

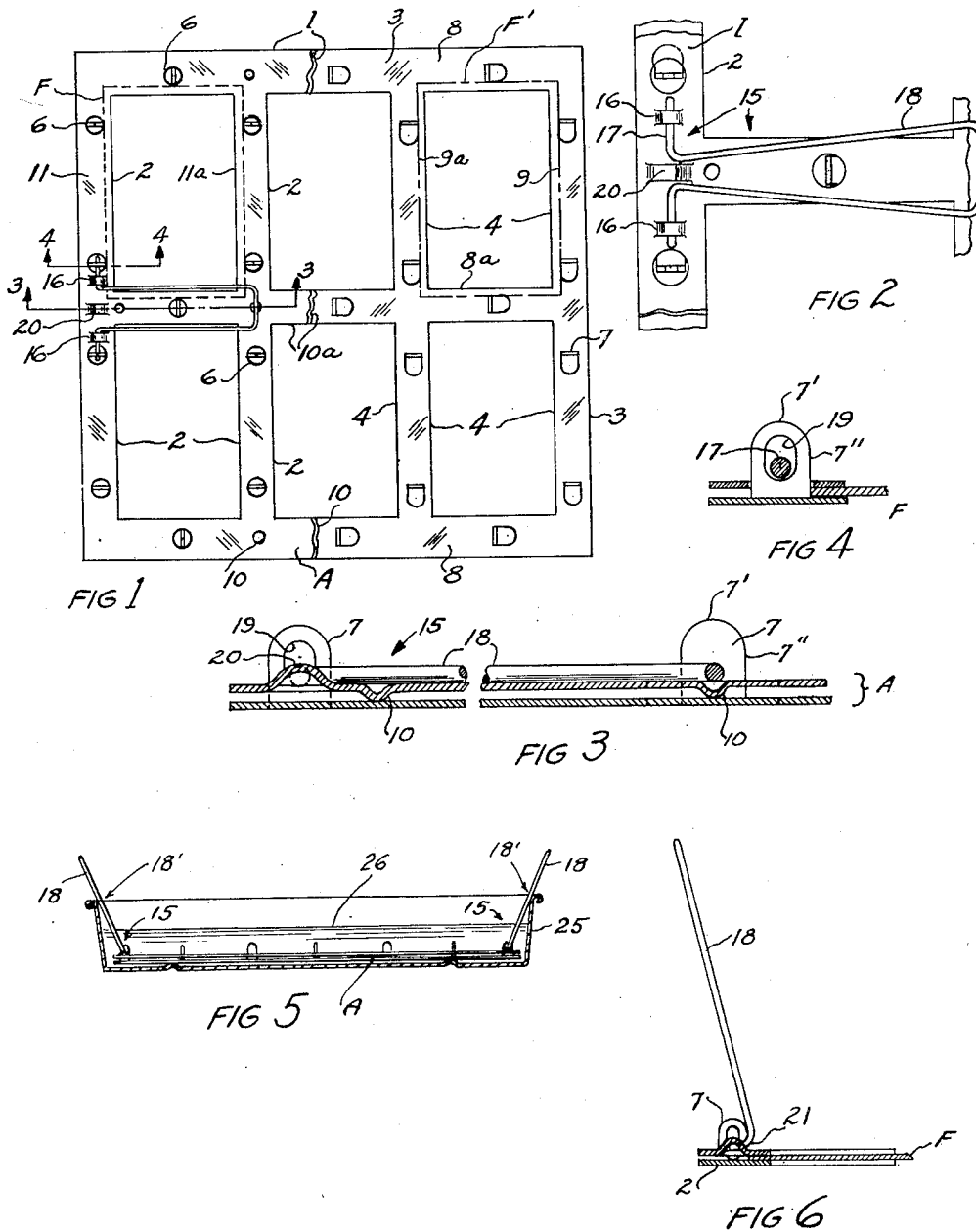
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DEVELOPING FRAME FOR PHOTOGRAPHIC FILMS OR PLATES

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DEVELOPING FRAME FOR PHOTOGRAPHIC FILMS OR PLATES

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This invention relates to a frame made of readily separable parts and adapted to support and expose major surfaces of pre-cut photographic transparencies (films or plates) to light and/or fluid treatment as required in development of desired images thereon. The above indicates the general object.

