

The Art of Marquetry

Craig Vandall Stevens

Text written with and photography by Joy Shih Ng



With illustrated,
step-by-step
instructions



A Schiffer Book for Woodworkers

About the Artist

Craig Vandall Stevens designs and builds one of a kind furniture in his one-person shop in Sunbury, Ohio. He studied furnituremaking at the College of the Redwoods Fine Woodworking Program in northern California, a program renowned for its excellence in craftsmanship and attention to detail. There under the instruction of master cabinetmaker Jim Krenov, he developed an extensive background in traditional cabinetmaking techniques and handskills. The focused environment of the college became the setting for Craig to begin exploring the delicate art of marquetry.

Craig's furniture and carvings have been recognized both regionally and nationally. He has received Awards for Excellence from the Ohio Designer Craftsmen and won an "Excellence in Craftsmanship" Award from *American Woodworker Magazine's* national competition. His work appears in Taunton Press' *Design Book Seven* and has been included in group and solo exhibitions around the United States. Craig is also responsible for reproducing many of the original architectural carvings for the historical renovation of the Ohio State House in Columbus, Ohio. *The Art of Marquetry* is his third book.

Craig teaches classes on a variety of woodworking topics and conducts small group workshops in his shop. He may be contacted at 11951 Wildwood Lane, Sunbury, Ohio 43074.

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Craig Vandall Stevens

Text written with and photography by Joy Shih Ng



77 Lower Valley Road, Atglen, PA 19310

Dedication

This book is graciously dedicated to
my friend and teacher, James Krenov.
Thanks for sharing your gift.

Front Cover:

Cedar Waxwing Cabinet, marquetry detail. *Courtesy of Fran and Darrell Hutchinson. Photo by Stephen Webster.*

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We are interested in hearing from authors
with book ideas on related subjects.

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A "Word" From The Author

Acknowledgments

I would like to express my appreciation for Caroline who shares this adventure with a sense of humor, endless support, and a lighthearted spirit. She will surely one day be sainted. A special *note* of thanks to my long time friend Gary Everts, whose commissioned piece, "A Stand For Music" appears in the Gallery section. I would like to acknowledge the special talent of Greg Zall, my good friend and marquetry compadre. Also thanks to Stephen Webster, my studio photographer, who beautifully captures the subtle detail of my furniture. Stephen's photographs appear in the Gallery section.

I would also like to acknowledge the staff at the College of the Redwoods Fine Woodworking Program, Jim Krenov, Michael Burns, David Welter, and Jim Budlong. Their commitment to an honest, sensitive approach to woodworking inspires me and has helped me develop new ideas about grace and beauty.

A very special thank you to Jason Grant and EcoTimber in Berkeley, California for continually educating me and other woodworkers concerning responsible forest management. EcoTimber graciously provided the Lesser-Known Species that I describe and use in some of the marquetry projects presented in this book.

Special appreciation to my family and friends for their understanding that following the path of the heart is more important than following the path of convenience (in other words, never asking when I'm going to get a "real job").

Finally I would like to thank the nice folks at Schiffer Publishing for taking an interest in my work, in particular Joy Ng and Doug Congdon-Martin for their great skills and sense of humor.

Truthfully, one of my reasons for learning the art of marquetry is that I could then use one of the greatest words in a woodworker's vocabulary on a daily basis - *Marquetarian!* A person that makes pictures out of wood!! It sounds so...noble. I use it at every opportunity. For instance, out to dinner at a nice restaurant, I might slip it in when I order my meal. "I'd like the marquetarian... oops, I mean vegetarian special." Signs can be hung around the shop or from the mail box - "Marquetarian is In". The possibilities are endless. Aside from woodworkers getting to wear the coolest clothes to work, getting to name-drop terms like marquetarian is certainly one of the highlights for me. This all goes to prove that woodworkers often spend way too much time alone!



Introduction To The Art of Marquetry

While studying Fine Woodworking at the College of the Redwoods in northern California, I had the chance to see the work of many of the school's former students. A few of these beautiful pieces of handmade furniture used the art of marquetry as a means of decorating a surface. This art form captured my imagination and has become one of the most rewarding aspects of my work as a furnituremaker.

There is sometimes confusion between marquetry and inlay. Inlay is the art of creating a design that is made up of shell, stone, metal, and sometimes wood. The inlay is then glued *into* a cavity that has been hollowed or carved out of the surface. Marquetry is a technique where different colors of wood veneers are carefully cut to fit precisely together, creating a design in a single sheet. This veneer sheet or picture is then glued to a solid, stable surface.

The idea that one can paint a picture using the natural colors of wood, precious metals and gems is an ancient one. Artifacts enriched with colorful designs were left behind in the tombs of the Egyptians. By modern definition, these surface decorations are more closely related to inlay. In the mid 16th century, Italian craftsmen began using marquetry as a furniture decorating art. Around that same period of time came the invention of the fret saw. A U-shaped metal frame with a fine blade held tightly at the open side, the fret saw made it possible to cut veneers quickly, with great accuracy. Today's fret saw works on the same principal and is still one of the primary tools used by the marquetarian.

I use a technique called the double-bevel cut for nearly all of my marquetry work. Double-bevel means cutting 2 layers of veneer at the same time,

with the saw blade angled or beveled, so that one piece fits in the void left by the other piece. It's a very accurate method that eliminates gaps around the individual pieces of the marquetry picture. The technique can be confusing initially, but it is easily learned. With practice, the cutting of the veneers can be mastered and the challenge becomes designing the marquetry picture and choosing veneers that will enhance its appearance.

Much of the fine furniture that I design and build begins with the marquetry design. Sketching may lead to a drawing with graceful, vertical lines that spark an idea for a cabinet with a similar graceful, vertical presence. After completing the sketch, I begin choosing the woods I want to use. The background can set the mood for the piece and is usually the wood I'll be using for the cabinet itself. After choosing the marquetry woods, I transfer the finished sketch to the background and begin the process of cutting the different colors of veneer to fit.

In this book I will discuss the double-bevel technique of marquetry including the tools and materials required, veneers, using the scroll saw and the fret saw, choosing woods, design, shading with hot sand, and finishing. I'll take the projects from the design through the marquetry process including preparing the completed design for finishing.

I will also demonstrate how to saw your own veneers out of solid wood planks. This is a beneficial technique for the marquetarian because it can provide veneers in colors and textures that might be unavailable in commercial or store-bought veneers. Sawn veneers, while much thicker than commercial veneers are easily cut with a fret saw or scroll saw for use in marquetry.

I wish you luck as you explore marquetry and I hope you find it as exciting as I do!



Woods for Marquetry

Lesser-Known Species



From left to right: tagua nut, cuta, arariba, camphor, chakte kok, pau ferro.



From left to right: New Guinea red cedar, red elm, red oak, chechen, red eucalyptus, cuchi.

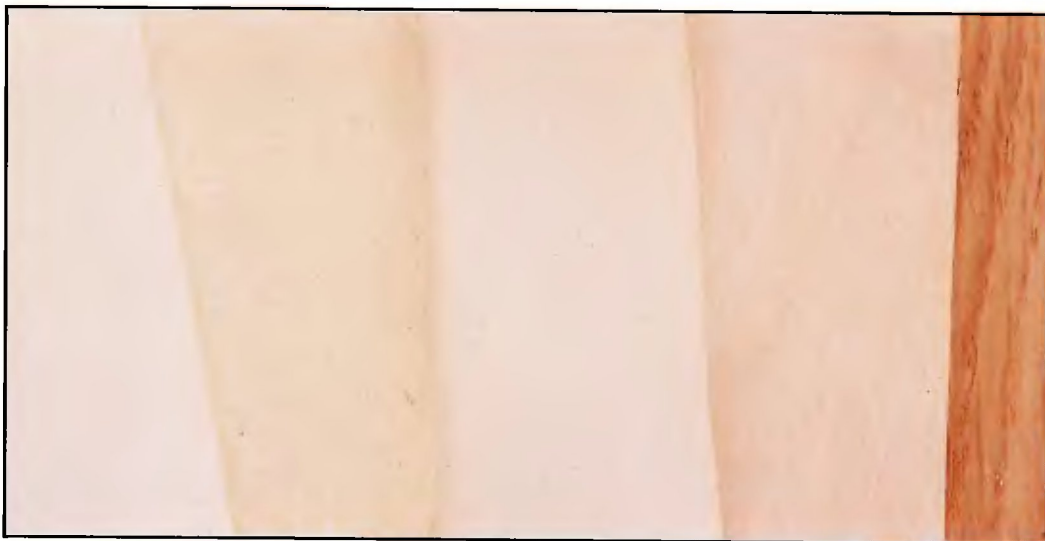


From left to right: pau dao, malas, monkey pod, koa, kamarere, t'zalam.



From left to right: kwila, kiaat, narra, granadillo.

A Sampling of Thin Veneers



From left to right: aspen, sycamore, holly, maple, white oak.



From left to right: makore, quilted madrone, bubinga.



