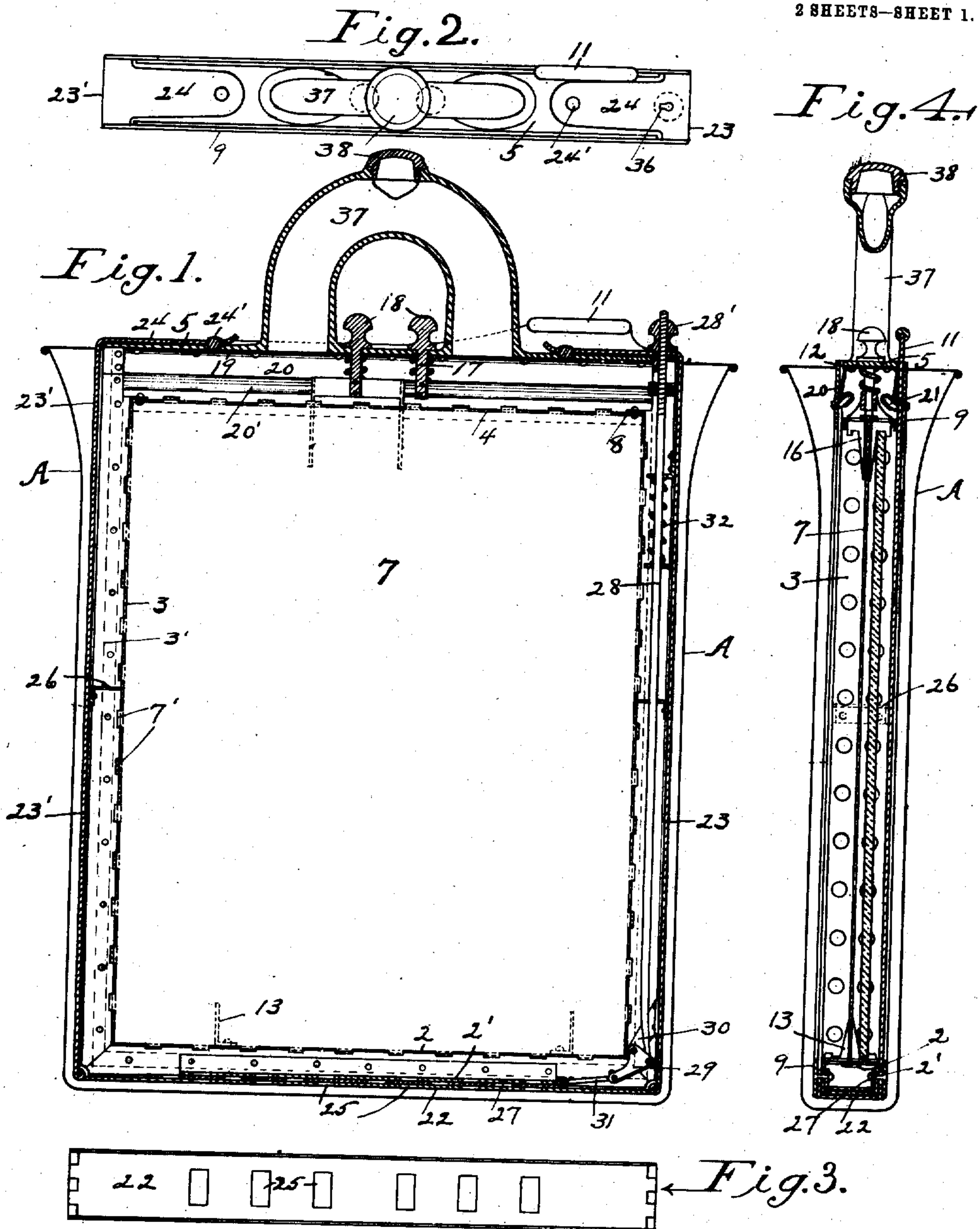


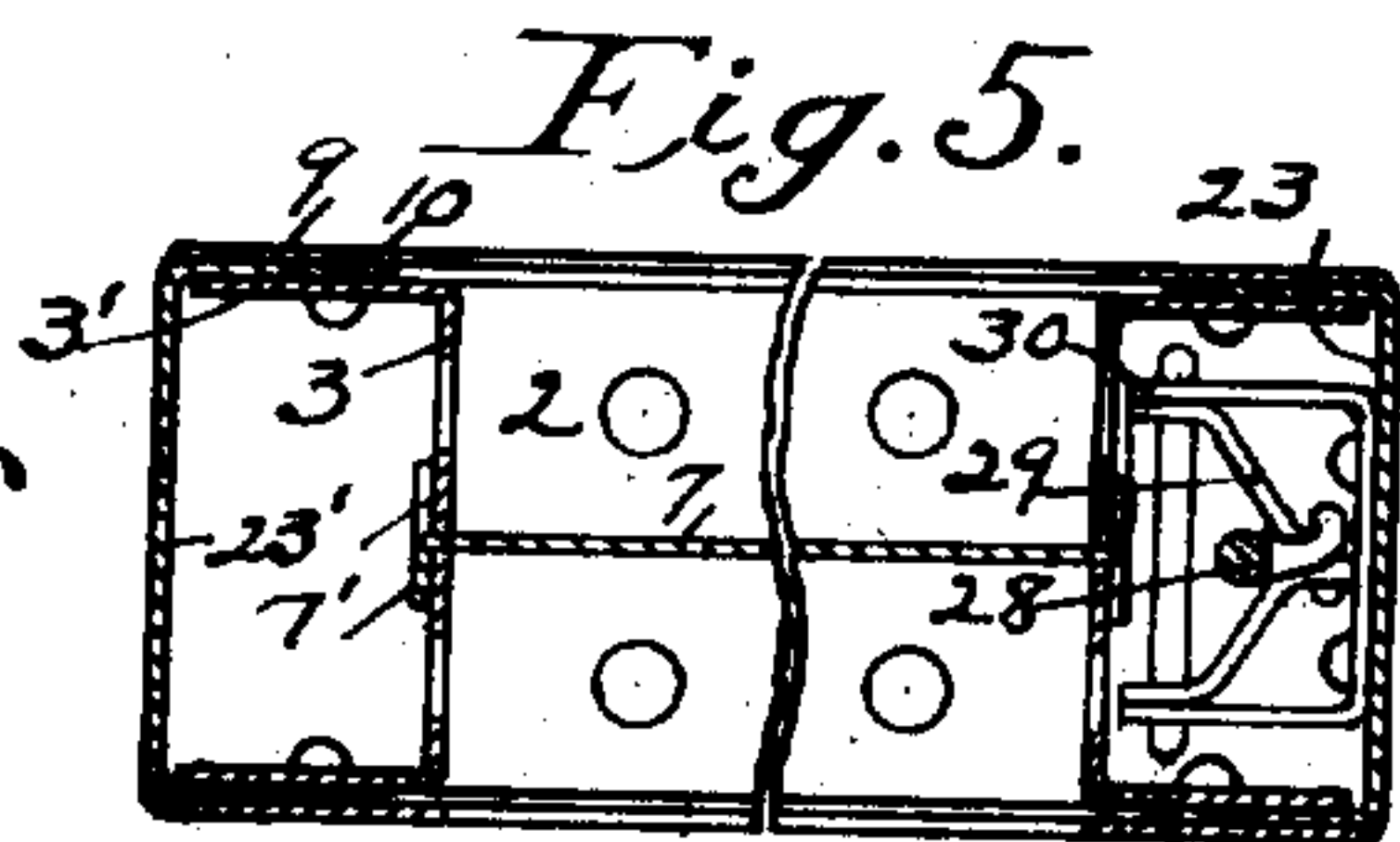
901,202.

A. B. SHEPPARD.
DEVELOPING PLATE HOLDER.
APPLICATION FILED DEC. 5, 1907.

Patented Oct. 13, 1908.
2 SHEETS—SHEET 1.



Witnesses.
Alex. D. Malou
Arthur P. Rusk



Inventor.
A. B. Sheppard
By J. H. Nesbit
Att'y

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2 SHEETS—SHEET 2.

Fig. 6.

