

# SMITH'S 1930S BATTERY-POWERED CLOCKS

FROM THIS:



TO THIS ??:



(Image from: <https://Clockdoc.org/admin.aspx?moid=62925>)

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## INTRODUCTION:

Many years ago I was employed by a Smiths service agent servicing Smiths (and other brand) instruments.

Although I am now retired, I still have an interest in automotive instrumentation and as part of this have written several documents about Smiths instruments and servicing of same.

Recently I was asked to have a look at a Smiths car clock, the description of which was quite different to any Smiths clock I had dealt with previously. The clock was an electrically wound clock from the late 1930s and I was unaware of any **Smiths electric** car clock from this period. The Smiths "CE" clock that I was familiar with was not released until 1937/1938 and was a Jaeger designed clock.

To date, I have only had a chance to briefly examine a single example of this type of clock, which was fitted to a 1938 Rolls Royce 25/30 owned by Roger Lusby of Richmond, New Zealand. Roger also provided the photographs of this clock that are presented here.

The remainder of this document sets out what I have found, and what I have deduced, about this car clock and its relationship to the Smiths "Barticlock".

Bear in mind that these clocks, along with many similar clocks by other manufacturers employ a common clockwork mechanism that is essentially no different to the majority of mechanical clocks produced over the years: It has a spring under tension driving a gear train, the speed of which is regulated by an oscillating balance. But rather than a more traditional wound mainspring that is occasionally re-tensioned by the operator, the energy source for these clocks is a helical spring which is automatically re-tensioned by an electric "motor" at frequent intervals for as long as a power supply is present.

## LIST OF REFERENCES USED:

A long time in making by James Nye

Principles, Construction, Operation, Installation and Repair of Mains and Battery-operated Clocks by S J Wise, second edition 1951

<https://www.vintagewatchstraps.com/williamson.php> Copyright © David Boettcher 2005 - 2024

<https://www.electric-clocks.co.uk/smiths/sm-names & trademarks.htm>

<https://clockdoc.org>

Acronyms used within this document:

ABEC All British Escapements Company Ltd. (1928 – 1945?)

BCMA British Clock manufacturers Association, later "British Clock & Watch manufacturers Association" (1932 -

ECWM English Clock and Watch Manufacturers (1921 - 1932)

From: <https://clockdoc.org/admin.aspx?aid=13049>:

**"TITLE**

Smiths Batriclock

**CAPTION:**

The Smiths Batriclock appears rare and was made for a short time starting in 1934. The escapements were made by a Smiths subsidiary specialist escapement manufacturer A.B.E.Co. and the movement was modelled on the Empire car clock, made previously by English Clock and Watch Manufacturers, a company and trademark Smiths had bought up in 1932.

**TAGS:**

Copyright: Colin Boyd"

Which supports my thinking as set out here.

## THE SMITHS 1930S ELECTRICALLY WOUND CAR CLOCK:

From references to hand <sup>1),2)</sup>, this clock appears to be ECWM's "Empire" car clock, the design of which is attributed to Harry Norman Walford, dating from the early 1920s <sup>3)</sup>. ECWM was acquired by Smiths about 1932. Smiths appear to have continued producing this 2 inch diameter clock as their own until about 1938 when it was replaced by the "new" "CE" type clock. I will use "Empire type" to denote this clock in the remainder of this document.

There is nothing in the way of service information available (to me) for these very early Smiths car clocks. They are similar in design to Dr. Hermann Aron's electric clock movement developed in the late 1800s and used in Heliowatt/Chronos clocks of his design.

These clocks were fitted to 1930s era English Rolls-Royce cars, possibly also Bentley and Armstrong Siddeley cars, and may have been an optional upgrade in lieu of a clockwork instrument. American built Rolls-Royce cars used mainly Waltham or Seth Thomas clocks.

This clock was manufactured by Smiths English Clocks Ltd. The legend on the dial stating "ENGLISH MADE WITH SWISS ESC(apemen)" is typical of many English clocks manufactured until the mid 1930s which relied on imported escapements.

