

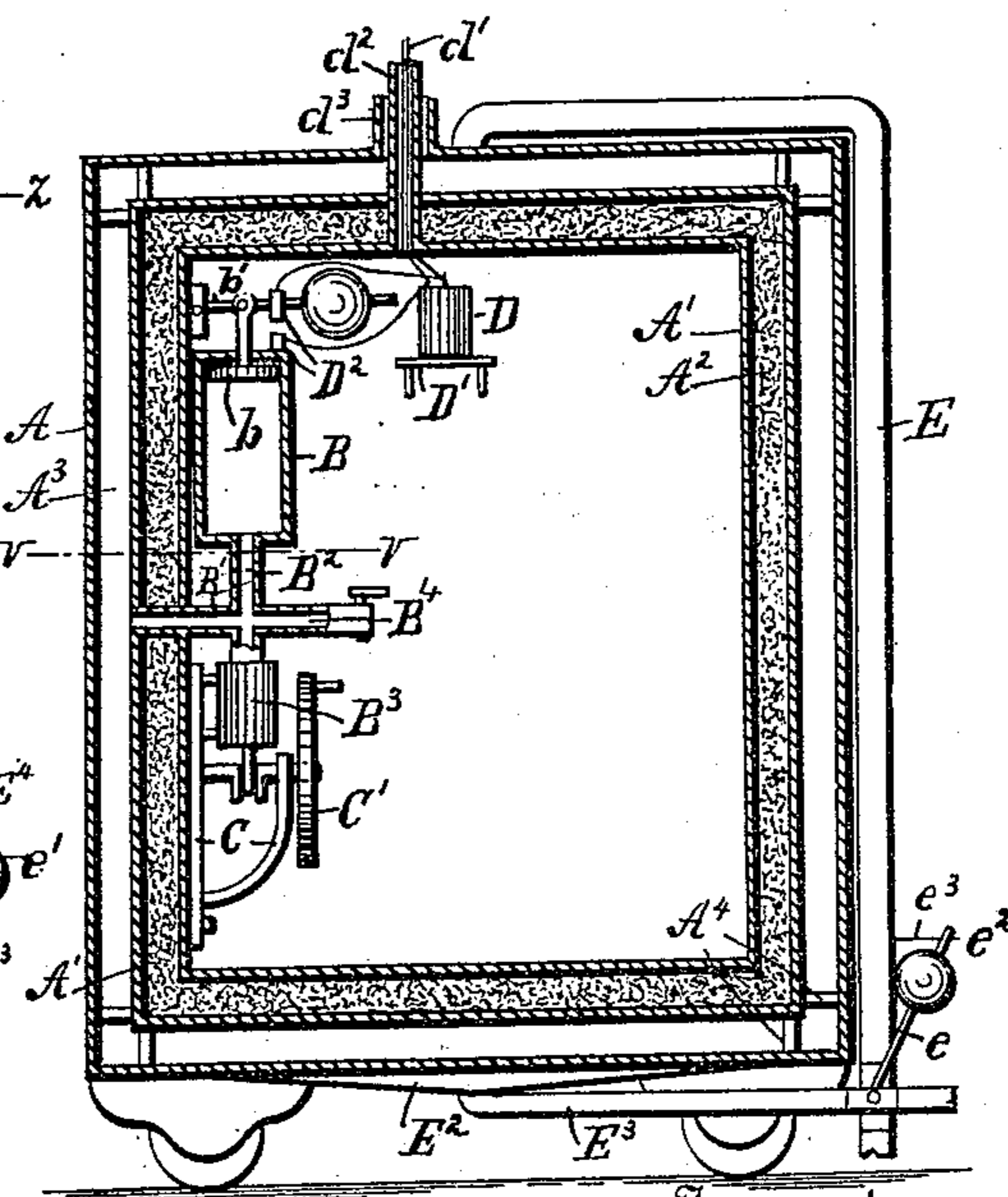
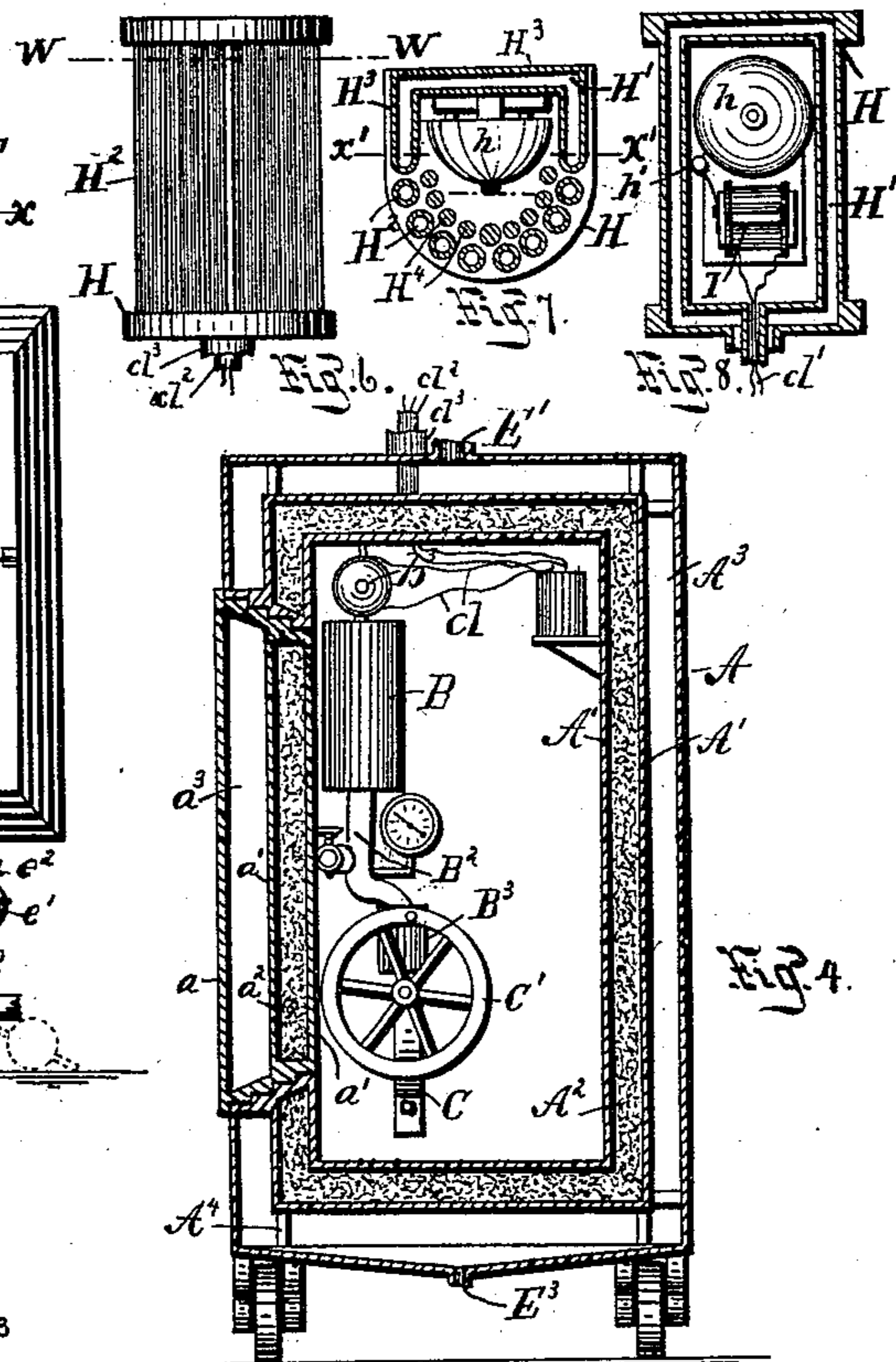
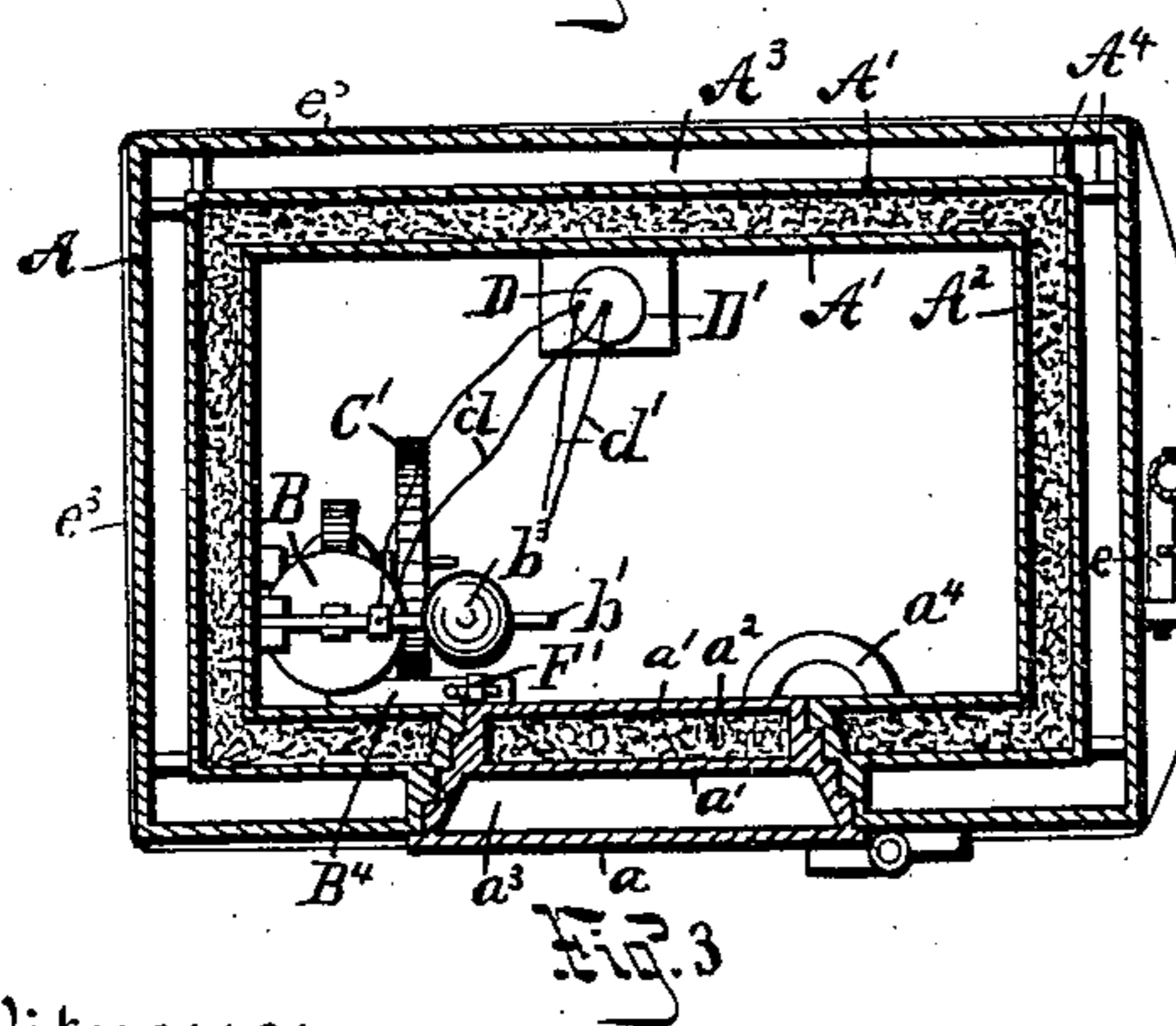
