

THE forge & plane



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Trades Guild

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A Brief Sketch of a Spring Pole Lathe

By Mick Robins

That a spring pole lathe might have been used at Fort Vancouver is a matter of debate, although certainly the knowledge of pole lathe construction and usefulness was a part of the broader frontier culture of the times. While most traditional tableware had been replaced by metal and ceramic tableware by the early 1800s, the simple bowls and spindles, quickly produced from green wood by the barst of means, could have found utility in the kitchen and dairy of the Fort, as well as in simple ladder-back chair construction.

Other than a chainsaw to fell the trees and rough out the bench, I built my lathe over a period of seven days using only hand tools at the Fort. The lathe consists of a sturdy bench roughly milled from green alder (see Figure 1). Butterfly joints were inserted into each end to check splitting. Into the bench is cut a long slot along the center to hold maple head and tail stocks, both of which are held in place by wedges. For spindle work, freshly rived blank work pieces are supported between the two centering pins



and turning can commence immediately; there is no need to pre-shape the blanks or remove the corners. Sockets are burned into each end of the spindle and oiled in order to keep the rotation smooth and prevent the centering pins from drilling into the work piece.

In the case of a bowl, however, a mandrel is necessary. The mandrel consists of a hickory cylinder into one end which holding pins have been inserted (Figure 2a). A ferrule on both ends strengthens the mandrel. The mandrel is driven into the blank work piece that has first been roughed out with an axe. The assembly is then mounted onto the lathe, and a leather strap is wrapped a couple of times around the mandrel, or in the

See **Lathe** on **Page 2**

The goal of this newsletter is to keep guild members informed on the goings on at the fort, techniques of the historic smiths and carpenters, as well as news about our fellow guild members. Please send me ideas about any of the above that you would like to see in your newsletter.

Craig Webster
Newsletter Editor

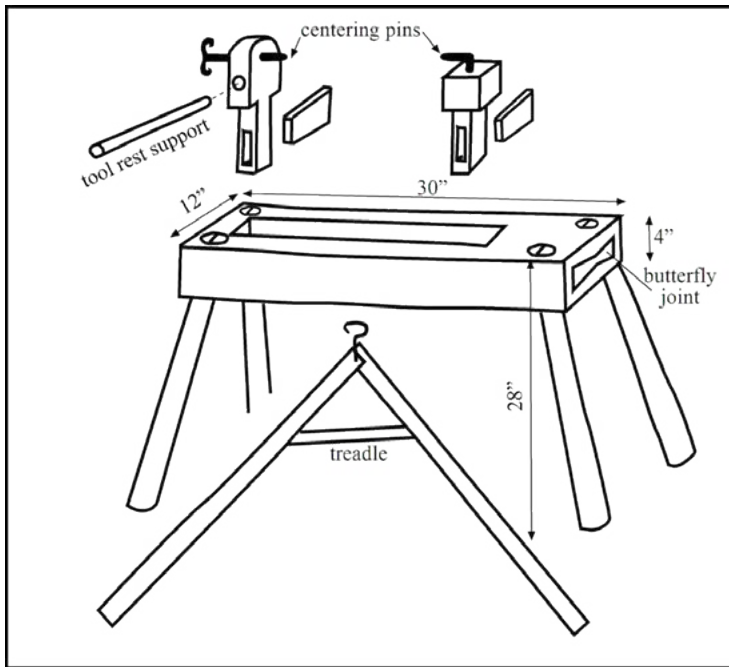


Figure 1. Lathe set up. Measurements are approximate.

case of a spindle directly around the spindle itself. One end of the strap is attached to a foot treadle, and the other to a springy lodgepole pine sapling mounted in the rafters directly above the lathe.

The foot treadle consists of a large triangular frame which gives stability and adjustability to the “power stroke.” When the treadle is pushed down the work piece spins rapidly towards the operator three to four times. Cutting is done only on this stroke. The spring pole simply provides the energy to reverse the spin for the next cutting stroke. With a little practice one can tune into the rhythm of this process exerting surprisingly little effort.

