

No. 878,248.

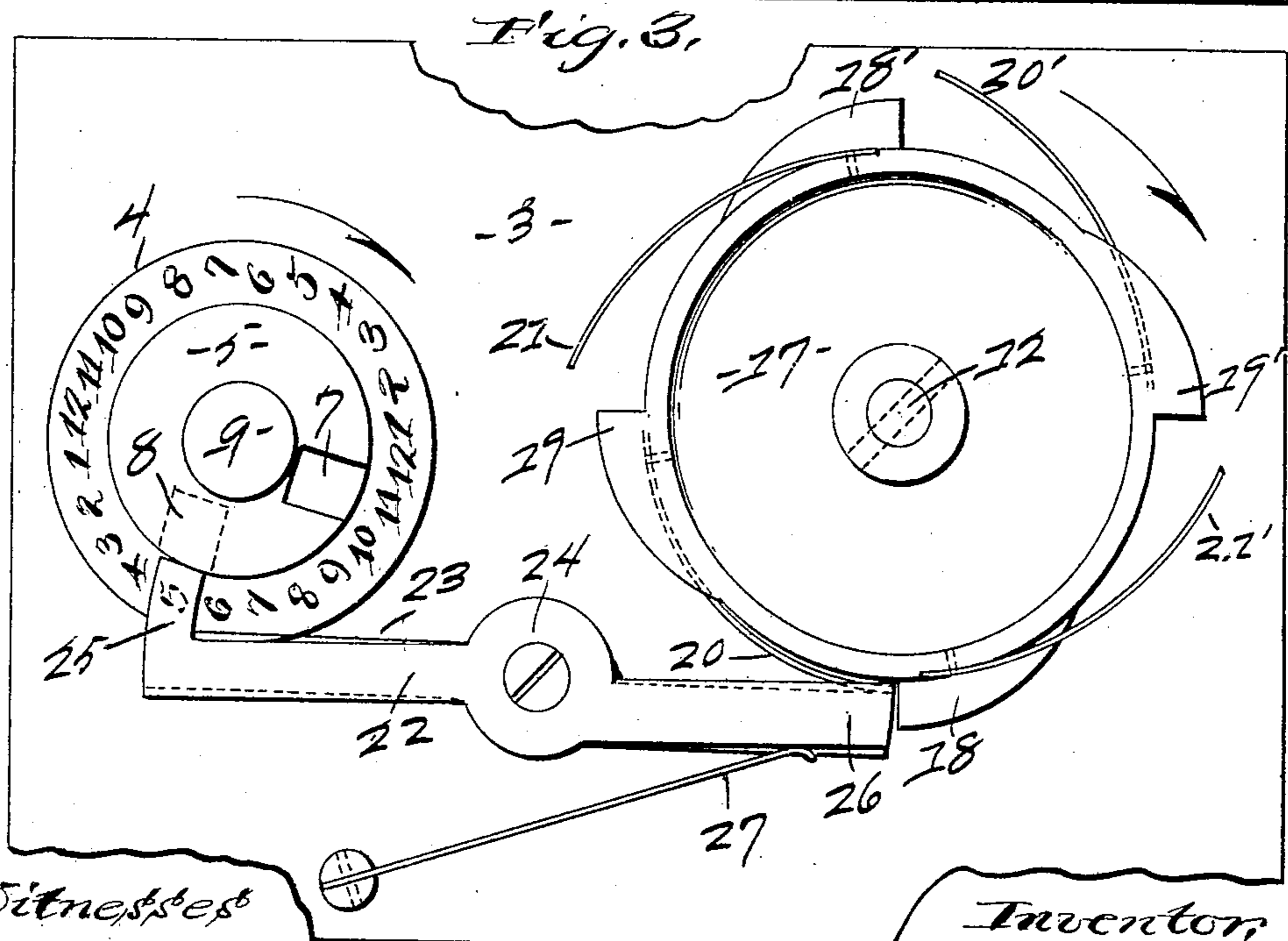
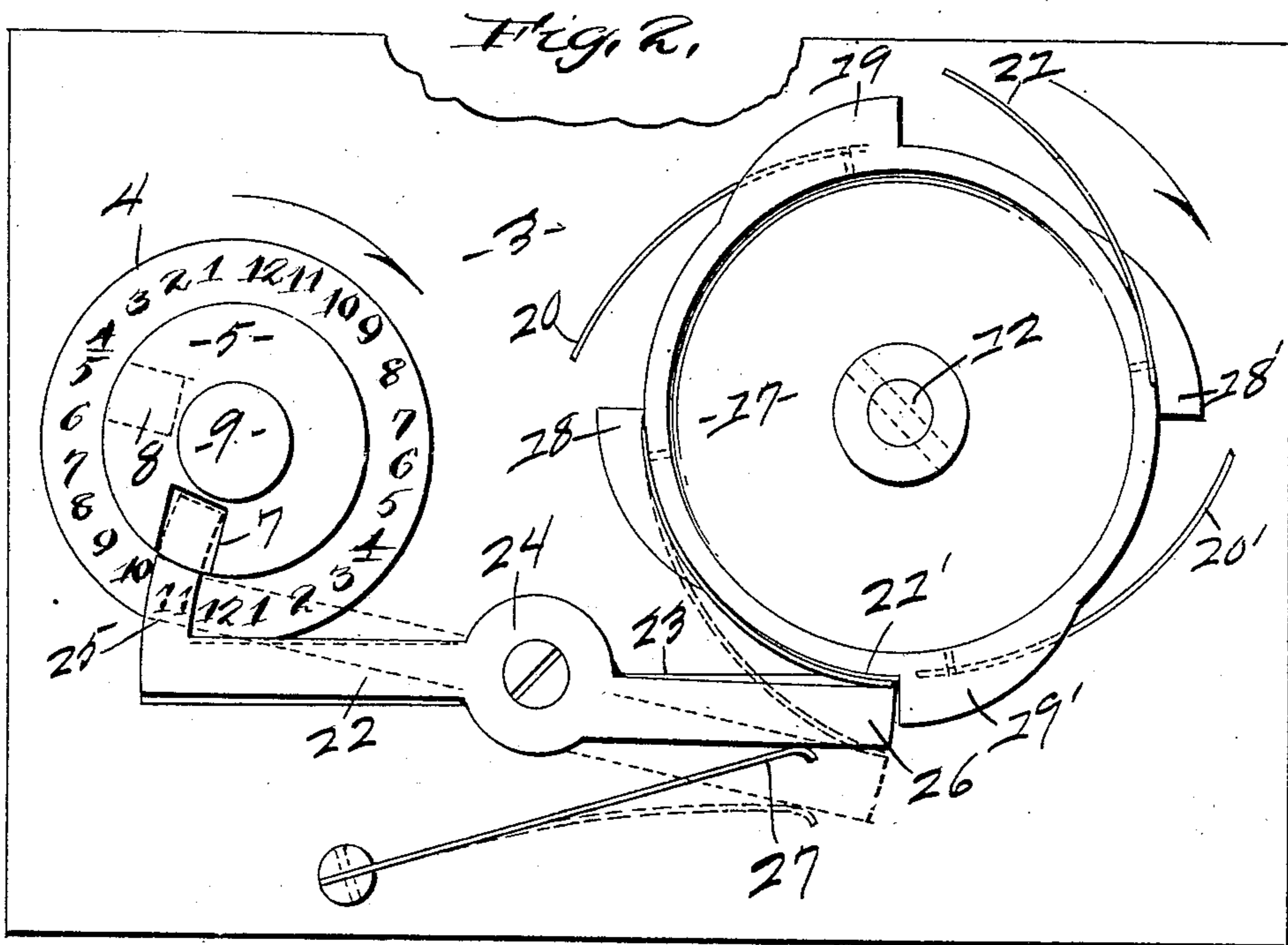
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H. B. SNELL.

