

M. R. UTLEY.

FUSE BOX.

(Application filed May 13, 1901.)

(No Model.)

2 Sheets—Sheet 1.

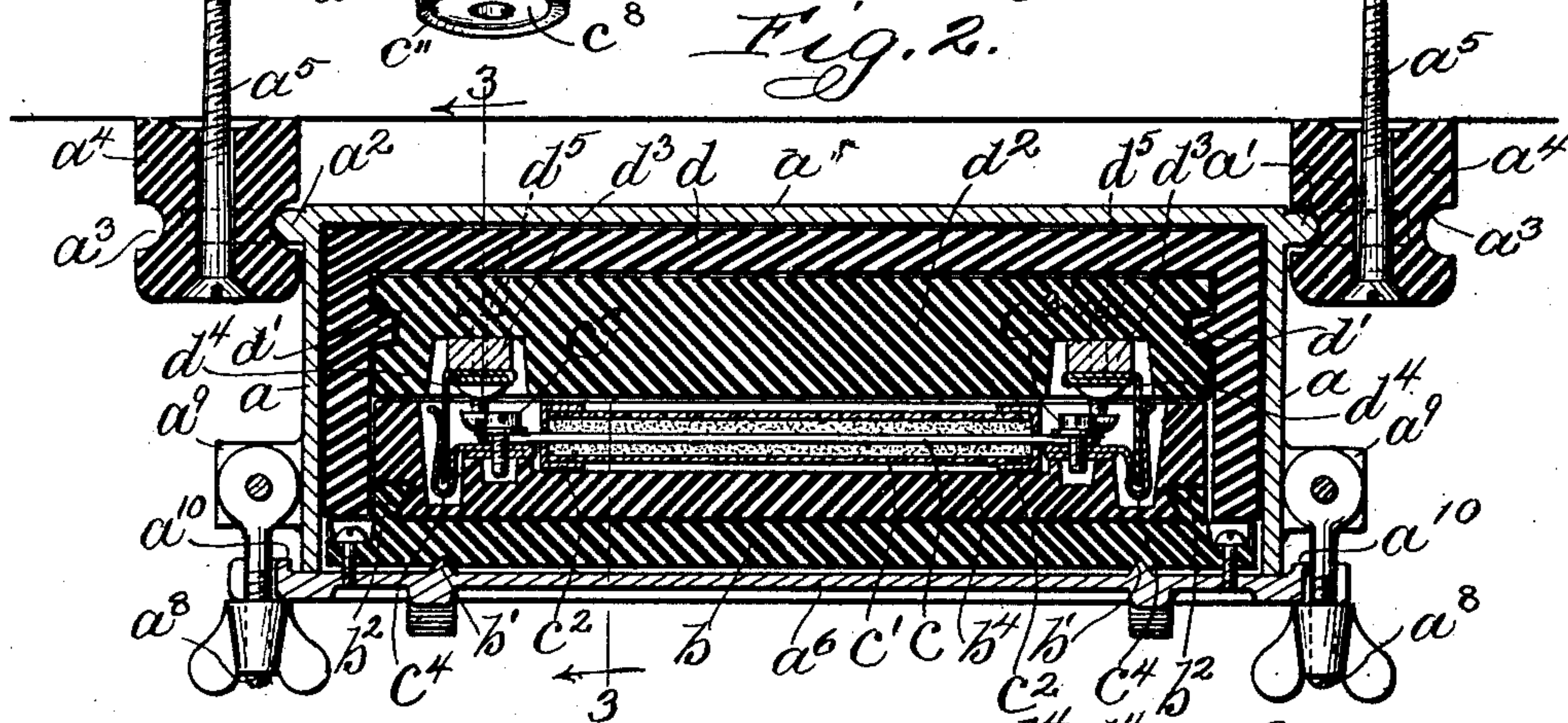
