

A. S. GREENWOOD,
TIMED OR INTERMITTENT OPERATING DEVICE.
APPLICATION FILED JULY 12, 1920.

1.376.531.

Patented May 3, 1921.

FIG. 1.

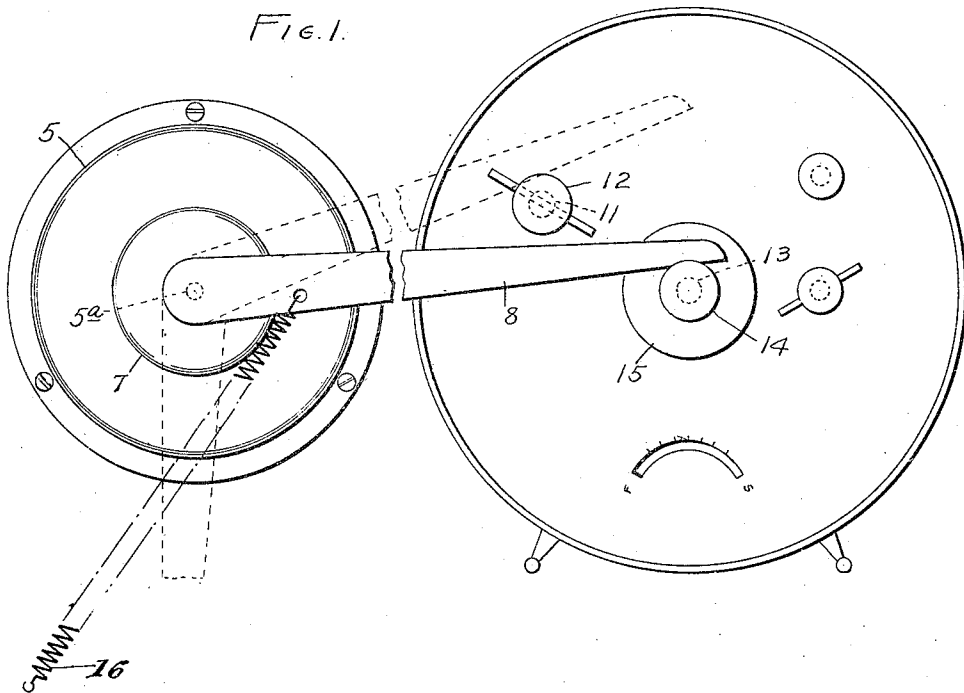
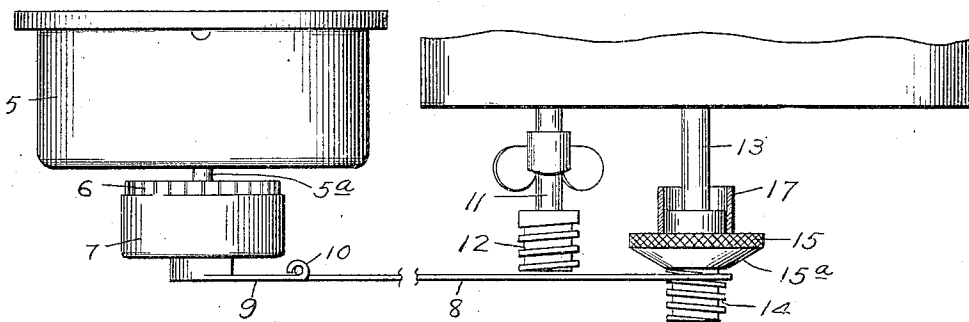


FIG. 2.



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TIMED OR INTERMITTENT-OPERATING DEVICE.

1,376,531.

Specification of Letters Patent.

Patented May 3, 1921.

Application filed July 12, 1920. Serial No. 395,694.

To all whom it may concern:

Be it known that I, ALEXANDER S. GREENWOOD, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Timed or Intermittent-Operating Devices, of which the following is a full, clear, and exact description.

My invention has relation to a device for timing the operation of electric switches, water cocks, steam valves, and the like, and, while it will be found that my device is equally applicable to any type of a shut-off or valve, I have described the same herein as applied to the well-known type of snap-switch for electric circuits.

As stated, my improved device will be found to be especially adapted for use in connection with the operation of an electric switch for controlling the illumination of store and shop windows, electric signs, and all other locations where it is desired to continue illumination for a definite or predetermined period. It is the custom of many shop-keepers to illuminate their windows and sometimes portions of their stores during the evening and part of the night after the closing time, and at stated times a patrolman, watchman or other attendant turns off the lights from a switch outside the store. The human factor of course enters into this character of service because the owner must depend entirely upon the reliability and regularity of the attendant who may from some cause fail to travel his route, and thus the lights will remain burning until the store has been reopened the following morning.

