# BASKET ILLUSION
# -DEMYSTIFIED-

Harvey Meyer

DAVID NITTMANN
*Wood guy and artist*

**W**hen I was a fledgling woodturner, I attended a demonstration by David Nittmann, who remains well known for his basket-illusion work. I was fascinated, but since I was so new to turning, I thought basket illusion work was beyond my capabilities and left the demo early.

Several years later, I became more intrigued by David's work and also learned of the work of Jim Adkins, then a relatively unknown basket illusionist. This time, I was hooked. I did more research and learned that the process was actually originated by Lincoln Seitzman, whose work is still on display in museums and galleries. David Nittmann, of course, gets well-deserved credit for popularizing this unique form of embellishment.

I taught myself the process through trial and error. My first piece, a platter, was a disaster, but I was very proud of it. Continuously refining my process and tools, and several platters later, I started to get the hang of it. Eventually, I started applying the basket illusion on hollow vessels, because I enjoy turning hollow forms

## Beading tools



**1**

Precision beading tools (pictured unhandled) are a worthwhile investment if you plan to do basket-illusion work. Their shape and size ensure consistent bead shapes.

# Designing the Pattern

You can design a pattern before turning the platter, or turn the platter and then design a pattern that suits the finished dimensions. For this article, I chose to turn first, then design.

I use polar graph paper to design patterns for my platters and normal grid-style graph paper for most of the patterns I use on hollow vessels. I print my own blank graph paper using a software program called Graph Paper Maker (blackcatsystems.com). It's available at no cost, but I recommend paying the $20 fee to register your copy, as that allows you to receive free program updates. In the program, select the polar graph paper option and set the number of spokes to 120 and the number of circles to forty. (Ignore the settings for the minor spokes.) The program will generate a PDF file that you can print (*Photo a*). Note that this blank graph paper is used for design purposes only; you will print another indexed circle later that will be used at the lathe.

Experiment on the graph paper until you have a pattern (*Photo b*). I usually design using the same colors that I will use when I dye the platter. For this article, I settled on a pattern that is fairly simple and works with any number of spokes—as long as the total is a multiple of twelve, which is how often my pattern repeats itself. So this pattern would work with 72, 84, 96, 108, 120, etc., spokes. I chose to leave one spoke uncolored.



**a**



**b**
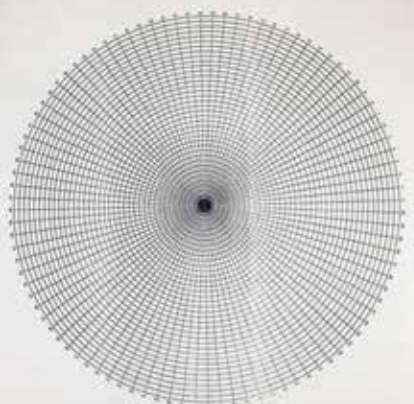
*A blank sheet of polar graph paper printed using the Graph Paper Maker program. The example graph paper shown here has ninety-six spokes, even though the platter I turned calls for 120. Since my pattern repeats every twelve spokes, I could use it on a platter indexed to any multiple of twelve. A larger platter might be indexed to 144 or more spokes, while a smaller platter might be indexed to 96, 108, or 120. This pattern uses thirty-one beads, or rows.*

more than anything else. To me, the utmost challenge is to put the basket illusion effect on a hollow vessel—both inside and out. Following is the basic process, which can be applied to many different turned forms.

## Getting started

To illustrate this article, I turned a platter about 9" (23cm) in diameter and ¼" (6mm) thick, then designed a basket-illusion pattern that would fit (*see Designing the Pattern sidebar*). It is also possible to begin with a decorative pattern in mind and turn the piece to accommodate it. My preferred wood for basket-illusion platters is 8/4 kiln-dried hard maple; for hollow vessels, I prefer Bradford pear. I begin the turning and beading process on the bottom of the platter first, then the top.