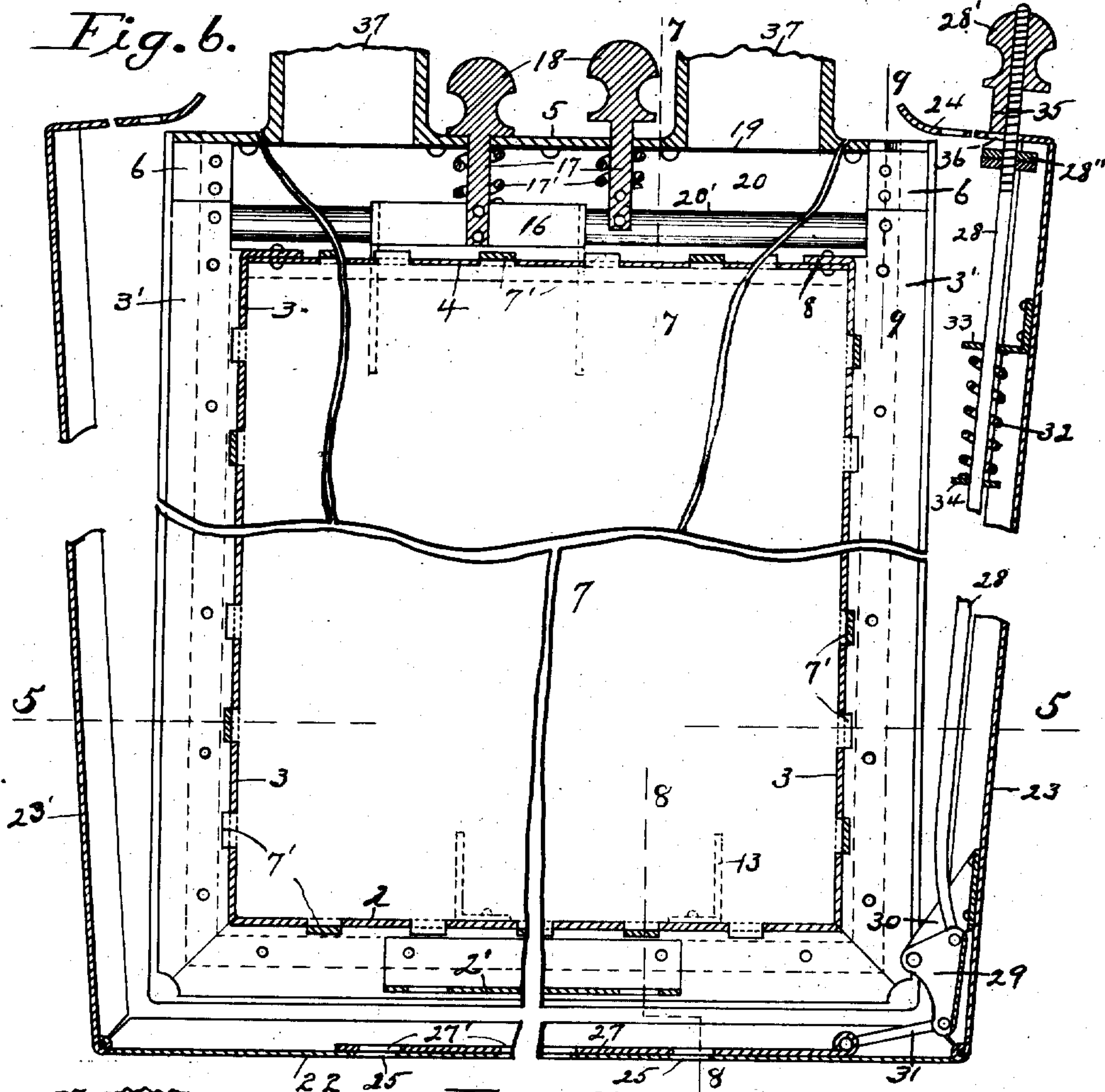


Fig. 8.

