Oct. 9, 1923. 1,469,814

W. F. FOLMER

PHOTOGRAPHIC CUT FILM HOLDER

Filed July 7, 1922

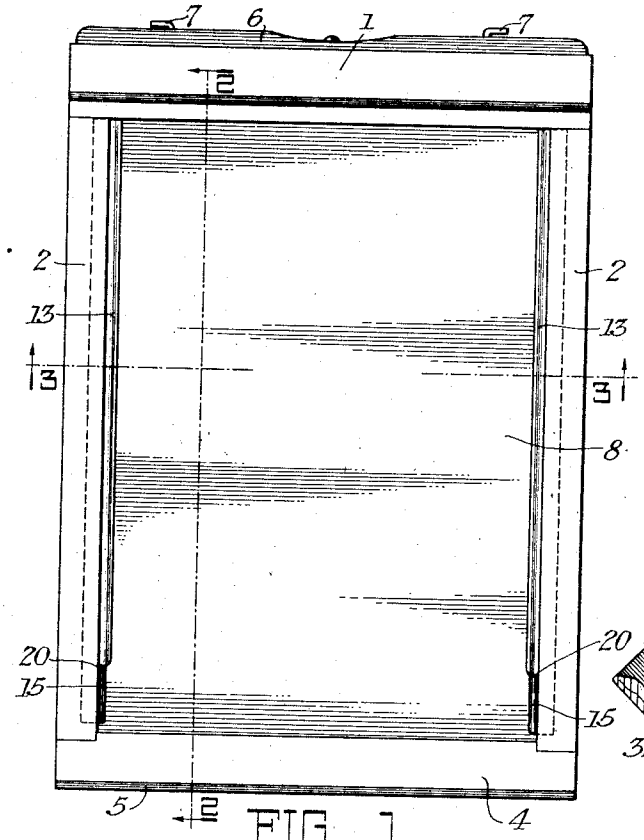

FIG. 1.

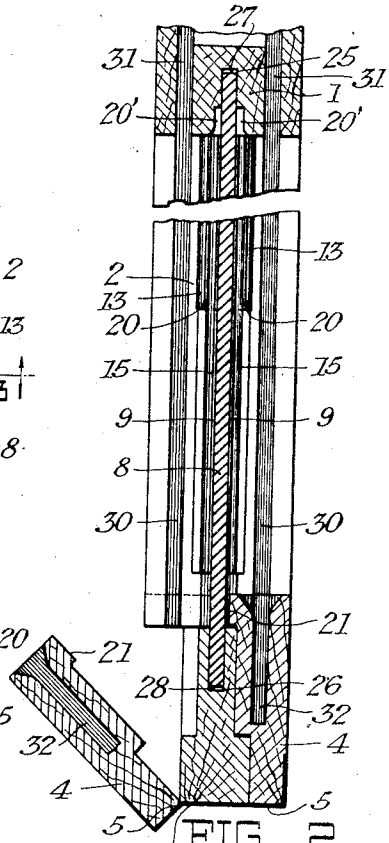

FIG. 2.

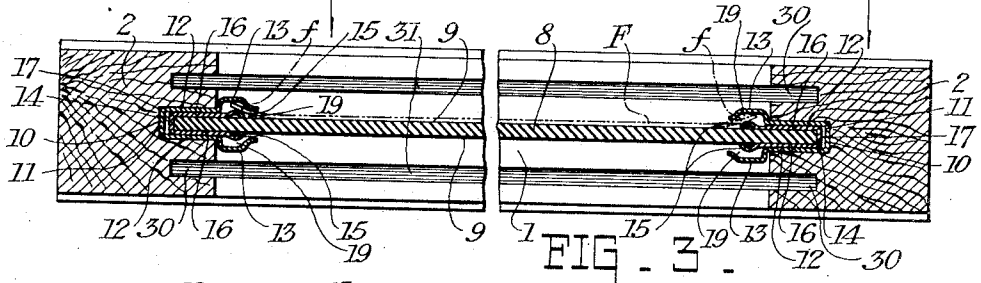

FIG. 3.

