

No. 762,886.

PATENTED JUNE 21, 1904.

W. CROSS.

WASHING AND DRYING APPARATUS FOR PHOTOGRAPHIC FILMS.

APPLICATION FILED APR. 8, 1903.

NO MODEL.

FIG. 1.

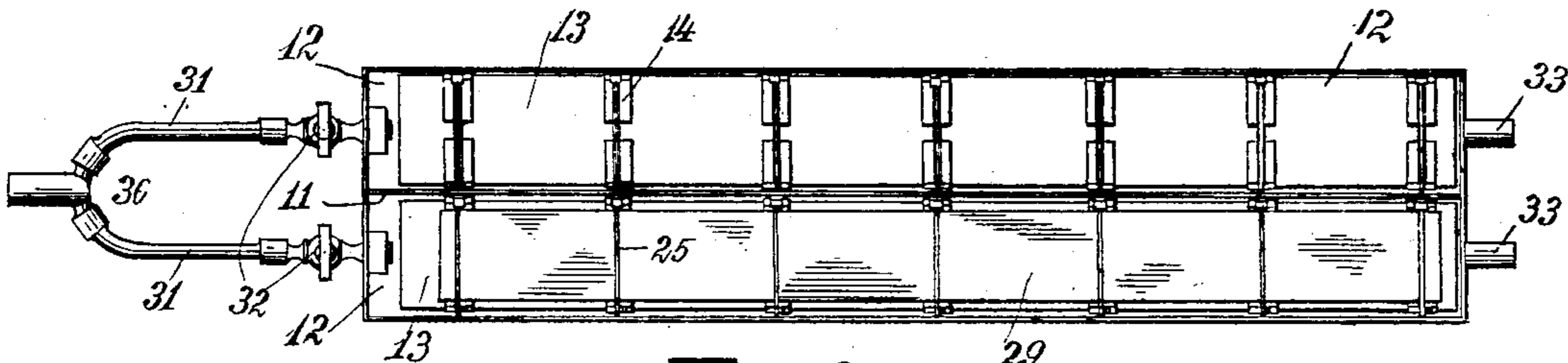


FIG. 2.

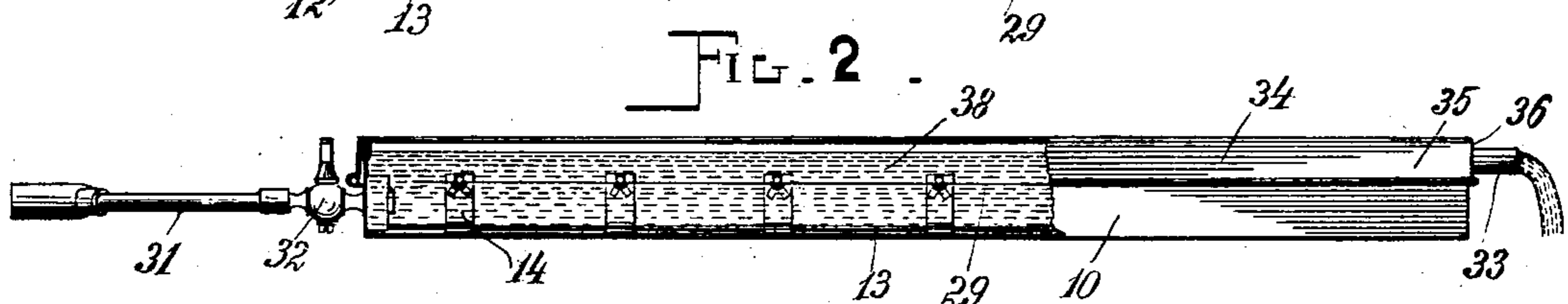


FIG. 3.

