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The place to come for all your Bulle and Eureka restoration parts.

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Bulle Clock Serial Number 67438

*Restoration of Bulle Clock
Serial Number 67438*

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*Photos by kind permission of
the owner*

This clock is of the tall two plate, "A" type and dates from around 1926. The first thing to note is that the column looks a little strange!! The top and bottom of the column are all that's left of the original with a solid plastic type material inserted between. We can only assume that the dreaded battery acid has done its work and eaten enough of the original tube for it to be quite rotten and need replacing. The original tube was 55mm diameter and 0.5mm thick, so it is difficult to obtain. From the number that I have restored I believe them to be fabricated from plate rather than extruded. Anyway, we'll see more when we disassemble the clock. Other than that, the clock looks to be in reasonable order.

Below we see the top of the column in more detail



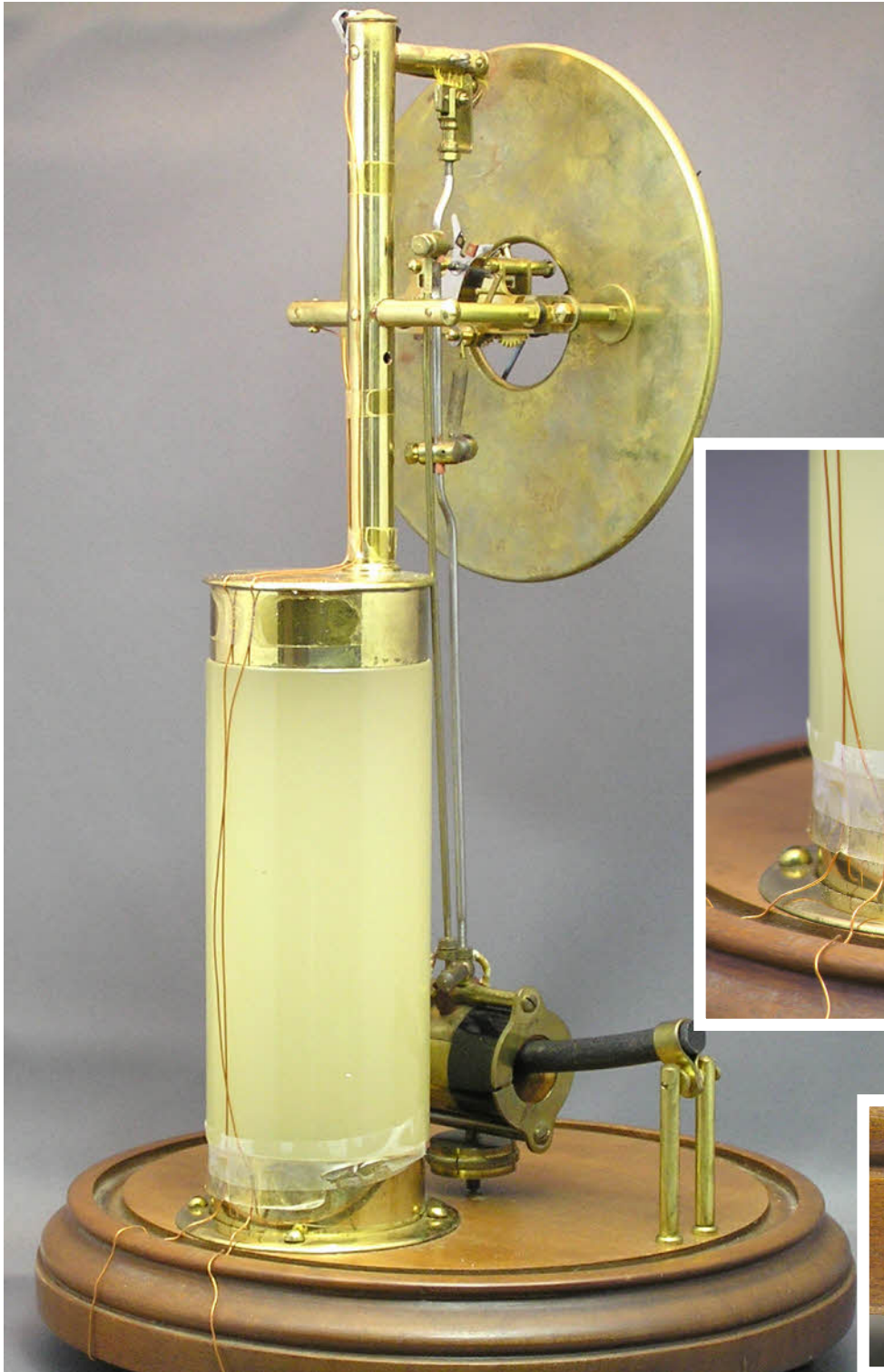
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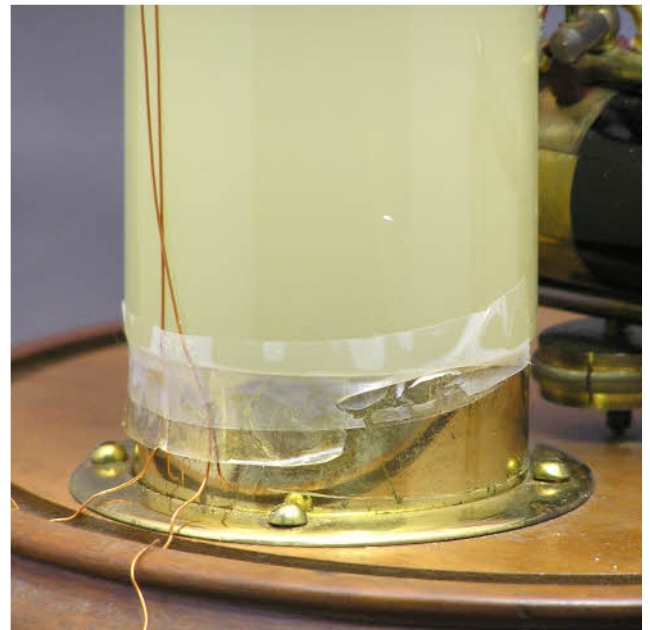
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The rear of the clock. Note the two enamelled copper wires running from the movement, down the outside of the column and out under the base. This was done because the column is now solid plastic and had no where to run the wires. In this photo is much clearer that the top and bottom of the original brass column have been expertly machined to fit the plastic.



