L. T. FENNING.

TIME CONTROLLED ELECTRIC SWITCH.

APPLICATION FILED JULY 8, 1915.

1,179,512.

Patented Apr. 18, 1916.

2 SHEETS—SHEET 1.

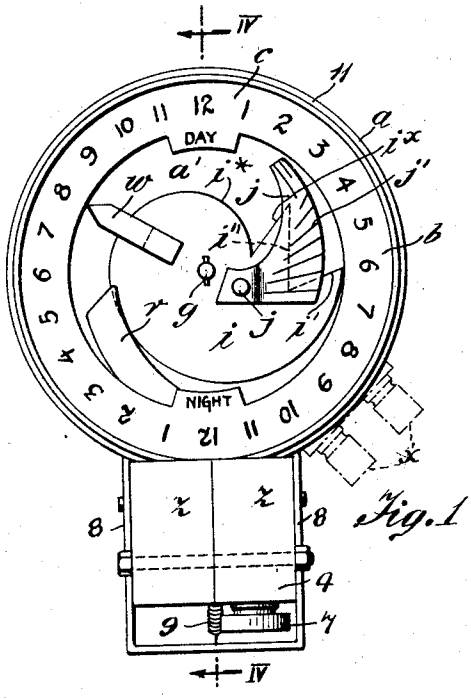


Fig. 1

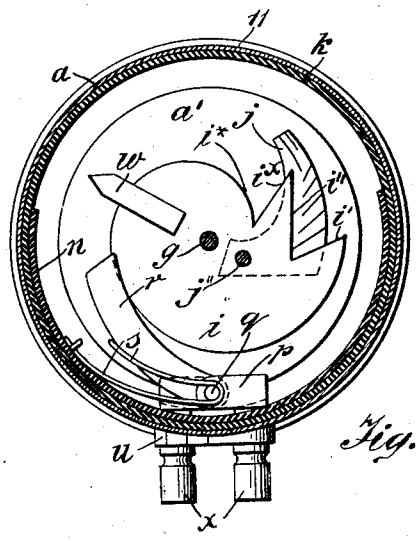


Fig. 2

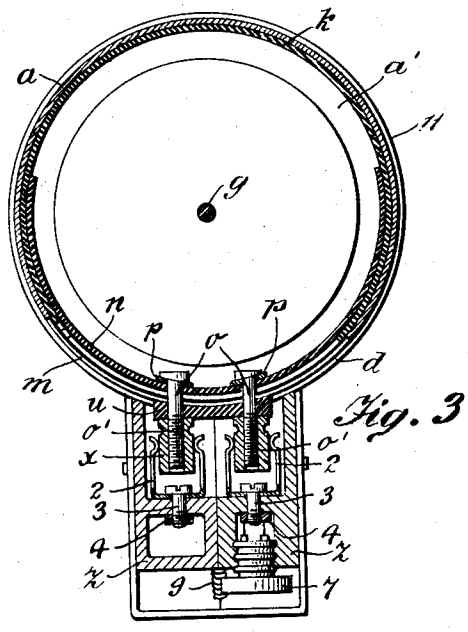


Fig. 3

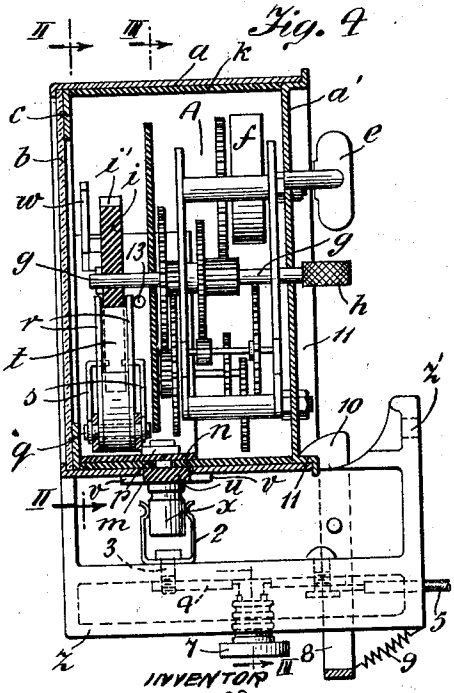


Fig. 4

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2 SHEETS—SHEET 2.

