



British Horology Times

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Repairing a Daniel Quare Spring Clock

Lesson Learned – Beware of Assumptions

By Dennis Radage (British Columbia)

A

Daniel Quare spring clock was recently brought to my workshop for examination and possible repair since it would not run, more correctly, when started, it slowed and then stopped within a



Figure 1: Daniel Quare pull quarter repeat spring clock



Figure 2: Decoratively engraved and signed backplate

a minute or two. The clock, signed on the dial, chapter ring and backplate; ‘Dan. Quare London’, can be seen in Figures 1 & 2. This is a time and strike, pull quarter repeat spring clock in an ebony-veneered case with a gilt-decorated dome top. The case has open fret to the top front door rail allowing the strike and quarter repeat to be clearly heard.

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Chapter 159

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THE WATCH

Could but our tempers move like this machine. Not urged by passion, nor delayed by spleen; But true to nature's regulating power, By virtuous acts distinguish every hour. Then health and peace would follow as they ought. The laws of action and the laws of thought, Sweet hope with which to pass the present moments o'er, The hope of endless life, when time shall be no more.

(Poem on Silk found in Pearsall & Embree, NY watch, ca 1786)



President's Message:

Although the weather in Wilmington caused the tailgate mart at the Southern Ohio Regiona to be cancelled, the presentation by John Kirk made up for the loss. John gave an illustrated talk on the display of the Clockmakers' Guild in the Science Museum in London England. Not only that but John showed a couple of very interesting watches from his personal collection that were, certainly, objects that of singular rarity and beauty. Thanks again, John for sharing your knowledge, experience and watches with us.

Once again, Dennis Radage has written an outstanding article for BHT on his repair of a Daniel Quare bracket clock. Please take the time to read this fine, illustrated article as the quality of the illustrations and Dennis' description are unparalleled. Dennis has written his book on Charles Gretton with the same attention to detail. If you haven't already purchased your copy please do so. Let Dennis know that you are a member of Chapter 159 and he will apply a significant discount. Email him at: grettonbook@outlook.com.

We still are looking for contributions to the BHT and you don't have to be a Shakespeare to share your experiences with us. The chapter is a forum for sharing our interest in British Horology so please share your interest. Put some notes together and send them to Richard. We will help you to get your thoughts into final form if you wish. We will all benefit from you sharing your experience.

We received an e-mail that the oldest Bell Foundry in England is closing. Whitechapel Bell Foundry is set to close in May. There is a group that is trying to preserve the foundry as it is of significant historical value having continuously operated since the 16th Century and having cast such historic bells as Big Ben and the original Liberty Bell. The Spitalfields Trust has submitted an application to Tower Hamlets Council to have Whitechapel Bell Foundry designated as an Asset of Community Value. They are seeking letters of support. You can find out more on the web page: <http://spitalfieldslife.com/2017/03/11/save-the-whitechapel-bell-foundry/>

Elsewhere in this issue is an announcement of our meeting at the National Convention in Arlington. Ken Rockwell is an excellent craftsman and a wonderful speaker. Please plan on attending this meeting as Ken's presentation is bound to both be informative and entertaining. As always, the events page on our website, www.britishhorology.nawcc.org has additional information.

TaTa For Now

Bob

(Continued from page 1)

The clock has a rectangular dial, a date feature above the Roman VI-hour position, a false (mock) pendulum and two subsidiary dials at the top; the right being for strike/silent and the left for rating, lifting or lowering the pendulum by a rack and pinion mechanism on the backplate. The clock dates to circa 1705.

Figure 2 (Page 1) shows the decoratively engraved and signed backplate, the short pendulum and the engraved cover of the rack and pinion rating mechanism.

Several attempts were made to start the clock, but it would slow and then stop every time after a minute or two. Obviously, there was an issue. The problem could not be identified without a detailed examination, which meant removing the movement from the case. The movement is held in with two brackets screwed to the backplate and case sides.



