

No. 670,149.

Patented Mar. 19, 1901.

E. I. DODDS.

TIME SWITCH FOR ELECTRIC CIRCUITS.

(Application filed Sept. 9, 1899.)

(No Model.)

Fig. 1.

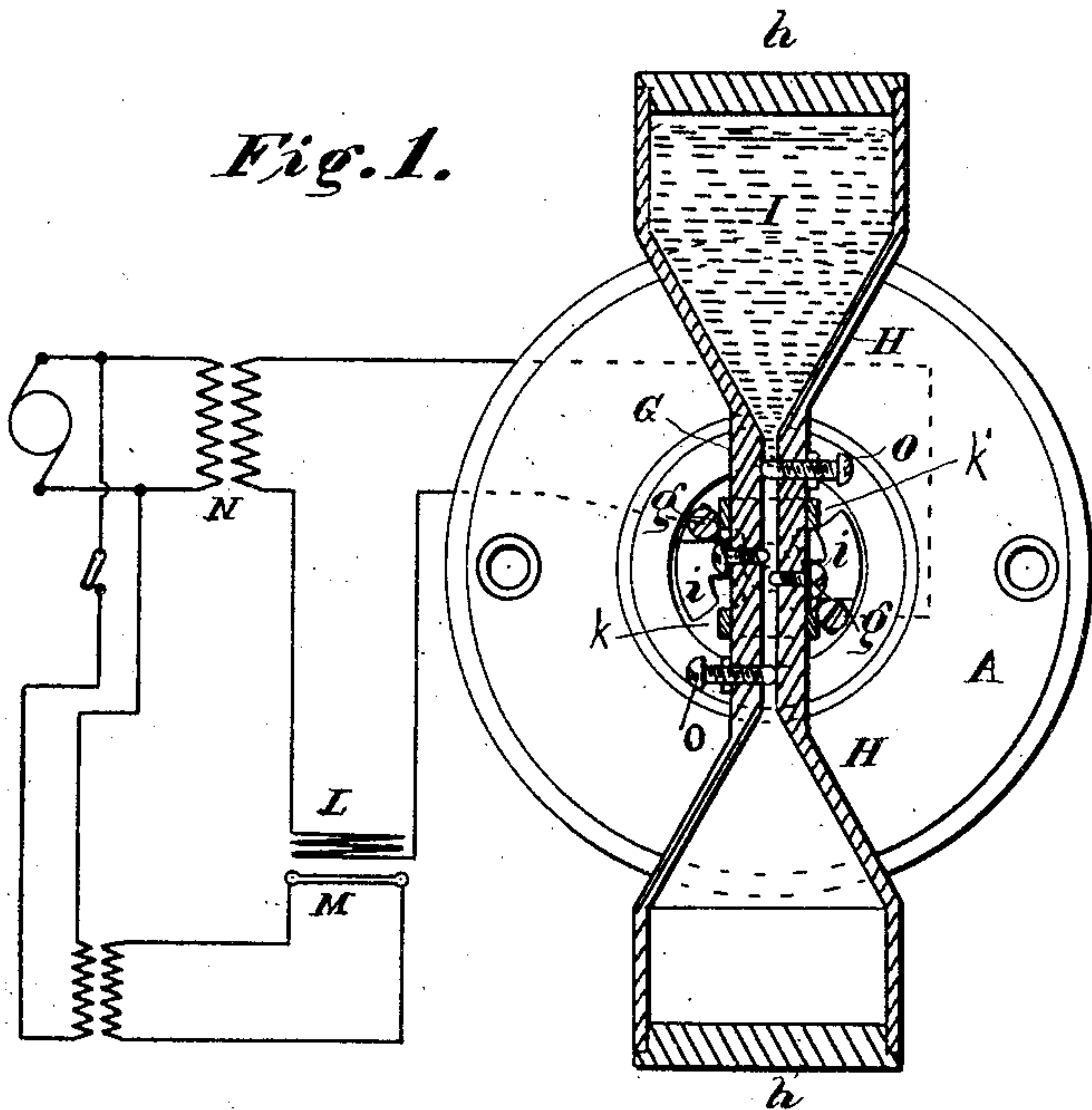


Fig. 2.