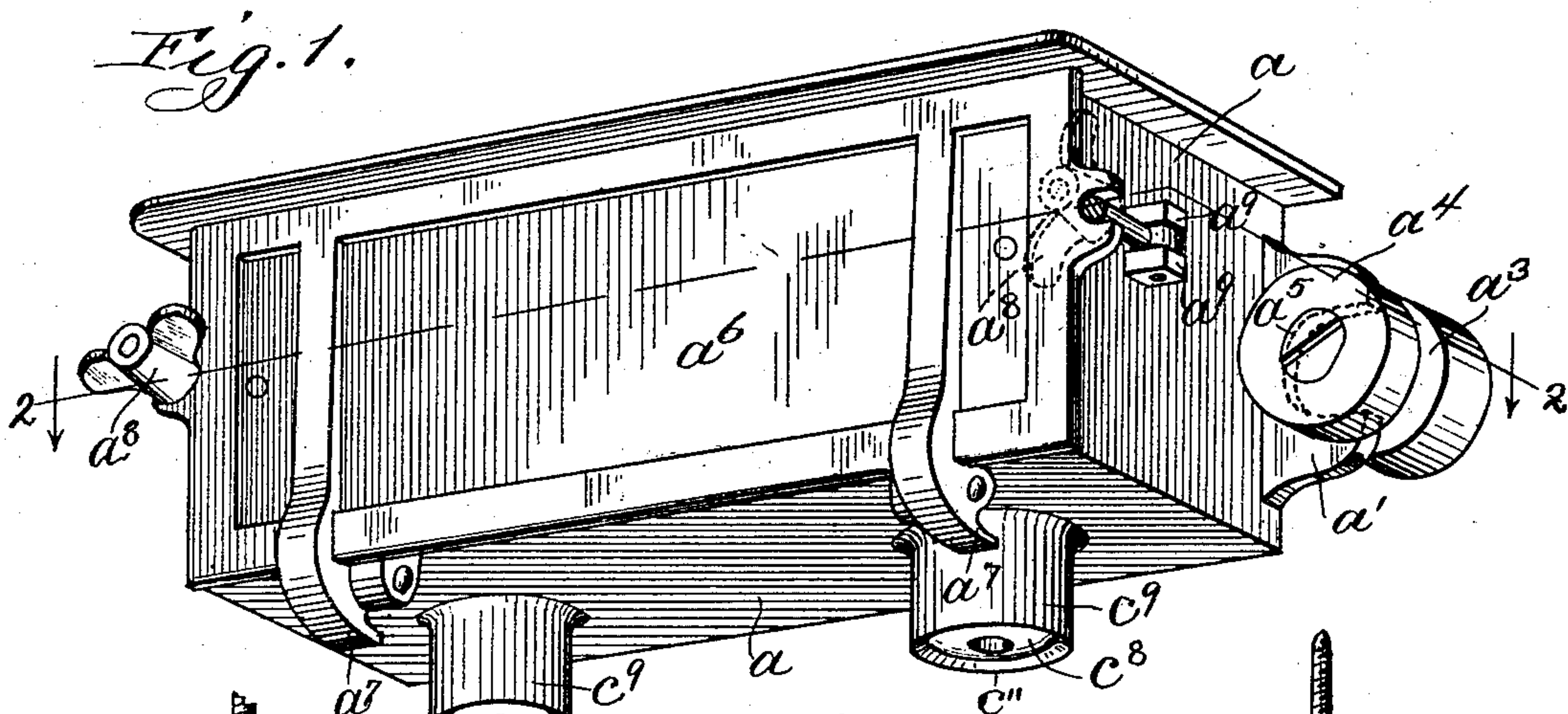
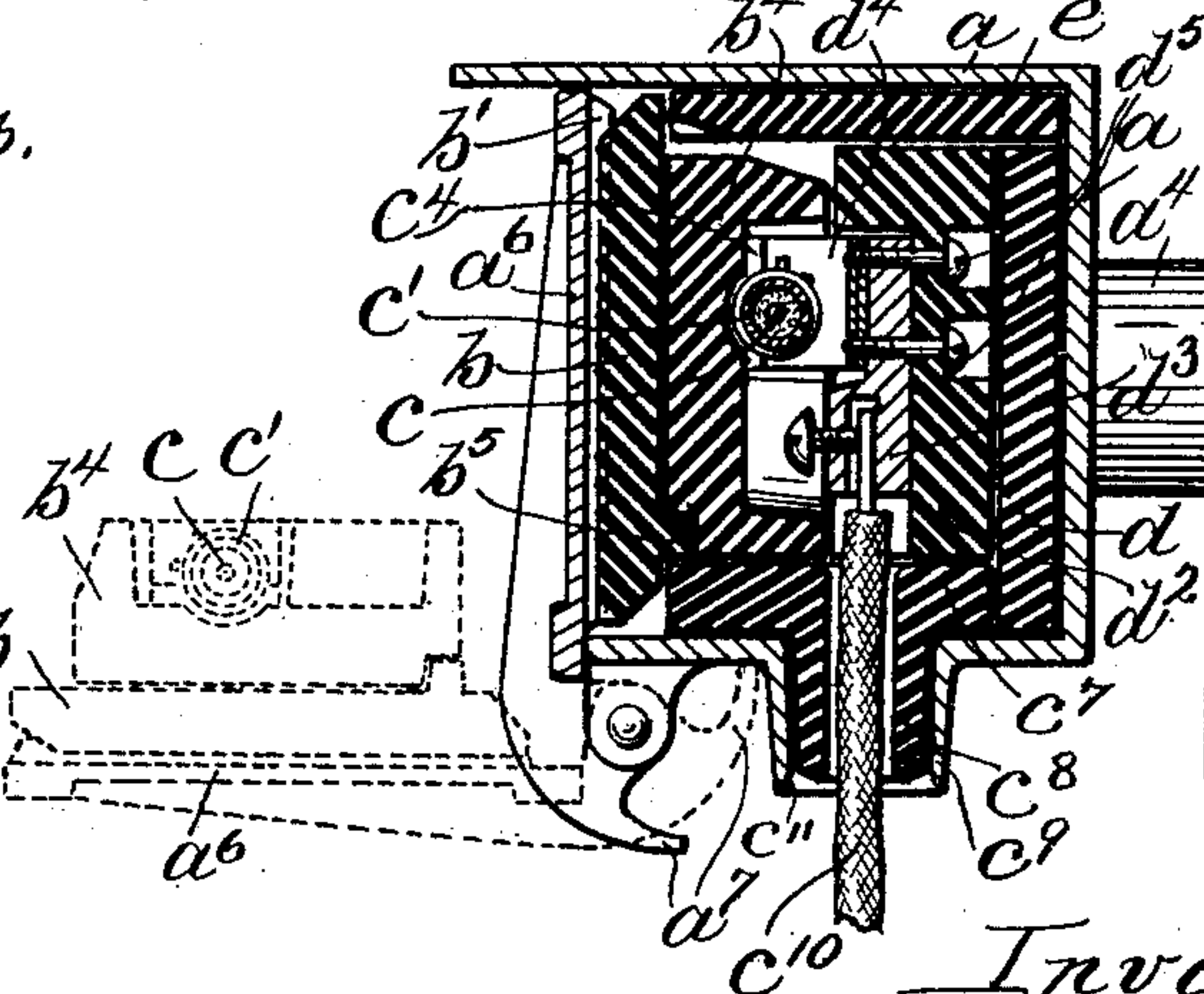
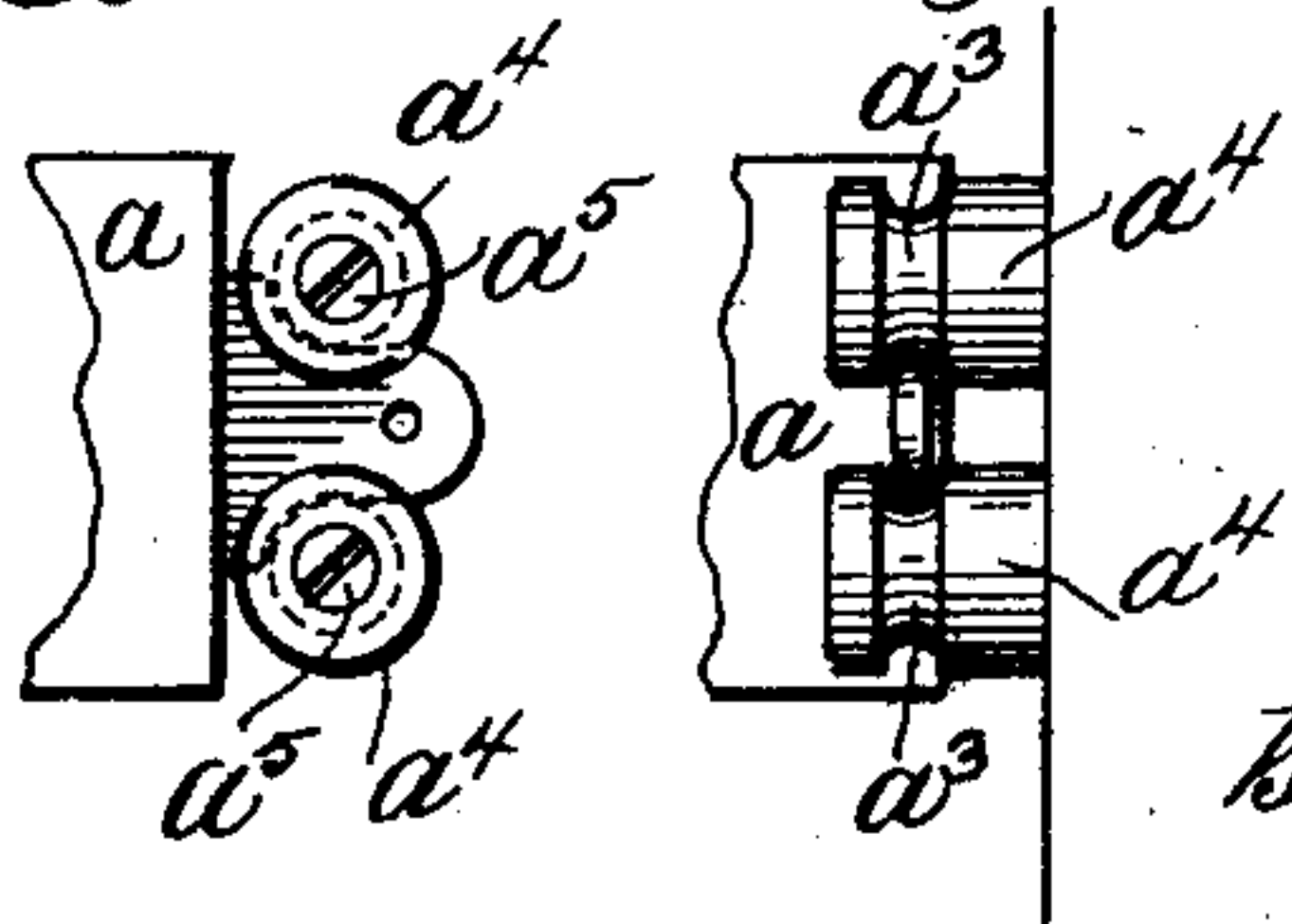


