



Touching The Untouchable

by Mostyn Gale

My previous article about escapements (March 2013) discussed remaking of a pallet strip for a half-deadbeat. This article describes the basic principle behind many escapements (clock or watch) and how you can tell if they are right. This knowledge helped me understand that the half-deadbeat pallet was not right and how to fix it.

Many times when discussing aspects of clock or watch repair I have heard people say that, apart from some pallet wear, escapements are often OK as is and not to attempt adjusting them – the best approach being, “don't touch them!” I believe this approach to be a lack of education – knowing how things are supposed to work takes the fear away from dealing with faulty escapements.

The basic function of an escapement is to transfer power from the wheel train to the pendulum. Sometimes the power is lost in the wheel train itself but if the clock has been cleaned, pivots and bushings checked and in order but the clock still will not run, then there is the possibility that power is not being transferred efficiently through the escapement.

This is where understanding the proper angles for the impulse surfaces becomes important – you have to put your imaginative abilities to work. Imagine a circle defined by the pallet axis and the tip of the pallet impulse surface. The escape wheel will attempt to push the pallet in the direction of tangent ‘TP1’ on the entry pallet and ‘TP2’ on the exit pallet, in figure 1.

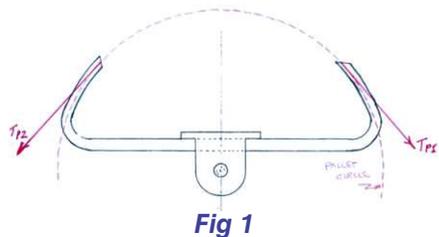


Fig 1

Now imagine a circle around the tips of the escape wheel teeth (not very hard to imagine this one). The escape wheel teeth want to push the entry pallet in the direction of tangent ‘TE1’ and the exit pallet in the

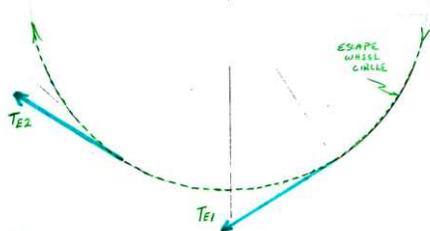


Fig 2

direction of tangent ‘TE2’, in figure 2. Now if you overlay these two circles with the entry pallet impulse surface with the escape teeth we know that the impulse plane should form an angle that is perpendicular to the half angle between ‘TP1’ and ‘TE1’. Next, align the exit pallet impulse surface with the escape teeth. Again, the impulse plane should form an angle that is perpendicular to the half angle between ‘TP2’ and ‘TE2’. See figure 3.

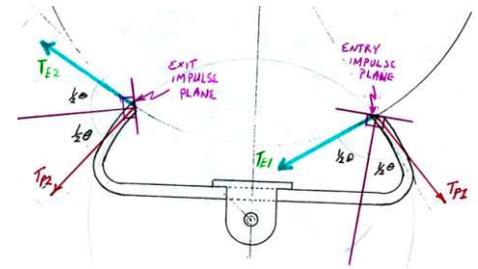


Fig 3

Now back to real escapement – instead of paper circles, you have to imagine where and how these tangents are positioned and then where the impulse plane should be. This is where digital photography and a close up lens can really help. I take photos, print them, and then draw in the tangents and angles. Figure 4 shows what the old exit pallet looked like. You can see that the angle of the impulse plane was 35 deg off from where it should have been. Without going into the math (basic trigonometry) in this article, suffice to say that 35 deg accounts for a 75% loss of energy being transferred to the pendulum. Figure 5 shows what the exit pallet of my replacement looked like.

