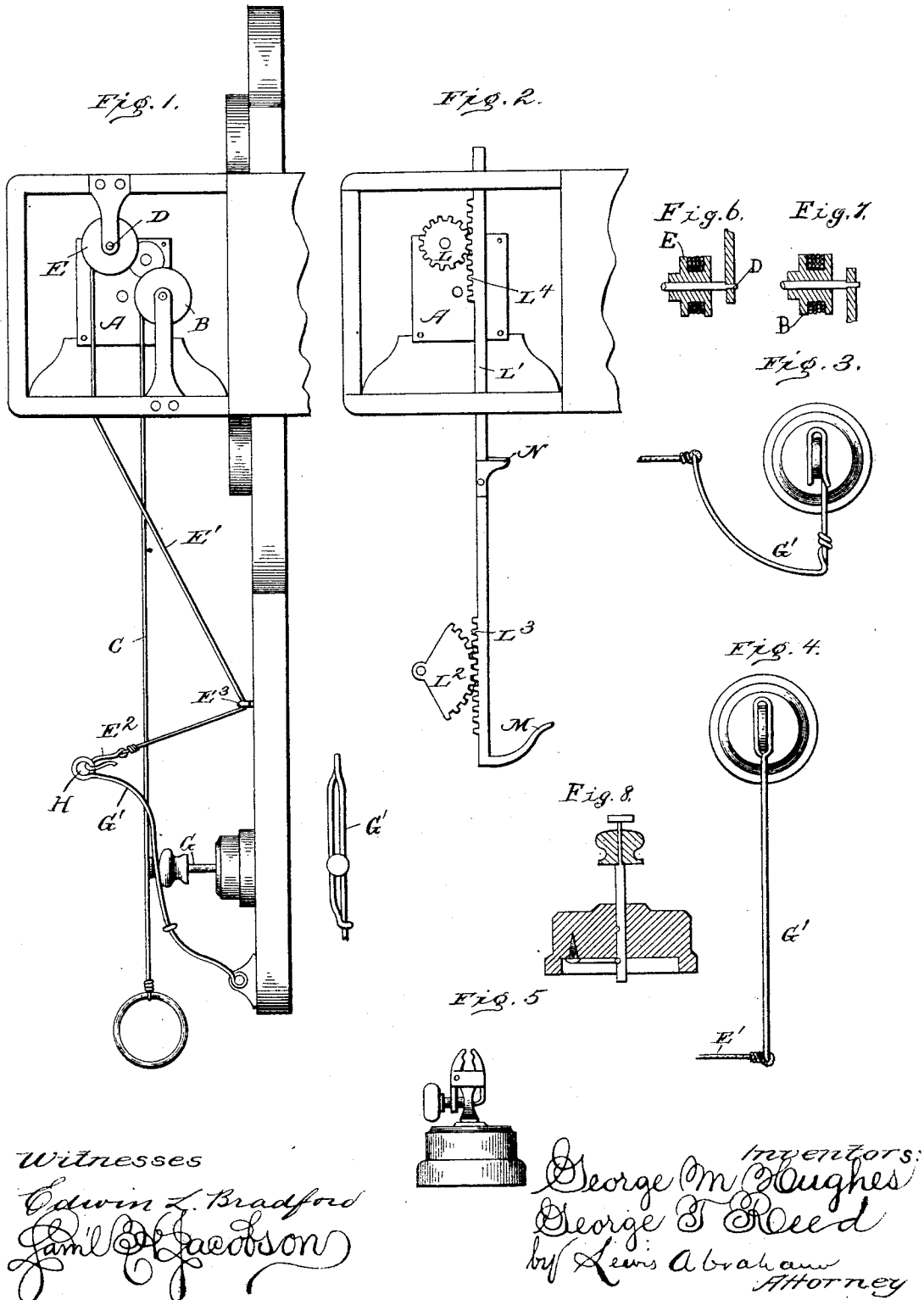


(No Model.)

G. M. HUGHES & G. T. REED.
AUTOMATIC ELECTRIC LIGHT EXTINGUISHER.

No. 511,527.

Patented Dec. 26, 1893.



UNITED STATES PATENT OFFICE.

GEORGE MILTON HUGHES AND GEORGE THORN REED, OF BALTIMORE,
MARYLAND, ASSIGNORS TO THE AUTOMATIC ELECTRIC LIGHT EX-
TINGUISHER COMPANY OF BALTIMORE CITY.