Fig. 3a. Fig. 3b.



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2 Sheets—Sheet 2.

Fig. 4.



Fig. 5.

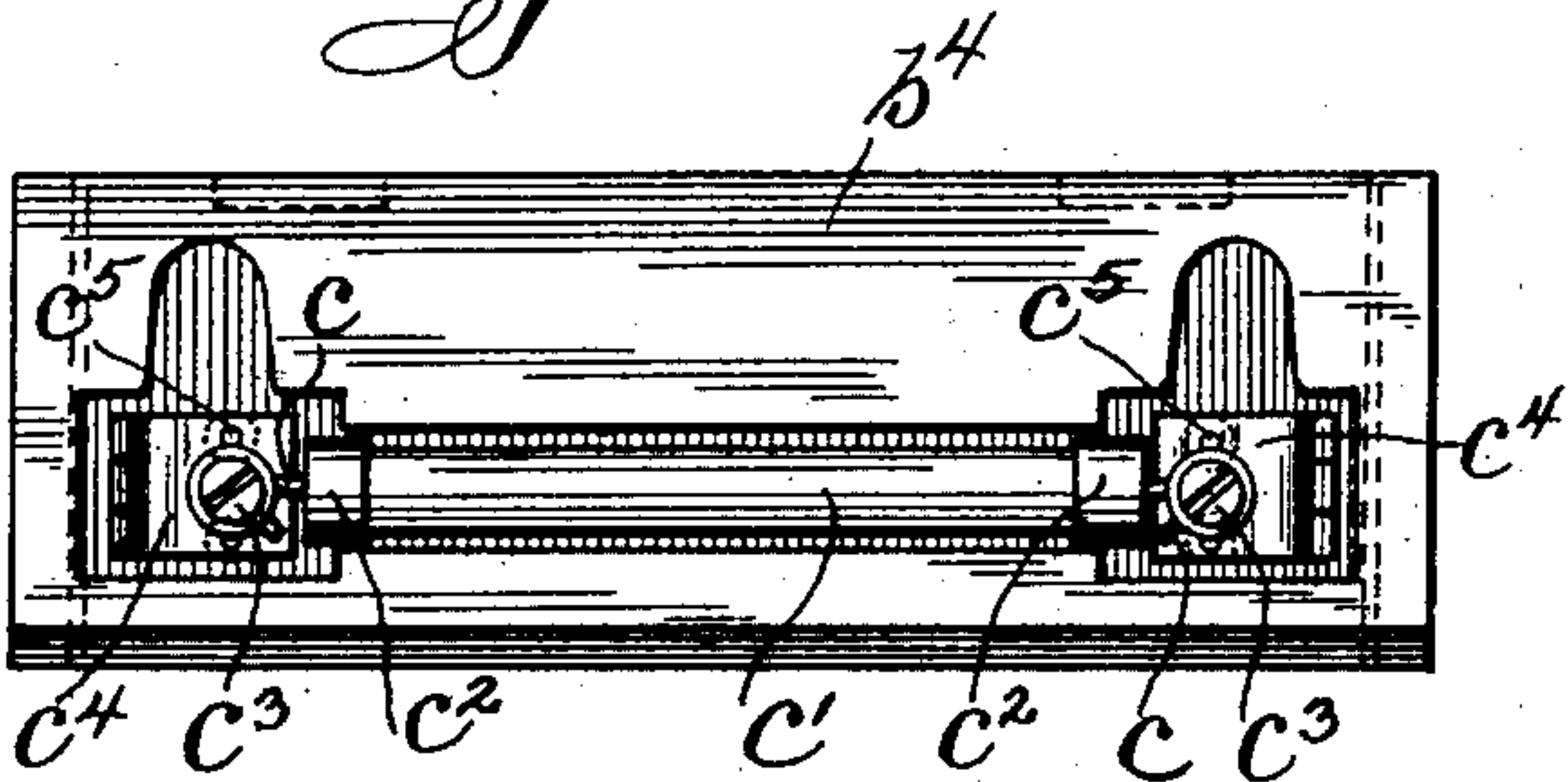


Fig. 6.

