R. L. BOYD.

PRINTING DEVICE.

APPLICATION FILED DEC. 7, 1911.

1,037,198.

Patented Sept. 3, 1912.

2 SHEETS—SHEET 1.

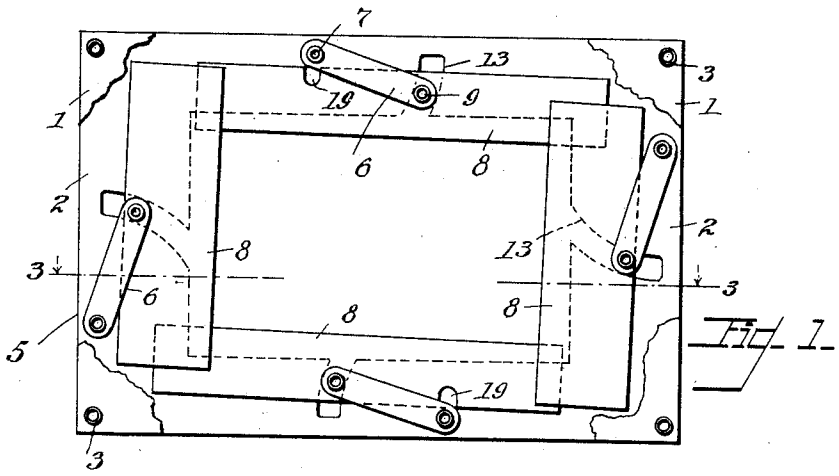

Fig. 1.

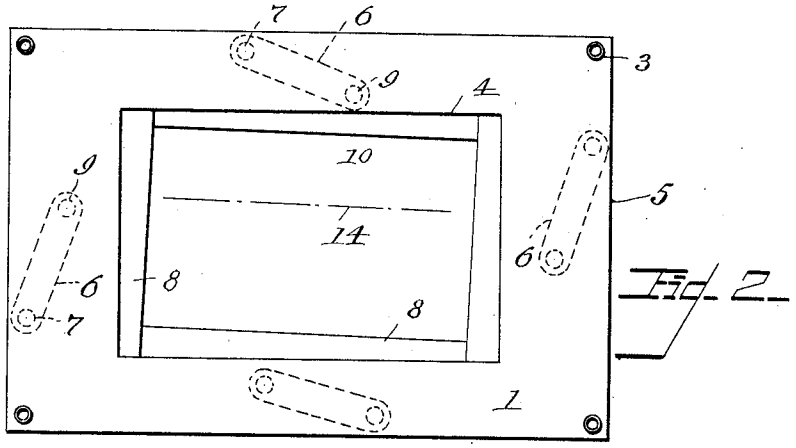

Fig. 2.

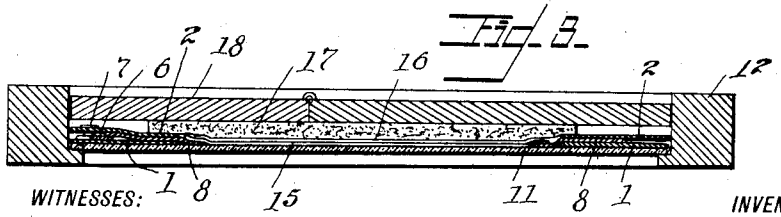

Fig. 3.

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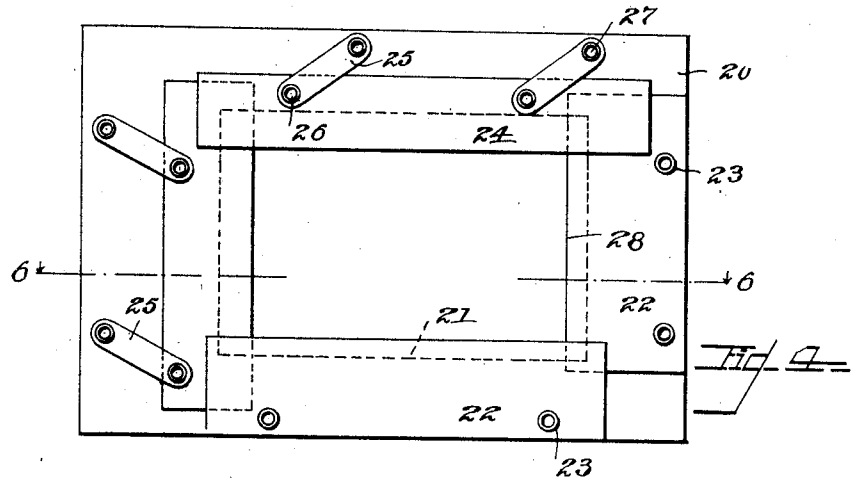

Fig. 4.

