

No. 701,400.

Patented June 3, 1902.

J. C. F. SCHAFER.  
MAGAZINE PLATE HOLDER FOR CAMERAS.

(Application filed Apr. 26, 1900.)

(No Model.)

4 Sheets—Sheet 1.

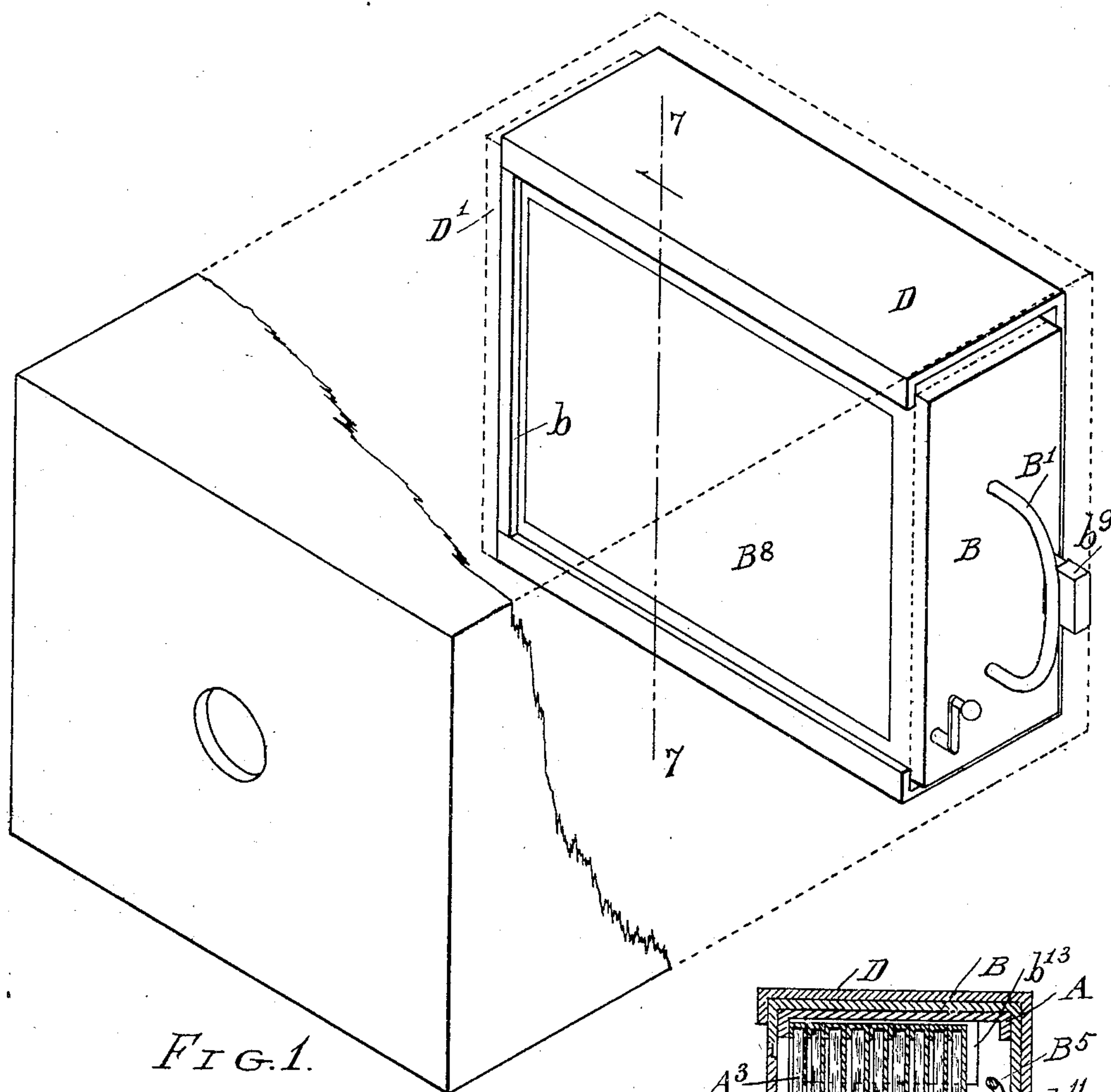


FIG. 1.