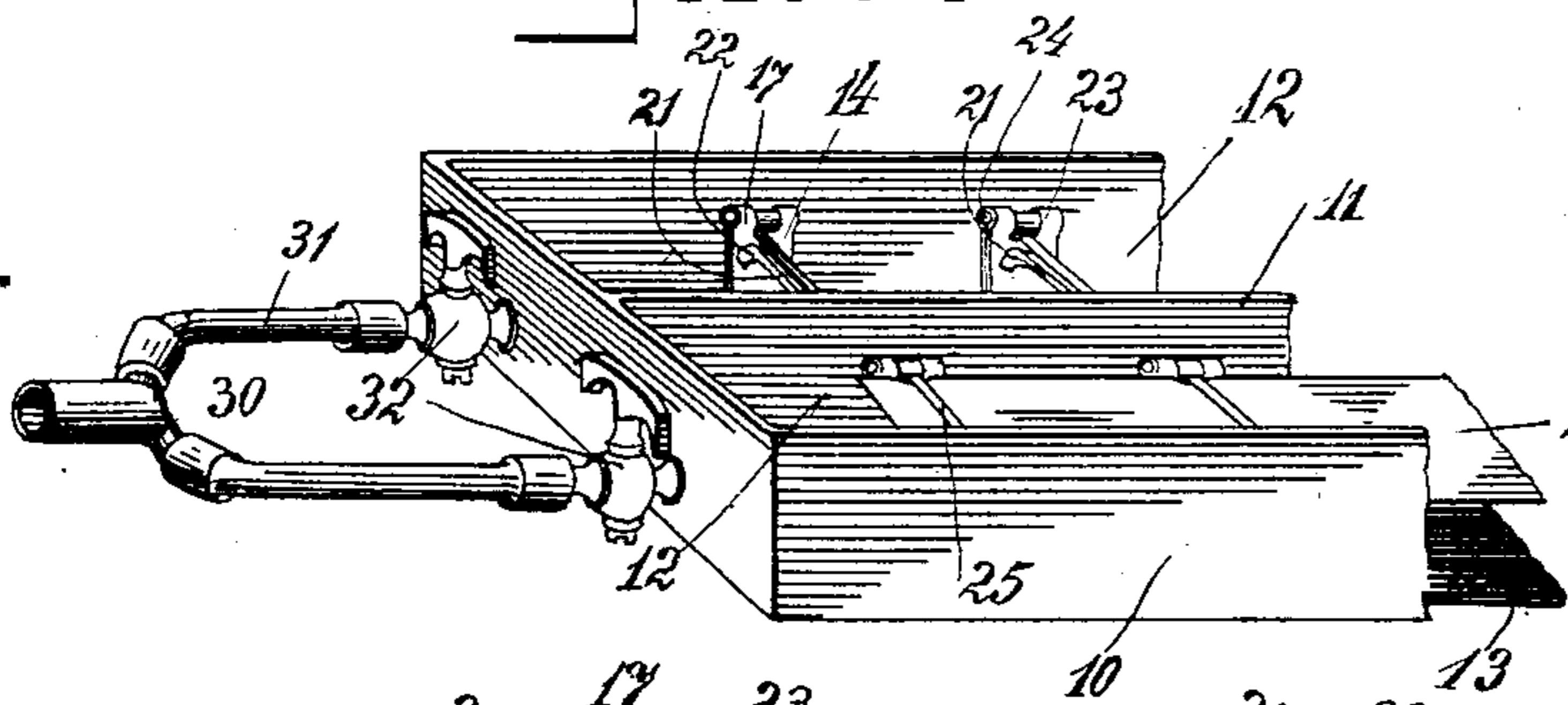


FIG. 4.