The logo on this clock was also used by Smiths for their mains powered electric clocks from 1931 until 1937 at which time the "Smith(s) Sectric" logo was introduced <sup>4)</sup>.



View of dial and markings at rear of the case.

Markings on the rear of the case are; "E.55C", "41618" and "12 VOLT". If I were pressed for an explanation of these numbers, the "E.55C" denoting the clock model (E[lectric]?), diameter (55[mm]) and "C" denoting C[lock]. The number "41618" could be Smiths part number (X.41618 – the "X." frequently omitted from part numbers but this number is consistent with instrument ID numbers from this period) or possibly a serial number. The "12 VOLT" is self explanatory.

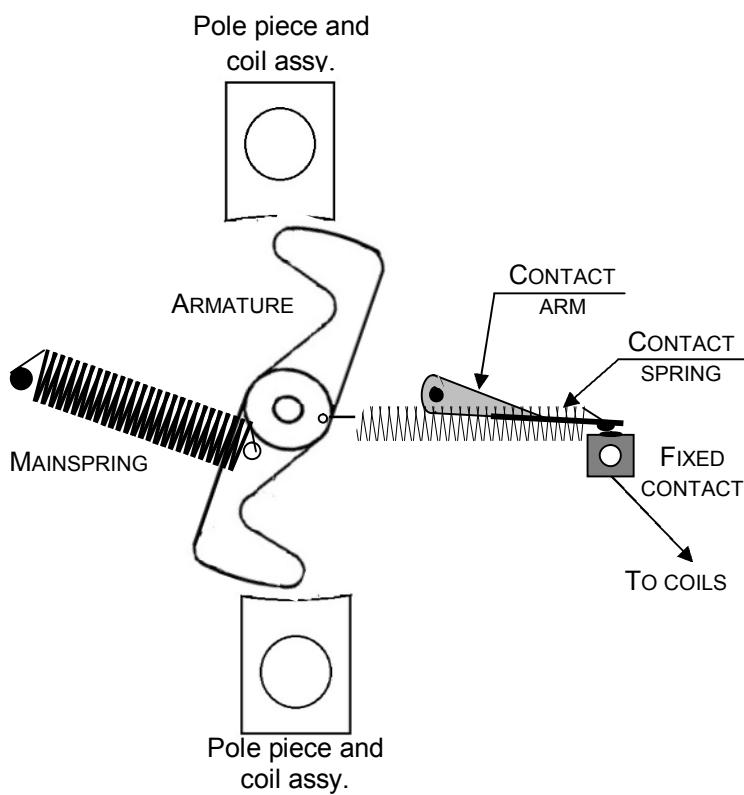
<sup>1)</sup> <https://www.vintagewatchstraps.com/williamson.php>

<sup>2)</sup> A long time in making by James Nye, page 86

<sup>3)</sup> <https://www.vintagewatchstraps.com/williamson.php>

<sup>4)</sup> <https://www.electric-clocks.co.uk/smiths/sm-names & trademarks.htm>

The "motor" driving the clock comprises a "Z" shaped iron armature connected to a helical mainspring. A pin attached to this armature connects, via another spring, to a moveable contact plate. As the armature rotates, this spring applies tension to the contact plate and as it moves beyond the contact plate pivot point draws the contact plate rapidly toward the contact pillar thus energizing the coils and pulling the armature toward the pole pieces tensioning the mainspring and at pulling the contact plate to its rest position against a stop-pin.

