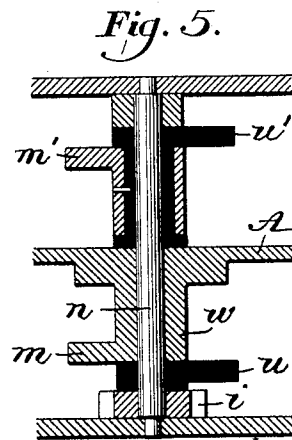
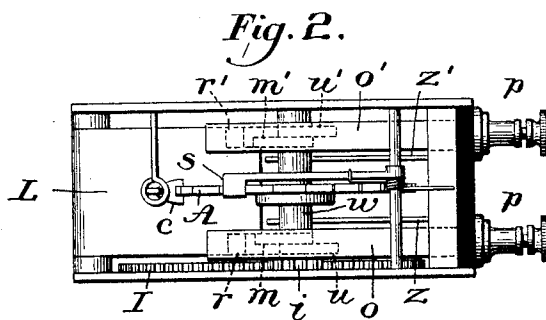
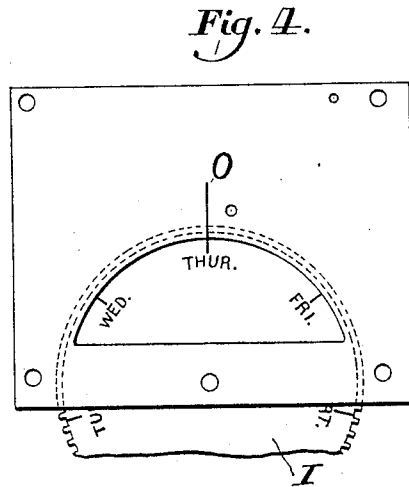
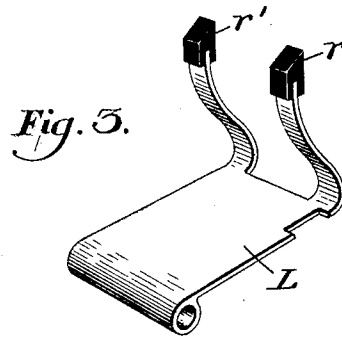
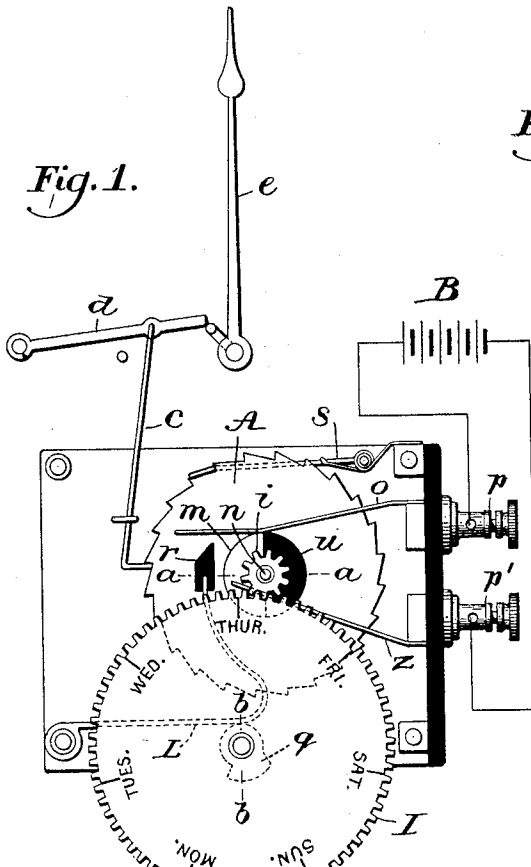


(No Model.)

L. H. WATTERS.  
AUTOMATIC ELECTRIC TIME SWITCH.

No. 584,149.

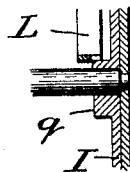
Patented June 8, 1897.



Witnesses.

*John L. Rogers*  
*Emil Holl*

*Fig. 6.*



*Leon H. Watters.*

Inventor.

# UNITED STATES PATENT OFFICE.

LEON H. WATTERS, OF MEDIA, PENNSYLVANIA.

## AUTOMATIC ELECTRIC TIME-SWITCH.

SPECIFICATION forming part of Letters Patent No. 584,149, dated June 8, 1897.

Application filed April 1, 1896. Serial No. 585,742. (No model.)

*To all whom it may concern:*

Be it known that I, LEON H. WATTERS, a citizen of the United States, residing at Media, in the county of Delaware and State of Pennsylvania, have invented a new and useful Automatic Electric Time-Switch, of which the following is a specification.

My invention relates to automatic electric time-switches for attachment to clocks, the object of my invention being to provide for closing and breaking an electric circuit during such parts of the day or week as may be desired. This object is attained by means of the mechanism represented in the accompanying drawings, in which—

Figure 1 represents a front view of the apparatus embodying my invention, the front plate being removed to show relation of parts. Fig. 2 represents the apparatus as seen from above. Fig. 3 represents the lever by means of which the springs are released from contact with the rotating disks. Fig. 4 represents the front plate and spur-wheel. Fig. 5 represents, on an enlarged scale, a section on line *a a* of Fig. 1, showing the relation of the shaft to parts attached to it. Fig. 6 represents a section on line *b b*, Fig. 1, showing the cam and part of the lever worked by it.

