

(No Model.)

W. E. SCHNEIDER.
SHUTTER FOR PHOTOGRAPHIC APPARATUS.

No. 464,998.

Patented Dec. 15, 1891.

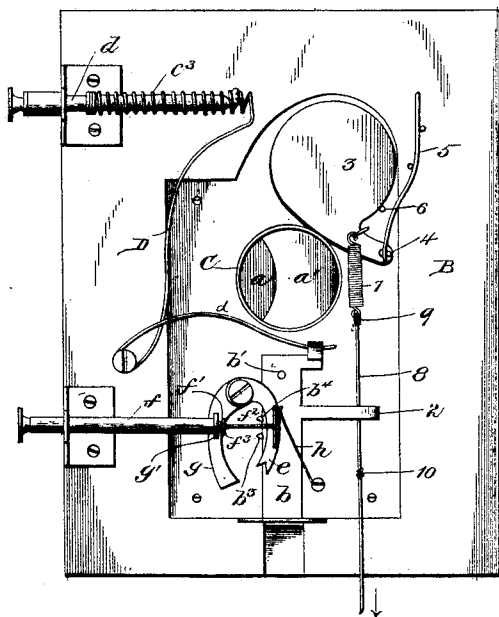


Fig. 1.

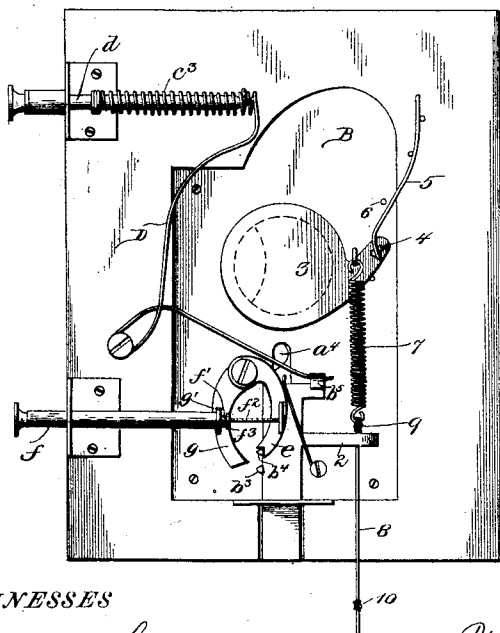


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM E. SCHNEIDER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
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SHUTTER FOR PHOTOGRAPHIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 464,998, dated December 15, 1891.

Application filed January 21, 1891. Serial No. 378,595. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. SCHNEIDER, a citizen of the United States, residing at Washington, in the District of Columbia, have
5 invented a certain new and useful Improvement in Shutters for Photographic Apparatus, of which the following is a full, clear, and exact description.

This invention relates to shutters for photographic cameras, and more particularly to the class of shutters shown in my patents, Nos. 433,745 and 433,746, dated August 5, 1890; and the objects of the invention are to provide a safety device for closing the light-opening
15 automatically as the shutters are being set for operation and to set the escapement-operating rod for use in time and instantaneous exposures.

The invention will be described first and
20 then particularly pointed out and claimed.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is an elevation with the parts in position of
25 disuse, and Fig. 2 is a similar view with the parts set for use.

Parts that correspond in construction and operation to similar parts in my patent No. 433,746 are here reproduced and correspondingly lettered, as follows: B is the front of the camera-frame; C, the light-opening; *a* and *a'*, the leaves of the shutter; *b*, the slide, provided with a pin *b'*, which engages slots *a''* in the leaves to cause the leaves to cross one
35 another as the slide is caused to rise and descend.

*b*³ and *b*⁴ are lugs on the slide.

*b*⁵ is a hook on the slide, engaged by a spring D, one end of which is made with or as a coil
40 *c*³, which is engaged by a hooked rod *d* to vary the effective strength of the spring, and consequently its power relatively to the slide and its appurtenant devices.

e and *g* are the escapement-dogs to co-operate with the lugs *b*³ and *b*⁴ in setting and releasing the shutters for instantaneous and time photography.

f is the rod for disengaging the dogs from the lugs to cause the leaves to act in making
50 an exposure, and *h* is the spring for normally

throwing the dog *e* into the path of movement of the lugs *b*³ and *b*⁴.

