

HOROLOGICAL™ TIMES

October 2005



American Watchmakers-Clockmakers Institute

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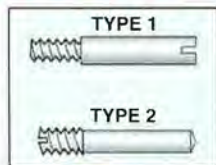


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COVER

This month's cover features a
Kees Engelbarts' watch



President's Message

Jim Door

Why do we belong to this or any other organization? By our very nature we are selfish. What motivates us to belong to this or any other organization? Do we not ask ourselves—"What will I get out of it?" This is human nature. We tend to seek out those things that will be of benefit to ourselves. This is a part of survival. Along the way we discover the rewards of helping others. Self-concern is only a negative when it rules our every decision, our every action.

I know I joined hoping to improve myself, to learn from those more knowledgeable and more skilled than myself. When I started doing committee work I found a great sense of satisfaction. Our committee volunteers spend many hours working to improve things for all of us. I commend them for their dedication. By the time this is published most of our committees will have been appointed for the year. These committees are not closed; it is still possible to add to them as we find those who are willing and able to help. To make this a more profitable organization for those who belong, we need your help.

The past several months have seen terrible devastation in the U.S. We are not a "relief" organization. But, that shouldn't stop us from helping. I am sure many of you are finding ways to help those affected by hurricane Katrina. Tom Pack has posted on AWImatters information on one way we can help in finding new employment for those affected. We can do even more. Do you have extra tools you would be willing to donate to help those starting over? Do you know of members who have been displaced by Katrina? If you have current contact information on them please forward it to us. If you know of specific needs please pass that on as well.

AWImatters on Yahoo is a good forum where we can inform members more quickly on opportunities to help. If you have not joined yet please consider doing so. There is no additional cost for this; it is a membership benefit. You can sign up at <http://finance.groups.yahoo.com/group/awimatters/>

What benefit will you get from this? The satisfaction of knowing you have helped another and that is one of the best "self-serving" motives to have.



Executive Director's Message

James E. Lubic, CMW

Certification continues to pick up steam. So far 53 members have taken the new AWCI Certified Watchmaker's Exam. That number includes the members who took the test as a pilot test. Those who agreed to have their names published in the *HT* after passing the exam will begin to appear in the November issue of the *HT*.

If you haven't heard yet, the Standards and Practices for Clockmakers have been posted on the AWCI website at www.awci.com/services/certification.php, and on our Yahoo Group, AWCI Matters under "Files". If you don't have access to the web you may contact Nancy Wellmann at AWCI toll free 866-FOR-AWCI, ext. 303 (866-367-2924) and request a copy. Please take the time to review this document and don't be shy about providing your feedback. You can e-mail your comments to educationcomm@awci.com or mail a copy to AWCI to the attention of the Education Committee.

The biggest challenge we have with our new website is educational content. Prior to the digital era and even video tape, the popular way of delivering educational material was through slide presentations. Most families owned a 35mm camera and for a small investment you could purchase a zoom or macro lens for that camera. In the so-called "olden" days AWCI members would make slide presentations pertaining to a particular topic that they felt was important for our membership. It didn't matter if the topic was new or old, or maybe it was a new method of performing a job that could make a fellow member more profitable in their work. A lot of valuable information was shared with our members through this media over the years.

You have probably heard the saying "everything old is new again". Well that is kind of how I look at all this new technology. Now almost everyone has a computer and a digital camera, which means that it would be very easy for you to share your expertise with the AWCI membership once again.

Digital cameras can be used to take pictures of a process, method or tip of some sort that you might want to share. One could document the restoration or servicing of a particular watch or clock that they would like to share with the AWCI members. You can download the pictures onto your computer and size them properly and add text. Once you are happy with the product you can e-mail your presentation to AWCI. We can then share this information with the membership by uploading it to our website in the "members only" section. I see this as a very important role that you the member can play in shaping the future of our organization while at the same time sharing your expertise.

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JIDA





David Christianson,
CMW, CMEW, FAWI

Questions & Answers

Question

Can you please identify these two pocket watches?

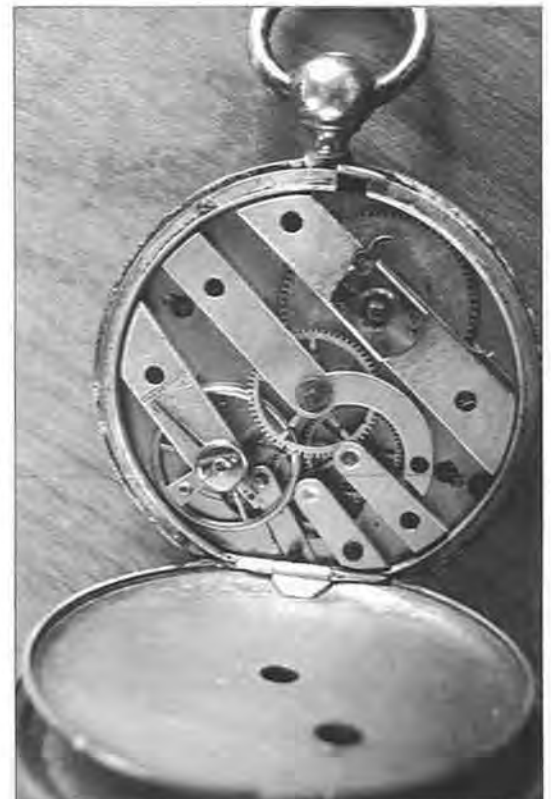
*Michael Mirman
Warren, RI*

Answer

1. Your pocket watch marked Alphonse Humbert has a typical Swiss bar movement

in common use during the middle of the 19th century. It is key wind and key set, which places it before 1870 when the pin set method became common. Unfortunately I cannot find any reference to Alphonse Humbert. I don't know if he was the one to finish the watch (from a rough movement or ebauche) or, more likely, the marketer of the watch, which was finished by an unknown watchmaker. Humbert was a familiar name in the watchmaking and distributing businesses at the time in Switzerland.

(Continued on page 6.)





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PS110	Disposable, 10/pkg.	5.95 pkg.

The experts at American Jewelry Manufacturer Magazine have several reference books that would make valuable additions to one's library. They focus primarily on the technical aspects of repairing and making jewelry, from common bench repairs to the latest techniques for volume production. Soft-bound.

101 Bench Tips for Jewelers by Alan Revere



Acclaimed as a designer, author, educator, and innovator, Alan Revere now shares his most valuable bench tips for Jewelers. Based on his monthly column in AJM, this book will help any jeweler speed production, improve quality, and raise profits at the bench. 120 pgs.

BK140 \$ 39.95

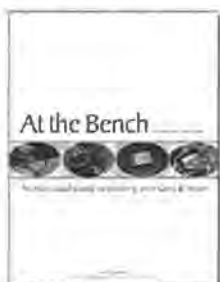
The AJM Handbook on Best Business Practices



A handbook on how to maximize profits and minimize risks, This AJM Handbook offers expert advice on a range of vital topics; keeping your business profitable in good times and bad, establishing solid credit practices, investing in technology, the benefits of leasing, plan for production increases, controlling metal policies, implementing a 5S visual control system, creating a profitable business plan. 96 pgs, 5.5 x 8.5".

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At the Bench by Gregg Todd and Greg Gilman



At the Bench includes step-by-step, illustrated lessons on the repair and fabrication of gold and silver jewelry, as well as guides to bench setup, maximizing workflow, organizing small tools, safe torch work, and maximum metal recovery. 116 pgs., pictures throughout.

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The Platinum Bench by Jurgen J. Maerz



Shows how platinum isn't difficult, just different. This book provides step-by-step, illustrated lessons on common platinum repair and fabrication projects, as well as a guide to the many alloys, how to properly set up your bench, and casting. 112 pages, 200 pictures.

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Questions & Answers

(Continued from page 4.)

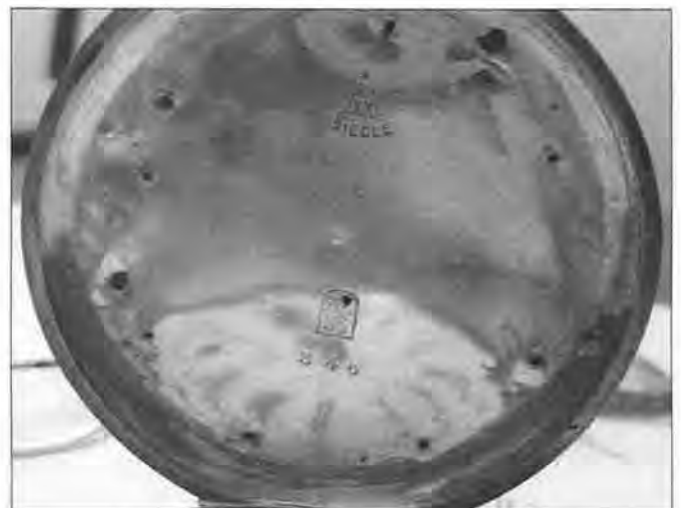
2. Your Qte. Salter watch is a very nicely made stem wind and lever set pocket watch in a 14 karat gold case. The inside cover tells us that the movement is wound with a stem (remontoir); has a straight-line pallet fork (ancre ligne droite); has 22 ruby hole jewels; a Breguet hairspring (spiral Breguet) and the movement is made of nickel. This movement is a Swiss bar-style movement that was in common use in the late 19th century.



Although stem winding was introduced in 1842 by Adrien Philippe, it didn't come into universal use until the 1880s. Stem setting came into common use in about 1900. Before that it was pin setting (preferred by the European manufacturers) and lever setting (preferred by the American manufacturers), although the Swiss made both, especially the lever setting for import to the U.S. Because of this and the style of the watch and its movement, I would estimate the watch was made about 1890.

As to Qte. Salter, I have no clue. He is not listed in any of the standard reference books. In fact a similar inquiry to the National Association of Watch and Clock Collectors in April of 1984 asked about a high quality watch by Qte. Salter very much like yours. They could not find any information about him, either; and nothing, it seems, has come to light since.

Like your first watch (see page 4), Qte. Salter may have been the finisher ("maker") or he could have been the marketer of this very fine watch; finished by some very talented and unsung maker in Switzerland. A situation that was quite common at the time. ☺



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10/05



Ron DeCorte, CMW

Kees Engelbarts' Artisan Watches

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I first met Kees (pronounced Case) in March of 2004, thanks to Peter Speake-Marin who made the introduction. While making an article about his work, Kees invited me to stay at his apartment in Geneva, that he shares with his wonderful wife Pascale and son Daan. Since that time we've become good friends sharing a lot of good meals, a few beers, and a few bad jokes. (For those who might not be acquainted with Kees Engelbarts there is an excellent TZ interview available at <http://www.timezone.com/library/tzints/tzints632089400153593750>)

I've heard Kees Engelbarts described as the "Jolly Green Giant" but this isn't exactly true. He is jolly and he is a giant of a man, but he isn't green!



Kees Engelbarts

Hopefully you have read the interview with Kees and know his background. Now I would like to take you through the process of how he makes his magnificent and totally unique dials, and share some pictures of his watches that you may not have seen before.

Making Dials

Kees is well known for his work in the material—mokume gane—(see a technical description at the end of this article). Figure 1 shows a dial platform prepared from mokume gane for a rectangular watch. The preparation of a platform like this will take many days. But this dial is only just getting started.

Figure 2 shows a block of solid gold coated with a thin coat of shellac; a paper outline is attached while the shellac is wet. The shellac bonds the paper very tightly with the gold. When the shellac is dry the outline will be transferred to the underlying gold plate using a fine scribe, and the result is shown in Figure 3. Notice that the surface is just scratched and doesn't have a lot of detail or depth at this stage.

