

No. 697,568.

Patented Apr. 15, 1902.

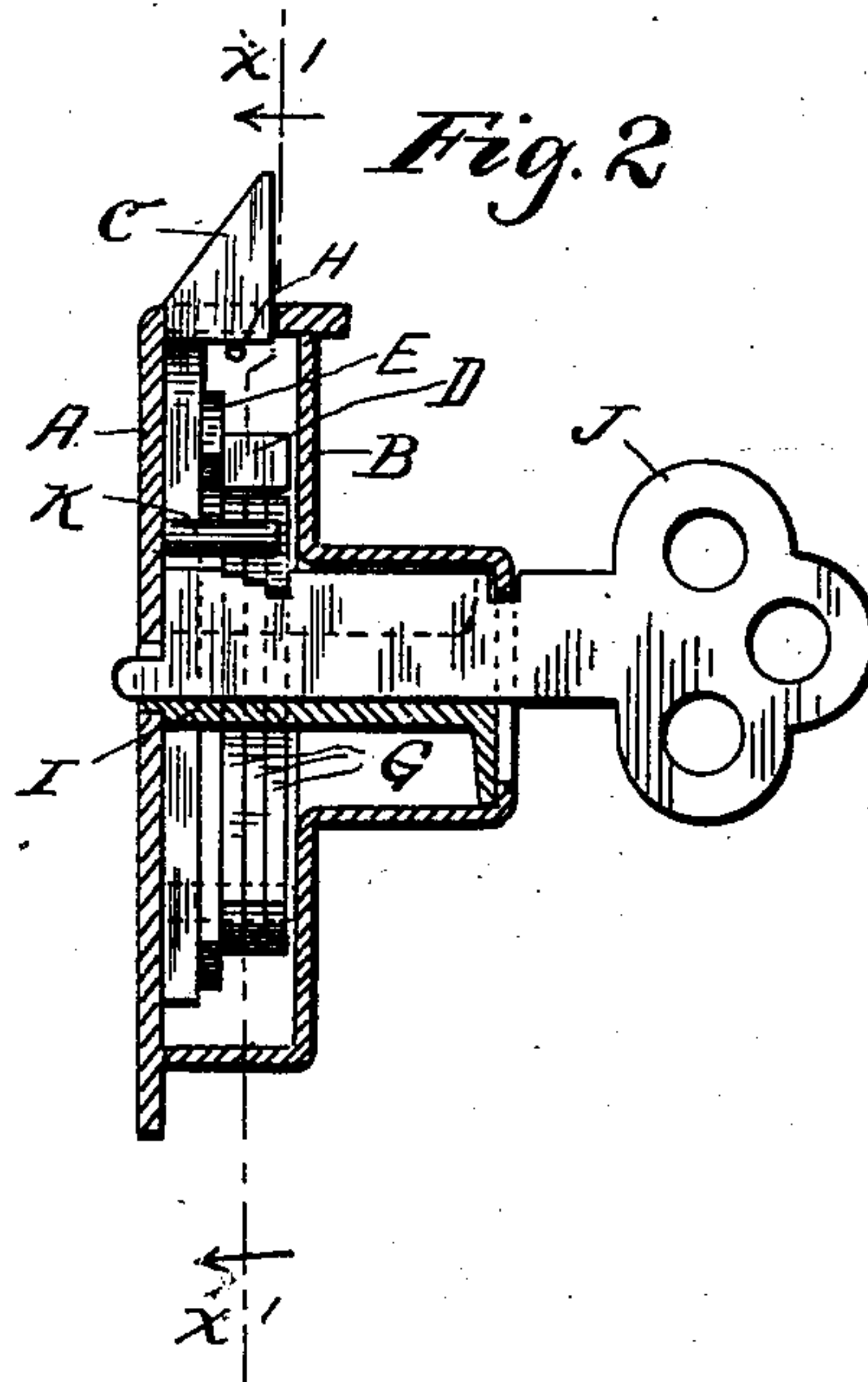
