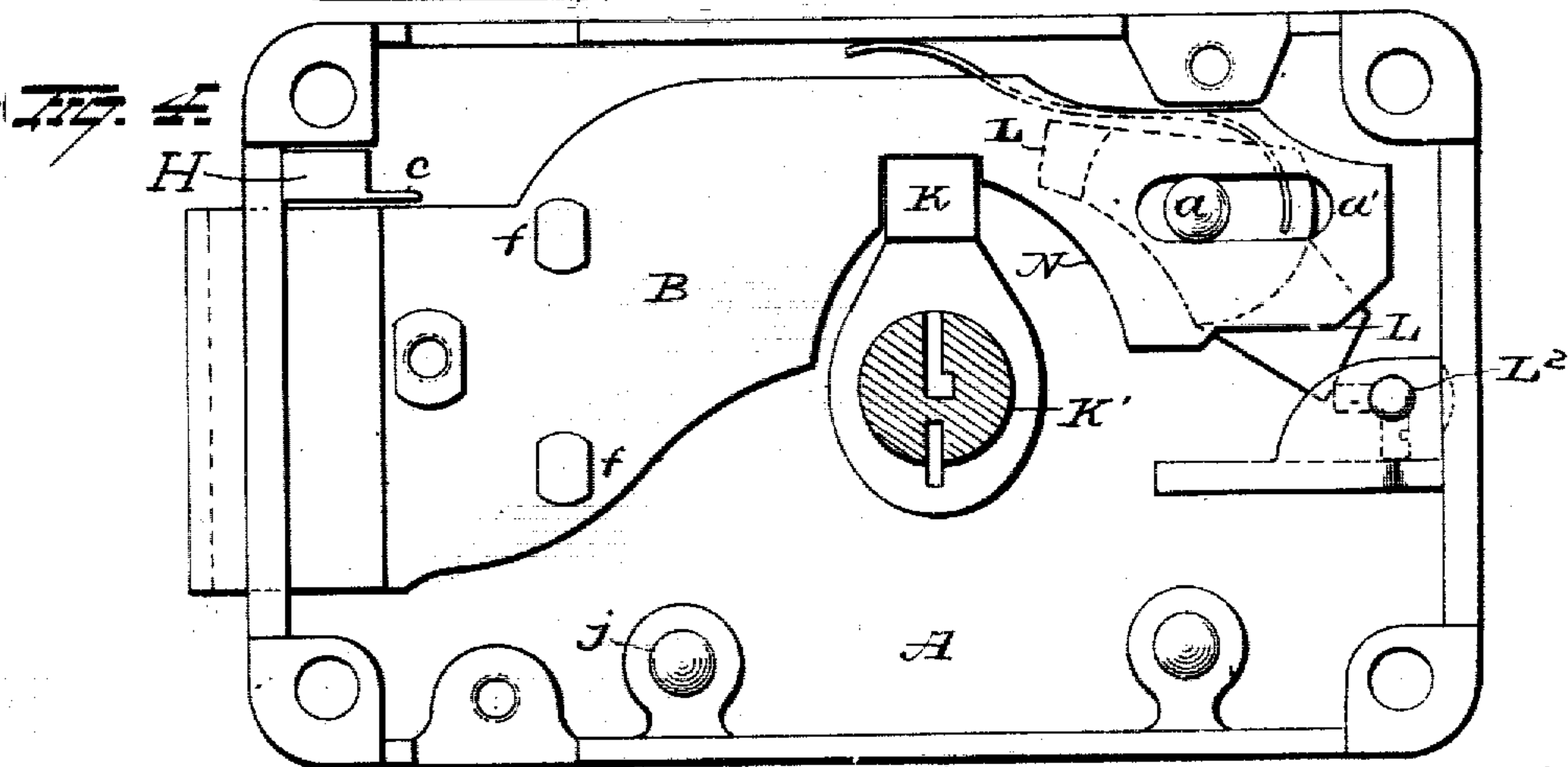
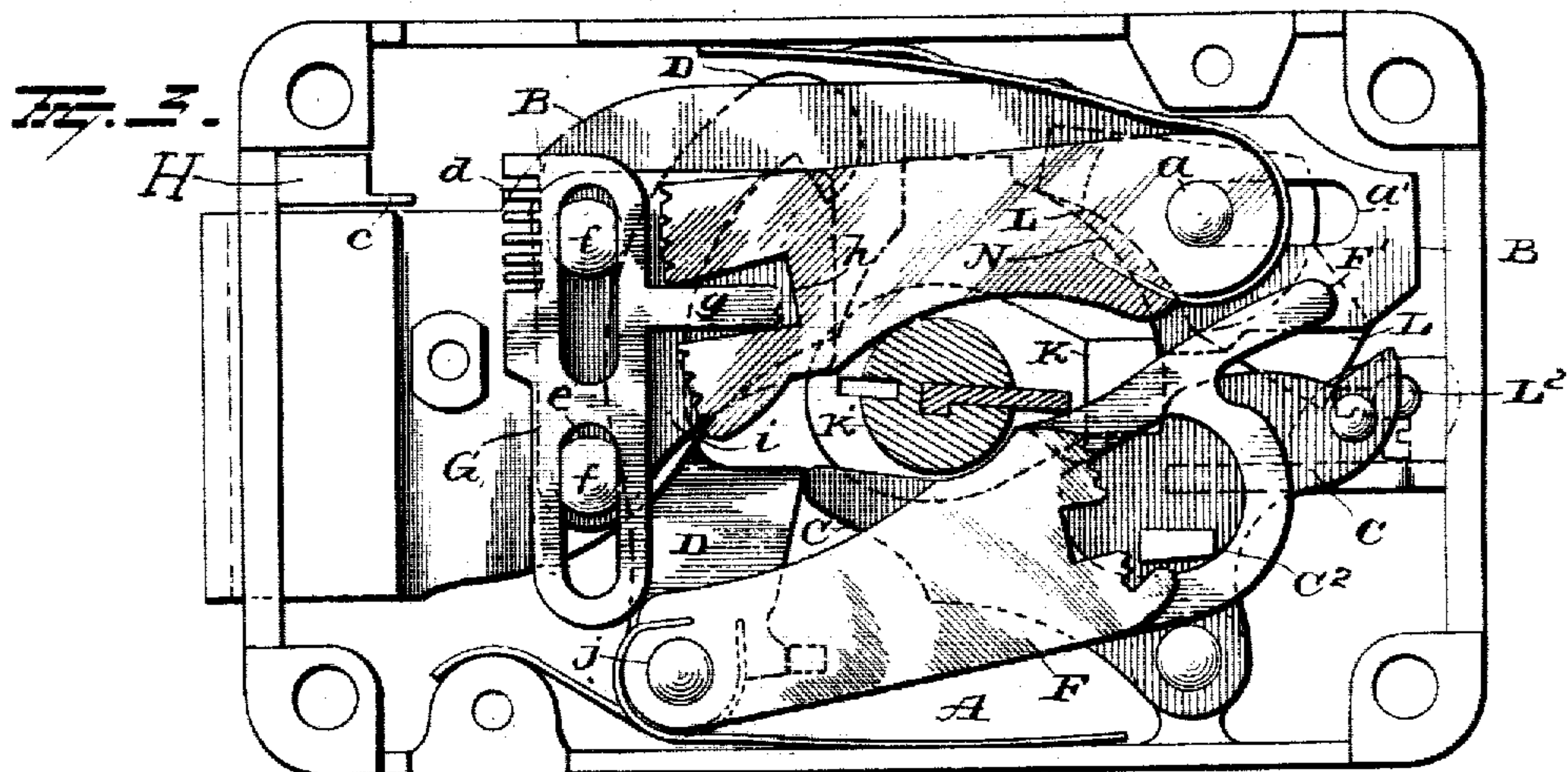
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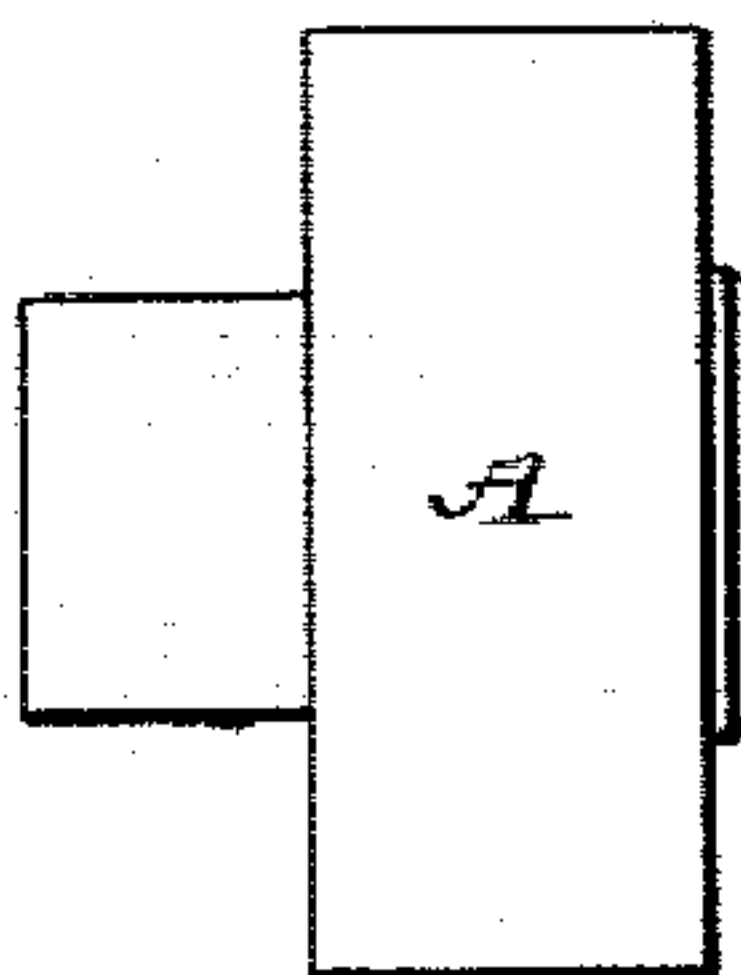
2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WARREN H. TAYLOR, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE
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CHANGEABLE COMBINATION KEY-LOCK.