After removing the shellac coating the gold block is cemented to a wooden block and placed in the engraving ball (Figure 4). At this stage the outline is finalized and cut deeper.

Next the outline is removed from the gold block using a piercing saw (Figure 5). Notice the outline is given a fair amount of space, especially in areas of fine detail. After some detailing of the outline using files and small detail saws (Figure 6) the outline is again cemented to a block and returned to the engravers ball for final engraving. Figure 7 shows the finished dial.



Figure 1



Figure 4



Figure 2



Figure 5



Figure 6



Figure 3



Figure 7

Engraving Tools

Figure 8 shows a tiny detailing saw. The detail saw in use is shown in Figure 9. In actuality this “saw” is used more like a file for getting into very tight areas and creating details that would be impossible with a conventional file.

Figure 10 shows hand gravers and files. An engravers ball (vise) sits in a leather ring (donut) allowing it to be tilted at just about any angle (Figure 11). The upper half of the ball rotates freely making it possible for the engraver to turn the work as they are actually making a

cut with their graver. Work can be held between the solid jaws or on the top surface using pins that can be set into the holes for odd shapes. The jaws of the vise are opened and closed with the removable handle.

Kees’ assistant Tatiana is shown at her bench in Figure 12.

The Watches

I’ll let the watch pictures speak for themselves and the craftsmanship (Figures 13-24).



Figure 8



Figure 10



Figure 9



Figure 11



Figure 12

Kees made a beautiful skeleton watch shown in Figures 23 and 24 for his wife Pascale in 1995. Excuse a few scratches—she wears it everyday!

Mokume Gane

Mokume Gane is a Japanese process of bonding multiple thin layers of precious metals such as gold and silver. A typical mokume combination used by Kees might be: white gold, silver, yellow gold, silver, pink gold, shakudo.

Mokume means “wood grained” and Gane means “metal”.

The metals are placed together in layers and pressed while they are heated. It’s important not to use too much heat or the metals will melt together into a blob instead of fusing into a multi-layered single piece with each layer preserving its unique properties.



Figure 13



Figure 15



Figure 14



Figure 16



Figure 17



Figure 20



Figure 18



Figure 21



Figure 19



Figure 22



Figure 23



Figure 24


A sharp, slightly curved graver is used to cut away layers in certain areas, exposing underlying layers resulting in the desired pattern. The piece is then sent through a rolling-press to flatten the surface.

Acids, heat, and natural oxidation can be used after the engraving process to create highlights and contrast between the exposed layers.

More Information

For more information about Kees and his work, visit his web site at: www.kees.ch



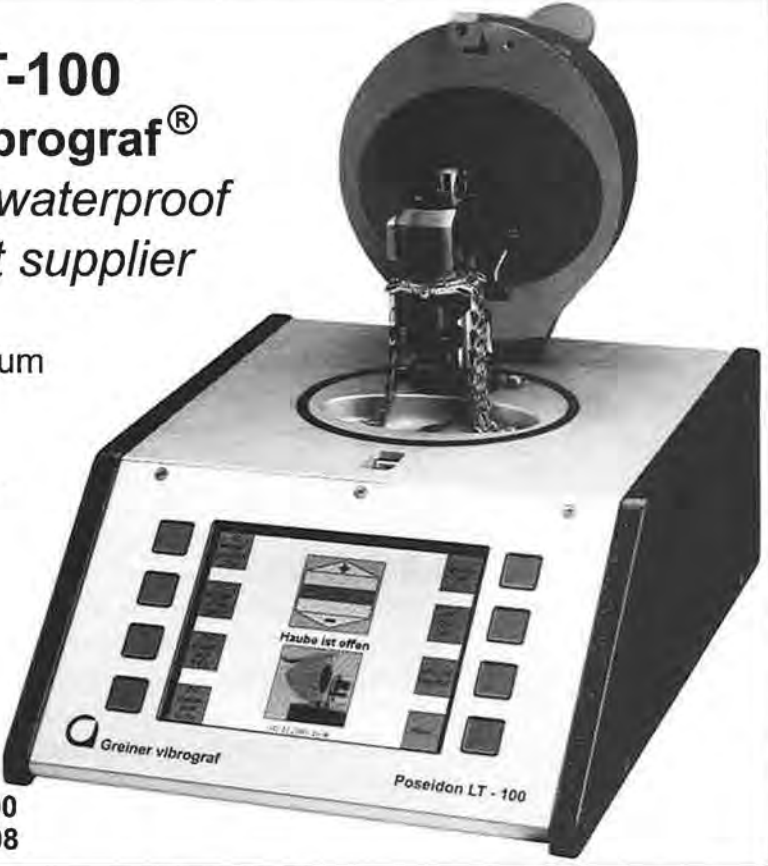


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Mark Butterworth

The Modern German Clock Movement

Part 57

The Kieninger Two-Piece Pendulum Hanger

A great source of satisfaction in seeing a mechanical clock is the act of simply watching the pendulum. It has a very calming effect, and in the movies at least, using the pocket watch swinging on the chain in the hands of an expert is hypnotizing. On the other hand, seeing a pendulum wobble makes one want to tear it loose from its suspension. Some time ago, I wrote about pendulum wobble and some of the causes. In general it was pointed out that all of the angles associated with the suspension such as suspension spring slot, the spring itself, crutch, hanger, etc., ideally should all be at right angles to one another and the crutch slot horizontal and perpendicular to the plate itself. Before getting into the main point of the article, I should mention that another cause not always obvious is the fact that the two halves of the modern two-piece suspension spring are sometimes not the same length in coming from the factory. Whew! With all that has to be right, it is a marvel there are not more wobbling pendulums around.

In 1976 Kieninger devised a two-piece pendulum hanger or leader (termed "upper pendulums" by the factories) to help assure a nice non-wobbling pendulum when conditions are less than perfect. It is based on the simple principle that the hanger engages the crutch pin at two separate points rather than one. As a result, the crutch pin itself does not allow the hanger or the pendulum to wobble. As long as the crutch pin is perpendicular to the plane (surface) of the movement, it is virtually assured that the pendulum bob should follow. Please see Figure 1 showing the hanger properly installed on the KSU series movement.

Note that the angled portion of the hanger faces in toward the movement. This is critical. If it is reversed, the clock will generally stop. The reason is that in most circumstances, the hanger in the reversed position will ride against the end point of the crutch pin. It is vital in any type of hanger, whether it engages a crutch pin or a slot, that there be "endshake" between the front and rear positions. Note also in the first photo that the hanger is not touching either the front or the rear of the pin. In general, the hangers from most manufacturers can be reversed without ill effect, but not so with the Kieninger.

The Kieninger system uses two different sizes. The longer length (7 in.) is used on all grandfather units and the shorter one (4.5 in) on the mantle and wall movements. Please see Figure 2. The short leader is seen properly installed on the J series movement.

It is my belief that a good number of the stoppage complaints on these units can be



Figure 1. Kieninger KSU unit with leader

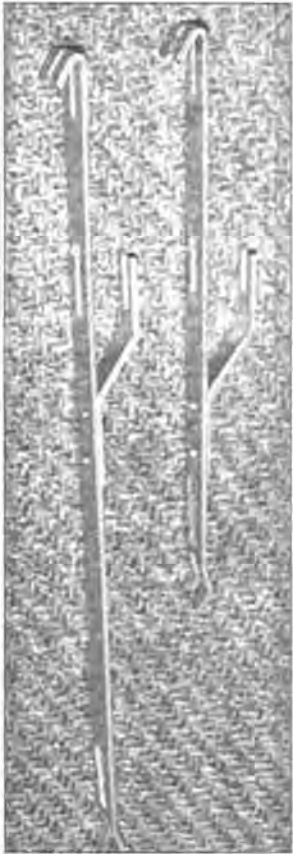


Figure 2. Kieninger leaders showing two-piece construction

traced to the leader not being properly installed. Note also on Figure 1 that there is a bracket (hanger guard) surrounding the upper half of the suspension spring. This is used on all the units employing the long leader. The purpose of this is to make it very difficult to accidentally knock the leader off the spring by an action such as jamming the pendulum upward against the leader in trying to secure the pendulum. Many repair persons remove this when servicing the clock and do not re-install. It is not necessary to remove this part to remove the hanger. Simply bend the crutch outward and upward until the crutch pin reaches the top of the hole in the slot and remove the leader! Note that the bend in the top of the hanger is such that the open end is outward. The system was made with this in mind and the brass in the crutch has plenty of spring.

The hanger can be re-installed in exactly reverse order. Slip the top over the pin of the suspension spring and then bend the crutch upward to go through the hole in the hanger. The system used on the wall and mantle clocks uses the more conventional plastic bracket over the suspension post, which is designed to be removed along with the suspension spring to remove the hanger. Please see again Figure 3.

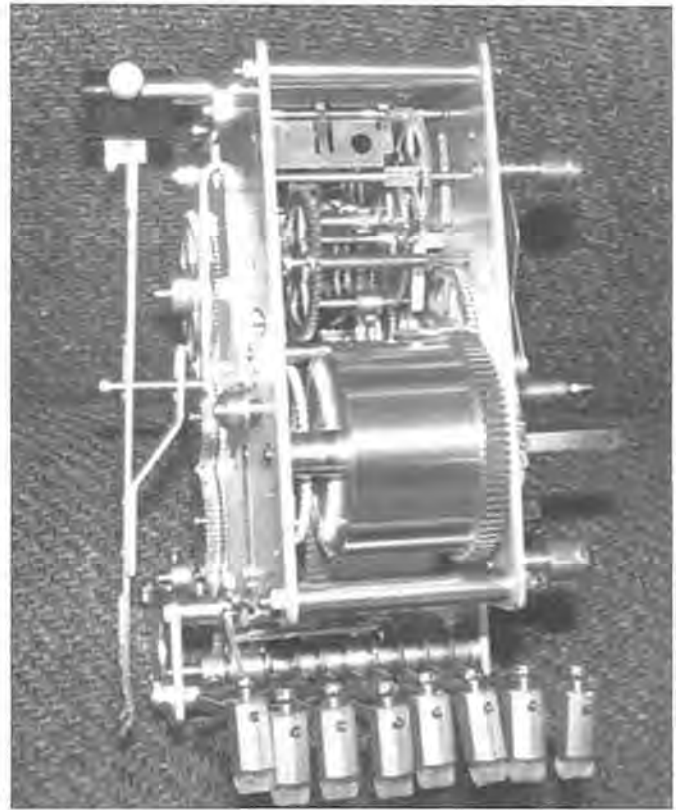


Figure 3. Kieninger J unit with leader

This may be more than you ever wanted to know about Kieninger pendulum hangers but hopefully it will save you some time and trouble in the field.

Final thought: "All I've ever wanted is an honest week's pay for an honest day's work."—Steve Martin in *Sgt. Bilko*.



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Jim Door

Determining the Life of a Watch Cell

How long will the battery last in my watch? If you work in retail you have probably heard this question many times. Our stock answer is “Most companies design their watches so a battery should last at least one year if the movement is in good condition.”

Short of an “ouija board,” can we make an educated estimate on the life span of a cell? In theory we can predict the life expectancy of a fresh cell. The primary factors are 1) the storage capacity of the cell and 2) the current drain of the movement.

1) The capacity of watch batteries (cells) is rated by manufacturers in milliamp hours (mAh). A cell rated at 20 mAh would in theory last 20 hours under a drain of 1 milliamp (mA). Usually current drain for watches is measured in microamps (:A). 1 milliamp equals 1000 microamps so this cell has a capacity of 20,000 hours use at 1 microamp.