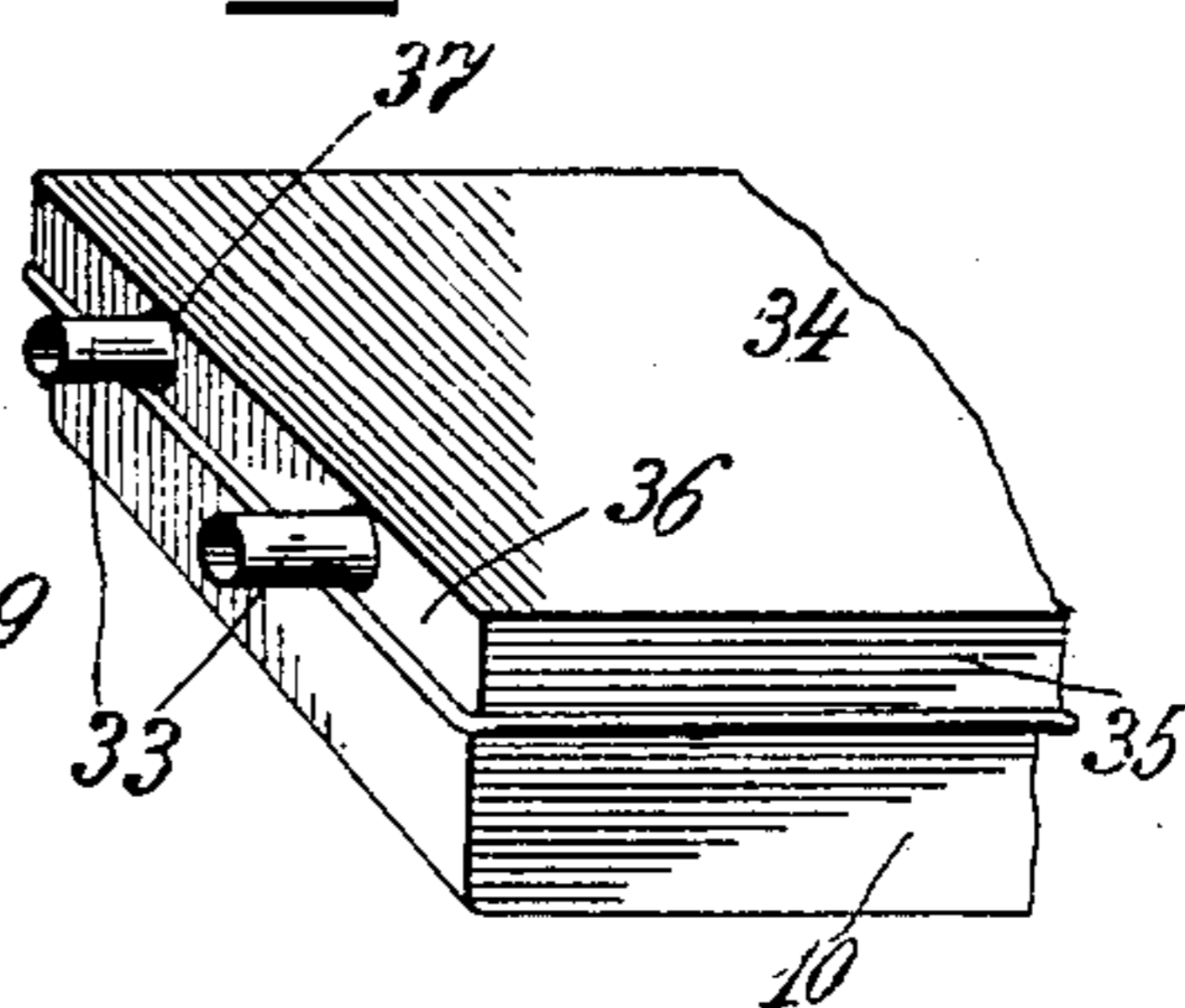
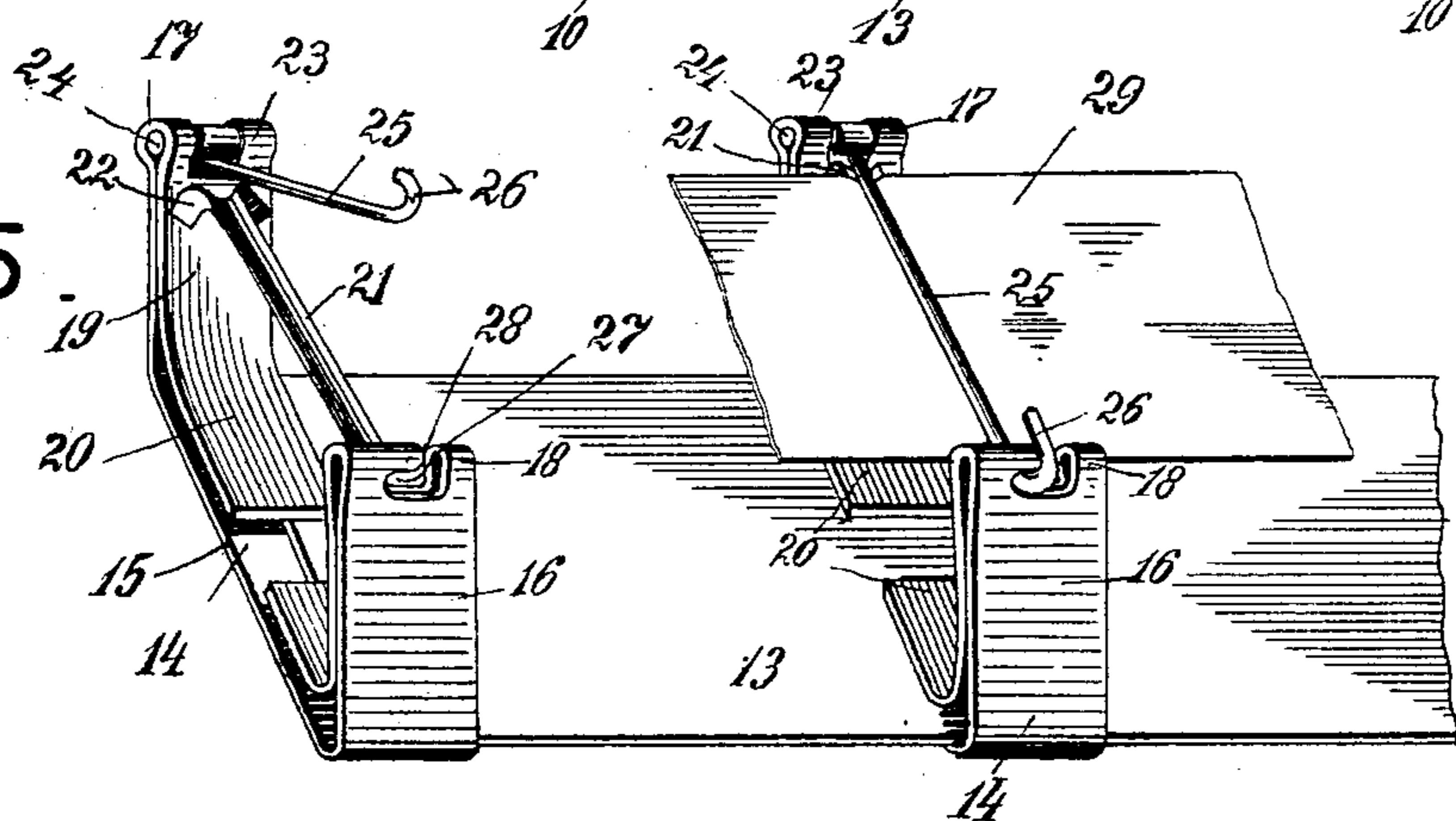


