

J. G. SWALLOW.
TIME CONTROLLED ELECTRIC SWITCH.

APPLICATION FILED JULY 23, 1904.

2 SHEETS—SHEET 1.

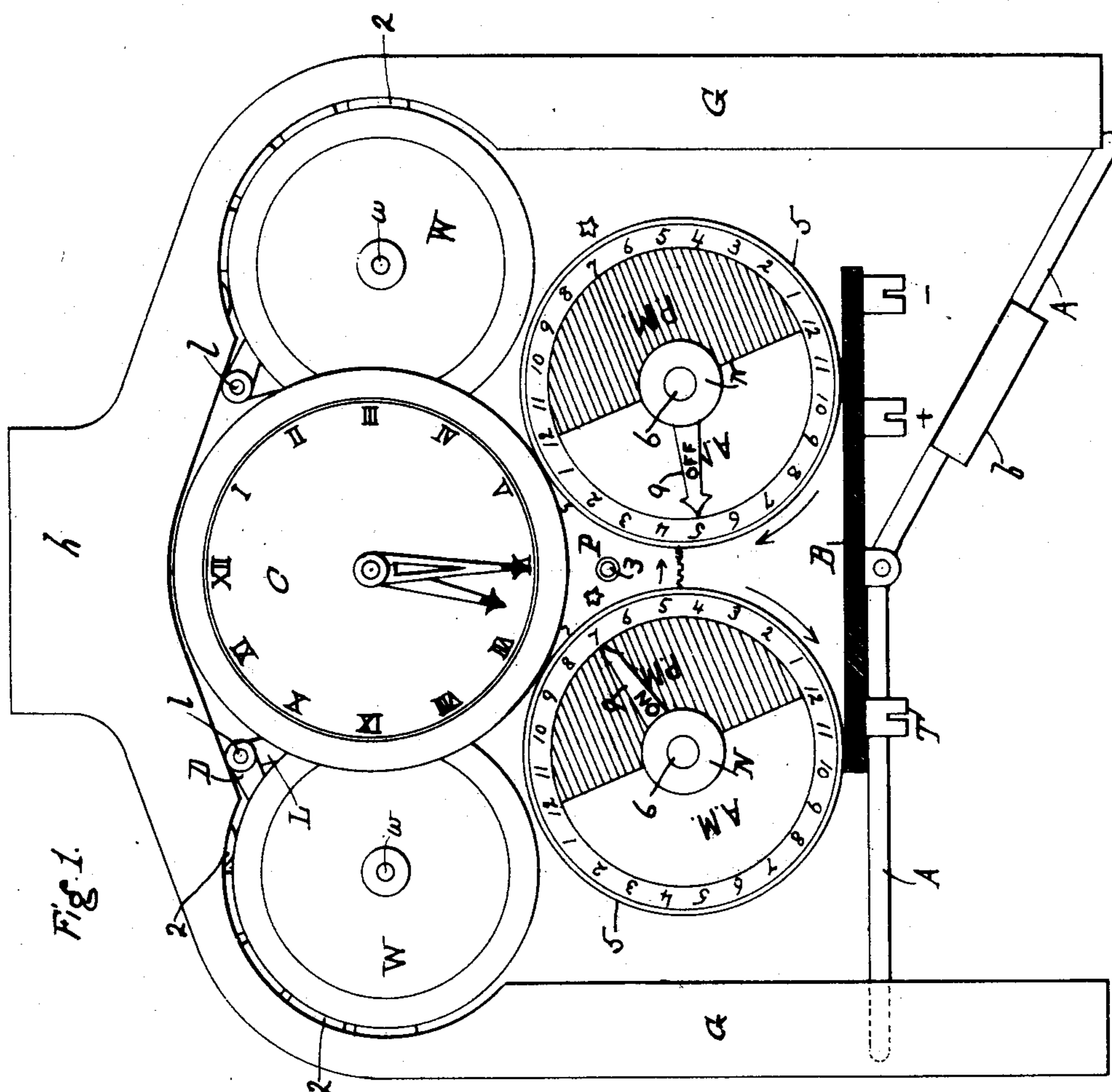


Fig. 1.

