138,708

PATENT SPECIFICATION

Application Date, Feb. 17, 1919. No. 3888/19.
Complete Left, Aug. 8, 1919.
Complete Accepted, Feb. 19, 1920.

PROVISIONAL SPECIFICATION.

An Automatic Indicator of Failing Electric Current.

We, FRANK HOPE-JONES, M.I.E.E., of 32 and 34, Clerkenwell Road, in the City of London, Electrical Engineer, and THE SYNCHRONOME COMPANY, LIMITED, of the same address, do hereby declare the nature of this invention to be as follows:—

This invention has for its object improved means for giving warning of diminishing value of current in electric circuits in which energy is transmitted by means of current impulses of comparatively short duration, which impulses increase in duration as the current diminishes, such for example as those produced by the automatic switches described in Patents Nos. 1587 of 1895 and 6066 of 1905.

In accordance with our invention, we provide in an electric circuit a short filament enclosed in a vacuum, such as a small electric lamp, the filament being so proportioned that electrical impulses of normal duration and full current value are unable to make it incandescent, whereas impulses of longer duration, though of less current value will cause it to glow momentarily or flash at each impulse, thus providing a visual warning.

According to one practical embodiment of our invention one or more low voltage lamps of small candle power are included in a series circuit of electrical impulse dials in any position in which they are likely to catch the eye of those responsible for the maintenance of the installation such as for instance, in the master clock, or as a desk fitting for the works engineer or premises superintendent. A resistance may be conveniently included in the circuit adjacent to one of these lamps, which resistance can be readily short-circuited when the warning is first observed, thus giving time for the replenishment of the battery.

It will be seen by our invention that we have achieved a visible warning of failing current very reliable in its nature and peculiarly adapted to attract attention.

Dated this 14th day of February, 1919.

F. HOPE-JONES,
THE SYNCHRONOME COMPANY, LIMITED.

Sealed with the common seal of the
Synchronome Company, Limited,
in the presence of

JOHN OCKLESHAW,
W. H. SHORTT,
Directors.

[*Price 6d.*]

COMPLETE SPECIFICATION.

An Automatic Indicator of Failing Electric Current.

We, FRANK HOPE-JONES, M.I.E.E., of 32 and 34, Clerkenwell Road, London, E.C., Electrical Engineer, and THE SYNCHRONOME COMPANY, LIMITED, of 32 and 34, Clerkenwell, Road, London, E.C., 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:—

This invention has for its object improved means for giving warning of diminishing value of current in electric circuits in which energy is transmitted by means of current impulses of comparatively short duration, such impulses increasing in duration with diminishing current, as for example, those produced by the automatic switches described in our Patents Nos. 1587 of 1895 and 6066 of 1905.

In accordance with our invention, we provide in our electric circuit a short filament enclosed in a vacuum, such as a small electric lamp, the filament being so proportioned that electrical impulses of normal duration and full current value are unable to make it incandescent, whereas impulses of longer duration, though of less current value will cause it to glow momentarily or flash at each impulse, thus providing a visual warning of diminishing current.

One practical application of my invention is illustrated by the accompanying sheet of drawings wherein "A" is a master clock or time transmitter shewn diagrammatically, "*g*" being its gravity lever normally held up by the catch "*k*", "*m*" the resetting electro-magnet with magnet armature "*a*" carrying the contact screw "*s*" at its extremity; "B" is a primary battery or other source of electrical energy; "C" is a series of electrical impulse dials; "D" is the automatic indicator of failing current consisting of a small electric glow lamp which will light up with a steady current equal to the current value normally necessary to operate "A" and "C". The connecting wires "*w w*" connect "A, B, C and D" in series.

The gravity lever when released descends in the act of giving a mechanical impulse to maintain the going of the clock until its tail comes into contact with the screw "*s*" on the armature when the electric circuit is completed, the magnet "*m*" energised and the armature "*a*" attracted. The movement of "*a*" takes "*g*" with it, and "*g*" and "*s*" remain in contact until "*a*" strikes the projecting magnet core while by virtue of its inertia "*g*" flies on breaking the circuit. "*g*" is finally caught and held by the catch "*k*".

The duration of the impulse is determined by the time "*g*" and "*s*" are in contact and when the action and current are normal the current is cut off before the filament of "D" is hot enough to glow. As the current value decreases due to falling voltage or increasing internal resistance of the battery the resetting action slows and the time of contact increases out of proportion to the decrease in current which caused it. It therefore follows that the time of contact soon becomes long enough to flash up to incandescence with each impulse and so give a visible indication and warning of the change in the current value.

The duration and apparent brightness of the flash increases with further decrease of current until the armature fails to move when the circuit is made, the lamp consequently remains illuminated until the circuit is broken by the return movement of the portion of the clock mechanism to which the lever gives periodical impulses.

One or more warning lamps can be introduced into the circuit and placed

just where they are most likely to catch the eye of some responsible person when flashing.

