Oct. 17, 1944. L. S. SANDERS 2,360,587

METHOD OF PREPARING CAMERA COPY FOR MULTICOLOR PRINTING

Filed July 21, 1942 2 Sheets-Sheet 1

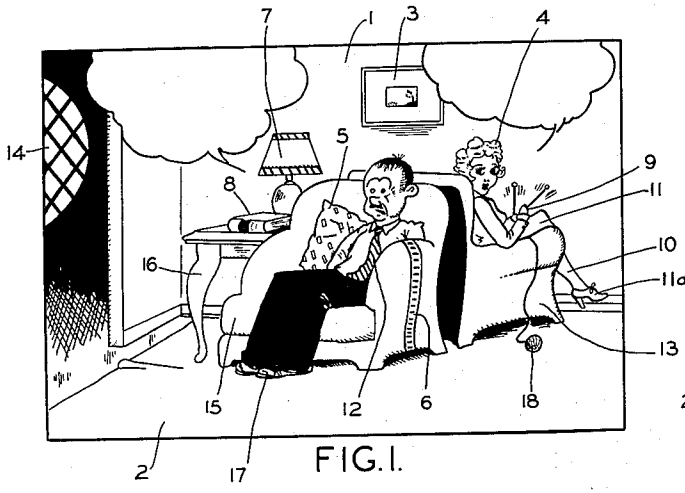


FIG. 1.

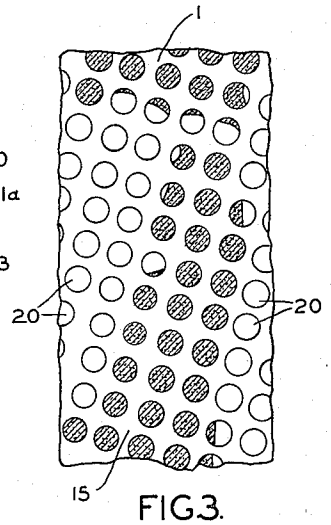


FIG. 3.

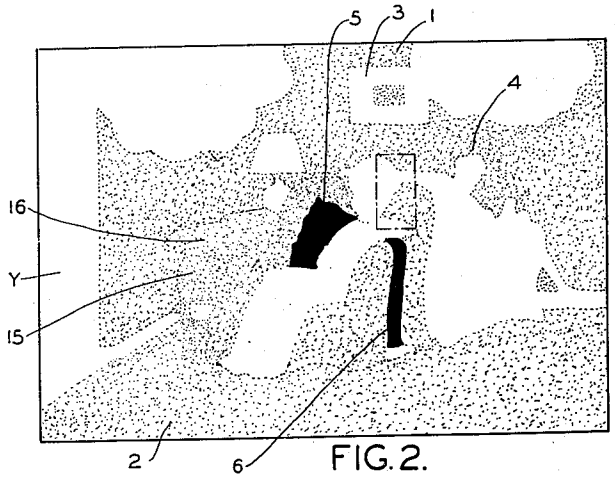


FIG. 2.

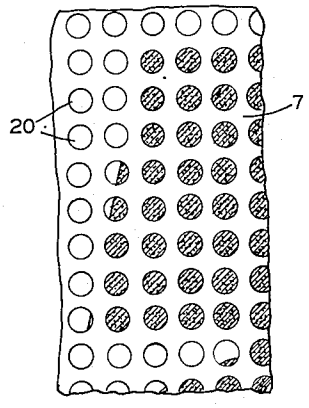


FIG. 5.

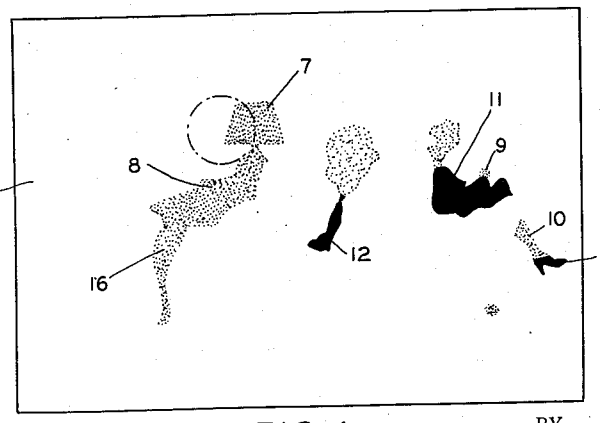


FIG. 4.

