No. 633,291.

Patented Sept. 19, 1899.

A. NEWELL.

SLIDING DOOR LOCK.

(Application filed Aug. 3, 1898.)

(No Model.)

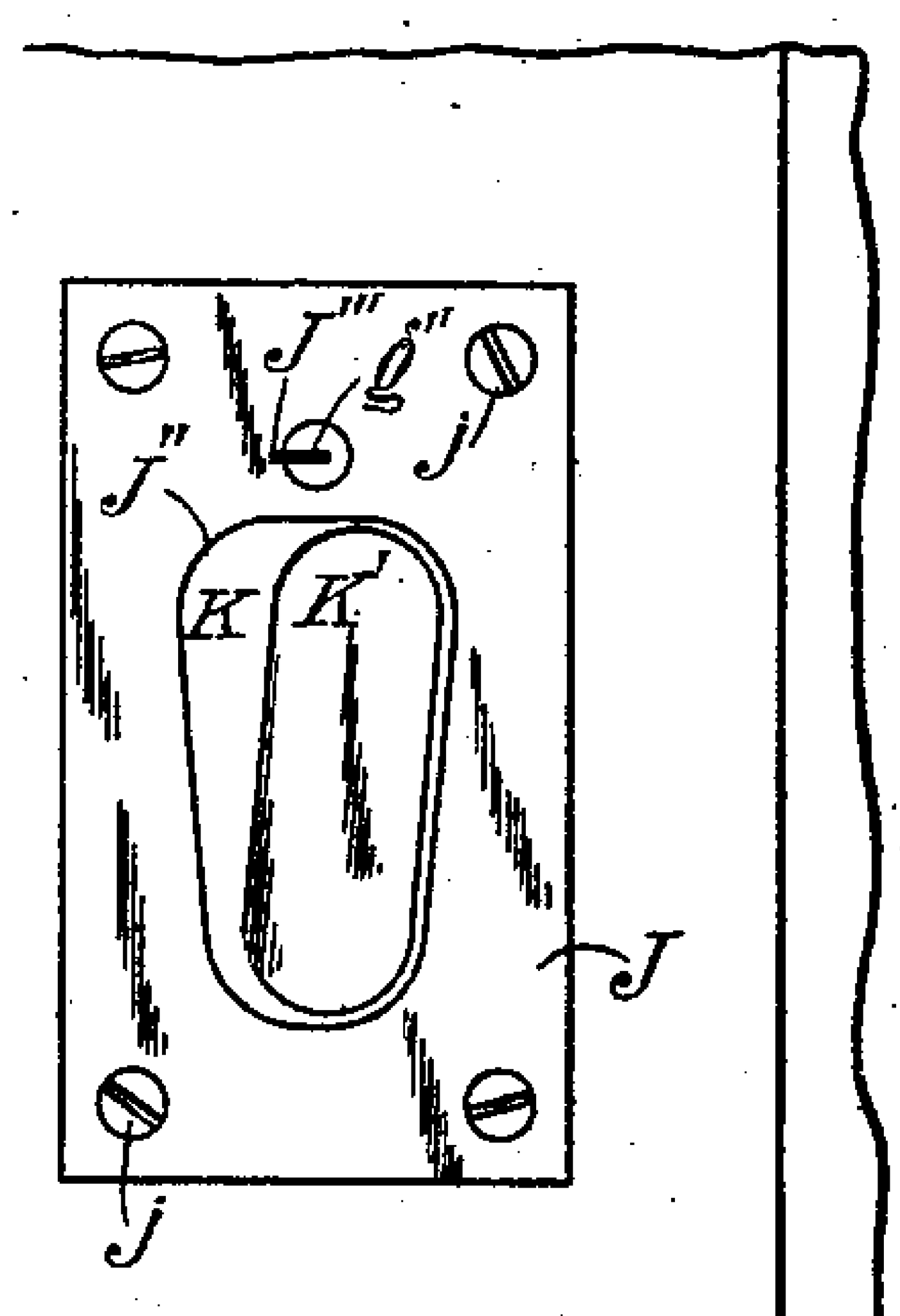


Fig. 3.

Fig. 1.

