WOODTURNING FUNdamentals

AAW EDUCATION

Publication of the American Association of Woodturners
January 2016 vol 5, issue 1 | woodturner.org

AAW | AMERICAN ASSOCIATION OF WOODTURNERS

Woodturning FUNdamentals
TABLE OF CONTENTS

AAW EDUCATION

January 2016 - Volume 5: Issue 1 Features

Woodturning FUNdamentals
a bimonthly publication by the American Association of Woodturners
222 Landmark Ctr.
75 5th St W
St. Paul, MN 55102
phone 651-484-9094
website woodturner.org
Exec. Director: Phil McDonald
phil@woodturner.org
Program Director:
Linda Ferber
linda@woodturner.org

SAFE TURNING IS FUN TURNING.

An accident at the lathe can occur with blinding suddenness. Respiratory and health problems can develop over time. Take appropriate precautions when you turn. Use face shields, safety glasses, and dust masks. Follow all manufacturers' safety guidelines. For more about woodturning safety, visit AAW's website at **woodturner.org.**

AAW | AMERICAN ASSOCIATION OF WOODTURNERS Fundamentals

Cover photo: Geoff Whaling

WELCOME

A Note from the Executive Director

We are starting our fifth year of publication for *Woodturning FUNdamentals* with this January 2016 issue, volume 5, issue 1. We would like to thank all the people that have contributed, and shared their projects and tips in this publication.

If you're looking for even more resources to build your woodturning skills, I'd like to remind you that past issues of *Woodturning FUNdamentals* are available to members at http://www.woodturner.org/default.asp?page=FUNdamentalsRes

In this issue of *Woodturning FUNdamentals*, we are happy to offer an project article written by Mike Peace on turning a pillbox, which offers a wonderful combination of written and video instructions. Also included with this issue is a the first of a four-part glossary of woodturning terms. The glossary is grouped into parts of the lathe, tools, personal proctection equipment (PPE), and types of turning. The first glossary featured in this issue covers the parts of the lathe. We will publish a new section with each issue this year and hope you find it helpful. If there are terms that have you puzzled please send it in and we will do our best to provide answers.

As always, *Woodturning FUNdamentals* invites you to submit your questions, tips, projects, and problems to us. Every turner develops tips and techniques that work, and also runs into frustrating obstacles from time to time. You're not alone. Please send your submissions to us at linda@woodturner.org.

I welcome your suggestions and concerns.

Respectfully,
Phil McDonald
Executive Director
phil@woodturner.org

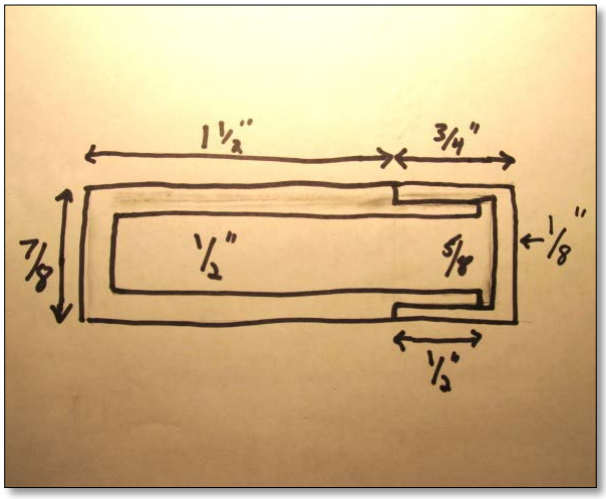
AAW | AMERICAN ASSOCIATION OF WOODTURNERS
Fundamentals

Click here or above to read Helga Winter's profile.
Click here to read other AAW 30th Anniversary member profiles.

PROJECT & VIDEO: PILL BOX

Pill Box Project

Variations: Case for Needles or Toothpicks



Introduction

Use some of those nice exotic scraps you may have lying around your shop to make an attractive and functional pill box.

1” x 1” x 3” blank of most any dried hardwood will make a good size one. Exotics like padauk, purple heart, or zebrawood are all good. You might have a fat pen blank on hand that will work nicely. If you are a segmenter, perhaps you have some laminated scraps.

Design

The walls of the top and flange are 1/16". The top and bottom are 1/8” thick.

Tools

- Four-jaw chuck or Collet chuck capable of holding the blank
- Spindle roughing gouge
- Burn wire, texturing tools if desired and a point tool
- Vernier or dial calipers
- 3/8” spindle gouge, ½” square scraper
- 1/2” round nose scraper, thin parting tool
- Jacobs chuck with 5/8” Forstner and 1/2” twist bits

Steps

1. Rough blank round between centers. Turn a tenon for the base end to fit your chuck jaws, if necessary.

2. Mount in a chuck. Drill end that will be the lid 1/2" deep using 5/8" Forstner bit and drill chuck about 700 RPMs. Sand as needed. Embellish the lid sides as desired: beads, burn rings, texturing, etc. If texturing on the side of the lid, do it now with tailstock support with a 60- degree-cone live center. On very hard woods I use a small spiraling or texturing tool.

3. Part off lid using a thin parting tool. Set aside for finishing the end.

4. What is left in the chuck will be the bottom. Face it off with spindle gouge for a finished surface. Create a starting dimple for centering the drill bit with a skew laid on its side. Again, using a Jacobs chuck, but this time with a 1/2" drill bit, drill a hole 1 7/8" deep. Retract the drill to clear chips as often as necessary. A clogged drill bit will overheat the wood and often veer off center. **For safety**, keep a hand on the drill chuck when retracting. If it gets pulled from the tailstock, bad things happen!

5. Measure the depth of the hole in the lid with calipers and mark the length of the flange to fit into the top. A 1/2" long flange with a 5/8" diameter will give you a piston fit that will keep the lid on well. The flange must be perfectly straight to get a sort of pneumatic fit. Use a parting tool or skew as a scraper to sneak up on the fit.

6. Trial fit occasionally to ensure a good fit. Before the final fit, while it is still snug, put on the lid and finish the very top where it was parted off. A scraper works well on endgrain. Sand and texture if desired. The Wagner tool textures well on the top where it is endgrain.

7. I polish with Ubeaut EEE. For exotics, I rarely use a finish.

8. Finish shaping the base and do a final fit on the flange for a smooth-fitting lid. Sand and finish. I don't sand or put finish on the flange or walls of the lid. Part off.

9. Reverse the bottom by mounting over a 1/2" mandrel that fits into your spindle with a morse taper or held in your chuck. If the box bottom is a little loose, tape it in place. Use tailstock support, if needed, with a wood or nylon soft-touch tip on live center.

10. Remove any tenon or excess. I like to make the bottom flat so the box can stand up.

11. Sand and finish. If the lid is a bit snug, consider buffing the flange with carnauba.

Variations: Make it about 3 3/4" long using 1/2" and 3/8" drill sizes for a traditional needle case. Design one for toothpicks!

