

H. VANDER WEYDE.

DRAFTSMAN

METHOD OF AND LENS FOR MAKING PHOTOGRAPHS.

No. 521,064.

Patented June 5, 1894.

350
189

FIG. 1.

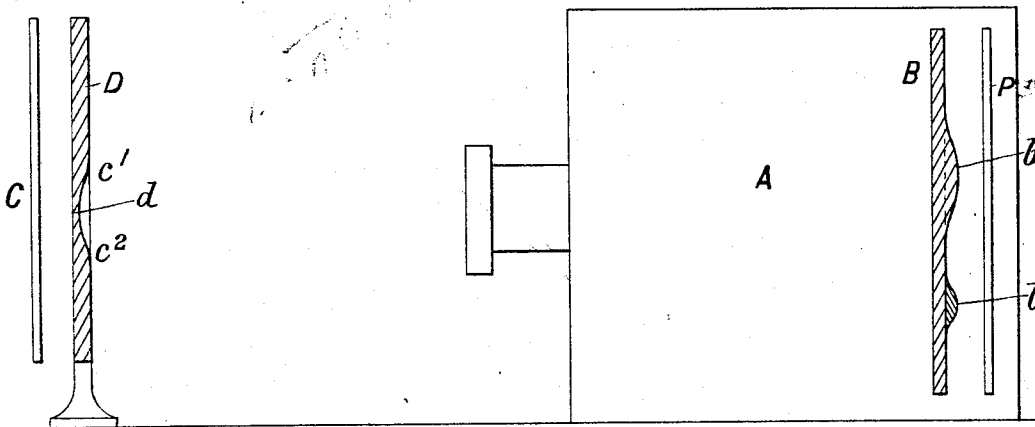


FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

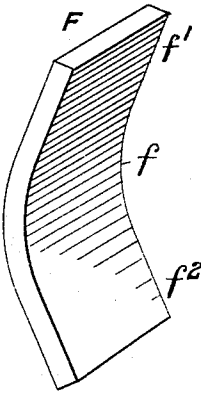
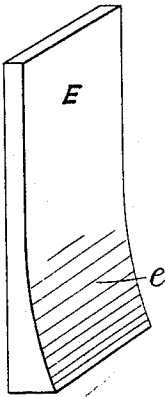
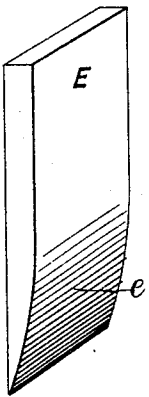
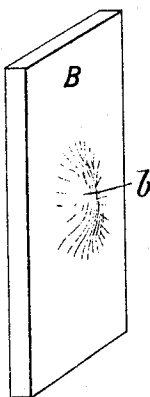


FIG. 7.



WITNESSES.

