FURTHER EXPLORATIONS IN DECORATING TURNED WORK

David Lutrick

In the February 2020 issue of *AW* (vol 35, no 1), John Lucas described his technique for adding interesting features to turned items using router bits. The same issue showed the routing jig used by Paul Petrie, Jr. Both rely upon linear motion of the bit along or across the surface of a workpiece. I have developed a parallel technique that relies on the bit cutting an arc through the wood. While either technique can achieve similar results on curved surfaces (*Photo 1*), the rotation technique can also enable the creation of symmetrical patterns, such as rosettes, similar to those achieved using ornamental-turning rose engines. These results were achieved after I experimented for several years, just as John Lucas described in his article.

Pie-crust rim

My experience of using a trim router for adding features to turned work started with a search for a way to reduce the time and effort required to produce the classical pie-crust rim on bowls and platters. After several attempts, I was able to use a cove bit in the trim router to cut starter grooves in a rim, uniformly spaced using the indexing wheel on the lathe. Key to the technique was a stable platform for the router. I put a small plywood table on a metal channel and connected that channel through a pivoting nut to the post that fits into the lathe banjo (*Photo 2*).

The angle of the table was adjusted by varying the height of the post and clamping the back end of the channel to a second banjo at a greater height. The depth of the groove on the rim was set by adjusting the router-base height. The low-profile insert mounted in the plywood table kept the router base aligned. A second low profile table insert was necessary, as the back of the router case was smaller than the base and the router axis had to be parallel with the table. With experience, the best angle and depth of the groove was determined. As anyone who has made a pie crust rim can attest, finishing and shaping the wood to an attractive final result was still an effort, but the starter grooves assured me of a uniform look. My most ambitious project was nested 20"- and 14"- (51cm- and 36cm-) diameter walnut bowls, the larger one with ninety-six grooves (*Photo 3*).

Gimbal jig for biscuit cutter

The second technique that contributed to developments did not involve the use of a router, but gave me ideas on how to support and guide the bit. Diana Friend introduced those of us in the Seattle AAW chapter to her technique for using "ties" to stabilize cracks and voids in bowls and other vessels. Some of the ties are hardwood copies of the compressed wood biscuits used for flat-wood joinery. Diana demonstrated cutting the slots for these ties with a biscuit joiner mounted on a gimbal jig supported by the lathe banjo.

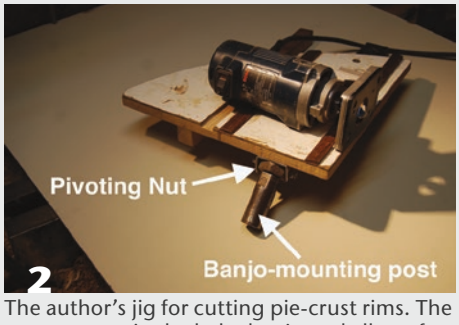
After seeing Diana's jig, I constructed a similar custom mounting of the Panavise® standard base. I made a base mount for the lathe by fitting an aluminum plate to the base and fixing a 1" (25mm) threaded rod to that plate with nuts (*Photo 4*). The rod is the correct diameter for the lathe banjo toolrest post. I then removed the jaws

Routed rim

1

A bowl decorated with router rotation.

Pie-crust rims



2

The author's jig for cutting pie-crust rims. The post mounts in the lathe banjo and allows for rotation via a pivoting nut.

3

Nested bowls with pie-crust rims. The larger one has ninety-six grooves, and the smaller one, forty-eight.

from a Panavise® self-centering extra-wide head and mounted that head on the bottom of the biscuit joiner (*Photo 5*). Fortunately, the joiner had screw holes in the base that lined up with the adjustable head brackets. *Photo 6* shows the jig in position to cut slots through a crack in a bowl wall, and *Photo 7* shows the cut slots.

Diana's technique using such a jig allows one to cut slots at almost any angle and position on a bowl's outer surface. The ties not only save many otherwise unusable bowls, they also add decorative interest, particularly when a set of multi-colored ties is used down the length of a crack, cut at various angles to the crack.

While cutting slots for the ties on numerous bowls and recalling the pie-crust rim technique, I was struck with the idea that a cutting tool mounted securely on a support at the proper distance from and orientation to the surface would give me a useful bowl-wall decorating tool.

Rotating-platform router

The first efforts to do this involved a fixed horizontal platform for the trim router, mounted in the banjo, plus a carriage for the router. As John Lucas described in his article, I also went through several iterations of the platform design, eventually creating my current one (*Photo 8*).

