

W. L. POTTER.

TIME-LOCK.

No. 184,297.

Patented Nov. 14, 1876.

Fig 1.

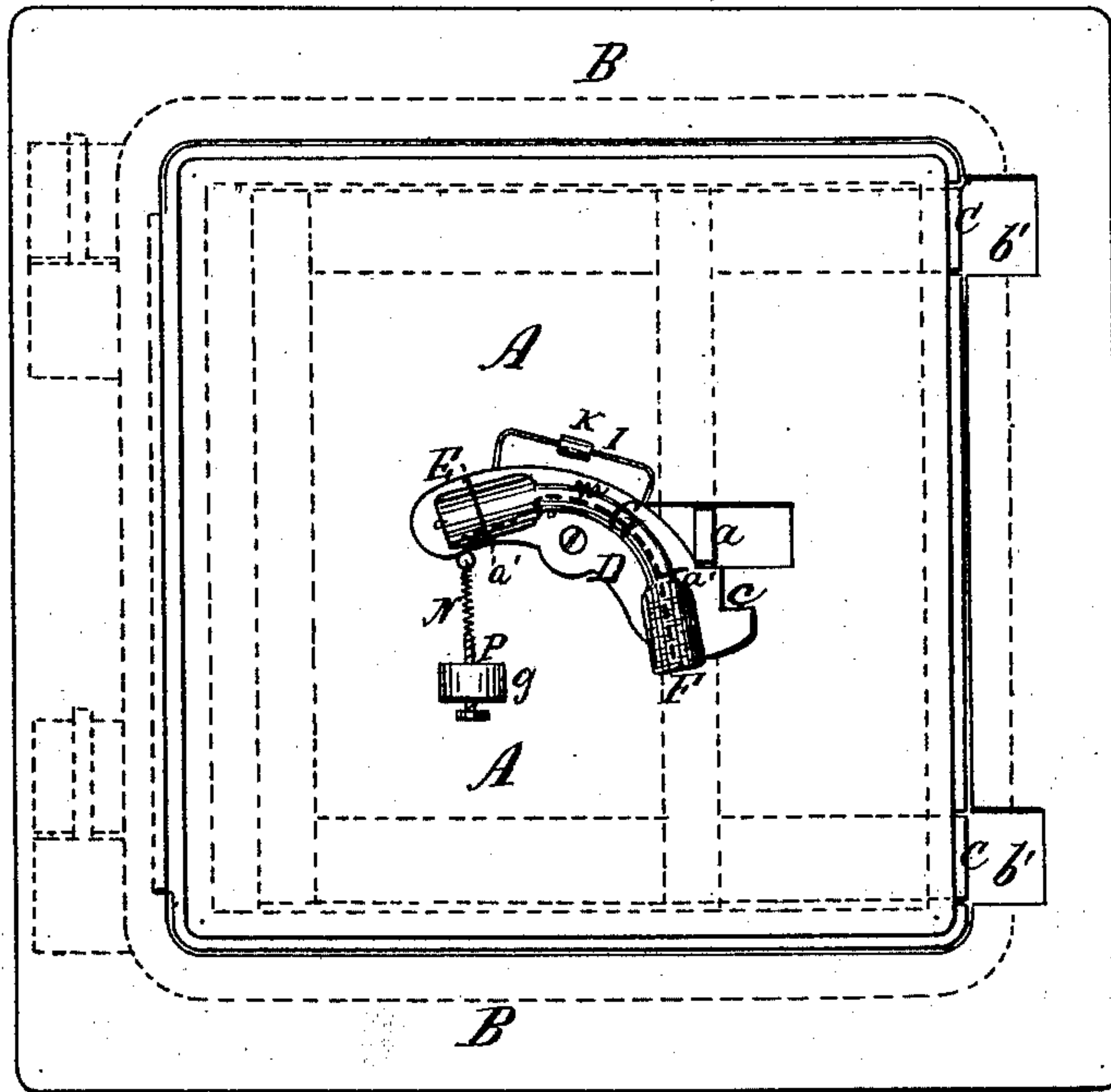