Figure 3: The movement removed from the case for examination

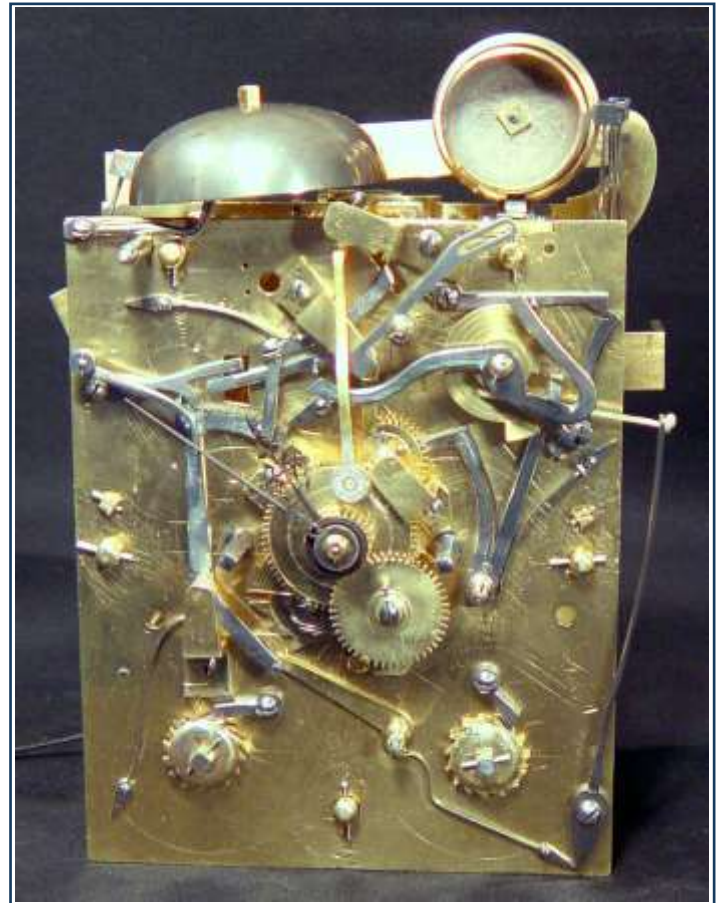


Figure 4: The complex mechanisms on the front plate of the movement

Figure 3 shows the movement out of the case. Note that the pull quarter cord had to be disconnected before the movement could be separated from the case. The hour bell and quarter bells can be seen to the top of the movement. Visual examination could not identify any issues, the clock continued to slow and stop. As with just about all spring clocks of this period, the going train had a verge and crown wheel escapement.

The hands were removed, then the dial was separated from the movement; this of course disconnected the subsidiary dials from their arbors and levers. Figure 4 shows the movement front plate. The motion work, false pendulum, rack striking mechanism and the quarter repeat mechanism are all mounted on the front plate along with the mainspring set-up clicks and ratchets. The minute hand was reinstalled so as to observe hour and quarter

striking and repeating. Careful examination did not identify any issues or fouling parts. Note that this is a reasonably complicated clock.

The clock would strike correctly and the pull-quarter repeat also functioned appropriately, no issues were found on the strike side. The issue was deemed to be associated with the going train.

Some history: this clock was sent to the UK a few years back to have some restoration work performed. It is known that the clock was fully dismantled at that time, cleaned and professionally restored. As can be seen in Figures 1 through 4, the case and movement are clean and visually well restored. The clock performed all functions correctly when returned to its Canadian owners. Given this history, I was not expecting to find any serious faults.

The hour bell was removed, then power to the various wheels was checked. There was ample power to the contrate wheel which drives the pinion of the crown wheel. It seemed clear that there were no issues with the mainspring, fusee/great wheel, center arbor with its wheel or the contrate wheel. It was observed however, that the beat was inconsistently slightly uneven.