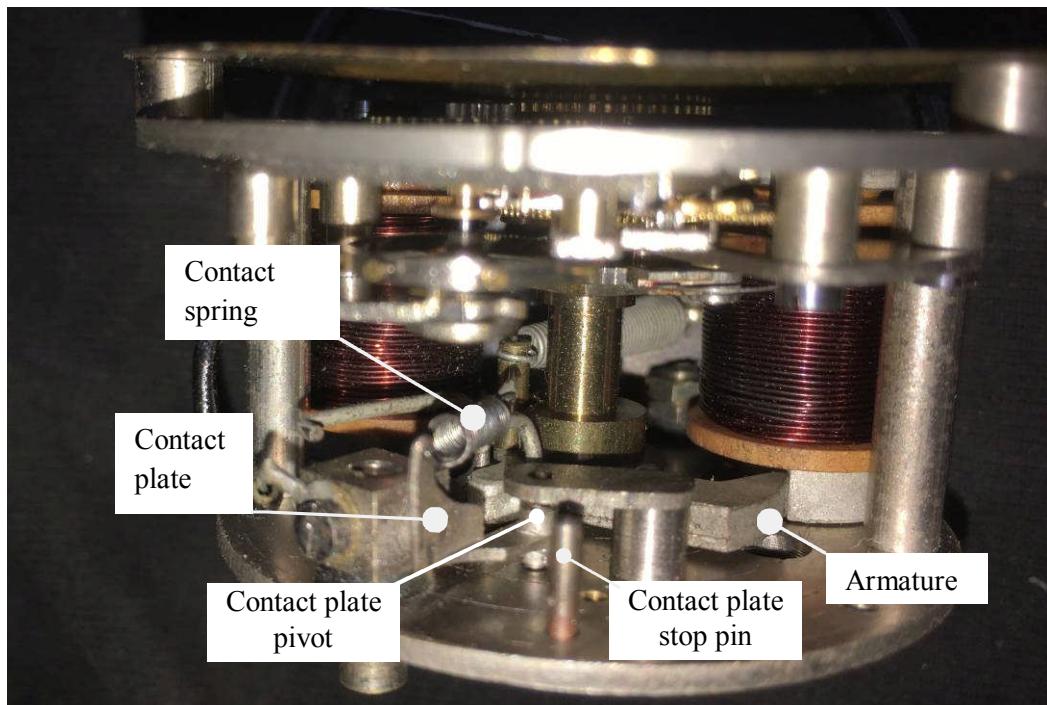


The sketch at left shows the armature in its rest position with the contacts closed as viewed from the front of the clock. When power is applied, current flowing through the coils will cause the armature to rotate anticlockwise, re-tensioning the mainspring and drawing the contact plate assembly away from the fixed contact as the line of action of the contact spring moves to the other side of the contact arm pivot point.

