

Turning Small Squarish Dished Platters

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These are "**small**," perhaps about 7.5" to 10.5" across.
They are "**squarish**," not quite square.
I call them "**dished platters**" - not flat inside like a platter but not really a bowl.

I make these to be used – for real candy instead of eye candy. Also great for cookies, cheese, mail, wallets, keys or change. They make excellent wedding and housewarming gifts, especially since they are not huge!

These pages show how I make these but certainly not the **only** way!

SOME DESIGN DECISIONS

The base is thicker than usually done on a platter, but this will not be a problem since I only use dry wood. The thicker base lifts the piece off the table, creates a shadow, and adds visual interest.

Others make platters with square sides, sometimes with rounded corners. From the top view the edges of this design are curved all the way across with no flats. I think this looks better when viewed from a slight angle.

A turned piece with a non-circular rim can be difficult to hold to turn away evidence of the holding method and to detail the bottom. I use a method that makes this easy.

A vacuum chuck would work, as would a custom donut chuck. The piece could be jammed tightly between something in the headstock and the tailstock and the center of the base turned, nibbling away at the center nub then paring and finishing by hand.

My method: cut a recess in the bottom for an expansion chuck for turning the top. To greatly simplify things I choose to simply leave the recess in the bottom, disguising it a bit with some detail.

The detail inside the base distracts the eye and adds interest. I shape the inside of the recess instead of leaving it flat. A narrow flat ring inside the recess is perfect for signing the piece.

I completely turn and smooth the bottom and may even apply finish before reversing to turn the top.



THE WOOD

I turn these only with dry wood. Nearly any species will do. I generally use wood 2" thick but have used wood as thin as 1.5". Hardwood boards 2x8 to 2x12 are perfect.

If the board is rough-sawn, it helps to plane it first so you can see the surface, grain orientation, figure, and any defects.

THE BASIC STEPS

- Prepare a template
- Trace the outline onto a board and cut out the blank with a bandsaw or jigsaw.
- Optionally sand the outer curve of the blank with a disk sander.
- Prepare a way to hold the blank first by the TOP, such as a recess, tenon, screw chuck, faceplate, or glue block.
- Mount the blank and make a recess in the bottom to use later.
- Turn the entire bottom.
- Smooth and sand the bottom, perhaps apply finish.
- Reverse to hold by the bottom recess and turn the top.
- Smooth and sand the top.
- Shape and smooth the rim.
- Apply finish.

Since the piece has "wings" it requires special techniques for "turning air".

Caution: *turning air requires close attention to nearly invisible spinning wood. Please see the "Important Safety Note" below in the section on turning the bottom.*

NEEDED TOOLS and USEFUL TOOLS

Almost necessary:

- Band saw or jigsaw
- Scroll chuck
- Parting tool
- Bowl gouge or other cutting tool
- Sandpaper
- Bright light

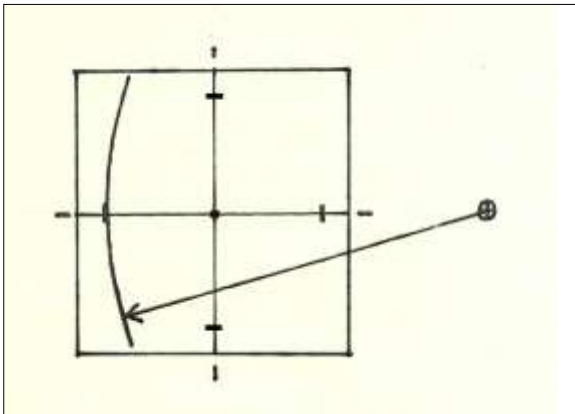
Optional but helpful:

- Disk sander
- Screw chuck
- Forstner bit
- Negative rake finishing scraper
- 1/4" round skew chisel
- Hand held scrapers
- Small ROS
- Soft sanding block
- Sanding sticks

PREPARE A TEMPLATE

I make these little platters with sides that are true arcs of a circle. I have used arcs from 1.2 to 1.5 times the diameter of the piece – a shorter radius makes a more curved edge.