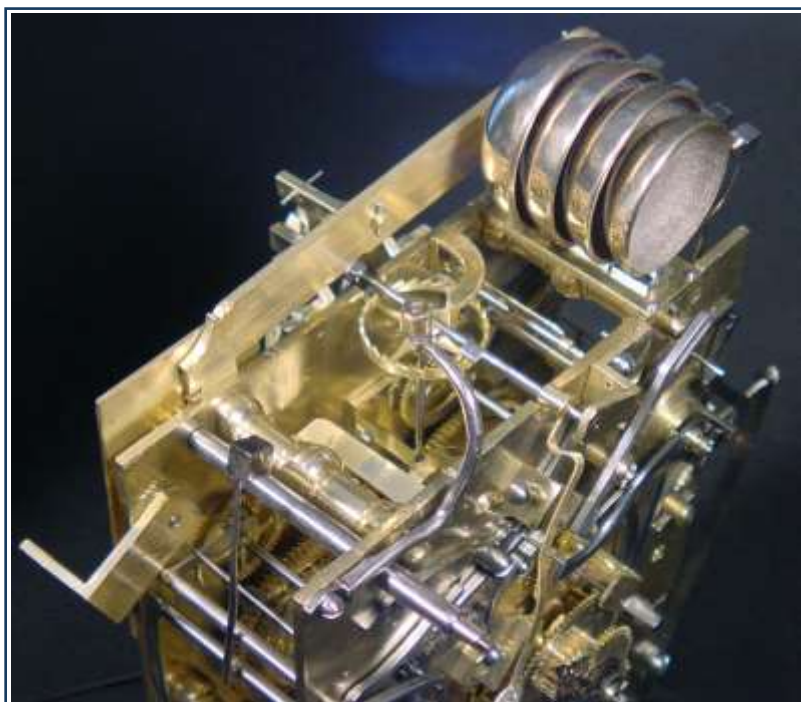


Figure 5: View showing the crownwheel with its top and bottom potencies

The next task was to let down the mainspring of the going train. This allowed the side shake (freedom of pivots in their holes) to be checked. No issues were found here.

The pendulum, then back cock were removed followed by the verge shaft and pallets. These were examined and found to be in good order.

The crown wheel top potence (pivot) (as can be seen in Figure 5) was removed. This now allowed the removal of the crown wheel with its arbor and pinion that interface with the contrate wheel. The crown wheel was rotated that identified a slight unevenness. This was leveled. As no other issues were observed, the movement was reassembled, replacing all parts including the back cock and pendulum.

The going train mainspring was wound slightly, the contrate wheel again having sufficient power, but although the beat was now quite even, the movement still would not run for more than a minute. It was noticed that there was quite a large drop of the pallets onto the crown wheel teeth.

The mainspring was again let down, the pendulum and back cock removed, the pallet arbor was removed as was the top crown wheel potence, allowing the crown wheel to be lifted out yet again. The crown wheel arbor is pivoted in a lower potence which can be seen in Figures 5 and 6. It was noticed that the lower potence was blackened around the pivot hole. The lower potence was removed for examination. Both the upper and lower potence parts have two locating pins and each are held to the inside of the backplate by a single screw. Note