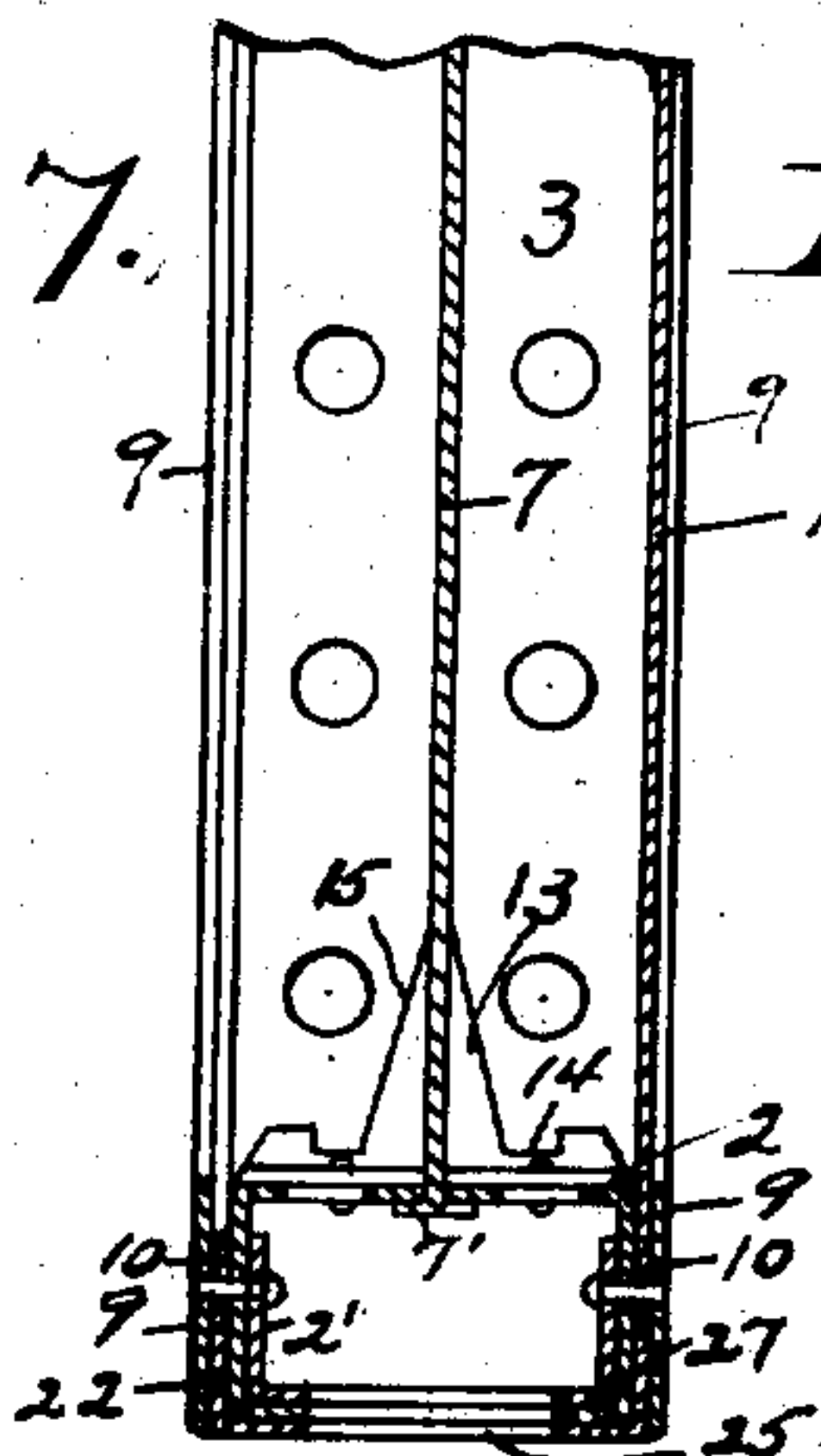
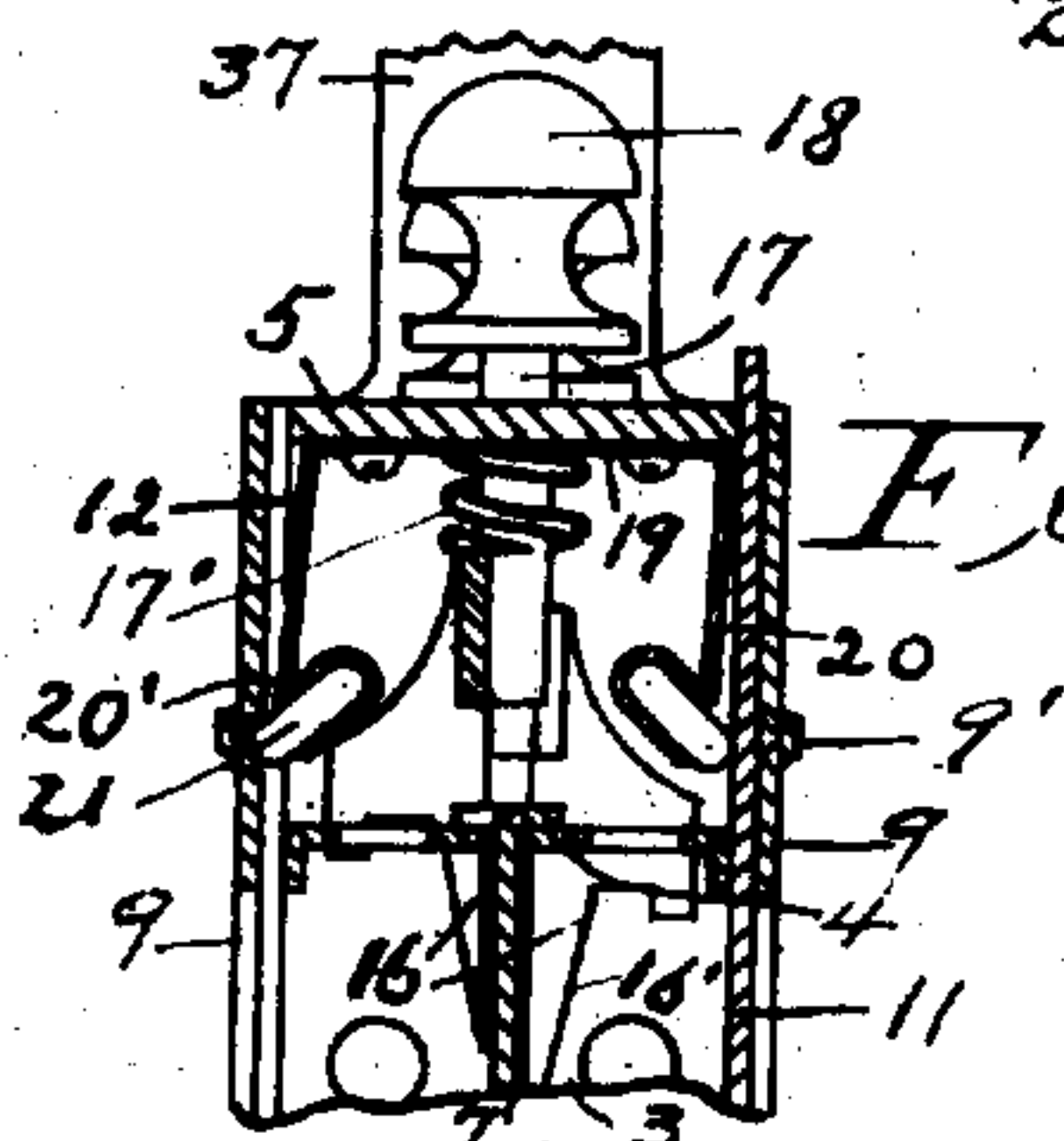
