May 4, 1926. 1,583,601

H. U. MITCHELL

DELAYED ACTION ELECTRIC SWITCH

Filed Jan. 21, 1926

Fig. 1.

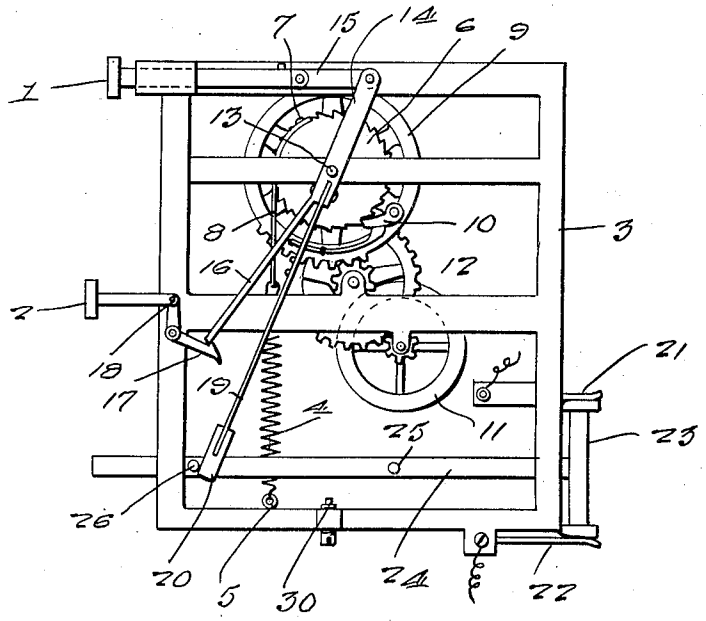


Fig. 2.

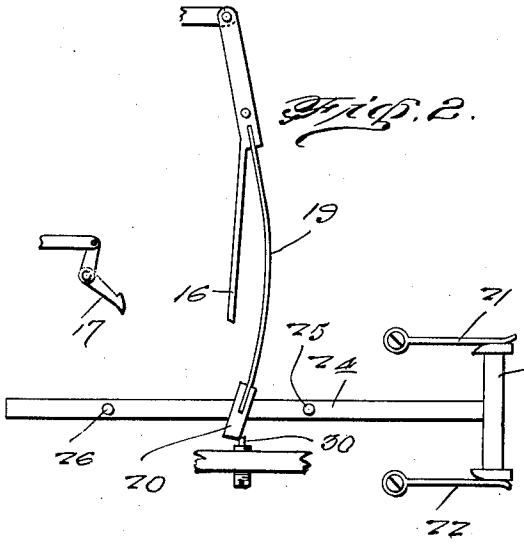
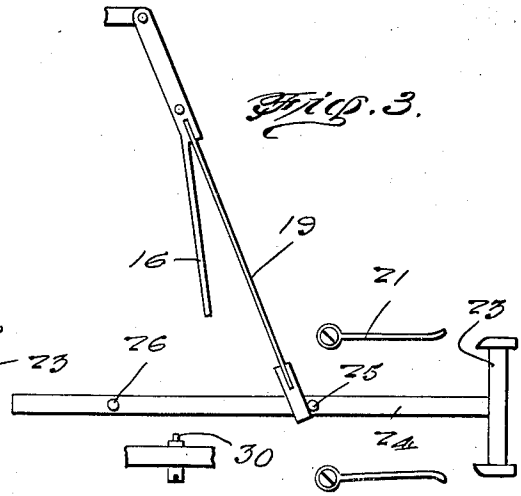


Fig. 3.



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UNITED STATES PATENT OFFICE.

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DELAYED-ACTION ELECTRIC SWITCH.

Application filed January 21, 1926. Serial No. 82,721.

To all whom it may concern:

Be it known that I, HAROLD U. MITCHELL, a citizen of the United States, residing at Medford, in the county of Jackson and State of Oregon, have invented certain new and useful Improvements in Delayed-Action Electric Switches, of which the following is a specification.