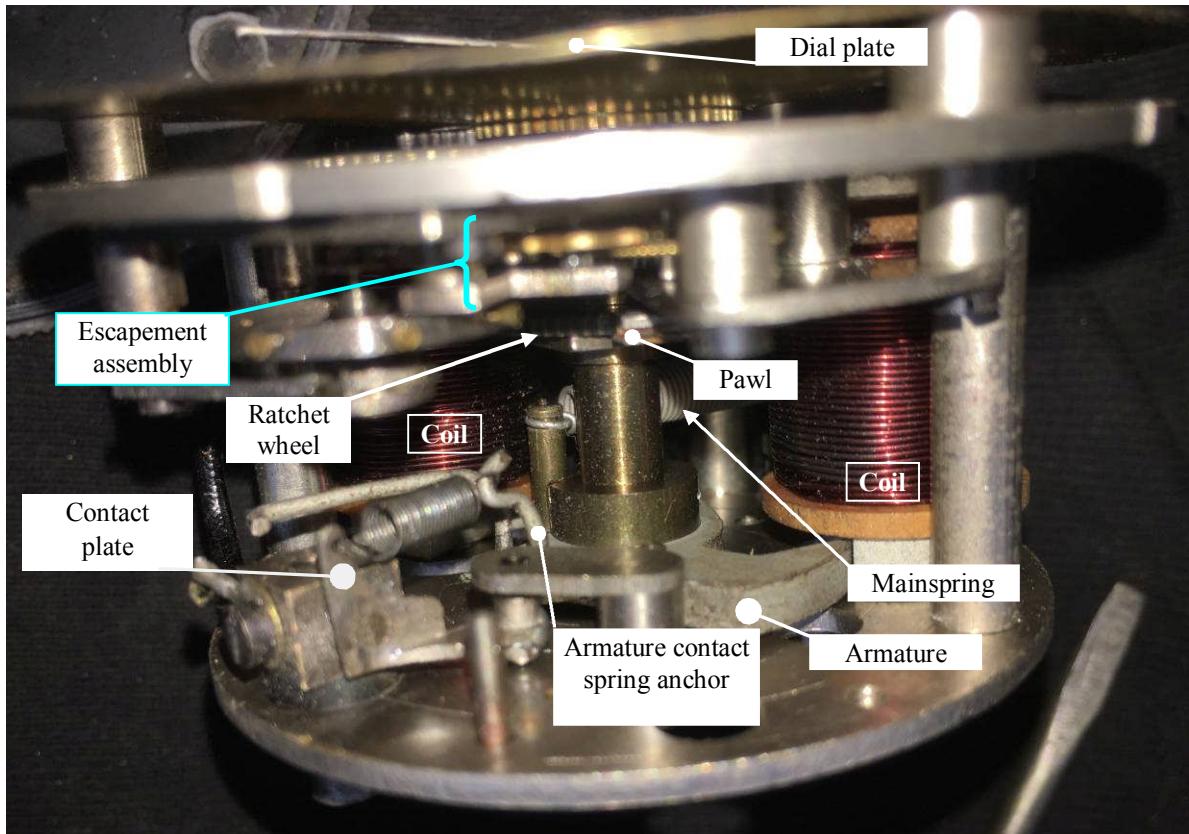
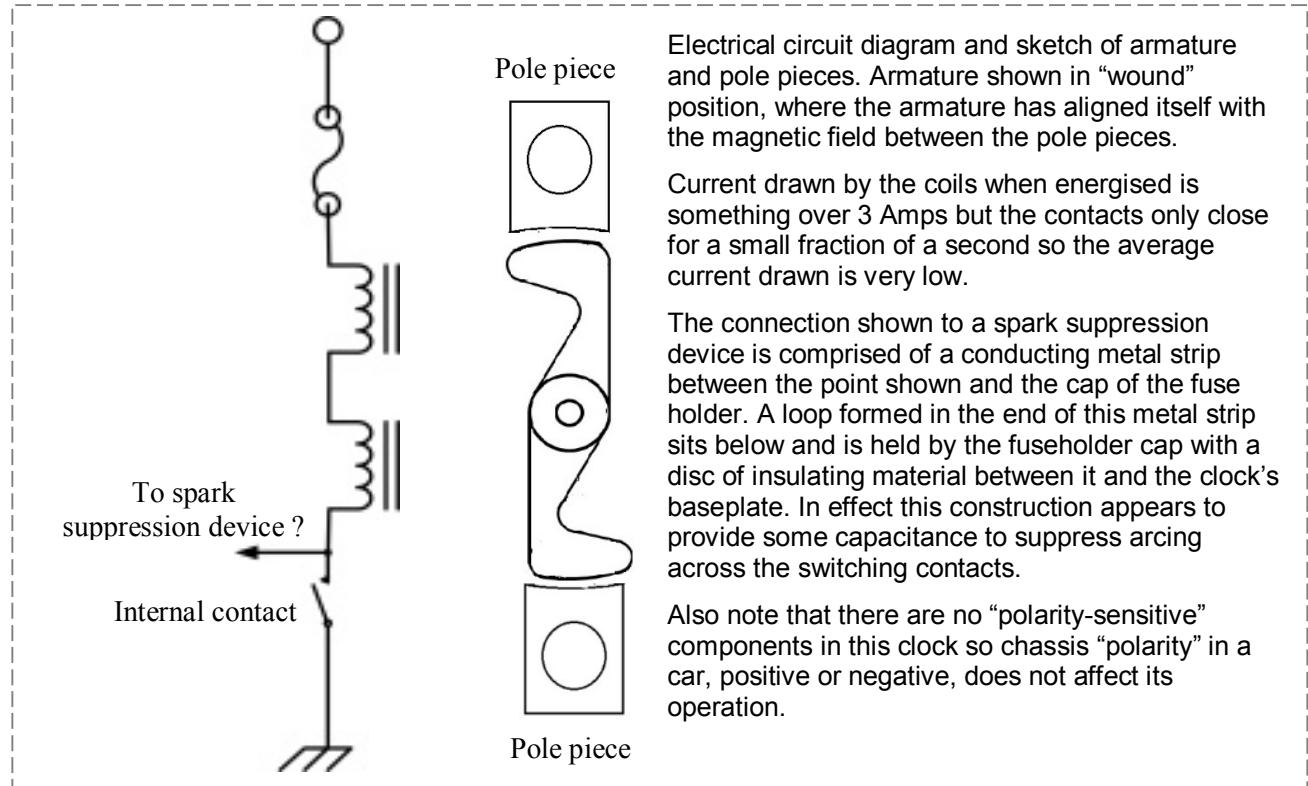
The relative locations of the hairspring anchor on the armature (a stout, hooked wire) and the contact arm pivot are critical to the operation of this clock. The contact must operate before the armature meets any fixed part of the clock assembly and the contact plate must pull clear of the fixed contact before the armature achieves its point of maximum travel.