A resistance may be conveniently included in the circuit adjacent to one of these lamps; which resistance can be readily short-circuited when the warning has been observed thus giving more time for the replenishment of the battery.

It will thus be seen that we have by our invention achieved a visible warning of failing current very reliable in its action and peculiarly adapted to attract attention.

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

1. In an electric circuit in which energy is transmitted by means of current impulses of short duration such impulses increasing in duration with diminution of current, the use of a short filament capable of being made incandescent by the longer duration impulses only.

2. The visible indication of failing electric current furnished by the flashing of a small low voltage lamp connected in series in a circuit wherein energy is transmitted by means of current impulses which increase in duration with the diminution of current substantially as described with reference to the sheet of drawings.

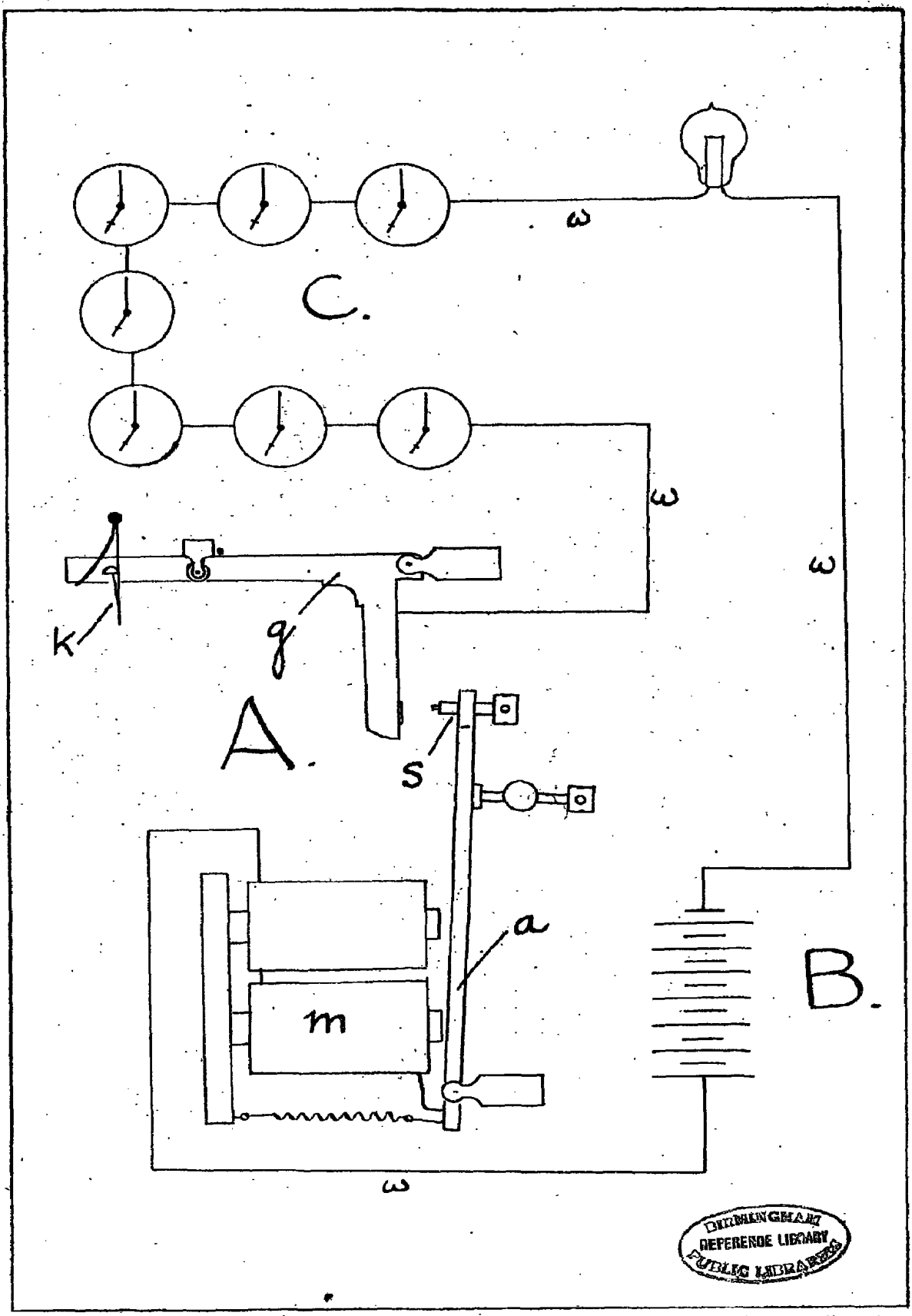
Dated this 29th day of December, 1919.

FRANK HOPE-JONES,
THE SYNCHRONOME COMPANY, LIMITED.
F. HOPE-JONES,
Managing Director.

The seal of The Synchronome Company, Limited, affixed in the presence of

JOHN OCKLESHAW,
Chairman.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1920.



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