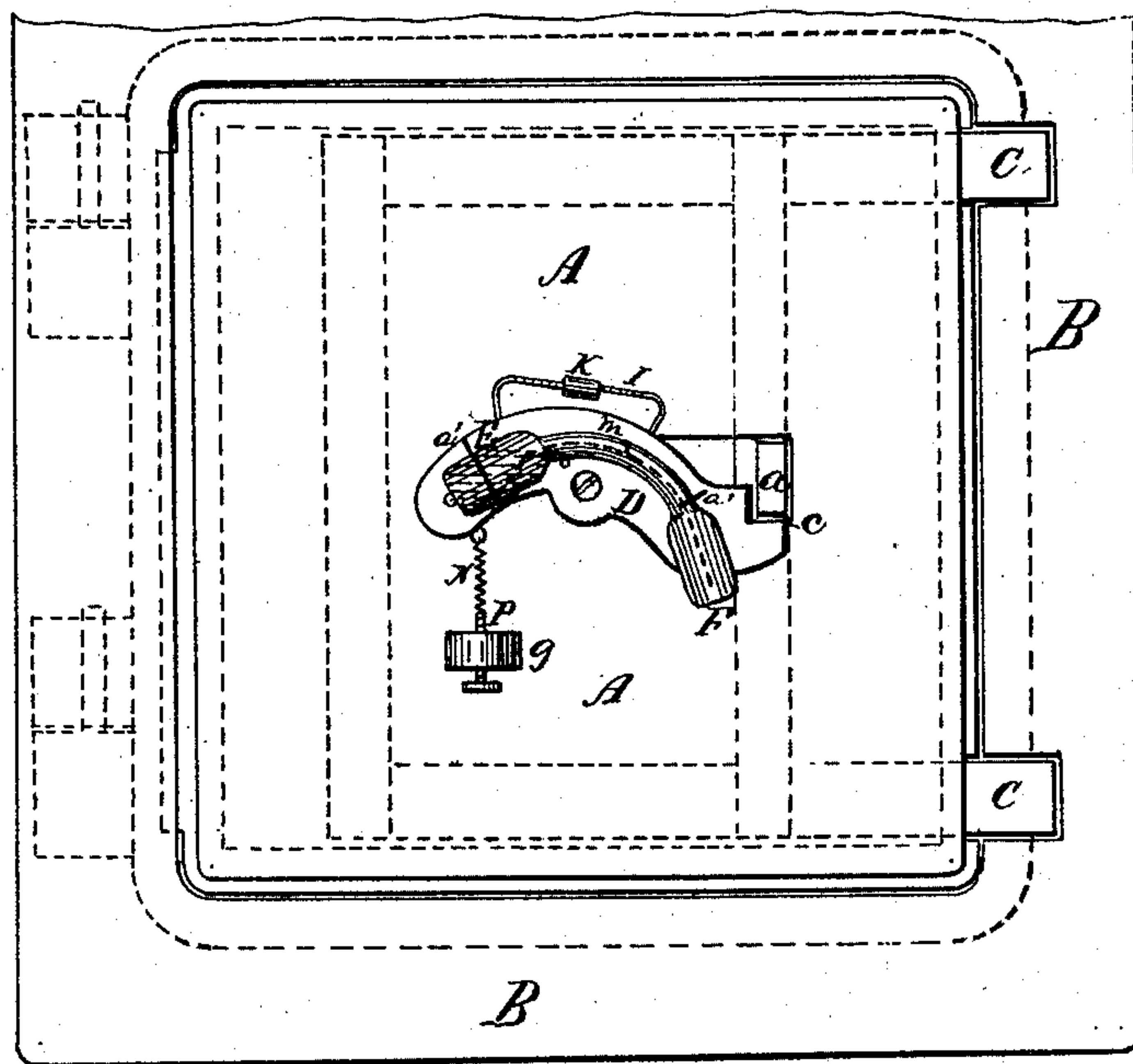
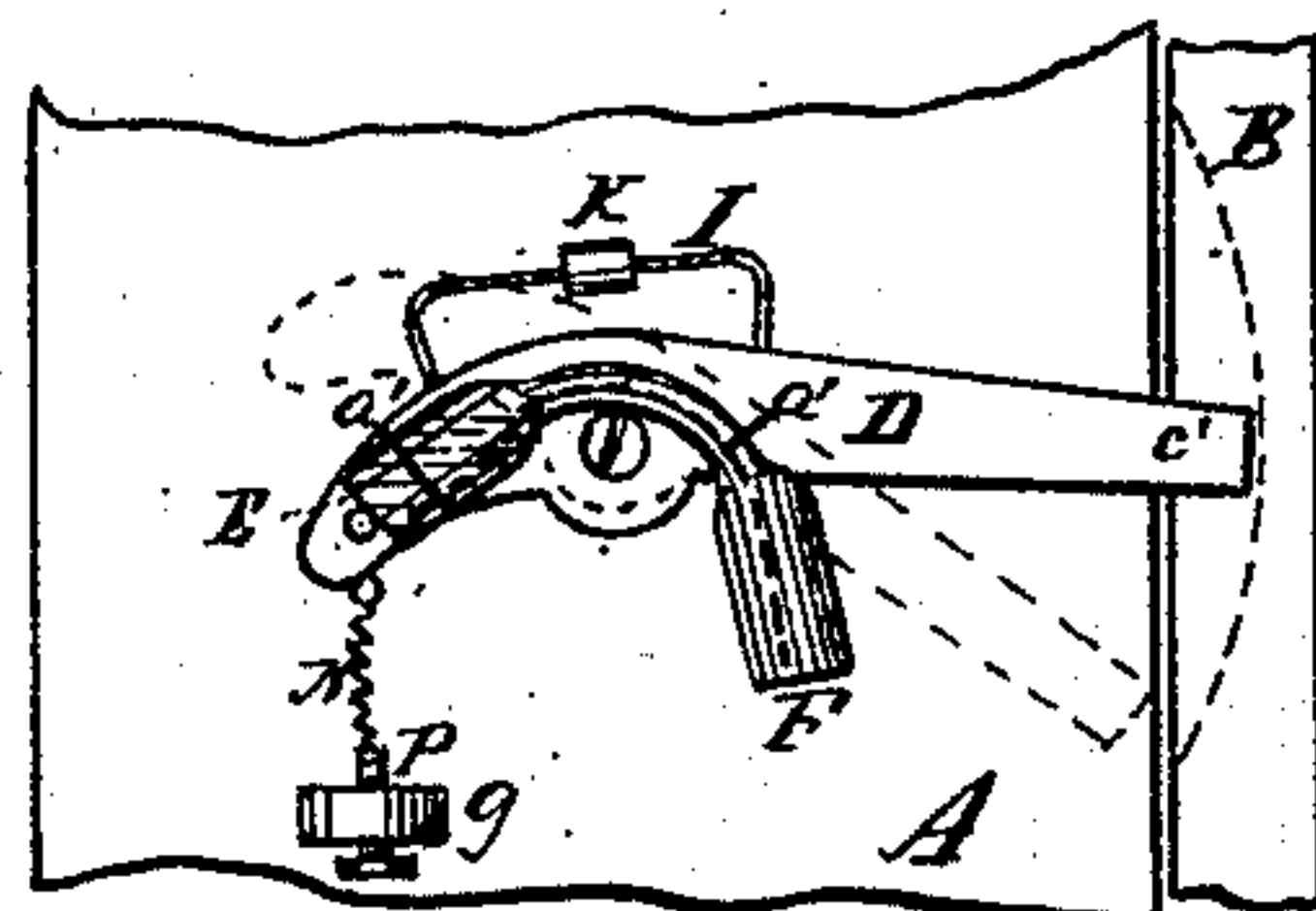