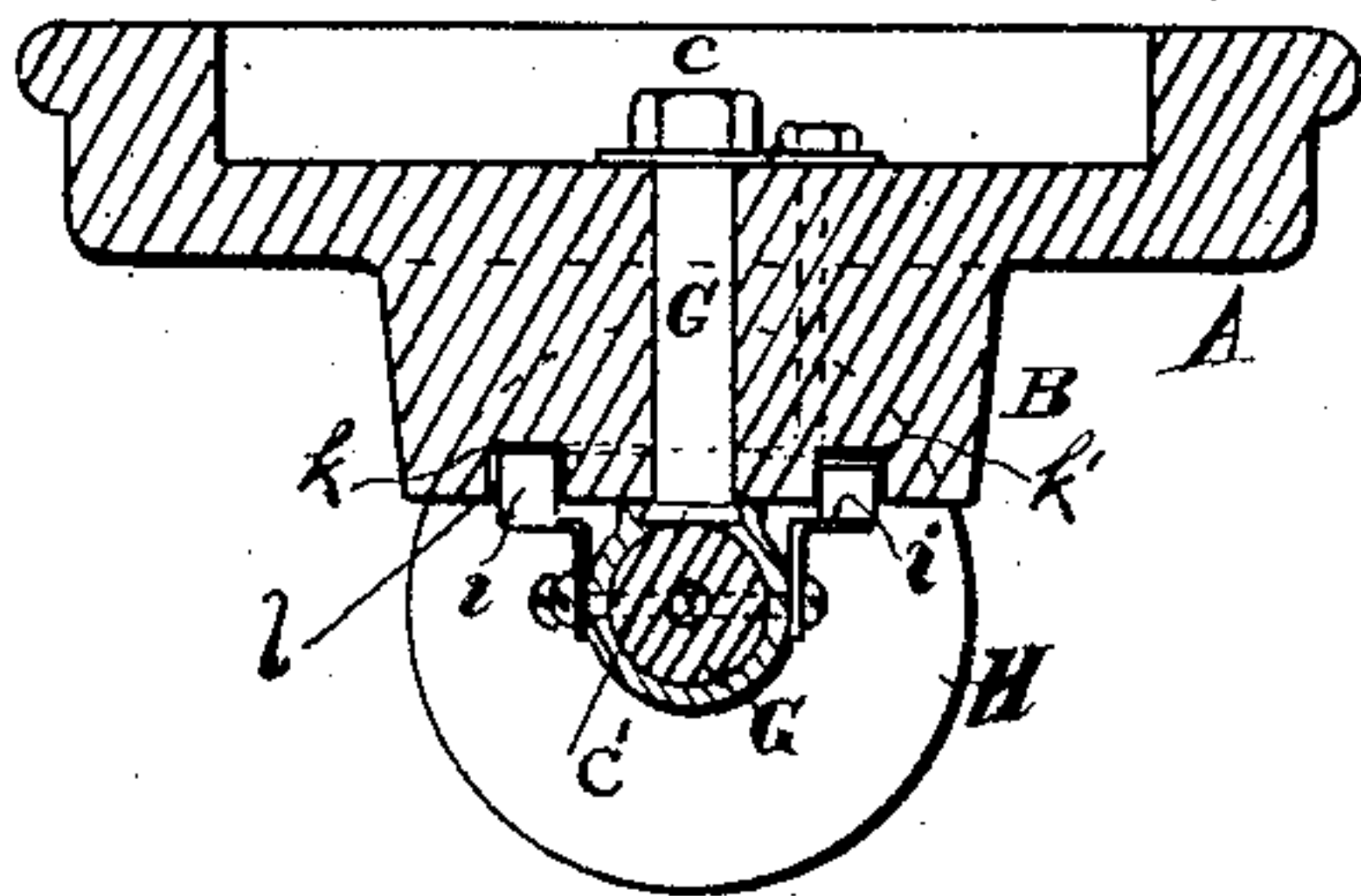
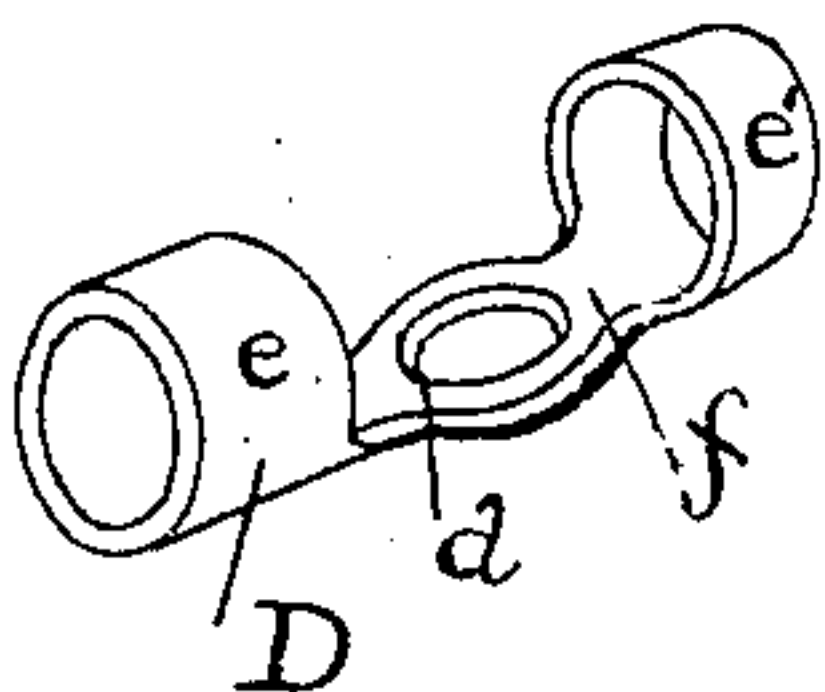


Fig. 3.



