

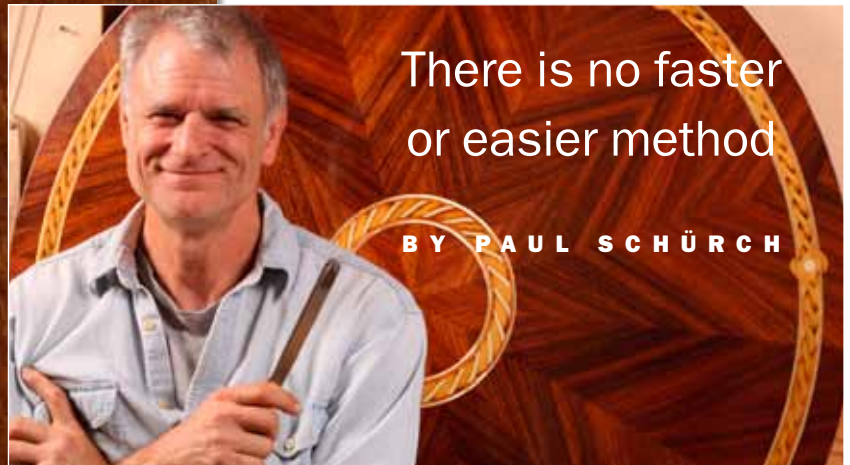
Marquetry, the Italian Way

I didn't know much about marquetry when I got my first big table job in California in 1989. I decided to inlay the solid maple top with wood and stone designs by shaping the inlay, routing out the background, gluing the inlay into the recess, and sanding it flush. I got the job done, but I knew there had to be an easier way.

This spurred me to head back to Europe, where I had done my original woodworking training. There I found work in an Italian shop, producing marquetry for the furniture trades, and learned the efficient techniques of knife-cutting, packet-cutting, and contour-cutting that I still use and teach today.

The three techniques are complementary, and allow me to produce any design I can come up with. They require little investment in tooling, are easier and faster than other methods, and deliver better results.

This article builds on an earlier one, "Decorative Veneering" (*FWW* #164), where I showed how to do a four-way bookmatch, stringing, and a border using the knife-cutting technique. These elements combine wonderfully with the marquetry in this article, where I use packet-cutting to quickly create pictures in wood.



By the way, to add depth and realism to these pictures, I also use sand-shading, a classic scorching technique for adding shadows. I cover that in Master Class on pp. XX-XX. If you haven't tried marquetry, you will be surprised at how simple, practical, and fun it can be. To demonstrate, I'll create a panel of three flowers, with leaves and a curving stem.

You will need a basic scrollsaw that can hold a 2/0 blade, and for larger projects, you'll need a vacuum bag to press the veneers. I also recommend thin tongs, for handling the pieces, and a 23-gauge pin nailer, though hand-nailing the packet also works.

Why packet-cutting?

Packet-cutting is simply stacking various veneers on top of each other and scrollsawing the pattern simul-

