

# *“The Carriage Way”*



## International Carriage Clock Chapter #195 Founded 2013

The National Association of Watch and Clock Collectors

**Volume 2014 No. 3**



**A Five Sided Dial Carriage Clock by Margaine**

## President's Report



**Stan Boyatzis**

Welcome to the August Chapter 195 newsletter. Membership continues to climb and I again encourage current members to spread the word about Chapter 195 and invite friends with an interest in carriage clocks to join.

In this newsletter John Hamilton continues with his article on the Enigmatic Bolviller No. 10. John thoroughly explores the layout of the time train.

There is a short article on an unusual five sided dial carriage clock by Margaine No.15138. I would be interested to hear from any member who is aware of another similar clock.

Peter Foster describes how he replaced a broken glass panel in a carriage clock. A common problem that often requires attention.

Roger Little with the help of his two sons and some family bonding describes how he replaced a missing handle and repaired a broken regulator arm on a platform escapement.

The executive is proposing to hold a meeting of Chapter 195 at the 2015 National in Chattanooga. A room has been booked at the National and there will be a lecture for members. This will be our first face to face meeting and we hope to see as many members as possible. We will provide further details as they become available.

Copies of previous newsletters, hints and a question page are included at our website.

<http://community.nawcc.org/Chapter195/Home/>.

I have attached a link at the end of the newsletter to the Bonham's website with details of carriage clocks sold and prices fetched at their July 2014 auction in London.

The link to the Online Galleries website is again included.

The Executive Committee hopes you enjoy reading the Newsletter.

### **Members of the Executive Committee:**

Stan Boyatzis: President (Aust.) Email: [carriageclocks@optusnet.com.au](mailto:carriageclocks@optusnet.com.au)

Keith Potter: Vice President (Aust.)

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Tom Wotruba: (USA)

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# THE ENIGMATIC BOLVILLER N° 10.

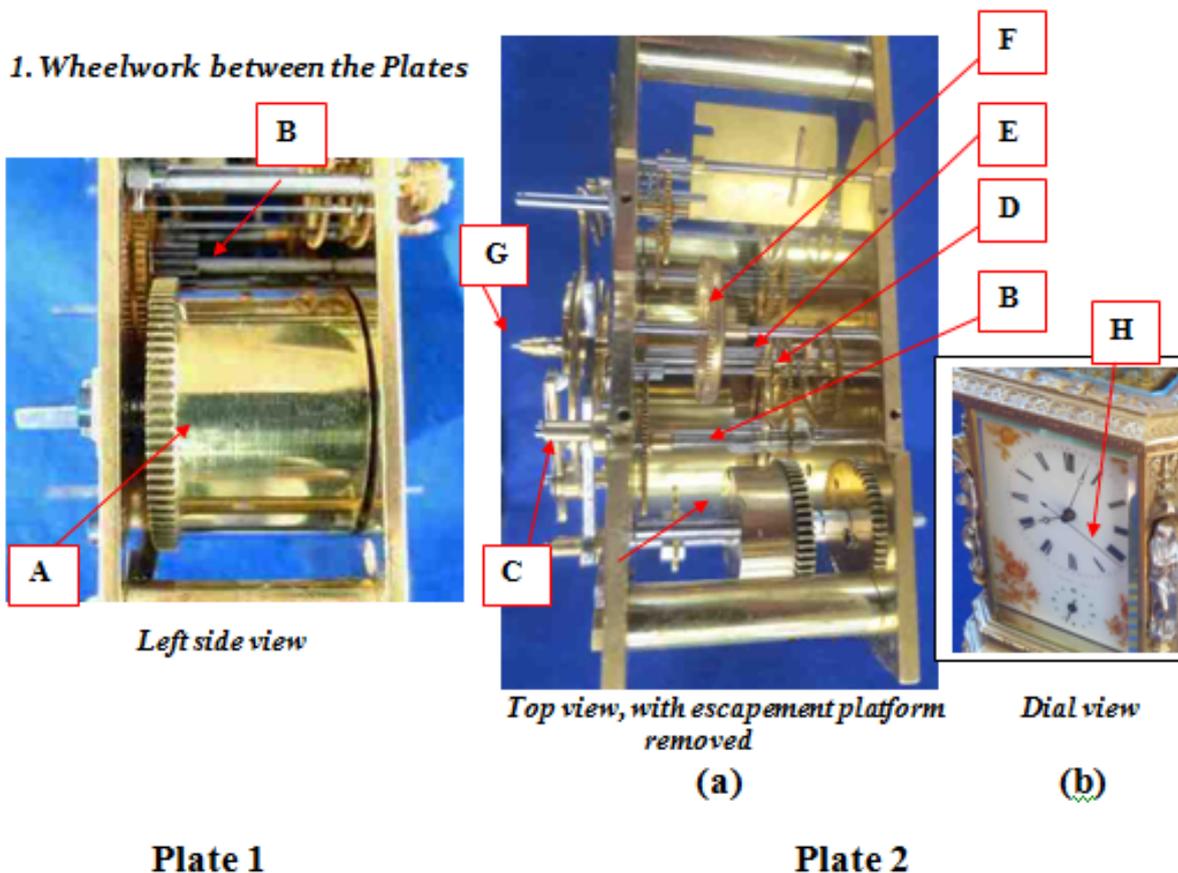
John Hamilton (Aust.)

## Part 2. THE TIME TRAIN

### Introduction

Part 1 of this work, which appeared under the same title in a previous issue,<sup>1</sup> was devoted to an examination of the style, construction and decorative features of the gilded-bronze case, housing an hour-repeating carriage clock, signed by the well-known 19<sup>th</sup> century Paris manufacturing and marketing firm of Bolviller. The evidence gathered particularly from the facts of its recognizable “transitional” style of construction, and use of the old “amalgam” process for the gilding of its surfaces, indicated a date of manufacture probably no later than c1850.

