

No. 781,339.

PATENTED JAN. 31, 1905.

J. HELMSTADTER, JR.
ELECTRIC TIME SWITCH.
APPLICATION FILED DEC. 11, 1903.

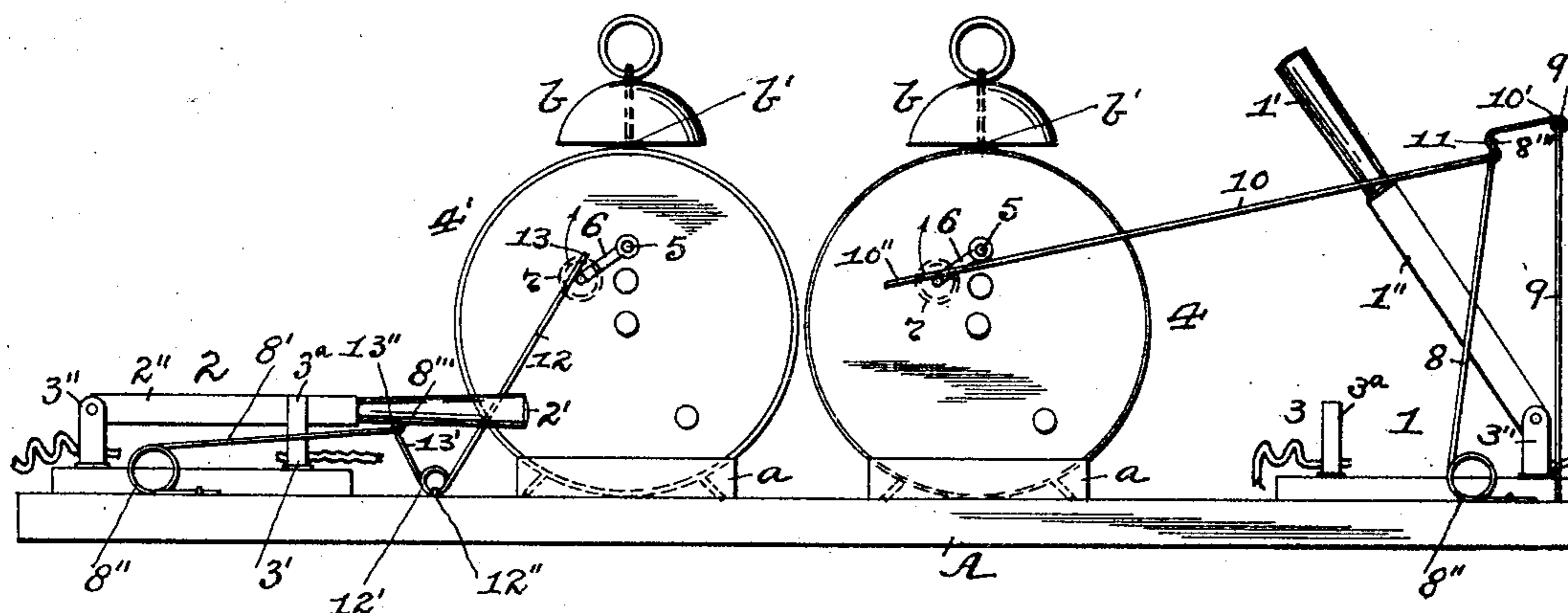


Fig. 1.

