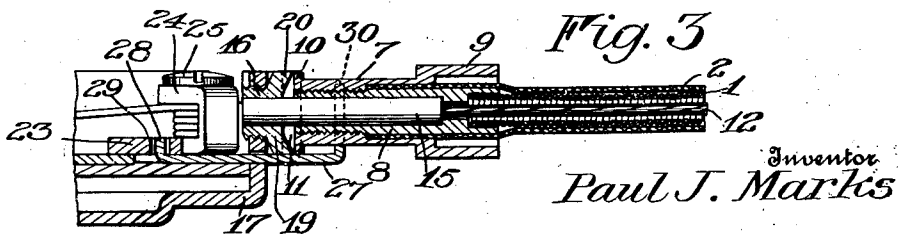
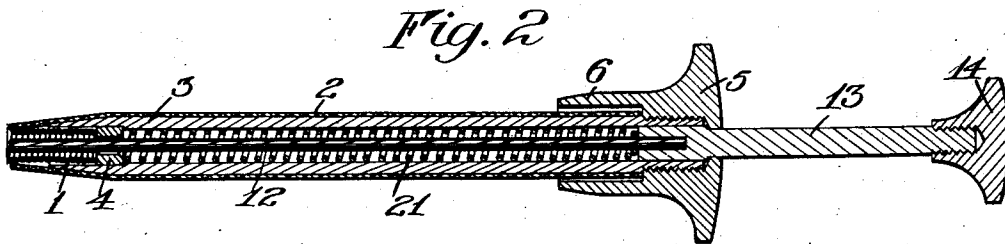
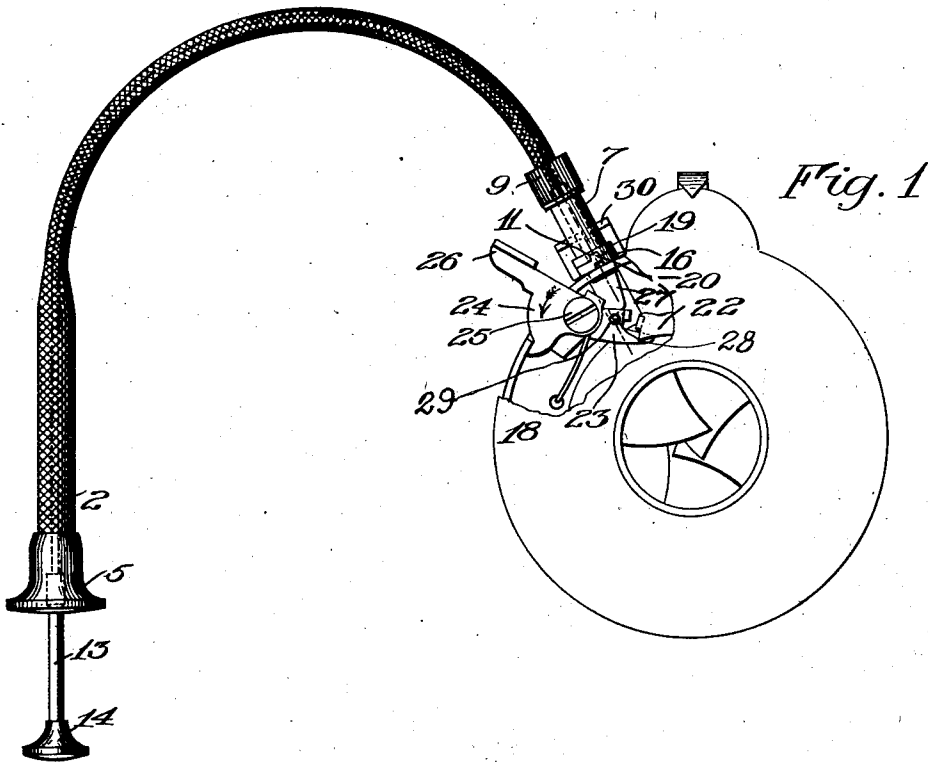


P. J. MARKS.
SHUTTER OPERATING DEVICE.
APPLICATION FILED NOV. 4, 1915.

1,179,205.

Patented Apr. 11, 1916.



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By *Charles Rich*
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UNITED STATES PATENT OFFICE.

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SHUTTER-OPERATING DEVICE.

1,179,205.

Specification of Letters Patent.

Patented Apr. 11, 1916.

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To all whom it may concern:

Be it known that I, PAUL J. MARKS, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Shutter-Operating Devices; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to photography and more particularly to shutter operating devices of the class known as "cable releases" which are designed to take the place of the ordinary bulb and tube for pneumatically effecting "bulb" exposures and "time" exposures.

The invention has for one of its objects to provide a device of this character that will trip the shutter by a pulling motion instead of a thrusting motion but which will still be simple in construction and in the mode of its attachment to the shutter casing or support.

To these and other ends the invention resides in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a front elevation of a photographic shutter provided with an operating device constructed in accordance with and illustrating one embodiment of my invention, a part of the cover plate of the shutter being broken away to reveal interior parts; Fig. 2 is a central longitudinal section through the outer end and finger grip of the operating member on an enlarged scale, and Fig. 3 is a similar enlarged sectional view through the inner or attaching end of the member.

Similar reference numerals throughout the several figures indicate the same parts.