The general idea is to cut beads into the wood's surface and then delineate and color small segments. I do not sand the wood's surface prior to beading, so it is important to get the best possible surface off the tool. Only the very top of each bead will retain the quality of this surface, while the rest of the wood will be eliminated in the beading process.

## Form beads

When I first started practicing this technique, I used a homemade beading tool. It worked well, but I wanted a tool that made smaller beads and one that could be maintained easily. Now I use the precision beading tools from D-Way Tools (d-waytools.com). For all my basket-illusion platters, I use only two beading tools: a ⅛" (3mm) tool cuts all of the beads except for one, the very outer bead, nearest the rim, which I cut with a 3⁄16" (5mm) tool. I use both tools unhandled. The tools I use remain sharp for a long time, but an

occasional touch-up with a diamond hone keeps them in perfect condition (*Photo 1*).

The tool works best in a shear-cutting position, with the flute down on the toolrest and the handle as low as possible. The toolrest should be positioned as close to the work as possible, and the points of the tool must be presented at center height (*Photo 2*).

After shaping the bottom of the platter and preparing a tenon for later use, begin the beading process by scoring the lines that define the width of each bead. Do not actually form ▶

## Form beads on bottom





Starting on the bottom of the platter, score and then form beads in one section at a time. With the tool handle down, gently rock the cutting edge left and right until a rounded bead is formed.

## Add burn lines



Either stiff sandpaper or a thinned piece of Formica® provides the friction needed to add burn lines in the grooves between beads.

the beads until you finish marking them off. Scoring the beads first will space the beads with precision and allow a nice sharp "V" between them. Beginning at the rim, about ¹⁄₁₆" (2mm) from the edge, score the ³⁄₁₆" outer bead using the beading tool's points. Then switch to the ⅛" tool, place its left point into the rightmost line scored for the previous bead, and gently swing the tool so as to score the right line of this bead. These are very light scoring marks. Then move the ⅛" tool to repeat the process, continuing scoring lines for about eight beads at a time before going back and actually forming those beads (*Photo 3*).

Beginning with the larger outer bead, place the ³⁄₁₆" beading tool into the scored marks. Make sure the points of the tool are at center height and begin cutting the bead by gently rocking the tool left and right. This causes the tool to cut with one point, then the other, until the bead is formed.

It is important to stop cutting the bead as soon as the top of the bead becomes round. If you stay on it too long, the top of the bead will get scraped and there may be tearout. If you stop cutting the bead too soon,

the top of the bead will be flat and will cause problems later, when burning lines over the beads.

Continue cutting the beads on all of the scored lines, but leave the last set of lines for later so you will have a reference point when you begin scoring the remaining beads. When you are satisfied with the first set of beads, move the tool-rest into position for the next set, scoring and cutting as before. Eventually, you'll run into the tenon area in the center of the platter; go as far as you can (*Photo 4*). Later, you will make the tenon smaller and add more beads.

### Burn lines between beads

The next step is to add burn lines in the valleys between the beads. For platters, I use either stiff sandpaper or a thin piece of composite material like Formica®. The first method uses the edge of very stiff sandpaper. It must be paper-backed, not cloth. While the piece is spinning as fast as safely possible, insert the edge of the sandpaper into a valley between beads. Hold it with a bit of pressure and friction will burn a sharp line. With a pair of old scissors, refresh the edge of the abrasive before beginning the next burn.

The second and better method is to burn the lines with Formica strips. Standard Formica is too thick, but sanding it down to about .015" thick using a wide drum sander makes it perfect. As with the sandpaper option, insert the edge of the Formica into a valley with the piece spinning as fast as safely possible. Hold for a second or two, and the friction will result in a sharp black line between beads (*Photo 5*). There is no need to refresh the edge; just keep burning the valleys.

If you accidentally burn any of the beads where they shouldn't be burned, slow the lathe and lightly abrade those areas with a maroon Scotch-Brite™ pad. This will clean up any stray burns without changing the profile of your beads. A word of caution: Both of these burning methods produce a lot of smoke and fumes, so you should wear breathing protection and ventilate the work area.