2) Each movement is designed to operate within a particular current drain range. While there are times of increased drain, such as during the date change, the rate is usually stable. Tech sheets generally list the acceptable current drain limit. The most common reasons for the current drain to change are dirt or other blockage, dried lubricants, or a circuit problem. Also excessive use of alarm, stopwatch or light functions will shorten its expected life.

If we know the mAh rating of the cell and the current drain we can mathematically estimate the maximum life of the cell. The formula is capacity / drain = time. Example: $20,000 \text{ :Ah (20mAh)} / 1.1 \text{ :A} = 18,182 \text{ hours}$. Divide that by 8760 (hours in year) = 2.1 years. In theory this watch could run up to 2 years with this cell.

This of course is based on several presumptions including: 1) the cell is fresh and has the full capacity available, 2) there is no increase in the current drain in the next two years, and 3) the watch isn't exposed to any conditions such as high heat (i.e. being left in a hot glove box) that can affect the cell life.

When a customer comments that their watch is “going through batteries,” first check that it has the correct cell, if it has been dated check the date (sometimes customers will say the battery was changed several months ago when in fact it was two years ago, how time flies). Then measure the current drain. It is best to refer to the manufacturer's tech sheet for the correct drain. If the tech sheet isn't available the following chart can help to determine if the cell should be lasting for a reasonable period. Keep in mind that the more current movements are usually designed to run 2 or more years on one cell.

For example, if a watch comes in that uses a 377 cell and has a current drain of 4.5 :A it will not last a year and needs additional servicing, if it has a drain of 1.5 :A it may last a maximum of 2 years.

The following chart is for silver oxide cells only. Silver oxide cells maintain a fairly stable voltage output for most of their life. The voltage output of alkaline cells begins declining soon after they are put in use. The mAh ratings vary slightly from one manufacturer to another. Energizer (Eveready) is now producing some cells that are compatible for both high drain and low drain applications. These are listed on the chart with both the low and high drain numbers, such as 371/ 370. All numbers are rounded to the nearest one-tenth (.1).

Maximum Current Drain Under Ideal Conditions

Cell	mAh	1 yr	2 yr	3 yr
315	21	2.4	1.2	.8
317	12.5	1.4	.7	.5
319	18	2.1	1.0	.7
321	15	1.7	.9	.6
329	39	4.5	2.2	1.5
335	6	.7	.3	.2
337	8.3	.9	.5	.3
339	13.5	1.5	.8	.5
337	8.3	.9	.5	.3
339	13.5	1.5	.8	.5
341	13.5	1.5	.8	.5
344/350	100	11.4	5.7	3.8
346	9	1.0	.5	.3
357/303	150	17.1	8.6	5.7
361	23	2.6	1.3	.9
362/361	27	3.1	1.5	1.0
364	20	2.3	1.1	.8
365	32	3.7	1.8	1.2
366	33	3.8	1.9	1.3
370	34	3.9	1.9	1.3
371	34	3.9	1.9	1.3
371/370	34	3.9	1.9	1.3
373	30	3.4	1.7	1.1
376	26	3.0	1.5	1.0
377	26	3.0	1.5	1.0
379	14.5	1.7	.8	.6
381	49	5.6	2.8	1.9
386/301	120	13.7	6.8	4.6
387S	60	6.8	3.4	2.3
390/389	85	9.7	4.9	3.2
391	49	5.6	2.8	1.9
392/384	41	4.7	2.3	1.6
393	75	8.6	4.3	2.9
394	60	6.8	3.4	2.3
394/380	60	6.8	3.4	2.3
395	52	5.9	3.0	2.0
395/399	52	5.9	3.0	2.0
397/396	32	3.6	1.8	1.2
399	52	5.9	3.0	2.0
621W	18	2.1	1.0	.7

SEEKING CANDIDATES FOR THE AWCI BOARD OF DIRECTORS

The committee involved with securing candidates to run for the AWCI Board of Directors is seeking recommendations from the membership. If you plan to suggest a possible candidate, please send that individual's name and background to: Nominations for Board of Directors Committee, AWCI, 701 Enterprise Drive, Harrison, Ohio 45030-1696.

Each recommendation will be carefully considered by the committee. Candidates will be selected on the basis of their local association or AWCI experience, geographic location, present job status, horological experience, and willingness to serve.

Recommendations must be received before December 31, 2005 to be considered for the 2006 election.

AWCI 45th Annual Meeting

August 4-7, 2005 - Minneapolis, MN

Lucy Fuleki

Our convention is growing. Thanks to our educational programs, trade fair exhibitors, local chapter support and sponsors, each year the AWCI Annual Meeting is enjoyed by more people. Total attendance for this year's event was 175, following a record-setting 170 in Portland, Maine last year. The sponsors this year enabled convention attendees to have a paddleboat ride and dinner on the Mississippi, hosted by Rolex. The Minnesota Watch and Clockmakers Association (MWCA) provided the country and bluegrass music of the Mississippi Minstrels. The bus transportation from the Sheraton Bloomington to Harriett Island in St. Paul was donated by Swatch. Proceeds from this event

Congratulations to Newly Elected AWCI Directors and Officers

Jim Door - President

Mark Butterworth - First Vice President

Dennis Warner, CW - Second Vice President

Alice Carpenter, CMW, CMEW, FAWI - Secretary

James K. Zimmerman, CMW, CMC, CMEW - Treasurer

Mark Baker, CMW - Director

Gene Bertram, CC - Director

Matt Henning, CW - Director

Roland (Ron) Iverson, CMC - Director

Gerald Kincaid - Affiliate Chapter Director

Doug Thompson, CW, CEWT - REC Director

Willem Van Kempen - IAB Director



Glenn Gardner addresses Affiliate Chapter Meeting attendees. Photo by Wes Door



Dan Fenwick was keynote speaker for the Affiliate Chapter Meeting. Photo by Wes Door



Newly-elected Affiliate Chapter Vice Chair Wesley Grau and Affiliate Chapter Director Gerald Kincaid.

Photo by Wes Door



The IAB meeting was called to order by Willem Van Kempen, IAB Director. (L to R): Bernhard Stoerber, Rolex; Willem Van Kempen, Richemont; and Damian DeBlis, Tiffany & Co.

Photo by Lucy Fuleki



Also attending the 2005 IAB meeting: Gerald Wilson, Wm. S. McCaw Co.; Chris Gaber, Gaber & Co.; Bill Esslinger, Esslinger & Co.; Jack Kurdzionak, The Watchmaker; and Chuck Berthiaume, Rolex.

Photo by Lucy Fuleki



IAB meeting attendees included Paul Borel, Jules Borel & Co.; Tom Cassedy, Cas-Ker Co.; and Henry Livesay, Sr., Livesay's, Inc.

Photo by Lucy Fuleki

went to the AWCIE Education, Library & Museum Charitable Trust.

The Trade Fair on Saturday was also a lively affair, when nine vendors hosted a luncheon for 150 people during the lunchtime break in educational programs. The MWCA held a Silent Auction during the day Saturday and a live auction following the Awards Dinner. Mistress of Ceremonies, Terry Kurdzionak, brought smiles to faces, chuckles and laughter, during her impromptu presentations following the dinner.

On a more serious note, Jerry Jaeger resigned during the convention after many years of dedicated service



Attendees boarding the bus bound for the ELM Trust paddleboat ride and dinner on the Mississippi. Swatch was the sponsor for the transportation. Photo by Wes Door



AWCIE-ELM Trustees & 2005 Convention Sponsors: front row: Chuck Berthiaume, Rolex; Trustee Mark Butterworth; Trustee Jack Kurdzionak; Peter Foster, Swatch; back row: Klaus Lehman, Swatch; Bernhard Stoerber, Rolex; President and Trustee Jim Door; Trustee Mark Baker; Willem Van Kempen, Richemont.



Wes Door and Brenda and Scott Dauner.
Photo by Lucy Fuleki



Paula and Gene Bertram, Jim Sadilek
Photo by Lucy Fuleki



Judith and Jerry Kincaid, Chick Hardy
Photo by Lucy Fuleki



Mississippi Minstrels
Photo by Lucy Fuleki



Tamara Houk's class - "Computerizing Your Shop"
Photo by Wes Door



Mike Gainey's class - "Servicing the Aging Modern Floor Clock in the Home"
Photo by Wes Door



Manuel Yazijian's class - "21st Century Watchmaker Behavior & Practices"
Photo by Wes Door



Dan Fenwick's class - "Swatch Group Innovation"
Photo by Wes Door



Jerry Faier's class - "Improving Your Diagnostic Techniques"
Photo by Wes Door



Bob Ockenden's class - "Business Management, Planning & Marketing"
Photo by Wes Door



Esslinger & Co. at the 2005 Trade Fair
Photo by Wes Door



Twin City Supply at the 2005 Trade Fair
Photo by Wes Door



Matt Henning, Jerry Freitag, Jim Door, Jim Lubic and Dave Jacobs at the President's Reception
Photo by Lucy Fuleki



Jim Sadilek, Terry Kurdzionak, Gene Bertram and Jerry Jaeger before the annual dinner and awards
Photo by Lucy Fuleki



Wes Door, Tom Payne and Betty Door
Photo by Lucy Fuleki



Jerry Kincaid and Dan Spath
Photo by Lucy Fuleki

Dan Fenwick Awarded AWCI Lifetime Achievement Award



Jerry Kincaid, Dan Fenwick and Dan Spath

Photo by Wes Door

Dan Fenwick was presented the Lifetime Achievement Award for Horological Excellence. Fenwick is Technical Manager at Swatch Group Customer Service in Secaucus, NJ. The AWCI Awards Committee felt that Fenwick should be recognized for his inspiration and outstanding contributions to the horological world and his lifetime efforts in the education and training of fellow watchmakers.

Dan Fenwick is a graduate of the Joseph Bulova School in New York and WOSTEP in Neuchatel, Switzerland. Dan began working with the Swiss Watch Technical Center in Lititz, PA. After eight years he went to work for Hamilton Watch Company. In 1985 SMH was formed and all service functions merged in Lancaster under SWTC. In 2004 The Swatch Group (US), Inc. moved to Secaucus, NJ.

to AWCI as instructor, director and president of the organization. The vacancy on the Board of Directors was filled by Gene Bertram, next in line in the ballots received from the membership. Three retiring directors received certificates: Jim Sadilek, Joe Juare and Glenn Gardner. The Watchmakers/Clockmakers Association of Ohio received the Outstanding Chapter of the Year Award, with Chuck McKinney accepting the award.

Mark Butterworth gave a Treasurer's report stating that the expenses and income were both below budget projections but that the Institute is in a sound fiscal position. President Jim Door reported that the Perpetuation Fund increased its net value by \$33,000 during the year for a total net value of \$7.1 million. The board voted to increase regular membership dues from \$79 to \$83 to cover inflation costs. The Industry Advisory Board (IAB) dues will increase to \$250. The Affiliate Chapter Membership and Research & Education Council (REC) dues will remain at \$100. Bench course fees will increase from \$125 to \$145 per day. The daily rate of



Dan Spath, Chuck McKinney and Jerry Kincaid. Chuck accepted the 2005 Affiliate Chapter Award for the Ohio Watchmakers & Clockmakers Association.

Photo by Wes Door

a full-day academy course will increase from \$80 to \$95. AWCI evening course fees will increase from \$35 to \$40 per day. The fee for the academy-visiting instructor will increase from \$200 to \$300. The night course instructor fee increases from \$100 to \$125. The speaker fees will be



2005-06 AWCI Officers: Jim Zimmerman, treasurer; Mark Butterworth, first vice president; Dennis Warner, second vice president; Jim Door, president; and Alice Carpenter, secretary.

Photo by Wes Door



2005-06 ELM Trustees: Mark Butterworth, Mark Baker, Jim Door and Jack Kurdzionak. Charlie Cleves not available for photo.

