N° 3560 A.D. 1899

Date of Application, 17th Feb., 1899

Complete Specification Left, 17th Nov., 1899—Accepted, 6th Jan., 1900

PROVISIONAL SPECIFICATION.

Improvements in Colour Photography.

I, WILLIAM NORMAN LASCELLES DAVIDSON, of 3, White Rock Road, Southwick, near Brighton, in the County of Sussex, Captain 4th Battalion The Kings (Liverpool Regiment), do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in taking photographs in natural colours by what is known as the three colour process, whereby I am enabled to take such photographs with greater efficiency and to photograph moving objects as well as still life.

According to my invention, instead of employing (as has hitherto generally been the case) either a number of separate cameras placed side by side or a single camera in which a number of sensitive plates are successively exposed, I use a single camera having the necessary number of lenses all of the same focus and provided with means whereby the said lenses may be simultaneously exposed. Each lens is provided with a different colour filtering screen and the camera is divided into a number of compartments corresponding respectively with the lenses and so arranged that the plate when in position is divided into a corresponding number of equal parts. Thus ensuring that a number of identical negatives will be obtained at one exposure, from which a true rendering of the original in colours may be obtained.

According to one form of construction embodying my invention, I employ a camera having a bellows body and the usual movements and provided with either double backs of ordinary book form to take two plates or films each, or a changing back to hold a number of glass plates or films. To the front of this camera I attach three lenses side by side either horizontally or vertically and provide them with a flap or other shutter whereby they may be simultaneously exposed. The interior of the camera is divided into three equal parts or chambers (one for each lens), preferably by means of two strips of flexible material mounted on spring rollers so as to work with the bellows part of the camera. These flexible strips have their ends at one extremity situated at the front of the camera and their ends at the opposite extremity situated near the focusing screen, in such manner as to divide the plate into three equal parts.

The lenses are each supplied with a different colour filtering screen in order to obtain negatives (in monochrome) of the relative values of the colours filtered by the aid of the said lenses and screens. These lenses may either be rectilinear or single landscape lenses, but for advanced work and badly lit subjects I prefer the rectilinear.

The colour filtering screens—light red, blue violet, and green or yellow, respectively—are preferably of optically ground glass but may be of dyed celluloid or other transparent material.

Each lens has a different sized aperture, the lens with the red screen having the largest, that with the blue violet screen the smallest, and that with the green or yellow screen a medium stop.

[*Price* 8*d*.]

The colour screens may be fitted to their respective lenses by being slipped into suitable holders at the backs of the lenses. Or coloured stops may be made to slip into the lenses—between the combinations in the case of rectilinear lenses, or in front or behind in the case of a single lens.

Or a coloured screen may be used in conjunction with the sensitive plate and either in contact with it or not. Or in place of said screens, the glasses of which the lenses are composed, may be dyed to the necessary colours.

When the exposure is made therefore, (provided the lenses are properly paired and the colour screens in correct position), there will be three distinct images each identical to the other and each having its correct proportion of colour.

Dated this 17th day of February 1899.

HASELTINE, LAKE & Co.,
45, Southampton Buildings, London, W.C., Agents for the Applicant.

COMPLETE SPECIFICATION.

Improvements in Colour Photography.

I, WILLIAM NORMAN LASCELLES DAVIDSON, of 3, White Rock Road, Southwick, near Brighton, in the County of Sussex, Captain 4th Battalion The Kings (Liverpool Regiment), 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:—

This invention relates to improvements in taking photographs in natural colours by what is known as the three colour process, whereby I am enabled to take such photographs with greater efficiency and to photograph moving objects as well as still life.

According to my invention, instead of employing (as has hitherto generally been the case) either a number of separate cameras placed side by side or a single camera in which a number of sensitive plates are successfully exposed, I use a single camera having the necessary number of lenses all of the same focus and provided with means whereby the said lenses may be simultaneously exposed. Each lens is provided with a different colour filtering screen and the camera is divided into a number of compartments corresponding respectively with the lenses and so arranged that the plate when in position is divided into a corresponding number of equal parts. Thus ensuring that a number of identical negatives will be obtained at one exposure, from which a true rendering of the original in colours may be obtained.

According to one form of construction embodying my invention, I employ a camera having a bellows body and the usual movements and provided with either double backs of ordinary book form to take two plates of films each, or a changing back to hold a number of glass plates of films. To the front of this camera I attach three lenses side by side either horizontally or vertically and provide them with a flap or other shutter whereby they may be simultaneously exposed. The interior of the camera is divided into three equal parts or chambers (one for each lens), preferably by means of two strips of flexible material mounted on spring rollers so as to work with the bellows part of the camera. These flexible strips have their ends at one extremity situated at the front of the camera and their ends at the opposite extremity situated near the focussing screen, in such manner as to divide the plate into three equal parts.

The lenses are each supplied with a different colour filtering screen in order to obtain negatives (in monochrome), of the relative values of the colours filtered by the aid of the said lenses and screens. These lenses may either be rectilinear

or single landscape lenses, but for advanced work and badly lit subjects I prefer the rectilinear.