In the development of color photographs from sensitized film, individual rectangular sections of the cut film are, at present, generally mounted in individual supporting frames for suspension in tanks containing respectively the required developer, fixative, etc., solutions, and after each fluid treatment the film is carefully washed before immersion in the next tank. Modern color film requires also flood light treatment on both sides during the development process, and when the film sections are individually mounted the work of handling the film is tedious and time-taking. Such color film is currently supplied in sets of six or more accurately cut film sections all the same size. The present frame improvement enables mounting of all the sections of the set for simultaneous development step by step; enables complete washing of both sides of each film section as required, and enables simultaneous light treatment of the entire set, first on one side and then on the other, thus effecting a great saving of time. The above indicates a still further object.

Another object is to provide a separable two-part frame for photographic transparencies or the like, having means to enable easy separation of such two parts, easy mounting of (e. g.) the transparencies between the parts, and accurate realignment of the parts to secure (e. g.) the transparencies in place.

A further object is to provide an improved means for detachably securing the frame parts together.

A still further object is to provide a retaining frame for (e. g.) photographic transparencies so arranged that the edge margins of the latter, as well as the main faces and the entire frame, may be adequately subjected to washing fluid so that portions of one solution will not be carried over to a different solution.

Still another object is to provide a frame for holding photographic sheet sections such as will enable the use of shallow trays rather than deep tanks to contain the necessary treating solutions, and at the same time enable handling of the

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frame without the use of rubber gloves or other protective means for the hands.

Other objects and features will become apparent from the following description of the preferred form of frame as shown in the drawings, wherein:

Fig. 1 is a plan view showing, in reduced scale, substantially half of each main part of the frame hereof;

Fig. 2 is a detail full scale plan view of a portion of the top frame part, showing the preferred means for releasably securing the frame parts together in retaining relation to the transparencies;

Figs. 3 and 4 are double scale sectional views as indicated by the lines 3—3 and 4—4 on Fig. 1;

Fig. 5 is a diagrammatic reduced scale sectional view showing the preferred manner of use of the frame; and

Fig. 6 is a view similar to Fig. 3, showing a modified form of securing means for the frame parts.

Referring to Fig. 1 showing the frame unit A, the left hand portion of the view shows the top side of a normally upper frame member 1, formed as a single generally flat piece of sheet metal punched to provide rectangular openings as at 2 to form film or plate exposure windows at one side of the unit. The lower member 3 is made in substantially the same way from a flat piece of sheet metal with the desired number of framing or window openings 4. The openings 2 and 4 in the two frame members are in accurate alignment when the members are assembled.

Partly in order to align the two frame members, the upper member 1 is provided with a series of preferably circular openings 6 and the lower member 2 with correspondingly positioned tongues 7, preferably of the shape best illustrated in Fig. 3, that is, with rounded ends 7' and parallel or nearly parallel side edges 7''. The positioning tongues 7 are struck from the metal stock forming the frame member 3 and bent at right angles to the principal plane of the sheet stock. With the two frame members in substantial alignment, all the tongues lie diametrically of the circular openings with the opposite edges 7'' nearly fitting the respective openings.

Partly to facilitate assembly of the top member 1 over the bottom member 3, the tongues 7 are in sets, the elements of which are relatively turned

at right angles to each other. The same device assists in placing the photosensitized transparencies in accurate alignment with the frame openings as will be described later herein. For the purposes just mentioned, the border framing bar portions 8 and 8a, which are shown in horizontal position on Fig. 1, have their tongues 7 located each with one edge disposed toward an adjacent framing opening 4 and further located approximately midway of the adjacent sides of said openings. All the other tongues, namely, those on the framing bar portions 9 and 9a (one of each shown), are located in pairs in the same relationship to the adjacent window opening defining edges, but preferably so that there are at least two tongues adjacent each relatively longer window-defining edge. There could, of course, be a greater or lesser number of tongues 7 than illustrated.

Because of the relationship of the principal planes of the tongues 7 described above, the user has only to position the upper frame member 1 with the circular openings 6 in approximate alignment with the associated tongues 7 and then drop the top frame member, since the rounded ends 7' of the tongue carried by the bar portions 8 and 8a of the lower frame member will guide the upper frame member into place in the necessary direction (vertically of the lower frame member as illustrated on Fig. 1), and the rounded edges of the tongue carried by the bar portions 9 and 9a will guide the top frame member in the necessary direction transverse to the first mentioned direction, or in other words, horizontally in the particular position of the two frame members illustrated on Fig. 1.

