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PATENTED NOV. 19, 1907.

A. GAFFNEY.

APPARATUS FOR DEVELOPING PHOTOGRAPHIC PLATES.

APPLICATION FILED JAN. 23, 1903.

2 SHEETS--SHEET 1.

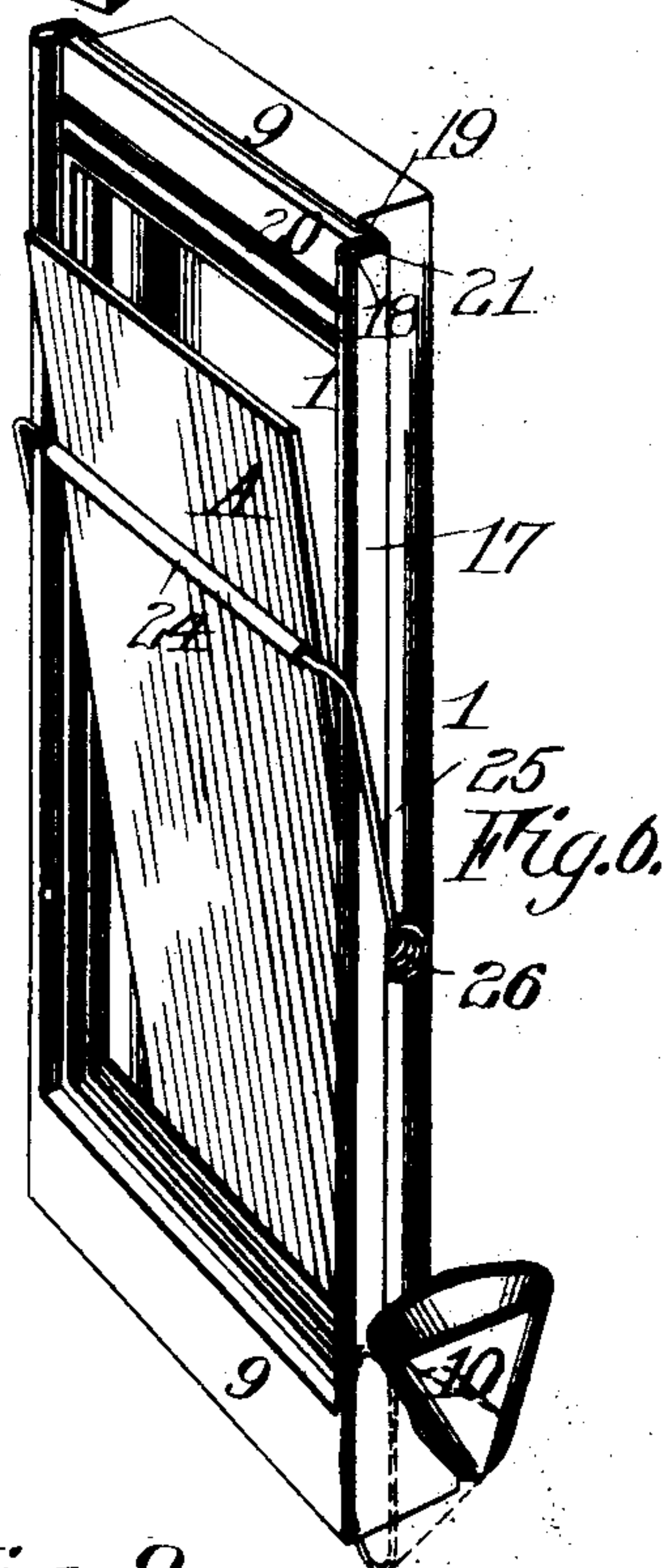
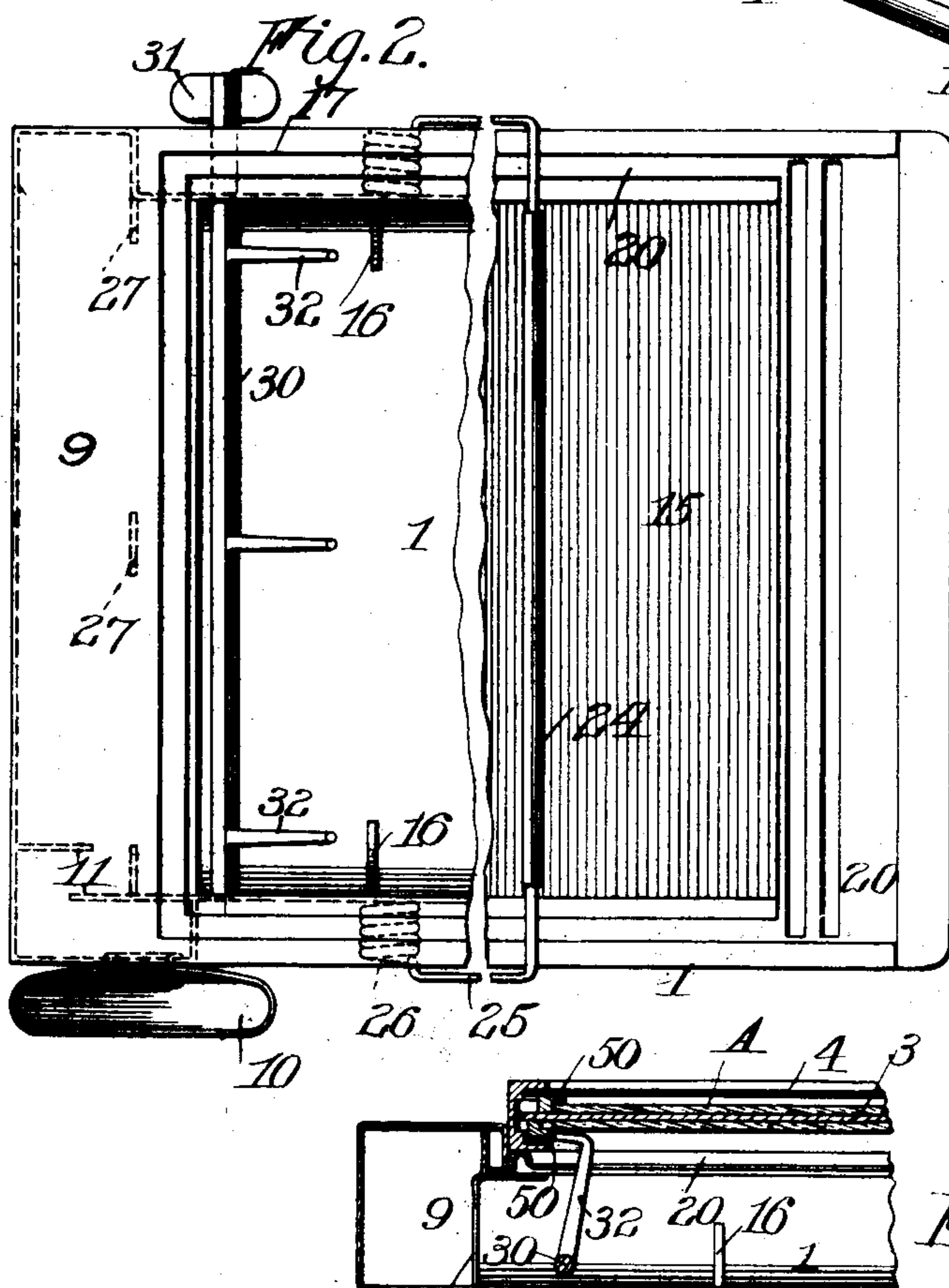
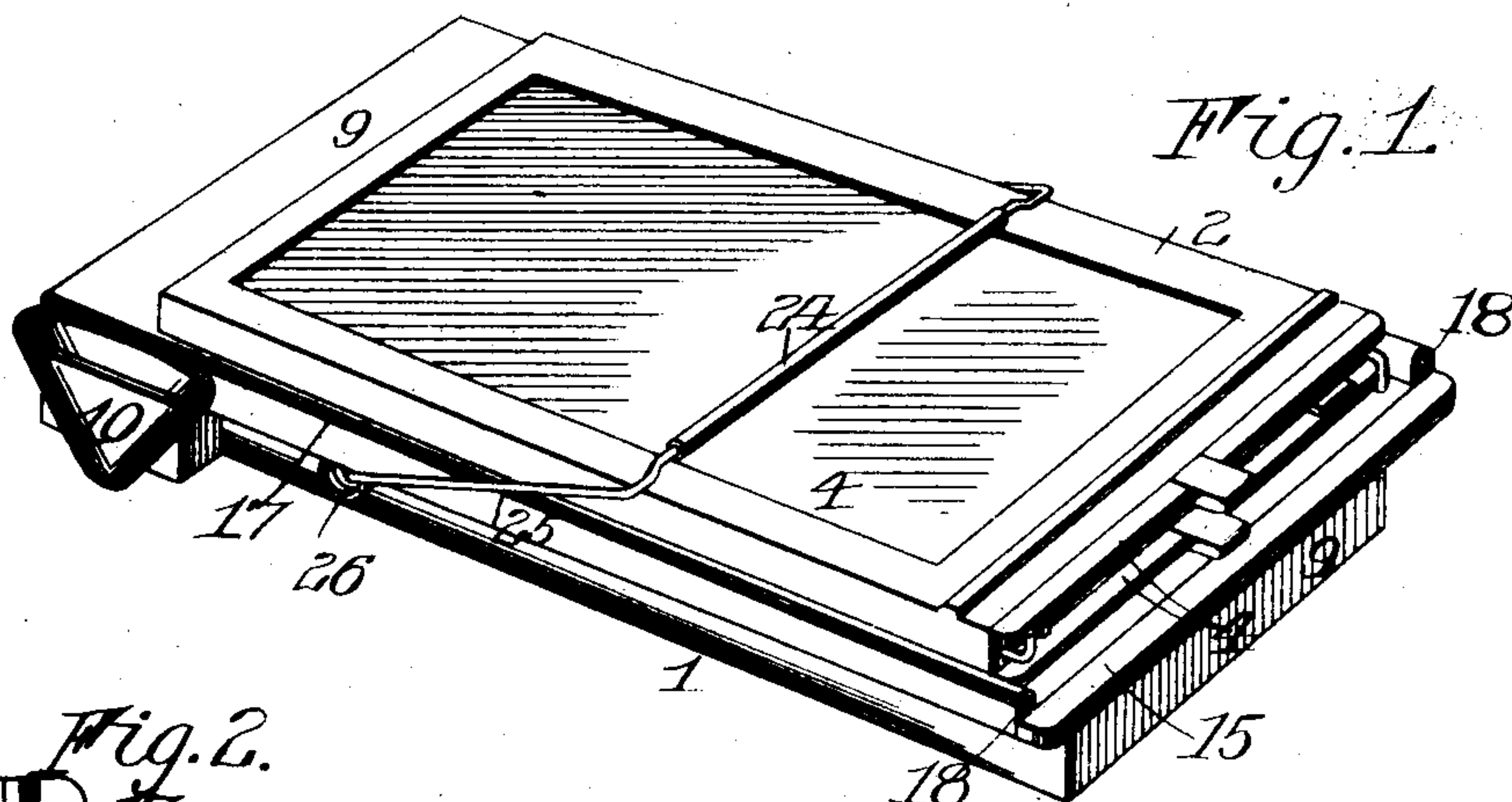


