No. 658,839. Patented Oct. 2, 1900.

C. F. GODDARD, Jr.

PHOTOGRAPHIC PRINTING FRAME.

(Application filed Apr. 25, 1898. Renewed Mar. 2, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

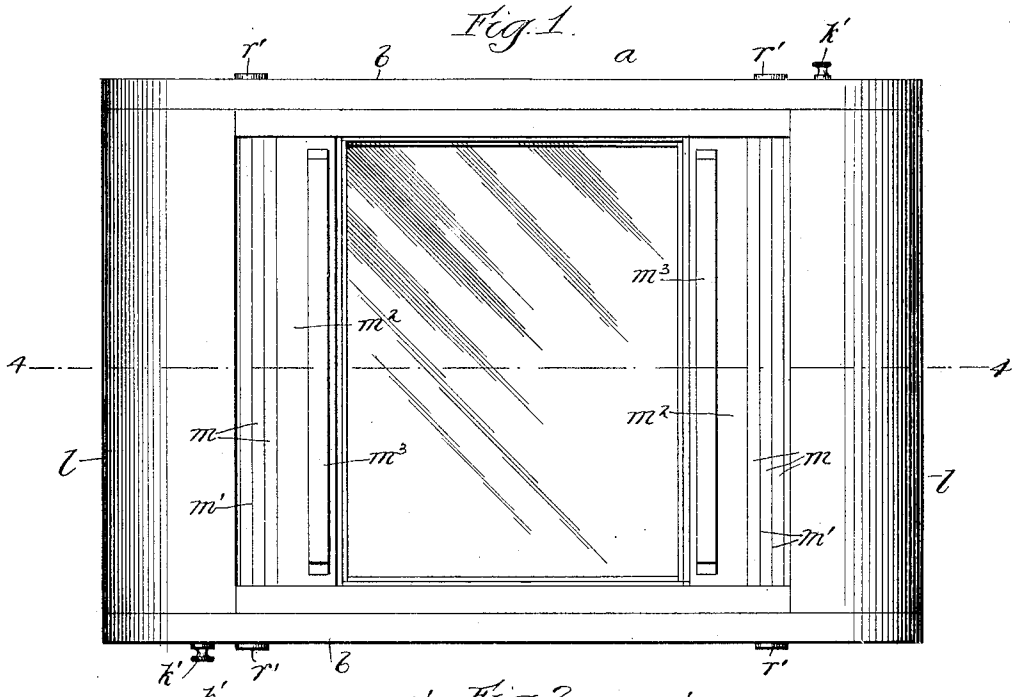
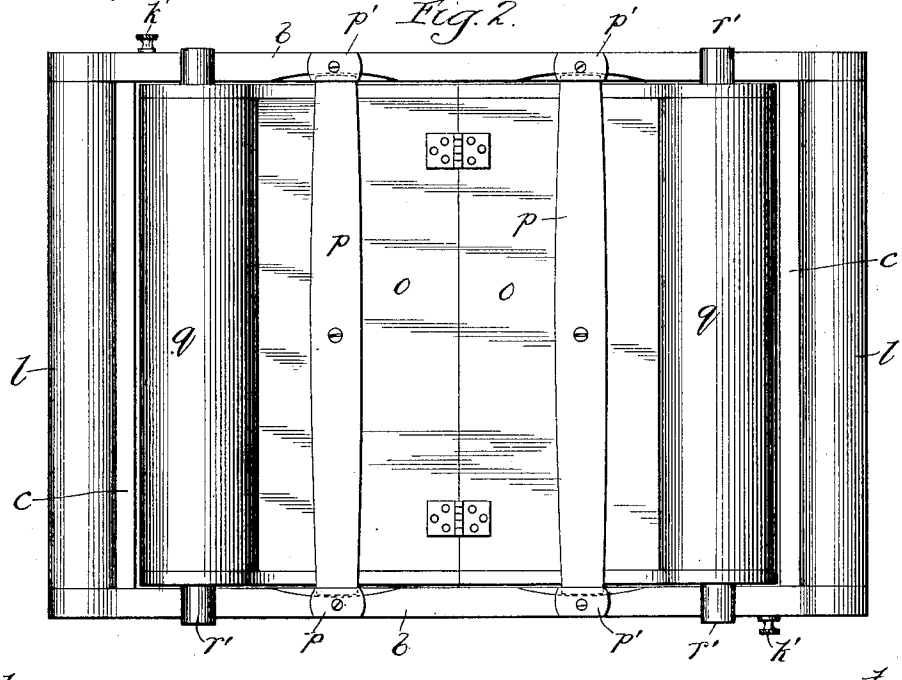


Fig. 2.