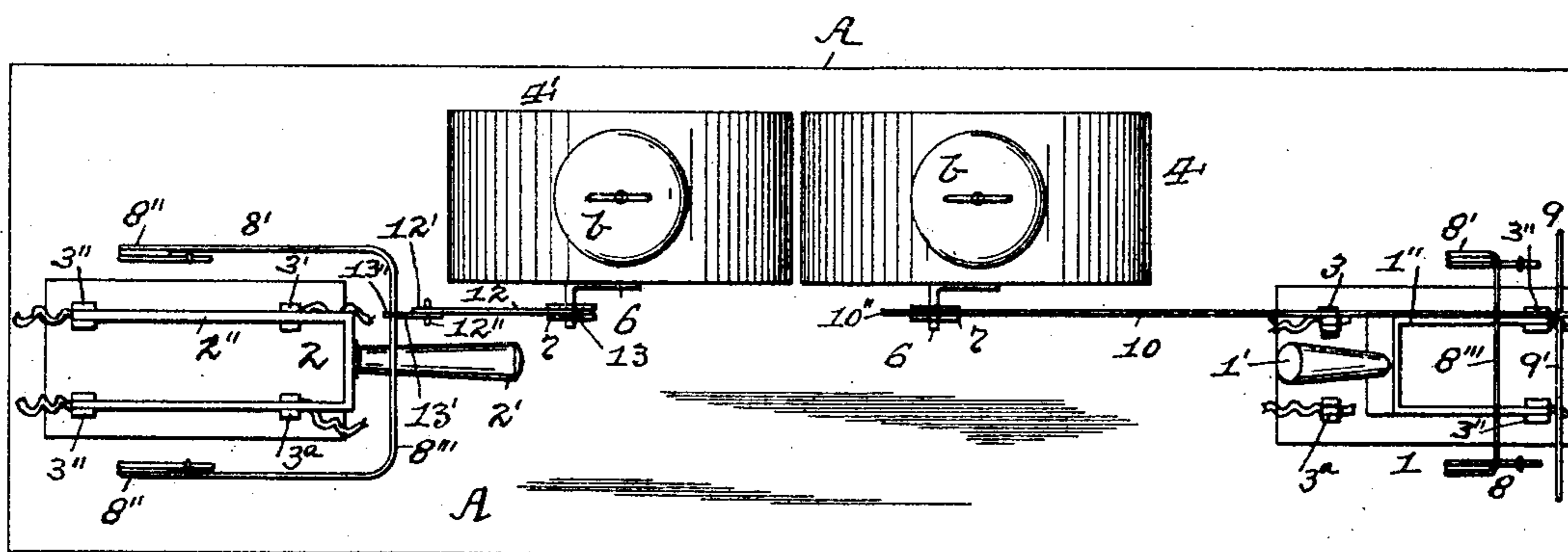


Fig. 2.

Witnesses:
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JACOB HELMSTADTER, JR., OF McKEESPORT, PENNSYLVANIA.

ELECTRIC TIME-SWITCH.

SPECIFICATION forming part of Letters Patent No. 781,339, dated January 31, 1905.

Application filed December 11, 1903. Serial No. 184,801.

To all whom it may concern:

Be it known that I, JACOB HELMSTADTER, Jr., a resident of McKeesport, in the county of Allegheny and State of Pennsylvania, have
 5 invented a new and useful Improvement in Automatic Electric-Switch-Operating Devices; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an automatic electric-switch-operating device, and has for its
 10 object to provide a cheap, simple, and effective mechanism for automatically lighting and extinguishing lamps at predetermined times—as, for instance, in shop-windows and similar
 15 places where it is desired to have the lamps in operation only during a specified period of time—thus avoiding the annoyance, expense, and possible neglect of personal service for such work.

My invention consists, generally stated, in the novel arrangement, construction, and combination of parts, as hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved automatic electric-switch-operating device I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a side elevation of two electric switches, showing my improved operating device connected thereto. Fig. 2 is a front elevation of the same.

Like symbols of reference herein indicate like parts in each of the figures of the drawings.

As illustrated in the drawings, A represents a backing or support of wood or other suitable material, upon which is mounted the
 40 double-pole electric switches 1 2 of any suitable construction, and which have their terminals 3 3' connected by positive and negative feed and distributing wires through the
 45 feed-box and to the current-receiving device, respectively, (not shown,) in the ordinary manner.