The wooden base looks clean and tidy although a little "tired". I think all we need do is cut it back a little and add a few coats of Polish to bring out the lustre. The label on the base is of the later oval type.

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As you can see from these two photos there is a small "Pot" resistor of 1000 Ohms. I have no idea why this is here. The coil still reads a healthy 1100 Ohms so there is no need to add any extra resistance. I can only assume that this clock has been the recipient of some experimentation in the past.



The underside of the base shows further modifications. The solid replacement column takes up the room where the battery would have fitted, so the two wires from the movement are terminated with contacts that allow a small battery to sit across the opening. This of course leaves no room for the bottom battery cover which has been removed and lost. So besides restoring the column we will have to make a replacement battery compartment cover. The last photo shows a shrinkage crack in the wood; perhaps a sign of modern home heating. It is not



that bad and will not be treated other than a good waxing.

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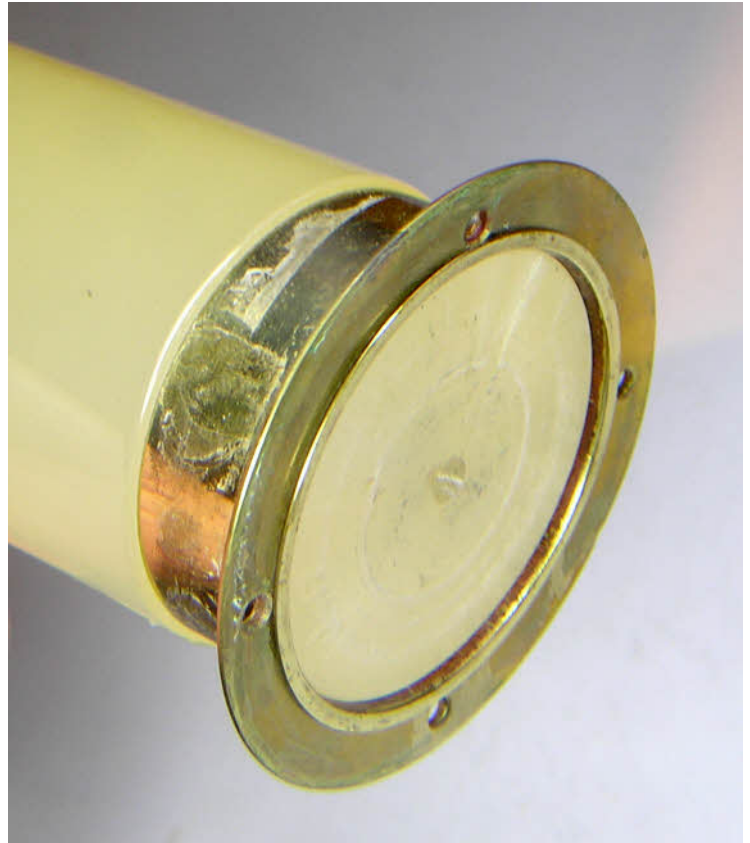
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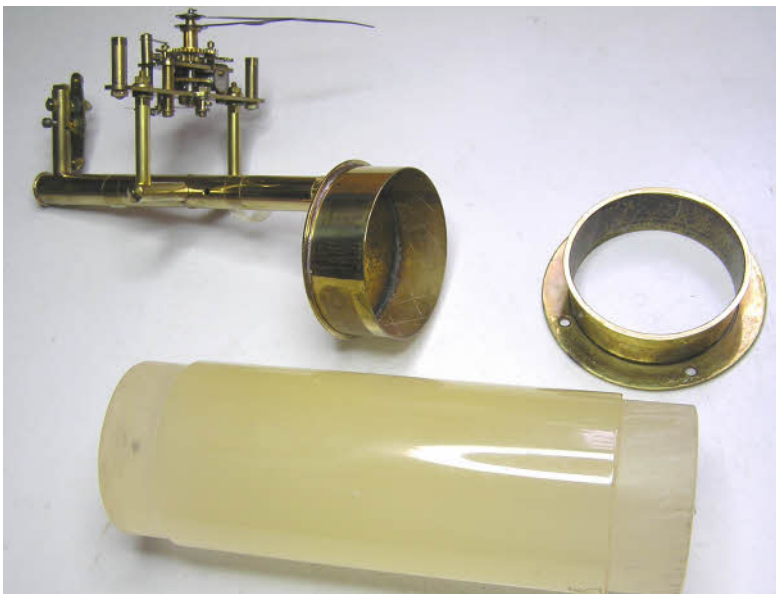
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The coil looks as though it has been tampered with although the good news is that it still has a good resistance. Hopefully all we probably need to do is remake the lead out wires.



The column removed from the base shows how the plastic and column had been machined to mate together.



The whole column disassembled. Notice the machined ends of the plastic and original column.. We will need to remove the top of the column from the rest of the frame carrying the movement and replace it with a donor from another damaged clock. Luckily I managed to find a column with the top frame damaged leaving a good column. I'll show the donor operation a little later.