FIG. 5.



Witnesses:

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WASHING AND DRYING APPARATUS FOR PHOTOGRAPHIC FILMS.

SPECIFICATION forming part of Letters Patent No. 762,886, dated June 21, 1904.

Application filed April 8, 1903. Serial No. 151,608. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CROSS, a subject of the King of Great Britain, residing at Calgary, Alberta, North-West Territories, Canada, have invented certain new and useful Improvements in Washing and Drying Apparatus for Photographic Films; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to photography, and is especially concerned in providing an improved apparatus for washing and drying photograph-films such as are used in kodaks and similar cameras, which films consist of continuous bands, successive portions of which have been exposed. Hitherto films have been dried by simply pinning them upon a board, and the films usually exhibited a strong tendency to curl at the edges, which is most undesirable. My invention overcomes this difficulty.

In its general construction the invention contemplates the employment of a box or receptacle through which running water may flow, and this receptacle is provided with arrangements for securing a film within the same in such a manner as to be thoroughly washed by the water. Improved means are provided for attaching and removing the film, all with a view to facilitating the washing and subsequent drying of the film.

The invention consists in the construction and combination of parts to be more fully described hereinafter, and definitely set forth in the claims.

In the drawings, which fully illustrate my invention, Figure 1 is a plan of the device with its cover removed. Fig. 2 is substantially a side elevation, a portion of the apparatus being shown in section, as will appear. Fig. 3 is a perspective view representing a portion of the forward end of the apparatus. Fig. 4 is a perspective view representing a portion of the opposite or rear end of the apparatus. Fig. 5 is a perspective view, upon a much enlarged scale, showing how a photograph-film is held within the device during the washing operation.

Throughout the drawings and specification the same numerals of reference indicate like parts.