AUTOMATIC TIME SWITCH.

APPLICATION FILED DEC. 10, 1907.

2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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AUTOMATIC TIME-SWITCH.

No. 878,248.

Specification of Letters Patent.

Patented Feb. 4, 1908.

Application filed December 10, 1907. Serial No. 405,874.

To all whom it may concern:

Be it known that I, HARRY B. SNELL, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Automatic Time-Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to time mechanisms for actuating switches of electric circuits, and it has for its object to provide a simple and positive mechanism which shall operate automatically to light and extinguish the lamps in an electric circuit at predetermined times.

The mechanism is of especial value for use in effecting the illumination of show windows in stores.

In carrying out the invention I employ the novel combination, arrangement and the details of construction hereinafter shown, described and specifically claimed.

In the accompanying drawings illustrative of the invention Figure 1 is a plan view of the complete mechanism arranged for operating an electric snap switch. Fig. 2 is front view of the device showing the same at the instant of and immediately before being operated to turn the switch "off". Fig. 3 is a like view showing the position of the parts immediately before being operated to turn the switch "on". Fig. 4 is a perspective view of the escapement wheel detached from the mechanism.

Referring to the details, 1 is a case which confines a clock-train of ordinary construction adapted to rotate an arbor 2 once in twenty-four hours, the clock case and the working parts of the mechanism being mounted upon a vertical supporting plate 3. Upon the forwardly projecting portion of the arbor 2 are mounted a disk 4 numbered about its periphery to indicate the hours of the day, and two disks 5 and 6, each provided with a peripheral inwardly extending notch 7 and 8 respectively. The disks 4, 5 and 6 are normally loose upon the arbor 2 so as to be readily adjustable thereon and after adjustment are securely held by a nut 9 upon the end of the arbor 2 which contacts with the outer notched disk 5 and forces all three

disks together and maintains them against relative movement upon the arbor.