In this, the second of four parts of our investigation, Bolviller N°10’s time-keeping mechanisms are described and discussed, focusing particularly on those aspects which might shed further light on questions relating to the time and place of the clock’s manufacture.

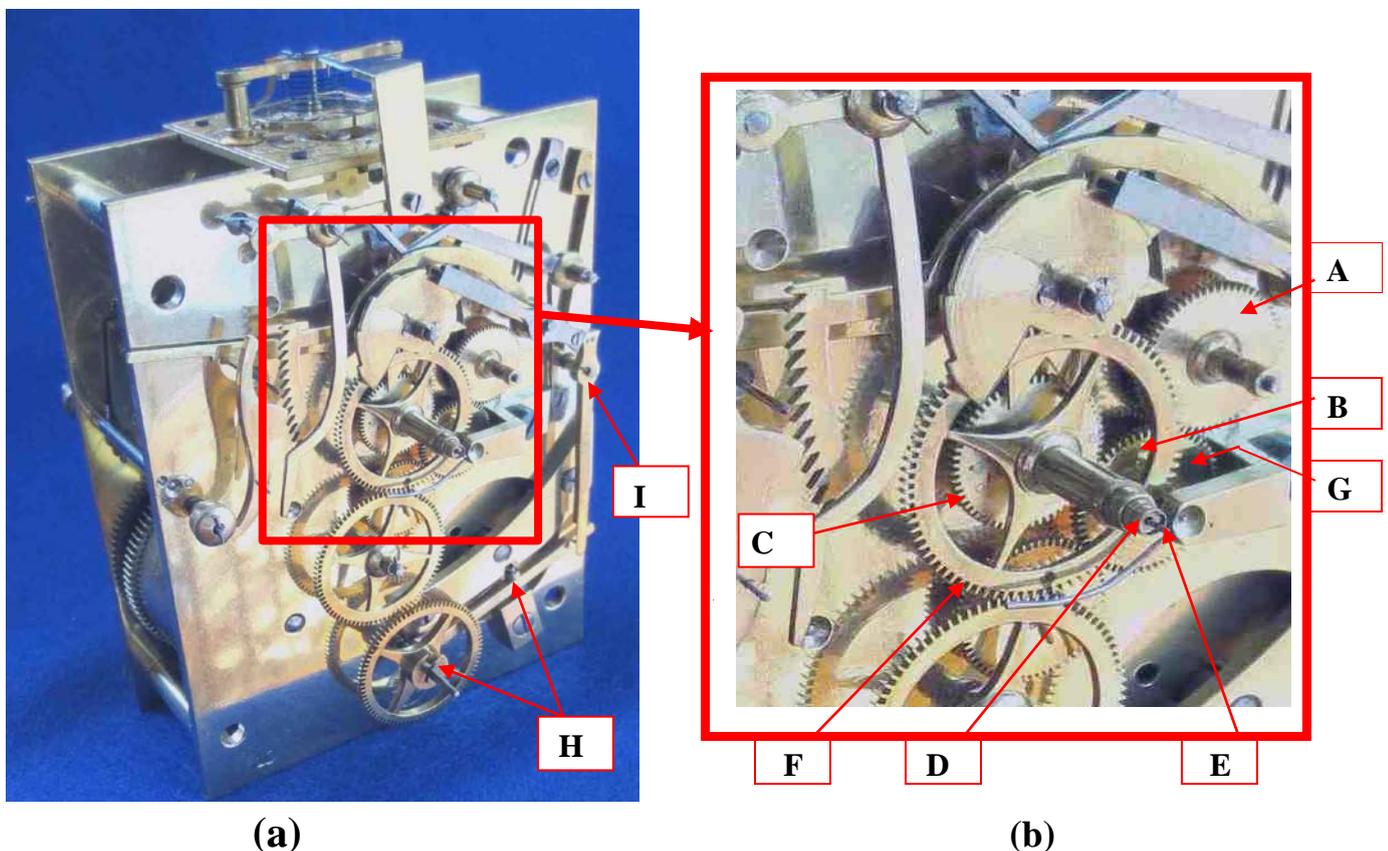


<sup>1</sup> The Carriageway, March 2014.

As in most French carriage clocks of 8-day running capability, the “Time” train of Bolviller N°10 includes a barrel mainspring ((A) in **Plate 1**) which delivers power *initially* to a “gearing up” sequence of three wheel and pinion arbors, located between its movement plates. While the vertical alignment of the barrel and second-wheel arbor (B), at the lower-left corner of the movement (**Plate 1**) is “normal” for French striking carriage-clock movements, the plantings of the subsequent two are *not* so. Rather than being centrally located as the dial’s “minute” indicator, the third wheel arbor ((B), in **Plate 2(a)**) is offset to the right in relation to the dial, and its elongated front pivot extends through the front plate to become the core of the friction clutch (C) for enabling the manual adjustment of the dial hands. Likewise, the fourth wheel (D), which no longer connects directly with the contrate wheel, is “reassigned.” It now plays a dual role; firstly as the driver of the extremely slender arbor (E), on the tip of which is mounted the clock’s fine sweep-seconds hand ((H) in **Plate 2(b)**); and secondly, as the power source for the special “transfer” gear-train mounted outside the back plate (see details below).

