

No. 759,934.

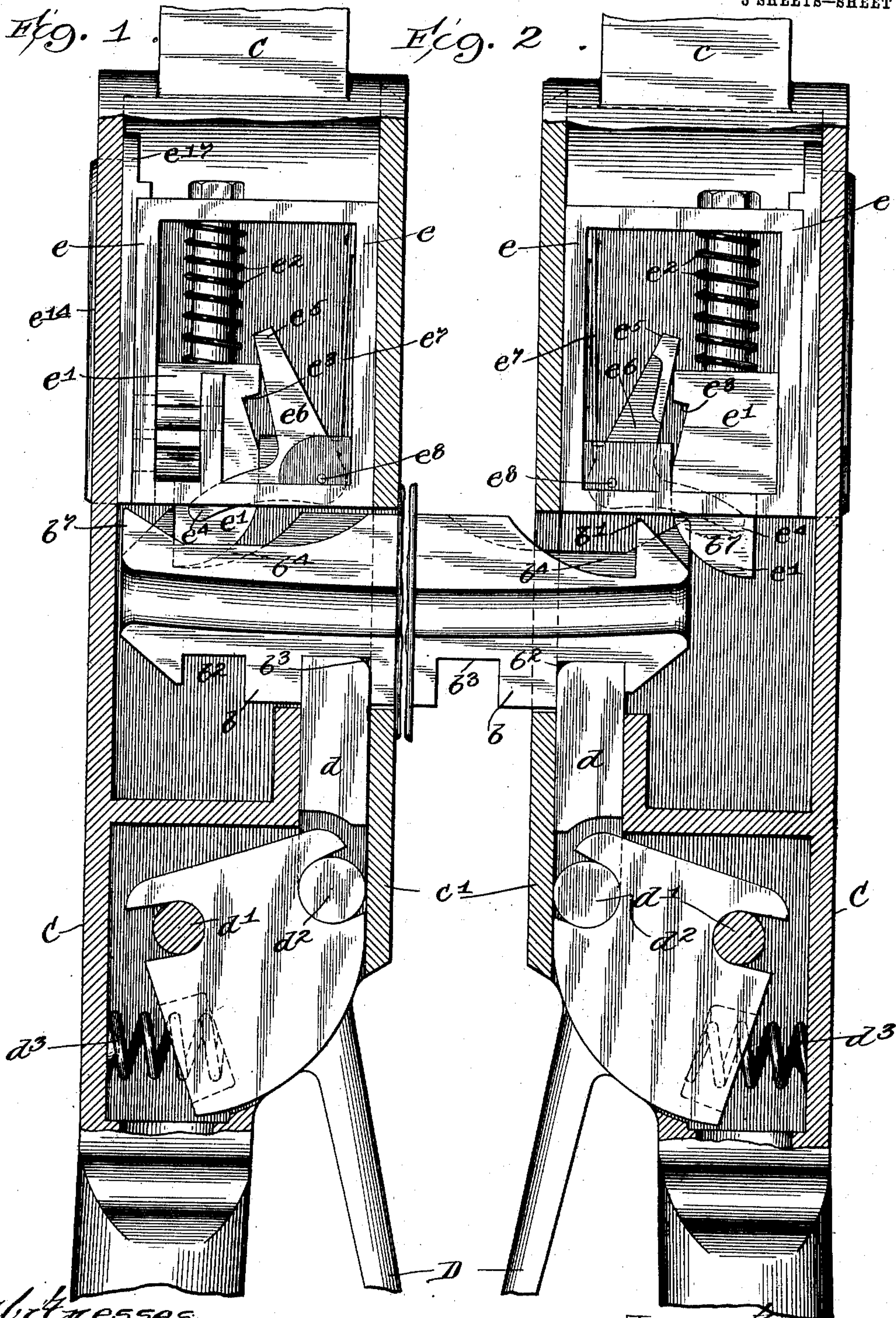
PATENTED MAY 17, 1904.

C. SULFER.  
AUTOMATIC RAILWAY SWITCH LOCK.

APPLICATION FILED APR. 27, 1901.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses  
Ray White.  
Harry C. White

Inventor:  
Charles Sulfer.  
By J. J. Rain Attorney.