No. 814,335.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed July 1, 1905. Serial No. 287,935.

To all whom it may concern:

Be it known that I, WARREN H. TAYLOR, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Changeable Combination Key-Locks; and I do hereby 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.

My invention relates to an improvement in changeable combination key-locks designed more particularly for safe-deposit boxes, and is an improvement on the lock disclosed in Patent No. 690,537, granted to me January 7, 1902.

In the patent above referred to the change in the combination can only be effected when the bolt is retracted, and a cam-stop which is accessible from the rear of the lock operates normally to prevent the key-hub and the change-key therein from being turned to a position where the key can be withdrawn from the lock when the latter is unlocked or the bolt retracted. Hence to withdraw the key from the lock for the purpose of changing the combination which is effected by the insertion of another key this cam-stop, which, as before stated, is accessible from the rear, is moved to a position out of the path of the cam on the key-hub, thus permitting the latter to be moved to a position where the key can be removed. The fact that the cam-stop is accessible when the door is open makes it possible for the custodian or attendant in charge of the safe-deposit boxes to change the combination without the knowledge of the owner of the box and in this way gain access to the box without the use of the key held by the owner.

The present improvement, therefore, consists in the adding of another locking mechanism actuated by a key which will control the changing of the lock from its adaptation to a change-key of one form to that of another form.

My invention further consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of my improved lock with the face-plate of the casing removed and the bolt in its locked position. Fig. 2 is a similar view showing the guard-key mechanism in a

position to release the key-hub, the latter partly turned and the safety locking device moved out of the path of the key-hub. Fig. 3 is a similar view showing the bolt retracted and the key-hub turned to its position to receive a new change-key. Fig. 4 is a view of the casing, bolt, and safety locking mechanism, the latter being turned by its key out of the path of the cam on the key-hub. Fig. 5 is a view of a modified form of safety locking mechanism, and Figs. 6 and 7 are views in side and end elevations of the latter.

A represents the lock-casing, and B the bolt slidably mounted therein and provided with an elongated slot *a'* for the passage of the fixed stud *a*, on which the tumblers *E* are mounted. Secured to the casing near its front end and in a position adjacent to the bolt B is a stationary spline H. This stationary spline H is provided with a tooth *c*, adapted to engage the notches *d* in the movable or changeable fence or fences G, which latter are slidably mounted on and carried by the bolt B.