Fig. 5

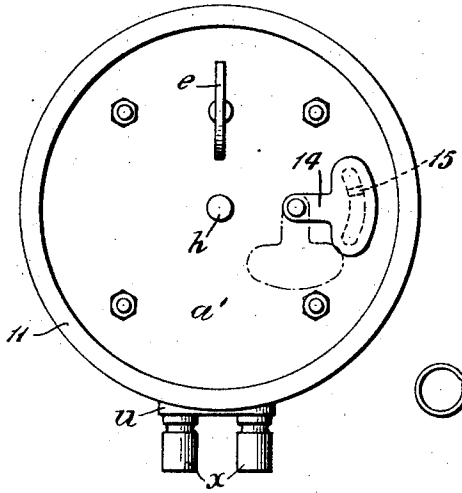
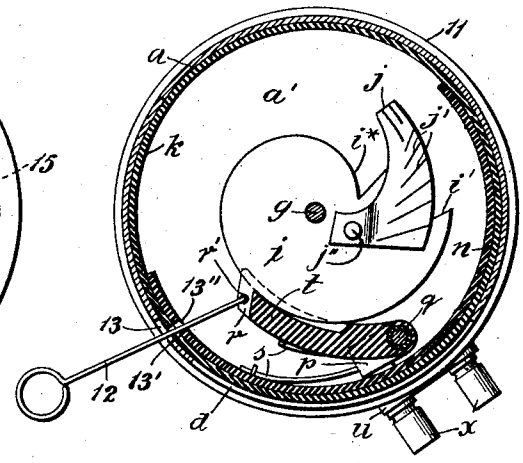


Fig. 6



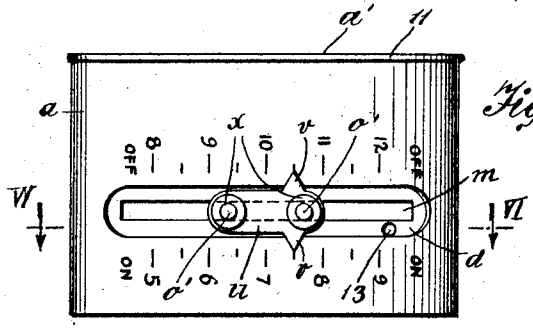


Fig. 7

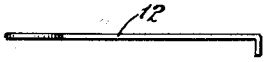


Fig. 10

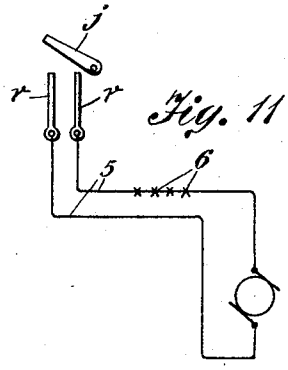


Fig. 11

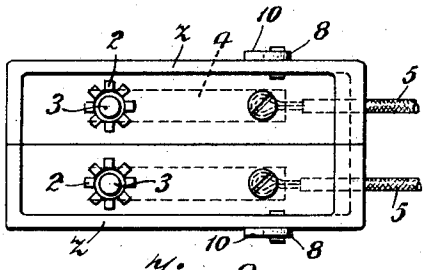


Fig. 8

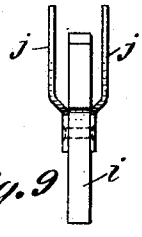


Fig. 9

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UNITED STATES PATENT OFFICE.

LOUIS T. FENNING, OF JACKSON, OHIO.

TIME-CONTROLLED ELECTRIC SWITCH.

1,179,512. Specification of Letters Patent. Patented Apr. 18, 1916.

Application filed July 8, 1915. Serial No. 38,653.

To all whom it may concern:

Be it known that I, LOUIS T. FENNING, a citizen of the United States of America, residing at Jackson, in the county of Jackson and State of Ohio, have invented certain new and useful Improvements in Time-Controlled Electric Switches, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in time-controlled electric-switch mechanism and particularly to a switch mechanism of this type adapted to turn on and to cut off the current supplied, for example, to the electric lights used in display or show windows of stores; and an object of this invention is to provide a mechanism of the character just referred to which will be simple in construction, comparatively cheap in manufacture and efficient, durable and handy in operation and use.

In the drawings illustrating the principle of this invention and the best mode now known to me of applying that principle, Figure 1 is a front elevation of my new switch mechanism; Fig. 2 is a section on the line II—II of Fig. 4; Fig. 3 is a section on the line III—III of Fig. 4; Fig. 4 is a section on the line IV—IV of Fig. 1; Fig. 5 is a rear elevation of my new switch mechanism; Fig. 6 is a section on the line VI—VI of Fig. 7; Fig. 7 is a bottom plan of my new switch mechanism; Fig. 8 is a plan view of the electric connection; Fig. 9 is a detail of the rotary cam that carries the contact-plates; Fig. 10 is a detail of the hook for manipulating the contact-lever; and Fig. 11 is a diagrammatic view of the lamp circuit.

The clock mechanism A is of the usual type and is housed in a casing *a* having a glass front *b* on which is pasted a circular paper-strip *c* having thereon the words, Day and Night, at points diametrically opposite; and, between these two words, on each half of the paper strip *c*, there are inscribed the numerals 1 to 12 (Fig. 1).