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Fig. 3.

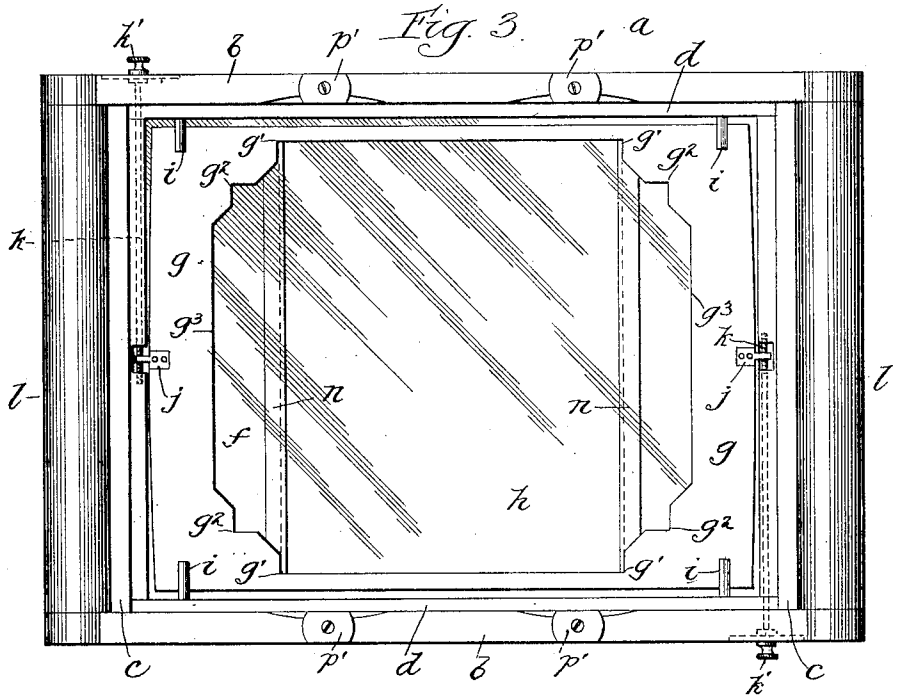


Fig. 4.

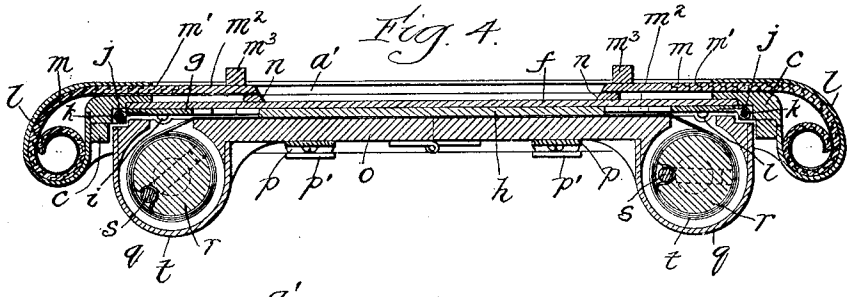


Fig. 5.

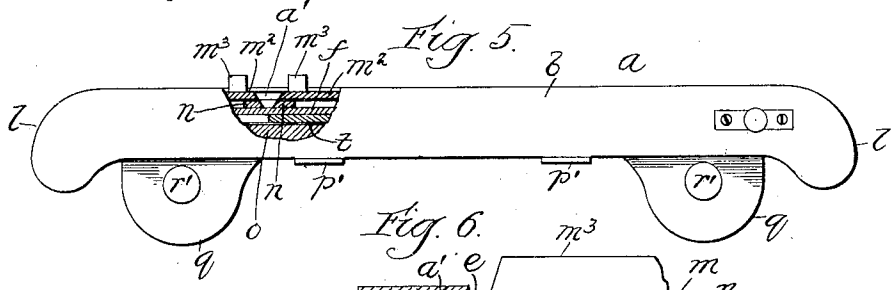
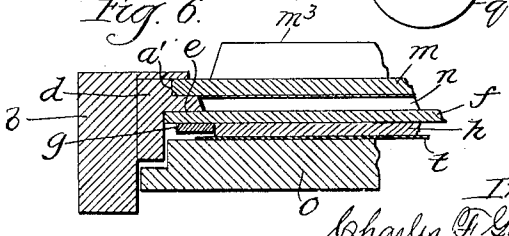


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES F. GODDARD, JR., OF CHICAGO, ILLINOIS.

PHOTOGRAPHIC-PRINTING FRAME.

SPECIFICATION forming part of Letters Patent No. 658,839, dated October 2, 1900.