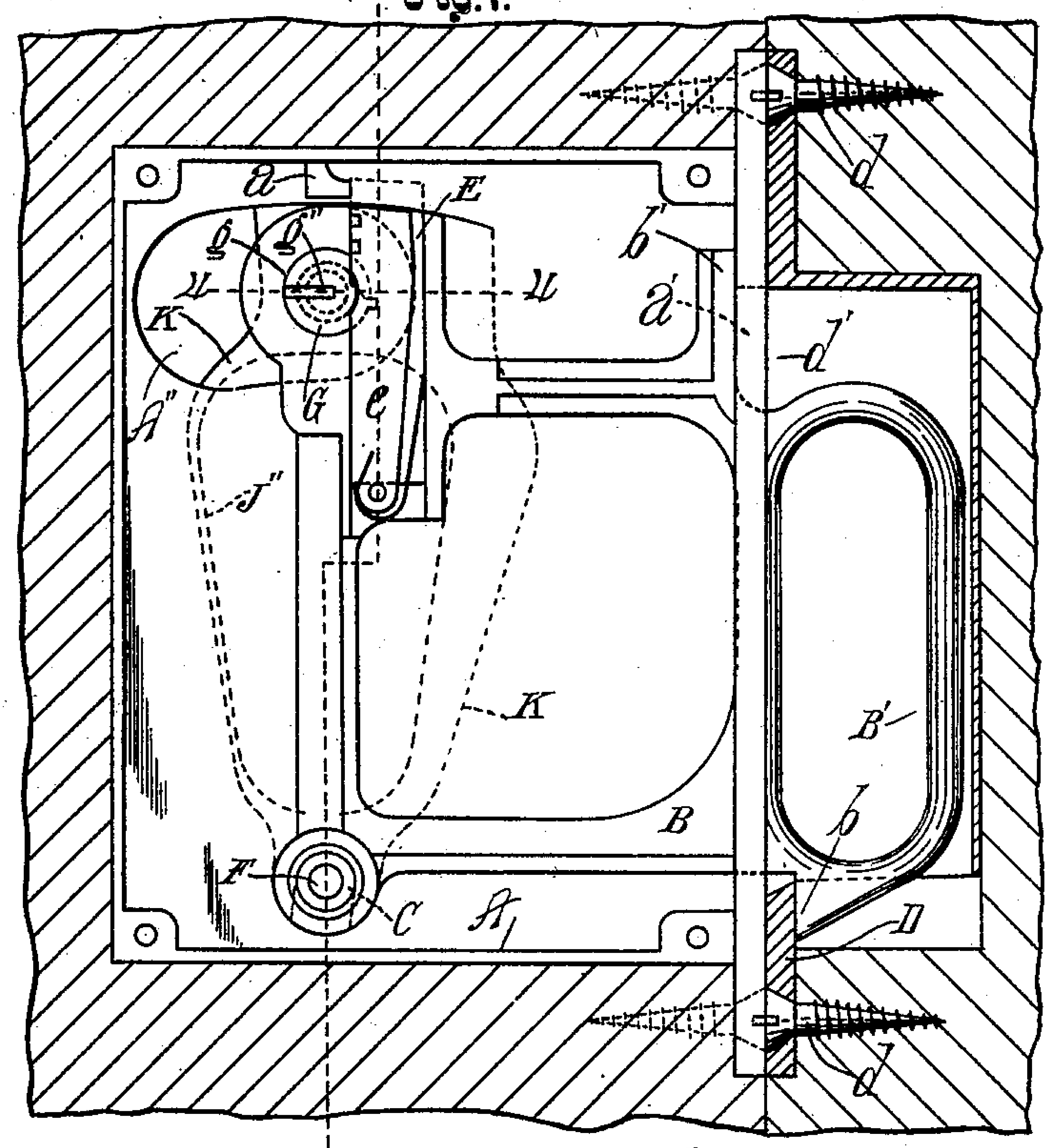


Fig. 2.

