Introduction

The idea for this article started with an email conversation with Judy Williams about someone else’s crochet hooks. We were commenting about the positive and negative points of his hooks when Judy wrote that one couldn’t do the hook part itself on the lathe. Of course I saw this as a challenge (or a goad?). That was quite a while ago. I started trying to use my collet chuck, which required a rather strange tailstock center modification and a largely cylindrical handle. Later I came up with a couple of jigs that let me turn eccentrically to shape the hook using #1 jaws on a 4-jaw chuck and to choke up on the already turned handle to turn the finial without overly worrying about vibration. Fig01 shows the end result.

First this article will discuss some usability design considerations so your hook does more than look pretty. Then it will describe a couple of alternate tools for turning the hook, and then how to practice making the hook. Next the article tells how to make the two jigs required and last turning the actual hook.

Design Constraints

Length

While I was still trying to work out hook turning with the collet chuck I sat in on a hook design session given in the spouse craft room by Katherine Kowalski at the Hartford Symposium. She said that crocheters use two different hand grips: pencil and knife. If one holds the hook like a pencil, as in Fig02, the standard commercial 6” length is fine as the end and any sharp edged decorative turnings are well above the soft hand parts. My wife, who does hold it like a pencil, in fact doesn’t like the balance of longer hooks. However, if you hold the hook like a knife as in Fig03, than the end of a standard hook, or the sharp features of a finial in mine, dig into the base of your palm. A 9” hook moves the end and sharp features beyond all but the biggest of hands, as in Fig04.

This is NOT a production technique. If you want to make a lot of hooks in a hurry it would make more sense to do the notches off lathe. But if you enjoy the challenge of a few extra degrees of difficulty you should enjoy it. If it doesn’t make economic sense to sell them, then give them away. In my area, at least, there is a resurgence of interest among 20 something girls in the fiber arts. One of the things my Dad never had to tell me was never pass up a chance to make a pretty girl smile.
Fig 04  Knife grip with a long hook. The end and sharp features are now past the hand.

Therefore, before you design your hook, or at least before you gift it, find out the preferred grip style of the user. For Pencil grippers, use a 6-1/2” to 7” blank (you lose a bit of length at both ends). For Knife grippers, use a 9-1/2” or so blank.

Tip

Although there are some commercial crochet hooks that are basically a cylinder with a rounded tip and a slot, it’s not the best design. Crocheting is pulling loops of yarn through loops of yarn. The size of the shaft of the hook determines the size of the loop. If the hooked tip of the hook is as large as the shaft, then the hook plus the loop of yarn it is pulling will be larger than the loop it is pulling through, necessitating additional effort to compress the yarn to pull it through. Fig 05 illustrates this. The hook on the left was turned on only two centers, leaving the width of the hook the same as the shaft. The parallel lines of the background show how the taut yarn protrudes well past the shaft diameter. The hook on the right was turned on four centers, thinning the sides of the hook, and the yarn plus hook is barely bigger than the shaft. The shaft itself is the same diameter, so it yields the same size loops.

Fig 05  The hook on the left was turned on two centers so the hook past the notch is the same width as the shaft. The hook on the right was turned on four centers so the hook is thinner than the shaft. Note that the taut yarn extends past the shaft diameter on the two center hook, which will present greater resistance in use.

Tools

From Parting Tool

The notch is formed by turning eccentrically using two tools, a 1/16” mini-cove tool and a skew. One way to make a mini-cove tool is by regrinding a 1/16” parting tool. This kind of modification probably constitutes abuse, so buy a cheap one. First adjust your grinder sliding V-notch so that the bottom of the parting tool is tangential to the grinding wheel as in Fig 06. The notch is necessary because when cutting the hook the tool is making almost a small diameter face grain cut and would open the slot up in exactly the worst way by reducing the undercutting. The finished mini-cove tool is shown in Fig 09.

Fig 06  Grinding the bottom of the tip of the parting tool into a semi-circle.

Readjust the sliding V-arm so that the bevel matches the wheel and sharpen the face of the tool as in Fig 07. Then mount a flat tool rest in place of the sliding arm and grind a notch behind the tip as in Fig 08. The notch is necessary because when cutting the hook the tool is making almost a small diameter face grain cut and would open the slot up in exactly the worst way by reducing the undercutting. The finished mini-cove tool is shown in Fig 09.

