

How to Make a Sea Urchin Ornament and Stand

None of the following information is original with me. I have gleaned it from various books and demos. Two books by Dick Sing cover much of what I am sharing in great detail. *Miniature Birdhouses* (ISBN: 0-7643-2080-7) and *Ornaments & Eggs* (ISBN: 0-7643-1463-7).

Sea urchins are a spiny sea creature. When they die they leave a shell that comes in a wide variety of sizes, colors and textures. Some are thin and fragile and others are thicker and stronger.

Shells can be purchased at craft stores but I've found better prices on the web from dealers specializing in sea shells. Here are two of the many sea shell vendors found on the web.

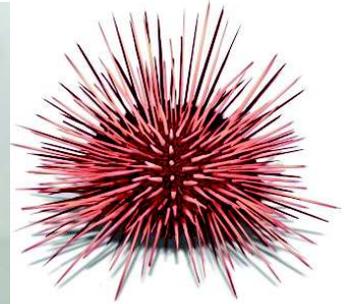
<http://www.seashellworld.com/sea-urchins.html>
<http://www.ussell.com/search.aspx?find=urchin>

To add strength to the shells I fill them with expanding insulation foam. Use the minimal expansion foam if possible. First tape over the smaller hole then squirt foam into the larger hole. Direct a small amount of foam around the perimeter inside the shell. Only partially fill the shell. Usually less than half full. The foam expands slowly and way more than you expect! Try a test first outside the shell to get an idea of how fast and how much the foam expands. If you overfill the shell with foam it will be difficult to remove from the outside of the shell. Acetone will work if you use it before the foam completely cures. After the foam cures remove the tape and excess foam by pulling, cutting or scraping. Under filling is better and saves a lot of work, sticky fingers and spoiled shells. Don't ask me how I know this.

More elegant ornaments can be made if the finial base fits nicely flush with the shell but most shells have irregular holes and lumps around the hole. To handle this I use a trick I saw Ashley Harwood use, which is to ream the holes perfectly round using a tapered grind stone. This allows you to make the finial exactly fit the hole and blend into the shell rather than sit on top of the lumps or irregular hole. Use a fine grit stone as the shells are fragile. With a stone in a cordless drill insert the stone into the hole and gently grind into the shell until you have a perfectly round hole. Some of the larger shells have holes that exceed the maximum diameter of the stone. With these I've had some success with an electrician's step drill. This is a bit tricky as these drills tend to grab and can easily break the shell but with patience it can be done. Turning step drill by hand gives more control but takes longer. These tools are available from Harbor Freight and other tool vendors.

The larger hole usually looks better as the bottom of the ornament but you can experiment. There are no rules. The finials are best made with a dense hardwood especially if you are going for long and slim with fine details. Hard Maple, Cherry, Walnut, Ebony, Osage, Bubinga, etc. are all good.

I usually start with a 1 1/2" x 1 1/2" x 8" piece of wood. Obviously smaller shells and shorter finials will require smaller stock. Mark the center on both ends. Chuck the stock, centering with tailstock live center. I usually only chuck about 1/4" of the end. If you chuck more you will have to drill the 1/8" holes deeper and use a longer piece of material to start.



Foam filled irregular hole



Stone



Step Drill



Round-ing hole



Nice round hole



Stock



Round and drill one end



Round and drill other end



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Round down to maximum diameter and drill a 1/8" hole in tailstock end about 1" deep. Reverse in chuck, finish rounding and drill 1/8" hole about 3/4" deep in other end. Hole depth is not critical. Just don't cut into it in later operations.

Part off about 2" of the tailstock end. Put this piece aside for later. It will become the top finial. Bring up the live center to remaining piece to support during roughing. This will be the lower finial. Measure large hole in shell. Set calipers to slightly larger than measured diameter. Round down this piece to the caliper setting and roughly taper piece from tailstock to 1/2" from chuck. Make a shallow taper from the max diameter 1/2" from chuck toward chuck. This will fit into the tapered hole in the shell. Remove tailstock support and turn finial to desired shape starting at tailstock end and using fingers to support while turning.

