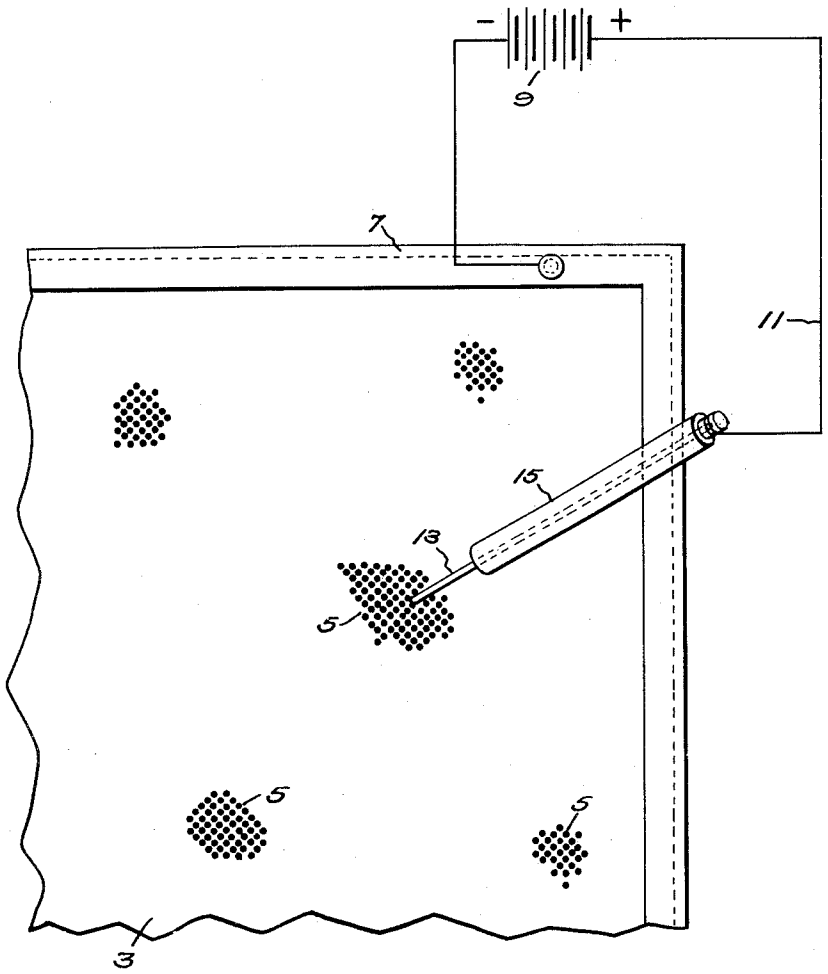
Dec. 27, 1932. A. W. CORNELL 1,892,099

MODIFYING PHOTOGRAPHIC IMAGES

Filed March 3, 1931



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Patented Dec. 27, 1932 1,892,099

UNITED STATES PATENT OFFICE

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MODIFYING PHOTOGRAPHIC IMAGES

Application March 3, 1931. Serial No. 519,738.

This invention relates to the retouching of photographic images and the object is to provide a simple and effective method of making local alterations in such images, the advantages of which will be apparent to those skilled in the art from the following description of an illustrative embodiment of the invention.

My invention finds a particular application to the retouching of half-tones for the production of printing plates, and for convenience I shall describe in detail the operation of retouching a screen diapositive, the operation being illustrated diagrammatically in the accompanying drawing.

In the drawing I have shown in diagrammatic fashion a screen diapositive 3 which may take the form of a glass plate having thereon the usual pellicle of gelatin or the like containing a developed photographic image made by the aid of the usual half-tone screen and presenting the so-called dots 5 of metallic silver, the height and area of which vary in accordance with the tones of the image. I have not attempted to represent the picture in the drawing nor to show all the dots. If it is desired to lighten the tone of some portion of the picture, this may be effeced by reducing the area and/or size of these dots at the desired location. My invention provides means for doing this directly on the diapositive.

It has been proposed to utilize chemical reducing agents in solution form to reduce the dots but the extent of their action and the area over which they are effective have been difficult to control. Obviously the success of the retouching operation depends upon reducing solely those dots occurring in the limited area where the tone of the image is to be made lighter and in reducing those only to the desired amount.

