Feb. 18, 1958 F. A. STIRRUP 2,823,596

FILM NEGATIVE SUPPORTING FRAME

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Fig. 1.

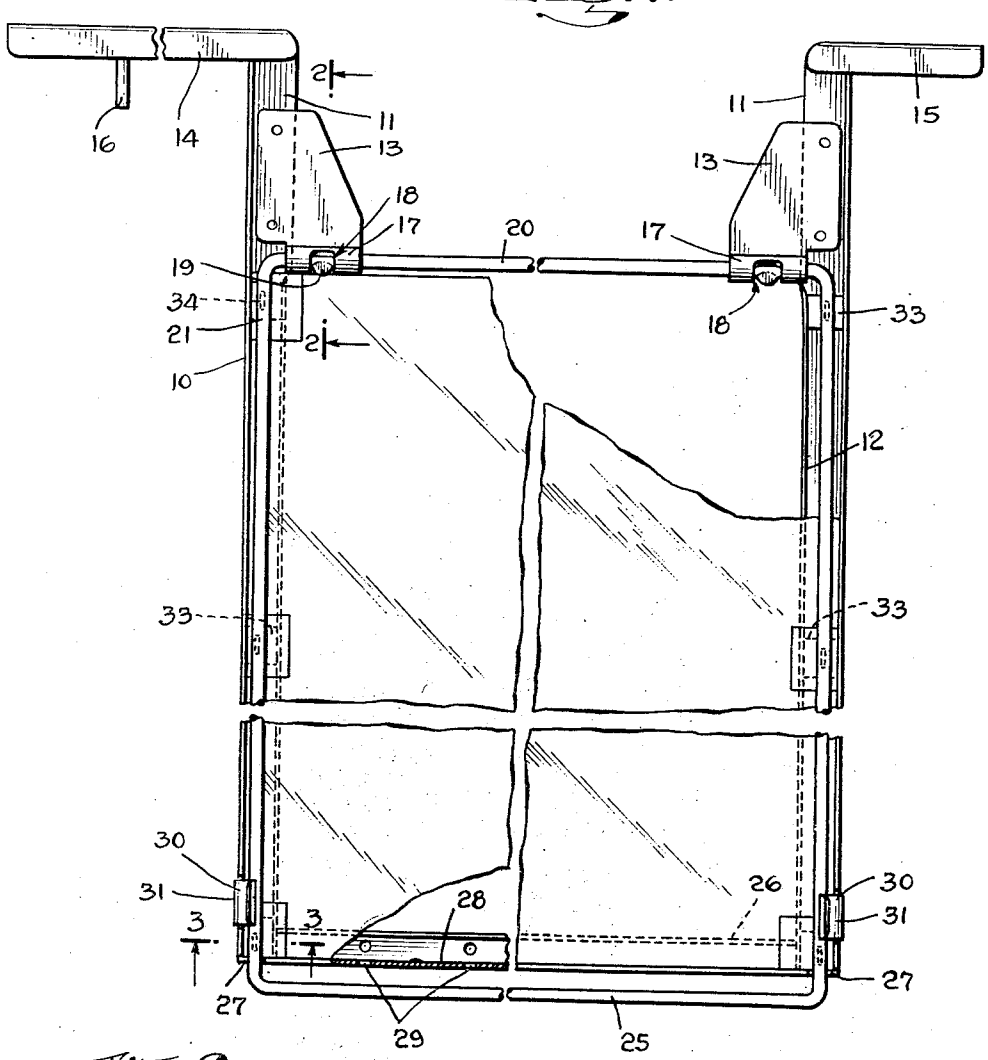


Fig. 2.

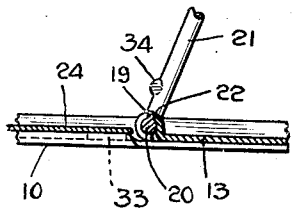
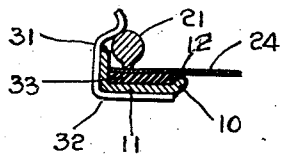


Fig. 3.



INVENTOR.
FRANK A. STIRRUP

BY

ATTORNEY

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FILM NEGATIVE SUPPORTING FRAME

Frank A. Stirrup, Plainfield, N. J.

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4 Claims. (Cl. 95—100)

This invention relates to frames for support of photographic film negatives in the operation of developing or processing the same. More particularly, the invention deals with a frame for use in the support and handling of X-ray picture film, wherein peripheral edge portions only of the film are engaged in an otherwise open substantially rectangular frame.