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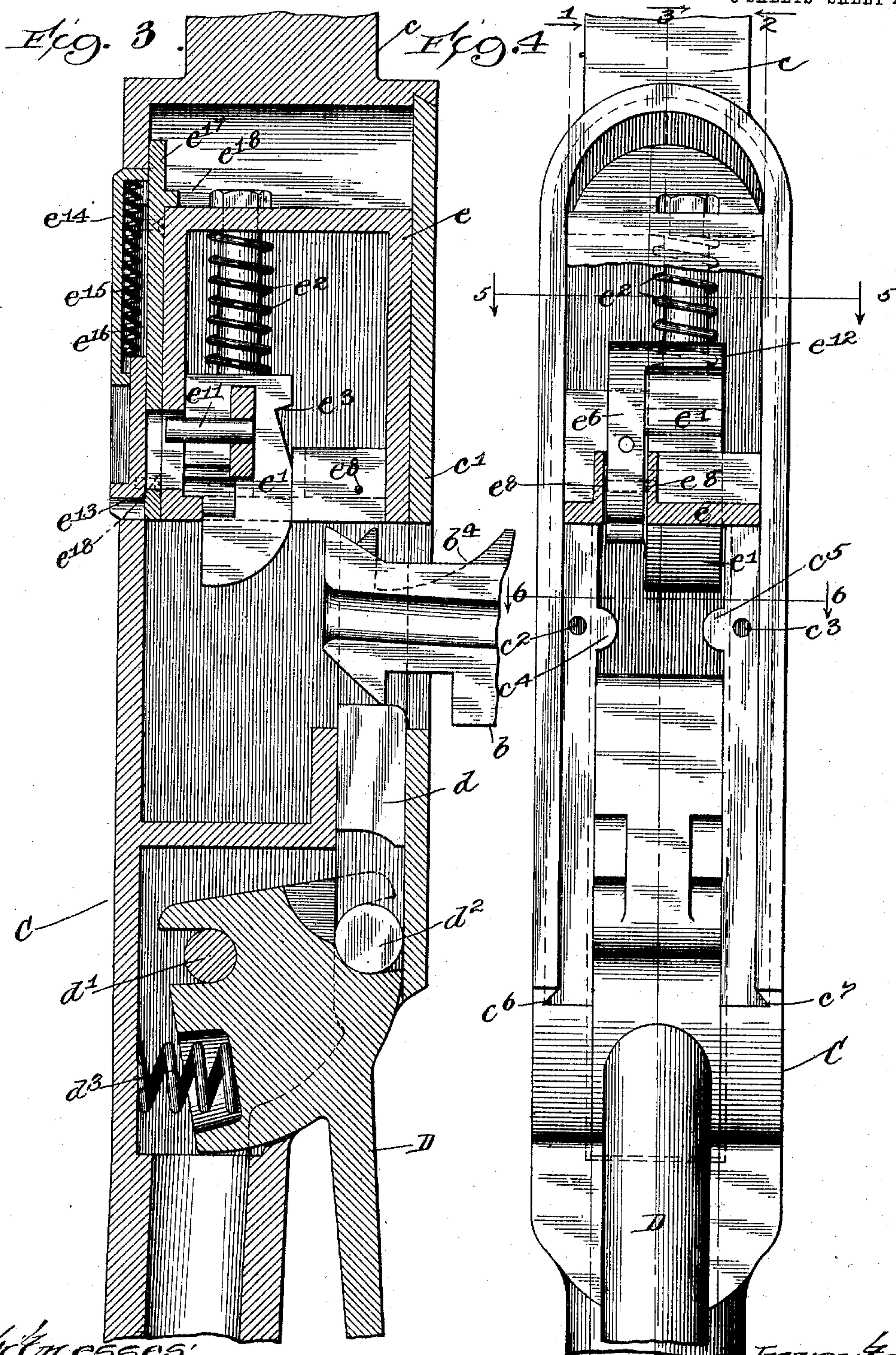
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3 SHEETS—SHEET 3.

Fig. 5.

Fig. 6.

