Mar. 6, 1923. 1,447,444

L. T. THURBER

PRINTING FRAME

Filed Apr. 8, 1920

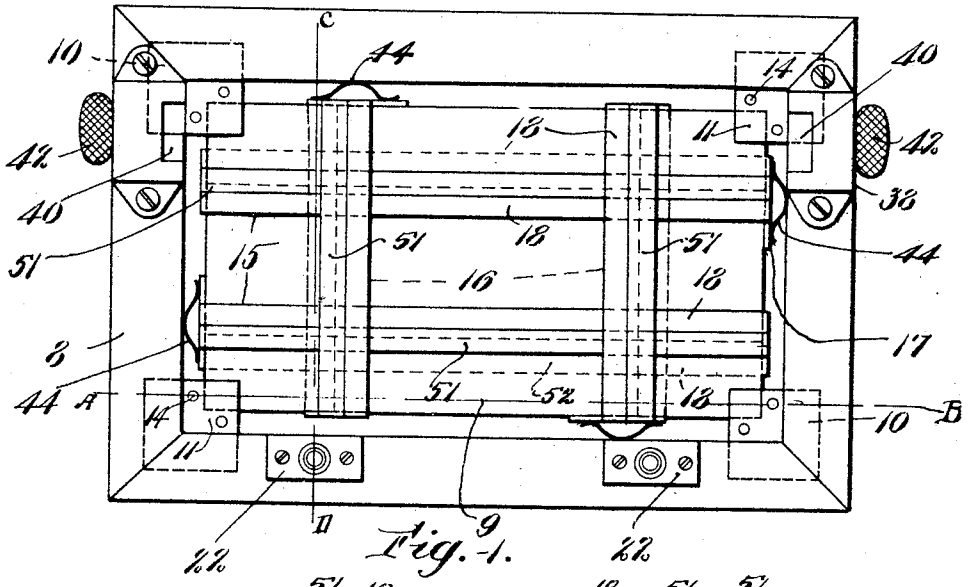


Fig. 1.

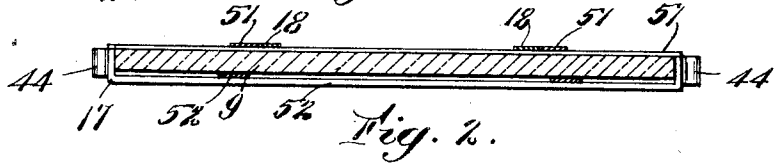


Fig. 2.

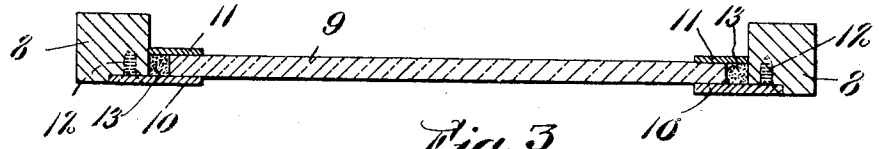


Fig. 3.

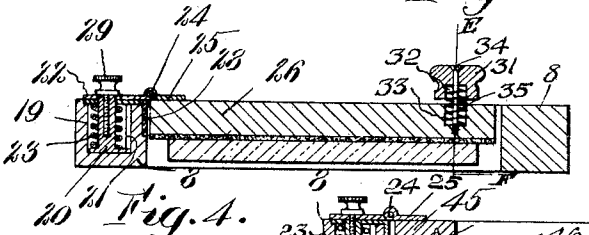


Fig. 4.

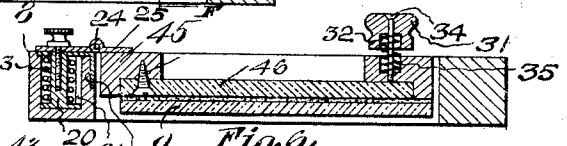


Fig. 6.

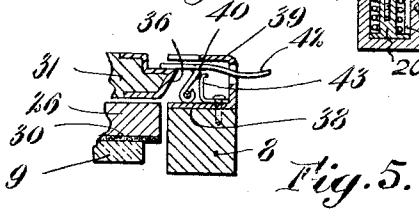


Fig. 5.

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UNITED STATES PATENT OFFICE.

LUMAN T. THURBER, OF BROOKLINE, MASSACHUSETTS.