Application filed April 25, 1898. Renewed March 2, 1900. Serial No. 7,128. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. GODDARD, Jr., of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Photographic-Printing Frames, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding letters of reference in the different figures indicate like parts.

My invention relates to that class of photographic-printing frames adapted to print panoramic or other views on a continuous web of sensitive paper of indefinite length from a series of different negatives; and one object of my invention, among other things, is to so construct said frame as to enable the user to accomplish exact registration between a given negative and that portion of a web upon which a print has previously been made, so as to provide for the usual variation in the negatives resulting from the camera being more or less out of level when the exposure is made.

A further object is to provide means for securing an exact and satisfactory blending of the print upon the lines of demarcation between the different negatives or any portion or section of said negatives which may be arbitrarily chosen by the operator.

To these ends my invention consists in providing a suitable negative-holder within the frame with means for enabling the same to be moved laterally, either in its entirety or at either end, so that the image of the negative may be caused to accurately register with the adjacent line of the previous print, whether the image of the negative be at right angles to the frame or not; and it further consists in providing suitable adjustable blenders so arranged that the light may be admitted to or shut off from any part of the negative from its entire surface down to the narrowest slit which may be found necessary in correcting registration or which may result from joining a part only of a given negative to a print previously made, all of which is hereinafter more particularly described, and definitely pointed out in the claims.

In the drawings, Figure 1 is a front or face view of my improved printing-frame. Fig. 2 is a back view thereof. Fig. 3 is a like view in which the removable back has been removed, showing the adjustable negative-holder. Fig. 4 is a vertical longitudinal sectional view taken upon the line 4 4, Fig. 1. Fig. 5 is an edge view upon which a portion of the side is broken away, showing the interior parts in section; and Fig. 6 is an enlarged transverse sectional view in detail of a portion of the frame.

Referring to the drawings, *a* represents an oblong rectangular printing-frame having side bars *b b*, joined by transverse end pieces *c c*, which constitute the skeleton of the structure. Attached to the inside of the side bars are cleats *d d*, (better shown in Figs. 3 and 6,) which cleats are provided with shoulders or ledges *e*, arranged to form a support for a glass plate *f*, smaller ledges being formed in the end pieces *c c*, as shown in Fig. 4. Next to the glass plate *f* and between that and the removable back, hereinafter described, is an open frame *g*, Figs. 3, 4, and 6, which I term the "negative-holder." The negative-holder is so shaped as to form corner-notches g' g^2 for the reception of a negative *h*, which may be placed either longitudinally or transversely within the frame. When placed transversely, as shown in Fig. 3, the corners of the negative rest in the notches g', and when placed longitudinally they are adapted to rest in the notches g^2. A cut-away portion g^3 in the negative enables the margin of the previous print to be seen and aids in the adjustment, so as to insure a proper registration of the negative therewith. Should the image of the negative fail to register with the previous print, the negative-holder may be adjusted thereto by means of the following-described mechanism: The negative-holder is somewhat narrower than the interior of the frame and is rounded slightly at the ends, which permits of a lateral adjustment of the entire holder, as well as an oblique movement at either end. The holder is held in position against the glass *f* by means of pins or stops *i*, Figs. 3 and 4, which project inwardly from the frame and are parallel with the face of the glass. Lugs *j j* are rigidly attached to the respective ends of the negative-holder and are tapped to receive the screw-threaded ends of rods *k k*, (shown in Fig. 4

and indicated in dotted lines in Fig. 3,) which are mounted in bearings in the frame and provided with thumb-nuts $k' k'$, by which they may be operated. Attached to the respective ends of the main frame are hollow rounded casings $l\ l$, which are adapted to receive the free ends of flexible sliding curtains $m\ m$, which are preferably made from overlapping slats of wood or other suitable material, as shown at $n'\ n'$, Fig. 4, cemented or glued in any well-known way to a flexible fabric. The ends of the slats formed in the curtain are adapted to slide in grooves a', Figs. 4, 5, and 6, formed in the cleats d. Upon the exposed end of each curtain is a wide slat m^2, to which is rigidly attached a cleat m^3, which abuts against the edge of the casing l when the curtains are pushed back and serves also as a holder or projection, which the operator may grasp in manipulating the curtain. Attached beneath the slats m^2, respectively, are beveled slats or cleats $n\ n$, which are in contact with the glass plate f and serve to cut off the light from the negative upon any predetermined line. The curtains, with the parts n, are termed "blenders" and will be hereinafter referred to in describing the operation of the device.

