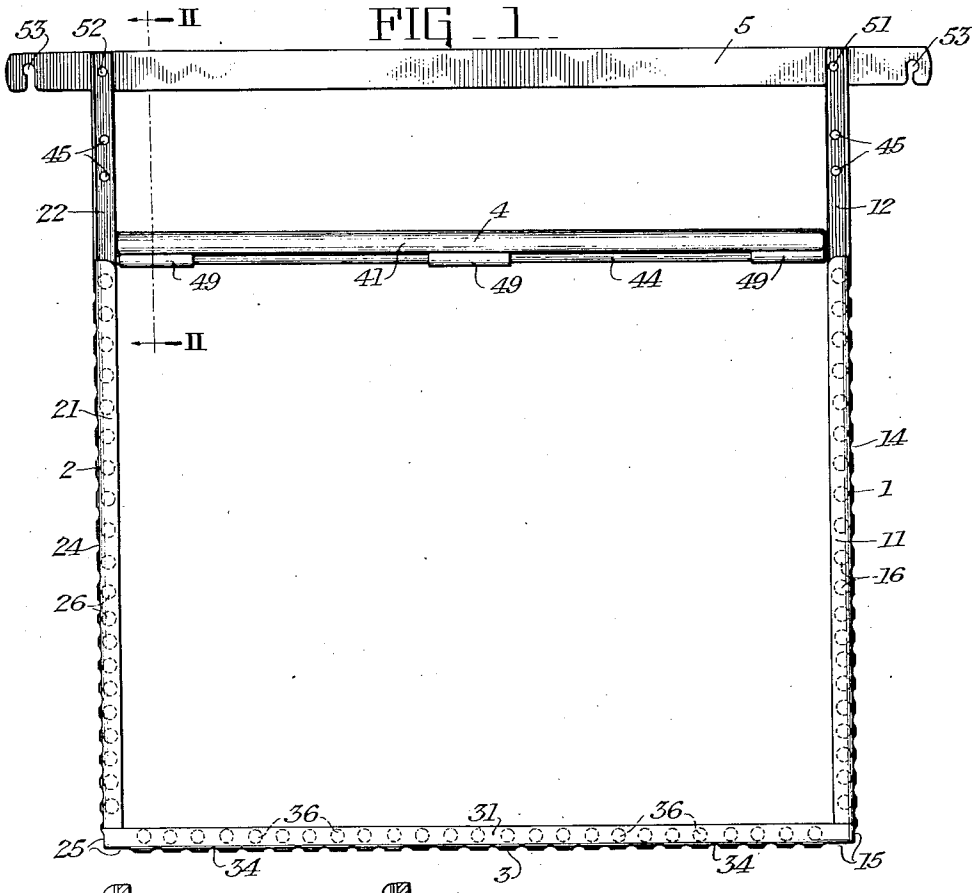
A. K. CHAPMAN.

FILM HOLDER.

APPLICATION FILED DEC. 9, 1920.

1,398,938. Patented Nov. 29, 1921.

FIG. 1.



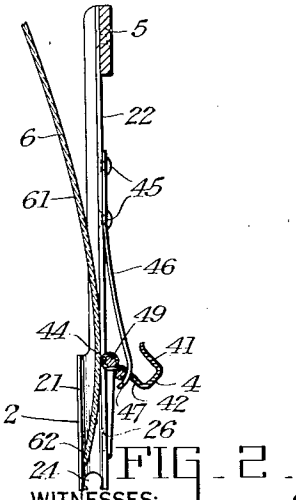


FIG. 2.

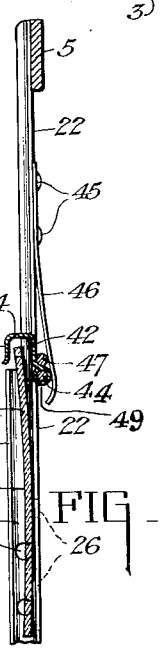


FIG. 3.

