J. H. SNAPP.

PROCESS OF PRINTING FROM PHOTOGRAPHIC NEGATIVES.

APPLICATION FILED MAY 31, 1912.

1,092,545.

Patented Apr. 7, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

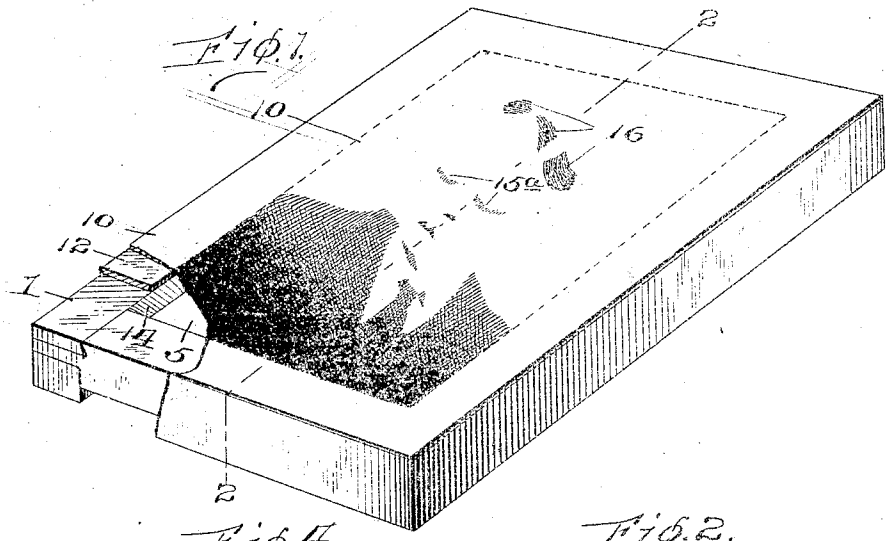
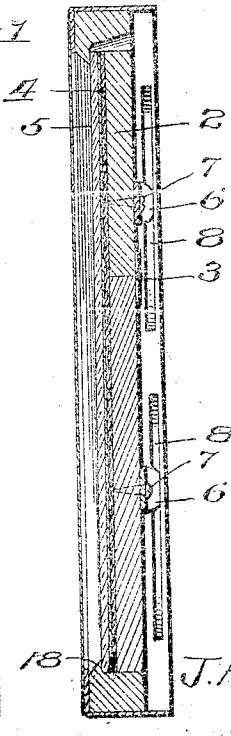


Fig. 4.



Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 5.



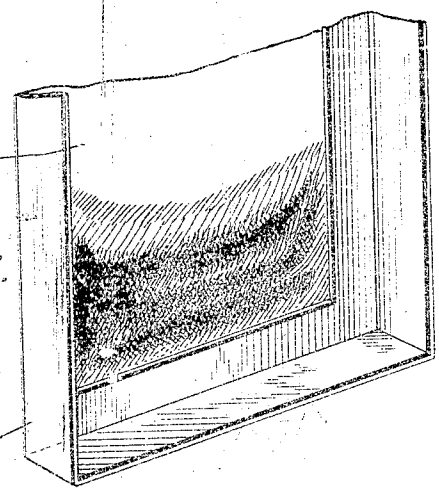


Fig. 3.

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UNITED STATES PATENT OFFICE.

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PROCESS OF PRINTING FROM PHOTOGRAPHIC NEGATIVES.

1,092,545. Specification of Letters Patent. Patented Apr. 7, 1914.

Application filed May 31, 1912. Serial No. 700,786.

To all whom it may concern:

Be it known that I, JOHN H. SNAPP, a citizen of the United States, residing at 416 M street, northwest, Washington, in the District of Columbia, have invented certain new and useful Improvements in Processes of Printing from Photographic Negatives, of which the following is a specification.

My invention relates to the art of photogpraphy and more particularly to a method of reducing in the photographic print the contrasts between the high lights and shadows as they appear in the negative.

