No. 897,711. PATENTED SEPT. 1, 1908.

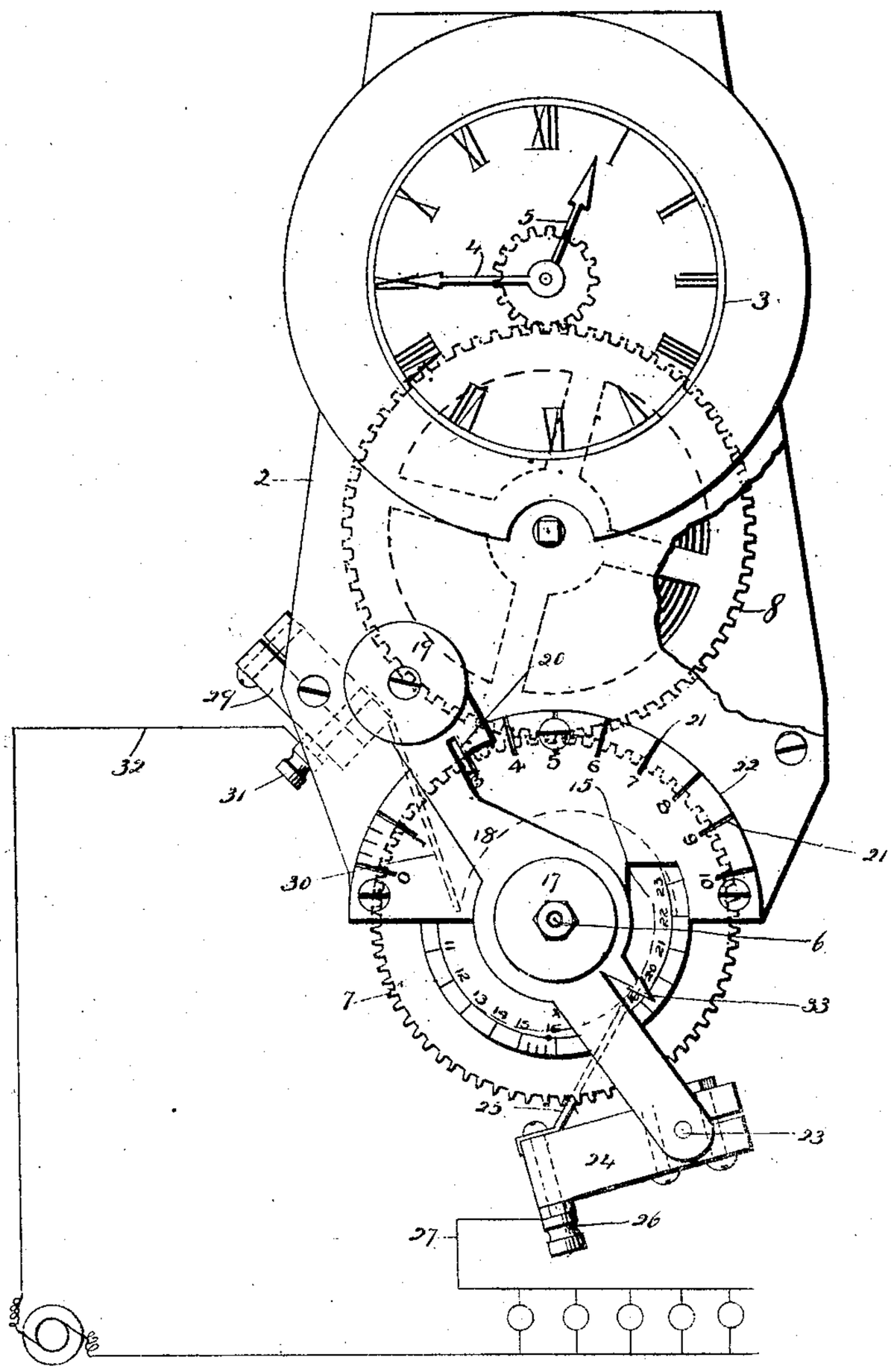
H. W. BROWN.

TIME SWITCH FOR ELECTRIC CIRCUITS.

APPLICATION FILED APR. 27, 1908.

3 SHEETS—SHEET 1.

Fig 1



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3 SHEETS—SHEET 2.