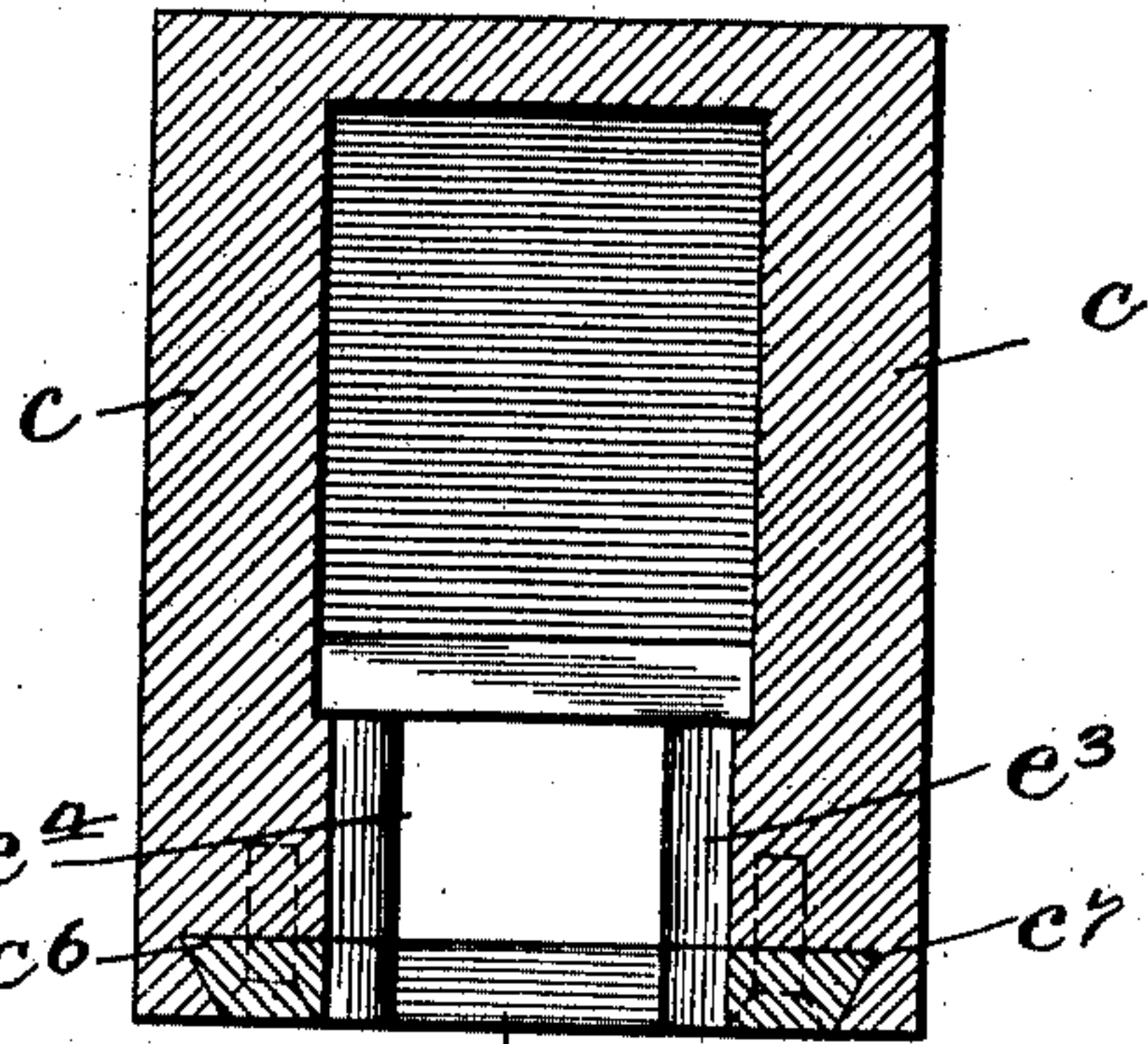
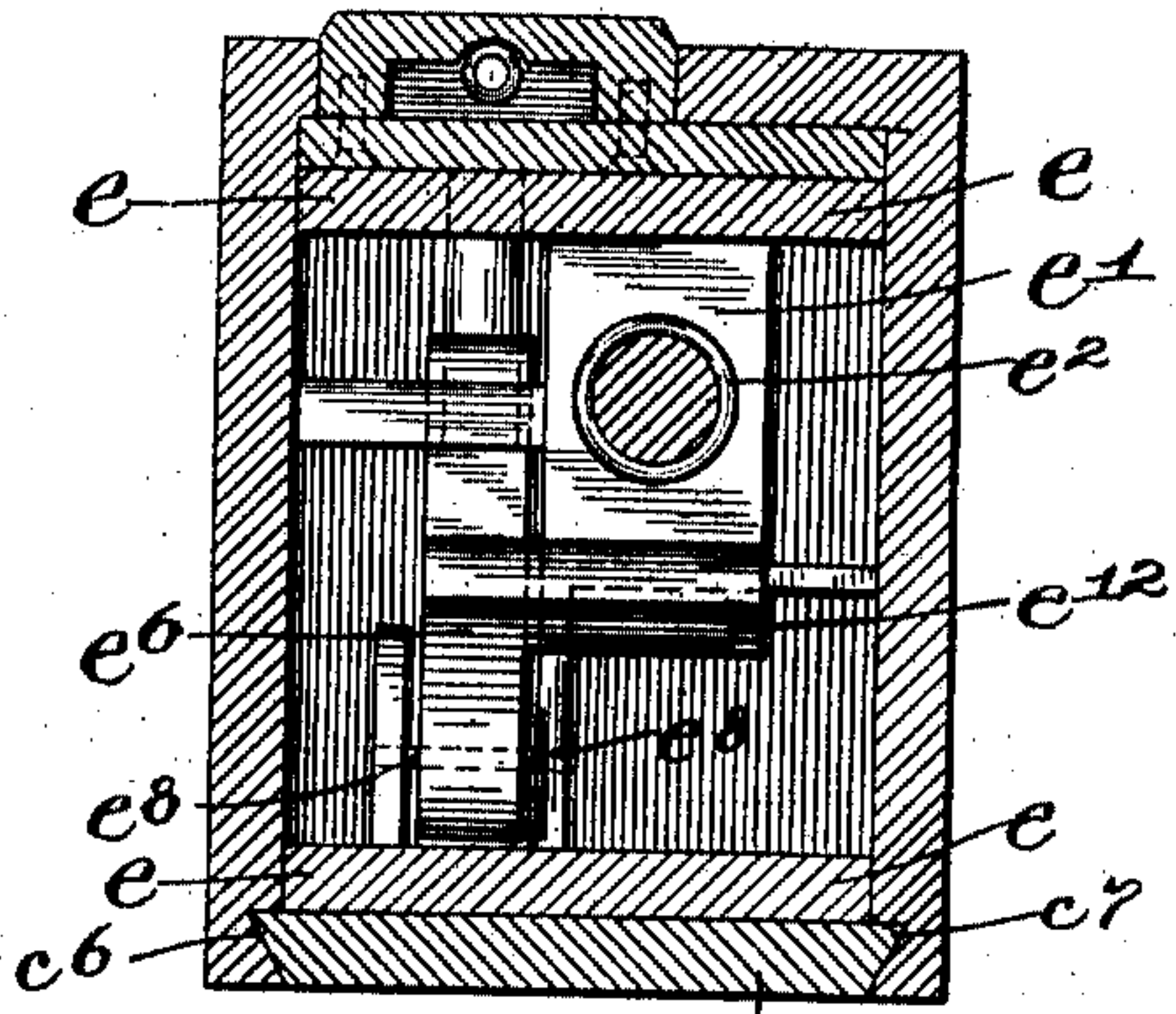


Fig. 7.