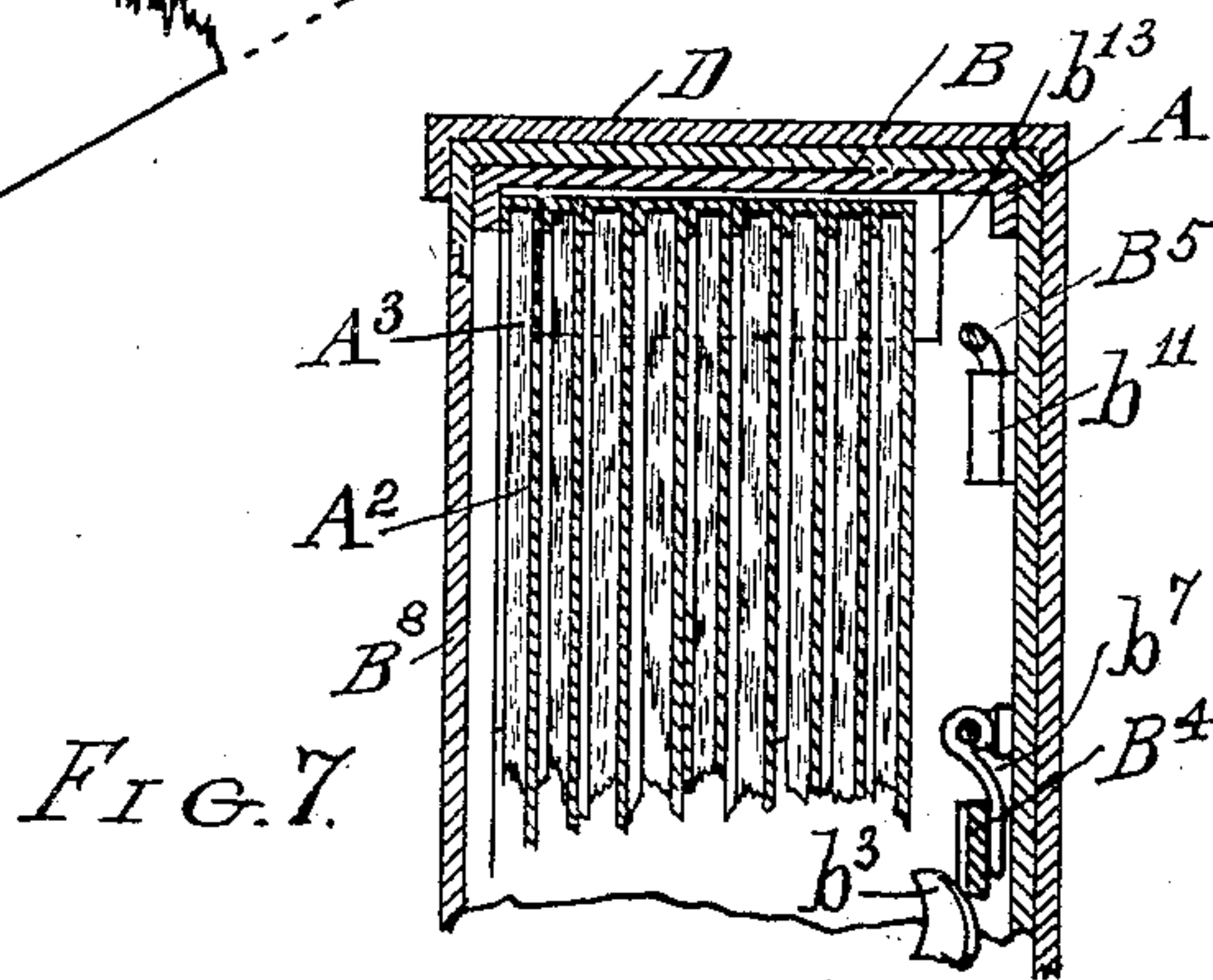


FIG. 7.

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4 Sheets—Sheet 2.

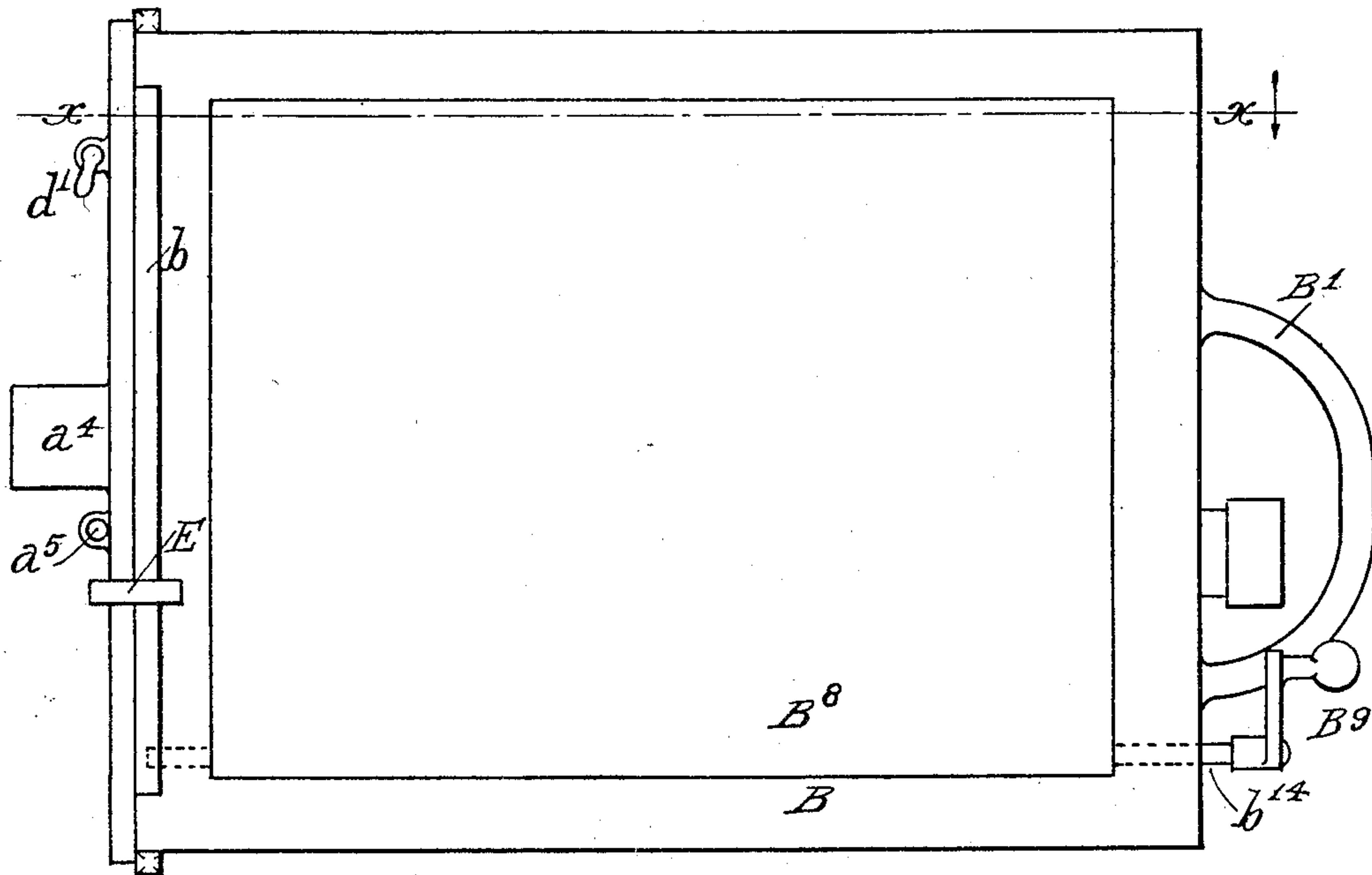


FIG. 2.