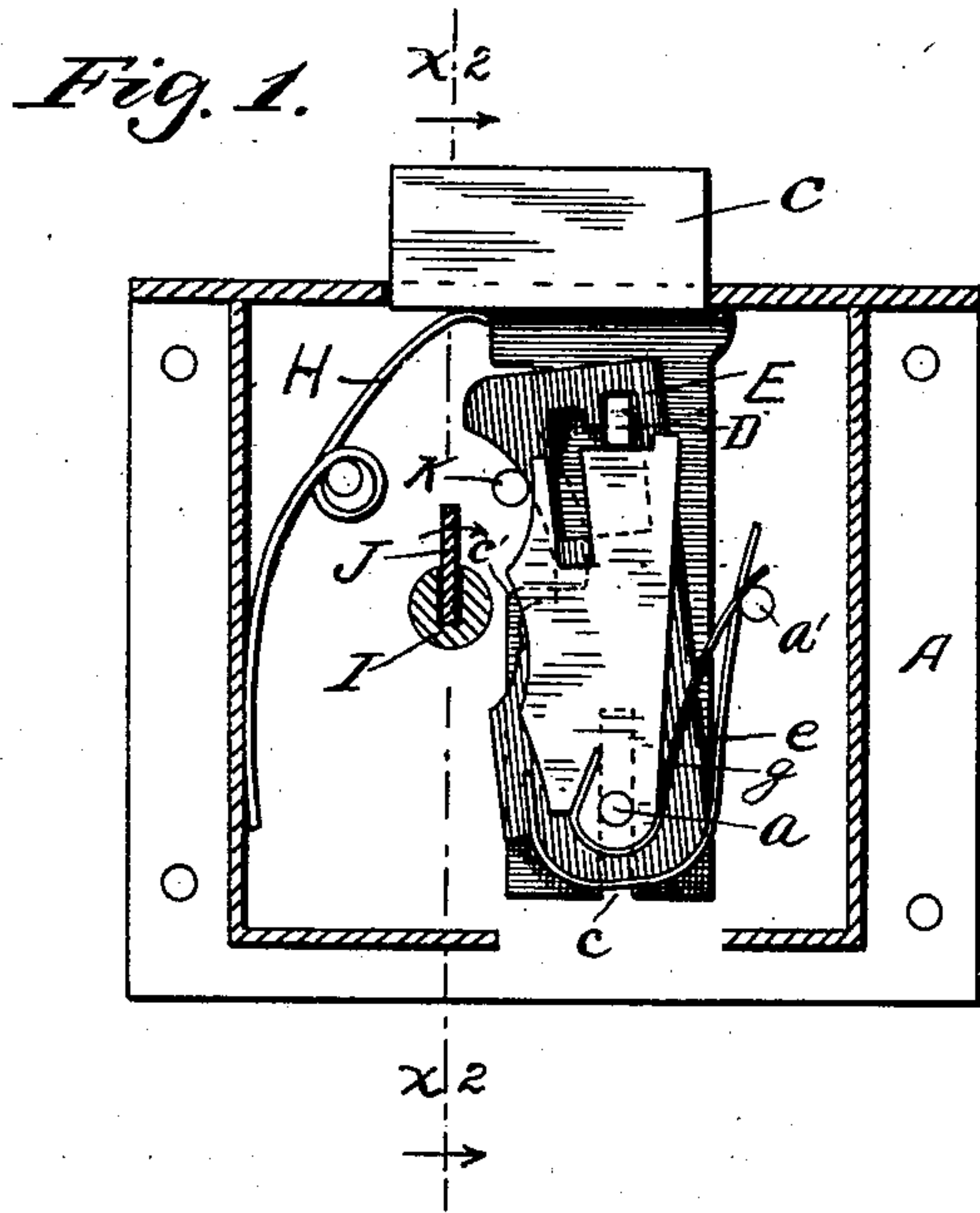
J. J. TREAT.

