

<h1>Horologix</h1>		<p>The place to come for all your Bulle and Eureka restora- tion parts.</p>	<p>Contact Peter Smith Telephone 01454-880825 Or Mobile 07969-773480 Email peter_smith@horologix.com</p>
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Bulle Clock Serial Number 342201

Restoration of Bulle Clock Serial Number 342201

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Photos by kind permission of the owner

This clock sits on a thin polished aluminium base under a glass dome. The s/n shows it to be a very late model probably into the 1940's.. The pendulum is some sort of flat fibre rod with large decorative aluminium disks at the end. The regulation weight is hidden at the back of the clock. The suspension consists of a pivoted arbour completely unlike the early versions. The clock looks complete but is quite dirty.

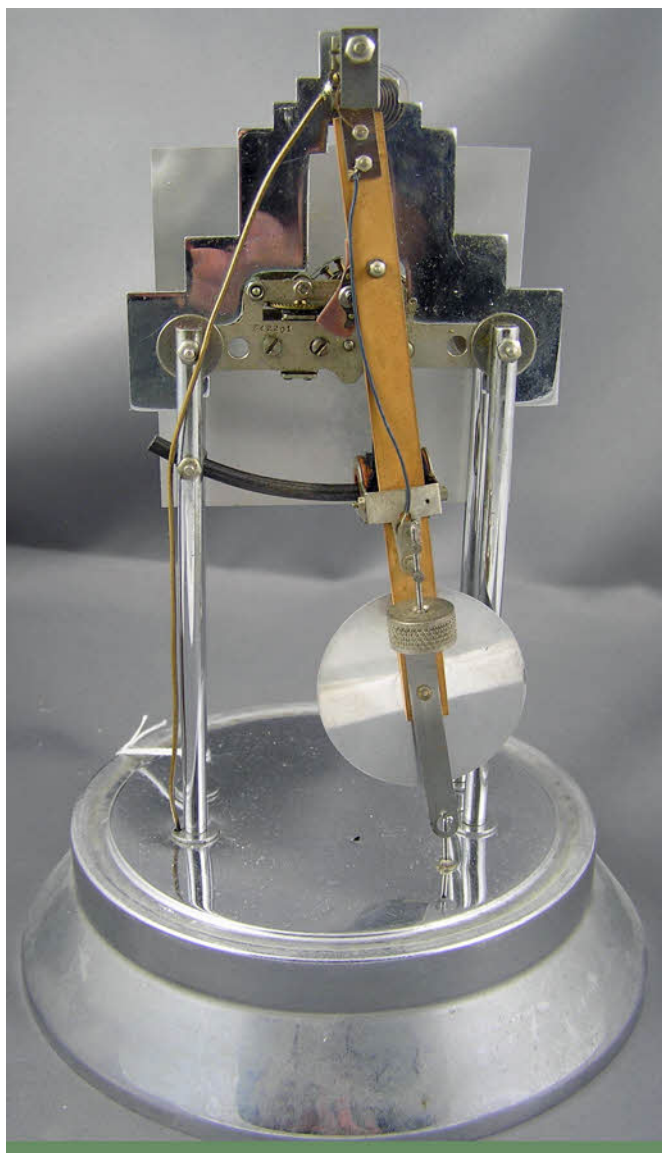
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The large magnets on earlier clocks have now been replaced with these much smaller cobalt magnets which are only fixed on one side leaving a large gap on the other. Some clocks have the arc of swing completely closed with a dummy magnet of brass or other non magnetic material secured to the other side of the frame. This example could allow the coil on the pendulum to be completely disengaged from the magnet and swing free. But the suspension does tend to hold the pendulum in a rigid arc. For travel the pendulum is secured by a simple hook and eye as seen in the first photo above. The photo at left shows some damage to the thin aluminium dial. These dials being so thin are very prone to damage at the slightest knock. I should be able to straighten it better than what it is now though.

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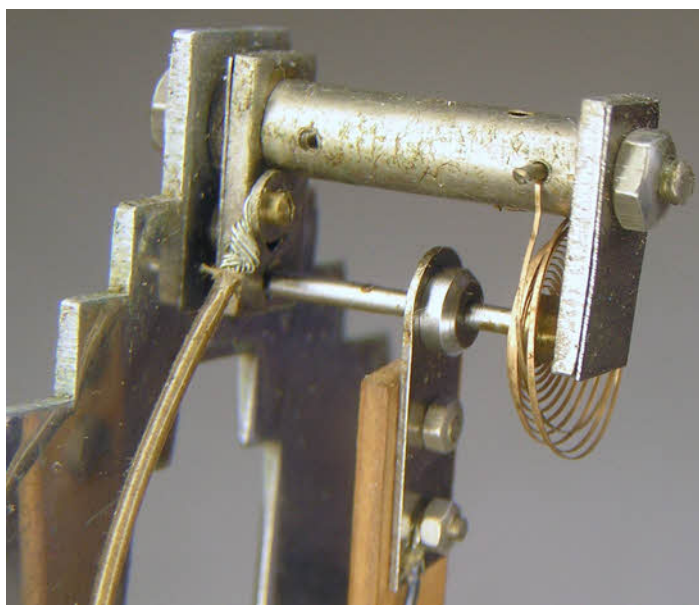
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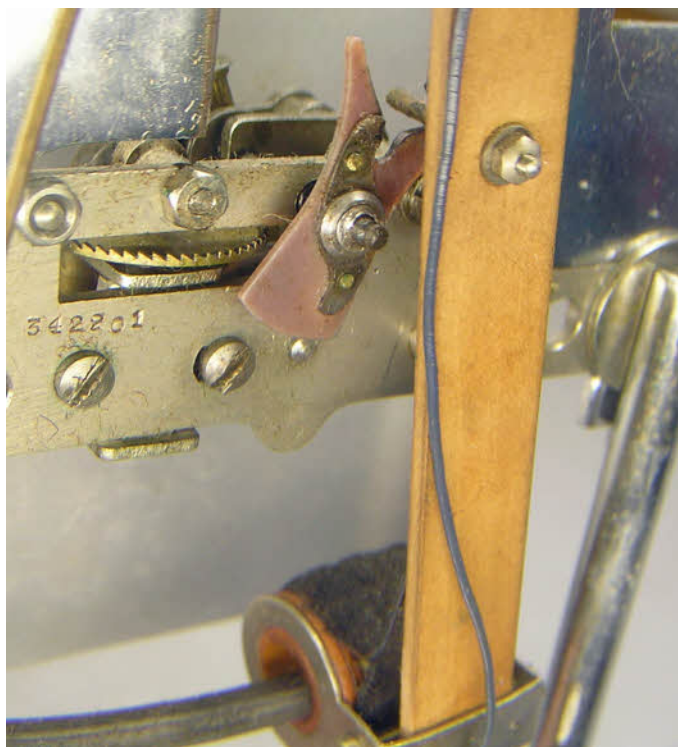
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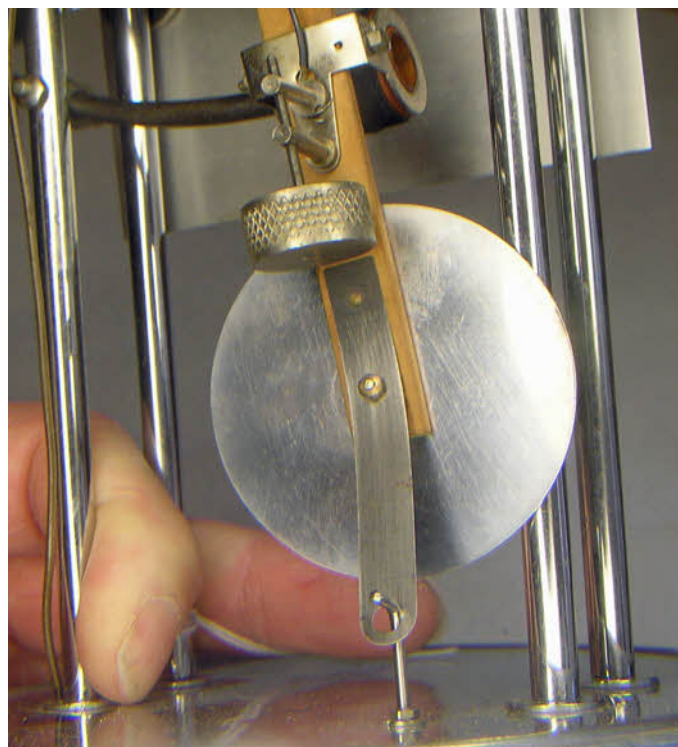
The underside shows the badly corroded battery strap. I shall see how much steels is left after cleaning and decide whether it is worth keeping.