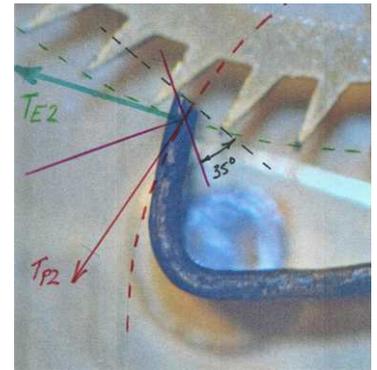


Fig 4

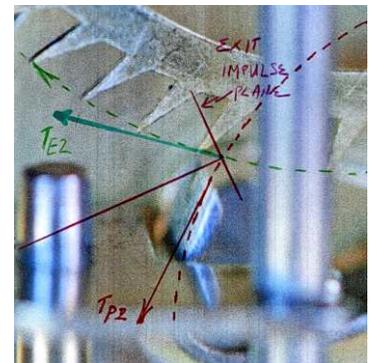


Fig 5

This approach is not the same for all escapements because there are many different varieties but it will work for many of the most common types. However, the fundamental principle is still the same – knowing how things are supposed to work really helps. Go to school! ■

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PRESIDENTS MESSAGE

By Mike Schmidt

In November, "190" celebrate its 7th year and will soon be looking forward to 2014. Thanks to the hard work of our Officers, Board of Directors, and others, Chapter 190 continues to grow its membership and prosper. This mont, a nominating committee led by Ernie Jenson and members Ken McWilliams, Tom Ferkel, and Ralph Napolitano will be seeking help from the membership to continue the good work of Chapter 190. Many small tasks and a few large ones are required to help keep the chapter well and growing. Please be open to giving back and serving your chapter by offering to help.



Chapter 190 recently received a donation of clock tools, clocks and parts from the Metzger family. (Estate of Paul Metzger) Ken McWilliams will be bringing some tools and I will be bringing some clocks and parts to each meeting for several months. We are still in the process of sorting, and assembling the cases and parts. We thank the Metzger family for their generous donations.

We also want to thank the family of Dan McKinnon who donated clocks, books, and horology publications that were sold at last months meeting. A box of watch tools and parts will be offered at this months meeting.

We also want to thank Larry Lopes for his continuing donation of anniversary clocks for the Chapter 190 marts. Chapter 190 is a non profit corporation and all donations are tax deductible. The proceeds will be used for educational purposes within the chapter.

For all of us, including me, who sometimes grumble about the decline in membership of the NAWCC, please read the message from the Executive Director Steve Humphrey on page 338 of the July /August Bulletin. 'NAWCC and the Future' The message is a positive realistic explanation on the future and viability of the NAWCC.

Chapter 190 Educational Opportunities

Congratulations to instructors Lex Rooker and Ray Marsolek and the seven students who completed the August NAWCC Field Suitcase Workshop FSW102 (2 train clocks with snail striking system). Under the tutelage of Lex and Ray, all seven students learned all the requirements of the course plus they all learned and completed the task of using a lathe to replace a broken pivot. All of the students began their workshops with our new 2 day introductory program that began in February.

The next FSW workshop to be offered for NAWCC members who have completed the FSW103 is the FSW104 "Introduction to Weight and Fusee Driven Clocks". This workshop will be November 15th thru November 18th. Ray Marsolek will be the instructor. The coordinator for this workshop will be Frank Huttlinger who can be reached at (714) 267-3930 or email huttlingerf@cox.net

My personal favorite workshop that everyone, including watch collectors, should take is the Field Suitcase Workshop FSW 200 "Fundamental Skills for Clock Repair & Lathe Preparation", sometime referred to as "The Metals Workshop". It is offered January 24-27, 2014. Ray Marsolek will be the instructor with Lex Rooker assisting. There is no prerequisite for this workshop except for fundamental clock repair knowledge. If you have interest in this workshop please contact coordinator Tom Ferkel (661) 775 1652 or email tferkel@gmail.com.

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Tales From the Bench

by Ferdinand Geitner

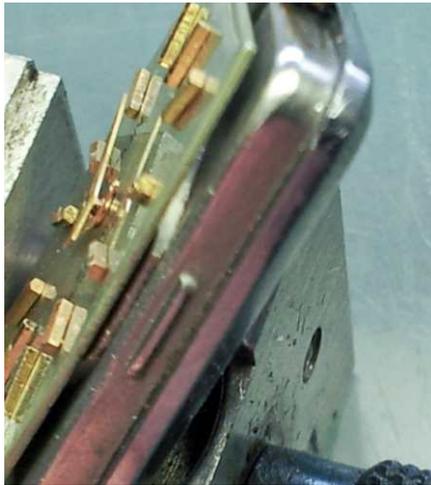
A Simple Job

The first step, and supposedly simplest, of servicing a watch can create its own problems! I'm talking about opening the case and taking the movement out. Pocket watch cases have two distinct styles; snap on back and screw back.