Still more particularly, the invention deals with a frame structure comprising a main frame of angular cross-sectional form, within which is pivotally mounted a film clamping frame or member firmly pressing edge portions of the film upon cushioned supports spaced in the main frame.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

Fig. 1 is a broken plan view of a frame made according to my invention, showing the parts in operative position.

Fig. 2 is an enlarged detail sectional view on the line 2—2 of Fig. 1, showing a clamping member or frame, in part, in raised position; and

Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 1.

In practice, I provide a main frame **10**, which is substantially L-shaped in cross-sectional form. However, the lower rail **11** preferably includes a raised inner flange **12** extending throughout the major portion of the length of the frame, the raised portion being omitted, however, where two hinge brackets **13** are welded to the lower rail **11** adjacent the free end portion of the side members of the generally U-shaped structure of the main frame.

To the ends of the main frame are secured laterally extending long and short hanger rails **14** and **15** adapted to be arranged upon a tank or vat in support of the film within the vat in the operation of developing or otherwise processing the film. The long rail **14** also preferably has a depending pin **16**, which can be utilized for positioning the frame with respect to a support.

The hinge brackets **13** are wider than the parts **11** of the main frame and extend into the frame, the brackets having, at their wide ends, rolled hinge bearings **17** which are cutout, as seen at **18**, the cutouts being adapted to receive protruding hinge lugs **19** on the crosshead **20** of a clamp frame or member **21**, the lugs **19**, in addition to establishing the hinge connection with the bearings **17** in operating in the cutouts **18**, also engage the shoulders **22** of the cutouts in checking upward swinging movement of the clamp frame **21** to a rearwardly inclined position, as noted, in part, in Fig. 2 of the drawing. This leaves the upper portion of the main frame free and clear for the insertion of a picture film **24** into position on the main frame, preparatory to being clamped by the clamp frame **21**.

Considering Fig. 1 of the drawing, it will appear that the size of the clamp frame **21** is such as to position the lower crosshead fingerpiece end **25** of the frame beyond the crosshead portion **26** of the main frame **10**, the side members of the frame **21** passing through slits **27** in the upstanding portion **28** of the crosshead **26**. This upstanding portion, as well as the lower portion of the crosshead **26**, is provided with apertures **29** for draining, developing or other solutions from the frame when the frame, together with the film supported therein, is removed from a tank or vessel.

The sides of the main frame **10**, adjacent the crosshead **26**, or the upstanding portions thereof, are cutout, as seen at **30**, and, in these cutouts, are arranged spring clips **31**, the lower portions **32** of which are welded or otherwise secured to the lower portions **11** of the main frame, as noted in Fig. 3 of the drawing. In the construction shown, the clamp frame or member **21** is formed from rod stock, the ends of the stock being welded together at any desired position so as to produce a resulting more or less rectangular or O-frame. These round rods form the pivotal hinge mounting and also move freely, but firmly, over the spring clips or catches **31**, the latter serving to firmly support the frame **21** in film gripping position, as indicated in Fig. 3 of the drawing.

Arranged upon the lower member or rail **11** of the main frame adjacent the crosshead **26**, the hinge bearing **17** and substantially centrally between these two points are rubber or other cushioning pads **33** and the side members of the frame **21**, adjacent these pads, have downwardly projecting beads or nubs **34**, which form slight indentures in the film **24** in clamping the film in position within the frame **10**.

The frame **10**, between the bearing **17** and crosshead **26**, in combination with the distance between the side members of the main frame, defines a standard size of film which is to be processed and here reference is made primarily to X-ray picture films, which are reasonably large in size. In the operation of mounting the film in position, the clamp frame or member **21** is arranged in the reclined position noted in Fig. 2 of the drawing with the main frame **10** arranged upon a bench or table. Then the upper edge portion of the film **24** is brought into engagement with the bearings **17** which operate as checks or guides for positioning the film in the main frame, after which, the film is dropped onto the several pads **33**; whereupon, the clamp frame or member **21** is moved forwardly and downwardly and forced into clamping position over the spring clips or catches **31**. The frame can now be utilized to move and handle the film in placing the same in various developing and processing tanks, as well as in dryers and, after being fully processed, the thumb of one hand is placed on the upstanding member of the crosshead **26** and other fingers of the hand beneath the crosshead **25** in releasing the frame **21** from the spring clips **31**; whereupon, the frame **21** is swung into its reclining position, as noted in Fig. 2, after which, the processed film can be readily removed from the frame. The slight indentures which are formed by the projections **34** at the side edges of the film are not objectionable as they are beyond the range of the picture subject matter of the film. However, these projections serve to securely retain the film against displacement from the frame during the processing of the film.

