

(No Model.)

A. B. WILLIAMS.  
ELECTRIC TIME SWITCH.

No. 594,306.

Patented Nov. 23, 1897.

Fig. 1.

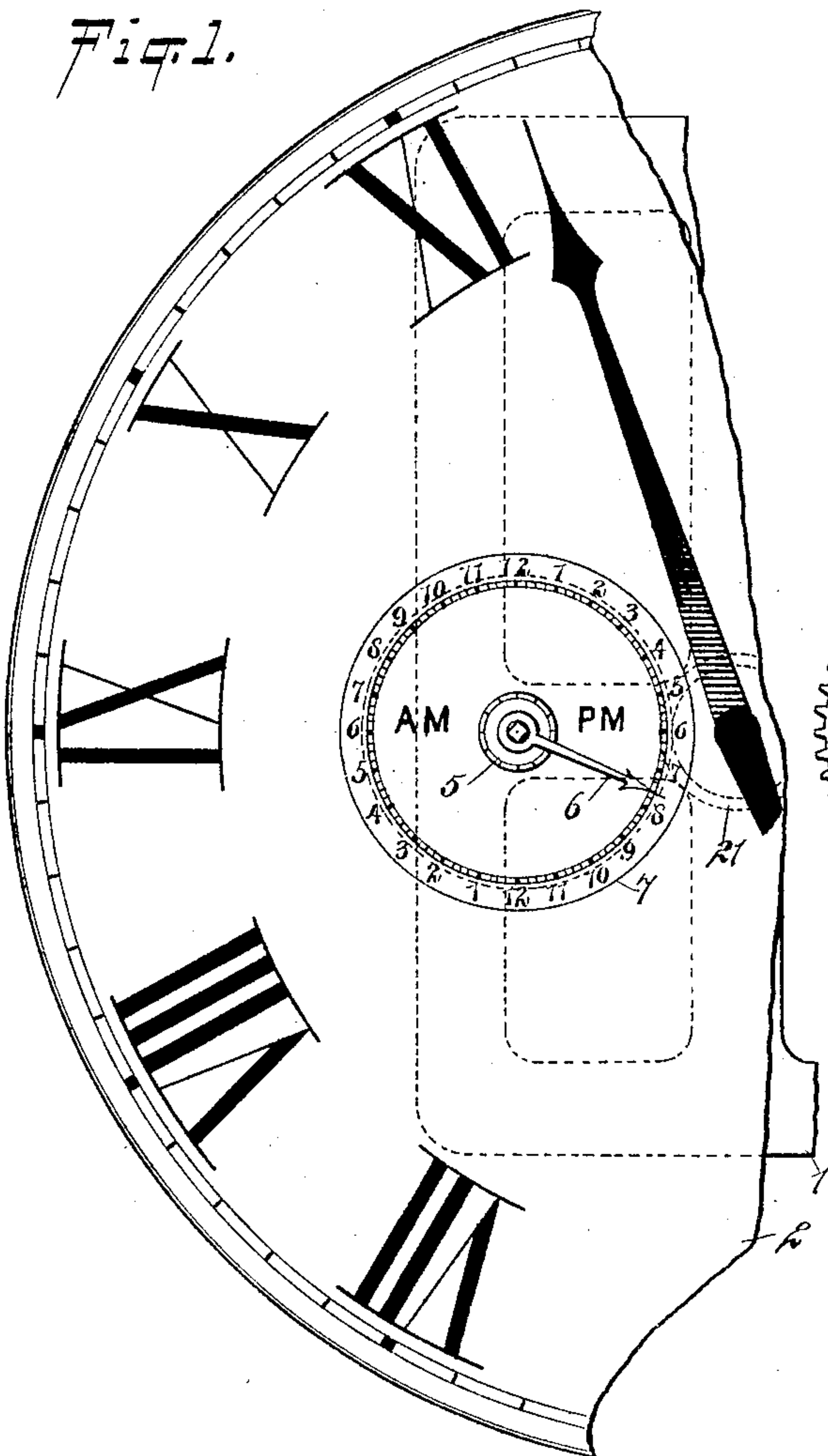


Fig. 2.