Figure 6: Bottom potence and contrate wheel

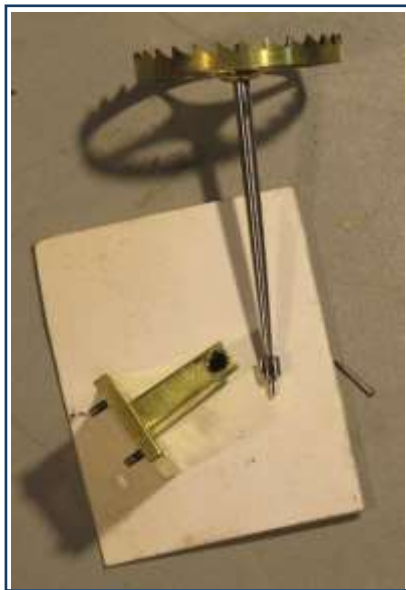


Figure 7: Bottom potence removed showing blackened crownwheel pivot

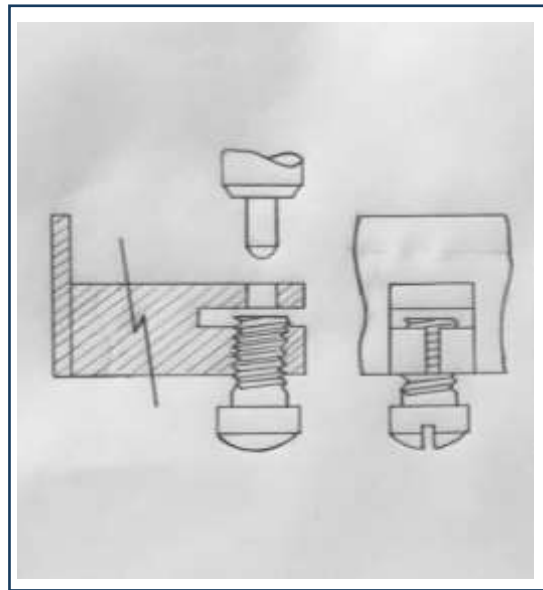


Figure 8: The bottom potence showing the correct shape of the pivot, and the positioning of the hardened steel adjusting screw

that each time the going train is dismantled, the mainspring must first be let down. After reassembly, the mainspring must again be wound sufficiently to power the train. This winding was achieved by turning the arbor of the mainspring with a let-down key, the ratchet and click holding the slightly wound position.

Examination of the lower potence exhibited blackened and gummed lubrication making this pivot area quite dirty, Figure 7. The lower pivot of the crown wheel arbor rests on a hardened screw which is mounted into the bottom of the potence, directly under the pivot hole. This acts in a similar manner to that of an endstone. The screw is used to raise and lower the crown wheel arbor, thus crown wheel, which allows adjustment of the drop of the verge pallets onto the crown wheel teeth.

The potence was cleaned, then examined. This looked to be in good condition with no serious wear. The crown wheel bottom pivot was also cleaned and then checked for fit in the lower potence pivot hole. A small amount of fresh lubrication was applied. The adjusting screw was turned one-half of one turn so as to improve the pallet drop. Since no additional issues were noticed, the assumption was that this assembly was now good.

As previously indicated, I was not anticipating serious issues because of the previous restoration work. Sorry to admit that this wrong assumption led me to reassemble the clock again and power the mainspring. The assembly was now clean and the pallet drop had been improved. The clock was set in motion, with slightly improved performance. The clock was trying to function, but the problem had obviously not been corrected, even though I now had several minutes of running before the clock slowed and stopped.

Instinct told me that the problem was indeed related to the crown wheel assembly, but there was nothing apparently wrong, at least, not obvious. It was time to take a break and read a little about early verge escapements, I read *Practical Clock Escapements* by Laurie Penman. I focused on the chapter describing verge pivots. One image in this book struck me as being quite different from what I could recall, related to the shape of the lower crown wheel arbor pivot. Figure 8 is an image similar to page 29, Figure 2.29 of the Penman book. This suggests that the correct shape of the pivot should have a rounded end, thus having just a single contact point.

The mainspring was again let down and the pendulum, back cock, verge arbor and top potence were removed again. The crown wheel was removed. What became very clear this time is shown in Figure 9. The bottom pivot end was flat with a sharp edge. This pivot rotates on the hardened steel adjusting screw. A flat pivot end would introduce considerable friction when rotating on this screw.

