

No. 659,480.

Patented Oct. 9, 1900.

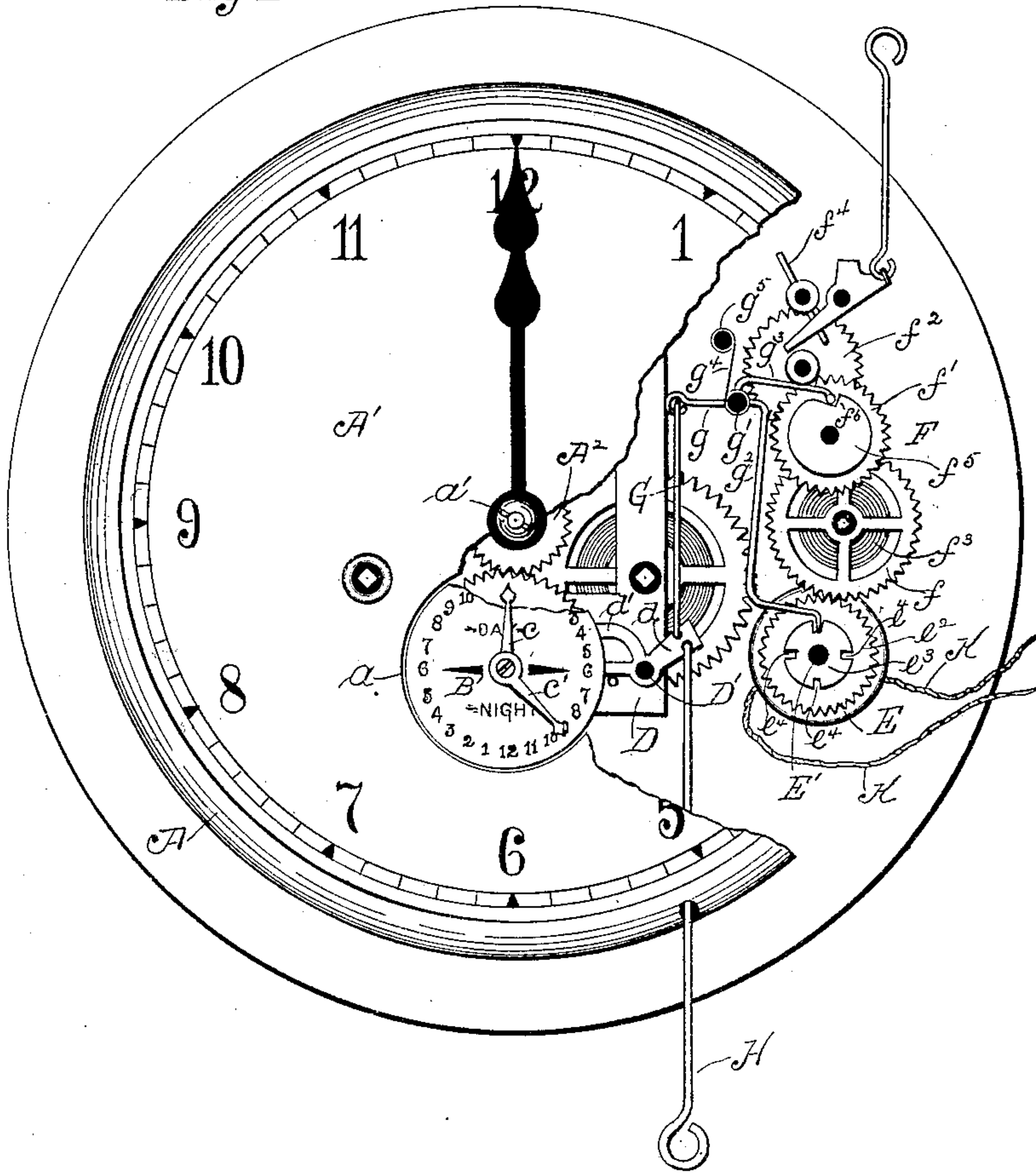
C. E. KATSCH.
TIME CIRCUIT CLOSER.

(Application filed June 2, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses.

J. Coleman

N. H. M. Freeman

Inventor.

Charles E. Katsch
by *George W. Robinson*
his Attorney.