Sometimes a screw back can look like a snap on and when people try to open it with a knife (unsuccessfully) they create a gap on the edge of the case which looks like one on a snap on case. The threads can be corroded and seized up and it takes longer to open the case than to service the movement. Wrist watches fall in the same category, snap on and screw on. (Waterproof watches are mostly screw on).

Recently I received a small square ladies wristwatch with a snap on back which had been "serviced" but did not run well. The back was easily removed but the movement was somewhat tight in the steel case back. Usually a thin sharp knife on the long edge of the movement, i.e.: 12 & 6 (carefully, first a little on one side and then the other etc) will do the trick but sometimes people work on the side (9 o'clock) and there is an opening exposing the 4th wheel which does not like to be handled by a knife edge,

In this case, the wheel was bent so it had to be repaired. After correcting that problem, it worked but gave a crazy graph on the timing



machine. Also it gained a lot with the regulator in a "reasonably normal" position.

After checking the escapement closer I found the escape wheel was bent (not running flat). It was mounted on a thin round shaft, not riveted onto the pinion and could be distorted running at an angle on the shaft. One side was up the other down and it only engaged the pallet half of the time skipping a couple of teeth every time before catching the pallet again therefore gaining an incredible amount. That's why the timing machine could not interpret the galloping noise. How did the escape wheel get so distorted? It cannot be reached without taking the movement apart.

So, between distorting the 4th wheel while removing the movement from the case, and the distorted escape wheel, which can only be caused by handling it directly, (Probably mis-aligning it with the pallet and trying to fit it into the jewels.) I don't think this was a very competent service job. Something one does not expect on a "routine" day of a watchmaker. ■



Continued from page 2

On September 7th & 8th, the third 2 day "Introduction to Antique Clock Collecting, Repair & Maintenance" was completed. Our new program to date has resulted in introducing clocks, history, theory, and maintenance, to 25 students for the first time. The public introductory workshop has worked as a bridge by introducing and bringing several new members to the NAWCC, Chapter 190, and our educational workshop program.

Chapter 190 will continue to offer the "Introduction to Antique Clock Collecting & Repair & Maintenance" workshop. This 2 day workshop is open to members, friends, and the public. The only prerequisite for this workshop is "Interest & Curiosity" in mechanical clocks. All tools, movements, and knowledge are supplied. The date for this 4th workshop will be set in early 2014. For information contact Mike Schmidt, phone 805 988-1764 or e-mail eaglecreekclocks@msn.com.

The Sunday morning workshops have been very popular and very well attended. The workshop this Sunday will begin at 10:30 A.M. It will be led by George Antinarelli. The opening subject will be a demonstration of work using the "Bergeon Bushing Tool." Members are encouraged to bring their clocks. Any subject or questions on watches and clocks are always welcomed. The coffee will be on early!

Mike Schmidt

Follow-up To My Grandfather's Clock

by Ken McWilliams

In our last newsletter I wrote an article on the song "My Grandfather's Clock". One of our readers contacted us with the following comments:

As usual, the latest Chrono Times is pretty good, but something was (to me) glaringly missing: Henry Clay Work wrote a follow-up song, "Sequel To Grandfather's Clock", in which a smaller, wall-hanging clock figures prominently. Look it up.

David O'Banion

You were right David, it was published in 1878, two years after Grandfather's Clock. Here are the lyrics to the sequel.

Sequel to Grandfather's Clock

Once again have I roamed thro' the old-fashioned house,
Where my grandfather spent his ninety years.

There are strangers in charge, and the change they have wrought--
Oh! it saddens me, even to tears.

Dear old clock! when they found you were speechless from grief,
Then they went and swapped you off, case and all.

For that vain, stuck-up thing
(tick, tick, tick, tick, tick, tick, tick, tick),
For that vain, stuck-up thing on the wall.

Grandfather sleeps in his grave;
Strange steps resound in the hall!
And there's that vain, stuck-up thing
(tick, tick, tick, tick, tick, tick, tick, tick),
There's that vain, stuck-up thing on the wall.