From left to right: Bolivian rosewood, mahogany, European pear, olive, East Indian rosewood.

A Sampling of Sawn Veneers



From left to right: holly, black bull hoof, red eucalyptus, osage orange, purple heart, macassar ebony.



From left to right: yew, Norway maple, satinwood, bubinga, poplar, siricote.



From left to right: olive, European pear, doussie, bay laurel, jarrah, ebony.



From left to right: European beech, jarrah, bird's eye maple, redwood burl, apple, Brazilian rosewood.



From left to right: lacewood, mountain mahogany (rich brown heartwood and cream color sapwood), manzanita, eucalyptus, mesquite, yacca.

A Sampling of Woods That Show Chatoyance



From left to right: lacewood, quilted madrone, makore, bird's eye maple, bay laurel.

Marquetry Tools and Supplies

One of the wonderful things about marquetry is that it requires few tools. The double-bevel method can be performed using either an inexpensive, hand-held fret (jeweler's) saw or an electric scroll saw, both available from woodworking catalogs and stores. Hegner scroll saws are available from Advanced Machinery Imports Ltd.

Along with a saw, you'll need:

Jeweler's blades size 2/0 (jeweler's blades fit both fret and scroll saws and are available through jewelers supply stores like "Frei and Borel" in Oakland, California)

Pin vise for holding tiny drill bits (woodworking or jewelers supplies stores)

A tiny drill bit, size #68 or so (a little larger than a needle)

Masking tape

Small counter-sink (mine is made by Dremel and is available at hardware stores)

Pencil

Tracing paper

Graphite paper

Tweezers (jewelers supply stores)

Hot plate and small frying pan

Fine sand (sandbox sand)

Yellow woodworker's glue and a small glue bottle

Small hammer

Sand paper or cabinet scraper

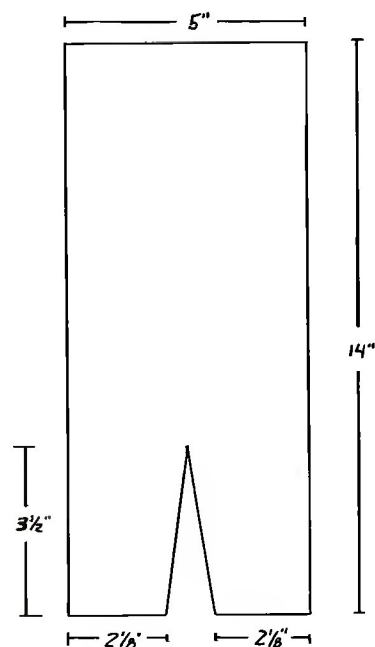
Wax paper

Veneer tape (woodworking catalogs and stores)

If you're using a fret saw, you'll want to make a simple angled table with a birds-mouth or notch cut into the front edge of the table. The angled table is the key to an accurate fit of the veneers. Because the angled table supports the work piece at the correct angle, the saw can be kept vertical.

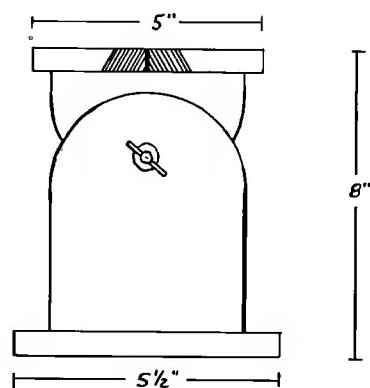
If you're using an electric scroll saw, you may find that the opening in the metal table top has a large space around the blade. It's worth spending a few minutes making an auxiliary top out of nice plywood or masonite that reduces the gap around the blade. This offers the veneers additional support at the blade, keeps the blade from flexing too much and helps prevent tiny marquetry pieces from falling through to the floor. The new top can be attached with double-sided carpet tape and replaced when worn.

Adjustable Birdsmouth top view

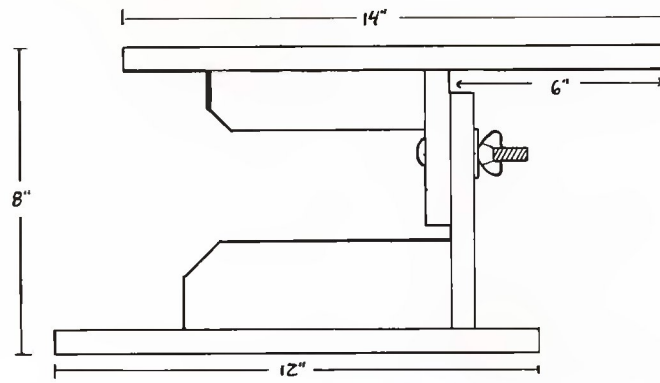


1/2" Baltic birch screwed to base (no glue)

Adjustable Birdsmouth front view



Adjustable Birdsmouth side view



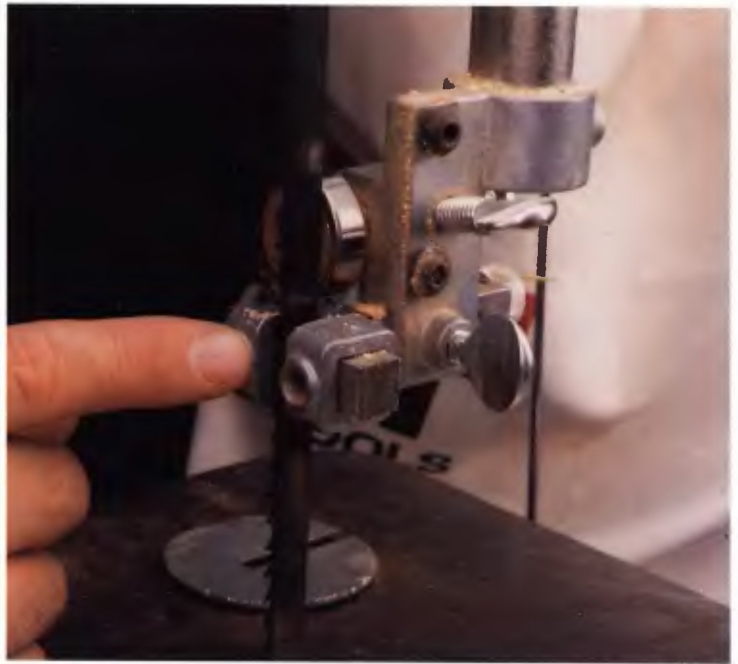
1/2" Baltic birch plywood, glued and screwed



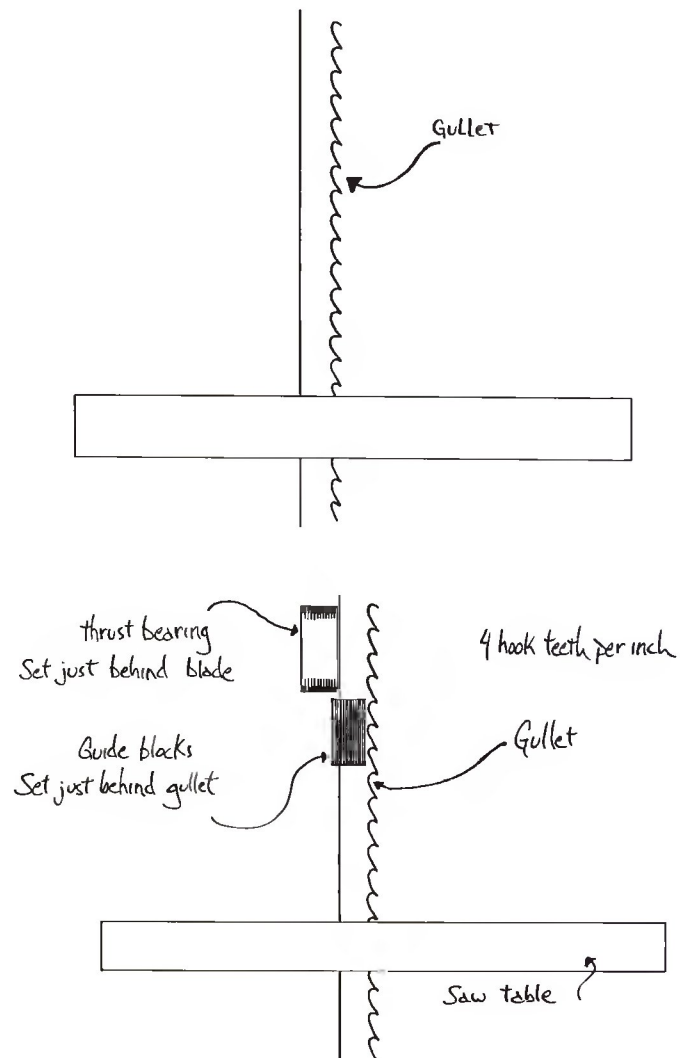
Introduction to Resawing Veneers

The first step to accurate resawing on the bandsaw is setting up and adjusting the saw. The proper blade is important and I use a sharp 1/2" blade, with 4 hook teeth per inch. The benefit of using a blade with 3 or 4 teeth per inch is that it efficiently removes a lot of material quickly, yet the teeth don't have an overly aggressive set.