Referring more particularly to the parts, 10 represents the body of the apparatus, which, as indicated, consists, substantially, of an elongated rectangular box, which is preferably formed of sheet metal or similar material, adapted to contain a bath. The box shown is provided with a longitudinally-disposed partition 11, which divides the space within the box into two compartments, so that the device shown is adapted to wash two films at the same time. Of course, if desired, the body or box 10 may be made of greater width, so as to wash a greater number of films simultaneously, there being then a plurality of longitudinally-disposed dividing-partitions.

Within each of the compartments 12 there is disposed an elongated band or plate 13, preferably formed of sheet metal. This plate, it should be understood, is removable and simply rests upon the bottom of the box or compartment. To this plate are attached a plurality of clips 14, which are disposed at equidistant intervals along the length thereof, their distance apart depending upon the length of the successive exposures or pictures upon the film, as will be readily understood, and it should be stated that they are so placed that they lie at the lines of division between the successive exposures. It should be understood that these clips afford means for securing the film. The manner in which they do this will be hereinafter described. Referring more especially to Fig. 5, it should appear that each of the clips 14 comprises a band 15, disposed transversely beneath the said plate 13, which band is bent upwardly at the sides to form standards 16, which terminate above in enlarged heads 17 and 18, respectively, as indicated. It should appear that these standards are reinforced by bending the band back upon itself, as indicated at 19, and below this point the band terminates in horizontal extensions 20, which project toward each other and are substantially parallel with the aforesaid portion 15 and the extensions 20, and it should appear that this arrangement affords means whereby the clips resiliently clasp the

plate. At the same time, evidently, they might be slipped along into any new desired position if sufficient force be used. These standards 16 aforesaid are connected by struts 21 near their upper portions, which struts consist, substantially, of members formed of light metal of channel shape, as shown, the "channel" or concave side of the same being disposed upwardly, as will appear. The extremities of these struts are formed with integral feet 22, which are secured to the standards, as shown. It should be observed that the heads 17 aforesaid are cut away centrally, as shown, so as to form oppositely-disposed ears 23, in which are mounted pivot-pins 24, to which are rigidly attached light bars or keepers 25. It should be understood that these keepers by reason of the pivots 24 may swing in a vertical plane, and the aforesaid channel-struts 21 are disposed in the planes in which these keepers swing, and the arrangement is such that these keepers may be swung down, so that they could lie in the channels 21 and would afford means for clamping an article, such as a photograph-film 29, thereagainst. As indicated, these keepers 25 are preferably formed with crooks 26 at their extremities, and they are adapted to be retained in their locked or clamping position by means of the undercut notches or recesses 27, formed in the heads 18, it being understood that a certain resiliency of the parts permits the keepers to be thrown to a certain extent out of their normal plane, so as to enter the laterally-displaced openings 28 of the recesses 27.

The manner of applying the film and clamping the same to the channel-struts 21 should clearly appear from an inspection of Figs. 3 and 5. It should be stated that in applying a film, however, it is preferably clamped first at its ends, a slight tension being given to the film before clamping the same at these points. The film is then secured to the intermediately-disposed clips at the lines of division between the successive exposures, the film being clamped in this manner with its face or active side downwardly. The films having been placed in the compartments in the manner described, running water may be admitted to the compartments by means of the rubber-hose connection 30, comprising the branches 31 and stop-cocks 32 for controlling the flow through the said branches. The water finds outlet through the spouts 33, one of which is provided in connection with each of the compartments 12. These are disposed at a high level, so as to insure the proper immersion of the film during the washing operation.

The box 10 may be provided with a suitable cover 34 of substantially the construction shown, comprising a marginal flange 35, the rear portion 36 whereof is provided with a pair of openings 37, corresponding in position to the aforesaid spouts 33 and which are adapted to receive the same in the manner in-

indicated in Fig. 4, it being understood that in order to apply the cover the spouts 33 would be first inserted in the openings 37 and the cover thereafter moved longitudinally and downwardly until it seated itself properly. There is, of course, sufficient play or space allowed between the spouts 33 and the edges of the opening 37 to permit the manipulation described.

It will appear that my invention is especially adapted for receiving films directly from the fixing solution used in their development, the device being supported upon a suitable horizontal table or shelf, so that the running water may pass from the spouts 33 to a sink or basin. After the washing operation is complete the film and the plate, together with the clips, may be removed bodily, their relation being maintained undisturbed, whereupon the film may be set in an exposed position, where it will dry quickly. It should appear that the keepers 25 afford effective means for preventing the undesirable tendency to curl at the longitudinal edges of the film, which tendency usually manifests itself with many forms of apparatus for this purpose.