Fig 07  Grinding the bevel.
Fig08  Cutting a notch behind the tip.

Fig09  The finished mini-cove tool.

From a Drill Blank

Another way to make a mini-cove tool suitable for crochet hooks is similar to my article in Woodturing Design #7, Fall 2005 (also on my web site). It uses a steel rectangle instead of drill rod to hold the drill blank so that it can cut on a steep angle to the spindle without fouling. Start with 7” of 1/8" x 1" steel bar. Cut a bevel at the tip leaving about ¼” flat (the bevel is necessary so you can sharpen the tool. The wide steel suppresses vibration). Drill a 1/16” hole about ½” deep in the middle of the flat. Cut a 1/16” drill blank in half. Use CA glue to fasten the drill blank in the 1/16” hole. Sharpen the end of the drill blank at a 45 degree angle using the grinder and sliding V-arm. The completed mini-cove tool is shown in Fig10. It’s a deluxe version, with black Gorilla tape for a handle instead of grey generic duct tape.

Fig10  Alternate mini-cove tool made of a drill blank mounted in rectangular steel stock.

Practice

You won’t want to repeatedly waste the work turning the shaft of the crochet hook learning the basics of turning the hook, so do some practice first. Select a short 3/8” dowel and cut about one third of one side off of the dowel for about the last 3”. Mount the dowel in your 4-jaw chuck with #1 jaws so it’s sticking out about 4” as in Fig11. The partial dowel will let you practice the cuts while turning more wood than air, but still stop the work and see how the cut would look on a hook by looking at the flat.

Fig11  Practice dowel mounted in the 4-jaw chuck. About 1/3 of the side of the dowel has been sawn off so you can evaluate your practice cuts while still turning more wood than air.

To make the first cut with the drill blank based mini-cove tool, adjust your tool rest so that the tip of the tool is at lathe axis height when the tool is held straight across. Hold the tool at an acute angle to the spindle as in Fig12 and push it in. When you think you’ve cut deeply enough, pull the tool back the way it went in but DO NOT LIFT the tool. Turn the lathe off and have a look at your progress by looking at the flattened part of the dowel. You should be able get a feel for, and perhaps see the tool through the ghost image to tell how deep to go after a bit.

Fig12  The first cut with a drill blank based mini-cove tool. Push in and pull back—don’t lift.

If you made the parting tool based mini-cove tool, the cut is made the same way. Adjust the tool rest so that the bottom edge is on lathe axis. Hold the tool at an acute angle to the spindle but also tilt the tool in towards the spindle about 30 degrees as in Fig13. Push the tool in. When you think you’ve cut deeply enough withdraw the tool by pulling it straight back. Again, do not lift. Fig14 shows the practice piece after the first cut.

Fig13  The first cut with a parting tool based mini-cove tool. Hold the tool so the top is tilted inward about 30° and push in and pull back.
Fig 14  The practice dowel after the first cut.

The second cut is done with the skew as in Fig 15. Make two or three cuts, starting near the notch and gradually starting further back, to cut a slope to the bottom of the notch. Fig 16 shows the practice piece after the first cut.

Fig 15  Cutting a slope to the bottom of the notch with a skew.

Fig 16  The practice dowel after the second cut.

For the third cut go back to the mini-cove tool. Now that the slope gives you a bit more room undercut the lip of the hook a bit more as in Fig 17. Fig 18 shows the practice piece after the third cut. Start a new series of cuts a little further back and continue until you feel comfortable with the procedure. You can cut off the dowel and make a new flat or switch to a new dowel. Patient practice with the dowel will yield less frustration later, so don’t be in a hurry. Go ahead and blow a real hook up and then come back.

Fig 17  The third cut to further undercut the notch.

Fig 18  The practice dowel after the third cut.

Jigs

Eccentric Jig

The Eccentric Jig is just sheet metal folded into a C shape so that it clips around the square hook blank. This effectively converts the square into a rectangle to that only two opposing jaws of the 4-jaw contact the work, letting you mount it slightly off axis. If you made the Direct Reading Caliper from my last article, you’ll have some thick brass sheet metal lying about and can make the jig from that starting at Fig 21. If you haven’t, buy some readily available aluminum flashing from Home Depot et al.