I use a square of poster board marked with a horizontal and vertical line and mark the width on each line. A 9x9 square is a good starting size. Draw the arcs with a large compass, trammel points, or a point and a pencil taped to a stick.



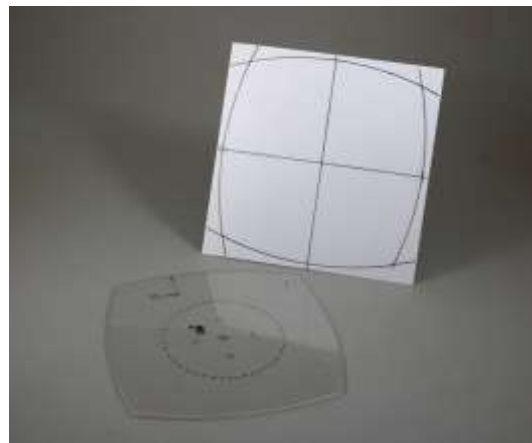
Anchor the center of the square to a work surface with a pushpin through the center.

Mark the center point for the arcs on the work surface.

Draw one arc with the compass. Turn the template 90 degrees and draw the second arc. Repeat for all four arcs. Cut out the template.

For a more durable template, trace the outline onto a sheet of 1/8" plexiglass. Cut it out with the band saw and sand the edges smooth.

The clear plastic lets you slide the template around and see the figure in the wood.



PREPARE THE BLANK

Trace the pattern onto the wood. Cut out the blank with a band saw. No band saw? A jigsaw would work.

Tip: If the board has not been planed, I often run the blanks through a drum sander to flatten both surfaces. This also shows the wood surface better and helps in deciding which side should be the top.

I use a disk sander to smooth the sawn edges of the curve. No disk sander? No problem. The rim can be smoothed by hand sanding after turning.

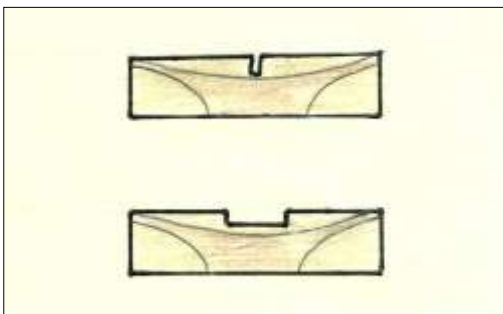
Diagonal lines from corner to corner can be helpful when judging the edge sanding.

Mark the center carefully - a center-finding ruler or a compass can help.



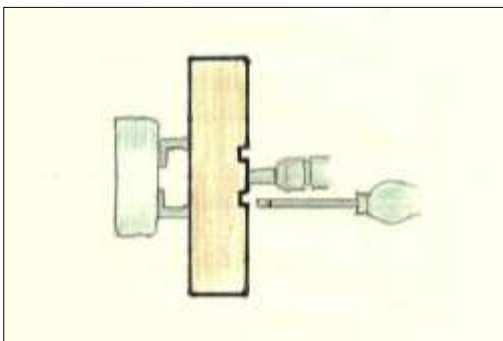
PREPARE THE MOUNTING METHOD

The blank is first held by what will be the **TOP** of the dished platter to turn the bottom. I like to hold the top with a screw chuck or with a chuck in a recess.



To hold the blank by the top I usually use a screw chuck since it involves simply drilling a hole. I use the Glaser screw chuck.

Another method is to use a Forstner bit in a drill press to drill a recess for an expansion chuck. For common 50mm dovetailed jaws, a 2-1/16 or 2-1/8" Forstner bit is perfect. It does, however, leave a divot in the center.



You can cut a recess on the lathe with a parting tool while holding the blank securely with the tailstock. Jamming the blank against the open jaws of a chuck works very well. Be sure to center the blank first.

A glue block or face plate with screws or double-sided tape are holding options.

