

**Horologix**



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**Eureka Clock Serial Number 7617**

*Restoration of Eureka  
Clock Serial Number 7617*

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*Photos by kind permission of the owner.*

*A tall clock in a mahogany break arch “Early English” case with moulded quarter pillars. Enamel dial “Eureka Clock Co Ltd, London”. Three ball movement without second hand. The case has provision for a full flag cell battery at the rear. Initially the clock looks OK with just the minute hand missing. But what are those wires at the back?*

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*On opening the case it's obvious that this clock has had some major changes made. But it also seems to have parts missing. Note the missing feet and decorative finials that support and embellish the movement. But its the second photo that shows the really interesting alterations. In place of the battery there appears to be some sort on transformer, screw terminals and perhaps a solenoid. From here lead various wires that terminate in some mechanical contacts that are now disconnected from the movement. These were obviously connected to the extra wheelwork seen at the rear of the clock. From what I can make out the insulated material with the triangular brass protrusions were connected in such a way as to provide impulses at the quarter hours and hours. It naturally follows that this system provided a chiming and striking method that, rather than being mechanical on the clock, was in fact led away from the clock as electrical impulses to drive some other remote device. All of this extra work looks to be from the 1920's or 30's and done to a professional standard which suggests that the clock was changed after purchase at some cost.*

*All of these additions have been photographed in situ before being removed and the clock returned to it's original condition.*

*The next page show some detail of the modifications.*

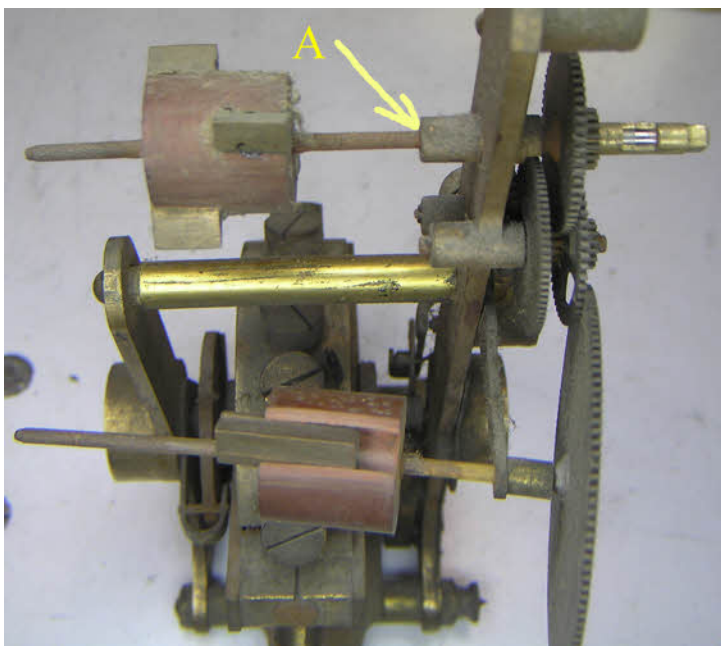
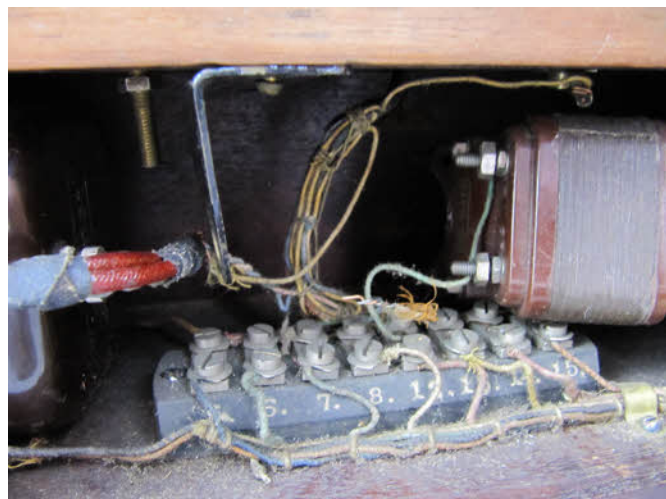
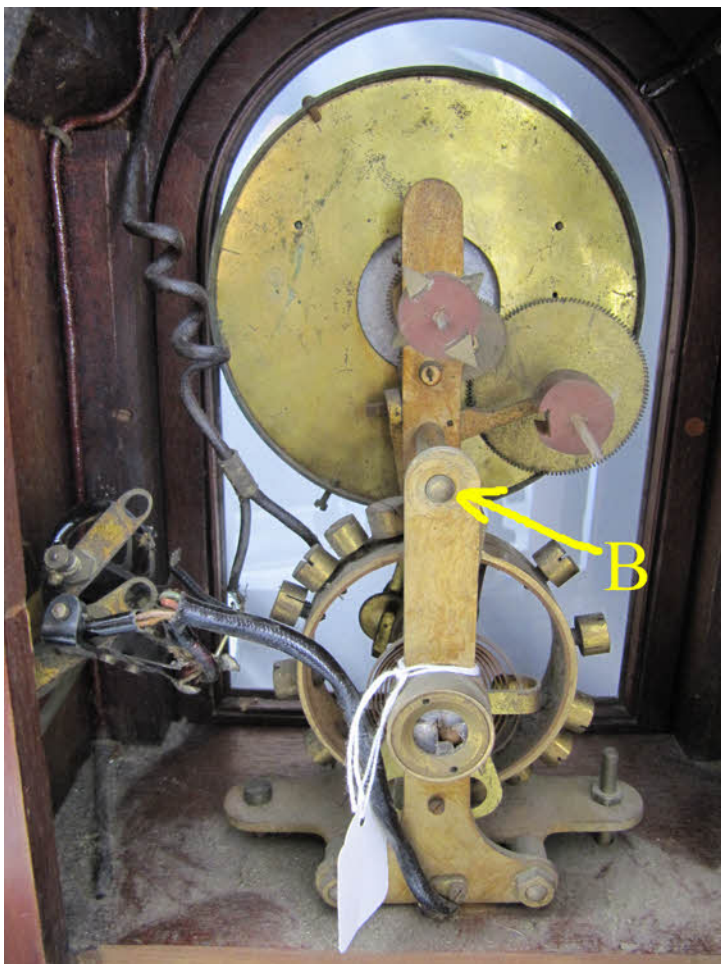
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*Note that the arbour carrying the four triangular blocks has been screwed directly to the rear of the minute hand arbour (A). The other arbour is driven from the motion work. Surprisingly, considering the additions, there is no damage evident to the clock itself. All the additions have been placed using existing holes or screws. Note that the nut is missing from the frame plates at (B).*