Fig. 2

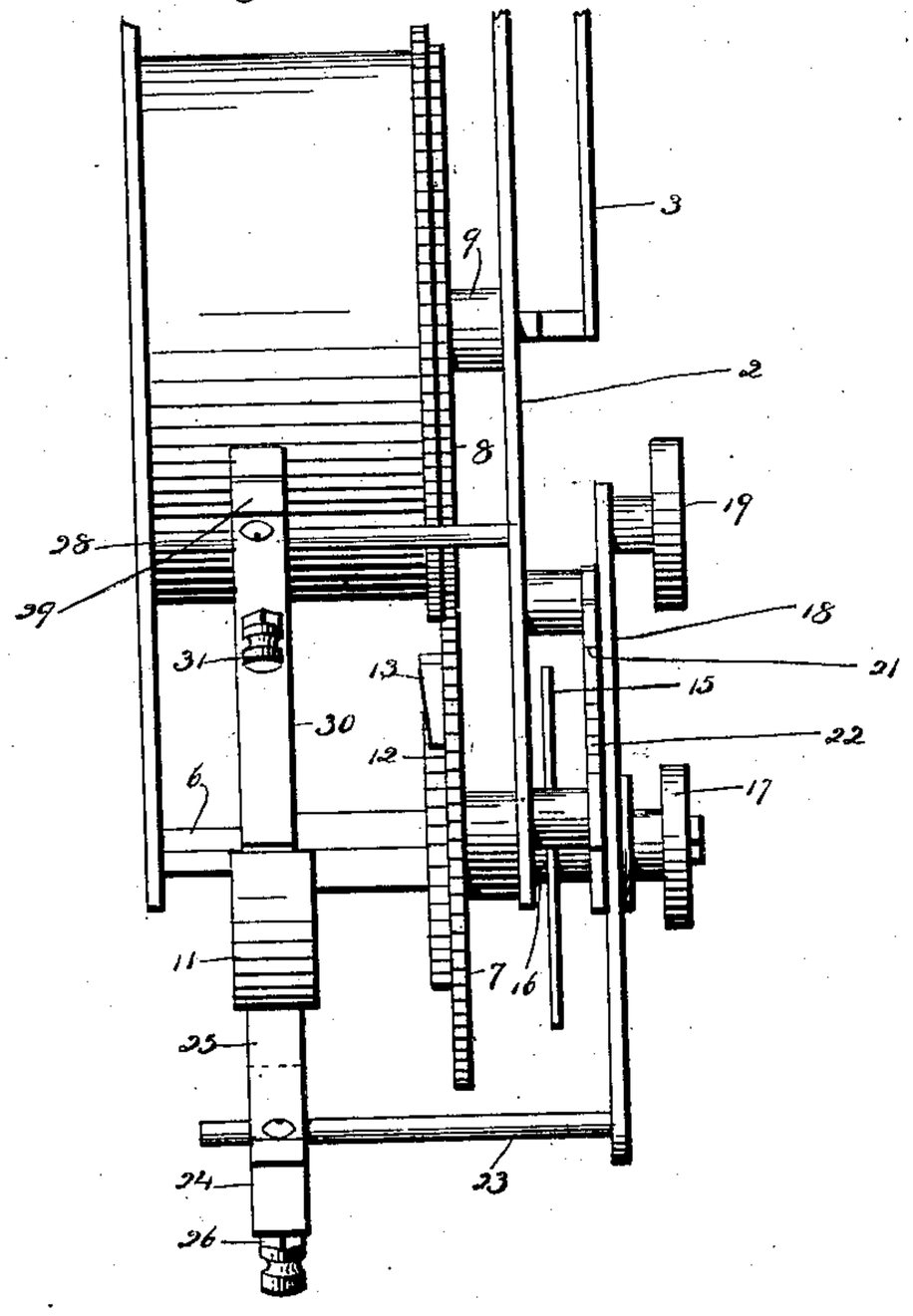
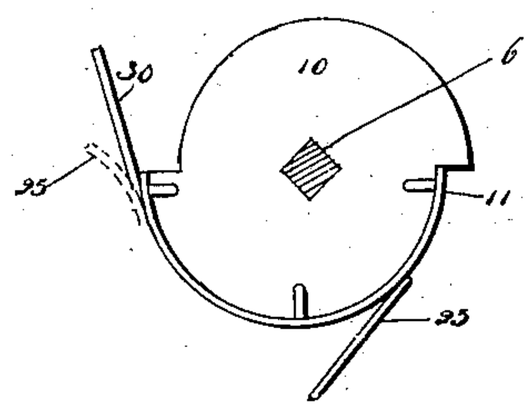


Fig. 3.



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3 SHEETS—SHEET 3.

Fig 4.