MOUNT ON THE LATHE AND MARK THE BASE

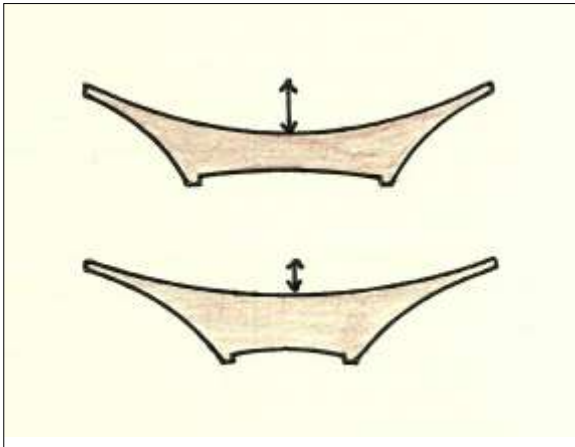
Mount (by the TOP), true the face, and mark the base diameter on the bottom. I like the diameter of the base to be about 0.5 to 0.6 times the width of the platter.



Base diameter considerations:

There are tradeoffs between the diameter of the base, the shape of the rim, and the eventual depth of the concavity in the top.

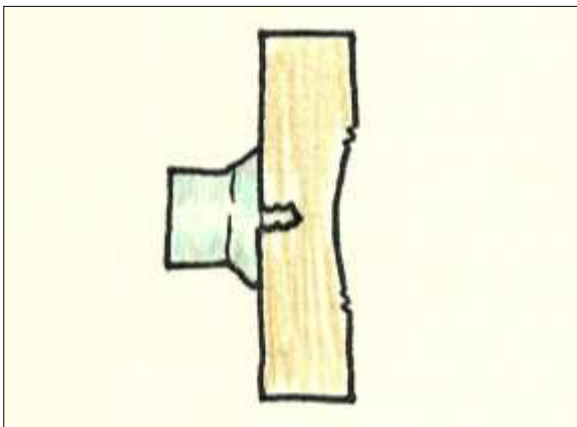
IF you want to keep the rim thickness even all the way across the sides, consider the slope of the bottom curve.



- For a simple curve on the bottom, a larger diameter base may make it easier to get deeper dished shape.
- A smaller base can give a shallower dished shape.
- A different bottom shape such as an ogee or a conical bottom can also define the shape of the bottom curve at the rim.

SLIGHTLY DISH INSIDE THE BASE RING

To define the base, I cut a small angled groove around the outside of the base.



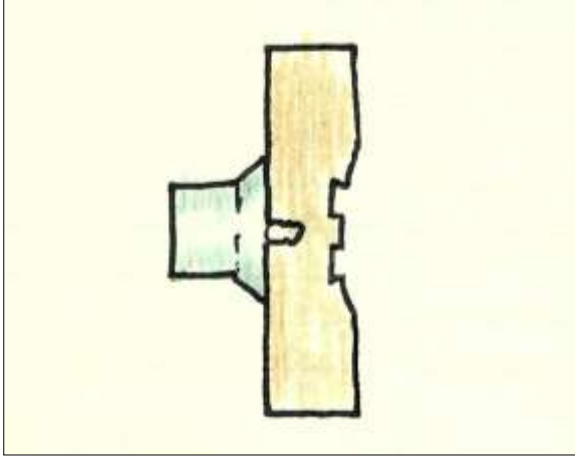
I like to create a narrow ring just inside the base diameter because I like the way it looks. I use a parting tool to cut a second angled groove to define the inside of the ring.

Cut a slight concave surface inside the base so the piece will sit nicely on a flat surface.

CUT A RECESS IN THE BOTTOM

Mount securely on the lathe. Be sure the piece is secure – tighten with the chuck key several times in each socket.

Cut a recess in the bottom of the blank to hold it later to turn the top. The recess does not need to be very deep. 1/8" – 3/16" is fine if the chuck jaws are in good shape. Some ways:



- Use a Forstner bit held in the tailstock (easiest but does leave a divot in the center)
- Cut the recess with a parting tool or scraper (no divot, gives more flexibility in base design)

Dovetail the recess slightly to fit the chuck if desired or if the recess is shallow. I like to use a 1/4" round skew chisel as a scraper - hold horizontal and push in at a slight angle.