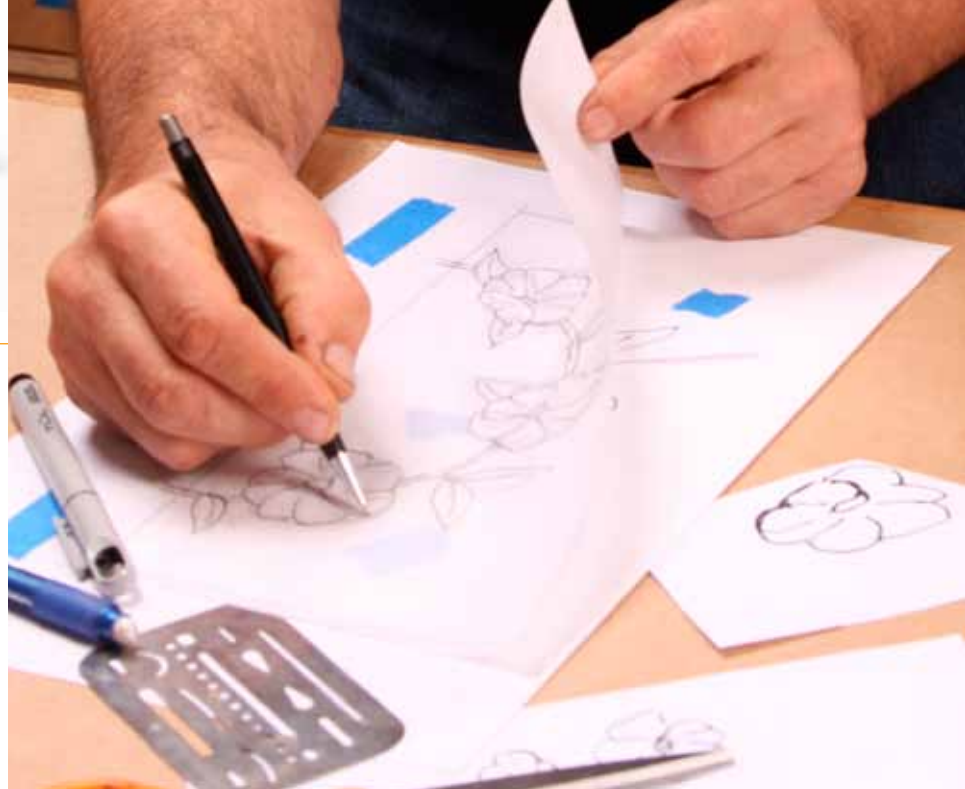


Design: You don't have to be an artist

If your design is simple or you can draw well, you can create the design from scratch. But there is an easy way to build a complex design without drawing.



Building blocks. Find line drawings in books, and enlarge or reduce them with a photocopier to make them the right size. Then trace them onto paper or clear film to get clean versions.



Arrange to create. Photocopy those drawings and arrange them under tracing paper to create a complete design, drawing in the missing elements.



Clean it up and label it. To make your final, clean drawing, place another sheet of tracing paper over the top. Put clear film between the sheets so the pencil marks don't transfer from below. Last, mark and label your drawing as shown below.

taneously in both the background and the picture veneers. The pieces are reassembled like a puzzle. The kerf is not an issue, since the 0.008-in. gap created by the blade is so thin that the gluing and finishing process fills the grooves. I also use the thin sawkerfs as a design element, as in leaf veins or other accent lines in the design.

The beauty of packet cutting is that when you wander slightly off the line, the background and the design will still fit.

Start with a drawing

Every marquetry design (called a "cartoon") starts with a line drawing, which acts as a template for cutting out and assembling the pieces. There are many ways to obtain a usable drawing for marquetry. You can trace over photographs in books, using either vellum tracing paper with a 0.5 mm mechanical pencil with HB lead, or transparent film with a fine-tipped permanent marker. You can then enlarge, reduce, or reverse the drawing or certain elements of the drawing with a photocopy machine to achieve the proper elements for your

