March 3, 1931. L. G. SIMJIAN 1,795,050

APPARATUS FOR PRODUCING MARGINED PHOTOGRAPHS

Filed July 16, 1928

Fig. 1.

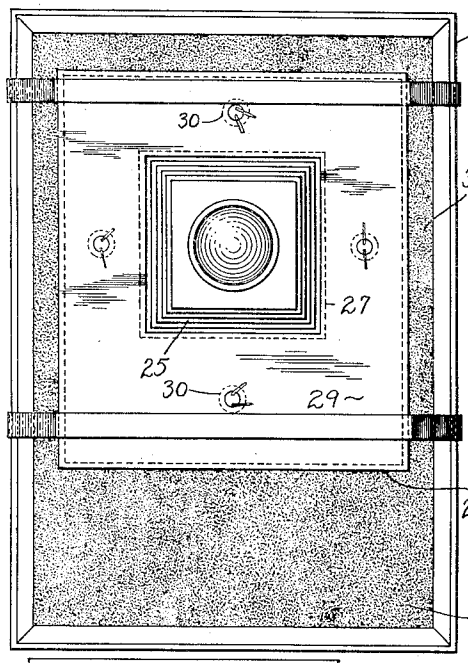
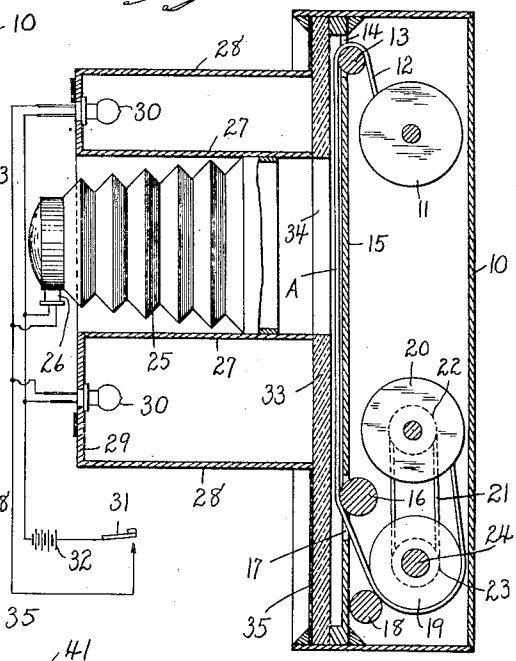


Fig. 2.



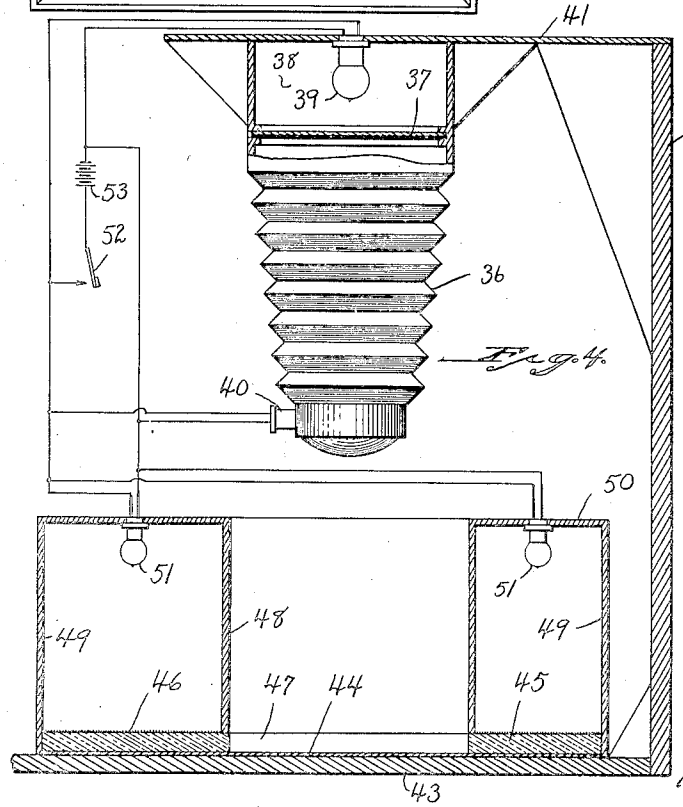
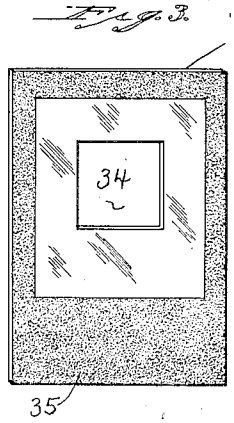


Fig. 4.