Remove the blade currently on the saw. Dust any sawdust off the bandsaw tires and back the guide blocks and thrust bearings away from the blade. Install the 1/2" blade approximately in the center of the tires. The teeth will be pointed down towards the saw table and facing you as you stand in front of the saw. Tension the upper wheel until the blade becomes slightly taut, then rotate the upper wheel by hand for several revolutions. This allows the blade to properly track or find its proper location on the saw's wheels. Adjust the tension of the blade according to the scale on your particular bandsaw. For this project I am using a Delta bandsaw with a 6" riser block. I have adjusted the tension of the blade a little beyond the 1/2" mark on the saw's tension scale. The blade should be very tight, not so much that you risk damaging the saw, but tight enough to prevent the blade from wandering while in the middle of a cut.



Adjust the upper guide blocks so that they come forward to the back of the blade's gullet and in until they lightly touch the sides of the blade. Tighten the guide blocks in place.





Adjust the upper thrust bearing forward until it lightly touches the back of the blade. Tighten the thrust bearing in place. The bearing should move slightly from light contact with the blade as the blade rotates. The bearing should not be in such tight contact with the blade that it can not be stopped with finger pressure while the blade is being rotated by hand.

Repeat the above two steps to adjust the lower guide blocks and thrust bearing below the saw table. Rotate the blade by hand to double check that both the upper and lower guide blocks and thrust bearing are properly positioned.

The next important step is to find the "drift" of the blade. Band saw blades rarely cut perpendicular to the front of the saw table, so it's important to find each blade's angle at which it naturally wants to cut.



Draw a line along the length of a piece of thin scrap wood, parallel to one side.



Turn the saw on and pushing from the end of the scrap, cut part way along the pencil line manipulating the scrap to allow the blade to follow the line. Hold the scrap piece still and turn off the saw.



While still holding the scrap piece in place, place an adjustable bevel square along the front edge of the bandsaw table. Adjust the square's arm against the edge of the scrap piece parallel to the pencil line. Tighten the bevel square. The bevel square's angle now represents the drift of the saw blade.



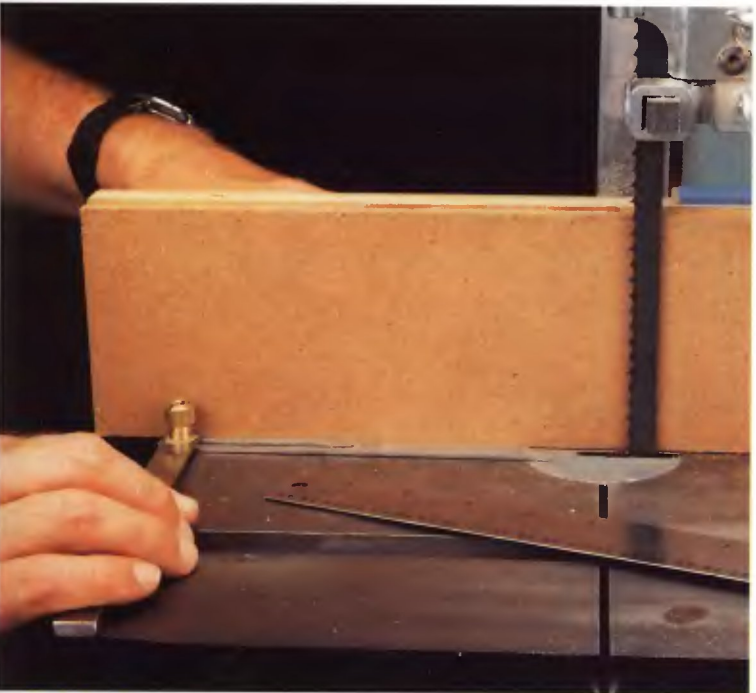
For resawing I made an accurate fence out of 3/4" birch plywood approximately 4" high to support the plank being resawn.



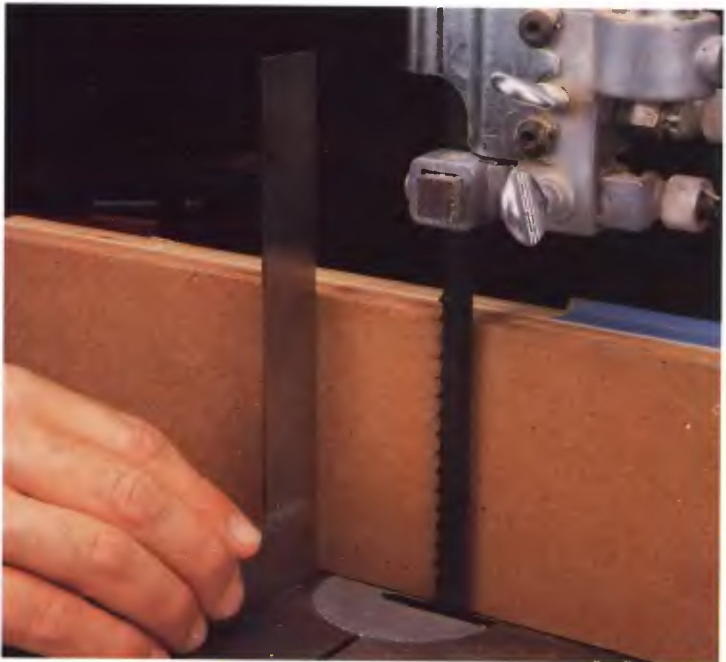
I saw my veneers to a strong $3/32$ ". This allows me to thickness plane or sand the veneers to a strong $1/16$ ". My finished veneers measure $5/64$ ". Whatever final thickness you choose for your veneers, it's important that all veneers used in a marquetry project be the same thickness.



Clamp the fence to the bandsaw table. Double check the distance between the fence and the blade, and double check the fence's angle with the bevel square. Make any adjustments and re-clamp if necessary. The fence I am using doubles as a router table fence which explains the dust chute.



At the same time that you are adjusting the distance between the blade and the fence ($3/32$ " plus), set the fence against the angle of the bevel square to align it with the drift of the blade.



Check that the fence is square to the top of the bandsaw table.

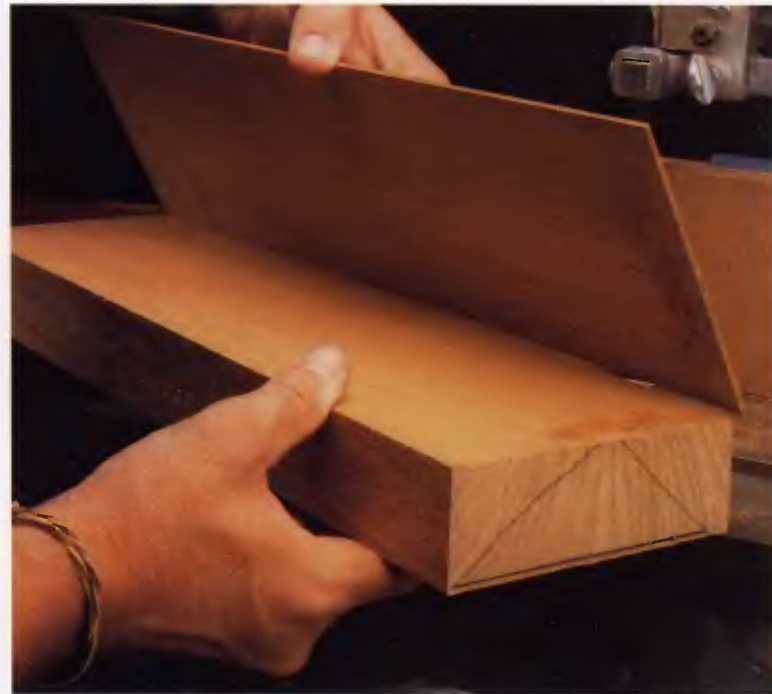


One face and one edge of the wood to be resawn have been jointed. I draw a cabinetmaker's triangle on one end of the board to aid in re-assembling the veneers in the sequence that they were cut.



With the jointed face against the fence and the jointed edge on the saw table, use steady pressure and saw the veneer off. It's important to use a steady feed rate to reduce the chance of the blade burning the wood. Before starting the cut, think about the position of your hands. Position them on the workpiece so that you don't need to stop the forward progress in the middle of the cut to get a new grip. Any pauses like this usually result in burned marks and irregularities on the wood surface.

Beware of where your fingers are on the end of the board so that they are not in the path of the blade as it exits. It's a good idea to have a piece of scrap wood nearby to push the board through at the end of the cut, keeping your fingers out of danger.



The first veneer is sawn. Check the new surface for any unevenness. Any high or low spots require that the board be jointed again before the next veneer is cut.



The cabinetmaker's triangle allows me to easily find book-matched veneers. Book-matched veneers are a mirror image of each other and often create a more attractive background of a marquetry design than randomly selected veneers. By checking the cabinetmaker's triangle drawn on the end of the board, you can easily find the correct sequence of veneers.