### Work on the top

Once all the valleys are burned on the bottom of the platter, reverse-mount the piece so you can work on the top. I use a four-jaw chuck to hold the tenon I formed earlier. In this orientation, you can turn the top of the

platter, bead the surface, and burn the valleys.

The techniques are the same as those used on the bottom, but there is one major difference: you can't turn the entire top of the platter down to final thickness before beading because doing so would release the internal stresses of the wood and the platter may begin to wobble. If the platter is not running completely true, you can't cut accurate beads. To avoid this scenario, start thinning the platter from the rim to the center, but work in stages. Beginning at the rim, turn the platter down to ¼" thick in a section about 1½" (4cm) wide. Once you are satisfied with the surface quality of this section, score and cut the beads in this area (*Photo 6*).

When scoring the ³⁄₁₆" outer bead, sight down from above and line up the beading tool so the bead will line up directly opposite the bead on the bottom. Score the ³⁄₁₆" bead and then score a few ⅛" beads. Return to the outermost ³⁄₁₆" bead's score marks and form the bead. After that bead is completed, and before moving to the ⅛" beads, the ³⁄₁₆" bead on the bottom of the platter must be connected to the ³⁄₁₆" bead on the top side. To do this, I use a round-nose negative-rake scraper to very gently round over the edge of the rim so that the bead on the bottom transitions into the bead on the top. The desired effect is to have a rounded rim that looks like a bead all the way around the piece (*Photo 7*). Abrasives help to blend it all together.

When the outer bead is completed, finish cutting the ⅛" beads in the first stage. If the wood is vibrating or screeching because it is thin, you will get tearout and possible chipping. To avoid this, fold up a paper towel and hold it against the bottom of the platter to dampen the vibration while cutting the beads. Don't press too hard or you might burnish the beads on the bottom with the paper towel. The last set of scored lines should not be beaded at this time so you'll have a reference when starting stage two. ▶



## Begin top beads, blend rim bead



**6**



**7**

Beading begins on the first stage of the top of the platter, leaving the center thickness for support. After thinning the section to about ¼", the beads are scored and then cut with the beading tool. The ³⁄₁₆" rim bead is rounded over with a negative rake scraper to blend the top and bottom beads together.

## Continue top beads





Beading continues in stages on the platter's top, again leaving bulk in the center for support. After completing all the beads, the sharp corners of the small circle left in the center are rounded over with a detail gouge. Burn the valleys on the top of the platter.

## Back to the bottom



Reverse-mount the platter, reduce the tenon to about 1" diameter, add more beads, and burn lines in the valleys between those beads.

Being careful to maintain the curvature of the top, turn the next stage down to the same final thickness. Using the last set of scored lines in stage one, continue scoring ⅛" beads (*Photo 8*) until reaching the end of stage two. Continue in this manner until the rest of the top is beaded.

As you approach the center of the platter, continue beading until you have to decide if you can fit one more bead. Generally, if I'm going to be left with a circle in the middle less than ¼" diameter, I won't add the last bead. My goal is to never leave a circle in the center that is smaller than ¼" or larger than ½" (13mm). Regardless of its final size, round over the sharp corner of the little circle that is left in the center. I use a detail gouge for this task (*Photo 9*).

Finally, burn the valleys on the top of the platter, as you did on the bottom.

### Reduce the tenon

When the top of the platter is completed, reverse-mount the workpiece to reduce the size of the tenon and add a few more beads and burn lines

(*Photo 10*). Generally, I like the bottom of the platter to be beaded almost to the center, leaving about a 1"- to 2"- (25mm- to 5cm-) diameter unbeaded area in the center so I can sign my name.

At this time, the goal is to remove some of the tenon, but not all of it. Leave enough material so you can hold the tenon in a small set of jaws—about 1" diameter. This small tenon will be used to hold the piece in a chuck while you do the indexing necessary for accurately drawing the radial lines.

