





# UNITED STATES PATENT OFFICE.

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## SHUTTER FOR PHOTOGRAPHIC CAMERAS.

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*To all whom it may concern:*

Be it known that I, WESLEY EATON ROBERTS, of Hartford, in the county of Ohio, and State of Kentucky, have invented new and useful Improvements in Shutters for Photographic Cameras, of which the following is a full, clear and exact description.

This invention relates to camera-shutters made up of two pivoted parts or sections controlled as regards their opening movement, which is away from each other, by a hand-bulb pneumatic attachment; and the invention consists in novel means for communicating motion from the pneumatic attachment to the divided shutter, and for securing a close action to said shutter and holding it closed when shut.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both figures.

Figure 1 is an interior view of the front end of a camera with my invention applied, and Fig. 2 a transverse section of the same upon the line *x x* in Fig. 1.

A is the front end of the camera, in the front board, *b*, of which is the usual aperture, *c*, for passage of the light as transmitted through the lens or lenses carried by the tube B, as usual.

CC are the two sections of the divided drop-shutter, pivoted above, as at *d d*, to the board *b*, on its inside, and meeting, when closed, by an overlapping vertical joint in central transverse relation with the aperture *c*, and having the pivots *d d* so arranged that the shutter-sections, when free, close by their own weight within a keeper, D, at their lower ends. This keeper has a stop or partition, *u*, across it in the meeting line of the shutter-sections, and the shutter-sections have notches *v* in their lower ends, so that when said sections come together the partition *u* in the keeper D will stop them, and at the same time allow them to close perfectly tight. Fig. 1 shows by full lines the divided shutter as fully open, and by dotted lines the same as closed.

The board *b'* is independent of the head-block or front board, *b*, of the camera, and may be secured by screws to the latter on its inside, as shown in Fig. 1, whereby said shutter-carrying board *b'* may be attached and detached at pleasure.

The shutter-sections C C are more or less

opened, as required, and for a longer or less period to give the necessary exposure for the taking of the picture, by squeezing with the hand upon an elastic bulb, E, of a pneumatic attachment, such action causing the air in the bulb to be compressed and to be forced along a tube, F, and within a small cylinder, G, fitted on the outer end of said tube, and secured on the top of the forward end portion of the camera-box, over the divided shutter. This cylinder G is fitted with a plunger, H, that, as the air is compressed in rear of it by squeezing of the hand-bulb E, is forced outward and caused to open the shutter-sections from over the aperture *c* by pulling upon a cord, *e*, secured to an arm, *f*, upon the plunger, and which, passing through the top of the camera-box, is connected by a hook, *g*, and loop *h* with a doubled or divided cord, *e'*, that, passing through an eye or guide, *s*, inside of the camera, is attached to the shutter-sections CC upon the off side of their pivots or fulcrums. The hook-and-loop connection *g h* between the cords *e e'*, which virtually form but a single cord, provides for the convenient and ready attachment and detachment of the shutter-sections C C when required.

When hand-pressure is removed from the elastic bulb E, then the plunger H returns to its normal inward position and the shutter-sections C C drop and close, as shown by dotted lines in Fig. 1.

If it is desired to keep the shutter-sections open for any very prolonged period of time, a clamp of any suitable kind may be applied to the tube F, to retain the compressed air back of the plunger H.

When the divided shutter is closed, light is effectually excluded from entering the camera through the lens-tube and aperture *c*.

To prevent any rebound of the shutter-sections as they are closed or brought together, a latch, I, is pivoted, as at *i*, to the one shutter-section and made to automatically engage with a pin or catch, *k*, upon the other shutter-section, and so keep the two shutter-sections closed as they come together. This latch works within a staple, *l*, that serves to guide it and form a rest or support for it. Furthermore, said latch is connected by a cord, *m*, with the cord or cords *e e'*, or, if desired, directly with the plunger H, so that when the divided drop-shutter is opened said latch will be simultaneously



raised or lifted from its engagement with the catch and adjusted or turned to a position out of the way of any interference with the aperture *c* of the camera, as shown by full lines in Fig. 1.

The support for the lens-tube may be suitably constructed, if desired, to provide for a carriage adjustment of said tube. To provide for this the boards *bb'* are made, when secured the one upon the other, to give a combined thickness which will admit of the carriage movement of the lens-tube.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a camera-shutter composed of two independent pivoted rising-and-falling sections, *CC*, and with the flexible air bulb and tube *F*, of the cylinder *G*, plunger *H*, and the cords or cord-sections *ee'*, substantially as specified.

2. The combination, with the camera-box having an exposing-aperture in its forward end, of the pendent shutter-sections *CC*, the keeper *D*, the cords or cord-sections *ee'*, the

hook *g*, the plunger *H*, cylinder *G*, and the air-tube *F* and flexible bulb *E*, essentially as shown and described.

3. The combination, with the pendent shutter-sections and means, substantially as described, for opening the same, of an automatically-closing latch carried by the one shutter-section and adapted to engage with a catch upon the other shutter-section, and a cord or connection between said latch and said shutter-opening means, essentially as specified, whereby the shutter-sections are kept from rebounding when closing and the latch is released and adjusted out of the way simultaneously with the opening of the divided drop-shutter, as set forth.

4. The combination, with the pendent shutter-sections *CC* and the cords or cord-sections *ee'*, adapted to open the divided drop-shutter, of the cord *m*, the latch *I*, and the catch *k*, substantially as shown and described.

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Witnesses:

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