Once all the veneers have been cut, they are ready to plane or sand to the final thickness. If you are not planning on using a drum sander or thickness planer, or if the board is too small to be safely sent through a planer, set the bandsaw fence to the final veneer thickness. For these smaller pieces, I set the fence 5/64" from the blade. With careful fence and drift set-up, veneers sawn at this fence setting are ready to use for marquetry right off the saw.

Equipment for Marquetry Projects



Equipment for sand shading: small hotplate and pan, fine sand (playground sand), small brush, long-handle tweezers.

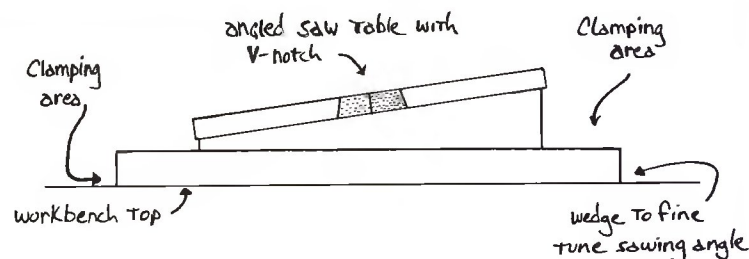


Tools and supplies needed for marquetry. *From lower left, and clockwise:* small hammer with slightly convex head, cabinet scraper, small countersink, pin vise with tiny drill bit (#68 drill bit), long-handle tweezers, small brush, fret saw blades (jeweler's blades, size 2/0), small glue bottle, 1/2" masking tape, bench knife, mechanical pencil.



Simple birdsmouth jig
1/2" Baltic birch top, approx. 6" x 10"

I use a Hegner 22" variable-speed scroll saw for most of my marquetry work. The variable speed motor is one of the saw's most important features. At its slowest setting the motor operates at approximately 400 rpms, slow enough to do very precise marquetry and still make good progress on a project. The saw's accuracy allows me to focus on the marquetry process and its 22" deep throat permits work on large marquetry panels. I recommend using a foot pedal to operate the saw, freeing both hands to manipulate the workpiece.



I also enjoy using a fret or jeweler's saw for marquetry. Fret saws are available with throat depths ranging from 2 1/2" to 12" deep. The depth of the throat somewhat limits the size of the marquetry design that can be created, but with careful planning a smaller fret saw can be used to make several small patterns and assemble them in sections in a larger piece. Becoming proficient with a fret saw is a wonderful skill to learn. The equipment required is inexpensive and can be modified to fit your needs. The technique feels awkward at first, but with practice it can become a very accurate, rewarding approach to marquetry.

Double-bevel means cutting two layers of veneer at the same time, with the saw blade angled or "beveled" so that one piece of veneer fits in the void left in the other piece. The thickness of the veneer and the thickness of the saw blade determine the angle of the bevel. The bevel is then set by tilting and securing the table of a scroll saw or a "birds-mouth" jig if you're sawing by hand with a fret saw. Using 5/64" sawn veneers and a 2/0 jeweler's blade, the space around each piece of veneer will be filled using a bevel of around 7 de-

grees. If your sawn veneers are a different thickness, you'll need to adjust the angle of the saw table slightly. This sounds much more complicated than it is. Your first couple of practice pieces will help to clear things up.

If you're not interested in sawing your own veneers or don't have the equipment to do so, you'll want to use commercial or store-bought veneers to practice the art of marquetry. The bevel angle will be greater because the veneers are much thinner. Commercial veneers come in two common sizes, 1/28" thick and 1/40" thick, so you'll need to experiment to determine the exact bevel angle for the materials you're using. When using the slightly thicker 1/28" veneers, the saw kerf gap will be filled with a bevel angle of 13 to 15 degrees. If your veneers are 1/40" thick, I've found that a bevel angle of 18 to 20 degrees works. The work is simplified and the fit of each marquetry piece is more accurate if you use the same thickness veneer for an entire project.

To begin, I'll demonstrate an exercise that will help you understand the process of marquetry and how the double-bevel method works.

Introduction to Double-Bevel Cutting



Select a light color veneer. I'll always refer to this initial veneer for any marquetry project as the "background veneer". The background veneer is always the piece that has the design or pattern drawn on it. All other veneers are added to the background veneer to create the design. Draw a simple shape on the background veneer. I have marked the shape with the letter "W" to indicate a "waste" or throw-away piece. This waste piece is replaced by the new piece of veneer.



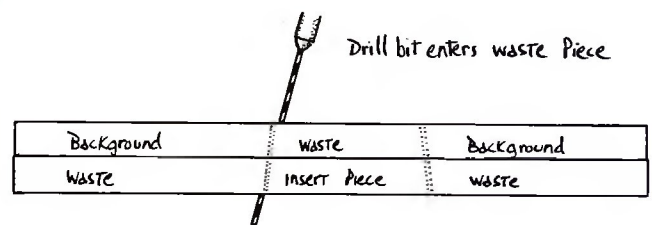
Place a contrasting piece of veneer under the first veneer making sure the drawn shape is completely over the contrasting piece.



Holding the two pieces of veneer carefully together, turn the pair over and secure with several strips of masking tape.



Install a tiny drill bit into a pin vise. I'm using a #68 size bit, but a variety of sizes will work providing they're just slightly larger than the 2/0 scroll saw blade. Any drill bit about the size of a sewing needle will work fine. Drill a hole to match the angle of the tilted saw table, starting on the inside of the drawn line and angling the bit towards the outside of the drawn shape. By drilling at approximately the same angle as the tilt of the saw table, the drilled hole will be sawn away from both pieces of veneer. Using 5/64" veneers with the 2/0 blade, and tilting the saw table to 7 degrees eliminates the saw kerf. This makes for a perfect fit.



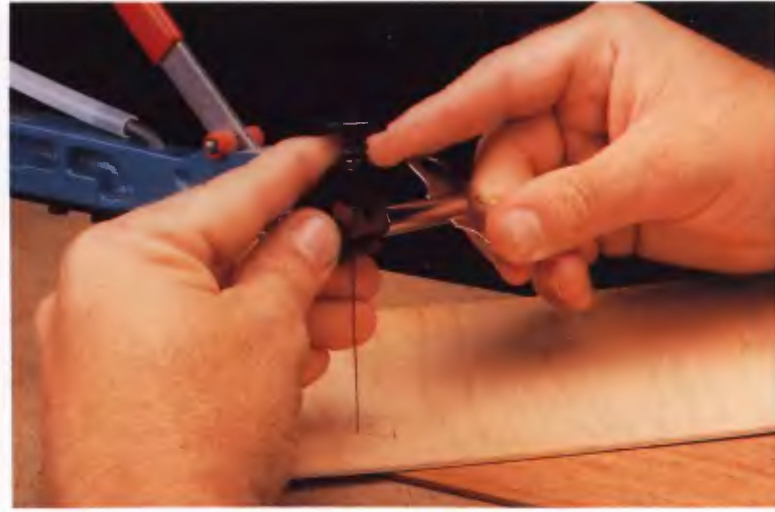
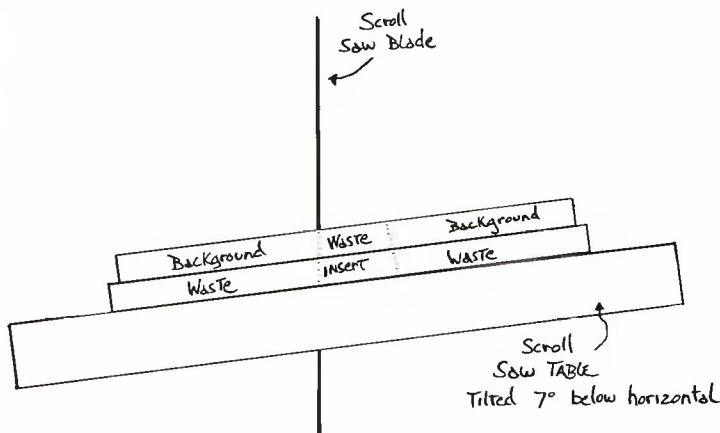
Drill bit exits waste piece.
The drilled hole is cut away and invisible.



Turn the workpiece over and countersink the exit hole. This makes threading the blade through the veneers much easier. Marking a circle around the exit hole with a graphite pencil or dark pen also aids in finding the countersink hole when the workpiece is turned back over for threading.