Schematic drawing above shows the main elements of the rewind mechanism.

Annotated photograph below shows the physical construction of the clock.

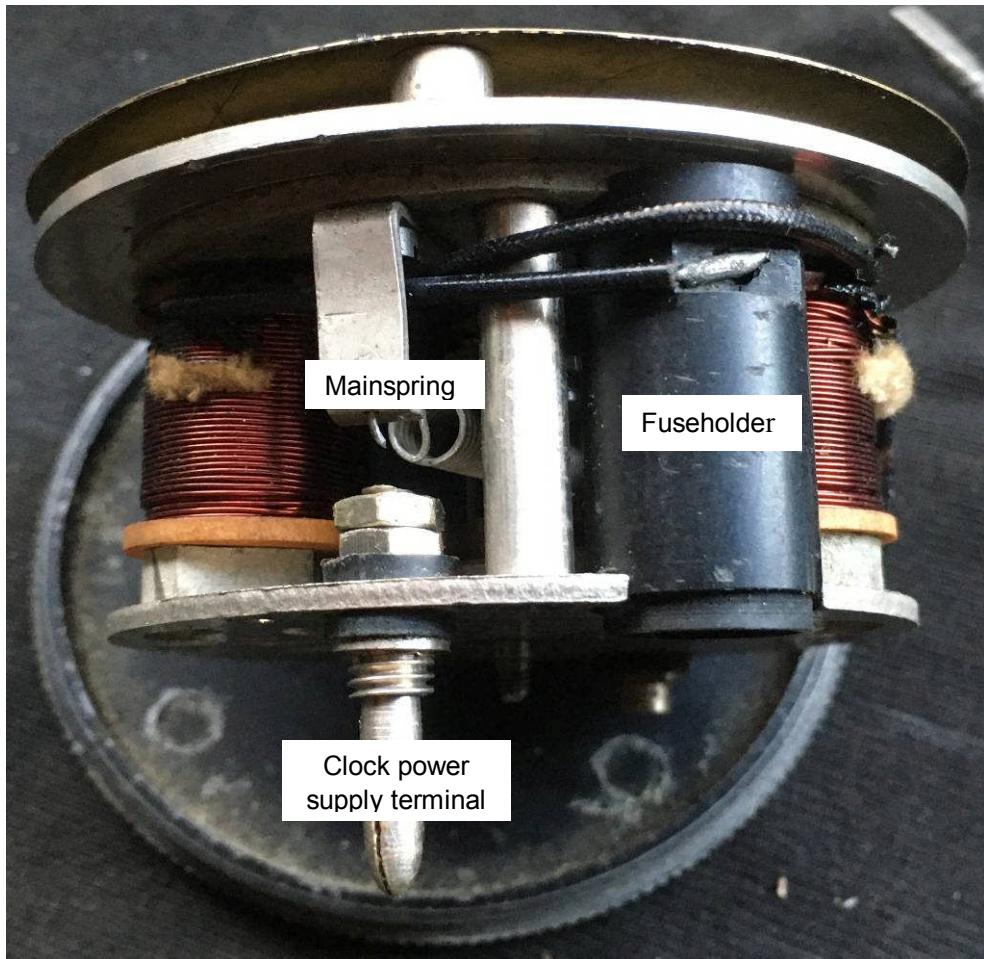


Having been afforded a cursory examination of the physical clock, I traced the electrical circuit and sketched the mechanical construction as presented within this document.



Further details of clock mechanism.

The photograph below shows the main electrical components of this clock. The fuseholder cap is not present. A moveable arm, also not present, attaches at the threaded portion of the power supply terminal and bears against a contact on the fuseholder cap.