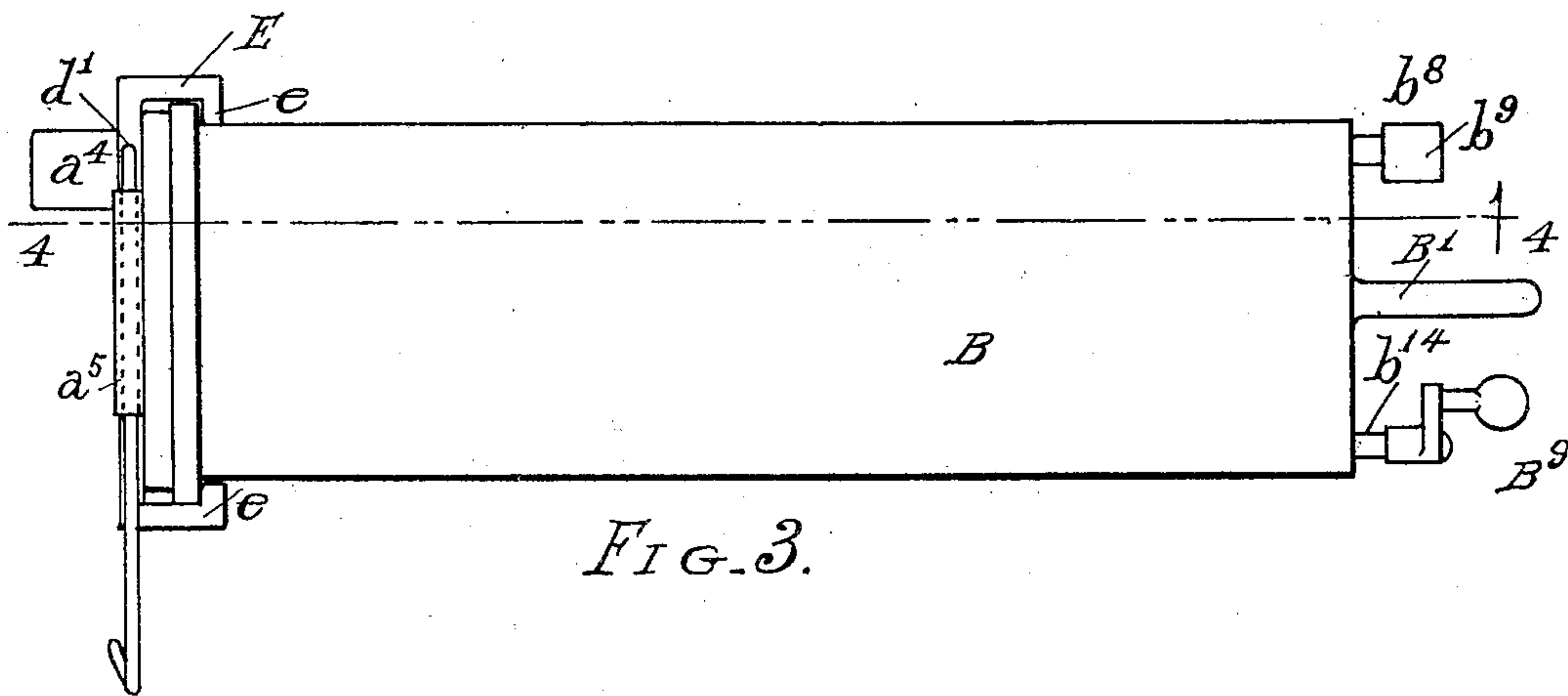


FIG. 3.

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4 Sheets—Sheet 3.