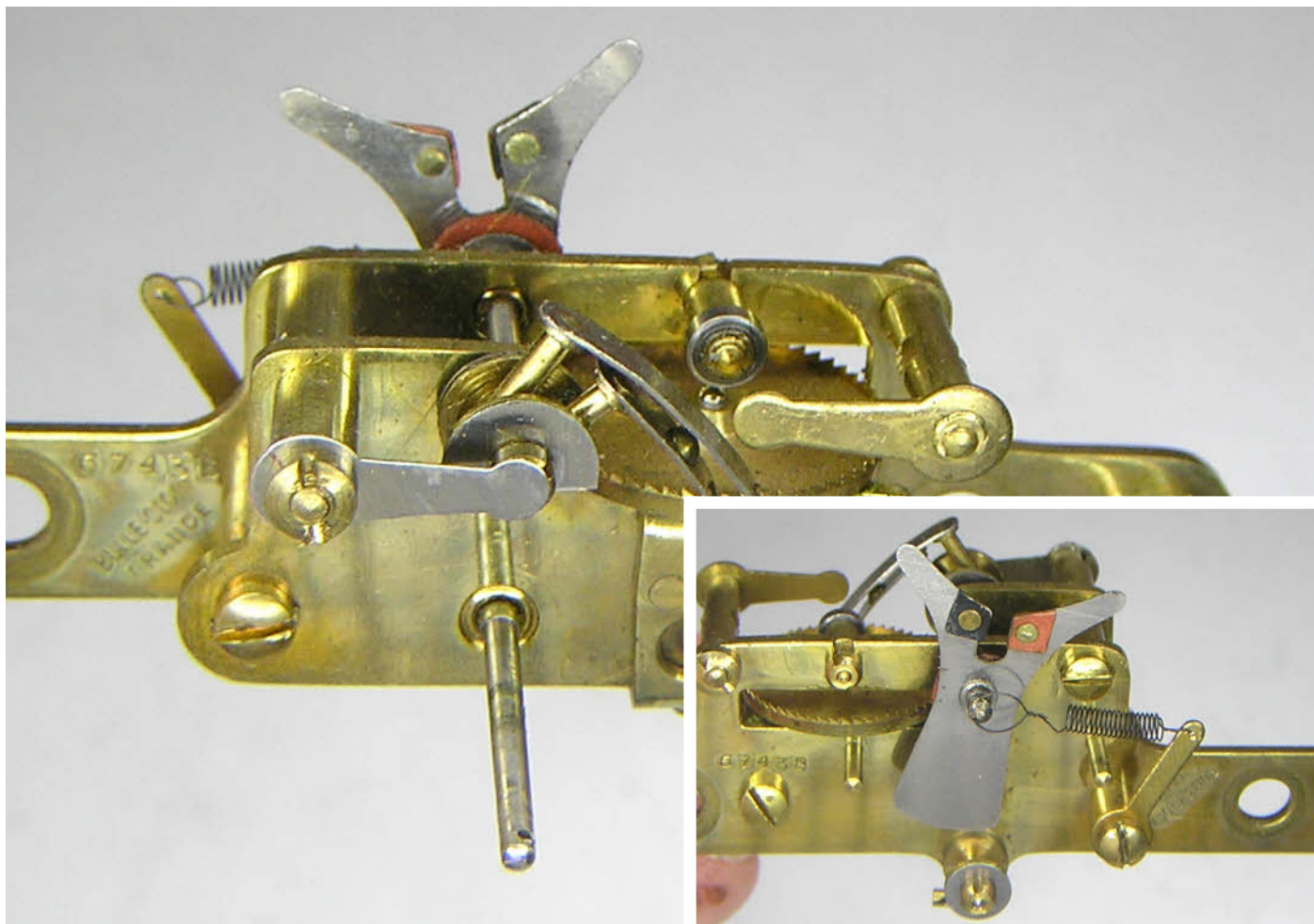
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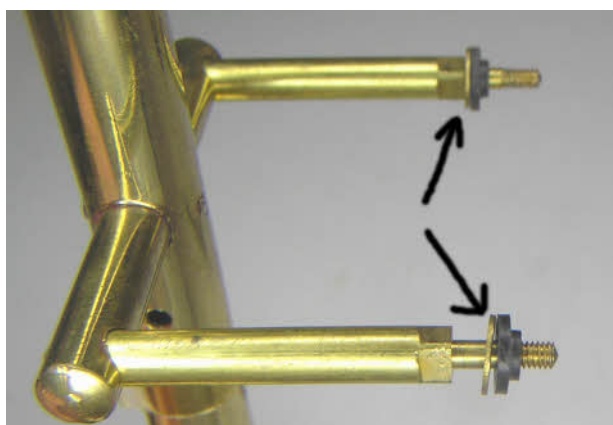
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The movement itself looks to be in good condition. The fork contacts have a good presentation within the fork pin gap, and show little signs of wear. This means we can clean it up without replacement. It seems that this clock has not had such a bad life as the column would suggest. Perhaps it was left inactive for many years, with the battery left in the column to leak acid. A familiar scenario. The insert photo shows the rear of the movement with fork contacts.



The photo at left shows the insulating washers and brass spacers. The spacers are replacements and are much too thin. New ones will be machined on the lathe. Below we see the brass contact rod from the rear of the pendulum. A little bent but easily straightened.