The cutting tools are equally simple. I do most of the bowl work using a hooked knife that has about a 3/8” radius tip (shown in Figure 2b). I use a small radius knife for tight inside cuts (Figure 2b, center), and recently have begun experimenting with steep edged cutters for smoothing and spindle work (Figure 2b, right). The important aspect to these tools is the long handle (ca 30”), which gives stability and control to the tool. My cutting tools are made from potato digger tines and yard-sale-find baseball bats. The latter will provide enough material for one handle and one mandrel. The holding pins are cut from

PRESIDENT'S MESSAGE

We seem to be in a constant state of change in the world and the same is true at Fort Vancouver. Since our last newsletter there have been significant personnel shifts in the Park Service at the Fort. Kimm and Cassie have departed and Robert Gutierrez has joined the staff. Thankfully, Mike Twist remains as our main point of contact at the fort. Greg Shine, Chief Ranger, is more visible these days and has taken a renewed interest in the Carpenter and Blacksmith shop and is providing both encouragement and resources to help the shops operate better. This increased interest by top Park Service personnel is very positive for the Guild.

In my estimation, the Guild is at a crossroads. The Park Service management is eager to have us take on more responsibility in day to day management of the Blacksmith and Carpenter shop. The Guild Board is debating the issue but I believe to be true to our bylaws we should take on more re-

sponsibility and it is up to all of us to help where we can. I think we can use this new opportunity to mature as an organization and build a better foundation for growth in the future.

We continue to provide training several times a year in the Blacksmith shop (see articles about the tong workshop and the annual Williamsburg event in this issue). My goal is to have some type of comparable training in the Carpenter shop within the next year. I have a few ideas but send be any that you think could draw a crowd of people interested in carpentry, joinery, or the wheelwright or cooper’s trade.

Thanks to my son Nathan and his wife Amanda I will be taking a coopering class at the Port Townsend School of Woodworking in late April. I’ll share my experiences in the next newsletter. I encourage every member to continue to develop their skills in the historic trades at Fort Vancouver.