Fig. 8.

Fig. 9.

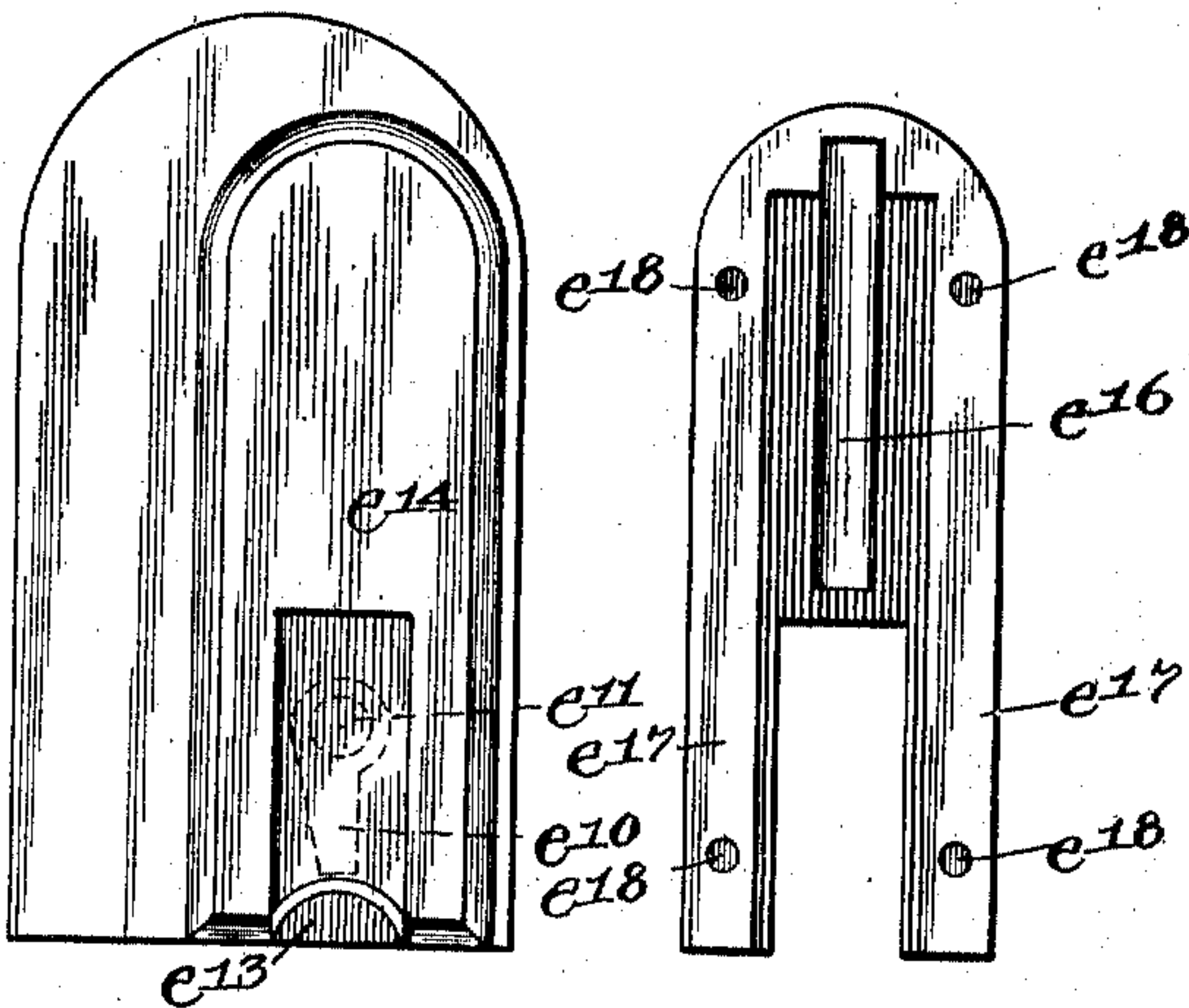