In the present embodiment of the invention, I provide an outer tubular, flexible casing formed by a tightly wound wire helix 1 with a braided covering 2. This covering or stocking as it is called, is woven in such a way as to make it inextensible while the helical core 1 has its convolutions in contact with each other making it incompressible. The casing as a whole, therefore, is both inextensible and incompressible. At its

outer end the core 1 (Fig. 2) is secured within a rigid sleeve 3 adjacent to a fixed thimble 4, to the exterior of which sleeve the stocking 2 is also secured. The sleeve terminates in a pull button 5 and a collar 6 thereon conceals the attached end of the stocking. The inner end of the casing is also connected to a sleeve 7 having a tubular plug 8 threaded therein in fixed relation and between which plug and the sleeve 7 the stocking 2 is confined. The extremity of the core 1 is secured within the plug 8, as shown in Fig. 3. The sleeve 7 is formed with a knurled enlargement 9 and its end face is enlarged by a flange 10 to constitute a clutch member having a diametrical recess 11.

Within the casing is a flexible but incompressible cable 12 so that the casing and cable are relatively movable longitudinally. The outer end of the cable is fixed to a stem 13 passing centrally through the pull button 5 and itself terminating in a push button 14. The inner end of the cable carries a rod 15 on which the sleeve 7, through the medium of the plug 8, is adapted to slide. The rod 15 has fixed thereto a nut 16 threaded into the casing or support 17 of the shutter, indicated generally at 18 in Fig. 1. The nut has a clutch face 19 opposed to the clutch 10 on the sleeve 7 and provided with a diametrical rib 20. This rib may be seated in the recess 11 by the rotation of the sleeve 7 on the rod 15 until they come in register and the parts are then locked together for joint rotation.

An expansive spring 21 within the sleeve 3 bears against the fixed thimble 4 at one end to act against the casing and against the end of the stem 13 at the other to act upon the cable 12 about which latter the spring is coiled. This normally holds the stem 13 extended from the casing and the two clutch faces 10 and 19 against each other.

The tip of the master member of the shutter is shown at 22 in Fig. 1 and with it co-operates a finger 23 on the shutter operating member 24 pivoted at 25 and having the finger portion 26 for direct operation. When the operating member 24 is rocked in the direction indicated by the arrow, the finger 23 rides against the master member 22 and actuates the shutter. I also connect to the shutter operating or controlling member 24 a slide 27 suitably guided in the shutter cas-

ing and having a projection 28 that takes into an aperture 29 in the finger 23. The slide terminates exteriorly of the casing in an offset forked abutment 30 which embraces the sleeve 7 in the path of the flange 10.

The operation of the device is obvious. As the buttons 5 and 14 are pressed together between the fingers, the thrust is taken by the cable 12 against the shutter casing and the pull is taken by the casing surrounding the cable so that the sleeve 7 slides outwardly on the rigidly anchored rod 15. In so doing, the flange 10 comes in contact with the forked abutment 30 and pulls out the slide 27 rocking the member 24 and tripping the shutter.

The device may be easily applied to or detached from the shutter. To remove it from the attached position shown in the drawings, the clutch faces 10 and 19 are engaged so that the rod 15 and with it the cable and the sleeve 7 and with it the casing 1—2 are turned together through the medium of the knurled finger portion 9 on the sleeve. The nut 16 is thus unscrewed and may thence be passed laterally out from beneath the forked abutment 30, the normal position of the latter being sufficiently spaced from the shutter casing to permit of this. The device is applied to the shutter casing by a reversal of these movements.

I claim as my invention:

1. The combination with a shutter embodying a support and a shutter controlling element, of an inextensible, flexible, tubular casing connected to the shutter controlling member and an incompressible thrust member contained therein and connected to the shutter support.

2. The combination with a shutter embodying a support and a shutter controlling element, of an inextensible, flexible, tubular casing adapted to operate the shutter controlling member, an incompressible thrust member slidably contained therein and having a threaded portion and interlocking con-

nections between the casing and thrust member for rotating the latter through the medium of the former to screw the thrust member into and out of the shutter casing.

3. The combination with a shutter embodying a support and a shutter controlling element, of an inextensible, flexible, tubular casing adapted to operate the shutter controlling member and terminating in a sleeve having a clutch face and an incompressible thrust member slidably contained therein and terminating in a nut threaded into the shutter support and provided with a clutch face cooperating with that on the casing for the joint rotation of the sleeve and nut.

4. The combination with a shutter embodying a support and a shutter controlling element having a forked abutment, of an inextensible, flexible, tubular casing terminating in a sleeve having a collar adapted to detachably engage with the forked abutment and provided with a clutch face, and an incompressible thrust member slidably contained in the casing and terminating in a nut threaded into the shutter support and comprising a collar having a clutch face cooperating with that on the casing sleeve for the joint rotation of the sleeve and nut.

5. A shutter operating device comprising a flexible casing and a cable slidably contained therein, one of which is incompressible and the other inextensible, the cable terminating in a threaded portion rotatable through the medium of the casing.

6. A shutter operating device comprising a flexible casing terminating in a sleeve provided with a clutch face and a cable slidably contained therein and terminating in a threaded nut having a clutch face adapted to cooperate with that on the sleeve for joint rotation of the cable and casing, one of the latter elements being inextensible and the other incompressible.

PAUL J. MARKS.

Witnesses:

FRANK M. PAGE,
EDITH WATERSTRAAT.