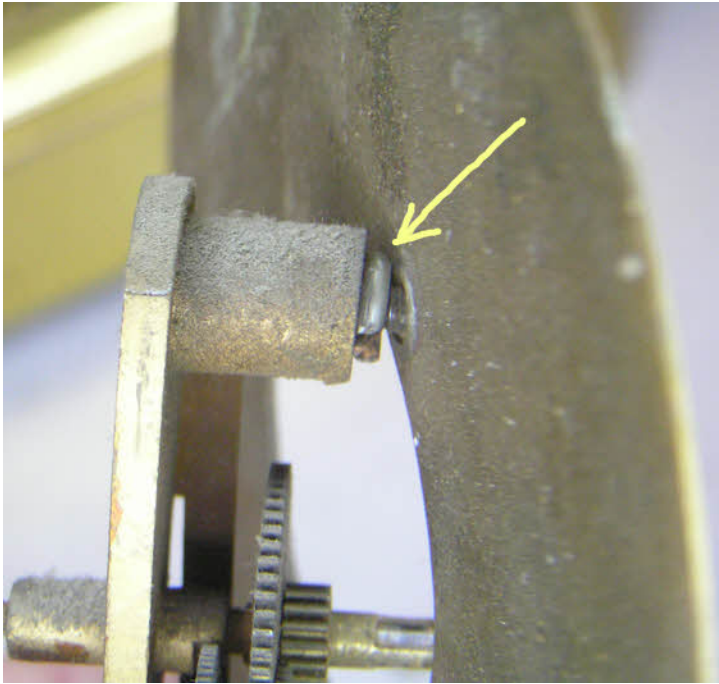
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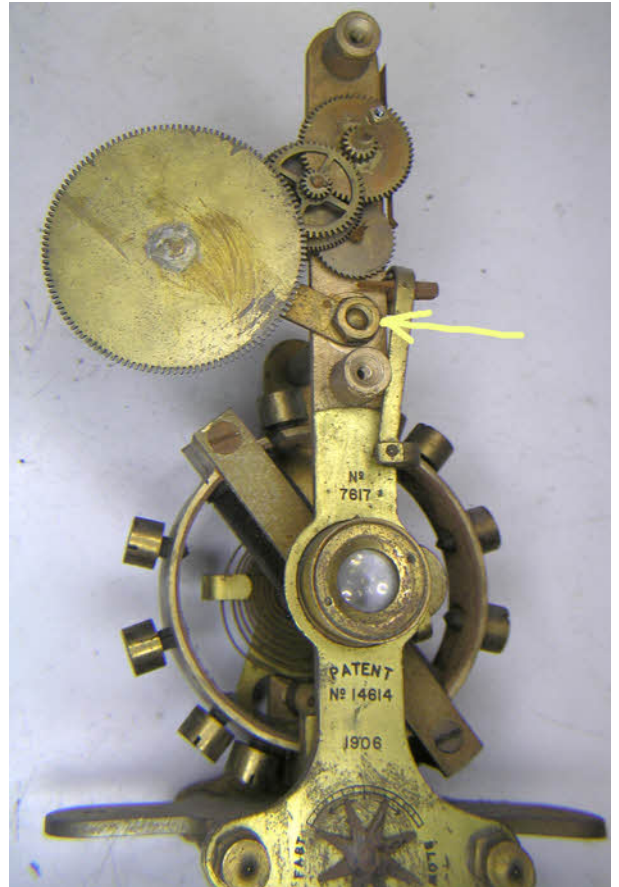
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These "spacers" were found behind the dial pan. Why?



The extra wheel work is attached to the clock using the existing frame nuts.



Note the one triangular brass insert in the arbour driven by the motion work.

The photo on the right shows the badly damaged rear bearing. Besides the broken glass, which looks as though it has been shattered by shock, all the steel work is badly rusted.