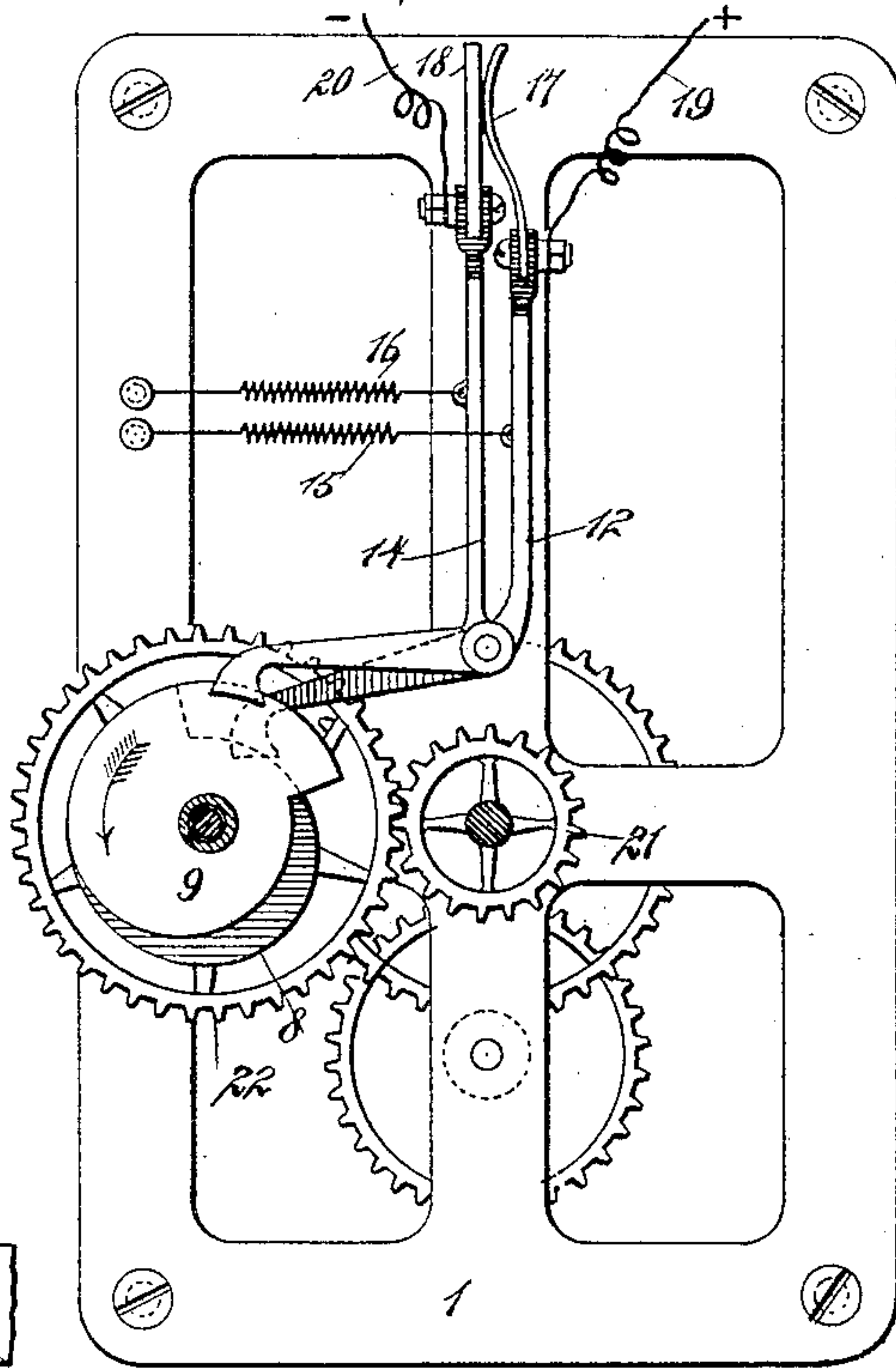
