(No Model.)

L. A. DE RIBAS.

DROP SHUTTER FOR CAMERAS.

No. 359,715. Patented Mar. 22, 1887.

Fig. 1.

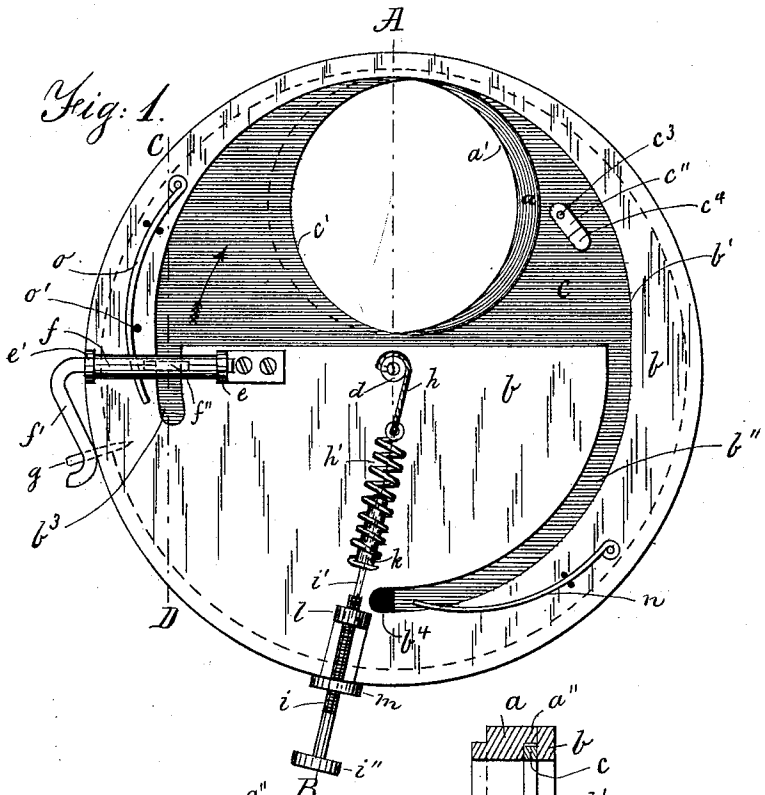


Fig. 3.

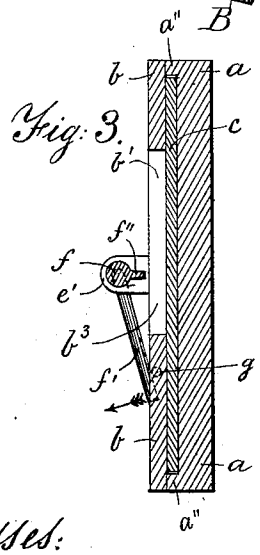
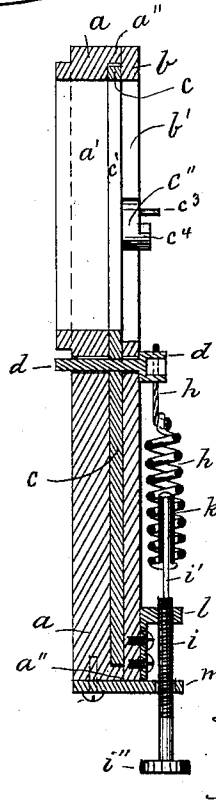


Fig. 2.



Witnesses:
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by
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his atty.

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UNITED STATES PATENT OFFICE.

LOUIS A. DE RIBAS, OF BOSTON, MASSACHUSETTS.

DROP-SHUTTER FOR CAMERAS.

SPECIFICATION forming part of Letters Patent No. 359,715, dated March 22, 1887.

Application filed October 30, 1886. Serial No. 217,568. (No model.)

To all whom it may concern:

Be it known that I, LOUIS A. DE RIBAS, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Drop-Shutters for Cameras, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in drop-shutters for photographic cameras, and it is carried out as follows, reference being had to the accompanying drawings, where—

Figure 1 represents a front elevation of the invention, and Fig. 2 represents a cross-section on the line A B, shown in Fig. 1. Fig. 3 represents a cross-section on the line C D, also shown in Fig. 1.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

a is the circular block or case, provided between its center and outer periphery with a cylindrical perforation, *a'*, into which the outer ring of the lens is inserted when the shutter is to be used. The circular block or case *a* has on its face an annular projection, *a''*, to which is secured in a suitable manner the cover *b*, as shown in the drawings.

In the circular space between the front of the block or case *a* and its cover *b* is loosely arranged the circular shutter *c*, which latter is pivoted in its center to the center of the case *a* and cover *b* by means of the pin *d*, that passes loosely through the case *a* and cover *b*, and is suitably attached to the circular shutter *c*.

c' is a perforation in the shutter *c*, which perforation is of a suitable size and shape, according to the amount of exposure that may be required in taking the desired view or object. To the outside of the circular shutter *c* is secured a small block or lock-piece, *c''*, having locking projections c^3 and c^4, as shown in Figs. 1 and 2. The cover *b* has a semicircular, or nearly so, cut-away portion, *b'*, and concentric slots *b''* and b^3, communicating with the said cut-away portion *b'*, as shown in the drawings.