While we talked of the old clock they all ran it down.
Tho' they claimed that it couldn't be made to run.
It was useless they said-- it was quite out of style;
Built, no doubt, just about the year One.
And the words echoed round, with a faint, mocking sound,
As if some one gave assent to it all;
'Twas that vain, stuck-up thing
(tick, tick, tick, tick, tick, tick, tick, tick),
'Twas that vain, stuck-up thing on the wall.

From the clock-peddler's cart in the junk-shop it went,
Where its cog-wheels were sundered one be one;
And the brass-founder joked as they writhed in the flames--
"Melt'em up," says he; "then they will run."
There is grief in my heart, there are tears in my eyes.
Yet indignantly the sight I recall
Of that vain, stuck-up thing
(tick, tick, tick, tick, tick, tick, tick, tick),
For that vain, stuck-up thing on the wall.

"An extremely hard case!" said the junk-dealer's wife,
As she carried it for kindling wood and sighed--
That mahogany case, with its quaint, figured face,
Which so long was my grandfather's pride.
"There is hope for the small; there's a change for us all;
For the mighty ones of Time, they must fall!"
Says that vain, stuck-up thing
(tick, tick, tick, tick, tick, tick, tick, tick),
Says that vain, stuck-up thing on the wall.

MAJESTIC TIME: THOMAS TOMPION EXHIBITION

The following is excerpts from a recent press release for the Thomas Tompion exhibit at the "Time For Everyone" symposium held this November at Cal Tech.

Pasadena, California. Twenty clocks, watches and sundials by Thomas Tompion, the acknowledged father of English clockmaking, will be displayed at the "Time For Everyone symposium", November 7-9, 2013. From English private collections, these rare and elegant masterpieces represent the largest grouping of Tompion's output ever available for public viewing in this country.

The exhibition commemorates 300 years since the clockmaker's death in 1713. Born in 1639, he is one of only two horologists honored by burial in London's Westminster Abbey. Among his most affluent clients were royalty and aristocracy in England and throughout Europe. In 1675, he was commissioned to construct the first regulators for the Old Royal Observatory in Greenwich, England. Around this time, he made the deadbeat escapement, an ingenious innovation that greatly influenced the design of precision clocks for the next 200 years.

Single examples of Thomas Tompion's work may be seen in the world's finest museums, but never so many in one place at one time. Included in the exhibit will be Number 483, a month-going regulator that indicates mean solar and sidereal time, and the "Spanish Tompion", a magnificent 8-day full grande sonnerie clock in a superb tortoiseshell case. Tompion watches far outnumber his clocks, and also on display will be his No.144 quarter repeater, c. 1697, in a double gold case.

John C. Taylor, an English inventor immersed in the study and collecting of early clocks, will introduce the exhibition prior to the opening reception on the evening of November 7. His presentation, "Tompion in Context", will offer a learned perspective to the hundreds of collectors, historians, horologists and interested members of the public expected to attend.

The Ward Francillon Time Symposium, sponsored in association with the National Association of Watch and Clock Collectors, convenes annually. The 2013 conference, however, marks twenty years since the highly successful Longitude Symposium at Harvard University, and promises to be an equally historic event. Dr. Taylor's lecture is one of more than twenty talks by eminent thinkers on the subjects of time and its measurement.

"Time for Everyone: The Origins, Evolution, and Future of Public Time", will take place on the campus of The California Institute of Technology (Caltech). The full program and registration details are at www.timeforeveryone.org and on a fold-out brochure which can be requested by calling 978-475-5001.

Horology Trivia

by Giorgio Perissinotto

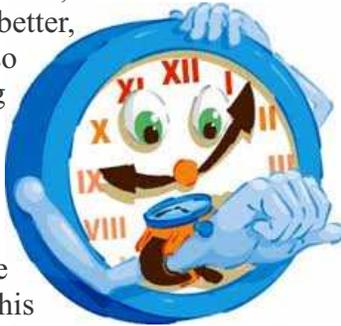


Note from the editor:

We are starting a new column on trivia within horology. The subject will deal with terms and concepts that we are all familiar with, but the origins may surprise us. We will also cover the unusual and sometimes bizarre aspects of time. If you come across something that you feel may apply, please contact Giorgio. (His contact info is always on the left side of page 2 of our newsletter.)