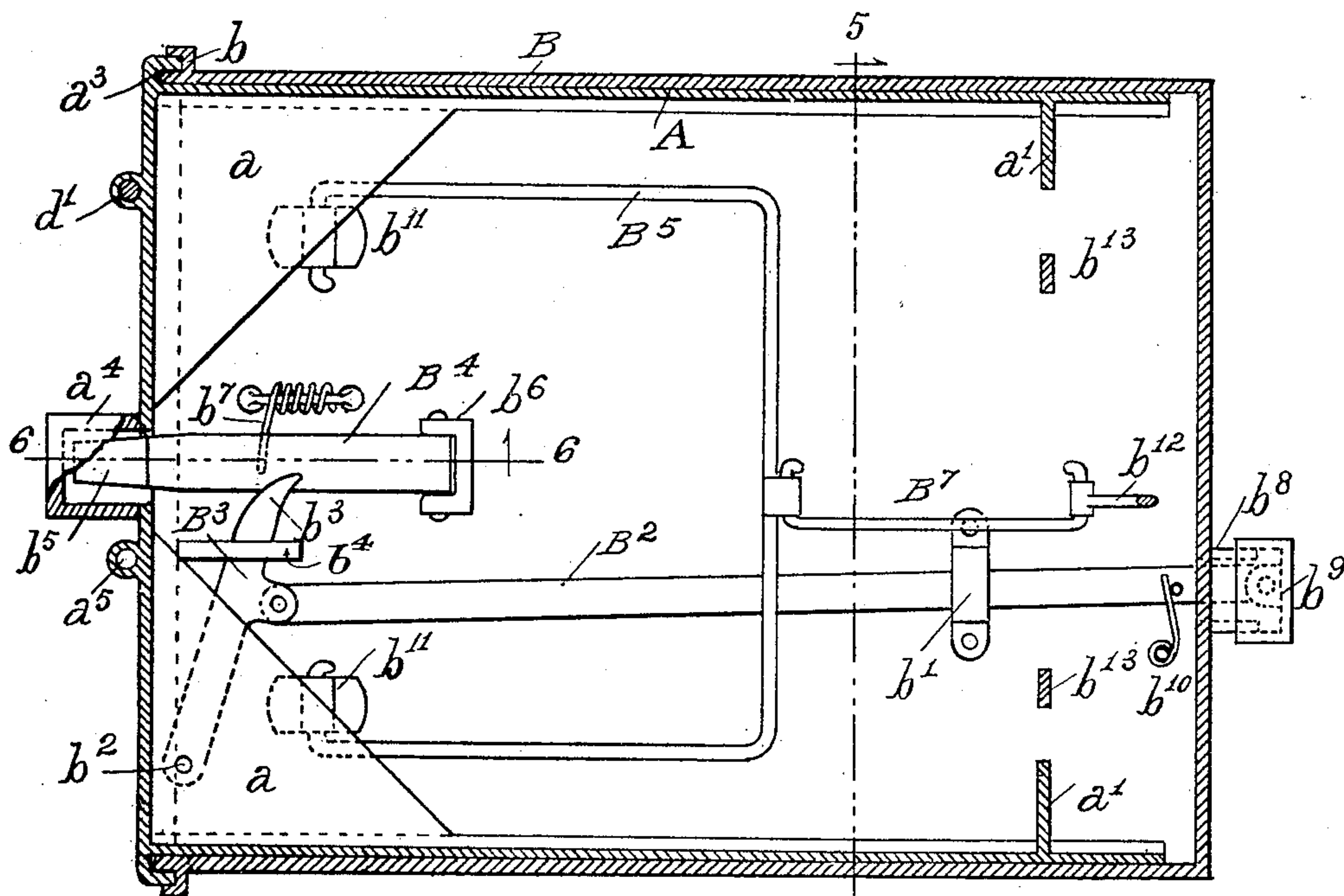


FIG. 4.

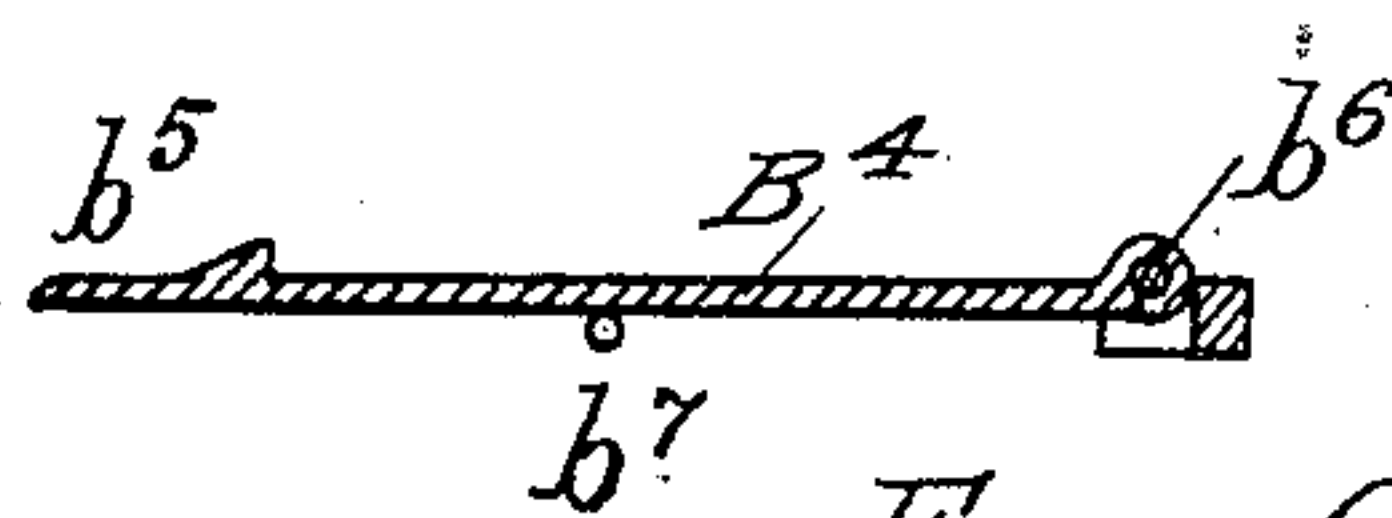


FIG. 6.

