

No. 637,377.

Patented Nov. 21, 1899.

F. ELY.

MEANS FOR PREVENTING TAMPERING WITH FIRE ALARM BOXES.

(Application filed Mar. 17, 1899.)

(No Model.)

2 Sheets—Sheet 1.

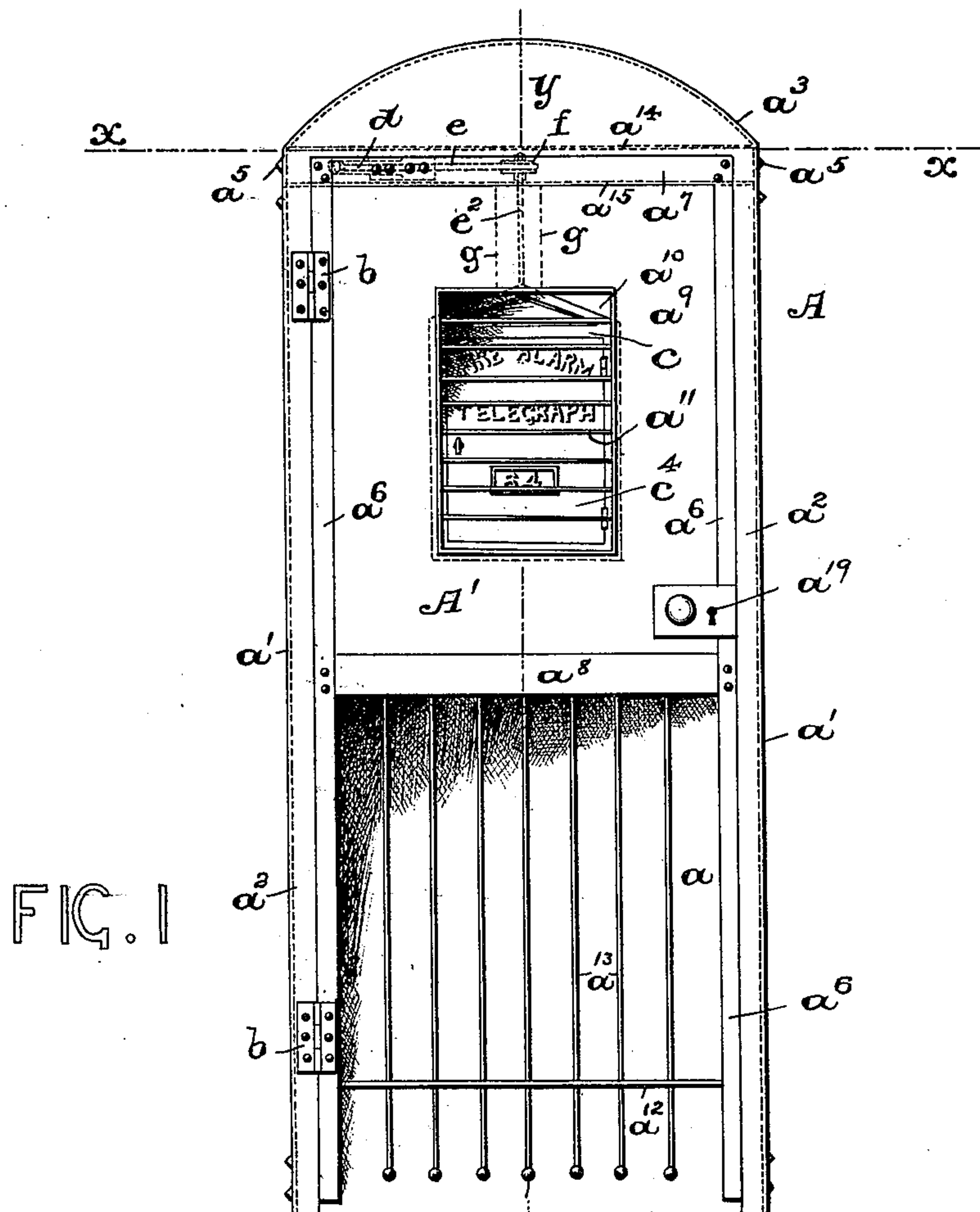


FIG. 1

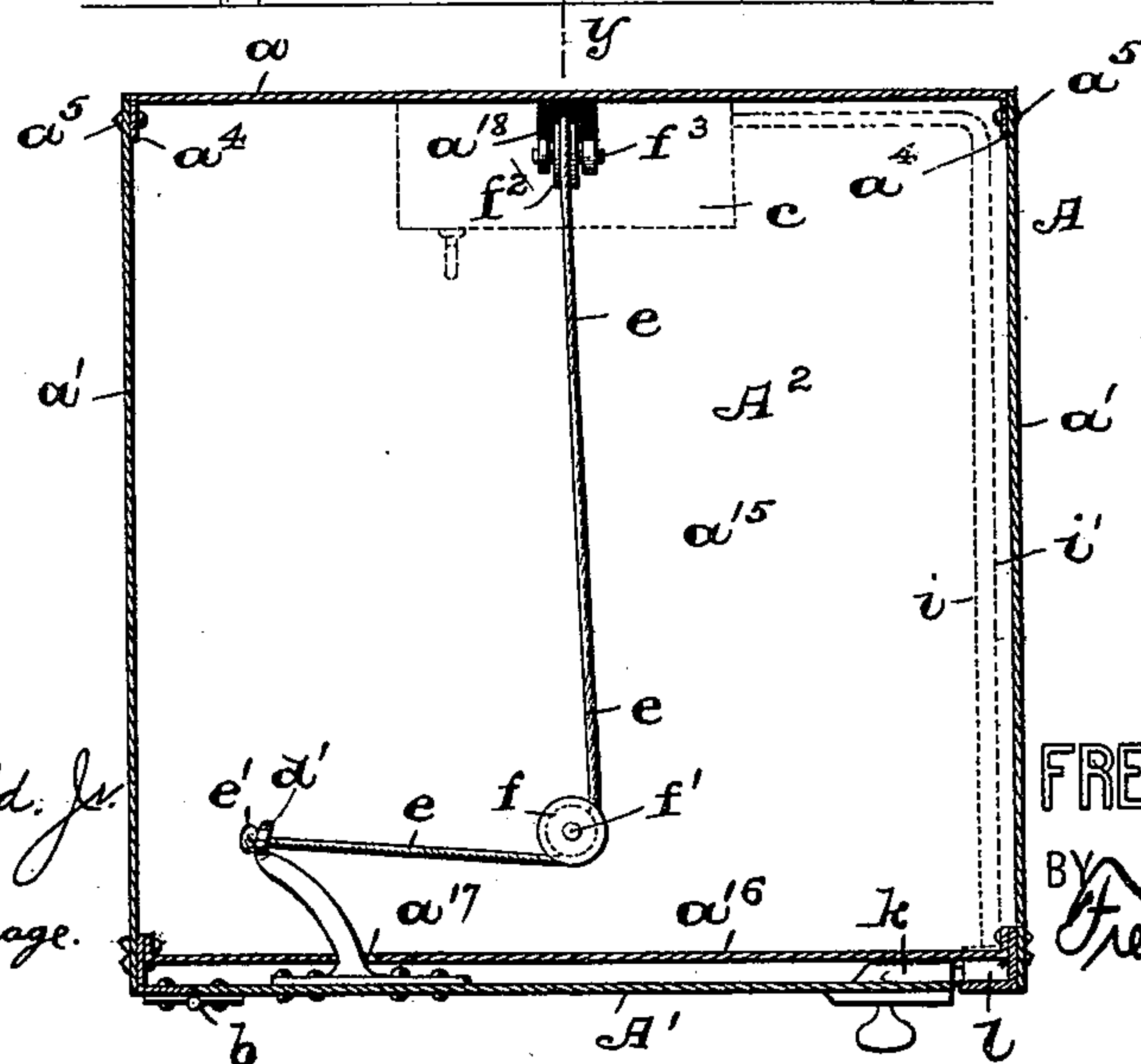