Fig. 8.

Inventor

Witnesses

Walter B. Payne.
William Rich.

Argentine Gaffney
Rich F. Church.
his Attorney

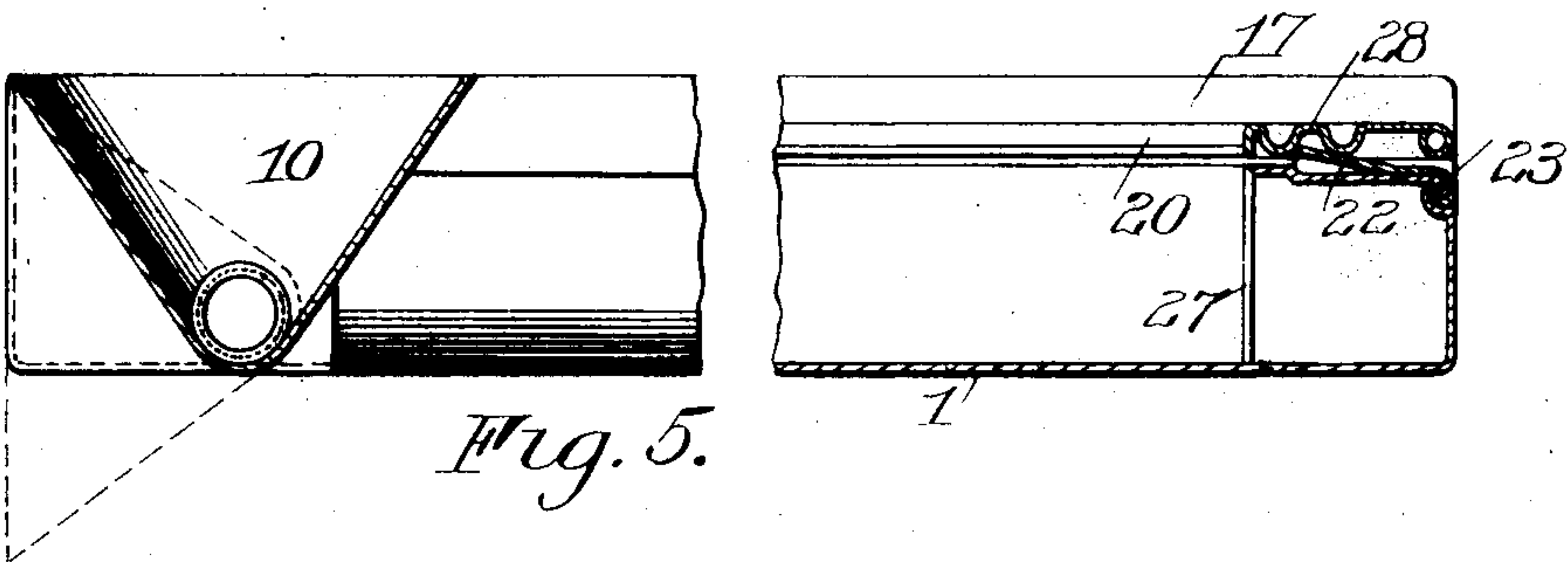
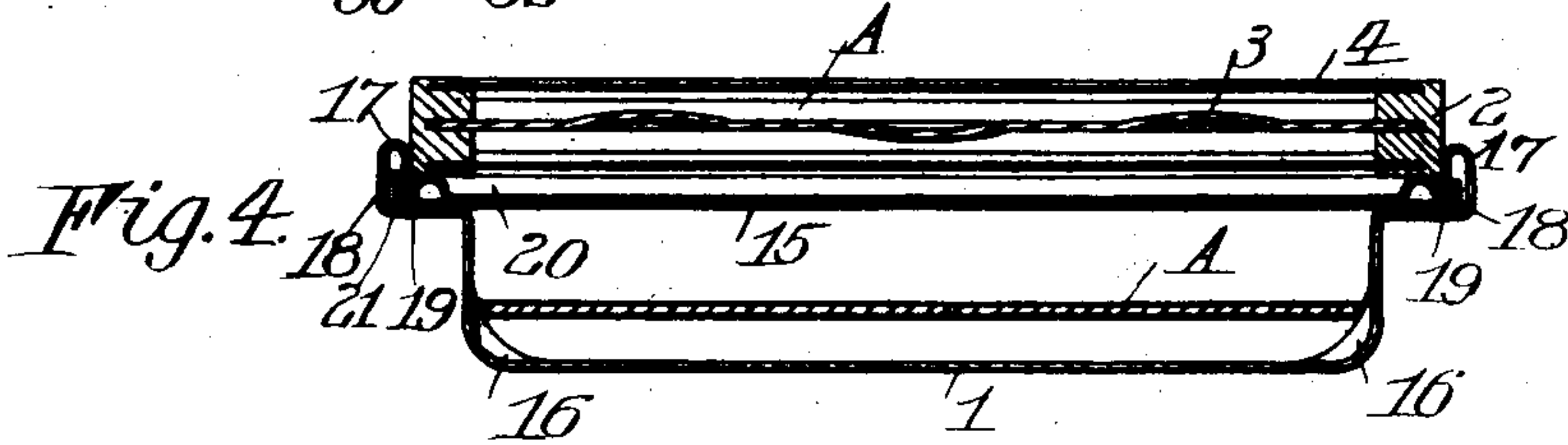