Fig 2.



Witnesses.

Fig 3.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN TIME-LOCKS.

Specification forming part of Letters Patent No. **184,297**, dated November 14, 1876; application filed October 11, 1875.

To all whom it may concern:

Be it known that I, WILLIAM L. POTTER, of Mechanicsville, in the county of Saratoga and State of New York, have invented certain Improvements in Time-Locks for Safes, of which the following is a specification:

This invention relates to that class of apparatus designed to supplement the usual lock of a safe or other receptacle, and to render the same incapable of opening during any stated period—as, for example, over night, or over Sundays or holidays, even by the key of the usual lock. Its object is to provide a device for the purpose that while securing the object sought in a degree equal to many others of its class, yet the said device shall be more simple in construction, and consequently cheaper to manufacture, which may be conveniently adjusted to act any number of hours desired, and which may be readily attached or applied to almost any safe of ordinary or known construction.

The invention comprises a tilting actuating device, constructed with a capillary passage, and partially filled with liquid, in combination with a locking-lever, the whole so combined and arranged that the liquid, being in one end of the said device, will, by its weight, retain the lever in position to lock the door of the safe or other receptacle; but, being transferred by capillary attraction to the opposite end, will tilt the same, and thereby bring it to a position to unlock the door, the time required for this being proportioned to the relative weight of the two ends of the device, and also to the quantity of the liquid transferred, as aforesaid, and the rapidity of the capillary action. The invention further comprises a novel combination of parts whereby the most advantageous operation of my aforesaid invention is secured.

Figure 1 is a face view, from the inside of a safe, of a time-lock or mechanism made according to my invention, showing the parts in position previous to locking the safe-door. Fig. 2 is a like view, showing the parts in the position occupied during the time that the door is locked by the device. Fig. 3 is a similar view, with the parts in the locking position of a modification of my invention.

A is the door, and B the adjoining sides of a safe; and C C are the usual locking-bolts of

the lock therein. These bolts C form part of a lock of any suitable or ordinary construction, the character of the lock itself being of minor importance in the use and operation of my invention. In the form and structure shown in Figs. 1 and 2, the locking bolt or bolts should be provided with a stud, shoulder, or stop, *a*, the connection of which with the bolts C in the just-mentioned figures is indicated in dotted lines.