### 1. Cadrature Elements

By offsetting the third wheel arbor from its usual dial-centred position in the Time train, the maker of the Bolviller N°10 movement obviously created a problem for himself, relating to the provision of an alternative “power path” to the cannon wheel and its associated dial motion work. The detailed view of the movement’s cadrature, presented in **Plate 3(b)**, shows that the solution he chose was an additional short train of wheels, set on the outside of the front plate, and bridging between the third-wheel arbor clutch wheel (A), through the cock-mounted idler wheel (B), to the cannon wheel (C). The pipe of the cannon “floats” freely on the smooth outer surface of the centre-seconds pipe, which is rigidly flange-mounted on the front plate of the movement. In operation, it is retained by the minute hand, which fits tightly on the cannon’s pipe (D).

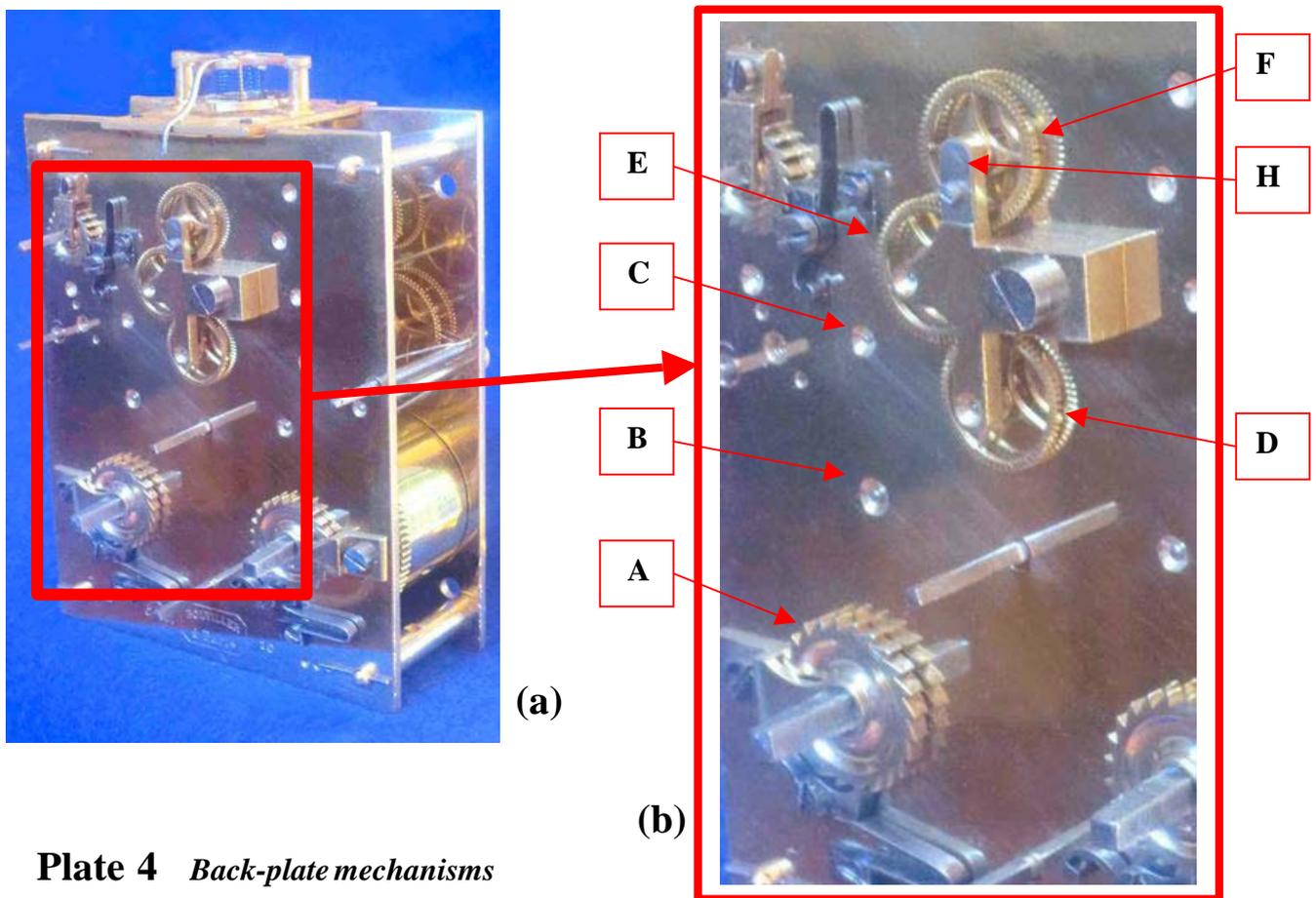


**Plate 3**  
Cadrature of Bolviller N°10

Being identical in size to (A), and separated from it by the intervening idler wheel, the cannon rotates exactly in step with it (i.e. clockwise and at the same rotation rate) and thus, provides correct “minute” indication. Note that the hollow tip of the outer bearing pipe is bushed to support the end of the slender centre-seconds arbor (E). The hour wheel (F), which rotates freely on the rear end of the cannon’s pipe, is driven by the idler wheel pinion (G), (hidden behind the cock).

