N° 14,126 A.D. 1910

Date of Application, 10th June, 1910.
Complete Specification Left, 10th Jan., 1911—Accepted, 10th July, 1911

PROVISIONAL SPECIFICATION.

Improvements in or relating to Electric Clocks.

I, FRANK HOLDEN, of No. 1, Harcourt Buildings, Temple, London, E.C., Electrical Engineer, do hereby declare the nature of this invention to be as follows:—

My invention relates to electric clocks more particularly of the kind described in my Patent Application No. 14,873 of 1909 and has for its object to provide an improved contact arrangement whereby chattering of the movable contact carried by the pendulum or balance-wheel is entirely prevented, thereby ensuring effective and certain closure of the circuit of the energising coil during the time of engagement with the fixed contacts.

According to my invention I construct the contacts of magnetic material and I magnetise both of these contacts. The magnetisation may be inductively produced by a magnetic field located in the neighbourhood of the point of engagement of the contacts or, more simply, by using a movable contact of a piece of steel such as watch-spring steel, which is magnetised before it is mounted on the pendulum. This piece of steel is provided at its upper end with a loop of silver, by means of which it is loosely hung upon a silver pin projecting from the pendulum. The lower end of the contact is tipped with silver or other suitable metal at the point where it engages the fixed contact or contacts and these fixed contacts are constructed of nickel or other suitable magnetic material, preferably coated with silver, so that when the movable steel contact member is carried by the pendulum into engagement with the fixed contacts it is magnetically prevented from rebounding from the contacts, thereby ensuring that the current in the coil is effectively made during the time of engagement.

Dated this 10th day of June, 1910.

JOHN GRAY,
83, Cannon Street, London, E.C.,
Agent for the Applicant.

COMPLETE SPECIFICATION.

Improvements in or relating to Electric Clocks.

I, FRANK HOLDEN, of 1, Harcourt Buildings, Temple, London, E.C., Electrical Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to electric clocks of the kind in which the time-keeping element, that is the pendulum or balance wheel, carries a pivoted contact which by the motion of the said element, periodically engages a fixed contact, thereby closing the electric circuit which energises the time-keeping element.

[*Price 8d.*]

Holden's Improvements in or relating to Electric Clocks.

An example of a clock to which my invention is more particularly applicable is given in my Patent No. 14,873 of 1909. Clocks constructed as described I find have a liability to variation in the amplitude of swing of the pendulum, apparently due primarily to the rebound of the contacts after touching which probably causes a variation in the duration of the time of actual contact. By means of my invention the electrical contact is made preferably definite, and invariable in character resulting in constancy of the amplitude of swing and incidentally in an increase of the electrical efficiency of the driving element.

According to my invention the moving and fixed contacts are magnetised so that when touching or nearly touching a magnetic attraction takes place between them of sufficient strength to prevent rebound, the consumption of energy in the contact mechanism being still so small as not to interfere with the time keeping properties of the clock.

In the accompanying drawing, illustrating my invention, I have shown in front elevation part of the pendulum clock illustrated in the patent specification above referred to. Referring now particularly to the drawing, *a* is the pendulum bob, *b* is the energising coil and *c* are the magnets through the fields of which the coil *b* is swung by the motion of the pendulum. The movable contact consists of a strip *d* of magnetic material, such as watch-spring steel, which is provided at its upper end with a loop *e* of silver, by means of which it is loosely hung upon a silver pin *f* projecting from the pendulum bob *a*. The lower end of the strip *d* is tipped with silver *g* or other suitable metal at the part which engages the fixed contacts *h* and *i* and these contacts are constructed of nickel or other suitable magnetic material preferably coated with silver strips *j* and *k* as shown. The electric connections for the coil and contacts (which are shown clearly in Fig. 3 of the specification above mentioned) have been omitted as they are unnecessary for the understanding of the present invention. By making the contact strip *d* of magnetic material which can be permanently magnetised or magnetised inductively by a separate field such as the stray fields of the magnets, the fixed contacts also being magnetic, the movable contact when brought into engagement with the fixed contacts by the pendulum is magnetically prevented from rebounding from the fixed contacts, thereby ensuring that the circuit of the coil is effectively completed during the time of engagement. Secured to the upper end of the fixed contacts is a piece of insulating material *m* for the purpose of limiting the period of actual contact between the fixed and moving contacts to a time corresponding to a small movement of the pendulum.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In an electric clock of the kind hereinbefore referred to, magnetically reinforcing the engagement of the electric circuit contacts.