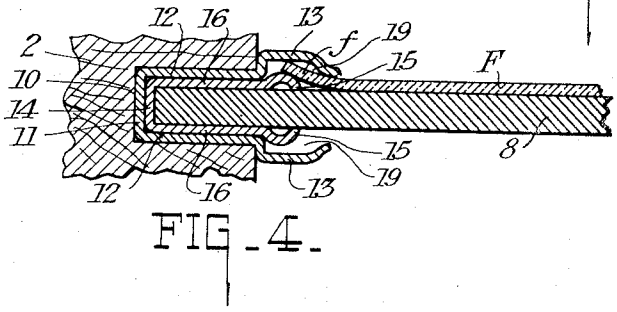

FIG. 4.

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UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC-CUT-FILM HOLDER.

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To all whom it may concern:

Be it known that I, WILLIAM F. FOLMER, 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 Photographic-Cut-Film Holders, of which the following is a full, clear, and exact specification.

This invention relates to photography and more particularly to holders for the photographically light sensitive material upon which a latent image is produced in a camera. One object of my invention is to provide a holder which will retain sheets of cut film flat in position for exposure; another object is to provide a frame for the holder which will support the holder in one plane in such a way that it will not buckle if it warps; another object is to provide a simple structure to engage the edges of the cut film; another object is to utilize the film-holding members for an expansion joint between the frame and the film holders, and other objects will appear hereinafter from the specification, the novel features being pointed out in the claims at the end of the specification.

In the drawing in which like reference characters denote like parts throughout:

Fig. 1 is a plan view of a holder constructed in accordance with and illustrating one form of my invention;

Fig. 2 is a section on line 2—2 of Fig. 1, parts being broken away;

Fig. 3 is a similar section, but taken on line 3—3 of Fig. 1; and

Fig. 4 is an enlarged fragmentary sectional detail of parts of the holder.

The frame of the holder is of well-known construction, consisting of an upper bar 1, sides 2, 2, and a fixed bottom bar 3, to which are hinged the doors 4, 4 by means of a fabric hinge 5. A rail 6 on the upper bar 1 carries the usual latches 7, 7 which are adapted to hold dark slides in the holder in a well-known manner.

In the holders of this type the film-supporting plate 8 is usually made of fiber board which is liable to swell, shrink or otherwise warp under severe climatic conditions. I, therefore, mount this plate so that the expansion or contraction can take place without altering the plane surfaces 9, 9, of the film-supporting plate as it is necessary for best results with cut film to hold it perfectly flat.

This is done by grooving each side 2 through its center portion as at 10 Fig. 3. A metal strip 11, roughly U-shaped in cross-section is shellaced or otherwise positioned in the groove, the walls 12, 12 of the metal fitting closely in the sides of groove 10. The outer marginal portions 13, 13 of the walls 12, 12 are bent away from center plate 8, then parallel to it, and terminate in curves toward the plate. These walls form flanges adapted to contact with the upper side of a film F.

A second U-shaped metal strip 14, having edges 16, 16 bent so as to embrace the plate 8, forms a rail which slides into the metal groove strip 11. This strip may be clinched upon plate 8, or merely held by friction. The curved ends 15, 15 provide beads which will, when assembled, hold the cut films F flat against plate 8 by raising the edges *f* of the films as shown in Figs. 3 and 4. The beads 15, 15 are adapted to contact with the lower side of a film placed in the holder.

The advantages of the above described structure are that the channel members 11 and 14 provide an expansion joint, as the parts are made so that the inside dimension between side walls 12, 12 is just sufficient to permit the outside walls 16, 16 of member 14 to slide therein, and yet hold plate 8 in the proper plane. Clearance is provided at 17—17 to permit limited movement of plate 8 (Fig. 3). Fig. 4 illustrates the position of the parts in the greatest extent of movement of part 8, showing that even in this position part 14 permits bead 15, 15 to properly position film edges *f*, as well as in its normal position shown in Fig. 3 The position shown in Fig. 4 is, however, very seldom, if ever, assumed by the several parts.