Mechanical and automatic devices have also been employed for turning off the switch and many of these involve such alteration of the electric wiring that they fail to meet the requirements and approval of certain municipal fire regulations. My device, however, is in the nature of an attachment that is adapted to be coordinated with the typical button or turning knob of an approved snap-switch, and has for one of its objects the provision of a structure that may be adjusted and set at any time, and will automatically rotate the knob or button of the switch to light the lamps at a specified time, and later will further rotate the knob or button to extinguish the lamps after they have been lit for a predetermined period.

Among the further objects of my invention are the provision of a device of the kind set forth that is simple in construction and easy to operate or adjust, that is dependable in its operation, and which is economical to construct so that it may be manufactured and sold to the user at a moderate price. Also it is an object of my invention to provide a device of this nature that is made of a minimum of simple parts and is therefore capable of being readily installed by unskilled persons without the use of tools and without altering or interfering with the electrical equipment to which it is attached.

I prefer to accomplish the divers objects of my invention in substantially the manner hereinafter fully described, and as more particularly pointed out in the claims, reference being had to the accompanying drawings that form a part of this specification, in which,

Figure 1 is a vertical elevation of my invention attached to an electric snap-switch.

Fig. 2 is a top plan thereof.

The drawings, are, in a sense, merely diagrammatical for the purpose of illustrating one simple embodiment of my invention, and by referring thereto it will be seen I have employed similar reference characters to designate the same parts throughout the divers views.

As is well known in most alarm-clocks the winding key for the alarm rotates during the ringing of the alarm which takes place at a definite time. I have made use of this rotative action of the winding key to turn on the switch to light the lamps. Likewise, the minute-hand spindle also rotates slowly and coincident with the movement of the minute-hand around the clock-face, and similarly I have utilized this action of the minute-hand spindle to release the switch operating member to give a second turn to the switch and extinguish the lights.

In the drawings, 5 indicates the box or casing of a switch of the "snap" type through which the operating spindle protrudes, and is provided with a turning knob, key, button, or the like, 6 that is usually intermittently rotated to open and close an electric circuit in which lamp sockets are interposed. A cylindrical or other suitably shaped cap 7, closed at its outer end, is removably mounted and frictionally retained upon the element 6, and extending laterally from this cap is an arm or lever 8, which

may be either rigidly secured thereto as shown in Fig. 1 or pivotally connected to a lateral projection 9 by a hinge 10, as will be observed in Fig. 2 of the drawings.

5 In both constructions however the arm 8 is long enough to extend across the vertical plane of the axis of the minute-hand spindle.

I prefer to employ an ordinary alarm-clock for operating arm 8, and I enlarge and
10 extend the alarm-winding spindle 11 a short distance to provide the same with a plurality of threads 12, as seen in Fig. 2, so that the lower edge of the arm 8 will ride in the depression or groove between two threads thereof and when the spindle 11 rotates during the unwinding of the alarm spring the arm will be moved horizontally to the end of the spindle where it will be freed or released. This releasing of the arm 8 permits the outer end thereof to gravitate to the horizontal plane of the minute-hand spindle 13 which I have likewise enlarged and extended axially, as seen in the drawings, and have provided it with threads 14 for the engagement
25 thereof by the lower edge of arm 8. As the minute-hand spindle 13 rotates once each hour the length of time arm 8 remains upon the same is regulated by the number of threads between the contacting edge of the arm 8 and the outer end of spindle 13. Upon
30 reaching the outer end of the spindle 13 the arm 8 is freed therefrom and moves or gravitates to a vertical position, as indicated in dotted lines in the drawings. Divers means may be utilized to adjust the device to permit the lights to remain lighted for divers predetermined periods of time, and I have shown a washer or nut 15 threaded upon the spindle 13 and having a beveled outer face
40 15^a to guide the lower edge of the arm 8 to its proper position upon the threads of the minute-hand spindle 13. By adjusting the nut or washer longitudinally upon the spindle 13 the desired number of threads 14 may be left uncovered and thus permit the arm to remain supported upon the spindle a predetermined number of hours.

In operating the device for controlling store-window and similar illumination, the alarm is "set" in the usual manner for the hour at which the lights are to be turned on and the arm 8 is swung around and placed on the spindle as shown in dotted lines in Fig. 1 of the drawings. It will be understood the switch spindle 5^a will be rotated by this movement of the arm so that it is ready to snap on the switch, and upon the starting of the alarm the arm is moved laterally by the threads 12 until it is freed therefrom at the end of the threads on the spindle whereupon the arm falls off and rests upon the lower spindle 13, thus turning on the switch and starting the lights. If it is desired to illuminate the window for example from 6:30 p. m. to 10:30 p. m. (four

hours) the nut or washer 15 is turned until four threads are left uncovered on spindle 13, and the arm will therefore remain upon the latter spindle until the minute-hand has made four circuits of the clock-face whereupon the threads will free the arm from the outer end of the spindle. It will of course be understood the washer adjustment is made at the same time the alarm is set so that the device needs no further attention. 75 The arm having been released from the clock spindle will be swung to a vertical position, and in its travel to the lower position it will turn off the switch and extinguish the lights at the desired hour. It may be found necessary to assist the gravitation of the outer end of the arm 8, and in such event I either weight the same or employ a light coiled spring 16 one end whereof is connected to the arm intermediate its ends and the opposite end whereof is fixedly secured in any suitable manner. 85