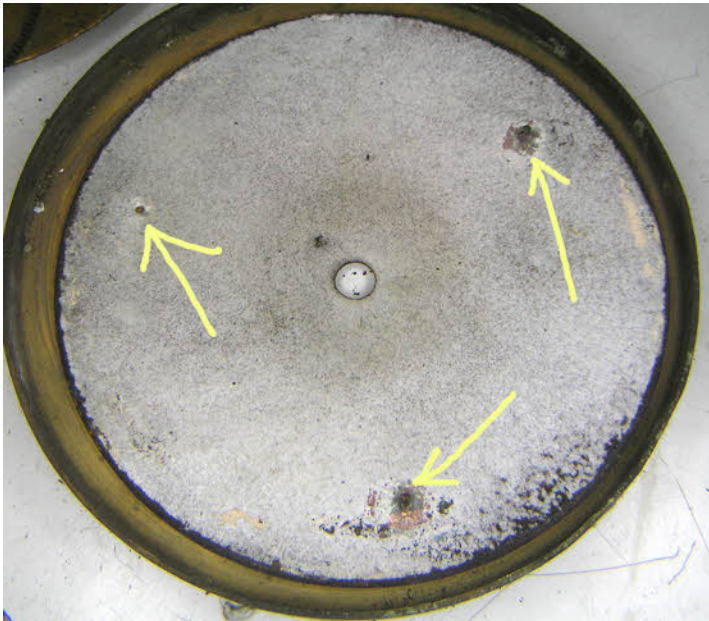
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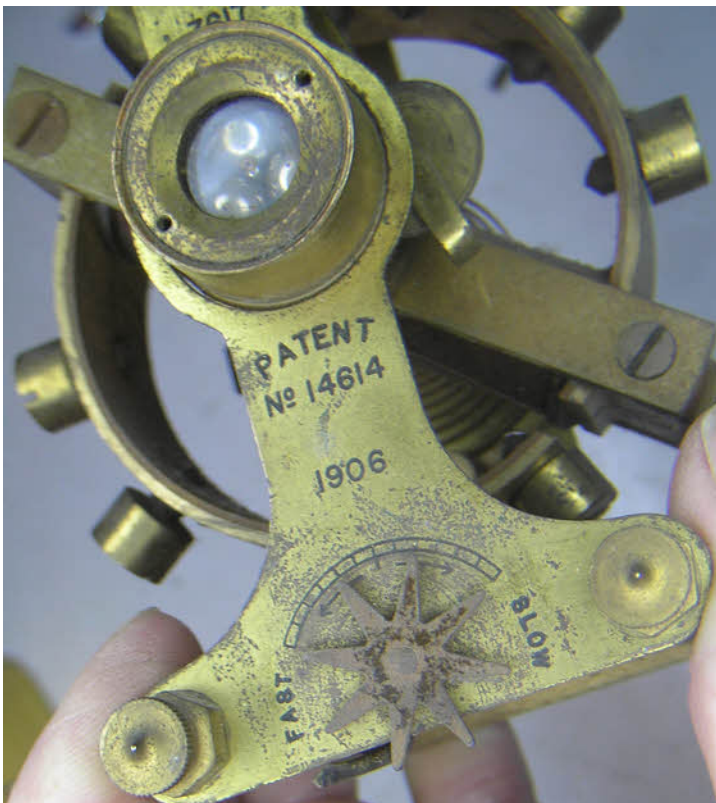
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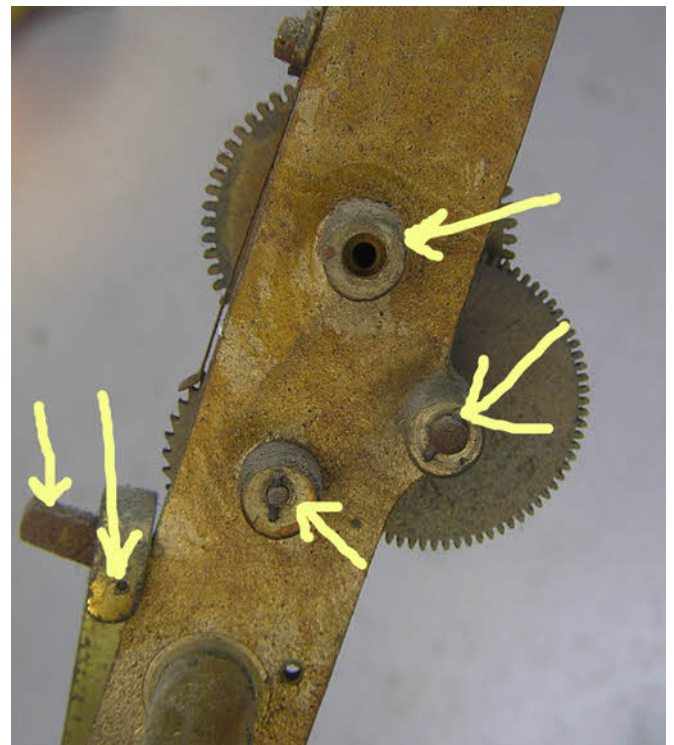
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*All of the pins at the rear of the dial look as though they have been under stress with one of them actually broken off. But the front of the dial is unmarked bar all the dirt which will easily wash off. Given the state of the rest of the clock I am surprised the dial survived intact.*