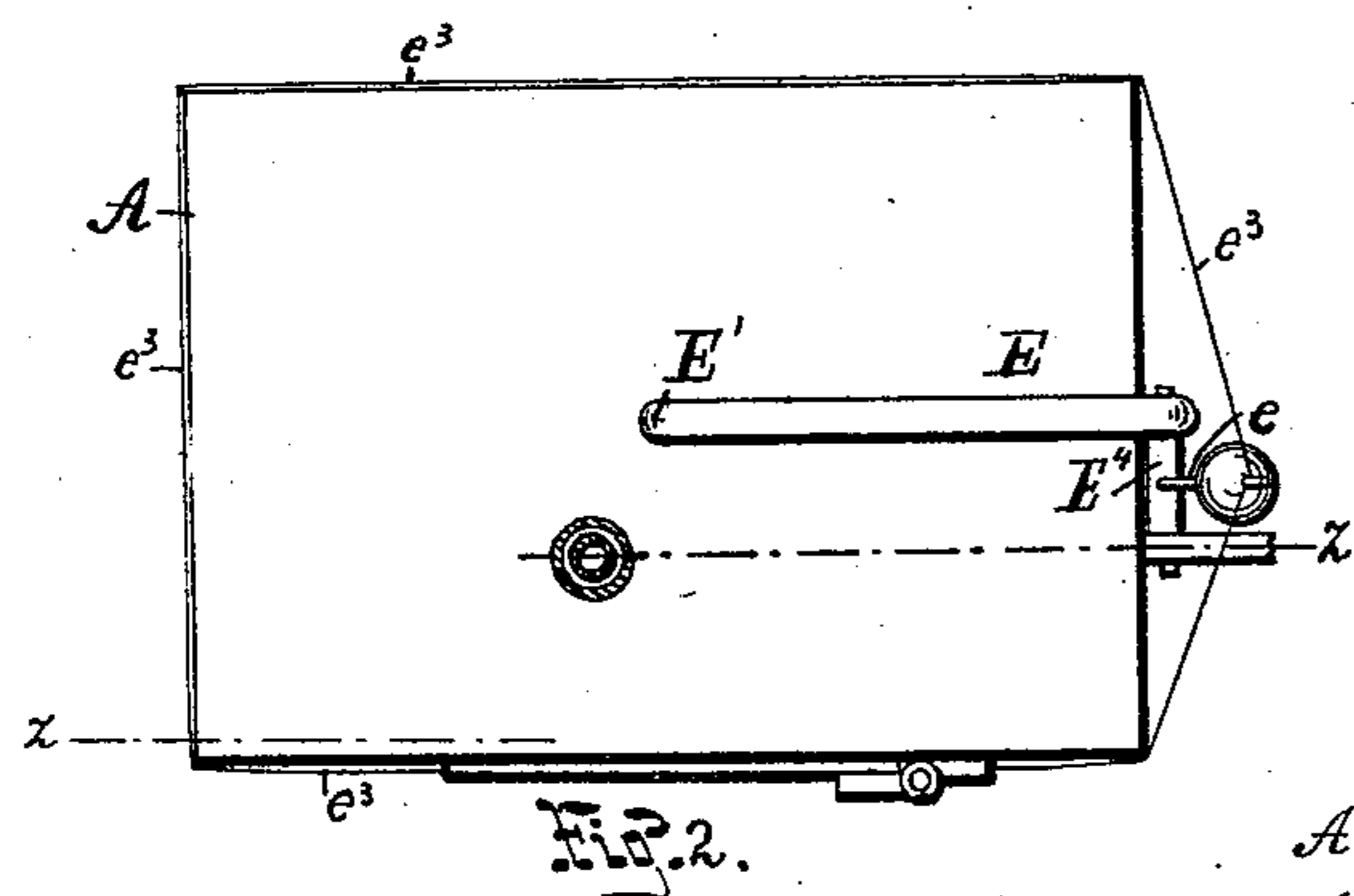
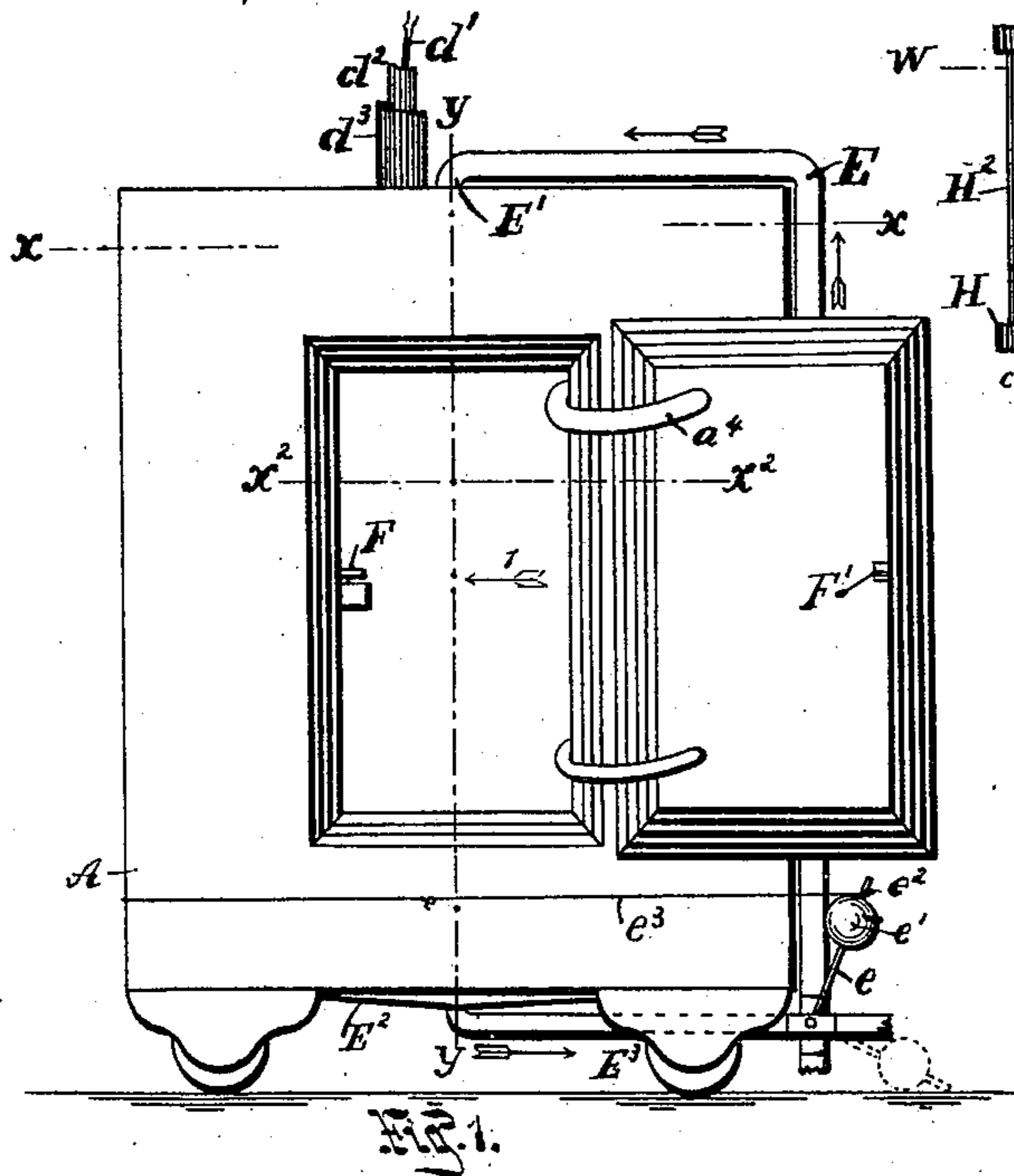
(No Model.)