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METHOD OF PREPARING CAMERA COPY FOR MULTICOLOR PRINTING

Filed July 21, 1942 2 Sheets-Sheet 2

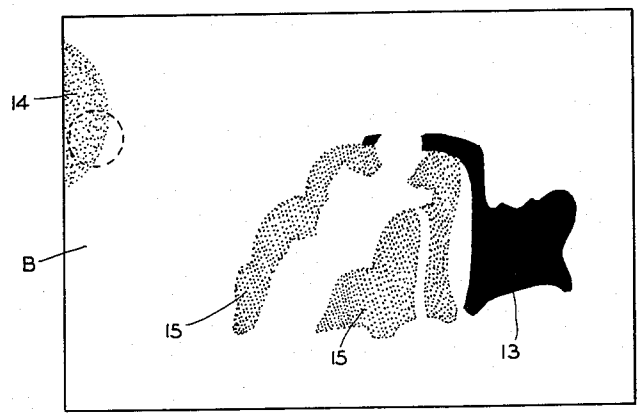


FIG.6.

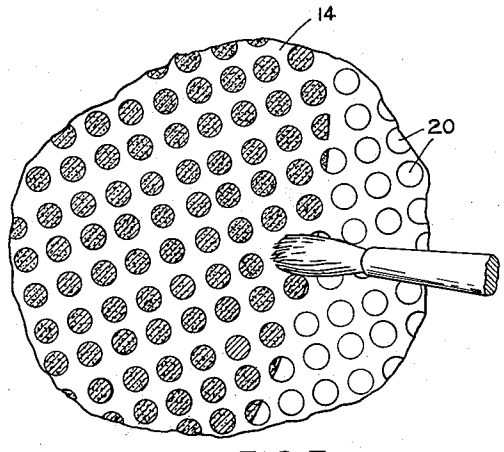


FIG.7.

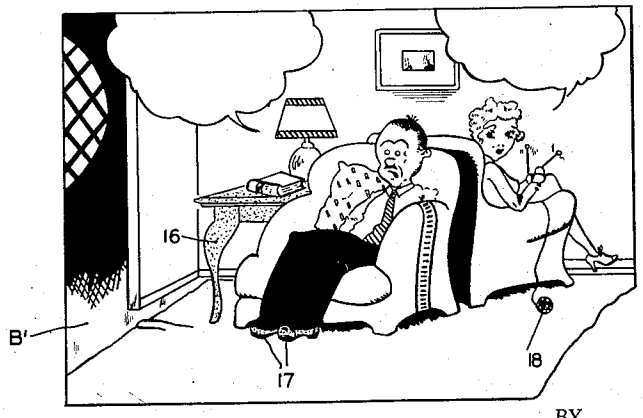


FIG.8.

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UNITED STATES PATENT OFFICE

2,360,587

METHOD OF PREPARING CAMERA COPY FOR MULTICOLOR PRINTING

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Application July 21, 1942, Serial No. 451,700

1 Claim. (Cl. 41—41)

This invention relates, as indicated, to a method of preparing camera copy for multicolor printing, but has reference more particularly to the preparation of such camera copy for use in making line and halftone plates for comic supplements and the like.

In my Patent No. 2,224,270, there is described a method of preparing camera copy for multicolor printing, which consists in providing a plurality of sheets of a drawing medium containing an invisible regularly recurring pattern, said sheets corresponding in number to the number of primary colors involved in the final image to be printed, applying to each of said sheets lines which separate objects of different colors, said lines having substantially no photographic value, but sufficiently visible to the artist to serve as guide lines, and applying to portions of said sheets representing color a developing agent, whereby said patterns are brought to visibility.

The foregoing method, while, satisfactory in general, involves the use of a key plate which carries the outlines of the various parts of the final printed picture which are to appear in different colors, and the use of this key plate to print with a light blue ink which has no photographic value, the outlines of the drawings on four separate sheets of the special drawing medium described above.

The present invention has as its primary object the provision of a method of preparing camera copy for multiple color printing, in which the necessity for key plates, outlines and ink for printing or forming the outlines is completely obviated.

I accomplish this by the use of transparent media bearing a photographically invisible Ben Day, halftone or other regularly recurring pattern, instead of media of an opaque character, such as described in the aforesaid patents.

In order to better understand the invention, however, reference is made to the annexed drawings forming a part of the present application, and in which

Fig. 1 is a view of a picture, similar to those which are commonly found in the color comic supplements of Sunday newspapers, but printed with color plates which have been produced with the camera copy of the present invention as a basis;

Fig. 2 is a view of copy from which the negative for the yellow plate is produced;

Fig. 3 is a view, on a greatly enlarged scale, of a fragment of that portion of Fig. 2, which is enclosed within the dotted rectangle;

Fig. 4 is a view of copy from which the negative for the red plate is produced;

Fig. 5 is a view, on a greatly enlarged scale, of a fragment of that portion of Fig. 4, which is enclosed within the circle;

Fig. 6 is a view of copy from which the negative for the blue plate is produced;

Fig. 7 is a view, on a greatly enlarged scale, of a fragment of that portion of Fig. 6, which is enclosed within the circle; and

Fig. 8 is a view of copy from which the negative for the black plate is produced.