### Draw radial lines

The next step is to apply radial pencil lines that will define the small segments. These lines have to be drawn in precise regular intervals, so the use of an index wheel is necessary. In order to index the platter into the appropriate number of segments, you first have to know what your pattern requires. For the platter shown in this article, I chose a pattern with 120 equal segments, or spokes. There are a number of indexing wheels and other methods available to turners, but no single

indexing wheel will suit the needs of the basket illusionist all the time. For that reason, I make my own indexing wheels (*see Indexing sidebar*).

Mount the index wheel over the lathe spindle and hold it in place with a chuck (*Photo 11*). Be sure the chuck is mounted snugly, so the index wheel, chuck, and lathe spindle move in unison. Mount the platter in the chuck, grabbing onto the small tenon that remains on the bottom (*Photo 12*). Place the indexing board on the lathe bed so that the magnets in the bottom of the board are attracted to the lathe bed, and position the vertical upright against the index wheel such that the markings near the outer part of the wheel are lined up with the top of the vertical upright. Align any one of the index lines with the top of the vertical riser (*Photo 13*).

Make sure the pencil point is on dead center height and draw a line on both the top and bottom of the workpiece. Be sure to hold the base of the pencil jig so it glides on the surface of the jig's flat board without

## Prepare for indexing



**11** The indexing wheel is mounted over the spindle and held firmly in place with the chuck.



**12** The platter is held by its now small tenon in preparation for indexing both the top and bottom.



**13** The vertical riser of the indexing board is aligned with one of the lines on the indexing wheel. Now you're ready to draw lines.

rocking or tipping. Light pressure is all that's needed to draw the lines. Note that I didn't draw the index lines to the very center of the piece, as the lines would be too close together in that area. Rotate the workpiece (along with the index wheel) until the next line on the index wheel is aligned with the top of the vertical riser. Draw another line on both sides of the platter. Repeat this process until the entire piece is indexed with radial pencil lines (*Photo 14*).

One last turning step is to remove the small tenon. Reverse-mount the platter using a jam chuck and tailstock support and turn away the tenon, except for the small stub under the tailstock's live center *(Photo 15)*. With the piece off the lathe, cut away the stub and sand the small area in the center.

### Burn radial lines

When the piece is indexed with pencil lines, you can burn in the radial lines using a handheld wood burner. I prefer to sit comfortably with good lighting because this process takes a while. It

doesn't matter if you start burning on the top or bottom, but be careful not to smudge the pencil lines as you handle the piece.

Using the pencil lines as a guide, burn lines over the beads. I use a specially made burning pen (Optima #21AEF; carvertools.com) that creates a nice sharp line over the bead with just one touch (*Photo 16*). You can work either upward or downward, carefully following the pencil lines. Try to burn these lines as straight as possible, though they don't have to be perfectly straight. I typically work for about ninety minutes in one sitting, then take a break and come back to it later. Don't rush the process; take the time to align the pen over the index lines every time you're about to touch the pen to the wood.

### Herringbone weave on rim

When all the radial lines are burned in, move onto burning the herringbone weave pattern around the rim. This feature adds authenticity, but it does take a lot of practice. As an ▶

## Draw the lines



**14** Every time you move the indexing wheel to the next line, use the pencil jig to draw a line on both the top and bottom of the platter. After 120 lines are drawn on each side, the platter is completely indexed.

alternative, you could just color the rim bead with one of the colors used in your pattern.

Start by laying out a pencil line (not to be burned in) that splits the rim bead in half (*Photo 17*). Using a medium skew burning pen, burn equally spaced lines about 45 degrees from that centerline on the top half of the rim bead. It is important to burn at the minimum heat level that will leave a sharp dark line with no overburn. Try to space these lines about ³⁄₁₆" apart, but a little closer is okay, too. It doesn't matter in which direction the lines are headed. As you come around to where you started, judge the spacing so the last two lines are not too close or far apart from each other. Then burn the same set of lines on the bottom side of the rim bead. These lines head in the opposite direction and are spaced in the middle of where the top lines intersect the centerline.