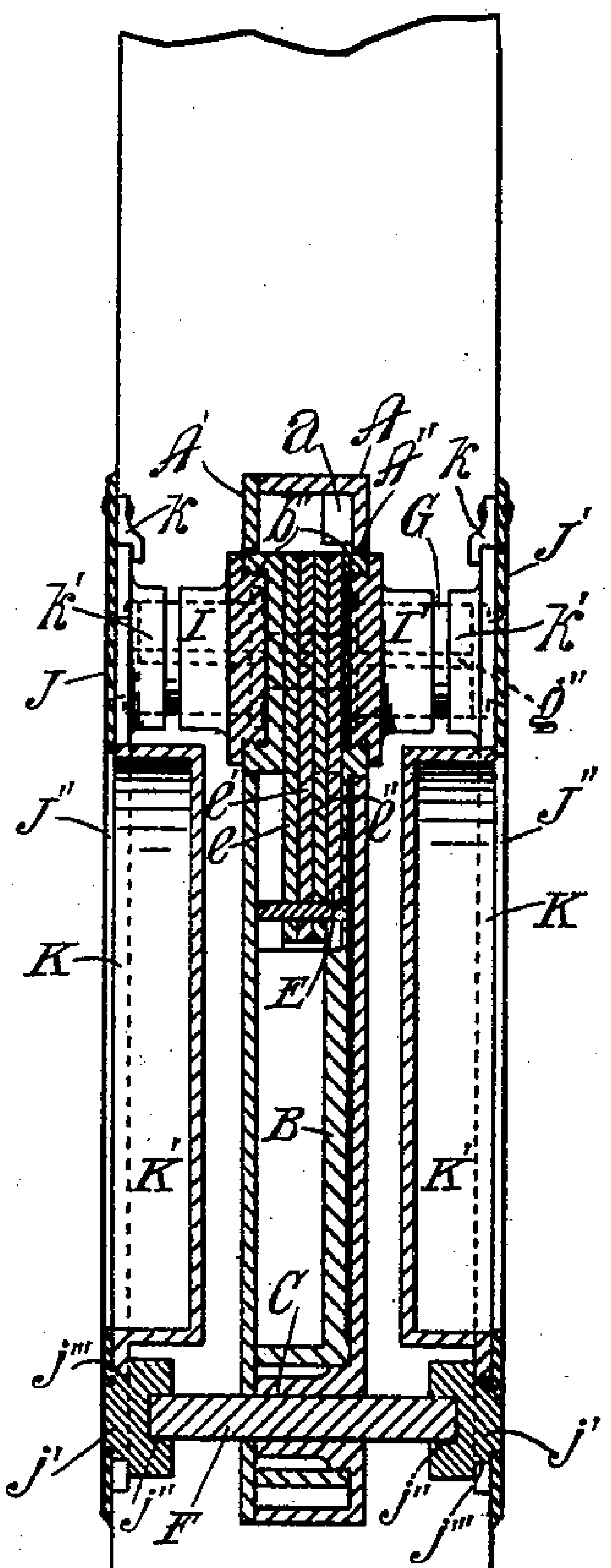


Fig. 4.