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

1. A film supporting device of the class described, comprising a main substantially U-shaped frame of L-shaped cross-sectional form throughout the major portion of its length, free upper ends of the side members of the main frame having long and short laterally extending

supporting rails, brackets secured to said ends of the main frame and including downwardly extending cutout hinge bearings, an O-shaped clamp frame defined by side members and top and bottom crossheads, the top crosshead being pivotally mounted in the bearings of said brackets, the side members being arranged within upstanding wall portions of the main frame beyond limits of said brackets, the side members of said clamp frame extending through openings in the lower portion of the main frame to form, of the lower crosshead, a fingerpiece portion for operation of the clamp frame, the sides of the main frame, adjacent the lower ends thereof, having spring clips operatively engaging the side members of the clamp frame in retaining the same in operative position within the main frame, cushioning pads spaced along the main frame, and said clamp frame having, in alinement with the pads, protruding beads adapted to operatively engage a film supported on said pads in retaining the film against displacement from said frames.

2. A film supporting device of the class described, comprising a main substantially U-shaped frame of L-shaped cross-sectional form throughout the major portion of its length, free upper ends of the side members of the main frame having long and short laterally extending supporting rails, brackets secured to said ends of the main frame and including downwardly extending cutout hinge bearings, an O-shaped clamp frame defined by side members and top and bottom crossheads, the top crosshead being pivotally mounted in the bearings of said brackets, the side members being arranged within upstanding wall portions of the main frame beyond limits of said brackets, the side members of said clamp frame extending through openings in the lower portion of the main frame to form, of the lower crosshead, a fingerpiece portion for operation of the clamp frame, the sides of the main frame, adjacent the lower ends thereof, having spring clips operatively engaging the side members of the clamp frame in retaining the same in operative position within the main frame, cushioning pads spaced along the main frame, said clamp frame having, in alinement with the pads, protruding beads adapted to operatively engage a film supported on said pads in retaining the film against displacement from said frames, and the top crosshead of the clamp frame having means engaging said bearings for supporting the clamp frame in an upwardly inclined position to give free access to the main frame in attaching and detaching a film with respect thereto.

3. A film supporting device of the class described, comprising a main substantially U-shaped frame of L-shaped cross-sectional form throughout the major portion of its length, free upper ends of the side members

of the main frame having long and short laterally extending supporting rails, brackets secured to said ends of the main frame and including downwardly extending cutout hinge bearings, an O-shaped clamp frame defined by side members and top and bottom crossheads, the top crosshead being pivotally mounted in the bearings of said brackets, the side members being arranged within upstanding wall portions of the main frame beyond limits of said brackets, the side members of said clamp frame extending through openings in the lower portion of the main frame to form, of the lower crosshead, a fingerpiece portion for operation of the clamp frame, the sides of the main frame, adjacent the lower ends thereof, having spring clips operatively engaging the side members of the clamp frame in retaining the same in operative position within the main frame, cushioning pads spaced along the main frame, said clamp frame having, in alinement with the pads, protruding beads adapted to operatively engage a film supported on said pads in retaining the film against displacement from said frames, the top crosshead of the clamp frame having means engaging said bearings for supporting the clamp frame in an upwardly inclined position to give free access to the main frame in attaching and detaching a film with respect thereto, and said last named means comprising hinge projections cooperating with cutout portions of said hinge bearings of the brackets.

4. A sheet supporting device of the character described, comprising a main frame of L-shaped cross-sectional form and generally U-shaped in plan, the upper end of the main frame having supporting means extending laterally from the side members of the main frame, a clamp frame arranged within the main frame, said clamp frame having top and bottom cross members joined by side members, brackets fixed to the side members of the main frame upwardly beyond said top cross member and including wide ends projecting into the frame beyond said side members, said wide ends of the brackets having cross cutout bearings encircling said top cross member in pivotally supporting the clamp frame in the main frame, and said top cross member having means arranged in the cutouts of said bearings to aline the clamp frame in the main frame and to check swinging movement of the clamp frame for support in an upwardly and rearwardly inclined position with respect to a sheet receiving area of the main frame.

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