*The front bearing and registration plate.*



*All of the arbours and steel work are badly rusted and hard to remove.*

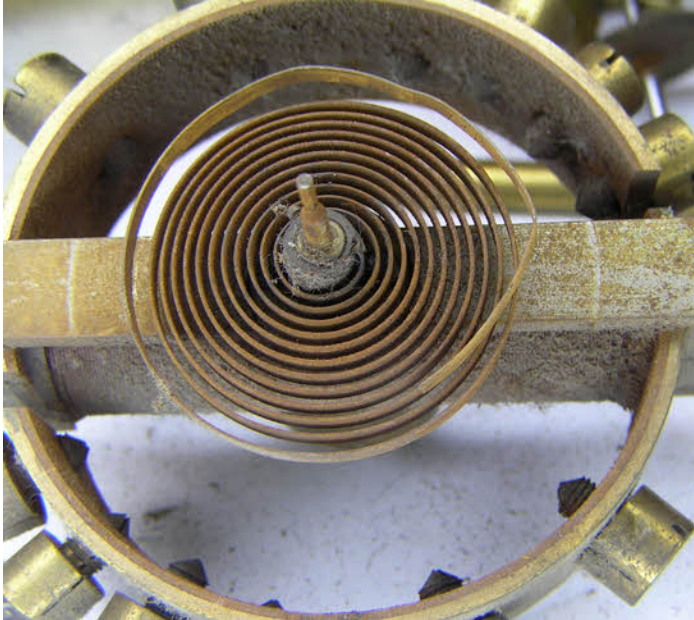
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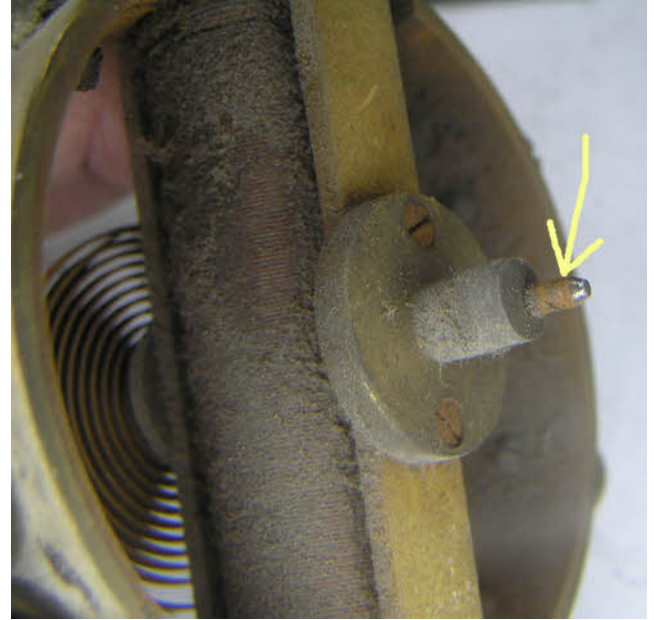
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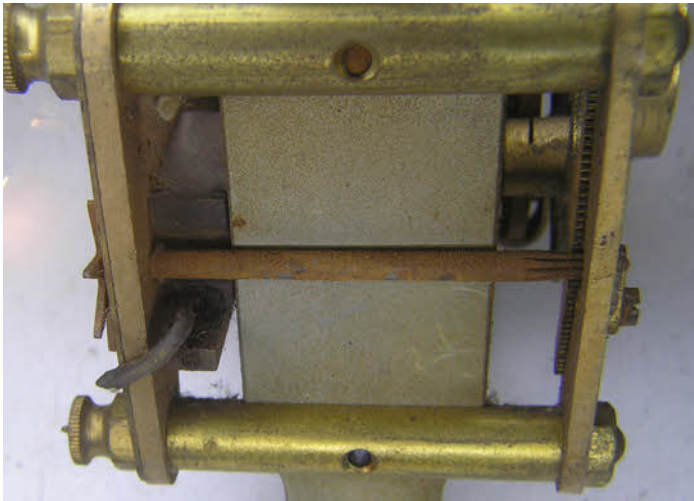
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*The balance spring heavily rusted. This will take some cleaning. The rear pivot is also rusted.*



*The front pivot has been snapped off. It's a wonder the glass was still intact.*



*The arbour carrying the star adjusting wheel also shows heavy rust. When I'd removed all the wheel work the extent of the damage was evident. Every piece of exposed steel was heavily rusted. All of the pivots and pinion teeth will need to be cleaned and re-polished. All of the screws will need the same treatment as well as bluing. If you take into consideration all the missing and damaged parts then this clock will require more work than I have put into any Eureka or Bulle clock in the last ten years. But I have to say that is also the most interesting!*

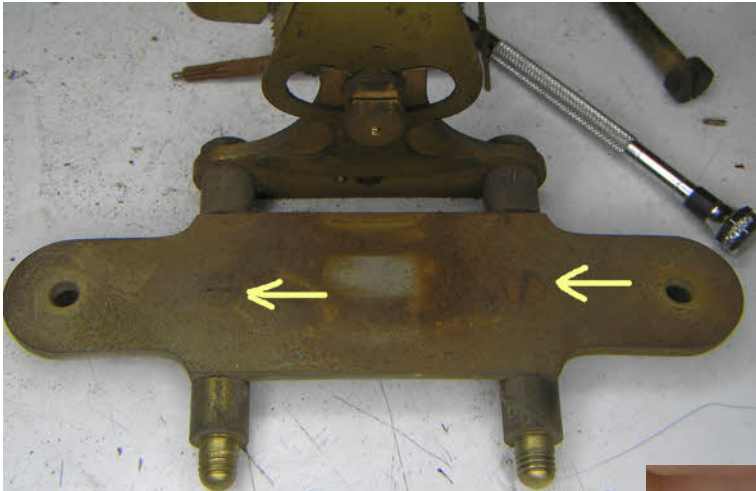
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The two base plate screws were hidden in the rust.



The steel of the bi-metal balance wheel did not escape the rust. It was so bad that deep pits showed up when the rust was removed. The steel was originally polished and then nickel plated but all of that nickel was now gone. There is not a lot one can do when steel gets in this condition other than to clean it as best one can and secure it from further damage with a coat of lacquer..



The contact pin had been worn down to a small point.



Although covered in dirt the coil proved to sound and reading a good 20 Ohms. When cleaned I took the opportunity to give it a coat of clear lacquer too.



