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PROVISIONAL SPECIFICATION.

Improved Folding Plate Carriers (or Sheaths) and Reflecting Screen (combined) for Producing simultaneously, Three Negatives (or Positives) with One Lens, and One Exposure

WILLIAM NORMAN LASCELLES DAVIDSON Captain 6th Bn. "The King's" (Liverpool Regiment) Southampton House Southwick Sussex do hereby declare the nature of this invention to be as follows:—

5 This invention relates to a method of obtaining with one lens, and one exposure simultaneously, three negatives (or positives) suitable for the three colour heliochromy or such like process. Any ordinary camera and lens may be used. This is attained by combined plate carriers (or "sheaths") and reflecting screen, (one or more plate carrier & screen) unfolding into the interior of a camera to form the necessary images on the shutter of the dark slide being withdrawn to make an exposure, and to
10 fold back again into the dark slide after the exposure to facilitate removal of slide from camera. The plate carriers (or "sheaths") & reflecting screen combined may be placed in large numbers in a "changing box" or magazine hand or stand camera instead of "dark slides." A complete tri-chromatic image is presented to each eye
15 on the above combined carriers and screens being used stereoscopically with a pair of lenses or such like. An adjustable screen or "shield" is placed near the lens to avoid extraneous light reaching plates in position inside the camera.

Dated this 15th day of May 1901.

W. N. L. DAVIDSON.

COMPLETE SPECIFICATION.

20 **Improved Folding Plate Carriers (or Sheaths) and Reflecting Screen (Combined) for Producing simultaneously Three Negatives (or Positives) with One Lens and One Exposure.**

I, WILLIAM NORMAN LASCELLES DAVIDSON, Captain late 4th Battalion "The Kings" (Liverpool Regiment) of Southampton House, Southwick, in the County of Sussex, do hereby declare the nature of this invention and in what manner the same
25 is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in apparatus for obtaining photographic pictures in natural colours by means of the "three colour process", and consists of a
30 hinged carrier and reflector screen combined adapted for use in ordinary dark slides and cameras in which the whole apparatus is contained.

The apparatus is based upon a principle already in use in which the picture is projected by a lens directly upon one plate, passing through a coloured glass or screen tilted at an angle in front of the plate and also reflected by the screen upon
35 two other plates placed at right angles to the first, these plates being placed film to film with or without a separating layer. The three photographic plates are rendered

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sensitive only to definite colours such as red, yellowish green, and blue or such other colours as may be found desirable, the speed of the plate being different to suit the various intensities of light. According to my invention a dark slide contains the three sensitive plates and the screen or reflector and the carrier is constructed so that when inserted in the camera (in the dark slide or changing box) and the shutter withdrawn the carrier containing two (or one) of the plates is turned into horizontal position while the screen or reflector simultaneously turns about half way, that is, to an angle of about 45° inside the camera. The plates and screen are then in a position to receive the images formed by the lens in the desired manner.

In order that this invention may be more readily understood, reference is had to the accompanying sheet of drawings in which

Fig. 1 is a section of a slide constructed according to my invention showing it in closed position ;

Fig. 2 is a similar view with the slide opened in the position taken upon exposure ; and Fig. 3 is a front view of the open slide.

A is the frame or body of the dark slide of the ordinary double pattern having the sliding shutters or covers *a* at the front and back. In the back of the slide is placed the sensitive plate B, this plate being placed in position as in the ordinary slide, taking up the position however of the plate which is not being exposed in the ordinary photographic process. The other sensitive plates B¹ (two being shown) are placed face to face in the hinged carrier C at the front of the slide. This carrier can drop down into the horizontal position as shown especially in Fig. 2 and is held in that position by the small stop or shoulder *c* which abuts against the division *a*¹ of the slide. As mentioned above the two sensitive plates B¹ can be placed in direct contact with each other or a layer of coloured transparent material can be placed between them, the colour of this layer being that to which the lower film is sensitive.