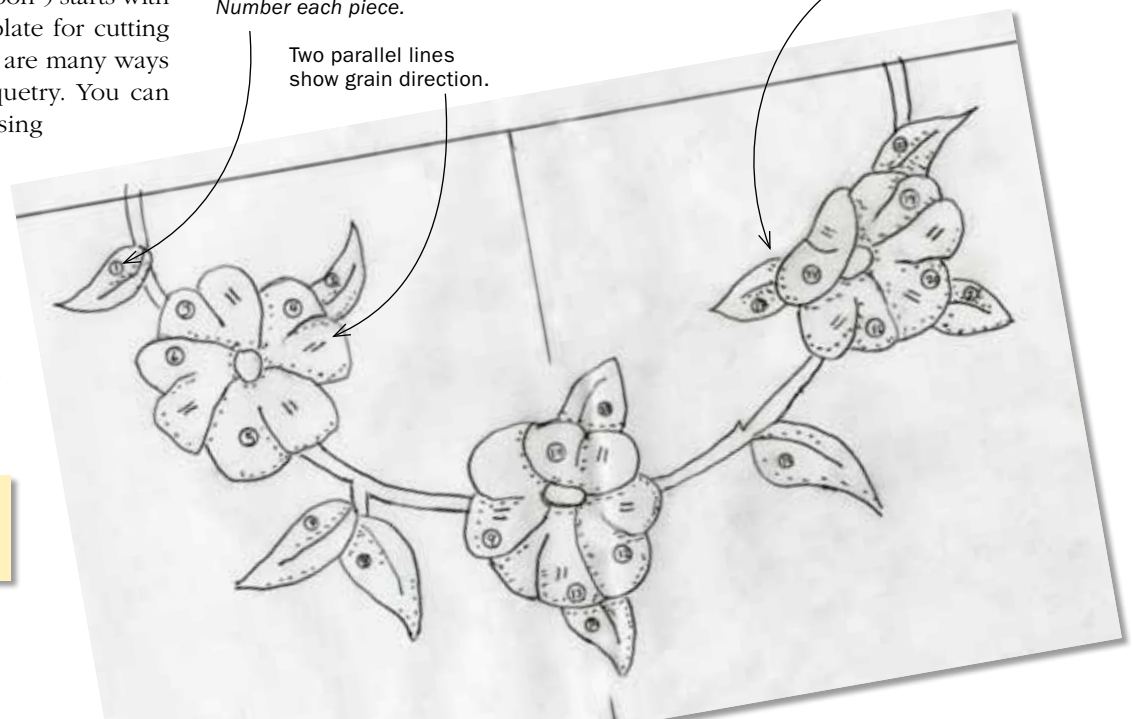
MANAGE THE MADNESS

In order to choose veneers for your packet and keep track of the pieces afterward, you need to label each element carefully.

Decide which edge should be in shadow (sand-shaded), and put a row of dots there.

Number each piece.

Two parallel lines show grain direction.



Online Extra

Scrollsawing in action. Go to FineWoodworking.com/extras for a free video on Schürch's tips for clean cutting.

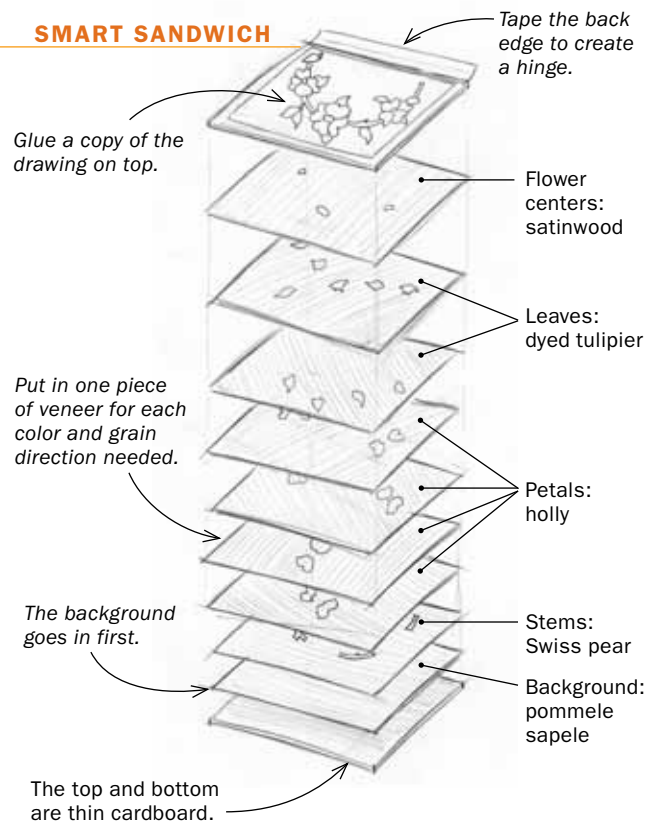
Build the packet

To saw out all the pieces in one shot, you need to bind together all of the veneers in a stack, with the drawing on top.

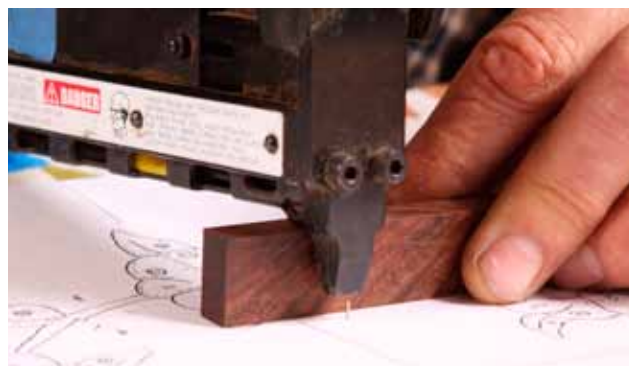


Reinforce the veneers first. Put veneer tape on the “show” faces. Wet the tape on a damp sponge, and burnish it afterward with a brass-bristle brush to improve its bond. Place the sheets under MDF to keep them flat while drying.