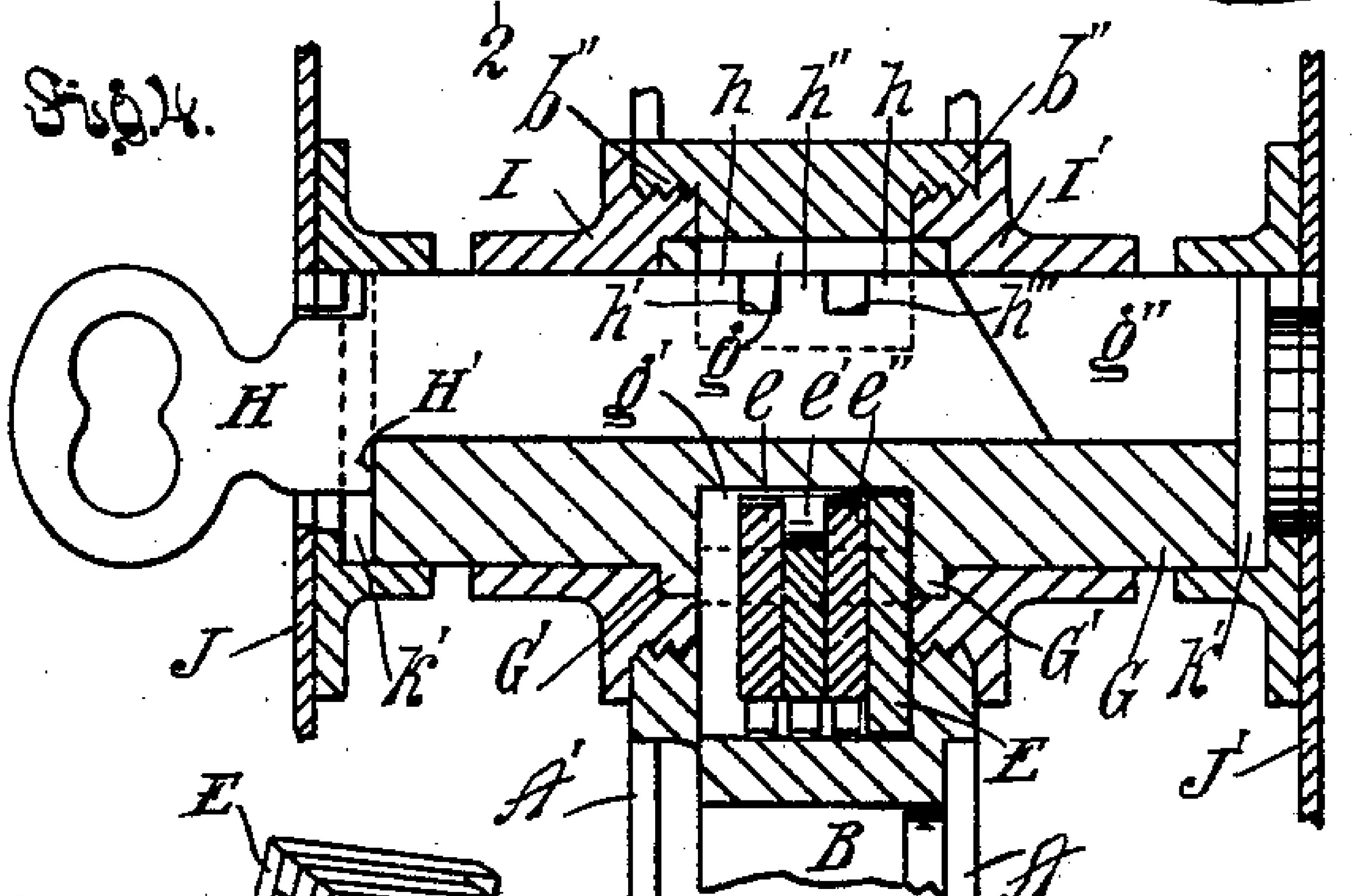


Fig. 5.

