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Date of Application, 24th Jan., 1912
(Patent of Addition to No. 1642, of 21st Jan., 1911)
Complete Specification Left, 24th July, 1912
Complete Specification Accepted, 31st Oct., 1912

PROVISIONAL SPECIFICATION.

Means for Projecting Films in Colour Kinematography.

I, COLIN NOEL BENNETT, 9, Morrab Road, Penzance, Cornwall, Journalist, do hereby declare the nature of this invention to be as follows:—

The principle of utilising the extended picture shift and multiple lens battery for recording negatives in colour kinematography as set forth by me and claimed in my Patent No. 1642 of 1911 can with small modification be applied equally to the projection of positives obtained from the negatives so made.

For this purpose the mechanism as described in my original patent, instead of being contained in the body of a kinematograph camera, is arranged so that a beam or beams of light may be sent through the gate from a light source situate behind it, after the manner common in optical projection.

Thus, in the case of my patent being utilised for the projection of two-colour kinematograph pictures the arrangement would be substantially as follows:

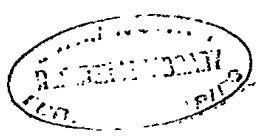
Two optical lantern bodies situate behind the gate of the projector mechanism are so arranged that the light beams from their condensers pass respectively through the one and the other of the kinematograph positives in position in the double picture gate opening, and from thence onward through the respective colour filters and lenses to the projection screen, where the projected images are formed. These images are made to coincide by means of suitable centring attachments to the projection lenses. Also when utilising the principle of my patent for projection purposes it may prove of advantage to fit the colour filters used for projection purposes between the light source and picture gate. Also the light beams from the light sources may if required be bent in their course prior to striking the picture gate, such bending being effected by means of mirrors or prisms, or other like means. Also a single light source may be made to provide all the light for the purpose of colour projection, such light being then divided into separate beams and these light beams being distributed to their several picture positives requiring illumination in the double, triple, or multi-picture gate aperture. This light distribution may be effected by means of mirrors, prisms, or the like, as may prove most convenient.

The lenses of a projector as above described may further be fitted with iris diaphragms, and by suitably manipulating these diaphragms the relative brilliance of the several projected colour sensations may be altered at will. This provision allows for making quick colour changes in the projected picture, and also makes it possible to compensate for inequality in the recording of colour in the original colour record negatives and positives.

Dated the 23rd day of January, 1912.

COLIN N. BENNETT.

[*Price 8d.*]



COMPLETE SPECIFICATION.

Means for Projecting Films in Colour Kinematography.

I, Colin Noel Bennett, 9, Morrab Road, Penzance, Cornwall, Journalist, 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 Specification of a previous Patent No. 1642 of 1911, I have described a method and apparatus for taking kinematographic pictures for reproduction in colour, according to which two or more colour sensation records of the same movement phase are taken simultaneously one below another on a film at each exposure, the film being shifted a suitable distance for the purpose between the exposures, that is to say a suitable multiple of a single picture distance to enable the plurality of separate colour sensation records to be photographed upon it at each exposure.

According to the present invention I apply this multiple shift method to the projection of positives obtained from the negative films so produced, and I provide the projecting lantern with a multiple film shift, and arrange the said projector so that a beam or beams of light are sent through the different colour sensation records of same movement phase in the gate and through their corresponding colour filters, and that the projected images are superposed on the screen.

For the projection of two-colour kinematographic films, for example, I may employ two optical lantern bodies situated behind the gate of the projector mechanism and so arranged that the light beams from their condensers pass respectively through the one and the other of the kinematographic positives in position in the double picture gate opening and from thence onward through the respective colour filters and lenses to the screen, on which the images are made to coincide by means of suitable centering attachments to the projection lenses, or by arranging the lantern bodies at a suitable angle to each other, the film being shifted a length corresponding to two pictures between the successive projection periods. For three colour projection, three lenses and corresponding screens would be employed, and the film would be moved a distance of three picture lengths at each shift and so on.

For the sake of convenience in centering the light when employing two or more separate sources of illumination, the light beams from the light sources employed may be bent in their course prior to striking the picture gate. This may be effected by means of any suitable arrangement of mirrors or right-angled or other prisms. Such an arrangement would allow of two or more lantern bodies being placed at an angle to each other and to the projector gate, and would enable the separate sources of illumination to be more easily handled and controlled, and their light beams better concentrated on to their respective pictures in the gate.

Instead of employing separate sources of light, a single powerful light source may be made to provide all the light for the projection, such light being suitably distributed on the pictures in the gate. If necessary or desired the light from a single source may be divided into separate beams and these beams be distributed on the pictures in the gate by mirrors, prisms, or the like.

The accompanying drawing is a diagrammatic section illustrating by way of example an arrangement of lantern for projecting positives prepared from a negative film for two-colour kinematography, produced according to my said previous patent.

R represents the body of the projecting lantern and S the condenser thereof. A^1 B^1 are projecting lenses fitted at the front of the lantern, the upper lens A^1 being arranged in any suitable way, *e.g.* by pivoting it as at A^2 and providing an adjusting screw as at A^3, so that its axis may be angularly adjusted relatively to the axis of the lower lens B^1, in order to superpose on the screen the beams from the two lenses. The gate opening K^1 L^1 is of double picture length, and the claw C of the escapement action for the film M^1 is operated by a film shift mechanism of any suitable kind, pitched to pull the film down to the extent two pictures at each shift. R^1 G^1 represent the red and green colour filters for the respective lenses.