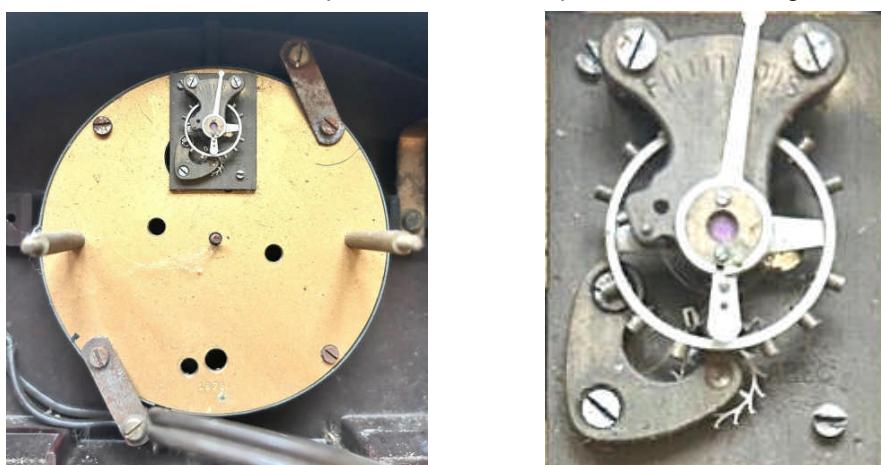


## THE BATRICLOCK:

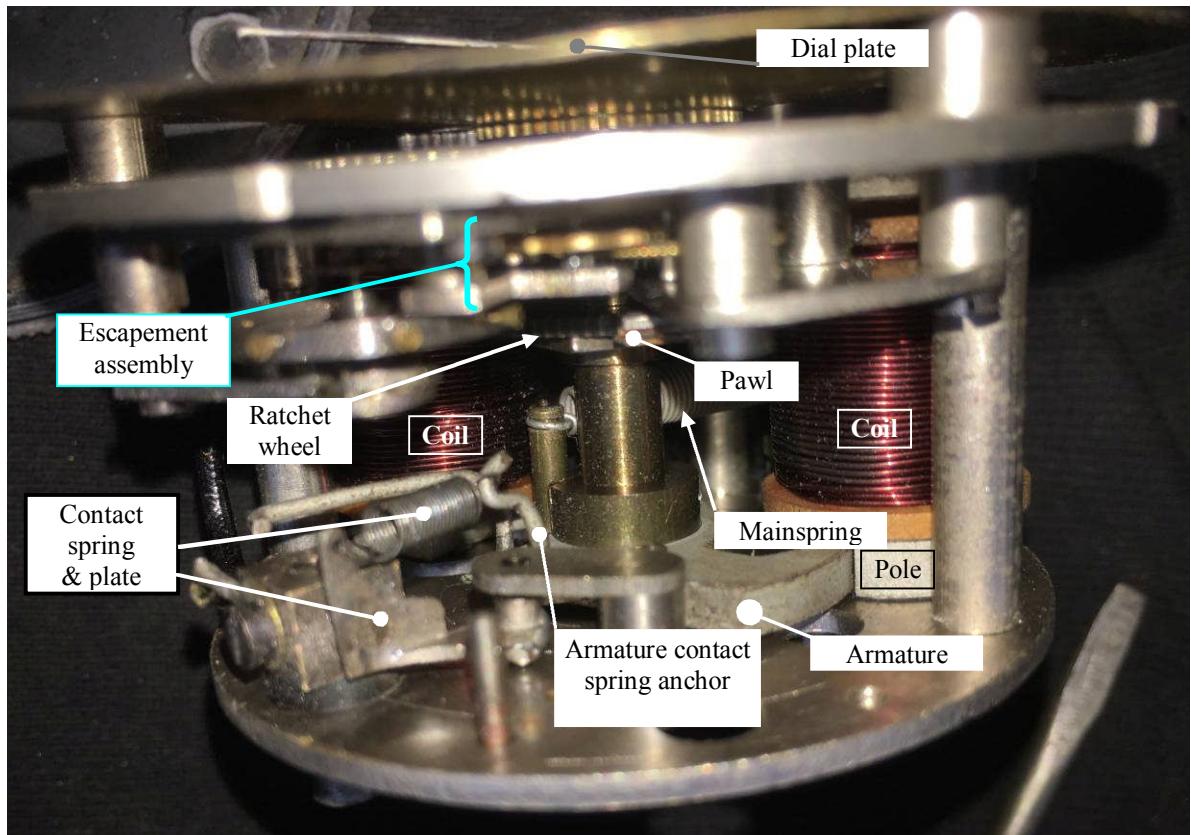
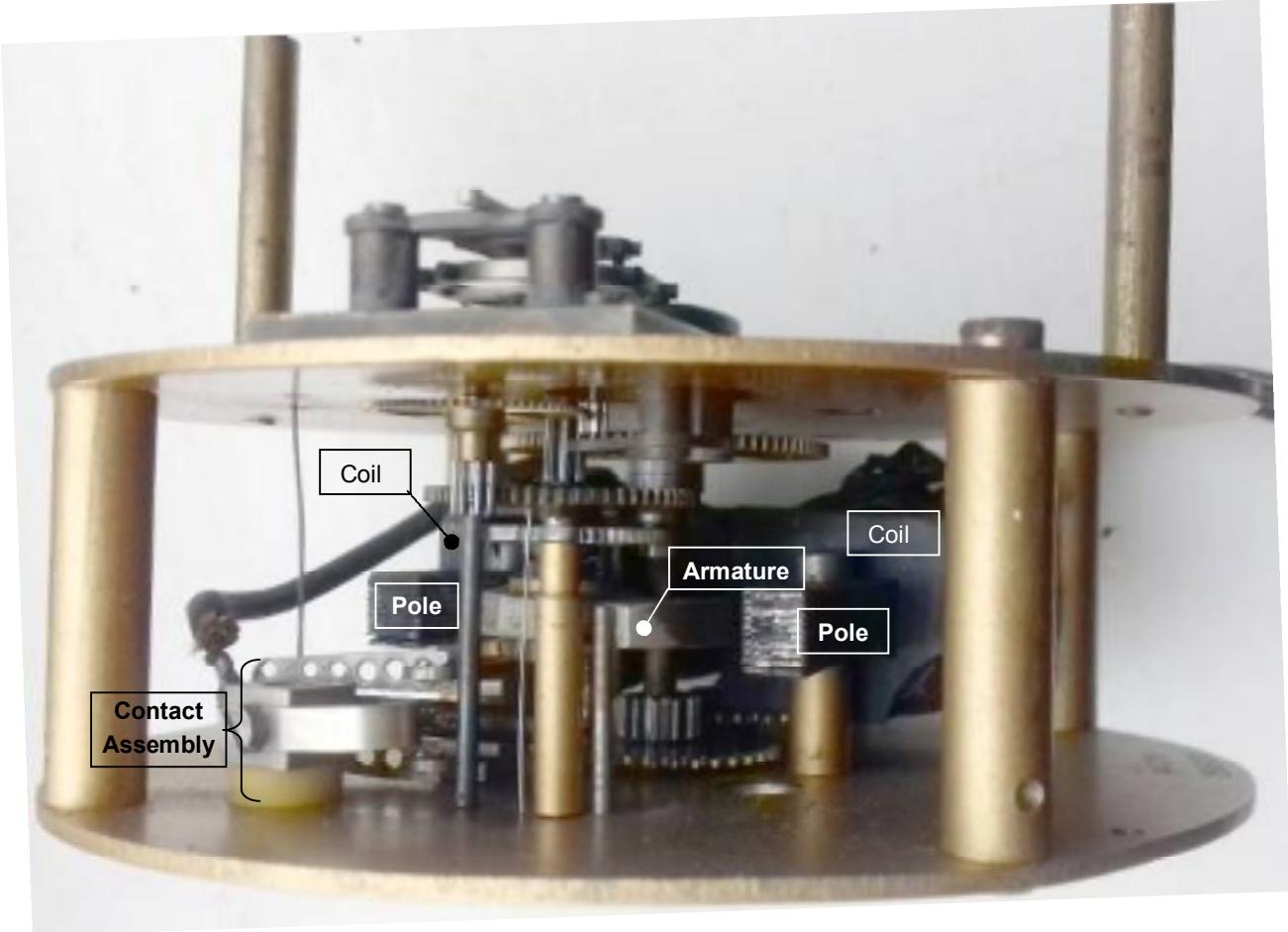
In 1934 the Batriclock was marketed and employed an ABEC escapement rather than the Swiss "Suter" escapement used in the 2 inch, "Empire type", clock. (H Williamson Ltd had purchased the Swiss watchmaking firm of F. Suter & Cie in 1898 which supplied parts for Williamson's clocks including "escapement parts" <sup>5)</sup>.