2. In an electric clock of the kind hereinbefore referred to, the improved construction of electric circuit contacts substantially as hereinbefore described.

Dated this 10th day of January, 1911.

JOHN GRAY,
83, Cannon Street, London, E.C.,
Agent for the Applicant.

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ERRATUM.

SPECIFICATION No. 14,126. A.D. 1910.

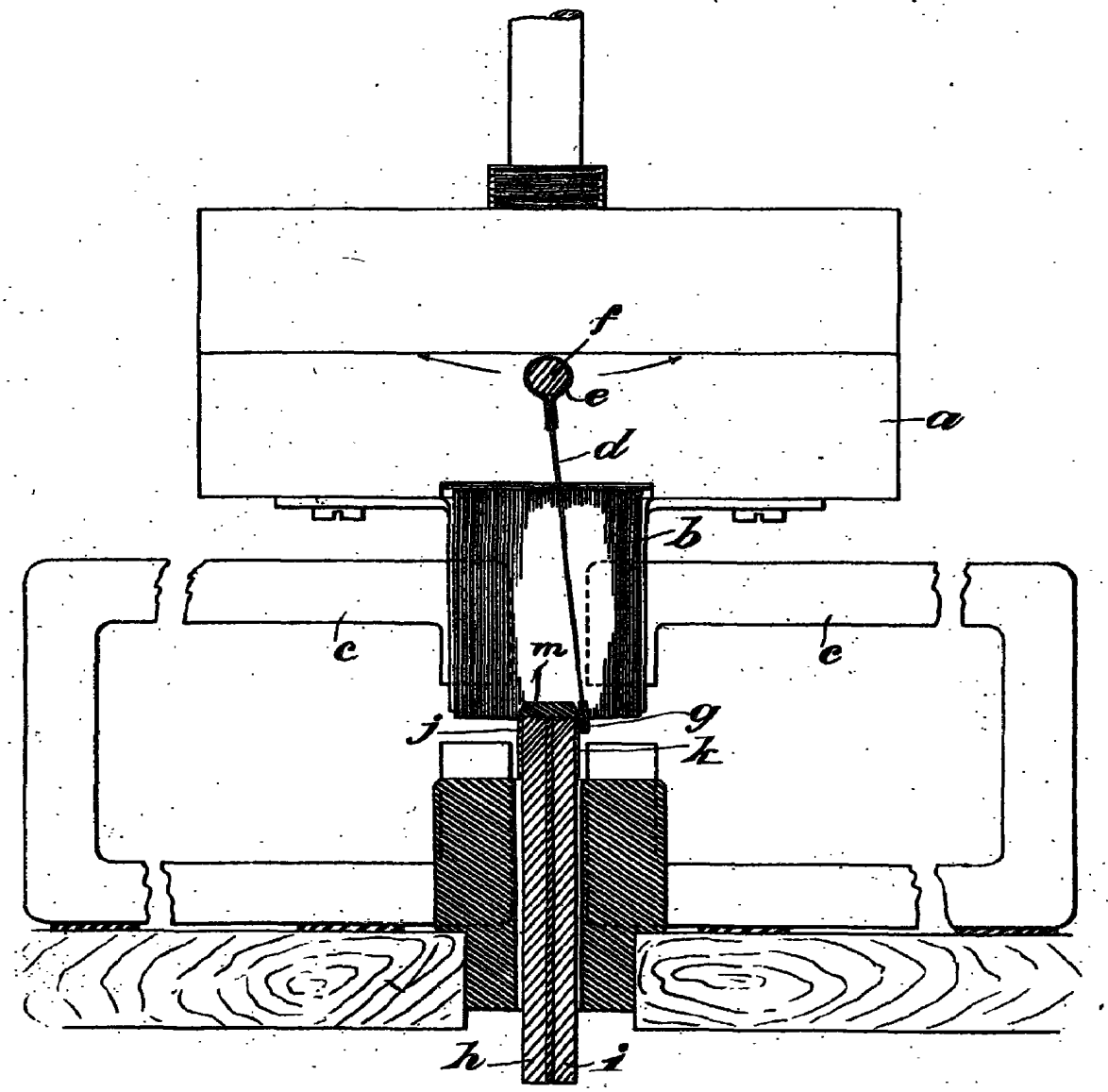
Page 2, line 6, *for* "preferably" *read* "perfectly."

PATENT OFFICE,
3rd November, 1911.

A.D. 1910. JUNE 10. N° 14,126.
HOLDEN'S COMPLETE SPECIFICATION.

(1 SHEET)

[This Drawing is a reproduction of the Original on a reduced scale]



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