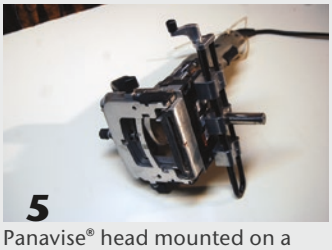
The table is a re-purposed piece of salvage aluminum, drilled and tapped for a commercially available toolrest post with ¾" × 13 tpi threads on one end. The ability to maintain a stable post while rotating the platform is critical. Fortunately, my lathe's toolrest post is held securely without play by the locking mechanism, while still allowing the post to rotate. Some post locking mechanisms do not maintain verticality until fully tightened. Others have a "flat" on the post that a tightening bolt contacts. Neither of these locking mechanisms allow rotation. In those cases, the controlled rotating cut is not possible unless the table were to have a bearing set into it. My current router carriage is also third or maybe fourth generation, as one can see from the numerous unused holes in the carriage plate (*Photo 9*).

When I first tried to use the carriage freehand on the platform, it was obvious the router bit could not be controlled well enough for precision decorating. I then tried to use a pipe-like depth gauge mounted on the router housing, with the bit inside the modified PVC pipe fitting (*Photo 10*). Paul Petrie, Jr., uses a rounded nosepiece to follow the bowl contour, and John Lucas uses a fixed fence for the same purpose. My depth gauge helped control the depth of cut, but still did not give enough precision to be acceptable, and the shape and depth of the groove were fixed, limiting design flexibility.

I now clamp the carriage plate to the platform (*Photo 11*). The movement of ▸

Gimbal jig


4
A gimbal jig mounted on an aluminum plate.

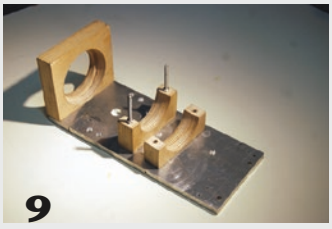

5
Panavise® head mounted on a biscuit joiner.


6

7
The biscuit joiner mounted on the gimbal, mounted in the lathe banjo, ready to cut slots across a crack in a bowl wall. Note: cutter blade extended for illustration purposes only.

Rotating-platform router


8
A support platform with banjo-mount post.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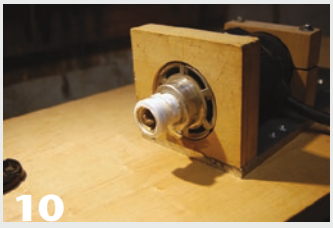
A trim router carriage.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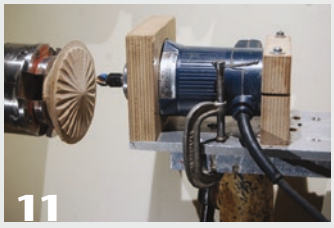
Router mounted in carriage with PVC depth gauge collar.


11
Platform mounted in banjo with router carriage clamped to it. The router is aligned with rotation axis and ready to cut a rosette.

the bit is through an arc when the platform is rotated. I can move the carriage plate back and forth on the platform, changing the diameter of the arc that the router bit cuts. With the precise spacing provided by the index wheel's 48 stops, I can make designs with symmetry based on all the factors of 48: 2, 3, 4, 6, 8, 12, 16, 24, and 48. Both cove and V-cutting bits work, each giving a unique visual effect.

Making rosettes

When the bit tip is placed exactly on the turning centerline and the platform post is aligned properly, rosettes can be precisely shaped on disks of wood. The blank disks are mounted in the chuck, with either a tenon or recess, depending on the planned use of the rosette. The surface is then shaped, scraped, and sanded, so it is uniform prior to routing. A table height spacer is used to set the bit at the exact centerline; thus, one does not have to rely on the post lock to set the height. Aligning the table-post pivot point requires one to first choose a position with the bit close to, but not touching the surface. Then one locks the banjo on the bed and rotates the platform through the arc, observing where the bit is likely to enter and leave the wood while cutting. The pivot point is then adjusted enough toward the disk surface for the bit to bite into the wood when the groove is cut. Minor adjustments can be made after the initial cut to change the leaf outline relative to the center point or to make the groove deeper.

Once a satisfactory cut is made, the piece is rotated using the chosen number of stops, moving the platform and router bit though the arc at each stop. As the table remains on the same level during any adjustments and the indexing, all the cuts will be in the plane passing through the lathe axis. As long as the piece is not moved in the chuck, the position of the cuts will be accurate and repeatable. For example, one could double the number of leaves in a design if the first complete blank rotation does not give satisfactory results. You can even change the bit size or bit shape for a second level of cuts. As one makes more and more of the rosettes, choosing the right post location and carriage position on the table becomes easier. Making practice pieces is always a good idea before starting on the final project.