Between the plates B and B¹ is placed the glass screen or reflector D which is hinged and is adapted to drop down into the position shown in Figs. 2 and 3 at about an angle of 45° to the slide or back plate B. It is retained in this position by any ordinary device such as the fine cord *a* attached to the slide of the carrier.

The general arrangement of the plates according to the method hitherto in use is as follows

The plate B is extremely sensitive to red rays, but is not acted upon appreciably by other colours and the image produced by the lens is thrown directly upon the plate, the light passing through a red glass D on its way to the plate. Part of this light is reflected down by the glass D (which is at about 45°) upon the plates B¹ below, which are placed in such a position that the image is in focus after reflection upon them. The upper one of these plates may be a slow chloride film or plate which is practically sensitive only to blue, and below this plate or film a second plate or film very sensitive to green and yellow is placed, the two films being in contact or separated by a very thin green or yellow colour filter. If the speed of the plates is adjusted properly the plate B will record the image produced by the red rays and the other plates will record the same image produced by the other colours with densities which are in proportion to the natural strength of the different rays.

According however to a novel arrangement I also propose to employ, the blue and green sensitive plates are placed in the back of the slide while a plate very sensitive to red is placed in the carrier C and covered by a red screen or filter, the arrangement being the same as that illustrated in the drawings, the upper plate B¹ representing the red screen. The glass D in this case is not coloured but acts merely as a reflector and not a colour filter. Part of the light passes directly through the glass to the back plates and part is reflected down upon the plate in the hinged carrier passing through the red screen covering it. The action of the apparatus in both cases is substantially the same.

The position of the camera lens and the directions in which the light travels are shown in chain lines in Fig. 2.

On the slide being placed in the camera and after withdrawing the shutter in front in the usual manner for exposure, the hinged carrier and the glass at once drop down

Davidson's Improved Folding Plate Carriers and Reflecting Screen.

into the desired position inside the camera and the exposure can be given in the usual manner. To return the parts into collapsed position before withdrawing the slide the camera can be tilted back or any suitable mechanical device operated from the outside will raise the plates and collapse them into the slide. The slide may of course be reversed so that the hinged plate carrier and reflector are in a horizontal or vertical position according to requirements the action being otherwise similar to that already described with the exception that the light is reflected from the tilted reflector in an upward or sidewise direction.

It is necessary to prevent light passing through the lens directly impinging upon the horizontal plates which should therefore be shielded from the lens an adjustable screen being provided for that purpose.

The hinged carriers and reflector are applicable both to single and stereoscopic work in colours and can also be used to obtain duplicate negatives or positives in one colour simultaneously. The plate holders can be carried in large numbers in a changing box or magazine camera in place of the ordinary dark slides.

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 photographic dark slide a carrier adaptable to any dark slide or changing box, hinged within the slide, turning into position at right angles to the slide for exposure and a screen reflector hinged behind the carrier adapted to turn through about half a right angle and to reflect part of the light from the lens upon the horizontal plates in the carrier, the whole adaptable for three colour photography, substantially as herein described and shown.

(2) In a photographic dark slide having a plate fitted in the carrier at the back, a hinged carrier C at the front carrying plates B¹ and adapted to take up a horizontal or vertical position for exposure, a hinged screen reflector D between the plates B and B¹ and an attachment *d* retaining the reflector at an angle of about 45° to the slide when opened, the whole adapted for three colour photography substantially as herein described and shown.

Dated this 14th day of February 1902.