The suspension with hair spring to maintain electrical contact. The suspension is isolated from the frame by fibre washers.



The rear of the movement showing the fork and non adjustable contact pin. Its height is fixed which can make it difficult to regulate the clock.



The hook and eye of the pendulum. Note the small aluminium rating nut.

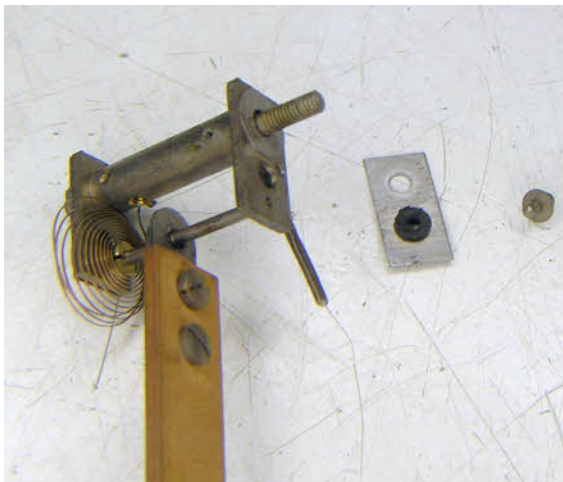
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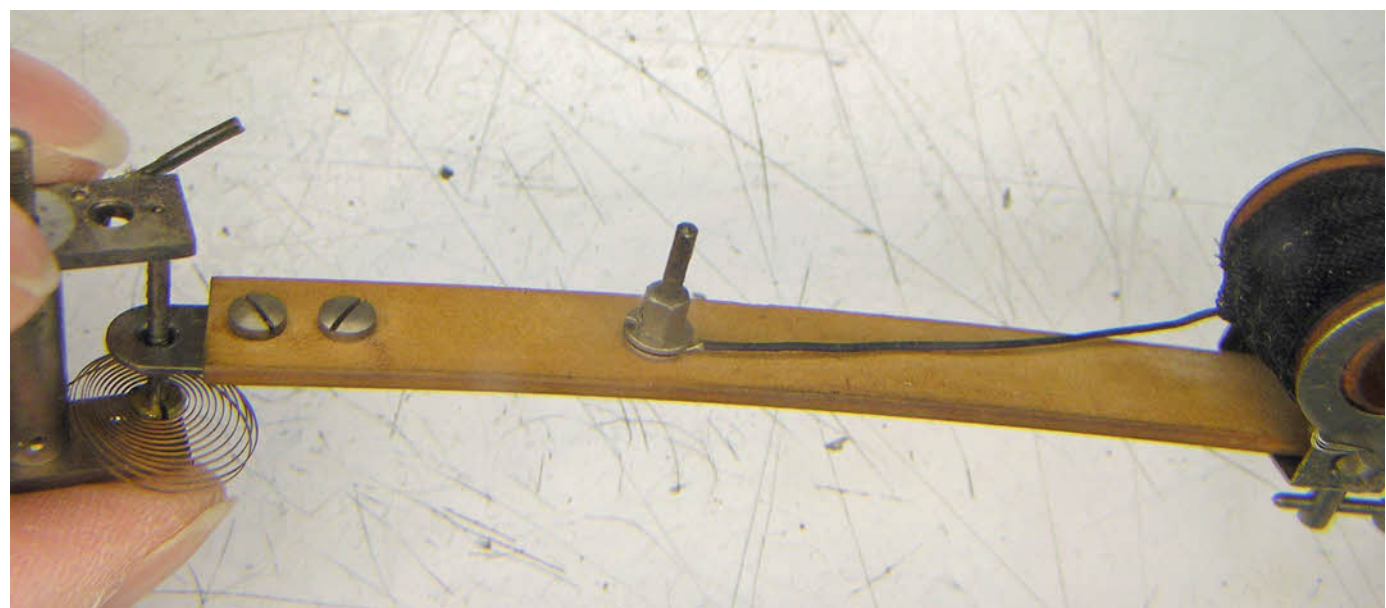
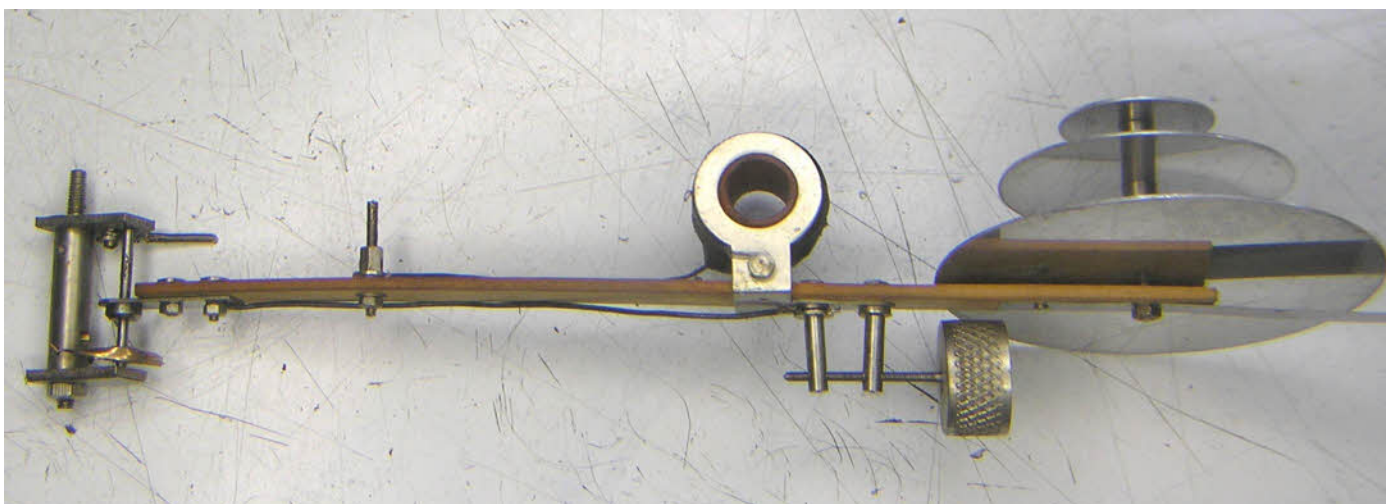
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Some more detail photos of the pendulum and suspension. These later clocks were made with cheaper materials and although they were probably easier to manufacture they are more difficult to restore than earlier clocks. As you can see the pendulum rod is slightly bent, but the material it's made of, makes it very difficult to straighten successfully. Note also that there is no adjustment possible with the contact pin. Its fixed position means that it cannot be adjusted up or down in the fork. The cobalt magnet is also a problem in that it cannot always be re-magnetised to the same strength as when first manufactures.



