T. L. RAY.

PHOTOGRAPHIC PRINTING-FRAMES.

No. 183,022. Patented Oct. 10, 1876.

Fig. 5

Fig. 6

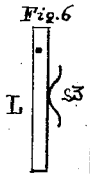


Fig. 7

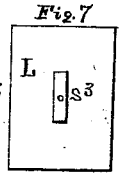


Fig. 1

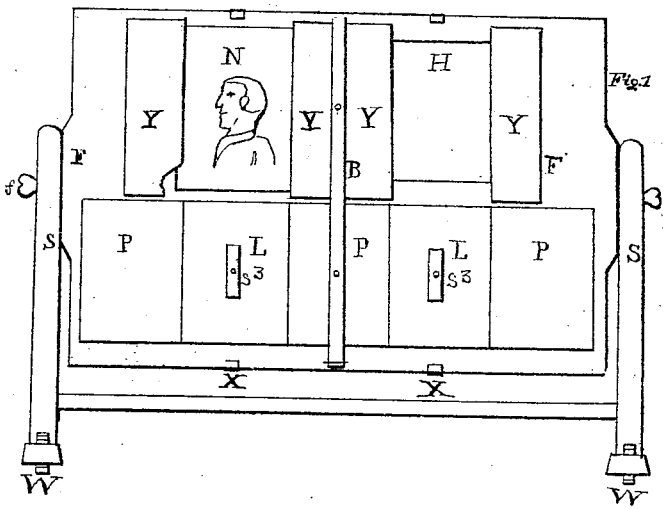


Fig. 2

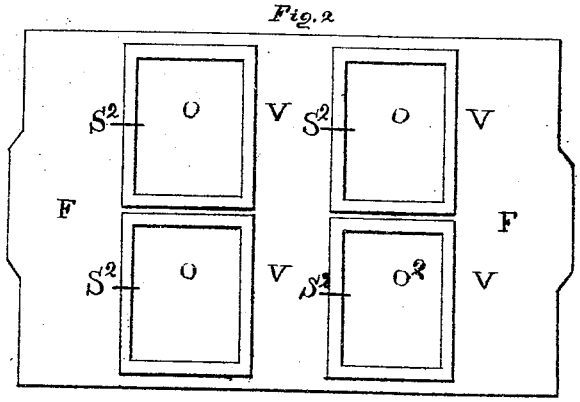


Fig. 3

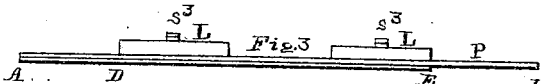
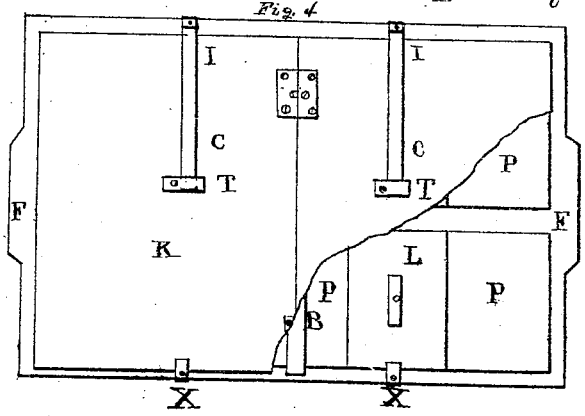


Fig. 4



Witnesses
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UNITED STATES PATENT OFFICE

THOMAS L. RAY, OF BELVIDERE, ILLINOIS.

IMPROVEMENT IN PHOTOGRAPHIC-PRINTING FRAMES.

Specification forming part of Letters Patent No. **183,022**, dated October 10, 1876; application filed October 10, 1874.

To all whom it may concern:

Be it known that I, THOMAS L. RAY, of Belvidere, Boone county, Illinois, have invented a Photographic-Printing Frame, of which the following is a specification:

The object of my invention is to produce in the same frame at one time an indefinite number of sun-pictures from negatives of different persons, or negatives taken on separate glasses, which may be of the same or of different intensity with the same amount of exposure to light, the said pictures to be finished on separate cards, by the combination, in a photographic-printing frame, of, first, the equalizing-media O O, as shown in Fig. 2, consisting of oiled papers, stained glass, tracing-muslin, or other media of different thicknesses or density, and substantially the same, for retarding the light of the least intense negatives, or increasing the light of the most intense negatives, by means of condensing-lenses O^2, said equalizing-media being held between the light and sensitive paper or over the negative by means of the movable frame V, or its equivalent, as shown in Fig. 2, using the required amount of said equalizing-media to give each picture the same degree of actinic light.