Photo by Tom Pack



James M. Dodson Perpetuation Fund Trustees: front row: Wes Door, Alice Carpenter, Mark Butterworth; back row: Jim Lubic and Jim Door.

Photo by Tom Pack

increased from \$125 to \$150 and qualifying affiliate chapters will be reimbursed by one-half.

Willem Van Kempen reported that the Industry Advisory Board (IAB) has increased its membership from 15 to 17 and intends to add more. He said IAB is committed to helping AWCI achieve the professional level it's striving for and the industry is looking forward to working with professional watchmakers. The IAB will also work with students to "keep them in the fold." (AWCI currently has 100 student members.) Van Kempen said the IAB members are willing to contribute more financially and work with the Board to bring about a closer relationship between industry and AWCI.

Doug Thompson proposed holding all AWCI annual meetings at REC school locations. This would increase awareness and enrollment in the schools as well as provide additional attendees to the convention. This year's convention was greatly enhanced by the participation of students from the St. Paul Technical College. Our thanks to Joe Juare and Doug Thompson for volunteering the following students; and to Alvin McClure, Kris Buss, Brent Philippi, Naomi Berndt, Peggy Anderson, Roy Bass, David Syvertsen, Melody McLeish, Jonathan Simmons, Evan Olmstead, and Aaron Halverson for their dependability and professionalism while working at the registration desk, auction and hospitality suite.

Matt Henning, Ron Iverson and Dennis Warner were given the oath of office by Immediate Past President Jack Kurdzionak as they joined fellow Board members on Friday, August 5, 2005.

ELM Trust re-elected last year's officers: Mark Baker, Chairman; Jack Kurdzionak, Secretary; Mark Butterworth, Treasurer; Jim Door, Trustee; and Charlie Cleves, Curator.

Mark Butterworth was appointed during the AWCI Board meeting as the new Perpetuation Fund trustee to begin a three-year term.

Two major committee appointments were made during the convention. Jerry Faier was reappointed as the Education Committee Chair. Jim Zimmerman was appointed Chairman of the Finance Committee, with Glenn Gardner, Chick Hardy and Dr. Paul Stairs, as members.

Mark your calendars now for next year's AWCI convention in Seattle, Washington, August 3-6, 2006. ☺



J.M. Huckabee,
CMC, FAWI, FBHI

As A Clockmaker Turns

Tools for the Clockmaker's Lathe

Introduction

There is no such thing as a difficult lathe job when it is broken down into simple and logical steps. However, we need simple and logical tools to do the simple steps. Here are some tools used by "Old Huck."

The Tools

Figure 1 shows my most active lathe-tool group: turning gravers, a cut-off tool and several drill bit holders. To form the gravers, I heat to red, air-cool and file to shape. Heat to red, dip in a cup of water, and sharpen on the grinding disc of Figure 2. The cut-off tool is a hobby knife that is heat-treated and ground.

Figures 2, 3, and 4 show the grinding disc I use. It is faced with a disc of 3-M or Norton abrasive papers in grits in a range of 150 and upward. The "white backing" for the abrasive is a half-dozen pieces of poster card. This soft backing permits grinding with a no-bounce operation. Gravers can be sharpened in about fifteen seconds.

Note the markers on the knob of "The Magic Center Finder" in Figures 4 and 10. Sight two markers and touch down; do this to each of the three facets of the drill tip. Re-sharpening takes about one minute.

How do we test a center location we have cut? Again, the test is so simple; use a map pin and touch down into the center of the rotating work. If you cannot feel the piece running, your center is perfect, and you don't even need to look at the piece. Study Figure 5 and its caption.

Drilling—I haven't broken a small drill bit in the past 20 years. Here are my rules on drilling. Never hold a bit in a lathe tailstock fixture; hold the bit in a small pin vise such that it can spin in the event of a hang up or a heavy cut. Let the pin vise spin in your fingers if it pulls heavy. Use lubricant, and clean out chips often. Rest a fingertip on the bit to detect cutting rate and load. Study the illustrations and captions of Figures 6-9.



Figure 1. Clockmakers' lathe tools for turning, cut-off and drilling



Figure 2. A soft-backed grinding disc sharpens various tools

Spade drills can be made in a few minutes. I keep a variety of sizes of spring steel wire for repivoting raw material. This is available in drill gauge sizes. It is perfect for making spade drills. Cut the material with a hand-held motor tool and thin cut-off wheel. Form the



Figure 3. Sharpening a turning graver on a soft-backed grinding disc

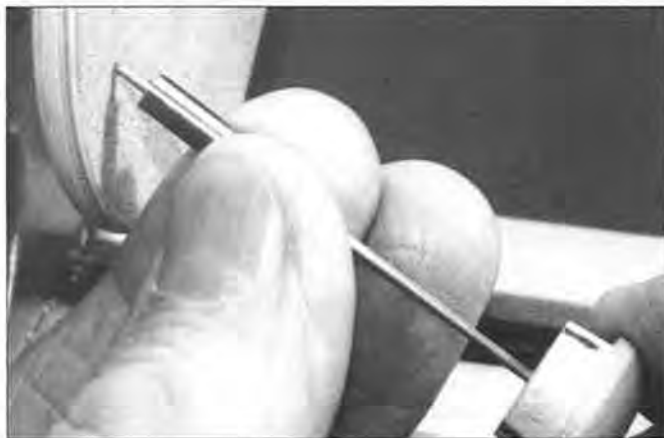


Figure 4. Sharpening "The Magic Center Finder" on the disc



Figure 5. A map pin is used to test a perfect drilling center

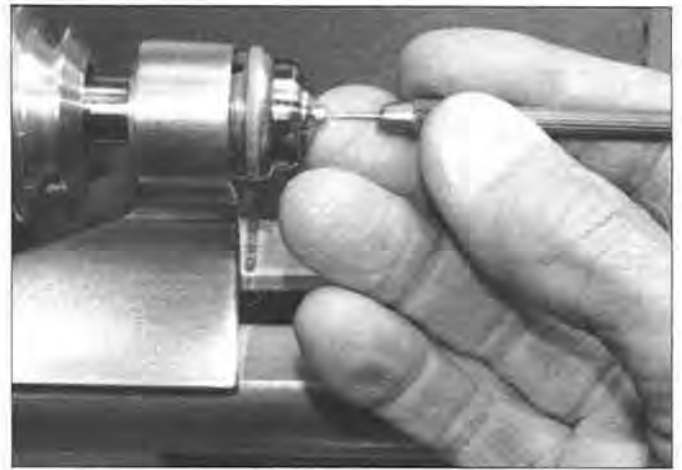


Figure 6. Rest the drill bit on a fingertip to judge cutting rate



Figure 7. Hold a spade drill lightly so it spins in the event of a hang up

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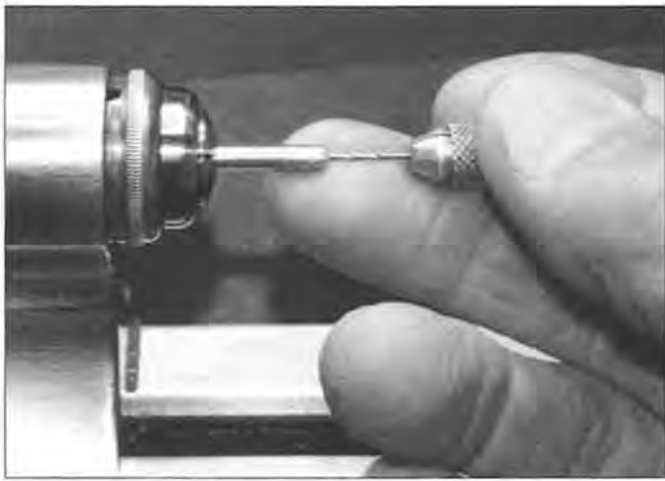


Figure 8. A fingertip on the twist drill gives judgment of cutting rate



Figure 9. Watch, and clear chips frequently, add lubricant

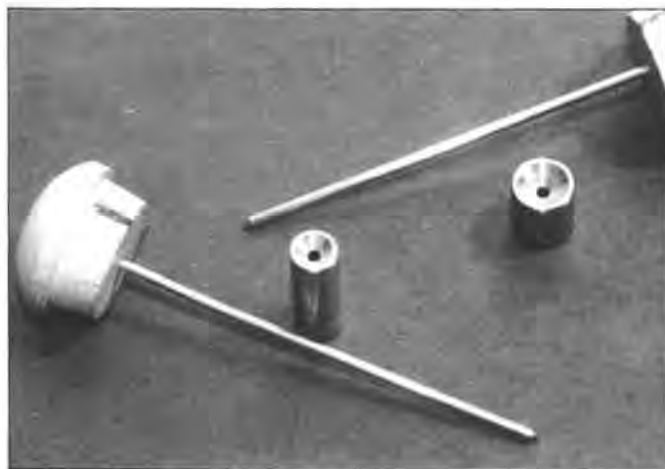


Figure 10. "The Magic Center Finder"—"the crown jewel" of lathe work



Figure 11. The method of holding "The Magic Center Finder"

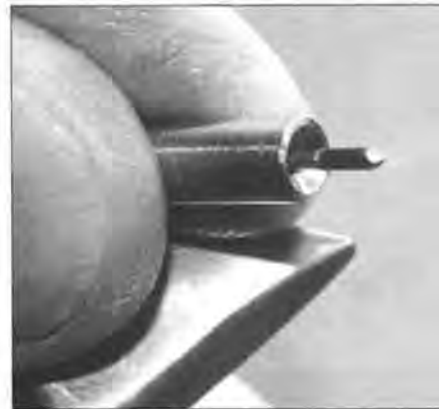


Figure 12. The bell and drill of "The Magic Center Finder"

end as "a watchmaker's screwdriver," then form the cutting edge with a hand-held stone slip. In use, clean chips often, as it has no flutes for chips to escape. Figure 7 shows a spade drill in use.

The "crown jewel" of the clockmakers lathe work is "Old Huck's Magic Center Finder." This tool can spot a perfect center in the end of a piece of lathe work in five seconds. This is not commercially available; you must make your own. It must be sized to your "hand size" and is a nice exercise for students of lathe work. Two items are critical. The drill point must be in perfect center of the cup; and cup hole-to-drill clearance must be essentially zero. In years past, I've written articles on construction in this publication. Raw materials are spring steel wire, and a cup cut from brass rod stock.

Conclusion

Every lathe job is easy and a genuine pleasure when worked in a series of simple and logical steps.



INTRODUCTION TO PRECISION TIMING

TEACHER: Antoine Simonin on behalf of 

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NOVEMBER 7-11, 2005

AWCI TRAINING FACILITY - HARRISON, OHIO

PARTICIPANTS - Practicing watchmakers who have a minimum of 3 years full time experience in the after-sales of quality watches and Teachers in a watchmaking school

AIM OF THE COURSE - To gain practice with precision timing and understand its intricacies

NUMBER OF PARTICIPANTS - 12 maximum

COST - \$495.00

PROGRAM THEORY

- the various parts of the regulating unit
- definition of isochronism, their various effects such as:
 - poise of hairspring / balance wheel
 - escapement
 - regulating pins
 - temperature
 - pinning point
 - dynamic poising

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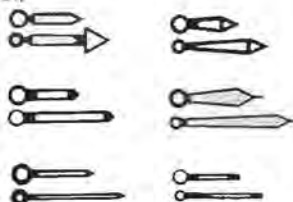


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Vincent E. Schrader
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Certification Central

Passing and Failing, The Origin of Standards

“Passing” and “Failing” are very black and white terms. In my trade we refer to them as “dichotomous”. The “di” prefix fundamentally indicates “two”. The “choto” refers to “contrary”. Thus “dichotomous” becomes an adjective which describes a choice between fundamentally different outcomes.