### 3. Centre-seconds Mechanism

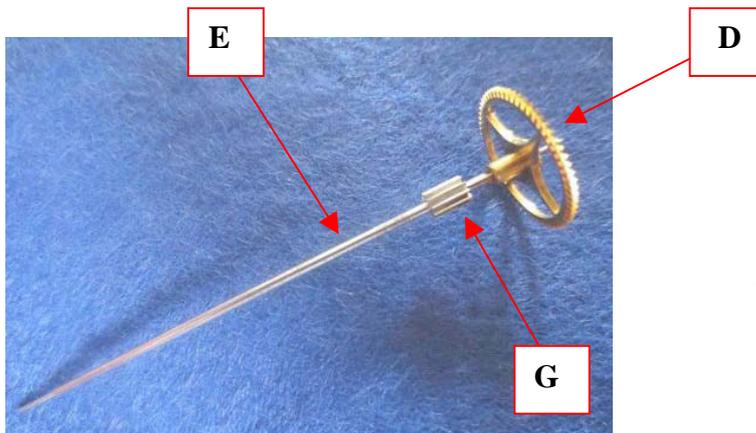
Plate 4(a) shows the back plate, with the bell and bell standard removed. The higher magnification view in field 3(b) provides a clearer view of the ratchet and winding square (A) of the Time-train mainspring barrel; also the rear pivot locations (B) and (C) of the second and third wheel/pinion arbors.



**Plate 4** *Back-plate mechanisms*

The three small equal-sized wheels (D), (E) and (F), supported by a three-armed cock (which are normally concealed under the bell), are of particular interest. Together, they constitute the subsidiary mechanism, which, simultaneously, drives the dial’s centre seconds hand, and delivers power from the Time mainspring to the platform escapement via the contrate wheel and its associated pinion. The lower wheel (D) of the array, which is fixed on the rear extremity of the long, thin centre-seconds arbor (see also **Plate 5**), receives power from the main “Going” train via engagement of its associated pinion (G) with the fourth train wheel, located between the movement plates. The rear pivot of the fourth wheel arbor is visible through one of (D)’s crossing-out windows in **Plate 4(b)**. The identically-sized wheel (E) functions simply as an idler

for transferring (D)'s direction (anti-clockwise) and rate of rotation to wheel (F), which drives directly the short contrate wheel arbor, located between the plates which is supported by a cock the. Note the small polished steel cap-plate (H), for limiting end-shake, but without any means for independent fine (screw) adjustment.



## Plate 5

*Centre-seconds arbor (E), showing incorporated pinion(G), which receives power from the fourth wheel of the Time train*

Allix and Bonnert<sup>2</sup> have offered some general discussion on the use of the centre-seconds feature in carriage clocks and their apparently strong association with clocks manufactured by the Japy Frères Company of Beaucourt and Badevel. From their observations of particular clock examples with centre seconds mechanisms, and their seeming abundance, especially as products for the eastern export market, Allix and Bonnert were evidently convinced that, at least, during the second half of the 19<sup>th</sup> century, they emanated largely, if not solely, from the Jura region of France. However, if, as will be subsequently revealed<sup>3</sup>, Bolviller N<sup>o</sup>10 was supplied to Paris, *not* from Badevel, but from St. Nicolas d'Aliermont, one could conclude that the manufacturers of *western* France, when required, were equally able and equipped to manufacture and/or fit centre-seconds movements.

## *Escapement*

The platform escapement fitted to N<sup>o</sup>10 is of a type, rarely seen in carriage clocks of continental origin. It is a *spring* detent “chronometer” mechanism, closely matching the one, described and illustrated by Derek Roberts<sup>4</sup> from another early Bolviller clock (labeled N<sup>o</sup>50 and dated 1848!). Like that example, N<sup>o</sup>10's escapement bears deeply cast foliate ornamentation, both, on the upper surface of the platform, and on the associated pillared balance bridge. **Plate (4a)** reveals a balance unit, consisting of a “genuine” temperature-compensating, split bi-metallic wheel (A), a helical blued-steel hairspring and a lever-controlled regulator, set beneath a screwed-on pillared bridge. The spring detent mechanism, itself, is under slung, with only its escape wheel (B) remaining visible from above, through the circular orifice in the platform. Both the unlocking pallet (C) and impulse roller (D) are of polished steel. The locking pallet (E) is a prism-shaped jewel, which is cemented in place between two steel blocks (F), fixed to the underside of the curved detent body (G). The protruding tip of the gold spring (H), which is supported on the cranked end of the detent at (I), is positioned to receive lift *in passing* from the tooth of the rotating unlocking pallet, and thereby release the wheel tooth, being held up by the locking jewel.

<sup>2</sup> Carriage Clocks, their History and Development 1975.

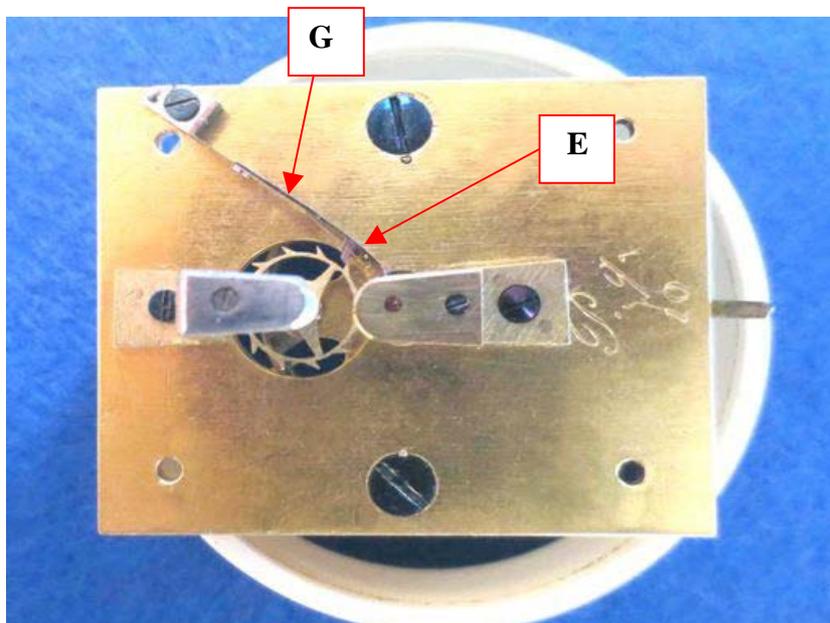
<sup>3</sup> In a discussion of “Maker and Date of Manufacture?” to be published in a future Part of this Article.

