C. PRICHARD.

TIME MECHANISM FOR OPERATING VALVES, SWITCHES, AND THE LIKE.

APPLICATION FILED NOV. 28, 1911.

**1,047,563.** Patented Dec. 17, 1912.

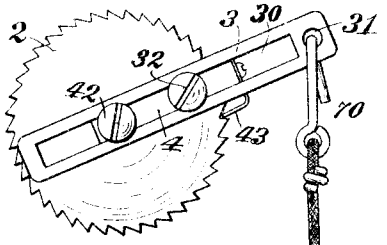



Fig. 1.

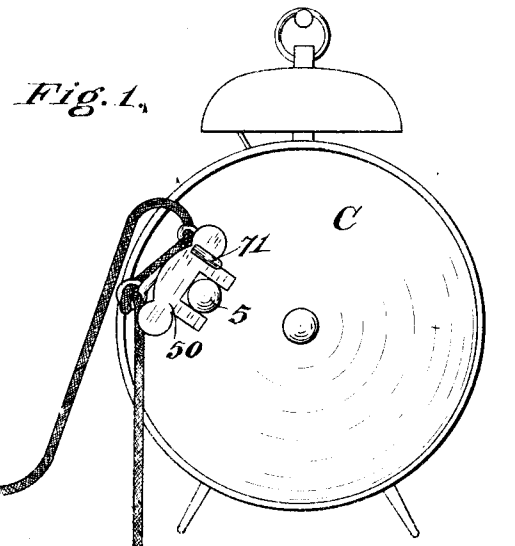
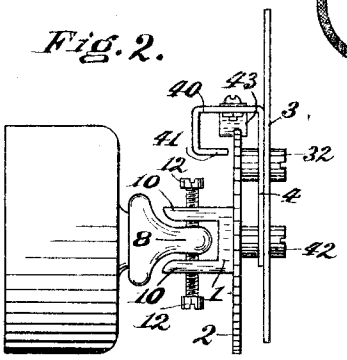



Fig. 2.



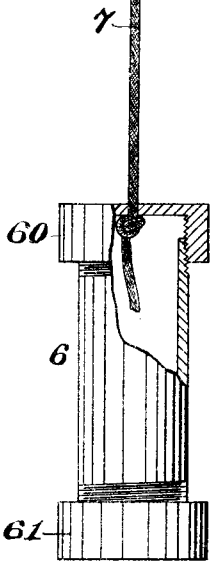




Fig. 4.

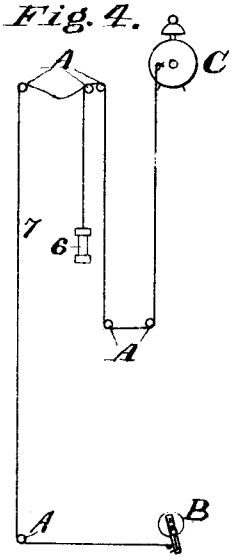



Fig. 3.

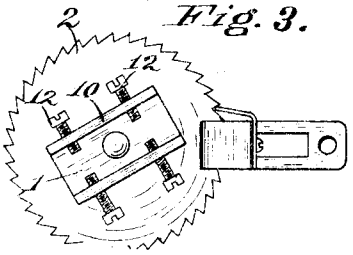
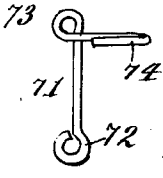



Fig. 5.

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# UNITED STATES PATENT OFFICE.

CHANNING PRICHARD, OF SEATTLE, WASHINGTON.

## TIME MECHANISM FOR OPERATING VALVES, SWITCHES, AND THE LIKE.

1,047,563. Specification of Letters Patent. Patented Dec. 17, 1912.

Application filed November 28, 1911. Serial No. 662,939.

*To all whom it may concern:*

Be it known that I, CHANNING PRICHARD, a citizen of the United States, and resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Time Mechanisms for Operating Valves, Switches, and the Like, of which the following is a specification.