FIG. 2

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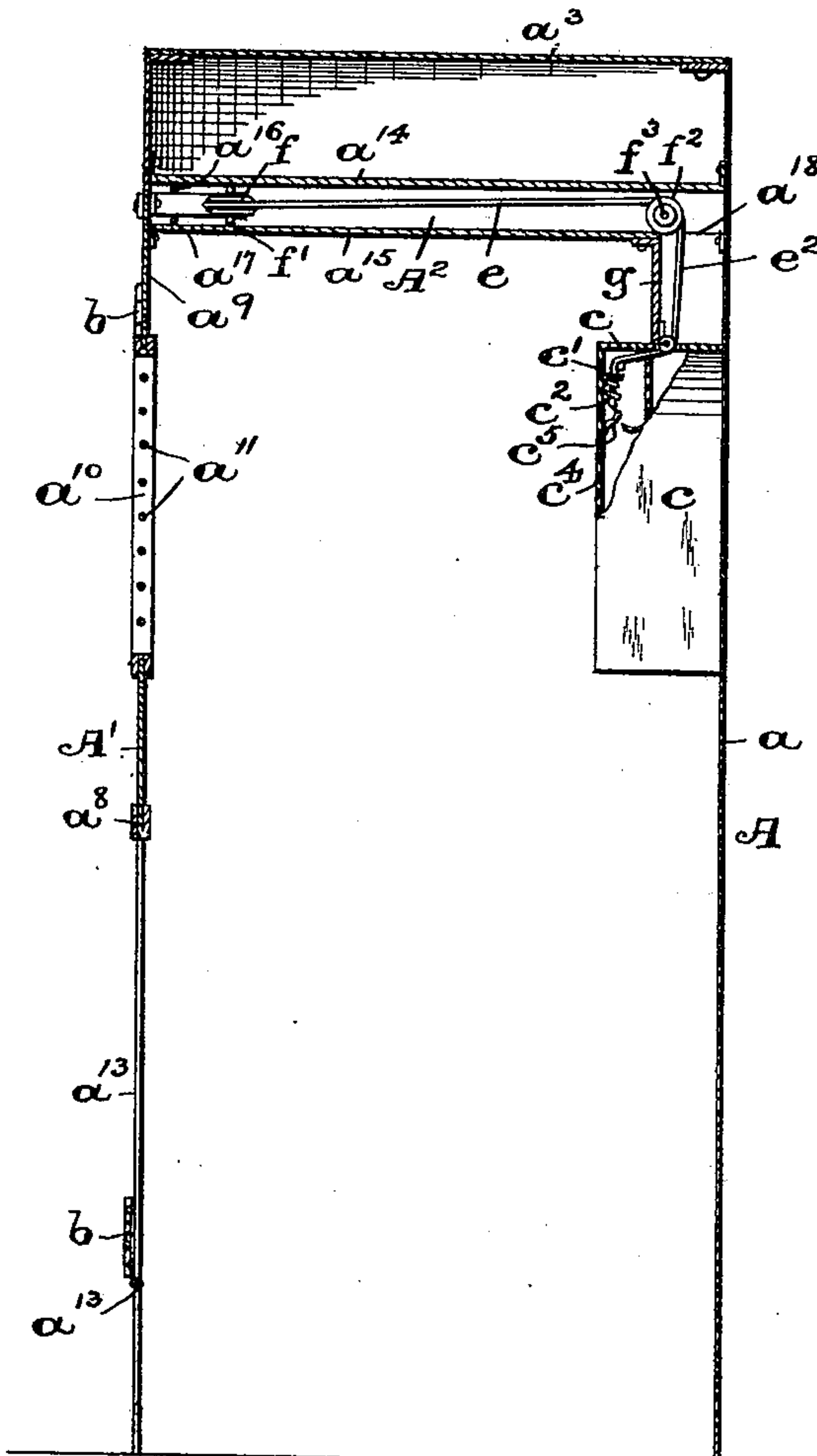