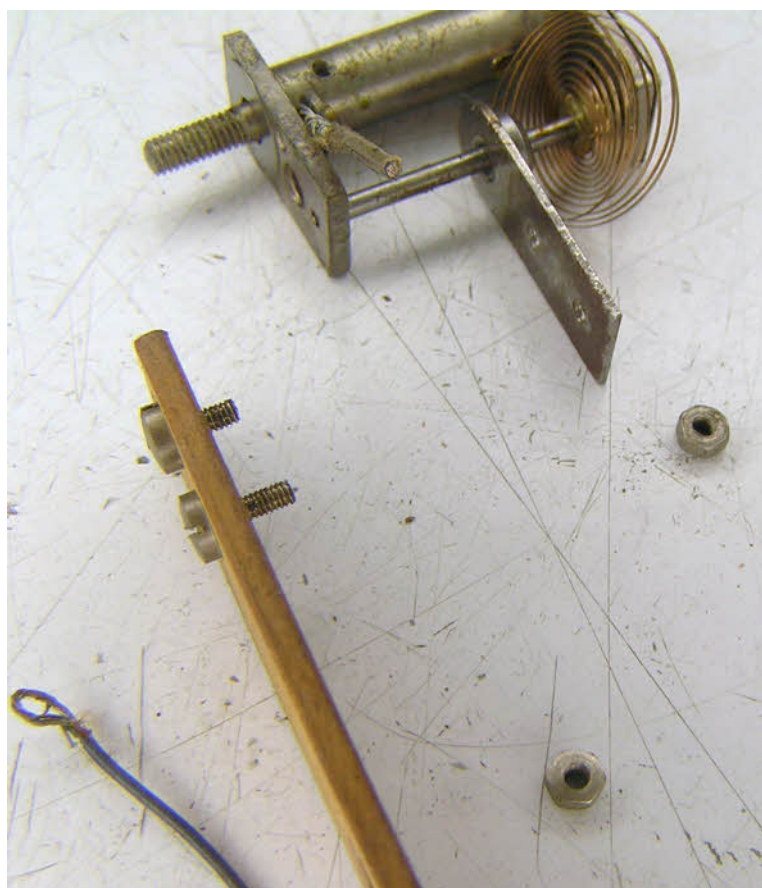
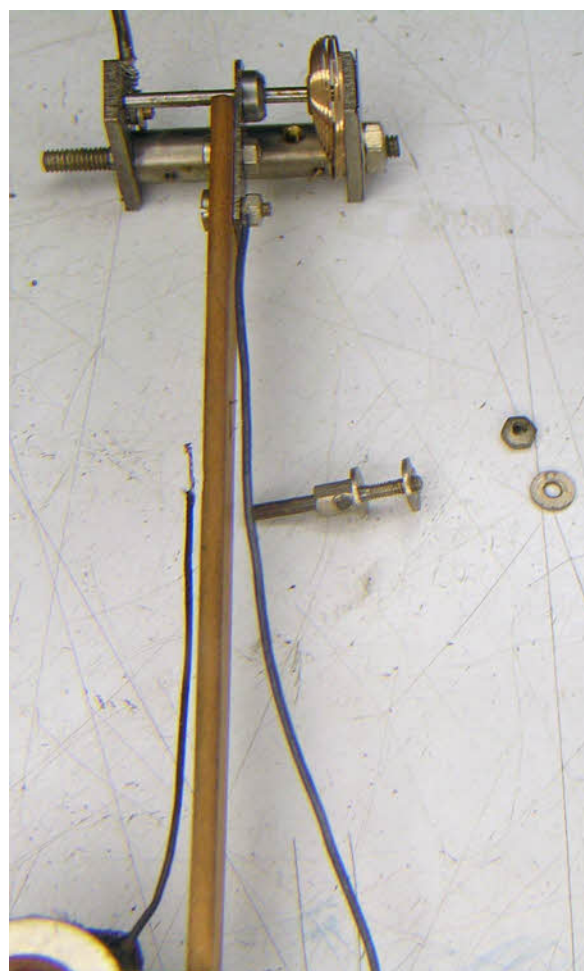
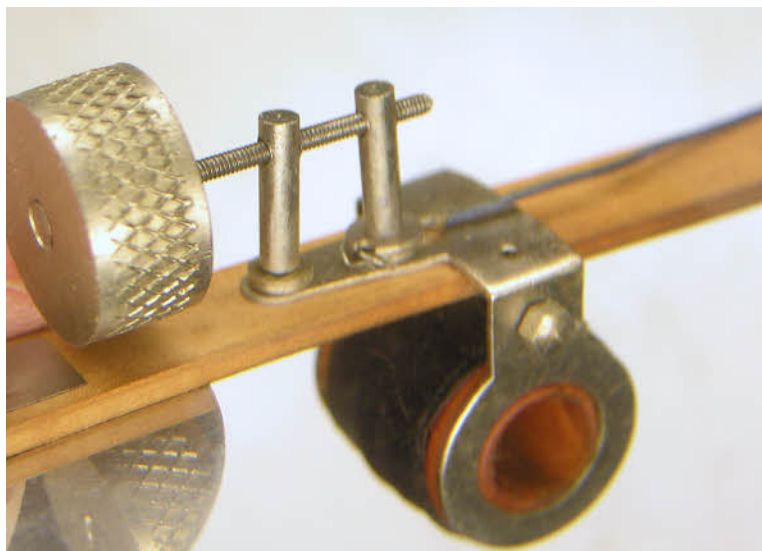
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I thought it may be useful to show a few more photos of the pendulum assemblies as they are a little more unusual than most I see in the workshop. Another area where manufacturing has changed is in the makeup and material of the contact pin itself,. In this model the pin is made from brass and not silver.