4 4' represent clock mechanisms of any of the well-known forms removably mounted in
 50 the standards *a* on the support A and are

each provided with the usual small dial whereby the operation of the mechanism hereinafter described may be regulated. As in all well-known forms of alarm apparatus, the clock is provided with a device constructed to
 55 operate at the time to which the hand on the small dial is set to move any form of alarm-releasing apparatus for operating the alarm *b* through the rod *b'*, and this rod *b'* is connected to a shaft 5, projecting through the clock for
 60 a crank-arm 6 thereon, and on which is preferably mounted a small grooved roller 7. In the present mechanism this device operates in the well-known manner to rotate the shaft 5 on each of the clocks 4 4', and with said shaft
 65 the crank-arm 6 and roller 7 thereon, while such shaft 5 constitutes the winding-shaft for the small dial mechanism.

Extending around each of the switches 1 and 2 are the U-shaped spring-pieces 8 8',
 70 which are preferably formed of wire and provided at each of their ends with the coiled sections 8'' thereon for being fastened in any desired manner to the support A, and so constructed that spring-piece 8 will always tend
 75 to assume a horizontal position to said support, while the other piece, 8', will always tend to assume a perpendicular position.

Extending up from the support A is the U-shaped standard 9, which is preferably formed
 80 of heavy wire and is so arranged that its end 9' extends across the switch 1, while pivoted or loosely secured to this end 9' by its bent end 10' is the lever 10, which is also preferably formed of wire, and its opposite end 10''
 85 is adapted to engaged with the grooved roller 7 on the crank-arm 6 of the clock 4. This lever 10 is also provided with a right-angle bent portion 11 therein for engaging with the forward end 8''' of the spring-piece 8 when this
 90 piece has been raised into a position substantially at right angles to the surface of the support A.

A bell-crank lever 12, made, preferably, of wire and provided with the coiled section 12',
 95 is fastened by such section to the support A at 12'' and one end, 13, is adapted to engage with the grooved roller 7 on the crank-arm 6 of the clock 4', while the opposite end, 13', is provided with a hook 13'' for engaging with
 100

the forward end 8''' of the spring-piece 8' when this piece 8' has been depressed into a position substantially parallel with the surface of the support A.

5 The use and operation of my improved automatic electric-switch-operating device is as follows: The pointers on the small dials of the clocks 4 4' are set at the hours at which it is desired the switches 1 and 2 are to be closed
10 and opened, respectively, and such small dial mechanisms are wound up by the crank-arms 6 on the shafts 5 thereof. The spring-piece 8 can now be raised and held in position by the bent angle portion 11 of the lever 10,
15 loosely mounted on the upper end 9' of the standard 9, engaging with the forward end 8''' of the spring-piece 8, and after this is done the end 10'' on the lever 10 can be placed or drawn over onto the grooved roller 7 on the
20 crank-arm 6 of the clock 4. The switch 1 can then be raised so that its handle 1' will be in the path of the end 8''' on the piece 8 when this piece is dropped or forced down to close the switch 2. After this is done the spring-
25 piece 8' can be pressed down into a position parallel with the face of the support A and be retained in this position by means of the hook 13'' on the bell-crank lever 12 engaging with the forward end 8''' on the spring-piece 8'.
30 The opposite end 13 of the lever 12 is then placed or drawn over the grooved roller 7 on the crank-arm 6 of the clock 4', and after this is done the switch 2 is dropped down onto its terminals 3', which will thus allow its handle
35 2' to be in position directly over the end 8''' of the spring-piece 8', so that with switches 1 and 2 and their engaging and operating parts in these positions, as shown in Fig. 1, the circuit is broken between these switches and the cur-
40 rent is unsupplied to the lights, motors, or other current-receiving devices. The various parts of the apparatus now remain in these respective positions until the time when the operating mechanisms in the clocks 4 4' are
45 actuated by reason of the arrangement of parts incident to the setting of the hands on the small dials of said clocks, so that when the first operation occurs in the clock 4 it will cause the crank-arm 6 on the shaft 5 of said
50 clock to be rotated, so that the end 10 on the lever 9 will be raised on the roller 7 of said crank-arm 6, and thereby release the angle portion 11 on said lever 9 from engagement with the forward end 8''' of the spring-piece
55 8, which will allow the end 10'' of the lever 9 to leave its roller 7 on the arm 6 and drop down onto the support A. This releasing of the end 10'' on the spring-piece 8 will immediately allow the said spring 8 to fly downward
60 by its pressure and in doing so come into contact with the handle 1' of the switch 1 by its forward end 8'', and so throws and drops said switch 1 on its pivots 3'', so that its blades 1'' are brought into contact with the jaws 3^a of
65 the terminals 3 of said switch, and thereby