LOCK.

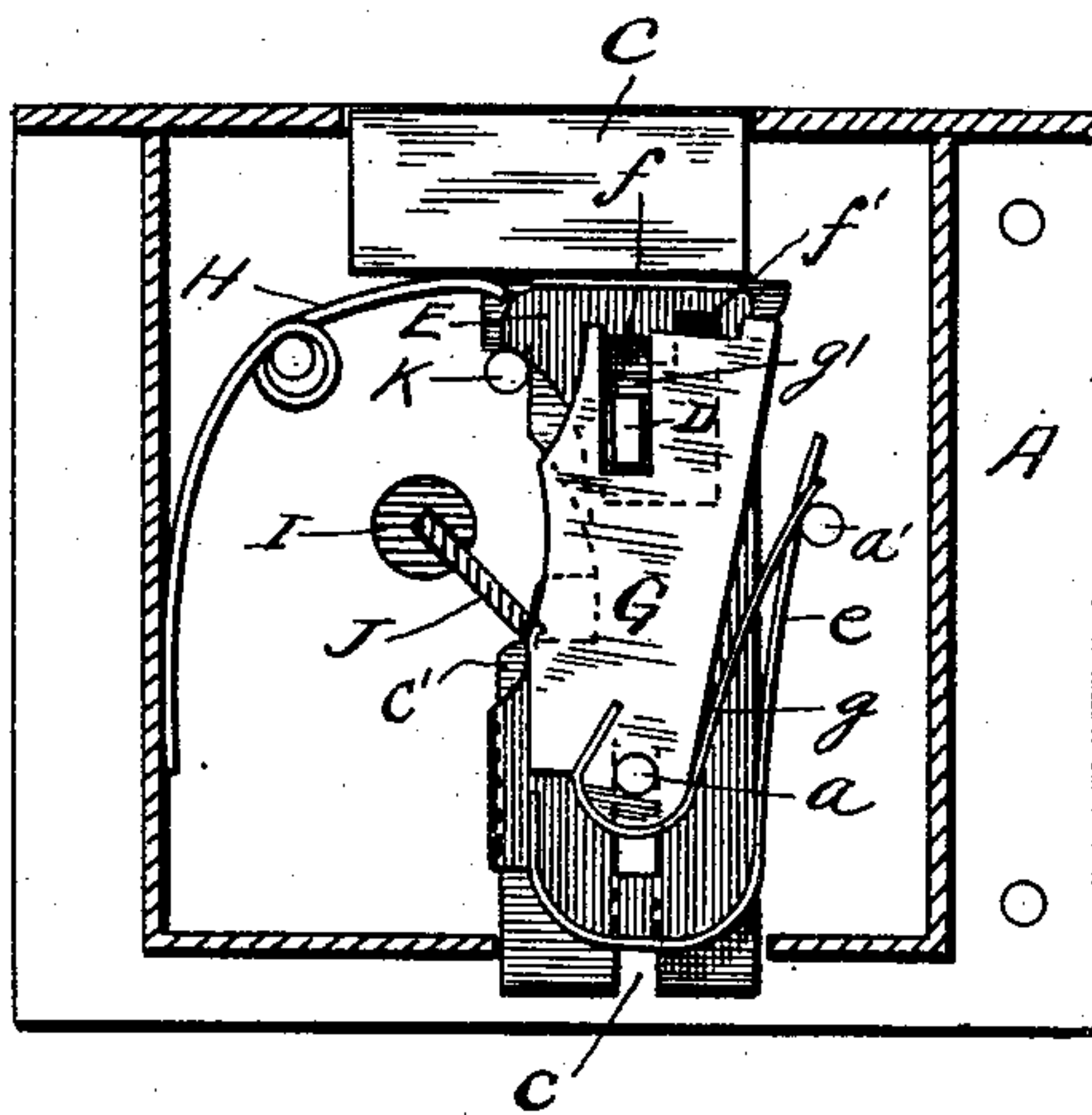
(Application filed July 31, 1901.)

(No Model.)

2 Sheets—Sheet 1.



*Fig. 3.*



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2 Sheets—Sheet 2.