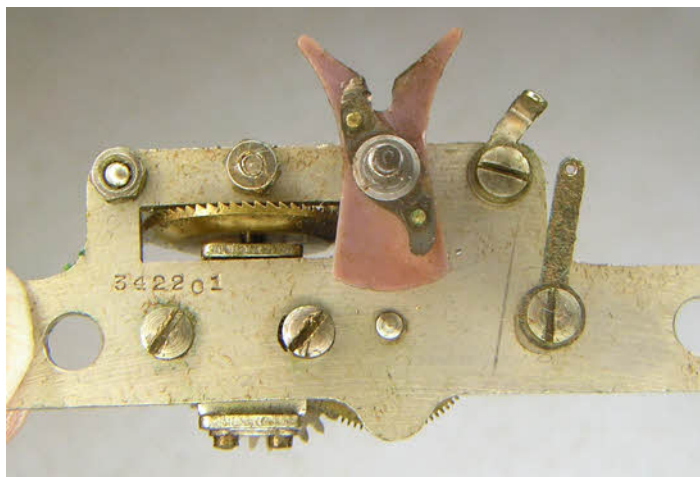
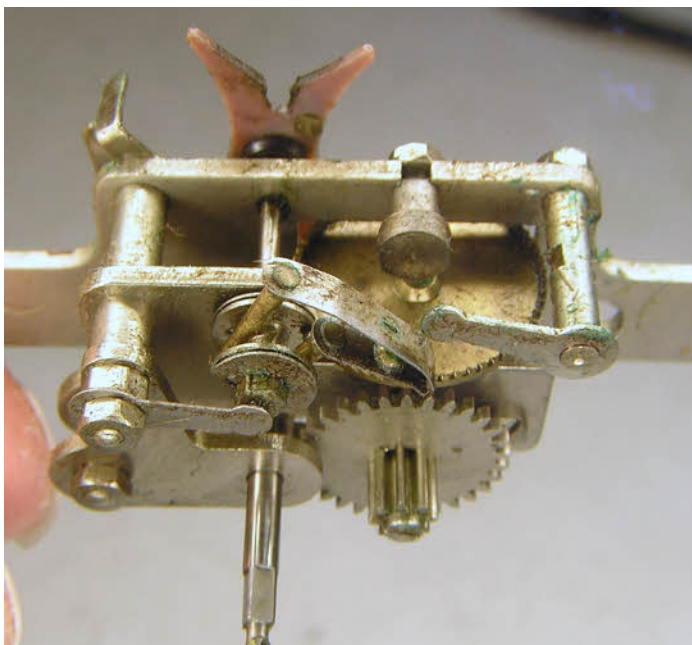
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This type of fork is not uncommon on later clocks. Bulle seemed to use many colours of this plastic type material. I have seen black, blue, red, pink and clear. There were probably others as well. I guess it must have made manufacturing easier because no insulator was necessary if the fork itself is an insulator. But note the wear in the fork canyon and the damaged silver contact. I will have to replace the fork completely. The photo at top left shows the dirty nickel plated movement.