<sup>4</sup> See *Carriage and Other Travelling Clocks* by Derek Roberts, p.73.



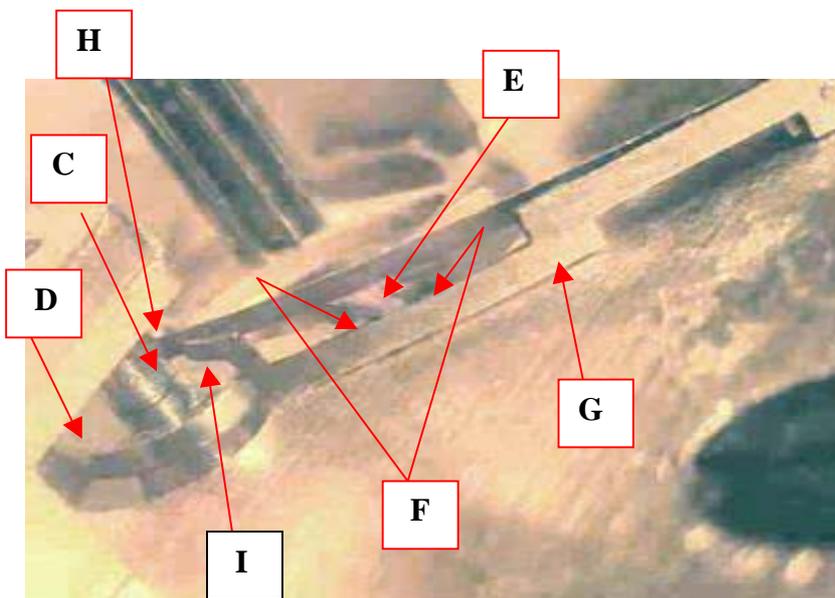
**Plate 6(a)**

*Bolviller N°10's spring-detent chronometer escapement.  
(top view)*



**Plate 6(b)**

*Bottom view of platform,  
showing the underslung  
arrangement of the mechanism.*



**Plate 6(c)**

*Detail of detent mechanism,  
showing the unlocking pallet  
impulse roller, and cutaway  
detent, supporting the tip of  
the gold spring.*

Although fitted with a detent-type escapement, it is clear that the balance of this escapement was not originally “tuned” to operate as a “free-sprung” unit. Its helical spring is pinned “externally” (i.e. without Arnold-type internal terminal coils<sup>5</sup>). The curbs of the timing regulator, which is fitted to overhang the back-plate, embrace the spring’s top coil, and when closely set, noticeably (and rather worryingly!) affect the otherwise “smooth breathing” action of the spring. This seems a less than satisfactory arrangement in a mechanism that should be expected to perform at “chronometer” standard.

An interesting reference to another Bolviller hour repeater (N<sup>o</sup>67) which appears in Chapter VIII of Allix and Bonnert’s book,<sup>6</sup> may have some relevance to the question of Bolviller N<sup>o</sup>10’s age.

**“--- Chronometer (detent) escapements were but rarely used in French *pendules de voyage*, while the English and Swiss were distinctly inclined to put them in their best pieces. One French clock by Bolviller includes a detent escapement among a number of other peculiarities. It stands eight-and-a-quarter inches tall with handle up, has hour and half-hour strike and repeat on bell, and plays one of two alternative tunes at twenty five minutes past the hour. The case is remarkable for its deep relief casting in a bird motif. ---“**

A picture showing a *very* similar Bolviller clock, is included as Fig. 4-6, on p.72 of Derek Roberts’ book.<sup>7</sup> Its case is identical, in both type and finish, to that of Bolviller N<sup>o</sup>67, but movement number, escapement type, and nature of its complications are not disclosed. However, the fact of its having a centre seconds function (when No. 67 does not), indicates that it *is* a different clock. It is dated c1840!

Although Bolviller N<sup>o</sup>10 lacks a music-playing facility, its 8¼ inch height, deep relief recoco casing style, hour-striking and repeating on bell, as well as its possessing a centre-seconds function and a spring-detent escapement, *does* suggest that it may be a “close relative” (i.e. production-wise) of both the above-mentioned pieces. Could Bolviller N<sup>o</sup>10 have been made as early as c1840? Perhaps not --- but, in the light of the other evidence, so far gathered, c1850 might be taken as a *reasonable* estimate of its date of manufacture.

***To be continued.***

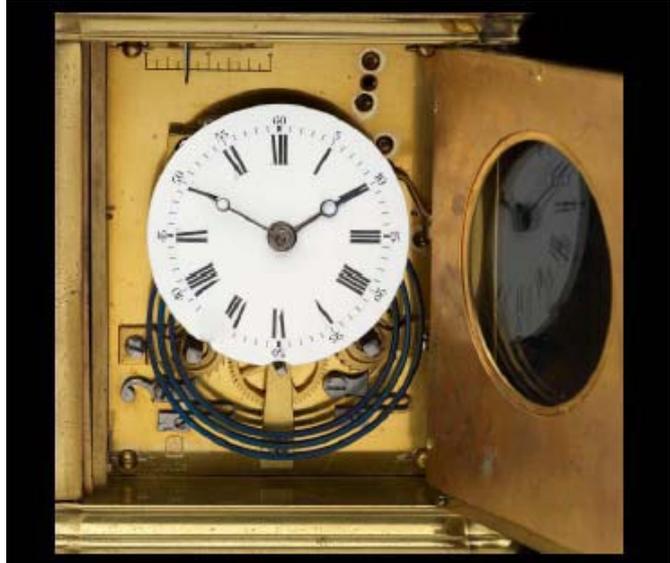
<sup>5</sup> see p.339 in “Watchmaking” by George Daniels, Sotheby’s Publications, 1981.