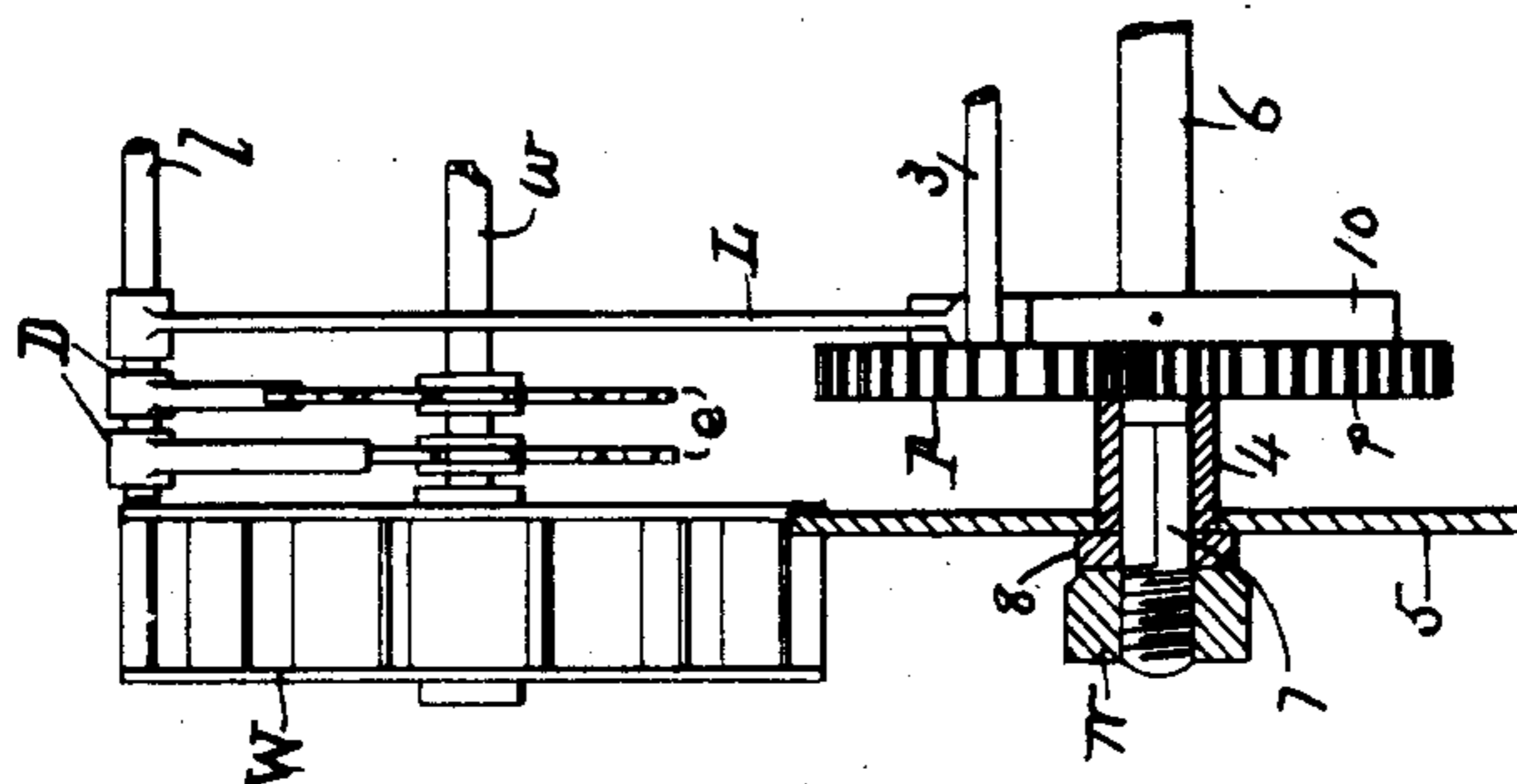


Fig. 3.

WITNESSES

E. W. Collins

Walter Abbr

INVENTOR

Joseph George Swallow.

