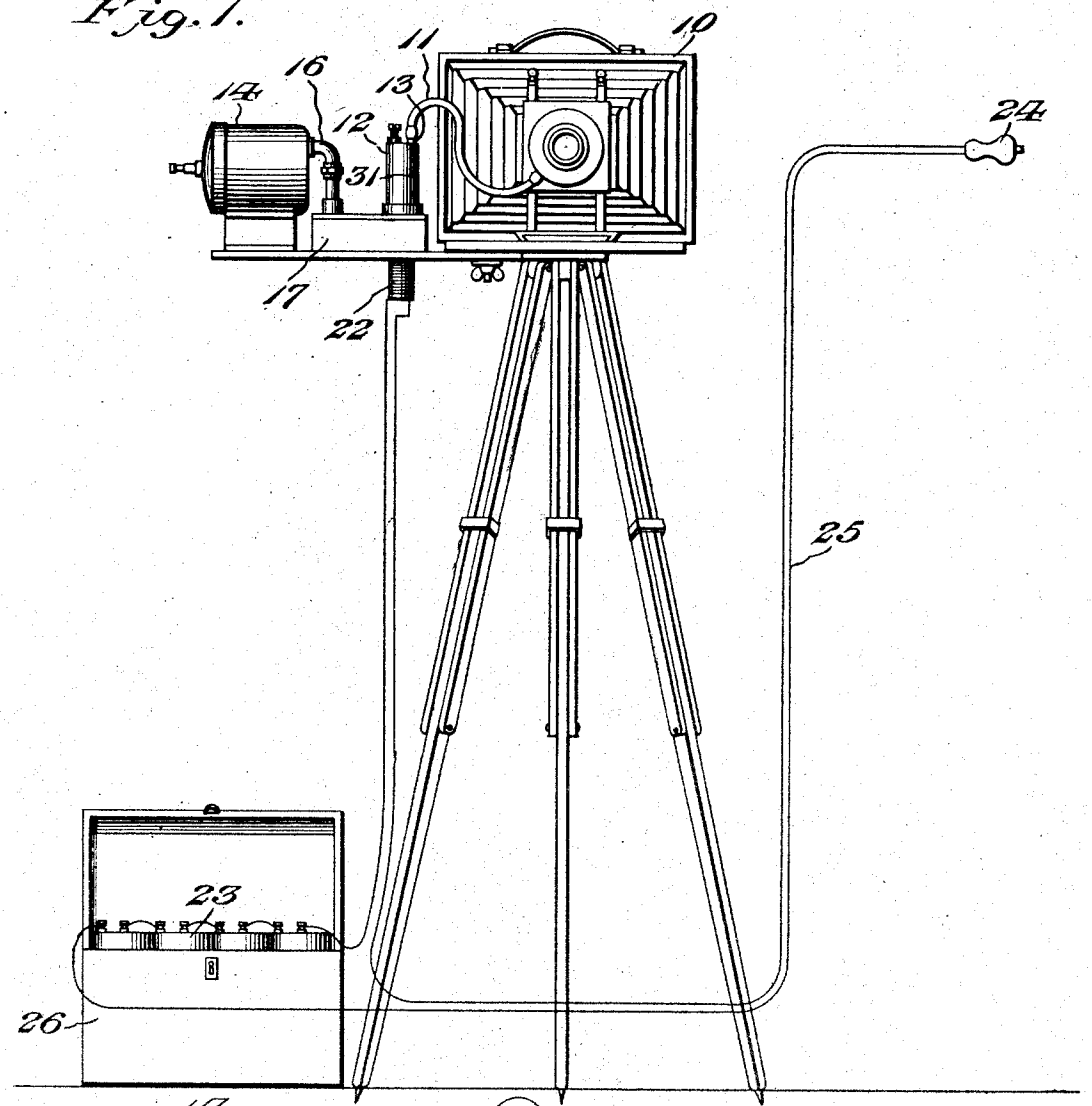
H. B. EMMRICK.

SHUTTER ACTUATING APPARATUS.

APPLICATION FILED JULY 20, 1918.

1,344,997. Patented June 29, 1920.

Fig. 1.



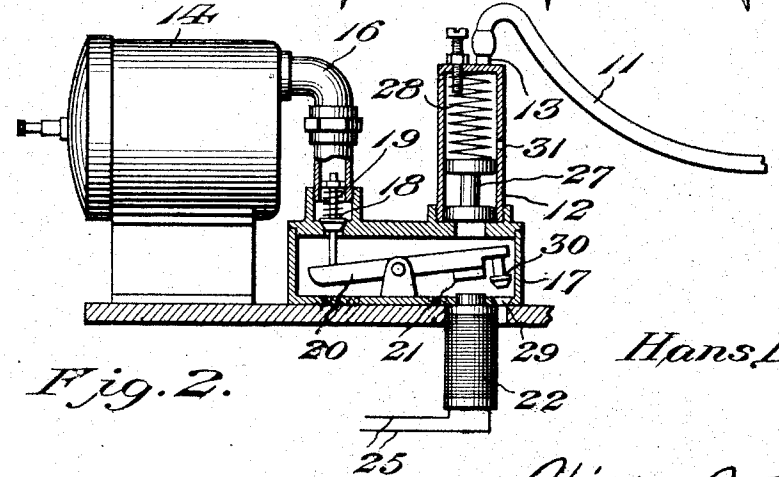


Fig. 2.