Video: Turn a Pill Box, Mike Peace

- Video: Turn a Pill Box, Mike Peace (TRT 26:47)
- Video link: https://www.youtube.com/watch?v=1-NAqttp-XM
- Tip: If you have trouble accessing the video directly from this document, you may copy the video link and paste it directly into your browser.

~ Mike Peace
Suwanee, Georgia
mikepeace356@gmail.com
http://mikepeacewoodturning.blogspot.com/

TURNING MINIATURES

Turning a Miniature Bowl

INTRODUCTION

About ten years ago, I became interested in turning small items. It started with goblets, then quickly evolved into bowls, vases, and even cowboy hats. I didn't have a particular goal in mind; I just did it to see if I could. Each successful miniature I turned inspired me to do more.

Working at small scales proved to be challenging; not just because of the scale, but also because I wasn't able to find tools sized appropriately for this task. I looked online, but even tools marketed as miniature tools were much too large for the projects I was undertaking. So, I started inventing my own. The results are simple tools that can be made in any home shop from readily available materials.

This article will focus on the techniques and tools needed to turn a simple, 3/4" diameter bowl, like the one shown in Photo 1. Future articles will describe making several other types of turnings, including bowls with beaded rims and a footed base, vases, deep vessels hollowed through small openings, cowboy hats, and more.

Photo 1

UNDERSTANDING SCALE AND PROPORTION

The term *Miniatures* means different things to different people. To some, a miniature is anything that is smaller than normal. To others, a miniature is an accurately made small-scale reproduction of an item - or type of item - we see in our everyday lives. For turners in the first category, scale isn't very important. But for those of us in the second category, the turner's goal is producing an item that will look natural in the setting where it will be used; for example, a dollhouse, or perhaps a model train display. These items are usually accurately made at a specific scale.

I prefer working at 1/12 (one-twelfth) scale. This is the size used to make many dollhouses, and therefore dollhouse furniture pieces. It's an easy scale to work with. To convert any full-scale dimension to 1/12 scale, simply divide the full scale measurement by twelve. So, 1' (aka 12") divided by twelve becomes 1". 6" divided by 12 is 1/2", and so on. Table 1 maps some commonly used full scale measurements to their 1/12 scale equivalents.

TABLE 1	
FULL SCALE	**1/12 SCALE**
12"	1"
9"	3/4"
6"	1/2"
3"	1/4"
1 ½"	1/8"
3/4"	1/16"
3/8"	1/32"
3/16"	1/64"

You probably noticed a lot of commonly used measurements are missing from this table. This is because those measurements don't scale to measurements that can easily be measured with a standard ruler. For example, 2" scales to 1/6", 1/2" scales to 1/24", and 1/4" scales to 1/48". Converting these dimensions to decimal doesn't make it any easier: 2" scales to 0.1667". 1/2" scales to 0.042", and 1/4" scales to 0.021". Therefore, I suggest rounding your measurements to the nearest measurements shown in the table. Trust me--no one will notice the difference.

More important than scale, in my mind, is proportion. In the case of miniatures, this refers to the relationship of height to width, and often, to thickness. Take, for example, a bowl that's 9" diameter by 6" tall, with a wall thickness of 1/2". At 1/12 scale, the reproduction should be 3/4" by 1/2", and the wall thickness should be less than 1/16" thick! Turners are often afraid to make things that thin, and end up making bowls that are the right diameter and height, but leave the wall thickness around 1/8" thick. This results in a heavy-looking miniature, and rightfully so: that 1/8" would scale up to 1 ½" thick in full scale. Can you imagine a 9" bowl with a 1 ½" wall thickness? Ideally, miniatures should not look like they're miniatures. When you look at a picture of a miniature with nothing else in the picture, it should be nearly impossible to tell how small it is.

Photo 2

Photo 3

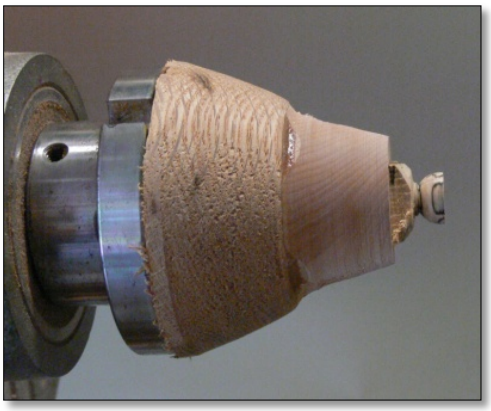


Photo 4

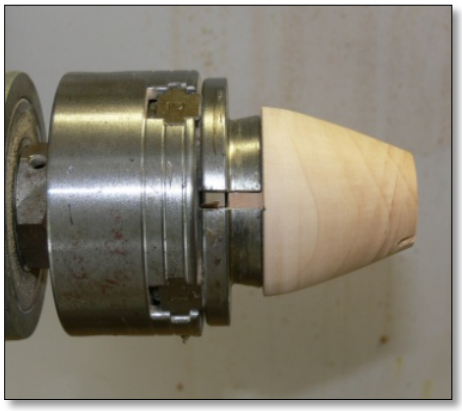


Photo 5

GETTING STARTED

Turning a simple bowl like the one described above requires a few specialty tools. First is a way to mount the blank on the lathe. Conventional means (chucks, faceplates, and between-centers) are impractical for miniatures. The blanks you will be working with are too small, and you don't want to risk hitting your knuckles on an oversized chuck. I prefer using a glueblock, like the ones shown in Photos 2 – 5. My favorite is the one shown in Photo 2. I use a tap the same size as the spindle on my lathe, which makes it possible to thread the glueblock directly onto the spindle.

In Photo 3, epoxy is used to attach the glueblock to a nut the same size as the spindle. If neither of these options is possible, the glueblock can be attached to the lathe by mounting it in a chuck, or attaching it to a faceplate as shown in Photos 4 and 5.

Photo 6

You'll need a small gouge for shaping the outside of the bowl. I prefer a 1/4" gouge, ground in a fingernail grind. If you don't have a gouge this size, you can make your own from a 1/4" Phillips Head screwdriver by cutting off the tip, then grinding it as shown in Photo 6. The gouge at the top is a commercially manufactured 1/4" bowl gouge and the one at the bottom is made from a screwdriver. As you can see, the shapes are very similar, and the cuts obtained from the two tools are pretty similar as well.

Photo 7

You'll also need a small parting tool. I have several that I've made from different-sized screw- drivers, ground into different shapes and thicknesses. Screwdrivers can also be used to make pyramid tools, skews, scrapers, captive-ring tools, and hollowing tools (see Photo 7).