FIG. 3

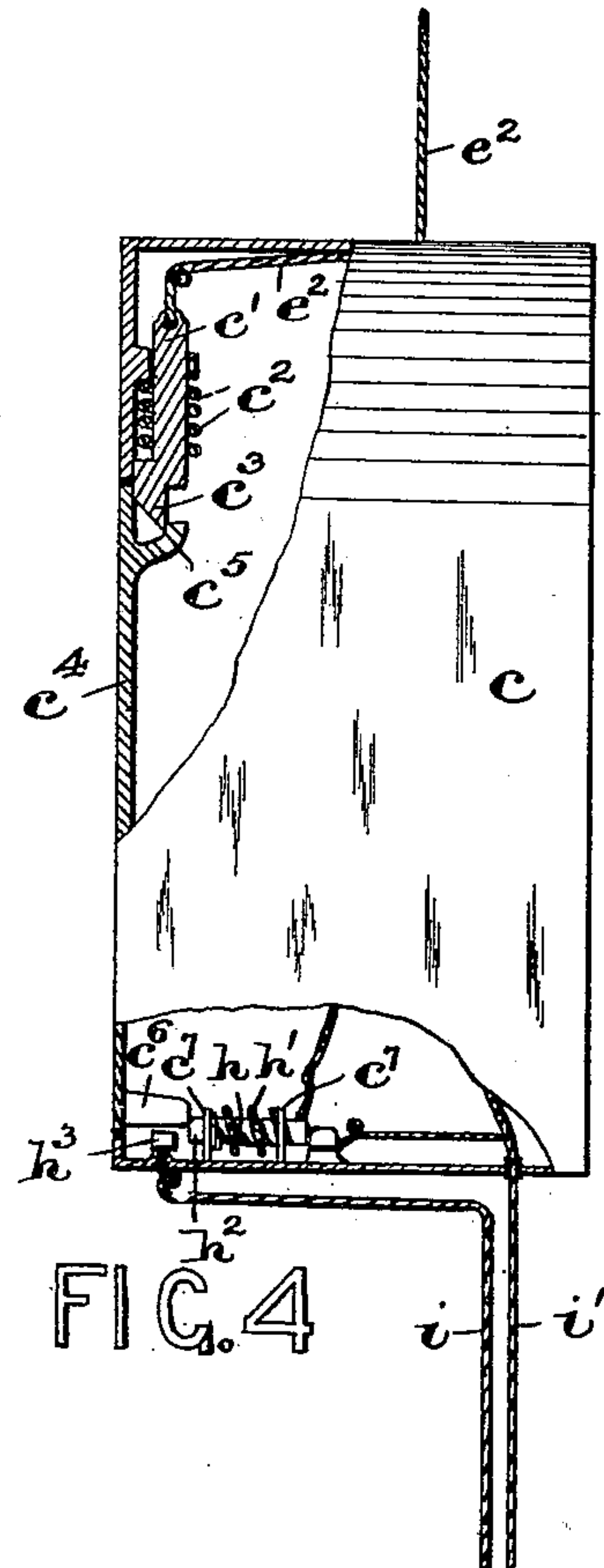
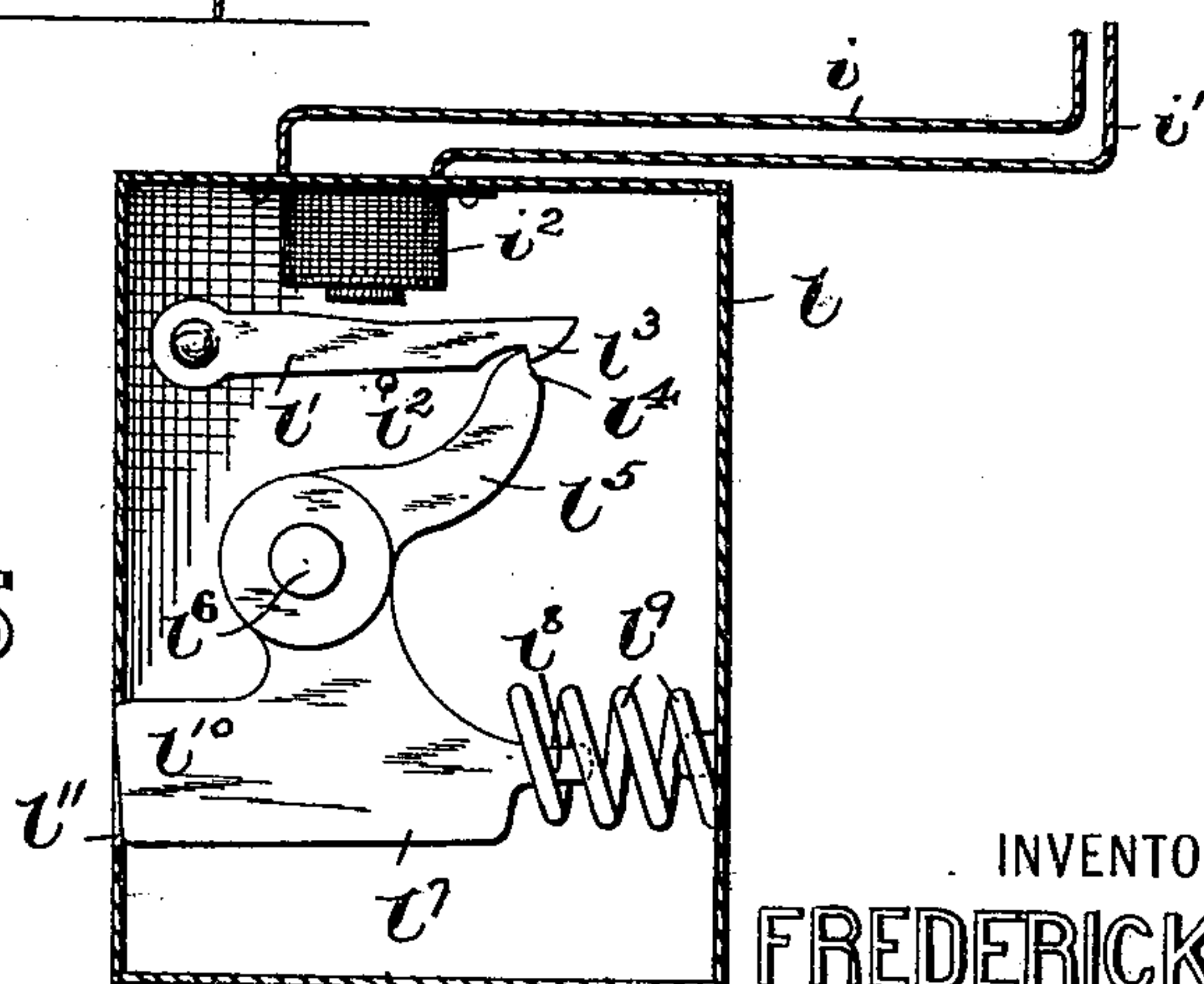