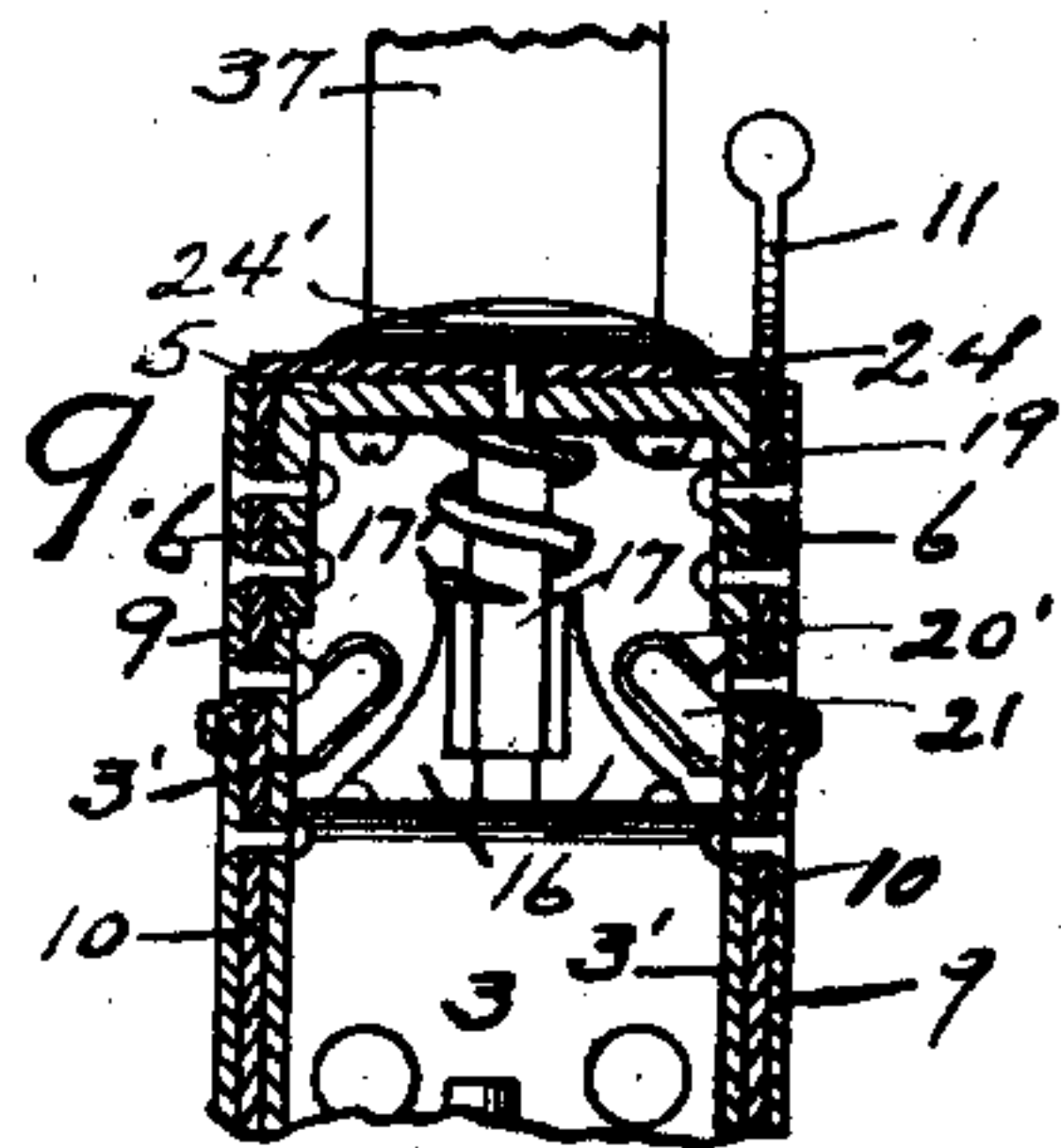


