

PROUDS Ltd., Clock and Scientific Instrument
Makers
336 KENT STREET, SYDNEY

SELF-CONTAINED
Electric Clocks

(MURDAY'S PATENTS)

The Simplicity and Science of the Mechanism of Murday's Invention has produced an Entirely New Timepiece that will run for two years and does not require winding. The Motive Power is supplied by an ordinary Dry Cell Battery which, when exhausted can be replaced by anyone very simply with a new one at a cost of 3s.

*An Accurate Timekeeper
Does not Tick
Does not require Winding*

PROUDS LTD.

Clock and Scientific Instrument Makers
336 KENT STREET, SYDNEY

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THE NEW

Balance Wheel Electric Clock

(Murday's Patent)

THIS consists of a large and heavy balance wheel electrically operated on a somewhat similar principle to the pendulum in our other electric clocks. The balance wheel drives the wheel train, not *vice-versa*, as in a spring-driven clock or watch.

When the arc of oscillation falls to a certain fixed minimum, the electric circuit is automatically closed and fresh energy is imparted to the balance wheel, by the action of an electro-magnet and armature, sufficient to keep it vibrating for an interval of about a minute—more or less—according to the condition and strength of the battery.

As with the pendulum operated on this intermittent method, the time-keeping is practically independent of variation in battery power.

The balance wheel is made of a special nickel steel alloy, which is unaffected by changes of temperature, and thus does away with the complicated construction of a compensated wheel rim. The hardened steel pivots of the balance wheel staff or arbor are running in large sapphire cups, the friction being almost nil.

A regulator arm is provided which acts on the giant controlling hairspring exactly as in a watch.

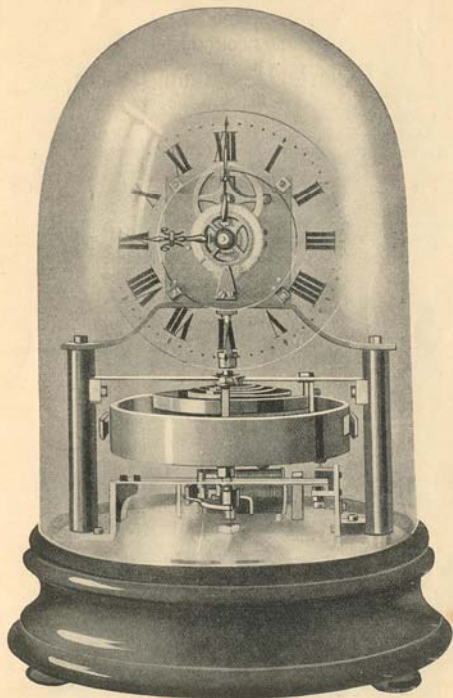
By means of a roller attached to the upper part of the staff a lever is made to operate the wheel train at every oscillation of the balance wheel. This action is particularly safe and almost silent.

The illustration shows the balance wheel clock mounted on a solid, turned and polished base, containing the two driving cells, and protected by a glass shade 12 inches high. The total height over all is about 15 inches by 10 inches dia. base.

The dial is a glass circle $5\frac{1}{2}$ inches dia. with the figures enamelled on the back surface, and in Roman or Arabic design, as preferred.

The New Balance-Wheel Electric Clock

(Murday's Patent)



Mounted on Solid Turned and Polished Base, with extra strong English-made glass shade, 12 inches high, total height 15 inches by 10 inches diameter base.

Price, £5 5s.

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SELF-CONTAINED

Electric Pendulum Clocks

(Murdal's Patent)

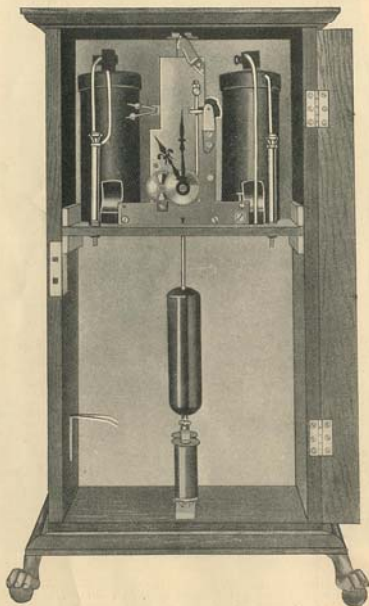


FIG. 1

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GENERAL DESCRIPTION

FIG. 1 shows a general view of the mechanism of a half-seconds pendulum clock with the dial removed. It will be observed that the wheel train is extremely simple, and mounted on the front face of a single plate. The complete movement with the dry cells is carried on a platform which can be withdrawn from the case.