2 Sheets—Sheet 1.

D. M. ROTHENBERGER.  
BANK SAFE.

No. 523,946.

Patented July 31, 1894.



Witnesses  
A. B. Hambright  
Ella L. Gerhart.

Inventor  
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By Attorney  
Wm. R. Gerhart

(No Model.)

2 Sheets—Sheet 2.

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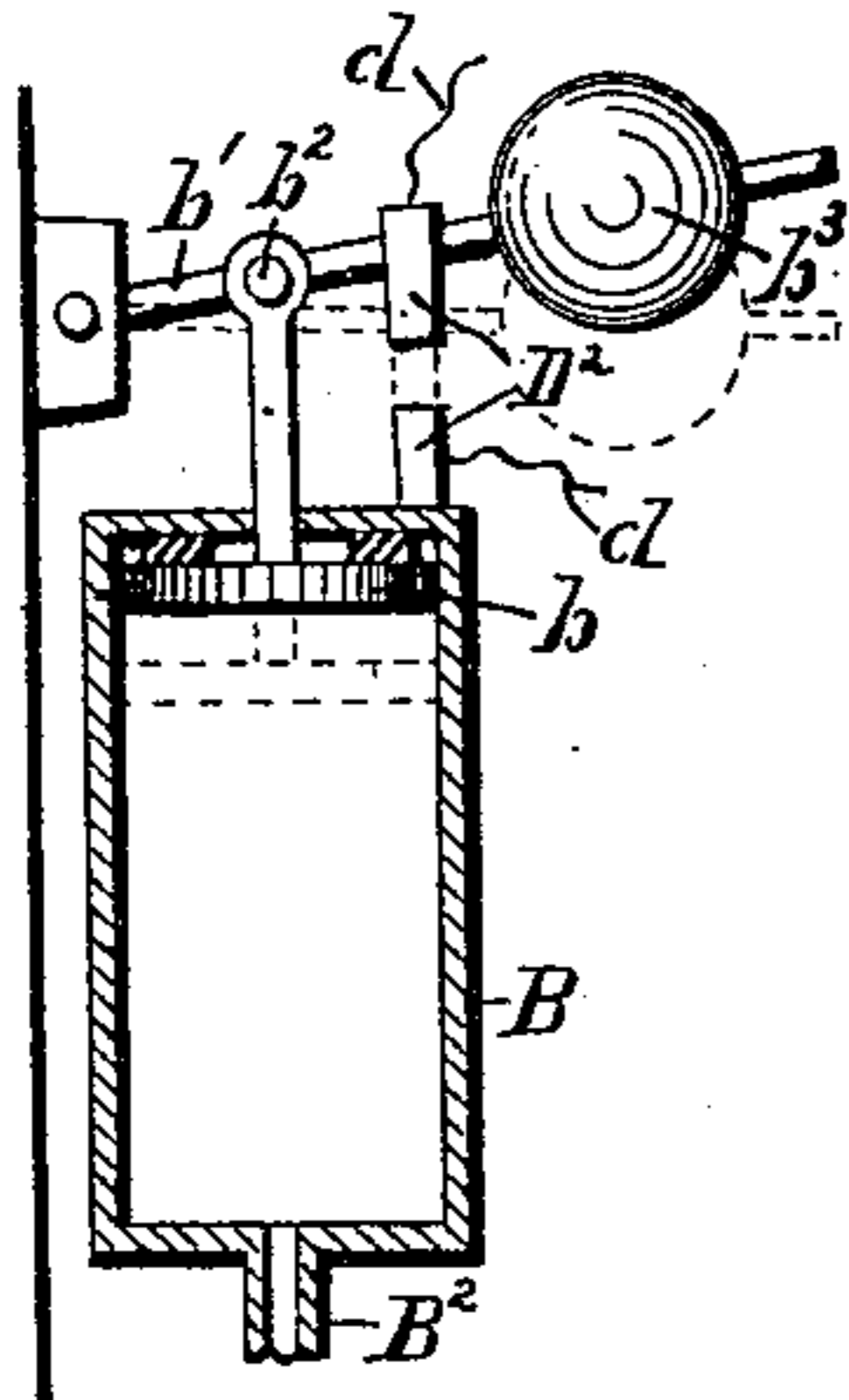


Fig. 11.

