

# PATENT SPECIFICATION

334,243



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PROVISIONAL SPECIFICATION.

## Improvements in or relating to Colour Photography.

We, Dr. JOHN NAISH GOLDSMITH, Ph.D., M.Sc., F.I.C., British Subject, of 67, Chancery Lane, London, W.C. 2, and SPICERS LIMITED, a British Company, of 19, New Bridge Street, London, E.C. 4, do hereby declare the nature of this invention to be as follows:—

This invention consists of improvements in or relating to colour photography. There is one type of process in which a colour screen (i.e. dots, lines, or geometrical patterns made up of two, three, or more colours) is applied to a film. A typical example of such process as described in Patent No. 217,557. It is a feature of processes of this type that at one or more stages in the process, lines of geometrical patterns of greasy ink are applied to the film. For example the film dyed uniformly with one colour (say green) may be led through a printing machine by means of which extremely fine parallel lines of greasy ink (intended to act subsequently as fatty resists) are printed upon it. The printing is effected by means of a small engraved steel roller having, for example, fifteen lines and fifteen intervening grooves per millimeter. When the ink is dry the film is passed into contact with a bath which bleaches and dissolves out the green dye from the spaces between the lines, leaving unattacked the green lines protected by the ink. Thereafter the film has applied to it another dye, say a red dye, which colours only the spaces between the ink lines, and so forth.

It has now been found that dyes which are useful for the purpose of forming a multicolour screen on a film can be incorporated in a medium which can be printed in the form of lines or other geometrical patterns on to the film, and further that

when the film has been thus printed and when the medium has been removed (say by washing with a solvent) coloured lines remain on the film showing that the dye has passed from the body of the medium into the film. For example, a dye can be incorporated in the fatty or greasy ink employed to print lines on the film, and when the ink has been removed (say by washing with benzene) the coloured lines remain on the film.

According to this invention, a process of making a multicolour screen for colour photography or cinematography includes the step of applying to some portions of the surface of the film a medium such as a fatty resist having incorporated therewith a dye which will colour the film.

According to a preferred form of this invention, a process of making a multicolour screen for colour photography or cinematography includes the step of printing on the film fine parallel lines of a medium such as greasy ink having incorporated therewith a dye, e.g. a green dye which will colour the film which underlies the said lines.

By this means the step of covering the whole film uniformly with one dye can be omitted, as also can the step of bleaching out the colour between the greasy lines.

In fact when the film has received the lines of medium embodying one dye and when the ink has suitably dried, the film may be immediately treated with the next colour to produce the coloured lines between the first mentioned lines.

Dated this 30th day of May, 1929.  
BOULT, WADE & TENNANT,  
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COMPLETE SPECIFICATION.

## Improvements in or relating to Colour Photography.

We, Dr. JOHN NAISH GOLDSMITH, Ph.D., M.Sc., F.I.C., British Subject, of 67, Chancery Lane, London, W.C. 2, [Price 1/-]

and SPICERS LIMITED, a British Company, of 19, New Bridge Street, London, E.C. 4, do hereby declare the nature of this inven-

tion and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

- 5 This invention comprises improvements in or relating to colour photography, and relates especially to methods for the application of a multicolour screen to a film comprising celluloid, or a cellulose ester, 10 such for example as cellulose acetate or nitro-cellulose, of the type in which there is applied to the surface of the film at one or more stages of the process a series of lines or other geometrical patterns of a 15 greasy resist-material, i.e. a material capable of protecting the underlying portions of the film from solutions of dyes or bleaching agents. Thus, for example, oily resists may be employed to protect 20 the film from aqueous or aqueous alcoholic dye solutions.

One example of a process of this general type is given in the Specification No. 322,432, according to which the film dyed 25 uniformly with one colour (say green) is led through a printing machine by means of which extremely fine parallel lines of greasy ink (intended to act subsequently as fatty resists) are printed upon it. The 30 printing is effected by means of a small engraved steel roller having, for example, fifteen lines and fifteen intervening grooves per millimeter. When the ink is dry the film is passed into contact with a bath which bleaches and dissolves out 35 the green dye from the spaces between the lines, leaving unattacked the green lines protected by the ink. Thereafter the film has applied to it another dye, say a 40 red dye, which colours only the spaces between the ink lines, and so forth.