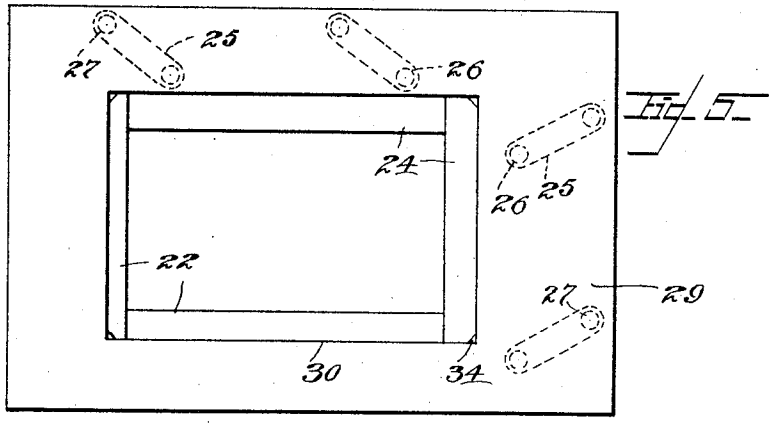

Fig. 5.

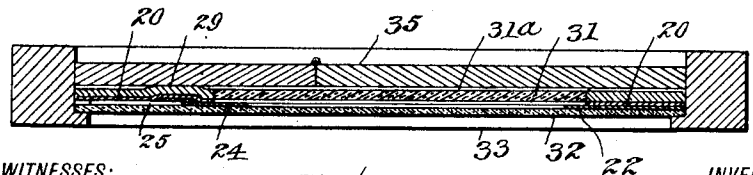

Fig. 6.

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UNITED STATES PATENT OFFICE.

ROBERT L. BOYD, OF PLAINFIELD, NEW JERSEY.

PRINTING DEVICE.

1,037,198. Specification of Letters Patent. Patented Sept. 3, 1912.

Application filed December 7, 1911. Serial No. 664,460.

To all whom it may concern:

Be it known that I, ROBERT L. BOYD, a citizen of the United States, and resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Printing Devices, of which the following is a specification.

This invention relates to the printing of photographs in ordinary printing frames, in which they are exposed to the light. In making such prints from certain kinds of pictures, particularly such as show an expanse of water, the camera, especially if held in the hand, will usually have the picture upon the exposed plate in an inclined position, that is, a horizontal line in the view, which should produce a horizontal line in the picture, will be tilted or inclined from the horizontal.

The principal object of this invention is to provide means for correcting this defect or inaccuracy in photographs.

A further object of the invention is to provide means for shortening or enlarging at will either the foreground or the background of the picture shown in the print.

In practising the invention I provide movable guards or screens around the edges of the negative or film from which the print is being made, and these screens may be adjusted so as to bring the edges of the print into the proper relation with the horizontal and vertical lines in the photograph, or to modify the foreground or background.

The invention consists in the construction and combination of parts to be more fully described hereinafter, and particularly set forth in the claims.

