

PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Improvements in or relating to Photographic Films having Lenticular Elements thereon.

We, SOCIÉTÉ DU FILM EN COULEURS KELLER-DORIAN, of 42, rue d'Enghien, Paris, France, a body corporate organised under the laws of France, 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 colour kinematography with films comprising refringent elements the following device is used for taking positives.

15 A colour-selecting filter is positioned in the objective of the camera in the plane of the diaphragm. This colour-selecting filter is contained in a lens and has several segments or bands of either coloured gelatine or glass or any other suitable substance. The colours adopted are such that the whole reconstitutes white light, and each band or segment allows a definite portion of the visible spectrum to pass. The film to be exposed has on its non-emulsified side refringent elements engraved for instance in the backing itself, having say a lenticular shape and so made as to give in the emulsion an image of the selector filter. The whole of these elemental images constitute the image of the picture to be taken.

25 If lenticular elements are used for refringency, and if, for instance, the bases of these elements are circular, such bases leave between them spaces marked a , a^2 , a^3 , etc., on Figure 1 of the accompanying drawing. The said interstices between the circular surfaces form with the emulsified side two parallel faced blades leaving a free passage for the

luminous rays that reach there and which therefore take no part in the forming of the coloured filter images by the elemental lenses. The result is a parasitic fog which fades the colours when the picture is taken, and again when the film is being copied or projected.

This drawback has been found serious enough to necessitate the abandoning of circular bases for the refringent elements, and to have recourse to bases that can be arranged relatively to one another so as to minimise the interstices between them.

Such an arrangement can be achieved by the present invention which comprises a photographic film with lenticular elements provided on the non-emulsified side characterised in that the elements are constituted by (a) lines of contiguous semi-cylindrical excrescences arranged so that the troughs between the excrescences in one line are staggered relatively to the troughs in the adjoining lines or (b) rounded studs or picots packed so close together that their adjoining bases are not circular but form regular polygons. In the former case the colour-selecting filter must have its colour bands disposed parallel to the lines.

Figure 2 illustrates a form of the invention in which the polygons are hexagonal. The intersection of the partitioning edges of the refringent elements should of course be as sharp as possible.

To each refringent element hereinafter called a "picot" is apportioned a surface of the sensitized side equal to the base surface of the picot and lying opposite to the said surface. When the

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Price 4s 6d

aperture of the lens illuminating the picot is varied, the diameter of the filter image produced by the picot in the emulsion varies in the same way. Therefore, with a very wide aperture of the illuminating lens this image will extend beyond the portion of the emulsion allotted to it. The various images then encroach on one another allowing light to fall on the interstices between the picots, a most unfavourable occurrence. If the aperture of the lens becomes substantially decreased, everything else remaining equal, an image produced by the picot will not occupy the whole of the surface allotted to it. In this case when the film is used for copying or projecting, arrangements have to be made in order that the light projected through the film will pass only through the surface where the image produced by the picot has been printed. Obviously, therefore, the more this surface is decreased the more the amount of efficient light is decreased also. This drawback is less serious, however, than the one resulting from elementary images which are too extensive.

With a definite lens aperture and a definite number of picots per unit of surface the selector filter image given by the picot on the emulsion increases in size with increasing thickness of the film. Considering that in this variation of thickness, the surface of the emulsion allotted to the picot remains the same, it will be seen that with a given lens aperture and a given number of picots per unit surface, the portion of emulsified surface allotted to the picot can be more or less filled up by varying the thickness of the film.

One feature of the invention therefore consists in the film having such a thickness and the picots such a base area that for a given aperture of the lens illuminating the picots, the images projected by the latter on the sensitised layer of the film will not encroach on one another.

On the other hand the selector filter image produced by the picot on the emulsified layer is due to the silver grains existing in the emulsion after development and fixing of the image. It is therefore, as a matter of fact, a mosaic which will vary in coarseness with the coarseness of the silver grains and the undesirable influence of the coarseness of these grains will increase inversely with the surface of the picot, that is to say the number of picots will be greater per surface unit.

Lastly with usual commercial emulsions the sensitiveness of the film side to

light increases as its component silver grains are coarser.

Now, in order to facilitate the use of colour cinematography with films comprising refringent elements conditions should be provided at the picture-taking stage as convenient as those for black and white cinematography. The following should therefore be made possible:—

(1) To use picture-taking lenses with usual apertures, $F=3.5$, for instance, or smaller.

(2) To use rapid emulsions, and consequently coarse silver grained ones. For picture-taking therefore, the use of coarse grained emulsions, and therefore of broad picots and thick films will be necessary.

On the contrary, for copying which is operated at leisure in studios there is an advantage in keeping the usual thickness of film and consequently in using small surfaced picots and fine grained emulsions.

Experience has shown that for picture taking, less than 26 different picots per millimetre length of film should be employed and the film should be thicker than the standard one which is 12 to 13 hundredths of a millimetre thick.

For copying films of normal or less than normal thickness should be used with more than 23 picots per millimetre of film length coated with emulsions adapted to define in the photographically obtained image parallel lines 18 thousands of a millimetre or less distant from one another after development of the film. A film having a certain number of picots per millimetre can thereof be copied by means of a film carrying a greater number of picots per millimetre.

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 photographic film with lenticular elements provided on the non-emulsified side characterised in that the elements are constituted by (a) lines of contiguous semi-cylindrical excrescences arranged so that the troughs between the excrescences in one line are staggered relatively to the troughs in the adjoining lines or (b) rounded studs or picots packed so close together that their adjoining bases are not circular but form regular polygons.

2. A film as claimed in Claim 1 which has such a thickness and the picots have such a base area that the images pro-

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jected by the latter on the sensitized layer of the film will not encroach on one another for a given aperture of the lens illuminating the picots.

- 5 3. A film as claimed in Claim 1 having a thickness greater than 12 to 13 hundredths of a millimetre, and having less than 26 elements per millimetre length for exposure purposes, and more than 23 elements per millimetre length for copying purposes.

- 10 4. The photographic film substantially as described with reference to the accompanying drawing.

Dated this 15th day of January, 1926. 15
SOCIÉTÉ DU FILM EN COULEURS
KELLER-DORIAN,
Per: Boulton, Wade & Tennant,
111/112, Hatton Garden, London,
E.C. 1, 20
Chartered Patent Agents.

Reference has been directed, in pursuance of Section 7, Sub-Section 4, of the Patents and Designs Acts, 1907 and 1919, to Specifications Nos. 211,486, 207,837, 207,836, and 24,698 of 1914. 25

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

Fig.1.

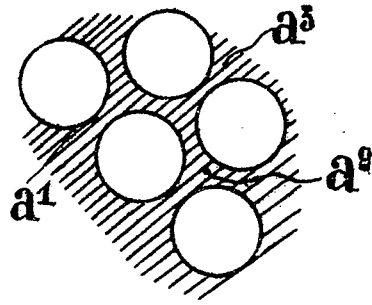


Fig.2.