My invention relates to time controlled mechanisms, and particularly to an automatic mechanism for operating switches, valves and like mechanisms.

The object of my invention is to produce a device which shall be reliable, simple and cheap in cost for controlling such devices as electric light switches, gas and water cocks and valves and like mechanisms.

My invention comprises the novel parts and combinations of parts which will be hereinafter described and particularly pointed out in the claims.

In the accompanying drawings I have shown my invention in the form which is now preferred by me.

Figure 1 shows all the parts of my device assembled in the position occupied when in use. Fig. 2 is a side view of the part of the apparatus which is connected with the switch to be operated. Fig. 3 is a back face view of the device shown in Fig. 2 in edge view and in Fig. 1 in front face view. Fig. 4 shows diagrammatically my device under conditions in which certain of its parts are separated some distance. Fig. 5 shows, separately, the hook by which the device is connected with the clock.

One of the purposes for which my invention has been designed, is the control of electric lights, either to turn them on or off at a given time without requiring the presence of any person at that time to operate the switch. The same apparatus can also be used for turning on or off gas under similar conditions. It may also be used to control water supplies, or, in fact, any supply or apparatus which may be controlled in such manner as by the turning of a shaft or swinging of a lever. I will describe it as employed in the control of electric lights, it being understood that it may be similarly employed for other analogous purposes.

Electric currents used for lighting are quite commonly controlled by means of a switch which is given a quarter turn to shift from the position of "on" to the position of "off". The most common form of these switches has a small thumb piece or key having a flat terminal body, as is shown at 8 in Fig. 2. For use upon such a switch I provide a base body 1 having two flanges 10 separated so as to straddle the key 8, and also provided with set screws 12 by which it may be secured firmly to the key. If another kind of electric key or switch were used another means of securing the base to the key might be used.

Secured to the base 1, or supported therefrom, is a lever 3, which, preferably, is adjustable, both in length and in angular position relative to said base. The adjustable length may be secured by having a section 4 fixed in position and a section 3 provided with a slot 30 and secured to the fixed section by means of screws or bolts 42 and 32.

The adjustment in angular relation may be secured by securing a ratchet wheel 2 to the base 1 and providing the fixed section 4 of the lever with a pawl 43 which engages the teeth of this wheel. The lever turns upon the screw 42 as a pivot and its angular position is determined by the point where the pawl engages the teeth of the wheel 2. By this expedient it is possible to adjust the lever in the exact position required, irrespective of the position which the switch key may occupy.

To actuate the switch key I employ, preferably, a weight, and connect it with the lever 3 by a cord 7. This weight in its preferred form consists, as shown, of a pipe section 6 having its ends closed by caps 60 and 61, one of which (the upper) has a central hole for the passage of the cord 7. Any surplus cord may be coiled within the pipe, and, if a heavier weight should be required, this may be secured by placing shot or any other heavy substance within the casing. This is a matter of convenience in making the device adjustable so as to adapt it to differing conditions.

The cord may be secured to the lever 3 by a hook, as 70, which engages over the lever or enters a hole, as 31. Intermediate the

weight and this hook, is secured another hook 71, which is adapted to engage a time released or operated member of a clock mechanism, thereby supporting the weight until released by this clock mechanism to thereby operate the switch.

I have shown at C a common alarm clock, this having an alarm-winding key 50, mounted upon the arbor 5 of the alarm mechanism. The hook 71 is passed over this winding key and the weight is supported thereby until the alarm goes off. When this occurs the winding key 50 turns backward, whereby the hook 71 is released, allowing the weight of the weight 6 to be brought suddenly upon the lever 3, thereby turning the switch key. This action may serve to either turn the current on or turn it off, depending upon which position the key occupied before. As the lever is pivoted upon the switch key and its angular position is determined by the ratchet tooth with which its pawl engages, the pull of the cord may come from any direction which may be desired. Also, the lever may be reset into operative position by simply throwing it back the required distance.