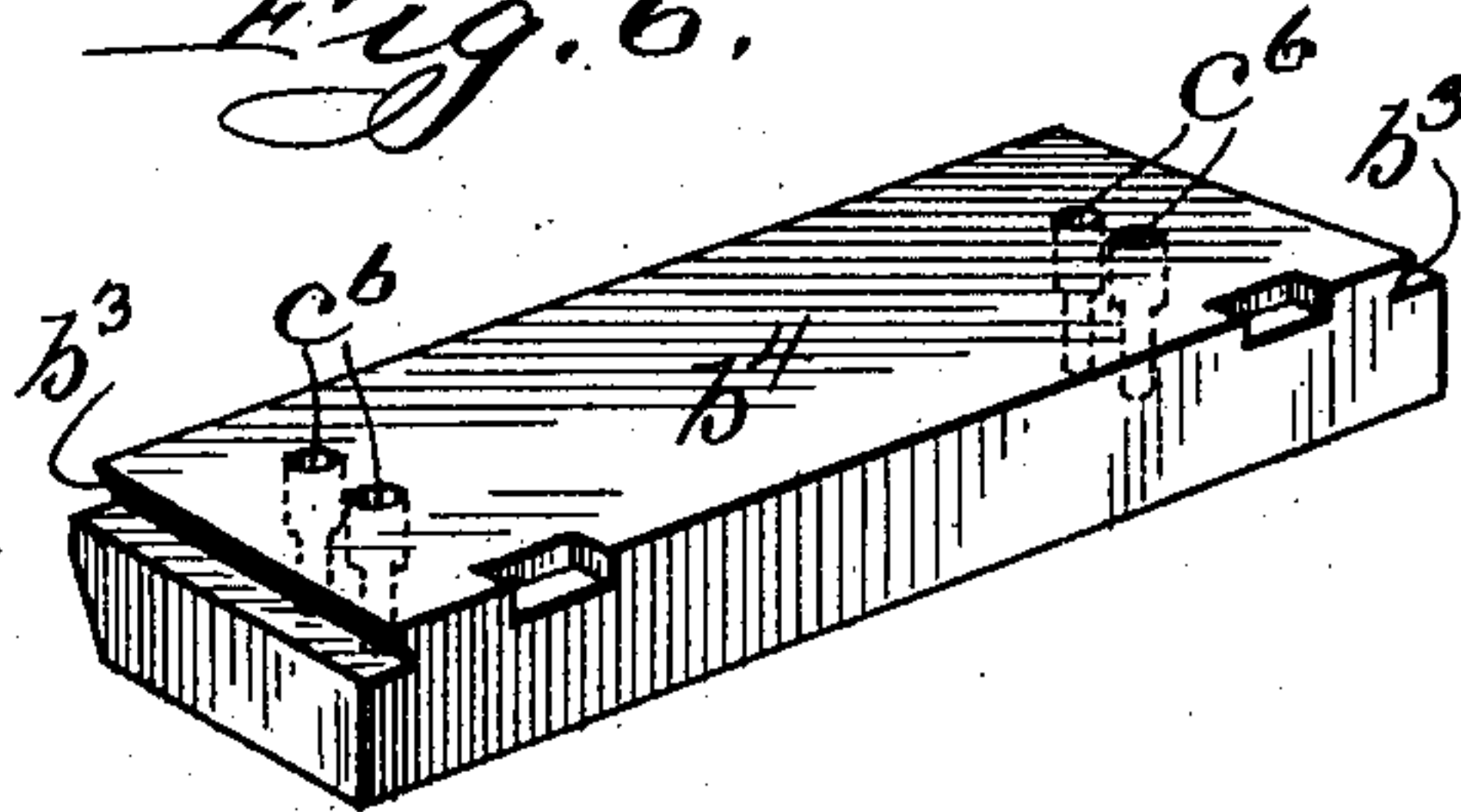


Fig. 7.

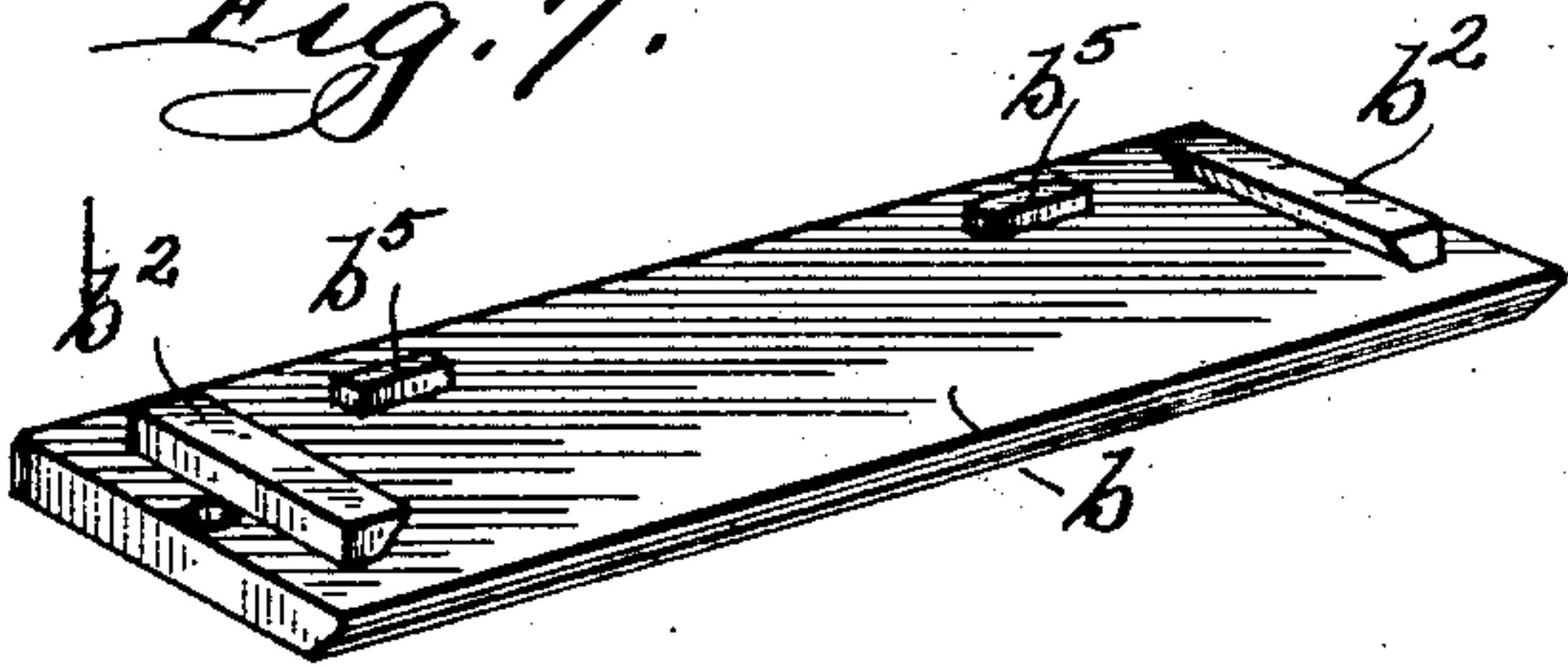


Fig. 8.