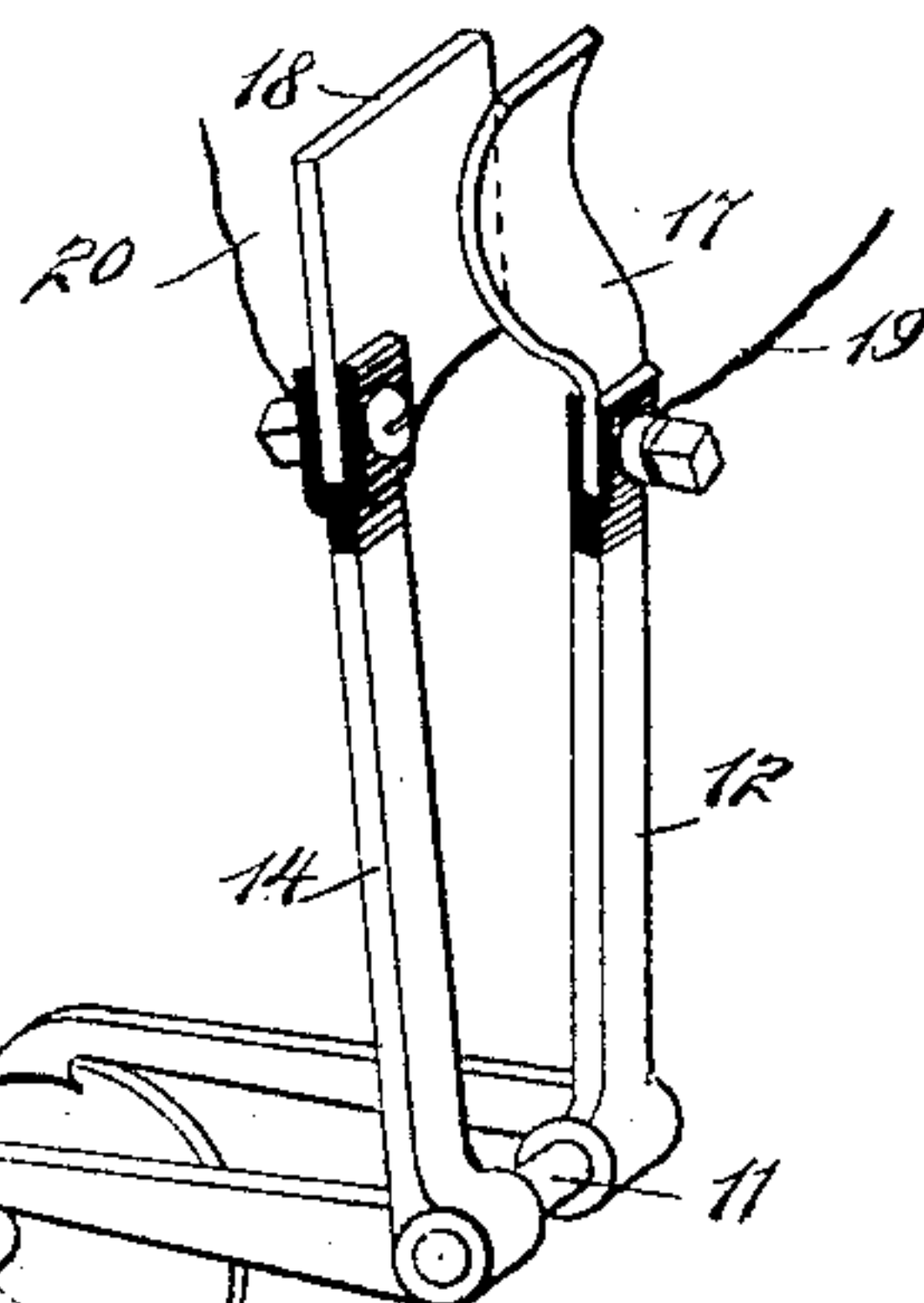