It is one object of the present invention to provide means whereby, in processes of the above described type, the 45 steps of covering the whole surface of the film with one dye, and subsequently bleaching the dye from the inter-spaces between the first series of the resist pattern, may be avoided. In effect when the 50 film has received the lines of resist-medium embodying one dye and when the film has been suitably dried, it may be immediately treated with the next colour to produce coloured lines between the first 55 mentioned lines.

According to the invention in a method of the type described for applying a multi-colour screen for colour photography to a film comprising celluloid, or a cellulose 60 ester, the resist-medium employed to print one or more of the series of lines or other geometrical pattern on the film, contains a dye which penetrates from the medium into the film, so that on removal 65 of the medium, for example by washing

with a solvent, a geometrical pattern in colour remains on the film

According to a feature of the invention, the dye-bearing medium may comprise a fatty or greasy ink, which is printed on 70 the film in a series of lines, so that after removal of the ink (by washing with benzene) a series of coloured lines remains on the film.

The dye-bearing medium may comprise a greasy resist, a dye miscible with or 75 soluble in said resist and an agent (such as acetic acid) which is a solvent for the dye and enables the dye to penetrate into the surface of the film.

The dye-bearing medium may alternatively comprise a resist consisting of thickened linseed oil or like thickened vegetable oil, an oil-soluble dye such as "oil orange" or "oil red", and acetic 80 acid. 85

According to a particular form of this invention, after lines of a greasy resist-material embodying a dyestuff have been printed on the film, a dyestuff of a 90 different colour is applied to those portions of the film which are unprotected by the resist-lines so that after removal of the resist-lines a series of parallel lines in alternate colours is then left on the film. 95

The following are examples of greasy inks, containing dyes which will penetrate from the ink into the film, which may be employed according to the invention in the production of a multicolour screen:— 100

1. Williams' Oil Red	-	-	-	20 g.	
Thickened Linseed-Oil					
(Stand Oil)-	-	-	-	20 g.	
Acetic Acid	-	-	-	20 g.	
2. Williams' Oil Orange	-	-	-	20 g.	105
Thickened Linseed Oil					
(Stand Oil)	-	-	-	40 g.	
Acetic Acid	-	-	-	10 g.	
3. Williams' Oil Blue	-	-	-	10 g.	
Thickened Linseed Oil					110
(Stand Oil)	-	-	-	18 g.	
Acetic Acid	-	-	-	10 g.	

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:— 115

1. A method of the type described for applying a multicolour screen for colour photography to a film comprising celluloid, or a cellulose ester, such for example as cellulose acetate or nitro-cellulose, wherein the resist-medium employed to print one or more series of lines or other geometrical patterns on the film, contains 120 a dye which penetrates from the medium into the film, so that on removal of the medium, for example by washing with a solvent, a geometrical pattern in colour remains on the film. 130

2. A method according to Claim 1 wherein the dye-bearing medium comprises a fatty or greasy ink, which is printed on the film in a series of lines, 5 so that after removal of the ink (for example by washing with benzene) a series of coloured lines remains on the film.
3. A method according to Claim 1 wherein the dye-bearing medium comprises a resist, a dye miscible with or 10 soluble in said resist and an agent (such as acetic acid) which is a solvent for the dye and enables the dye to penetrate into the surface of the film.
4. A method according to Claim 1 wherein the dye-bearing medium comprises a resist consisting of thickened linseed oil or like thickened vegetable oil, an oil-soluble dye such as "oil orange" 15 or "oil red", and acetic acid.
5. A method according to Claim 1, wherein after lines of a resist-material embodying a dyestuff have been printed on the film, a dyestuff of a different colour 25 is applied to those portions of the film which are unprotected by the resist lines so that after removal of the resist lines a series of parallel lines in alternate colours is left on the film.
6. A method of making a multicolour screen for colour photography, substantially as described herein. 30
7. For use in colour photography a film to which a multicolour screen has been applied by way of the special methods 35 described or claimed herein.

Dated this 28th day of March, 1930.

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