My invention provides for reducing the dots by electrolytic action capable of restricted localized application, as by means of a pencil-like electrode manipulated in the manner of a retouching tool. The electric current may serve to initiate a local chemical reaction by means of which the dots are reduced as by activating a reducing agent otherwise inert to the metallic silver of which the dots are formed. It may be convenient to note here that I use the word "reduce" not in the chemical sense but in the physical sense, denoting the reduction of the size of the dots.

The preferred method of operation in accordance with my invention is as follows. The screen diapositive being produced in the customary manner, I preferably toughen the same to resist the mechanical abrasion of the retouching tool, as by means of a potassium alum solution. The plate is then treated with a suitable reagent which in itself is inert to the silver which forms the dots but which may be changed electrolytically to an active reducing agent. For this purpose I prefer to use a strong solution of potassium ferrocyanide, say 150 grams of the crystals in 400 cc. of water forming a nearly saturated solution. To facilitate the penetration of this solution in the gelatin pellicle and to prevent too rapid drying out during the retouching operation with possible precipitation of the salt I prefer to utilize a suitable penetrating and stabilizing agent such as tri-ethanolamine of which I may add 1¼% by volume to the ferrocyanide solution.

The plate so treated may be removed to a glass table for retouching and a portion thereof may be fitted into a metallic frame 7 here shown as embracing two adjacent edges of the plate and making contact with the gelatin pellicle, and through this frame the pellicle is connected to the negative pole of a suitable source of electric current 9 conveniently an ordinary six-volt storage battery. The positive pole is connected by a flexible conductor 11 to a suitable electrode 13 mounted in a handle 15 by which it may conveniently be manipulated. The electrode 13 is fundamentally a platinum wire and its form may vary in accordance with the particular retouching operation to be effected. Thus different tools may be used at different times on the same retouching job. The adjective "pencil-like" will sufficiently characterize the electrode and it is manipulated by

the artist as he manipulates a pencil in the application of colors.

As I understand the chemical action involved, when the electrode 13 is applied to the photographic film the circuit is closed and the flow of current changes the potassium ferrocyanide adjacent the electrode 13 to ferricyanide which acts upon the silver of the dots to reduce the same. The action so effected is localized, is delicate and thus can be readily controlled both as to the dots which it is desired to reduce and to spacial extent of the reduction. If desired, retouched areas may be swabbed with a neutralizing agent immediately after treatment. When the work is completed the plate is removed from the frame and thoroughly washed.

The reduction of the dots in the manner described provides for lightening the tone of the photographic image. If it is desired to increase the depth of tone, the same operation may be carried out on a negative instead of on a diapositive and the printing plate may be produced in well known manner from the two.

The method described permits the artist to work directly upon the photographic image in accordance with his customary technique in the use of a pencil or similar tool. The entire work is visible at all times, it being unnecessary to mask any portions and the retouching operation is at all times immediately visible and in the direct form in which it will appear in the finished product.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive; reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

Claims:

1. The method of modifying a photographic image which comprises placing it in an electric circuit by means of a retouching tool contacting therewith in the presence of a reducing agent which is electrolytically activated.

2. The method of modifying a photographic image which comprises treating it with a substance in itself inert to the image but adapted to be changed electrolytically to develop reducing properties and locally changing such substance by the action of a tool constituting an electrode.

3. The method of modifying a photographic image which comprises the step of electrolytically generating a reducing reagent therein in limited areas corresponding to desired areas of reduction of the image.

4. The method of retouching a developed photographic image which comprises saturating it with a strong ferrocyanide solution by aid of a penetrating agent and passing an electric current therethrough at the location where reduction is desired.

5. The method of retouching a pellicle embodying a developed photographic image comprising the steps of hardening the pellicle to resist mechanical abrasion, bringing it into contact with a ferrocyanide solution and utilizing an electrode as a retouching tool to effect a localized electrolytic action.

6. The method of retouching a half-tone photographic image which comprises subjecting the areas which it is desired to reduce to the localized action of an electric current in the presence of a solution of ferrocyanide.

7. The method of retouching a half-tone photographic image which comprises saturating the pellicle embodying the image with a ferrocyanide solution, connecting the pellicle to a pole of a source of electric current, connecting the other pole to a conductor shaped to provide a retouching tool and applying said tool to the localities of the plate where reduction of the image is desired.

8. The method of retouching a developed photographic half-tone image characterized by the step of reducing the size of the silver "dots" by a localized electrolytic action effected by the application thereto of a pencil-like electrode.

In testimony whereof, I have signed my name to this specification.

ARTHUR W. CORNELL.