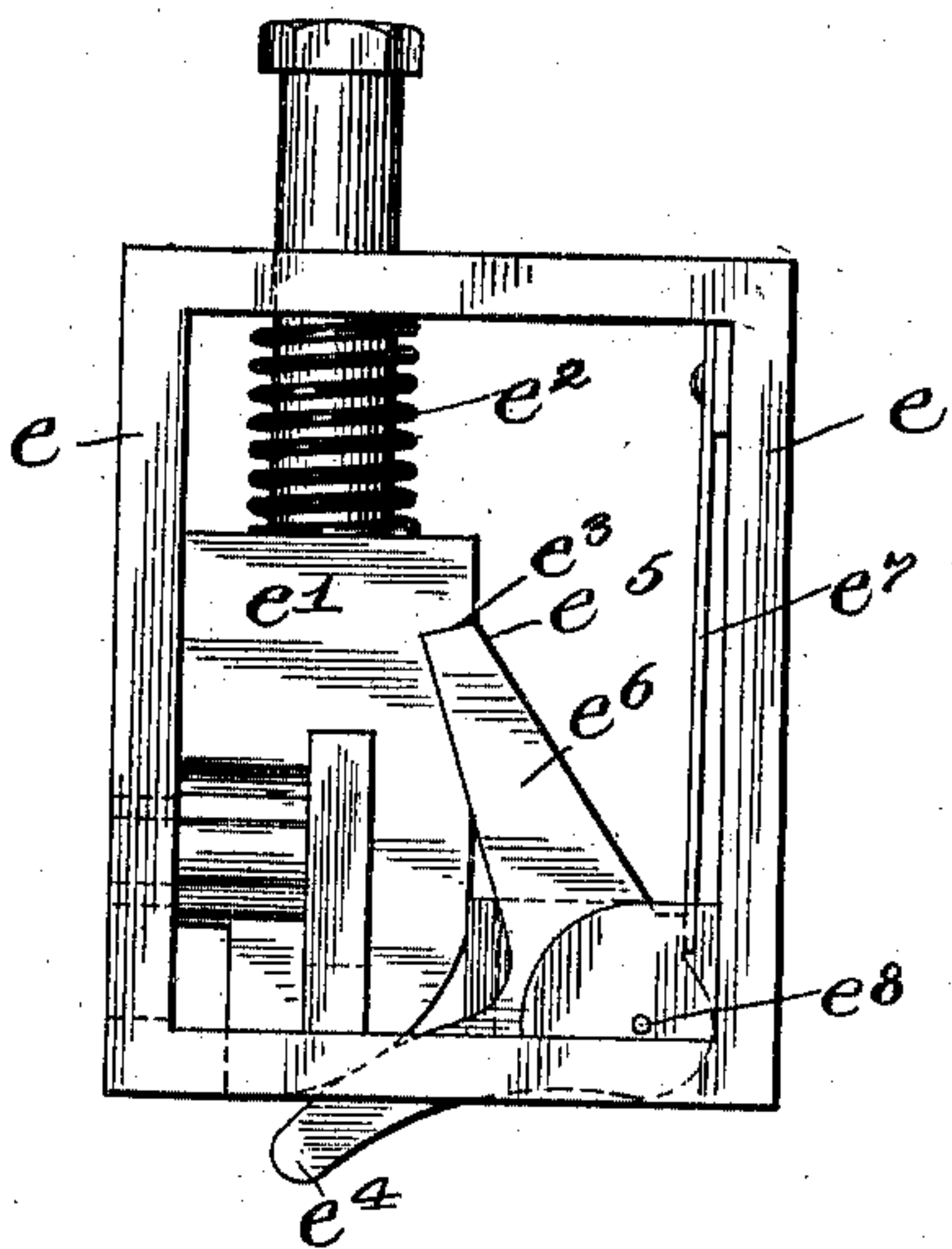
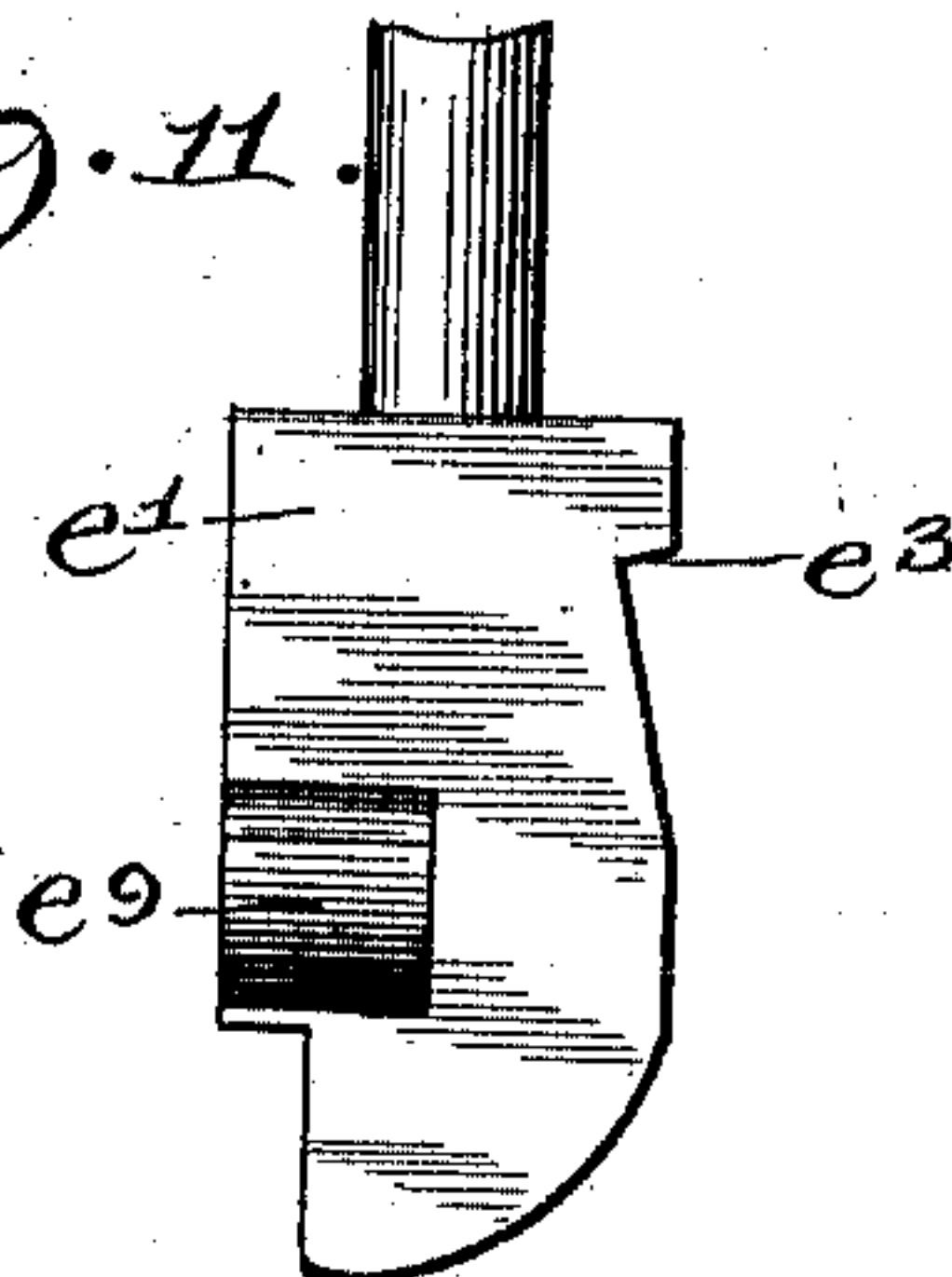