GEO. H. RAYNER & Co
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Fig 1

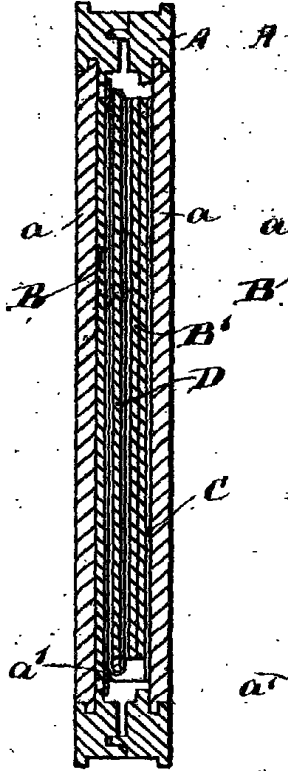


Fig 2

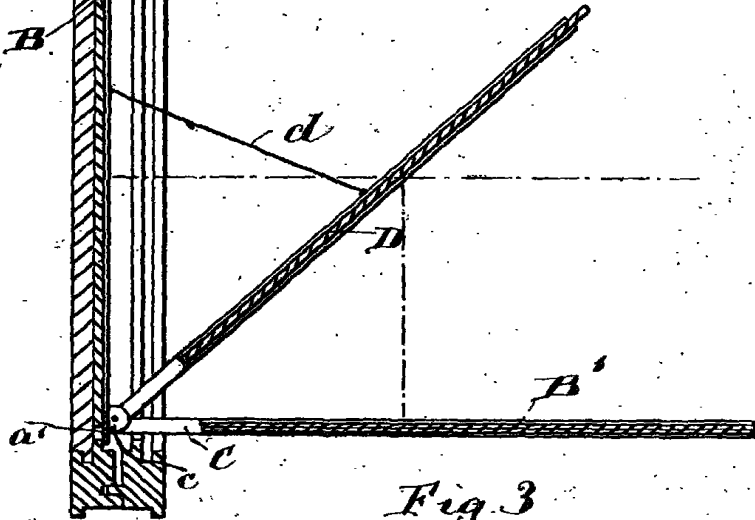
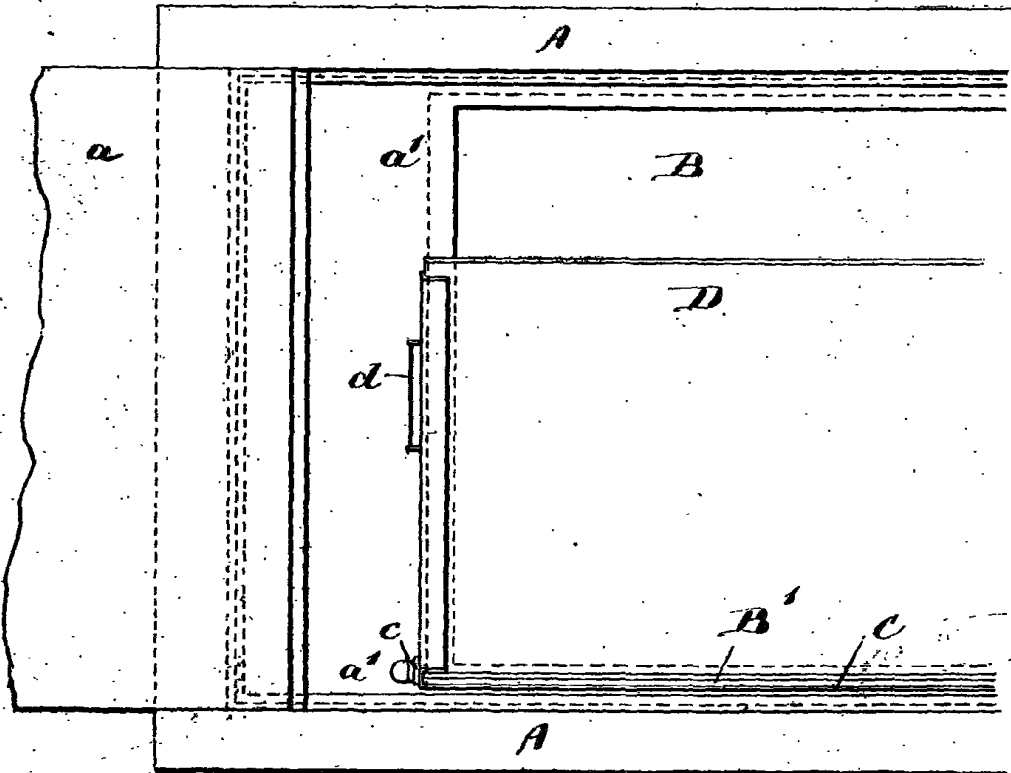


Fig 3



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