



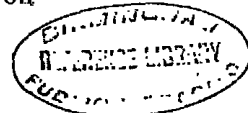
*(Under International Convention.)*

*Date of Application (in the United Kingdom), 8th Feb., 1912*

*Accepted, 19th Dec., 1912*

## An Improved Kinematograph for Projections in Natural Colours by the Three-colour Process.

[*Price 8d.*]



*Kinematograph for Projections in Natural Colours by the Three-colour Process.*

Figures 2, 3 and 4 shew the special fitting for the objectives to a larger scale in front elevation, axial section and side elevation respectively.

Figure 5 represents a face view of the shutter with coloured screens shewn in Figure 1.

As shewn in Figures 2, 3 and 4 each of the objectives A, B, C which are similar one to the other, instead of being circular in section is limited by two parallel planes so that their axes can be brought together at a distance less than the dimension of a picture.

The central objective B is fixed. The outer objectives A and C are able to pivot slightly in the horizontal direction in frames D and E owing to the provision of vertical trunnions *a* and *b*. These frames are movable in the vertical direction and furthermore are able to incline slightly in pivoting around horizontal trunnions *c* and *d*. These latter trunnions are journalled in openings *e* *f* of oval shape (Figure 4) formed in the lateral face of the aperture F of the kinematograph (Figure 1) so that the trunnions *c* and *d* and consequently the objective fittings D and E can be displaced vertically.

The fittings can be locked in the desired position by means of milled knobs G and the objectives A and C can be fixed in their respective fittings by means of other knobs H.

It will readily be understood that by means of this fitting it is possible:

- (1) To vary the distance between the axes of the objectives.
- (2) To rotate the objectives slightly around a vertical axis.
- (3) To rotate the objectives slightly around a horizontal axis.

The positions of these axes are determined in such a manner that they are located outside the nodal points so that a displacement of the picture upon the screen corresponds to an angular displacement of an objective.

In this type of kinematograph a shutter I is employed (Figures 1 and 5) which is provided with three screens each of which corresponds to the three complementary colours generally employed. These colours are the same at each sector but relatively displaced as shown in Figure 5.

As each picture is projected three times, once in the upper position that it occupies in the projection aperture, once in the central position and once in the lower position, it is necessary for the corresponding screen to occupy a suitable position on the shutter; it is for this reason that the shutter makes only one revolution for three pictures and that it is divided into six sectors of which three opaque sectors *g* correspond to the displacement period of the film and three sectors *h* each composed of three concentric coloured surfaces relatively displaced as stated above. The shutter can be arranged either between the source of light and the film, as indicated above, or between the film and the objectives or in front of the objectives.

Nevertheless the central colour is attenuated to a certain extent because when the segment is perfectly centred it illuminates more strongly the picture in front of the fixed objective. If the corresponding coloured screens were allowed to have the same value as the two others there would be a preponderance of this colour in projections on passing through the sector and the same would apply to the other two sectors.

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 a kinematographic apparatus for projecting by the three colour process the provision of objectives which are limited in area by two parallel planes in such a manner that the objectives can be centred relatively to the pictures upon a film.

2. In a kinematographic apparatus for projecting by the three colour process the provision of extreme objectives which are adjustable as to distance from the

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central objective, and adjustable about two axes which are at right angles to each other.

3. The construction and arrangement of objectives for kinematographs substantially as described and shewn.

5 Dated this 8th day of February, 1912.

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Agents for the Applicants.

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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1912.

SHEET 1.

Fig. 1.

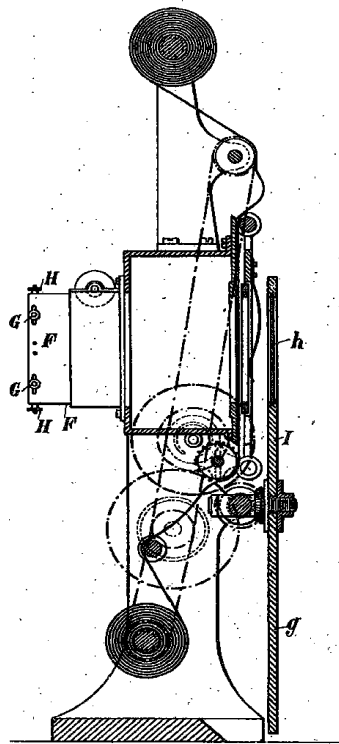


Fig. 2.

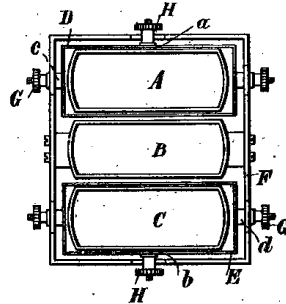


Fig. 3.

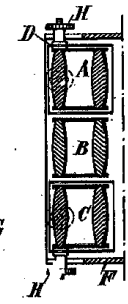


Fig. 4.