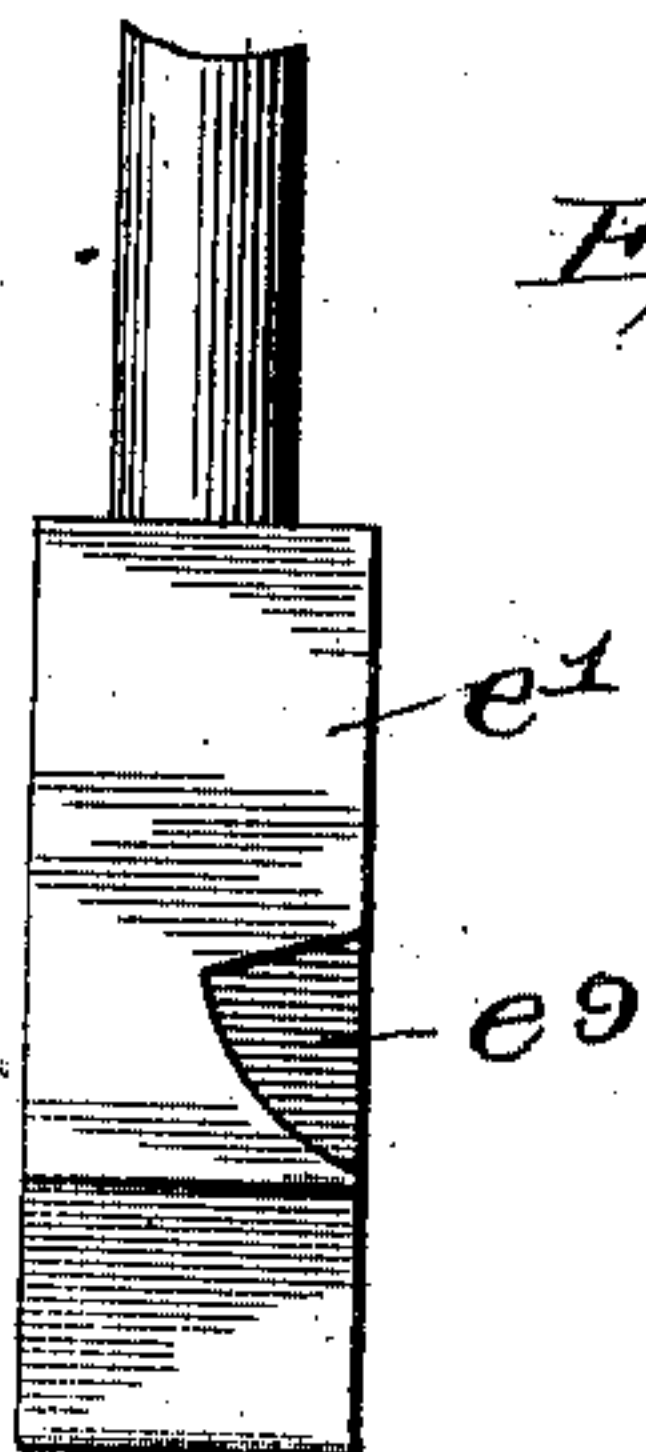