FIG. 4

FIG. 5



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# UNITED STATES PATENT OFFICE.

FREDERICK ELY, OF NEWARK, NEW JERSEY.

## MEANS FOR PREVENTING TAMPERING WITH FIRE-ALARM BOXES.

SPECIFICATION forming part of Letters Patent No. 637,377, dated November 21, 1899.

Application filed March 17, 1899. Serial No. 709,441. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK ELY, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Means for Preventing Tampering with Fire-Alarm Boxes; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention has reference to fire-alarm boxes; and the invention relates more particularly to a novel means to be employed in connection with such boxes to prevent tampering with the same and to prevent the sending in of false alarms.

My invention has for its primary object the protection of fire-alarm boxes to prevent tampering with the same and to prevent the sending in of false alarms; and, furthermore, my invention has for another object to provide a simply-constructed cage or booth in which an alarm-box is located and a mechanism connected therewith which shall be of such arrangement and construction that when the door of the cage or booth has been opened the door of the alarm-box shall remain locked and the door of the alarm-box becomes unlocked as soon as the cage-door is entirely closed, the alarm mechanism being arranged to establish an electric circuit when the alarm-box door is opened to release a lock mechanism connected with the cage or booth to thereby hold the door of the latter in its closed position until said lock mechanism is actuated by means of a key from the outside.

Other objects of this invention not here specifically mentioned will be evident from the following specification.

With these several ends in view my invention consists, essentially, of the novel arrangement and combination of a protector cage or booth with a fire-alarm box and actuating and locking mechanism connected with the same for the purposes above stated; and, furthermore, the invention consists in such novel arrangements and combinations of the several parts and the details of the

construction thereof, all of which will be hereinafter fully described and finally embodied in the clauses of the claim which form a part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a front view of one form of protector cage or booth for a fire-alarm box embodying the principles of my present invention; and Fig. 2 is a horizontal section of the same, said section being taken on line *x* in Fig. 1, and said view illustrating one construction of lock mechanism arranged within said fire-alarm box for locking the door thereof. Fig. 3 is a vertical section of the cage or booth, taken on line *y* in Fig. 1, the alarm-box being also partly represented in vertical section, illustrating the disengaged position of a sliding bolt for locking the alarm-box door. Fig. 4 is a side view of the alarm-box, portions of the same being represented in vertical section to illustrate, on an enlarged scale, the arrangement of said bolt for locking the door of the alarm-box and also illustrating one arrangement of electric contact device for making an electrical contact when the alarm-box door is opened to actuate a bolt mechanism connected with the cage or booth, and thereby lock the door of the latter at the same time that the fire-alarm-box door is opened. Fig. 5 is a face view of the lock mechanism for locking the door of the cage or booth, the casing thereof being represented in section.

Similar letters of reference are employed in all of the said above-described views to indicate corresponding parts.

In said drawings, *A* indicates a suitable cage or booth which is usually made of sheet metal, but which may be made of any other suitable material, as will be clearly evident. Said cage or booth consists, essentially, of a back *a*, the sides *a'*, an open frame *a<sup>2</sup>* at the front, and a top or roof *a<sup>3</sup>*, the said parts being suitably secured together by means of flanges *a<sup>4</sup>* and rivets or bolts *a<sup>5</sup>*, as indicated in Fig. 2; but of course the said parts of the cage or booth may be connected in any other desirable manner. On one side of the frame *a<sup>2</sup>* are suitably-placed hinges *b*, and secured to said hinges is a door *A'*. Said door consists, essentially, of the framework *a<sup>6</sup>*, *a<sup>7</sup>*, and *a<sup>8</sup>*, of sheet metal or any other suitable material.