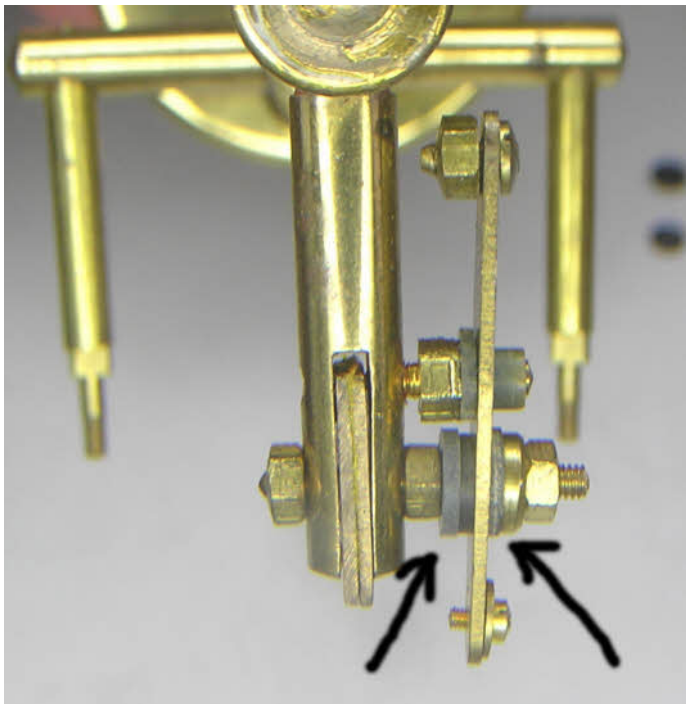
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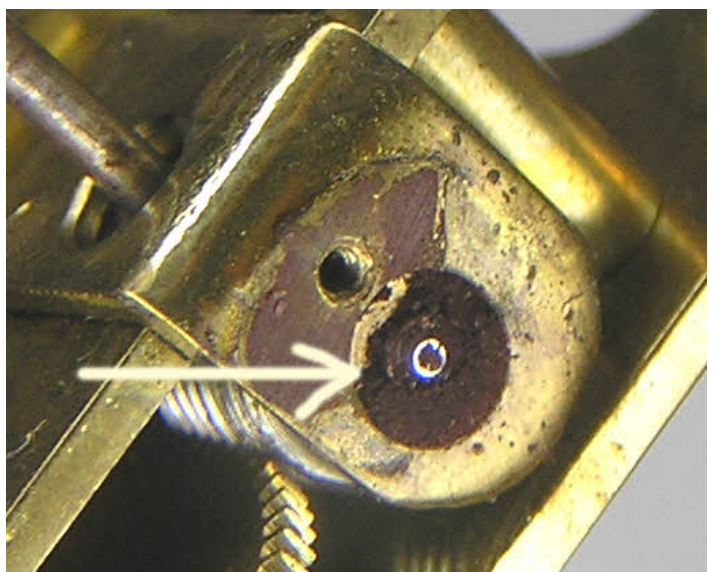
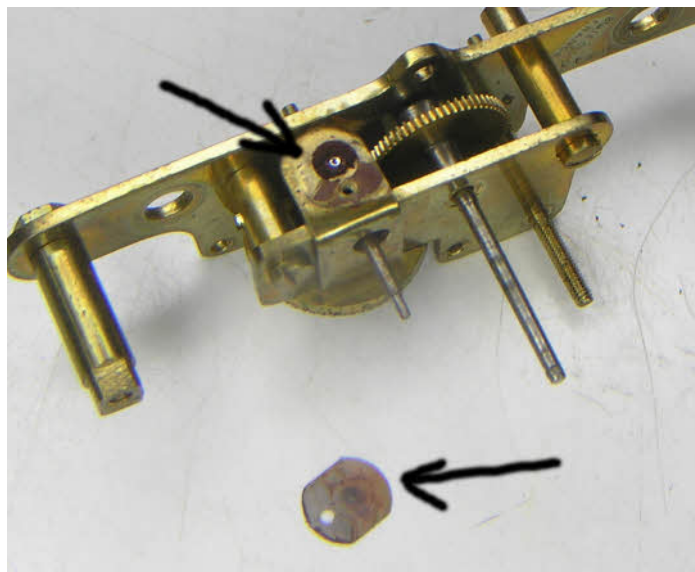
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The top contact assembly also has the large brass spacer missing on the left. The right one is in position. Another simple machining job.



The dial has been repainted as can be seen from the over-spray marks on the brass (arrowed). The execution is excellent though perhaps a little flakey. We will have to be extra careful when cleaning the inner and outer brass rims.



This looked a little more serious. At first sight it looked as though the count wheel arbour had rusted badly, but luckily it was the bottom plate. The arbour was in fact quite clean and smooth. The plate however is pitted with rust and may need replacing. The count wheel was, not surprisingly, stubborn to rotate which wouldn't have helped the clock to perform.

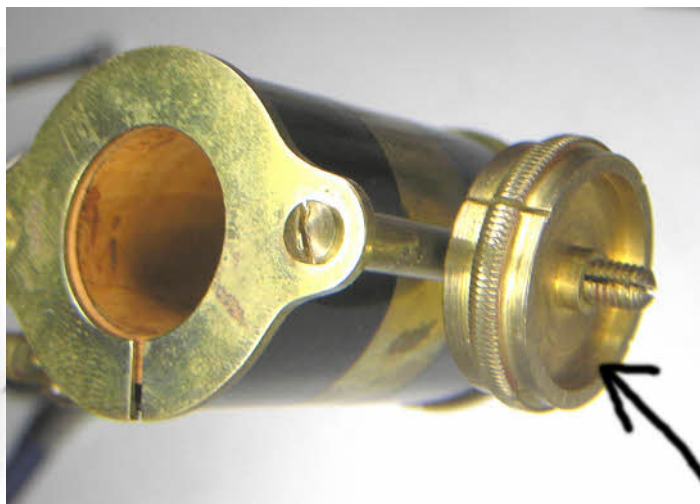
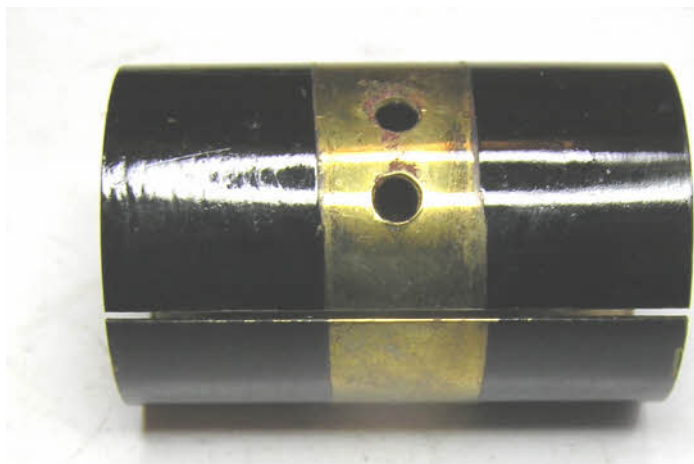
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These two photos show the painted brass coil cover and the rating nut. On some Bulle clocks the coil cover is sprayed completely black with an additional brass ring that spans the middle of the cover. In this style of clock however, the cover is first polished and then the centre masked (not too straight as can be seen) before spraying. The practical upshot of which is you get the look of a brass ring but at less expense. The second photo show usual problem of "lightened" rating nut to try and speed up the going rate. The best thing in this case is to machine an insert so as to keep as much of the original as possible.



In this photo you can see the two lead out wires from the coil have been cut off and extended. The silk ribbon is also loose and uncoiling. The extension swill be removed and the silk rewound. New extensions will then be added and insulated. The coil is wound with 6500 turns of 42 swg enamelled wire.