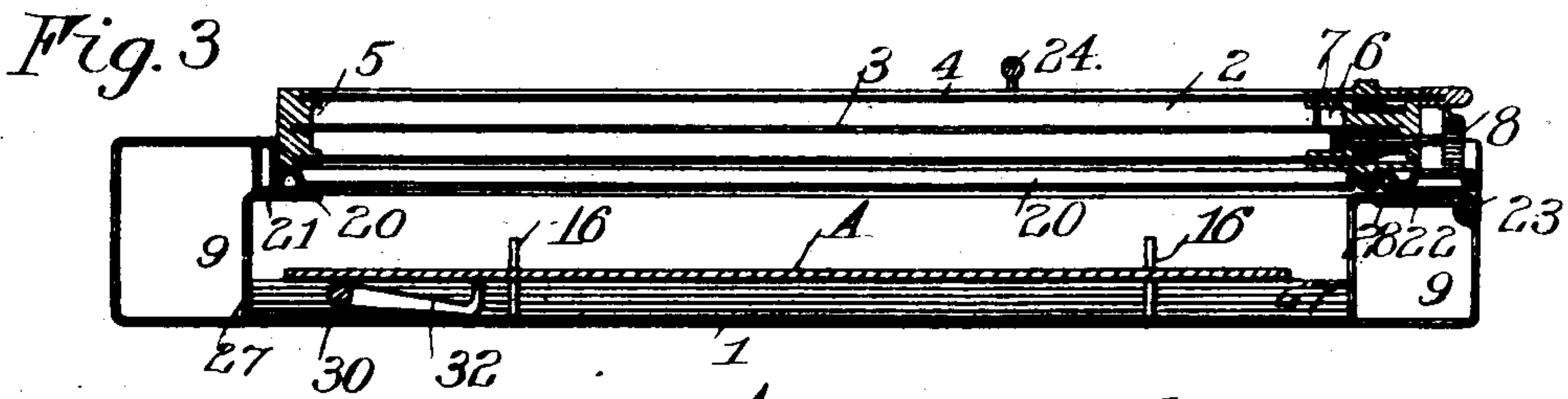
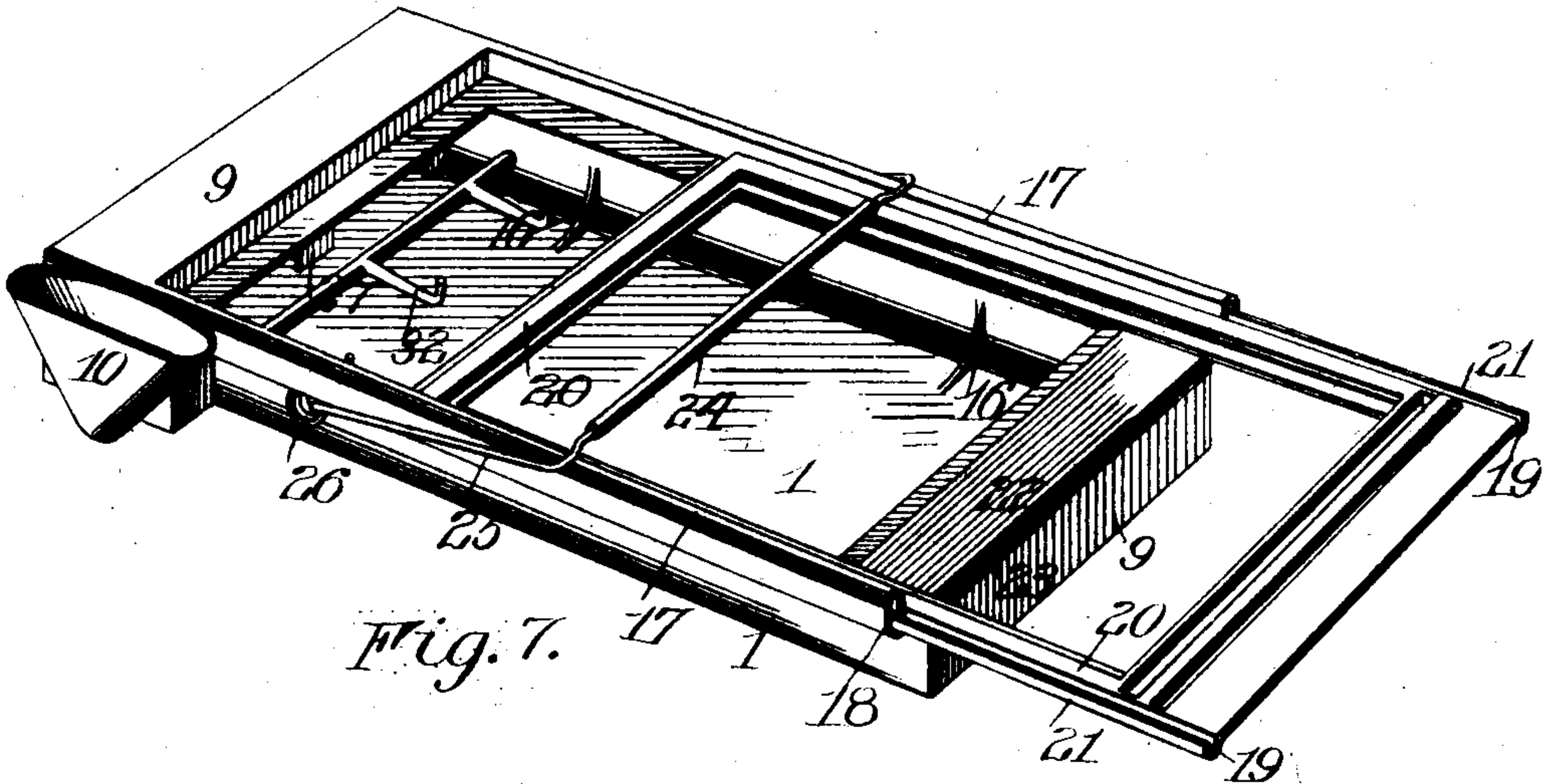
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2 SHEETS—SHEET 2.