The colour filtering screens—light red, blue violet, and green or yellow, respectively—are preferably of optically ground glass but may be of dyed celluloid or other transparent material.

Each lens has a different sized aperture, the lens with the red screen having the largest, that with the blue violet screen the smallest, and that with the green or yellow screen a medium stop.

The colour screens may be fitted to their respective lenses by being slipped into suitable holders at the backs of the lenses. Or coloured stops may be made to slip into the lenses—between the combinations in the case of rectilinear lenses, or in front or behind in the case of a single lens.

Or a coloured screen may be used in conjunction with the sensitive plate and either in contact with it or not. Or in place of said screens, the glasses of which the lenses are composed, may be dyed to the necessary colours.

When the exposure is made therefore, (provided the lenses are properly paired and the colour screens in correct position,) there will be three distinct images each identical to the other and each having its correct proportion of colour.

And in order that this invention may be more clearly described reference is had to the accompanying sheet of illustrative drawings on which

Fig. 1 is a front elevation of a camera constructed according to this invention.

Fig. 2 is a horizontal section on the line A B Fig. 1, and

Fig. 3 is a vertical cross section on the line C D Fig. 2.

The camera is constructed with a front plate A having the three lenses B B^1 B^2 all of the same focus. These lenses are each provided with the colour screens b^1 b^2 b^3 arranged behind the lenses the colour screens being of the requisite colours to give the three photographs in the proper colours required, for three colour photography. The camera is completed by means of the bellows body C and the movable back plate D adapted to receive the dark slide holding the photographic plate and being provided with a hinged ground glass screen E which can be turned up out of the way when the dark slide is in place. For the purpose of dividing the camera into three compartments flexible partitions F are provided having a certain amount of springyness so that when released they will collapse and allow of the colour screens b^1 b^2 b^3 being got at easily. These partitions F are provided with rigid bars f each fitted at their ends into slots upon the back plate D. These partitions F being of a flexible character will therefore extend or collapse in accordance with the movements of the bellows body C. The front A of the camera is attached to the base board G and the focussing is effected by the movement of the back D which is operated by pinions engaging in the racks g upon the base board G the milled head h serving for rotating the pinions. In order to effect slight adjustments of the lenses B B^1 B^2 they are mounted on a sliding frame A^1 fitting in grooves in the front A of the camera and the longitudinal slot a in which a milled screw a^1 engages allows of a slight vertical adjustment.

Shutters I I^1 I^2 are fitted to the lenses B B^1 B^2 and are connected together by means of a rod i operated by a milled head i^1 so that all three lenses can be exposed simultaneously.

The lenses are provided with differently sized apertures and with stops in order to allow for the differences required for the particular colour screen in use in each lens.

It will be seen that a single camera is thus obtained in which the three photographs in monochrome required for three colour photography can be obtained at one exposure the focussing for all three and the exposure being effected simultaneously.

The three photographs are obtained upon one plate and as a result the three photographs will be obtained side by side identical with one another but each having its proper proportion of colour.

Any desired construction of dark slide may be used and instead of the shutter mechanism shown any other convenient arrangement may be used provided that all three shutters can be used simultaneously. The colour screens may be variously arranged in position relatively to the lenses or if found more convenient may be placed adjacent to or in contact with the sensitive plate.

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). In a camera for three colour photography, a camera body provided with three lenses fitted with the proper colour screens, a movable back whereby the focussing of all three negatives is simultaneously effected, a sensitive plate adapted to have the three negatives upon it side by side and a shutter mechanism whereby an exposure can be obtained for all three lenses simultaneously substantially as described.

(2). In a camera for three colour photography, a camera front having three lenses side by side each fitted with the proper colour screen, a bellows body, a back frame adapted to receive a sensitive plate upon which all three negatives will be obtained side by side, flexible partitions dividing the interior of the camera into three divisions, rack and pinion gear for effecting the movements of the back frame for simultaneous focussing, and shutter mechanism whereby an exposure can be obtained for all three lenses simultaneously substantially as described.

(3). In a camera for three colour photography, a front plate A, lenses B B^1 B^2, colour screens b^1 b^2 b^3 behind them, bellows body C, movable back plate D adapted to receive the dark slide and provided with a ground glass screen G, flexible partitions F, rack and pinion gear for focussing by means of the movements of the back plate D, and shutters I I^1 I^2 adapted to be operated together substantially as described with reference to the drawings and for the purposes specified.

Dated this 17th day of November 1899.

GEO. H. RAYNER,
37, Chancery Lane, London, Agent for the Applicant.

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A.D. 1899. Feb. 17. Nº 3560.

DAVIDSON'S Complete Specification. (1 SHEET)

Fig. 1.