The film is held perfectly flat against plate 8 in this holder in a similar manner to that shown in my photographic film sheath Patent No. 1,351,998, issued Sept. 7, 1920; that is, the beads 15, 15 and the flanges 13, 13 incline the edges *f* of film F forcing the intermediate portion of the film against the plane surface 9 of plate 8.

The operation of this holder is as follows: After withdrawing the dark slides, as is shown in Fig. 1, the bottom doors 4, 4 are opened and the edge of the film is entered

into the ways 19, 19 formed between the flanges 13, 13 and 15, 15. The flanges 13, 13 are cut away at 20, 20 so that there is plenty of room to enter the film without bending too sharply. When in place the longitudinal edges are held by the above mentioned channel members, while the top is held flat by grooves 20′, 20′ in the top bar 1 (Fig. 2), and the bottom of the film is held by the flanges 21, 21 of the bottom doors 4, 4. Thus all the edges of the film are held in the proper place and the face of the film flat in the proper plane for exposure.

In the drawings, I have shown a groove 25 in the top bar 1 and 26 in the bottom bar 3 to receive the top and bottom of the center plate 8. A space 27 at the top and 28 at the bottom is preferably left between the edges of plate 8 and the bottom of the grooves. This permits of movement of the plate 8 in expanding or contracting in any direction. But whatever the movement of plate 8, the exposure area of the film will remain constant because the flanges 13 are fixed to the frame sides 2.

In the drawing the sides 2 are slotted at 30, 30, the top bar 1 is slotted at 31, 31, and the bottom doors 4 are grooved at 32, 32 to receive the customary dark slides. This construction is well-known in photographic plates and film holders.

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

1. In a holder for photographically sensitive material, the combination with a film-supporting plate, of means for supporting the plate, including rails, said rails having portions adapted to engage the film edges and being positioned between the film-supporting plate and its supporting member.

2. In a holder for photographically sensitive material, the combination with a film-supporting plate, of a frame in which the supporting plate is positioned, there being two film-engaging rails between a portion of the film-supporting plate and the frame, one being adapted to contact with the under side of a film and the other with the upper side of the film, to hold it in the desired position.

3. In a holder for photographically sensitive material, the combination with a plate, of a frame in which the plate is mounted, an expansion joint between an edge of the plate and an edge of the frame consisting of metal strips, one slidable on the other, and one being carried by the frame and the other by the plate.

4. In a holder for photographically sensitive material, the combination with a plate, of a frame in which the plate is mounted, an expansion joint between an edge of the plate and an edge of the frame consisting of metal strips, one slidable on the other, and each strip having a formed up edge for engaging a film.

5. In a holder for photographically sensitive material, the combination with a film-supporting plate, of a frame in which the plate is mounted, the sides of the film-supporting plate carrying film-engaging rails, and the sides of the frame also carrying film-engaging rails, the rails on one part being slidably mounted relatively to those on the other part, whereby the film-supporting plate can expand or contract.

6. In a holder for photographically sensitive film, the combination with a frame, of a film-engaging member carried thereby, a film-supporting member, and a film-engaging member carried by the film-supporting member, the last named film-engaging member being mounted upon the first named film-engaging member and having a slidable connection therewith.

7. In a holder for photographically sensitive material, the combination with a frame, of a channel member carried by the frame, a plate, a channel member slidable in the first channel member and carried by the plate, the edges of the channel members being spaced to engage the edges of the sensitive material positioned in the holder.

8. In a holder for photographically sensitive material, the combination with a frame, of a channel member carried by the frame, a plate, a channel member slidable in the first channel member and carried by the plate, the edges of the channel members being spaced whereby one may lie beneath and the other above a film positioned on the plate, and adapted to hold an edge of the film at an angle to the plate.

9. In a holder for photographically sensitive film, the combination with a frame, of a rail carried by the frame and adapted to lie over the film, a film-supporting member, a rail carried by the supporting plate and adapted to lie under a portion of the film, the film-engaging rails being mounted to permit one to slide relatively to the other, whereby an expansion joint is formed to care for variations in the size of the film-supporting member.

Signed at Rochester, New York, this 3 day of July, 1922.

WILLIAM F. FOLMER.