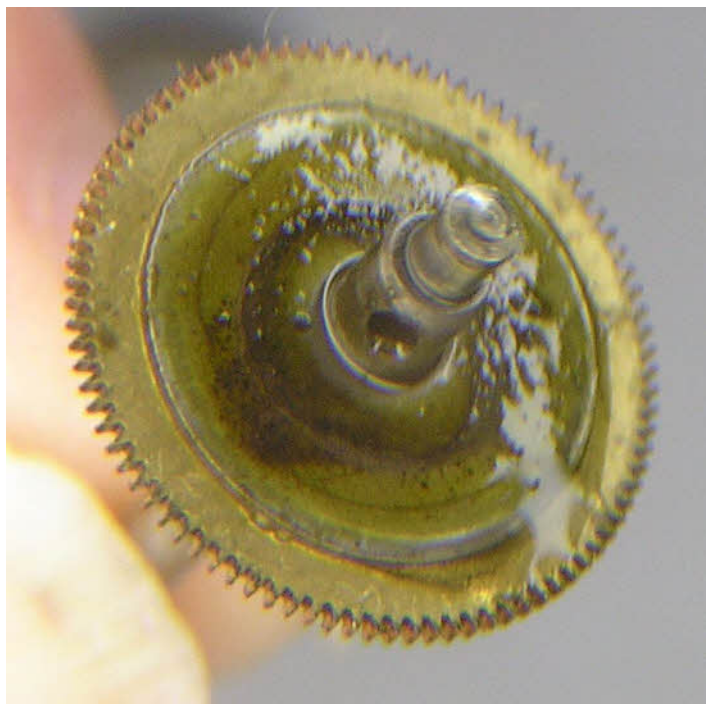
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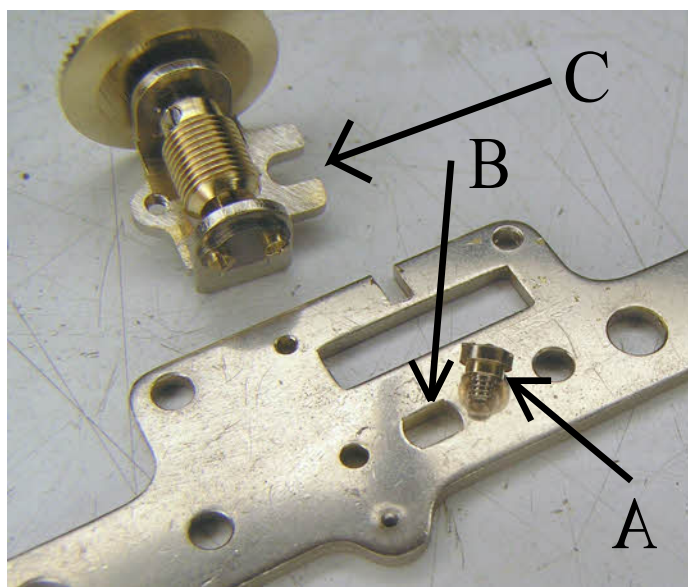
The clock seems to have been well oiled!!!



The cleaned worm wheel assembly.



The strap has been cleaned as best I can. The rust has been removed and there is just enough metal left to make it serviceable. The base itself has some bad corrosion marks which have thinned and holed the base in places. But they should not be that noticeable



The worm wheel assembly ready to be mounted back on the main movement plate. Always make sure that shouldered screw "A" runs back and forth easily in the slot made for it "B" before securing the worm wheel assembly "C". It makes it much easier to adjust the depth of the worm and centre wheel later on.

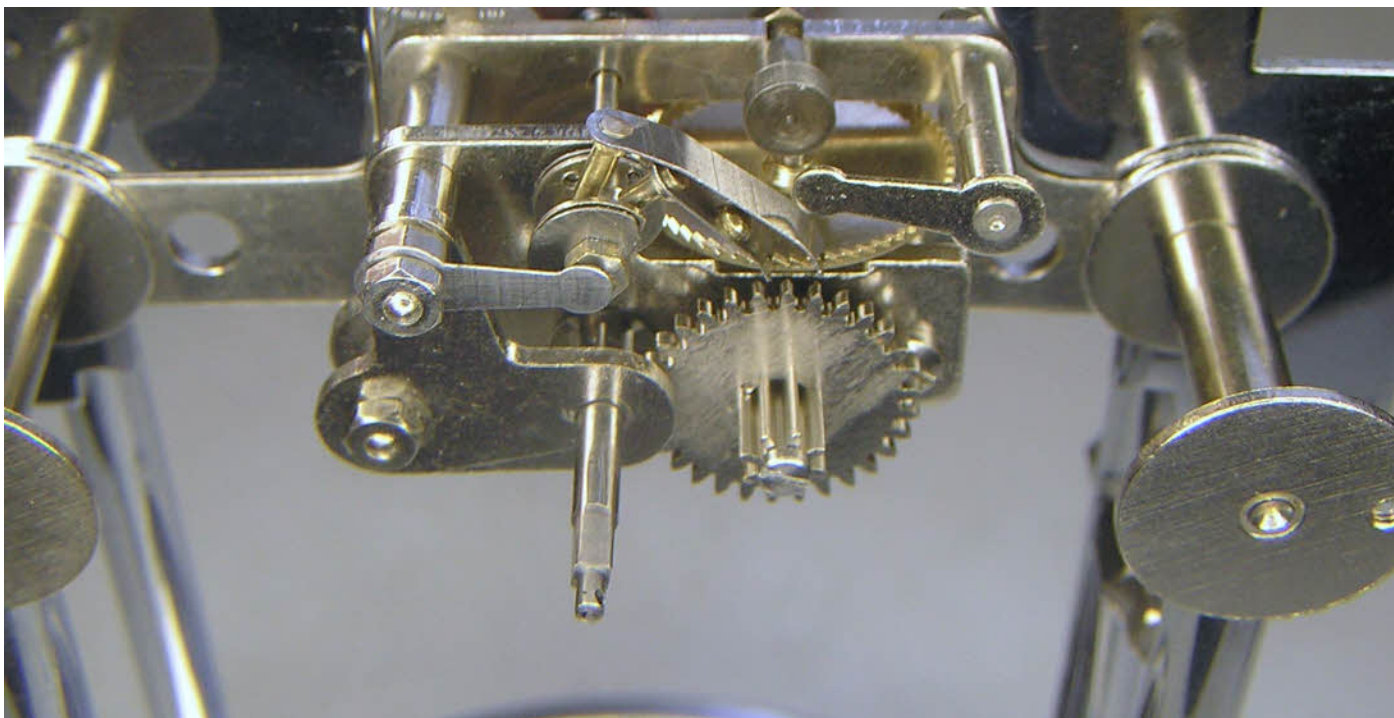
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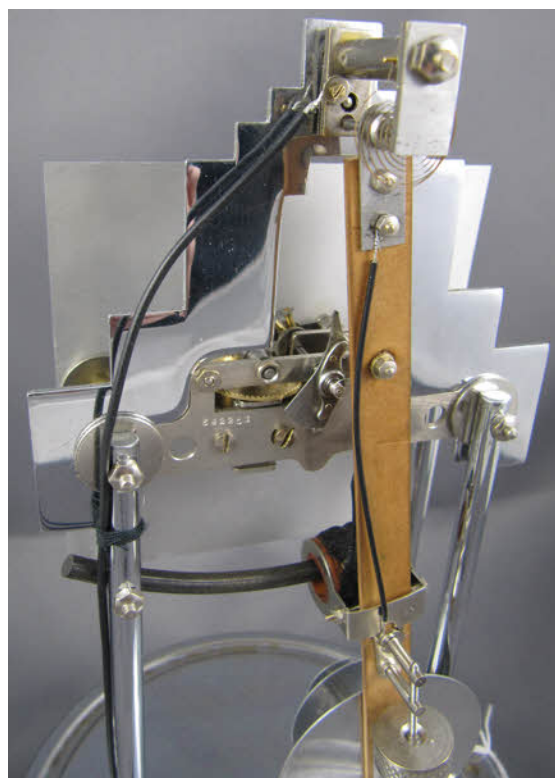


The cleaned movement back in place. The method of mounting the movement on the frame makes it very difficult to make adjustments when testing.