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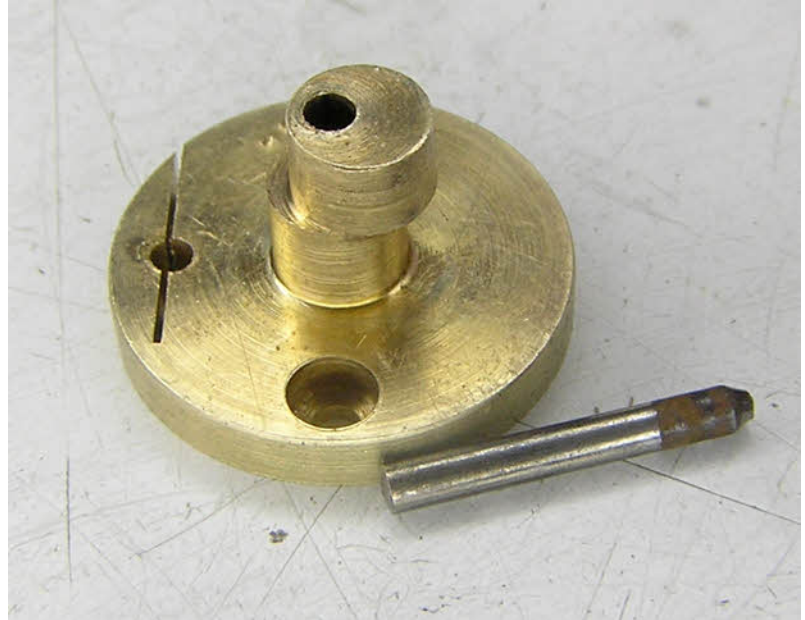
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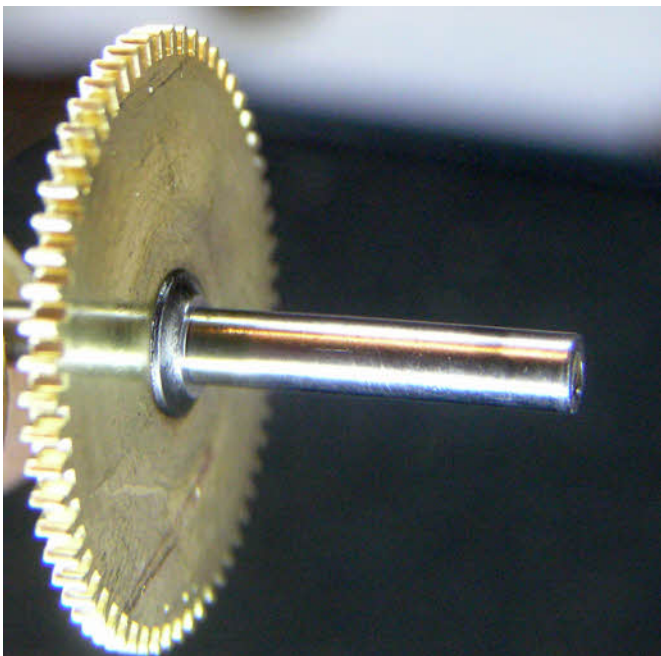
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*The contact pin assembly had started to disintegrate.*



*The front pivot removed ready for replacement.*



*Arbours cleaned and polished.*



*New front pivot polished and in place.*

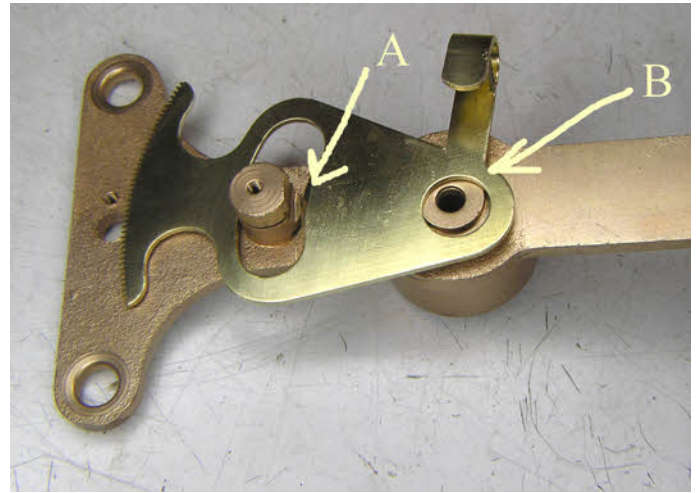
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These two photos show how the regulator segment is secured to the frame. It is first roughly set in position with the hole at (B) ready to be slipped over the protrusion at the rear of the bearing. But it will be found that it cannot slip directly over the protrusion until the slot at (A) is pushed down and into the slot cut into the side of the round pillar that holds the spring securing screw. The photo below left shows the segment in position. It should be a snug fit with an easy sliding action.



The photo on the right shows the restored balance wheel with steel of the balance cleaned and lacquered. The pivot has been polished and the screws blued.

