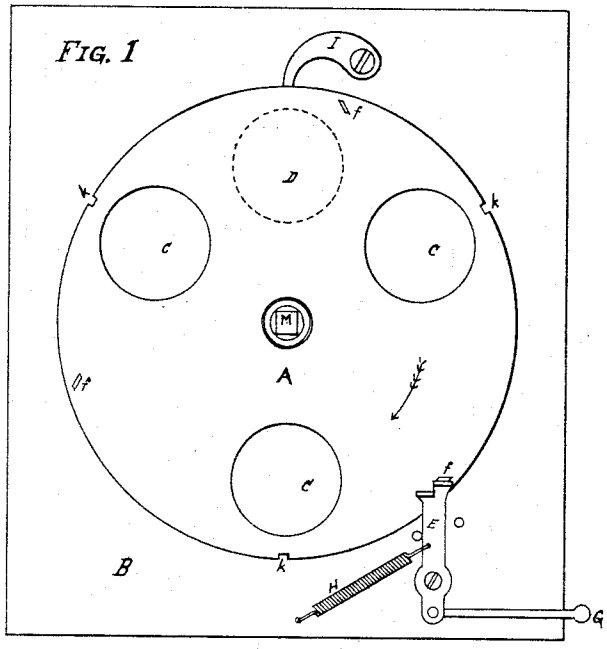
(No Model.)

F. A. HETHERINGTON.

PHOTOGRAPHIC CAMERA SHUTTER.

No. 436,855. Patented Sept. 23, 1890.

FIG. 1



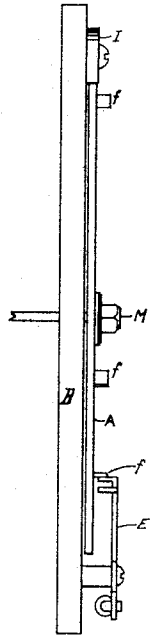


FIG. 2.

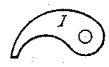
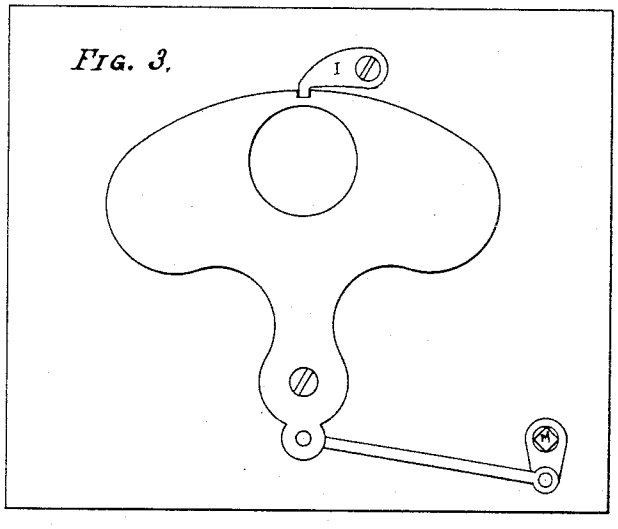


FIG. 4.

FIG. 3.



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FREDERICK ALEXANDER HETHERINGTON, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO THOMAS E. HIBBEN, OF INDIANAPOLIS, INDIANA.

PHOTOGRAPHIC-CAMERA SHUTTER.

SPECIFICATION forming part of Letters Patent No. 436,855, dated September 23, 1890.

Application filed October 22, 1889. Serial No. 327,858. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK ALEXANDER HETHERINGTON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Shutters for Photographic Cameras, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates generally to that class of shutters commonly applied to the "detective" or hand cameras, although it may also be applied to shutters of the tripod class of cameras.

The object of this improvement is to provide a simple and efficient means of arranging the shutter for time exposure when instantaneous exposure is not wanted. I attain this object by the device illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a shutter of the intermittent rotary type, showing my improvement attached. Fig. 2 is an edge view of the same. Fig. 3 is a front view of a shutter of the vibrating or oscillating type and illustrates the application of my improvement to that style of shutters. Fig. 4 is a detail of the pawl I.

Similar letters refer to similar parts in all the views.

In the intermittent rotary shutter, as shown in Fig. 1, A is a thin disk of rubber or other suitable material.

B is the shutter-board, in which the disk is journaled by the shaft or pivot M, the outer end of which is squared to receive a key.

The dotted circle D represents the hole in the shutter-board A through which light passes to the lens.

C C C are the holes cut through the disk A, equidistant apart. As the shutter is rotated in the direction of the arrow each one of these holes will in turn pass by the opening D in the shutter-board.

This style of shutter is constructed with three small projecting dogs or lugs, as shown in *f f f*. These lugs engage with the trigger E, which is so constructed that it is impossible for the shutter to make more than one-third of a revolution each time the trigger is pressed.

In the illustration, H is a spiral spring, and G is a small wire having a button at the end for the finger. The shutter is geared by a simple clock mechanism, so that its tendency is to rotate in the direction of the arrow. It is restrained by the foot-piece or flange of the trigger E. If the button G be pressed inward, it will throw the trigger E over so that the lug *f* will slip down onto the lower flange of the trigger. It is kept there by the pressure of the operator's finger until ready for exposure, when the trigger is released, and the disk, being freed, makes one-third of a revolution, and the next lug of the disk engages with the trigger. It is often desirable, however, to hold the opening C in a fixed position opposite the opening D for making timed exposure, and to accomplish this is the object of my improvement, as before stated. To attain this object I cut notches in the periphery of the disk, as shown at *k k k*. I then pivot to the shutter-board B a small gravity-pawl I. This pawl is hung loosely, and is arranged to drop into the notches either by gravity or by the application of a spring back of it. I prefer to allow gravity alone to accomplish this purpose, although a spring may also be used in cases where necessary.

It will be readily seen that when the shutter is being used for instantaneous exposure it will revolve so quickly that the pawl cannot have time to drop into the notches provided for it, and it will therefore not interfere with instantaneous exposing. If, however, it is desired to set the shutter for time exposure, it is only necessary to apply a key to the squared shaft M and turn the shutter slowly backward. The pawl will then without any special adjustment automatically drop into a notch, and thus lock the shutter in that position. It is of course understood that when this operation is performed a cap or plug is placed in the exterior opening in the end of the camera proper. The

time exposure is then made by using the cap or plug in the usual manner. If it be desired to again arrange for instantaneous exposure, it is only necessary to apply the key as before and give the shutter a quick backward rotary movement. The pawl will then lift, and the shutter-lug can be again brought to engage with the trigger E.

In Fig. 3 is shown how this device may be applied to an oscillating or vibrating shutter. It may be in the same manner applied to reciprocating shutters.

I am aware that rotary and vibratory shutters are in use, and therefore do not claim the shutter, broadly; but

What I do claim, believing to be new, and desire to protect by Letters Patent, is—

In a camera-shutter, the combination, with the shutter-disk provided with peripheral notches, of a gravity pawl or dog independent of the releasing-trigger and adapted automatically to engage such notches in time exposure and pass over said notches in instantaneous exposure, substantially as described.

FREDERICK ALEXANDER HETHERINGTON.

Witnesses:
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