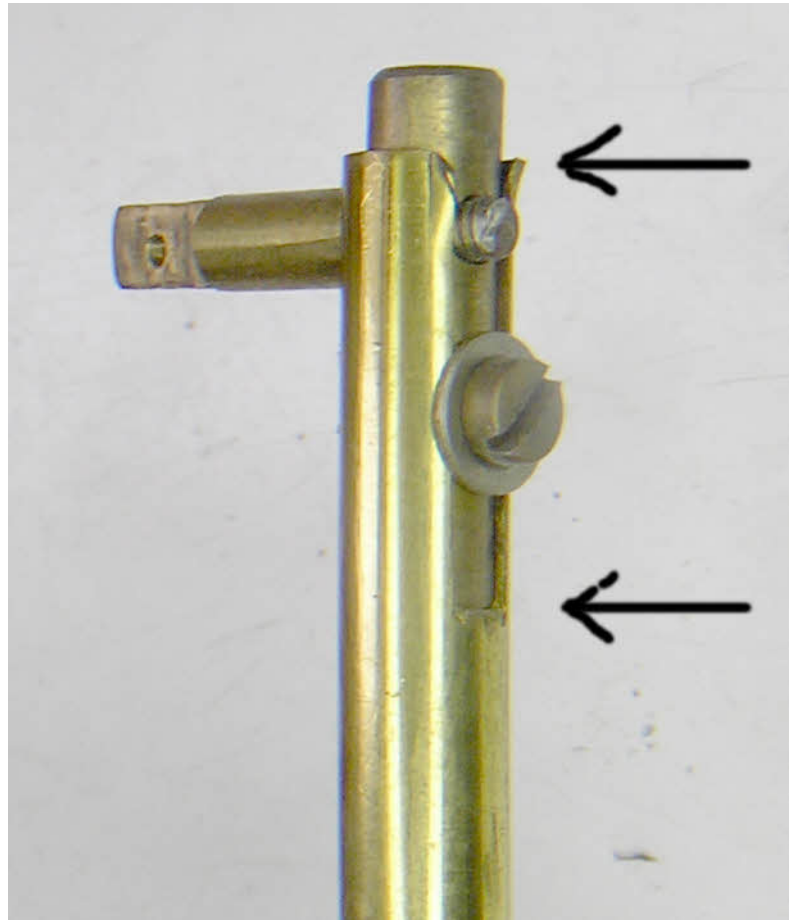
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These two photos show the donor column. It had been discarded because the top of the frame had been destroyed by a "Bodger". The top cap has been removed and a long slot cut vertically (between the arrows) so that a solid brass insert could be slid up and down. This was probably to allow the pendulum length to be altered because the clock couldn't be rated through being unable to solve another problem elsewhere in the clock. This is all a waste of time really because the pendulum can only move a millimetre or two before the coil casing hits the magnet on the base. What a waste. I wonder what happened to the rest of the clock?

Anyway, all we need to do is remove the top cap from the column by melting the solder. We also need to do this on the recipient clock but this time we need to wrap a wet rag around the frame where it meets the column cap to stop the heat from also melting this joint.

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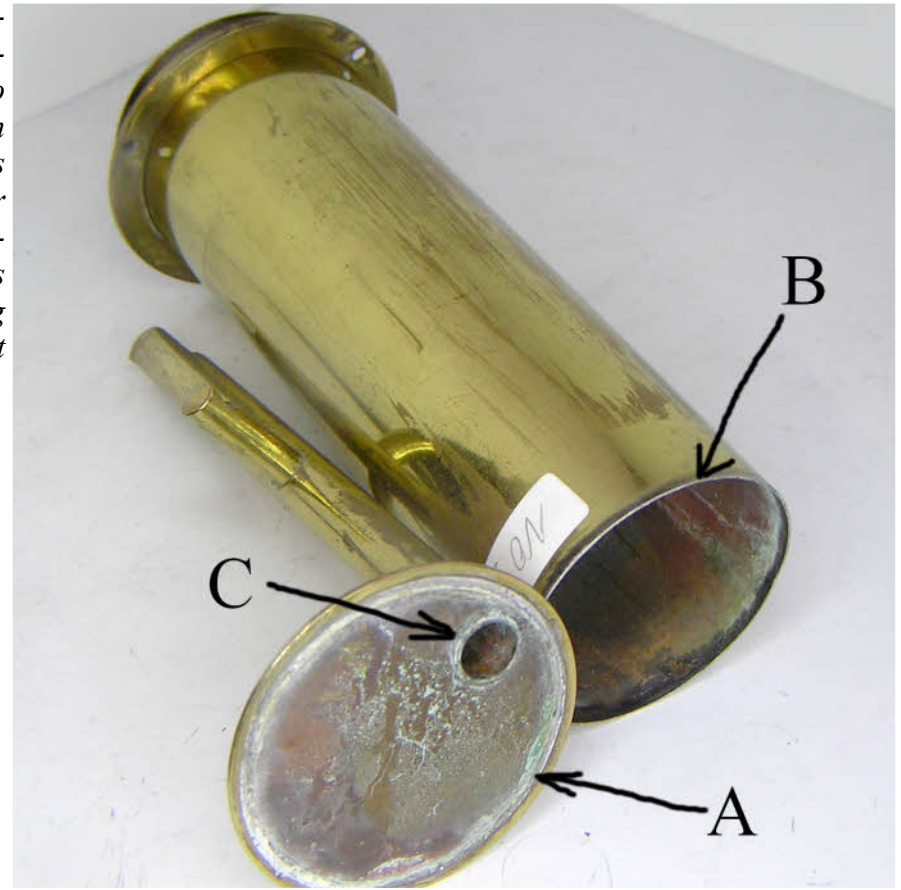


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The top cap (A) removed from the column (B) by heating the solder and gently lifting. Note the groove in (A) to receive the column. The problem with the procedure is that the top frame is also mounted in the top cap by a solder joint (C) which we don't want to disturb in the recipient clock.. This is achieved by wrapping a wet rag around the frame just above the joint (C).



At left we see the donor column attached to the recipient top cap and frame. Both parts were first cleaned and degreased before attempting to re-solder the joint. Particular attention needs to be paid to the vertical posture of the top frame. It must not lean front to back or right top left. Remember, the pendulum is going to swing from here over a curved magnet! In case you do attempt this procedure, please remember to locate the loose securing collar (D) over the column before attaching the top cap (as I have neglected to do in the past).

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The photo on the right shows the column and polished base now reunited ready for the pendulum and movement..



Some "A" type bases have a decorative brass banding in the groove around the circumference. The give away is one or two holes at the back behind the column. In this case there are no holes present and so this clock had no banding.