AUTOMATIC ELECTRIC-LIGHT EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 511,527, dated December 26, 1893.

Application filed March 17, 1893. Serial No. 466,494. (No model.)

To all whom it may concern:

Be it known that we, GEORGE MILTON HUGHES and GEORGE THORN REED, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Automatic Electric-Light Extinguishers; and we 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.

Our invention relates to means, by which to operate and control mechanism, that will automatically cut out, one or more of, a series of electric lights, at a predetermined time.

In carrying out our invention we connect the switch, herein sometimes, called a key or button, through which the current is controlled, to an adjustable time trip mechanism, whereby, when said mechanism is tripped, it will automatically operate the key, button, or switch, or analogous device, to open the electric circuit, and cut out supply of the light or lights in the circuit controlled by the switch or its equivalent.

Our invention further consists in means for controlling and operating the winding arbor of the tripping device, by the mechanism which acts on the switch, which thereby serves as means for winding up the trip operating elements, and our invention further consists in certain novel features, arrangement and combinations, of mechanism for closing the electrical circuit, all as hereinafter fully described, illustrated in the drawings, and specifically pointed out in the claims.

In the accompanying drawings, wherein like letters of reference indicate similar parts in each view:—Figure 1. is a rear view of a clock mechanism having a tripping attachment corresponding to the ordinary form of alarm devices, showing the winding mechanism for both, and one means, for connecting and controlling the cut out with the trip; also showing one form of switch. Fig. 2. is a similar view showing another equivalent means for connecting the trip mechanism with the switch. Figs. 3, —4,— and —5. show different forms or modifications of the levers.

Fig. 6, is a sectional view of trip winding spool. Fig. 7, is a like view of the clock gear winding spool. Fig. 8, is a sectional view of the push button and switch shown in Fig. 1.

The continuously operating mechanism, A, which actuates or controls the trip mechanism may be constructed similarly or in the form of an ordinary clock gear, with the gear which actuates the time trip arranged to release the same at a predetermined time and which trip mechanism has mounted upon the main spring arbor a spool, B, or similar device by which to wind said mechanism and which spool is actuated by means of a cord or chain, C, which is of sufficient length to fully wind the spring for running the mechanism for a given time and which cord or chain extends out through the case in which the gear mechanism is located into convenient reach to be operated. In the present instance, as above stated, an ordinary form of clock mechanism is shown, but the winding mechanism may be varied without departing from the scope and purview of our invention. Preferably mounted in the same case is a tripping device shown in the drawings, as constructed similar to the usual form of alarm mechanism used in clocks, and forming part thereof. On the arbor, D, of said trip mechanism is mounted a spool or gear wheel, E. In Fig. 1, this is represented in the form of a spool to receive a cord or chain, E', similar to that shown to wind the clock mechanism proper, and by the unwinding of which cord or chain, the spring which actuates the trip mechanism is wound and upon the tripping of said mechanism and actuation thereof by its spring to rewind the cord or chain upon the spool. This cord or chain is shown in said figure as extending from the spool and connected with one form of lever used for operating the switch and in the position it occupies when said mechanism is set. This form of switch consists of a case into which the terminals of the circuit extend and a reciprocating rod or plunger, G, to which the knob or button is connected and which is operated in the following manner: An arm or lever, G', which is hinged at one end to a suitable support, extends up in curved form over the knob and is connected to said

knob through a slot in the lever and a pin or bolt engaging the knob, the connection being such that while said parts maintain a fixed relation to each other, relative to the re-operation of the rod, sufficient endwise movement is secured. The free end of the lever is provided with an eye, H, and the cord or chain extending from the trip is provided with a hook, E², by which said cord or chain is connected to the lever, the cord or chain, in this instance passing through an open eye, E³, or similar guide, secured to the base or support and arranged in such manner that the cord or chain shall act upon the lever to force the plunger downward to cause the same to break the circuit or cut out the light or lights controlled by the switch. Where the switch is made to turn, as shown in Fig. 3, a lever made in angular or curved form is employed, having at one end a socket or clamp to engage the key and at the other with an eye to be engaged by the cord or chain.

Another modification in the form of lever for operating the key is shown in Fig. 4, in which a straight lever is employed, having one end connected with the button and having the cord or chain connected to the other end, in which case the shaft of the button forms the fulcrum of the lever.