Like parts are represented by the same letters in each of the figures.

The ratchet-wheel A contains twenty-four teeth and is worked by the pawl *c*, attached to the lever *d*, which is lifted by a cam on the post of the minute-hand *e* of a clock. A retrograde motion of the ratchet-wheel is prevented by the ratchet-spring *s*.

The pinion *i* is attached to the shaft *n* of the ratchet-wheel and contains ten leaves. It is geared with the spur-wheel I, which has seventy cogs, and is stamped around the rim with the names of the days of the week.

The pawl *c* is lifted once every hour. Hence the ratchet-wheel A makes a complete rotation every twenty-four hours and the spur-wheel I makes a rotation every seven days.

A circular disk made in two sections, one half *m* being of conducting material and the other half *u* being of insulating material, is attached to the shaft *n* of the ratchet-wheel A, with which it is concentric, so as to make

electrical contact between the shaft *n* and the section *m* of the disk.

The spring *o*, which is attached to the insulated binding-post *p*, is made of conducting material and is in contact with the rotating disk *m u*. The spring *z*, also of conducting material, is attached to the insulated binding-post *p'* and presses upon the shaft *n* or the collar *w* of the disk *m u*, and as long as the spring *o* is in contact with section *m* of the disk *m u* the circuit of the battery B is closed, the length of time that it remains closed depending upon the relative lengths of the peripheries of the sections *m* and *u* of the disk.

The shaft of the spur-wheel I has a cam *q*, which lifts the lever L and presses the insulated end *r* of the lever against the spring *o*, thus pressing the spring away from the disk *m u* and breaking the electric circuit during a part of the week, the duration of the break depending upon the length of the periphery of the cam *q*.

In Fig. 5 *m'* and *u'* show the method of insulating the conducting-section of the disk when more than one circuit is to be operated by the same apparatus.

The apparatus illustrated in Figs. 1 to 6 is so constructed that the section *m* of the disk *m u* is in contact with the spring *o* during half a rotation of the ratchet-wheel A, or during a period of twelve hours. The cam *q* has a periphery of sufficient length to hold the spring *o* from contact with the disk *m u* during five-fourteenths of a rotation of the spur-wheel I, or during a period of two and a half days. (From Friday evening at six o'clock to Monday morning at six o'clock.)

To set the apparatus described above, set the hands of the clock for six o'clock, turn the spur-wheel until the name of the day of the week coincides with the line marked O on the front plate, Fig. 4, then set the clock for the correct time of day, and the current will be turned on at six o'clock in the morning and off at six o'clock in the evening of each day of the week except Saturday and Sunday, on which days the current will not be turned on at all.

By a proper modification of the length of

the periphery of the cam  $q$  and of the relative lengths of the peripheries of sections  $m$  and  $u$  of the disk  $m u$  the current may be turned off or on during such part of the day or week as  
5 may be desired.

What I claim as my invention is—

1. In an automatic electric time-switch, the rotating disk  $m u$  having the shaft  $n$ , the ratchet-wheel A attached to said shaft  $n$ , a  
10 minute-hand with post having a cam thereon, and a lever worked by said cam and operating said ratchet-wheel, said parts being combined substantially as described.

2. In an automatic electric time-switch, a  
15 shaft with a spur-wheel thereon, having a cam connected therewith, said wheel having thereon the names of the days of the week, a pinion geared with said spur-wheel, a minute-hand with a post having a cam thereon and a  
20 lever operated by said latter cam and working said first-mentioned cam on said spur-wheel, through the instrumentalities described, said parts being combined substantially as described.

25 3. In an automatic electric time-switch, the lever L having the insulated points  $r$  and  $r'$ , the spur-wheel I with the cam  $q$  on the shaft, thereof and the springs  $o$  and  $o'$ , said points  
30 being intermittently brought into contact with said springs by the operation of the said cam.

4. In an automatic electric time-switch, the combination of the insulated binding-posts  $p$  and  $p'$ , with the springs  $o$  and  $z$  attached thereto, a rotating disk formed of two sec- 35 tions, one of insulating material, the other of conducting material, a minute-hand with its post having a cam thereon, a pawl operated by said cam, a spur-wheel and a pinion meshing therewith, a cam connected with said 40 spur-wheel, a lever having an insulated end in contact with said spring  $o$ , and a circuit in which said binding-posts are located, substantially as described.

5. In an automatic electric time-switch, a 45 rotating disk formed of conducting and insulated sections, a collar on the shaft of said disk, an electric circuit with wind binding-posts therein, springs connected with said binding-posts, one of said springs bearing on 50 said disk, the other on said collar, a minute-hand, a spur-wheel, having a shaft with a cam thereon, a pinion meshing with spur-wheel, a lever operated by the cam of said spur, and a ratchet-wheel, with operative mechanism 55 connected with said minute-hand, said parts being combined, substantially as described.

LEON H. WATTERS.

Witnesses:

JOHN F. ROGERS,  
EMIL HOLL.