There is a fence G for each tumbler E, and each fence is provided with a series of notches *d* for engaging the tooth *c* of the stationary spline, and each is also provided adjacent to its ends with the elongated slots *e*, through which the pins *f*, carried by the bolt, pass, and with a rearwardly-projecting tongue *g*, designed to enter the gating *h* in the tumbler. These fences are moved to their proper positions by the tumblers and must necessarily remain undisturbed when once moved. Hence in order to prevent one fence from moving another by frictional contact therewith I locate the thin plates *i* between the several fences and also preferably on or against the outer face of the outer fence, and as these spacing or friction plates are secured to the pins *f* the several fences are separated and prevented from imparting movement to the adjacent fences. Again, these fences are restrained against accidental movement when once set by their respective tumblers by the frictional contact of the friction or spacing plates. Hence after the tongues of the fence pass out of the gatings in the tumblers preparatory to engaging the tongue on the stationary spline H the fences G are retained in their respective positions by the frictional contact of the plates *i*. These spacing or friction plates also engage and separate the

free ends of the tumblers, as clearly shown in Figs. 1 and 2, and hold them against any undue accidental movement and properly spaced to engage their respective fences.

5 N is a recess formed in the edge of the bolt for the operation of the cam K of the key-hub K'. This cam when turned engages the side walls of the recess and slides the bolt back and forth. The key-hub K' is provided with
10 two slits to receive the two keys.

Mounted on the stud *a* adjacent to the bolt is the spring-pressed tumbler L, the front end of which when the bolt is retracted rests in the path of the cam K and prevents the latter from completing a half-revolution, which is necessary in order to bring the key to a position where it may be withdrawn. The combination under which the bolt is locked is, however, regulated by the key, which
20 throws the bolt to a locked position. Hence in order to change the combination it is necessary to change keys when the bolt is in its unlocked position, and in order to permit of the removal of the key I provide a safety-
25 lock, which consists of the tumbler L above referred to, actuated by a safety-key L², introduced from the rear face of the lock-casing near its rear end. This key should be in the custody of some official other than the
30 regular attendant or custodian of the boxes and is only used when it is desired or necessary to change the combination, as would be the case at the time of the rental of a box or where a key has been lost. By inserting the
35 safety-key and turning the same the safety-tumbler will be moved out of the path of cam K, thus permitting the key-hub to continue its turning movement and complete its half-turn, in which position the change-key can
40 be withdrawn, a new one introduced, and the combination changed by the act of throwing the bolt to its locked position, as will be hereinafter explained.

In throwing the bolt to its locked position
45 the tumbler L will yield under the pressure and permit the cam K to pass and will then automatically fall into its normal position in rear of the cam. From this it will be seen that unless the safety-tumbler L be removed
50 or elevated, as above explained, the change-key cannot be removed when the lock is unlocked.

In Fig. 4 I have shown the safety-lock of the pin-tumbler variety and connected to the
55 tumbler L by the pin L¹.

By referring to Fig. 2 it will be seen that when a change-key is introduced and turned and each bitting of the key engages its corresponding tumbler the fences of the several
60 tumblers will be raised to the particular heights corresponding to the bitting of the key. Now as the key continues to turn the bolt moves forward, and the movable or changeable fences all engage the stationary
65 spline H and will be held at the particular

elevation at which they were set by the key with which the lock was locked. Consequently when this same key is again inserted for retracting the bolt it will again raise the
70 tumblers to their proper positions relative to their respective fences, so that the tongues or arms of the several fences will slide into the gatings of their respective tumblers. If, however, a different key be inserted, the gat-
75 ings in the tumblers will not register with the tongues or arms of the fence, thus absolutely preventing the unlocking of the lock with any other key than the one employed for locking it.

It should be borne in mind that the bit-
80 tings of the keys must bear a certain fixed relation to the notches in the changeable fences, so that when the key is operated the raising of the tumblers will raise the change-
85 able fences to just the right points, so that they will engage properly with the stationary spline H.

