

April 10, 1928.

C. E. K. MEES

1,666,048

METHOD OF MAKING MULTICOLOR SCREENS

Filed Jan. 8, 1927

FIG - 1 -

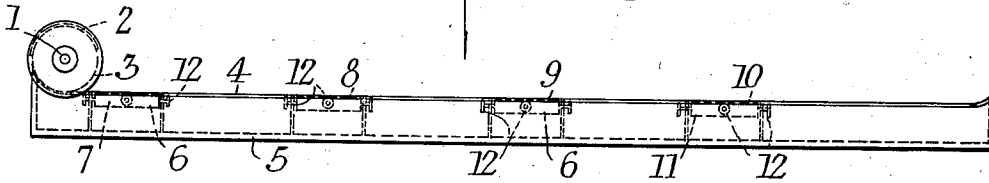


FIG - 2 -

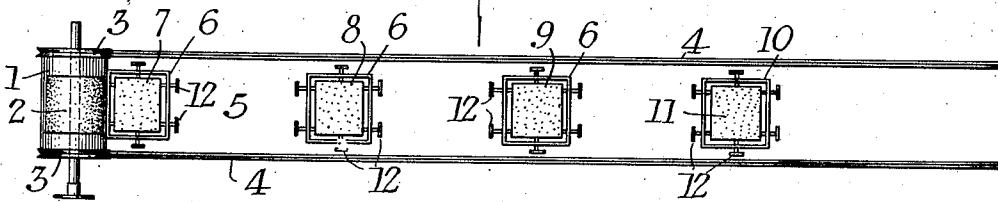


FIG - 3 -

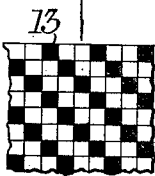


FIG - 5 -

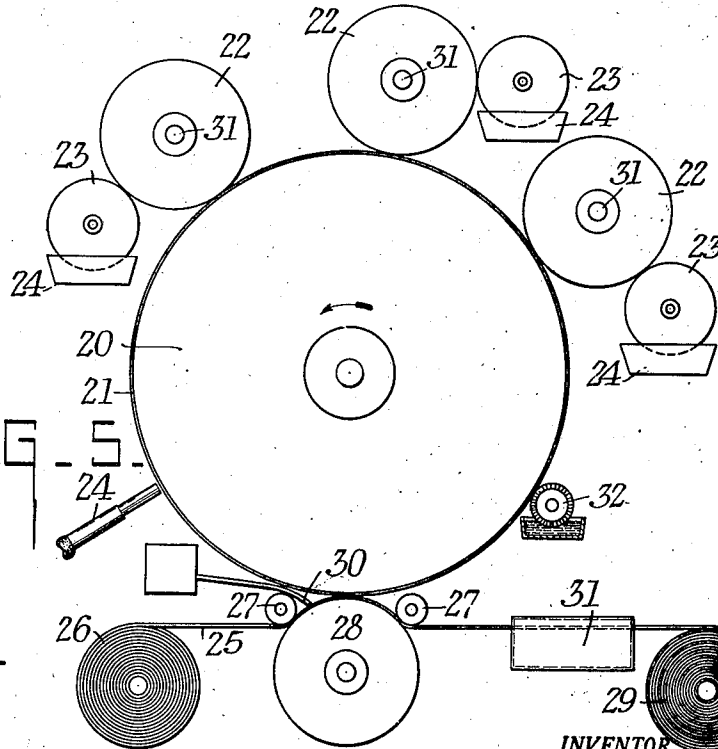
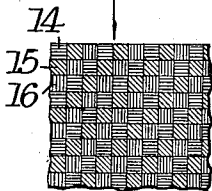


FIG - 4 -



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METHOD OF MAKING MULTICOLOR SCREENS.

Application filed January 8, 1927. Serial No. 159,816.

This invention relates to a process of making multi-color screens for use in color photography, such screens being of the type comprising a layer of juxtaposed minute, non-overlapping particles, lines or areas of any number of different colors in any preferred pattern or arrangement.

Among the objects of the invention are the making of such a screen by a mechanical printing process, the ready determination of lack of register between the different color components, the ready adjustment of such registration, the prevention of diffusion between particles of different colors, and uniform color over different portions of the screen.

These and other objects of my invention are obtained by printing the screen by an offset printing process, the several color components, each comprising separated blocks or dots, being successively deposited upon a blanket in proper registry one with the other so as to form on the blanket a multi-color design, which is then transferred as a unit to the final screen support. The color materials used are preferably water inks carrying in suspension water-insoluble, spirit-soluble dyes which are transferred to the support by coating the latter with a volatile solvent for the dyes.

My improved process will now be more fully explained, reference being made to the accompanying drawings in which—

Fig. 1 is a side view of apparatus for carrying out my invention,

Fig. 2 is a top view of such apparatus,

Fig. 3 is an enlarged view of a fragment of a printing member for one color component of the screen,

Fig. 4 is an enlarged view of a fragment of the completed screen,

Fig. 5 is a side view of a different form of apparatus for carrying out my invention.

It is to be understood that Figs. 1, 2 and 5 are largely diagrammatic, the details of the machine not being necessary to an understanding of the invention.

A roller 1 has a peripheral rubber blanket 2 such as is customarily used in offset printing processes. This roller is supported by edge grooves 3 on rails 4 of an elongated frame 5, over which it is adapted to roll. Between the grooves are seats 6 for a series of forms 7, 8 and 9 and a support 10 for a sheet 11 to be printed upon. Each seat 6

has around its edge screws 12 by which the positions of the forms may be carefully adjusted.