Cut a piece of aluminum flashing 1-1/4” wide and a little longer than 6” long. Fold the strip in half lengthwise using a vise to flatten the fold as in Fig 19. Now fold the strip in half lengthwise again as in Fig 20. Four thicknesses, plus the inevitable wrinkles and air, will give enough thickness for the jig to work.

Fig 19  Folding the aluminum flashing strip in half lengthwise.

Fig 20  Folding the aluminum flashing strip in half lengthwise the second time.

Use a fine line marker to draw a line across the folded strip ½” from the fold. Clamp the strip in the vise at the line at the top of the jaws. Then use a hammer to fold the strip at a right angle as in Fig 21. Cut a sample hook blank to ½” square and place the blank into the corner you just made in the strip. Clamp the strip and blank in the vise with the blank even with the top of the jaws as in Fig 22. Use a hammer to fold the jig into its final shape as in Fig 23. Take the jig out of the vise and use shears to cut away any excess length in the last leg of the strip. You can...
keep the last leg together and cover up sharp edges with a little tape.

and cut off the nub of the finial without being concerned about vibration and the like. Cut a piece of aluminum flashing and a piece of 2mm craft foam 1.5” wide by 2” long. Spray the foam piece with spray adhesive as in Fig24. Follow the directions on the can for the appropriate waiting time and then stick the foam to the flashing. Bend the jig around a 3/8” dowel with the foam side in as in Fig25. You don’t have much leverage on the edges, so you may need to use needle nose pliers to finish the bends. The completed jigs are shown in Fig26.

**Finial Jig**

The Finial Jig lets you really choke up on the already finished hook handle to turn

**Fig21** After making the first 90° bend in the eccentric jig.

**Fig22** The set-up for making the second 90° bend in the eccentric jig. Use scrap wood the same size as your hook blanks.

**Fig23** After making the second bend in the eccentric jig.

**Fig24** The set-up to apply foam to flashing for the finial jig.

**Fig25** After bending the finial jig around a dowel.

**Fig26** The completed jigs.

**Turning**

**Prep**

Begin to make a crochet hook by cutting ½” x ½” blanks as shown in Fig27. I suggest you select a fairly hard diffuse porous straight grained hardwood such as maple, holly, or cherry, at least for your first hooks. They do need to be square, but bandsawn is good enough if your blade or attention doesn’t wander. Cut the blanks about 7” long for a pencil grip hook, or 9-1/2” long for a knife grip hook. Use a center punch to mark for the tailstock center. Put a single punch in the center of one end, and 4 punches in a T pattern at the other end as in Fig28. The middle punch of the T is in the middle of the stock. One punch is halfway between the middle and bottom, while the last two punches are halfway between the middle and either side.

**Fig27** Hook blanks suitable for both knife and pencil grips. Use diffuse porous straight grained hardwood.
Hook

Insert the blank into the chuck rounded in first, T punched end towards the tailstock as in Fig29. You can insert a knife style blank in as far as it will go. Leave about 3 inches past the jaws for a pencil style blank. Hold the blank so that the middle center punch engages the tailstock point and tighten the chuck. Turn the last 2-1/2” or so round as in Fig32.

The square blank won’t fit far enough into the Morse taper to choke up on in the chuck sufficiently, so first mount the blank in the 4-jaw chuck with the T marked end in the chuck as in Fig29. Turn 2-1/2” to 3” of the blank towards the tailstock round as in Fig30. Remove the blank from the chuck.

Now you have to decide what size crochet hook to make. It’s prudent to start with larger size hooks such as a J (.225”) or K (.255”). After you practice you can work down to smaller sizes such as I (.198”), H (.173”), or G (.150”). Set your calipers to the size required. Mark the blank 3/8” from the tailstock for a sturdy nub, and 1-5/8” from that for the extent of the shaft. Make parting cuts at the marks to define the shaft as in Fig33. Reduce the whole shaft area to the required diameter as in Fig34. Turn a half-cove that blends into the shaft as in Fig35. A cut like this will make any minor errors in remounting less visible. Remove the blank from the chuck.