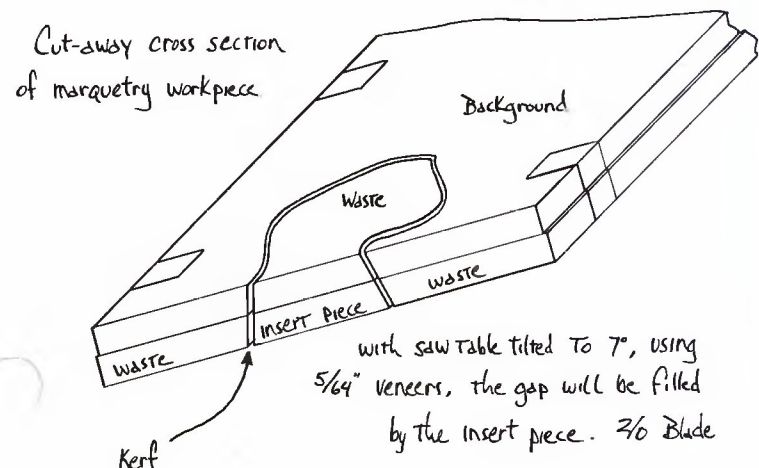
With the teeth of the saw blade facing down and towards you, thread the saw blade through the hole. The drawn shape should now be visible as the top or "background" veneer. The drawn shape or waste piece should be uphill of the blade. That is, if your saw table is tilted down to the left, the waste piece should be on the right (uphill) side of the blade.

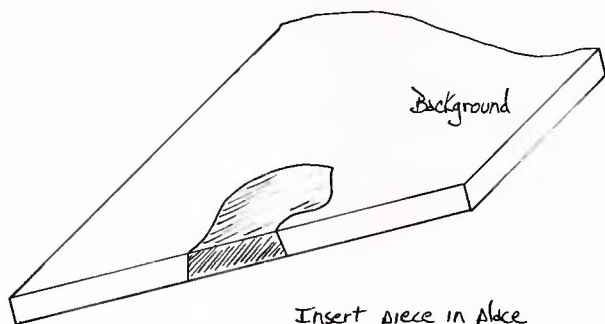


Attach the top of the blade to its clamping device. Adjust the tension on the blade so that the machine doesn't rattle in use, but isn't so tight that you're constantly breaking blades.

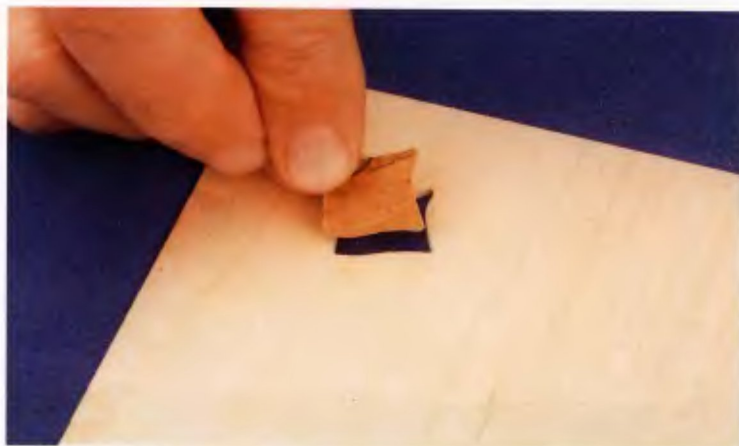


Begin cutting the shape, rotating the workpiece clockwise which feeds it into the saw blade while keeping the waste piece uphill of the saw blade. Again, with the table tilted down 7 degrees to the left, the drawn shape is to the right side of the saw blade. When the cut is complete, the waste piece will be replaced with the new "insert veneer" currently taped below.

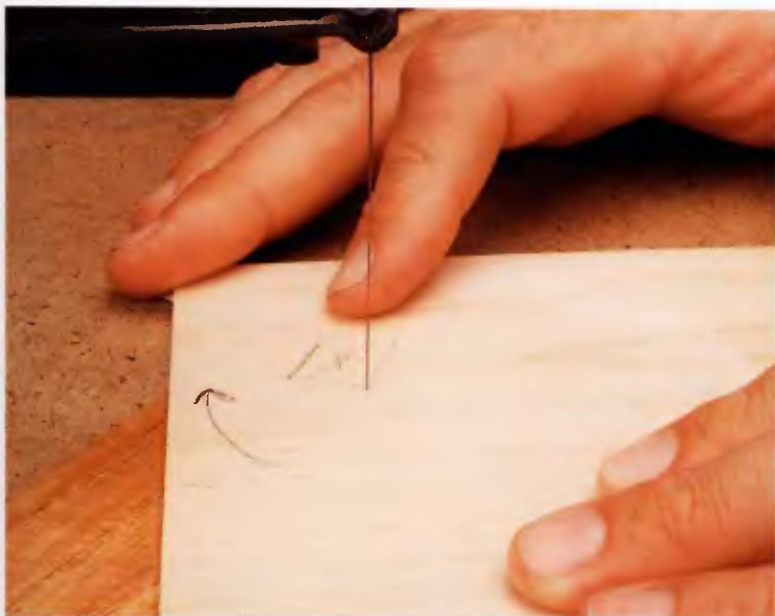




Insert piece in place
with no gap around its edges



From the back or wrong side of the top (background) veneer, set the cut-out contrasting veneer in place. It should be a snug fit.



Cut along the line, continuing to rotate the piece clockwise. To prevent bending the blade to the side or towards the back, occasionally pause the saw and release your hold from the workpiece to allow the blade to center itself. Some flexing of the blade towards the back of the saw is to be expected. If this happens excessively, you might consider placing an auxiliary table on your saw's metal table surface. The space for the blade can be cut to allow only a small amount of backwards flexing of the blade. I've fitted my table top with a piece of 1/4" masonite, reducing the space around the blade. When reaching a corner of the shape, keep the blade moving in place as you carefully turn the corner. This will allow you to make a tight turn and prevent the blade from breaking.



Turn the workpiece over. You are now a Marquetarian! Revel in your success, show all your friends, start promising beautiful marquetry gifts to family members. If the fit is not as snug as you had hoped, however, hold off on that last suggestion for a bit and continue reading.

Work on several practice pieces to begin feeling comfortable with the technique. Don't be discouraged if your first attempt is not a perfect fit—this is the time to fine-tune your work.

If the contrasting veneer that you have cut is not a snug fit, and falls through or is a loose fit, try angling your saw table slightly more to the left. For example, try changing the scale on the saw table from 7 degrees to 7 1/2 degrees. Making the angle steeper will create a tighter fit.

If the contrasting veneer that you have cut is too large and won't fit into the opening, try decreasing the angle of the saw table slightly. It may take several practice pieces, changing the saw table's angle each time, to determine what is perfect for your situation.



After removing the workpiece from the machine, remove tape and set aside the bottom contrasting veneer.

A First Project

Marquetry Using a Scroll Saw



With the graphite paper still in place, draw two reference marks at opposite corners of the sketch. The reference marks help you to reposition the tracing over the veneer for subsequent cuts.



For a simple project that will allow you to practice double-bevel cutting, we'll make a leaf using two pieces of veneer. Copy the leaf pattern on to tracing paper. Place the tracing over a light color veneer.



The transferred sketch with the reference marks. This veneer will now be referred to as the "background veneer."



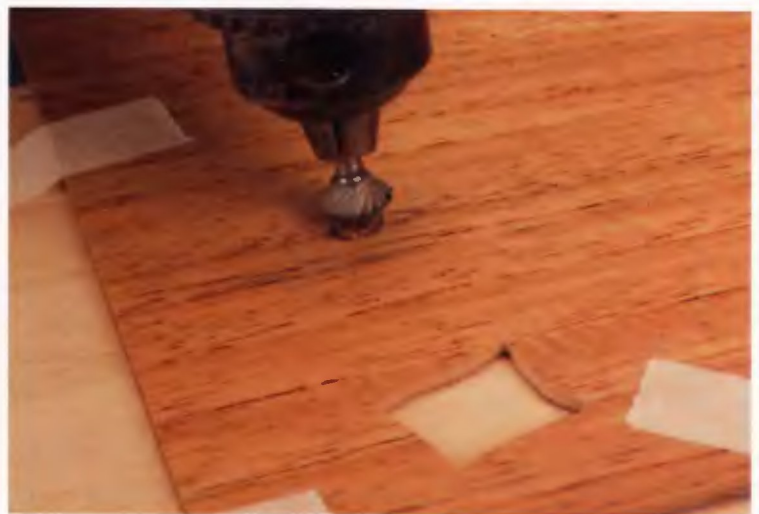
Tape the tracing to the veneer and slide a piece of graphite paper (graphite side down) between the tracing and the veneer. Using a pencil, transfer the design on to the veneer.



I've chosen a beautiful wood called *narra* to make the leaves. Narra is one of the many lesser known species of wood that I use in my woodworking. Its color ranges from golden-brown to red and will work well for this project. I'll refer to it as the "insert veneer." To make the design more realistic, I like to use the grain of the insert veneer to suggest veins in the leaf. I have drawn arrows representing grain directions on the pattern to help position the grain direction of the insert veneer (contrasting veneer).



Position the background veneer over the insert veneer. We'll work on the section of the leaf marked #1. Notice the insert veneer's grain runs in the direction of the arrow. Secure the background veneer to the insert veneer with masking tape.



