

PATENT SPECIFICATION

387,159

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COMPLETE SPECIFICATION.

Improvements relating to Multi-colour Light-filters for Use with Lenticular Films.



We, I. G. FARBENINDUSTRIE AKTIEN-GESELLSCHAFT, a Joint Stock Company organised according to the laws of Germany, of Frankfurt a/Main, Germany, 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:—

10 In the known Berthon process for taking motion pictures in natural colours on lenticular films, there is used a multi-colour filter consisting of several areas of different colours in the form of parallel strips. In this case, the customary concentric method of stopping by means of a circular or iris diaphragm cannot be applied, because as the stop is increased, the relative proportions of the areas of the colour strips would be altered more and more in favour of the middle colour strip and it would therefore be impossible to obtain a picture in true colours.

15 The present invention provides a parallel band multi-colour filter which is capable of being stopped concentrically without leading to the production of colours which are not the true colours. For this purpose there is fitted either in front of or on the filter a mask having a form such that the relative proportions of the effective colour areas on the filter will not be altered by concentric stopping, whatever be the size of the stop.

20 Fig. 1 of the accompanying drawing represents, by way of example, a mask of the kind above described fitted on the middle portion of the filter and having an outline of a determined shape.

25 When the diaphragm of the objective (diameter D_1 , D_1) is fully open, the effective blue area of the filter consists of the zones b_1 and b_2 , the effective green area consists of the zones g_1 , g_2 , g_3 and g_4 , and the effective red area consists of the zones r_1 and r_2 .

30 When the objective has been stopped to the diameter D_2 , D_2 , the effective blue area consists of the zone b_2

35 the effective green area consists of the zones g_2 and g_3

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the effective red area consists of the zone r_2 .

The following equation must, therefore, be satisfied:

$$(b_1 + b_2) : (g_1 + g_2 + g_3 + g_4) : (r_1 + r_2) = b_2 : (g_2 + g_3) \cdot r_2.$$

The curves can be determined mathematically or empirically. In the present case, the empirical method was used. When using the empirical method the filter is drawn on paper ruled in millimetre squares, and the outlines of the mask are traced by comparing the different areas.

The invention is also applicable to multi-colour filters having more than three colour strips, in which case, however, the mask would be of a different shape. Furthermore, the outline of the mask may easily be chosen so that the optical centre of the two outer filter strips is not displaced laterally by stopping. For this purpose the filter is drawn on paper and subdivided by a number of circles concentric with the filter. The positions of the optical centres of the filter strips are known; moreover, it is a necessary condition that a line drawn on the surface of the filter parallel to the lenticular elements shall intersect only one colour area. From these data, the colour areas of the filter can be masked by plane geometrical measurements in such a manner that the optical centres of the two outer filter strips are not displaced by concentric stopping. A mask satisfying this condition is illustrated in Fig. 2 of the accompanying drawing.

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. A parallel band multi-colour filter for use with lenticular films in front of, or on which, is fitted a mask having a form such that the relative proportions of the effective areas of the colour strips will not be altered by concentric stopping of the objective.

2. A mask for use with the multi-colour filter referred to in Claim 1, constructed and adapted to operate substantially as

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described with reference to the accompanying drawing.

ABEL & IMRAY,
30, Southampton Buildings, London,
W.C. 2,
Agents for the Applicants.

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Fig. 1.

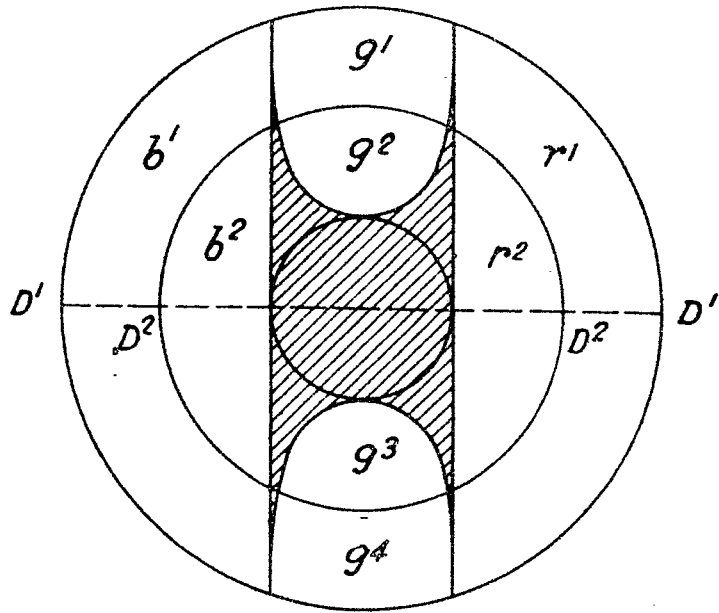
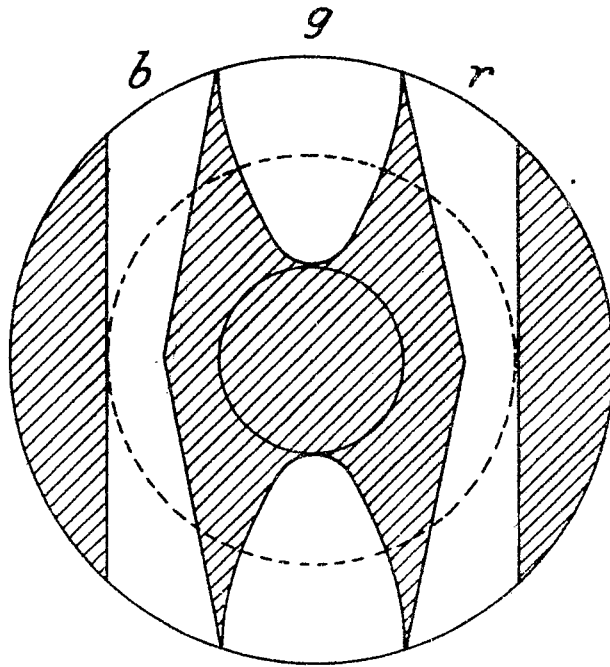


Fig. 2.



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