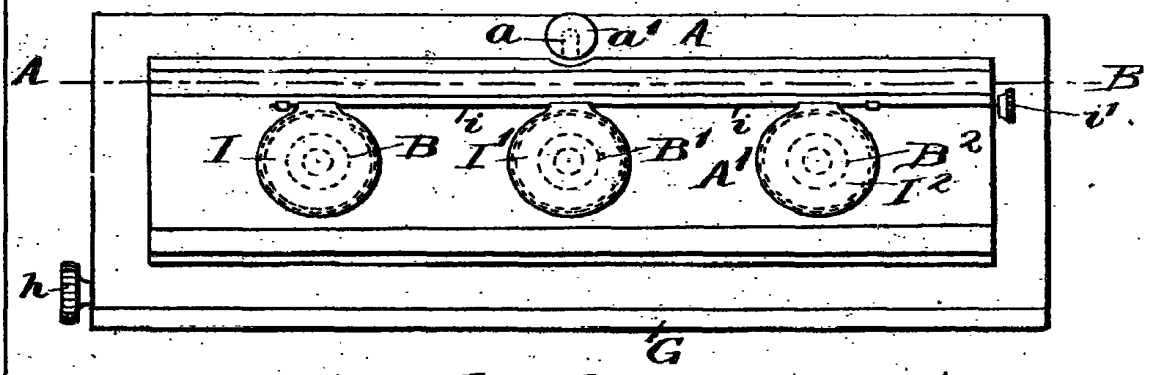
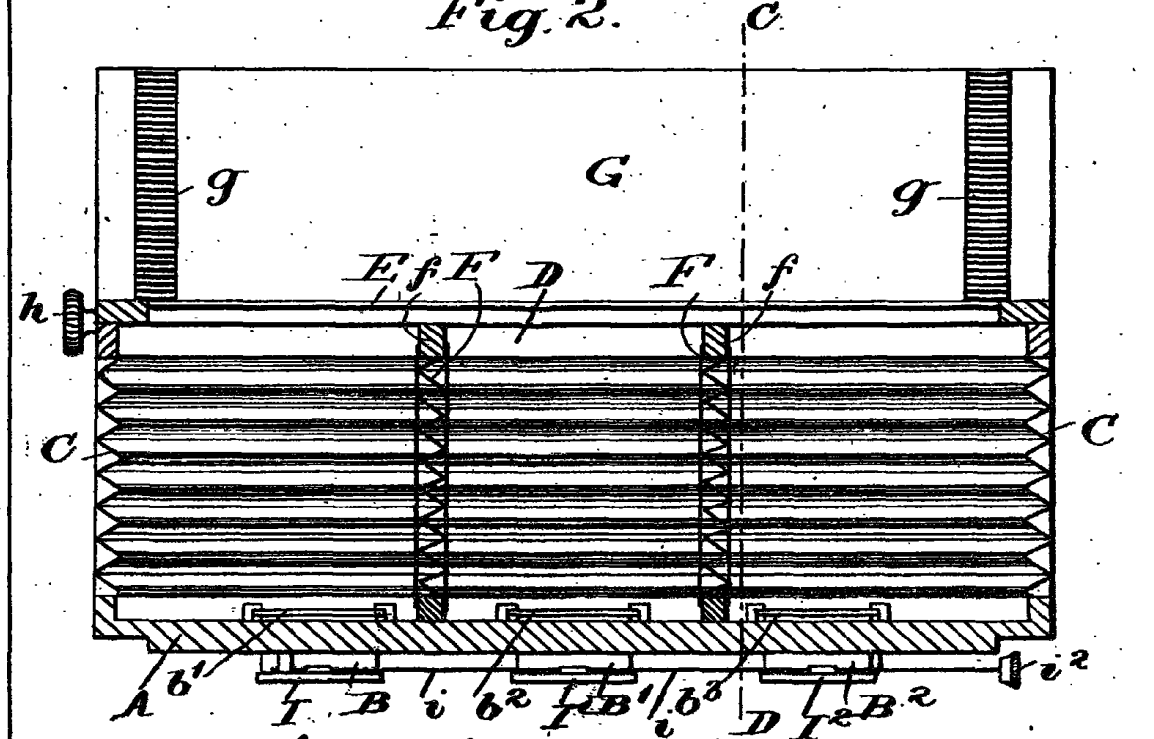


Fig. 2.



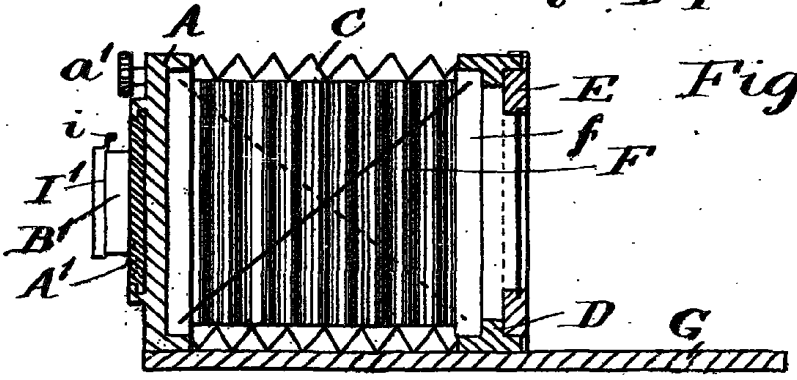


Fig. 3.

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

Malby&Sons, Photo-Litho.