Between the frame portions  $a^6$  and  $a^7$  I have arranged a plate  $a^9$ , which is preferably provided with an opening  $a^{10}$  and the cross pieces or bars  $a^{11}$ , through which the fire-alarm box  $c$ , secured to the inner surface of the back  $a$ , is exposed to view. The lower part of the door may be provided with a cross-bar  $a^{12}$ , and vertical bars or rods  $a^{13}$  may be employed between said bar  $a^{12}$  and the cross-piece  $a^8$ , substantially as shown. Of course it will be understood that any other suitable arrangement and construction of door may be employed. As more particularly illustrated in Fig. 3 of the drawings, the said cage or booth A is provided at or near its top with a pair of horizontal partitions or plates  $a^{14}$  and  $a^{15}$  and a vertically-arranged partition  $a^{16}$ , all of which form a chamber  $A^2$ , substantially as illustrated and for the purposes to be hereinafter set forth more in detail.

As will be seen from Figs. 2 and 3, the door  $A'$  is provided on its inner side, at or near its upper edge, with a suitably-constructed arm  $d$ , provided at its free end  $d'$  with a perforation or other means, with which is operatively connected the end  $e'$  of a flexible connection  $e$ . Said arm  $d$  extends into said chamber  $A^2$  and is movably arranged in an opening  $a^{17}$  in said vertical partition  $a^{16}$ . Said flexible connection  $e$ , which may be a chain, rope, or the like, is arranged to pass over a grooved wheel  $f$ , rotatable on a vertically-arranged pin or stem  $f'$  between said plates  $a^{14}$  and  $a^{15}$ , and then over a second grooved wheel  $f^2$ , rotatable on a horizontal shaft or rod  $f^3$  in the said chamber  $A^2$ . The end portion  $e^2$  of said flexible connection  $e$  then passes through an opening  $a^{18}$  in the plate  $a^{15}$  and into the fire-alarm box  $c$ , where it is attached to the end of a bolt  $c'$ , said flexible connection passing over suitably-arranged grooved wheels in said box, which are placed substantially as illustrated in Figs. 3 and 4. From an inspection of the several figures of the drawings it will be seen that the flexible connection and the arm  $d$  are fully protected from any outside interference by thus being arranged between the plates forming said chamber  $A^2$ . To prevent the tampering with said parts and to fully protect the end portion  $e^2$  of the connection  $e$  certain vertical plates or partitions  $g$  are arranged around the same, said plates being secured upon the top of the box  $c$  and against the under side of the plate  $a^{15}$ , as clearly illustrated in Figs. 1 and 3.

From an inspection of Figs. 2 and 3 it will be seen that when the door  $A'$  of the cage or booth A is closed the end portion  $d'$  of the arm  $d$  will exert a pull upon the flexible connection  $e$  against a spring  $c^2$ , encircling said bolt  $c$ , whereby the nosing  $c^3$  of said bolt is normally disengaged from a holding portion  $c^5$ , formed on the back of the door  $c^4$  of the fire-alarm box  $c$ . When the door  $A'$  is opened to admit a person, it will be seen from said Fig. 2 that the end  $d'$  of the arm  $d$  assumes a position nearer the wheel  $f$ , whereby the tension