Tom Dwyer

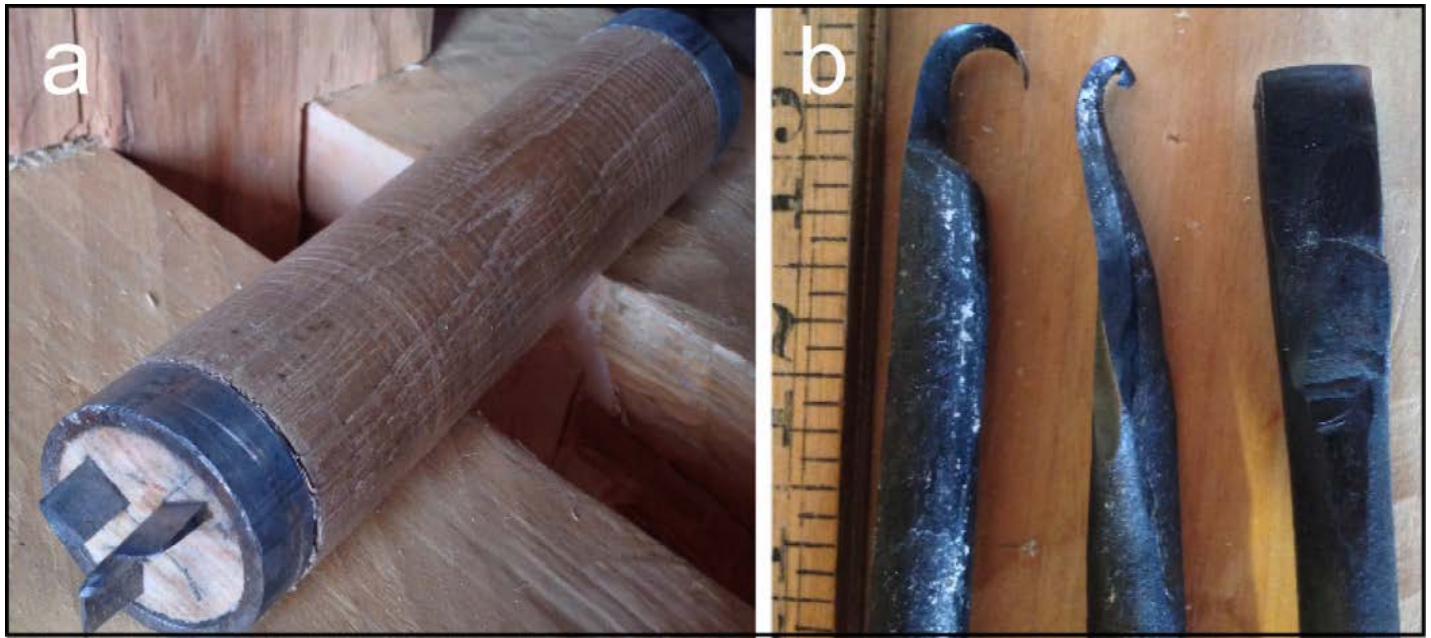


Figure 2. (a) Hickory mandrel showing the holding pins; (b), tips of the cutting tools.

old lawn mower blades. Because spindle work requires reversing the work piece several times I have adapted a 9" C-clamp to serve as an adjustable "quick release" centering pin.

Traditional bowl turners would leave the tool marks on the bowls with no further finishing other than possibly a wax coating. I smooth out the inside of my bowls with a goose-neck cabinet scraper once they are dry, and then dip them in a heated mixture of one part beeswax to three parts organic palm oil. Chair spindles are put back onto the lathe after drying and smoothed by rotating against a file.

With a few minor modifications, the method I describe above I learned from Kiko Denzer at week-long class he taught at the primitive technology gathering Echoes-in-Time.

www.echoes-in-time.com.

Thanks too to Mike Twist for the loan of his copy of Robin Wood's book *The Wooden Bowl*, a look at his collection of Robin Wood's work, and his suggestions as to plausible uses of treen at the Fort. Pat Neal also made some valuable suggestions on cutting tools. Questions and comments are welcome at

mick_robins@yahoo.com.

Hammer Making Workshop Scheduled for the Blacksmith Shop

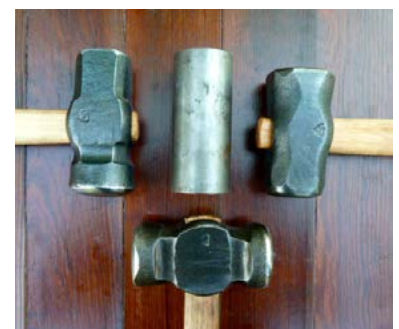
Be sure to mark June 7th and 8th in your Calendar. That is the date for the first Blacksmiths Tool Making Workshop to be held in the Blacksmith's Shop. Rashelle Hams (*See Page 4*) will be leading the way. This workshop will focus on making the Blacksmiths best friend, the hammer. The first hammer to be made will be a small rounding hammer. Time and interest permitting more styles may be completed.

There will be a small amount of 1-1/2" R that can be utilized for stock but assume that you should provide your own stock.



This is a hands on workshop, but if you just want to be a spectator, that is fine as well. Understand that spectators might be asked to strike, but that will not be a requirement.

Come and participate, or just watch some heavy striking. Either way, it will be a fun day.



My Journey in Tool Making

By Rashelle Hams

Last May I had the chance to use the Trade Guild's scholarship fund and went to Mississippi to learn from Brian Brazeal. I scheduled 6 days of classes with him. It was one on one with sometimes his brother Ed or another local area blacksmith watching and commenting. It was nice to get multiple views at times.