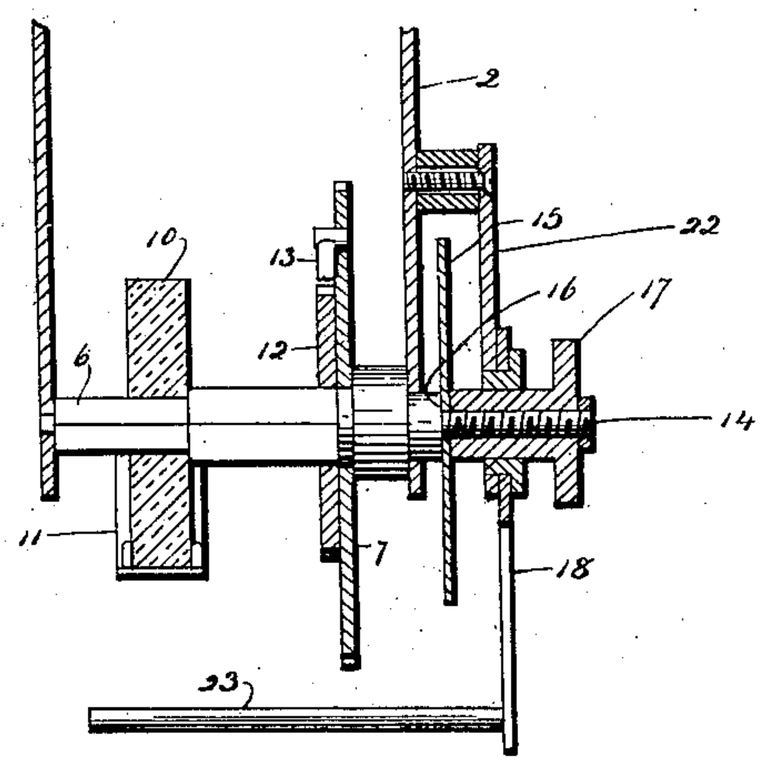
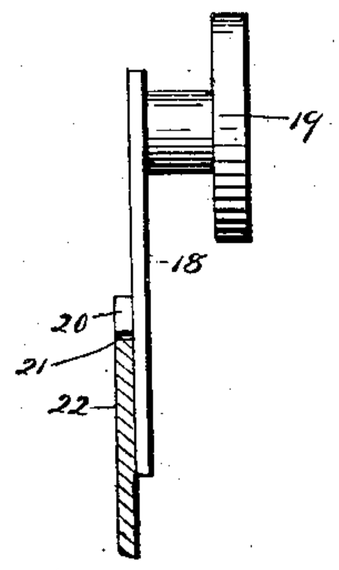


Fig 5.



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UNITED STATES PATENT OFFICE.

HAYDEN W. BROWN, OF WATERBURY, CONNECTICUT.

TIME-SWITCH FOR ELECTRIC CIRCUITS.

No. 897,711. Specification of Letters Patent. Patented Sept. 1, 1908.

Application filed April 27, 1908. Serial No. 429,532.

To all whom it may concern:

Be it known that I, HAYDEN W. BROWN, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Time-Switches for Electric Circuits; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a front or plan view of a time switch for electric currents constructed in accordance with my invention. Fig. 2 a side view of the lower portion of the time-movement plate and my improved switch mechanism. Fig. 3 a plan view of the switch plate detached, showing the contact fingers thereon. Fig. 4 a sectional view through the shaft of the switch mechanism. Fig. 5 a broken sectional view showing the engagement of the switch arm with the indicator plate.

This invention relates to an improvement in time-controlled switches for electric circuits, and while adapted especially for use in connection with limiting the time during which electric currents may be switched on for use in electric lights, is adapted for various other purposes, such, for instance, as on automobiles where it is desired to cut out the electric circuit during any predetermined period, the object of the invention being a simple arrangement of parts which may be used in connection with an ordinary time mechanism; and the invention consists in the construction hereinafter described and particularly recited in the claims.

In carrying out my invention I employ a time mechanism of any desired type, preferably a movement which will run for at least eight days without rewinding. In the drawings 2 represents the front movement plate of an ordinary clock movement; 3 the dials, and 4 and 5 the hands thereof. Adjacent to the clock movement and preferably mounted in the movement plates thereof which may be made longer for the purpose, is a shaft 6 carrying a gear wheel 7 by which it is turned, this wheel meshing with the gear wheel of the clock movement or a wheel turned thereby. As herein shown the gear 7 meshes with a gear 8 on the winding shaft 9 and the teeth of the gears 7 and 8 are such that the gear wheel 7 will make a complete revolution once in twenty-four hours. Mounted upon the shaft 6 to turn therewith is a switch block 10 of wood fiber having a portion, and substantially half of its periphery covered by a metal switch plate 11. The gear 7 is mounted on the shaft 6 so as to be turned independently of it, and in order to turn the shaft a ratchet 12 is fixed to the shaft and a pawl 13 to the wheel 7 the pawl being adapted to engage with the ratchet when turned in one direction, and to ride over it when turned in the opposite direction. The outer end of the shaft 6 has a threaded stem 14 over which is passed an hour dial 15 which is clamped to the shoulder 16 on the shaft 6 by a thumb nut 17. On the nut 17 is a hollow rivet 31 secured to the plate 22 and on which is mounted a switch arm 18 adapted to be turned by an operating knob or handle 19 and having a finger 20 to engage with notches 21 in the edge of a segmental indicator plate 22 which is secured to the front plate 2 or a part carried thereby.