Fig. 10.

Fig. 11.



Witnesses:

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# UNITED STATES PATENT OFFICE.

CHARLES SULFER, OF SAN ANTONIO, TEXAS, ASSIGNOR TO INTERNATIONAL RAILWAY SUPPLY CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## AUTOMATIC RAILWAY-SWITCH LOCK.

SPECIFICATION forming part of Letters Patent No. 759,934, dated May 17, 1904.

Application filed April 27, 1901. Serial No. 57,793. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES SULFER, a citizen of the United States, residing at San Antonio, county of Bexar, and State of Texas, have invented certain new and useful Improvements in Automatic Railway-Switch Locks, (Case No. 3;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable persons skilled in the art to which it appertains to make and use the same.

My invention relates to a combined switch-lock and switch-shifting lever.

One of the objects of my invention is to provide a simple, reliable, and efficient means for locking the moving parts of a railway-switch-shifting device together, so that after the shifting mechanism of the switch has been moved to a desirable position it may be positively and quickly locked in the position to which the said parts have been so moved.

A further object of my invention is to provide an automatically-acting lock for the switch-lever and a supplementary latch, which latter I shall designate the "safety" device, arranged in the handle in such a position with reference to the other member of the locking device—namely, a stud—that the safety-latch will engage with said stud and hold the two parts in position as firmly as if the said parts were positively locked together by the locking mechanism, the arrangement being such that after the switch-lever has been once unlocked with the key the parts may be temporarily locked together by means of the said safety-latch at such times when it is not desirable to lock the parts permanently together. Finally the two parts may be so permanently locked together by holding the safety-latch lever in such position that the bolt thereof will be withheld from engagement with its respective member and by further depressing the lever bodily until the permanent locking or latch bolt is automatically thrown into engagement with its respective member on the said stud.

My invention further consists in the combinations and arrangements of the various

parts, as hereinafter pointed out and specifically claimed.

In the drawings, Figure 1 is a vertical section of my switch handle or lever, showing the stud permanently locked in the said handle by its engagement with the locking or latch bolt thereof. Fig. 2 is a similar section of my switch-lever, showing the stud temporarily locked by means of the safety-latch. Fig. 3 is a similar section of my switch-lever, showing the stud entering the perforation in the handle and depressing the safety-latch. Fig. 4 is a front view of my switch-lever with the covering-plate removed. Fig. 5 is a transverse section of the lever and lock. Fig. 6 is a similar section of the lever. The foregoing sectional views are all taken on the correspondingly-numbered lines of Fig. 4. Fig. 7 is a side view of the case or frame containing the locking mechanism of the switch. Fig. 8 is a plate adapted to cover the front side of the lever, which contains the sliding cover for the keyhole of the lock. Fig. 9 is a detail of a supplementary plate adapted to be placed inside of the large plate shown in Fig. 8 for containing the spring and sliding mechanism of the keyhole-cover. Figs. 10 and 11 are detailed views of the latch-bolt.

In all of the views the same letters of reference indicate similar parts.

In the drawings, C is a broken-away portion of the switch-shifting lever containing the mechanism of the locking and safety-latch devices.

*c* is the upper extension of the lever.

*c'* is a plate for covering the perforations in the lever in which the mechanism is contained. This plate is chamfered around its edges and is adapted to slip into the said lever-front under the dovetailed portions *c<sup>6</sup>* and *c<sup>7</sup>* and to be secured by screws, which are adapted to be inserted in holes *c<sup>2</sup>* and *c<sup>3</sup>* and which pass through the said plate for holding the same in position.

*c<sup>4</sup>* and *c<sup>5</sup>* are ribs cast within the perforation of the lever for the purpose of guiding the lever and holding it in the desired position with reference to the stud.



D is the safety-latch handle adapted to operate the safety-latch bolt  $d$ , operated by means of the stud  $d^2$  of the safety-latch bolt and the fork that partly surrounds the said stud of the handle D. The handle D is pivoted upon a stud  $d'$ , which is attached firmly in the orifice of the lever. Stud  $d'$  passes through the aperture or perforation made into the switch-lever in which the safety-latch handle D is pivoted.

10 The open helical spring  $d^3$  is adapted to distend the safety-handle D and to raise the safety-bolt  $d$ . When the handle D is depressed, the safety-bolt  $d$  is withdrawn from the path of the stud  $b$  within the aperture of the lever.

$e$  is a quadrilateral frame or case for holding the mechanism of a self-contained lock. By means of said lock the stud  $b$  is locked and retained within the perforation of the said switch-lever.

$e'$  is a spring latch or lock bolt, which is yieldingly held down in its lowest position by means of an open helical spring  $e^2$ , which for convenience surrounds the upper rounded portion of the said lock-bolt.  $e^3$  is a notch made in the said spring-latch lock-bolt, with which a trip-dog  $e^6$  is adapted to engage. An extension  $e^4$  of the trip-dog  $e^6$  passes through the frame of the said lock and into the path of the stud  $b$ . A flat spring  $e^7$  is adapted to exert the necessary pressure against the trip-dog  $e^6$  to hold it in position ready and to cause it to engage with the notch  $e^3$  of the bolt  $e'$ .  $e^8$  is a pivot upon which the said trip-dog moves.

35 A notch  $e^9$  is made into one side of the latch-bolt, into which the key passes when the said key is turned for the purpose of raising the said latch-bolt out of the path of the stud  $b$  for the purpose of unlocking or disengaging the locking member of the device.  $e^{10}$  is the keyhole into which the said key is inserted, and  $e^{11}$  is the key-stud in the said keyhole, over which the said key passes.

$e^{12}$  is a lateral extension from the trip-dog  $e^6$ , and it is this portion of the said dog which is adapted to engage in the notch  $e^3$  of the latch-bolt  $e'$ .

A channel  $e^{16}$  is made into a plate  $e^{17}$  of the lever C immediately above the keyhole for containing a helical open spring  $e^{15}$ , which bears against the fixed part of the plate at the upper end and against a sliding keyhole-cover adapted to slide in said plate at its lower end and retain the keyhole-cover in the position shown in Fig. 3, so as to maintain the keyhole closed by said cover to prevent the entrance of moisture, dirt, and other foreign substances.

$e^{14}$  is a front plate, between which and plate  $e^{17}$  the keyhole-cover  $e^{13}$  is fitted, so that the latter may be raised against the pressure of the spring  $e^{15}$  to insert the key into the keyhole  $e^{10}$ . Small screws  $e^{18}$  pass from the inside of the perforation to the said lever into the plate  $e^{14}$  for holding the latter in position.