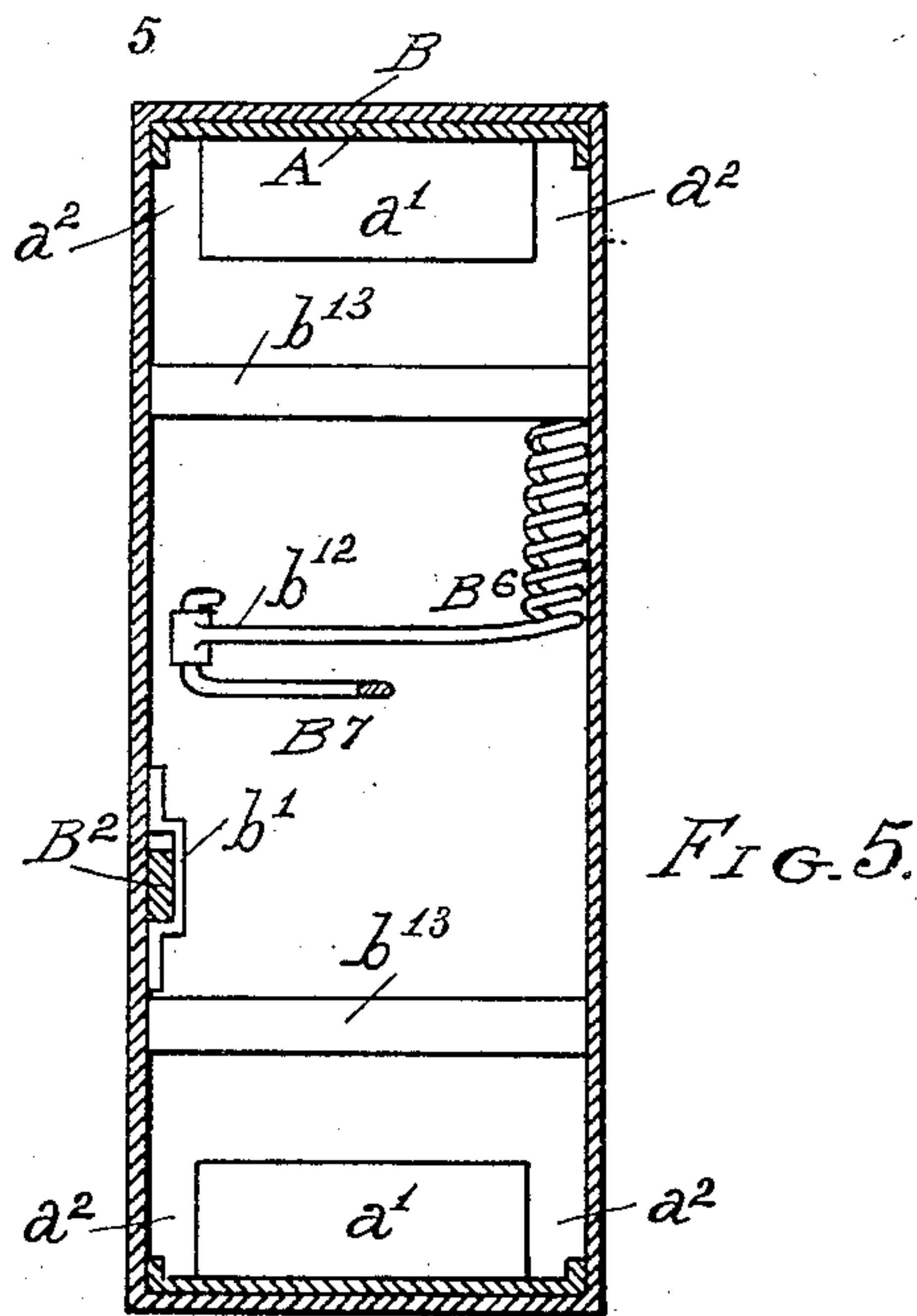


FIG. 5.

Witnesses.  
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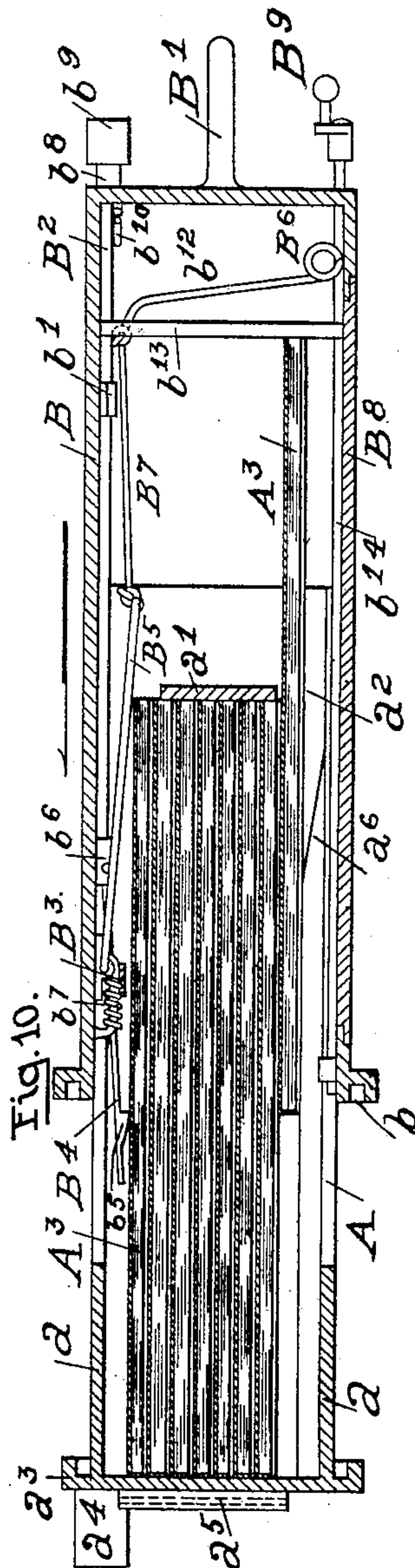
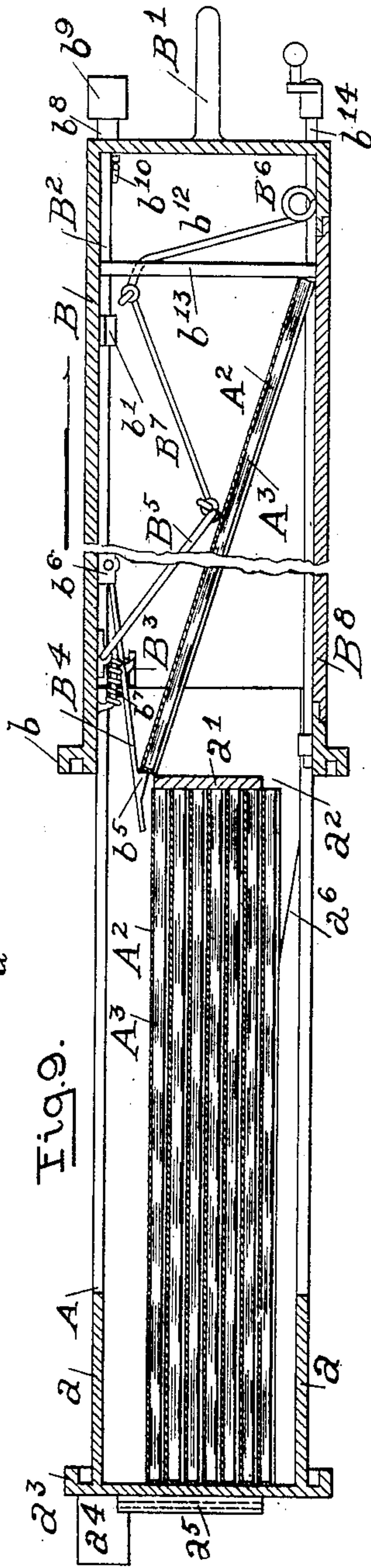
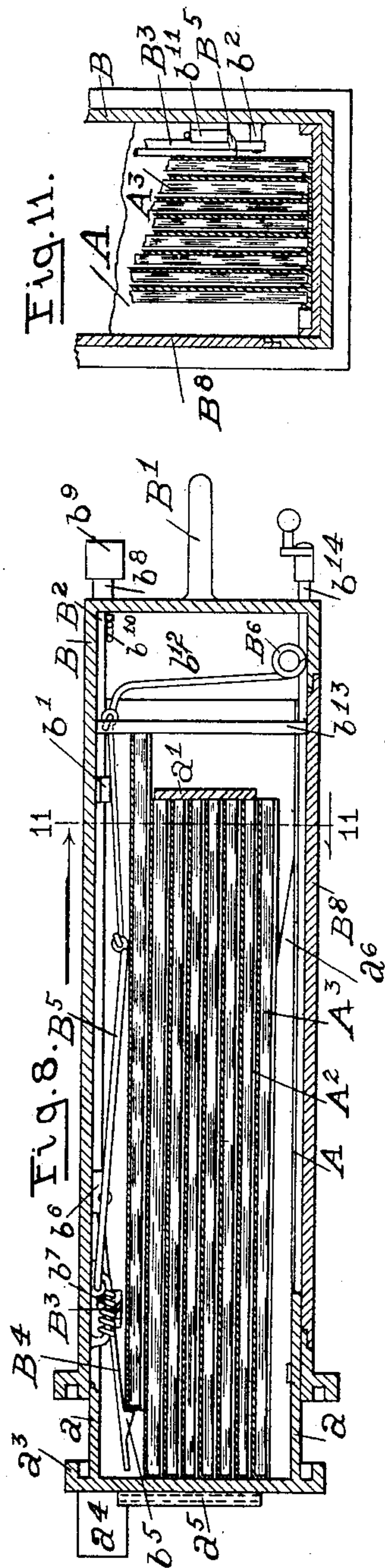
**J. C. F. SCHAFFER.**

