(No Model.)

J. H. DYSON.

ELECTRIC CLOCK.

No. 491,339. Patented Feb. 7, 1893.

Fig. 1.

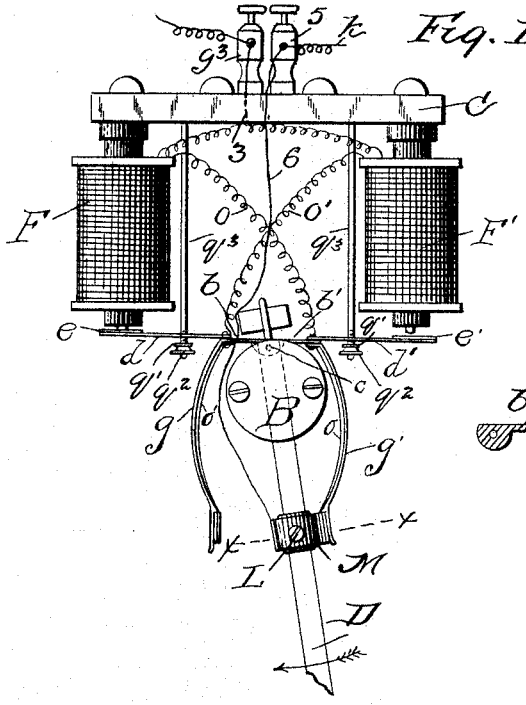


Fig. 4.

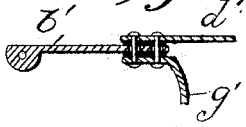


Fig. 2.

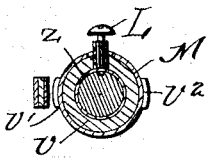
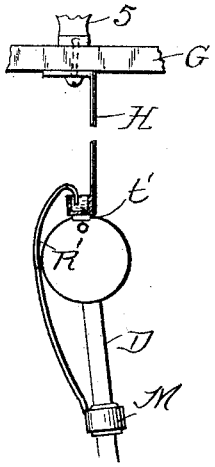


Fig. 3.



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ELECTRIC CLOCK.

SPECIFICATION forming part of Letters Patent No. 491,339, dated February 7, 1893.

Application filed June 6, 1892. Serial No. 435,603. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. DYSON, a citizen of the United States of America, residing at Belleville, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Electric Motors for Pendulum Clocks, of which the following is a specification.

My invention relates to electric clock motors and is an improvement upon the form of device shown in Letters Patent of the United States No. 439,838, of November 4, 1890, granted to me. My object in the present invention is to generally simplify the construction dispensing with a number of the parts shown in said patent, and to render the operation of the device positive and certain.

In the accompanying drawings, Figure 1, is a front view of my improvements. Fig. 2, is a sectional view on line x—x of Fig. 1. Fig. 3, is a detail view of a modified form of the electrical connection. Fig. 4 a view of a detail.

The pendulum D, the perforated stud-bolt B, the magnets F, F′, the armatures e e', carried on the arms d d', which are pivoted at c in line with the axis of the pendulum, are all of substantially the same form as those in the patent referred to.

In the present case, I utilize the depending arms g g' for the purpose of making and breaking the circuit, said arms being electrically connected with the wires o o' which connect respectively to one of the terminals of the magnets F F′. The arms d d', are insulated from the parts b b' of the arms, which parts are pivoted at c, as before described. The other terminals of the magnets connect with a wire 3, leading to a binding post g^3, and from this binding post electrical connection is made to the magnet of the registering mechanism, the return wire k, connecting with the binding post 5, from which the circuit is continued by the wire 6, which may be insulated and connected electrically to the collar M, secured to the pendulum intermediate of the lower ends of the arms g g' by a set screw L, passing through a boss on an interior ring z on the pendulum D, suitable insulating material v, being interposed between the ring and the collar. The collar carries platinum contact strips v' v^2, arranged to contact with similar strips on the depending arms g g' of the pivoted armatures.