The dial has straightened out quite well.

The photo on the right shows the movement and pendulum back in place



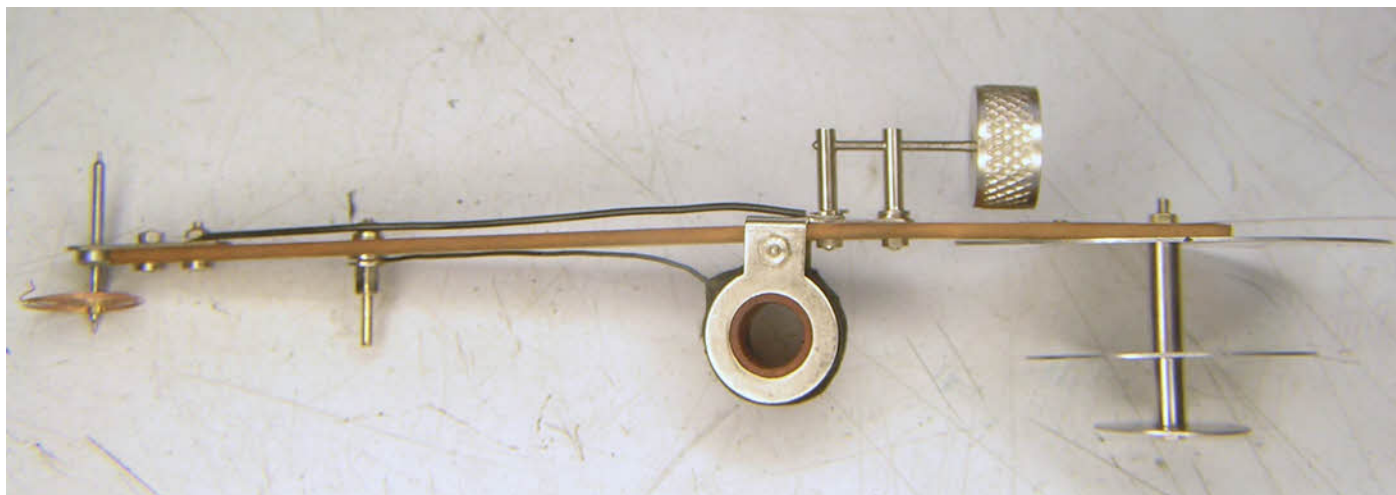
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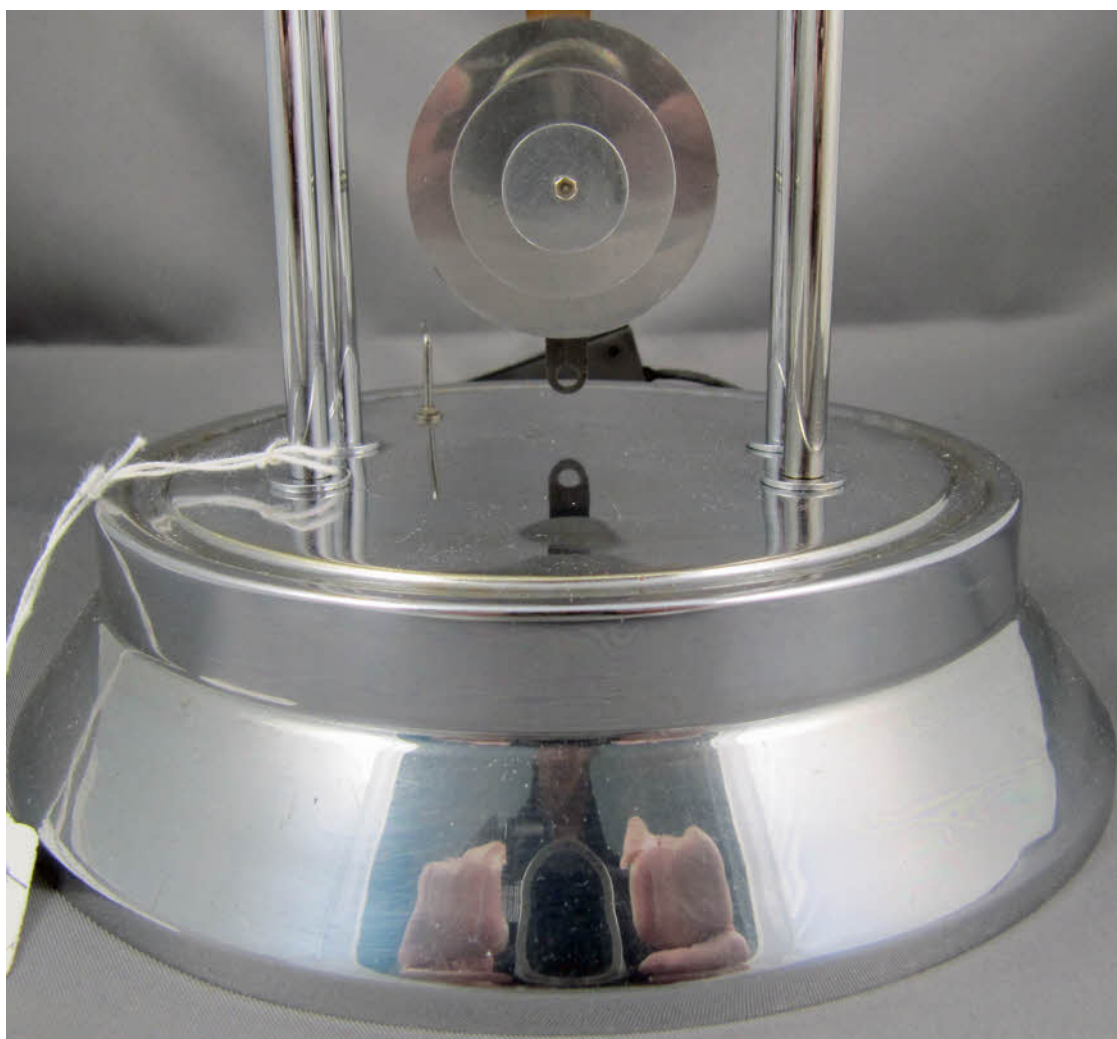
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The pendulum restored and straightened as much as I dare.