Fig. 4

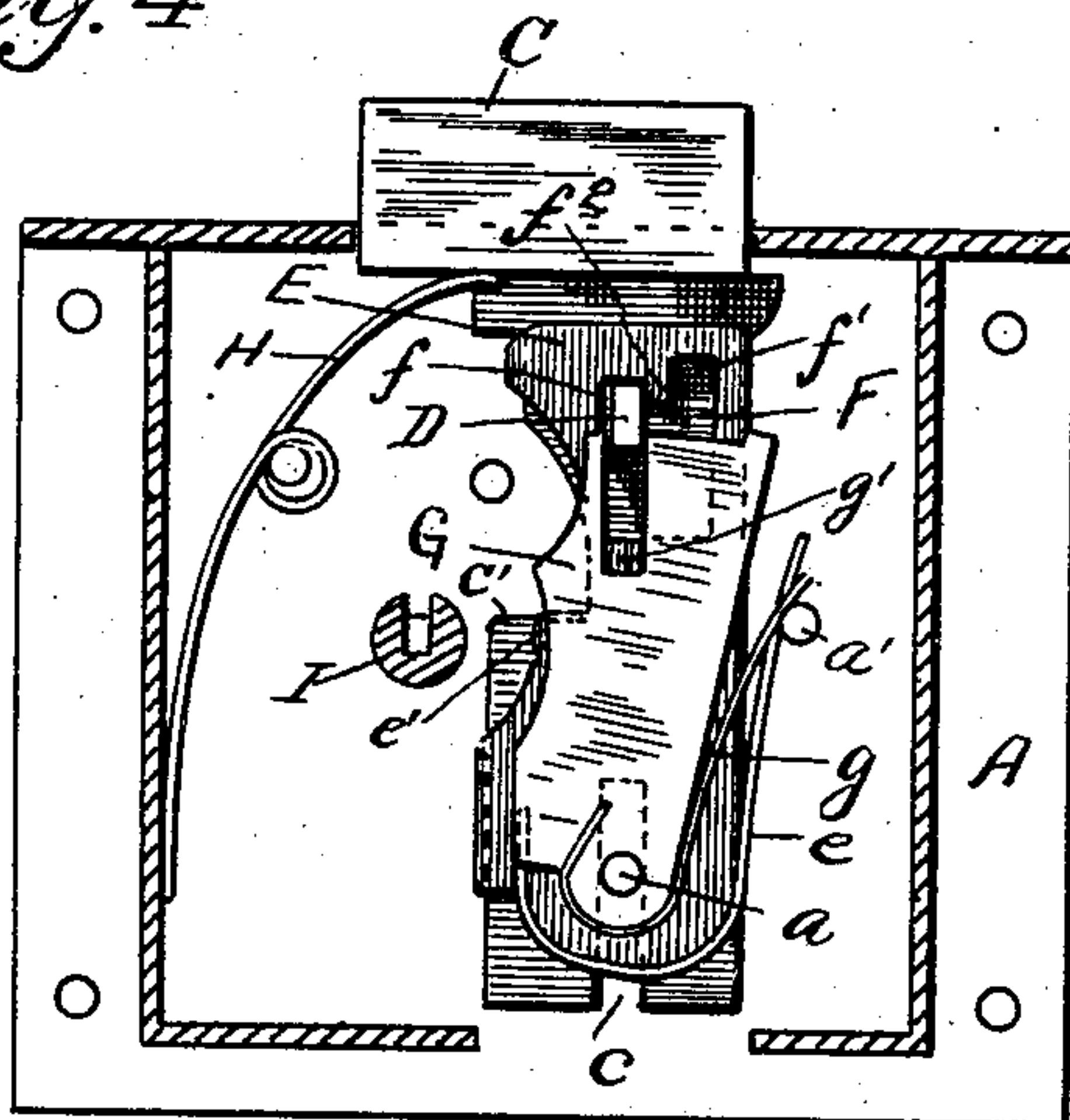


Fig. 5

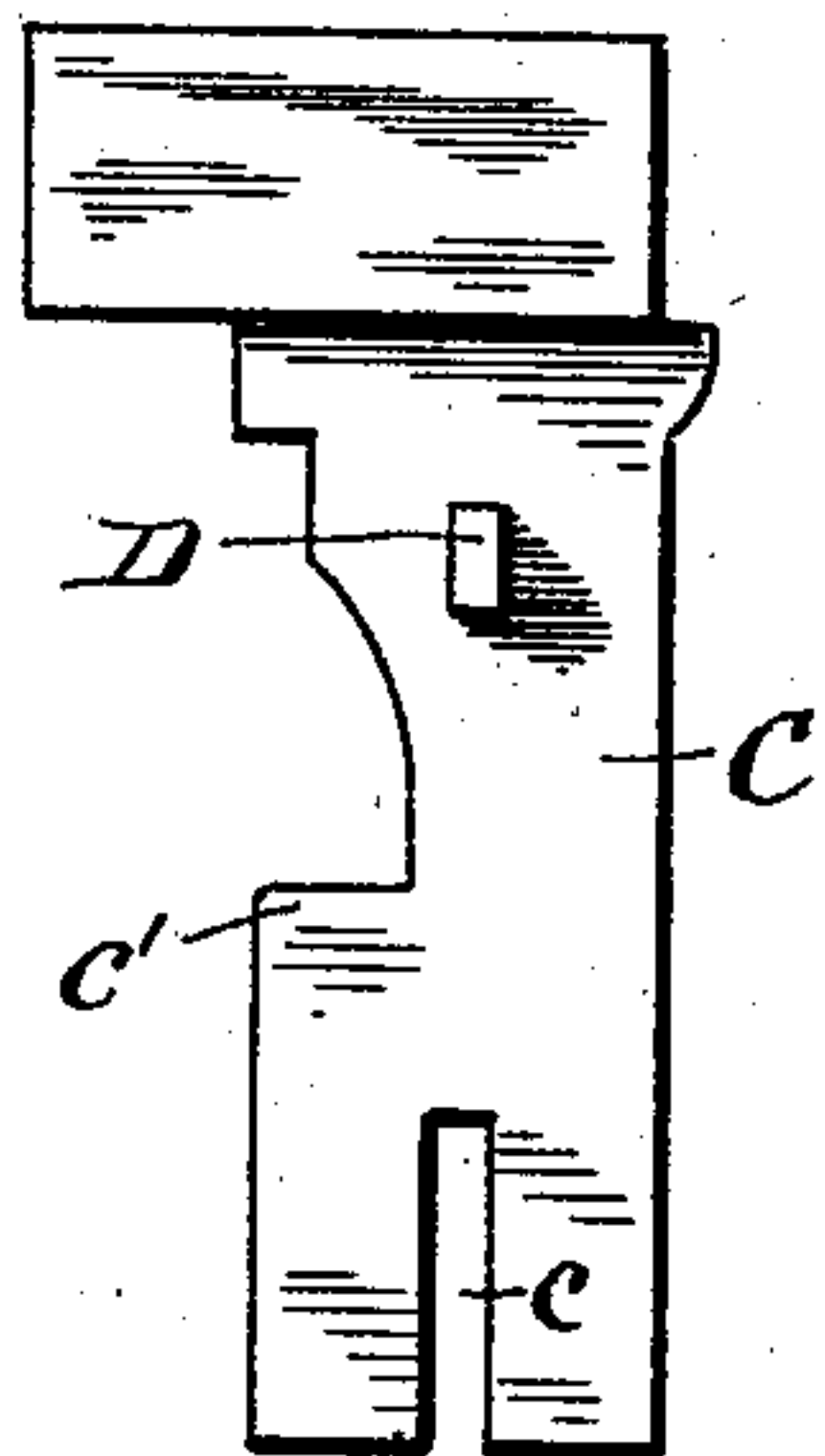


Fig. 6

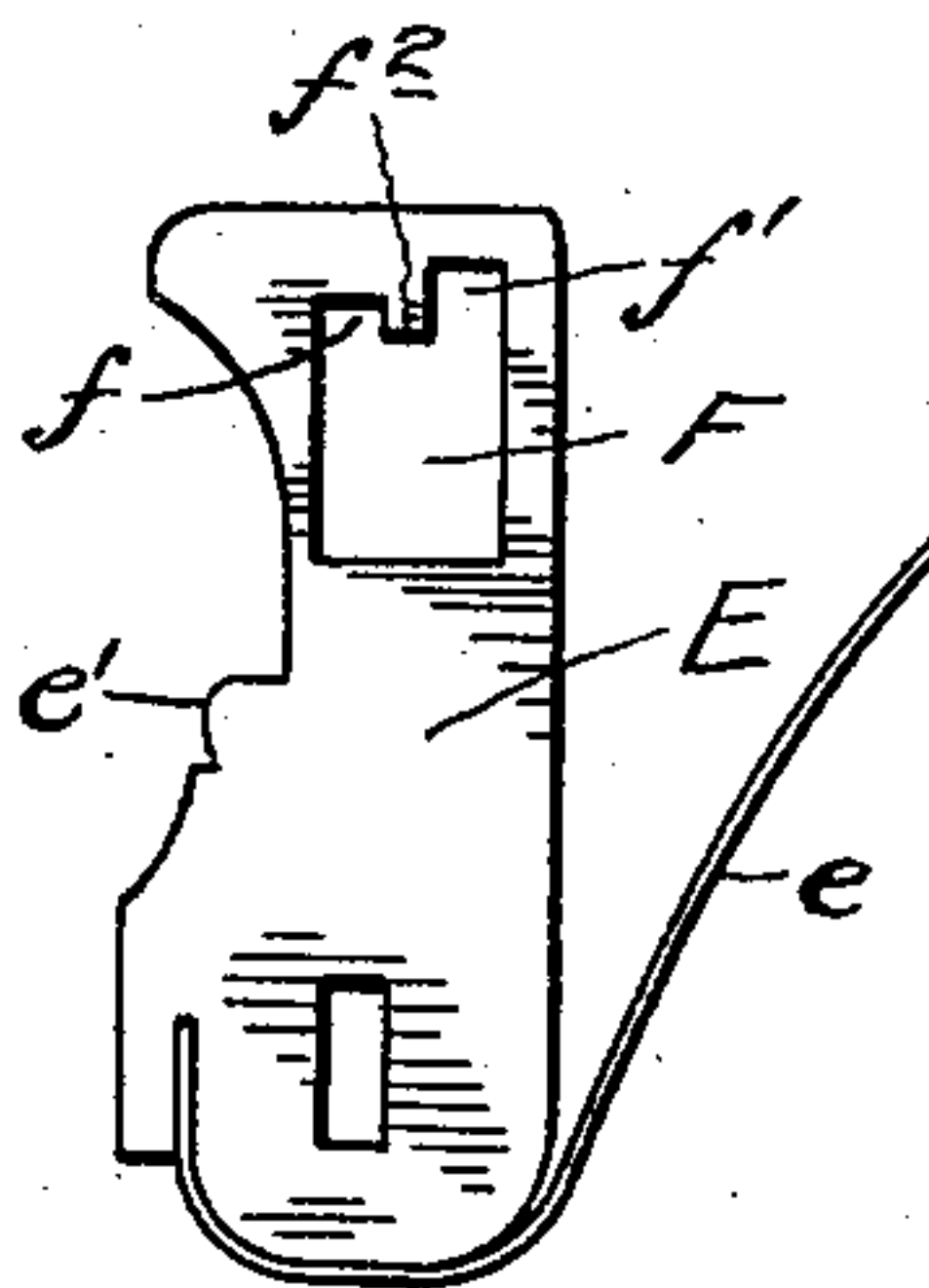