The use and operation of my device are as follows: When the lever C, which is pivoted to a switch-shifting mechanism, is depressed upon the stud  $b$  for the purpose of locking the parts together, the stud  $b$  first comes in contact with the safety-latch  $d$  and forces the latter downwardly against the pressure of the spring  $d^3$ . When the lever C is further depressed, the spring  $d^3$  will force the safety-latch bolt  $d$  into the notch  $b^2$  of the stud. By means of this safety-latch the stud  $b$  and lever C may be temporarily latched together. When the handle D of the safety-latch device is compressed, the safety-latch bolt  $d$  will be withdrawn from the notch  $b^2$  of the stud  $b$  and the parts or members—the lever and the stud—may be again separated. When the two elements of the locking device are forced entirely together, so that the latch-bolt  $e'$  will engage with the notch  $b^4$  in the stud  $b$ , then the safety-latch bolt  $d$  and the notch  $b^3$  will engage, and the lever C cannot be again operated until the switch-key is used. To unlock the lever C from the stud  $b$ , so as to swing the said lever into position to turn the switch mechanism, the switch-key is first placed under the spring-pressed plate  $e^{13}$  and the said plate raised by lifting the key until the keyhole  $e^{10}$  is uncovered, when the key may be inserted therein. The key is then turned in the lock until it engages under the shoulder of the notch  $e^9$  of the spring latch-bolt  $e'$ . The said latch-bolt is thereby raised until the end  $e^{12}$  of the trip-dog  $e^6$  snaps into notch  $e^3$ , and thereby the said latch-bolt is supported, being removed from the path of the stud  $b$ , having been withdrawn from the notch  $b^4$  thereof. At the same time the extension  $e^4$  of the trip-dog  $e^6$  is lowered into the path of the projection  $b^7$  of the stud  $b$ . When the lever and stud are separated, the said projection of the stud again raises the projection  $e^4$  of the trip-dog  $e^6$ , which action disengages the end  $e^{12}$  of the trip-dog and the notch  $e^3$  of the spring-bolt, and the said bolt being again released it descends to the position shown in Fig. 3 to again engage with the notch  $b^4$  and again lock the two parts together. When it is desired to temporarily lock the two parts—the lever and the stud—together, the safety device D may be used.

It will be seen that the locking elements of the device are placed so that they will latch together before the engagement of the permanently-locking mechanism.

The safety device may be operated by the manipulation of the handle D.

To unlock the permanent-locking members, the use of the separable switch-key becomes necessary.

It will be noticed that my lock contains only two major portions—namely, the safety-latch  $e'$  and the trip-dogs  $e^6$ —and that the two portions are operative without the springs  $e^2$



and  $e^7$ , respectively. These springs, however, are desirable for the purpose of producing a quick action of the respective pieces.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a railway-switch-locking device, a lock comprising a casing having a stud-receiving recess, a sliding bolt, and a pivoted latch-dog having one end extending into the said recess, and its other end arranged for engagement with the bolt, substantially as set forth.

2. In a railway-switch-locking device, a stationary member having a stud secured thereto, a movable member adapted to be moved to receive the stud, and a lock associated with the movable element comprising a latch-bolt, and a trip-dog adapted to control the movement of the bolt having one end extending into the path of the stud, substantially as set forth.

3. In a railway-switch-locking device, a stationary member having a stud secured thereto, an inclined projection on said stud, a movable element adapted to be moved to engage the stud, and provided with a recess to receive the same, and a lock associated with the movable element comprising a latch-bolt, and a trip-dog therefor having one end extending into the stud-receiving recess and arranged in the path of the inclined projection on the stud, substantially as set forth.

4. In a railway-switch-locking device, a removable lock-case, a latch-bolt adapted to be vibrated therein, a triangular-shaped trip-dog pivoted therein, one end adapted and ar-

ranged to engage said latch-bolt, and the other end extending through the walls of said case, substantially as set forth.

5. In a railway-switch-locking device a removable lock-case,  $e$ , provided with an opening in its wall, a latch-bolt,  $e'$ , adapted and arranged for reciprocation therein, and provided with a notch  $e^3$ , a spring  $e^2$  adapted and arranged to depress said bolt, a pivoted trip-dog  $e^6$ , having an end  $e^5$  adapted to engage said notch in the bolt when the latter is in raised position, and an end  $e^4$  extending through the opening in the wall of the case  $e$ , a spring  $e^7$  arranged to tend to move the dog  $e^6$  to position to engage the bolt, means for raising the bolt, and means for coacting with the end  $e^4$  of the dog to remove the end  $e^5$  from engagement with the bolt, substantially as set forth.

6. In a railway-switch-locking device, a hollow handle in which the locking mechanism is located, and a safety-latch consisting of the handle  $D$  and the latch-bolt  $d$  adapted to be moved thereby, laterally-extending studs  $d^2$  partially inclosed by forks on the handle  $D$ , stud  $d'$  upon which handle  $D$  is pivoted, compression-spring  $d^3$ , and a means such as a plate  $c'$  for retaining said safety device within said handle, substantially as set forth.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 25th day of April, A. D. 1901.

CHARLES SULFER.

Witnesses:

FORÉE BAIN,  
M. F. ALLEN.