The printing-frame is provided with a removable back consisting of the usual backboards $o\ o$, hinged at the middle, as shown in Figs. 2 and 4, and provided with the usual clamping-springs $p\ p$, the ends of which are adapted to engage with clips $p'\ p'$ upon the side rails of the frame. Hollow semicylindrical casings $q\ q$ are rigidly attached to the backboards at or near the opposite ends of the printing-frame and are provided with rollers $r\ r$, having projecting trunnions $r'\ r'$, which are adjusted in suitable bearings and which extend outwardly to a sufficient extent to form handles or knobs which may be grasped by the operator for manipulating the rolls. Wires $s\ s$, Fig. 4, are secured in longitudinal grooves in the rolls and are adapted to form clamps, beneath which the ends of a web t may be secured, which web is first wound upon one of said rolls and is then carried lengthwise of the removable back, as more clearly shown in Fig. 4, and then attached to the opposite roll. The back is then placed in position in the frame and secured in the usual way by means of the springs $p\ p$, as shown in Fig. 2. The curtain-blenders are then adjusted, as shown in Figs. 1, 3, and 4, to conform to the position of the negative h, the outer edges of which are indicated in dotted lines in Fig. 3. The frame is exposed to the light in the usual way, and a print is made from the desired negative upon the web. The negative is then removed, another substituted, and the rolls are actuated so as to bring the fresh paper in contact with the new negative. Should the second negative fail to register with the margin of the print previously made, it may be adjusted thereto by manipulating the knobs $k'\ k'$, which will enable the edge of the negative to conform to any obliquity of the marginal line or to be adjusted laterally, so as to be brought into alinement with the longitudinal margins of the print. When the second negative is properly adjusted, then the curtains are moved so that the beveled parts n are brought into positions indicated in Figs. 3 and 4. In adjusting the curtain to conform to the margin of the print which has previously been made should the operator fail to place the blender upon the proper lines, so as to leave an unprinted transverse strip or line upon the paper, the error may be corrected by moving the blender to the exact marginal line, as shown at the left, for example, in Fig. 5, and then drawing the opposite curtain over the print which has just been made, so as to conform to the opposite line of said last-named print, thus leaving a narrow slit through which the light may pass to the line upon the sensitive paper which it is desired to expose in order to make the print continuous upon the web. The curtains respectively should be made of such a length that either one may be drawn forward to a sufficient distance to cover the entire negative. This construction enables a print to be made from any part or section of the negative and of any width desired. This feature is of the highest importance, not only enabling corrections to be made where the registrations have been imperfect, but may be utilized with special advantage where in making panoramic views the negatives have been allowed to overlap upon the subject, as frequently occurs in connection with architectural photography. Should such overlapping occur in exposing the negative, that portion of the latter may be covered by the flexible curtain, so that the part of one negative may be joined with the other in the print upon any predetermined line.

By means of my improved printing-frame prints of an indefinite length may be made in any desired number of negatives with such accuracy and delicacy of blending as to render it impossible to discover the lines of junction and to give them the appearance of having been made from a single negative.

One of the important advantages connected with my improved printing-frame is that the rolls for supporting the web and the cases therefor are attached to the removable back of the frame, and when either section of the latter is raised in the usual way to enable the operator to examine the print that portion of the web represented by that section is lifted with it, thus enabling the print to be examined in the shortest possible time and with minimum trouble.

Having thus described my invention, I claim—

1. The combination with the main frame of a photographic-printing frame, of a glass front plate for supporting the negative, a

movable negative-holder in contact with said glass plate, said negative-holder being provided with corner-notches to receive the negative whether the latter be placed longitudinally or transversely of the printing-frame, means for moving said negative-holder laterally and obliquely, a removable hinged back for holding a web of sensitive paper against the negative, and suitable rolls mounted upon the respective ends of said removable back for receiving said paper-web, substantially as and for the purpose specified.

2. The combination in a printing-frame of the class described of a main frame, a removable back, rolls mounted upon said back and inclosed within a suitable casing, a glass plate supported within the frame, a negative-holder in contact with said glass plate, and movable flexible curtains arranged in front of the frame, each being adapted to slide in opposite directions a distance corresponding substantially to the opening within the negative-holder, substantially as described.

3. In a printing-frame of the class described, the combination with means for supporting a negative therein, rolls for supporting a web of sensitive paper in position to be moved past and in contact with the negative, means for adjusting the negative to register with the margin of the prints respectively as made upon said web, and a pair of flexible sliding curtains adapted to be moved from opposite directions across the entire face of the negative, substantially as described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 18th day of April, 1898.

CHARLES F. GODDARD, JR.

Witnesses:
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JOSEPHINE S. MCGREGOR.