When teachers examine students for academic progress, if they are indeed teaching for the purpose of diagnosis and identifying instructional needs, they will tend to ignore the idea of dichotomy in order to get a notion of where someone is on a learning spectrum, or domain. (The current buzzword is where they are on the “learning curve.”) Once the teacher knows where a student stands in terms of skills or abilities deemed worthy of learning, then he/she can prescribe a course of learning to take the students from where they are and move them forward on the curve.

The end point of this process is usually measured by some form of instrument or measuring device designed to aid the senses, unless the senses can be directly accessed and trusted. This could be hearing (as in concert performance), seeing (as in painting or sculpting), reading (as in written essays) or even feeling or tasting (as in baking a cake). If the concert is beautiful, well-executed, with few errors, the student passes. If the cake tastes good and looks pleasing to the eye, the student passes.

On to watches and clocks. Establishing a dichotomous point in the repair and service of timepieces is an activity which can generate fist fights among the uncivilized. Of course, since clockmakers and

watchmakers are generally civilized people, the fights don’t usually break out, but the disagreements certainly abound.

In building assessments which have a dichotomous outcome (certification or no certification), I find it difficult sometimes to get content experts to agree on just where to “draw the line.” This issue emerges whenever we assess a candidate’s work for certification purposes. The resolution to the issue is to build a process which is thorough, systematic, and fair for making judgments, and to apply the process to a given project and then TRUST the process. If the process works, the eventual outcomes (the work of the candidates over time) will validate it.

To determine “where to draw the line,” “where to set the bar” or “what the cut-point is” (whatever you want to call it), we find that there are some dichotomous issues which stand clearly and are generally unarguable...they will never be contested by anyone. Here is an example from our CW examiner’s score sheet (this is the REAL thing) and is used to score candidate work. (See Table 1.)

The table delineates a clear set of dichotomies which are applied to an automatic wind timepiece BEFORE it is scored. As the note at the bottom indicates, EACH of the questions in the grid must be “yes” if the watch is to be considered for scoring at all.

Where do these questions come from? One would think they beg the obvious to a ridiculous point, but fundamentally these are the initial “bottom line” questions which a timepiece would encounter in going through

Is Watch Fully Operational?

Is watch run down?

yes

no

[Wind watch exactly ten (10 full) turns of the crown]

Can you wind the watch properly?

yes

no

Are the reversers free?

yes

no

Does watch stop when crown in position III? (fully extended)

yes

no

Can you set the hands?

yes

no

Can you set the date (quick set)

yes

no

Does the date jump?

yes

no

[Shake watch dial/case back axis, listen for rotor]

Can you hear the rotor turn freely without touching case back or bridges?

yes

no

[Test function of auto mechanism]

Is the automatic mechanism functioning properly?

yes

no

**If all answers above are "YES", watch is considered operational for scoring.
If any answer above is "NO", timepiece is considered non-operational and therefore not scorable.**

Table 1

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a “Quality Control” inspection at a major repair facility, and one would ASSUME they are the same conditions a professional private watchmaker would consider before deciding to move on to his/her next repair task. You can actually sum up these questions with just one... does the watch work properly from the outset? If any of these conditions are not met, the watch is a “come-back” or a “fail” or whatever term you want to apply to the negative side of the dichotomy.

When Things Get “Sticky” (no pun intended)

For the bench watchmaker the above conditions can present a potential “moral dilemma”. Theoretically, a watch can exhibit all of the above conditions nicely and at this point, be placed in a client’s hands, payment accepted, and money put in the bank. Only the watchmaker now knows the true story of what goes on inside the timepiece. Only the watchmaker knows if he/she used the proper oils, inserted oils or greases in the proper places in the proper quantity, insured that the escapement was functioning properly, that the watch timed well in all positions.

We all know it is possible for some watches to keep time and defy logic or credibility. I recently serviced a timepiece which has a one-hundred-year life history, with at least 30 repair marks in the back. Here’s a picture of just the pallet bridge. (See Figure 1.)

Aside from the unbelievable number of scratches on this bridge, the key point is the bend which is visible by the light pattern where the upper pallet arbor hole jewel is mounted. Someone actually bent the bridge enough to allow enough endshake for the watch to run.



Figure 1

Ironically, the watch’s primary problems for me were dirt and rust, which I corrected. I bit my tongue before putting it on the timer, but guess what—virtually no beat error and almost perfect rates in all positions. The only thing I can figure is that the watch must have been built by God.

The point, however, is that as egregious as the various “repairs” that have been made on this watch are, they are virtually invisible to the consumer. I made digitized photos (for myself and my client) of all of these problems. I didn’t want this type of work attributed to me. Oh, and I didn’t add a repair “scratch” to the timepiece. If the above isn’t as good as DNA, I don’t know what is.

When Standards Truly Become Meaningful

So what’s the point of the above? It’s a glaring example of how horribly a timepiece can be cobbled and still run acceptably. I have no idea how long this watch will run in future years, but as this was an archival repair, and I followed my client’s instructions to get it “running quickly” as he had to return to China, and as it is a treasured heirloom he WANTED it this way. But I did make certain that he knew what he was getting. Digitized photos of the repair marks, the scratches, the bends, and the gouges were a part of my invoice for repair. I guess if God wants it to stop, I’ll see it again.

The point is that I have become increasingly aware as I work with various industry content experts that there are many, many very subtle errors that can be made in the repair of a modern watch (which is, of course, often cased up like an atomic bunker before being returned to the client), and that these poor practices can STILL remain disguised and not manifest themselves. My old timepiece was made with the expectation, that like a car, it would have its points and plugs changed every 5,000 miles. Today’s cars use plugs that last 100,000 miles. And today’s watches will run a long, long time, if properly serviced and cared for. But improper repair can cause a timepiece to quit on a client in less than 2 to 3 years. Some manufacturers even guarantee this time period, fully expecting their products to run well for 5 to 10 years. At the end of that time however, improper lubrication or service can result in the wear of a timepiece component that is prohibitively expensive to repair or replace, and this can happen in a matter of months.

It is this knowledge and skill which is included as a part of the demonstration of candidate ability in our modern testing. It’s why we use the term 21st Century.

And once we get past the dichotomous information, we then begin to look at what only we can see as professionals.

We assign weights to the various components involved in a complete modern watch servicing, and apply a seven point scaling to each category.

There are many rules that govern what our assessors do; e.g., we do inspection for cosmetic flaws under a 10 power loupe. If we have questions or are uncertain, then we can increase the magnification.

Here's a prime example of a cosmetic flaw which could easily be missed by an untrained eye (or even some "trained" ones). It is visible to the naked eye, but jumps out at you under magnification. (See Figure 2.)

Undoubtedly, in his/her haste to case up this examination watch, this flaw missed being seen by the assessment candidate. The problem, of course, is that this is a "comeback" flaw on a high end timepiece. Is it enough to fail the watch, however, if everything else is "perfect"? This is where the going gets very rough in the

assessment process. As our tests are structured this defect would carry a heavy weight against the candidate, but might not fail the watch IF everything else is perfect. But as we have learned through many trials, generally, errors such as this have "company." In other words, if something like this gets missed, there's a pretty good chance that there will be other errors which correlate with it. In the end, the sum will weigh against the candidate.



Figure 2

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We have other examples of cosmetic flaws which are barely acceptable, acceptable, and unacceptable, in graphic form, which we hope to publish soon on our website.

I have learned by watching the expert examiners, quality control specialists, and gifted horologists who are our content experts, to begin "seeing through their eyes." It is clear to me that if we are to meet the standards we have set for our organization and quality we ostensibly represent, that we ALL have to start seeing this way.

Our content experts have laid out the entire scoring scheme for all to see. If you choose to become certified in our new format, you will see the very score sheet and the weightings for each category of scoring concern. You will know in advance what you must do to meet the standards.

It is my belief that our examinations are not difficult. They do demand discipline, cleanliness, basic knowledge and understanding, and reasonable (not superhuman) skills. But we all have to start seeing through different eyes.

A last word about "failing." I've never really liked the word personally, because of how people misuse it. If I can't do something, it doesn't mean that I'm a failure, it simply means that for one reason or another, I didn't do it. It may simply be a matter of practice and experience. It may be a matter of getting better training (such as through an AWCI bench course or WOSTEP). It may also mean I don't want to do it, or that I don't think it's important.

But convince me that it's important, train me, give me time and experience, and the chances are vastly improved that my "failure" will turn to success. In fact, the most eloquent argument for failure is that it is truly the only way for us to learn. It's what gives us understanding of ourselves, our talents, and the direction we must go.

See you next month.



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Laurie Penman

Center Distance Instrument

Part 2

The bed of the instrument is made and its section is constant to within less than one-thousandth of an inch along its working length. This point is important, because if it was tapered, the carriage (see Figure 12 for the names of the parts) will not slide smoothly. However, this is the only part that needs to be made to any great accuracy and, as we saw in the first part of this article, it is simply a matter of taking care.

Making the Carriage

The 'carriage' is the name I have given to the brass cylinder that contains the brake shoe and carries the sliding point and the locking system. It has a hole of the same nominal size as the original diameter of the bed (0.5"); although it may be drilled out with a twist drill of this size it is wiser to drill with a slightly smaller drill first (Figure 13) and then either bore out (Figure 14), or drill with a 0.5" drill that is ground properly and which has had the corners polished with an Arkansas stone. The stone has the

effect of reducing the efficiency of cutting at the widest part of the drill, but the facet produced by polishing is tiny and the result is a slightly burnished bore (Figure 14), and one that is almost the same diameter as the drill. (A freshly ground drill will cut slightly over size.) Drilling into an existing hole that is close to the diameter of the twist drill produces a tendency to 'snatch' at the drill, make sure that the drill's shank is firmly gripped in the tailstock quill, and that the locking handle is applying a little pressure so that the quill cannot move as a result of backlash. My carriage is made from brass that is three-quarters of an inch in diameter and one and a half inches long. There is nothing further to be done until the brake shoe is finished.

Making the Brake Shoe

This part has a section similar to the bed, but it is shorter, just over one and a half inches.

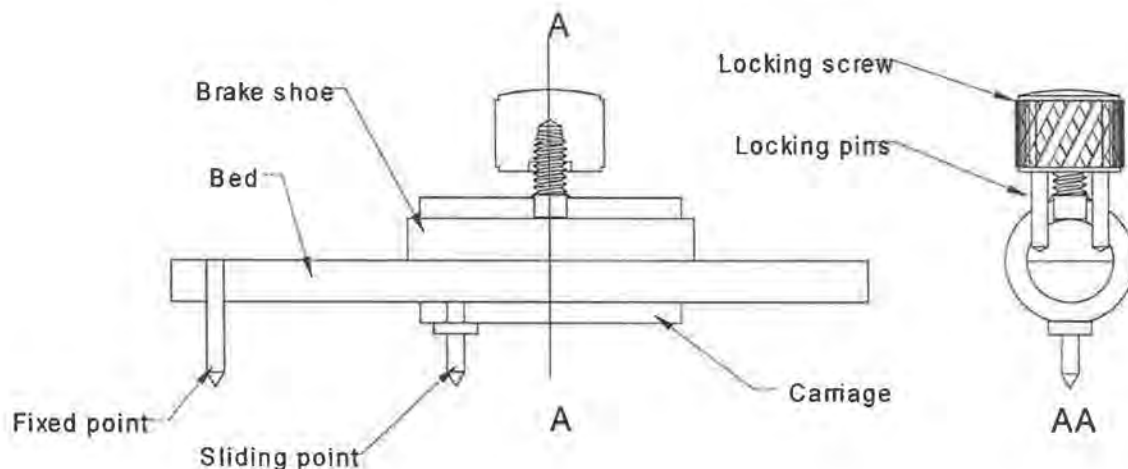


Figure 12

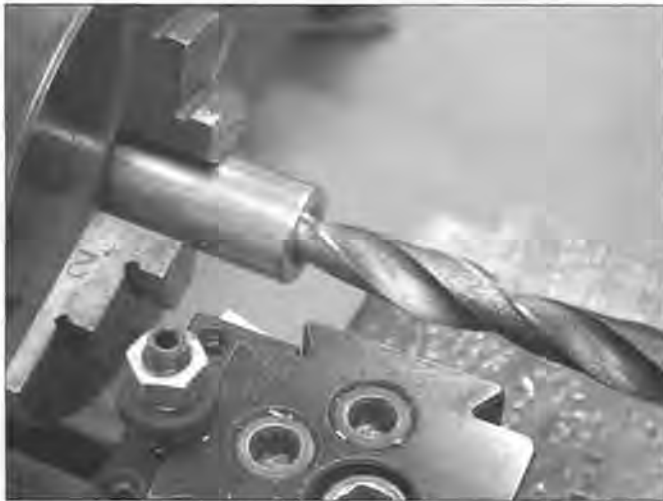


Figure 13

A piece of 0.5" brass rod was first checked to see that it would slide neatly and easily inside the bored out carriage and then placed in the milling machine so that it could be reduced to a half cylinder with an end mill. The intention is to produce a piece that, when combined with the bed, will slide smoothly inside the carriage.