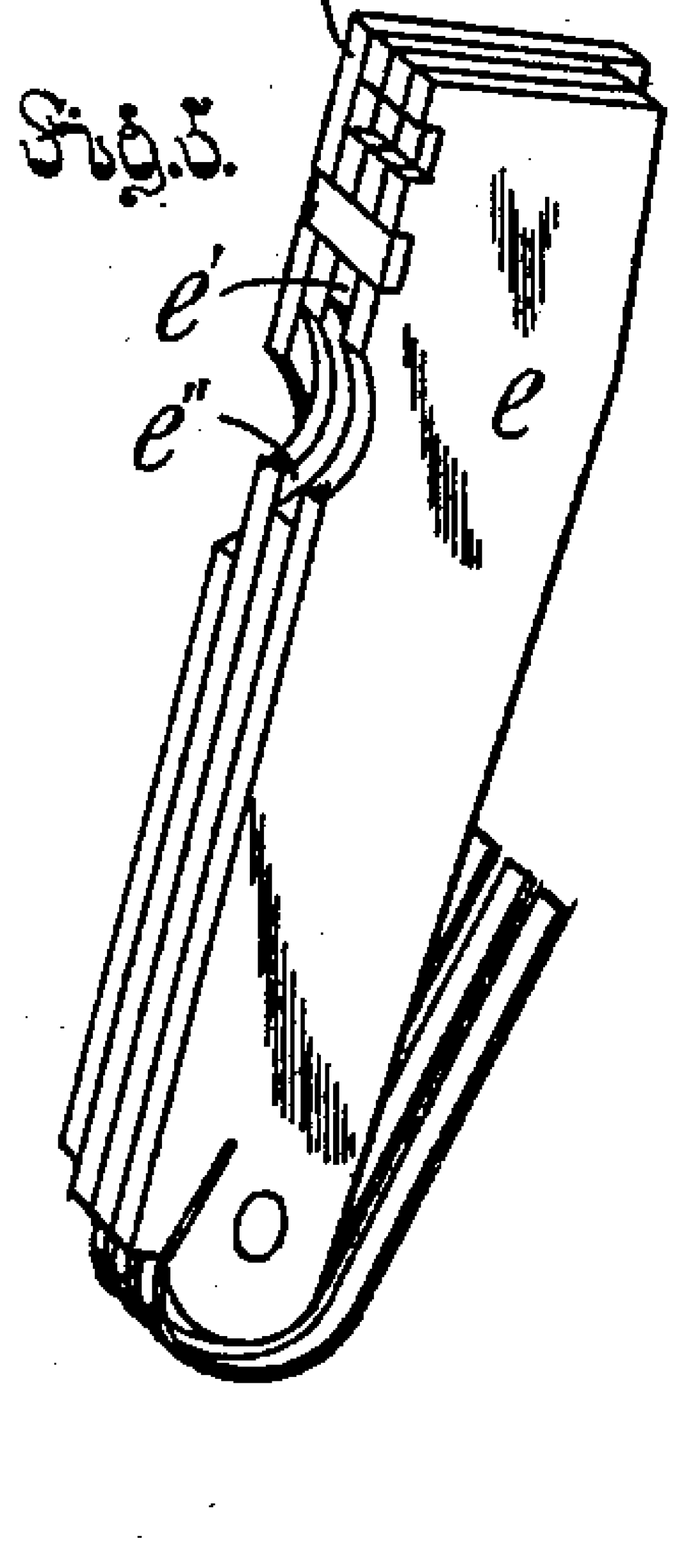
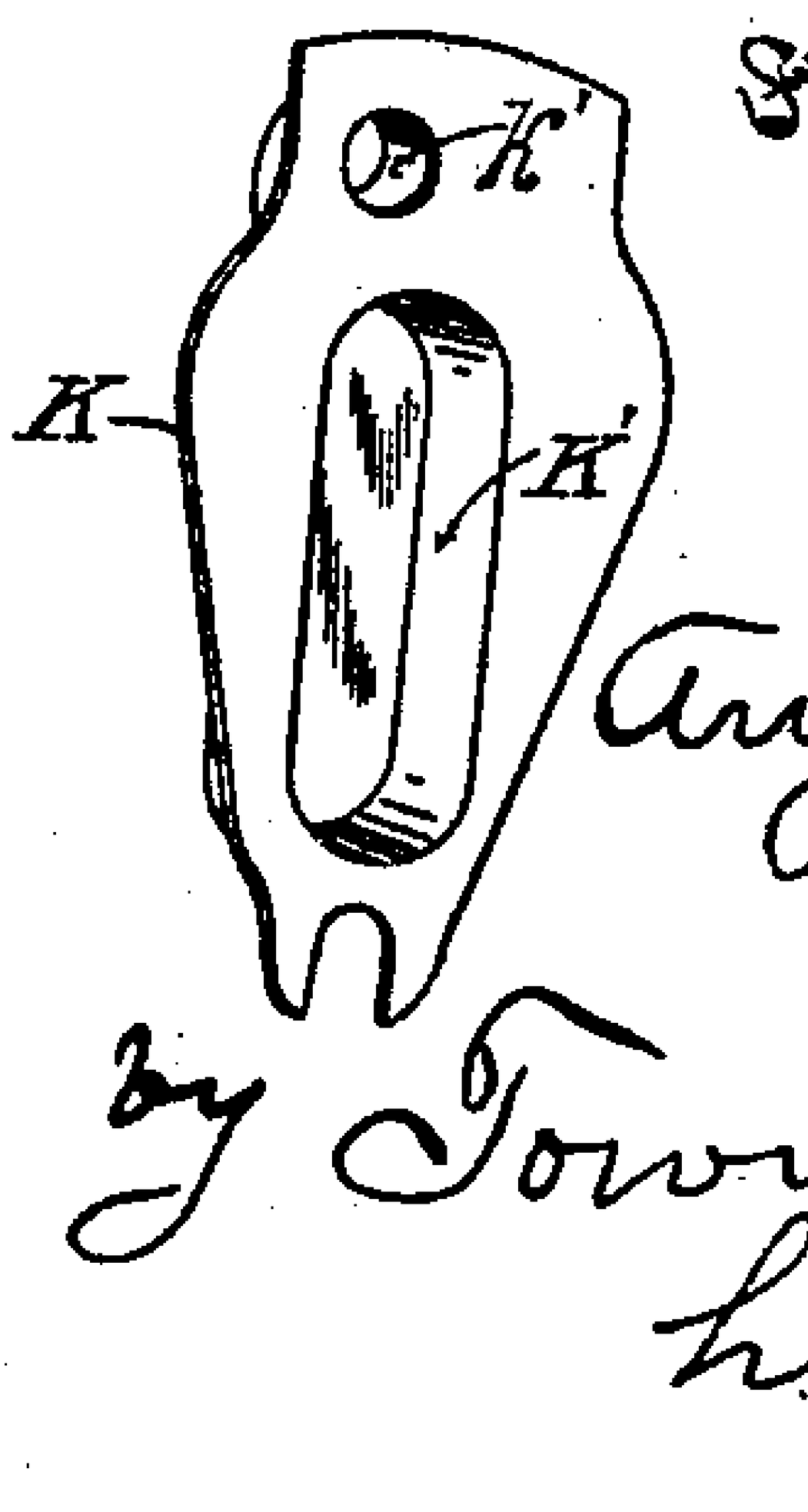


Fig. 6.



Witnesses

Terry Kingman.

E. W. Waterman.

Inventor

Augustus Newell

by Townsend Bros.

his attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

AUGUSTUS NEWELL, OF PASADENA, CALIFORNIA, ASSIGNOR OF ONE-HALF TO DANIEL SCHUYLER, OF SAN DIEGO, CALIFORNIA.