Inventor

Witnesses
Walter B. Payne
Willard Rich

Augustine Gaffney
Frederick F. Church
his Attorney

UNITED STATES PATENT OFFICE.

AUGUSTINE GAFFNEY, OF ROCHESTER, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO EASTMAN KODAK COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

APPARATUS FOR DEVELOPING PHOTOGRAPHIC PLATES.

No. 871,332.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed January 23, 1903. Serial No. 140,256.

To all whom it may concern:

Be it known that I, AUGUSTINE GAFFNEY, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Apparatus for Developing Photographic Plates; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention has for its object to provide an apparatus for developing photographic plates or negatives which is adapted to be employed in connection with the usual plate holder whereby the plates may be developed without the trouble and inconvenience of the usual dark room.

My invention embodies generally a suitable tray or receptacle in which a photographic plate is deposited from its holder, and the various developing operations are performed without exposing the plate to the light until after such operations thereon are completed.

To these and other ends the invention consists in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a perspective view of an apparatus constructed in accordance with my invention shown with the plate holder attached thereto. Fig. 2 is a top plan view of the apparatus. Fig. 3 is a longitudinal sectional view, and Fig. 4 is a cross sectional view thereof. Fig. 5 is an enlarged view partly in section illustrating details of construction. Fig. 6 is a perspective view illustrating the operation of the device, and Fig. 7 is a perspective view illustrating certain details of the construction. Fig. 8 is a detail sectional view.

Similar reference numerals in the several figures indicate similar parts.

A developing apparatus constructed in accordance with my invention embodies a tray or receptacle 1 adapted to be employed in connection with a plate holder 2 of the usual or any preferred construction from which the plate is deposited. The plate holder which I have illustrated is one of the double form provided with the chambers, ar-

ranged at opposite sides of a septum 3, which are adapted to be normally closed by means of the slides 4, as will be understood. The plate is secured in the chambers by means of the ledges or portions 5 and 6 on the holder extending over opposite ends of the plate. As shown, one of the ledges projects over the plate a greater distance than the other and arranged in the recess formed thereby is a suitable form of spring device engaging the end of the plate to prevent its lateral movement in the holder. In the present instance I have shown the spring, indicated by 7, which is normally forced inward by a plunger or pin 8 and which when released removes the tension of the spring from the plate so that the latter may be shifted longitudinally in the holder to permit it to be removed as will be further described.

The apparatus embodies the central portion or tray at each end of which are formed tanks or reservoirs 9, having a capacity sufficient to contain the requisite amount of developing fluid or agent. Arranged upon the side of the receptacle and leading into one of the reservoirs is a funnel or filling device which is rotatably mounted upon a hollow sleeve so that it may be revolved into a suitable position to receive the liquid, when it is supplied to the reservoir, and also to enable the operator to readily pour out the contents of the reservoir when desired. To this end I arrange the aperture leading from the funnel adjacent the end of the tray so that when the required amount of liquid is supplied to the reservoir none remains in the funnel. indicates baffle plates located in the reservoir opposite the aperture leading from the funnel which successfully prevent the entrance of light through the aperture leading into the interior of the apparatus. The tray is normally closed by means of an opaque slide 15, similar to the slides 4 in the plate holder, operating in a channel suitably formed between portions of the receptacle and capable of operation to open and close the tray.

In the particular construction of developing apparatus which I have illustrated, the device is formed of sheet metal and the tray 1, as shown in the cross sectional views is slightly greater in length and width than the particular size of plate with which it is intended to be employed. The sides of the