Fig. 7.



Witnesses.
Alex S. Malon
Albina Reshard

Fig. 9.



Inventor.
A. B. Sheppard
By J. H. Verbit
att

UNITED STATES PATENT OFFICE.

AULEY B. SHEPPARD, OF PITTSBURG, PENNSYLVANIA.

DEVELOPING-PLATE HOLDER.

No. 901,202.

Specification of Letters Patent.

Patented Oct. 13, 1908.

Application filed December 5, 1907. Serial No. 405,184.

To all whom it may concern:

Be it known that I, AULEY B. SHEPPARD, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Developing-Plate Holders, of which the following is a specification.

The primary object of this invention is to provide for the developing, fixing, washing, and drying of photographic plates without removing them from the camera plate-holder in which they are exposed.

The invention is embodied in a plate-holder of usual exterior proportions adapted for use in cameras of ordinary construction.

A further object is to so construct the plate-holder that all light is excluded therefrom during the developing process, dispensing with the necessity of doing this work in a dark room.

A further purpose is to so construct the fluid channels of the holder that they may be fully opened and dried out.

Other improvements are the devices for securing the plate within the holder; the shutter mechanism for the slide passages; and means for opening and closing the fluid passages.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of the plate-holder. Fig. 2 is a top plan view thereof, and Fig. 3 a bottom view. Fig. 4 is a vertical central cross-sectional view. Fig. 5 is a sectional plan view, broken, on line 5—5 of Fig. 6. Fig. 6 is a vertical sectional view, enlarged, similar to Fig. 1, the detachable channel inclosing portions being shown away from the main frame. Figs. 7, 8, and 9 are cross-sectional views taken on lines 7—7, 8—8 and 9—9, respectively, of Fig. 6. Figs. 5, 8 and 9 represent the detachable frame parts in position on the main frame. Figs. 4, 7, 8 and 9 show one of the slides removed.

The main frame of the holder consists of the bottom channel member 2, to the ends of which are secured the upright side channels 3, the latter being united near their upper ends by the horizontal channel member 4, while above the latter is the top or head 5. At each end of head 5 are the opposite depending flanges 6. The holder is of usual double construction, its interior being divided by partition 7 with slots in members 2, 3 and 4 to receive projections 7' on the edges of the partition, the projections being bent over after being passed through the slots,

as shown. The upper ends of the rear face of channels 3 are turned inwardly as indicated at 8 to connect with channel 4.

Secured to the opposite sides of the frame composed of parts 2, 3, 4 and 6 are the face plates or frames 9 which form flat and smooth outer faces for the holder. These face frames are spaced outwardly from said parts by the thin spacing strips 10 which are only slightly thicker than slides 11 and form passageways for said slides which are confined and move between the outer faces of channels 3 and the inner faces of frames 9 as will be understood, there being a corresponding space between bottom member 2 and the lower portion of each of frames 9 to receive the lower extremity of the slides when fully inserted, thus completely closing the plate-holding cavity. Slots 12 in head 5 form a continuation of these passages, so that the slides are simply raised and lowered through the top of the plate-holder. The spacing strips are narrower than the channel members and the bars of frame 3, and thus form slots or spaces at the outer edges of the frame which correspond with the passageways for slides 11. By referring to Fig. 9 it will be seen that strips 10 and frames 3 extend to the top of head flanges 6, thus securing together said flanges and sides 3' of channels 3, which simply meet and do not overlap.

Secured in the bottom of each of the plate cavities is a support 13 notched between its edges at 14 to receive the lower extremity of the plate and having the upwardly extending rearwardly sloping edges 15 which direct the plate into notches 14 when being inserted. A similar holding device 16 is arranged in inverted position in the upper portion of the plate cavity and is movable through a slot in the upper channel member 4, said device being secured to a stem 17 projecting through head 5 and carrying knob 18, with a spring 17' on the stem for holding the device normally depressed in plate-holding position. When inserting or removing a plate, the holding device is simply raised against the pressure of the spring so that the plate may be moved inward or outward as required; the downwardly and inwardly tapering edges 16' centering the upper portion of the plate in the cavity in the same manner that the lower portion thereof is brought to position by sloping edges 15, thus holding the plates out of contact with parti-

tion 7 and slides 11. With the plate-confining devices thus arranged, each plate is so held within the holder as to assume the identical position in the camera occupied by the ground glass when focusing. This is a well recognized principle in the construction and operation of cameras and plate holders, and hence the improved holder is adapted for use in any of the ordinary styles of plate cameras. A further advantage in thus holding the plates is that they are prevented from "freezing" or sticking, due to capillary attraction, to the partition; also the developing and other fluids pass freely around the plates, likewise the air when the plates are drying.

To exclude light when the slides are removed, I employ a relatively thin spring-metal strip or plate 19 which is arranged horizontally in the space between the end lugs 6 of head 5, plate 19 having its opposite sides or edges disposed downwardly as indicated at 20 and curved or looped from one end to the other at 20' to grasp and hold the horizontal shutter strips 21, formed preferably of rubber. Normally, sides 20 of plate 19 hold the shutters projected outwardly against the slides when the latter are in place, and extending across and closing the slideways when the slides are removed, as clearly shown in Fig. 7. When the slides are withdrawn, as at the left hand side of Fig. 7, the shutters enter the outward bulge 9' in face frame 9, thus more effectually closing the slideways. Said bulges operate to wedge the plate holder in the camera and exclude light, as will be understood by those skilled in the art.