The next step is to begin connecting the top and bottom lines. On the top half of the rim bead, extend the lines so they touch the lines burned on the bottom half of the rim (*Photo 18*).

# Indexing

*Indexing wheel*
Cut a piece of ⅛" hardboard into a circle about 8" (20cm) diameter and carefully center a hole in it to fit over your lathe spindle. Using the Graph Paper Maker (or similar) program, generate and print the indexed circle that will be adhered to the hardboard. I used the polar graph paper selection, with the parameters set as indicated in *Photo a*. Print the polar graph, cut out the circle, center the cutout over the hardboard disk, and tape it in place. Then carefully cut out the hole in the center of the paper. Now you have an index wheel with sixty and 120 spokes (*Photo b*).

Since I do a lot of basket-illusion work, I have created several two-sided indexing wheels containing the most common numbers of spokes. You could, for example, print out another polar graph with 72 and 144 or 96 and 192 segments and mount it on the opposite side of the hardboard disk.

*Indexing board and pencil jig*
The indexing jig is simply a flat, smooth board attached to the lathe bed with some embedded rare earth magnets. The board is ¾" (19mm) thick and about 18" × 24" (46cm × 61cm). Affixed to one end of the board is a vertical riser that reaches the center height of the lathe—10¼" (26cm) on my Powermatic 3520B (*Photo c*). The top of the riser serves as a reference point for the index lines on the indexing wheel. The smooth board allows me to slide the pencil jig to draw the index lines on the workpiece.

The pencil jig supports the pencil at center height. A simple design includes a small block of wood for the base, with a vertical riser about 12" tall. Drill a hole in the riser that will firmly hold the pencil at the exact center height of the lathe (*Photo d*). Since I frequently demonstrate using various lathes, my pencil jig has holes drilled that will allow me to use it on almost any sized lathe. I now use a more easily adjustable version of the pencil jig (*Photo e*).

### Print and mount indexing wheel

**a**

**b**

*Graph Paper Maker screenshot shows the settings for printing an indexing wheel with 60 and 120 spokes. The printed polar graph is then taped to a hardboard disk and a hole cut out of the center for a completed indexing wheel.*

### Indexing board and pencil jigs

**c**

**d**

**e**

*Indexing board in position and anchored to the lathe bed with several rare earth magnets. The top of the vertical riser aligns with the indexing wheel's spokes at the lathe's center height. The pencil jig slides easily on the board's smooth surface.*

*Two versions of pencil-holding jigs. At left, a simpler version, and at right, a more deluxe version allowing easy adjustment of pencil height for use on different-sized lathes.*

Then, on the bottom half of the rim bead, connect those lines to the lines on the top half of the rim. Erase the center pencil line. You can now see the herringbone pattern beginning to form (*Photo 19*).

Now for the hard part—extending the lines over the side and all the way around the rim bead. This takes several touches for each line and you will have to constantly reposition the platter to find a comfortable approach angle. Start on the top and bring each line around the bead until it goes all the way to the valley where it meets the first ⅛" bead. Then do the same on the bottom of the platter. The final step is to add a small tick mark to provide the illusion of a crease where the weave passes under the opposite side (*Photo 20*).

## Color the sections

Gathering up my pattern and India ink marking pens, I sit in a comfortable chair for the most fun—and longest—part of the project. I use Faber Castell's Pitt Artist pens to dye the squares. I prefer India ink to other types of dyes for several reasons: it is permanent and lightfast; it dries very quickly and does not bleed; and it does not penetrate as deeply as other dyes, so some mistakes can be corrected. I use two pens for each color. The "B" (brush tip) pen is used to color most of each square, but it does not allow me to dye all the way down in the valleys between the beads without bumping an adjacent bead. The "S" (superfine) nib allows me to square things up and get ink right down to the valleys without getting ink on adjacent surfaces.