At the end of the switch arm opposite the handle 19 is an inwardly projecting rod 23 to which is clamped an insulating block 24 carrying a contact finger 25 which is connected through a binding post 26 with one line 27 of the electric circuit, the contact arm 25 extending into the path of the switch plate 11. Secured to a post 28 or other convenient point is a similar insulating block 29 carrying a spring contact finger 30 connected through a binding post 31 with the other line 32 of the circuit. The switch arm 18 is also provided with a pointer 33.

The indicator plate 22 is marked from 0 to 10, but may be with any series of numbers to indicate the length of time that the electric current shall be turned on; that is, when the lever 18 is turned it moves the contact finger 25 so that the time in which it will be connected by the switch plate 11 with the contact finger 30 will correspond to the figures on the indicator 22.

The dial 15 is numbered from 1 to 24, and on it I will place an X, or other character, which, when brought to the lowest position will be when the contact finger 30 has just escaped from the switch plate 11 and bears against the insulated portion of the block 10. If it is desired that the switch shall be closed for three hours, the switch 18 will be moved until the finger 20 engages with the notch above the figure 3 on the indicator dial 22

with which it would thereby be interlocked and so as to hold the block 24 carrying the contact finger 25 in a stationary position. If now, it is desired to close the circuit at some subsequent time, the dial 15 will be turned from left to right or back to the number on the dial corresponding to the number of hours to elapse between the present time or time of setting to the hour at which the circuit is to be closed. Thus as indicated in Fig. 1 the pointer 33 stands at quarter past 19, the time being 12:45 p. m. If it is desired to close the circuit at 6:45 p. m., the hour dial 15 will be turned back until the pointer 33 stands over the figure 6 and so that at the expiration of six hours the two contact fingers will both come upon the switch plate 11 and close the circuit, and in such position that in six hours the switch block 10 would be turned so that both contact fingers 25 and 30 would be connected through the switch plate 11, thus closing the circuit and they would both be in contact with this plate for a period of three hours at the expiration of which time the switch block 10 would have been turned by the time mechanism to such an extent that one or both of the fingers would escape from the switch plate and one or both of them rest upon the insulated portion so as to open the circuit. The length of the switch plate 11 is slightly less than a half circle so that when the switch arm 18 is turned to 0, the contact finger 30 will escape from the switch plate 11 before the contact finger 25 engages with it so that although the switch block 10 makes a complete revolution it will not at any time close the circuit. On the other hand the switch may be turned beyond the point 10 so that the contact fingers 25 and 30 will be in contact and thereby continuously close the circuit. It will thus be seen that the device for use for electric lights can regulate the time at which the lights will be turned on during which they will continue on at the expiration of which they will be automatically cut off. The device may also be used on the sparking mechanism of an automobile which at the expiration of a certain predetermined period of time would be cut off and at a certain time be turned on.

It will be seen that the device is extremely simple and can be readily attached to any time movement, that there are but few parts and consequently not liable to disarrangement.

It is apparent that more than one switch block might be arranged on the shaft so that two or more wires of the same circuit could be controlled by the same mechanism.

I claim:—

1. In a time switch for electric circuits, the combination with a time mechanism, of a gear wheel turned thereby, a shaft on which the wheel turns and which is turned by the wheel, a switch block mounted on the shaft and turned by said wheel, contact surfaces on said switch block, contact fingers in engagement therewith, and means for adjusting one of said fingers, substantially as described.

2. A time switch for electric circuits comprising a time mechanism, a gear wheel turned thereby, a shaft on which the said gear is mounted, a switch block on said shaft and adapted to be turned by said gear, said switch block formed with a contact surface, contact fingers arranged adjacent to said switch block, a switch arm carrying one of said contact fingers, and an hour dial fixed to said shaft, substantially as described.

3. A time switch for electric circuits comprising a time mechanism, a gear wheel turned thereby, a shaft on which the said gear is mounted, a switch block on said shaft and adapted to be turned by said gear, said switch block formed with a contact surface, contact fingers arranged adjacent to said switch block, a switch arm carrying one of said contact fingers, an hour dial fixed to said shaft, and an indicating dial with which the switch arm may be interlocked, substantially as described.

4. A time switch for electric circuits comprising a time mechanism, a gear wheel turned thereby, a shaft on which the gear wheel is mounted, a switch block mounted on said shaft and adapted to be turned by said gear and having a switch plate secured to the edge thereof, contact fingers adjacent to said switch block, a switch arm having an inwardly projecting arm by which one of the contact fingers is carried, an hour dial fixed on said shaft, and an indicating dial over which the switch arm is turned, substantially as described.

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

HAYDEN W. BROWN.

Witnesses:

M. MAKEPEACE,

BERTHA J. FRENCH.