*The base cleaned
and lacquered.*

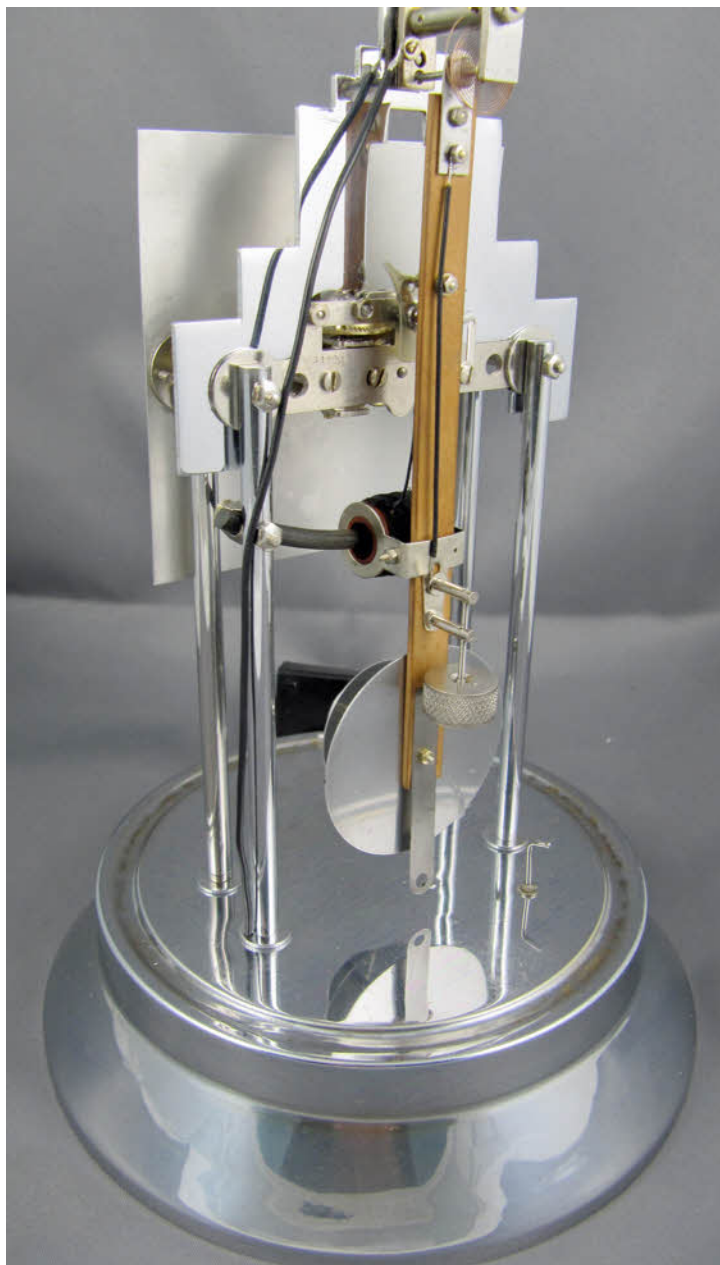
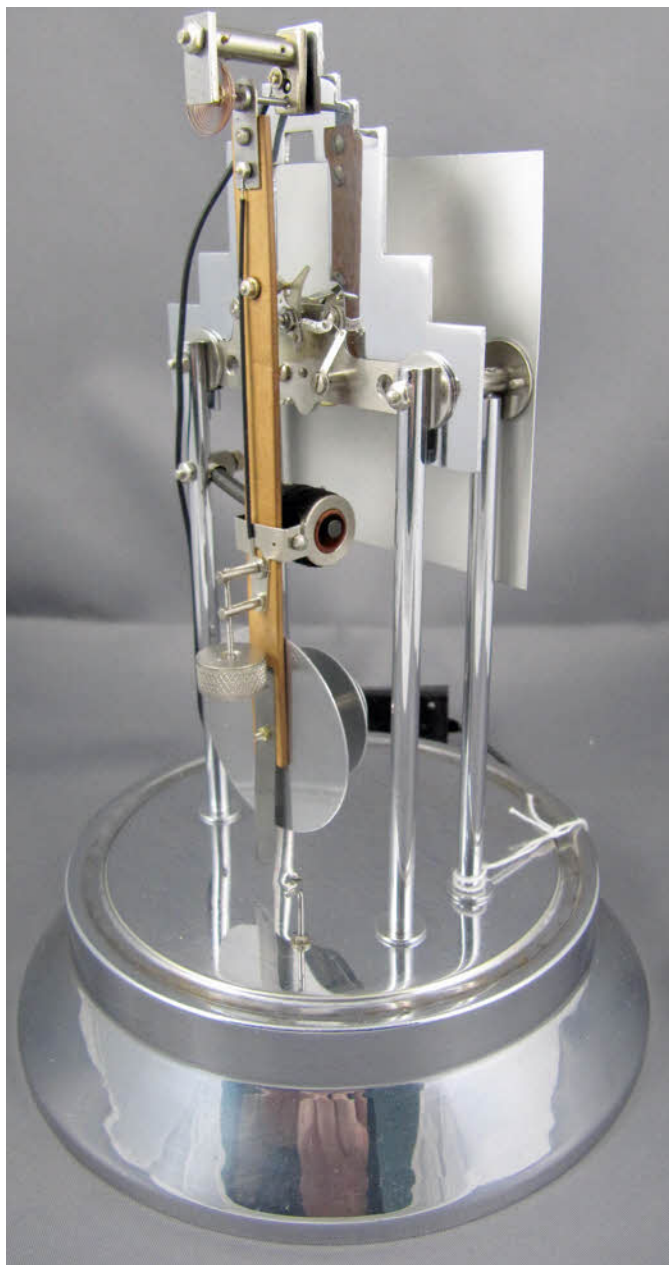
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The completed movement from both sides.