The outer open faces of channel members 2 and 3 are closed by the bottom member 22 and the opposite side members 23 and 23', each of these members being of channel form with its open side disposed inwardly. Sides 23 and 23' are preferably hinged to the lower extremities of the bottom member 22, so that the sides may be turned outward and released from channels 2 and 3. Members 22, 23, and 23' are of such size that their edges enter the outer portions of the spaces formed by spacing strips 10 between channels 3 and face plates 9, thus closing the channels and forming fluid passages around the lower edge and upwardly along the opposite edges of the plate-holder. The upper ends of members 23, 23' carry the inwardly projecting spring clips 24 which pass over the top face of head 5 and are perforated to engage studs 24' projected from the head, thus securely fastening together the parts. The inner walls of these channels are perforated, as shown, so that the developing and other fluids have free access to the plate-confining cavities of the holder.

In practice, the improved plate-holder

carrying the exposed plate or plates is removed from the camera and may if desired be immediately immersed in a developing solution contained in the can-like tray or pan A, the fluid entering through opening 25 in the bottom detachable member 22, from which it flows upwardly through the side channels 3 and the perforations thereof into the plate cavity. A partition 26 in each of the side channels deflects the fluid into the plate cavity, preventing it from coursing around in the channels.

Inlet openings 25 are closed by slide 27 until after the lower end of the plate-holder has entered the developing tray, the slide having apertures 27' which are moved in and out of register with apertures 25. With the detachable portions of the channels in position, the slide bears upwardly against the inverted channel section 2' secured in channel 2 and is positively held. Slide 27 is actuated by rod 28 movable vertically in channel 23, with its upper end projecting thereabove and carrying knob 28', the adjustable nut 28'' on the rod limiting the upward movement thereof. The lower end of the rod connects with one arm of bell-crank 29, the lever being fulcrumed in bracket 30 carried by channel 23, with its other arm connected by link 31 with slide 27. A coiled spring 32 on rod 28 between fixed stop 33 and stop 34 on the rod holds the rod normally depressed, with slide 27 closing the fluid entrances 25. Knob 28' is threaded on rod 28 and carries the depending lug 35 which moves in a slot 36 in the upper end of channel 23, so that when the rod is withdrawn against the pressure of spring 32 to open slide 27, the knob may be turned to place lug 35 out of register with slot 36, thus holding the rod in elevated position.

Between the upper channel 4 and head 5 is the space or chamber in which shutters 21 and the plate-holding devices operate. This space has free communication with the plate-confining cavity through apertures in channel 4, and hence the various developing and washing fluids have free ingress and egress through all four walls of the plate-confining cavity. Also, this top space or chamber may be utilized as an inlet for the washing fluid after the plates have been developed and fixed, the fluid entering through the tubular U-shaped extension 37 on head 5, having the plugged inlet 38 adapted to connect with a hose or spigot, or hold a funnel, as may be most convenient.

Part 37 constitutes a convenient handle with which the plate-holder may be readily raised and lowered in the developing pan, and by which it may be hung up with the slides removed when drying the plates and at other times when not in use.

The plates are not removed from the holder from the time they are first inserted until after they have been exposed, fully developed, and dried, when they are ready for printing. All of the work may be carried on in the open and without having access to a dark room. With the outer portions of the bottom and side fluid passages removable, the parts may be separated and opened up and fully cleansed and dried. Also, the detachable connections between the several parts provide simple and efficient means for assembling the same.

As before indicated, the whole device is of such form as regards thickness and other proportions as to be adapted for use wherever plate-holders of usual construction are employed. The improvement is one of the series of appliances which I have devised for practicing plate photography without the use of a dark room, the developing plate-holder here shown and described being adapted at its flat faces to make light-excluding connection with my improved plate package forming the subject matter of an application filed October 31, 1905, Serial No. 285,338. By the use of these two appliances the plates may be transferred at any time or place from the package in which they are purchased to the plate-holders and after being exposed may if desired be immediately developed, dried, and printed, all of which work may proceed in daylight.

As I believe I am the first to provide a camera plate-holder in which the plates may be exposed, fully developed, and prepared for printing, all without being removed from the holder; also the first to provide a holder by means of which all of these operations may be accomplished outside of a dark room; I do not limit myself to the structural details herein described and shown, as the holder may be variously constructed and embodied without departing from the spirit and scope of the invention.

I claim:—

1. A plate holder consisting of a frame, and fluid channels extending along the edges of the frame with openings at different points along the channels for the passage of liquid into and out of the channels.
2. A plate holder consisting of a frame, channels extending along the side edges of the frame with openings at various points for passing liquid from the channels to the interior of the frame and vice versa, and a channel at the bottom edge of the holder with which the side channels communicate.
3. A plate holder consisting of a frame, channels extending along the side edges of the frame, and a channel at the bottom edge of the frame communicating with the side channels with perforated walls separating said channels from the interior of the frame.

4. A plate-holder consisting of a frame, a horizontal channel at the lower end thereof and vertical channels at opposite edges thereof open to the horizontal channel with communication between the channels and the plate-holding cavity, and means for admitting fluid to said channels.