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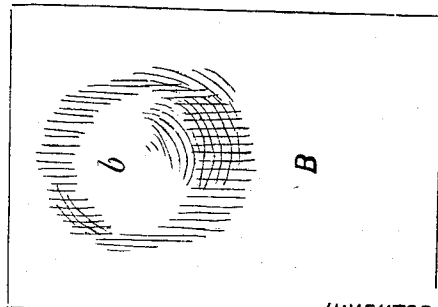
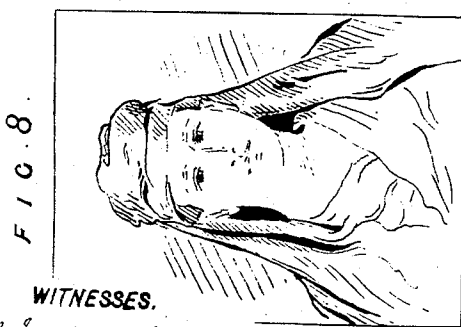
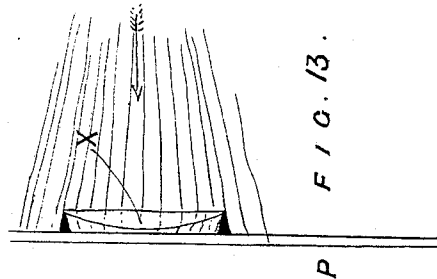
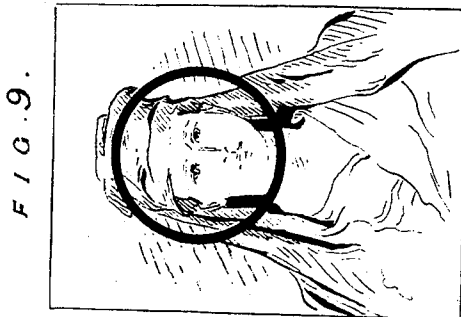
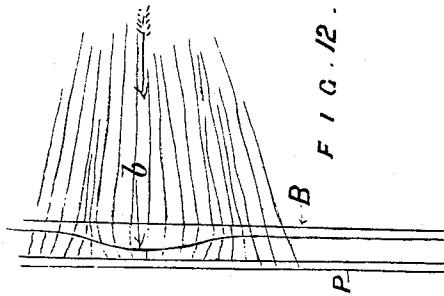
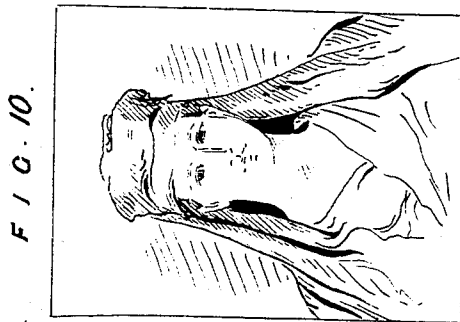
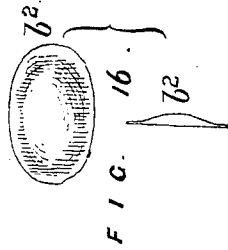
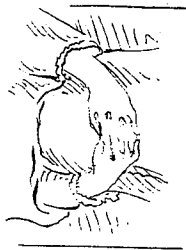
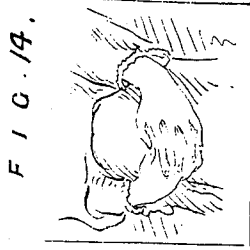
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UNITED STATES PATENT OFFICE.

HENRY VANDER WEYDE, OF LONDON, ENGLAND.

METHOD OF AND LENS FOR MAKING PHOTOGRAPHS.

SPECIFICATION forming part of Letters Patent No. 521,064, dated June 5, 1894.

Application filed May 2, 1893. Serial No. 472,712. (Specimens.) Patented in France July 29, 1892, No. 223,317; in Belgium July 29, 1892, No. 100,732, and in Italy September 30, 1892, XXVI, 3,246, and LXIII, 468.

To all whom it may concern:

Be it known that I, HENRY VANDER WEYDE, artist and electric-light photographer, of 182 Regent Street, London, in the county of Middlesex, England, have invented new and useful Improvements in Photography, (for which I have obtained Letters Patent in the following countries, namely: France, dated July 29, 1892, No. 223,317; Belgium, dated July 29, 1892, No. 100,732, and Italy, dated September 30, 1892, Vols. XXVI and LXIII, Nos. 3,246 and 468,) of which the following is a full, clear, and exact description.

My invention relates to an improvement in portrait photography, whereby to enable the subject to be idealized, without sacrificing the fidelity of the portrait, by locally modifying the relative dimensions of certain portions of the subject, so as to impart an appearance of dignity and remedy the distortion due to inaccurate foreshortening heretofore inherent to ordinary photography. For instance, the size of the head and of the hands and feet may be reduced, or the length of the neck or waist or of the skirt of the dress or the size of the bust or the breadth of the shoulders or hips, may be increased without otherwise altering the proportions of the picture. These artistic modifications may be effected either in photographing the living subject, or in copying or enlarging a photographic negative or positive, and the effect produced is visible to the operator and may be duly appreciated before the photograph is taken.