SLIDING-DOOR LOCK.

SPECIFICATION forming part of Letters Patent No. 633,291, dated September 19, 1899.

Application filed August 3, 1898. Serial No. 687,616. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS NEWELL, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented new and useful Improvements in Sliding-Door Locks, of which the following is a specification.

The particular object of my invention is to produce a neat, cheap, and simple lock which will be especially adapted for sliding doors, in which the door is entirely chambered within the wall when open, a lock which will be devoid of springs for operating the catch, will be provided with a convenient pull which is always in position to be readily grasped when it is desired to close the door, and is also provided with inconspicuous, simple, durable, and conveniently-operated means whereby the lock may be readily unlatched when it is desired to open the door.

A further object of my invention is to provide a lock of this character which may be locked and unlocked from either side of the doorway and so arranged that after the lock is unlocked the key must be removed from the lock before the latch can be unlatched. By this arrangement I provide means whereby it is rendered unlikely that the key will be accidentally left in the door and will engage with the jamb of the door when the door is pushed back into its recess in opening the door—that is to say, with my improved construction when the latch is in its operative position there are no projecting knobs, keys, or other operating devices which prevent the door from being fully chambered in the wall when opened, and therefore I avoid the liability present in many locks of this character of bruising or marring the woodwork by accidental contact therewith of such projecting parts.

My invention comprises the various features of construction and combinations of parts hereinafter fully set forth and claimed.

The accompanying drawings illustrate my invention.

Figure 1 is a fragmental sectional view of a door and jamb, showing my improved lock in position. In this view one side of the lock-case is removed in order to expose the interior arrangement. Fig. 2 is a vertical cross-section on line indicated by 2 2, Fig. 1. Fig. 3 is a fragmental side elevation of a door provided with my invention, showing the escutcheon-plate and the recessed handhold. When the lock is in position in the door and the door is closed, the only parts of the lock exposed to view will be those shown in this figure. Fig. 4 is a cross-section on line indicated by 4 4, Fig. 1, showing the key in place in the lock. Fig. 5 is a perspective view of the bolt and the tumblers which engage the bolt, and Fig. 6 is a perspective view of one of the handholds.

In the drawings, A represents the case of the lock. This case has one side A′ rendered removable by means of screws in the ordinary manner.

B represents the catch-bolt, which, as shown in the drawings, comprises a rectangular frame pivoted in the case by a pivot-pintle C, cast integral with the case. This frame is provided upon its front side with a door-pull B′, which projects from the front of the case, as clearly shown in Fig. 1, and is provided below the door-pull with a catch *b*, which is adapted to engage with the catch-plate D, which is arranged to be secured to the jamb of the door by screws *d* and is provided with a recess *d′* to receive and chamber the door-pull B′ when the door is in its closed position, as indicated in Fig. 1. The frame is thus pivoted at one corner, the catch is arranged at another corner of the frame, and at a third corner of the frame a bolt E is provided. This bolt is carried by the latch-frame and is adapted to be projected upward, as indicated in dotted lines in Fig. 1, to engage with a lug *a*, provided upon the case, to thereby lock the frame in its latched position or to be retracted, as shown in Fig. 5, and thereby released therefrom to allow the frame to be swung in the case to lift the catch from its engagement with the catch-plate. The opening *a′* in the front of the case, through which the door-pull projects, is sufficiently long to allow the frame to swing upward to release the catch, and a projection *b′* is provided upon the upper front corner of the rectangular frame to close this opening when the catch is in its latched position.

A″ represents oblong openings provided in

the side walls of the case and through which the operating-pin works as the rectangular frame is swung in operating the catch.

I provide for operating the catch positive means which will not rack or get out of order under continued use. This means comprises a pivot-pin F, which passes through the case at a point coaxial with the pivotal point of the rectangular frame B (preferably through the pintle-lug C) and projects from each side of the case.