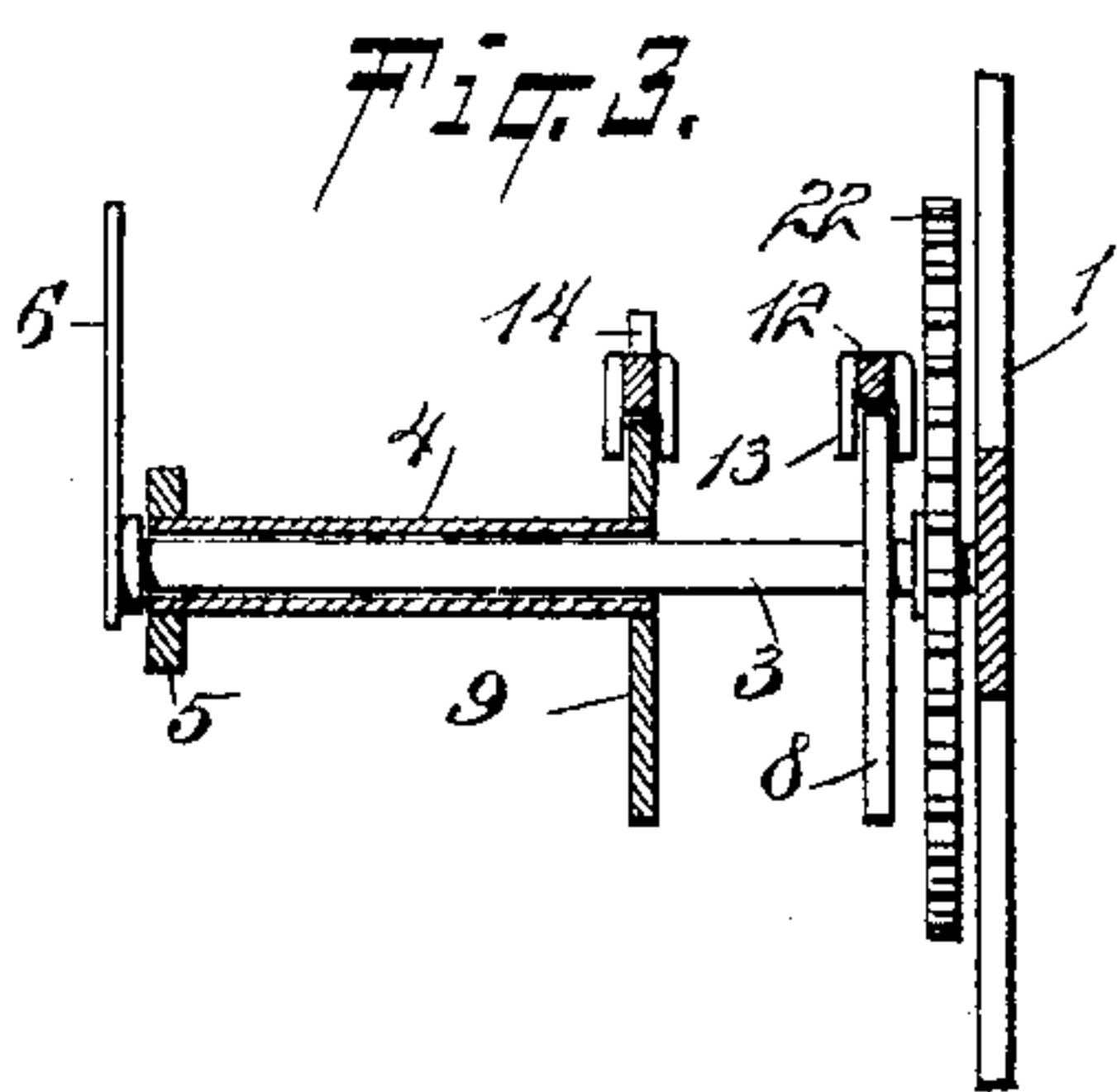