My present invention pertains to electric switches such as are designed more especially for use in lighting circuit; and it contemplates the provision of a delayed action electric switch—i. e., a switch calculated to interrupt a lighting circuit not at the time when an operator pushes a button, but at a time later than the pushing of the button, this in order to enable the operator to move about an illuminated house or apartment after pushing the button to bring about extinguishing of the light, the operator being assured that after the lapse of a predetermined space of time following the operation of the button the circuit will be interrupted and the lights extinguished.

To the attainment of the foregoing, the invention consists in the improvement as hereinafter described and definitely claimed.

In the accompanying drawings, forming part of this specification:—

Figure 1 is a view illustrative of one means for carrying my invention into effect.

Figures 2 and 3 are detail views of the switch mechanism comprised in said means and hereinafter explicitly referred to.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

It is within the purview of my invention to employ any means for accomplishing the purpose hereinbefore set forth, the means illustrated being simply by way of explanation and clearness.

Among other elements the means illustrated comprises manually operable elements 1 and 2, preferably in the form of push buttons as illustrated. Said means also comprises an appropriate frame 3, a retractile spring 4 connected at one end 5 to the frame 3, and a ratchet disk 6 to which is appropriately connected at 7 one end of a cable 8, the other end of which is connected to the end of the retractile spring 4 remote from the connection of said spring to the frame 3 at the point 5. A spur gear 9 is arranged alongside the ratchet disk 6 and is equipped with a pawl 10 for cooperation with the teeth of the said ratchet disk. At 11 is an appropriate governor, and by reference to Figure 1 it will be noted that the said governor 11 is connected by a train of gearing 12 with the spur gear 9. Fulcrumed at 13 on the frame 3 is a lever 14 connected by a link 15 with the before mentioned push button 1. The said lever 14 is provided with an arm 16 for cooperation with a keeper 17 of lever type connected at 18 to the push button 2. It will also be noted that the said lever 14 carries a spring strip 19 on which is a hammer head 20. At 21 and 22 are terminals designed to be incorporated in a lighting circuit with one or more lamps and a source of electric energy, and at 23 is a conductive bridge which in the position shown in Figure 1 is designed to complete the electric circuit, and in the position shown in Figure 3 is designed to render such circuit interrupted or broken. The bridge or contact device 23 is carried by a rectilinearly movable and appropriately guided bar 24, the said bar 24 being provided with lateral projections 25 and 26 for cooperation with the hammer head 20 as hereinafter set forth. Also for cooperation with the hammer head 20 in the manner hereinafter set forth is a projection 30 on the frame 3.

In Figure 1 the bridge or contact device 23 is shown interposed between and in electric connection with the terminals 21 and 22, and hence the lighting circuit will be completed through the element 23. Assuming now that a person in authority wishes to bring a delayed breaking or interruption of the lighting circuit and the extinguishing of the light or lamp after the lapse of a predetermined period of time, it is simply necessary for such person to press inwardly on the button 2 so as to effect the release of the arm 16 of the lever 14; it being understood in this connection that the fulcrum portion of the lever 14 and the ratchet disk 6 are fixed with respect to each other and are adapted to turn or swing as one piece. From this it follows that on the release of the arm 16 from the keeper 17, the contraction of the spring 4 will bring about movement of the disk 6 and the lever 14 in counterclockwise direction, and this movement will be a slow or delayed movement because of the accompanying movement of the spur gear 9 connected by the train of gearing with the governor 11. Incident to such movement the hammer head 20 will bring up against the

projection 30 on the frame 3 and the spring strip 19 will be bowed and put under tension, and then following the tensioning of the strip 19, the hammer head 20 will slip out of engagement with the projection 30 and by striking the lateral projection 25 of the bar 24 will suddenly impel said bar 24 toward the right and thereby bring about removal of the bridge or contact piece 23 from between the terminals 21 and 22, so that the lamp in the circuit will be extinguished.

It will be understood from the foregoing that an appreciable interval of time will elapse between the inward pushing of the button 2 and the extinguishing of the lamp in the lighting circuit as is highly desirable in practice.