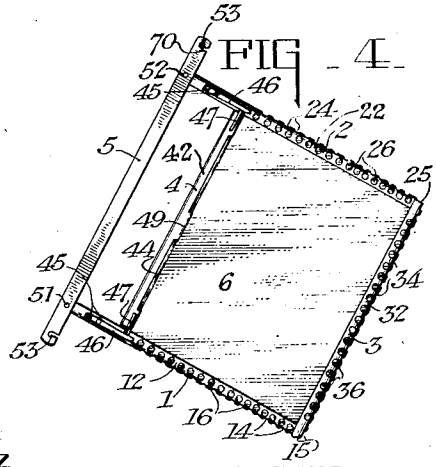


FIG. 4.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ALBERT K. CHAPMAN, OF ROCHESTER, NEW YORK, ASSIGNOR TO EASTMAN KODAK COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

FILM-HOLDER.

1,398,938. Specification of Letters Patent. Patented Nov. 29, 1921.

Application filed December 9, 1920. Serial No. 429,549.

To all whom it may concern:

Be it known that I, ALBERT K. CHAPMAN, a citizen of the United States of America, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Film-Holders, of which the following is a full, clear, and exact specification.

This invention relates to frames for holding films during fluid treatment and drying; more particularly it relates to certain modifications of the film holders shown in the patent to N. E. Luboshez, No. 1,363,184 granted Dec. 21, 1920.

The principal object of my invention is to provide for improved draining of the fluid from the channels of the holders while facilitating easy loading of the film into position.

In the accompanying drawing:

Figure 1 is a front elevation of a frame embodying the preferred form of my invention;

Fig. 2 is a vertical transverse fragmentary sectional view on the line II—II of Fig. 1 of the upper part of the holder, showing the initial position of the film when being loaded into the channels;

Fig. 3 is a vertical fragmentary sectional view of the upper part of the holder showing the film in position;

Fig. 4 is a rear elevation of a loaded frame suspended during the drying operation.

My frame comprises four channel members, the two vertical side members being 1 and 2, while the lower and upper transverse or horizontal members are 3 and 4 respectively. The members 1, 2, 3, and 4 have inwardly extending spaced flanges 11—12, 21—22, 31—32, 41—42. The upper member 4 is supported on a transverse rod 44, the ends of which are fastened to outer sides of the flanges 12 and 22. The member 4 has tubular portions 49 which embrace the rod 44, so that member 4 can swing about it as a pivot. Upon the flange 42, at each end thereof, there is soldered or otherwise fastened a projecting rod 47, located above one of the tubular portions 49. Bearing against rods 47 are leaf springs 46, which are attached to flanges 12 and 22 at 45, say by rivets for example. When the member 4 is swung to its first position, as shown in Fig. 2, the springs 46 bear against rods 47 below pivot rod 44 and consequently retain member 4 in such position. When, however, member 4 is swung into its second or retaining position, as shown in Fig. 3, springs 46 bear against rods 47 above pivot rod 44, and therefore, retain it in that position.

The proper drainage of the liquids during the drying operation is a prime essential in rapid work under commercial conditions. I provide the bases or outer walls of the members 1, 2, and 3 with draining openings or perforations 14, 24 and 34 respectively. The corners where members 1 and 2 join transverse member 3, are cutaway at 15 and 25 to likewise permit of additional drainage.

When the film 6 is loaded into the frame, its sensitive side 61 is kept opposite to the transverse rod 44 and tubular portions 49, as indicated in Fig. 2. Consequently only the back of the film can contact with parts 44 and 49. Since such parts are substantially smooth and the rear face of the film is quite resistant, no injurious scratching takes place. If the film were reversed and the sensitive side 61 of the film 6 should rub against parts 44 and 49, friction or abrasion marks might be caused, which would appear upon development to the detriment of the finished picture.