There is very little information on the Batriclock available. What I have been able to find is photographic as presented herein. The clock is approximately 8 inches wide, 6 inches high and 2 inches deep.

The picture below shows the rear of the clock's works fitted in its case with an enlarged view of the escapement where "ABEC" can be seen imprinted on the base plate at the lower right.



<sup>5)</sup> <https://www.vintagewatchstraps.com/williamson.php>, "Williamson and Büren", page 3



Partially annotated Batriclock movement (top) compared to "Empire type" car clock movement below.  
(Photograph of Batriclock movement from: <https://clockdoc.org/admin.aspx?moid=62927>)

## ANOTHER SMITHS ELECTRIC CAR CLOCK ?:

At about the same time as the Batriclock was introduced, a 4 inch diameter electrically powered car clock was provided to Rolls-Royce and most likely other car manufacturers. I have not seen one of these clocks "in the flesh" but photographs of these clocks do exist and examples can be seen below. These 4 inch clocks have the legend "S Smith & Sons (M.A.) Ltd" in the lower part of the dial and (in some cases) the word "ELECTRIC" printed immediately above in lieu of the "Smith Electric" logo on the 2 inch clock.

I can only guess here, but I think that these 4 inch clocks would use the "Empire type" movement in a stepped case as was later done with the "CE" clock movement, the case and dial manufactured by the motor accessories division. Particularly as these two clocks were available concurrently. I doubt that the Batriclock movement would be robust enough for automotive use.

But until somebody documents one of these clocks and/or makes this information readily available, an educated guess is the best that can be done.

Photographs found on the internet showing a selection of Smiths electric car clocks fitted to English-built Rolls-Royce cars from the 1930s.



1934 RR Phantom dash  
(4" diameter clock)



1935 RR Phantom II  
(4" diameter clock)



1937 RR Phantom III  
Sports limo  
(2" diameter clock)



1935 RR Phantom II dashboard  
with 4" diameter clock



1938 RR Wraith  
(2" diameter clock)



1938 RR Wraith dashboard  
with 2" diameter clock