SMART SANDWICH



The flip trick. To see where each piece of veneer should go, flip the top of the packet up and down quickly. Secure each piece with a few strips of blue tape.



Pin the packet. Put the packet on a layer of rigid foam, and use a 23-gauge nailer, with $\frac{3}{4}$ -in.-long pins, to lock the layers together. Placing a $\frac{1}{2}$ -in.-thick spacer under the gun leaves the pins sticking out $\frac{1}{4}$ in. on each side. Nail into the background areas only, putting at least two nails in each piece of veneer below.



Clinch the pins. Bend over each pin in the same direction above and below for greatest strength and to avoid shifting the layers.

project. By the way, a drawing can also be photocopied onto transparent film, which can be used to trace a mirror image for symmetrical designs.

You can also make your own sketch, refining it by placing tracing paper over each new version until you are happy with the picture and all the lines are crisp and clean. I use common drafting tools—from compasses, rulers, and templates I have made in $\frac{1}{8}$ -in.-thick MDF, to drafting arms and thin wooden sticks to bend a curve just right. My go-to tools are my 0.5 mm pencil, an electric eraser (used with an erasing shield), and a photocopy machine.

I find that creating a marquetry cartoon is easier after the furniture has been designed, in order to get the form and proportions just right.

For a workable cartoon, you should make all the pieces in the design or background bigger than $\frac{1}{4}$ in. square, or they will be too small to handle while cutting or sandshading. I always try to simplify the drawing so that the background is connected together as much as possible, and avoiding narrow background sections between the images. I find that the most challenging designs to scrollsaw are straight lines, thin parallel cuts (stems, border work),

Saw from the inside out

Start from the inside elements so the outer elements remain attached to the overall packet for support.



Starter hole. Schürch cuts the head off an 18-gauge nail and chucks it in a drill to create a starter hole for the scrollsaw. The nail parts the wood fibers, leaving an undetectable hole.



One stack at a time. After sawing an element free, press down on it with a pencil, lift the packet, and then reach under it to remove the small stack of pieces.



Stay organized. Under each part of the drawing is a small stack of veneer parts. Keep each stack together, with its labeled piece on top. Use a big tray and another copy of the drawing to keep track of the pieces.

lettering, and facial features: All of those show mistakes clearly, so beginners should avoid them.

Labeling is critical

It's very important to number all of the pieces to help you identify, sort, and assemble the marquetry pattern after it is in a hundred pieces, many of them identical.

You'll also need to add little rows of dots where you plan to sand-shade the pieces, as well as lines to indicate grain direction. After the final drawing is done, I make three photocopies, one for choosing veneers (sometimes I paint it first) to get the colors right, one to be glued onto the packet as a cutting template, and one as an assembly guide.

How to make the packet

To build the packet, start with two sheets of grayboard $\frac{3}{4}$ in. larger than the final panel size. Also known as thin cardboard, base mat board, or notebook backer, grayboard is about 0.035 in. thick, and can be obtained from an art-supply store in sheets up to 3 ft. by 4 ft. It allows for clean nailing, prevents scrollsaw tearout, and helps the thin 2/0 blade to stay vertical while cutting. Glue a copy of the drawing onto one layer



Pick out your parts. Now take apart each stack, find the piece with the right color and grain direction, and place it on a copy of the full drawing. Since there is veneer tape on the show face, you'll be looking at the glue face for reference. Bring along the labeled, cardboard pieces too.

SAND-SHADING IS NEXT



To find out how to do it, see "Master Class" on pp. XX-XX.



Assembly is the fun part

The process is quick and easy, and it feels great to watch your veneer picture come together.

First pull the pins.

A small nail nipper is the best tool. Use it to grip the pins firmly without cutting them. They will straighten as they pull free.



