

Turning a Wooden Baseball Cap

By Larry Hancock



**Tutorial by Larry Hancock • Photos and Text by Larry Hancock
Distributed by Craft Supplies USA
January 2006**



Since I don't live where maple grows wild for the taking I am using magnolia this cap. Magnolia warps and goes oval so it will work for the cap. This tree was cut about 6 months ago and left in the yard. The end grain has split some but the cracks only go about 1" deep on this unsealed piece.

I sawed the log section in half through the heart. A cap can be turned from a smaller log section than a cowboy style hat. It is still best if you can stay away from the heart section of wood so use something big enough to allow for that.



I have marked a line that shows the heart of the log and made marks 5" either side of this line to make my chain-saw cuts.

The opening of the cap is toward the bark side of the blank unlike turning a cowboy where the opening is to the heart. That is why you can use a smaller piece of wood for the cap but it also means you will be turning a lot of air on the outer edges of the cap and can't use a light to gage the bill thickness. The growth rings of the wood want to straighten themselves out so the bill of the cap is toward the bark side to assist bending it in the right direction. The wood is oriented from front to back parallel to the heart to make the cap go oval in shape



The blank cut to a rectangular section and the corners trimmed off. From here I will go straight to the lathe without having to cut any more wood off. The blank is about 18" long, 10" wide and 6" thick. I allow excess wood in the blank now so I have something to work with while I am trying to orient it on the lathe for best grain presentation and in case I find a defect that needs turned away.



I have marked the center of the blank and will seat the spur center before I put the blank between centers on the lathe. I am seating the spur in solid wood not bark. The bark and the soft wood underneath can allow the spur center to become loose and spin in the blank while turning. This can be dangerous by allowing the blank to fly off the lathe. I removed all the bark from the blank while I was cutting it out with

the chainsaw.



The spur center seated in the blank. Use a rubber mallet to prevent damage to the spur center.



The blank between centers. Rotate the blank by hand to make sure it clears the ways and tool rest before you turn the lathe on. Start the lathe at a slow speed and slowly bring the speed up to something you are comfortable with to start roughing at.



There will be a lot of air turned on the outer edges of this piece so be very careful where your hands are at all times.



Any time you move the tool rest, when turning an irregular piece like this one, stop the lathe and rotate the blank by hand to make sure it clears everything before starting the lathe back up.



Roughing starts at the outer edge and proceeds toward the center in progressive steps. Start by cutting the tips of the wings off and working back toward the center, taking longer cuts each time.



The bowl gouge is presented with the flute in the direction of cut. Starting the cut toward the center and pulling toward the outer edge. Even though you can't see the wood on the outer edge you continue the line of cut until clear of the wood and then go back in for another cut.



Check the tightness of the tailstock continually to make sure it does not loosen off when turning an irregular or out of balance piece of wood. You don't want the blank flying off and landing on your foot or otherwise hitting you.



The cap is sized the same as the cowboy style hat. Measure your head front to back and side-to-side to get the average for the diameter you need to fit your head. My head is 8" by 6" so the average is 7". Add about 3/4" to the diameter to allow for wood shrinkage, this amount will vary some with the species of wood you use so you need to know the characteristics of the wood you are using for an

exact size. The diameter is measured on the outside of the head-band area, for me the outside diameter is 7 3/4".



The bill on most caps is 2 1/2" to 3" long so I have plenty of extra on this blank to work with.



This is the style cap I wear, your favorite cap may vary in shape slightly with sides that start straighter and then round over to the top button. Use your style cap as an example for shape and follow these steps to create a wood version.

Look closely at the picture and you will see the bill of the cap is angled downward from the top in the rough turned blank and the real cloth cap in the front.

Turn the wood cap to imitate the curves and angles of a real cap. Don't expect the wood to bend in all directions to compensate for not turning the cap closely to shape from the start.



I always orient the side of the blank I am going to turn the tenon on for the chuck on the tailstock side. Since I am right handed it is more comfortable and the tailstock is smaller than the chuck so I have more access to turn the tenon. Cut in toward the headstock to form a straight-sided tenon.

Your chuck jaw design may require a dovetail shaped tenon instead of the straight tenon for the Oneway chuck jaws.



Pull the gouge to the outer edge to make a square shoulder or slightly under cut for the chuck jaws to seat firmly against.



The finished tenon for holding in the chuck.



The blank reversed and gripped in the chuck. You can see the profile the cap will be and the bill is already turned to slope down from the top.



The chuck jaws seated against the shoulder of the tenon for best lateral support of the blank while turning.



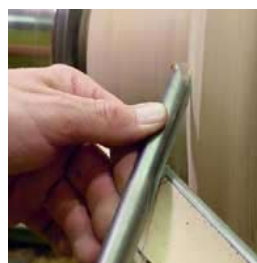
Refining the outer profile of the blank now that it is gripped in the chuck for final turning.



With the bowl gouge side vertical and the bevel rubbing the wood surface a clean finish cut can be made. The convex shape of the side ground bowl gouge allows the shaving to come off the wood with little resistance in a good shearing cut.



The shavings produced by the above cut. Shavings are long and thin because they slide right over the surface of the inside of the flute without having to curl away.



Shear scraping the bill area. Apply pressure down onto the gouge above the tool rest surface and pull the gouge in a smooth motion to clean cut the bill area. This will help with the tool bounce when turning a lot of air.



The bill area surface from the tool. Don't leave any torn grain, cut it cleanly at this stage.



Using a spindle gouge to make a V cut for a bead detail.