Figure 14

Measurement with a micrometer will obtain this result, of course, but it is much safer to actually test the combination of the newly milled brass and the finished bed, by sliding them both into the carriage (Figure 16) In this photograph the chuck has been rotated through 180° ready for drilling, but the checking was done before rotating, of course.

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Figure 15

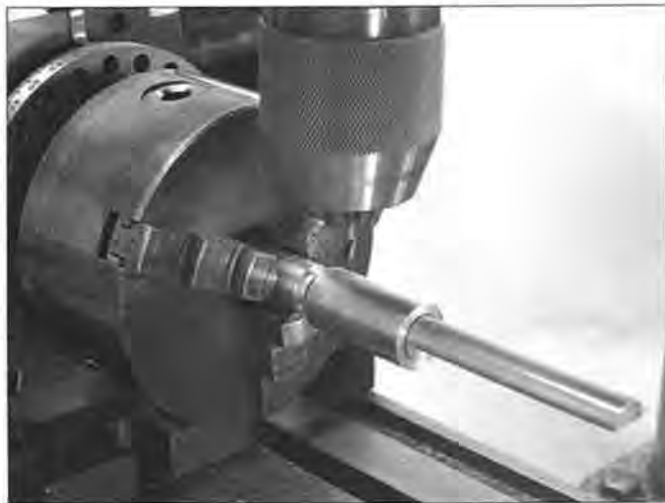


Figure 17

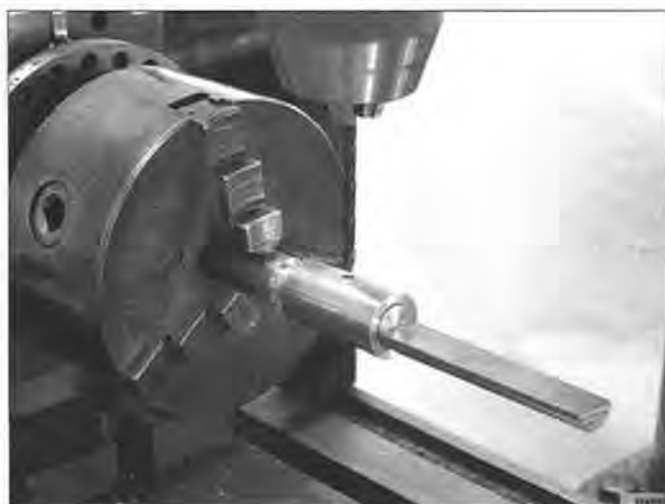


Figure 16



Figure 18

Before the shoe is cut off the bar, it is used to support the carriage so that it can be drilled for the points, which are the locking screw stud and the locking pins. This is what you see in Figure 16, where I am preparing to drill a hole through the carriage and the bed for both points (sliding and fixed). The bed and carriage are assembled on the shoe. To stabilize the assembly, Loctite® 242 (Threadlocker) was painted inside the carriage and ten minutes or so allowed for it to set. Threadlocker is not a high strength adhesive, but sufficient to hold the various parts together whilst drilling.

A center drill is used to ensure that the twist drill locates securely on the curve of the carriage. (This is particularly important later, when the locking pins are drilled; they are offset from the center line and the twist drill would wander away if it had no center hole to

stabilize it.) Although the twist drill is to be taken right through the carriage, it will not pierce the complete depth of the bed because the shoe would then be marked as well.

Not all designs work out directly from the drawings; I later realized that the sliding point (on the carriage) needed to be made with a flange because there was not sufficient thickness to the carriage wall to make a reliable rigid support for the point. The flange cures that problem, but it needs a flat made on the carriage to sit upon. This is why a flat should be milled at the drilling stage, rather than relying on a file as I did.

The chuck is now turned through 180° (Figure 18) and a center drill used for the tapping hole for the locking nut stud, this is followed by drilling the locking pin

holes equally spaced on either side. Refer to Figure 12 again to clarify these details. In Figure 19 another view of this drilling is shown—and, inadvertently, a shot of the spirit level that I used to check that the shoe had been rotated truly through 180°—I am a belt and braces man.

When all the drilling had been completed the brass rod was removed from the chuck and all the parts heated to about 300°F to release destroy bonding of the Loctite® and release the parts. They were cleaned of residual adhesive and the shoe was sawn from the bar and the end filed up to look neat. The end of the shoe and the carriage were marked so that they would not be turned around when next fitted together. The position of the bed to these two is determined by the holes drilled for the two points and does not need to be marked. Now that the pieces have been separated it is possible to run a tap through the hole in the carriage. A smooth file and emery paper was used to remove all fraise from the inside of the carriage and the surfaces of the shoe and the bed.

Making the Locking Assembly

The stud for the locking nut is a simple piece of steel rod screwed for its full length. The actual screw thread



Figure 19

was American Thread 8-32 NC, but anything close to 4mm, or 3/16" would do. It should be about half an inch long and locked into the carriage with Loctite® 609 (high strength), taking care that it does not encroach on the bore.



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Detail of Locking System

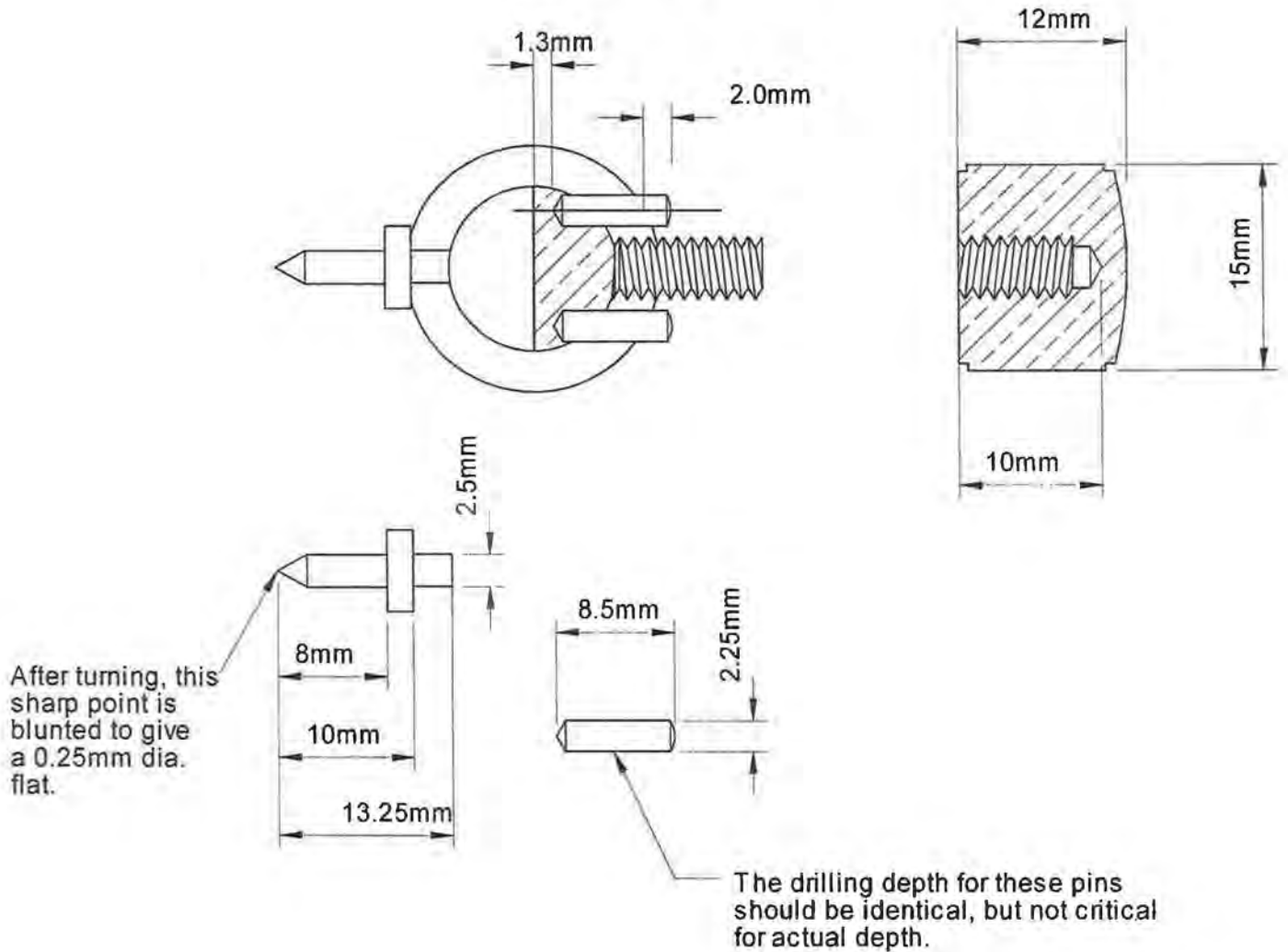


Figure 20

The locking nut is turned from brass and the pins, stud and point from steel. The last is turned from drill rod so that it can be hardened and tempered amber. Notice that the point is blunted to produce a 0.25mm diameter at the end. This should ensure that the 'point' locates on the conical sides of the center dot and does not float about on the rounded point at the bottom of the dot.

Loctite® is used to lock the stud in place (and not protruding into the bore of the carriage) and then the pins and nut are put in position. Finally a smooth file is used on the outer end of one pin, or the other, to make sure that the nut contacts both equally.

Only the fixed point remains to be made, this is a pointed piece of drill rod with no flange, but similar to the sliding point otherwise. It should be long enough so that when forced into the hole in the bed, a line over the top of the two point ends will be parallel to the axis of the bed.

Next month I will detail some modifications to the instrument and give some examples of its use and advantages over more traditional methods.



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12:30 - 1:30 pm	Lunch provided for class attendees
7:30 pm - ?	Welcome Reception & Auction

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9:00 am - 5:00 pm	American 8-Day Open Spring Time & Strike Clock Repair - Part 2 Jeff Hamilton, CMC - Instructor
9:00 am - 5:00 pm	ETA Chronograph 7750 Jim Lubic, CMW - Instructor Factory servicing methods and technical information
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Jack Kurdzionak, CW

From the Workshop

You Are Invited

Do you have a solution to a watch or clock repair problem that you want to share with our membership? Do you have a question about a repair problem you would like to ask? I invite you to participate in this column with your suggestions, questions, and comments. It's easy. Just e-mail me at AWCI<magazine@awci.com> or write using the old standby known as the postal service. You can even fax me at 513-367-1414.