It’s easier to see what you’re doing when cutting a lot of air if you adjust the background. Try to make the background contrast with the work. You can use a
strongly lighted light background with a dimly lit blank, or a dark background such as black construction paper behind a brightly lit blank. Fig36 shows a brightly lit blank with a medium grey background.

Fig36 A dark background and a brightly lit shaft makes it easier to see the ghost image and tell how your cuts are progressing.

To mount the blank for the first eccentric mounting clip the eccentric jig on the still square part of the jig so that the open side of the C is away from the bottom punch of the T. Hold the bottom punch of the T against the tailstock and tighten the chuck. Use gentle tailstock pressure. Fig37 shows the eccentrically mounted blank. Make the first cut with the mini-cove tool to start the hook notch—the result is shown in Fig38. Then use the skew to cut the ramp down to the base of the notch and then steepen the notch of the hook by touching up with the mini-cove tool as in Fig39. At this point you need to sand the ramp and notch while it is still eccentrically mounted, as in Fig40.

Fig37 The first eccentric mount to turn the notch.

Fig38 After the first eccentric cut to form the notch.

Fig39 After completing the eccentric cuts to form the notch.

Fig40 After sanding the slope and notch while still eccentrically mounted.

To prepare for the second and third eccentric mounting, remove the blank from the chuck and rotate the Eccentric Jig 90°. Hold one of the side punches against the tailstock point and tighten the chuck as in Fig41. Take one or two light skew cuts to trim the side of the hook tip. The result is shown in Fig42. Remount the hook in the other side punches as in Fig43 and repeat the skew cuts. The result is shown in Fig44. Should you wish to “cheat”, obviously one could get the same result with a couple of swipes on a pneumatic cushion drum sander or the like.

Fig41 The second eccentric mounting to thin the width of the hook tip.

Fig42 After thinning one side (bottom in this photo) of the hook tip.

Fig43 The third eccentric mounting to finish thinning the width of the hook tip.
After the third eccentric mounting.

**Handle**

To turn the rest of the handle, first mark where the finial will start with pencil. Mount the blank in the 4-jaw chuck so that the mark is accessible as in Fig45. You can use what ever design you like for the handle. However I do suggest that the handle just behind the shaft be tapered for ease of grip and that all features in the handle should be smooth and flesh friendly rather than sharp. The size of the shaft effects what looks graceful for the handle. I’ve found for the H size hook I used for the photos looks nice with an elongated wasp shape with some beads at the narrow part. The turned handle is shown in Fig46.

Do the majority of the sanding while you still have tailstock support. Even so, do back up the work with your fingers while sanding. Fig47 shows the handle after sanding. After sanding finish turning the end of the tip with a skew or spindle gouge to remove the nub and then sand the tip. Fig48 shows the hook after removing the nub. If you are going to use a lathe applied finish, such as French polish or CA glue, then apply finish to the shaft and handle now, as in Fig49.

After doing the majority of the sanding of the handle and shaft.

**Finial**

Slip the Finial Jig on to the handle as in Fig50. You may need to resize the jig if it overlaps, but you can easily do that with a pair of scissors. Hold the center punch against the tailstock center point and tighten the chuck as in Fig51. Don’t be afraid to really tighten the chuck, as you don’t want it to slip. Turn the finial to whatever shape you like. Sand the finial while you still have tailstock support as in Fig52. Then cut off and sand the end and apply finish as in Fig53. Fig54 shows a pair of completed hooks in both knife and pencil grip length.
Fig 50  The handle with the finial jig slipped on.

Fig 51  The hook mounted to turn the finial. The jig protects the already turned handle well so don’t hesitate to tighten the chuck securely.

Fig 52  After turning and sanding the finial.

Fig 53  The finished finial.

Fig 54  Two completed crochet hooks.

Abrasiv paper in graduated grits

Finish of choice

**Author**

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**Tools & Materials**

1/16” parting tool or 1/16” drill blank & steel bar stock for mini-cove tool

Spindle roughing gouge

Skew

4-jaw chuck

3/8 dowel for practice

Aluminum flashing for jigs

2mm craft foam for Finial Jig (look at a craft store such as Michael’s or the craft section of Wal*Mart)

Spray adhesive

Center Punch

½ x ½ x 7 or ½ x ½ x 9-1/2 diffuse porous straight grain spindle blanks