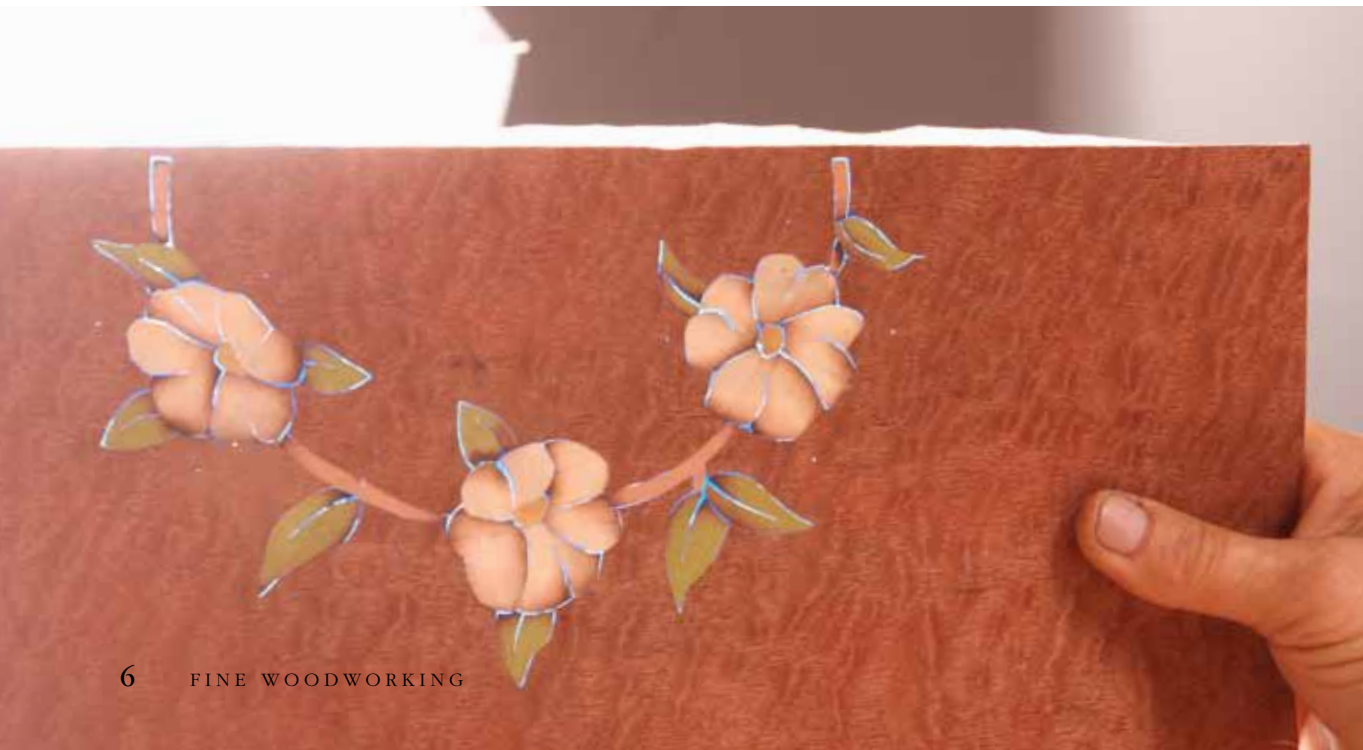
Build bridges. Schürch uses small vine pieces to connect the two halves of the background, working on the glue face.



Tape is the foundation. Working on the show face, cover all the spaces with blue tape.



Paint your picture. Flip the pattern over to the glue face, and start placing pieces (left). Schürch places his thin tongs into the sawn leaf veins (right) to spread the piece and even out the gaps. The blue-tape adhesive allows the pieces to be shifted sideways.



Check the gaps. Place the completed pattern in front of a strong light to check for uniform gaps. Shift pieces around if necessary.

of grayboard with a spray adhesive like 3M 77. Then tape the two sheets of grayboard together along one side—hinged like a book.

Now select all the veneers you'll need for your design. The first piece in the packet is the background, the same size as the oversize grayboard. It can be a radial match, bookmatch, or just a single sheet of veneer. After that, if you are not using full sheets, each piece of veneer should be prepared at least 1-in. larger than the image it corresponds to in your drawing.

Apply 25-gram veneer tape to the whole "show face" (the side that you will see once glue-up is done) of each layer of veneer to reinforce it, and rub the tape aggressively with a brass-bristle brush to improve its grip. Then immediately place the pieces under a sheet of MDF or plywood to keep them flat while they dry for 20 to 30 minutes.

After that, you can start building the packet. Using a few pieces of blue tape, secure the background veneer to the bottom layer of grayboard. Then open and close the sandwich rapidly to make sure you are positioning each piece of veneer directly under its drawn outline, and secure each one with a few more pieces of blue tape. Select veneer pieces and orient the grain for maximum effect, depending on your design. Make sure the gum-taped side of all pieces is facing up.