**MAGAZINE PLATE HOLDER FOR CAMERAS.**

(Application filed Apr. 26, 1900.)

(No Model.)

4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

JOHN C. F. SCHAFER, OF MOUNT PULASKI, ILLINOIS.

## MAGAZINE PLATE-HOLDER FOR CAMERAS.

SPECIFICATION forming part of Letters Patent No. 701,400, dated June 3, 1902.

Application filed April 26, 1900. Serial No. 14,473. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. F. SCHAFER, a citizen of the United States, residing at Mount Pulaski, in the county of Logan and State of Illinois, have invented certain new and useful Improvements in Magazine Plate-Holders for Cameras, of which the following is such a full, clear, and exact description as will enable others skilled in the art to which it appertains to make and use my said invention.

My invention relates to cameras such as are commonly used by photographers; and the general purpose of my invention is to provide a magazine plate-holder for cameras so constructed and arranged that it may be used with cameras of different makes and so constructed and arranged that a number of plate-magazines may be charged at one time, and each of said plate-magazines may be placed in or removed from the camera without the risk of exposing the plates to light. With this general purpose in view the more specific purposes of my invention are to provide a plate-magazine of novel and improved construction adapted to contain a number of photographic plates shiftable therein; to provide a light-tight case for said plate-magazine; to provide within said case simple and effective means for sliding the plates in the plate-magazine; to provide simple and effective means for shifting the plates within the plate-magazine; to provide means to prevent displacement of the plates in the plate-magazine; to provide means for disengaging the case, so that the case may be moved without moving the plates in the plate-magazine; to provide means for securing the magazine plate-holder in a camera; to provide means for retaining the plate-magazine in the case when the case is withdrawn from the housing, and to provide means to prevent excessive movement of the movable parts of the magazine plate-holder.

With these ends in view my invention consists of the novel features of construction and combinations of parts shown in the annexed drawings, to which reference is hereby made and hereinafter particularly described and finally recited in the claims.

Referring to the drawings, in which similar letters of reference designate like parts in all of the views, Figure 1 is a perspective view

of the magazine plate-holder in position in a camera, only so much of the camera being shown in outline as is necessary to illustrate the connection of the magazine plate-holder with the camera. Fig. 2 is an enlarged front elevation of the plate-magazine proper disconnected from the camera. Fig. 3 is a top plan of the plate-magazine. Fig. 4 is a vertical longitudinal section on the line 4 4 of Fig. 3. The sheaths and plates are omitted from this view. Fig. 5 is a vertical transverse section through the plate-magazine on the line 5 5 of Fig. 4, the sheaths and the plates being omitted. Fig. 6 is a vertical longitudinal section through the plate-hook on the line 6 6 of Fig. 4. Fig. 7 is an enlarged partial vertical section through the camera and the magazine plate-holder on the line 7 7 of Fig. 1. In this view the plates and their sheaths are shown in position in the plate-magazine. Fig. 8 is an enlarged longitudinal section taken on the line *x x* of Fig. 2 and shows the position of the parts when the case is withdrawn sufficiently for the plate-hook to have engaged with and moved the rear plate a short distance. Fig. 9 is an enlarged longitudinal section on the line *x x* of Fig. 2 and shows the position of the parts when the rear plate has been withdrawn into position for the shifter to shift the withdrawn plate into position to be pushed in front of the pile of plates in the plate-magazine. Fig. 10 is an enlarged longitudinal section on the line *x x* of Fig. 2 and shows the position of the parts when the transferred plate has been pushed partially in front of the set of plates in the plate-magazine. Fig. 11 is a partial transverse section on the line 11 11 of Fig. 8.

In the drawings I have shown the magazine plate-holder as applied to a camera having a rectangular box of usual and well-known form; but it may be applied to cameras of other and different forms without departing from my invention.

The plate-magazine A is of rectangular form and has a flanged top piece, a flanged bottom piece, and an end piece connecting said top piece and bottom piece. Corner-pieces *a* strengthen the connection of the end piece with the top and bottom pieces. A plate-stop *a'* extends part way across the under side of the top plate and is somewhat shorter than



the space between the flanges thereof, the spaces  $a^2$  between the flanges of the top plate and the end of the plate-stop being such that a single plate may freely pass therethrough at either end of the plate-stop. A recessed projecting ledge  $a^3$  extends around the plate-magazine, and a similar ledge on the case fits in the recess  $a^3$ , so as to form a light-tight joint between the case and the plate-magazine. On the end of the plate-magazine is a box-shaped housing  $a^4$ , which accommodates the projecting end of the plate-hook, as hereinafter described. On the end of the plate-magazine are eyes  $a^5$ , in which pins  $d'$  fit, the pins serving to connect the plate-magazine with the housing D in such manner that the case inclosing the plate-magazine may slide in the housing, while the plate-magazine remains stationary.