While I have shown in the accompanying drawings the preferred form of my invention, it will be understood that I do not limit myself to the precise form shown, for many of the details may be changed in form or position without affecting the operativeness or utility of my invention, and I therefore reserve the right to make all such modifications as are included within the scope of the following claims or of mechanical equivalents to the structures set forth.

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

1. In a device of the class described, in combination, an elongated receptacle for a bath, a removable member lying within the same and immersed in said bath, and fastening devices attached to said removable member at regular intervals equal to the distance between the pictures and adapted to support a film horizontally thereabove.

2. In a device of the class described, in combination, a receptacle for a bath, a removable member mounted therein, and means for attaching a film to said removable member substantially at the lines of division between the exposures upon said film.

3. In a device of the class described, in combination, a receptacle for a bath, a plurality of fastening devices disposed within the same, said fastening devices being adapted to secure a film at the lines of division between adjacent exposures upon the same.

4. In a device of the class described, in combination, an elongated member, clips carried thereby and movable longitudinally with respect to the same, said clips constituting fastening devices for attaching a film.

5. In a device of the class described, in combination, an elongated member, clips carried thereby and movable longitudinally with respect to the same, said clips comprising transversely-disposed members adapted to clamp a photograph-film therebetween.

6. In a device of the class described, in combination, an elongated member, a clip carried thereby and comprising transversely-disposed members adapted to clamp a film therebetween, one of said members being substantially of channel form, and one of said members being movable.

7. In a device of the class described, in combination, an elongated member, resilient clips adapted to slide thereupon, said clips comprising transversely-disposed members adapted to clamp a photograph-film therebetween, one of said members being movable.

8. In a device of the class described, in combination, an elongated member, clips carried thereby and having oppositely-disposed standards, a fixed member connecting said standards, and a movable member cooperating therewith to clamp a photograph-film thereto.

9. In a device of the class described, in combination, an elongated plate, clips having resilient extensions adapted to clamp said plate, said clips comprising oppositely-disposed standards, and a pivoted member connecting said standards and adapted to clamp a film therebetween.

10. A film-holder for washing photographic roll-films, comprising a body-piece having a plurality of transverse clips thereon at intervals corresponding to the distance between the successive photographs on the film-roll.

11. A film-holder for roll-films while being washed and dried, comprising an elongated body member adapted to hold a strip of film having a series of photographs thereon, and a plurality of adjustable clips adapted to seize the film transversely from side to side in the spaces between the photographs.

12. A film-holder for photographic roll-films while being washed and dried, comprising an elongated body member, a series of offset standards slidable longitudinally thereon, and a plurality of clips carried by said standards and comprising jaws extending transversely of the film.

13. A washing and drying apparatus for photographic roll-films, comprising an elongated shallow tray, means for supporting a strip of film parallel to the bottom of said tray, and means for directing a current of water from one end of said tray to the other end thereof.

14. A washing and drying apparatus for photographic roll-films, comprising a shallow elongated tray having approximately the area of a strip of film, a removable frame adapted to hold a strip of film stretched in said tray in horizontal position and parallel to the length thereof, and means for producing a current of water longitudinally in said tray.

15. A washing and drying apparatus for photographic roll-films, comprising a shallow elongated tray having approximately the area of a strip of film, a removable frame adapted to hold a strip of film stretched in said tray in horizontal position and parallel to the length thereof, a water-inlet at one end of said tray, and a water-outlet at the other end thereof.

16. A washing and drying apparatus for photographic films, comprising a water-tray, means for producing a current of water longitudinally therein, and means for supporting a strip of film horizontally and longitudinally in said tray.

17. A washing and drying apparatus for photographic films, comprising a water-tray, means for producing a current of water longitudinally therein, and a plurality of clips comprising transverse jaws positioned between the successive photographs on a strip of roll-film and adapted to extend from side to side of said film and clamp the same.

18. A washing and drying apparatus for photographic roll-films, comprising a double water-tray divided by a partition, means for supporting a strip of film longitudinally in each compartment, and independent means for directing a current of water through each compartment of said tray.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM CROSS.

Witnesses:

MAGGIE RITCHIE,
M. C. BERNARD.