PRINTING FRAME.

Application filed April 8, 1920. Serial No. 372,172.

To all whom it may concern:

Be it known that I, LUMAN T. THURBER, a citizen of the United States, and resident of Brookline, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Printing Frames, of which the following is a specification.

My invention relates to an improved photographic printing frame and more specifically to new and improved means for centering and retaining a negative in such a frame.

In making a positive print from a photographic negative it is usual to cover certain portions of the negatives with an opaque mask. This is desirable in order to eliminate inartistic edges of the negative and to provide the print with a white border. It has been generally customary to make such masks in fixed sizes for the various standard sizes of negatives. This is undesirable since often more or less of a negative of the same size may be desired to be printed or blocked out. An adjustable mask is therefore highly desirable. In the use of masks of fixed size which are usually not attached to the frame proper, some means are necessary to retain the negative and mask in the desired relationship, and a usual method is by means of gummed stickers which are inconvenient in use and may injure the negative.

Since negatives and printing paper both vary in thickness and intimate contact is essential for a good print it is necessary to provide the backing member of a printing frame with means resiliently pressing it against the glass evenly at all points.

In using a frame for enlarging purposes it is necessary for the backing member to be transparent since the frame simply holds the negative and the sensitized paper is placed at a distance. Any resilient means for the backing member therefore must be associated with its edges.

It is an object of my invention to provide an improved photographic print frame which is relatively simple in construction and easy in operation, and which includes in its construction an adjustable mask associated with the frame and adapted (if desired) to retain the negative in fixed relation thereto. It is a further object to provide in connection with such a device, a cover hinged to the frame, the cover being adapted to resiliently press a negative and positive into firm and intimate contact. It is also an object to provide resilient hinge and catch means which are adapted for use with the frame of a transparent backing member. Other and further objects will appear as the description proceeds.

In its broadest aspect my invention comprises a frame having a glass or similar translucent plate mounted therein and movable slides disposed relative to the plate, the slides together forming an adjustable mask. It further includes a resiliently supported hinge and catch for the backing member of the frame, the hinge and catch being associated with the edges of the member and therefore being adapted for use with a backing member the main portion of which is transparent.

I have illustrated a preferred embodiment of my invention in the accompanying drawings, in which,

Figure 1 is a plan view of my improved printing frame, the backing piece being removed;

Figure 2 is a section illustrating the relation between the glass and a mask slide;

Fig. 3 is a longitudinal section on a line such as A—B of Fig. 1, illustrating the method of attaching the glass to the frame, the slides being omitted;

Fig. 4 is a transverse cross section through the frame on a line such as C—D of Fig. 1 showing the backing member in place and illustrating the mode of securing the backing member to the frame;

Fig. 5 is a fragmentary transverse cross section on a line such as E—F of Fig. 4 showing one end of the clamping bar employed for holding the backing member in position and illustrating the holding clip employed therewith; and

Fig. 6 is a transverse cross section similar to that of Fig. 4 but showing a modified form of backing member.

As shown in Fig. 1, my improved printing frame comprises a rectangular wooden frame 8 with a rectangular sheet of glass 9 supported inside the frame between holding members 10 and 11 located at the corners. The members 10 are set into the face of the frame at its corners and are held in place

by suitable wood screws 12. A spacing member 13 is placed between the holding members and is held therebetween by the screws or rivets 14 which also serve to hold the members in place. The spacing members are cut away as indicated in Fig. 1 so that they serve to hold the glass centered in the frame and equally spaced therefrom on all sides.

The glass carries two sets of mask slides, one pair 15, 15 extending across the glass parallel to one edge and the other pair 16, 16, extending at right angles thereto. A slide is shown in elevation on the glass in Fig. 2. The upper members 51 are formed of thin sheet metal, and the hooked end portions and the members 52 extending below the glass are preferably formed of heavier sheet metal, the two members being secured together by soldering or brazing. The members 18 are formed of material which is substantially transparent but which is opaque to actinic rays, that is, the rays which affect photographic paper. One end 17 of each member 52 is extended along the edge of the glass to aid in retaining the member properly aligned and to each such end portion 17 a bowed spring 44 is attached one end of which is fastened to the slide by riveting or in any suitable manner and the middle portion of which bears against the inner side of the frame member 8. These springs serve to retain the members 15 and 16 at any point where they may be placed and yet permit them to be readily moved when desired.