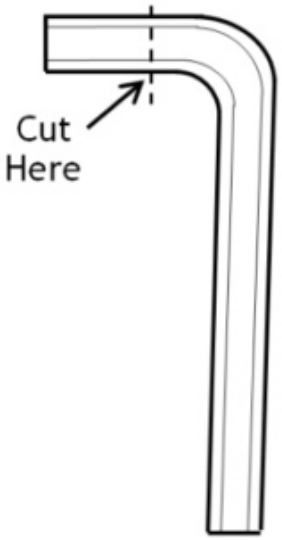


Photo 8

Photo 9

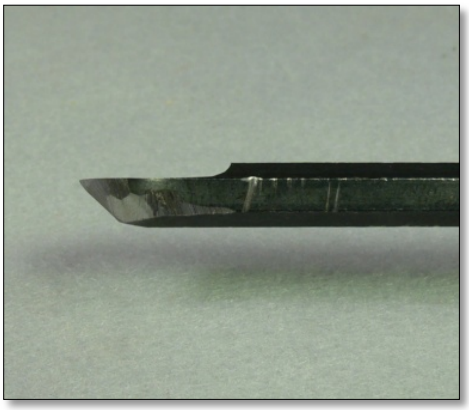


Photo 10

Photo 11

I use a simple tool made from an Allen wrench for hollowing the inside of the bowl. Cut the short leg of the Allen wrench off just past the bend (see Photo 8). Grind the cut end round and grind the top of the wrench flat near the bend (see Photo 9), then grind the bottom side at a slight angle, as shown in Photo 10. Finally, glue the long end into a handle, to make it easier to hold. For our bowl project, a 1/8” or 3/16” allen wrench will work best. However, you might want to make several tools of this type in various sizes (see Photo 11). These tools will come in handy for different-sized miniatures and various hollowing tasks.

Photo 12

You’ll need a way to sand the inside of the bowl, once it’s turned. Wrap double-sided tape around both ends of a 6” piece of 1/8” dowel, then wrap strips of sandpaper over the tape, being sure to wrap it in a clockwise direction to prevent the sandpaper unwinding while in use. Finally, wrap masking tape around the top of the sandpaper as re-enforcement. I put 220 grit on one end, 320 on another, then on a different stick, put 400 and 600. As you can see in Photo 12, I label them 2, 3, 4, and 6, so I can quickly determine which grit is which.

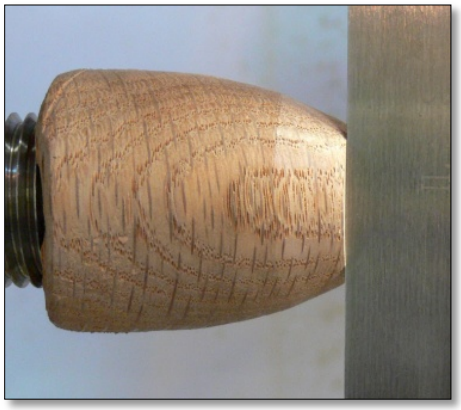


Photo 13

TURNING A BASIC BOWL

Let's look at turning a basic bowl like the one shown in Photo 1. To make this project, start by attaching a glueblock to the spindle. Use a parting tool or skew to cut the face of the glueblock flat. Lay a straightedge across the face. If it isn't perfectly flat, face it again until you get it true (see Photo 13).

Cut a blank from a piece of fine-grained hardwood (such as maple, or any fruitwood, such as cherry, apple, or pear), approximately 3/4" x 3/4" x 2" long. Since bowls are usually oriented with the grain running across the face, cut the blank with the grain running sideways (rather than lengthwise). Sand one end of the blank smooth. A rough or uneven surface will prevent the wood from adhering well to the glueblock, which can result in a failed glue joint.

Photo 14

Smear thick CA glue generously on the smooth end of the blank (Photo 14). Position the glued end against the glueblock, being careful to align and center it as accurately as possible. Bring the tailstock up to apply pressure against the other end. Turn the glueblock carefully by hand, and inspect the joint between it and the blank. You should see a thin bead of CA glue oozing out. As you turn the glueblock, the glue should flow along the seam. This is good. This bead will help reinforce the joint. Spray the joint with accelerator to prevent it from dripping onto the bed of the lathe. Allow the glue to dry for approximately 10 to 15 minutes before proceeding to the next step.

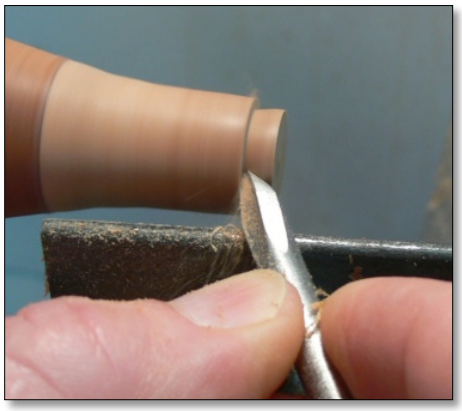


Photo 15

Photo 16

With the tailstock still supporting the blank, turn it to the diameter of your bowl; in this case, 3/4”. Use a spindle gouge to start shaping the outside of the bowl, as shown in Photo 15. Only shape the top 2/3 of the bowl. You can refine the shape and cut the bottom 1/3 later, after the inside of the bowl is finished. Photo 16 shows what your bowl should look like at this point.

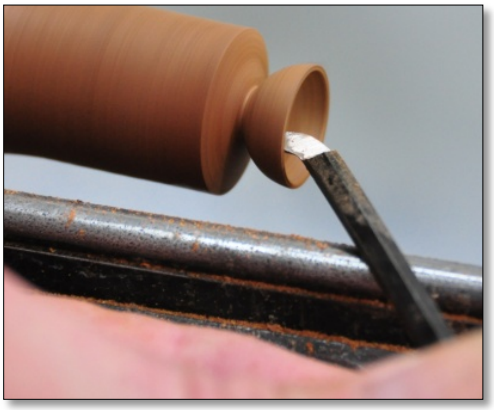


Photo 17

Use one of the Allen wrench tools to hollow the inside of the bowl. Place the toolrest to the side of the blank, parallel to the bed of the lathe. Raise the toolrest so that it is just below the center of the blank. Lay the Allen wrench tool horizontal on the toolrest and nearly perpendicular to the bed. Insert the sharpened tip into the center of the bowl, then move it back and forth, so that it carves away the material on the inside of the bowl, as shown in Photo 17.