The clock and its weight may be removed and stored, or used elsewhere when not needed for this work. When it is desired to use it for this purpose it is but a minute's work to attach it to the switch. The part B, by which is meant the mechanism shown in Figs. 2 and 3, may be removed from the switch key if desired, but this is small enough to hardly be in the way.

In Fig. 4 I have shown, diagrammatically, how the different parts may be placed some distance apart, being connected to operate together by the cord 7 which is lengthened for this purpose. This cord is passed through or over guides A, these being screw hooks, pulleys, or any convenient equivalent device. I have shown the inner, non-adjustable member 4 of the lever, as having its outer end bent over the ratchet wheel 2 and then backward to form a guard and safety support 40, 41, for the lever to prevent the lever being pulled over sidewise. It also serves as the support for the pawl 43.

It is evident that the exact mechanism herein shown may be connected with a common gas cock to turn it off or on as desired. The same may be done with water cocks or valves. If more power is needed for any particular use or location, this may be supplied by making the weight heavier. If it is desired to control a switch of the kind known as a knife switch, the cord 7 may be connected directly with the handle of the switch. In fact, the device may be adapted to almost any type of device of this character.

What I claim and desire to patent is:

1. In a device for automatic operation of valves, switches and like mechanisms, in combination, a base provided with means for securing it to the mechanism to be operated, a lever composed of two parts, one pivoted upon the base and the other adjustable lengthwise upon the first to vary the length of the whole, a cord or like flexible member adapted to be secured to the outer or longitudinally adjustable member of the lever, means for securing the inner or pivoted member of the lever to the base in any desired angular position, a weight secured to said cord, and a time controlled mechanism adapted to support said weight and to release it at a predetermined time.

2. In a device for automatic operation of valves, switches and like mechanisms, in combination, a base provided with means for securing it to the controlling member of said mechanisms, a ratchet wheel fixed to said base, a lever provided with a pawl adapted to engage said ratchet wheel to hold said lever in any desired angular position, a cord or like flexible member adapted to be secured to said lever, a weight secured to said cord, an alarm clock having an external winding key, a hook secured to said cord and adapted to engage said winding key to support said weight.

3. In a device for automatic operation of valves, switches and like mechanisms, in combination, a base having separated flanges adapted to embrace a switch key, clamping screws in said valve, a ratchet wheel secured to said base, a lever composed of two sections, one pivoted centrally upon said ratchet wheel and carrying a pawl adapted to engage the teeth of said wheel, the other section of the lever having a slot and clamping screws passing through said slot and engaging the other lever section, whereby the length of the lever may be adjusted, a cord having a hook adapted to be secured upon the adjustable section of said lever, a weight secured to said cord and adapted to operate the switch when released, an alarm clock having an exterior alarm-winding key, a hook secured to said cord and adapted to engage said alarm-winding key to thereby support the weight.

4. In a device for automatic operation of valves, switches and like mechanisms, in combination, a base having flanges and clamping screws therein adapted to engage the switch key, a ratchet wheel secured to said base, a lever composed of two sections, one pivotally mounted central of said ratchet wheel and having its outer end bent over the edge of the ratchet wheel and down to a point adjacent the opposite side of said wheel, a pawl secured to this lever section and engaging with said wheel, the other lever section having a slot embracing the pivot of the first section, a clamping screw passing through said slot and into the other

section, a cord adapted to be secured to said lever, a weight secured to said cord, an alarm clock having an exterior alarm-winding key, a hook secured to said cord and adapted to engage said alarm-winding key to support the weight.

In testimony whereof I have hereunto affixed my signature at Seattle, Washington, this 16th day of November, 1911.

CHANNING PRICHARD.

Witnesses:
H. L. REYNOLDS,
R. J. COOK.