WITNESSES:

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ETHAN I. DODDS, OF AVALON, PENNSYLVANIA, ASSIGNOR TO GEORGE WESTINGHOUSE, OF PITTSBURG, PENNSYLVANIA.

TIME-SWITCH FOR ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 670,149, dated March 19, 1901.

Application filed September 9, 1899. Serial No. 729,891. (No model.)

To all whom it may concern:

Be it known that I, ETHAN I. DODDS, a citizen of the United States, and a resident of Avalon, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Time-Switches for Electric Circuits, of which the following is a specification.

When electric-lamp glowers, which are non-conductors when cold and are brought to a conductive state by means of electric heaters, are employed for lighting purposes, the operation of raising the temperature of the incandescing body to a sufficient degree occupies an appreciable amount of time. Under the same conditions of current and with the same glower or set of glowers the time occupied for this purpose would be practically uniform—that is to say, the heater if current were passed through it for a given time sufficient in one case to bring the glower to a conductive state would at another time produce the same effect upon the glower in the same length of time. I have provided a switch for controlling the heater-circuit, and I have so constructed and arranged the parts of my switch that when it is once set in operation it will hold the heater-circuit closed for a predetermined length of time, this time being selected as a safe one to insure the adequate heating of the glower.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a side elevation of one of my switches, showing some of the parts in section. Fig. 2 is a horizontal section through the central part of my switch, and Fig. 3 is a detail view.

The switch elements are mounted upon a base A, which may be secured to a wall or other vertical support. In the center of the said base I form a hub B, through which passes a shaft or bolt C, secured in place by a nut c. The outer end of the bolt C, is provided with the head c', which rests in a countersink d within a frame or holder D. The said frame or holder is illustrated in detail in Fig. 3. It consists mainly of a pair of rings e e', held together by a straight bar f. The rings are adapted to surround the shank G of a glass or rubber receiver H. This receiver is pro-

vided with cups at its opposite ends, which are adapted to hold mercury, as shown at I. Each cup is provided with a cap h h, which prevents the mercury from passing out at the ends of the receivers when the caps are in place.

By passing the bolt or screw C through the frame D and then securing the receiver H by means of the rings e e', the said receiver is pivotally mounted upon the base A or, more strictly, upon the hub B. An operator can with the hand turn the said receiver to any desired position with relation to the base.

Through the walls of the neck G, I pass screws g g', and by means of these screws I attach to the neck contact-springs i i'. These springs bear upon fixed segmental contact-strips k k' within a circular opening l within the hub B. Now these segmental contact-strips are the terminals of an electric circuit which includes a heater L in proximity to a glower M. The heater-circuit is supplied from a converter N or any other suitable source of electric current. The glower M may likewise be supplied from said converter or from any other source.

The screws g g' project into the opening or channel in the neck G, and when the mercury I is in contact with these screws the heater-circuit is completed and the heater is in operation. The descent of the mercury through the channel referred to is regulated by a screw o at each end of the channel. By adjusting the screw o the time which it takes for the mercury to descend through the channel can be very exactly regulated.

The operation of the switch is now clearly intelligible. Ordinarily the mercury will be in the lower chamber or cup and the upper chamber will be empty. To turn on the heater-circuit, the operator reverses the position of the chambers, placing the full chamber at the top and the empty chamber at the bottom, by simply turning the receiver with his hand. The mercury immediately begins to ascend and causes electrical connections to be made between the screws g g' and the heater begins to operate. It continues to operate so long as the mercury is flowing down through the channel or at least until all the mercury has passed below the upper contact-

screw *g*. After this time the heater-circuit is broken automatically. Meanwhile the glower has been brought to a state of conductivity, and the lamp of which the heater forms a part
5 continues to operate until the glower-circuit is broken by some other means.

The invention claimed is--

In a system for operating electric lamps having glowers which require to be heated,
10 to be rendered conductive, means for electrically developing a high temperature in the vicinity of the glower for rendering the glower

conductive, and means for automatically causing a cessation of such electrical development of high temperature after a predetermined period, independently of the operation
15 or non-operation of the glower.

Signed at New York, in the county of New York and State of New York, this 11th day of August, A. D. 1899.

ETHAN I. DODDS.

Witnesses:

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