For the setting of my novel switch and the establishment of the light in the lighting circuit, it is simply necessary for the person in authority to press inwardly on the button 1, whereupon the spring 4 will be put under tension, and the spring strip 19 will be swung toward the left in Figure 1 so that the hammer head 20 by cooperation with the lateral projection 26 on the bar 24 will move the bridge or contact piece 23 into position between the terminals 21 and 22. This condition will attain until the button 2 is pressed inwardly as before described.

It will be gathered from the foregoing that in its broad aspect my invention consists in a delayed action electric switch calculated to maintain the lamps in a lighting circuit in operation for a material period of time after the actuation of the element, movement of which is calculated to bring about extinguishing of the lamps.

With respect to the embodiment illustrated and specifically described, I would have it understood that I prefer in practice to employ the construction disclosed. I do not desire, however, to be understood as confining myself to the specific construction and relative arrangement of the parts, my invention being defined by my appended claims within the scope of which changes in structure and in relative arrangement of parts may be made without departure from my invention.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:—

1. In a delayed action electric switch and in combination, a frame, a movable circuit breaker, a movable operative controlled element, and slow moving mechanism arranged to be set in motion by the movement of the operative controlled element; said mechanism including a projection on the frame, a spring strip movable with said slow moving mechanism, and a head on the strip and adapted to bring up against said projection for the tensioning of the spring strip and also adapted after said tensioning to bring about sudden release of the head from the projection whereby the head will be impelled against the circuit breaker for the movement of the latter.

2. In an electric time switch for delayed action purposes and in combination, a frame, a movable circuit breaker, an operative controlled movable element, a keeper connected with and movable by the same, a second movable operative controlled element, swingable means connected with the second-named operative controlled element and having an arm for cooperation with said keeper and also having a spring strip and a head on the free portion thereof, said head for cooperation with the circuit breaker, means on the frame for cooperating with said head and bringing about tensioning of said strip, and spring means for bringing about slow movement of said swingable element subsequently to the release of the arm thereof from the keeper.

3. In an electric time switch for delayed action purposes and in combination, a frame, a movable circuit breaker, an operative controlled movable element, a keeper connected with and movable by the same, a second movable operative controlled element, swingable means connected with the second-named operative controlled element and having an arm for cooperation with said keeper and also having a spring strip and a head on the free portion thereof, said head for cooperation with the circuit breaker, means on the frame for cooperating with said head and bringing about tensioning of said strip, and spring means for bringing about slow movement of said swingable element subsequently to the release of the arm thereof from the keeper; the said spring means including a ratchet disk movable with the swingable element, a gear, a pawl carried by the gear and engaged with the ratchet disk, and means connected with said gear for delaying rotation thereof.

4. In a delayed action electric switch and in combination, a frame, a circuit breaker, operative controlled movable elements, a keeper complementary to one of said elements, spring means, a swingable element movable against the action of said spring means into engagement with said keeper, means for retarding movement of the swingable element in the opposite direction, a connection between the swingable element and the other operative controlled movable element, a spring element carried by the swingable element and adapted when released to impel the circuit breaker, and means cooperating with said spring element for the tensioning of said element and for the sudden release of the same following such tensioning.

5. In a delayed action electric switch and in combination, a frame, spaced terminals, a circuit maker and breaker movable toward

and from a position between said terminals and having a rectilinearly movable bar and projections thereon, a projection on the frame, operative controlled movable elements, a keeper connected with and movable by one of said elements, a swingable element connected with the other operative controlled element and having an arm to engage said keeper and also having a spring strip terminating in a head, a projection on the frame for cooperating with said head in the tensioning and subsequent sudden release of the spring strip, a ratchet disk connected and movable with said swingable element, a retractile spring connected at one end with the frame, a cable interposed between and connected to the opposite end of said retractile spring and the ratchet disk, a gear, a pawl carried by said gear for cooperation with the ratchet disk, and means for retarding or delaying rotation of the said gear.

In testimony whereof I affix my signature.

HAROLD U. MITCHELL.