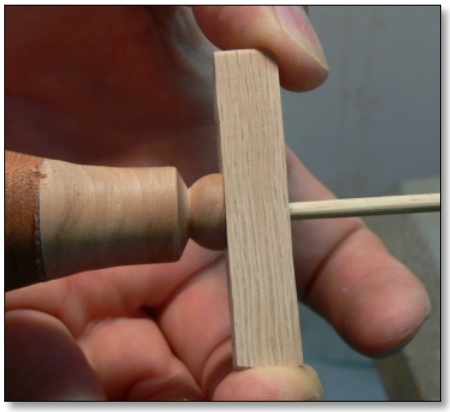


Photo 18

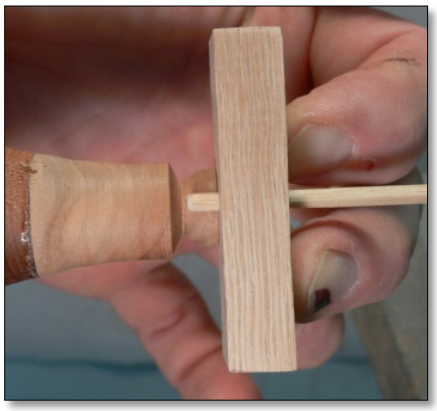


Photo 19

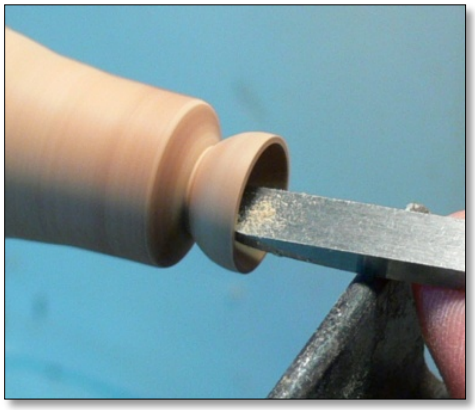


Photo 20

Follow the shape of the outside of the bowl, and be careful not to go too deep. You can make a simple depth gauge by drilling a 1/8” hole through a block of wood, then inserting a piece of 1/8” dowel through the hole. Position the wood on the rim so that the dowel is centered in the bowl. Push the dowel in until it hits the bottom (Photo 18). Then, reposition the wood so that the dowel is against the outside of the bowl. Sight across the tip, and see where it lines up on the bottom of the bowl (Photo 19).

If necessary, use a round-nosed scraper to refine the surface on the inside of the bowl, as shown in Photo 20.

Photo 21

Use the tip of the sanding sticks to sand the inside of the bowl. Move them back and forth from the center of the bowl to the rim (Photo 21). Start with 220 grit and work your way up to 600.

With the lathe turned off, work some EEE-Ultra Shine Paste Wax into the wood in the interior of the bowl. Turn the lathe on and use a clean section of the paper towel to buff the surface. The surface of the wood will be very smooth and shiny, and there should be no visible scratches. If there are, go back to the scraper and start again.

Photo 22

Photo 23

Work some friction polish into the wood with the lathe off. Wad up a piece of paper towel into a ball, and with the lathe on, press it firmly into the bowl, as shown in Photo 22. Continue to buff until the surface of the wood is dry. Apply several more coats of friction polish, until you obtain the shine level you desire (Photo 23).

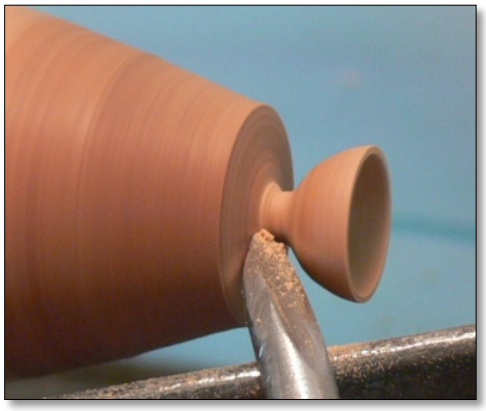


Photo 24

Photo 25

When this is done, finish shaping the outside of the bowl. Remove enough wood to provide clear access to the bowl's bottom (Photo 24).

Use short strips of sandpaper to sand this area, starting with 220 grit, then switching to 320, 400, then 600. Wipe the wood clean, then apply EEE-Ultra Shine Paste Waxand friction polish as before. Be careful here; applying too much pressure can snap the bowl off! Instead, apply pressure from both sides at once, to even out the pressure (Photo 25).

Photo 26

Use a small parting tool to cut through the remaining piece of the wood. Be ready to catch the bowl as it breaks free. I often reach over the spindle with my left hand, and have my thumb and finger poised, ready to catch the bowl (Photo 26).

In order to finish the bottom , we need to re-attach the bowl to the lathe in a way that will hold it securely, while at the same time providing free access to the bottom so we can shape, sand, and finish it.

Photo 27

Photo 28

Photo 29

Create a jam chuck by cutting a tenon on the end of the spindle from where you just parted the bowl (Photo 27). Make the tenon *slightly* smaller than the bowl's opening. Next, cut a piece of double-sided tape approximately 1" square, and stick it onto the tenon. Use the tip of a razor blade to peel the backing away. Press the bowl firmly onto the tape-covered tenon. If you sized the tenon correctly, it should be a snug fit. You should now be able to turn the lathe on without worrying about the bowl flying off. Carefully use the spindle gouge to finish shaping the bottom of the bowl (Photo 28). Sand the unfinished section, then apply EEE-Ultra Shine and friction polish as you did previously.

Finally, use your finger nail or the edge of a sharp knife to pry the bowl away from the tape (Photo 29). Again, be very careful not to drop the bowl! They bounce like super balls, and once they hit a hard floor, there's no telling where they will end up. Wipe away any sticky residue with a piece of soft cloth, then proudly display your bowl somewhere safe!

Photo 30

~Thomas W. Jones
Conowingo, Maryland
732-693-1547
twjones109@gmail.com

WOOD DRIVES

The Many Uses for Wood Drives

Wood drive centers are versatile and easy to make. Best of all, they can be turned from wood in your left-overs box. By turning a wood drive you may not need to purchase specialized jaws for a chuck or they may save you the time to set up another shop tool. I especially like using wood drive centers while teaching children. Should you get a catch, the work piece just spins on the wood drive center resulting in little or no damage to your work. Increase the pressure on the tail stock and you are off and running again. If you can drill a hole in the headstock end of a turned item without interfering with the finished piece, you can utilize a wood drive. Note, wood drives are normally used to make smaller tuned items.

The most common wood drives are turned with a point/cone on the end. (Figure 1 - Cone Drive) You can use a spindle gouge, bowl gouge or skew to turn this shape.