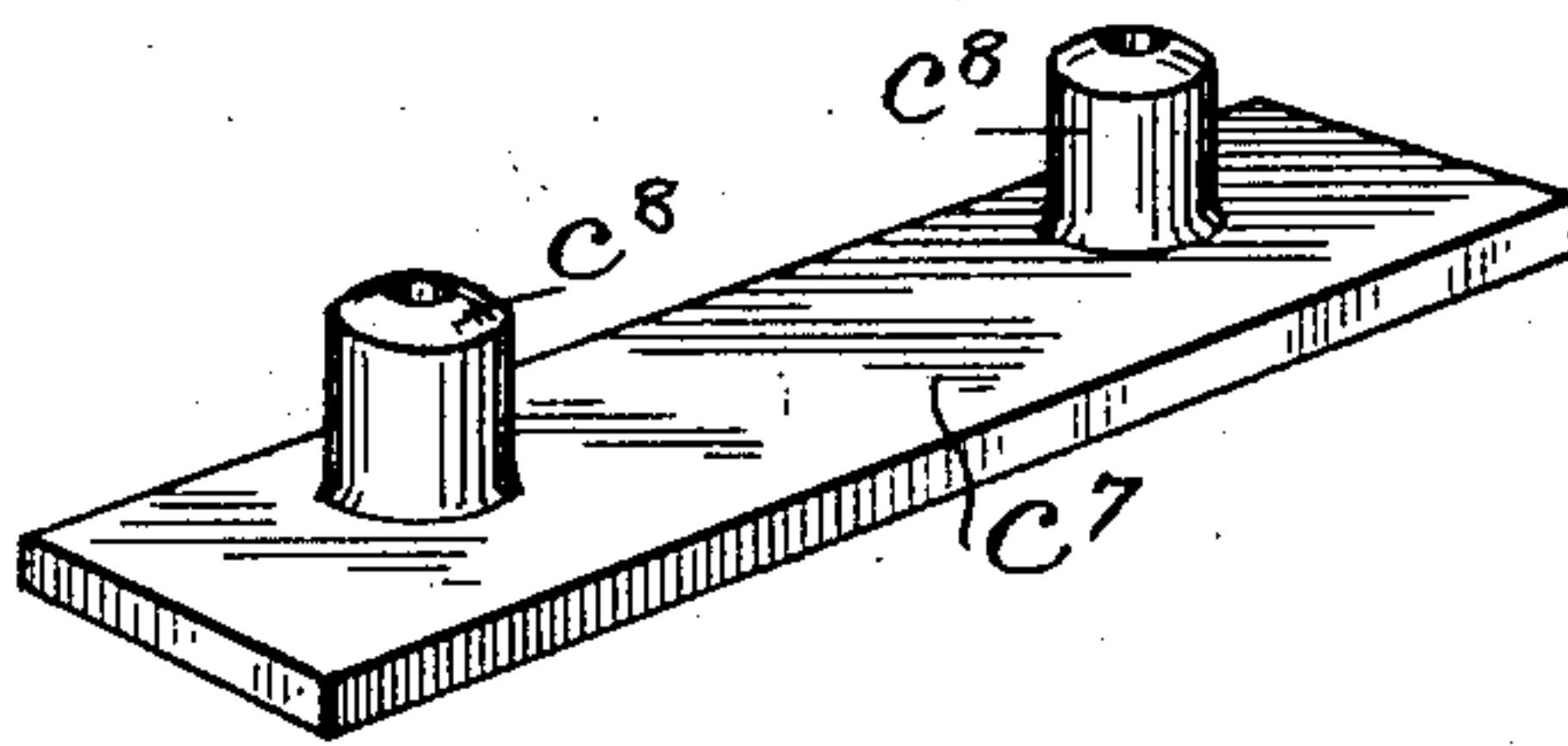


Fig. 9.

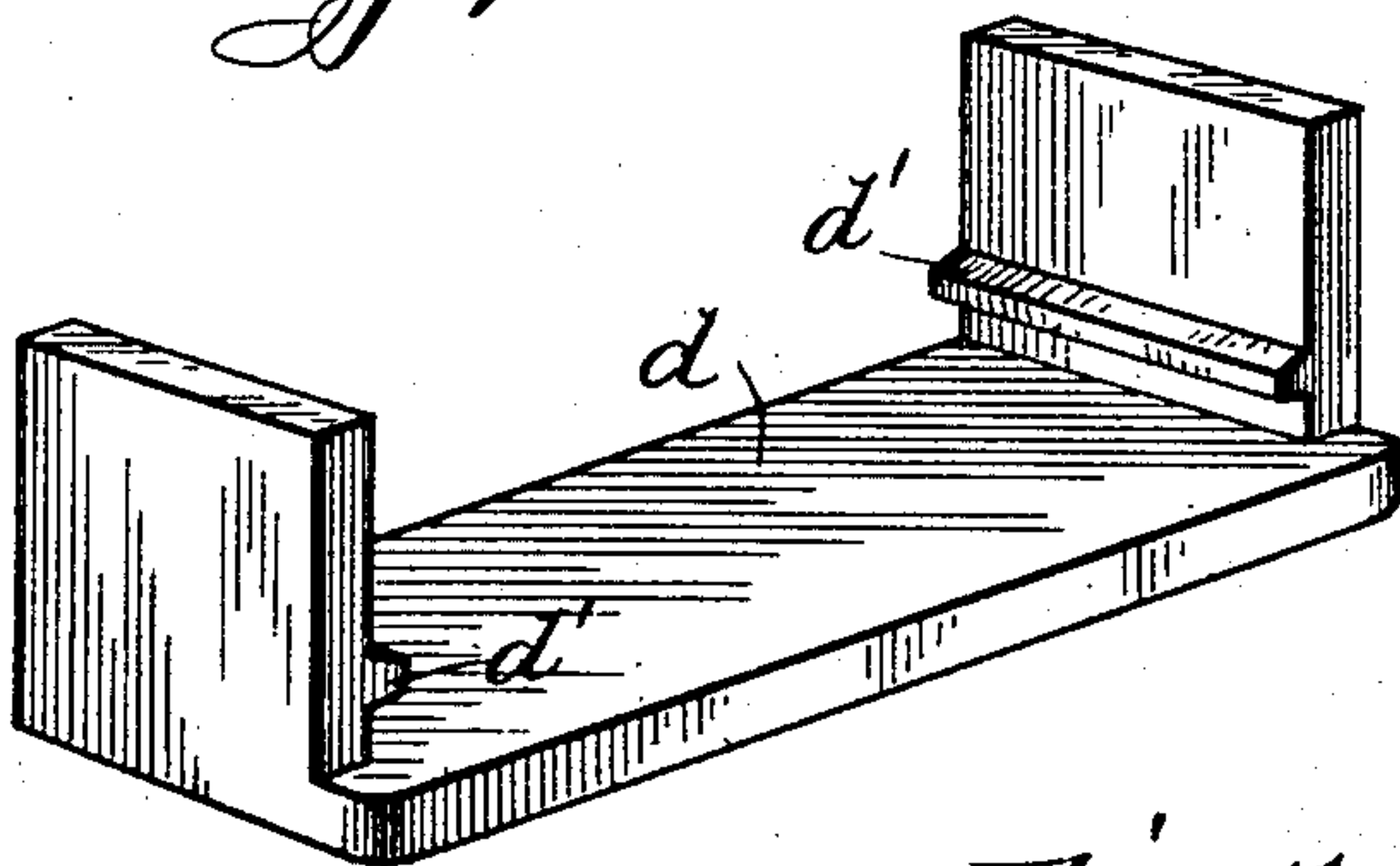


Fig. 10.