It is well known that the ordinary photographic negative does not properly represent objects as they appear to the eye because of the strong contrasts between the high lights and the shadows and also due to the fact that unnatural contrasts are produced because of the different actinic properties of the objects due to their colors. For these reasons the positive printed from a negative exaggerates certain features of the object and minimizes others, causing an unnatural and oft-times unpleasant effect. Various expedients have been resorted to for the purpose of overcoming or eliminating these defects and usually by some form of retouching or other treatment of the negative itself.

The purpose of my invention is to provide a method of printing from the untouched negative and eliminating or counteracting the improper or undesirable contrasts or shadows and causing the different portions of the picture to print in their proper or desired density and tone. By my method I am also enabled to reduce to any desired amount the printing of any particular portion of the picture.

My invention will be clearly understood from the following description in connection with the accompanying drawings in which—

Figure 1, is a perspective view of an apparatus for carrying out my method of photographic printing; Fig. 2, is a cross-section on the line 2—2 of Fig. 1; Fig. 3, is a rear perspective view of a portion of the film-carrier shown in Fig. 1; Fig. 4, is a top plan view of a printing frame inclosing a positive print; and Fig. 5 is a plan view of a negative corresponding with the positive in Fig. 4.

In Figs. 1 and 2, I have shown an apparatus adapted to be used in carrying out my method of printing, in which 1, is an ordinary printing frame, having the usual sectional back-board 2, hinged together at 3, and holding the printing paper 4, firmly pressed against the negative 5 by means of the leaf springs 6, pivotally mounted to swing upon pivot screws 7, and adapted to lock at their ends in the grooves 8, in the sides of the frame.

My method of counteracting or eliminating the effect of the undesirable parts of the negative and of reducing the shadows or properly proportioning their density relative to the high lights of the picture, involves the interposition of a translucent film carrying a reducing medium between the negative and the source of light by which the printing or exposure is effected and out of contact with the negative so that no sharp lines of demarcation shall be produced.

A suitable film for supporting the translucent reducing medium may be formed of tissue paper or tracing linen represented at 10, and secured to a carrying frame 12, which is made to fit over the printing-frame 1. When the parts are in position, the film 10, will be spaced or separated from the negative 5, by a space equal to the width of the bevel or rabbet 14 of the printing-frame and the thickness of the carrying-frame 12, and this permits the dispersion of the light between the film and the negative and prevents any sharp lines being produced upon the positive by the reducing medium. There is, therefore, no danger of sudden contrasts, due to the use of the reducing medium and it is unnecessary to move the parts during printing as in the use of shields in the "dodging" or "shadowing" operation employed by photographers to restrain the printing from portions of a negative.

I have discovered that an opaque substance will not serve the purpose of a reducing medium but that the medium must be translucent or semi-translucent and moreover it should be capable of adhering to the supporting film and of being distributed accurately in order to graduate its density. I have discovered that amorphous powdered carbon when combined with an adhesive vehicle which may be resinous, saponaceous, waxen or a combination thereof, is suitable for producing the reducing medium in my method of printing.

For the purposes of illustration, I have shown in Fig. 5 a negative of a portrait. If

the positive is printed in the usual manner from this negative the effect will be very displeasing by reason of the contrasts between high lights and shadows and the exaggerations produced. Thus, for example, the fleshy portions of the face just under the eyes produce shadows, appearing in the negative as curved transparent lines, as at 15. Again certain parts of the hair are practically transparent and will produce in the positive dense parts which will show no detail. The same is true of certain portions of the clothing. According to my method, these parts may be restrained in the printing operation by interposing a translucent medium having a density proportional to the degree of transparency of these parts of the negative. Thus in Fig. 1 I have indicated at 15ª, thin bands of the reducing medium placed upon the supporting film in a position to intercept the light rays passing through the transparent parts 15. Likewise patches of the reducing or restraining medium at 16, coöperate with the corresponding transparent portions of the hair to produce a positive print having the proper color values. The printing quality of the clothing portions of the negative may be restrained until the proper amount of contrast with the high lights is produced. If desired, certain portions may be entirely eliminated from the picture, producing the effect of vignetting.

