



PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION.

Improvements in Electric Clocks.

I, CHARLES EDMOND PRINCE, British subject, of Stubblings Manor, Burchetts Green, Berkshire, do hereby declare the nature of this invention to be as follows:—

This invention relates to electrically driven clocks and its object is to provide a clock in which the vibrations of the pendulum shall be almost entirely free and such work as the pendulum has to perform is symmetrical and very small. According to this invention I provide a polarised reversing relay in circuits which are so arranged that they are made by the pendulum and broken by the relay. Preferably the relay consists of a pivoted soft iron bar or armature carrying a winding, and with one of its ends between the poles of a permanent magnet, while its other end carries, preferably at the extremity of a flexible arm so that contact is retained for a longer period during the movement of the armature, a contact adapted to come alternately against two fixed contacts. Each of these fixed contacts is in series with a battery or other source of current, an electro magnetic device such as a solenoid winding, and a light spring contact adjacent to the pendulum. Let us suppose that the contact carried by the relay armature is touching the right hand one of the two fixed contacts. Then when the pendulum during its swing to the right touches the right hand spring contact, it completes the circuit through the winding of the relay armature, and through the right hand solenoid, which therefore attracts a core carried by the pendulum rod, so imparting a sustaining impulse to the pendulum. The current flowing through the winding on the relay armature, however, causes the armature to turn on its pivot until its spring contact breaks the circuit and comes against the left hand fixed contact, thus prepar-

ing the other circuit. The pendulum then swings over to the left until the contact carried by it completes the other circuit, whereupon, as before, a momentary current flows through the left hand solenoid, which attracts the core of the pendulum rod, and being now arranged to be in a reversed direction through the armature winding, causes the latter to swing back and so on. The momentary current through the armature winding may be employed to work one or more step by step clock mechanisms by any method well known in the art.

Instead of employing two sources of current to effect the reversal through the armature winding, one source can be employed, and the armature may carry two contacts so connected as to effect the necessary reversal.

Alternatively, the sustaining impulse instead of being imparted to the pendulum on each oscillation may be given by one solenoid at every alternate oscillation, or through the step by step mechanism at any desired intervals.

Since this invention can easily be made to allow considerable latitude in the position of the parts in a vertical direction, a feature of it is that a fine adjustment of the pendulum may be made from the upper end without the necessity of stopping it, by moving a portion of its length through the fixed point of suspension; as, for instance, by hanging the rod from a thin strip of metal passing through a narrow aperture in the frame, and by drawing this strip upwards, or by allowing it to pass downwards, by means of a screw and nut.

It will be seen that with such an arrangement the mechanical work that is to be done by the pendulum is exceedingly light, and is perfectly symmetrical; that the pendulum only makes and never breaks the circuits, so that there is no