The magnet proved to be a little weak even after re-magnetising. Unlike the earlier magnets the cobalt version is only magnetised with two poles and not three. I had great problems trying to get the clock to give enough impulse to the pendulum to drive the count wheel successfully. I even changed the brass contact pin for a silver one. After many trials I decided to introduce a voltage regulator to the base which would allow a little more voltage to be introduced to increase the amplitude of swing. I found that the minimum required was 1.8 volts which is just over the maximum you would expect from a brand new "AA" or "C" cell battery.

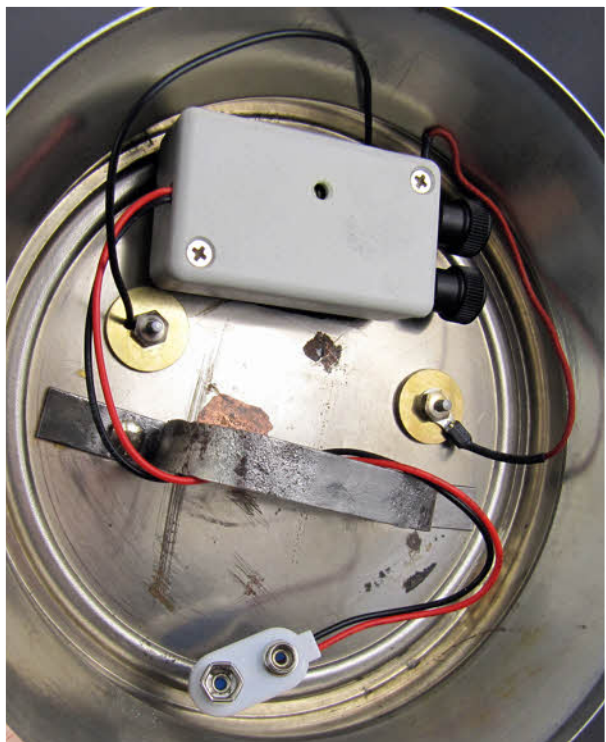
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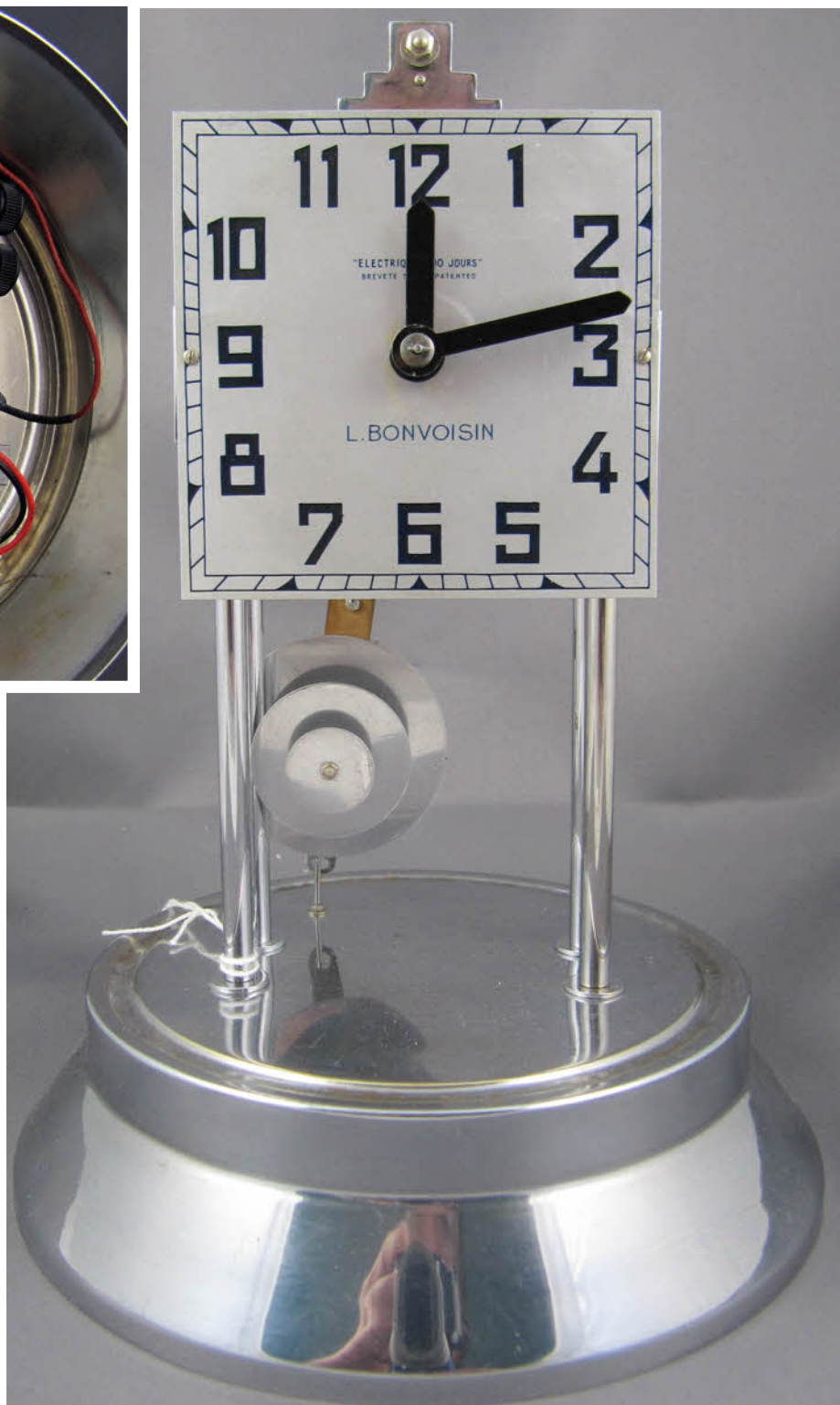
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The regulator in place within the base. It is the same circuit as in the BU022 and EU005 regulated battery holders, but because the aluminium base of this clock is quite shallow I had to house it in a small box. The regulator allows any voltage from 1.25v up to 3.0v.

The clock has now been running well within 3 minutes a week for the last 3 months.

The last photo shows the finished clock.



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The finished clock