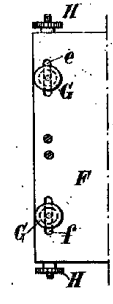
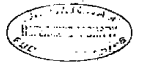
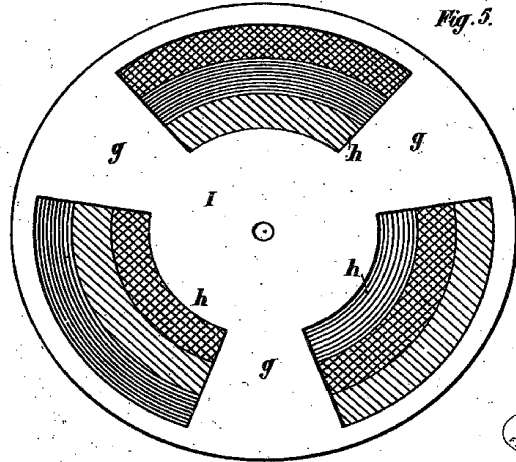
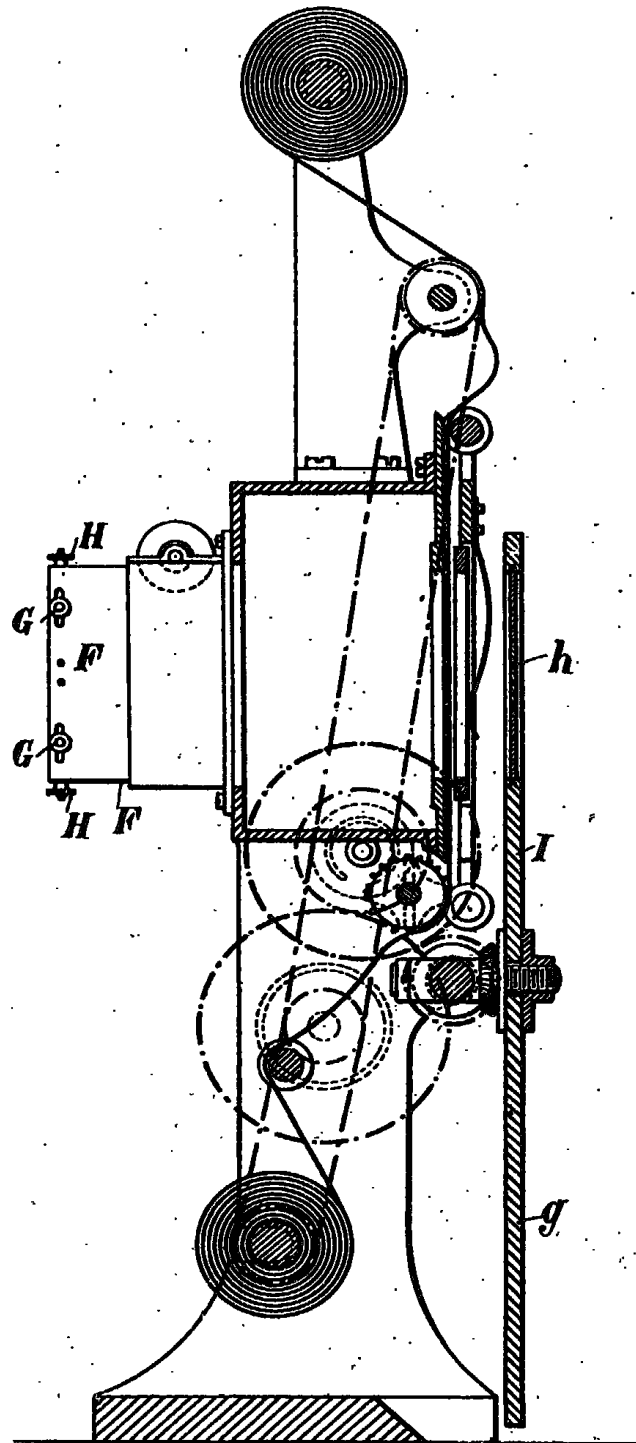


Fig. 5.



*Fig. 1.*



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

c  
G  
c  
G

Fig. 2.

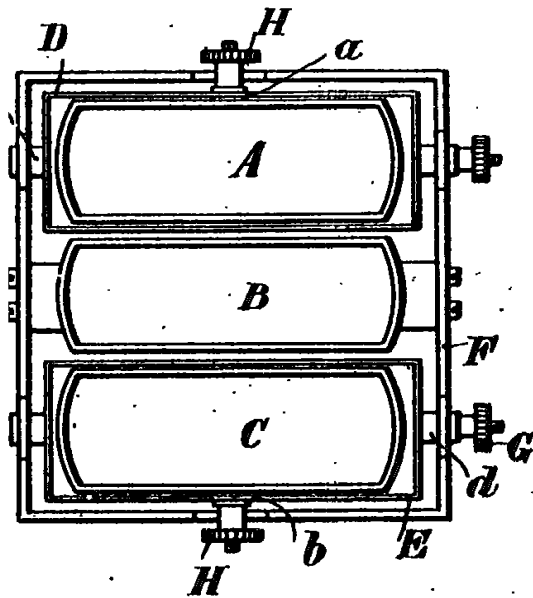


Fig. 3.

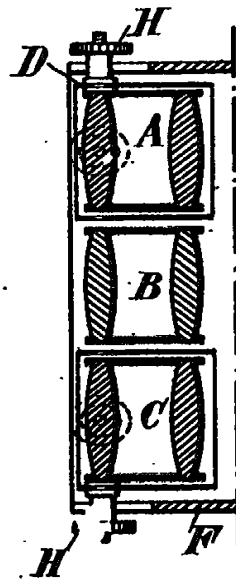


Fig. 4.

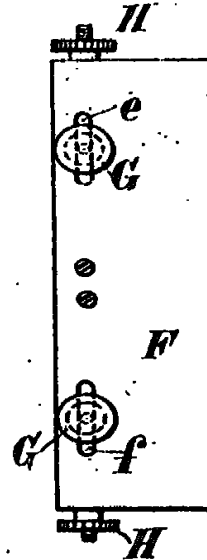


Fig. 5.