Another modification is shown in Fig. 5, which consists of a double acting jaw, one set of jaws being adapted to engage the key, and the others to clamp the lever between them, the clamp being controlled by means of a set screw in one of the arms engaging the key as shown in the drawings.

In Fig. 2, a modification is shown, both in the means for actuating or winding the trip mechanism and also in the means of actuating the switch in which case a gear wheel, L, is mounted on the arbor of the trip mechanism adapted to be engaged by rack bar, L'. This rack bar is provided with a series of teeth, L³, L⁴, near each end, one set engaging the gear or pinion, L, while the others engage a sector or quadrant rack, L², mounted upon or connected with the cut out. A handle, M, is connected to the rack bar for moving the same to wind up the spring for actuating the trip mechanism and at the same time simultaneously act to close the circuit and throw in the lights controlled by the button or switch by the engagement of the teeth on the rack bar with the pinion and quadrant rack. A stop, N, is connected to the rack bar to engage the case or other part to regulate or control the movement of the rack bar to hold the bar in its proper relation to the pinion and quadrant rack.

These modifications each accomplish the same end, and in substantially the same manner, and as will be readily understood, other modifications of like character may be employed without departing from the spirit or intent of our invention.

The operation and practice, of our invention, may be thus briefly described:—The

clock, or other construction of gears, having been wound up, as also the tripping device, by means of the described connections, with their respective springs, the trip is set to be actuated at a given time, by the clock gear, which when reaching a certain point acts to release the trip causing the spring to unwind, revolving the spindle which acting through the connections with the switch or button move the same to open the circuit, cutting out the light or lights controlled thereby. The trip mechanism may be connected to or form a part of an ordinary time piece to run for any desired period, the trip mechanism being wound, however, at the time or simultaneously with the closing of the circuit to throw in the light or lights, the clock mechanism being wound by means of the cord or chain extending from the spool on its spindle as often as required. It will thus be seen that by our invention the action of closing the circuit to cut in the lights provide means for automatically cutting out the same and dispenses with special attendance for such purpose and with more exactness.

It is well known that electric lights are employed by merchants in their show windows after business hours, when their stores are closed, and it is desirable that the circuit should be cut out at a given time. It is usual to employ a janitor or watchman to enter the premises for such purpose, or to place a button outside of the premises. This latter practice is objectionable as mischievous persons tamper with such exposed key, as is frequently the case, and often by such manipulation not only cut off the light at undesirable times, but also injure the connections. When the switch or other device is left to be operated by a watchman, it involves expenditure for compensation of such service, besides persons employed therefor may, by negligence, accident, or emergency, not perform their duty at the time instructed, sometimes closing the lights too soon, sometimes not at all. Added to this is the necessity of intrusting the opening and closing of establishments at late hours of night, thereby involving risk, if such employed, or persons, who may accompany him, should be dishonestly inclined. Our invention entirely obviates such risks and mischiefs, as the devices can be set to operate automatically, as hereinbefore set forth, at a precise predetermined time.

It will be understood that our invention can be adjusted to close a series of lights in one or more apartments of an edifice, and leave others in the building unaffected by the automatic device embodied in our invention.

Having thus described our invention and the manner of its operation, what we claim, and desire to secure by Letters Patent of the United States of America, is—

In a light controlling device, clock mechanism, provided with controlling trip adapted to be set to a predetermined point by revolvable spool, E, journaled to arbor of trip, said

spool having outwardly extending axial pin-
tle, loosely journaled in orifice of hanging
plate, depending from upper end of case of
the device, winding cord, E', connected at one
5 end to the spool, adapted to be reciprocatingly wound and unwound on periphery thereof, the opposite end of said cord supplied with terminal hook, E², swinging arm, G', connected at a given point of its length to
10 switch which, as said arm is lifted, or depressed, will control the electric current, said arm having at its free end eye, H, to intermesh with hook, E², in combination with spool, B, journaled to arbor of winding gear, and

upright standard firmly adjusted to lower 15
surface of case of the device, cord, C, connected to said spool and adapted to be wound and unwound on periphery thereof, its opposite end provided with terminal ring, substantially as described. 20

In testimony that we claim the invention above set forth we affix our signatures in presence of two witnesses.

GEORGE MILTON HUGHES.

GEORGE THORN REED.

Witnesses:

WILLIAM H. BERRY,

THOS. M. DOBBIN.