Fig. 3.



Inventor
Luther G. Simjian
by Seymour Earle & Nichols
attys

Patented Mar. 3, 1931 1,795,050

UNITED STATES PATENT OFFICE

LUTHER G. SIMJIAN, OF NEW HAVEN, CONNECTICUT

APPARATUS FOR PRODUCING MARGINED PHOTOGRAPHS

Application filed July 16, 1928. Serial No. 293,177.

This invention relates to improvement in apparatus for producing photographs with either light or tinted margins or borders.

The object of this invention is to provide a simple, reliable and effective apparatus by which photographs, having light or tinted borders or margins, may be produced at a low cost and with superior results.

My invention is particularly suitable for use in automatic and semi-automatic photographic machines, though not so limited.

Heretofore it has been the general practice to produce so-called tinted margins or borders upon photographs by the well-known double-printing method, which involves positioning a mask over the border or margin of the positive paper, in addition to positioning the image-bearing negative over the central portion of the positive paper. The carrying out of this process has been difficult and time-consuming, largely owing to the fact that the mask must be accurately registered with that portion of the paper designed to receive the image from the negative.

Heretofore also when it has been desired to produce a white border or margin, rather than a tinted one, a separate and distinct mask has been applied to the negative, before positioning the same over a sheet of positive paper and prior to the printing of the latter. Here also the problem of accurate registration is a troublesome one.

It is obvious that either one of the two standard methods of obtaining margins are unsuited, in a practical sense, for use in automatic and semi-automatic photographic machines, owing to the need for mechanically positioning a mask.

Furthermore, in the so-called direct-positive method, it has not heretofore been practicable to produce photographic prints having white or tinted borders or margins. In this direct-positive method the image is recorded by the camera in negative form directly upon extra-rapid special sensitized paper which latter, subsequent to exposure, is chemically treated to reverse the negative-image and transform it into a positive-image. The difficulty of obtaining white or tinted borders upon direct-positive paper will be best understood by drawing attention to the fact that when the margins of such papers are shielded from light as would be the case when a mask is used, the paper would remain photo-chemically unaffected where so masked or covered, and upon being subjected to reversing chemicals the resultant margins or borders would be dark rather than light.

With my improved apparatus, I am enabled, in the field of standard photography, to produce a negative which will in turn produce a positive print having a light or so-called tinted or graded border without the attendant labor or expense of resorting to double-printing. Also, in the case of photo-enlarging apparatus I am enabled to produce margins directly upon the positive paper as will hereinafter appear. Furthermore, in the field of direct-positive photography I am enabled also to produce prints having either uniform white or tinted borders.

In the accompanying drawings:

Fig. 1 is a view in front elevation of one form which an apparatus constructed in accordance with my invention for producing margined photographs may assume;

Fig. 2 is a broken central sectional view thereof;

Fig. 3 is a detached perspective view of the mask; and

Fig. 4 is a vertical sectional view illustrating my invention as applied to a photo-enlarging apparatus.

In the embodiment of my invention herein chosen for illustration, I employ a box-like housing 10 within which is located a supply-reel 11 upon which is wound a strip of undeveloped photo-sensitive material 12. The said strip 12 passes upward over an idler-roll 13 and forward through an aperture 14 in the front plate 15 of the housing 10 and downward over an idler-roller 16 and inward through an aperture 17 in the said front-plate 15 and between the adjacent faces of complementary feed-rollers 18 and 19 and is finally wound upon a receiving-reel 20 which is frictionally driven by means of a belt 21 and pulleys 22 and 23 from the drive-shaft 24 of the feed-roller 19. It is obvious that by turning the shaft 24 the strip 12 will be drawn down-

ward and rolled up upon the receiving-reel 20 aforesaid.