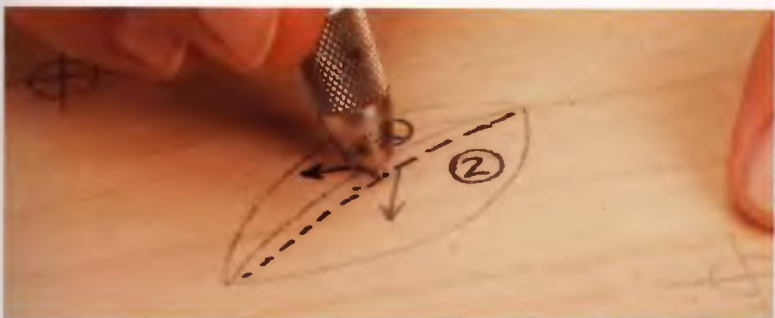
Turn the workpiece over, draw a circle around the drill hole and countersink the hole.



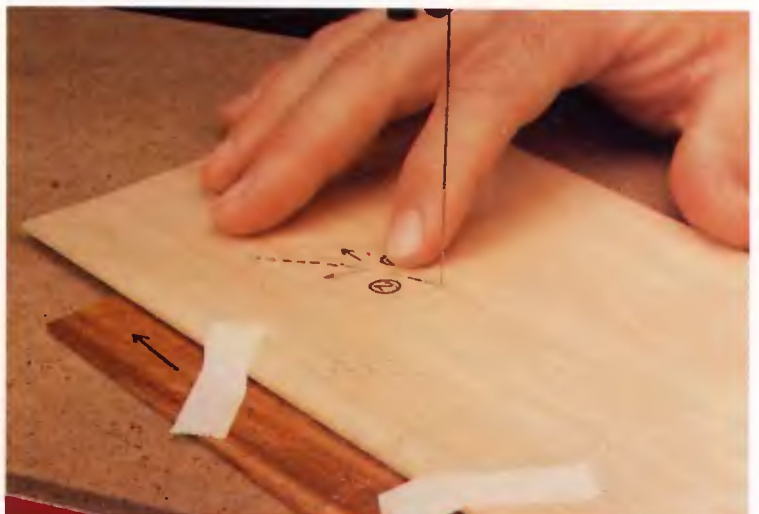
The process of double-bevel marquetry is the continuous overlapping of veneers. Where this first insert piece borders the second insert piece is a good place to demonstrate this overlapping. Continuing with the section of the leaf marked #1, you will follow the transferred pencil line on the outside of the leaf pattern. When you reach the center line separating the two halves of the leaf pattern, you will cut just outside of this center line (the dotted line shown). This overlap area will be cut away with the next insert piece, leaving a clean seam between the two halves of the leaf pattern.



Thread the blade through the hole and attach it to the saw's blade clamp. Tension the blade.



Drill a hole using the pin vise and bit along your dotted line. Remember to slightly angle the drill towards the outside of the line, to approximately match the angle of the tilted saw table. Placing the hole in this overlap section insures that it will be cut away with the following insert piece.



Begin cutting along the dotted line in the overlap area. When you reach the corner, back off slightly and carefully pivot the workpiece to continue following the line. While pivoting, the saw blade is moving but the teeth are not cutting the veneer.



Now that you have completed the sharp turn at the corner, carefully follow the pattern line around the outside of the leaf. Remember to occasionally release the workpiece to allow the blade to center itself.



I keep a finger applying downward pressure to the veneer near the saw blade. This pressure prevents the blade from accidentally lifting the workpiece and allows me to pivot the workpiece when following a curve or cutting around a corner.



Pivot around the corner, easing off on the pressure to prevent the teeth from cutting while you make the turn. Cut along the dotted line in the overlap section to the starting point.



The completed cut. Remove the workpiece from the saw.



Remove the insert and waste pieces. Also remove masking tape and set aside the remaining insert veneer.



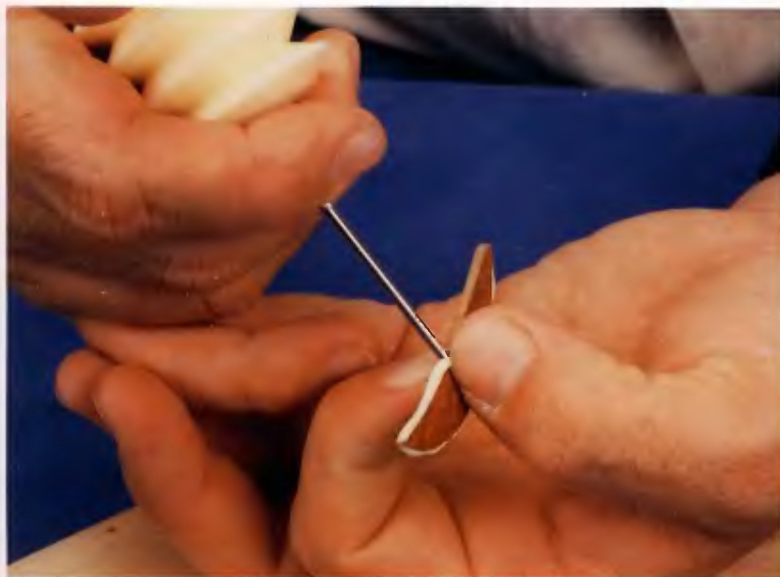
With the background veneer still face down, push the cut-out insert piece into the opening.



Turn the workpiece over and check for a nice fit.



Lightly tap the insert piece into the opening with a small hammer to assure a snug fit that is flush with the face of the background veneer. Wipe off excess glue.



Once you're satisfied with the fit, you are ready to glue the insert piece in place. Remove the piece and apply yellow woodworker's glue around the edges, using a small glue bottle.



The first section of the leaf glued in place.



From the back side (wrong side) of the background veneer, press the glued insert piece in place.



Lay the pattern over the background veneer using the reference marks for positioning. Tape the pattern in place.



Slide graphite paper (graphite side down) between the pattern and the background veneer. Retrace the center line of the leaf to transfer it to the newly placed insert piece.



Position the background veneer over the insert veneer. We are now working on the section of the leaf marked #2. Again notice the insert veneer's grain matches the direction of the arrow on the leaf section marked #2. Secure the background veneer to the insert veneer with masking tape.



The overlap area from the first inserted leaf section will now be cut away with this second leaf section. This will leave a clean seam between the two sections. With this second leaf section you will be cutting the actual line all the way around.



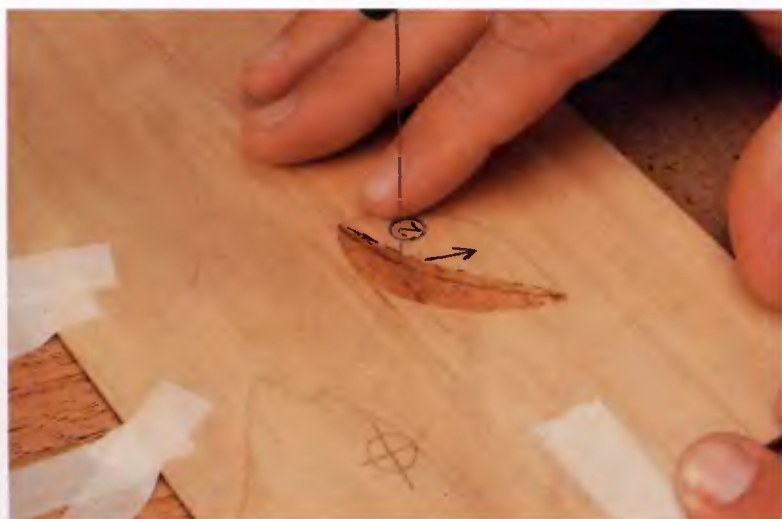
Drill a hole on the center line of the leaf, angling the drill towards the outside of leaf section #2. If you can imagine drilling at a slightly steeper angle than the saw table is tilted, the drill hole will be invisible once the insert piece is cut out. Because we have no overlapping area on this piece in which to place the hole, the slightly steeper drill angle will place the hole in the waste area of both veneers.



Turn the workpiece over, draw a circle around the drill hole and countersink the hole.



Thread the blade through the hole and attach it to the saw's blade clamp. Tension the blade. Again, notice that the waste area of the background veneer (the top veneer) is uphill to the right of the blade.



Begin cutting along the center line of the leaf, feeding the workpiece into the saw blade. Remember that the workpiece is being rotated clockwise and to occasionally release pressure on the workpiece allowing the blade to center itself.



Remove the insert and waste piece. Also remove masking tape and set aside the remaining insert veneer.



Once again, when reaching the corner, back off slightly and carefully pivot the workpiece to continue following the line.



Again with the background veneer still face down, push the cut-out insert into the opening.



The completed cut. Remove the workpiece from the saw.