5. A plate-holder consisting of a frame having a channel extending along the lower edge thereof, the channel communicating with the plate-confining cavity and having openings through which fluid may enter, a closure for the inlet openings, and operating means for the last mentioned closure extending to the upper portion of the holder.

6. A plate-holder consisting of a frame having a channel at the lower end communicating with the plate-confining cavity and having openings through which fluid may enter, a closure for said openings, a frame having an upright channel communicating with the bottom channel, and operating means for the last named closure extending through said upright channel.

7. A plate-holder consisting of a frame having a channel at its lower end open to the plate-confining cavity and also having openings through which fluid may enter, a slide for closing said openings, a vertically movable spring-held rod extending to the upper portion of the holder, and an operative connection between the rod and said slide.

8. A plate-holder consisting of a frame having fluid channels communicating with the plate-confining cavity, and detachable members forming walls for the channels.

9. A plate-holder consisting of a frame having fluid channels at the edges thereof communicating with the plate-confining cavity, and detachable members hinged together and forming walls for the channels.

10. A plate-holder consisting of a frame having fluid channels along the bottom and upright edges thereof communicating with the plate-confining cavity, a bottom member, opposite upright side members secured to the bottom member; said members detachably connecting with the frame and forming walls for the channels thereof.

11. A plate-holder having channels extending along the bottom and upright edges thereof which communicate with the interior of the holder, a bottom member, opposite upright side members hinged to the ends of the bottom member, said members detachably engaging the frame and forming walls for the channels, and means for securing the upright ends of the side members to the upright portion of the frame.

12. A plate-holder consisting of a frame having bottom and upright side channels communicating with the interior of the holder, a bottom member, upright side mem-

bers hinged to the ends of the bottom member, said members detachably engaging the frame and forming walls for the channels thereof, and spring clips carried by the side members for engaging the frame.

13. A plate-holder consisting of a frame having its bottom edge formed of a channel having its open side disposed outwardly, the channel forming a fluid passage which communicates with the plate-confining cavity, and a detachable member closing the open side of the channel.

14. A plate-holder consisting of a frame having its bottom and side edges formed of channels having their open sides disposed outwardly, the channels communicating with the plate-confining cavity for passing fluid thereinto, and detachable members for closing the open faces of the channels.

15. A plate-holder consisting of a frame having an opening for the passage of a fluid, a closure for the opening, the bottom and side edges of the frame formed of channels having their open sides disposed outwardly, channel members having their open sides disposed inwardly and detachably connecting with the channels of the frame and forming the outer walls of fluid passages inclosed by the channels, the latter communicating with the interior of the holder.

16. A plate-holder consisting of a frame having openings at its opposite sides for the passage of plates, a closure for the opening, a partition dividing the interior of the frame into two compartments, the bottom and upright edges of the frame formed of channels having their open sides disposed outwardly, facing members for the opposite sides of the frame secured to but spaced from the channels, and detachable channel-like members having their open sides disposed inwardly, the edges of said channel members entering between the channels of the frame and the facing members for inclosing fluid passages which communicate with the interior of the holder.

17. A plate-holder consisting of a frame having opposite openings for the passage of plates, closures for the openings, a partition forming two plate compartments within the holder, the bottom and side edges of the frame formed of channels having their open sides disposed outwardly, facing members for opposite sides of the frame secured to but spaced away from said channels, bottom

and opposite side channel members hinged together with their open sides disposed inwardly and detachably connecting with the frame, the edges of the detachable members entering between the channels of the frame and facing members for inclosing fluid passages which communicate with the interior of the holder.

18. A plate-holder consisting of a frame open at its opposite sides for the passage of plates, a partition dividing the interior of the frame into two compartments, the bottom and side edges of the frame formed of channels having their open sides disposed outwardly, facing members secured to but spaced away from the channels, plate-confining slides movable in the inner portions of the spaces between the channels and facing members, and detachable members having their edges entered in the outer portions of the spaces between the channels and facing members to inclose fluid passages which communicate with the interior of the holder.

19. The combination with a plate-holder, of a fork-like device within the upper portion of the plate-confining space and adapted to embrace the edge of a plate and hold it away from the walls of said space, a stem for said device movable through the upper end of the holder, and a spring confined on the stem for holding the forked device normally projected inward.

20. A plate-holder consisting of a frame partitioned centrally and open at its opposite faces for the passage and exposure of plates, slides closing the open faces, and a two-branch fluid inlet communicating with the frame interior and projecting from the upper end of the holder.

21. A plate-holder consisting of a frame having an opening for the passage and exposure of a plate, a closure for the opening, a notched support in the lower portion of the holder for confining the lower edge of a plate with faces thereof out of contact with the walls of the plate cavity, and a movable device for embracing and similarly holding the upper edge of the plate.

In testimony whereof I affix my signature in presence of two witnesses.

AULEY B. SHEPPARD.

Witnesses:

J. M. NESBIT,
F. E. GATHER.