

## ***Northwest Woodworkers Association***

# ***THE SAWDUST NEWS***



June 2016

<http://www.nwwoodworkers.org>

An association for woodworkers of all skill levels to share their common interest

### ***The Next Meeting***

**Date:** **Thursday, September 29, 2016** at 6:30 PM

**Location:** **Rockler Woodworking-Northgate**

832 NE Northgate Way

Seattle, WA 98125

**Program Highlight:** **Furniture Repair and Refinishing**

Mark Martinez, who will be facilitating this meeting, noted that the program content and provisions for a potential guest speaker are being arranged. Further meeting details will be furnished in a group email prior to the next meeting.

### ***June 2016 Meeting Highlights***

***Newsletter Photos by Scott Wilson***

The **June 2016** meeting of the **Northwest Woodworkers Association** was held on **Thursday, June 30, 2016** at **Woodcraft Supply**. Eighteen members were present, including new member **Chris Morgan**. Welcome **Chris**!

We want to express our appreciation to **Ron and Michelle Hall** and the **Woodcraft** staff for providing a wonderful venue for this meeting. We really appreciate your long standing support of the **Association**.

### ***Upcoming Events***

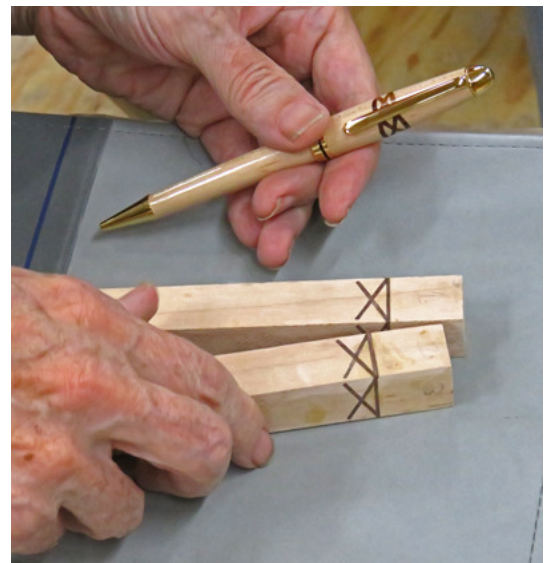
**Reminder** – **There will be no meetings in the months of July and August.** We will resume meetings on **September 29, 2016** at **Rockler-Northgate**.

## Show 'N' Tell



In last month's meeting, member **Alex Smithing**, inquired of the group any advice for making a **Celtic Knot**, which he wanted to apply to a turning he was making. Since none of the members had done such a task, we suggested that he search the internet for **YouTube** videos or the **Instructables** website.

To our delight, he brought along a beautifully turned pen, made from **Maple** with a nicely proportioned **Celtic Knot** made from **Mahogany** inserts. **Alex** also displayed some of the blanks used to produce the **Celtic Knot**, noting that he had made the kerfs for the inserts on his band saw, using a positioning jig to orient the blanks at a 30° angle, as shown in the photo.



He also showed us some photos of a pizza cutter handle he had turned with an included **Celtic Knot**. **Alex** noted that for this project, he cut the kerfs for the inserts with his table saw, providing a slightly wider kerf. Great projects, **Alex**! Thanks for sharing this technique with us.

[**Ed. Note:** I'm glad **Alex** brought along these projects. Not being a turner, I just can't get my visualization brain cells to work well enough to envision how the planar inserts turn into curved surfaces!! Maybe time to retire.....??]



**Tom Walko** showed us some of his recent model boat projects. He explained that he enjoys exploring flea markets, yard sales, etc. looking for toy or model boats that he can refurbish. He noted that on occasion he has been able to acquire a wide variety of vessels, some of which are of much higher value than the seller is aware of, making for some very satisfying bargains.....:-)!!

**Tom** brought along three of his current boat models, two of which were refurbished toys or models, requiring some disassembly, repair, and repainting. He said he also adds the “smoke” to the stacks, to enhance the appearance of motion. The larger model has very unique striated decking, which he said is a purchased product that would be very difficult to replicate with shop equipment, due to the closely spaced lines. To enhance his models, he also fabricates custom bases, designed to complement the vessel being displayed. Note the “waves” on the base of the largest boat!