It may be found desirable to permit the lamps to burn all night or until they have been manually extinguished, and in order to permit this being done I provide a hollow stub extension 17 projecting from the rear face of the nut 15, that has a bore slightly greater than the external diameter of the threads 14. Thus, when the device is "set" the nut 15 is screwed outwardly toward the outer end of the spindle 13 so that the rear face of the nut will be beyond the vertical plane of the outer end of the spindle 11 so that the threads back of the nut are covered by the stub 17, and when the arm 8 falls from the end of spindle 11 its lower edge will rest upon the outer surface of the stub and the nut will prevent the arm being moved farther laterally and consequently no further turning of the switch takes place and the lamps remain burning until the switch is turned off manually. 100 105

While I have herein described a specific manner of carrying out my invention, it is obvious that modifications thereof may be made without departing from the principle involved, because, as above stated, the device is capable of adaptation to valves, cocks, shut-offs, and other structures as well as to electric switches. Such changes as may be found necessary I desire it understood are contemplated as coming within the scope of my invention as expressed in the appended claims. 110 115 120

What I claim as new is:—

1. Means for operating an element to be controlled, comprising an arm pivotally mounted at one end and operatively connected to said element, a member supporting the movable portion of said arm and adapted to release said arm to initially move the element, and a second member adapted to receive and support said arm after its release from the first-mentioned member, 130

whereby the releasing of said arm from the second member permits the same to gravitate and further move the element.

2. An actuating device comprising a clock-work including an alarm spring winding spindle, and a minute-hand spindle, both spindles extended outside the casing of the clock-work, said spindles having threads upon their outer portions and positioned in different horizontal planes, in combination with an element to be operated, and an arm pivoted at one end and having its free end extended across the threaded ends of said spindles, whereby the rotation of said spindles permits said arm to be moved from the upper to the lower spindle and remain thereon a predetermined period.

3. The combination with a snap-switch and a rotatable spindle operating the same, of means for actuating said spindle comprising an arm suitably connected at one end to said spindle, a rotatable threaded element supporting the outer portion of said arm which latter is adapted to be released therefrom upon the rotation of said element whereby said switch is closed, and a second rotatable threaded element adapted to receive the arm from the first-mentioned threaded element and release the same after a predetermined rotation whereby the final release of said arm opens said switch.

4. The combination with a snap-switch and an operating spindle therefor, of means for actuating said spindle comprising an arm connected at one end to said spindle, and a plurality of rotatable threaded elements disposed in planes below each other and in the normal path of movement of said arm whereby the releasing of the arm from one element closes the switch during a predetermined period and the releasing of the arm from the next element opens the switch at the end of the predetermined period.

5. The combination with a snap-switch and an operating spindle therefor, of means for actuating said spindle comprising an arm connected at one end to said spindle, a threaded element upon which the movable portion of said arm is supported prior to the closing of said switch, and a second

threaded element upon which the movable portion of said arm is supported after being released from said first-mentioned threaded element, whereby the rotation of said first element releases the arm to close the switch and the rotation of the second element releases the arm to open the switch.

6. Means for operating an element to be controlled comprising an arm pivotally mounted at one end and operatively connected to said element, a member supporting the movable portion of said arm and adapted to release said arm to initially move the element, a second member adapted to receive said arm after its release from the first-mentioned member and retain the same during a predetermined period, and means for limiting the period said arm is retained by said second member.

7. A controlling device comprising a clock-work including two rotatable spindles positioned in different planes and having threaded portions, in combination with an element to be controlled, a pivoted arm operatively connected to said element and having its free portion extended across the threaded portion of said spindles, whereby the rotation of said spindles permits said arm to be moved from one to the other of said spindles to initially operate said element and to remain in such position during a predetermined period, and means for limiting said predetermined period.

8. A control device comprising a swinging arm and a plurality of threaded rotatable stops therefor, said arm cooperating with the threads of said stops whereby the rotation of said stops will successively disengage the arm from the respective stops.

9. A control device comprising a swinging arm, a rotatable stop positioned in the path of movement of said arm, and means for regulating the position at which said stop receives said arm.

Signed at Chicago, county of Cook, and State of Illinois, this 8th day of July, 1920.

ALEXANDER S. GREENWOOD.

Witnesses:

E. K. LUNDY, Jr.,

J. H. JOCHUM, Jr.