Resist the temptation to leave the tailstock in place while turning finial. The small amount of pressure from the live center will bow the finial and when the tailstock is finally removed it will not be straight and will whip around. This makes it look odd and hard to sand and finish. OK, do ask me how I know this.

Start the finial at the tailstock end and progress in increments leaving as much mass at the headstock end as possible for support. Totally finish turn the tip detail before moving to the next section. Turn the thin stem incrementally and continue adding details toward the headstock. When you are happy with the finial sand and finish as desired. I will sometimes use dyes to complement the color of the shell or set off the finial. I then seal the wood with Deft or other friction finish. The finished ornament will be given a coat of lacquer.

Part off the finial as close to chuck as possible using thin parting tool. Hopefully there is some of the 1/8" hole still in the finial. Repeat the process with the saved piece of stock to make the top finial fit the taper to the smaller hole in the shell. Before parting off the smaller finial drill a 1/32" diameter hole in it from the top into the 1/8" hole already in the bottom. This small hole will be used for the hanging loop, either a purchased screw eye or home made one like I use.

I make my hanging loops from 24ga brass craft wire. Cut a length about 3/4 inch and twist around an 1/8" allen wrench or ice pick. These loops are easy, cheap and more delicate than screw eyes.

Install screw eye or insert a homemade hanging loop in the small hole in top finial. Hold top finial upside down and put a drop of CA glue in the large hole and let it run down into the small hole. When you see the glue at the top of the finial insert loop in the finial. Be careful not to glue your fingers to the finial. Yes you know how I know this.

Insert a length of 1/8" dowel into the bottom finial with a drop of CA glue. Insert this dowel through the shell and seat the bottom finial. You may need to adjust the hole size with the stone to get

Part off 2 inch piece



Rough shape



Begin detailing



Work in stages toward chuck



Fine tuning taper



Finished turning



Dyed and sealed



Part off



Fit to shell



Repeat process for top finial



Drilling for hanger loop



Twist loop around 1/8" hex wrench



Finished loops



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the look you want. Mark the dowel just below the top of the shell. Cut the dowel to this mark. Install the top finial on the dowel. Adjust dowel length if necessary and try again. When fit is right add a drop of CA to 1/8" hole in the top finial and assemble for last time.

Spray entire ornament including shell with a coat of lacquer. Ornament is done. Now let's make the display stand!

Select a piece of 3/4" stock 2-1/2" to 3-1/2" square for the base of your stand. Mark the center and mount this to a flat scrap block using double sided tape and the live center to apply pressure for a good bond. Round up the blank to the desired diameter. Remove the live center and create a 1/8" recess in the face sized to fit the expanding jaws of your chuck. This will be the bottom of the base. Taper the raised rim toward the center slightly so it will set firmly. Sand and finish the bottom. I use Deft or friction finish.

Remount the base on the expansion chuck. Shape the top as desired. Drill a 1/16" hole in the center about 1/2" deep. Sand and finish. The base is done.

I use a piece of 1/16" brazing rod purchased at a welding supply store. Polish the rod with fine emery paper. Bend the hanger to the desired shape using needle nose pliers and your fingers. Fingers work best for the smooth curve. If you use larger rod, 3/32" or 1/8" you will probably have to bend the curve around a form. I like the 1/16" rod because it is easy to work with and flexes a little which adds some motion and interest to the ornament. Insert the end of the bent rod into the base just completed. Spray the base and rod with lacquer. If you don't spray the brazing rod it will tarnish over time. Hang the ornament you are done. Make a bunch more for gifts or to sell. The possibilities are endless by changing the shell, wood species, color, finial shapes and display stand. Have fun.

You may notice that the finished ornament pictured to the right doesn't have the original detail at the bottom of the finial. That's what happens when you drop a fragile piece. It's called a "design opportunity". I made the top to match and it looks like that's what I intended all along.

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Glue loop in finial



Mark dowel for cutting



Finials and dowel ready to install



Double faced carpet tape chuck



Base blank mounted



Bottom of base finished



Drilling hole for hanging rod



Friction finish sealer on base



Finished ornament



Stands can be used for small bird houses too.