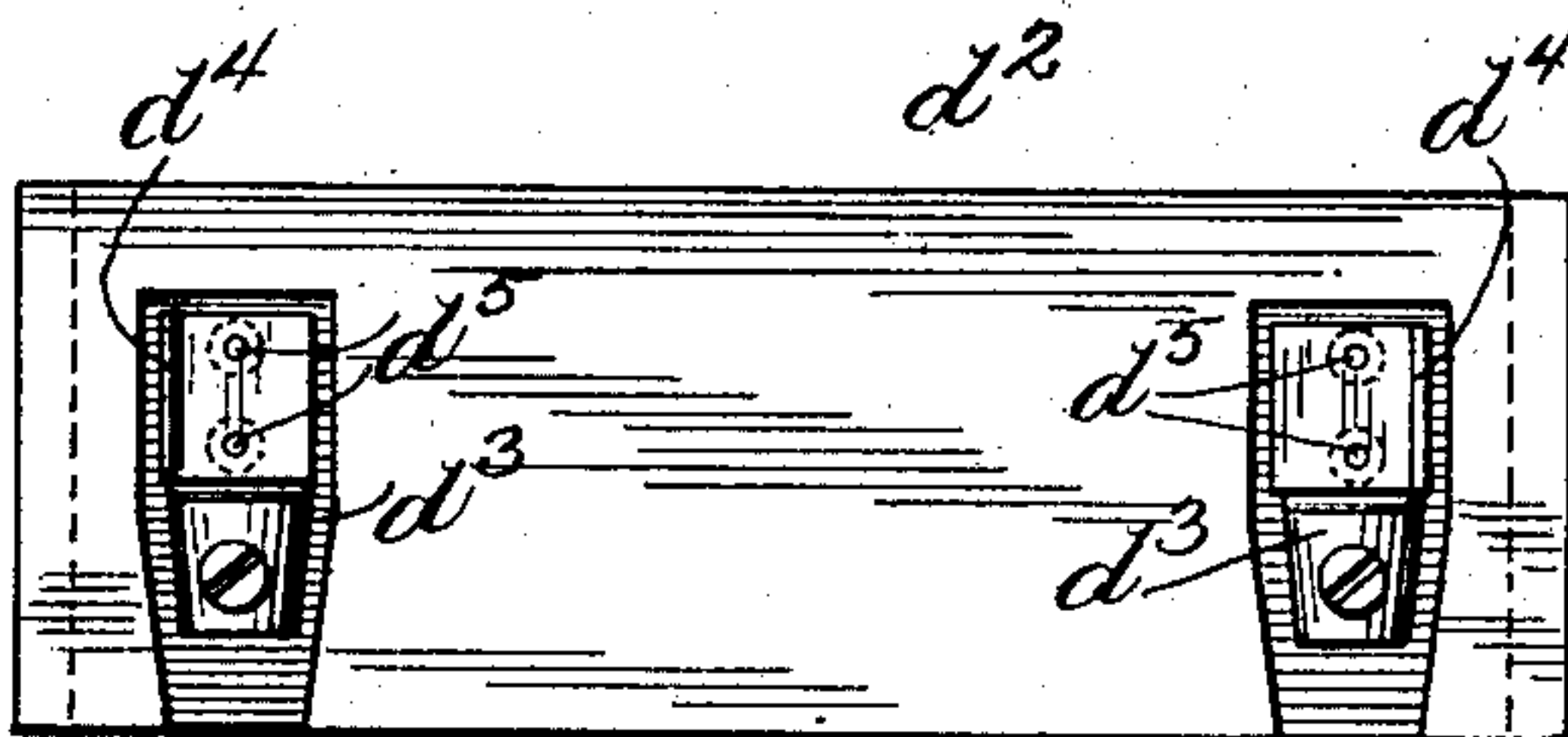
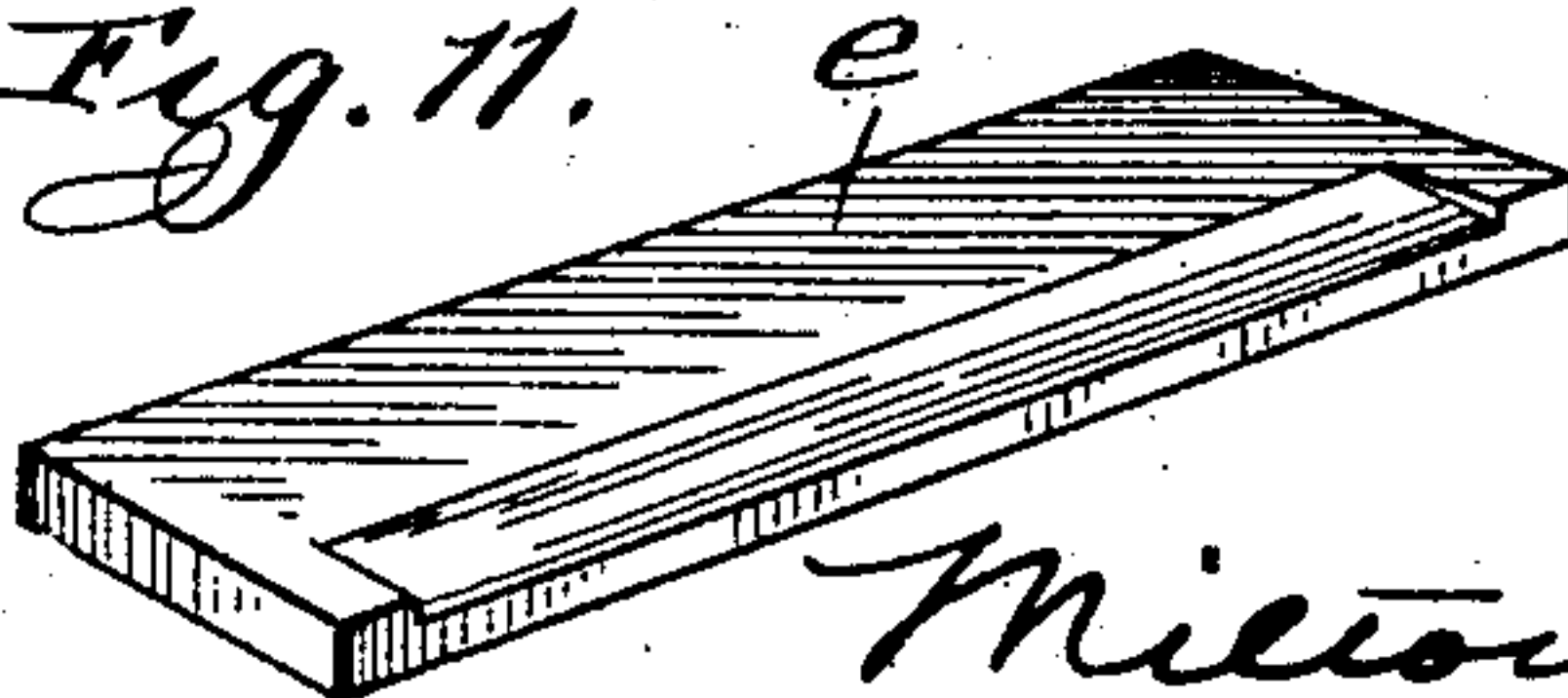


Fig. 11.



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UNITED STATES PATENT OFFICE.