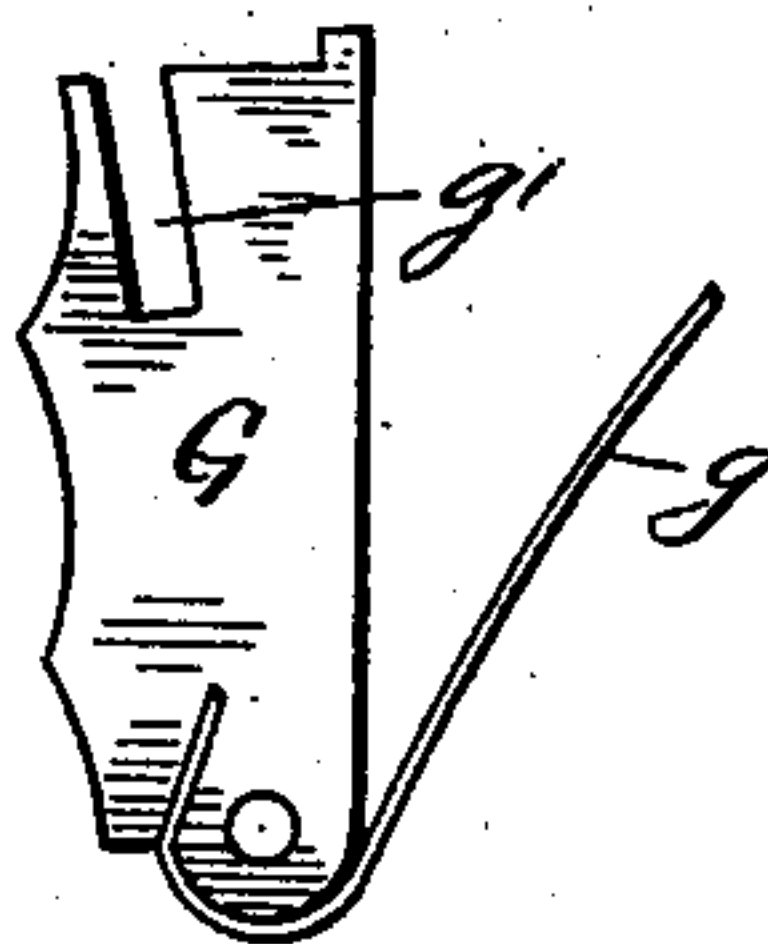


Fig. 7



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# UNITED STATES PATENT OFFICE.

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## LOCK.

SPECIFICATION forming part of Letters Patent No. 697,568, dated April 15, 1902.