Ready now for shaping the bottom, first the base, then out to the corners.

IMPORTANT SAFETY NOTE ABOUT "TURNING AIR"

When turning something with wings:

- Be sure the blank is well seated and the chuck is tight.
- Before switching the lathe on, ALWAYS rotate the piece by hand to make sure a corner will not hit the banjo or rest.
- Some people make a mark on the tool rest to show the extent of the corners. Bright tape is good for that.
- Use a BRIGHT task light to help see the corners.
- Stand clear when turning the lathe on. Every time.
- When adjusting the tool rest, let the lathe first come to a complete stop. Wings are fragile.
- Always be aware of the rotating corners – they may be invisible. Keep hands and fingers away.
- Make very deliberate motions. Don't turn while distracted.

TURN THE BOTTOM

Detail the inside of base ring and the inside of the recess as desired. Here are a few I've done.



Now shape the bottom outside the base ring to create a continuous smooth curve from the base to the corners of the rim. A small bowl gouge is excellent but the small Hunter Hercules tool is my favorite. Tools must be SHARP when turning air.

Regardless of the tool used these cuts require careful bevel-rubbing cuts with attention to tool control.

Note about cutting "downhill":

Since the grain orientation is across the face, it is the same as turning a bowl. Turn downhill to avoid tear out. When shaping the bottom always* cut from the center outwards towards the rim.
(* More about this below.)



Remember to use very light cuts when cutting "air" at the wings!

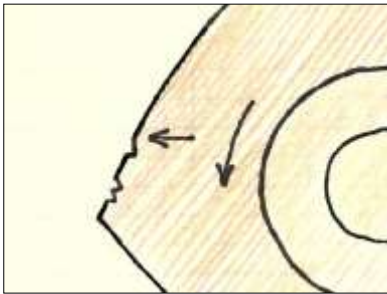
Be sure to leave the rim thick enough at the corners! I usually leave it 1/4" or a little thinner, perhaps 3/16".

When cutting "air" at the corners:

- Use **very** sharp tools
- Make **extremely light** "whisper" cuts
- Move the tool to cut slowly with the lathe speed as fast as is safe

ABOUT CHIPPING AT THE WINGS

Some species of wood are more brittle than others. This can be a problem where the grain runs parallel to the trailing edge of a corner.



At the very edge the gouge is pushing unsupported fibers into the air and can throw chips off the edge of the rim.

If the chips are small they can be sanded away by hand at the end when shaping the rim. If the chips are large, the piece is ruined without some drastic measures.

I stop the lathe often while shaping the bottom. If I see any chipping I either:

- Might work: soak that edge with thin CA glue then try another cut. This will sometimes work, especially if the wood is porous. (may stain some species)
- Better, break the "rule" against turning uphill. I cut inwards from the corner and stop when I reach the solid wood. This prevents chipping since the edge fibers are supported while cutting.

Cutting uphill on the wings will probably cause tear-out, best minimized with VERY light cuts and a sharp tool. Tear-out is worse with some woods than others.



I sometimes follow uphill cuts with an even lighter pass downhill.

Refine the curve to take out any humps or valleys. You can easily feel these (with the lathe off). I mark high spots with a pencil then cut away the pencil marks.

SMOOTH THE BOTTOM

My favorite tool for initial smoothing is a negative rake scraper ground with a curve on the side and end.



The curve lets only a small part of the edge touch the wood and the flat I grind at the end is important. Grind the bottom bevel last.

I ground these from Thompson scraper stock and from Thompson skew chisels. The scraper bevel has a 50-55 degree included angle.

When the burr from the grinder is worn I hone and either use the burr from the hone or a carbide burnishing rod to raise a smooth burr.

These scrapers are amazing! They will remove the barest whispers of shavings with a gentle burnished burr or even finer with a honed burr. They can remove wood more aggressively if needed but with no chance of a catch.

Always hold scrapers like these horizontal and flat on the tool rest.