When I arrived I called Brian's wife Karen, who picked me up at the Airport. She also did all the meals and laundry while I was there. So for the price of the one on one class it included a place to stay, meals, laundry. Everything so the student could concentrate on learning.

The mornings started at 6:00 am for breakfast and out to the forge to start the coke fire at 7:00 am. Lunch at noon, and dinner at 6:00. After that if you wanted to you could go back out and forge some more. I elected to stop and take notes after dinners, wash up, and go to bed to be up in the am and do it all over again.

First thing we did was I struck while we made my hot cut. Brian used your ability to strike to judge the size of hammer billet to use as we then made my hammer. Mine is within a couple ounces of the one he uses at finished weight without handle



3.676 ounces.

Anyone journeying to study, I advise you to toughen up your hands before going as by my 6th day my blisters had blisters. You set the pace and the class itinerary. I elected to do tools for tools. With some other things added in such as the copper ring and seahorses, etc. Make a list of things you want to learn. I observed Brian tack a drop the tongs weld at a red heat using iron mountain flux. I now have some of my own and use it when I don't want to risk the final product. Though I've forge welded with sand and no flux, as well as borax and several other formulations.

On the tools for tools class we would alternate. I would strike while Brian directed then he would strike while prompting me on directing. I also learned the value of using a large rounding hammer.

It was a great chance to learn and I look forward to one day learning more from him.

I plan to host a hammer making demo in the spring using some of the techniques I learned. Contact me for more information.



THE CARPENTER SHOP BUILDS A RED RIVER CART – PART 1

By Tom Dwyer and Dick Pettigrew

Last summer we were bemoaning the fact that we seemed to have lost a stable cadre of volunteers in the Carpenter's shop. We hit upon the idea of taking on a big project to help reenergize the shop and invite more interest by Park Service staff in that historical shop.

Carpentry was clearly an important historical trade at Fort Vancouver. Unlike the Blacksmith Shop, the Carpenter's Shop suffers from two main problems 1) a much smaller number of volunteers and 2) an inadequate inventory of period correct tools and raw materials to work with. We believe the latter contributes to the former problem.

We sent a proposal to Park Management requesting permission to build a full size Red River Cart in the shop and we also requested a modest budget from the Park to purchase materials and tools. Back in 2007 some Guild members built a small

See Cart on Page 6



Cart Continued from Page 5

scale cart which was on display for a short period of time before some defects in materials used in the wheels caused problems. We felt we could do better than that with renewed support from the Park. And if this effort was successful, it can set the stage for a more complete interpretive program built around projects in the carpenter's shop. The Park Service approved the project and we were on our way.

It is not known for sure whether true Red River carts were used at the fort but clearly this item has much historical connection to the HBC throughout western Canada. Clearly some means of moving materials around the large fort and its environs by carts and wagons was necessary and the interchange of personnel between Fort Vancouver and other interior Canada posts likely meant workers were familiar with this type of cart. Tom Holloway's research shows that both wagons and up to eight, two-wheeled carts were on the Fort inventory in the 1840s.

We used the Parks Canada Lower Fort Gerry set of plans to develop the board footage and material costs for the project. These carts were built entirely of wood. We felt much of the cart could be built from locally available Douglas Fir. Likely carts used at the fort in the 1840s, were also built out of this abundant local wood. However, wheels, the axle and hubs required more appropriate hardwoods so we purchased two ash hub blanks (16 X 9 inches) with Park Service funds.



The finished wheels will be over five feet in height!

After making a small bench to hold hubs, we constructed four hubs out of Doug fir to practice cutting different sized mortises and fitting tenons on a hub. In addition, we acquired material for oak felloes and spokes from a local sawmill through the generosity of Pat Lydon of Dollars Corner Sawmill and Mike York of Denali Furniture. Finally, this same sawmill cut material for the shafts and axle. We feel we can easily find other wood for the remainder of the cart.