The invention consists essentially in interposing, in the pencil of rays, lens-like media of peculiar form, whereby the rays of light which are transmitted from those portions of the subject whose relative dimensions it is desired to modify will be so refracted as to produce the effect desired, and yet the part or parts so modified will flow into and merge naturally with the surroundings. The said media may be interposed either within or without the camera, according to circumstances; for instance when photographing the living subject they would be situated within the camera, while in copying or enlarging they may be in the same position or situated between the original and the camera or in both

these positions conjointly. It is, however, to be understood that the same form of lens gives the reverse effect according as it is situated within or without the camera, so that to produce similar effects in the two positions lenses of opposite curvature would be used. Such lens-like media are convex or concave according to the position in which they are used and the effect to be produced, but it is essential in order to modify the dimensions of a portion only of the image while leaving the remainder unaltered and yet show no line of demarcation or break of continuity between the two portions, that the lenses shall differ from ordinary lenses in that the curved surface of the lens portion shall gradually merge with or graduate into a plane surface by which the rays of light are not appreciably refracted, so as to cause the effect produced by the interposition of said lens-like media, to meet or flow naturally into the surroundings.

Reference is to be had to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a diagrammatic sectional elevation, showing the lens-like media interposed in the pencil of rays, both between the original photograph and the camera lens and between the latter and the sensitive plate. Figs. 2, 3, 4, 5, and 6, are perspective views, illustrating different forms of the refracting media producing different effects. Fig. 7 shows a lens to be supported adjustably on a flat plate of glass. All of these lenses may be made of glass and kept in stock for general purposes. Figs. 8, 9, and 10, illustrate the effect as applied to the reduction of the head of a figure in copying or enlarging; Fig. 8 being the original, Fig. 9 the effect which would be produced were an ordinary lens, such as that shown in Fig. 13, to be used, and Fig. 10 the effect produced by the lens of the peculiar form shown in Figs. 11 and 12. Figs. 14 and 15 illustrate the effect as applied to the reduction of the hands (represented as clasped in front of the knee of the sitter) the reduction being in one direction only and obtained by the use of an oval lens, shown in face and edge view in Fig. 16.

Referring to Fig. 1, A is an ordinary cam-

era provided with the usual photographic lens. B is a plate of glass fitted within the camera just in front of and covering the whole surface of the sensitive plate P. The plate B is plane, except that there is formed on its surface a lens-like convexity *b* shown also in Figs. 2, 11, and 12, in such position that the image of the head will be projected through it, supposing, for instance, that it is desired to reduce the size of the head. As the position in the picture of this part of the image is generally about the same, this lens may be an integral part of the plate B but as the position of the hands is more variable it is more convenient in modifying the dimensions of these parts of the image to use separate lenses, such as shown in Figs. 7 and 16 which by merely moistening their flat surface may be made to adhere to the plate B in any desired position, as shown at *b'*, Fig. 1. The effect produced by these lenses is visible on the focusing screen and they are readily accessible for adjustment. The lenses *b* and *b'* may be thus used within the camera, both in the operation of photographing a living subject or in copying or enlarging a photographic negative, transparency, or picture. The lenses are of the peculiar form hereinafter described and their effect when used within the camera is to locally reduce the proportions of the parts of the image which they refract. If it were desired to locally enlarge a portion of the image whose position in the picture is, like the head, approximately constant, a plate D having a concavity *d* in its surface, as shown in Fig. 3, would be used instead of the plate B. But for locally enlarging portions of the image whose position is variable in the picture, adjustable lenses of concave form cannot be so conveniently employed, because being necessarily thick at the edges a sharp line would be shown on the photograph, needing to be retouched out. I therefore prefer to use the convex lenses *b'*, Fig. 7, and produce the enlarging effect, in the operation of copying a photographic negative, transparency, or picture C, as next described. D is a plate of glass interposed between the original C and the camera-lens. In the surface of this plate D there is formed a concavity *d*. The effect of this concave lens *d* applied in this position is the same as that of the convex lens *b* applied within the camera as before described, so that by using the one plate (either the plate B or the plate D) in the position shown, in conjunction with adjustable lenses *b'*, applied thereto, or to a plain plate in the position of the other plate, any number of desired local modifications may be effected.