The plate-magazine may be made of any suitable dimensions and of any suitable material; but I prefer to use plate-magazines made of sheet metal or fiber and adapted to accommodate, say, twelve sheaths containing plates.

The plates  $A^3$ , usable with the camera, are contained in sheaths  $A^2$ , of sheet-tin or other suitable material, each adapted to contain a single plate, and the sheaths are slidable on each other in the magazine and serve to protect the plates from injury.

The case B may be made of sheet metal or other suitable material and is preferably in the form of a rectangular box having one end open and is of a size suitable to contain the plate-magazine and the plate-moving mechanism. A recessed ledge  $b$  extends around the open end of the case, and the ledge  $a^3$  on the plate-magazine fits therein, so as to form a light-tight joint therewith. The ledge  $b$  also engages with a suitable ledge on the inside of the housing D or with the inside of the camera-box through which the case projects to prevent the case from being pulled too far out, as will be hereinafter explained.

At one end of the case is a handle  $B^7$ , which may be used in pushing the case in and out. In the front of the case B is a door  $B^8$ , secured to a shaft  $b^{14}$  and mounted to turn downward. The door  $B^8$  may be opened or closed by means of a crank  $B^9$ , secured to the shaft  $b^{14}$ . When it is desired to make an exposure without withdrawing the case, the door may be turned downward to expose the plate, and when the exposure is completed the door may be closed. Bars  $b^{13}$ , extending transversely across the case, serve to prevent longitudinal displacement of the plates when the magazine plate-holder is closed and also serve to successively push back into the plate-magazine the plates previously withdrawn therefrom by the successive outward movements of the case B. The bars  $b^{13}$  also serve to divide the case into two compartments, one of which contains the spring  $B^6$ , and the other contains the plate-shifting frame  $B^5$ . The bars prevent the plates from striking against and injuring the

spring or interfering with its action. A longitudinal ledge  $a^6$  on the inside of the front of the plate-magazine is tapering or wedge-shaped for a part of its length and serves to guide the shifted plate into position in front of the set of plates in the plate-magazine when the case is pushed inward. A slide  $B^2$  works in a guide  $b'$  on the inside of the rear wall of the case and is pivotally connected with an arm  $B^3$ , which has its pivot  $b^2$  on the rear wall of the case and oscillates in a guide  $b^4$ , which serves to hold the arm in contact with the plate-hook. The arm  $B^3$  has an upturned end  $b^3$ , which engages with the plate-hook. The plate-hook  $B^4$  is connected with the rear wall of the case by a hinge  $b^6$ , which permits the plate-hook to turn inward. A spring  $b^7$ , between the plate-hook and the wall of the case, acts to push the plate-hook forward. When the case is pulled outward to its full limit, the projecting part  $b^5$  of the plate-hook  $B^4$  lies on the back of the rear plate-sheath  $A^2$  and prevents the plate-hook from slipping off the end of the sheath. The end of the hook is inclined, so that when the case is pushed inward, carrying the hook with it, the hook will slide on the back of the rear sheath until it enters the housing  $a^4$ , passes beyond the edge of the sheath, and stops in such position that the spring behind the hook pushes it forward into position to engage with edge of the sheath and pull the sheath outward as the case is again slid outward. The outwardly-extending end of the slide  $B^2$  is inclosed in housing  $b^8$ . A cap  $b^9$ , connected with the end of the slide  $B^2$ , telescopes on the housing  $b^8$  and prevents light from entering through the housing. The slide may be operated by pressing with the thumb against the cap  $b^9$ . In order to slide the case outward without moving a plate, it is necessary to push back the plate-hook, so that it will not engage with the edge of a plate. This is accomplished by pushing the cap  $b^9$  inward, thereby moving the slide  $B^2$  to turn the arm  $B^3$  on its pivot  $b^2$  and cause the curved part  $b^3$  of the arm to engage with the plate-hook  $B^4$  and press it back against the rear wall of the case. A spring  $b^{10}$ , secured on the rear wall of the case, acts against the slide  $B^2$  to retract the slide.

The plate-shifter frame  $B^5$  is preferably of wire, but may be of any other suitable material. One side of the frame  $B^5$  is connected with the rear wall of the case by hinges  $b^{11}$ . A spring  $B^6$ , secured to the front wall of the case, has a rearwardly-extending arm  $b^{12}$ . A rod  $B^7$  is pivotally connected with the frame  $B^5$  and with the arm  $b^{12}$ .

When the plate-magazine is in position in the case the frame  $B^5$  and the rod  $B^7$  lie in a position approximately parallel to the rear wall of the case, and the arm  $b^{12}$  lies approximately transversely to the case.

The case B fits in a housing D and is slidable to a limited extent therein. The housing may be secured to the camera in any suit-



able manner. The housing D is preferably somewhat shorter than the transverse width of the camera-box, as shown, and the opening in the side wall of the box is made just large enough for the case B to slide therethrough until stopped by the engagement of the ledge *b* with the inside of the side wall of the box. Any other suitable means for limiting the outward movement of the case in its housing may be employed without departing from my invention. Before inserting the case in the housing the plate-magazine is inserted in the case, and the closed end of the plate-holder is inserted in the case, and the closed end of the plate-holder is secured by pins *d'* passing through eyes *a*<sup>5</sup> on the end of the plate-holder and through holes (not shown) in the side walls of the camera-box in registry with the eyes *a*<sup>5</sup>.

As an additional safeguard against the admission of light I provide a light-tight door D' at one end of the housing. That, however, is not an essential feature of my invention and may be dispensed with if the other parts be properly constructed and arranged substantially as set forth.

The plate-magazine being easily detachable from the case a number of plate-magazines may be used with a single case, or, if preferred, a number of interchangeable cases containing plate-magazines may be used in a single housing D, connected with a camera substantially as set forth.