In the outside cylindrical face of the casing *a*, there is formed a slot *d* at one side of which there are inscribed, on the cylindrical face, the word, On, and a column of numerals, as 5, 6, 7, 8, 9; and, on the other side of the slot *d*, there are inscribed the word, Off, and a column of numerals, as 8, 9, 10, 11, 12, the latter numerals lying, respectively, opposite the first-named numerals.

The key *e* is used to wind the main-spring *f* of the clock and the shaft *g* is provided at its outer end with a finger-hold *h* and, at its inner end, carries the cam *i* to which there is fastened, by means of the metal pin *j''* a pair of contact-plates *j* the edge portions of which are cut into strips *j'*, as shown (Figs. 1, 2, 6), in order to give the plates *j* greater resiliency. The ends of the strips *j'* are turned outwardly somewhat. The cylindrical wall of the casing *a* is provided with a lining *k* of insulating material (Figs. 2, 3 and 6), which is formed with a channel or slot *m* and within which there is slidably mounted a strip *n* of insulating material that carries a pair of posts *o* the outer ends *o'* of which are screw-threaded and the inner ends of which carry each a bracket *p* to which there is attached by a pivot *q* an arm or contact-lever *r* that is pressed toward the surface of the cam *i* by a spring *s* and that rubs against one of the contact-plates *j;* and these arms *r* are insulated from each other by non-conducting strips *t* fastened to the opposed faces of the arms *r* and fastened together.

Mounted free to slide over the slot *m*, there is a strip *u* of insulating material (Fig. 7) from each side of which projects laterally an index *v* that is arranged to point to the numbers indicating the hours at which the current is to be turned on (or, as the case may be, switched off). The cam *i* also carries a clock-hand or pointer *w* which travels over the paper-strip *c* and indicates the hour. The threaded ends *o'* of the posts *o* project outwardly through this strip *u* and, on these threaded ends *o'*, there are screwed the contact-caps *x* that fit into spring-metal sockets 2 through which pass screws 3 that fasten the same to the two-part block *z* of insulating material (as porcelain) and that are screwed through holes in strips 4 of conducting material, to and from which the leading wires 5 conduct the current that flows through the lamps 6 (Fig. 11). A fuse-plug 7 (Fig. 4) is introduced into the circuit for safety's sake. The pair of insulating blocks *z* may be fastened to a wall

by screws passing through holes z' therein. Pivoted on the blocks z is a yoke-shaped lever 8 which is controlled by a coil-spring 9 and the arms of which are formed with hooks 10 adapted to engage the annular flange 11 (Fig. 1) formed on the back a' of the clock.

When it is desired to disconnect the switch mechanism from the leading wires 5 (as on Sundays), it is necessary only to withdraw the contact-caps x from the sockets 2 and to turn the casing a until these contact-caps x take the position shown in dotted lines in Fig. 1.

In order to permit the cam i and contact-arms r to be set conveniently, a hook 12 (Figs. 6 and 10) is provided, which is shaped to enter the holes 13, 13', 13'', in the casing a and the insulating lining k and strip n, respectively, and to hook into the hole r' formed in one of the contact-arms r. By pulling on the hook 12, the arms r may be raised from the cam i against the tension of the springs s.

The operation of the time-controlled electric switch device hereinbefore described will now be readily understood and is as follows: If the clock-hand or pointer w does not point to the correct hour, the outer milled end h of the shaft g is seized; and, by turning the latter, the cam i may be turned and the clock-hand w made to indicate the proper hour. The main spring f may be wound by turning the key e. By pushing on the contact-caps x, the strip u is moved over the slot m and the indices v turned and the clock-hand w made to indicate the hours at which the current is to be allowed to flow through the lamps 6 and to be cut off therefrom, respectively. The screw-caps x are next inserted in the sockets 2 fastened to the porcelain blocks z and the contact-arms r become charged. When the hour for turning on the lights has arrived, the insulation t separating the contact-arms r overhangs the shoulder i' (Fig. 2) and is pressed inwardly, by the springs s, as the cam i turns, slipping over the shoulder i' and resting upon the step i'' of the cam i. The contact-arms r are thus brought into rubbing contact with the contact-plates j and so remain during the time the lamps 6 are to be lighted. When the hour for interrupting the current has arrived, the insulation t overhangs the shoulder i^x and is again pressed inwardly, by the springs s, as the cam i continues to turn, slipping over the shoulder i^x and resting upon the surface i of the cam i, whereby the arms r are thrown out of contact with the plates j and the lamp circuit is broken. By changing the contact-plates j to others of a different length, the device may be arranged so that a greater or lesser period may elapse between the turning-on and the cutting-out of the lamps 6.