No. 659,480.

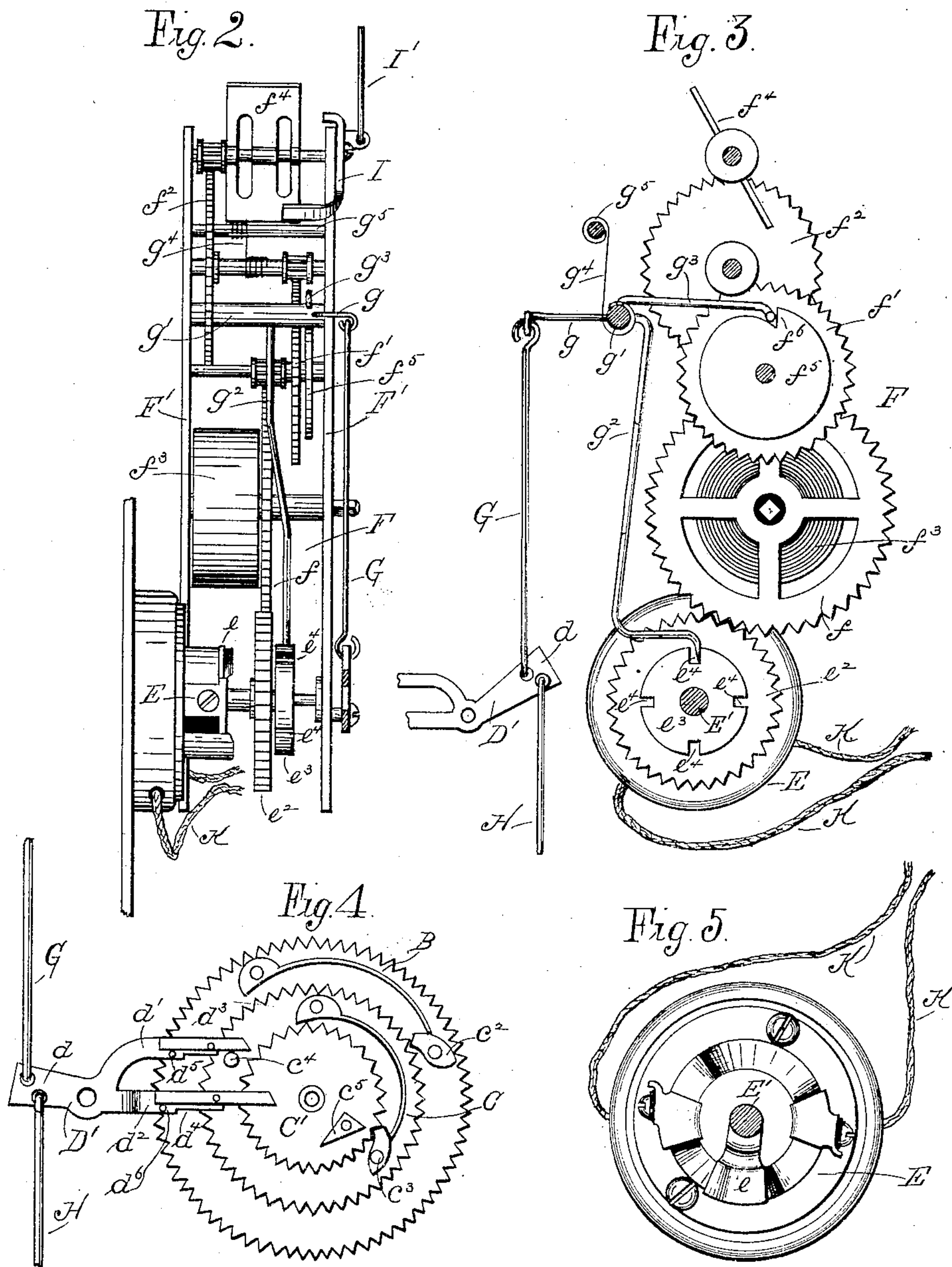
Patented Oct. 9, 1900.

C. E. KATSCH.
TIME CIRCUIT CLOSER.

(Application filed June 2, 1899.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses.

J. Coleman

N. H. M. Freeman

Inventor.