MEASURING TIME: AM, PM, AD, BC, BCE. Hours and minutes.

While the most common way of situating ourselves in a time continuum is through a quick glance at our wrist or pocket watch and only rarely at a public clock, dividing time in larger slices is always in the background. 6:00 PM may seem just a simple referent, but upon closer analysis it reveals a bit more. *P.M.* is Post Meridiem, as opposed to *A.M.*, Ante Meridiem, with meridiem meaning noon or, better, midday, in Latin, yet it also declares that we are dealing with a 12 hour clock, which reflects a division of the day into two cycles, from 0 to 12. Note, however, that there is no 0 on the dial; 12 therefore does double duty. What this means is that we divide the day into two 12 hours cycles or periods, but in reality it is one segment with a central point being the half of an imaginary great circle on the earth's surface terminated by the north pole and the south pole, connecting points of equal longitude. Many countries, however, prefer the 24 hour clock and refer to 2 pm, for example as the 14th hour. Military time is usually expressed this way as well.



BC is before (the birth of) Christ, while, asymmetrically, *AD* is Anno Domini, Latin for "In the year of the Lord." But in recent years the preferred abbreviations are *BCE* and *CE*, for Before the Common/Current/Christian Era. Use of the *CE* abbreviation was introduced by Jewish academics in the mid-19th century. Since the later 20th century, use of *CE* and *BCE* has become standard in academic and scientific publications, and more generally by publishers emphasizing secularism or sensitivity to non-Christians.

The *HOUR*. The hour (common symbol: h or hr, of Latin and Greek origin) is a unit of measurement of time. In modern usage, an hour comprises 60 minutes, or 3,600 seconds. It is approximately 1/24 of a mean solar day. But before the development of the mechanical clock, much more practical was the use of "hour" as an approximate unit to mark "daylight hours" and thus divided the day accordingly. Sunrise marked the beginning of the first

hour (the zero hour), the middle of the day was at the end of the sixth hour and sunset at the end of the twelfth hour. This meant that the duration of hours varied with the season. A similar system is used in Jewish law and it's called a Talmudic hour " in a variety of texts. This hour is one twelfth of time elapsed from sunrise to sunset, day hours therefore being longer than night hours in the summer; the opposite holds for winter.

Strange as it may seem today, for many centuries astronomers counted the hours from noon, because it was the most reliable way to ascertain the vertical position of the sun in relation to the earth. Today, of course we start counting the hours at midnight.

MINUTE. The minute is used as both a unit of time and of angle. As a unit of time, the minute is equal to 1/60 of an hour or 60 seconds. In the UTC time standard a minute on rare occasions has 59 or 61 seconds, a consequence of leap seconds. ■



John Kirk presented a program on carriage clock escapements



The **September** Chapter 190 Meeting
is Sept 15, 2013

Sellers may start setting up at 11:30

The Mart is open from 12:00 til 1:15

The Meeting starts at 1:15

“2013 AHS (American Historical
Society) France Tour”

Mostyn Gale will recap the
highlights of his recent tour of France with
the AHS.

The **October** Chapter 190 Meeting
is Oct 20, 2013

Sellers may start setting up at 11:30

The Mart is open from 12:00 til 1:15

The Meeting starts at 1:15

“Thomas Tompion & His Clocks”

Ken McWilliams will give us a peak
into the life of one of the greatest English
clockmakers of all time.



This Month's Mini-Workshop

At 10:30AM

The opening subject will be *A demonstration of using the “Bergeon Bushing Tool.”* The workshop will be led by George Antinarelli. This is a round table discussion where everyone gets to join in and learn. Feel free to bring your clocks that are giving you problems. Don't let a clock baffle you, let our experts confuse you instead.

THE WORKSHOPS ARE ALWAYS FREE!