Fig. 3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ADDISON B. WILLIAMS, OF WACO, TEXAS, ASSIGNOR OF ONE-HALF TO  
LOUEY MIGEL, OF SAME PLACE.

## ELECTRIC TIME-SWITCH.

SPECIFICATION forming part of Letters Patent No. 594,306, dated November 23, 1897.

Application filed July 7, 1897. Serial No. 643,707. (No model.)

*To all whom it may concern:*

Be it known that I, ADDISON B. WILLIAMS, of Waco, in the county of McLennan and State of Texas, have invented a new and Improved  
5 Electric Time-Switch, of which the following is a full, clear, and exact description.

This invention relates to automatic electric time-switches; and the object is to provide such a switch of comparatively few parts and  
10 in which there is comparatively little friction, thus assuring accuracy and quickness of action.

While the switch is designed to be used on any kind of electric circuits and will effectually open or close them at any desired time  
15 of the day or night, this invention is more particularly intended to switch the lights on or off of mercantile or other shop-windows where it is not desired to burn the lights all  
20 night. The superior advertising qualities of a brilliantly-illuminated shop-window with an elegant display of attractive goods is undisputed and is becoming universally recognized as one of the most effectual and profitable  
25 means of attracting trade that the merchant has at command. The cost of light, however, is the one serious set-off to the profit of the window-display, owing to the fact that the lights will usually have to be burned  
30 all night or an attendant employed to turn them off.

The time-switch is intended to effectually and automatically switch the lights on and off at the times found to be the most profitable hours of the night, thereby practically  
35 reducing the amount expended for lighting windows to about one-third of the former cost as compared to the old way.

I will describe an electric time-switch embodying my invention, and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a fragmentary view of a clock-dial, showing my invention as applied thereto. Fig. 2 is an elevation showing the time-works of a clock as operating in connection  
50 with the switch. Fig. 3 is a sectional view

of the switch mechanism, and Fig. 4 is a perspective view thereof.

Having a bearing at one end in the time-works frame 1 and extended through the dial 2 of a clock is a shaft 3, and on this shaft 3  
55 is a sleeve 4, adapted to be moved rotatively with relation to the shaft 3. There will be sufficient frictional engagement, however, between the shaft 3 and the sleeve 4, so that both may be rotated together. The sleeve 4 also  
60 extends through the dial 2 and at its outer end has a graduated finger-piece 5, by means of which it may be turned relatively to the shaft 3, and the outer end of the shaft 3 is provided with a pointer 6, movable over a  
65 setting-scale 7 on the dial of the clock. Secured to the shaft 3 is a cam 8, and secured to the sleeve 4 is a cam 9, the cams being of a like construction. Each cam has its edge gradually increasing in distance from the axis  
70 of the shaft from one end to the other, and at the junction of the ends there is a shoulder 10.