**Tom** noted that the finely crafted rowboat was made of knotty **Koa**, which he said he had never worked with before. He said that he was much surprised to find the **Koa** material was extremely hard, noting that he could hardly make an impact on the surface when sanding with 100 grit sandpaper! He did note that the **Koa** milled nicely and was very pleasant to work with, however.

## **Program Highlight -** **Design and Fabrication of Wooden Locks**



**Herb Stoops** treated us to an informative and entertaining presentation related to the design and fabrication of working wooden locks. He said that he had long been interested in locks and their mechanisms and had been building some of them in his shop for the last couple of years. He also noted that his wooden locks were great conversation pieces and made very welcome gifts to friends and family.



**A Wall Mounted Display of Herb's Partial Lock Collection**

During his early investigations into wooden locks, **Herb** was able to obtain an interesting and educational book on the subject. This well illustrated book, “**Making Working Wooden Locks**”, by Tim Detweiler, contains a number of different lock designs, some of which have detailed information about their internal locking mechanisms. This book is available from **Amazon.com** and other sources.

**Herb** noted that an internet search related to antique and medieval locks produced hundreds of lock configurations! He said that his printed internet photos of many of the designs provided valuable starting points for his wooden replicas, and occasionally some information about the internal locking mechanisms.

He noted that replicating metal locks with wood presents an interesting variety of challenges due to the unique, variable, characteristics of wood, including grain pattern and direction, strength, dimensional changes due to temperature and humidity, and flexibility for internal parts like flat leaf springs.

### **Shackle Fabrication Experiments**

Some of the lock configurations he selected utilized captive or removable **U-** or **J-shaped** shackles, providing some unique fabrication challenges. Initially, he tried making the shackles from solid stock, such as **Ash** or **Oak**. However, he discovered that although these wood species were suitable for fabrication, they were susceptible to breakage across the curved end of the shackle where the grain pattern changed from side grain to end grain.

So he developed some interesting alternative configurations to eliminate the end grain breakage problem. First, he built a forming/clamping jig into which he installed multiple strips of hardwood veneer, with the grain aligned along the length of the shackle. Glue was applied to the veneer strips prior to installation in the jig and the layup was clamped both transversely and longitudinally to form the shape and compact the layers of veneer.



**Shackle Forming/Clamping Jig**



**Glued Up Veneer Shackle Blank**



**End View of Veneer Glueup**

After drying, the veneer shackle blank was milled with a roundover bit in his router table in four passes to form a quarter round radius on each internal and external corner, ultimately producing the desired circular cross section.

Although this fabrication method did produce acceptable results, and certainly an eye appealing striated veneer layer pattern, it proved to be somewhat difficult, unpredictable, and very labor intensive – made for some sticky hands, too..... 😊!



He also tried making veneer “planks”, formed of multiple layers of hardwood veneer, with adjacent layers having the grain direction rotated 90° -- essentially forming a sort of “veneer plywood”. After the veneer stack up was clamped and the glue dry, the rough shape of the shackle was band sawed and edge routed as above to form the shackle. Although this method was moderately successful, it too was very labor intensive and difficult to replicate with consistent results. It was also very wasteful of the veneer stock.



So he tried a couple of different approaches, utilizing commercial hardwood plywood to provide directional stiffness. For some of the tests, hardwood plywood was sandwiched between two outer layers of solid wood having their grain direction along the length of the shackle. This method produced good results, with the plywood layer providing additional strength and dimensional stability. This method also appeared to have better repeatability and consistency compared to the previous methods.

Having succeeded so well using the plywood layer in the shackle, **Herb** decided to carry the technique one more step and make the **whole shackle** from a single piece of  $\frac{3}{4}$ " (19mm) **Baltic Birch** plywood. This method produced the best results of all of his tests and eliminated the requirement to make any of the glued up laminations, substantially reduced the time and effort required to make the shackles, and produced improved dimensional consistency. In addition, the multiple thin veneer layers used to make the plywood produced a high strength part in all directions with a visually pleasing appearance.