If there is a topic that you would like to learn about, just mention it at the workshop. We are always looking for good topics for our workshops



Happy Birthday

September

**Thomas Beard, Thomas Ferkel, Paul Highfill,
Chris Manzione, David Rubright, Chip Stevens,
and Norma Zuber**

October

**Larry Lopes, Lynn McWilliams, Marco Perez,
Richard Purnell, and Richard Schall**

CLASSIFIED PAGE

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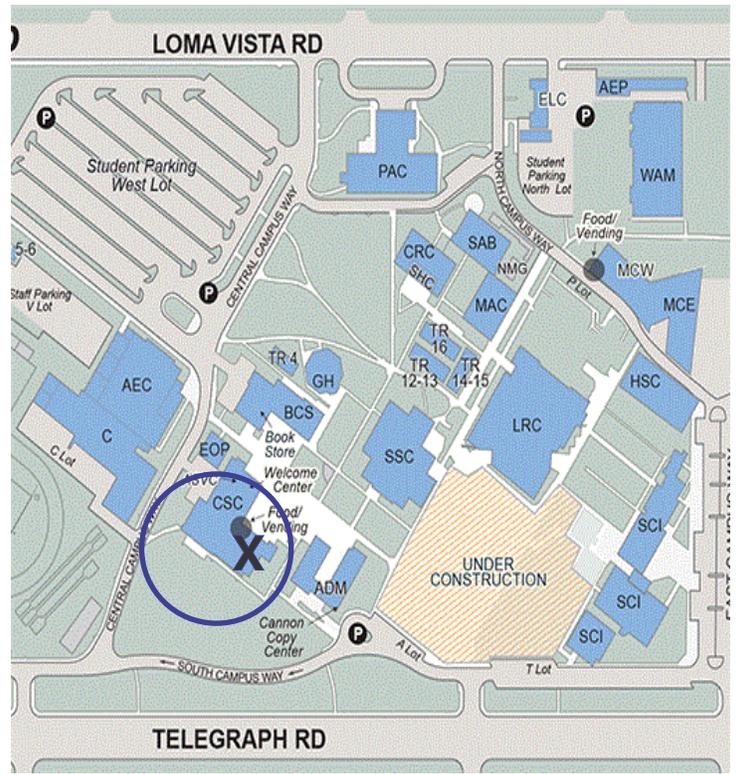
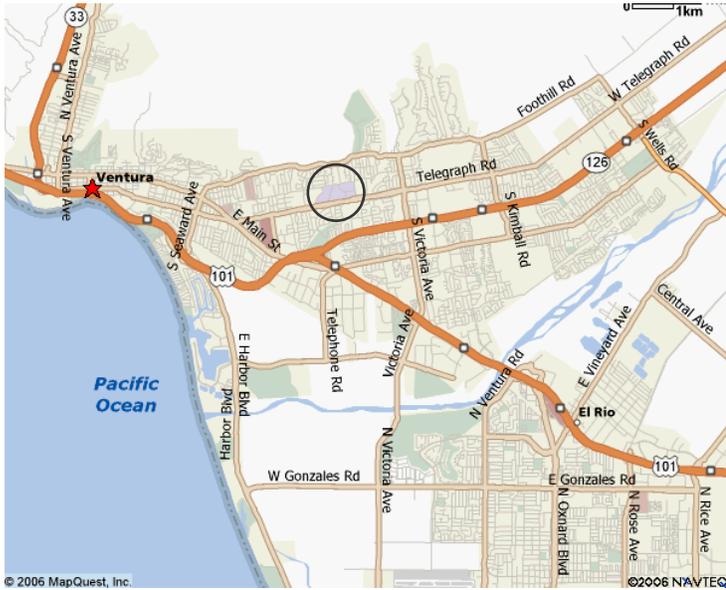
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- Chronometer -

Hamilton 21 Marine Chronometer in running condition, with inner box and gimbals; outer box not essential.

Please contact: Giorgio Perissinotto
E-mail: **giorgio@spanport.ucsb.edu**

The Chapter 190 meetings are held the third Sunday of each month. (No meeting in December)
 We will meet in the Campus Student Center (CSC) on the Ventura College campus. The CSC is located in building "B", east of the gym and



Sept - Oct, 2013 Issue

NEXT MEETINGS

SEPT 15

OCT 20



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Chrono Times