allow the current to be supplied to the lights or other receiving devices. The next operation occurs in the clock 4'. The crank-arm 6 on the shaft 5 of said clock will be rotated and in its movement will raise the end 13 of
70 the lever 12 on the grooved roller 7, and thereby release the hook 13'' on said lever 12 from engagement with the forward end 8''' of the spring-piece 8', while the end 13 of the lever 12 will leave its roller 7 on the arm 6
75 and drop down onto the support A. This releasing of the end 8''' of the spring 8' by the hook 13'' will immediately allow said spring to fly upward by its pressure and in doing so comes into contact with the handle 2' of the
80 switch 2, and so raises the blades 2'' of said switch on its pivots 3'' and breaking contact between said blades and the jaws 3^a of the terminals 3', so as to cut off the supply of the current to the light or the other receiving de-
85 vices.

It will be evident that a single clock mechanism can be employed having two alarm mechanisms thereon, if desired, and that single or double pole switches can be used. It
90 will also be obvious that the alarms 4 on the clocks can be done away with, if desired, and that it will be further understood that while I have illustrated and described the preferred form and arrangement of parts of my inven-
95 tion it will further be obvious that the mechanical construction, as well as said arrangement, may be varied without departing from the spirit of the invention or sacrificing any of its advantages.
100

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with an electric switch, of an alarm-winding shaft in an alarm-clock, an arm on said winding-shaft, a spring-piece
105 extending over said switch in its raised position, and a lever connected to said spring-piece and engaging with said arm, said lever having an angular portion thereon for holding said spring-piece in its raised position and
110 for releasing the same to automatically drop said switch at a predetermined time in making an electric circuit.

2. The combination with an electric switch, of an alarm-winding shaft in an alarm-clock, an arm on said winding-shaft, a standard, a
115 spring-piece extending over said switch in its raised position, and a lever loosely mounted on said standard and engaging with said arm, said lever being connected to said spring-piece
120 by an angular portion for holding the same in its raised position and for releasing the same to automatically drop said switch at a predetermined time in making an electric circuit.
125

3. The combination with an electric switch, of an alarm-winding shaft in an alarm-clock, an arm on said winding-shaft, a standard, a
130 spring-piece extending over said switch in its raised position, and a lever loosely mounted

on said standard and engaging with said arm,
said lever being connected to said spring-piece
by a bent angular portion for holding the
same in its raised position and for releasing
5 the same to automatically drop said switch at
a predetermined time in making an electric
circuit.

4. The combination with a supporting-base,
of an electric switch, an alarm-winding shaft
in an alarm-clock, an arm on said winding-
shaft, a standard, a spring-piece secured to
said base and extending over said switch in its
raised position, and a lever loosely mounted

on said standard and engaging with said arm,
said lever being connected to said spring-piece 15
by a bent angular portion for holding the
same in its raised position and for releasing
the same to automatically drop said switch at
a predetermined time in making an electric
circuit. 20

In testimony whereof I, the said JACOB
HELMSTADTER, Jr., have hereunto set my hand.

JACOB HELMSTADTER, Jr.

Witnesses:

J. N. COOKE,

J. L. TREFALLER, Jr.