MILTON R. UTLEY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
CHARLES F. SLACKS, OF CHICAGO, ILLINOIS.

FUSE-BOX.

SPECIFICATION forming part of Letters Patent No. 715,528, dated December 9, 1902.

Application filed May 13, 1901. Serial No. 60,002. (No model.)

To all whom it may concern:

Be it known that I, MILTON R. UTLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Fuse-Boxes, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a fuse-box for electrical purposes, my object being to provide an improved form of box which will be thoroughly waterproof and which, moreover, will serve to effectually insulate the electrical conductors from the covering of the box.

In fuse-boxes of the class to which the present invention relates it is found desirable to make the covering or exterior of the box of metal, usually cast-iron, and as the metallic casing is liable to become grounded during wet weather it is of prime importance to effectually insulate the electrical conductors from the metallic casing.

The present invention comprehends a structure wherein this effectual insulation of the electrical conductors is secured.

The invention furthermore contemplates a mounting for the box upon the cross-arm or other support, whereby the box will be rigidly and securely mounted in position and whereby the same will be insulated from the support.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a perspective view of a fuse-box embodying my invention. Fig. 2 is a sectional view on the line 2 2 of Fig. 1. Fig. 3 is a sectional view on the line 3 3 of Fig. 2, the cover in the open position being shown in dotted lines. Fig. 3^a is a front view of a modification of the support for the box. Fig. 3^b is a side view thereof. Fig. 4 is a view of the fuse-wire. Fig. 5 is a front view of the removable fuse-block, showing the fuse inclosed in a glass tube. Fig. 6 is a rear view thereof. Fig. 7 is a perspective view of the insulating-block attached to the cover. Fig. 8 is a perspective view of the bottom insulating-block. Fig. 9 is a perspective view of the insulating-block for the ends and side of the

box. Fig. 10 is a view of the terminal block. Fig. 11 is a perspective view of the insulating-block for the top of the box.

Like letters refer to like parts in the several figures.

The box *a*, preferably of metal, is provided with two lugs *a'* *a*², one on either end. The said lugs *a'* *a*² are so constructed that they engage the grooves *a*³ *a*³ of the insulators *a*⁴ *a*⁴, which are secured in position by the screws *a*⁵ *a*⁵.

The box *a* is provided with a hinged cover *a*⁶, which forms the front of the box, and is adapted to swing downward, the downward movement being limited by the lugs *a*⁷ *a*⁷. The said cover is held in a closed position by the thumb-screws *a*⁸ *a*⁸, which are pivoted to the lugs *a*⁹ *a*⁹, which project from the ends of the box *a*. The top of the said box projects beyond the cover, thus forming a shelter and preventing the rain from beating into the box.

The cover *a*⁶ is also provided on the ends with projecting lips or ridges *a*¹⁰ *a*¹⁰, which lap over the ends of the box, thereby forming practically a waterproof cover.

Secured to the inner face of the cover *a*⁶ by screws is a porcelain insulating-block *b*, which is held away from the said cover a short distance by the projecting ridges *b'* *b'*, which extend the width of the cover and which engage shallow channels in the face of the block *b*. A space is thus left between the block *b* and the cover or door, so that water falling upon the edge of the door when it is open will pass downward between the block and the door instead of entering the box. The upper end of the block is chamfered, as shown in Fig. 3, to properly direct the water to the space between the block and the cover. The lower end of the block *b* is chamfered, as shown in Fig. 3, to accommodate the swinging of the door. Formed integral with the block *b* are the projections *b*² *b*², which have their inner edges cut away, so as to engage correspondingly-formed faces *b*³ *b*³ on the fuse-block *b*⁴. The lateral movement of the block *b*⁴ is limited by the lugs *b*⁵ *b*⁵ on the block *b*, which are adapted to engage recesses on the said block *b*⁴.

On one side of the block *b*⁴ a recess is formed

in which the fuse-wire c is adapted to be placed. This fuse-wire is incased in a glass or porcelain tube c' with metal caps $c^2 c^3$ on the ends thereof and filled with plaster-of-paris. The said fuse-wire is secured at its ends to the binding-screws $c^3 c^3$, which are screwed into tapped holes in the metallic strips $c^4 c^4$, which form the spring-seats for the knife-switches. The strips $c^4 c^4$ are secured to the block b^4 by the pins or screws $c^5 c^5$, which are inserted from the rear face of the said block through the countersunk holes $c^6 c^6$. The ends of the said strips $c^4 c^4$ are deflected into recesses and then turned up, thereby forming spring-seats for the blades of the knife-switches.

The block c^7 has formed integral with it two projecting tubes $c^8 c^8$, the said tubes being inserted in the tubes $c^9 c^9$, formed on the bottom of the box. The main-line wires $c^{10} c^{10}$ enter the box through these tubes $c^8 c^8$. The block c^7 is so constructed as to leave spaces on either side, so that the cover may be closed and that another block may be inserted between the side of the box and the block c^7 . The tubes c^9 have their lower ends beveled toward the outer edge c^{11} , as shown in Figs. 1 and 3, so that any moisture collecting upon the exterior will drip away from the lining and from the cables c^{10} . The tubes c^8 on the insulating-lining (shown in Figs. 3 and 8) are shorter than c^9 and are inwardly sloping at the ends to increase the tendency of the water to pass to the outer edge of tubes c^9 . The insulating-blocks for the side and the ends are cast in one piece d . The piece of the said block d which insulates the side of the box projects on one side beyond the end pieces and is adapted to fill the space between the side of the box and the piece c^7 . Formed integral with the end pieces of the block d are the ridges $d' d'$, which are adapted to engage correspondingly-formed grooves or channels in the ends of the terminal block d^2 and upon which the said block d^2 is adapted to slide.

Mounted in recesses formed near the ends of the block d^2 are the binding-posts $d^3 d^3$ for the main-line wires c^{10} , which enter the box through openings in the tubes $c^8 c^8$. Mounted upon the binding-posts $d^3 d^3$ are the metallic strips $d^4 d^4$, the ends thereof being deflected to form the blades of the knife-switches. The binding-posts and strips are secured to the terminal block by the screws $d^5 d^5$, which fit in countersunk holes passing through the block. It will be noted that the block or lining d rests between the heads of the screws $d^5 d^5$ and the metallic face of the box. The current is thus effectually prevented from jumping from the binding-posts to the metallic box. If the terminal block were mounted directly upon the wall of the box, there would be danger of the current thus jumping from the binding-posts to the box. The insulating-block e for the top of the box firmly holds the other pieces of in-

ulation in their respective positions. One edge of the block e is chamfered, so that as the cover is being closed the block b^4 will not strike. The upper edge of the block b^4 is likewise chamfered.