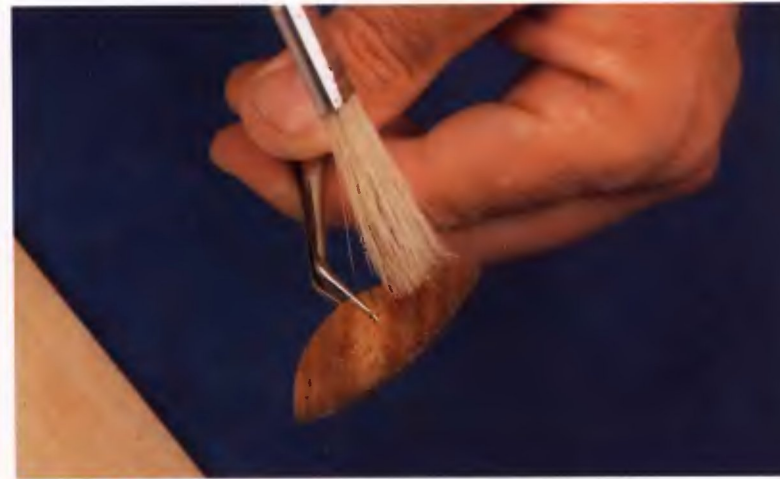
Turn the workpiece over and check the fit. The clean seam between the two halves of the leaf demonstrates the benefit of cutting both inserted veneers along the center line at the same time.



Choosing to have the grain run in two different directions not only suggest the veins in the leaf but also shows the reflective contrast of the wood.



The shaded insert piece.



Brush away any sand.

To further enhance the contrast between the two halves of the leaf, I will shade the center line edge of the second insert. Over a hotplate, heat fine sand in a small pan on a high setting. Place the center line edge of the insert into the hot sand for 10-15 seconds, checking regularly for desired shading. All woods react differently to shading with hot sand. Some species shrink if left in the sand too long while others may burn easily. The narra I'm using shades very well and after just a few seconds, has the look I'm after. Experiment shading with scraps of the same kind of veneer before using the actual insert piece.



Reposition the center line edge of the insert piece to shade the length of the curve. Again, heat for 10-15 seconds or as needed, checking the progress regularly.



Apply glue around the edges.



From the back side of the background veneer, press the glued insert piece in place. Lightly tap the insert with the small hammer if needed. Wipe off excess glue.



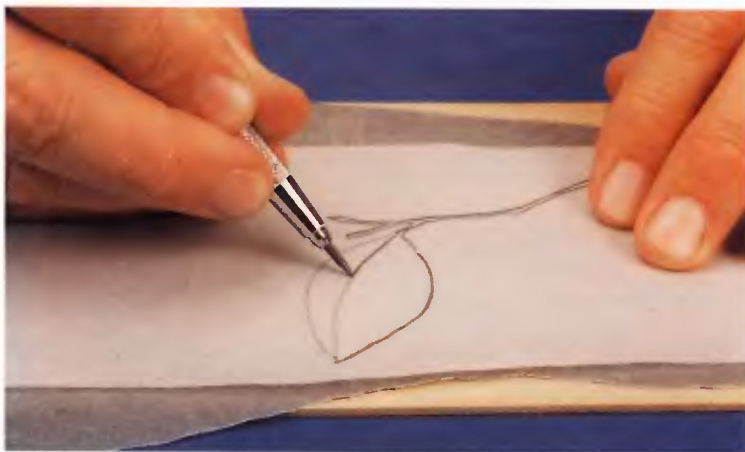
The completed leaf glued in place.

Marquetry Using A Fret Saw

When making a marquetry design using a fret or hand-held saw, you will use the same tools and supplies as previously described. The only difference is the saw and the saw table. *Pictured from left to right:* fret saw with an 8" deep throat and a modified handle, 12" fret saw (Eclipse brand), homemade adjustable saw table. I modified the saw on the left to provide a very long handle using the handle from a Japanese hand saw. The handle not only fits my hand nicely, but its extra length makes it easier to keep the saw vertical while cutting the veneers.



To demonstrate marquetry using a fret saw, we'll continue with the same leaf design by adding a new leaf and branch. Place the tracing over the background veneer on the good or "face" side of the previous leaf design. Tape the tracing to the veneer.

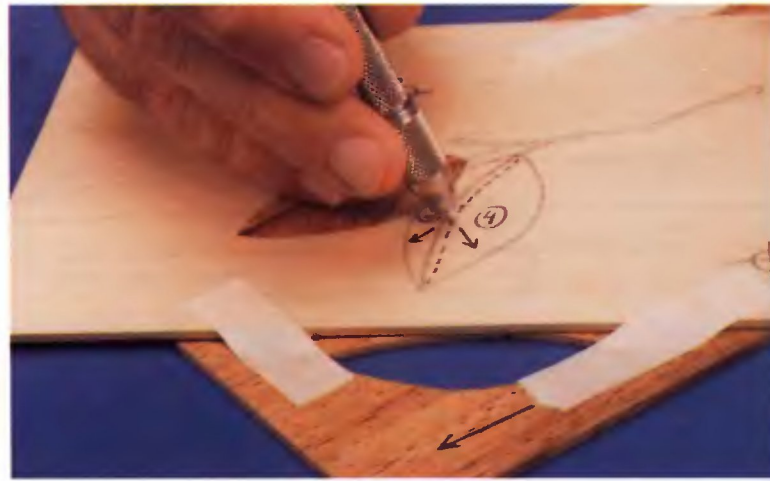


Slide a piece of graphite paper between the tracing and the veneer and transfer the design.

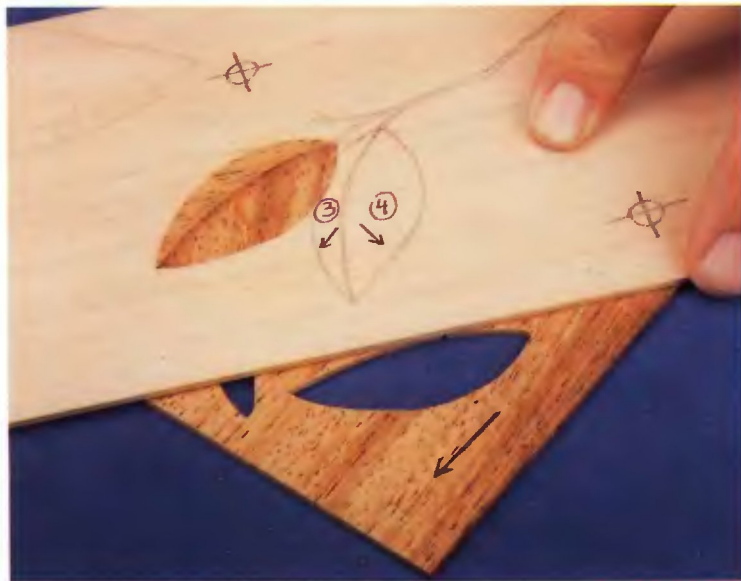




With the graphite paper in place, draw two reference marks.



Again, drill an angled hole along the dotted line. Remember to drill towards the outside of leaf section #3.



Again, to make the design more realistic, we'll use the grain of the insert veneer to suggest veins in the leaf. We'll work on the section of the leaf marked #3. Position the background veneer over the insert veneer, matching the directions of the arrows. Secure with masking tape. Be aware of previous cut-outs in the sheet of insert veneer so that you don't overlap and cut into a void.



Turn the workpiece over, draw a circle around the drill hole and countersink the hole.



Draw a dotted line on the outside of the leaf's center line to provide for the overlap.



Clamp the fret saw table to your work bench. Tighten the blade at the handle end clamp with the teeth facing away from the saw frame and down towards the handle. Hook the top end of the saw on the fret saw table and place the handle against your shoulder. Thread the saw blade through the countersink hole and slide the workpiece all the way to the handle. Applying pressure with your shoulder, flex the saw frame and fasten the opposite end of the blade.



The threaded saw blade.



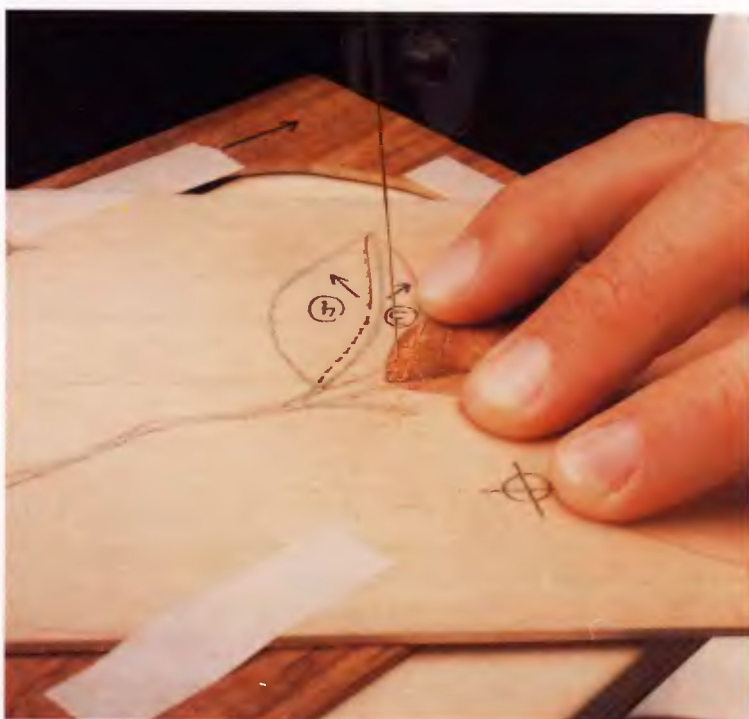
The adjustable fret saw table has been tilted to 7 degrees since I'm still using 5/64" veneers and a 2/0 saw blade. The notch in the front of the table, called the "birds-mouth", is where the sawing takes place.