It is manifest that these bolts, being thrust into the usual sockets *b'* in the adjoining surface of the door-frame of the safe, will be held in a locked position independent of the action of any key, or any action of the lock of which said bolts form a part, in case any firm obstruction is placed behind the stud *a*.

D is a lever, pivoted to the inner surface of the door A, and having one of its ends notched, as shown at *c*, this notch providing a shoulder, which, when this notched end is elevated, will fit behind the stud *a* and prevent the withdrawal of the bolts C, as just hereinbefore indicated. Upon this lever D are attached two bulbs, E and F, connected by a curved tube, G. The bulbs may be of glass, the tube of metal, or bulbs and tube may be in one piece, of glass. Each bulb has a sufficient capacity to hold a quantity of alcohol or other liquid, sufficient, when in the bulb E, to tilt the notched end *c* of the lever upward, and when in the bulb F to tilt the said end downward. A quantity of the liquid not exceeding the capacity of one of the bulbs is placed within the two and their connecting-tube. In the tube G is placed a strand (indicated by the dotted line *m*) of cotton or other fibrous substance, or any material capable of insuring the transmission of liquid through it by capillary attraction. The ends of this strand *m* should extend into the bulbs E F. The two bulbs and their curved connecting-tube should be firmly connected together, but preferably should be attached to the lever by hooks or staples *a'*, so that they may be readily detached from the lever, in order on occasion to be reversed, as hereinafter more fully explained. I is a screw-threaded carrier, attached to the lever D, and having upon it a nut, load, or rider, K, which may be adjusted at any desired point along the length of the

aforesaid rider. N is a spring, attached at one end to the end of the lever D adjacent to the bulb E, and at the other to a screw, P, which works through a fixed nut, g, on the inner side of the door A.

Assuming the bolts C to be in position for locking the door, as shown in Fig. 2, with the notched end *c* of the lever D behind the stud *a*, to prevent the retraction of the bolts, as hereinbefore explained, the liquid being within the uppermost bulb E, and consequently retaining by its weight the end or shoulder *c* of the lever D behind the stud *a*, the bolts C will, of course, be held against withdrawal so long as the weight of the liquid in the bulb E counterbalances the weight of the opposite arm of the lever D, and that of the bulb F thereon; but when, by capillary attraction, sufficient of the liquid has passed through the strand *m* into the other bulb, F, to tilt the end *c* downward, the said end is brought away from the stud *a*, as represented in Fig. 1, and the bolts C may be retracted by the normal operation of the lock. Of course the time occupied in the aforesaid transfer of liquid from the one bulb to the other will depend not only upon the rapidity of the capillary action of the line *m*, but also upon the quantity necessary to effect the tilting of the device, as set forth; and this quantity will depend upon the resistance afforded by the spring N and the rider K, so that by adjusting the said spring and rider, either or both, the length of time may be varied to any requisite degree, according as the secure locking of the bolts C against all reverse movement or withdrawal is desired. In practice, this adjustment is preferred to be made by means of the rider alone, and the proper position of the rider in any given case, for any given time, is best ascertained by trial until the proper position is found. It is easy, however, so to graduate the carrier I that an approximate adjustment may at once be made. The spring N is especially designed to hold the bulb E in case, as in unlawful attempts to

open the safe, the safe is turned upside down, which, without some such provision, would be likely to tilt the device and release the bolts.

When desired, the apparatus may be constructed and arranged as represented in Fig. 3. In this latter, the end of the lever D sweeps past the adjacent edge of the door-frame, as indicated by the dotted line. When the end *c'* of the lever D is elevated, it holds against the inner surface of the door-frame, and thereby prevents the opening of the door, irrespective of the operation of the ordinary lock.

When the lever is tilted by the transfer of the liquid from the one bulb to the other, its end passes around an arc away from the edge of the door-frame, and permits the door to be opened.

When the liquid has passed from the bulb E to the bulb F, as described, and it is again desired to lock the door by means of my invention, as herein set forth, the two bulbs, with their connecting-tube, are removed from the lever D and replaced in a reverse position; which done, the liquid passes by capillary attraction from F to E, in the same manner as in the previous operation of the device it passed from E to F, the operation of the device being the same in one case as in the other.

What I claim as my invention is—

1. The tilting actuating device, constructed with a capillary passage and partially filled with liquid, in combination with a locking-lever, the whole arranged for use and operation substantially as herein set forth.

2. The time-lock comprising the described tilting actuating device, the locking-lever, the adjustable load or rider, and the spring N, the whole combined in relation with each other, the door A, and safe B, substantially as and for the purpose set forth.

WILLIAM L. POTTER.

Witnesses:

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