The forms 7, 8 and 9, carry, respectively, elements of a multi-color pattern screen of the type composed of non-overlapping dots, lines or areas in any preferred pattern or arrangement. The size of the individual areas would depend in part on the use to which they were to be put. For instance, if the sheet upon which they are to be printed is a motion picture film, the areas or lines would be very small, say of the order of 200 to 400 to the linear inch.

A portion of a typical design for one component is shown in Fig. 3 on an enlarged scale, the areas 13 being the printing areas. The three components are complementary and yield a multi-color design filling the area as indicated in Fig. 4, where the several colors are indicated by the three different sets of areas, 14, 15 and 16.

Each of the forms 7, 8 and 9 carries a suitable printing member which may be relief, intaglio or planographic, made by any desired process, though I prefer a planographic process.

These three suitable forms 7, 8 and 9 are made and placed in approximate registry in the several seats 6. The roller is then passed over them and over a trial sheet 11. The inks are transferred from the several forms in succession to the rubber blanket 2, which then prints them simultaneously upon the sheet 11. The design can be examined, either upon the blanket 2 or upon the printed sheet 11 for defects in registration, these defects being then overcome by adjustment of screws 12.

The inks used may be any of those commonly employed for planographic or other printing processes and chosen for their relative color value. I prefer to use a water ink in which is carried in very high concentration, in suspension, a water-insoluble, spirit-soluble dye in powder form. This would be applied to the form by rolling in the usual manner and would be transferred to the blanket 2. The support 11 is then moistened with a volatile solvent for the ink and the roller carrying the three color patterns in proper registration is passed over the sheet. The solvent will enable the support to absorb the dye from the blanket without transferring the medium in which

the dye was held. The blanket will then be cleaned before the next printing is made.

Typical dyes for use in this process are the following :

5 Red—Aurine (5 parts) spirits magenta (1 part).

Green—Metanil yellow (5 parts) toluidine green (1 part).

Blue—Alizarine sapphire.

10 These dyes are well known and a description of their constitution and properties will be found in dye lists and catalogs.

In another form of apparatus shown in Fig. 5, the roller 20 carries a peripheral rubber blanket 21 which contacts successively with three printing rollers 22, these being inked from inking rollers 23 passing through ink troughs 24.

20 Roller 20, turning in a counter-clockwise direction, passes these rollers 22 and the several color components of the screen are deposited on the blanket 21, upon which they may be examined by the microscope 24. The rollers are capable of independent adjustment on their shafts 31.

25 A continuous strip or band of material, 25, such as film, which may be of a composition including cellulose nitrate, cellulose acetate, cellulose ether, viscose or other cellulosic material, is directed from a supply roll 26 and guide rolls 27 over a printing roll 28, by which it is pressed into contact with blanket 21, to take up roller 29. The film and blanket move at the same speed. Just before 30 contacting the blanket, the film is moistened at 30 with a material such as methyl alcohol, which is a solvent for the dyes and also is capable of penetrating the material of the film. This causes the dyes to be transferred 40 from the blanket and absorbed by the film. The film then passes through a drier 31 before being rolled up. The blanket passes a cleaner 32 before again receiving ink from the rollers 22. There is thus left, embodied in the material of the support, a multi-color screen pattern.

This may be treated for use in any of the well known color processes, as by coating with a sensitized layer, as is described in 50 the patents, McDonough 611,457, September 27, 1898; Lumiere, 822,532, June 5, 1906; Eastman 1,028,337, June 4, 1912, and others.

It is obvious that modifications are possible and I contemplate as included in my invention all such modifications and equivalents as fall within the scope of the appended 55 claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The method of making a multi-color pattern screen which comprises the steps of

forming upon a printing blanket, a multi-color screen pattern composed of inks comprising spirit-soluble dyes, moistening a support with a material in which the dyes are 65 soluble and then at once submitting the support and screen to contact under pressure whereby the dyes are transferred from the blanket to the support.

2. The method of making a multi-color pattern screen which comprises the steps of forming upon a flexible printing blanket, a multicolor screen pattern composed of inks consisting of water-insoluble, spirit-soluble 75 dyes in water suspension, moistening a cellulosic support with a material in which the dyes are soluble and which is capable of penetrating the support and then at once submitting the support and screen to contact 80 under pressure, whereby the dyes are transferred from the blanket to the support and are embodied therein.

3. The method of making a multi-color pattern screen which comprises the steps of 85 forming upon a printing blanket, a series of complementary, non-overlapping, differently colored designs, constituting a multi-color screen pattern capable of use in a photographic color process, and composed of inks 90 consisting of finely powdered, transparent, water-insoluble, spirit-soluble dyes in water suspension, moistening a support with a material in which the dyes are soluble and then 95 submitting the support and blanket to contact whereby the dyes of the pattern as a whole are transferred from the blanket to the support.

4. The method of making a multi-color pattern screen, capable of use in a photographic color process, which comprises the steps of forming a plurality of printing forms, having complementary printing areas, applying to said several forms inks of different colors and comprising water suspensions of finely divided, spirit-soluble, 105 water-insoluble, transparent dyes, transferring said inks from said forms in succession and in non-overlapping registration upon a flexible printing blanket, thereby 110 forming thereon a multi-color screen pattern of non-overlapping color areas, applying to a cellulosic support a material in which the dyes are soluble and which is capable of penetrating said cellulosic support, and then 115 at once submitting the support and screen carrying blanket to contact under pressure whereby the dyes are transferred by a single operation from the blanket to the support and are embodied in the support. 120

Signed at Rochester, New York, this 4th day of January, 1927.

CHARLES E. KENNETH MEES.