<sup>6</sup> A general description and photo of the clock (Plate II/45) are appear in Chapter II of the book.

<sup>7</sup> “Carriage and other Travelling Clocks” by Derek Roberts, Schiffer Publishing Ltd., Pennsylvania, 1993

## A Five Sided Dial Carriage Clock. Stan Boyatzis (Aust.)

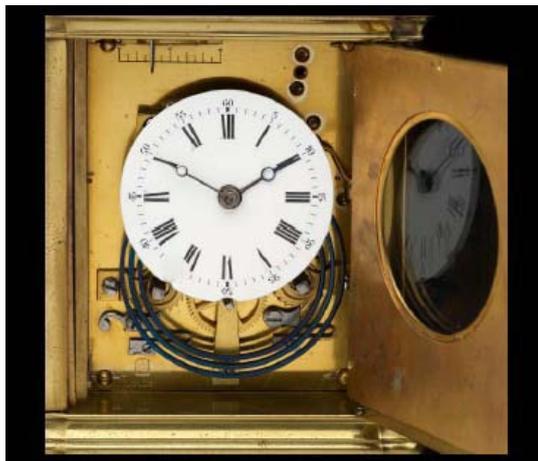
Two, three and four sided dial carriage clocks although rare are available. A five sided dial repeater by Margaine has recently come to my attention. This clock was previously passed in at the Fellows English and Continental clock auction in April 2012.



The carriage clock has a gilded brass gorge case with a five division ripple handle. There is a push button repeat present on the anterior top surface. With the handle down the height of the case is 14.5cms (5.75 inches). The base is slightly concave at the four corners.

The sides and top each have a 58mm (2 inch) round white enamel dial with Roman numerals for the hours and Arabic numerals at the five minute intervals. The front and back round enamel dials are 61mm and 56mm (2.4 and 2.2 inches) respectively. Engine turned brass masks surround all the dials. There are spade hands on four of the dials while the dial on the back has moon hands.

The rear pinned door has a circular glass aperture to reveal the back dial and opens to reveal the lever platform escapement running across the top of the plates. A single hammer strikes on a blued steel gong.. On the lower left corner of the back plate is Margaine's stamp (Beehive flanked by the initials AM on either side). Below is stamped the serial number 15138.

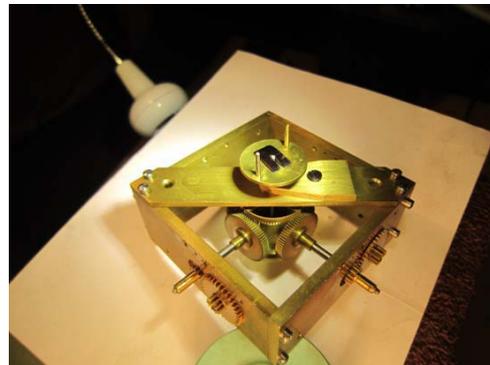
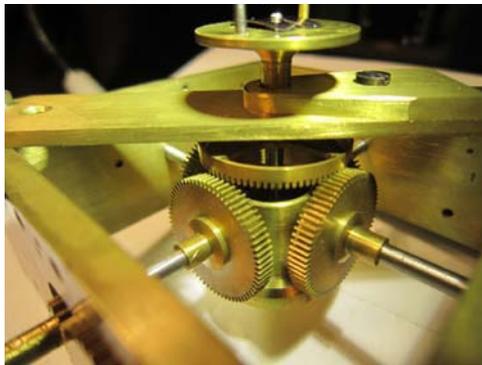
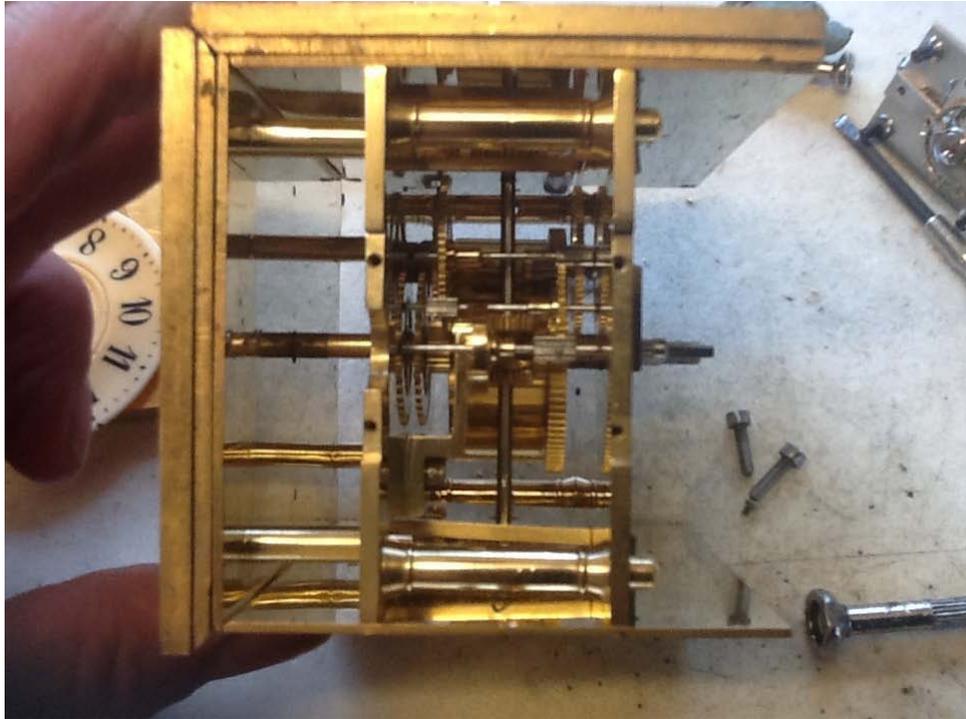


There is a large rectangular bevelled glass aperture to view the top dial.