By Howard and Howard

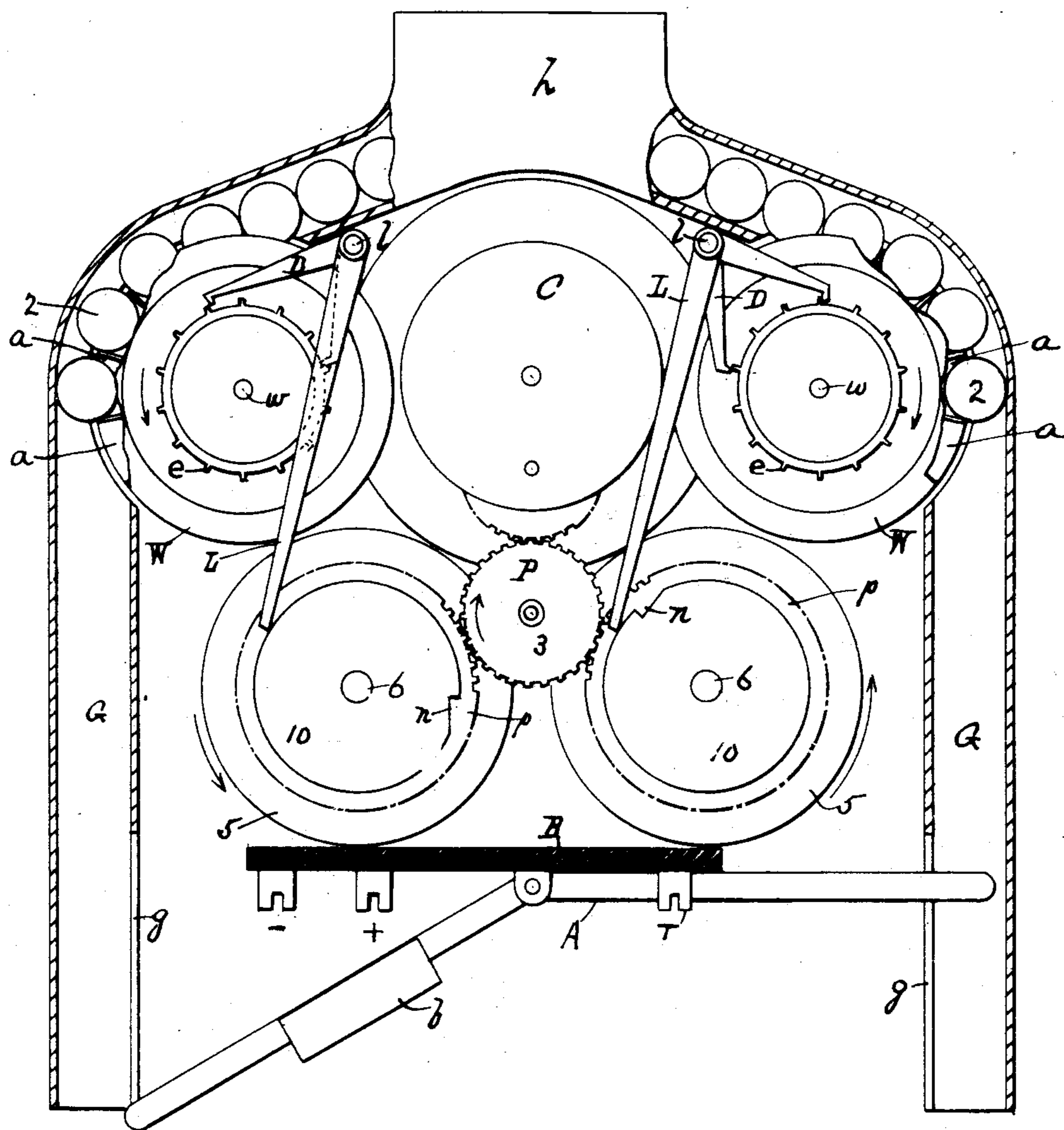
ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JOSEPH G. SWALLOW, OF NEW YORK, N. Y.

TIME-CONTROLLED ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 791,954, dated June 6, 1905.

Application filed July 23, 1904. Serial No. 218,305.

To all whom it may concern:

Be it known that I, JOSEPH GEORGE SWALLOW, a citizen of the United States of America, residing in the borough of Brooklyn, city of New York, county of Kings, State of New York, have invented a certain new and Improved Time-Controlled Gravity-Drop Mechanism, of which the following is a specification.

The object of this invention is to provide a simple, efficient, and reliable time-controlled gravity-drop mechanism for switching in and cutting out electric switches—such, for instance, as are used for the control of street-lighting—for turning on and shutting off fluid-pressure or for securing opposite motions to a lever which is to control any kind of apparatus analogous in its general purpose to those herein mentioned.

That my invention may be clearly understood I have illustrated and described it in the accompanying drawings and specification as applied to an electric-switch device, for which service it is particularly applicable; but, as before premised, I do not limit myself to such service.

In the accompanying drawings, Figure 1 is a front elevation of so much of my improved switch as is necessary for the proper understanding of this invention. Fig. 2 is a rear elevation of Fig. 1, and Fig. 3 is a side elevation of the weight-releasing wheel and escapement device and the cam and dial shaft with the dial and its sleeve shown in section.

The switch of this invention is shown as having an insulating-base B with plus and minus contact-clips on one end and an unconnected or dead clip at the other end and a switch-blade *b*, mounted on one of the arms A of the lever, which is pivoted at its center to the base, the two arms forming an obtuse angle. The extremities of these arms are adapted to occupy a position either within and across a guide-channel G, of which there is one adjacent to each extremity, or to occupy a position free of said channels. When the right-hand arm is within its adjacent channel, the left-hand one will be free, and vice versa.