I have found that the light-restraining medium may be coated upon the supporting film and evenly distributed thereon by means of a chamois-covered spatula or thin broad stick, and a cotton swab may be used as a spreader. Where a very dense medium is desired the coating upon front side of the film may be reinforced by a coating upon the reverse or rear side of the film as indicated in Fig. 3. In case it should be desired to reduce the density of the coating or restraining medium or to remove it in any portion of the film, this may be readily accomplished by using sponge rubber.

The adhesive vehicle which is combined with the amorphous powder material not only causes the powder to adhere to the carrying film, but prevents it from entering the pores or interstices of the film and thereby renders it subjcet to manipulation by the distributing swab so that the density of the light-restraining medium may be accurately determined. Moreover the adhesive medium renders the amorphous powdered material responsive to the operation of an eraser when it is desired to lighten or remove any of the material from the film.

The many advantages of my process of photographic printing will be appreciated by photographers. By my process the inaccuracies and undesirable features of a negative may be counteracted with facility without the necessity for laborious retouching of the negative. Moreover, by my process negatives which were useless may be used to produce excellent positive prints. Again the relative effects of light and shadow may be varied to suit the individual taste of the operator.

I claim:—

1. The process of reproducing a desired relation between the high lights and shadows in a photographic picture which consists in interposing a translucent sheet between the negative and the source of light spacing said translucent sheet from the negative, applying to said sheet a coating of plastic adherent amorphous material, the separate particles of which are at all times readily removable from each other and from said sheet to vary the density or extent of the coating, and manipulating said plastic adherent coating to cause its extent to correspond to the portions of the negative through which it is desired to restrain the actinic effect of the light and its density to vary with the transparency of the corresponding adjacent portions of the negative.

2. The process of reducing the contrasts between the high lights and shadows in printing positives from photographic negatives which comprises interposing between the source of light and the negative a translucent film, spacing said film from the negative and placing upon said film a plastic adherent light-restraining medium in alinement with those portions of the negative containing the shadows through which it is desired to restrain the actinic effect of the light, and varying the density of said adherent medium to correspond with the transparency of the corresponding adjacent portions of the negative, the treated translucent film being spaced from the negative a distance productive of coalescent diffusion of minute shadows cast by either the translucent film or the light-restraining medium thereon.

3. The process of producing a desired relation between high lights and shadows in a photographic picture and counteracting the undesirable effect of portions of negatives, which comprises interposing a supporting light-transmitting sheet between the source of light and the negative and in spaced relation to the latter, spreading on said sheet a light toning down coating of amorphous powdered carbon combined with a plastic adherent vehicle, and restricting the coating to those portions of the sheet matching the portions of the negative through which it is desired to restrain the actinic effect of the light, and exposing the shielded and unshielded portions of the negative uniformly to the source of light.

4. The process of producing photographic prints of proper tone values from negatives

of false tone values, which consists in placing a sheet of translucent material in spaced relation to the back of the negative, then producing upon said sheet a coating of readily removable light toning-down material opposite those parts of the negative that print too deeply, the coating being graded in density inversely to the thinness of the said parts of the negative, and then subjecting photo-sensitive material to the action of actinic light transmitted through the treated sheet and the negative while in spaced relation.

5. The process of modifying the printing effect of a photographic negative which consists in placing a sheet of light-transmitting material in spaced relation to the face of the negative remote from that from which the prints are to be taken, and then applying light toning-down material to the sheet in locations matching those parts of the negative to be restrained in printing effect.

6. The process of producing photographic prints from negatives having faulty gradation, which consists in treating a sheet of translucent material of substantially equal light transmitting quality throughout, with light restraining material in positions and density with respect to the faulty portions of the negative in inverse relation thereto, and subjecting a photo-sensitive medium to the action of actinic light transmitted through the treated sheet and the negative, in the order named, with the sheet separated from the negative by a shallow air space and with the treated parts of the sheet in substantial register with those portions of the negative to be restrained.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. SNAPP.

Witnesses:
E. C. BROWN,
E. E. WEAVER.