A shutter 14 covers the slot through which access is attained to the regulator 15 of the clock.

I claim:

1. A time-controlled electric-switch mechanism including a clockwork-driven shaft; a disk driven thereby; a pair of contact-plates carried by said disk; a pair of contact-arms insulated from each other and arranged to rub against said contact-plates; a pair of contact-posts to each of which one of said contact-arms is fastened; an electric connector into and out of electric connection with which said contact-posts are arranged to be slipped; and leading wires connected to said connector.

2. A time-controlled electric-switch mechanism including a casing formed with a slot; a clockwork-driven shaft mounted therein; a disk driven by said shaft; a pair of contact-plates carried by said disk; a pair of contact-arms insulated from each other and arranged to rub against said contact-plates; a pair of contact-posts to each of which one of said contact-arms is fastened and which project through the slot in said casing; means for positioning said contact-posts along said slot; an electric connector into and out of electric connection with which said contact-posts are arranged to be slipped; and leading wires connected to said connector.

3. A time-controlled electric switch mechanism including a casing formed with a slot; a clock face; a clockwork-driven shaft; a disk driven thereby; a clock hand carried by said disk and arranged to travel over said clock face; a pair of contact-plates carried by said disk; a pair of contact-arms insulated from each other and arranged to rub against said contact-plates; a pair of contact-posts to each of which one of said contact-arms is fastened; an electric connector into and out of electric connection with which said contact-posts are arranged to be slipped; and leading wires connected to said connector.

4. A time-controlled electric-switch mechanism including a clockwork-driven shaft; a stepped, cam-faced disk driven thereby; a pair of contact-plates carried by said disk; a pair of contact-arms insulated from each other and arranged to rub against said plates; springs for pressing said contact-plates against the cam face of said disk; a pair of contact-posts to each of which one of said contact-arms is movably fastened; an electric connector into and out of electric connection with which said contact-posts are arranged to be slipped; and leading wires connected to said connector.

5. A time-controlled electric-switch mechanism including a casing formed with a slot; a clockwork-driven shaft mounted therein; a disk driven by said shaft; a pair

of contact-plates carried by said disk; a pair of contact-arms insulated from each other and arranged to rub against said contact-plates; a pair of contact-posts to each of which one of said contact-arms is movably fastened and which project through the slot in said casing; means for positioning said contact-posts along said slot; an electric connector into and out of electric connection with which said contact-posts are arranged to be slipped; a fastening device which detachably secures said casing to said connector, and leading wires connected to the latter.

6. A time-controlled electric-switch mechanism including a casing formed with a slot; a clock face; a clockwork-driven shaft; a stepped, cam-faced disk driven thereby; a clock hand carried by said disk and arranged to travel over said clock face; a pair of contact-plates carried by said disk; a pair of contact-arms pressed yieldingly toward the cam-face of said disk and insulated from each other and arranged to rub against said plates; a pair of contact-posts to each of which one of said contact-arms is fastened; an electric connector into and out of electric connection with which said contact-posts are arranged to be slipped; a fastening device which detachably secured said casing to said connector; and leading wires connected to the latter.

Signed at Jackson in the county of Jackson and State of Ohio, this second (2nd) day of July, A. D. 1915, in the presence of the two undersigned witnesses.

LOUIS T. FENNING.

Witnesses:
JAMES O. TRIPP,
THEODORE GAHM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Corrections in Letters Patent No. 1,179,512.

It is hereby certified that in Letters Patent No. 1,179,512, granted April 18, 1916, upon the application of Louis T. Fenning, of Jackson, Ohio, for an improvement in "Time-Controlled Electric Switches," errors appear in the printed specification requiring correction as follows: Page 2, lines 37–38, strike out the words "turned and the clock-hand *w* made to indicate" and insert the words *are brought to point to the numerals indicating;* same page, line 58, for the reference-numeral "*i*" read *i*;* page 3, line 30, claim 6, for the word "secured" read *secures;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of November, A. D., 1916.

[SEAL.]

F. W. H. CLAY,

Acting Commissioner of Patents.

Cl. 161—27.

Corrections in Letters Patent No. 1,179,512.

It is hereby certified that in Letters Patent No. 1,179,512, granted April 18, 1916, upon the application of Louis T. Fenning, of Jackson, Ohio, for an improvement in "Time-Controlled Electric Switches," errors appear in the printed specification requiring correction as follows: Page 2, lines 37–38, strike out the words "turned and the clock-hand *w* made to indicate" and insert the words *are brought to point to the numerals indicating;* same page, line 58, for the reference-numeral "*i*" read *i*;* page 3, line 30, claim 6, for the word "secured" read *secures;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of November, A. D., 1916.

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F. W. H. CLAY,

Acting Commissioner of Patents.

Cl. 161—27.