It will be evident that the light may be retarded by using varnishes of different colors on either side of the negatives or varnishes that produce a ground-glass surface, or by grinding the surface of the glass; and the light may be increased by using reflectors with the same result; also, the equal printing may be secured by retarding the light on all of the least intense negatives, or the light may be increased on all of the most intense with the same result.

The movable frame V surrounds the aperture H in frame F, through which the actinic light passes to the negative N, is held firmly to the frame F by spring S^2, said spring being fastened in the cross-piece of frame F. The frame F is provided with cross-pieces the width of one picture, the outside pieces also the same width. The negatives always being larger than the picture required, the size of each picture is marked on each negative exactly where the light is wanted to pass through. The negatives are fixed in rows across the frame, on the other side from the movable frame V or opposite to it, the long way of the picture. The sensitive paper is used in strips long enough to cover one row of negatives and one picture more, or it extends from A to E, as shown in Fig. 3. The cross-pieces and picture being the same width, it will be seen that just one-half of the sensitive paper will be used at one exposure, printing D and E. The paper is then drawn from E to U, and the other half used at another exposure. Where the glass that the picture is on is two or three times as large as the picture wanted, or where there are two or more pictures on the same glass, it will be necessary to make the cross-pieces wider and separate the negatives enough to leave two or more pieces of sensitive paper between the negatives, just the size of the picture wanted; also, for printing pictures of different sizes in the same frame, the cross-pieces should be made adjustable and in two pieces of the same length and thickness. Then they may be separated to make any sized picture.

Another advantage in printing two pictures from each negative on a continuous strip of sensitive paper, or printing with the negatives separated, is that it allows room on the other side of frame F to adjust the equalizing-media and for the movable frame V and spring S^2, the sensitive paper being held firmly to negatives by means of flexible strip P, provided with block L and spring S^3. The flexible strip P covers the whole piece of sensitive paper. The block L covers the piece directly over the negative. The block L is provided with a convexo-concave spring, S^3, reaching far enough above the negative to receive pressure from the cover K; also, in order to see whole picture during the printing, and adjust the actinic light of each picture, the sensitive paper is held between each negative by bar B, as shown in Fig. 5, provided with springs convexo-concave, to press equally against each piece of sensitive paper, and held at each end.

The cover K, with hinge in center for examining one-half of the pictures while printing, is used for pressure on block L, with spring for holding sensitive paper in contact with negative N. It is held first at one end by buttons X X, and the other end is pressed down with levers C C, said levers being attached to frame

F with hinge I, and secured under clasp T, as shown in Fig. 3. The frame F is hung by thumb-screws, for the purpose of fastening it when at the proper angle with the sun, upon vertical standards S S, as shown in Fig. 1, said standard being fastened in a horizontal frame, provided with wheels W W. This arrangement gives the frame a vertical and horizontal rotary motion, which arrangement serves two purposes, namely, convenience in turning the frame while inserting the negatives, and adjusting the sensitive paper and media used to equalize the actinic light. It also permits the surfaces of the negatives to be easily kept perpendicular to the sun's rays.

I claim as my invention—

1. The process of printing an indefinite number of sun-pictures from negatives of different intensity at one time and at the same exposure to light, substantially as described.

2. The method of securing the equal printing of pictures in printing—that is, by retarding the light on all of the least intense negatives or increasing the light on all of the most intense, or by retarding the light on the least intense and increasing the light on the most intense, by means of equalizing-media and condensing-lenses, substantially as set forth.

3. The method of printing one picture from each negative in the printing-frame on a continuous piece of sensitive paper, and leaving an indefinite number of pieces of sensitive paper between the negatives just the size of the pictures already printed, substantially as described.

4. The method of pressing the sensitive paper in contact with negative in the printing-frame by means of the flexible strip P, with block L and spring S^3 and the cover K, when constructed, combined, and arranged to operate substantially as and for the purpose set forth.

5. As a new process, the printing of an indefinite number of pictures at one time and in the same frame of different persons or from negatives of the same intensity, taken on separate glasses, when said pictures are finished on separate cards, substantially as set forth.

T. L. RAY.

Witnesses:
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J. D'W. RAY.