In Fig. 4 I have shown a cross section of a preferred form of hinge used to connect the backing member to the frame. A cylindrical cavity 19 is formed in the frame and a receiver member 20 is fitted therein. This member has an extended base which has a lug projecting into a slot 21 at the side of the cavity so as to prevent rotation, and has a threaded recess in its upper face. A plate 22 is placed over the cavity, the plate having a circular opening therein of sufficient size to permit the upper end of the member 20 to pass through. The spring 23 surrounds the member 20, one end bearing against the extended base thereof and the other end bearing against the under side of the plate 22. The hinge proper 24, has one side 25, permanently connected to the backing member 26, while the other side 27, having the depending member 28 rigidly connected thereto, is detachably connected to the frame by the thumb-screw 29 which screws into the member 20. The face of the backing member 26 is provided with the usual cushion 30 of felt or similar material.

The edge of the backing member opposite to the hinge side carries the longitudinally extending, spring pressed, locking bar 31 shown in Fig. 5. This bar has a plurality of cavities 32 formed therein and complemental cavities 33 are formed in the backing member. Screws 34 pass through the center of these cavities, having a sliding fit in the bar 31, and being screwed into the backing member 26. These screws 34 are surrounded by springs 35 whose opposite ends bear against the bases of the cavities in the backing member and bar.

The ends of the bar are formed with cam surfaces 36 and notches 37 adapted to cooperate with the holding clips 38 which are attached to the frame 8 as shown in Fig. 6. These clips 38 comprise the housing 39, the fastening member 40, pivoted to the housing at 41 and having the finger pieces 42, and the springs 43 which retain the fastening members normally in the position shown in Fig. 5.

If the frame is desired for use in holding a negative in an enlarging camera, the backing member may consist of a wooden frame 45 having a sheet of glass 46 retained therein by screws 47 as shown in Fig. 6 instead of being the solid member illustrated in Fig. 4. My improved hinge and catch are particularly suitable for use with such a backing member as they provide a spring pressed contact and yet only occupy the frame of the backing member, permitting the major portion of the backing member to be transparent and unobstructed.

In the use of my printing frame the negative may be placed above the mask members or if a large number of prints are to be made of one negative it may be placed between the glass and the mask members 15 which thereby serve to retain it in place. The several members 15 and 16 are adjusted until the portion of the negative which it is desired to have appear in the print appears inside the inner edge of the mask. The transparent portions 18 of the mask members are important aids in adjusting the negative since they permit not only the portion of the negative which is to print, but also the adjacent portions to be visible.

If a contact print is to be made the printing paper is then placed above the negative, the backing member closed, and the bar 31 pressed down until its ends catch as shown in Fig. 5. The cam surfaces 36 serve to press the holding members 40 out of the way as the bar is pressed down. The screw 29 may be adjusted to vary the pressure of the hinge springs if desired. Also if it is desired for any purpose to remove the backing member this may be done by simply removing the thumb screws 29.

In opening the frame after printing, the two finger pieces 42 are pressed down and the springs 35 cause the bar 31 to rise out of engagement. By then grasping the bar 31 the backing member may readily be swung open on its hinges.

When the frame is to be used in an enlarging camera it is opened and shut in the same manner, a transparent backing member being used and no paper being placed in the frame.

Obviously where a solid backing member is used for contact prints it may be hinged longitudinally at any point if desired so that the member may be closed in two parts as is customary in such members for the purpose of permitting the print paper to be manually held on its proper location until it has been pressed down in part by the backing member.

While I have shown and described my printing frame as having the glass supported at its corners only, it may be desirable in the case of larger frames to support the glass at other points, as for example adjacent the central point of each side. The essential feature of my invention in this regard is that the edges of the glass be not so obstructed as to prevent sufficient movement of the mask slides for purposes of adjustment with negatives of varying sizes.

I claim:

1. A photographic printing device comprising an open frame, a backing member hinged thereto, and a glass supported within said frame, such glass being supported in the frame at spaced points only, and the intermediate portions of the edge of the glass being spaced from the frame.

