A Method of and Device for Obturating Photographic Objectives having a Multi-colour Filter.

We, I. G. Farbenindustrie Aktiengesellschaft, a Joint Stock Company organised according to the laws of Germany, of Frankfurt am 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:

In the known Berthon process for photographing moving pictures in natural colours on linear lenticular films a filter, placed in front of the objective, is used which comprises several juxtaposed areas in different colours. In its preferred form of construction the filter has three parallel juxtaposed areas (zones) of the fundamental colours red, green and blue. For a great many purposes it is desirable to obturate partly one or more or even all of the colour areas. This is particularly necessary when the emulsion used is too sensitive for one of the colours of the filter, or when special colour effects are to be obtained by suppressing one or two constituent colours. In certain cases it will also be necessary to reduce uniformly the luminosity for all colours. In this case the light cannot be intercepted by perforated or iris diaphragms as is customary in the ordinary black and white photography, since the colours obtained would not be the true colours for the reason that the central colour area is obturated to too small an extent while the lateral segments of the multi-colour-filter are much more affected by this interception of light. Hitherto it has been proposed to obturate the colour filter by more or less obturating the colour areas in question over their whole breadth. In the known Berthon process three parti-colour pictures of the object to be photographed are produced in the sensitive layer behind each lens element of the film backing. Owing to the small extension of each particolour picture into the areas of the adjacent pictures a diffusion halo is produced in this process which entails the disadvantage that the colours are more or less turned into white. By lateral diffusion one of the picture areas which corresponds with the red colour of a part of the object to be photographed and which, as the object contains at that place, for instance, only a small amount of red, will scarcely be exposed, receives an additional exposure from the adjacent zone corresponding with green which may perhaps be strongly exposed.

In order to prevent diffusion halos along the dividing lines of the colour areas of a multi-colour filter, it has hitherto been proposed to separate the colour areas by opaque strips which extend over the whole length of the dividing lines. According to this invention the obturation of a multi-colour filter by means of strips which extend along the dividing lines of the colour areas is improved by making the strips adjustable, so that the colour areas may be masked to a greater or less extent according to requirement and the colour reproduction controlled within wide limits. The strips used for masking the colour areas along their dividing lines are adjusted according to the relationship desired between the individual colour values and according to the sensitiveness to colours of the emulsion, while taking due account also of the other properties of the emulsion. In the case of a filter comprising n colour areas the number of the strips may vary from \((n-1)\) to \((n+1)\), but may likewise be smaller than \((n-1)\). The strips may be adjustable in the lateral direction, so that they may either cover equal areas at the right and left of the dividing line or may cover at one side of the dividing line a larger area than on the other. The strips may likewise be adjustable in their longitudinal direction so that they extend either over the whole length of the dividing line or over only a fraction thereof.

A construction in accordance with the invention is illustrated by way of example in the accompanying drawing, Fig. 1 being a view of the device in perspective and Fig. 2 is a cross section. The obturating device comprises a frame 2, which is mounted together with the colour filter 3 having colour areas \(r\), \(g\), and \(b\) on the objective casing 1 of a

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photographic camera. Adjustable slides 4, which can be moved longitudinally in a slot of the frame 2, are arranged in front of the colour filter and are provided with extensions 5. The slides 4 may be fixed in any desired position by means of set screws 6; to facilitate adjustment the slides may be provided with a suitable scale. It will be seen that the colour areas are masked along their dividing lines by the extensions 5 to an extent which is dependent upon the positions of the slides 4 in front of the colour filter. At the same time, the outer edges of the outer colour areas are also masked parallel to the dividing lines.

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. In the known process of producing colour record images on lenticular films having cylindrical lens elements, where
25 in the photographic objective has a multi-colour filter, which is obturated by means of strips along the dividing lines of the different colour areas, the improvement which consists in making the strips adjustable, so that the colour areas can be masked to a greater or less extent and the colour reproduction controlled.

2. A device for the process referred to in claim 1, comprising a mask which is fitted in front of the multi-colour filter and is provided with adjustable opaque strips adapted to cover wholly or in part the dividing lines between the colour areas of the filter, the number of adjustable strips being not more than \( n + 1 \), \( n \) being the number of the colour areas of the filter.

3. A device for obturating photographic objectives having a multi-colour filter, constructed and adapted to operate substantially as herein described.

Dated this 17th day of November, 1930.

ABEL & IMRAY,
Agents for the Applicants.

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