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J. H. HAMMER.

PHOTOGRAPHIC SHUTTER OPERATING MECHANISM.

APPLICATION FILED AUG. 18, 1903.

NO MODEL.

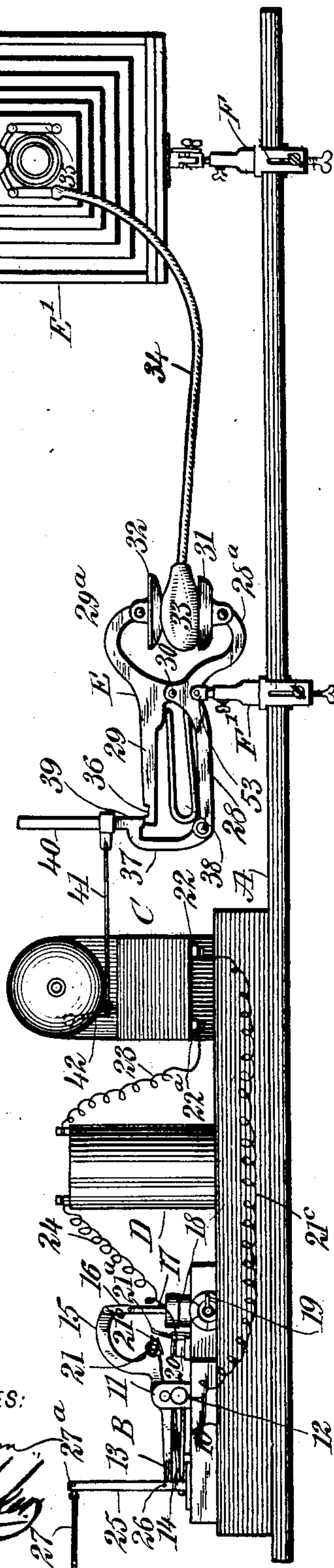
Fig. 1.

Fig. 2.



WITNESSES:

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PHOTOGRAPHIC-SHUTTER-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 762,711, dated June 14, 1904.

Application filed August 18, 1903. Serial No. 169,911. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. HAMMER, a citizen of the United States, and a resident of Marquette, in the county of Marquette and State of Michigan, have invented a new and Improved Photographic-Shutter-Operating Mechanism, of which the following is a full, clear, and exact description.

My invention relates to an improvement in photographic apparatus, and especially to apparatus designed to automatically operate a camera for instantaneous photography.

The purpose of the invention is to provide a trigger-operated cushion-controlled device for making and breaking a circuit connection with an alarm device, a bulb-operating device operated by the alarm device, the bulb acted upon being connected with the shutter of a camera, and means whereby the trigger may be brought into action manually or through suitable connections with an alarm-clock or trap to effect a closure of the said circuit whereby the device may be set to provide for an automatic instantaneous photographing of animals, birds, or the like or moving objects.

Another purpose of the invention is to provide supports for the bulb-operating device and the camera which enables such parts to be vertically adjusted, rotated, and arranged at any desired inclination.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a side elevation of the apparatus in its entirety, and Fig. 2 is a detail perspective view of a portion of an arm of the circuit-controlling device and a portion of the trigger for holding the arm in a given position.

A represents a support of any suitable character adapted to carry the various parts of the apparatus. These parts consist, primarily, of an electric controller B, connected with an alarm device C and a battery D or

other source of electrical supply located between the electric controller and the said alarm device, being in circuit connection with both.

E represents a bulb operating or compressing device, E' a camera the shutter of which is operated through the medium of the bulb-compressing device, and F and F' represent brackets which are employed, respectively, to hold the camera on the support A and to connect the bulb operating or compressing device E with the said support.

The electric controller consists of a base 10, from which metal uprights 11 are carried, and one of these uprights is provided with a binding-post 12, as is shown in Fig. 1. Between the upper ends of the upright 11 an arm 13 is pivoted, which arm extends upward from the said uprights and then inward, as is also shown in Fig. 1. A spring 14, located between the outer or longer end of the arm 13 and the base 10, acts to normally carry the outer end of the arm 13 upward. At the inner end of the arm 13 a curved head 15 is located, and this head is connected by a link 16 or its equivalent with a pump consisting of a plunger-rod 17, the plunger whereof operates in a cylinder 18, carried by the base 10, as is also shown in Fig. 1. This cylinder at its bottom portion is provided with the usual controlling-valve whereby to regulate the amount of air to be forced out therefrom by the plunger in a given time. The valve is set by operating a finger 19, attached to the stem of the valve and located at one side of the base, the said finger being adapted to travel over a suitably-divided scale.

A second binding-post 20 is secured to the base 10, adapted to be engaged by a contact-point 21, pivotally located, preferably, where the arm 13 connects with its head 15, as is also shown in Fig. 1, and such contact occurs when the outer end of the arm 13 has been forced upward by the aforesaid spring 14. This contact is what I denominate a "safety-contact," the main contact 21" being an upright spring-tongue connected with the screw-key or binding-post 20, which tongue has an outwardly-offset upper portion adapted when

the head 15 of the arm 13 descends to engage with a nose projection 21^b at the inner end of said arm 13.

If the pump is air-tight, it will regulate the time at which the exposure is to be made, according to the setting of the valve of the pump, and after the exposure and the contact is made to close the circuit the alarm will be continuously sounded until the head 15 is again raised. It is possible, however, that the pump may leak or that the valve may be out of order to such an extent as to permit the projection 21^b of the head to drop out of engagement with the contact 21^a, and thereby stop the alarm. In such an event the auxiliary contact 21 will engage with the post 20 and insure a continuance of the alarm until the circuit is purposely broken; but the auxiliary contact may at the option of the operator be turned to one side, and thus be out of action.