## Lock Mechanisms

Though there were different sizes and configurations, **Herb** noted that there appeared to be two common locking mechanisms used in these antique locks. One of them was a simple sliding bolt mechanism in which the bolt was oriented either transverse or longitudinal within the lock body, depending upon the lock's configuration.

To verify the geometry and functioning of his locks, he built a mockup of each type of locking mechanism. A mockup of one sliding bolt lock mechanism is shown in the adjacent photo.



To ensure that the lock mechanism would fit the space limitations of the lock periphery, **Herb** made a template with a cutout of the lock outline and used it to position the mechanism. This outline is clearly visible as a penciled line on this lock mockup.

Note that the blade of the key, when turned **CW**, would rotate the cam, which in turn would deflect the flat veneer leaf spring, moving the sliding bolt to the right, disengaging it from the notch in the shackle, allowing the lock to open.

A second type of lock mechanism utilized a rotating cam to directly disengage the shackle, as shown in the mockup below.



With this type of mechanism, the blade of the key, when rotated **CW** would move the end of the cam in a **CCW** direction, disengaging the cam from the notch in the end of the shackle. A flat veneer leaf spring is used to apply a force to the outside of the cam to provide and maintain the locking engagement with the shackle.

Again, note the use of a penciled outline of the finished lock periphery, produced with a template cutout, to ensure proper location and functioning of the mechanism within the lock body.

A third type of locking mechanism **Herb** showed was completely different – a combination lock! He noted that this type of lock is very difficult to produce using wood due to the lack of mass, dimensional variations in the lock components, smoothness of the internal sliding surfaces, etc. However, he was able to successfully make some of the wooden combination locks. He warned us that his demonstration locks may or may not function – only giving us a 50% chance that they would open. But, he was successful, much to everyone’s delight! He used the whiteboard to describe the internal combination locking mechanism, noting that the locking function is produced by a series of three disks, each having a hole or notch which must align with the adjacent ones to allow a pin of some sort to engage them to accomplish the unlocking function. One interesting thing he noted was that changing lock combinations does not require any revision of the internal mechanism, but only a revision of the geometry of the disks.



### Lock Configurations

Much to our delight, **Herb** brought out a fascinating array of wooden locks – a collection of more than **20** different configurations! Some of the more conventional designs were easily recognizable shapes, but the gamut ran from conventional to antique to medieval to Egyptian animals to complex Roman designs to musical instruments!! And what a variety of wood species, from **Maple** to **Walnut**, **Mahogany** to **Palmwood**, **Purpleheart** to **Yellowheart**, and brightly painted **Red Valentine** hearts! Wow, what a kaleidoscope of color and design!