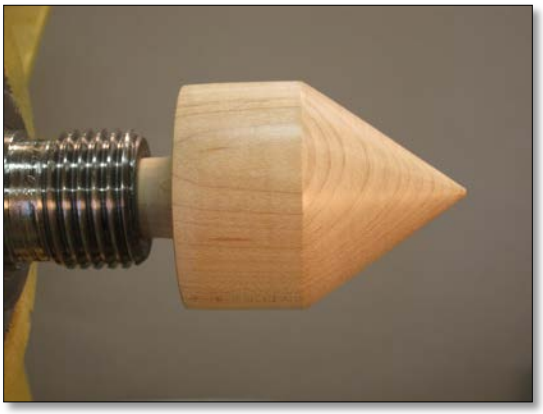


Figure 1 - Cone Drive

Cone drive with mounted pen blank.

The taper on this drive is approximately 60 degrees. You can turn any shape or size drive as long as the 2 MT taper fits securely in the head stock spindle. It is best to leave an inch or more of unused wood between the 2 MT taper and the working end of the drive so that you can re-turn the end a number times. Re-turning the drive may be needed if it becomes burned or scarred. Leaving additional material between the head stock spindle and the end of the cone also provides working clearance on medium and larger lathes. The cone drive may be used to turn whistles, pens, honey dips, pail handles and more.

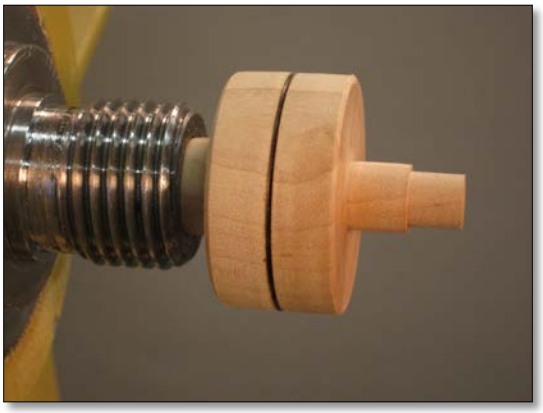


Figure 2 - Tenon Drive

Tenon drive with mounted honey dipper.

Some applications may work better if the drive end is turned to a straight or slightly tapered tenon (dowel shape) to fit a specific diameter hole in a work piece. (Figure 2 - Tenon Drive) See Beth Ireland's article on turning whistles in the Dec. 2015 issue of the *American Woodturner* journal. This also leaves the drive center securely, but not permanently attached to the work piece while the tail stock end of the work is parted off. Items like honey dips, that don't have holes in the finished piece, may be turned if a hole is predrilled in the waste material at one end.

The groove turned on the outside diameter of this drive provides a place to preheat a wire for decorative wire burning. It takes considerable pressure to burn a line on small diameter work pieces. Preheat the wire on the wood drive, then immediately move to the work piece to burn a line. This makes the task faster and takes less pressure. The burn grooves may be turned with a skew or spindle gouge.

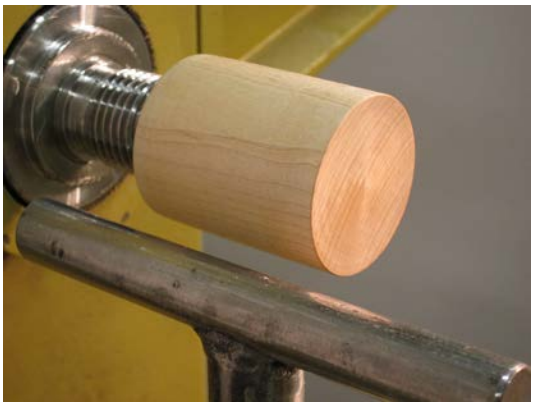


Figure 3 - Flat End Drive

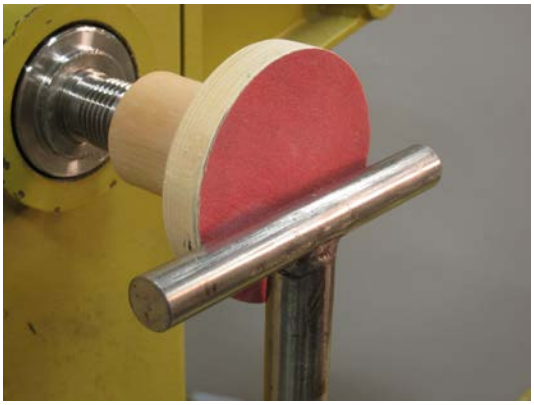


Figure 4 - Sanding Disk

Sanding Disk - There are multiple applications for a wood drive center where the end of the drive is turned flat. (Figure 3 - Flat End Drive)

One such use is making sanding disks. (Figure 4 - Sanding Disk) The four inch dia. sanding disk was cut from a piece of ¾" pine board. It was attached with hot melt glue applied just around the perimeter, then the edge and face of the disk was trued up (flattened) with a bowl gouge. The sand paper was attached with four small, ¾" lines of hot melt glue at the very outside edge of the disk. Spray contact cement or double face tape may work as well. Just tear of the paper to remove it. Use a bowl gouge to clean up any remaining glue.

Figure 5 - Waste Block Drive

Waste Block - The flat ended wood drive works great as a waste block (attaching a work piece to scrap wood). (Figure 5 - Waste Block Drive) Just glue the work piece to the flat face, complete the work, then use a thin parting tool to part off the finished piece. Remember to resurface the drive before attaching the next piece. Because turning a larger piece involves more force than sanding, I suggest you attach the work piece with wood glue or medium CA glue. In either case, be sure the glue is fully cured before you begin turning. You may use the tailstock to hold your work in place while the glue is curing.

Always use the tailstock to hold the work piece in place whenever possible while you are turning.

Off Set Turning – Many turners attach work pieces off center to the waste block (in this case the wood drive) to achieve striking decorative embellishments. Some examples include, turning grooves, depression, holes and holes filled with a contrasting wood color. Be sure the diameter of the wood drive is large enough to insure the full diameter of the work piece is attached to the drive. In most cases, small, light pieces like pendants and ear rings are attached to the wood drive with double face tape.

Figure 6 - Sanding Drum

Sanding Drum – Tear off a strip of cloth backed sand paper and glue it on a wood drive to make a sanding drum. (Figure 6 - Sanding Drum) Put a dab of hot melt glue on one end and let the glue harden. Note, the paper will be bumpy where the glue is applied. Tightly wrap the strip around the wood drive to the opposite edge and glued that end down with another spot of glue. Trim off the overhanging paper.

Technically, you could make the sanding drum as large and long as you like, provided that the drum is securely held in place by the tailstock. For larger sanding drums, I would suggest using a chuck to hold the sanding drum.