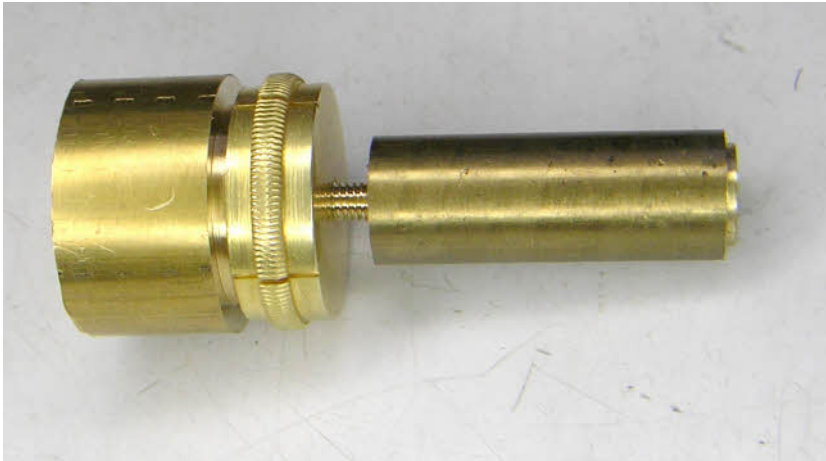
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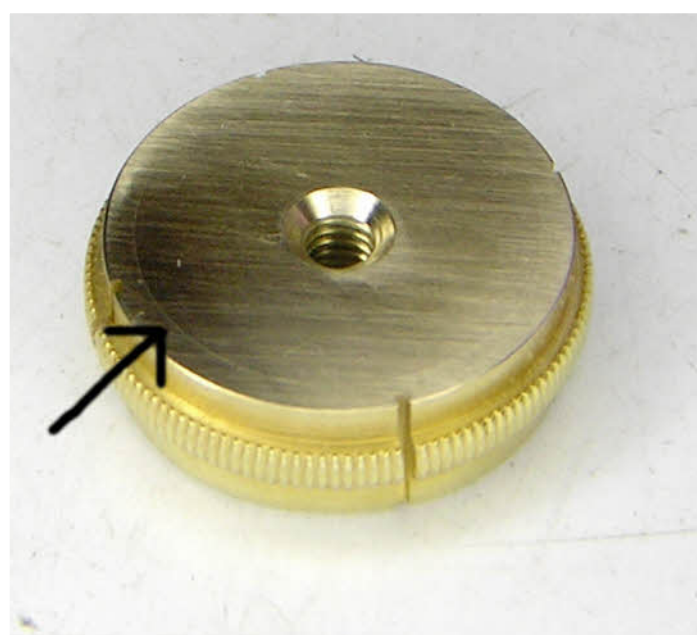
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Checking the progress of machining the rating nut insert.



The insert ready to be inserted and machined flush.



The finished nut. You can just make out the joint (arrowed) between the insert and original nut. The centre has been countersunk so the joint will not be so readily visible. Besides, this will be the underside of the nut and will never be visible. All that remains is for the whole thing to be polished and lacquered.

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The coil with ribbon rewound and lead out wires cleaned up and extended



The coil back within the cover with new insulated sleeves. The cover has been cleaned, polished and re-sprayed as per original.



The magnet has been re-charged to read 180mm on the magnetometer and then polished with Grate Black. The pendulum and magnet assemblies have been re-mounted on the frame ready for the movement.

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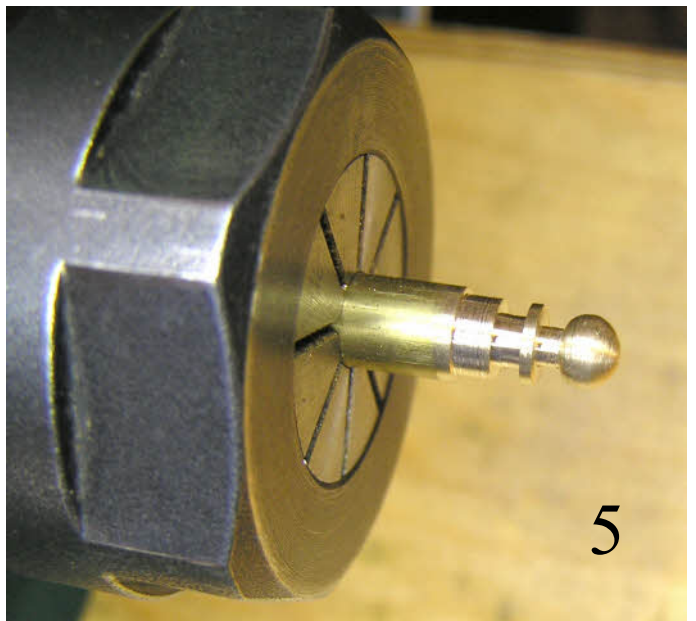
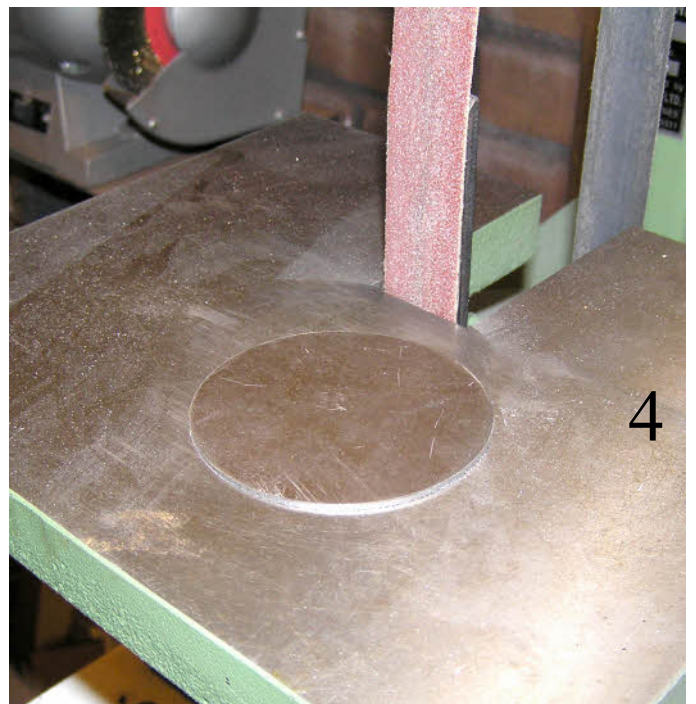
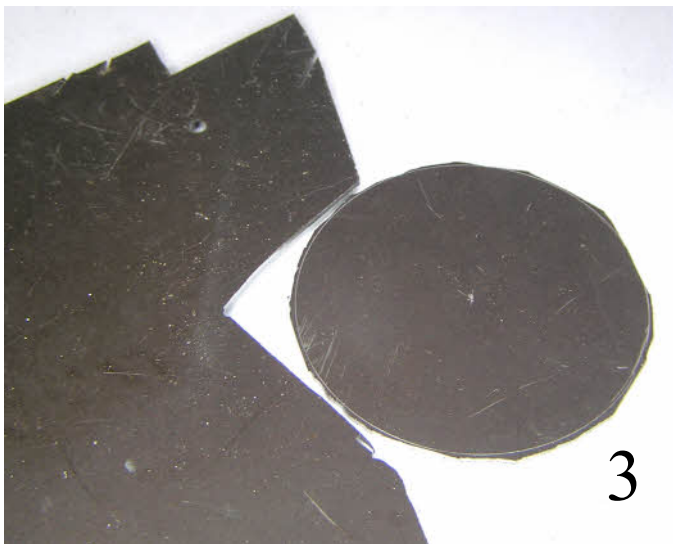