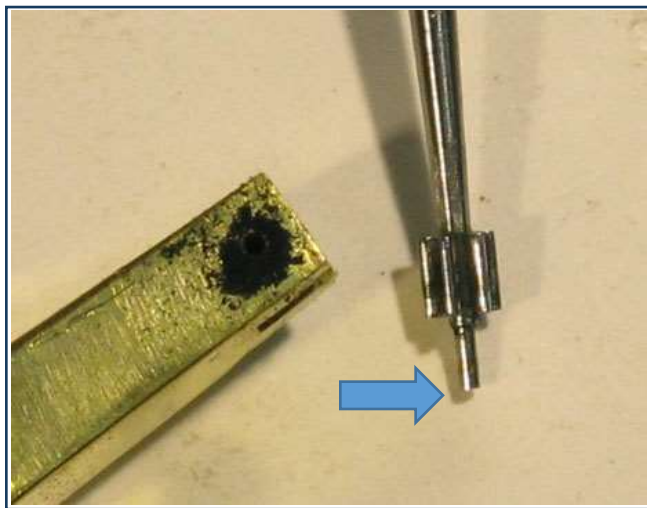


Figure 9: Bottom crownwheel arbor pivot has a flat bottom with sharp edge. This was causing considerable friction, wear and blackening of the pivot

Using stones, this pivot was properly rounded, then polished. After cleaning, the clock was again reassembled and power was applied to the mainspring. This time, when set in motion, there was a marked improvement. The pendulum swung with vigor, there was no stopping it this time. Problem identified and corrected.


Since the mainspring had been let down several times, with the gut line still half wound on the fusee, the mainspring was given power several times until all of the line was wound off of the fusee.

This took several days. At this point the clock is in its unwound state. These few running days allowed continued observation of the pivot and further assurance that the problem had indeed been corrected.

The going train mainspring was now set with just enough power so that the clock would run if there was more line.

The clock was now wound with a key to the fusee winding arbor until fully wound. The movement was allowed to run for a week before the dial was replaced, connecting the subsidiary dials in the process as well as replacing the hands. The false pendulum was positioned such that it swung freely and the star wheel and snail were synched to the position of the hour hand. The hour bell was replaced, then the movement was returned to its case and locked in position with mounting brackets. The pull quarter cord was reconnected to complete the project.

It is quite surprising how the shape of the lower crown wheel pivot would make such a difference. Why was it flat instead of rounded? Likely we will never know.

One should never assume, not even if the clock has been recently restored. I am only sorry that it took several attempts to isolate the issue. The evidence was there, but I initially missed it. Unfortunately, whether the movement is dismantled once, or several times, the service charge remains essentially the same. Lesson learnt, this kind of problem will not be missed again. 

Mystery Stretch Lantern Clock

Assistance Requested ..


As chapter members well know, we are always happy to provide guidance and help research unusual clocks and watches. This early lantern clock is one such example. It dates from the very early 18th century and was bought at a Michigan auction, Thomas Stretch, London. Wow.



Early 18th Century hoop and spike lantern clock with anchor escapement and nicely decorated hammer spring and stop

Thomas Stretch was the son of the renowned maker, Peter Stretch, who was one of the first clockmakers to immigrate to America (Philadelphia) from England. In fact, three brothers, Thomas (1697-1765), Daniel (1694-1735) and William (1701-48) apprenticed to their father and all became respected Philadelphia makers. But why was the dial signed London instead of Philadelphia? Loomes' *Watchmakers and Clockmakers of the World* lists only one "Thomas Stretch", the abovementioned son of Peter, and he was only a child when they left England in 1702. The owner speculated that since dials were often executed by engraving specialists, that this one could have been farmed out to a London engraver who mistakenly engraved "London" instead of "Philadelphia."

As Dennis wrote in the featured article of this issue of BHT, "Beware of Assumptions." Upon receiving and carefully studying the photographs, the mystery was soon solved. It's certainly not the first time that the name or description on a tag didn't quite hold up. Upon closer inspection, the clock is not signed "THo Stretch" but

"Ino Stretch" for John Stretch. The engraved letter thought to be an "h" is an "n" and the leading "T" is actually an "I". "I" in old English was interchangeable with the letter "J". There is no listing in Loomes for a John Stretch in London; however, I speculate that this could be Peter's brother, one of his many siblings that did not come to America, who may be an unrecorded clockmaker. While not colonial American or made by the celebrated Thomas Stretch, the clock is in wonderful condition and a great addition to his collection. 



"In^o Stretch, Londino"