Rough cut spokes and felloes have been drying under the Chief Factor's House for several months now and we have occupied our time learning how to taper the hubs, cut mortises and fit practice spokes to hubs. Thank goodness we decided to practice before trying our hand at the real hubs. Neither of us had ever tackled anything related to the wheelwright trade and it has been a real learning experience. We made several mistakes with the practice hubs and spokes but feel we are now ready to tackle the real hubs. Stay tuned for more progress in the next issue of the newsletter and stop by the shop sometime to see our progress.



Tong Workshop Held in Fort Blacksmith Shop

By Ike Bay

The Fort Vancouver Historic Trades Guild hosted a tong making work party on January 23/24. Bruce Crittenden with the Northwest Blacksmith Association was our instructor.

The goal of the workshop was to get blacksmiths started on making a variety of tongs so each forge will have the same basic set. Sixteen volunteer smiths turned out Thursday morning to work and learn from Bruce, and we thank him so very much for his help in making us better tong makers. The Guild is most thankful for all of Bruce's help and effort in this work party. He did a masterful job.

Tong Terms: Jaws- the parts that grab the material, Boss- the joint area, Reins- the handles.

Bruce covered Straight Jaw Tongs, Wolf Jaw Tongs and Box Jaw Tongs, which he feels, are well suited to working small stock. His drawings are shown at the end of this article. He started us with 6" of $\frac{3}{4}$ " Sq stock on which he had pulled a taper, leaving enough of the parent bar untouched to forge the jaws and boss. This healthy start on drawing the reins is appreciated. The tongs he made as demo pieces and the five tongs he donated give us lasting examples of his system.

His system has the smith forging the two half's' of the tong at the same time to insure uniformity in the jaws, boss and rein areas. Start with both jaws before moving on to the next step. Working from a chalk mark on the anvil insures a good start to uniform jaws.



The back of the jaws and the start of the reins need mass to give them strength. Do not forge too narrow. The boss is about half of the parent bar or $\frac{3}{8}$ " thick. Use dividers to insure the final boss shape is as wide as it is tall. See the circle in this area and punch in its center.

Punch the rivet holes under size and drift to final size. Use $\frac{1}{4}$ " rivets for tongs holding smaller sizes and $\frac{3}{8}$ " rivets for larger sizes. Start the punching with the jaw hanging down over the far edge of the anvil. This will give you a very flat surface on the anvil when you back punch. Final back punch is over the pritchel hole.

90-degree "V" grooves are placed on all the straight tong jaws, even the top jaw on box jaw tongs. These are started with a radius chisel and then finalized with a chisel ground to a 90-degree "V" edge.

A rivet plate was made by drilling a start hole deep enough to just get to the drill full width, and then using a round headed punch to make the depression conform to the rivet head shape. Several sizes could be on a single bar and these should be made for each forging station.

You will notice in Bruce's drawings that the tongs are effective in two sizes of flat stock. Regulate the jaws with the smaller size (as stated in the drawings) square stock held on edge in the grooves. This puts the space inside the jaws between the two stated sizes but close enough to both that they are effective in holding both sizes of flat stock plus the same in square and round. They are also effective in mild tapers. The box jaw tongs do the same because the groove is in the upper jaw. Going beyond what will fit inside of the box jaws, the tops of the boxes and the upper jaw form a three point hold which is very effective on small flat stock, spatula blades and the like, and bold tapers, such as axe blades.

Williamsburg Weekend Gallery

Once again this year the Guild and the NPS hosted a master smith from Colonial Williamsburg. Steve Mankowski returned again this year and put on an amazing three days of blacksmithing, February 27-March 1. Between 19 and 26 people attended each of the three days. Steve forged a wonderful colonial era meat broiler, staghorn hinges, stirrups, a bridle bit, a large gouge for use in the carpenter shop and much more. For those of you that missed it, here is a selection of pictures that show the results of his amazing blacksmithing skills.

*Ike Bay
Tom Dwyer*