Positioned substantially centrally with respect to that portion of the photo-sensitive strip 22 lying between the idler-rollers 13 and 16 which I shall for convenience of description designate A, I locate a camera 25 of usual construction and requiring no detailed description other than to say that its shutter-mechanism (not shown) is operated by an electro-magnet 26.

Positioned around the said camera 25 I place a hollow chambered shield which comprises an inner rectangular wall 27 and a complementary outer rectangular wall 28, both of which extend in planes substantially perpendicular to that portion A of the photo-sensitive strip 12 aforesaid, though they may obviously slope inward or outward if desired, so long as the inner wall discharges the function of preventing light for producing the margins from spreading laterally inward upon the central image-receiving area of the photo-sensitive material. In a broad sense, the inner wall 27 may be properly characterized as "ring-like" in so far as it laterally encompasses the central image-receiving area of the photo-sensitive material. The said hollow shield also comprises an end-wall 29 connecting the inner and outer walls 27 and 28 as shown, and in which are mounted at equidistant points four (more or less) inwardly-projecting electric bulbs 30 electrically connected in multiple with each other and with the electro-magnet 26 and controlled together with the latter by a switch 31 governing the flow of current from the storage-battery 32 or other suitable source of electrical energy. As thus located, the bulbs 30 are enclosed within the chambered shield aforesaid.

Positioned between the vertical reach A of the photo-sensitive strip 12 on one hand, and the camera 25 and the shield on the other hand, I locate a translucent screen or mask 33 having a central rectangular opening 34 and also having that portion of its surface surrounding the outer wall of the shield provided with an opaque coating 35 designed to prevent extraneous rays of light from entering the mask 10 and so damaging the strip 12.

It will be obvious from the drawings that the central or image-receiving section of the vertical reach A of the photo-sensitive strip will be shielded by the wall 24 from light emanating from the bulbs 30 within the said shield. It will also be seen that the light passing through the camera will be prevented from encroaching upon the marginal area surrounding the said central portion also by the said wall 27; the outer wall 28 of the shield acting to prevent extraneous rays from affecting the said marginal area.

In the use of the apparatus shown in Figs. 1 to 3 inclusive when the switch 31 is closed the shutter of the camera will be operated by the magnet 26 so as to record upon the central portion of the vertical reach A of the strip 12 the image, whatever its character, positioned in front of the said camera. Simultaneously (although this is not necessary) the lamps 30 will be lighted and their rays will shine through that portion of the mask 33 included between the walls 27 and 28 of the shield with the effect of photo-chemically acting upon that area of the strip 12 lying directly back of the shield so that when the said strip is developed it will be provided with a light margin or border surrounding the photograph proper.

If it is desired to produce a so-called tinted or graded margin around the photograph, it is obvious without illustration that the surface of the mask 33 included between the walls 27 and 28 of the shield may be provided with a finely-stippled or other semi-transparent surface.

In Fig. 4 of the drawings I have shown a photo-enlarging apparatus comprising the usual enlarging camera 36 provided at the rear of its bellows with a negative holder 37 and with a light-chamber 38 in which is located an incandescent electric bulb 39. The enlarging camera 36 is of standard form and requires no detailed description other than to say that its shutter (not shown) is adapted to be operated by an electro-magnet 40.

The said camera is supported by a horizontal bracket 41 offsetting from the upper end of a standard 42 upstanding from a base-plate 43 upon the upper face of which is positioned a section 44 of photo-sensitive material. Resting upon the top of the photo-sensitive material 44 is a mask 45 provided with a semi-transparent surface 46 having a central opening 47 arranged axially in line with the camera 36 and with the central image-receiving area of the section 44 of photo-sensitive material.