G represents a key-shaft which passes through an opening *g*, provided in the rear upper corner of the rectangular frame B and is provided at its mid-length with an annular groove *g'*, through which slide locking-bolt E and the tumblers *e e'*, &c. This shaft is provided with a key-slot *g''*, extending from end to end of the shaft and adapted to receive a flat key H. The tumblers *e* and *e''* are duplicates of each other and are arranged upon opposite sides of the central tumbler *e'*, which is at the mid-length of the key-shaft. The key is provided with duplicate wards *h*, arranged upon opposite sides of the ward *h''*, which operates the central tumbler *e'*, which wards engage with and operate the bolt, and oppositely-arranged wards *h' h'''*, which engage and operate the tumblers *e e''*, (and a central ward *h''*, which engages with and operates the tumbler *e'*.) A shoulder H' is provided upon one side of the key to engage with the end of the key-shaft to thereby regulate the distance to which the key enters the key-shaft and to bring the wards into exact relation with the tumblers and the bolt no matter from which side of the lock the key is inserted. The opening *g* in the rectangular frame, and which receives the key-shaft, is provided upon each side with a boss *b''*, which is interiorly screw-threaded, and socket members I I' are arranged to screw into the screw-threaded bosses upon opposite sides of the frame and to chamber the ends of the key-shaft. The key-shaft is provided upon each side of the groove *g'* with a projecting flange G', which flanges fit into corresponding sockets in the socket member to thereby prevent axial displacement of the key-shaft when the various parts are secured together and to thus insure that the key when inserted in the slot in the key-shaft will always be brought into exact position with relation to the tumblers and the bolt. This key-shaft forms an operating-pin by which the latch is operated, and the ends of the key-shaft project from the socket members, as shown in Figs. 2 and 4, for a purpose hereinafter explained.

J J' are escutcheon-plates which are adapted to be secured upon opposite sides of the door by means of screws *j*. Each of these escutcheon-plates is provided near its lower end with a pivot-block *j'*, which is riveted to the plate and is provided with a socket *j''*, adapted to seat upon and chamber one end of the pivot-pin F and to thus form practically a continuation of such pivot-pin. Each block is provided with an annular groove *j'''*, into which is slipped the slotted lower end of a handhold K, which is provided with a recess K' to receive the ends of the fingers and to be thereby conveniently operated. The upper end of each handhold is held in position by means of a guide lug or button *k*, which guides the handhold as it swings upon its pivot. The upper end of each handhold is provided with a socket *k'*, adapted to fit upon and seat one of the projecting ends of the key-shaft, so that when the handholds are swung upon their pivots the key-shaft will swing the catch-bolt to release the catch from its engagement with the catch-plate. The escutcheon-plates are each provided with an opening J'' to allow access to the handholds and are also provided with a keyhole J''', which registers with the keyhole in the lock only when the catch is in its latched position, as shown in Figs. 1, 3, and 4. By this means after unlocking the lock it is necessary to withdraw the key from the keyhole before the latch can be swung into its unlatched position, since the key engages with the escutcheon-plate and forms an effectual stop, which must be either removed or sheared off before the latch-frame can be swung toward the rear to disengage the catch from the catch-plate. This insures that the key shall be withdrawn from the lock before the door is opened, and thereby avoids all liability of leaving the key in the lock and causing it to become bent or broken by being carried back against the door-jamb when the door is opened.

In practical operation the socket members I I', the key-shaft G, and the pivot-pin F are removed from the lock before the case is inserted in the mortise in the door. When the case is in position in the door-mortise, the key-shaft is first inserted into its seat. The socket members are screwed from the opposite sides of the door into the screw-threaded bosses. The pintle-pin F is inserted into position, and the escutcheon-plates J, together with the handholds, which are pivoted thereto and for which suitable recesses have been provided in the door, are then secured upon opposite sides of the door, with the pivot-pin seated in the socket *j'''* and the key-shaft seated in the sockets *k'*. The device is then ready for operation.

When the door is closed, as shown in Fig. 1, if it is desired to open the door the fingers are inserted into one of the handholds and the handhold is swung toward the rear upon its pivot, thus through the medium of the key-shaft swinging the rectangular frame B upon its pivot and lifting the catch *b* from its engagement with the catch-plate. Further force exerted upon the handhold will push the door open, and the fingers are then removed from the handhold, thus permitting the latch to drop back into its normal position. (Indicated in Fig. 1.) The weight of the door-pull B' is sufficient to insure the

proper operation of the catch from the force of gravity, and I am by this improved construction enabled to dispense with springs for this purpose. When it is desired to close the door, the fingers may be inserted in the door-pull B′ and the door readily drawn into its closed position, the door-pull entering the recess or chamber *d′* in the catch-plate and assuming the position shown in Fig. 1.

If it is desired to lock the door, the key may be inserted from either side of the lock, and the key-shaft is rotated by the key, the duplicate wards of which engage with the tumblers and with the bolt, carrying the bolt up in its locked position, as indicated in dotted lines in Fig. 1. The key may be partially or wholly removed from the lock after this is done. When it is desired to unlock the lock, the key is again inserted and rotated in the reverse direction, thus operating the tumblers and carrying the bolt into its unlocked position, after which the key is removed and the latch may be operated by hand, as hereinbefore described.