But the film normally curls in such a way as to make the sensitized face 61 concave, as shown in Figs. 2 and 3. During at least part of the operations the film, therefore, contacts more closely with flanges 12 and 22 than with flanges 11 and 21. The tendency to retain water or other fluid by capillary attraction in the spaces between the film and flanges 12 and 22 may, therefore, increase. In order to prevent any retention during any part of the processes, I provide flanges 12 and 22 below the rod 44 with a series of draining openings or perforations 16 and 26. Similar perforations 36 may, of course, be placed in the flange 32 of the lower member 3.

However, I leave the portions of flanges 12 and 22 above the rod 44 substantially smooth and continuous and likewise keep the inner faces of flanges 11 and 21 smooth and continuous to facilitate loading. My experiments have shown that if perforations be used in the upper portions of flanges 12 and 22 or flanges 11 and 21, the entering corners of the film will catch in such perforations during such loading and make the latter a slow and unsatisfactory operation. But by keeping these parts smooth and con-

tinuous, the film slides into place readily. The lack of perforations in these parts does not in actual use impair the draining and drying properties of the holders. The member 4 being on the upper side during draining and drying does not need any perforations at all.

Referring to the drawing, it will be seen that flanges 11 and 21 do not extend above the vicinity of rod 44, but leave free access to the smooth upper portions of flanges 12 and 22. The tops of members 1 and 2 are joined to a suspension bar 5 inwardly from the ends of the latter at 51 and 52. The outer ends of suspension bar 5 are provided with notches 53 on which the frames may be hung during draining and drying in a diagonal position, as shown in Fig. 4, one notch 53 fitting over rod or pin 70 as a support. Notches 53 may conveniently be enlarged, preferably in an outer direction, at their tops, as shown.

In loading the holder the member 4 is swung back to its first position, as shown in Fig. 2. The lower edge 62 of the film rides on the smooth upper portions of flanges 12 and 22 into the grooves between the flanges 11 and 12 and 21 and 22. When it enters such grooves the natural curl of the film, the sensitive face 61 being outward, causes the corners or ends of lower edge 62 to ride against the smooth inner faces of flanges 11 and 21, thereby guiding the film easily into its final position, indicated in Figs. 3 and 4. When the film has slid downwardly, the member 4 is moved to its second position with flanges 41 and 42 embracing the upper portion of the film.

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

1. A frame for holding film during fluid treatment and drying, said frame comprising two spaced channel members, the flanges of each of which extend toward the other member, a transverse bar connecting the lower portions of said members, a transverse element connecting the upper portions of said members at one side of the channels thereof, the flange of each member nearest said element having fluid-draining openings and the other flange of each member having a smooth continuous inner film-guiding face.

2. A rectangular open film-holding frame, comprising two side members and two transverse members, each member having an inwardly facing groove formed by spaced flanges extending substantially throughout its length, the flanges freely supporting the edges of the film, one of said transverse members being mounted to swing to its first position out of alinement with the grooves in said other members, to permit the film to slide therein and also to swing to its second position into alinement with the grooves in said side members with its flanges on opposite sides of the edge of the film, the base of each side member and that flange of each side member which is nearest said swinging member when in said first position having fluid-draining perforations therein, and the other flange of each side member being smooth and unperforated.

3. A film holder comprising a top suspension bar, two spaced inwardly facing channel members attached to said bar at points removed from the ends of said bar, a bottom inwardly facing channel bar connecting the lower ends of said members, a rod attached to said members outside the channels thereof and between the said suspension bar and said bottom bar, an intermediate channel piece facing toward said bottom bar and swinging on said rod, one flange of each of said channel members being cut away between the point of attachment of said rod and the suspension bar, the portion of the other flange of each of said channel members, which is located between the point of attachment of said rod and the suspension bar, being smooth and continuous to provide a film-guiding surface, the remaining portion of said cutaway flanges of said channel members having smooth continuous inner film-guiding faces and the remaining portions of said side members between the points of attachment of said rod and said bottom bar being provided with fluid-draining openings.

Signed at Rochester, New York, this 6th day of December, 1920.

ALBERT K. CHAPMAN.