In the present invention the end *f'* of the rod *f* is screw-tapped into the lug *g'* on the dog *g* and then reduced, and this reduced
55 portion *f*² is supplied with a check-nut *f*³ to limit the adjustment of the rod *f* for setting the escapement for time or instantaneous photography.

The slide *b* is provided with a laterally-projecting arm 2, which is pierced vertically.

3 is a plate or disk of metal pivoted at 4 and adapted to be swung across and over the opening C. This disk has connected to it a spring 5, which normally tends to keep the
65 said disk in the position shown in Fig. 1—that is to say, away from the opening C—it being arrested in that position by a suitable stop, as a pin 6. Another, and I prefer a spiral, spring 7 is connected to the disk between its
70 pivot and its free end, and to this spring is attached a cord 8, which is passed through the opening in the arm 2. This cord is knotted or provided with an obstruction 9 above the
75 arm, and may be provided also with an obstruction 10 below the arm, which latter prevents the upward escape of the cord when suddenly released. The cord is designed to extend outside the camera.

The operation is as follows: When the parts
80 are not in use, and also after the leaves have been set for operation, or as soon as the cord 8 is free, the spring 5 returns the disk to the position shown in Fig. 1. If it be desired to set the leaves for operation, the cord is pulled in the
85 direction of the arrow, Fig. 1, with but slight if any extension of the spiral spring and the disk is brought down so as to cover the opening C. By further pull upon the cord in the same direction the spring extends and the end
90 of the spring 7 or the obstruction 9 on the cord comes into engagement with the arm 2 and moves the arm and the slide *b* downwardly, thereby causing the shutter-leaves to cross one another and to effect an engagement
95 of the dog *e* with one or the other of the lugs *b*³ or *b*⁴. When the cord is released, the spring 5 carries the disk back into normal position, Fig. 1; but it will be observed that the opening C was closed by the disk 3 while the
100

leaves were being set, and hence no light could pass through such opening, and consequently the plates have been protected from accidental exposure. It will be observed, also, 5 that the leaves cannot be set without first covering the opening by the plate or disk 3; and hence I call this plate or disk a "safety device."

It is obvious that my safety device is applicable to other shutters than the one herein set forth, and I mean to include in my claims herein all forms of shutters to which this safety device is or may be applicable.

It is obvious that the spring 7 admits of the closing of the disk over the opening, and thereafter a further downward pull of the cord to operate the slide to set the leaves while holding the disk in the closed position and against the retractive action of the spring 20 5. Any other form of connector having this capability of action may be used in place of the spring 7 and cord.

What I claim is—

1. A shutter having leaves and an escapement for operating them, combined with a plate or disk pivoted in connection with the exposure-opening and independently of the shutter-leaves, a device for operating the said plate or disk independently of the shutter-leaves, and means for effecting a co-operating connection between the said plate or disk operating device and the escapement for effecting conjoint operation of the said escapement and the plate or disk, substantially as and for 35 the purpose described.

2. A shutter having leaves and an escapement for operating them, combined with a plate or disk pivoted independently of the

shutter and its escapement, and a connector extending from said plate or disk into operative conjunction with the escapement and adapted to actuate the pivoted plate or disk to cover the exposure-opening while the shutter is being set, substantially as described. 40

3. A shutter having leaves and an escapement for operating them having a slide, and a laterally-projecting arm on said slide, a pivoted plate or disk, and a connector extending from said plate or disk to said arm and operable to set the escapement and at the same time cover the exposure-opening, substantially as described. 45 50

4. The leaves and an escapement therefor, including a slide and an arm projecting laterally therefrom, combined with a pivoted disk to cover the opening over which the leaves work for exposing purposes, a spring normally retracting said disk, and a partly-elastic medium connecting the disk and said arm and adapted first to close the disk over the opening and thereafter to actuate the slide to set the leaves while the disk covers the opening and then to release the disk, so as to uncover the opening, substantially as described. 55 60

5. In a shutter, the leaves and their escapement, including the dogs *e* and *g*, combined with the rod *f*, screw-tapped to one of the dogs and provided with a check-nut, substantially as described. 65

In testimony whereof I have hereunto set my hand this 19th day of January, A. D. 1891. 70

WILLIAM E. SCHNEIDER.

Witnesses:

PHILIP F. LARNER,
WM. H. FINCKEL.