2. A photographic printing device comprising an open frame, a backing member secured thereto, a polygonal sheet of glass supported in said frame, the glass being supported adjacent its several angles, the sides of the glass intermediate the angles being spaced from the frame, and a mask forming slide movable relatively to the glass.

3. A photographic printing device comprising a rectangular frame, a backing member hinged thereto, a rectangular sheet of glass having its corners supported in the angles of the frame, the sides and ends of such sheet intermediate its corners being spaced from adjacent elements of the frame, and mask forming slides mounted upon the glass and movable relatively thereto.

4. A photographic printing device comprising an open frame, a backing member therefor, a glass having its corners supported in said frame, and having its sides and ends spaced from the frame, and mask forming slides mounted upon the glass and movable relative thereto, the ends of the slides extending around the edges of the glass between the glass and the frame.

5. A photographic printing device comprising an open frame, a backing member hingedly secured to one face thereof, a plate of transparent material arranged within said frame and having its corners only secured to said frame, thereby providing elongated slots between the edges of said plate and adjacent members of the frame and a slide member resting against one face of said plate and having guide elements slidable within the aforesaid slots.

6. A photographic printing device comprising an open frame, a glass having its corner portions supported in the frame and having its sides and ends spaced from the frame, a backing member hinged to the frame, and a mask forming slides mounted upon the glass and slidable relative thereto, the ends of the slides extending around the edges of the glass between the glass and the frame, and springs mounted upon the slide ends and bearing against the inner side of the frame member, said springs serving to maintain the slides in predetermined position.

7. A photographic printing device comprising a frame, a sheet of glass having its corners supported in said frame and having its sides and ends spaced from the frame, a backing member hinged to the frame, and mask forming slides mounted upon the glass and slidable relative thereto, portions of each said slide being substantially transparent but being opaque to actinic rays.

8. A photographic printing device comprising a frame, a sheet of glass having its corners only supported in said frame, the sides and ends of the glass being spaced from the frame, and a spring pressed backing member hinged to said frame.

9. A photographic printing device comprising a frame, a plate of glass having its corners supported in the frame, the sides and ends of the glass being spaced from adjacent elements of the frame, mask forming slides mounted upon the glass and slidable relatively thereto, and a spring pressed backing member hinged to said frame.

10. A photographic printing frame comprising a frame member, a glass supported therein and a backing member hinged to the frame member, the hinges being constructed and arranged to resiliently press one edge of the backing member against the glass, a bar engageable with the opposite edge of said backing member for holding it against the glass, said bar being resiliently supported on the backing member, and spring pressed clips engageable with the ends of said bar for connecting it to the frame member.

11. A photographic printing frame comprising a frame member, a glass supported therein and a backing member hinged to the frame member, the hinges being constructed and arranged to resiliently press one edge of the backing member against the glass, a bar engageable with the opposite edge of said backing member for holding it against the glass, said bar being resiliently supported on the backing member and means for detachably connecting said bar to the frame

member, the central portion of the backing member being transparent.

12. A photographic printing frame comprising a frame member, a glass supported therein and a backing member having one edge hinged to the frame member, a bar mounted upon the opposite edge of the backing member and springs urging said bar away from the member, and clips attached to the frame adjacent the ends of the bar and adapted to engage the ends of the bar for retaining said bar in fixed position relatively to the frame member whereby the springs will resiliently urge the backing member against the glass.

13. A photographic printing frame comprising a frame member, a glass supported therein and a backing member having one edge hinged to the frame member, the hinge being rigidly connected to the backing member and having a sliding fit upon a stud mounted on the frame, and a spring operatively associated with the stud and adapted yieldably to urge it downward toward the frame whereby the adjacent edge of the backing member is urged against the glass.

14. A photographic printing frame comprising a frame member, a glass supported therein and a backing member having one edge hinged to the frame member, the hinge being rigidly connected to the backing member and having a sliding fit upon a stud mounted on the frame, a spring operatively associated with the stud and adapted yieldably to urge it downward toward the frame whereby the adjacent edge of the backing member is urged against the glass, a bar mounted upon the opposite edge of the backing member, the springs urging said bar away from the backing member, and clips attached to the frame adjacent the ends of the bar and adapted to engage the ends of the bar whereby the last-named springs will resiliently urge the backing member against the glass.

Signed by me at Boston, Massachusetts, this fifth day of April 1920.

LUMAN T. THURBER.