In Figs. 3^a and 3^b I have shown a modification of the mounting for the box. It has been a common practice to provide a lug upon each end of the box having an opening through which a screw or bolt is adapted to pass to secure the box in position. This form of mounting, however, has been found objectionable for many reasons, and my invention may be applied to boxes of this construction. In this case two insulators $a^4 a^4$ are provided in connection with each lug, the edges of the lug being fitted within the grooves $a^3 a^3$ of the insulation, as shown.

I do not wish to have it understood that I confine myself to the precise construction as shown in the drawings, as the various parts are susceptible to many modifications without necessarily departing from the spirit of my invention.

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

1. The combination with the box and the cover therefor, of an insulating block or lining mounted upon said cover, a space from the top edge to the bottom edge of said cover being left between said insulating-block and the cover for the passage of water, substantially as described.

2. The combination with the box and the cover therefor, of the insulating block or lining for said cover, and the engaging ridges and grooves for maintaining said block at a short distance from the cover, the upper edge of said block being cut away whereby the water is caused to pass between the block and the cover, substantially as described.

3. The combination with the box and the cover therefor, the insulating block or lining carried thereon and having the ridges, b^2, b^2 , and the stops, b^5, b^5 , and the fuse-block adapted to be mounted upon said insulating block or lining, and to be held in position by said parts, b^2, b^2 and b^5, b^5 , substantially as described.

4. The combination with a box, of an insulating block or lining having a portion adapted to fit against the side of the box and having at the ends portions adapted to fit against the ends of the box and carrying ridges, of a terminal block carrying channels adapted to engage said ridges and adapted to be removably mounted in position, substantially as described.

5. The combination with a box, of an insulating-lining comprising a portion adapted to fit against the side of the box, other portions adapted to fit against the ends of the box and carrying ridges, of a terminal block having channels adapted to engage said ridges and removably mounted in position, substantially as described.

6. The combination with a box having outwardly-extending tubes in the bottom, of an insulating-lining for the bottom of the box having tubes extending into the tubes on the box and terminating short of the ends of the tubes in the box, substantially as described.

7. In a device of the class described, the combination with a box having a door or cover, of an insulating waterproof lining mounted upon said door or cover, an insulating fuse-block removably mounted upon said insulating-lining and adapted to carry a fuse, whereby when the door is open the said block and fuse may be readily withdrawn and when said block is in place the fuse is effectually insulated from said door or cover, substantially as described.

8. In a device of the class described, the combination with a box, of an insulating waterproof lining having portions adapted to fit upon one side and the ends of said box, a removable insulating terminal block adapted to fit between the end pieces of said lining and to be held thereby, and terminals carried by said block adapted to be connected with electric conductors, the said lining serving to effectually insulate the said terminals from the box, substantially as described.

9. In a device of the class described, the combination with a metallic box adapted to contain electrical apparatus and having outwardly-extending tubes in the bottom portion thereof away from the ends, of an insulating lining-block adapted to cover the bottom of the box and insulate the contacts therefrom and having formed integral therewith two tubes adapted to extend through the tubes formed in the bottom of said box, and electric conductors adapted to extend through said latter tubes to the apparatus in the interior of the box, substantially as described.

10. In a device of the class described, the combination with a box adapted to contain an electric fuse, of an insulating waterproof lining for said box, an insulating terminal block removably held in position by said lining, an insulating waterproof lining carried upon the cover or door of said box, and a removable insulating fuse-block carried upon the lining of said cover, the said lining for the box and cover or door serving to effectually insulate the parts carried by the said blocks, substantially as described.

11. In a device of the class described, the combination with a box adapted to contain electrical apparatus, of supporting-lugs for said box, one at either end, grooved insulators with which said lugs engage to secure the box in position, means to retain said insulators in position, and tubes for the passage of the electric conductors formed entirely in the bottom side thereof and at some distance from the ends and the supporting-lugs, whereby undue wear upon the conductors and arcing across between said tubes and the insulator-retaining means is pre-

vented, said tubes being formed at the ends to direct the moisture away from the conductors, substantially as described.

12. A waterproof fuse-box having two supporting-lugs one at either end and upon the rear face thereof, whereby the box may be mounted upon a cross-arm, grooved insulators with which said lugs engage to secure the box from movement in all directions and in position, a projecting or overhanging shelf or top to conduct the rain or moisture beyond the edges of the box, a hinged cover forming the front side of the box and adapted to be opened to permit access to the interior of the box, and openings for the passage of the electric conductors formed wholly in the lower face or bottom of the box and at some distance from the ends and said lugs, said openings having their exterior edges formed to direct the water away from the conductors, substantially as described.

13. The combination with a box having outwardly-extending tubes in its bottom portion, of insulating lining-tubes for the tubes in the box, the said tubes in the box being outwardly sloping at their ends and the lining-tubes being inwardly sloping whereby moisture is effectually prevented from reaching the conductors, substantially as described.

14. The combination with a box having outwardly-extending tubes in its bottom portion, of insulating lining-tubes for the tubes in the box, the said tubes in the box being outwardly sloping at their ends and the lining-tubes being inwardly sloping whereby moisture is effectually prevented from reaching the conductors, the said lining-tubes being shorter than the box-tubes to prevent moisture dripping on the cable, substantially as described.

15. The combination with a box having outwardly-extending tubes in its bottom portion, of insulating lining-tubes for the tubes in the box, the said lining-tubes being shorter than the box-tubes and having their ends inwardly sloping to prevent moisture reaching the conductors passing through the tubes, substantially as described.

16. The combination with a box having outwardly-extending tubes in its bottom portion, of insulating lining-tubes for the tubes in the box, the said tubes in the box being outwardly sloping at their ends and the lining-tubes being inwardly sloping whereby moisture is effectually prevented from reaching the conductors, the said inner tubes terminating above the ends of the box-tubes, substantially as described.

17. The combination with a box having outwardly-extending tubes in its bottom portion, of insulating lining-tubes for the tubes in the box, the said inner tubes terminating short of the ends of the outer tubes, substantially as described.

18. The combination with a box having outwardly-extending tubes in the bottom, of a lining for the bottom of the box having tubes

extending through the tubes in the box, the ends of the tubes in the box having outwardly-sloping ends, substantially as described.

- 5 19. The combination with a box adapted to contain electrical apparatus and having outwardly-extending tubes in the bottom for the passage of electrical conductors, said tubes being formed to direct the water and moisture away from the conductors of an insulating-lining for the box having projections formed thereon extending into the tubes formed in the bottom of the box, and having apertures therethrough for the passage of the
10 15 electrical conductors, substantially as described.

20. The combination with a box adapted to contain electrical apparatus and having out-

wardly-extending tubes in the bottom for the passage of electrical conductors, said tubes 20 having their lower ends beveled inwardly so as to cause moisture to pass to the outer rims of the tubes and away from the conductors, of an insulating-lining for the bottom of the box having insulating lining-tubes extending 25 into said box-tubes and terminating short of the lower ends thereof, substantially as described.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses. 30

MILTON R. UTLEY.

Witnesses:

W. CLYDE JONES,
MELANCTHON R. NYMAN.