Nails lock everything in place

Close and nail the packet together with $\frac{3}{4}$ -in.-long, 23-gauge pins. These nails are thin and have a sharp point on one end, which separates the fibers rather than crushing them. Still, lighter background woods can show pinholes after glue-up, so you'll need to fill those holes after the design is assembled but before glue-up. Just apply a spot of white glue, burnish the hole closed with the tip of a chisel, and hand-sand with 100-grit paper, filling the hole with dust.

Here are some other important tips: Nail the packet together on a piece of rigid foam so the nails don't stick into your bench. And nail only into the background areas, close to the designs. Hopefully, each piece of background will be secured by at least two nails to keep it from shifting during sawing. I put a $\frac{1}{2}$ -in.-thick spacer under the body of my nailer, which leaves each pin protruding $\frac{1}{4}$ in. on either side of the packet.

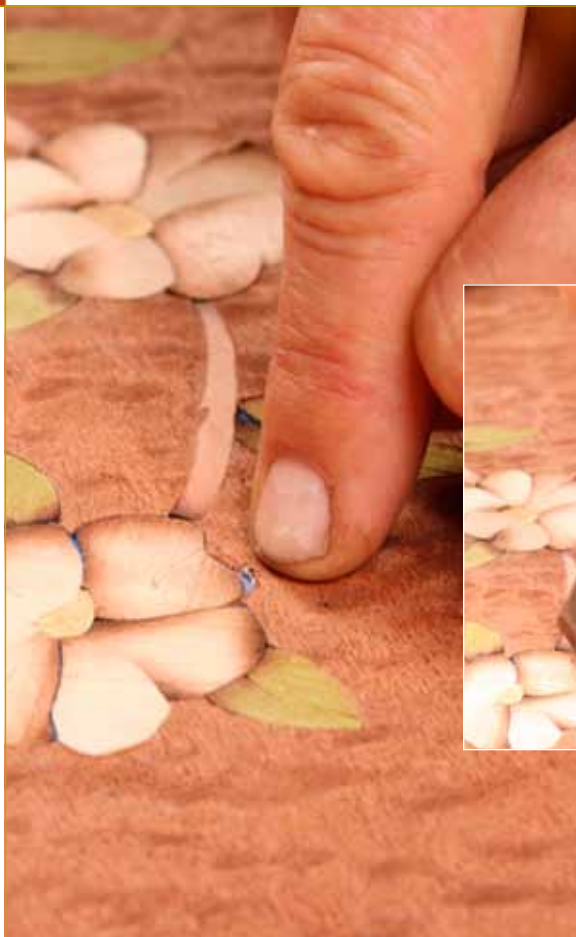
Now, bend down (or "clinch") the nails. Don't bend them over a cut line, and be sure to bend both sides in the same direction. If you form an S-shape, you will shift the veneer alignment.

Scrollsaw success

While cutting the packet on a scrollsaw, remove each stacked element of the design as it is cut free, placing them to one side as you go. To get the pieces out, I use a pencil or metal awl to hold down the stack of pieces I just cut, as I lift the packet. And then I reach under the packet with a pair of thin tongs to pull out the little stack.

Your best bet is to start cutting out pieces from the middle of the design, and work your way out toward the

Got a chunk missing? Repairs are easy



Oops. Sometimes a tiny piece chips away and goes missing.

Stippling means spreading. Use a sharp chisel to spread the nearby wood fibers along their grain lines, filling the gap.



Glue and sand. Apply a dot of glue to the stippled area, rub it in, let it dry, and sand it lightly with 100-grit paper.



Dance of the tape

Most veneering projects involve a back-and-forth between blue tape and veneer tape, in order to move all the veneer tape to the show face while keeping the pattern in perfect alignment.



Tape the glue face. Use blue tape on the back side to lock in the pattern and placement. Burnish the tape with a brass-bristle brush for a good hold.



Clean off the show face. Remove all the blue tape from the show face. Keep the tape low as you pull it off, to avoid pulling up fibers or a whole piece. Hold pieces down if necessary.

edges. This way, the pin nails holding the packet together will continue to support the veneers throughout the cutting process.