Making A Wood Drive – Use a dry, straight grain hardwood like maple or cherry. Place the wood on the lathe between centers so that the grain of the wood runs parallel to the lathe bed. Use a spindle roughing gouge to turn the wood round. I use a 3/8" parting tool to turn a .60" tenon on one end. Then, I mark off 2.4" from the edge of the tenon and turned a .70" flat outside my 2.4" dimension. I used a micrometer to pick up these dimensions from a drive center. Note, you may obtain slightly different dimensions when you measure a drive from your shop. Use a spindle gouge or skew to turn away the material between the two flats until you have a nice straight taper. I use a short straight edge to check my work while turning. Next, turn or cut off the flat at the small end of the taper. If your drive does not fit perfectly in the head stock spindle, it is better for both ends of the drive to fit tightly into the spindle with a slight concave between the two ends. If the taper is only seated in the middle it may wobble and come loose during use. If you reuse the wood drive center and the point does not align with the lathe's live center, simply return the point for proper alignment.

Occasionally I give the wood drive a tap to insure it is well seated in the head stock spindle. I use a short piece of PVC pipe to tap cone shaped drives. Occasionally, I give the wood drive center a tap to insure it is well seated in the headstock. I use a short piece of PVC pipe to tap cone shaped drives.

Many thanks to Beth Ireland for introducing me to wood drives. bethireland.net.

Denis mainly turns for family and friends and at charitable events.

~ Denis Delehanty
Purcellville, Virginia
denis@woodturner.org

THE ART OF SANDING

Sandpaper is a Cutting Tool

Quite often I observe beautifully turned pieces on display, with a poor sanding job that stands out like a big red nose. In conversations I find that many consider sanding as a necessary drudgery that has to be done against their will. They haven't taken the time to learn how fast it can be done with the right approach. Most people start with too fine a grit of paper, and then sand and sand until they are tired and discouraged. One of the problems is that on most woods the scratches are white and blend in until the finish is applied and then they turn almost black.

A **A few do's and don'ts can go a long way in solving most problems.** It seems natural that a faster speed would produce faster sanding, but in reality speed creates an air cushion that inhibits sanding. The slower speeds will sand faster. Speed builds up heat, which will melt the bond between the grit and the paper, destroying the paper and imbedding the grit into the wood, further inhibiting the sanding. Some wood will stress-crack from heat buildup and leave deep fine multiple cracks that won't sand out and you will have to re-cut the wood to eliminate them.

B ***Sandpaper is a cutting tool; it becomes dull with use, and unfortunately can't be re-sharpened.*** Worn out 220 grit sandpaper doesn't equal 320- or 400-grit sandpaper. "Use the sandpaper as if someone else were paying for it!" Good sandpaper is expensive but your labor is worth more. If you are able to do the job faster, with less effort, and end up with a better finish, you will learn to throw away that worn out sandpaper!

C If you sand with the lathe running, put it on a slow speed and keep moving the sandpaper back and forth. Don't wrap it around the wood and hold it there, for you will end up with those ugly rings around the wood. ***Take the time to learn what the scratch marks produced by each grit of sandpaper look like!***

D Stop often and inspect the work with a strong light at a 45-degree angle and look for light white marks. If you have a problem of scratches that won't come out, change the direction of the sanding to make sure you aren't creating them with buildup on the paper. *Buildup on the sandpaper can be easily removed with coarser sandpaper lightly pulled across it.*

E Most bowls are turned with the wood grain at a right angle to the lathe bed which means that 70% of what you are sanding is endgrain. The endgrain is more subject to tear-out and damaged fibers, besides being ***harder to sand,*** so extra effort is required. In my experience, it is not possible to do a thorough job of sanding with the lathe running while you're holding sandpaper against the wood or power sanding with the lathe running. I prefer to sand the trouble spots first and then power sand with the lathe running to blend in any ridges I might have created while concentrating on individual spots.

F When I have sanded to the point that I am satisfied the job is done, I always apply a thin coat of lacquer sanding sealer and let it dry and further inspect the work. What is going to show up in the final finish will show up here, and it is much easier to sand the sanding sealer than anything else you could put on it. The sanding sealer will also harden up the fuzziness and enable it to be sanded off with little effort. If nothing shows up with the sanding sealer, a light hand sanding with 400-grit paper will finish the process, and you are ready to put on any finish you desire. *Do not use steel wool or Scotch bright at this point for it will equally dull everything*. It will look smooth, but there will still be ripples in it. If you wiped sanding sealer on or the excess off, you could have streaks in it that will show up again when you put the finish on. Hand sanding with 400 grit will sand off the high spots while the low spots will still be shiny until it is all sanded evenly.

G Quite often some tool marks won't show up until you have sanded down to the finer grits of sandpaper and the last thing you want to do is go back to coarser sandpaper, so you sand and sand with that fine paper until you are tired and discouraged. You go ahead and apply the finish, thinking it won't show up. Well guess what, not only did it show up, it is worse than ever. You then leave it to the next day, hoping it will look better then! The reality is that had you gone back to that coarser grit, you would have finished in less time with a lot less aggravation.

- Save time! Start with a coarser grit than you think you need and sand with it longer than you think you need to, until all tooling marks and damaged wood fibers have been removed. Then the rest of the job will go quicker and be more satisfying.

- Put as much pride in your sanding as you put in the rest of your project. A good sanding job will not be seen, but a poor sanding job will stand out above everything else.

- A good sanding job looks like it hasn't been sanded, whereas a poor job is the first thing noticed. **Think about it!**

~ Jack Morse
Lawrenceville, Georgia
johnmorse@bellsouth.net

Want to learn more?

SHOP TIP

Safety First

Want to see how fast an accident can happen?
The speed your lathe spins is one factor that determines how fast an accident can happen. Y'all know that the speed of your lathe should vary with what you are turning. The smaller the diameter of your wood, the faster the lathe can safely go. If you are turning a two-inch spindle, you likely can safely turn it at 3,000 revolutions per minute ("rpm") or even higher. But if you are turning a twenty-inch platter, safe speeds range from just 300 to 450 rpm.

Most of us mostly turn stuff that is less than 20 inches in diameter, so for most of us most of the time, 300 rpm is pretty slow.

But 300 rpm is five revolutions *every second*. That's really pretty fast. You can get a good idea of just how fast that is by trying recite my favorite phrase when I screw up, five times in one second. Try it. Try to say ***"oh crap, oh crap, oh crap, oh crap, oh crap!"*** in one second or less. I don't think it's possible.

It's just as difficult to try to stop an accident at the lathe after it starts. To avoid an accident, you pretty much have to keep the accident from starting. And that takes knowledge, technique, and appropriate tools.

~ Harvey Rogers
Portland, Oregon
Safety Officer
Cascade Woodturners Association

LATHE SPEED

Always check the speed of the lathe before turning it on. Use slower speeds for larger diameters or rough pieces and higher speeds for smaller diameters and pieces that are balanced. Always start a piece at a slower speed until the workpiece is balanced. If the lathe is shaking or vibrating, lower the speed. If the workpiece vibrates, always stop the machine to verify why. Ensure the lathe speed is compatible with the size of the blank.