It is to be observed that in both the convex and concave forms of these lenses, the curvature is wave-like, that is to say reversed toward the margin of the lens portion, so as to graduate into or merge with the plane surface of the plate in or on which the lens is formed or applied, the object of this reversal

of curvature being to cause the effect produced by the central portion of the lens to gradually flow or merge into the surroundings of the part so modified without showing any break of continuity or lines of demarcation. The plane portion of the plate in or on which the lenses are formed or applied is of such dimensions as to cover the whole area of the picture and no apparent effect is produced by the refraction of the rays passing through the plane portion, but that part of the image which is refracted through the middle portion of the lens is reduced or enlarged, as the case may be, the opposite effect being produced where the curvature is reversed toward the margin of the lens, so that the proportions of the picture, as a whole, undergo no change. This effect is quite different to what would be produced by the use of an ordinary lens, and in illustration of my meaning I will refer to Figs. 8, 9, and 10, which illustrate the effects produced by an ordinary lens and by a lens having the reversed or wave-like curvature above referred to.

Suppose that it is desired to reproduce the picture shown in Fig. 8 but with the size of the head reduced so as to impart greater dignity or grace to the picture. If it be attempted to produce this effect by the interposition of an ordinary plano-convex lens, such as shown at X in Fig. 13, in the pencil of rays proceeding in the direction of the arrow toward the sensitive plate P, the rays which are intercepted by the lens X will be refracted as indicated in that figure, but those which are not so intercepted will be unchanged, and the consequence will be a sharp break of continuity in the outlines of the image and an unilluminated zone corresponding to the edges of the lens (as indicated by the dark spaces in Fig. 13) producing an effect such as that indicated in Fig. 9 which no amount of retouching could disguise, whereas by employing a lens *b* of the special form shown in Figs. 1, 2, 11, and 12, the light rays are refracted, as shown in the latter figure, and the same reduction of the size of the head is produced, as shown in Fig. 10, without any such break, the outlines harmonizing with and flowing into the surrounding portions of the picture. Similarly with regard to Figs. 14 and 15 in which the reduction of dimensions is in one direction only so as to render the hands slimmer, this effect being obtained by a lens *b'* of reversed or wave-like curvature and of approximately oval form, such as shown in face and edge view in Fig. 16. If, however, it be desired to vary the length, say, of the lower part of the picture over its whole width a plano-convex or plano-concave lens, such as shown in Fig. 4 or Fig. 5, would be used, the lens portion *e* being situated at one end of and extending across the full width of the plate E through which the whole of the image is refracted, the part of the image refracted through the lens-portion *e* alone undergoing any change. The form of the lens

used would, as previously described, depend on the effect to be produced and upon the situation in which the lens is applied—i. e., whether within or without the camera. Similarly if the plate instead of being plane be bent, as shown in Fig. 6, the middle portion f forms a concavo-convex lens which has its curvature in one direction only and extends quite across the plate F, while the upper and lower plane portions f' , f'' , are oppositely inclined so that the curved surfaces of the lens gradually flow into the inclined plane surfaces. The effect of the plate F when applied in front of the negative to be copied, will be to contract the portion of the image refracted through the lens portion f , and to vary the whole length of the picture to a corresponding extent, the opposite effect being produced if the plate F be placed within the camera. From the foregoing examples, it will be understood that the curvature and form of the lens-like medium will vary according to the desired effect, and that the above described figures represent what may be termed stock forms, suitable for general use, to which I do not, however, necessarily limit myself.

I claim—

1. The method herein described of varying the size or proportions of a part of a photographic picture without distorting or chang-

ing the rest, which consists in changing the focus of the rays upon that portion of the photographic field to be modified, preserving the focal length of rays of the other parts of the field, and causing the rays of different focus to gradually flow or merge into each other without any separating line of demarcation between the same, substantially as shown and described.

2. A photographic lens having a plane field with a portion thereof formed to a special focal curve running into the plane field gradually and without any angular line of demarcation between the two, substantially as shown and described.

3. A photographic lens constructed as a flat plane upon one side and with its other side a compound curve partly convex and partly concave, the one gradually merging into the other without angular line of demarcation, substantially as shown and described.

Dated this 14th day of April, 1893.

HENRY VANDER WEYDE.

Witnesses:

J. W. KENNARD,
Clerk to A. M. & W. Clark, 53 Chancery Lane, London.

THOMAS LAKE,
Notary's Clerk, 17 Gracechurch Street, London.