or pull on the flexible connection is released, and the spring  $c^2$ , connected with the bolt  $c'$ , will cause the nosing of the latter to enter the holding portion  $c^5$ , and thereby securely lock the door of the alarm-box  $c$ . The sliding arrangement of the bolt  $c'$  and its operative connections actuated from the door  $A'$  are such that the nosing of the bolt  $c'$  will not be entirely disengaged from the holding portion  $c^5$  of the door  $c^4$  of the alarm-box  $c$  until the door  $A'$  has once more been entirely closed. The arrangement of said door  $A'$  is such that it can be opened and closed from the outer or inner sides of the cage or booth A as long as the door of the alarm-box is kept closed; but when a person has entered the cage A and has fully closed its door  $A'$ , whereby the door  $c^4$  of the alarm-box  $c$  becomes unlocked, as hereinabove stated, and when such person opens said door  $c^4$  then a lug or projection  $c^6$  on the back of the door  $c^4$  will be drawn away from an electric contact-making piece  $h$ , which is slidably arranged in bearings  $c^7$  in the alarm-box, and a spring  $h'$  will force the end  $h^2$  of said piece  $h$  in electrical contact with a suitable contact-plate  $h^3$ , whereby the main fire-alarm circuit is established in the usual manner to permit the sending in to headquarters of the regular alarm. At the same time the current also passes through a shunt-circuit  $i i'$  to magnetize the core of a magnet  $i^2$ , which is placed in a lock-casing  $l$ , secured to the inner side of the frame-piece  $a^2$  of the cage or booth A. Within said casing  $l$  there is a pivoted arm  $l'$ , normally supported upon a pin  $l^2$ , as clearly illustrated in Fig. 5. When in this position, a holding portion  $l^3$  on said arm engages a pointed part  $l^4$  of another arm  $l^5$ , which is pivotally arranged on a pin or post  $l^6$  in said lock-casing  $l$ . Connected with said arm  $l^5$  is a bolt portion  $l^7$ , which has a projection  $l^8$ , whereby it can be forced against the action of a coiled spring  $l^9$  when said arm  $l^5$  and the arm  $l'$  are in their holding or locked engagement. (Shown in said Fig. 5.) When the current passes through the shunt-circuit wires  $i$  and  $i'$  and through the electromagnet  $i^2$ , the result will be that the arm  $l'$  is drawn against the free end of the core of said magnet, and its holding portion  $l^3$  thereby becomes disengaged from the end of the arm  $l^5$ . The spring  $l^9$  then forces the end  $l^{10}$  of the bolt  $l^7$  through an opening  $l^{11}$  in the side of the lock-casing  $l$  and causes its locked or holding engagement with a holding-plate  $k$  on the back of the door  $A'$ , as illustrated in Fig. 2. As there is no means on the inner side of the door  $A'$  for causing the unlocking of said bolt from the door, the person who has operated the alarm mechanism in the box  $c$  will thus be retained in the cage or booth A until the proper authority causes the bolt  $l^7$  to be forced back by means of a key, which is inserted in a hole  $a^{19}$ , placed for that purpose in the face of the door  $A'$ . As soon as this has been done and the door of the fire-alarm box  $c$  is again closed the two



arms  $l'$  and  $l^5$  will again enter into their holding relation with one another, and thereby cause said bolt  $l'$  to be again retained in the position indicated in said Fig. 5, with the spring  $l^9$  compressed ready to once more force the nosing of said bolt into its holding or locked engagement with the holding-plate  $k$  on the back of the door  $A'$  when a second person has entered the cage or booth  $A$  and has opened the door  $c^4$  of the fire-alarm box  $c$ .

From the above description it will be seen that I have devised a simple and operative means to prevent tampering with fire-alarm boxes and which can be used with any of the well-known constructions of alarm-boxes.

I am fully aware that many changes may be made in the several arrangements and combinations of parts, as well as in the details of the construction thereof, without departing from the scope of my present invention. Hence I do not limit my invention to the exact arrangements and combinations of the parts as herein shown and described, nor do I limit myself to the precise details of the construction thereof.

Having thus described my invention, what I claim is—

1. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth in which said box is placed, a locking mechanism in said box adapted to engage with and lock the door of said box, and means between said lock mechanism and the door of said cage or booth, to actuate said lock mechanism when the door of the cage or booth is opened and thereby lock the door of said alarm-box, substantially as and for the purposes set forth.

2. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth in which said box is placed, a spring-actuated sliding bolt in said alarm-box, arranged to engage with the door of said box and lock the same, and means between said bolt in the alarm-box and the door of said cage or booth, to cause the locked arrangement of said bolt when the door of the cage or booth is opened, and to cause the unlocked arrangement of said bolt when said cage or booth door is closed, substantially as and for the purposes set forth.

3. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth in which said box is placed, a spring-actuated sliding bolt in said alarm-box, arranged to engage with the door of said box and lock the same, and means between said bolt in the alarm-box and the door of said cage or booth, to cause the locked arrangement of said bolt when the door of the cage or booth is opened, and to cause the unlocked engagement of said bolt when said cage or booth door is closed, consisting, essentially, of an arm  $d$  on said door, pulley or other grooved wheels arranged in said cage or booth, and a flexible connection passing over said wheels and attached to

said arm  $d$  and to said bolt, substantially as and for the purposes set forth.

4. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth in which said box is placed, a door connected with said cage or booth, a lock mechanism in said cage or booth normally in its disengaged relation with said door, and an electric circuit between said alarm-box and said lock mechanism to actuate said lock mechanism when the alarm-box door is opened, substantially as and for the purposes set forth.

5. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth in which said box is placed, a door connected with said cage or booth, a lock mechanism in said cage or booth normally in its disengaged relation with said door, and an electric circuit between said alarm-box and said lock mechanism to actuate said lock mechanism when the alarm-box door is opened, said lock mechanism comprising, an electromagnet in said circuit, a pivoted arm  $l'$  forming the armature of said magnet, and a pivoted and spring-actuated bolt normally in holding engagement with said arm  $l'$ , but released therefrom when said arm is attracted by the magnet, substantially as and for the purposes set forth.

6. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth in which said box is placed, a door connected with said cage or booth, a lock mechanism in said box, means between said lock mechanism and said door, to actuate said lock mechanism when the door of the cage or booth is opened and thereby lock the door of the fire-alarm box, but unlocking the same when the cage or booth door is closed, a second lock mechanism in said cage or booth, normally in its disengaged relation with said door, and an electric circuit between said alarm-box and said lock mechanism to actuate the same when the alarm-box door is opened, substantially as and for the purposes set forth.

7. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth in which said box is placed, a door connected with said cage or booth, a lock mechanism in said box, means between said lock mechanism and said door, to actuate said lock mechanism when the door of the cage or booth is opened and thereby lock the door of the fire-alarm box, but unlocking the same when the cage or booth door is closed, a second lock mechanism in said cage or booth, normally in its disengaged relation with said door, and an electric circuit between said alarm-box and said lock mechanism to actuate the same when the alarm-box door is opened, said lock mechanism comprising, an electromagnet in said circuit, a pivoted arm  $l'$  forming the armature of said magnet, and a pivoted and spring-actuated bolt normally in holding en-



gagement with said arm *l'*, but released therefrom when said arm is attracted by the magnet, substantially as and for the purposes set forth.

5 8. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth in which said box is placed, a door connected with said cage or booth, a spring-actuated sliding bolt in  
10 said alarm-box, arranged to engage with the door of said box and lock the same, means between said bolt in the alarm-box and the door of said cage or booth, to cause the locked arrangement of said bolt when the door of the  
15 cage or booth is opened, and to cause the unlocked arrangement of said bolt when said cage or booth door is closed, a second lock mechanism in said cage or booth, normally in its disengaged relation with said door of the  
20 cage or booth, and an electric circuit between said alarm-box and said lock mechanism to actuate the same when the alarm-box door is opened, substantially as and for the purposes set forth.

25 9. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth in which said box is placed, a door connected with said cage or booth, a spring-actuated sliding bolt in  
30 said alarm-box, arranged to engage with the door of said box and lock the same, means between said bolt in the alarm-box and the door of said cage or booth, to cause the locked arrangement of said bolt when the door of the  
35 cage or booth is opened, and to cause the unlocked arrangement of said bolt when said cage or booth door is closed, a second lock

mechanism in said cage or booth, normally in its disengaged relation with said door of the cage or booth, and an electric circuit between  
40 said alarm-box and said lock mechanism to actuate the same when the alarm-box door is opened, said lock mechanism comprising, an electromagnet in said circuit, a pivoted arm  
45 *l'* forming the armature of said magnet, and a pivoted and spring-actuated bolt normally in holding engagement with said arm *l'*, but released therefrom when said arm is attracted by the magnet, substantially as and  
50 for the purposes set forth.

10. In a means for preventing tampering with fire-alarm boxes, the combination, with an alarm-box, of a cage or booth A, consisting, essentially, of sheet-metal sides and a  
55 door, a pair of plates *a*<sup>14</sup> and *a*<sup>15</sup> forming a chamber A<sup>2</sup>, a partition *g*, between the top of said fire-alarm box and the lower of said plates, a lock mechanism in said alarm-box, and means between said lock mechanism and  
60 the door of the cage or booth, to actuate said lock mechanism when the door of said cage or booth is opened and thereby lock the door of said alarm-box, and said actuating means being arranged between said plates *a*<sup>14</sup> and *a*<sup>15</sup>  
65 and behind said partition *g*, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 15th day of March, 1899.

FREDERICK ELY.

Witnesses:

FREDK. C. FRAENTZEL,  
WALTER H. TALMAGE.