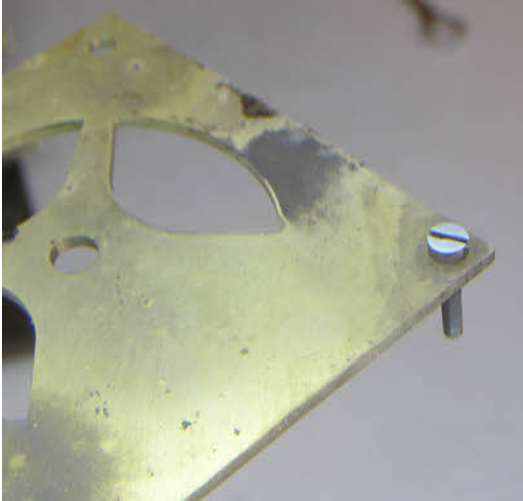
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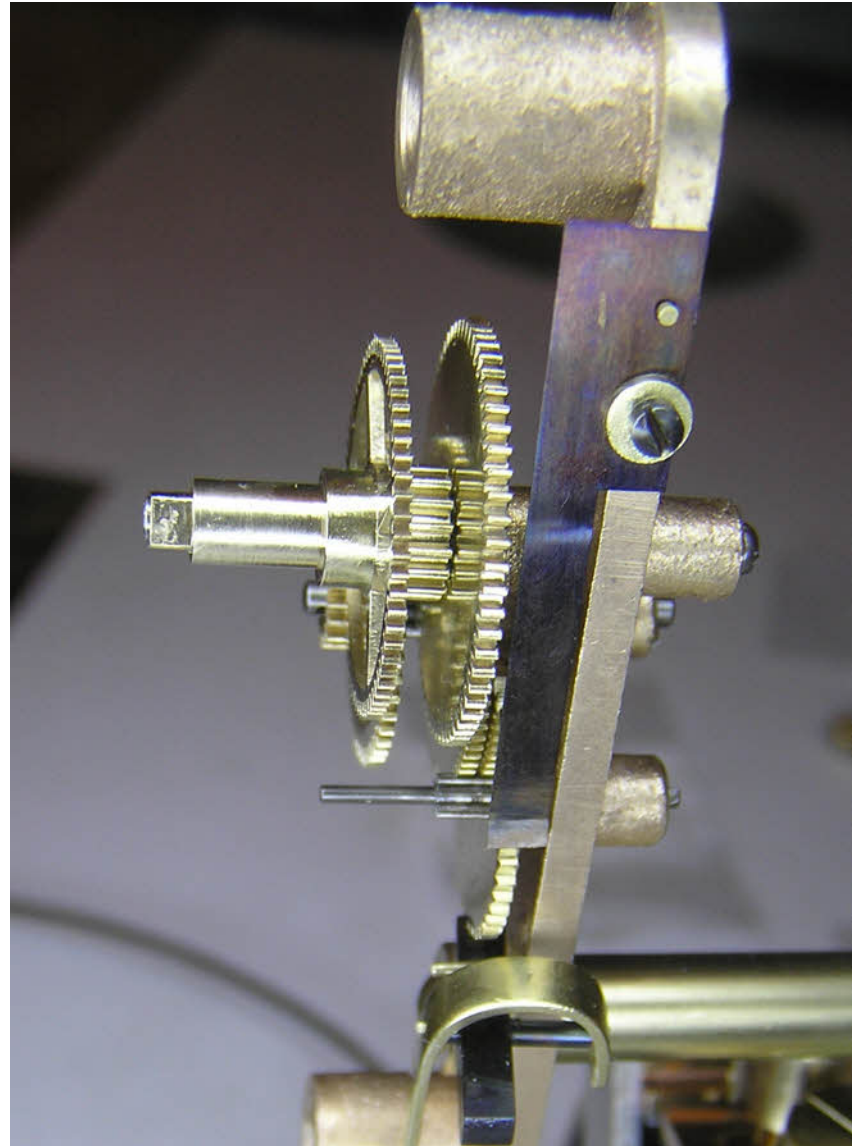
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*I use a scrap of old brass to hold cleaned and polished screws. A heat source such as a heat gun is then played on the brass near the screw until the screw starts to turn the required shade of blue.*



*Above can be seen the motion work back in place with the new count wheel click spring which replaces the original which was rusted and holed through. It is made from 0.004" spring steel. The photo above and left shows one of the dial retaining screws which had to be polished and blued.*

*The final photo is the hardened steel gathering pallet. Although the actual gathering face has been polished to remove pitting, the body of the pallet has only been cleaned and blued leaving the pits in situ. To polish them out would have left the pallet much thinner and too light for its purpose.*

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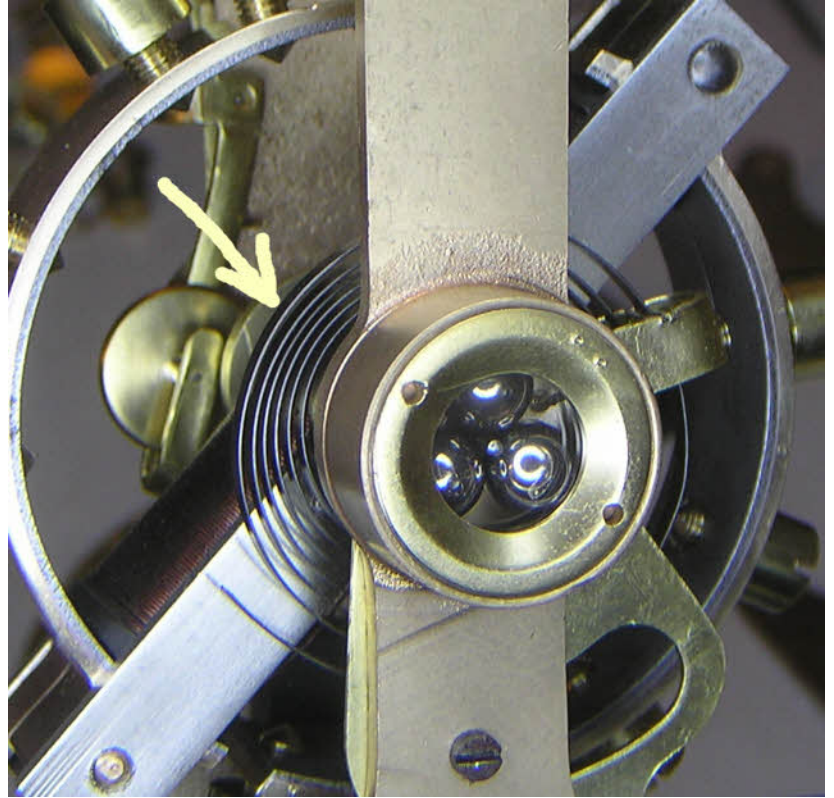
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On re-assembly it was found that on one side, the ball bearings stood proud of the bearing sleeve (ballrace) and fouled the glass. I've never seen this before. But I had to polish the balls to get rid of the rust, so it may be that they are that much smaller. So I turned a thin brass washer about 0.2mm thick and placed this in the housing before the sleeve. This was enough to give the balls room to roll even when the lock washer was turned down tight. There are paper washers in the assembly but these are placed between the lock washer and glass.



A photo showing the rear bearing housing with polished balls and new glass. It also shows the cleaned and polished balance spring. This spring took many hours to straighten, clean and polish. But it still remains very pitted and slightly misshaped. It must have been put under a lot of stress.