The magnets F F′ and the binding posts are carried by a plate C from which the rods q^3 depend, and pass through openings in the arms d d' of the armatures, the lower ends being threaded and provided with set nuts q' and jam nuts q^2, the movement of the arms with the armatures and depending arms g g' being thus limited to regulate the duration of the contact between said depending arms and the collar M. In the position shown the collar is in contact with the right hand depending arm, and the circuit is thus closed through said arm, the wire o, the left hand magnet F, the binding post g^3, the registering mechanism, the binding post 5, the wire 6, and the collar. The said magnet is thus energized, and the armature e is held up. As the pendulum swings in the direction of the arrow, the armature e', and the depending arm g' follow said movement, until the arm d' comes in contact with the stop nut q'. The arm g' will thus be arrested and the circuit broken between it and the collar M, thus cutting out the magnet F, and releasing its armature, which immediately falls and carries the arm g into contact with the ring M, which advances to meet it, and this action reverses the movement of the pendulum by reason of the weight of the armature and arm g, and in addition to this electrical contact is established between the said arm and the collar M, thus cutting in the right hand magnet F′, through its wire o' and the connections before described. The armature e' is immediately drawn up, retracting the arm g' to its outward limit, and the contact between the arm g and the collar M remains to keep the magnet F′ in circuit until the armature e is arrested by its stop nut q when the contact is broken, cutting out the magnet F′ and allowing the armature e' to fall, and throw the depending arm g' in contact with the collar M, thus reversing again the movement of the pendulum and cutting in the left hand magnet F with the result before described.

In Fig. 3, I show a modified form of connection between the binding post 5 on the supporting plate C, and the collar M of the pendulum, by which the use of the wire 6 is avoided, which as shown, is subjected to constant

bending during the oscillation of the pendulum. This connection in the modified form, consists of the rigid arm H connected mechanically with the plate C and electrically with the binding post 5. It has at its lower end a mercury cup t', this being located near the pivotal point of the pendulum. A rod R′ has its upper bent end immersed in the mercury, and its lower end connected with the collar M, from which it will be seen that the oscillation of the pendulum will not affect the electrical connection, as the upper end of the rod R′ is at the pivotal point of the pendulum. A similar form of mercury cup connection may be used between the wires $o\ o'$ and the depending arms $g\ g'$. Instead of employing depending arms $g\ g'$ as a part of the electrical connection, the wires $o\ o'$ may be continued downward and connected to the platinum points suitably insulated and carried on the said arms. The collar M indicates any form of contact.

I claim as my invention:

1. In combination the pivoted pendulum, the magnets, F F′ the pivoted armatures of said magnets, the depending arms $g\ g'$ connected with the said armatures and arranged to make and break the circuits substantially as described.

2. In combination, the pivoted pendulum, the magnet, F F′ the pivoted armatures of said magnets, the arms $g\ g'$ carried thereby, the interposed contact collar M on the pendulum, the electrical circuits, including the magnets, the contact points on the depending arms, and the interposed collar, the said arms being arranged to make and break contact with said collar, substantially as described.

3. In combination the pivoted pendulum, the magnets, the armatures thereof, the depending arms carried by said armatures, the collar M on the pendulum and in the electrical circuit, said collar being adapted to contact with the contact points of the depending arms and the means for limiting the falling movements of said arms substantially as described.

4. In combination, the pivoted pendulum, the magnets, the armatures carrying the arms, $g\ g'$, the contact collar M, interposed between the arms $g\ g'$, the electrical connection, including the depending arm H, having the mercury cup K at or near the pivot of the pendulum, and the rod R′ connected with the collar, and having its upper end immersed in the said mercury cup, and the means for limiting the movement of the arms $g\ g'$, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. DYSON.

Witnesses:
MYRON ROSS,
SAMUEL TALMAGE.