The time on the five dials is synchronised while the movement is outside the case. Once set, the five dials can be simultaneously adjusted with the arbor beneath the VI on the back dial.

In three and four sided dial carriage clocks a central contrate wheel drives three /four sets of motion works through straight cut pinions or wheels.



This clock was exhibited at the 1889 Paris Exposition Universelle and was intended as an exhibition piece to demonstrate the supreme technical ability of its maker Francois-Arsene Margaine. I am not aware of another five sided dial carriage clock and would be interested to hear from any of our members who may have seen or are aware of a five sided dial carriage clock.

*Photos from the Fellows auction catalogue dated 12<sup>th</sup> April 2012 are acknowledged.*

## REPLACING BEVELED GLASS IN CARRIAGE CLOCKS. Peter Foster (Aust.)

### My Previous Hobby

For over 30 years I had a 'Professional Hobby' where I made leadlight glass windows, and as a result recreated a popular Pre-World War 2, glass called English Muffle, which was unobtainable.

Clock Collecting – a natural progression.



It was a natural step when I took up clock collecting as a hobby to expand my skill in working with glass, especially when I fell in love with an inexpensive Oval Carriage clock in working order, but where the glass had been replaced with plastic using a blow torch to bend the plastic. It was ugly, but ignorance being bliss, I bought it. The cost for me to have someone else replace the glass was prohibitive, so I set about doing it myself. The results are above. Since then I have replaced many pieces of chipped, broken and/or missing glass in many clocks, which has paid for the additional equipment that I had to purchase.

### The Issues in replacing the Glass

What caused the breakage? I learnt the hard way to look at why the glass was chipped or broken. Forcing the glass in and out of a distorted frame, poor welds inside the channel mostly at the bottom, glass falling out during dismantling and accumulated grit and corrosion; seem to be the main issues.

There are so many different sizes, and fitting is critical, you need to supply the clock to the repairer to have the glass replaced.

Before dismantling I wrap two elastic bands around the clock to avoid breaking more glass. Holding the frame together gives me the exact dimensions in which to fit the glass. Having the old glass, even broken makes the job easier.

After checking squareness/cleaning/filing the frame channel where the glass is to fit, I then look at any remaining pieces of glass left to ascertain;

THICKNESS of the glass (between 2mm and 4mm),

QUALITY OF GLASS– Window glass – has a green edge, or antique glass – crystal clear edge,

THE ANGLE AND WIDTH OF THE BEVEL (between 10 degrees and 30 degrees), and (4mm to 10mm) are those that I have encountered to date.

DEPTH OF THE CHANNEL - USUALLY about 1.2mm.

A piece recently to be replaced had a bevel width one third of the rest of the clock. Both these pieces came from the same clock!

Never trust what was in the clock is correct.



## Tools and equipment needed

GRAPH PAPER AND A PERMANENT MARKER PEN (doesn't smudge when paper gets wet)

GLASS CUTTER. There are a number of types. My favourites are below – best one (in the middle), being the oil filled Toyo which has a small spring loaded wick to keep sufficient oil on the wheel.



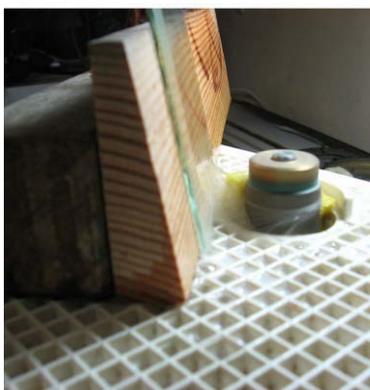
GLASS RULER, with a rubber backing to prevent slipping on glass



CALIPERS



GLASS GRINDER



DIAMOND FLATBED LAP

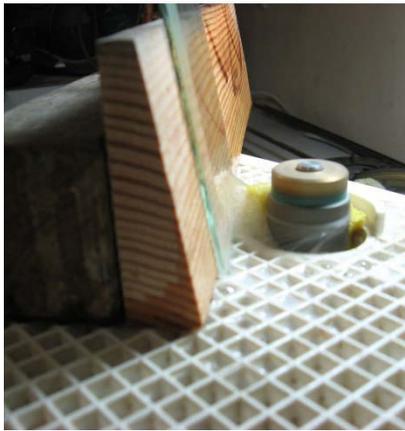


The above two items are for hobbyists, like me, and are not suited for heavy duty use.

## Cutting the Glass

If I have the broken or chipped glass it makes life a lot easier. Otherwise I use graph paper as it a simple task to draw squares and assists accuracy of cutting. Using calipers, I measure the internal width and height of the required glass. Once the pattern is drawn, I cut the graph paper to size and check that it slides down the channel easily, before cutting the glass. Using the graph paper underneath as the pattern, I cut the glass 1mm oversize which allows me to grind the edges where there are occasional imperfections in the way that the glass has come apart after the initial scoring.

## Shaping the Bevel angle



Having measured the angle with my angle gauge, I use the appropriate angled back plate, on my Glass Grinder, by drawing it across the vertical grinder wheel, until about 75% of the desired angle has been removed. The wheels available are around 170 grit size leaving relatively deep scratches in the glass, and it sometimes does not leave a perfect line. In the case of the Oval clock, I dispensed with this process as it was not practical. It was all done by hand using the diamond laps below. I was glad to have a few practice pieces!