The photo at left shows the final stage in machining one of the two decorative finials that act as nuts to the screws holding the frame to the case. I also machined the two supporting pillars as can be seen on the following pages.



A finished finial. The base is undercut to make sure it sits straight. It is threaded 2BA to accept the original screws.

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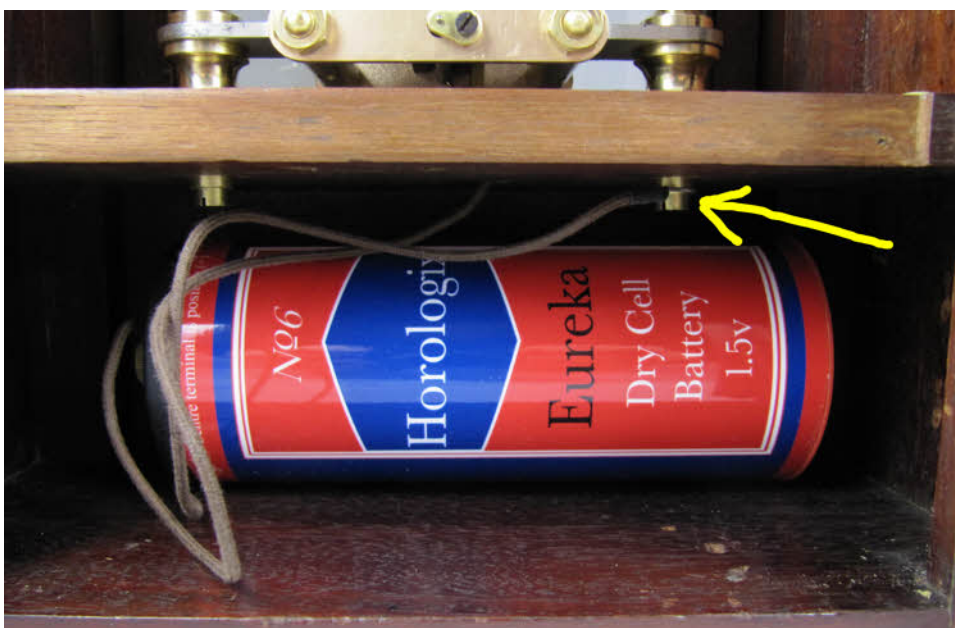
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*The only hand left on the clock was the hour hand which again was badly pitted with rust. So I made a new pair from spring steel to the original design and then made a new set of collets to match the existing wheel work. The hands were blued before securing to the collets.*



*Here we see the 1.5v flag cell battery case (EU005) in place in the special compartment underneath the movement. The negative side of the battery is connected to the frame via the screw arrowed.*

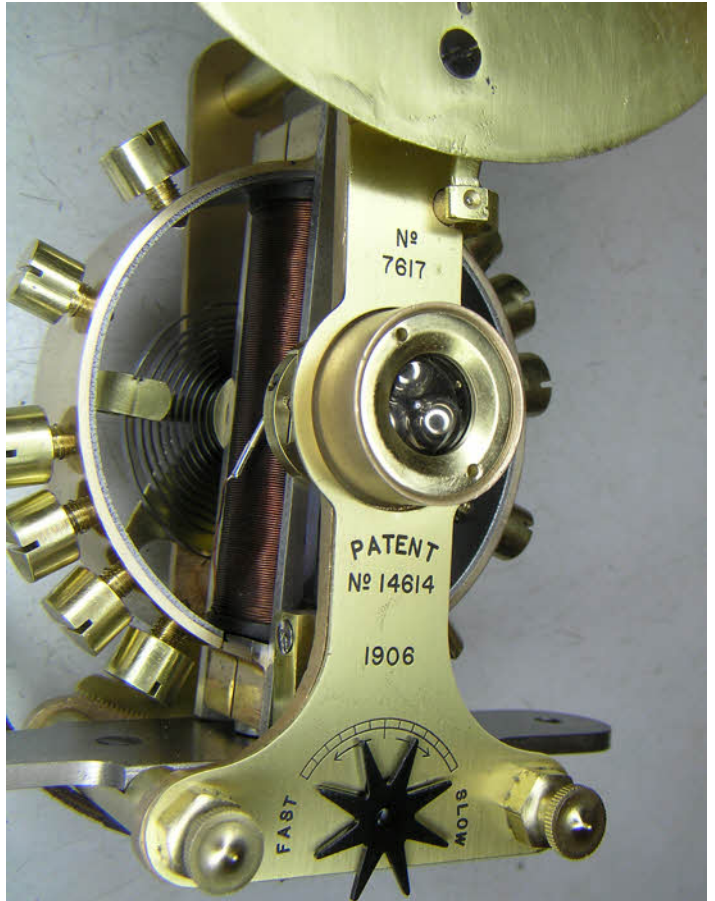
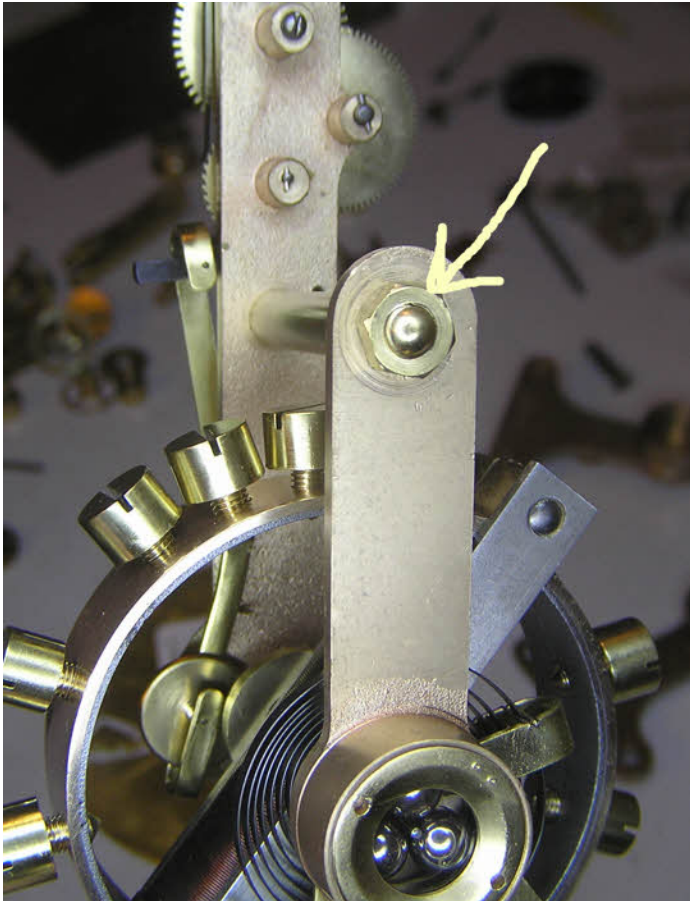
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*The final missing part was the frame nut which has now been replaced.*