10 is a case for a band-spring 11 one end of the latter being secured to the case and the other to an arbor 12 to which the spring imparts a rotative movement in a right hand direction, the spring being wound by rotating the case, the latter being held against backward rotation by a pawl 13 engaging the teeth 14 upon the periphery of the case. The conductor bar or element 15 of the snap switch 16, which is of ordinary construction, is mounted at the inner end of the arbor 12, either directly or on an extension thereof, being actuated in the usual manner by the rotation of the arbor. Upon the outer end of the arbor 12 is firmly secured the escapement-wheel 17 having two pairs of diametrically opposed outwardly extending projections or shoulders 18, 18' and 19, 19' upon its periphery. Each pair of shoulders upon the escapement-wheel is disposed to move in its own plane of rotation, as *a-a*, and *b-b*, and the shoulders are arranged at quarterly distances from each other, as shown. Secured upon the periphery of the escapement wheel are two pairs of stiff springs 20, 20' and 21, 21', the same having free ends disposed adjacent to the shoulders 18, 18' and 19, 19'.

22 and 23 are like levers which are independently pivoted at an approximately central point at 24 and at the ends adjacent to the notched disks 5 and 6 each has an angular portion 25 adapted to ride upon the peripheries of the notched disks and enter the notches thereof, the opposite ends 26 being adapted to engage the shoulders of the escapement wheel, the free ends of the springs mounted upon the escapement wheel exerting a downward pressure upon said ends while in contact with the shoulders. Each lever has also a light spring as at 27 which presses upwardly upon the end 26 and maintains the same in contact with the periphery of the escapement wheel when said end is released from the shoulders of the escapement wheel.

In operation, it will be understood that the snap switch is to be operated by successive quarter rotations or movements of the arbor 12. The lever 23 may be termed the "on" lever, and the lever 22 the "off" lever, that is, to turn the lights on and off. In like

manner, the notched disk 6 coacts with the lever 23 to turn the lights on, and the disk 5 coacts with the lever 22 to turn the lights off. If it is desired to turn the lights on at 5 o'clock, and off at 11 o'clock p. m., the disks 5 and 6 are set with their respective notches opposite the corresponding numbers upon the disk 4. At 5 o'clock the parts will be in the position shown in Fig. 3, the angular end of the lever 23 being opposite the notch in the disk 6. The pressure of the free end of the spring 20 upon the end 26 of the lever will now instantly force said end downward free from the shoulder 18 upon the escapement wheel, the latter on being thus released being instantly rotated, in the direction of the arrow, being arrested on completing a quarter rotation and assuming the position in Fig. 2, the shoulder 19' now contacting with the end of the lever 22. The mechanism will now remain inactive until the notch in the disk 5 after a period of six hours or at 11 o'clock arrives at the position indicated in Fig. 2. The angular end of the lever 22 will now enter the notch 7 in the disk, being forced into the notch by the action of the spring 21', the end 26 of the lever 22 being forced outward to release the shoulder 19' of the escapement wheel. The latter will now again complete a quarter movement and consequently actuate the switch and turn off the lights. It will be noted that as the angular ends of the levers 22 and 23 enter the notches of the disks they will be instantly withdrawn again, since the springs carried by the escapement wheel will be removed from pressure thereon the instant the escapement wheel has started upon its quarter movement. As the pressure upon the top sides of the ends 26 of the levers 22 and 23 is removed, the springs 27 will force said ends upward again and withdraw the angular ends from the notches. It is thus seen that the intermittent quarter rotations of the escapement wheel will be effected at such times as may be desired and that the switch connected therewith will also be actuated to turn the lights on and off at such times.

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

1. In a time mechanism for actuating electric switches, a motor - driven arbor con-

nected with the switch, an escapement wheel upon said arbor having two pairs of diametrically opposed shoulders operating in different planes of movement and having the shoulders of one pair disposed at quarter distances from those of the other, a pair of pivoted levers acting alternately to engage the shoulders of the escapement wheel, springs carried by the escapement wheel to force the levers from engagement with the shoulders, and a timing mechanism to release the levers, substantially as described.

2. In a time mechanism for actuating electric switches, a motor - driven arbor connected with a switch, an escapement wheel upon said arbor having two pairs of diametrically opposed shoulders operating in different planes of movement, the shoulders of one pair disposed at quarter distances from those of the other, a pair of pivoted levers adapted to alternately engage the shoulders of the escapement wheel, springs carried by the escapement wheel to force the levers from engagement with the shoulders, and a pair of clock-driven disks provided with notches in their peripheries to release the levers at predetermined times, substantially as described.

3. In a time mechanism for actuating electric switches, a motor - driven arbor connected with the switch to be operated, an escapement wheel on said arbor having two pairs of diametrically opposed shoulders operating in different planes of movement, the shoulders of one pair at quarter distances from those of the other, a pair of centrally pivoted levers alternately engaging the shoulders at one end and provided with angular extensions at the opposite ends, springs carried by the escapement wheel having free ends adjacent to the shoulders and adapted to force the levers from engagement with the shoulders, a pair of clock driven disks having peripheries traversed by the angular ends of the levers, and each disk provided with a notch to receive the angular ends of the levers, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

HARRY B. SNELL.

Witnesses:

GRANT WILLIAMS,
CARL H. KELLER.