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The battery cover now needs to be made. The sequence of events is shown here. I use 1.0mm steel from an old dial plate. It is the perfect thickness as per the original. An old cover is used as a template to mark out the new one. Photo 5 shows the embryo brass Knob in the lathe ready for parting off.



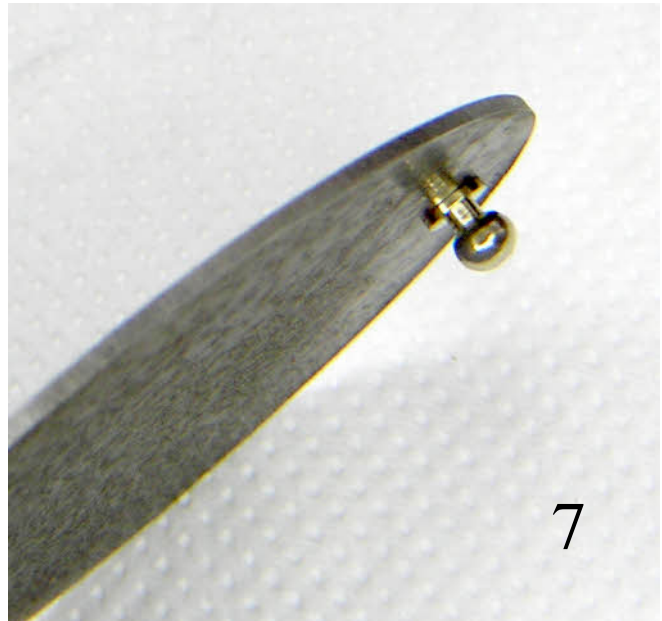
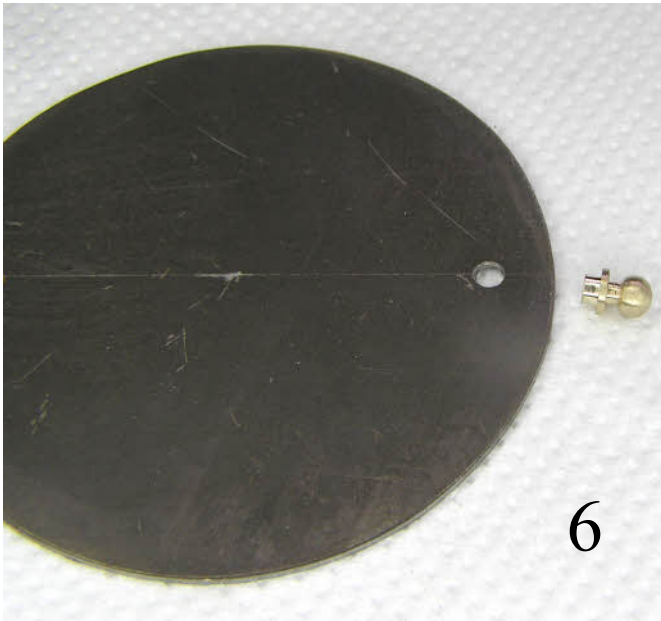
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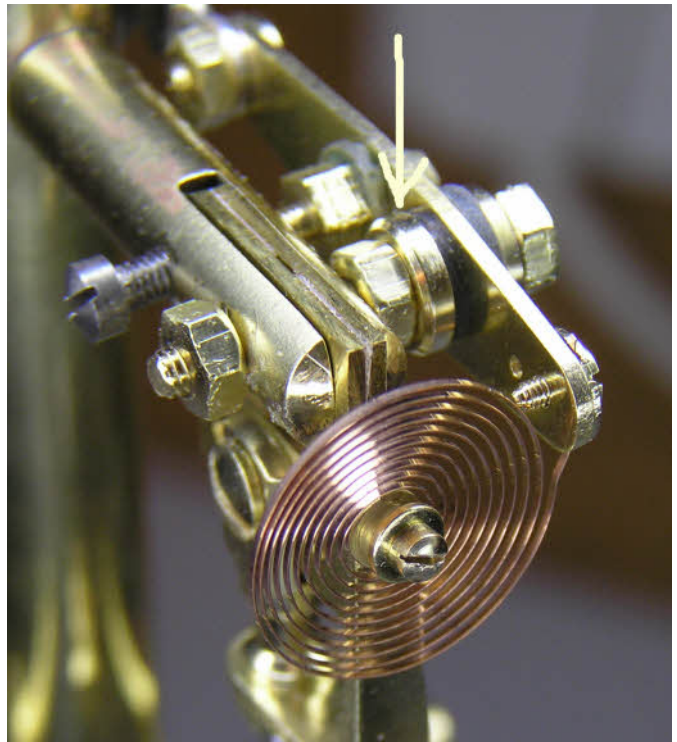
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The brass knob finally riveted in place.



The three spacing washers required to finish the movement. The first was used on the pendulum contact assembly shown in the photo on the right. The other two were used to correctly space the movement onto the frame.