**Egyptian Animal Locks**

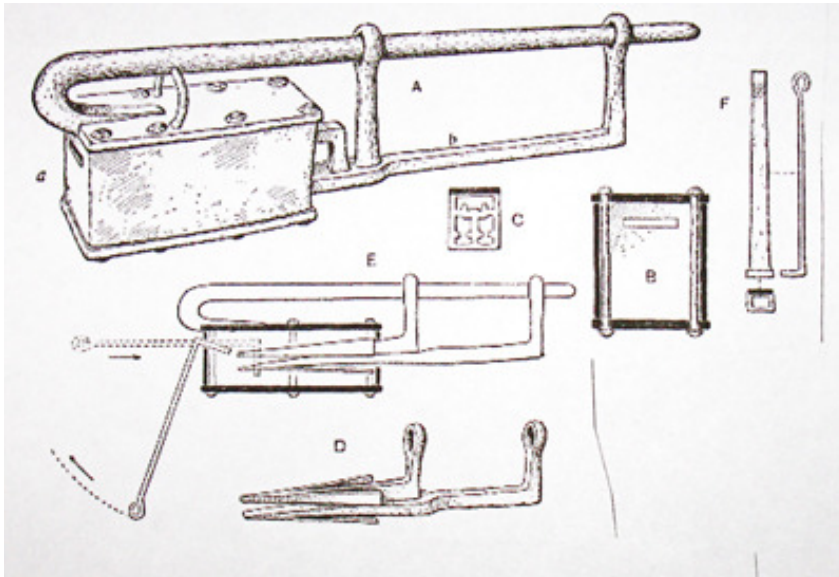


**Violin Lock Collection**



**Member Charlie Culler “Locked In” to Enjoying the Presentation!**

During his investigation, **Herb** was able to find sketches of the internal mechanisms of some of the antique and medieval metal lock designs. When available, these illustrations greatly aided his adaptation of these designs to the wooden replicas.



Note that by inserting the hollow ended key into the lock body and rotating it upward and pushing it forward compresses the leaf springs on the two tapered tangs, allowing the double eyed latching assembly to be withdrawn from the body, unlocking the device.  
[Ed. Note: Is there a harder way to do this?]



**A Complicated Roman Lock Design with Fixed Horizontal Shackle  
(Made of Iron, this must have weighed a ton!)**

Wow, **Herb**, we were overawed by your presentation! That is quite a body of work, of which you should be justifiably proud! It obviously represents a great deal of research and innovative engineering to design and fabricate the internal mechanisms for this wide variety of lock configurations, particularly those for which you had no illustrations of the internal workings. Thanks so much for taking the time to assemble this complex presentation and present it in such an understandable fashion. Great job and a great example of a quality presentation!!



## ***Note from the Editor***



We were glad to see so many folks at this month's meeting to enjoy a really interesting presentation on such a unique subject! Those of you who did not attend the meeting missed a real gem!

Unfortunately, the text and photos in this **Newsletter** somehow seem hardly sufficient to capture the real flavor of the meeting and the smorgasbord of design delights and exceptional information which most of us have probably never been exposed to. Being able to see and handle such a wide variety of distinctively designed and carefully crafted replica working hardware was an experience which I will treasure for a long time!

Perhaps this presentation was a fitting icing on the cake as we suspend our meetings for the Summer holiday season. We hope that each of you has an enjoyable, safe, and refreshing time with friends and family and will rejoin us in **September**.

Keep an eye out for that special piece of wood that may cross your path this Summer – we will be looking forward to seeing it as part of your next project or presentation.

Also, we would encourage each of our members to be on the alert for possible local places to visit that might be interesting to the **Association** members, and possible guest speaker contacts (business cards?) for future meetings. The **Steering Committee** welcomes all input from our members.

Happy and Safe Woodworking,

Paul

## ***Steering Committee Report***

Changes will be coming to the **Steering Committee** in the near future. **Paul Stoops** has submitted his resignation from the **Committee**, to become effective at the end of **December, 2016**. **Paul** feels that, having helped guide the **Association** for several years, it is time to step aside and provide an opportunity for one of our newer members to contribute. To that end, **Paul** is pleased to announce that **Alex Smithing** has become the newest member of the **Steering Committee** and will be his replacement. Congratulations, **Alex**!



The **Steering Committee** welcomes **Alex** to the group and believes that he has a lot to offer the **Association** and will provide some refreshing new ideas and insights. **Alex** is a **3D Artist** as well as a woodworker, and brings some unique skills and interests to the **Association**. His personal website is found here: <http://www.3dinsomniacdesigns.com/>

**Paul** has not yet decided whether to continue as **Newsletter Editor** after **December 2016**. If any of our members are interested in assuming this position, please contact **Paul** for further information. Only basic word processing and elementary photo editing skills are required.

## **Northwest Woodworkers Association Sponsors**

We appreciate the generous support provided by our NWWA sponsors, from providing member discounts on purchased items to providing state of the art venues for us to conduct our monthly meetings. Thank you, Sponsors!

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We encourage our members to contact any of the above individuals with questions, comments, or items that may be of interest to the membership.

In addition, please visit our website and forum: <http://www.nwwoodworkers.org>