SHOP TIP

Static Sanding Pad

All too often we hear of or see photos of fingers and knuckles injured while sanding bowls, particularly natural-edge bowls. This handy little aid, a static sanding pad, moves the turner's fingers a little farther away from the hazard of a spinning sharp or natural edge.

No additional expense, just some turning practice and a small bit of stock required, as most turners already use the sanding mandrels in power or inertia sanders.

Simply spindle-turn a typical file or mini woodturning tool-handle profile, then drill a hole slightly undersized to accommodate the sanding pad mandrel shaft. I find the hex shaft of the Tim Skilton premium sanding-pad mandrel (or similar) works best for me. The hex (or round) shaft should be a mild interference fit in the hole to prevent it coming adrift when not in use or spinning while in use.

One-to-3-inch (25-75 mm) mandrels and pads can be used to suit bowl size with suitably scaled tool handles. They are great for fine control when finishing off bowl rims where power or inertial sanders may be too aggressive or not suitable.

~ Geoff Whaling
Townsville, Queensland, Australia

Want to know more?

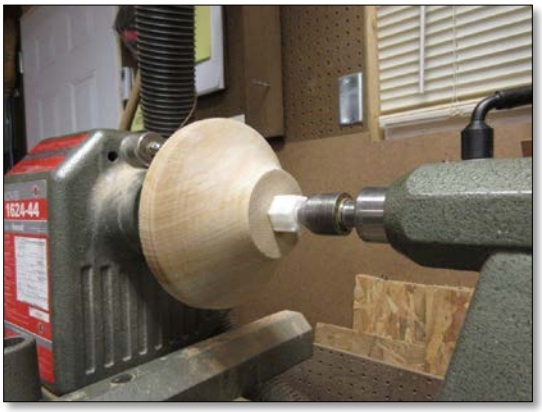
- **Puzzled over a tough project? Ask the experts!**
- **Do you have a great tip? Share it!**
- **Either way we'd love to hear from you! Contact us at linda@woodturner.org**

SHOP TIP

Support for Turning Bottom of Bowls

An alternative to the "wooden running pads" described in another tip: Take one of the plastic nuts that is used in some plumbing connections, such as the flexible connector that attaches to water using appliances, and place it over the end of the conical live center. The point of the live center does not protrude past the open end of the plastic nut and thus provides a small circular support surface at the wood project.

~ Warnie Lore
St Albans, West Virginia



Wooden Running Pads

I sometimes need to use my live center to support a turning attached to the drive center without the metal pin of the live center poking into the wood. I custom-make wooden pads that slip over the live center.

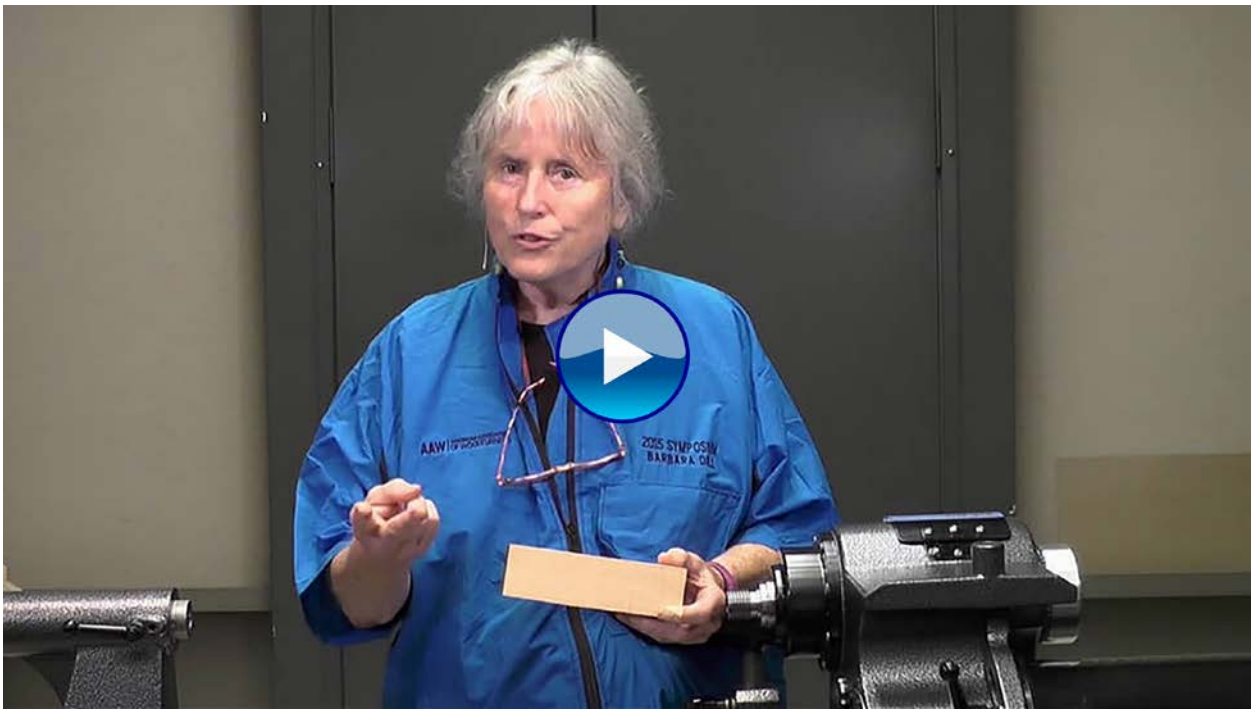
True up a small cylinder of wood and hollow out a recess deep enough for the live center to slip into cleanly. There should be very little or no play in the fit.

Cut the desired working profile and part that section free. The profiles are typically a cone—some shallow, some steep—but any profile can be made, even a long dowel shape. I keep these running pads stored close to my lathe so that they are super quick to slip on and off as needed.

~ Thomas Trager
Clinton Township, Michigan

VIDEO: MULTI-AXIS TURNING

Video: Tip on Multi-Axis Turning by Barbara Dill



- Multi-axis turning tip featuring Barbara Dill (TRT 3:07).
- Video link: https://vimeo.com/woodturner/review/132437084
- Tip: If you have trouble accessing the video directly from this document, you may copy the video link and paste it directly into your browser.

A Note About Safety

An accident at the lathe can happen with blinding suddenness. Respiratory and other problems can build over years. Take the appropriate precautions when you turn. Among the most important of these is the use of face shields, safety glasses, and dust masks. It is important to observe all manufacturers' safety guidelines. Following manufacturer's safety guidelines and information will help you continue to enjoy woodturning years into the future.