Although the mechanism above described is applicable to locks of any type, I have shown it in connection with a guard-key
90 mechanism which is used in connection with safe-deposit locks or other locks where the presence of a custodian or other person holding a second key is necessary before the lock
95 can be unlocked. This guard-key mechanism comprises one or a series of tumblers F, mounted on the stud *j* and each provided with a gating to receive the fence C² on guard-
100 lever C. This guard-lever is approximately triangular in shape and is designed at its rear end to be engaged by the bolt B, which operates to reset the guard mechanism, while
105 its front end is designed to engage the cam-locking lever D, as shown in Figs. 1 and 2. This second set of tumblers F is engaged by a guard-key inserted in the second slot in the
110 key hub or plug K', and when moved by the key the gatings in their ends are brought into line with the fence C² on guard-lever C, thus permitting the latter to turn. During this
115 turning movement its front end engages the cam-locking lever D and carries the hooked end thereof out of the path of the cam K. This hooked end normally rests in the path
120 of the cam K and prevents it from being turned sufficiently to throw the bolt to an unlocked position.

The guard-lever is, as before explained, re-
set or thrown off by the rearward movement of the bolt, and in addition it may be reset or
125 thrown off by a throw-off key. One of the guard-tumblers is provided with a tongue F', which latter moves in the path of a pin F², projecting from the guard-lever C, and which when moved by a key strikes the pin
130 F² and turns the guard-lever to its normal locked position. The object of the tongue F' is as follows: Should the attendant or guard who carries the guard-key by mistake put in his guard-key and set the guard-tumblers
135

of a lock, he can then insert another key, known as the "guard throw-off" key, which operates on this particular tumbler having the tongue F', and by turning it strikes the pin F² and throws the guard-lever C back into its locked position.

When the bolt B is moved outwardly to a locked position, the cam-locking lever D will be forced out of the way by the cam K, and after the latter has passed it falls back into the path of the cam and prevents the lock from being unlocked until the guard mechanism shall have been first unlocked.

The main tumblers E, guard-tumblers F, cam-locking lever D, and safety-tumbler L are each provided with a flat wire spring for holding them in their normal positions, and the safety-tumbler L is yieldingly held by its spring against a small stud, (shown in Figs. 1 and 2,) which stud prevents the spring from moving the safety-tumbler L out of the path of the safety-key, which, as before explained, is employed for actuating said tumbler.

While I have shown in Figs. 1, 2, and 3 the ordinary form of lock and in Fig. 4 a pin-tumbler lock, I would have it understood that I do not confine myself to any particular construction of lock, nor is it essential that a lock with guard-tumblers be employed, as my invention comprehends, broadly, a lock wherein a safety-lock actuated by an independent key is employed for preventing the withdrawal of the main key when the bolt is retracted except after the safety-lock has been actuated by its proper key.

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

1. In a changeable key-lock wherein the combination is changed by the insertion and turning of a key when the bolt is retracted, the combination with a bolt and tumblers, of a safety locking device for preventing the main key from being turned to a position where the main key can be removed when the bolt is retracted, and a key for actuating the safety locking device.

2. In a changeable key-lock, the combina-

tion with a bolt and tumblers, of a safety locking device which must be operated by a key before the main tumblers of the lock can be reset to conform to the bittings of a different form of change-key.

3. In a changeable key-lock, the combination with a bolt and a series of tumblers carried thereby, of a main key-hub for actuating the bolt, and a safety locking device for said main key-hub, which must be operated by its key before the main tumblers of the lock can be reset.

4. In a changeable key-lock, the combination with a bolt, a tumbler carried thereby and a key-hub having a cam for moving the bolt, of a safety locking device for limiting the throw of the cam and a key for actuating the safety locking device, whereby the main key-hub may be turned to a position where the main key can be removed while the bolt is in its retracted position, and a new change-key inserted.

5. In a changeable key-lock the combination with a bolt, tumblers thereon and a main key-hub having a key-slot opening at the front of the lock and having a cam for moving the bolt, of a safety locking device having its key-opening in the rear face of the lock-casing and adapted to limit the turning movement of the main key-hub, and a key for actuating the safety locking device.

6. In a changeable key-lock the combination with a lock-casing, a bolt therein, tumblers carried by said bolt and a main key-hub having its key-slot opening in the front face of the casing, of a safety locking device for limiting the movement of the key-hub and having its key-opening in the rear face of said casing and a key for said safety locking device.

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

WARREN H TAYLOR

Witnesses:

SCHUYLER MERRITT,
F. T. TOWNE.