By arranging the door-pull upon the latch-bolt two objects are accomplished, one being that of economy of space and material and the other being that of giving sufficient weight to the catch-bolt to overcome the weight of the locking-bolt and the latch-operating means and to insure that the force of gravity will cause the operation of the latch without the aid of springs, which are not only expensive, but are liable to break.

By arranging the locking-bolt upon the latch-bolt I am enabled to use the same bolt as a latching and locking bolt, and by reason of so arranging the device that the key must be removed from the keyhole before the latch can be unlatched I reduce to a minimum the chances of successful tampering with the lock, since the key or other instrument used must be fully withdrawn from the keyhole before the operator can ascertain whether or not he has succeeded in unlocking the lock.

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

1. In a door-lock, the combination set forth of the case; a rectangular frame provided at one corner with a catch and pivotally secured in the case by a pivot arranged at another corner of the frame; a bolt mounted in a third corner of the frame and adapted to engage with and to be disengaged from the case; means for swinging the frame upon its pivot; and means for operating the bolt.

2. In a door-lock, the combination set forth of a case; a rectangular frame pivotally secured by one corner in the case and having upon its outer side a door-pull, and a catch projecting below the door-pull; a bolt mounted in the rectangular frame and adapted to engage the case to lock the frame in position, or to be disengaged therefrom to allow the frame to swing upon its pivot; means for operating the bolt; means for operating the frame; and the catch-plate adapted to be secured to the jamb of the door and provided with a recess to receive and chamber the door-pull when the door is closed.

3. A tumbler-lock provided with two or more oppositely-arranged duplicate tumblers; a key-shaft provided with a key-slot extending from end to end of said shaft; and a key adapted to fit in the slotted shaft and provided with oppositely-arranged duplicate wards to operate the tumblers and the bolt, when the key is inserted from either side of the lock.

4. A tumbler-lock comprising a case; a swinging frame pivoted in the case and carrying a latch, and also carrying a bolt adapted to engage the case to lock the frame in its latched position; a key-shaft carried by the frame and slotted from end to end; oppositely-arranged duplicate tumblers adapted to engage the bolt; and a key, adapted to slide in the slotted shaft and provided with duplicate wards to engage the duplicate tumblers and the bolt and to operate them when the key is inserted from either side of the lock.

5. In a lock, the combination set forth of the case provided in its side walls with the openings for the key-shaft; the latch-frame, pivoted in the case by a pivot arranged at a distance from such openings; the key-shaft, passing through the frame and through the openings; the pivot-pin, passing through the pivotal point of the frame; the recessed handholds arranged upon opposite sides of the case, each having one end pivoted by the pivot-pin and having its other end engaging the key-shaft to operate the latch.

6. In a lock, the combination set forth of the case provided in its side walls with the key-shaft openings; the rectangular frame pivoted in the case by a pivot arranged near one corner of such frame and provided, near another corner of such frame, with an opening to receive the key-shaft, such opening being surrounded upon each side by a screw-threaded boss; a key-shaft arranged in such opening; screw-threaded socket members, one adapted to screw upon each side of the key-shaft openings and encircling the key-shaft; a pivot-pin passing through and projecting from the case at the pivotal point of the latch-frame; and handholds, one upon each side of the case, each having one end pivoted upon the pivot-pin, and its other end provided with a socket to fit upon the key-shaft.

7. In a lock, the combination set forth of the case provided in its side walls with the key-shaft openings; the rectangular frame pivoted in the case by a pivot arranged near one corner of such frame and provided, near another corner of such frame, with an opening to receive the key-shaft, such opening being surrounded upon each side by a screw-threaded boss; a key-shaft arranged in such opening; screw-threaded socket members,

one adapted to screw upon each side of the key-shaft opening and encircling the key-shaft; a pivot-pin passing through and projecting from the case at the pivotal point of the latch-frame; handholds, one upon each side of the case, each having one end pivoted upon the pivot-pin, and its other end provided with a socket to fit upon the key-shaft; and the escutcheon-plates adapted to be fastened to the door outside of the handholds and provided with the openings for the handholds.

8. In a lock, the combination of a pivoted latch provided at a distance from its pivot with a locking-bolt and a keyhole to receive a key to operate such bolt; and an escutcheon-plate provided with a keyhole adapted to register with the keyhole in the latch only when the latch is in its latched position.

AUGUSTUS NEWELL.

Witnesses:
ALFRED I. TOWNSEND,
JAMES R. TOWNSEND.