Charles E. Katsch
by *George W. Robinson*
his Attorney.

UNITED STATES PATENT OFFICE.

CHARLES E. KATSCH, OF NEW HAVEN, CONNECTICUT.

TIME CIRCUIT-CLOSER.

SPECIFICATION forming part of Letters Patent No. 659,480, dated October 9, 1900.

Application filed June 2, 1899. Serial No. 719,097. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. KATSCH, of the city and county of New Haven, in the State of Connecticut, have invented a new and useful Improvement in Clock-Controlled Apparatus, fully set forth and described in the following specification, taken in connection with the drawings, which form a part thereof, and in which—

Figure 1 is a view of clock, showing my device embodied therein; Fig. 2, a side elevation showing my invention; Fig. 3, a front elevation showing checking mechanism; Fig. 4, a detail rear view of the operating device, and Fig. 5 a plan view of switch.

In all figures similar letters of reference represent like parts.

This invention relates to clock-controlled apparatus for the opening and closing of an electric circuit at any period of a day, and has for its object the construction of a mechanism which when in connection with a clock will be operated thereby to at certain periods open and close an electric switch for the purpose of furnishing or shutting off the current whereby light or power is furnished.

As set forth in the specification and drawings, the device is used for incandescent lights, but may be applied to any use where an electric current is used without departing from the spirit of my invention.

In the drawings, A represents a casing containing the ordinary clock mechanism, the dial A' of which is provided with a circular perforation α , in which a supplemental dial B', more fully described hereinafter, is adapted to revolve.

A gear B, having seventy-two teeth, to which is rigidly secured a twenty-four-hour dial B', divided into a day and night dial of twelve hours each, is adapted to fit within the circular perforation α of the dial A' and mesh with a gear A², rigidly secured to the hour-hand-carrying arbor α' of the clock, so that said wheel B and dial B' will revolve once upon every two revolutions of said gear A² and hour-hand around the dial A'.

Ratchet-wheels C and C', to the arbors of which are rigidly secured hands or pointers c and c' , are adapted to fit within the dial-carrying wheel B and revolve with said wheel B and dial B', said wheel C' being journaled on

one of the supports of a clock-frame D in well-known manner to hold gear B in a position to mesh with gear A². The wheels C and C' are adapted to rotate upon the movement by the operator of the pointers c and c' in the opposite direction from that in which gear B and dial B' rotate and are held against rotation in the reverse direction by means of pawls c^2 and c^3 , as shown in Fig. 4.

On the wheel C is a laterally-extending lug c^4 , and on the wheel C' is a cam c^5 , said lug c^4 and cam c^5 being so adjusted in relation to the pointers c and c' that upon the revolution of gear B and dial B' they will come in contact with and operate a pivoted lever D', secured to one of the supports of the clock-frame D, to set a motor mechanism in motion at any desired time, as more fully described hereinafter. Lever D' consists of the arms d , d' , and d^2 , said arm d' having pivoted thereto a short arm d^3 and d^2 , having pivoted thereto a longer arm d^4 , which are adapted to rest when in their natural position on lateral extending lugs d^5 and d^6 , secured to arms d' and d^2 , as shown in Fig. 4.

Secured within the casing A of the clock in well-known manner is a switch E, the contact e of which is mounted on an axle E', said axle also having rigidly secured thereto a gear e^2 and wheel e^3 , on the periphery of which are notches e^4 , Figs. 1, 3, and 4. Gear e^2 is adapted to mesh with a gear f , forming a part of a motor mechanism F, secured within a skeleton support F' in said casing A and consisting of gears f , f' , and f^2 , on the gear f' being a cam f^5 , with an abrupt shoulder f^6 , while the gear f is connected with a spring f^3 and gear f^2 with a fly-wheel f^4 . This mechanism constantly tends to rotate the axle E', on which is mounted the contact e , but is checked from so doing by means of checking mechanism, which is as follows: A vertical rod G is attached at its lower end to the arm d of lever D' and at its upper end to one end of a horizontal rod g , the other end of which is rigidly secured to a shaft g' , journaled in support F' of the motor mechanism F.