In order to space the two frame members 1 and 2 apart, a slightly greater distance than the expected thickness of the films or plates to be treated, a series of dimples 10 are formed in one of the members, for example the member 1. The dimples 10, two of which are illustrated in Fig. 3, are of slightly greater height than the thickness of the film or plate stock F, Fig. 4. The main advantage of so spacing the frame members 1 and 2 apart over the entire adjacent areas of the two members is that, when the transparencies are subjected to washing water as by immersion of the frame A into a bath, all portions of the entire frame unit can be easily cleansed; and if the spacing by the dimples 10 is such that the transparencies are not gripped tightly by the margin-contacting portions of the frame bars, the transparencies themselves will be completely cleansed even at their supported margins.

When the cut film sections F are dropped into place, the rounded edges 7' of the tongues 7 align the sections with the window openings 4, one fully positioned section being shown at the right in broken lines at F', Fig. 1. One fully mounted section F is shown at the left.

Usually film or plate developing frames in photographic work are hinged together at one edge. Instead of so attaching the frame members together, I have provided spring retainers such as shown in Figs. 1 and 2 at 15, which not only serve for quick securing of the frame members together, but also serve as pivoted bails by which the frame unit A can be immersed flatwise in a tray and later hung up for the film or plate to dry. As shown particularly by Figs. 1 and 2, the top frame member 1 has a pair of spaced loops 16 lanced and upstruck therefrom in position to serve as sliding and pivot bearings for

aligned leg portions 17 of the retainer connected by the bail formation 18. Cooperating with the leg portions 17, two of the tongues 7 are apertured as at 19 (Figs. 3 and 4) and when the two sides of the bail are brought together into the relative position illustrated in Fig. 3, the legs 17 are detached from the openings 19 and the frame members can be separated simply by lifting the upper frame member. With the frame members assembled in the position shown by Fig. 1, the operator merely superimposes one frame member on the other and then releases pressure on the bail sides, whereupon the leg portions 17 spring into the openings 19 to latch the frame members together. In order to limit the movement of the leg portions 17 so that they will not be disconnected from the bearing forming loops 16, an abutment lancing is provided at 20 for engagement by the adjacent portions of the bail loop 18.

To facilitate engagement of the latch-forming legs 17 with the openings 19, the openings are preferably vertically elongated as shown in Fig. 4, and also made considerably larger than the cross section of the spring wire stock. Additionally, the ends of the latching legs 17 may be suitably rounded as shown on Fig. 2.

If it is desired that the bails 18 be retained in an upright position so that the operator will not have to reach into the developer solution in the tray in order to lift them up, the spring portions of the bails may be formed as in Fig. 6 with short bent terminal portions 21 (one shown) adjacent the legs 17. The terminal portions 21, for abutment with the frame bars 9, prevent the bails from swinging into the positions illustrated in Figs. 1 and 3, but enable the bails to be swung outwardly substantially into the principal plane of the frame unit to facilitate packing of the unit in a flat container.

Either with or without the abutment portions 21, it is usually feasible to rest the spring or bail portions of the retainers against the sides of the tray 25 as illustrated at 18', Fig. 5. In Fig. 5, the frame unit is in the normal position to treat the plates or film sections in a relatively small amount of fluid such as indicated at 26.

While the frame members 1 and 2 hereof are described above as made preferably of sheet metal, they could just as well be made, for example, from plastic sheet stock having properties enabling the formation of the desired tongues, openings, lancements, etc., thereon.

I claim:

1. A frame unit for supporting photographic films or plates, said unit comprising two generally flat members each having a window opening adapted to expose a respective side of a film or plate when supported between the members, interengaging devices on said members operating to align the window openings thereof, and a pair of spring latches on one frame member, centrally at opposite sides thereof, marginally of the frame each arranged detachably to engage a respective keeper on the other member to hold the frame members together, said latches each having a respective arm portion pivotally movable into a handle-forming position transverse to the principal plane of the unit.

2. A frame unit for supporting photographic films or plates, comprising two frame members with mutually registering window openings adapted to expose respective sides of a film or plate supported between the members, one of said frame members having a pair of transverse

projections extending through respective openings in the other member, each projection having a keeper hole for coaction with a latch, and a spring retainer of bail-like form with aligned and oppositely disposed terminal leg portions slidably secured to the frame member having the openings which receive the projections, said terminal leg members being held in the keeper holes by the spring force of the bail.

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