Referring more particularly to the drawings, and especially to Fig. 1, this view represents a picture, similar to those which are commonly found in the color comic supplements of Sunday newspapers, and printed with four different color plates, designated hereinafter as the yellow, red, blue and black plates, it being understood, however, that the invention is not limited in respect to the number of different color plates employed or to the use of plates of any particular color. The above colors have been chosen for purposes of illustration, principally for the reason that they are primary colors used in newspaper color work, and are those by means of which a large variety of tones and shades may be produced.

In Fig. 1, in addition to the black parts which are shown in black, other parts appear in color as follows:

The walls **1**, carpet **2**, the picture **3** and the woman's hair **4** are in a light shade of yellow, while the pillow **5** and chair trim band **6** are in a solid or deeper shade of yellow. The lamp **7**, book **8**, faces of the individuals, hands **9** of the woman, and stockings **10** are in a light shade of red (pink), while the dress **11**, shoe **11***a*, and tie **12** are in a deep or solid shade of red. The chair **13** is in deep blue, the sky **14** is a light blue, the chair **15** in green, and the table **16** in brown. The shoes **17** and ball of yarn **18** are in gray. The green tone is produced by a combination of blue and yellow shades, while the brown tone is produced by a combination of yellow, red and black.

In the preparation of the camera copy from which the negatives used in making the color plates are made, it is proposed to use a transparent or light-transmitting drawing medium which contains a photographically invisible Ben Day, halftone or other regularly recurring pattern, a number of which are readily available in the market, and all of which are admirably adapted for the purpose at hand. Such drawing media are described at some length in United States Letters Patent Nos. 2,009,586 and 2,021,816,

and in a pending application of Maurice D. McIntosh, Serial No. 452,863, filed July 30, 1942. It is to be understood, however, that any transparent or light transmitting surface which can be drawn upon and which contains or bears such a photographically invisible pattern or patterns, capable of being chemically developed for photopraphic purposes, may be employed as a drawing medium.

Since the media, to which reference has been made, are transparent and therefore transmit light directly from the picture of Fig. 1 when placed on such picture, it is not necessary to provide a key plate bearing the outlines of the various parts of Fig. 1 which are to appear in different colors, or to print such outlines on four separate sheets of the drawing medium which has been described. Instead of this, the artists will take four sheets of such medium and treat them in the following manner:

The artist will take the first sheet, shown in Fig. 2, and designated by reference character Y, place it over the picture (Fig. 1), so that the entire picture is visible to him through the sheet, and he will then paint, or otherwise fill in, with India or similar black ink, those portions of the sheet which correspond with the solid yellow portions of the drawing of Fig. 1. Such portions are the pillow 5 and chair band trim 6. Those portions of the sheet Y which correspond with the light shade of yellow portions of the drawing of Fig. 1 are brought out as uniformly spaced black dots by developing such portions of the invisible pattern which the sheet bears or contains. Such portions are the walls 1, carpet 2, picture 3 and the hair 4, and, since the green tone of the chair 15 and the brown tone of the table 16 are formed of combinations of colors which include yellow, such chair and table are also developed along with the portions 1, 2, 3 and 4. The developer which is employed in any particular case will depend on the drawing medium used, and the developer may be applied as by means of a brush or in any other suitable manner. If a drawing medium, such as described in Patent No. 2,008,586 is used, a suitable acid is used as the developer. If a medium such as described in Patent No. 2,021,816 is used, a soluble sulphide is used as the developer. If a medium such as described in McIntosh application, Serial No. 452,863, is used, the developer or developers referred to in said application may be used.

The manner in which the pattern is developed is clearly illustrated in Fig. 3, wherein the invisible undeveloped portions of the pattern are indicated by the unshaded circles (dots) 20, and undeveloped portions by the shaded circles (dots) in the wall 1 and chair 15.

The sheet Y, as thus developed, is removed from the picture (Fig. 1), and forms the camera copy from which the negative used in making the yellow color plate is made, being set aside until the camera copy for the other plates is completed.