I've heard some say never use scrapers on wings. However I find these scrapers work fine on the wings with VERY light passes. I don't worry about getting the wings perfect since they are smoothed by hand in the next step.

On the wings the scraper is easier to control using the nearly flat end of my grind.

Sand the bottom as desired. I personally do not sand while the lathe is spinning. Small negative rake scrapers are good to smooth detail near the center. The 1/4" round skew chisel used as a scraper is perfect for flat areas inside the recess.

For the larger curves of the bottom (not the wings) I sometimes use curved hand scrapers on the large curve with the lathe running, held in the air, not supported by the tool rest.

HAND SMOOTHING THE BOTTOM



I use handheld scrapers with the lathe off to remove any tool marks in the center of the recess and on the large curve on the bottom, all the way to the corners of the wings. This requires much less sanding, usually starting with 220 or 320 grit or finer.

I've bought small scrapers and made some from good quality cabinet scrapers by grinding shapes with a belt sander.



The smaller scrapers are excellent for the bottoms of these little platters. A flat or gently curved edge can be used on the curves of the bottom and to remove all tool marks from the wings.

Always scrape "downhill" and with the grain using light overlapping strokes. On end grain I again scrape downhill. If one direction doesn't seem to work, try a different angle.

After scraping I sand by hand with a soft sanding block. This is a flat white eraser from where office supplies are sold (or the dollar store).

Wrap a bit of sandpaper around the eraser and the soft block conforms nicely to the surface curves.



Two things help reveal surface defects such as tool marks and sanding scratches. First, use a bright light at a glancing angle. Second, wipe naphtha on the surface with a paper towel and examine the surface at different angles.

I sometimes finish sand with gentle motion from a random orbital sander. A 2" diameter ROS is perfect for the curves on the bottom (I use the Grex). The carving and finishing stand shown next makes this even easier.

SMOOTHING BY HAND MADE EASIER

I do most of my smoothing with the piece still in the chuck and with the chuck mounted on a carving and finishing stand.

This lets me see the piece so much better in good lighting and without bending over the lathe. It's much more comfortable for handwork such as scraping and sanding. The stand makes it so much easier to see and correct defects.

These stands fit in the lathe banjo or into a bench-top base.

The best carving/finishing stand I've found is from Best Wood Tools. Unlike some, which lock both the rotation axis and the post angle with one lever, this has a separate lever to lock the angle.



Loosening the upper lever allows rotating the piece to work on different corners and edges without having to juggle the piece with two hands.

REVERSE AND TURN THE TOP

Turn "downhill" from rim to center to make a gently dished shape. As when turning the bottom, the small Hunter Hercules tool is my favorite for this.

Be very careful not to make the rim too thin at the corners!!



Dish the top, being aware of the recess in the bottom. I like a smooth curve, turning the wings and outer areas parallel to the curve of the bottom. This will make the rim the same thickness all the way across each side. If the dish is too shallow the rim will be thicker in the center.

As before, make very slow and light cuts on the wings. It is best to line up and glide the bevel of the tool on the solid part of the wood, then carefully pull the tool back until it is just outside the wings. Advance slowly, gently "kissing" the wood, maintaining a controlled tool orientation. It is better to leave the corners a little too thick at first. It is very easy to accidentally take off too much and make the rim too thin at the corners.

SMOOTH THE TOP

I remove most tool marks on the top with the curved negative rake scrapers just as with the bottom, turning at as high a speed as safe. It is impossible to remove all the tool marks on the wings with the scrapers and difficult to make the very center perfect, so I do the rest of the smoothing by hand.

As with the bottom I rarely power sand but use scrapers and sandpaper by hand.

About power sanding: I don't like the clouds of dust made by rotating sanding disks and how softer areas of the wood can be sanded away more than harder areas. Hand scrapers leave an excellent surface by perfectly removing ripples and undulations as well as any irregularity at the very center of the dish. (I use hand scrapers like these on all bowls and flat platters too.)