I will do my best to help you help the membership. By sharing your questions and suggestions all of our members can benefit from our combined knowledge and experience. The ideas, tools, techniques and products presented in this column are suggested by the author and contributing members and are not endorsed by any manufacturer, supplier, advertiser or AWCI itself.

Connections, OK to Polish but Not Scrape

Have you ever noticed that the majority of common electrical failures are caused by faulty connections? Loose or dirty connections will not allow a proper flow of current from one conductor to another. Corroded or loose battery terminals in an automobile can prevent the car from starting regardless of the battery's state of charge. For current to flow from one conductor to another, the connection must be secure, clean and made from a highly conductive material. The same goes for watch cells. The electricity stored in the cell is made available to the watch movement at the positive and negative terminals on the cell. The task of the connectors is to get that electricity

into the circuit board of the watch as efficiently as possible. If the cell were hard wired to the circuit, it would guarantee a good efficient connection that would seldom fail, but that is not realistic because the cells must be changed every two years or so. The engineers have designed the connections to be spring-loaded steel contacts that make a secure connection from the cell to the circuit by exerting pressure against the cell's terminals. Unfortunately, steel corrodes in the presence of oxygen to form a non-conductive oxide between the cell terminal and the connector. A watch with plain steel connectors would not run very long before it would be stopped by a lack of electrical power.

The remedy is to plate the steel connectors with a layer of gold, so thin that it must be measured in microns (1 micron=1/1,000,000 of a meter). Gold isolates the steel in the connectors from the oxygen in the air, thus preventing them from corroding. Gold plated connectors provide protection for the steel, do not corrode, and make an excellent connection between the cell terminal and the circuit. Given proper care, gold plated connectors will perform very well. Proper care includes the following:

1. Make certain that the connectors are cleaned and polished (no abrasives) every time the cell is exchanged. Lightly soiled connectors can be cleaned with a leather buff or clean pegwood. Clean connections will again perform as new. Connections with damaged gold plating should be discarded and replaced with new ones. Once the gold plating (remember it is very thin) has been scraped and removed by an abrasive material, the steel beneath the gold will now be

exposed to air and begin to corrode immediately. Scraping a gold plated terminal will do nothing but hasten the failure of the watch because the current will not pass across corroded steel.

2. Use care when handling a replacement cell. Do not touch the cell with the fingers; use clean, nonconductive tweezers when putting the cell in place. The oil and chemicals on fingers will be deposited on the cell wherever it is touched. The small amount of current (a couple of microamperes at 1.57 volts) produced by the cell will not cross even the thin film of a fingerprint deposited on a connection.

3. Use a clean leather buff stick to press the cell into place in the watch movement. All too often watchmakers view a large thumbprint left on a cell and watch movement by the last person attempting to install a cell. Remember, the current cannot pass through a thumbprint any more easily than a fingerprint.

4. If the cell is secured in place by a cell strap across its upper terminal, use the same clean techniques when fitting the cell strap and locking it in place.

Watchmakers and technicians who pay attention to these small details when fitting replacement cells will have the satisfaction of doing the job well and having a satisfied client who will appreciate that well done job.

Jack Kurdzionak

ETA 7750 Chronographs and a Few Tips to Assure It Runs Well

The ETA 7750 chronograph seems to be everywhere. This mechanical chronograph movement has become the first choice for watch manufacturers who need a reliable chronograph that can be made in several variations to suit the tastes of their customers. Watchmakers regularly servicing this movement have found that spare parts are readily available and ETA makes its technical guides available, in multiple languages, to anyone who wishes to download them from the ETA website. Recognizing the popularity of this movement, we will discuss proper repair techniques.

The ETA 7750 is a day and date, automatic chronograph, controlled by a cam rather than a pillar wheel.



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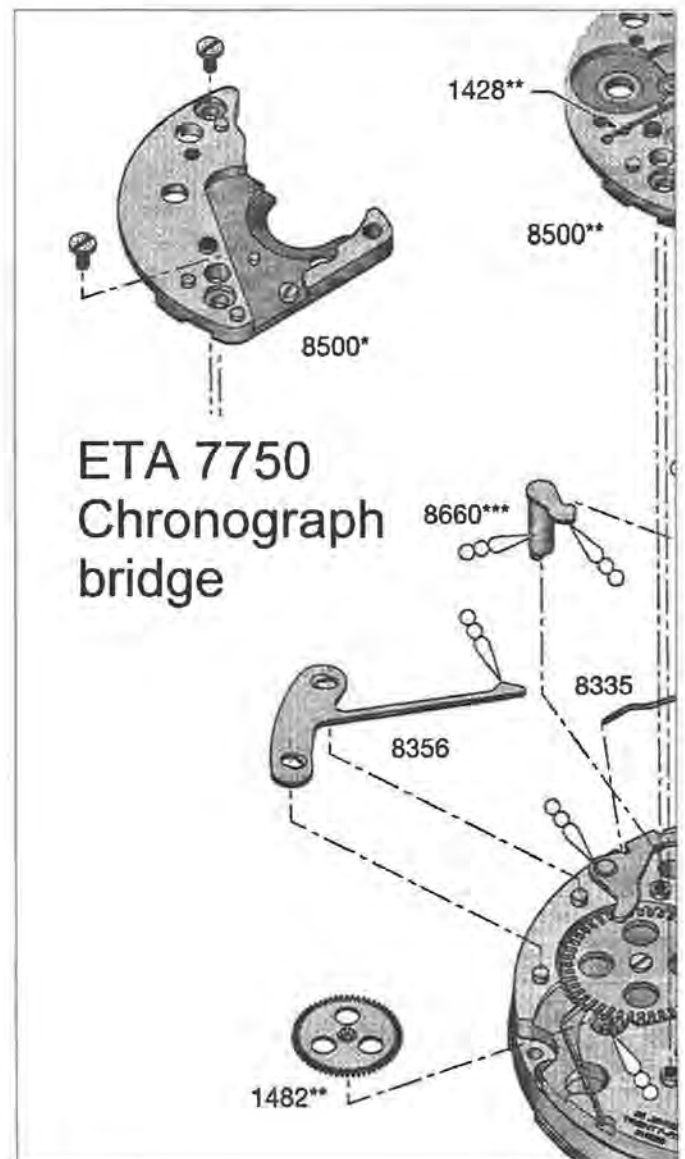
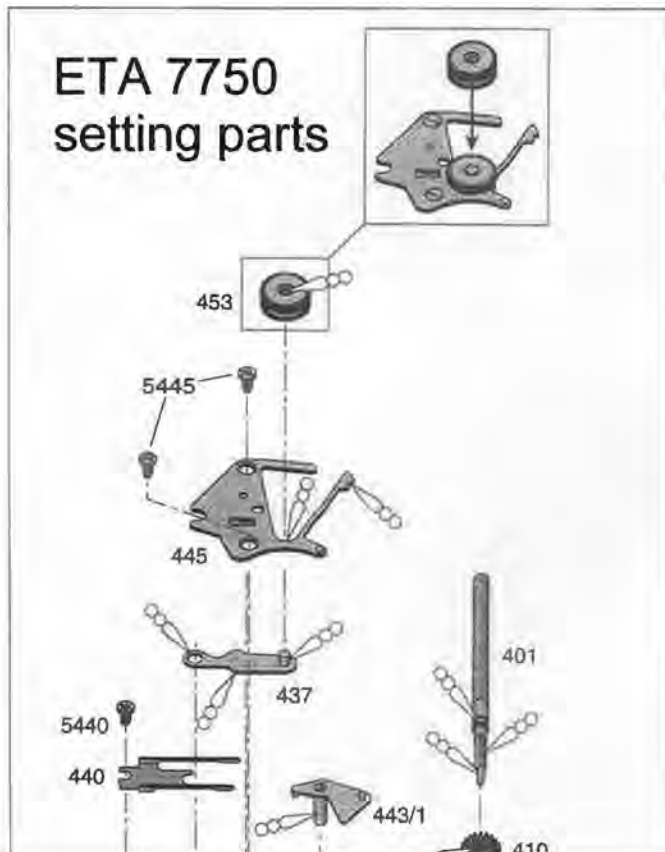
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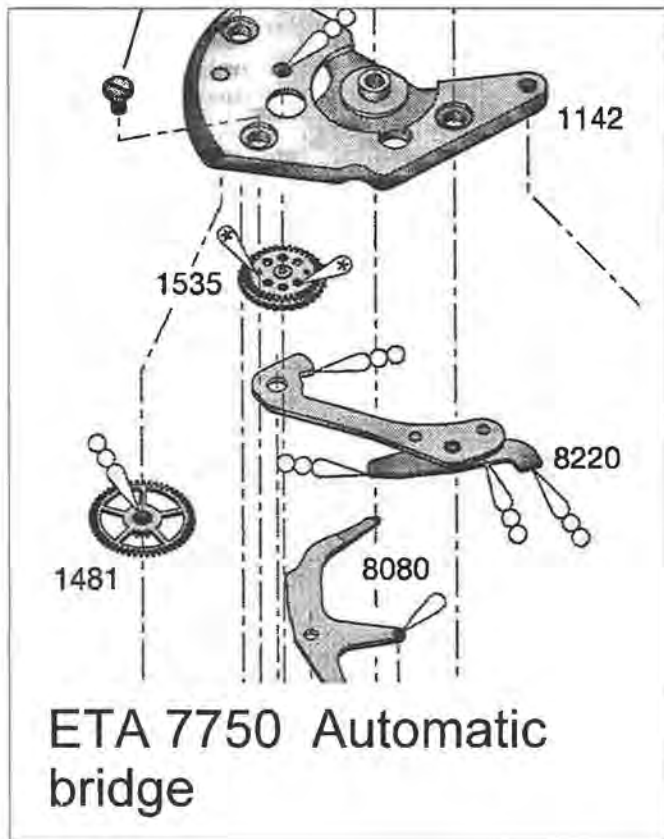
Adjustments to the chronograph mechanism are few and relatively simple. With some practice, experienced watchmakers should encounter no problems servicing this movement. However, there are several non-conventional servicing techniques that, if followed, will save a lot of time when servicing this movement.

The movement can be taken apart with the usual care and attention to detail given by the experienced watchmaker. The going train does have an unusual driver cannon pinion (part 240), tightly fitted to the elongated pivot of the great wheel (part 201/1) on the dial side of the main plate. The cannon pinion cannot be removed with tweezers or an old style cannon pinion remover. The best way to remove the cannon pinion is to use a Presto wheel puller (Bergeon ref. 30638/3) designed to lift the driving wheel from third wheel arbors. The three small jaws of the puller reach right under the cannon pinion while the three pushing legs of the puller straddle the cannon pinion. A gentle squeeze on the tool provides the necessary force to lift the cannon pinion away from its arbor with no damage at all to the plate or cannon pinion. After cleaning the movement, the cannon pinion must be lubricated with Moebius D-5 as shown in the technical guide. The cannon pinion is easily pushed back onto its arbor with a Seitz jewellery tool that will support the upper jewel of the great wheel arbor and limit how far down the cannon


pinion is pushed onto its arbor.

Fingers attached to the driving wheels advance the ETA 7750 day and date discs. The fingers engage both discs for several hours around midnight; hence the calendar cannot be quick set during this period. If the intermediate setting wheel (part #453 as shown in the tech sheet drawing) is not properly lubricated after cleaning, the discs and fingers can be damaged if any attempt is made to quick set the watch near midnight. This double wheel acts like a cannon pinion for the quick set mechanism. When lubricated with D-5 it offers enough friction to allow quick setting when the fingers are not engaged with the discs. When the fingers are engaged, the intermediate set wheel slips before damage can be done to the day date mechanism. Note that the post on the rocking bar (part #437) is lubed with D-5 in addition to lubing the internal parts of the intermediate set wheel.