Application filed July 31, 1901. Serial No. 70,361. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. TREAT, a citizen of the United States, and a resident of New Britain, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Locks, of which the following is a specification.

The object of my invention is to produce a lock having features of novelty and advantage. It is applicable to most of the ordinary kinds of locks, and I have illustrated it as embodied in an ordinary pivoted tumbler-lock. It is designed especially to eliminate the most serious objections to the ordinary spring-latch which is in very common use. As is well known, the bolt in a spring-latch is continually pressed forward by a spring, so that if, for instance, the lock be attached to a door and the door closed the bolt will be retracted by the lock-plate and will be forced forward into the locking recess or cavity by this spring. The objection to these spring-locks is and always has been that when the door is closed the bolt is not positively locked in its forward position, but is held there simply by the spring, and it is possible by inserting a tool between the door and jamb and working it from side to side to force the bolt back and open the door; but the great advantage of a spring-lock—that it is not necessary to use a key to lock the door—has continued them in use to a very large extent notwithstanding this very great objection. By my invention I provide a lock which operates alternately as a spring-latch and as a positive lock—that is to say, when the door is closed the bolt is positively locked in its forward position and cannot be retracted except by the use of the proper key, but when the bolt is retracted by the key and the door opened the bolt is not positively locked, but is held in its forward position simply by the spring. This permits of the door being closed and locked without the use of a key and the bolt positively locked. Thus it is seen that the operation of my improved lock is alternately that of a positive and of a spring latch.

I will describe in detail the embodiment of my invention which is illustrated in the drawings; but it is to be clearly understood that I do not wish to limit myself to the parts and

their arrangements which are shown and described herein.

Figure 1 represents a sectional view of a lock embodying my invention, taken on the line  $x' x'$  of Fig. 2, and shows the bolt positively locked. Fig. 2 is a sectional side view of my invention on the line  $x^2 x^2$  of Fig. 1. Fig. 3 is a view similar to Fig. 1, showing the bolt as it is retracted by the key. Fig. 4 is a view similar to Fig. 3, showing the position of the parts after the key has been removed. Figs. 5, 6, and 7 are detail views of the locking-bolt, the latch-plate, and one of the tumblers, respectively.

Referring to the drawings, A denotes the lock-plate, on which the parts of the lock are mounted, and B denotes the ordinary cover, adapted to be secured to the plate and cover the working parts of the lock.

C denotes the lock-bolt having a slot  $c$  at its rear end and a stump D.

E is what may be termed the "latch-plate," having an elongated opening at its rear end to receive the post  $a$ , thus permitting of a pivotal movement of the latch-plate E about the post  $a$  and also of a limited back-and-forth movement. In the forward part of the plate E is an elongated opening. The front side of this opening has ratchings  $f f'$  of different depths, these ratchings being separated by the projection  $f^2$ . The tumblers G are of the ordinary kind used in locks of this pattern, having the usual spring  $g$  and the slot  $g'$ , into which the stump D on the lock-bolt C must pass in order to release the lock-bolt. The spring H bears against the bolt, pressing it continually forward.

I is the ordinary key-seat, J the key, and K a post mounted in the lock-plate A, against which the latch-plate is thrown by the spring  $e$ . The part of the latch-plate E which rests against and moves on this post K is cam-shaped, ending at the rear in a shoulder  $e'$ , so that as the latch-plate is moved rearwardly it is thrown over against the spring.

In describing the operation of my lock I will assume that the door to which it is attached is closed. The parts of the lock will be in the position shown in Fig. 1, the bolt being forward, the stump lying in the deeper ratching  $f'$  in the latch-plate, and the solid