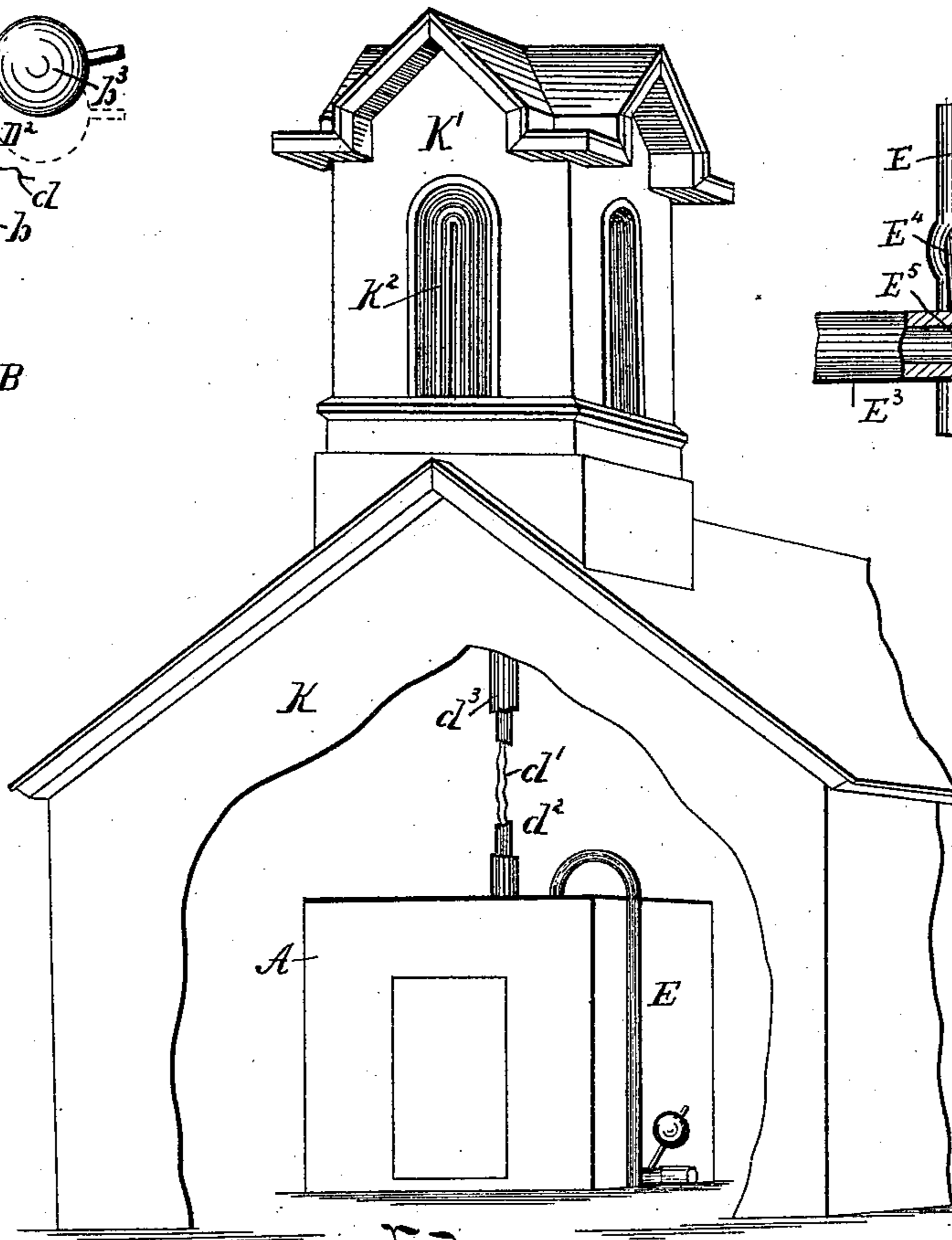


Fig. 14.

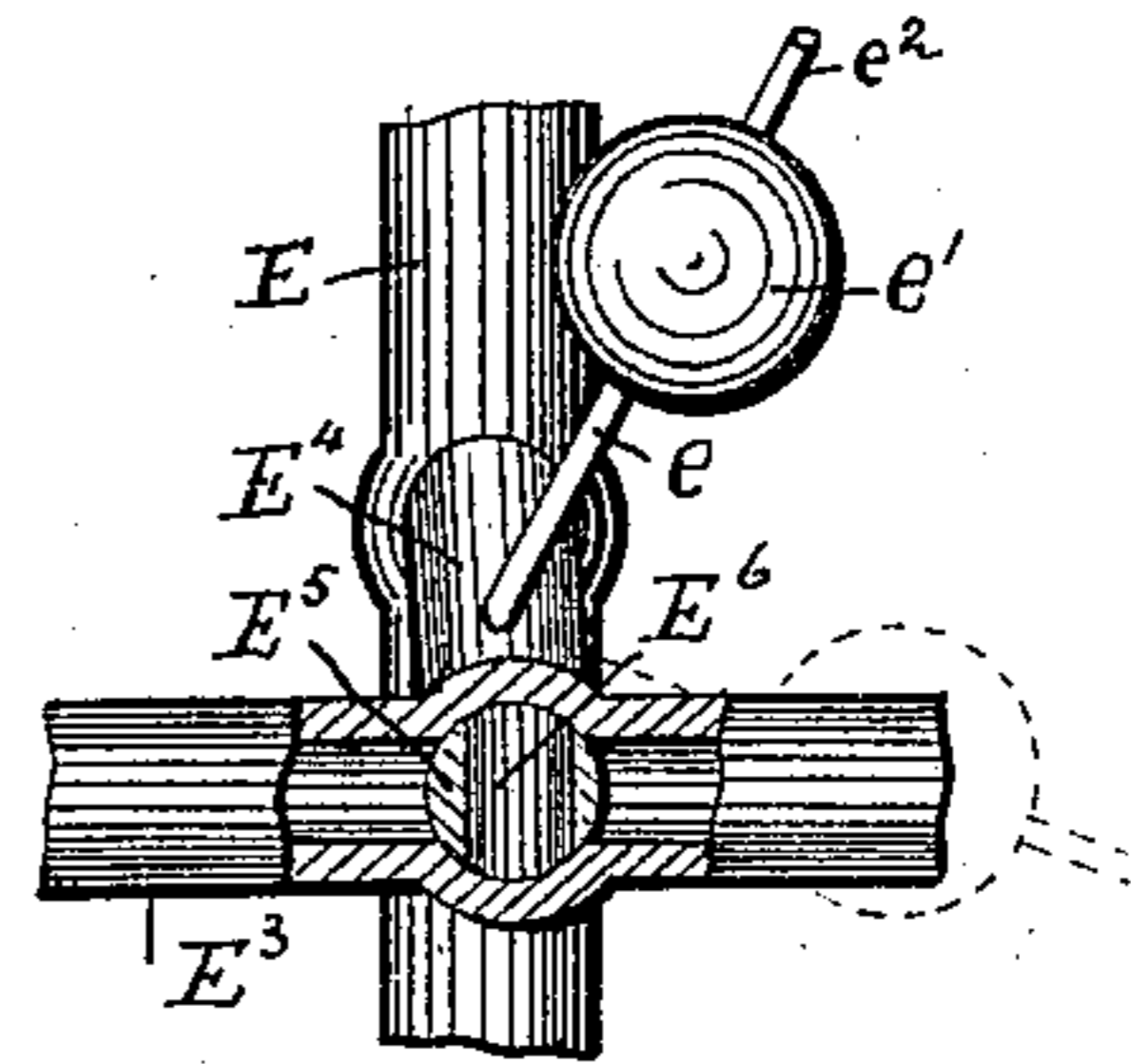


Fig. 15.