I make the starter hole for the scrollsaw blade in the center of the packet, by drilling with a sharpened 18-gauge wire nail. The sharp spinning point eases the fibers aside, so they will knit back together later. No drills, since they remove wood fibers.

It is wise to save all the pieces until the project is glued up, since you may need an alternate piece to replace a damaged or lost one.

After cutting, sort and select each piece including its numbered grayboard drawing on a tray for sand-shading. After shading, you can pull the pin nails out of the packet to release the background, and the pattern can be assembled.

To remove the pins cleanly, place the packet on the rigid foam again, and gently lever the pins straight out with some wire nippers, without cutting them. The pin will unbend on the bottom and pull out.

Putting it together: Tape and tape again

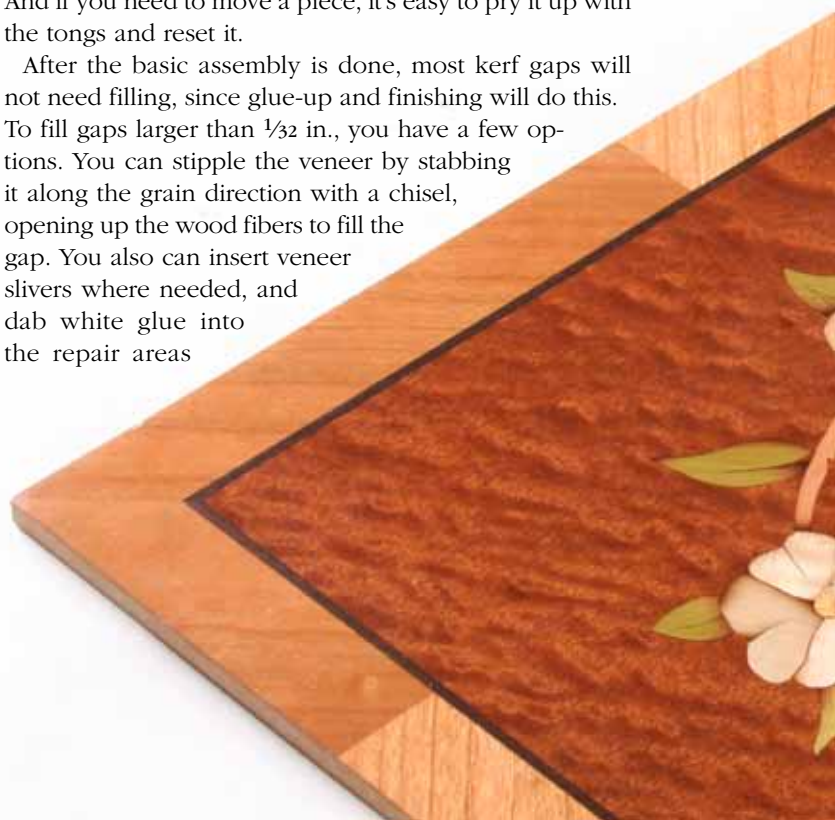
When all the veneer parts are ready for assembly, place the background onto a flat surface, gum-taped show face down. For this flower design, the stems act as bridge pieces, joining the two background sections together. Use a few pieces of blue tape to secure them.

Now flip the pattern over (show face up) and put wide blue tape over all assembly areas. Then flip the pattern over (show face down again), with the sticky side of the blue tape showing through the voids. The large blue tape

will hold it all together, and allow you to stick all the small pieces in place. This is the fun part, watching the picture come together.