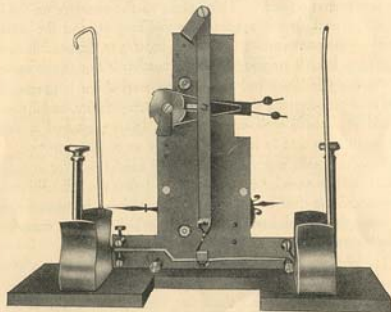


FIG. 2

Fig. 2 is a back view of the movement with the dry cells removed so that all details may be seen. The crutch, which is the forked rod by means of which the pendulum's motion is communicated to the wheel-work, is shown near the centre line of the movement-plate. It is pivotted in a bracket at its upper end, and a little lower carries a projecting arm on which the wire clicks are centred. These clicks, as the crutch swings to and fro with the pendulum, impel the click wheel round with an alternate push and pull motion.

The fork in which the pendulum rod hangs is seen near the lower end of the crutch; while, hanging quite freely from the extremity of the crutch is a small piece of steel known as the "toggle." This, as the

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pendulum swings, slides over and off a brass block attached to a long flat spring, one end of which is fixed in a stud; the free end is faced with platinum and plays between a platinum-tipped contact screw and a limiting screw above it. Normally the spring presses upwards against the point of the limiting screw, but when the pendulum arc is not sufficient to ensure the "toggle" sweeping right off the block, the point of the "toggle" trips in a groove on the block, thus depressing the contact spring by which the circuit is completed and the electro-magnet energised. This occurs as the armature on the lower end of the pendulum is approaching the magnet, and the attraction exerted on the armature imparts a fresh impulse to the pendulum, which will serve to keep it swinging freely for another 50 or 60 swings.

As the pendulum rod is of nickel steel there is practically no variation of time-keeping due to change of temperature, and if the clock is placed on a steady shelf or bracket and left undisturbed it may be relied on to keep time to within a very few seconds per week.

Two dry cells will run these clocks satisfactorily for at least two years. It will be seen by referring to Fig. 1 that the two cells are held in position on the shelf which carries the movement by means of spring clips, while the milled head terminals by which they are connected to the clock mechanism are also plainly visible.

The photograph from which Fig 2 was made was taken after the removal of the two cells, so that the spring clips and terminals are seen empty. This portion of the clock has been designed so that the cells can be removed with a minimum of trouble. The whole of the top shelf slides outwards so that all parts of the movements and the battery can be got at easily.

The mere act of sliding the shelf into position again makes the necessary electrical connections by means of spring contact pieces fitted to the shelf itself and to the side of the case. Care should of course be taken in putting the shelf back to see that the pendulum rod is in its proper place in the fork of the crutch, after which an impulse given to the pendulum by hand will start the clock going without further trouble.

All the various designs are fitted with movements of a construction similar to the foregoing description and illustrations Figs. 1 and 2; the difference in price being due to the style of case.

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Instructions for Setting-up Self-Contained Pendulum Clocks



THE platform to which the movement, dial and battery are fixed must be drawn out of the case, and the packing removed. The string holding the crutch should be undone, and the pendulum carefully hooked on the suspension spring which is fixed in the top of case, the opening in the hook being kept towards the front.

Using the pendulum as a plumb bob, level the case until the iron armature on the lower end of the pendulum rod hangs truly over the magnet poles. It is very important that this adjustment be carefully made, and that the case is steady and does not rock.

When replacing the movement platform, see that the pendulum rod passes between the tangs of the crutch fork. The pendulum should be set swinging through a good arc, and it will afterwards continue to swing of its own accord.

If the clock is to be moved temporarily at any time, it will be found best to secure the pendulum by springing it into the brass hook provided for this purpose at the left-hand side of the case.

When packing for transit the pendulum must be removed from the case and packed separately, while the crutch should be tied up to the left and paper packing placed between the cells as when sent out.

Regulation is accomplished as in other pendulum clocks by means of the thumb screw beneath the bob. Raising the bob will make the clock go faster, while lowering it will have a slowing effect. One turn of the screw will make a difference of about half-a-minute per day.

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Electric Pendulum Clock

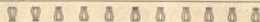


No. 1

Fumed Oak Case with
panelled door, best quality
enamelled dial 6 inches dia.,
bevelled plate glass,
mounted in solid brass
bezel. Size of case, 18 in.
high by 10 in. by 6 in.