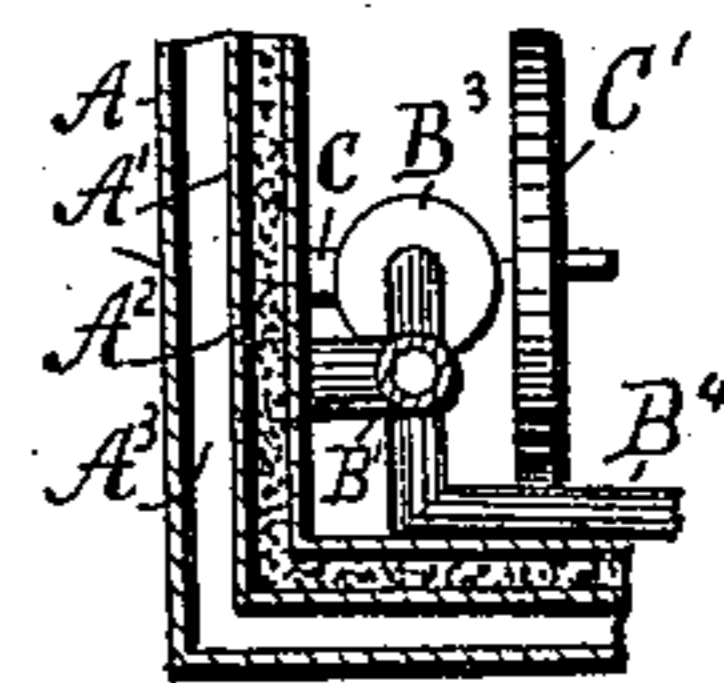


Fig. 16.

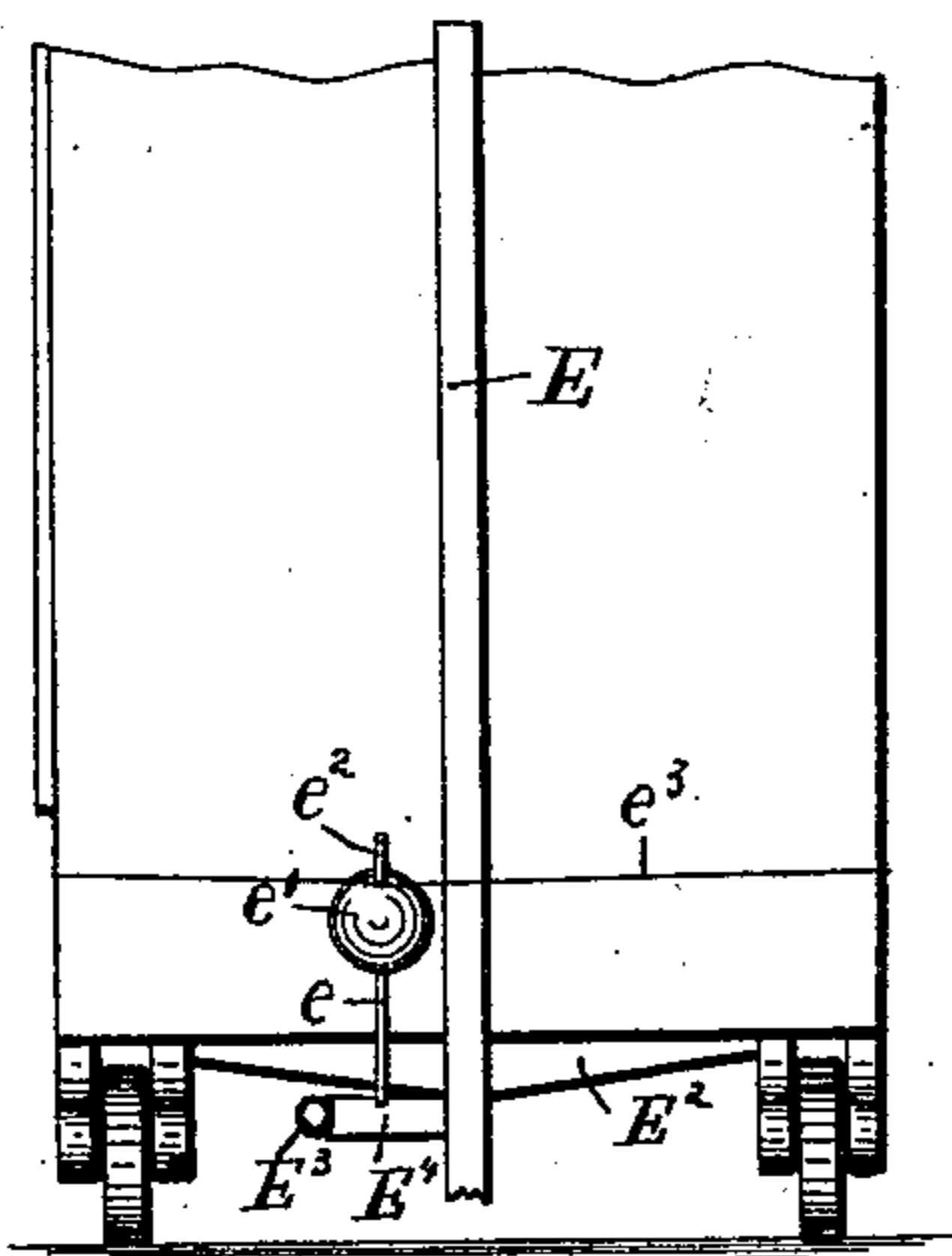


Fig. 9.