## Smoothing and Pre Polishing with Diamond Lap Discs



Water Drip

This stage required a lot of practice. The remainder of the glass is progressively removed by hand, using four diamond lap discs 325 grit, 600 grit, 1200 grit and 3000 grit. Each stage requires that you remove the previous scratches. A properly prepared surface is smooth and satiny in appearance. Rinsed and dried you should not see and scratches, dimples or flats. These can be observed more easily during the drying process, as these imperfections will retain more water and evaporate more slowly. If the current lap will not remove them easily, I return one step back with a courser grit lap.

## Polishing

The diamond laps are replaced with wet felt pad, spun, to run off excess water. The pad is then 'charged' with Cerium Oxide, applied with a sponge brush. The water drip feed is disconnected as it will quickly rinse Cerium Oxide away. If you start with a scratch free surface, it always amazes me how quickly the felt pad polishes the surface.

## The Joy of Working Together. *Roger Little (Aust.)*

One of my greatest joys is to work with my children, whether it is moving house, assembling furniture, or building and making things.

I work on a permanent part-time basis as a watchmaker with my younger son Mathew. Late last year I had the opportunity to work with my elder son Shawn on a project that came through the shop.

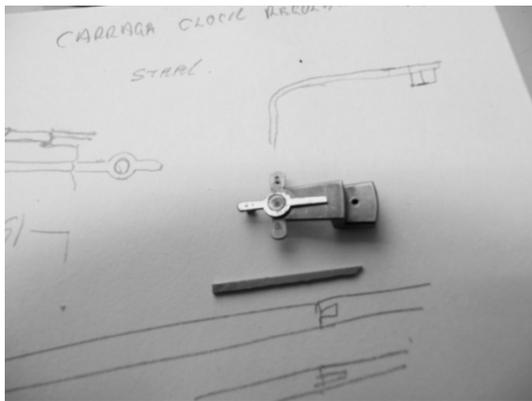
It was a Gorge case repeater carriage clock circa 1870. These are the more expensive case styles used by the top makers. The clock arrived in a very distressed state with broken glass side panels and in a very dirty case. The handle was missing and the hinges broken. The movement required cleaning, bushing, re-pivoting of the centre wheel and repairing the fly on the strike train. There was a broken regulator arm on the platform escapement.

Shawn had some holidays at the end of last year and he came to stay with us for a week or so. He is very talented with his hands and is always looking for a challenge. I asked him if he'd like to make a new handle for the clock and he accepted the challenge with glee. Shawn found a picture of a similar style handle in Allix's book on *Carriage Clocks* (p 163). The picture was drawn to scale to get the right proportions and Shawn went to work turning and filing a brass rod on the Schaublin lathe. The lathe was used to index the six flats on the handle.

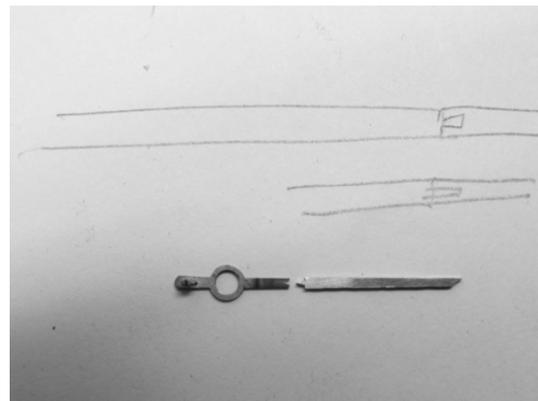
The hinge pieces were hand turned using a graver and together with his brother Mathew, he silver soldered the new hinge pieces to the top of the case.

I completed servicing the movement including repairs to the broken regulator.

A piece of steel was filed and silver soldered to the broken portion of the regulator arm to extend it. The end result was extremely pleasing. I am very proud of this joint effort to restore a lovely clock.



The broken regulator with a piece of silver steel ready to be filed.



The regulator with the filed steel extension ready to be silver soldered.



The completed regulator assembly



Restored carriage clock with new handle

# Do you own a carriage clock?

If so, you may have questions about your clock.

Such as - - - -

1. When was it made and by whom if it is not signed by a maker.

Many carriage clocks are marked by retailers, such as "Tiffany". Many times the maker is not identified. However the maker can often be identified by the construction style and other tell-tell signs found on the movement.

2. Should I clean the case, or not?
3. And the greatest question of all, what is it's value.

This is the hardest question to answer because of the many variables, such as condition of movement and case, the name and standing of the clockmaker, & the quality and rarity of the clock. We are not licensed appraisers. We can only advise you where to look for comparable clocks so you can make your own "best guess" as to the actual value, always remembering the oldest approach to a value is "Willing Buyer, Willing Seller".

Members of our chapter have many years of experience collecting, researching and restoring carriage clocks. Many are willing to help you answer some of these questions.

This free service is for NAWCC members only.

Email questions and pictures of your carriage clock (one clock at a time, please) to:

**Ken Hogwood:** (USA) [kenhogwood@aol.com](mailto:kenhogwood@aol.com)

**Doug Minty:** (Australia) [dminty@optusnet.com.au](mailto:dminty@optusnet.com.au)

**Link to the Online Galleries website:**

[www.onlinegalleries.com/art-and-antiques/antique-clocks/carriage-clocks](http://www.onlinegalleries.com/art-and-antiques/antique-clocks/carriage-clocks)

**Link to Bonhams July Fine Clock auction:**

<http://www.bonhams.com/auctions/21930/>