tray are curved and provided with the small supports or filling strips 16 which engage the edges of the photographic plate to support it out of contact with the bottom of the tray as well as the sides thereof, as shown in dotted lines in Fig. 3. The longitudinal movement of the plate is limited by means of the stops or abutments 27 arranged at the ends of the tray which prevent the plate from being moved into either of the two reservoirs. Extending outwardly from the tray is a support for the plate holder the latter being prevented from lateral movement and from a relative longitudinal movement, in one direction, by means of vertically extending side walls 17. The latter are formed by bending the material, as illustrated in Fig. 4, forming inclosed channels 18 therein which are open at their lower proximate sides forming ways in which are guided the edges or portions 19 on a removable open frame 20. The possibility of any rays of light being admitted around said frame is precluded by providing the flanges 21 on the portions 19, which extend into the chambers 18. The plate holder rests upon the frame 20 and the opening therein is equal to the size of the tray and the portions surrounding said opening are separated slightly from the proximate parts of the latter to permit the passage of the slide 15 between them. The valve or flap 22 for excluding the light from this channel, or way in which the slide 15 operates, is formed of a thin sheet of metal or other suitable substance which is not liable to be affected by the chemical nature of developing solutions and which may be secured in position by binding its outer end beneath a roll 23 of the metal of which the apparatus is constructed, as shown in Fig. 5. The outer end of the flap or valve 22 extends into a recess or channel 28, when the slide 15 is withdrawn, effectually preventing the passage of light and as the edge of the flap lies in proximity to the edge of the channel it serves to lock the frame 20 against accidental movement.

The plate holder may be secured in position by any suitable form of device for clamping it into operative position but as it is only necessary to support it upon the apparatus temporarily, I have shown a simple form of clamp consisting of a transversely extending bar 24 having at its ends arms 25 which are attached to coil springs 26 conveniently located beneath the overhanging edges of the support on the tray. By extending the walls 17 upwardly they serve to center the plate holder and as they extend beyond the meeting line of the receptacle and plate holder they exclude the light in case the parts of the two devices do not accurately fit together.

The developing apparatus may be employed with other plate holders than the one

I have described and I therefore provide it with a releasing mechanism or suitable devices for mechanically operating the parts of a plate holder. The releasing device I have shown is adapted to operate in connection with such a holder as that described in Letters Patent granted to W. F. Carleton No. 432,974 in which the ledge 50 corresponding to one of the ledges 5 or 6 which engage the plate, is movable to release the latter.

The releasing device embodies a member or key 30 journaled in the sides of the tray having the operating end or handle 31, at the exterior thereof, and within the tray the key is provided with a plurality of fingers 32 which are adapted to be rotated into the position shown in Fig. 8 to move the ledge 50 out of engagement with the plate to allow the latter to be dropped into the tray, as will be understood.

The operation of the device will be understood. When it is desired to develop a plate, the operator places the holder 2 upon the apparatus, as illustrated in Fig. 1, with the side containing the plate or negative which has been previously exposed adjacent the apparatus. If the slide 15 has not been previously removed it is then withdrawn and the lowermost slide 4 of the plate holder subsequently withdrawn. The photographic plate, indicated by A, is then released from the plate holder by releasing the plunger or pin 8, to remove the tension of the spring 7, thereby permitting the plate to be moved longitudinally in the holder. By rocking the device slightly the plate will be disengaged from the ledges 5 and 6 and permitted to drop into the tray 1 where it is supported upon the strips 16 and prevented from longitudinal movement by means of the abutments or stops 27. By thus supporting the plate its prepared surface or coating of film is prevented from injury by contact with the tray and the liquid is permitted to circulate freely around and over it. Before proceeding with the developing operation, the slide 15 is replaced so that the plate holder 2 may be removed, if desired. The apparatus is then held in a vertical position, as shown in Fig. 6, and the required amount of developing agent is poured into the funnel 10 and passes into the reservoir connected thereto. The funnel is then rotated upon the sleeve to the position shown in dotted lines in said figure and the apparatus is then tilted allowing the plate to be flooded with the solution as it flows from one end to the other. After this operation has been continued the desired length of time the funnel is revolved to the position shown in dotted lines in Fig. 5 permitting the liquid to be conveniently poured out of the tray. The subsequent operation of washing the plate with water may then be performed and the final operation of fixing the plate accomplished by filling the

receptacle with the required amount of the solution employed for this purpose. When this latter operation is completed the slide 15 may be withdrawn and the apparatus held in a substantially vertical position to cause the plate or negative to tip outwardly, its movement being arrested by the bar 24, as shown in dotted lines in Fig. 5, whereby it may be conveniently grasped and removed 10 by the operator.

The receiving tank or reservoir arranged at one side or end of the tray permits the required amount of the various solutions to be supplied and the whole plate immersed at 15 once and by providing a similar reservoir at the opposite side or end of the tray I am enabled to flood the plate in opposite directions with the whole volume of liquid which will effectively prevent bubbles from forming on the surface of the plate. Further by 20 arranging the tanks or reservoirs as I have shown them the liquid as it flows from one end of the tray to the other, as the latter is rocked, is prevented from splashing onto the slide 15 or from overflowing into the channel in which it operates. The frame forming this channel being removable and the entire apparatus constructed in a simple manner of 25 sheet metal it may be thoroughly cleaned after each operation, so that the development of plates or negatives subsequently may not be affected by chemical deposits remaining therein. The plate releasing mechanism which I have described is but one 30 form that may be employed and as various devices may be arranged to adapt the apparatus for operation in connection with other forms of plate holders, I do not limit myself to the precise construction shown.