The artist will then take the second sheet shown in Fig. 4, and designated by reference character R, place it over the picture (Fig. 1), so that the entire picture is visible to him through the sheet, and he will then paint or otherwise fill in with India or similar black ink, those portions of the sheet which correspond with the solid red portions of the drawing of Fig. 1. Such portions are the dress 11, shoe 11a, and tie 12. Those portions of the sheet R, which correspond with the light red or pink portions of the drawing of Fig. 1, are brought out as uniformly spaced black dots by developing such portions of the invisible pattern which the sheet bears. Such portions are the lamp 7, book 8, faces of the individuals, hand 9 of the woman, and stocking 10, and, since the brown tone of the table 16 is formed of a combination of colors which includes red, such table is also developed along with the portions 7, 8, 9 and 10. The pattern is developed in precisely the same manner as the pattern on the sheet Y. The sheet R, as thus developed, is removed from the picture (Fig. 1) and forms the camera copy from which the negative used in making the red color plate is made.

The artist will then take the third sheet shown in Fig. 6, and designated by reference character B, place it over the picture (Fig. 1), so that the entire picture is visible to him through the sheet, and he will then paint or otherwise fill in, with India or similar black ink, those portions of the sheet which correspond with the solid or deep blue portions of the drawing of Fig. 1. Such is the chair 13. Those portions of the sheet B, which correspond with the light blue portions of the drawing of Fig. 1, are brought out as uniformly spaced black dots by developing such portions of the invisible pattern which the sheet bears. Such is the sky 14, and, since the green tone of the chair 15 is formed of a combination of colors which includes blue, such chair 15 is also developed along with the portion 14. The pattern is developed in the same manner as the patterns on sheets Y and R, and the sheet B, as thus developed, is removed from the picture (Fig. 1), and forms the camera copy from which the negative used in making the blue color plate is made.

Finally, the artist will take the fourth and last sheet, shown in Fig. 8, and designated by reference character B', place it over the picture (Fig. 1), so that the entire picture is visible to him through the sheet, and he will then paint or otherwise fill in, with India or similar black ink, those portions of the sheet which correspond with the solid black portions of the drawing of Fig. 1. Those portions of the sheet B', which correspond with the gray portions of the drawing of Fig. 1, are brought out as uniformly spaced black dots by developing such portions of the invisible pattern which the sheet bears. Such portions are the shoes 17 and ball of yarn 18, and, since the brown tone of the table 16 is formed of a combination of colors which includes black, such table is also developed along with the portions 17 and 18. The pattern is developed in the same manner as the patterns on sheets Y, R and B, and the sheet B', as thus developed, is the camera copy from which the negative used in making the black color plate is made.

Using the sheets as camera copy, negatives are made therefrom in the usual manner, and with these negatives, zinc or copper color printing plates are printed and etched. In making such color plates, it is thus not required that color filters, halftone screens or Ben Day shading methods, devices or mediums be used. To insure perfect registry of colors, the camera with which the negatives are made, is locked, so as to preserve the focus for all of the sheets which are photographed thereby.

To avoid moire effects, an angled series of patterns is employed, that is to say, the dots on each of the sheets are arranged in rows which are angularly related to the rows on the other sheets, as will be apparent from Figs. 3, 5 and 7. The pattern of sheet B is not shown, but it will be understood that the dots are arranged in rows which are inclined at an angle to those in the other three sheets.

The transparent or light transmitting medium described in McIntosh application, Serial No. 452,863, is of particular value for use in cases where two different shades of the same color are desired. In that case, one of the two patterns, i. e., that consisting of spaced dots, will be developed to represent or form camera copy for lighter shade, while the other pattern, consisting of parallel lines, and hence, a darker pattern, will be developed to represent or form camera copy for the darker shade. In this way, one sheet of the medium could be used to provide, for example, for three different shades of yellow, i. e., black for solid yellow; dotted pattern for light yellow, and parallel lines for a deeper or intermediate shade of yellow.

It will be apparent from the foregoing, that a method has been provided whereby line and halftone color plates may be made quickly and easily, without the use of color filters, halftone screens, Ben Day shading machines, key plates or ink for printing or forming the outlines of the desired picture. It will also be apparent, since such equipment is not required, that relatively unskilled and inexpensive labor may be employed in the preparation of the color plates, thereby opening fields for color work which have not heretofore been explored.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the means and the steps herein disclosed, provided those stated by the following claim or its equivalent be employed.

I therefore particularly point out and distinctly claim as my invention:

In a method of preparing color plates for multicolor printing, the steps which consist in providing a plurality of sheets of a transparent or light-transmitting drawing medium containing a photographically invisible regularly recurring pattern, said sheets corresponding in number to a preselected number of primary colors involves in the final image to be printed, superimposing said sheets, one at a time, over a picture corresponding to the color picture to be ultimately produced, so as to render said picture visible through said sheets, applying a developing agent to portions of said sheets superimposed over selected colors in said picture, whereby said patterns are brought to visibility, and utilizing said sheets for the preparation of said color plates.

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