In the example shown, the light from the condenser is directed through the lens casing E^1, so that it is divided between the two lenses A^1 and B^1, but separate condensers and separate sources of light may be employed for the two lenses, and in general many different arrangements of lantern might be employed for the purpose in view. For the more perfect condensation of the light beam, a parallelising lens may be introduced between the condenser S and the gate opening K^1 L^1.

For three-colour projection, three lenses one above the other will be employed and the film shift mechanism will be pitched to three times single picture length, and so on.

The colour filters may in some cases be disposed between the light source and the picture gate.

When employing the present invention advantage may be taken of the fact that by providing the projection lenses with iris diaphragms or diaphragms of variable aperture, the relative intensities of brilliancy of the projected colour record sensations, may be altered at will, thus allowing for colour changes and also making it possible by means of manipulating such diaphragms, to compensate for the undue ascendancy of any particular colour sensation in a projected colour image. Such arrangement will be understood without further description or illustration, it being understood that iris diaphragms of any suitable form would be fitted to the lenses and arranged in any known or appropriate way so that the operator can adjust the diaphragm to any size of aperture as required in the course of the projection.

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

1. The application of the multiple shift method of my prior Specification No. 1642 of 1911 to the projection of positives obtained from negative films produced by such method, the projecting apparatus being provided with a multiple film shift, and being adapted to project in superposition on a screen and with the aid of corresponding colour filters, the images of the colour sensation records of same movement phase, substantially as described.

2. For the purpose specified, a projecting apparatus comprising a multiple film shift, in combination with a gate of suitable length and lenses and colour filters corresponding in number to the number of colour sensation records of same movement phase forming a set, and means for sending a beam or beams of light through the respective colour filters and lenses and for superposing the images of the respective colour sensation records on the screen, substantially as described.

3. In projecting apparatus according to Claim 2, the employment of two or more lantern bodies placed at an angle to each other, in combination with separate sources of illumination for the lantern bodies, and with mirrors or prisms adapted to bend the light beams from the separate sources prior to striking the picture gate, substantially as described.

4. In projecting apparatus according to Claim 2, providing the lenses with iris or other variable diaphragms as and for the purpose specified.

5. Kinematographic projecting apparatus constructed, arranged and adapted for operation substantially as described with reference to the accompanying drawings.

Dated this 24th day of July, 1912.

MEWBURN, ELLIS & PRYOR,
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Chartered Patent Agents.

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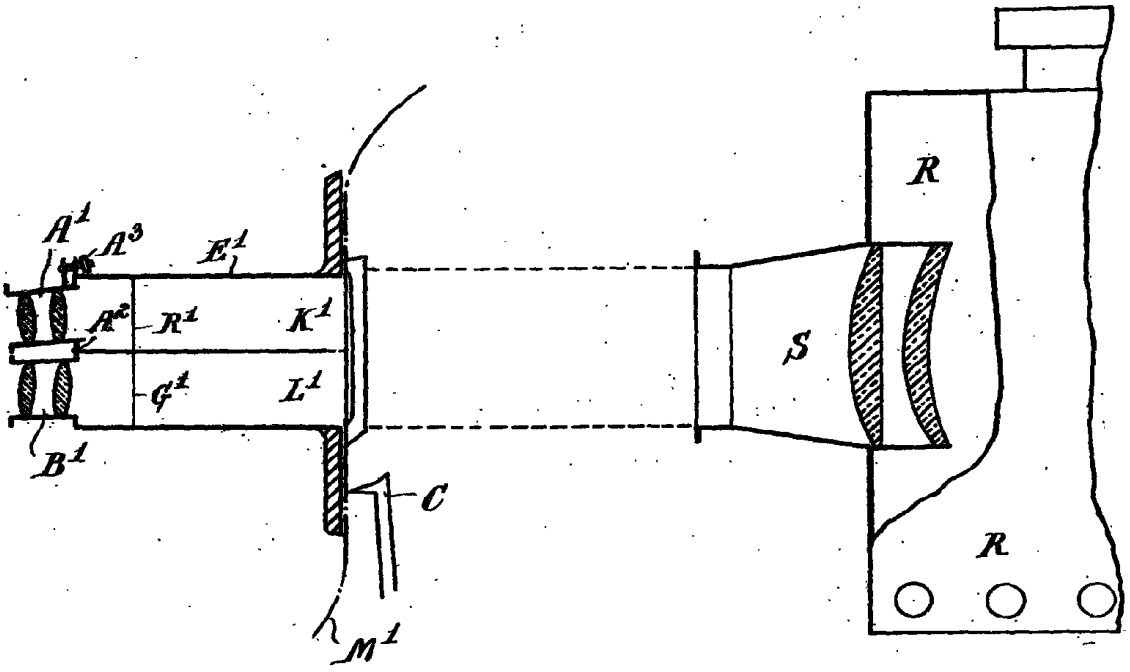
BENNETT'S COMPLETE SPECIFICATION.

(1 SHEET)

[This Drawing is a reproduction of the Original on a reduced scale.]



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