A larger curved scraper will quickly smooth away ripples in the dish and leave the surface very smooth. Always scrape downhill!

The two smaller scrapers are perfect for small areas like the wings. These are from Stewart McDonald, marketed to people who make violins and guitars.

After the surface is scraped smooth, sand the surface with the soft sanding block. As with the bottom, if the top is first scraped smooth, sanding by hand starting with 220 or finer is sufficient. I usually sand to 600 grit.



If I do power sand I use a pneumatic random orbital sander.

This 3" palm sander is perfect for the dished top. I use the one from Woodturners Wonders.

I only use fine sandpaper (400 or finer) with the ROS to avoid problems with cupping softer areas of wood.

The pneumatic random orbital sanders do need sufficient air supply, but a smaller compressor will work OK if sanding at slower speeds. For me, the ability to sand very gently at a slow speed is a big plus.

SHAPE AND SMOOTH THE RIM

I save the rim for last. A carving stand makes this easier but the rim can be worked on the lathe, especially if you can lock the spindle where needed. Some lathes have threaded holes for an indexing pin, which can lock the spindle at almost any angle.



Shape by hand with files, sand paper, or my favorite, sanding sticks. Minor chips on the edges can be removed. The rim might be rounded, angled, or thinned. This is also the best time to round the corners slightly if desired.

I glue strips of sandpaper onto thin strips of wood to make sanding sticks.

FINISHING

I often use Watco "Danish" oil as a finish. This is not a quick finish! For quick, use lacquer, shellac, poly, or some other film finish. I like beeswax on red cedar.

"Danish" oil soaks into the wood but doesn't make a thick film on the surface so you can still see and feel the grain. I usually apply multiple coats over a few weeks for a satin luster or a delicate gloss. The procedure:

- Apply oil liberally and let first coat soak in, giving it as much as it will take. Let the oil stay on the surface for a while (an hour or so), then wipe it off and let dry overnight or longer.
- Apply a second coat. If spots are still soaking up oil I apply more as needed. Wipe off after 30 minutes or an hour, then let dry overnight.
- Depending on the type of wood and the finish I want, I might repeat the previous step 2, 3, or even 10 times over the next week or more. Each additional coat adds an extremely thin layer of resin.
- To fill the pores on open-grained woods such as walnut, use grain filler or wet sand with "danish" oil on the first or second and maybe a later coat, depending on how it looks. I might use 400 or 320 grit paper (coarser if the pores are large), let sit for an hour, and then wipe off gently. I sometimes use Liberon 0000 steel wool wet or dry between coats.
- Finally, rub with steel wool or pumice for a satin finish. For a shinier finish wait a week after the last coat and polish with the Beale buffer or by hand.

----- **DONE!** -----

RESOURCES

Hunter Hercules carbide tool

<http://huntertoolsystems.com/product-category/hercules/>

Mike Hunter 612-718-7926

Thompson scrapers, parting tool

<http://thompsonlathetools.com/product-category/scrapers/>

Doug Thompson 440-214-6360

Glaser Screw Chuck

<http://stores.alanswoodturningstore.com/glaser-screw-chuck/>

Alan Lacer Woodturning

651 307 9059

Email: alan@alanlacer.com

Articulated Carving and Finishing Post

<http://bestwoodtools.stores.yahoo.net/arcaandfipow.html>

Best Wood Tools

931-788-0429

Email: sales@bestwoodtools.com

Stewart MacDonald scrapers for instrument makers

http://www.stewmac.com/Luthier_Tools/Types_of_Tools/Scrapers/StewMac_Ultimate_Scraper.html

<http://www.stewmac.com/>

800-848-2273

Pneumatic 3" random orbital palm sander

<https://woodturnerswonders.com/collections/random-orbital-sanders>

Woodturners Wonders

Ken Rizza 678-400-8181

Pneumatic 2" and 1" random orbital sander

<http://grexusa.com/grexusa/products.php5?id=AOS368>

GreX

888-447-3926

Dealer: Airbrushing Wood,

Joe Fleming 858-395-0562

<https://www.airbrushingwood.com/>