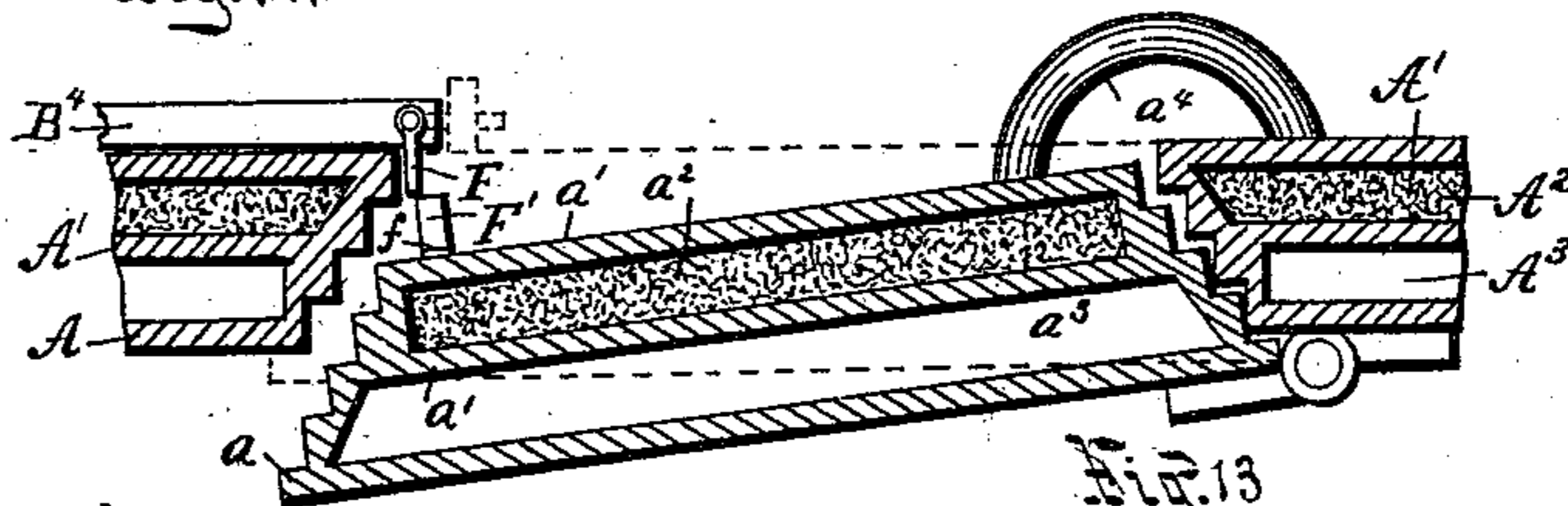


Fig. 13.

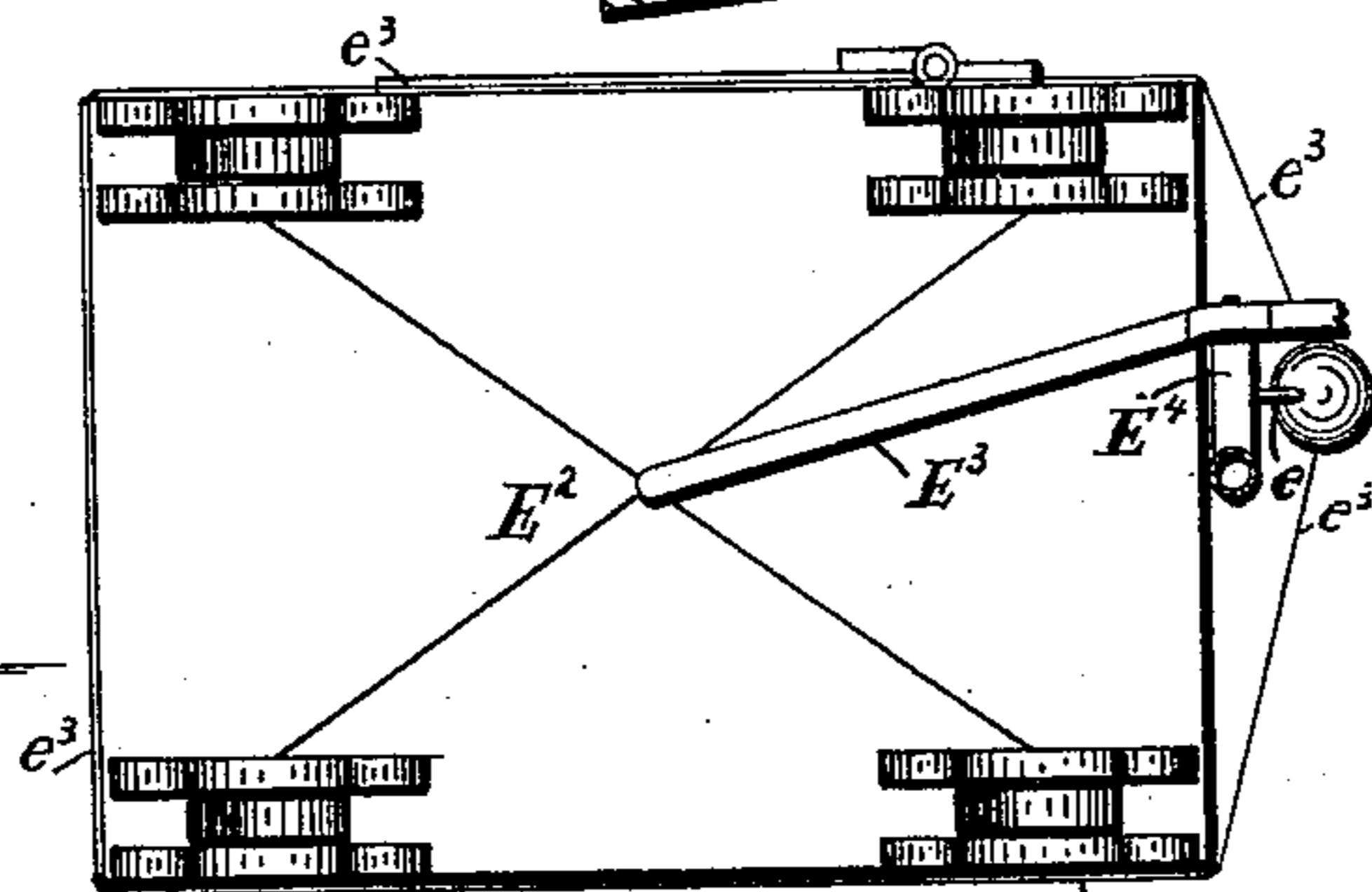


Fig. 10.

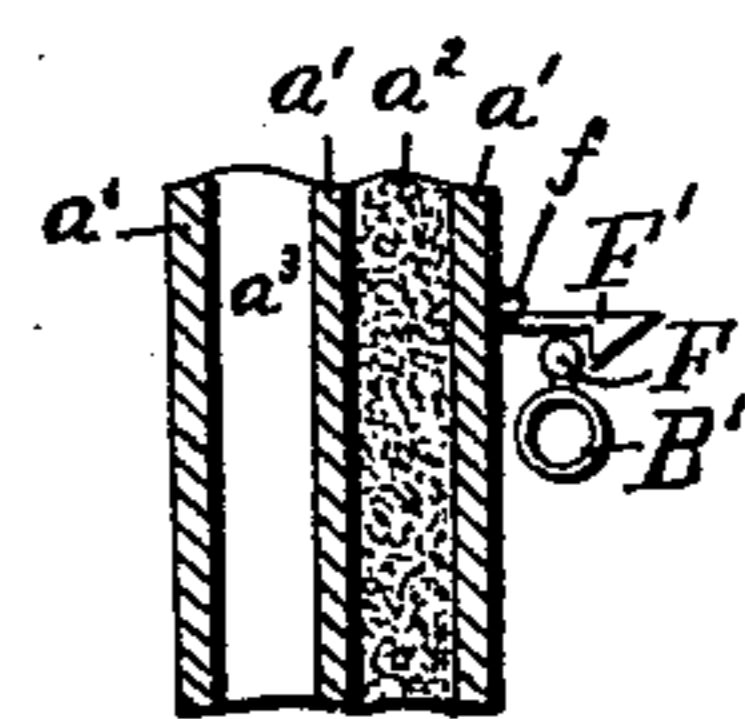


Fig. 12.

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# UNITED STATES PATENT OFFICE.

DANIEL M. ROTHENBERGER, OF LANCASTER, PENNSYLVANIA, ASSIGNOR  
OF ONE-HALF TO JACOB B. RUSSEL, OF SAME PLACE.