To the front of cover *b*, near its slot b^3, are secured the bearings *e* and *e'*, in which is journaled the small pin or shaft *f*, terminating outside of the case *a* as a crank or lever, *f'*. (Shown in Figs. 1 and 3.) The pin or shaft *f* has on its under side a locking-tooth, *f''*, adapted to hold the shutter *c* in a closed position when it is swung to the limit of its stroke in an opposite direction to the arrow shown in Fig. 1, and in such closed position the block *c''* is swung backward sufficiently to enter the slot b^3, the tooth *f''* passing between the locking projections c^3 c^4 and resting against the projection c^3. In such locked or closed position of the shutter the crank or lever *f'* is prevented from swinging back of the cover *b* by resting against the stationary pin or projection *g*, secured to cover *b* or its case *a*, as shown in Figs. 1 and 3.

The adjustable mechanism for turning the shutter *c* quickly around its axis as soon as released is carried out as follows: On the front end of the central pin, *d*, is wound and secured the cord, flat spring, or wire *h*, the lower end of which is secured to the upper end of the spiral spring (or elastic) *h'*, as shown in Figs. 1 and 2.

To the lower end of spring *h'* is connected the upper end of the regulating-screw *i*, preferably by means of a rod or wire, *i'*, made in one piece or connected to the screw *i*, the upper portion of which wire *i'* passes loosely through the swivel *k*, that is located within the spring *h'*, as shown in Figs. 1 and 2, the wire *i'* having a head in its upper end resting on top of the swivel *k*, and the latter resting in its lower end on the lower portion of the spiral spring *h'*, by which arrangement the screw *i* may be turned around its axis without turning the spring *h'* or the connection *h*.

l is a nut in which the screw *i* works, such nut being secured to the cover *b*, and the lower portion of said screw is preferably guided in the perforated bearing-piece *m*, secured to case *a* or its cover *b*, as shown in Figs. 1 and 2.

i'' is a serrated knob or thumb-piece in the lower end of the screw *i*, as shown in Figs. 1 and 2, by means of which the screw *i* can be regulated to adjust the power of the spring *h'*, according to the desired velocity with which the shutter is to act when released.

b^4 is a rubber or other elastic bumper, located at the end of the curved slot *b''*, against which the block *c''* strikes when the shutter, after being released, reaches the limit of its

stroke, and it is then prevented from rebounding by the spring *n*, (secured to cover *b*,) the free end of which locks against the projection c^4 on block *c''*, after such projection has passed by the free yielding end of said spring *n*.

The operation is as follows: According to the velocity with which the shutter *c* is to act the tension of the spring *h'* is regulated by means of the screw *i*, as above described. The shutter *c* is then turned around its axis in a direction opposite to that indicated by arrow in Fig. 1, until the projection c^3 on block *c''* has passed by the tooth *f'''* on the pin or shaft *f*, by which the shutter *c* is held locked in a closed position. When it is desired to take the picture, the operator swings the crank or lever *f'* in the direction of the arrow shown in Fig. 3, thereby causing the tooth *f'''* to pass by the projection c^3 and release the shutter *c*, which is instantly turned around its axis in the direction shown by arrow in Fig. 1, and during such movement of the shutter its perforation *c'* for a moment coincides with the case or lens opening *a'*, and as quickly closes the latter. The block *c''* during the closing motion enters the curved slot *b''*, butts against the bunter b^4, and is automatically held at the limit of its stroke by the spring *n*, as above described.

Should it be desired to actuate the shutter *c* in a reverse direction to the one above described, it is only necessary to wind the cord *h* in an opposite direction on the pin *d* and to add a locking-spring, *o*, near the slot b^3, as shown in Fig. 1, such spring when in use being liberated from the pin or catch *o'*, that otherwise holds it in inoperative position. When using the shutter in this manner, it is moved in the direction of the arrow shown in Fig. 1 until the block *c''* reaches the bunter b^4 and the spring *n* locks it against the power of the spring *h'*. When the picture is to be taken, the locking-spring *n* is depressed, when the shutter is swung in a direction opposite to the arrow shown in Fig. 1, by the influence of spring *h'*, until the block *c''* reaches the limit of its stroke in the slot b^3, and there caused to be automatically locked and held by the spring *o* and projection c^3 on block *c''*.

This my improved drop-shutter is very light and simple in construction, is easily set and operated, and can readily be adjusted for varying velocities of exposure, as may be desired for quick and slow plates, or more or less light objects that are to be photographed.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

In a drop-shutter, the perforated case *a a'* and cover *b*, having cut-away portion *b'* and curved slots *b'' b'''*, in combination with the perforated shutter *c c'*, pivoted to the said case and cover, the block and projections *c''* c^3 c^4 on the shutter, the holding and releasing device *f f' f'''*, spring *n*, the adjustable regulating-screw *i*, spring *h'*, and connection *h* to the shutter-spindle, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 25th day of October, A. D. 1886.

LOUIS A. DE RIBAS.

Witnesses:
ALBAN ANDRÉN,
HENRY CHADBOURN.