In the drawing which fully illustrates my invention. Figure 1 is a front elevation of the device as applied to an ordinary printing frame, the forward plate which lies adjacent to the glass of the printing frame being represented as broken away, leaving merely the corners thereof in place. This form of the device is particularly adapted to printing from films. Fig. 2 is a front elevation of the device illustrating the manner in which the screens coöperate to form a mask, the opening through which is properly alined with respect to the horizontal and vertical lines of the picture. Fig. 3 is a longitudinal vertical section taken on the line 3—3 of Fig. 1 and passing through an ordinary printing frame in which the device is used. Fig. 4 is a front elevation showing a modified form of the device in which the screens may be adjusted to vary the size of the opening, but not permitting of any angular adjustment. This view shows the side of the device which is adjacent to the glass of the printing frame. Fig. 5 is the rear elevation of the device with a mat superposed thereupon and forming a plate carrier. This form of the device illustrated in Figs. 4 and 5 is adapted particularly for printing from plates, that is, negatives formed on glass. Fig. 6 is a longitudinal section taken through Fig. 4 about on the line 6—6 and also passing through a photographic printing frame in which the device is held.

Before proceeding to a detailed description of the device it may expedite the disclosure of the invention to state that the invention preferably is in the form of a supplementary frame or guard, which is placed in the printing frame, lying against the glass. As the opening in this supplementary frame is much smaller than the normal opening of the printing frame, the printing frame is then adapted for printing pictures of a smaller size.

The preferred form of the device is intended especially for printing from films such as used in kodaks and similar cameras, although it may be used with plates if desired. This form of the invention is disclosed in Figs. 1 to 3, inclusive, and will now be described. The device in this form comprises forward plate 1 and a rear plate 2, which are of the same size and of rectangular form, superposed upon each other and held together at their corners by rivets or eyelets 3. These two plates have openings which register together to form a rectangular printing opening 4, as indicated in Fig. 2. The edges of this opening 4 are parallel with the edges of the supplementary frame 5 which the two superposed plates form. In the space between the two plates 1 and 2 I provide four links or arms 6, which are attached at the points indicated by pivots or eyelets 7, to the rear plate 2, that is, the plate which is not held adjacent to the glass when the device is in the printing frame. Pivotally attached to the free ends of these arms 6 I provide guards or screens 8, which are preferably in the form of thin, flat strips of plate metal, preferably aluminum. These screens have

straight inner edges, and are of considerable width as indicated. The pivot connections, or eyelets 9, which attach the screens to the arms 6 are preferably located near the middle points of the screens. The ends of the screens overlap each other, as indicated, and the screens are intended to be adjusted out into the opening 4 so that the inner edges of the screens intercept the light which normally passes adjacent to the edges of the opening 4; in this way the screens form an adjustable mask, and produce a smaller or supplementary opening 10 within the opening 4.

It should be understood that in practice the plate 1 of the device lies against the glass 11 of the printing frame 12, as indicated in Fig. 3, and in order to facilitate the adjustment of the screens without removing the mat from the frame, the inner edges of the upper or rear plate 2 are provided with arc shaped slots 13, which are struck upon radii having their centers at the eyelets or pivots 7. Into these slots the eyelets 9 project and these projecting eyelets facilitate the outward or inward adjustment of the arms 6. In this way, and by touching the fingers to the projecting edges of the screens the location and angular position of the screens can be adjusted.

The manner of adjusting the mask formed by the screens 8 to bring the edges of the opening 10 into proper alinement is illustrated in Fig. 2. The line 14 represents a horizontal line such as a horizon at sea, or a similar line on the picture which is known to be horizontal. The upper and lower screens should be swung out and adjusted on pivots 9, until they appear to be substantially parallel with this line 14, and then the end screens are adjusted so as to place them substantially at right angles to the line 14. By adjusting the side screens in or out evidently the amount of foreground or background in a picture may be increased or decreased as desired.

In Fig. 3, the film 15 is laid upon the glass 11, and back of the film lies the print or sensitized sheet 16. Back of the print 16 I provide a thick compressible pad 17 of felt, or other similar material, adapted to form a good cushion which accommodates itself to the inequalities or differences in thickness of the parts of the device in the vicinity of the supplementary opening 10. This pad insures that a substantially uniform pressure will be exerted by the back 18 when it is locked in place. When it is not necessary to use the screens, that is, in making prints from negatives not having the defects suggested, the screens may be pushed back so that they recede completely into the space between the forward plate 1 and the rear plate 2. In order to accomplish this it may be necessary to provide the outer edges of the screens 8 with notches 19, as indicated in Fig. 1 which give clearness for the eyelet pivots 7.