VIDEO: SAFETY TIP

Video Tip: Live Center Starting and Ending Safety Featuring Lyle Jamieson

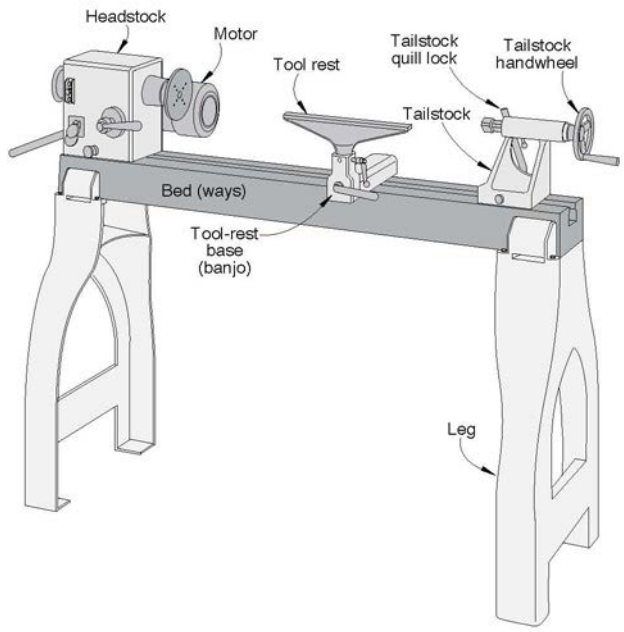
- Safety tip: Live center starting and ending safety featuring Lyle Jamieson (TRT 2:33).
- Video link: https://vimeo.com/woodturner/review/132474861/0eb7912249
- Tip: If you have trouble accessing the video directly from this document, you may copy the video link and paste it directly into your browser.

A note about safety

An accident at the lathe can happen with blinding suddenness. Respiratory and other problems can build over years. Take the appropriate precautions when you turn. Among the most important of these is the use of face shields, safety glasses, and dust masks. It is important to observe all manufacturers' safety guidelines. Following manufacturer's safety guidelines and information will help you continue to enjoy woodturning years into the future.

GLOSSARY OF TERMS

Parts of a Lathe



Banjo: The primary lathe fixing that holds the tool rest. The banjo clamps to the lathe bedway. The banjo is fully adjustable up and down the length of the lathe bed, as well as in and out (across the bed). Banjos are also known as *Tool Rest Holders.*

Bedway: The long part of the lathe that connects the headstock and the tailstock sections together. The lathe bedway can be flat steel, or cast iron (most common types), or rounded steel bars. In recent years, some manufacturers have introduced lathes with bedways made from stainless steel to eliminate rust concerns when working with green wood.

Bowl Rest: A specially designed tool rest that extends into the hollow of a bowl, effectively reducing vibration by limiting the distance the tool overhangs off the end of the tool rest.

Chuck: A work holding/fixing device used to mount a piece of wood firmly onto the end of a spindle. There are many different types of chucks including scroll chucks, screw chucks, collet chucks and pin chucks to name a few.

Collets: The movable metal parts in a chuck which grip the tool or the work piece.

Headstock: The housing containing the spindle and the spindle support bearings. Most woodturning lathes feature spindles with Morse taper arbors. On a lathe, this is the part that holds the material to be turned (or hold it on one end in the case of spindle turnings) and attaches to a motor that powers the rotation. The headstock may incorporate the motor directly but more often the motor is below or to the side and attaches to the headstock arbor via a V-belt.

Hand wheel: The work piece that turns about a horizontal axis against a fixed tool.

Morse Taper: The taper that is one of a standard series used in the shank of tools to fit a matching taper in the mandrel of a machine tool.

Mandrel: A shaft or spindle in a lathe to which work is fixed while being turned.

Motor: Power source for the lathe.

Spindle: The spindle is a rotating axis and heart of the headstock.

Spindle Steady Rest: Used to steady a long spindle while turning.

Switch: Control point for the lathe's power.

Tailstock: A moveable locking/clamping assembly on a lathe that slides up and down the bedway. The tailstock houses the tailstock quill or ram, which is adjustable in and out by means of a hand wheel that exerts pressure on a project for support during turning. The tailstock assembly is usually made from the same material as the main body of the lathe, typically cast iron or steel.

Tool Rest: A removable and adjustable tool rest support for woodturning tools that is held in the tool rest holder/banjo. Tool rests are normally shaped like a "T", but also come in other shapes. Larger lathes typically include a 6" and 12" long straight tool rest as standard accessories. Specialty tool rests are available in curved, box, "S" curved, angled, extra-long and skewed configurations to meet specific woodturning needs.

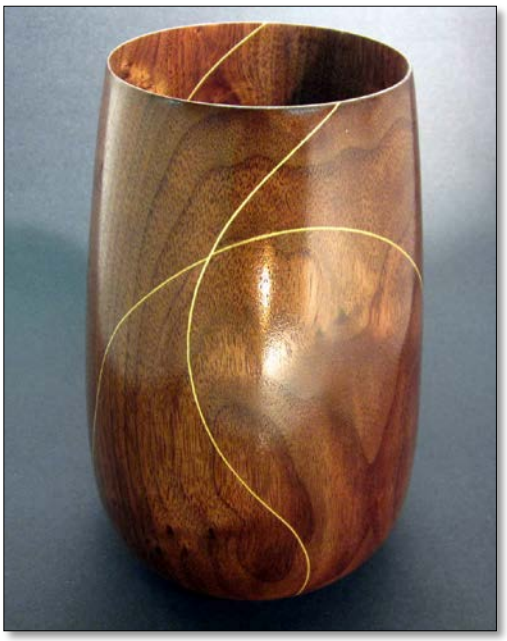
MEMBER GALLERY

Paul Guilbeault

Paul Guilbealt of Belle River, Ontario, Canada, has been a member of AAW since January 2009 and is a member of the Arizona Woodturners Association.

Blue Bird Bowl

Tear Drop Vase



Black Walnut Vase

Diana Friend

Seattle, Washington

"I started turning full-time in my late 50's after I moved to Seattle. I had rented a space in a wonderful shop to make furniture but found instead a lovely supply of green wood, an empty lathe, and kind support. As I started making more bowls I began to think along the lines of, "What if I spent all my time learning to turn, the 10,000 hours approach, would I really be able to get somewhere with it"? In my earlier life as a musician I learned the benefits of practice, practice, practice. Five years later, I continue that practice and add: the patience to slow down, the enjoyment of new problems and the fun in coming up with their diverse solutions."

Submissions

Want to share your work in *Woodturning FUNdamentals*?
Please send your high-resolution images along with title, size, and materials used to linda@woodturner.org.

Want to "pay it forward"?
Woodturning FUNdamentals welcomes other content including tips, projects, and informational articles.

Please send your content ideas to linda@woodturner.org. The deadline for submissions for the January issue of *Woodturning FUNdamentals* is February 9, 2016. Please note: All content submitted may be subject to edit.