Convex and concave surfaces can be routed, each giving a different visual effect. For a convex surface, a sharper peak will result in a single-point tip when finished (*Photo 12*). Concave surfaces need a "well" in the center for the bit to enter and exit the cuts. When the cuts are completed, that "well" will not be very noticeable (*Photo 13*).

The vertical profile of the blank cross section prior to routing will define the shape of the leaves. If the profile is smooth, without inflection points, the leaf outline will be a smooth curve. Inflection points on the profile will result in "corners" on the leaf outline. If the router bit leaves the surface at the end of cut before reaching the center of the design, a circular pattern will result. Using a small pointed tool, that circle can be emphasized before removing the blank from the chuck (*Photo 14*).

An attractive design depends upon the number of rosette leaves and their size relative to the size of the piece. A ½" (13mm) cove bit was used for the 24-leaf rosettes in *Photos 12 and 13*, which are 4" (10cm) and 4½" (11cm) in diameter, respectively. The 3½"- (9cm-) diameter design on the bottom of the bowl in *Photo 14* was cut with a ⅜" (9.5mm) cove bit, using a short arc diameter that created the forty-eight ¾"- (19mm-) long grooves.

After making several stand-alone rosettes, I determined that I could make the same pattern within a bowl or on a tray surface. I leave the area to be routed proud of the surrounding

Routed rosettes


12


13

A convex and concave rosette (*Photos 12 and 13*, respectively), both routed at the lathe.

Integrated design

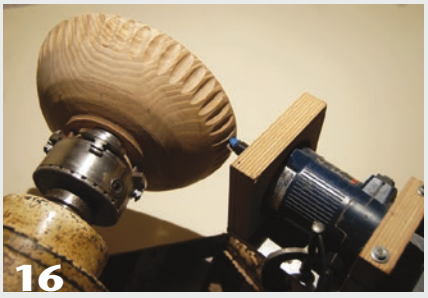

14

A routed pattern with an accentuating central groove.


15

Turned tray with integral convex rosette.

Bowl rim ideas


16
With the router mounted perpendicular to the turning axis, many possibilities exist for rim treatments.


17
Two passes using different router bits.


18
Two passes from opposite directions.

surface and complete the remainder of the piece. I shape that area as described above, usually for a convex feature, as shown in *Photo 15*. The width of the carriage plate should be as narrow as practical for the router, and the bit as far forward as possible; otherwise, when making an integral rosette in the bottom of a bowl, the cutting arc could be limited if the corners of the carriage plate hit the inner wall.

Surface decorations

Decorations on the outer surface of a turned piece are easily made by aligning the carriage perpendicular to the axis of the lathe. By cutting in a horizontal arc, grooves will be created that will be vertical when the piece is set on its base (*Photo 16*). Depending on the surface curvature in relation to the arc's diameter, a good deal of design flexibility can be achieved, such as patterns routed near bowl rims by indexing around the bowl twice with different arc center points (*Photos 17, 18*). In these illustrations using forty-eight index stops, the bowls had to be rotated in the chuck jaws by one-half index stop before the second pass was made.

One can cut an arc and return to the starting position before moving to the next index stop, or one can cut one way, index to the next stop, and then make a cut to return to the starting position. Each method cuts the fibers differently with respect to bit rotation, somewhat affecting the finished look of the groove. Note that if the cutting arc is stopped before the bit leaves the surface, a closed shape is created, as shown in *Photo 18*. Unfortunately, stopping the cut (interrupting the platform rotation) sometimes results in burning the wood fibers. I have hidden this problem by painting the cut with a dark color, then re-turning the surface to remove paint traces around the edges of the grooves.

Putting different pieces together

Coming full circle on these techniques has led me to use the rotation technique with the trim router carriage mounted on the gimbal jig (*Photo 19*). Rotation is around the ⅝" (16mm) post threaded into the carriage plate and held by the gimbal ball. Pie-crust rim grooves can be cut with this setup (*Photo 20*). This arrangement can also be used to rout designs in the top surfaces of hollow forms and tray rims when a groove at an oblique angle is desired. ■

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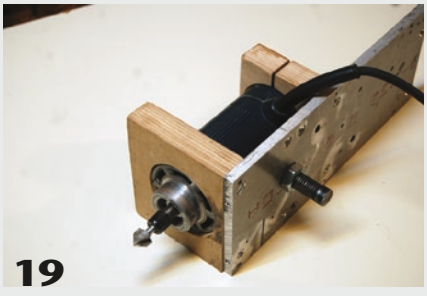
Router on gimbal jig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20

A router carriage with gimbal post allows for router rotation and an "arc" cutting pattern.