The modified form of the invention illustrated in Figs. 4 to 6 will now be described. In this form the device consists of a plate 20 of rectangular form which is provided with a rectangular opening 21, the edges of which are respectively parallel with the edges of the plate 20. On two adjacent edges of the plate 20 I attach fixed screens 22 which are in the form of very thin metal plates preferably of aluminum, and these plates are preferably secured by rivets or eyelets 23, as shown. Opposite the screens 22 I provide movable screens 24, which are also formed of thin plates. These screens 24 are mounted to swing in or out on parallel arms 25 which are pivotally attached by eyelets 26 to the screens 24, and pivotally attached to the plate 20 by eyelets 27; in other words, the two screens 24 have a "parallel" movement. The edges of the two screens 22 are at right angles to each other and the edges of the screens 24 are parallel respectively with the edges of the screens 22. In this way a smaller and supplementary opening may be formed in the opening 21 of the plate 20.

In printing from plate negatives I preferably employ a mat or plate carrier 29 which is also of rectangular form and of the same dimensions as the plate 20. This mat has a rectangular opening 30 which matches and registers with the opening 21 when the mat 29 and plate 20 are superposed. This mat 29 is preferably of substantially the same thickness as the printing plate or negative 31 which it is intended to hold.

In using the device the plate 20 is laid upon the glass 32 of the frame 33, that is, the face of the device shown in Fig. 4 lies adjacent to the glass. The mat 29 is then laid upon the plate 20 as illustrated in Fig. 5, and the edges of the screens 24 are adjusted in or out so as to give more foreground or background, or so as to change the length of the picture as may be desired.

The corners of the opening 30 in the mat 29 are provided with small clips or shelves 34 which receive the corners of the negative 31 and support it in the mat. In this connection it should be understood that the opening 30 is of just sufficient size to receive the negative. This mat keeps the negative in place and insures that the edges of the print will be parallel with the edges of the negative. When the negative is in the mat its upper face, as illustrated in Fig. 6, should be flush with the upper face of the mat, so as to equalize the pressure on the glass 32 when the back 35 of the printing frame is placed in position over the print 31^a.

In Fig. 4 the edges of the fixed screens 22

are represented as projecting beyond the adjacent edges of the opening 21. This arrangement produces a small margin around the edge of the print, but if no margin is desired the inner edges of the fixed screens 22 may be made to aline exactly with the edges of the opening 21. This will form no margin on the print and the fixed screens will then operate principally as reinforcements for the adjacent edges of the opening.

The body of the device in both forms is preferably constructed of card board, or similar material.

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

1. A printing frame having a plurality of flat, rigid strips forming movable screens, arranged to lie against the inner side of the film or plate, and movable members having pivot connections with said movable strips, enabling said strips to move laterally inwardly within said frame.

2. A printing frame having side rails and having a plurality of pivotally mounted arms arranged to lie against the inner face of the film or plate, and a plurality of elongated strips disposed adjacent to certain of said side rails and substantially parallel thereto, said strips being pivotally attached to said arms so as to move laterally inwardly and outwardly in said frame, and coöperating to form an adjustable mask.

3. A printing device comprising a substantially rectangular member with a printing opening therein, a plurality of elongated flat strips lying against the inner side of the film or plate, having their longitudinal axes extending longitudinally with the side edges of said member, and pivoted arms connecting said strips with said rectangular member and enabling a sidewise bodily movement of said strips into said printing opening.

4. A printing frame having side rails, a plurality of elongated screens having longitudinal axes extending longitudinally with the side rails of said frame, said screens being disposed wholly within the space surrounded by said rails and arranged to lie against the inner face of the film or plate, and pivoted arms attached to said screens and enabling said screens to be adjusted laterally inwardly and outwardly within said frame.

5. A printing frame having side rails and having a plurality of elongated screens having longitudinal axes extending longitudinally with said side rails, arms having fixed pivots, said screens being attached solely to said arms by pivot connections therewith, said screens being bodily movable out into the opening of said frame.

Signed at New York in the county of New York and State of New York this 2nd day of December A. D. 1911.

ROBT. L. BOYD.

Witnesses:
CHAS. H. TOPPING,
E. A. KLINE.