By employing an apparatus such as I have described photographic negatives may be subjected to the various developing operations in the daylight and the result of the exposure or picture determined without the 35 necessity of resorting to the dark room.

I claim as my invention:

1. In an apparatus for developing photographic plates, the combination with a tray and a reservoir having an open side extending across the tray and leading into the latter, of a retaining bar extending over said open side and adapted to engage a plate holder arranged on the tray and yielding connections between its ends and the tray. 50

2. In an apparatus for developing photographic plates, the combination with a tray and reservoirs having open sides arranged in opposition to each other at opposite sides of the tray, of stops between the tray and reservoirs, means for supporting a plate holder 60 centrally over the tray and a closure for the latter.

3. The combination with a tray, a reservoir connected thereto and a filling device 65 leading into the reservoir and movably con-

nected thereto whereby it may be maintained in an upright position irrespective of the relative position of the reservoir, of means for securing a plate holder on the tray.

4. The combination with a tray, a reservoir connected thereto at one side, and a funnel arranged at one end of the reservoir and revolvably mounted thereon and provided with a passage leading into the latter and located in proximity to the tray, of means for 70 securing a plate holder to the tray.

5. The combination with a tray, reservoirs located at the ends thereof and stops between the latter and the tray, of supports arranged in the tray and adapted to engage 80 the edges of a plate, means for securing a plate holder on the tray and a closure for the latter.

6. The combination with a tray, and curved supports arranged therein and adapted to engage the edges of a plate, of means for securing a plate holder to the tray and a slide for closing the tray. 85

7. The combination with a tray having a support adapted to receive a plate holder, of walls extending above the support, devices for securing the holder to the tray and means for closing the tray independently of the plate holder. 90

8. The combination with a tray and a support thereon having walls extending above the latter and provided with channels, of a slide for closing the tray guided in the channels and means for securing a plate holder on the support. 95 100

9. The combination with a tray and a support thereon having walls provided with channels, of a slide for closing the tray, means arranged above the slide and adapted to receive a plate holder and support it out 105 of contact therewith and devices for securing the holder on the support.

10. The combination with a tray and a support thereon having walls provided with channels, of a removable frame extending 110 over the support and guided in the channels, of a slide operating between the frame and support and a clamping device for securing a plate holder in position on the tray.

11. The combination with a metal tray, a support thereon and an open frame extending over the latter and separated therefrom to form a passage, of a movable slide arranged between the frame and support and a valve formed of resilient material secured at 120 one edge beneath a roll in the metal forming one of the parts and adapted to close the passage in which the slide operates.

12. The combination with a tray, of a single clamping bar extending over the tray 125 and arms at the end of the base yieldingly attached to the tray, said bar being adapted to engage a plate holder to secure it on the tray.

13. The combination with a tray having 130

an overhanging edge or support thereon, of a clamping member movable relatively to the tray and spring operated arms supporting said member and secured to said overhanging edge.

14. The combination with a tray or receptacle and a removable frame thereon, one of the parts being provided with a channel, of a valve secured to the other part and having the edge lying in the channel to lock the tray and frame together and a slide for closing the tray.

15. The combination with a tray having a support thereon and an open removable frame extending over the latter and separated therefrom to form a passage and provided with a channel, of a slide operating in the passage to close the tray and a valve secured to the tray having the end adapted to extend into the channel, when the slide is withdrawn.

16. In an apparatus for developing photographic plates the combination with a tray

and a plate holder arranged thereon having movable plate securing devices, of a releasing mechanism arranged on the tray and adapted to cooperate with said devices to release a plate from the holder.

17. The combination with a tray, a closure therefor and a support for a plate holder, of mechanism arranged in the tray and adapted to cooperate with the plate holder to release a photographic plate therefrom and means accessible from the exterior of the tray for operating said mechanism.

18. The combination with a tray, a slide for closing it and a support for a plate holder, of a member arranged in the tray having fingers thereon adapted to cooperate with a plate holder and means for operating the member to release a plate therefrom.

AUGUSTINE GAFFNEY.

Witnesses:

G. WILLARD RICH,
ELIZABETH J. PERRY.