parts of the tumblers lying directly back of the stump, positively locking the bolt in its forward position. When the key is inserted and turned, the tumblers are first moved so  
 5 that the ratchings in the different tumblers register with one another and lie in the path of movement of the stump. The key then catches a shoulder on the bolt and begins to move it back, the stump moving into the slots  
 10 in the tumblers. Just after the stump clears the projection  $f^2$  the key engages the shoulder  $e'$  on the latch-plate and moves it back also, the latch-plate being at the same time thrown sidewise against the spring  $e$  by the  
 15 cam-shaped side moving on the post K, all of the parts finally occupying the positions shown in Fig. 3. This clears the bolt from its locking socket or cavity, and the door may now be opened. As the key is turned back in order to remove it from the lock the bolt is  
 20 thrown forward by the spring H, and the position of the latch-plate is substantially unaltered, and the stump D moves into the shallower ratching  $f$ . This stump is made of  
 25 such width that when it is in the shallower ratching its other side just enters the slots in the tumblers and keeps them in line. The position of the parts when the door is open and the key is removed is shown in Fig. 4.  
 30 It will be seen from this figure that the bolt is thrown forward and held simply by the spring H, and it may be retracted by pressure on it, as when it passes across what is known as the "strike-plate." As soon as the  
 35 bolt is sufficiently retracted, so that the stump D passes out of the ratching  $f$  and beyond the projection  $f^2$ , the latch-plate will immediately fly over against the post K under the influence of the spring  $e$ , and when the bolt  
 40 comes to a position over its locking-socket it is thrown forward by the spring H. The stump now enters the deeper ratching  $f$  in the latch-plate, thus releasing the tumblers, which are thrown by the springs  $g$ , bringing  
 45 the solid parts of the tumblers directly behind the stumps, and thus positively locking the bolt. It is thus seen that each necessary operation of the lock by the key transforms the positive lock into a spring-lock. Then as  
 50 soon as the lock operates as a spring-lock it is immediately transformed into a positive lock. It will be seen, therefore, that I combine in this lock every degree of security of the positive lock with every element of convenience of the spring-lock, that no more operations are necessary to use this lock than  
 55 are necessary for the use of a spring-latch, and that without affecting the safety of the lock it can be used with one less operation of the key than can the ordinary positive lock.

A lock built according to my invention may be considered either a positive lock, with the spring H and latch-plate added, or it may be considered as a spring-latch, with the tumblers  
 65 and the latch-plate added; but the essential feature of my invention resides in a lock hav-

ing the security of a positive lock and the convenience of a spring-latch.

I claim as my invention—

1. A lock mechanism operating as and for  
 70 the purposes specified, said mechanism comprising the casing the spring-actuated bolt provided with a stump, the tumblers arranged one above the other, and the latch-plate located between the tumblers and the lock-bolt  
 75 and adapted in one of its positions to maintain the tumblers in such a position that their ratchings shall register with one another and lie in the path of movement of the stump, substantially as described. 80

2. A lock mechanism operating as and for the purposes specified, said mechanism comprising the casing, the spring-actuated lock-bolt, the tumblers arranged one above the other, the latch-plate located between the  
 85 tumblers and the bolt, ratchings in the tumblers and oppositely-disposed ratchings in the lock-plate, the stump on the bolt coacting with the ratchings in the tumblers and in the latch-plate, substantially as described. 90

3. A lock adapted to operate alternately as a positive and as a spring lock, comprising the casing, the lock-bolt, the tumblers arranged one above the other, and the latch-plate located between the tumblers and the bolt, the  
 95 parts being so constructed and arranged that the lock is changed from a positive to a spring lock by means of the key, and is changed from a spring-lock to a positive lock automatically by the movement of the bolt. 100

4. The combination in a lock with the casing, the tumblers, and the spring-actuated lock-bolt provided with a stump, of the latch-plate located between the tumblers and the  
 105 lock-bolt, said latch-plate having ratchings of different depths, the parts being so constructed and arranged that the lock is changed from a positive lock to a spring-lock when the bolt is retracted by means of a key, and changed from a spring-lock to a positive lock  
 110 automatically when the bolt is retracted, substantially as described.

5. The combination in a lock with the casing, the pivoted tumblers and the bolt, of the latch-plate pivotally mounted and having a  
 115 limited lengthwise movement, the latch-plate being so constructed and arranged that on one extreme position it permits the stump of the bolt to move entirely out of the ratchings in the tumblers, and that in its opposite extreme position it prevents the stump on the  
 120 bolt from moving out of the ratchings in the tumblers.

6. The combination with a lock and with the casing, the pivoted tumblers spring-actuated  
 125 in one direction, slots in said tumblers, the sliding bolt and the stump carried by said bolt, of a pivotally-mounted latch-plate spring-actuated in one direction and capable of limited lengthwise movement, and ratchings of  
 130 different depths in said latch-plate, as and for the purposes specified.



7. A lock mechanism comprising a bolt, a plurality of pivoted tumblers located one above the other, and a latch-plate located between the tumblers and the bolt, said mechanism being adapted to operate alternately, first as a positive and then as a spring lock, the change from the spring-lock to the positive lock being accomplished automatically by the movement of the bolt.

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Witnesses:

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