The alarm device C is in the nature of a gong and may be of any approved type electrically operated. A wire connection 21^c is made between the binding-post 12 and a binding-post 22 on the alarm device, a second wire connection 23 being made between a second post 22^a on the alarm device and a post on the battery D, while a third connection 24 is made between a second post on the battery and the binding-post 20, carried by the electric controller, as is fully shown in Fig. 1.

The arm 13 of the electric controller B is normally held in a lower position, compressing the spring 14 by means of a trigger comprising a post 25, mounted to turn in the base 10, and a pin 26, which extends from the post to an engagement with the upper face of the aforesaid arm 13, as is illustrated in Figs. 1 and 5. An arm 27^a, attached to the post 25 and extending outwardly at an angle thereto, has attached to it a link, cable, or cord 27, and the said link, cable, or cord may be connected with a suitable mechanism on an alarm-clock or with a trap, so that when a certain time arrives the post 25 of the trigger will be returned to release the arm 13 and close the circuit between the controller and the alarm device or when a trap is sprung the same result will be obtained; but it will be understood that the trigger may be operated by hand when so desired.

The bulb operating or compressing device E consists of a lower arm 28 and an upper arm 29, pivotally connected, as is shown at 30 in Fig. 1, and at the same end of each arm 28 and 29 curved heads 28^a and 29^a are respectively secured to or made integral with the said arms; but the two heads 28^a and 29^a curve in direction of each other and are one below the other.

A cup 31 is pivotally attached to the head 28^a of the lower arm 28, while a convexed plate 32 is pivotally attached to the head 29^a

of the upper arm 29, the said convexed plate 32 being immediately over the cup 31.

The bulb 33 ordinarily employed in operating the shutter 35 of the camera E' is connected with the said shutter by the conventional rubber tube 34, and at what may be termed the "outer" end of the upper arm 29 a recess 36 is produced, while a latch 37 is pivoted to the corresponding end of the alarm-arm 28 of the bulb operating or compressing device, being so curved that at its upper end a shoulder 39 is formed adapted to engage with the outer end of the upper arm 29 of the said bulb-operating device and hold the convexed plate 32 so far from the cup 31 as not to press the bulb 33, placed between these two parts, and at this time a spring 38, located between the two arms 28 and 29, is placed under compression.

The latch 37 is provided with an upwardly-extending bar 40, which may be integral therewith, and a link or cord connection 41 is provided between the said extension 40 from the latch and the hammer of the alarm device, as is also shown in Fig. 1.

When the shoulder 39 of the latch 37 is made to enter the recess 36 in the upper arm 29 of the bulb operating or compressing device, the two arms are locked in their open position, and should the alarm device be accidentally operated it will have no effect upon the arms to release the upper one and compress the bulb located between the cup and plate carried by the arms. When the bulb operating or compressing device is set up, the operation and position of the parts are those shown in Fig. 1.

I provide two brackets F and F', which are of the same construction, one of the brackets being adapted to support the camera E' and the other the bulb operating or compressing device E, and the brackets can be fastened to any suitable support.

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

1. A photographic apparatus, comprising an electric controller, an alarm device in electric circuit with the controller, means for operating the controller, and a bulb operating or compressing device, connected with the alarm device and brought into compressing action by the closing of the circuit between the said controller and the alarm device, as described.

2. In a photographic apparatus, a device for operating a camera-shutter, and an electric controller governing the operating action of the shutter-controlling device and comprising a pivoted and spring-controlled arm, a contact carried by the said arm, a second contact with which the contact of the arm is adapted to engage and releasable means for locking the arm with the contacts separated, as described.

3. In a photographic apparatus, an electric controller, a trigger arranged to normally hold the controller out of operative position, a bulb-operating device, a latch adapted to hold the bulb-operating device out of operative position, and means for releasing the latch from locking engagement with the bulb-operating device, influenced by the operative action of the electric controller, as set forth.
4. In a photographic apparatus, an electric controller, an alarm device, an electric circuit in which the controller and the alarm device are located, a trigger adapted to hold the controlling device normally out of operative position, a bulb operating or compressing device, a latch adapted to hold the parts of the said device out of normal operative position, and means for releasing the latch, controlled by the alarm device, as set forth.
5. In a photographic apparatus, an electric controller including a cylinder, a piston operating therein and an adjustable valve for said cylinder for regulating the rapidity of the action of the controller, a bulb operating or compressing device, a lock-latch for the said device, and means for carrying the lock-latch from locking position, controlled by the said electric controller, as set forth.
6. In a photographic apparatus, an electric controller, comprising a base, a spring-controlled arm pivoted on the base, a contact carried by the said base, a second contact carried by the arm, and a trigger for locking the arm, so that the two contacts will be separated, as described.
7. In a photographic apparatus, an electric

controller, comprising a base, a spring-controlled arm pivoted on the base, a contact carried by the said base, a second contact carried by the arm, a trigger for locking the arm so that the two contacts will be separated, a valve-controlled cylinder, a piston for the cylinder, and a connection between the piston-rod and the said arm, as described.

8. In a photographic apparatus, a bulb operating or compressing device, comprising pivotally-connected arms, a tension device located between the arms, oppositely-curved heads carried by the arms, a tension device acting to normally carry the said heads in direction of each other, and a latch pivoted to one arm and adapted for locking engagement with the other arm, as described.

9. In a photographic apparatus, a bulb operating or compressing device, comprising pivotally-connected arms, a tension device located between the arms, oppositely-curved heads carried by the arms, a tension device acting to normally carry the said heads in direction of each other, a latch pivoted to one arm and adapted for locking engagement with the other arm, a cup carried by the head of one of the arms, and a plate fitted to the cup, carried by the head of the opposing arm, for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN H. HAMMER.

Witnesses:

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PETER J. BLOM.