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SHUTTER-ACTUATING APPARATUS.

1,344,997. Specification of Letters Patent. Patented June 29, 1920.

Application filed July 20, 1918. Serial No. 245,875.

To all whom it may concern:

Be it known that I, HANS B. EMMRICK, a citizen of the United States, residing at Giddings, in the county of Lee and State of Texas, have invented new and useful Improvements in Shutter-Actuating Apparatus, of which the following is a specification.

The object of the invention is to provide a simple and relatively inexpensive apparatus by means of which a camera shutter may be operated either for snapshots or time exposures, from a point at a distance from the camera so that the operator may be included in the photograph and yet be able to absolutely control the time and duration of the exposure to suit the conditions under which the photo may be taken.

Further objects and advantages will appear in the following description, it being understood that changes in form and proportion may be resorted to within the scope of the appended claims without departing from the spirit of the invention.

In the drawings:—

Figure 1 is a general view of an apparatus embodying the invention.

Fig. 2 is a detailed view partly in section of the apparatus showing the application of or connection with a camera.

In the illustrated embodiment of the invention the camera which may be of any ordinary type indicated at 10 is provided with the usual flexible tube 11 ordinarily provided with a bulb for controlling the operation of the shutter, but in lieu of such a bulb the apparatus includes a cylinder 12 which is in communication by means of a nipple 13 with said tube. A reservoir 14 having a nipple 14^a with which may be connected an ordinary bicycle pump or the equivalent thereof for producing a desired pressure within the reservoir, is in communication by means of a tube 16 with a pressure chamber 17, the communication between said reservoir and chamber controlled by a valve 18 which is yieldingly held seated by means of a spring 19. This valve is carried by or connected with a lever 20 provided with an armature 21 arranged in operative relation with an electro-magnet 22, in circuit with a battery or series of cells 23 or other source of electrical energy controlled by a switch such as of the push button type indicated at 24, any suitable length of connection 25 being arranged between the switch and the battery and magnet which are preferably arranged in a small compact space and housed for example as in a convenient portable casing 26.

Within the cylinder 12 which is in communication with the pressure chamber 17 is located a piston 27 yieldingly held in a repressed position by an actuating spring 28 which is adapted to be compressed to cause a discharge of air from the upper portion of the cylinder to the shutter actuating means through the tube 11 by an increase of pressure in the chamber 17 sufficient to move the said piston in opposition to the spring 28.

The reservoir being charged with a suitable pressure of air, introduced for example as above suggested, and the several connections having been made as indicated, the closing of the circuit through the battery and magnet by the operation of the switch 24 will cause the attraction of the armature 21 and the unseating of the valve 18 which admitting pressure to the chamber 17 will result in the actuation of the piston and the discharge from the upper end of the cylinder 12 of a sufficient quantity of air to actuate the camera shutter and if a snapshot is to be taken it is simply necessary to momentarily close said circuit and then permit it immediately to open whereupon the pressure within the chamber 17 will escape through the outlet 29 and the spring 28 will restore the piston to its normal position and permit the camera shutter to close. On the other hand if a time exposure of any desired duration is required, it is simply necessary to maintain a closed circuit through the magnet for the required length of time, the lever 20 being provided with a closure 30 for the outlet 29 when the armature is in its attracted position and the valve 18 is open. Also in order to avoid the application of excessive pressure to the piston an air vent 31 may be provided in the cylinder 12 and said vent will also serve as an additional leakage port to relieve pressure within the chamber 17 and cylinder after the valve 18 has been seated by the opening of the circuit through the electromagnet.

It will be understood that from the foregoing description the operation of a camera shutter may be effected with the same accuracy and under substantially the same conditions as in the ordinary practice, by means of an apparatus arranged as indicated, even though the operator may be located at a

considerable distance from the camera, because the column of air used in the actuation of the shutter and the parts controlling its movement is no longer than ordinarily used where the shutter is actuated by the bulb, whereas if the tube leading into the shutter from the bulb were of a length sufficient to permit the operator to occupy a distant station, the compression of the air in the course of transmission of the pressure would detract materially from if not destroy the efficiency of the same. When the circuit in the present apparatus is closed, the action with reference to the admission of operating air from the reservoir to the piston cylinder is instantaneous, and while the advantages of the use of air in the operation of the shutter are thereby retained, the loss of energy due to the transmission of pressure through a long conductor is avoided.

Having described the invention I claim:—

1. An apparatus for the purpose described having a cylinder and piston, a pressure chamber in communication with the cylinder, a compressed air reservoir for communication with said pressure chamber, a yieldingly seated valve for controlling communication between said reservoir chamber, an escape port in the reservoir chamber, an electro-magnet and armature of which the latter is connected with said valve, a closure carried by the armature for closing the escape port, and a battery and switch in circuit with said electro-magnet.

2. An apparatus for the purpose described having a cylinder and piston adapted to furnish a blast of shutter actuating pressure to a camera, a pressure chamber in communication with the piston cylinder and provided with an outlet, an air pressure reservoir in communication with said pressure chamber, a yieldingly seated valve for controlling communication between the reservoir and said pressure chamber, a lever connected with said controlling valve, an electro-magnet and armature of which the latter is carried by the said lever, a closure for said outlet carried by the lever and adapted to be seated when the armature is attracted, and a source of electrical energy and a switch in circuit with said magnet.

In testimony whereof I affix my signature.

HANS B. EMMRICK.