A suitable weight-releasing mechanism connected with a clockwork at a preselected time

causes a weighted ball to descend one of these channels to throw the switch into contact position, while at a different preselected time a similar weight-releasing mechanism causes a ball to descend the other channel to cut out the switch. Each of these two channels may be controlled by similar sets of time selecting and releasing mechanisms actuated by a common clockwork. Therefore in the following description I will describe but one of these mechanisms. As shown in the drawings, C is a clock mechanism operating a pinion P in the direction of the arrow, which pinion in turn rotates pinion *p* of the "On" dial 5. W is a weight holding and releasing wheel provided with a number of pockets *a* for the reception of weighted balls 2. The periphery of the wheel W enters a cut-away portion of the guide-channel G, which channel communicates with a hopper *h*, adapted to contain the balls. The wheel W is mounted on a freely-turning shaft *w*, carrying escapement-wheels *e*. (See Fig. 3.) On a counter-shaft *l* there is mounted an escapement-dog D, operated by a lever L from a cam 10, so proportioned that one oscillation of the counter-shaft will release the lowest ball from its pocket *a*. The pinion P on its shaft 3, as before stated, meshes with the pinion *p*, said pinion *p* turning freely on its shaft 6 and carrying with it throughout its revolution a dial 5, connected to it by a sleeve 4 for the reception of a thumb-nut N and may be of square cross-section for a distance behind the thread to allow lateral movement of a collar 8, carrying a pointer 9. The cam 10 is notched at *n* and secured fast to the shaft 6, which notch *n* corresponds in angular position to the pointer 9. The lever L heretofore described rests always upon the surface of the cam 10 in one position, except when caused to drop into the notch of the cam.

To set the device, supposing it be desired to make a connection for street-lamps at seven p. m. and to cut them out at five a. m. one would turn the left-hand pointer, Fig. 1, to "7" on the dark or p. m. half of the left-hand dial 5 and the right-hand pointer to "5" on the light or a. m. half of the other dial 5.

The clock is shown on the drawings at "6.33," which we will consider as p. m. The

two dials have a proportionate motion with the clock, but travel at half the speed of its hour-hand. If desired, the clock-face can be eliminated, in which case two stationary pointers may be placed where the stars appear on Fig. 1 and the time indicated by the dials alone. When the pointer 9, with its sleeve 8, was turned to "7," the notch *n* of cam 10 was also turned to a position in line with "7." Consequently the end of the lever L, Fig. 3, occupies a position substantially in line with the notch *n*, which notch and pointer, as shown on the drawings, are adjacent to the star. At seven o'clock the end of the lever L will fall into the notch, which will cause an oscillation of the shaft *l* and dog D, feeding the wheel W forward by one pocket, releasing a ball 2 and causing it to drop on the left-hand extremity of the arm A of the switch-blade *b*, thus throwing the switch. In the morning at five a. m. the right-hand dial, pointer, and notch of the cam will be in line with the end of its lever L and then the right-hand dog and releasing-wheel caused to release a ball, which in falling will strike the other arm of the blade to cut out the switch. It will be seen that while the dials turn always at a predetermined speed with relation to the clock mechanisms I can readily change the time of operation of the switch by merely changing the relative positions of the notched cam and the dial, and this is accomplished by merely loosening both thumb-nuts and rotating the pointers to positions in line with the hours desired on the "On" and "Off" dials.

I claim as my invention—

1. A time-controlled gravity-drop mechanism, comprising an operating-arm, a guide-

channel, an unattached weight, a weight-releasing mechanism adapted to release said weight to cause it to fall in said guide-channel, the said arm adapted to occupy a position within said channel in the path of the weight before its fall, and adapted to be withdrawn from the weight afterward.

2. A time-controlled gravity-drop mechanism, comprising a weight-holding wheel, weights therein, a clock-controlled release mechanism for said wheel, a vertical guide-channel for the weights depending from said wheel, and an operating-arm entering said channel and adapted to be directly operated upon by the weight as it falls from said wheel.

3. A time-controlled gravity-drop mechanism, comprising a clock, a cam, a weight-holding wheel, an escapement device for said wheel, releasing-lever therefor, operated by said cam, a depending guide-channel, said lever entering said channel.

4. A time-controlled gravity-drop mechanism, comprising a clock, a dial and a cam driven together by said clock, and means to lock said cam in adjusted positions, with relation to the clock mechanism, an escapement controlled by said cam, a weight-releasing wheel controlled by said escapement, a depending guide-channel adjacent to said wheel and an operating-arm entering said channel.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH G. SWALLOW.

Witnesses:

EDNA W. COLLINS,
SARAH CARSON CONNOR.