Adding a bead detail that imitates the string over the bill on some caps. I am using a spindle gouge.



Sanding the cap before moving on to hollow the cap. It is easier to sand some now while the blank is running true.



Hand sand the bill area now. Remember to pick the bill you want to keep and sand it.



Start thinning the bill to final thickness. Start at the outer edge and work toward the center in small steps. The outer edge will start to warp out of round once thinned and no more turning can be done on that area, make sure to get the area cut cleanly before moving on.

You cannot use a light shining through the wood to help gauge the thickness, all you would see is the light itself since you are turning mostly air. Angle a light at the gouge tip so you can see the cut line the gouge is making and the depth of cut you are taking. In this picture you can see the line of cut at the gouge's tip. To find the surface of the spinning wood slowly present the bevel heel of the gouge to the wood and bring the cutting edge around until it starts to cut.



The bevel of the bowl gouge is aligned to the direction of cut. The cutting is done with the lower edge of the tip of the gouge.

You may notice when you stop the lathe that the leading edged of the wood on each side may be a different thickness than the trailing edge because the wood can flex away from the gouge after it contacts it or the gouge can grab the wing and take a deeper cut depending on the way the gouge is presented to the wood. If this happens try sharpening your gouge and presenting the gouge at a different angle or rotating the flute more to the side or up.



The outer edge of the bill at final thickness of about 3/32". When you stop the lathe the flat edge of the wood itself will give you a visual indicator of the thickness.

You need to maintain the 3/32" thickness (or slightly less) throughout the entire cap to allow for bending and shrinking without cracking. Variations of thickness in the bill will be most noticeable to the eye in the finished cap but maintain a constant thickness while turning the entire cap.

eye in the finished cap but maintain a constant thickness while turning the entire cap.



Thin the bill a step further and check the thickness before proceeding toward the center with any more cuts.



Keep thinning the bill area.



Sand the bill with the lathe stopped. Remember; just spend time sanding the bill you will keep.



Now the tailstock can be slid back and the cone of wood removed that was used for support.



I have reversed my lathe rotation to make it easier for hollowing. The chuck on the Oneway lathe locks to the spindle with set screws for safe reverse turning.



Wetting the wood with water will make it easier for a light to shine through to help gauge the thickness as the cap is hollowed. Remember to maintain a consistent thickness of 3/32" or slightly less throughout the entire cap.

Using a light is not necessary for completing a cap. The sides of the cap can be measured with most any 6" caliper with the lathe stopped. Turn the inside to final thickness in small steps, measure and then proceed another step toward the center. Any color wood, wet or dry, can be turned in this fashion to produce a thin walled bowl if you have calipers that can reach from the rim to the bottom.



Cutting from the bill to the center with the gouge flute facing the direction of cut.



The light shining through the wet end grain area of the wood.



Check the thickness and proceed with hollowing.

When turning irregular edged pieces like this cap or a natural edge bowl always stop the lathe before repositioning the tool rest. This picture shows the wings of the turning are closer to the tool rest banjo than the center section where the cutting is taking place. Any time you adjust the tool rest make sure and rotate the wood by hand to see that it clears the

upright section of the banjo before you turn the lathe on.



Refine the curve at the top of the cap near the chuck before hollowing that area.



The interior of the cap finish turned. Power sand some now to save on sanding time later.



I will use this waste wood chuck with fine grit sand paper attached to reverse the cap on for final turning of the top. The grit side of the sand paper will contact the interior of the cap to provide the drive friction.



With the cap reversed and driven by compression between the jam chuck and the tailstock center I can now finish turn the top of the cap. I use shear-scraping cuts for this.



The rounded top section blended in with the rest of the cap surface.

If you are unsure of the thickness of the wood at the top, stop the lathe, remove the cap, measure and then remount the cap on the lathe. You can do this as many times as needed. I personally don't mind being cautious at this stage of the turning when it means the difference between a finished cap or turning through the top and ruining the piece I have spent all this time working on.



Sanding the top area of the cap.



Most caps have a button on the top where all the seams come together so turn one on the cap.



I use a fine tooth hacksaw blade to cut the small amount of wood away above the button detail.



Use the bill of a cap as a template to mark the bill of the wood cap for cutting.



A lamp with a 75-watt bulb can provide some warmth to help with bending the bill.



Bandsaw the waste wood off from around the cap. Always be aware of where your fingers are in relation to the blade of the saw. The uneven edge of the cap on the table surface can be tricky to work with but the wood is thin and doesn't resist very much.



The finished cap. You can be as creative as you want with the cap, carve stitch lines around the cap, carve a logo in the front, bleach the bill white or dye it, paint a logo on the front, carve the back to look like an adjustable band or anything else you may think of to add. Look for examples on the internet from Johannes Michelsen or Chris Ramsey .



Now we finally have something that looks like a cap instead of a rectangular edge bowl.



Side view of the cap.



Sand the edges. You can use a belt sander or a sanding pad in a drill like I am using. Once the wood has dried I hand sand the entire cap and apply a lacquer finish.



I use my cowboy hat bending frame to shape the cap. To help round the bill of the cap I have a coffee can on the inside and rubber bands stretched around it.

Be careful with the side pressure when bending. The back of the cap no longer has wood to support it and it is all end grain. It will split easily. The bill will also split if too much pressure is applied while shaping. This stage is where I

and others have destroyed what we spent all this time turning so be careful and patient in shaping your cap.

The inside of this cap now measures 6 3/8" by 8". It was a 7 3/4" diameter circle to start. The top is 3 1/4" deep.