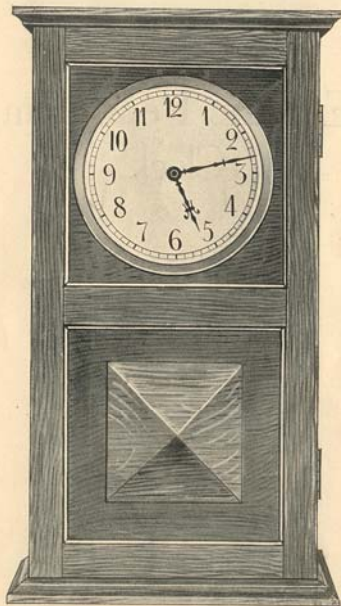
Price, £2 10s. each

*Or with Bevelled Plate Glass, in
place of lower Oak Panel,
7/6 Extra*



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ELECTRIC PENDULUM CLOCK

No. 1

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Electric Pendulum Clock



No. 2

Solid Oak Case, fumed
or stained, with brass or
copper Mountings

Price, £3 10s. each

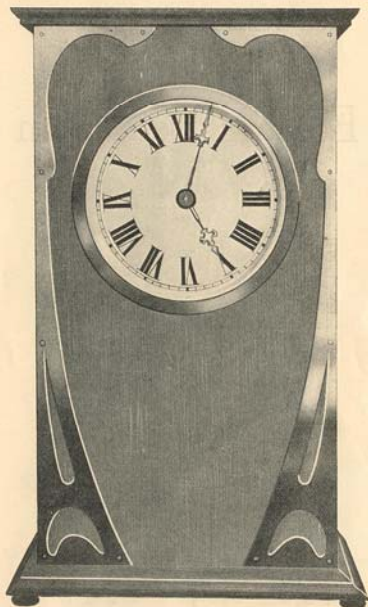
Highly polished Mahogany
Case, with brass or copper
Mountings

Price, £3 10s. each



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ELECTRIC PENDULUM CLOCK

No. 2

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Electric Pendulum Clock



No. 3

"A" DESIGN

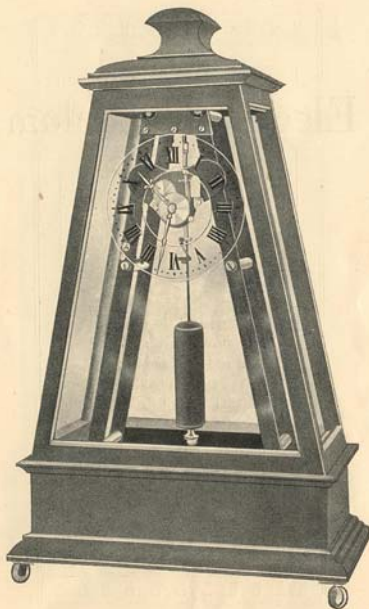
A novel form of Case, in highly-polished Mahogany and Glass, showing all the working parts. The dial is a glass circle, $5\frac{1}{2}$ in. diameter, with figures (Roman or Arabic) painted on the back surface. The battery of two cells is contained in the base.

Price, £3 10s. each



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ELECTRIC PENDULUM CLOCK

No. 3

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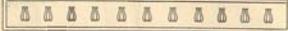
Electric Pendulum Clock



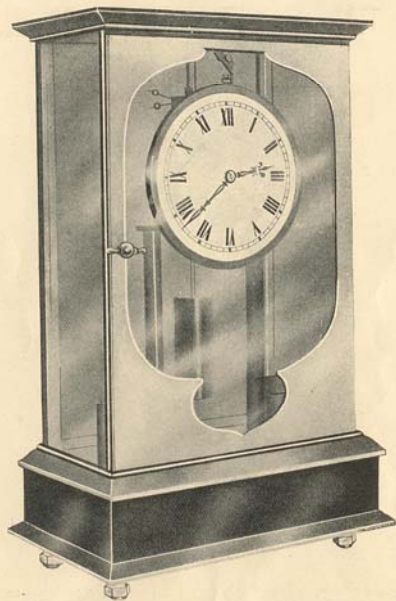
No. 4

A Handsome Case consisting of solid brass pillars with heavy bevelled brass band and top, glazed with best quality plate glass, hinged brass and glass door, the whole mounted on polished mahogany base containing the cells.

Price, £4 10s. each



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ELECTRIC PENDULUM CLOCK

No. 4

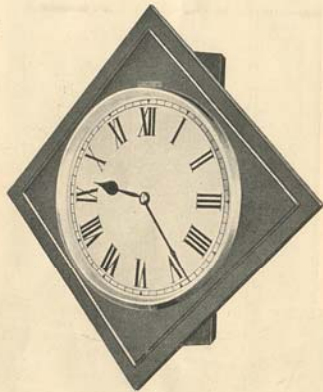
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Electric Pendulum Clock

NO. 5



Diagonal Frame, in fumed oak, with 12in. dial, fitted with half-seconds pendulum movement, as shown in Figs. 1 and 2, suitable for Workrooms, Offices, Schools, &c.

Price, £3 each.