

PATENT SPECIFICATION

350,856

Convention Date (United States): Oct. 15, 1929.

Application Date (in United Kingdom): Sept. 30, 1930. No. 29,302/30.

Complete Accepted: June 18, 1931.



COMPLETE SPECIFICATION.

Color Cinematographic Method and Apparatus.

We, TECHNICAL MOTION PICTURE CORPORATION, a corporation of Maine, United States of America, of 110, Brookline Avenue, Boston, Massachusetts, United States of America, assignees of JOSEPH ARTHUR BALL, a citizen of the United States of America, of 110, Brookline Avenue, Boston, Massachusetts, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

15 This invention relates to cinematography in colors and to a method as well as to an apparatus for recording different color aspects in complementary records for subtractive projection.

20 In color cinematography objectionable color fringes are often caused by failure of records of different color aspects to correspond precisely. While heretofore it has been possible to produce records of different color aspects simultaneously and/or along the same optical path the means proposed for this purpose have in general been found to be unsatisfactory. For instance the use of more than one light-dividing surface or partial reflector results in a serious loss of light for the second and third color records; while the use of a single film with three images of each complementary set distributed longitudinally of the film is impractical because of the excessive speed required to advance the film three picture spaces between each set of exposures; and of course records made from different sources or along different optical paths will not be complementary.

35 Objects of the present invention are to improve the art of making records for subtractive projection and to provide a method and apparatus for producing three or more complementary records which may be reproduced in superposition without noticeable color fringes.

40 In the accompanying drawing; Fig. 1 is a diagrammatic view in side elevation of an optical system; and

Fig. 2 is an end elevation of the reflecting shutter in Fig. 1.

[Price 1/5]

Price 4s 6d

The embodiment of this invention which has been selected for illustration comprises an objective lens O, which is interposed in the path of the main beam of light along optical axis A; a filter 1 disposed between the lens O and a bi-pack comprising films F and F¹ arranged with their emulsion sides adjacent; a revolving shutter M having an opening N for transmitting light along the optical axis A during approximately one-half revolution (more or less) and a reflecting surface R for reflecting light during the remainder of each revolution along path a', another objective lens O¹ and a second filter 2, whereby film at F, F¹ and F¹¹ may be exposed with light of three different colors or characteristic hues, for example, red, green and blue.

55 With some colors, as with blue for example, a relatively slight overlapping or failure to correspond is not noticeable while with other colors, such as green and red, the same degree of overlapping produces distinct and therefore objectionable color fringes. By exposing the film at F and F¹ to the red and green components of light, the red and green records will register exactly inasmuch as they are exposed simultaneously along the same path; and by exposing the film F¹¹ to the blue component, the tendency to color fringing due to the fact that this exposure is not simultaneous with the other two will not be noticeable for the reason that the blue record, which is colored yellow in the final picture does not contribute largely to the definition of the picture. While the colors red, green and blue have been referred to for the purpose of illustration, it will of course be understood that any combination of colors may be employed as for example red-orange, blue-green and blue-violet.

60 From the foregoing it will be apparent that by virtue of the arrangement of bi-pack in position to receive light along the optical axis A, pairs of records representing two-color aspects are formed on films F and F¹ from the same point of view along the same optical path and that the third series of records is formed at F¹¹ representing a different

55

60

65

70

75

80

85

90

95

100

105

color aspect, the exposures at F^{II} alternating with those at F and F^I . Obviously when using apparatus for exposing cinematographic film, the film may be advanced intermittently with any suitable mechanism and while auxiliary shutters may be used in the different paths if desired, the reflecting shutter M may be used alone, in which case the film F^{II} is advanced while the films F and F^I are being exposed and vice versa.

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:—

1. The method of making cinematographic film of the type having plural series of complemental records, representing different color aspects respectively, which are to be superposed in subsequent printing or projecting operations, characterized in that corresponding exposures of two series are made simultaneously from the same point of view and approximately equidistant from the light aperture and the exposures of a third series

are made alternately with respect to said exposures along a different path.

2. The method according to claim 1 further characterized in that said different path is a branch from the path of the main beam.

3. The method according to claims 1 or 2 further characterized in that the simultaneous exposures are effected in strata of emulsions held in parallel juxtaposition as illustrated in Fig. 1.

4. The subject-matter of any of the preceding claims further characterized by a reflector movable across the path of the main beam for effecting the alternate exposures.

5. The subject-matter of any of the preceding claims further characterized in that the simultaneous exposures are for the records (e.g. red and green) which contribute most to the definition or contrast of the composite pictures.

Dated the 30th day of September, 1930.

WM. BROOKES & SON,
London & Lancashire House,
5, Chancery Lane, London, W.C. 2,
Chartered Patent Agents.

[This Drawing is a full-size reproduction of the Original]