## BANK-SAFE.

SPECIFICATION forming part of Letters Patent No. 523,946, dated July 31, 1894.

Application filed May 17, 1893. Serial No. 474,558. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL M. ROTHENBERGER, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain Improvements in Bank-Safes, of which the following is a specification.

This invention relates to improvements in that class of devices designed to protect bank-safes, and is also applicable to the purpose of rendering prison-cells and other inclosed spaces secure.

The invention consists in surrounding the safe or other inclosure with a compressed-air chamber, in combination with means for sounding an alarm by reducing the air-pressure.

The invention further consists in the attachment to the safe of a device by which the air-pressure can be reduced in case of fire.

The invention also consists in the attachment of a device by which the air-chamber is flooded with water when approached by fire.

The invention consists, finally, in the construction and combination of various details, as hereinafter fully described, and then specifically pointed out in the claims.

My invention is illustrated in the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a front elevation of the safe, showing the door in an open position. Fig. 2 is a top plan view of the safe. Fig. 3 is a horizontal section on the line  $x-x$  of Fig. 1. Fig. 4 is a vertical section on the line  $y-y$  of Fig. 1, the door being closed and the parts viewed from the direction of arrow 1. Fig. 5 is a vertical section on the line  $z-z$  of Fig. 2. Fig. 6 is a front elevation of the alarm guard-case; Fig. 7, a horizontal section thereof on the line  $w-w$  of Fig. 6, and Fig. 8 a vertical section of the same on the line  $x'-x'$  of Fig. 7. Fig. 9 is an end view of the safe, showing an automatically acting device for flooding the inner wall of the safe with water. Fig. 10 is a bottom plan view of the safe. Fig. 11 is an enlarged vertical section of the air-cylinder. Fig. 12 is an enlarged side view of the connection between the door and the air-chamber, the walls of the safe being shown in section. Fig. 13 is an enlarged horizontal

section of the safe-door on the line  $x^2-x^2$  of Fig. 1, showing the connections between it and the air-chamber and the door partly open. Fig. 14 is an elevation of a bank-vault, the front being cut away to show the safe. Fig. 15 is an enlarged perspective view of the device for opening the feed and escape water-pipes. Fig. 16 is a top view of the pipes connecting the air-chamber with the air-cylinder and the door, taken on line  $v-v$  of Fig. 5.

Similar letters indicate like parts throughout the several views.

Referring to the details of the drawings, A indicates the outer wall of the safe, that entirely incloses the same and between which and the inner wall there is formed a compressed air chamber  $A^3$ , extending all around the top, sides and bottom of the inner wall. This inner wall is composed of two continuous parallel plates  $A'$ , having a space between them filled with asbestos, ashes or other nonconducting substance  $A^2$ . The width of the air-chamber is maintained by struts or braces  $A^4$ , interposed between the outer and inner walls of the safe. The bottom of the outer wall slopes downward on all sides from the edges toward the center, as shown in Figs. 4, 5, 9 and 10. The door is constructed in the same manner, having an outer wall  $a$ , an inner wall formed of plates  $a'$  with a space between them filled with noncombustible material  $a^2$ , and a compressed-air chamber  $a^3$ , connected with the air chamber surrounding the body of the safe by internally located flexible tubes  $a^4$ , shown in Figs. 1, 3 and 13.

B designates an air-cylinder located in the interior of the safe, the bottom of which is connected by a pipe  $B^2$  with a pipe  $B'$ , passing through the inner wall into the air-chamber  $A^3$  and having a branch pipe  $B^4$  extending to the door.

Below the pipe  $B'$  is an air-pump  $B^3$ , connected therewith and supported by a bracket C, the air-pump being operated by a crank-wheel  $C'$ . In the upper end of air-cylinder B is placed a piston head  $b$ , the rod of which passes up through the top of said cylinder and has its upper end pivoted to a lever  $b'$  at  $b^2$ , said lever being hinged to the inner wall of the safe and having a weight  $b^3$  on its outer end.

Between weight  $b^3$  and the pivot  $b^2$  a contact-block  $D^2$  is attached to lever  $b'$  and adapted to engage a similar contact block on the top of cylinder B, as shown in Fig. 11.

5 These contact blocks are connected with an electric-battery D, supported in the safe on a bracket  $D'$ , by wires  $d$ , and said battery is also connected with an alarm gong through an electro-magnet by wires  $d'$  and sounds the  
10 same when the circuit is closed by the meeting of contact-blocks  $D^2$ .

A pipe  $d^2$ , opening into the interior of the safe, extends to and enters the interior of the guard-case H, in which the alarm gong is  
15 placed, and is surrounded by a pipe  $d^3$ , opening into the air-chamber  $A^3$  of the safe and air-chamber  $H'$  of said guard-case H, there being an air-space left between pipes  $d^2$  and  $d^3$ .

The different air-pipes may, if preferable,  
20 be made of combustible material. The air-chamber  $H'$  extends over the entire top and bottom of guard-case H and through the side walls  $H^3$  of the same. Pipes  $H^2$  are arranged in front of the alarm-gong  $h$  and open into  
25 the top and bottom of air-chamber  $H'$ , and inside of and opposite the openings between pipes  $H^2$  are vertical rods  $H^4$ . Wires  $d'$  connect with the electro-magnet I, from which clapper  $h'$  is actuated. This construction of  
30 guard-case H facilitates the escape of the sound of gong  $h$  therefrom and prevents access to it.

To prevent over heating of the inner wall of the safe in case of fire there is a water feed  
35 pipe E running up one end of the safe and across the top to about the center  $E'$  thereof, where it enters air-chamber  $A^3$ . When fed into said air-chamber the water passes over and down the sides of the inner wall of the  
40 safe and is received in the depressed outer bottom  $E^2$ , whence it is conveyed by escape-pipe  $E^3$ . Pipes E and  $E^3$  are opened and closed simultaneously by a spigot common to  
45 both and consisting of a solid cylinder  $E^4$ , one end,  $E^5$ , of which engages the escape-pipe  $E^3$  and has a transverse perforation  $E^6$  through it, as shown in Fig. 15. The other end enters feed-pipe E and has a perforation therein similar to  $E^5$ , but at right angles therewith.

50 Cylinder  $E^4$  has attached thereto a lever-rod  $e$ , which, when the spigot is closed, extends upward therefrom at an angle with the end face of the safe, as shown in Figs. 5 and 15, and has a weight  $e'$  attached thereto. The  
55 free end  $e^2$  of the lever extends beyond the weight and is embraced by a combustible cord  $e^3$  that passes around the safe and holds said lever upright and the spigot in the position which closes pipes E and  $E^3$ .

60 Upon the approach of fire to the safe cord  $e$  is severed and weight  $e'$  drops, turning the spigot and opening pipes E and  $E^3$ . The interior of pipe E is of greater diameter than pipe  $E^3$ , so that the chamber  $A^3$  may be gradually filled with water, pipe  $E^3$  allowing the  
65 gradual escape of the same and of the steam generated therefrom.

The free end of branch-pipe  $B^4$  is open and has a cock therein operated by a crank-handle F. This handle is engaged by a catch or  
70 hook  $F'$  hinged to the inner side of the door at  $f$ . In opening the door of the safe, the cock is also opened by the engagement of hook  $F'$  with crank F, as shown in Fig. 13, thus permitting the escape of the compressed  
75 air in chamber  $A^3$ . Before closing the door again crank-handle F is turned so as to close the cock and when the door is pushed to the catch or hook  $F'$  takes over said crank-handle automatically by reason of the bevel on  
80 the lower side of its free end, shown in Fig. 12.