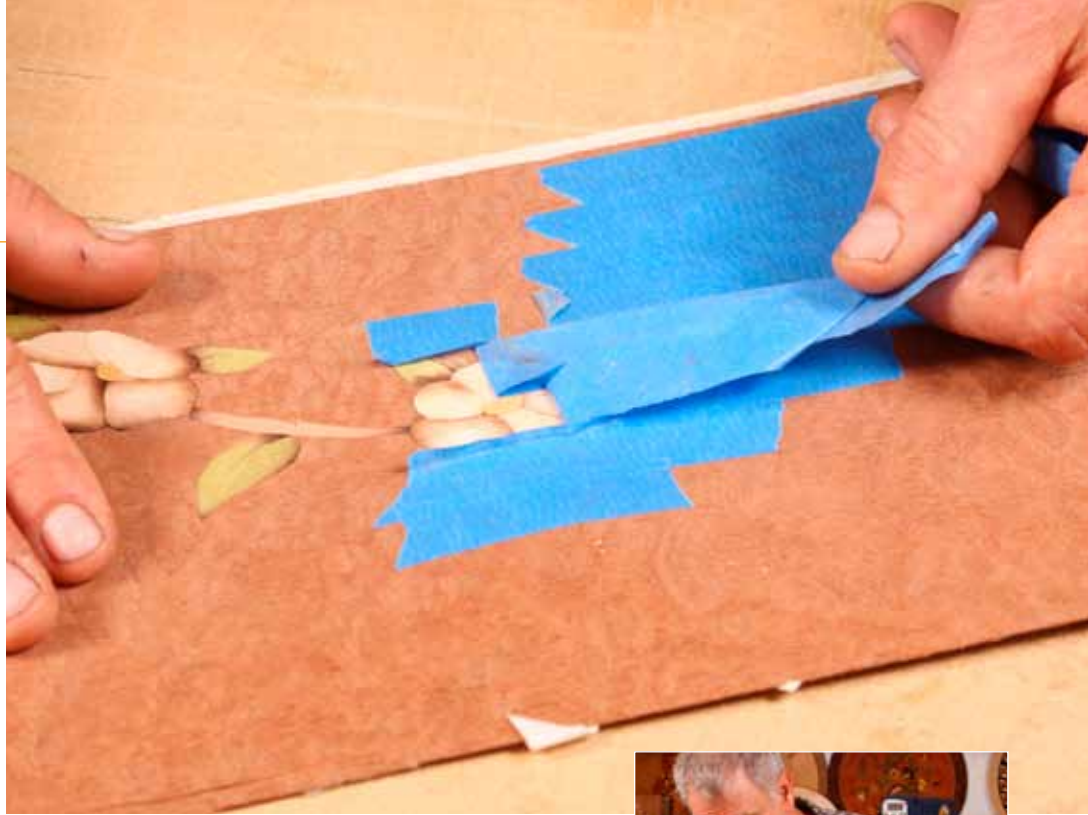
Spread the leaf veins apart to snug the leaf perimeter tight to the background, which also opens up and accents the vein lines. Place the outer petals of each flower snugly against the background first and then work your way in toward the center, distributing the gaps evenly. The adhesive on the blue tape will let you shift the pieces sideways. And if you need to move a piece, it's easy to pry it up with the tongs and reset it.

After the basic assembly is done, most kerf gaps will not need filling, since glue-up and finishing will do this. To fill gaps larger than $\frac{1}{32}$ in., you have a few options. You can stipple the veneer by stabbing it along the grain direction with a chisel, opening up the wood fibers to fill the gap. You also can insert veneer slivers where needed, and dab white glue into the repair areas





Tape the show face. Now veneer tape goes on the show face to hold everything together through the glue-up process.



One last layer to remove, then let it dry. Don't forget the blue tape you put on the glue face (above)! Put the veneer under a layer of MDF to keep it flat while it dries (right).



(or other fragile spots). Lightly sand the glue spots with 100-grit paper to ensure they will adhere properly to the substrate. By the way, like assembly, repair is always done on the glue surface.

The tape dance isn't over yet. Cover the glue face with blue tape, flip the skin over, remove all the blue tape from the show face,

and replace it with slimy gum tape. Once again, brush down the tape and place the assembled pattern under a platen until it is dry. Last, remove the blue tape from the glue surface.

Now you are ready to trim the edges, and add stringing or borders if needed. Make both the finished pattern and the substrate 1/2 in. oversize (1/4 in. all around) in case the veneer shifts during glue-up. I use the substrate as a

template for trimming the pattern. Cut a balancing veneer for the back of the panel, do a final check for gaps and overlaps in your marquetry, and proceed to glue-up.

The glue fills most of the gaps, but if any depressions are left after I've sanded the panel and sealed it with a couple of padded-on layers of shellac, I fill them with Famowood or Dap (both walnut color).

That's it. Lots of steps, but none of them difficult. You've learned marquetry, and your imagination is the limit now. □



Perfect panel.

To learn how Schürch adds beautiful borders and stringing, read his article in FWW #XXX.

Paul Schürch makes furniture in Santa Barbara, Calif., and teaches across North America. His veneering tools and DVDs are available at schurchwoodwork.com.