Rigidly mounted on the shaft g' are rods g^2 and g^3 , which are normally pressed downward by a torsional spring g^4 , surrounding the shaft g' and extending to and secured to a rigid shaft g^5 , secured in the support F', so

that in its normal position the outer end of rod g^2 rests in notch e^4 of wheel e^3 and the outer end of rod g^3 against the shoulder f^6 on the cam f^5 of gear f' , as shown in Figs. 1 and 3.

5 A rod H is attached to the arm d of lever D' and extends through an opening in the casing of the clock, so that said arm d may be drawn downward thereby and the rods g^2 and g^3 of the checking mechanism released
10 from the notch e^4 of wheel e^3 and shoulder f^6 of cam f^5 , respectively, to operate motor mechanism F independent of its operation by the mechanism of the clock proper.

A pivoted shoe I is attached to the skeleton support F', and to the outer end of said shoe I is attached a rod I', extending through a perforation in the casing of the clock, so that the inner end of said shoe I may be forced in or out of connection with the fly-
20 wheel f^4 of motor mechanism F to stop the operation of said wheel and motor mechanism when the same would otherwise be in operation, being released from contact with the checking mechanism.

25 Wires K are attached to the switch E in well-known manner and extend through a perforation in the clock-casing to the incandescent lamps or burners. Not shown.

As assembled, the gear B is adapted to mesh
30 with the gear A² at the point denoted by the figure "12" on the day portion of dial B', at which time the clock is supposed to be started.

In operation the pointers c and c' , which are marked or otherwise distinguished as the
35 "lighting" and "extinguishing" pointers, are set by the operator opposite the hours on dial B' at which it is desired that the lights are to be lighted and extinguished. As the dial B' revolves with the movement of the hour-hand
40 of the clock by means of gears B and A², the pointers c and c' and wheels C and C' also revolve until first pointer c on dial B' reaches the point in line with figure "12" on the clock-dial A', when lug c^4 will come in contact with
45 the outer end of arm d^3 and raise the same in well-known manner, so that arm d of lever D' will be forced downward, which draws rod G downward, causing rod g to also be drawn downward, thus partially rotating shaft g' ,
50 thereby withdrawing said rod g^2 out of engagement with notch e^4 on wheel e^3 and rod g^3 out of engagement with shoulder f^6 on cam f^5 , thereby setting in operation motor mech-

anism F, which meshes with gear e^2 , and thus revolving contact e a sufficient distance to
55 make the connection and close the circuit. Lug c^4 sliding over the end of arm d , as dial B' revolves allows lever D' to assume its normal position, when rod g^2 will be forced back into the next succeeding notch e^4 on wheel e^3
60 and rod g^3 against shoulder f^6 in cam f^5 to check motor mechanism F. As pointer c' on dial B' reaches the point in line with figure "12" on the clock-dial A' the cam c^5 comes in contact with the outer end of arm d^2 (over
65 which the lug c^4 is adapted to pass without contact) and the motor mechanism F again put in operation, as stated above, to withdraw the contact e and extinguish the lights.

When the operator desires to affix the
70 pointers c and c' at a point past the arms d^3 and d^4 of lever D, lug c^4 , as it passes the upper edge of arm d^3 , will swing said arm on its pivot sufficiently to pass it, when said arm will drop back into its normal position on lug
75 d^5 , cam c^5 causing arm d^4 to operate in a similar manner.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—
80

In a clock-controlled apparatus, the combination with the mechanism of a clock; of a gear adapted to mesh with a gear secured to the hour-hand arbor of said clock mechanism; a dial secured to said first-mentioned
85 gear; ratchet-wheels adapted to fit adjacent said first-mentioned gear and rotate therewith; arbors secured to said ratchet-wheels; pointers secured to said arbors adapted to rotate said wheels in the opposite direction
90 from that in which the dial rotates; pawls adapted to engage said wheels and hold them against reverse rotation; a switch; motor mechanism adapted to operate said switch; laterally-extending lugs on said wheels, and
95 a lever adapted to be tripped upon the rotation of said dial and wheels, to operate said motor mechanism, substantially as described.

In witness whereof I have hereunto set my hand, at New Haven, in the county of
100 New Haven, State of Connecticut, this 22d day of May, 1899.

CHARLES E. KATSCH.

Witnesses:

MABEL GOODRICH,
W. W. M. FREEMAN.