Like the apparatus previously described, the marginal area of the photo-sensitive material is shielded from light passing through the camera by a hollow chambered shield comprising an inner wall 48 and an outer wall 49 connected by an end wall 50 in which is mounted, so as to be enclosed within the said mask, a plurality of incandescent bulbs 51 connected in multiple with each other and with the electro-magnet 40, so as to be energized simultaneously with the latter when a switch 52 is operated to close a circuit from a storage-battery 53.

When the lights 51 are turned on, their rays will pass through the semi-transparent area 46 of the mask 45, with the effect of imparting to the marginal area of the sensitized material 44 a so-called tinted or graded effect.

I claim:

1. An apparatus of the class described comprising a holder for photo-sensitive sheet-material; a camera arranged to cause the

light passing therethrough to impinge upon the central image-receiving area of the said photo-sensitive material; illuminating means arranged to cast artificial light upon the margins of the said photo-sensitive material; and a ring-like light-shield having a wall substantially corresponding in size to and laterally encompassing the central image-receiving area of the said photo-sensitive material and extending substantially perpendicular with respect thereto in position to prevent the light emanating from the said illuminating means from spreading laterally inward in any direction upon the central image-receiving area of the photo-sensitive material.

2. An apparatus of the class described comprising a holder for photo-sensitive sheet-material; a camera arranged to cause the light passing therethrough to impinge upon the central image-receiving area of the said photo-sensitive material; illuminating means arranged to cast artificial light upon the margins of the said photo-sensitive material; means constructed and arranged to cause the said camera and the said illuminating means to function substantially simultaneously; and a ring-like light-shield having a wall substantially corresponding in size to and laterally encompassing the central image-receiving area of the said photo-sensitive material and extending substantially perpendicular with respect thereto in position to prevent the light emanating from the said illuminating means from spreading laterally inward in any direction upon the central image-receiving area of the photo-sensitive material.

3. An apparatus of the class described comprising a holder for photo-sensitive sheet-material; an electrically-operable camera arranged to cause the light passing therethrough to impinge upon the central image-receiving area of the said photo-sensitive material; electric illuminating means arranged to cast light upon the margins of the said photo-sensitive material; a switch interposed in a circuit controlling the action of both the said camera and the said electric illuminating means; whereby the two last mentioned elements may be caused to act substantially simultaneously; and a ring-like light-shield having a wall substantially corresponding in size to and laterally encompassing the central image-receiving area of the said photo-sensitive material and extending substantially perpendicular with respect thereto in position to prevent the light emanating from the said illuminating means from spreading laterally inward in any direction upon the central image-receiving area of the photo-sensitive material.

4. An apparatus of the class described comprising a holder for photo-sensitive sheet-material; a camera arranged to cause the light passing therethrough to impinge upon the central area of the said photo-sensitive material; illuminating means arranged to cast artificial light upon the margins of the said photo-sensitive material; a translucent screen interposed between the said illuminating means and the marginal area of the said photo-sensitive material; and a ring-like light-shield having a wall substantially corresponding in size to and laterally encompassing the central image-receiving area of the said photo-sensitive material and extending substantially perpendicular with respect thereto in position to prevent the light emanating from the said illuminating means from spreading laterally inward in any direction upon the central image-receiving area of the photo-sensitive material.

5. An apparatus of the class described comprising a holder for photo-sensitive sheet-material; a camera arranged to cause the light passing therethrough to impinge upon the central area of the said photo-sensitive material; illuminating means arranged to cast artificial light upon the margins of the said photo-sensitive material; and a chambered shield adapted to enclose the said illuminating means and comprising complementary rectangular inner and outer walls arranged substantially perpendicular to the photo-sensitive material, the said inner wall substantially corresponding in size to and laterally encompassing the central image-receiving area of the said photo-sensitive material in position to prevent the light emanating from the said illuminating means from spreading laterally inward in any direction upon the central image-receiving area of the photo-sensitive material and also constructed and arranged to prevent the light passing through the said camera from appreciably encroaching upon the margin area of the said photo-sensitive material.

In testimony whereof, I have signed this specification.

LUTHER G. SIMJIAN.