Reassembling the going train of the movement is straightforward. Most lubricating errors occur in the two layers of the combined automatic and chronograph bridges that are positioned above the conventional upper plate. The lower pivot of the ratchet wheel driving wheel (part #1482 as shown in the drawing of the chronograph bridge) must be lubed before the wheel is put into place and covered by the chronograph bridge (part #8500). Then the upper pivot is lubed and the lower pivot of the reversing wheel (part #1488) is lubed. Next, the post for the reduction wheel (part #1481 as shown in the drawing of the automatic bridge) is also lubed at this time. D-5 is specified to lube all of these parts. If these parts are fully assembled and not lubed in this order they cannot be lubed at all because they will not be accessible after assembly.

Jack Kurdzionak


AWCI CLOCK REPAIR EVENING CLASSES

American Watchmakers-Clockmakers Institute is offering weekly evening classes (10 consecutive Wednesdays) in clock repair. These will be basic instructional classes, loosely structured to adapt to the needs of the students. Clock classes will take place on Wednesday evenings from 6:00 PM to 9:00 PM at the training facilities at AWCI in Harrison, Ohio.

Instructor:	Laurie Penman, Clock Repair
Schedule:	Fall Session October 12, 2005 - December 14, 2005
Location:	AWCI Training Facility 701 Enterprise Drive, Harrison, OH 45030
Cost:	\$400 per 10-week session Registrants must be AWCI members (\$83 yearly membership) Tool and material costs are extra

For more information or to register for a class, contact Nancy Wellmann, Education Coordinator
 1-866-367-2924, ext. 303 or e-mail: nwellmann@awci.com

BULLETIN BOARD

NEW REQUEST

Omega Constellation Tools '95 Instruction Sheet
John Bouwman, Burlington, Ontario, Canada, is looking for a one page instruction sheet that would have originally been on the inside of the lid of a box of tools called "Omega Constellation Tools '95". These are crystal and bezel press tools.

ITEMS STILL NEEDED

Gilbert Mantel Clock Movement
Tim Bale, Ironwood, MI, is looking for a Gilbert Mantel Clock movement with the hammer coming out of the top; 51 mm between arbors and center shaft; 81 mm between winding arbors.

Pocket Watch Crowns

Robert Mohr, Manhattan, KS, is looking for a source for pocket watch crowns for 18 size pocket watches (9.75 mm opening, 10.50 mm diameter), any tap or color.

Levin's Pivot Polisher & Straightener

George Davis, Richland, WA, is looking for a copy of the parts list and user manual for Levin's pivot polisher & straightener Cat.# P500.

Swartchild Friction Jewel Assortment #49004JF

David Pierce, Gambier, OH, is seeking a copy of a chart for the Swartchild friction jewel assortment #49004JF.

Do you have information regarding this month's requests? Do you need information about one of this month's responses? If so, send your information or requests to:

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Gene Bertram, CC

Affiliate Chapter Report

Many people know how many Presidents have led the United States. If you call AWCI and ask how many presidents have led this organization, they could always count the photos on the conference room wall. If you ask how many Affiliate Chapter Chairs there have been, I doubt anyone could tell you. If they ever have a wall of photos for us, they'll probably forget about me, since I held the position for less than 36 hours.

Long story short, when Jerry Jeager announced his intention to resign from the Board, I had the option of resigning as Affiliate Chapter Chair and finishing out the remainder of his term. The majority of Chapter reps felt this course of action was best for the chapters, so that's what I did. Jerry Kincaid took my place as Chair, and Wes Grau was elected Vice Chair. I hope you'll support both of them and vote for me to stay on the Board in the next election.

I started attending Board meetings about 15 years ago. At first, it was because I wanted to know more about this organization and how it could help me become better at what I do. Then, as I got to know the people and volunteered/got drafted onto committees, it became a way of giving back. All through it, though, it's the people who kept me coming back.

Jerry Jeager and I have talked Atmos clocks many times and he's given me grief over not charging enough. He also convinced me to buy a Rollimat pivot polisher, and it was one of the best tool purchases I've made. Jim

Lubic and I have had many talks about the organization and the profession. I saw the color drain from Fred Burckhardt's face when I told him I had relatives with the same last name and heard his deep sigh of relief upon discovering the spelling was different. He'll always be "Cuzin Fred" to me, though. I've also had countless talks with many different people about life, work, techniques, and business. I even compared house call tool bags once, and how could I ever forget the look on Manuel Yazizjian's face when he first tasted biscuits and gravy. Board meetings can be a lot of work, but they're a lot of fun also. I encourage everyone to consider attending, especially if they are held near your part of the country.

Let Jerry Kincaid know what your Chapter is up to on a regular basis. His e-mail address is jkincaid@awci.com, and the office can probably get you his phone number. The more he knows about your activities and concerns, the better job he can do representing you. Also, writing a monthly column can be daunting, but if you let him know what's going on in your neck of the woods, it gives him material and you free advertising, not to mention a better chance of getting more local members, which gets you more resources to draw from and gives you more money to work with. Also, please encourage all your members to join AWCI. Support the organization that's working hard to make your profession more respected so you can earn more.





New Members

Alabama

Skinner, James N.—Heflin, AL*

California

Godfrey, Nile—Pleasanton, CA
Montgomery, Charles—Huntington Beach, CA
Schofield, Miles—Tarzana, CA

Connecticut

Mazeau, Steve—Westbrook, CT

Florida

Bacallao, Lazaro T.—Naples, FL
Duran, Kevin—West Palm Beach, FL
Medina, Lazaro—Miami, FL
Perez, Ignacio—Miami, FL
Reynaud, Roy—Tampa, FL

Georgia

Bishop, Kyle R.—Helena, GA

Illinois

Ross, Theron—Belleville, IL

Maine

Therault, Peter—Camden, ME

Minnesota

Allen-Davis, Jim—Cottage Grove, MN
DeRosier, Jim—Saint Paul, MN*

Mississippi

Lyons, John J.—Jackson, MS

New York

Johny, Benson—Elmont, NY
Weissbrot, Gary—Ithaca, NY
Wilman, John—Hopewell Junction, NY*

North Carolina

Eyre, Van—Waxhaw, NC

Oregon

Hall, James E.—Grants Pass, OR*

Pennsylvania

Adams, Joshua W.—Manheim, PA
Berstecher, David—Ephrata, PA
Byler, Aaron J.—New Wilmington, PA
Marinak, Joseph F.—Bellwood, PA
Mazur, Roman—Easton, PA
Schubach, Brian J.—Lititz, PA
Schwartz, Robert J.—Herndon, PA
Strohecker, Gerald—Harrisburg, PA

Texas

Camacho-Hodges, Elvira—El Paso, TX

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***AWCI welcomes back these individuals who have chosen to re-instate their membership.**



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Decker, Richard A. — San Jose, CA
Foreman, J.M. — Cambria, CA
Garbe, Bruce R. — South Pasadena, CA
Holub, William C. — Bellflower, CA
Kann, Lee Ambrose — Anaheim, CA
Kelton, Burl — Van Nuys, CA

COLORADO

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Hagans, Josephine — Denver, CO
Page, Mancel E. — Grand Junction, CO

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Wilsey, Robert L. — Lake City, FL

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Heyerman, Harold A. — Peotone, IL
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Kabumoto, Jack — Chicago, IL

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Sharples, Franklin A. — Chinook, MT

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 Rondinone, David — Kernersville, NC

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 Montgomery, Jacob E. — Union, OH
 Riggs, James J. — Bryan, OH
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 West, John E. — Norwood, OH

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 Long, John R. — Chambersburg, PA
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 Jones, Richard W. — Fancy Gap, VA
 Lanum, Lewis S. — Danville, VA
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 Reha, William — Virginia Beach, VA
 Soukup, Charles F. — Richmond, VA
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 Schain, Norman A. — Seattle, WA
 VanVleet, Donald G. — Tacoma, WA

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 Nett, Don — Appleton, WI
 Nummi, Harry R. — Superior, WI
 Pederson, Greg — Eau Claire, WI
 Sheppard, Eugene — Janesville, WI
 Smiles, Allan J. — Ashland, WI
 Smith, Joseph M. — Racine, WI

WEST VIRGINIA

Hughes, Stephen T. — Spencer, WV

WYOMING

Blakely, Mabel G. — Lander, WY
 Pyle, Robert D. — Cody, WY

CANADA

Riley, David C. — Kingston, ON
 Zoller, Horst R. — Saskatoon, SK

INTERNATIONAL

Switzer, Charles Wm. — Victoria,
 Australia
 Richardson, S. H. — Waiuku, New Zealand
 Mora, Rodolfo — Panama 5, Panama
 Drader, Frank — E. Sussex, United Kingdom

Continued next month

Industry News

Ruben Company Sells Watch Material Inventory to Cas-Ker

The Ruben Company of Dallas, Texas, a distributor of tools, supplies, and equipment for jewelers, has sold its watch material inventory and movements to the Cas-Ker Company of Cincinnati, Ohio. Ruben will continue to serve its customer base with a full line of supplies, but will no longer service the watch material market.

Cas-Ker acquired the inventory to bolster its already broad range of both everyday and hard-to-find watch parts. They have made several strategic purchases of material houses for inventory over the last few years.

For more information, call Ruben Montemayor of Ruben at 800-888-5639 or Rick Foster of Cas-Ker at 800-487-0408.

It's All Here in January 2006 in Hong Kong

Hong Kong January International Jewelry & Watch Show ("January Show"), organized by WTF in Hong Kong, will be held from January 17 to 20, 2006 at AsiaWorld-Expo, Asia's newest exhibition facility located next to the Hong Kong International Airport.

Announcing the launch of the fair, B.K. Chow, show director of World Trade Fair, said the January Show targets the best buying season as wholesalers and retailers need to replenish their stocks after Christmas and the New Year holiday season and to source new, exciting products for the coming spring and summer.

The January Show has a strict admission policy. This is a 100 percent professional trade show, produced only for the fine jewelry, pearl, gemstone, and watch industry, and the press. It is absolutely closed to the public. "In fact, January has long been a prime time for international jewelry and watch fairs, from Vicenza, and Bijorhca in Europe, Tucson and JA in the U.S. to IJT in Japan. Their continual success proves that the month is the ideal sourcing time for the industries," Mr. Chow said.

For inquiries, please contact: Mr. B.K. Chow, World Trade Fair Limited; Phone: (852) 6838-2688; E-mail: pr@januaryshow.com, Website: www.JanuaryShow.com

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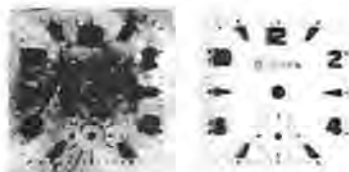
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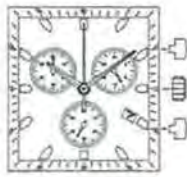
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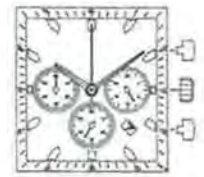
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Batteries that are counterfeit, or otherwise not factory authorized, have become an epidemic. They perform poorly. They lack reliability. And they ruin the trust between buyers and sellers. That's why Maxell has developed new holographic battery packaging that guarantees authenticity. Extremely difficult to copy, this new packaging ensures the peak performance and reliability you can expect from genuine Maxell batteries. Accept no substitute.

Recordable Media Data Storage Portable Energy Technological Partnerships