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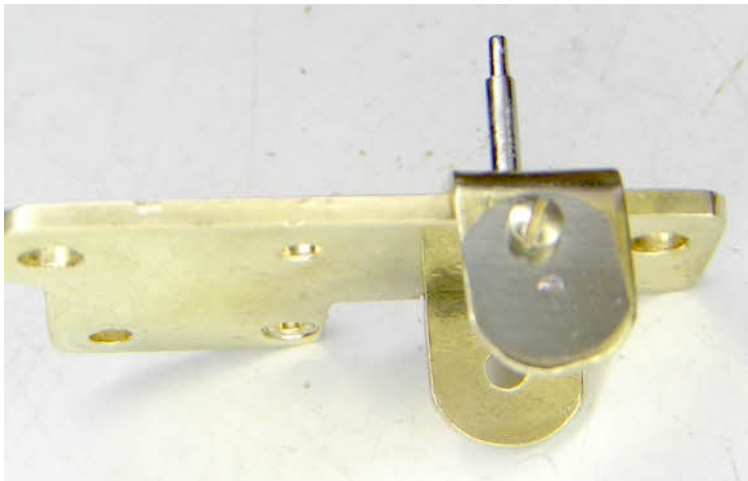
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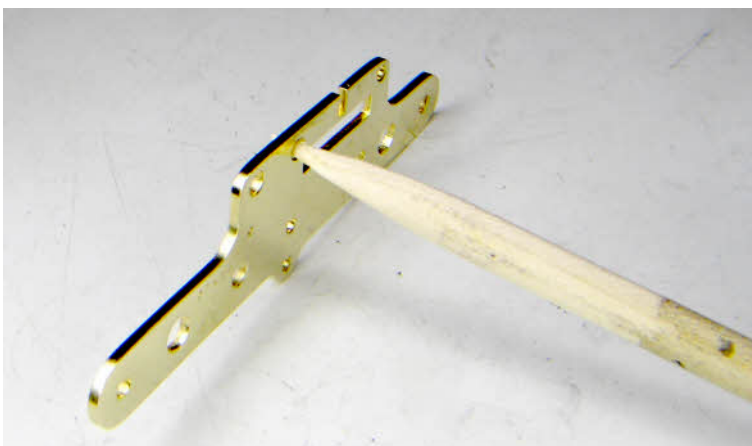
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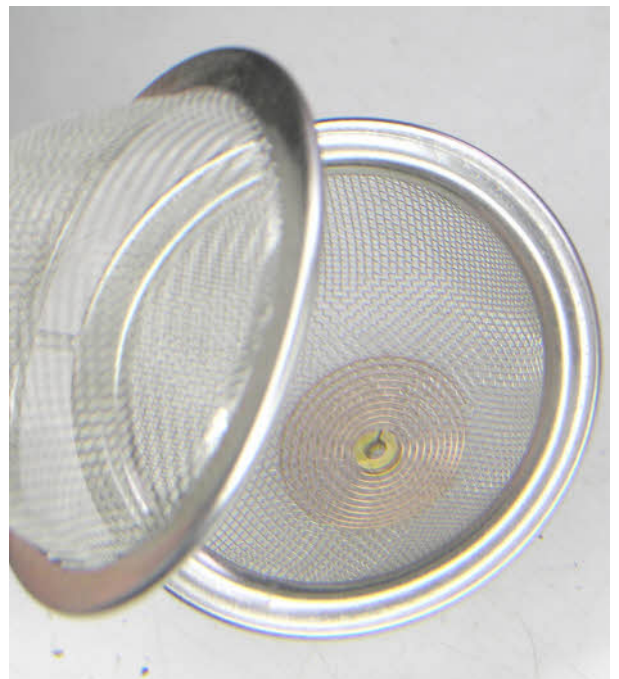
The contact pin was held in by just one thread. The replacement silver contact pin is shown on the right with four threads.



The photo left shows the original count wheel arbour bottom plate. I cleaned it up to have a detailed look. After polishing out as much wear as I could, I decided it was still very usable if turned upside down to present a new bearing surface. You can see the original dimple caused by the count wheel arbour.



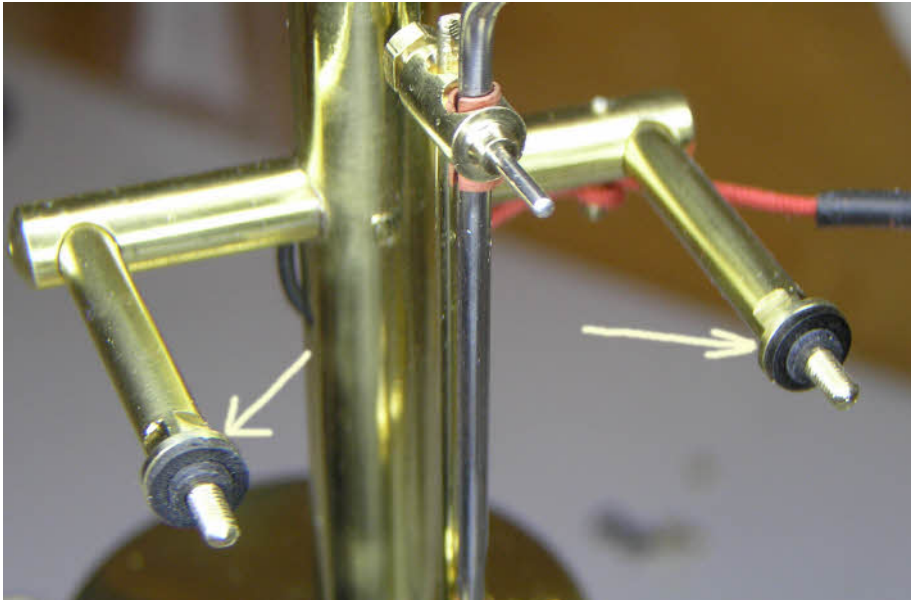
Even though the Bulle is an electric clock the movement still needs to be cleaned and repaired just as a mechanical one. This photo above shows "Pegging out" the pivot holes.



This photo shows the method of holding the hairspring for cleaning in the ultrasonic tank.

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The frame ready to accept the cleaned movement. Note the two new spacing washers (arrowed).



The movement mounted in the frame with the pin positioned in the fork.

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Above - The new battery cover



Above we see the new column in place on the finished clock



The photo on the left shows the rear of the completed clock.

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The completed clock