In order to prevent displacement of the parts when the magazine plate-holder is removed from the camera, I provide a clasp E having hooked ends *e*, which engage with the flanges *b* on the case. When the clasp is in position, it retains the plate-magazine in position in the case, and the case may be carried by the handle B' without risk of displacement of the plate-magazine and consequent exposure of the plates.

In practical use a number of suitably-sheathed plates are placed in the plate-magazine with the sensitive surface of the plate to the front and the metal surface of the sheath to the rear. The plate-magazine is then inserted in the case with the slide B<sup>2</sup> between the last plate and the rear wall of the case and the plate-hook B<sup>4</sup> projecting beyond the end of the rear sheath and in engagement therewith. The plate-magazine is then secured in the housing D by means of the pins *d'*, as already described. The magazine plate-holder is then ready for use. In order to shift plates in the magazine plate-holder, so as to cover an exposed plate and place in front of it a fresh plate in position for exposure, the operator grasps the handle B' and pulls the case outward. The plate-hook B<sup>4</sup> moving with the case and being in engagement with the left-hand end of the rear sheath A<sup>2</sup>, slides the sheath outward until it passes beyond the right-hand end of the sheath next in front of it. At this stage the

shifter-frame B<sup>5</sup>, actuated by the spring B<sup>6</sup>, acts to push the sheath forward and cause it to lie alongside the front wall of the case with its outer edge in contact therewith and its inner edge in contact with the front flanges of the plate-magazine. The case is then pushed inward, and as it moves inward the bars *b*<sup>13</sup> engage with and push the sheath inward in front of the other sheathed plates contained in the plate-magazine, the tapering part of the ledge *a*<sup>5</sup> guiding the plate and causing it to push rearward the other plates in the plate-magazine. When the case has been pushed inward until the ledge *b* on the case stops against the ledge *a*<sup>3</sup> on the plate-magazine, the sheath comes to rest with the sensitized surface of the plate contained in the sheath to the front in position for exposure of the plate. In order to make an exposure without shifting a plate, the operator grasps the handle B', pushes the cap *b*<sup>9</sup> inward, and pulls the case outward until the ledge *b* stops against the ledge *d* in the housing. This movement of the case withdraws the front wall of the case from in front of the plate and uncovers the plate, so that the exposure may be made in the usual manner. After making the exposure the case is again pushed inward until it stops against the ledge on the plate-magazine. The magazine plate-holder is then in readiness for shifting another sheath containing a plate from the front to the rear of the set of sheathed plates contained in the plate-magazine, as already described. After exposure of all of the plates the magazine plate-holder may be detached from the camera by opening the door on the side of the camera, removing the pins *d'*, and withdrawing the case B from the housing D. The magazine plate-holder may then be taken to a dark room, where the plate-magazine may be withdrawn from the case, the exposed plates removed, and fresh plates substituted. In practice it is found convenient, especially when a dark room is not accessible, to have a number of magazine plate-holders fitting in the same housing, so that when all of the plates in a magazine plate-holder have been exposed it may be removed and another magazine plate-holder loaded with fresh plates may be substituted.

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

1. In a magazine plate-holder for cameras, the combination of a plate-magazine, a case slidable on said plate-magazine, a handle on said case, a hook mounted on said case, and a hook-operating device contiguous to said handle, as set forth.

2. In a magazine plate-holder for cameras, the combination of a plate-magazine, sheaths slidable in said plate-magazine, a case slidable on said plate-magazine, a handle on said case, a hook mounted on said case, a hook-operating device contiguous to the handle on



said case, means for shifting said sheaths in said case, and means for returning said sheaths to said plate-magazine, as set forth.

3. In a magazine plate-holder for cameras,  
5 the combination of a plate-magazine, a case slidable on said plate-magazine, a handle on said case, a hook mounted on said case, a slide contiguous to said handle, an arm connected with said slide and engaging with said  
10 hook, a spring acting against said hook, a shifting-frame mounted on said case, and a spring actuating said shifting-frame, as set forth.

4. In a magazine plate-holder for cameras  
15 the combination of a case, a plate-hook mounted on said case and having an extension, a hook-disengaging device operative from the outside of said case, a plate-magazine on which said case is slidable and having a housing  
20 to accommodate the extension of said hook, means for limiting the movement of said case and sheaths within said plate-magazine with which said plate-hook engages, as set forth.

5. In a magazine plate-holder for cameras,  
25 the combination of a plate-magazine, a case slidable on said plate-magazine and having compartments, a plate-shifting frame mounted in one compartment of said case and a spring mounted in the other compartment of  
30 said case and operatively connected with said plate-shifting frame, and a plate-hook on said case in coöperative relation to said plate-shifting frame, as set forth.

6. In a camera, the combination of a camera-box having an opening adapted to accommodate a slidable case, a housing mounted in  
35 said camera-box, a plate-magazine within said housing and provided with a ledge, securing

devices connecting said plate-magazine with the camera-box, and a case slidable on said  
40 plate-magazine and having a ledge which engages with the ledge on the plate-magazine to limit inward movement of said case and engages with a wall of said camera-box to limit the outward movement of said case, as  
45 set forth.

7. In a magazine plate-holder for cameras, the combination of a plate-magazine, a housing, and a case slidable between said plate-magazine and housing, all three being separable from each other for the removal of and  
50 insertion of plates, as set forth.

8. In a camera, the combination of a camera-box, a housing mounted on said camera-box, a plate-magazine housed in said housing and detachably connected with said camera-box, and a case slidable on said plate-magazine and having a sliding movement within said housing, limited in one direction,  
55 as set forth. 60

9. In a magazine plate-holder for cameras, the combination of a housing, a plate-magazine housed in said housing, and a case slidable on said plate-magazine and having sliding movement within said housing, limited  
65 in one direction, said plate-magazine and case being withdrawable from said housing, as set forth.

In witness whereof I have hereunto subscribed my name, at Mount Pulaski, Illinois, this 14th day of April, 1900. 70

JOHN C. F. SCHAFER.

Witnesses:

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WM. B. JENNER.