Mounted to swing on a stud 11, extended from the frame 1, is an angle-lever 12, the horizontally-disposed arm of which engages with the periphery of the cam 8. Preferably the end of this horizontally-disposed member will have downwardly-extended side pieces 13 to  
80 engage against the sides of the cam and prevent any possible lateral movement of the lever relatively to the cam. Also mounted to rock on the stud 11 is an angle-lever 14, which has its horizontally-disposed member engaging with the periphery of the cam 9. The levers are respectively held yieldingly against their cams by means of springs 15 and 16, secured at one end to the vertically-disposed portions or members of the levers and at the other end to the time-works frame.  
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Secured to the upper end of the lever 12, but insulated therefrom, is a contact-plate 17, and secured to the upper end of the lever 14, but insulated therefrom, is a contact-plate 18, and these contact-plates are designed to  
95 make and break the electrical connection, as will be hereinafter described. Wires 19 and 20 lead from the contact-plates 17 18 to the lamps or other devices to be controlled. Rotary motion is imparted to the cams from the  
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time mechanism. As here shown, a pinion 21 on the hour-hand shaft of the time mechanism meshes with a gear-wheel 22 on the shaft 3. This gearing must be so related that  
5 a complete rotation of the cams will take place in each twenty-four hours.

In Fig. 2 I have shown the contacts 17 and 18 in their closed position—that is, the horizontally-disposed member of the angle-lever 10 12 is on a lesser periphery of the cam 8 and the horizontally-disposed member of the lever 14 is on a greater periphery of its cam 9. As the parts rotate together and the cam-shaft is rotated a sufficient distance to allow the lever 14 to move over the shoulder 10 of the cam 9 and engage its lesser diameter it is obvious that the spring 16 will draw the contact-plate 18 out of engagement with the contact-plate 17, thus quickly breaking the electric connection. One contact-plate being curved and there being a quick movement of the plates from each other it is obvious that they are not liable to stick, weld, or wedge, as is liable to occur with contacts sliding one upon the other.  
25 The length of time that the lights remain on is determined by the angle of the two shoulders 10 with relation to each other.

To set the switch, all that is necessary is simply to turn the finger-piece 5 until the pointer 6 is opposite the hour desired. This in turn actuates the cams 8 and 9. This setting will determine the time for the cam 8 to operate. To adjust the length of time for the burning of the lamps, the cam 9 must be adjusted relatively to the cam 8. This may be done by holding the pointer 6 and turning the sleeve 4, carrying the cam 9, until the proper time is reached, as indicated by the scale on the outer end of the finger-piece.  
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40 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An automatic electric switch, comprising rocking levers carrying contact-plates, the  
45 contact-plates being insulated from the levers, means for moving said plates directly from each other without rubbing action, a cam for governing each lever, the two cams being of like construction, means for adjusting the cams one relatively to the other, and  
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time mechanism for rotating the cams, substantially as specified.

2. An electric switch, comprising pivoted angle-levers, contact-plates carried by the vertically-disposed members of said levers and insulated therefrom, one of said plates being curved, cams engaged by the horizontally-disposed members of the angle-levers, the said cams being of like construction, means for adjusting one cam relatively to the other, springs for holding the levers yieldingly in engagement with the cams, and also serving to separate the contacts, and time mechanism for rotating the cams, substantially as specified.  
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3. An electric switch, comprising pivoted angle-levers, contact-plates on the vertically-disposed portions of said levers and adapted to engage, one with the other, a rotary shaft, a cam mounted on said rotary shaft, a sleeve mounted frictionally on said shaft, a cam carried by the sleeve, the said cams being of like contour, that is, having their peripheries gradually increasing in distance from the axis of the shaft from one end of the cams to the other, forming a shoulder at the junction, the horizontally-disposed members of the angle-levers being engaged with the peripheries of the cams, and also engaging with the sides thereof, and a time mechanism for rotating the cams, substantially as specified.  
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4. An electric switch, comprising pivoted angle-levers, contact-plates carried by the vertically-disposed members of the levers, but insulated therefrom, a rotary shaft having a pointer on its outer end movable over a time-dial, a cam on said shaft with which the horizontally-disposed member of one of the angle-levers engages, a sleeve frictionally mounted on said shaft and having a graduated finger-piece on its outer end, a cam carried by said sleeve and engaging with a horizontally-disposed member of the other of said angle-levers, and a time mechanism for imparting rotary motion to the cams, substantially as specified.  
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Witnesses:

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