*The front of the restored clock showing the registration plate which has been cleaned with the engraving re-filled with wax and the whole then lacquered.*



*This clock has been very interesting to restore with its amended function, missing parts and rusted steel work. There were many parts I would have liked to replace such as the balance spring, bearing ballraces and balance wheel. But then the only original parts would have been the frames and motion work. Where do you stop?*

*All of the extra parts that I have removed have been put aside and their original places in the case noted and photographed, in case anyone would like to do some research on their origin and function?*

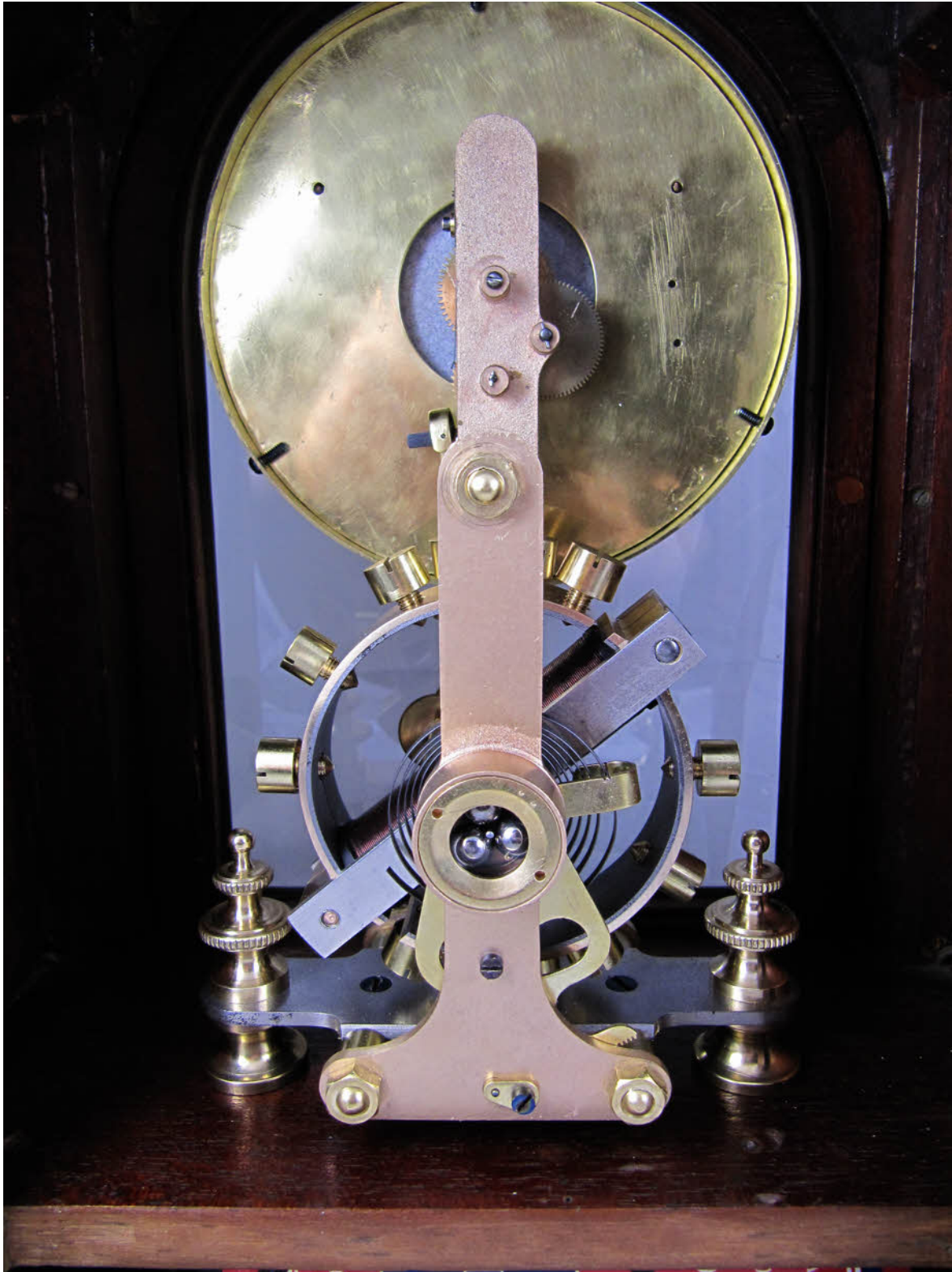
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*The rear of the finished clock with the new pillars and finials. Hopefully these would not be distinguishable from the originals.*

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*The finished clock.*