In Fig. 14, one of my safes is shown located in a vault K, the alarm-gong being placed in the tower  $K'$ , the windows  $K^2$  of which are  
85 protected by air-pipes connected with pipe  $d^3$  in any manner similar or equivalent to the means for connecting the air-pipes  $H^2$  with the air-chamber  $H'$  of guard-case H.

In operating, all outlets from air-chamber  $A^3$  being closed, said chamber is filled with  
90 compressed air by means of an air-pump  $B^3$ , thereby raising piston-head  $b$  and breaking connection between contact-blocks  $D^2$ . Opening the door of the safe or puncturing the outer wall of chamber  $A^3$  or any of the air-  
95 pipes connected therewith, permits the escape of the compressed air, when weight  $b^3$  forces down piston-head  $b$  and closes the circuit between contact-blocks  $D^2$ , thereby sounding the alarm.

100 As will be readily understood, the guard-case with the alarm-gong therein can be located in any convenient or desirable place, and connected with air-chamber  $A^3$  by pipes  
105  $d^2$  and  $d^3$ .

No particular construction of air-pump and source from which electricity is obtained are shown and described, as such construction  
110 forms no part of the invention and any well known forms of these devices can be employed. As will readily be seen, the escape pipe  $E^3$  may be used simply as an escape for the compressed air in case of fire and the flooding of the air-chamber be dispensed with.

In case of the application of my device to  
115 prison cells or other similar inclosures, the electric-battery, air-pump, and the mechanism connected therewith are placed on the outside thereof, and the air-chamber is located inside of the fire-proof walls.

I do not confine myself to the details of construction herein shown and described, as it is  
120 obvious that many changes may be made therein without departing from the principle of my invention; neither do I restrict myself  
125 to the location of the electric-battery and the air-pump within the safe, for they may be located outside the same if preferable.

Having thus described my invention, what I claim as new, and desire to secure by Letters  
130 Patent, is—

1. In a safe, the combination, with an air-chamber surrounding said safe, of an air-pump, a protected mechanism for generating

electricity, an alarm placed without the air-chamber of the safe and also surrounded by an air-chamber, wires forming a circuit between the source of electricity and the alarm, a jacket about said wires forming an air-passage between the different air-chambers, and a protected connection between the air-chamber of the safe and the mechanism for generating electricity, whereby a circuit is closed by forming an opening between said air-chamber and the outer air, substantially as and for the purpose specified.

2. In a safe, the combination, with an air-chamber surrounding said safe, of an air-pump and source of electricity located in the safe, an alarm placed outside of the safe and surrounded by an air-chamber, wires forming a circuit between the source of electricity and the alarm, a jacket about said wires forming an air passage between the air-chambers around the safe and the alarm, and a connection between the air-chamber of the safe and the source of electricity, whereby a circuit is closed by forming an opening between said air-chamber and the outer air, substantially as and for the purpose specified.

3. In a safe, the combination, with an air-chamber surrounding said safe, of an air-pump, a protected mechanism for generating electricity, an alarm placed without the air-chamber of the safe and protected by a case having an air-chamber formed above, below and behind it, and air-pipes in front of the alarm connecting the top and bottom of the air-chamber protecting said alarm, wires forming a circuit between the source of electricity and the alarm, a jacket about said wires forming an air-passage between the different air-chambers, and a protected connection between the air-chamber of the safe and the mechanism for generating electricity, whereby a circuit is closed by forming an opening between said air-chamber and the outer air.

4. In a safe, the combination, with an air-chamber surrounding said safe, of an air-pump, a protected mechanism for generating electricity, an alarm placed without the air-chamber of the safe and also surrounded by an air-chamber, wires forming a circuit between the source of electricity and the alarm, a combustible jacket about said wires forming an air-passage between the different air-chambers, and a protected connection between the air-chamber of the safe and the mechanism for generating electricity, whereby a circuit is closed by forming an opening between said air-chamber and the outer air, substantially as and for the purpose specified.

5. In a safe, the combination, with an air-chamber surrounding said safe, of a protected air-pump, a protected mechanism for generating electricity, an alarm placed without the air-chamber of the safe and also surrounded by an air-chamber, wires forming a circuit between the source of electricity and the alarm, a jacket about said wires forming an

air passage between the different air-chambers, and a protected connection between the air-chamber of the safe and the mechanism for generating electricity, whereby a circuit is closed by forming an opening between said air-chamber and the outer air, substantially as and for the purpose specified.

6. In a safe, the combination, with an air-chamber surrounding said safe, of an air-pump, a protected mechanism for generating electricity, an alarm placed without the air-chamber of the safe and surrounded by an air-chamber, wires forming a circuit between the source of electricity and the alarm, a jacket about said wires forming an air-passage between the different air-chambers, and a protected connection between the air-chamber of the safe and the mechanism for generating electricity, whereby a circuit is closed by forming an opening between said air-chamber and the outer air, the jacket and other air-pipes being formed of combustible material, substantially as and for the purpose specified.

7. In a safe, the combination, with an air-chamber surrounding said safe, of an alarm, a connection between the air-chamber and the alarm, whereby said alarm is sounded by forming an opening between the air-chamber and the outer air, an escape-pipe, as  $E^3$ , leading from the air-chamber, and an automatically opening spigot held in a position to close said pipe by a combustible cord passing around the safe, substantially as and for the purpose specified.

8. In a safe, the combination, with an air-chamber surrounding said safe, of an alarm, a connection between the air-chamber and the alarm, whereby said alarm is sounded by forming an opening between the air-chamber and the outer air, water supply and escape pipes opening into the air-chamber, and automatically opening cocks held in position to close said pipes by a combustible cord passing around the safe, substantially as and for the purpose specified.

9. In a safe, the combination, with an air-chamber surrounding said safe, of an alarm, a connection between the air-chamber and the alarm, whereby said alarm is sounded by forming an opening between the air-chamber and the outer air, water supply and escape pipes opening into the air-chamber, and an automatically opening cock common to the water-supply and escape pipes held in position to close said pipes by a combustible cord passing around the safe, substantially as and for the purpose specified.

10. In a safe, the combination, with an air-chamber surrounding said safe, of an alarm, a connection between the air-chamber and the alarm, whereby said alarm is sounded by forming an opening between the air-chamber and the outer air, and a connection between the air-chamber and the door of the safe adapted to form an opening between said air-chamber and the outer air by the opening of

said door, substantially as and for the purpose specified.

11. In a safe, the combination, with an air-chamber surrounding said safe, of an alarm,  
5 a connection between the air-chamber and the alarm, whereby said alarm is sounded by forming an opening between the air-chamber and the outer air, a cock closing a pipe leading into said air-chamber, and a hook on the door  
10 of the safe adapted to engage the handle of the cock and open the same when said door is opened, said hook being constructed to take over said handle when the cock is closed and the door is shut to, substantially as and for  
15 the purpose specified.

12. In a safe, the combination, with an air-chamber surrounding said safe, of an air-pump, a protected mechanism for generating electricity, an alarm placed without the air-

chamber of the safe and also surrounded by 20  
an air-chamber, wires forming a circuit between the source of electricity and the alarm, a jacket about said wires forming an air passage between the different air-chambers, a protected connection between the air-chamber of 25  
the safe and the mechanism for generating electricity, whereby a circuit is closed by forming an opening between said air chambers and the outer air, and an air pipe connected with the air-chamber having an open end 30  
closed by a cock adapted to be opened by a hook on the door when said door is opened, substantially as and for the purpose specified.

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