Make certain not to accidentally color a square that shouldn't be colored or to color a square the wrong color. This kind of mistake can usually be corrected, but it is not fun. I use a #11 scalpel to shave away my mistakes, but it's best to not make them in the

first place. To avoid this problem, use the "S" tip pen to make a tiny dot on the top of each square that needs to be dyed with that color. If you accidentally put a tiny dot where it doesn't belong, you can easily lift it off with the scalpel.

Following your pattern, put dots on the squares that need to be dyed. Work with one color at a time. In my pattern, I started with black ink, making dots with the "S" nib pen and then coloring in all squares that have a dot (*Photos 21, 22*). No ▶

## Remove tenon



**15**
Reverse-mount the platter using a jam fit, and turn away as much of the small tenon as possible. Remove the piece from the lathe, cut away the remainder of the tenon with a flush-cut saw, and sand the small center area on the platter's bottom.

## Burn the lines
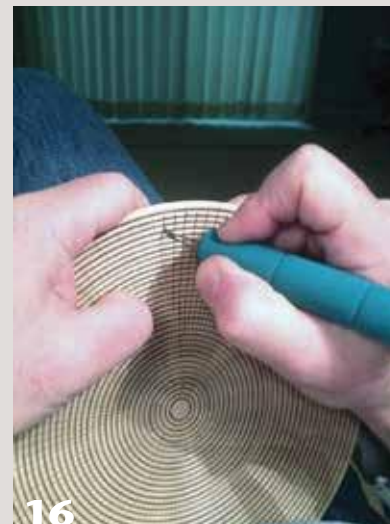


**16**
Using a burning pen, move up or down the pencil-drawn index lines to burn a sharp black line over the beads. Careful control of the burner settings will help you avoid overburn.

## Herringbone rim



**17**



**18**



**19**



**20**

Burn a herringbone pattern on the platter's rim. A temporary pencil line divides the rim in half. Burn lines from the centerline to the top and then from the centerline to the bottom, keeping the spacing equal. Continue the burn lines around the bead on top and bottom. Small tick marks are added to create the illusion of a crease.

dot, no dye. When I finished dyeing everything that needed to be dyed black, I moved to the other color—sanguine—using the same marking/coloring method.

Before moving to the bottom, there's one more thing to do to the top. The very center beads are still natural, with no burn marks or color. I think it looks unfinished this way, so I picked up my burning pen and added some closely spaced burn lines to make those inner beads look woven, too. Now, the top is finished (as shown in the *opening image*, page 36).

Color the bottom of the platter using the same sequence as on the top. After I finish dyeing the pattern, I sign my name in the center of the bottom using a power engraver (*Photo 23*).

Now for the easy part—spraying five coats of a clear acrylic matte finish on both sides of the platter. This topcoat helps to fix the colors in place. Finally, use a few drops of shellac to coat the center area on the bottom where you engraved your name, sealing the pores in that area. I use a cotton swab to apply black shoe polish over my signature to fill and blacken the engraved area, then carefully wipe away the excess.

I hope you will attempt the basket illusion technique yourself. It is not hard, but it is time-consuming and requires a fair amount of patience. Start with an easy pattern and work your way to more complicated ones. Have fun! ◼

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*Harvey Meyer of Dunwoody, Georgia, is a retired telecommunications engineer. After building furniture for many years, he started woodturning in 2000. He enjoys turning just about anything, but his main focus is on hollow forms and the basket-illusion method of embellishment. Harvey enjoys teaching and demonstrating and is an active member of the Georgia Association of Woodturners, Atlanta Woodturners Guild, and the AAW. For more, visit harveymeyer.com.*

## Add color





Dye the squares on the platter according to your design. First add a small dot on each square to be dyed. Then color in only those squares, first with a brush-tip pen without reaching the edges, then with a superfine nib to dye all the way down to the valleys and to square off the corners of each dyed area. When you have finished all the squares of one color, move on to the remaining colors, one color at a time.

## Colored bottom



When the bottom of the platter is completely dyed, add your signature in the center.