The workpiece and saw are in position to cut. My left hand keeps downward pressure on the workpiece while rotating the workpiece into the teeth of the blade. Because the saw blade's teeth are facing away from you, the rotation of the workpiece is opposite (counter-clockwise) of the rotation used on the scroll saw. With the table tilted down to the left, the waste piece in the background veneer is uphill or to the right of the saw blade.



Begin sawing along the line. My right hand operates the saw vertically. To steady the sawing motion, I rest my elbow against my leg. This helps assure that the saw stroke is consistently vertical. Make every effort to saw within the birds-mouth, pausing occasionally to check the saw blade's position. With my left hand manipulating the workpiece, I saw along the dotted line towards the corner.



Progress along the line, overlapping the previous leaf. Complete the cut.



Release the blade from the upper blade clamp and withdraw the blade.



With the background veneer face down, place the cut-out insert piece into the opening. Turn the workpiece over and check the fit.



To show a sense of depth between the two leaves, I'm going to shade the area that overlaps the first leaf.



Remove the insert and waste pieces. Also remove the masking tape and set aside the remaining insert veneer.



Shading the insert.



The shaded insert, glued and tapped into place.



Drill the hole from the inside of the center line towards the outside of the line. Turn the workpiece over, draw a circle around the drill hole and countersink the hole.



To begin working on leaf section #4, lay the pattern over the background veneer using the reference marks for positioning. Tape the pattern in place, slide graphite paper between the pattern and the background veneer, and retrace the center line of the leaf.



Thread the blade through the veneers. Flex the saw frame with your shoulder and fasten the blade.



Position the background veneer over the insert veneer. Again check to make sure the arrow in the leaf section lines up with the grain of the insert veneer. Secure the two veneers with masking tape.



Saw along the line and cut out the last leaf section.



The completed cut. Remove the insert and waste pieces and set aside the remaining insert piece.



With the edge shaded to your satisfaction, brush off excess sand. The shading should enhance the design by creating a three-dimensional effect. The piece is now ready to be glued into place.



To enhance the contrast of the two halves of the leaf, I'm going to shade the leaf section along the center line edge.



After pressing the insert into the opening, wipe off excess glue.



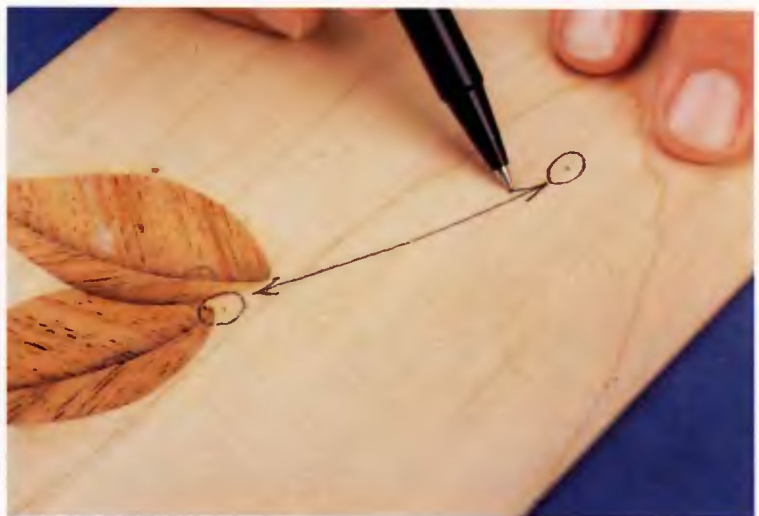
Shade with hot sand.



Lightly tap the insert for a tight fit.



The finished leaves.



Turn the background veneer over to the back side. Find the drilled holes and draw a line connecting them. This is roughly the location of the branch pattern on the opposite side.



To complete the project, we will make the branch. I have chosen a veneer complimentary to the leaves in color and texture.



Place the insert veneer over the background veneer.



To aid in placing the background veneer on the new insert veneer, I drilled a hole through the background veneer at both ends of the length of the branch. These holes serve as locators when positioning one veneer over another to ensure the desired grain direction and to prevent placement of the veneer outside of the pattern. Because the holes are drilled within the pattern lines they will be cut away when the insert veneer is cut or "let-in" into the background veneer.



Be sure to completely cover the drilled locator holes, being sure the grain direction of the insert veneer is running in the direction of the branch. Secure with masking tape.



With the veneers taped together, drill an angled hole from the inside line of the drawn branch towards the outside of the design. This hole is for threading the blade.



The completed cut-out branch.



Turn the workpiece over, draw a circle around the drilled hole and countersink the hole.



Check for fit. Shade the lower edge of the branch to add a shadow.



Thread and fasten the blade as shown before. Begin cutting. With narrow pieces like this, be especially careful to follow closely to the pattern line.



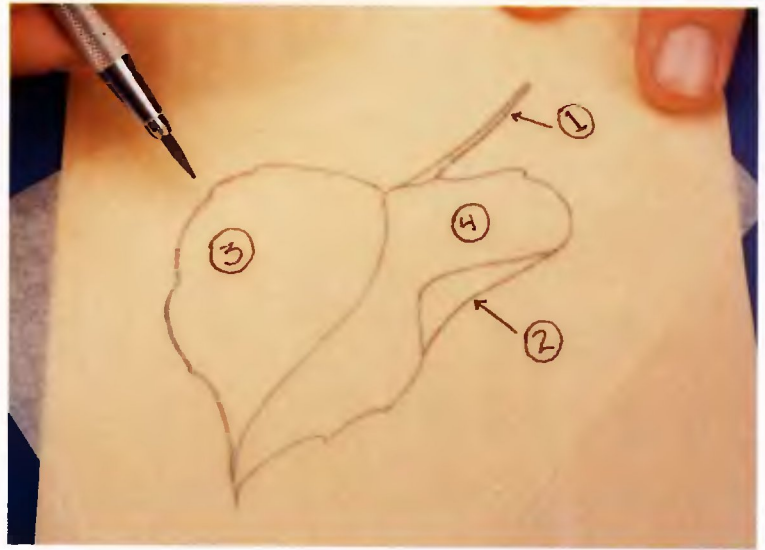
Do a final check before gluing and tapping the branch in place. Congratulations! You have completed your first project.

A Second Project: Curled Aspen Leaf

Marquetry Using Thin Veneers

The next project, a curled aspen leaf, will be made using thin (commercial or store bought) veneers. The technique is identical to marquetry using thicker sawn veneers except that the saw table is tilted to a greater degree to account for the thin veneer.

For this project I will be using the scroll saw. Before working on the stem, you'll need to change the angle of the saw table. Since the veneer I am using is 1/40" thick and I'm using a 2/0 blade, the saw table will be set at around 19 or 20 degrees. You'll need to experiment for the correct setting



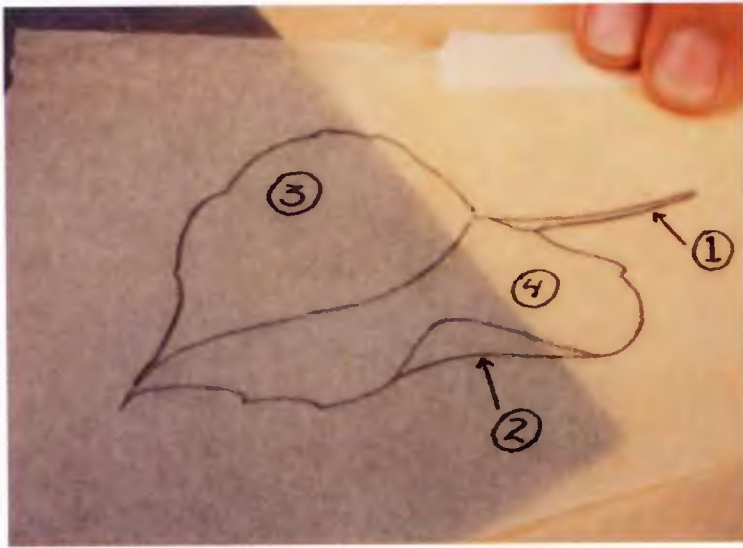
This pattern will be made using four separate cuts. You will first want to make a tracing of the design. On the tracing I've numbered the four areas according to the sequence of cuts.

using your materials. The best way to do this is to make a practice workpiece using some small scrap veneers to check for a proper fit.

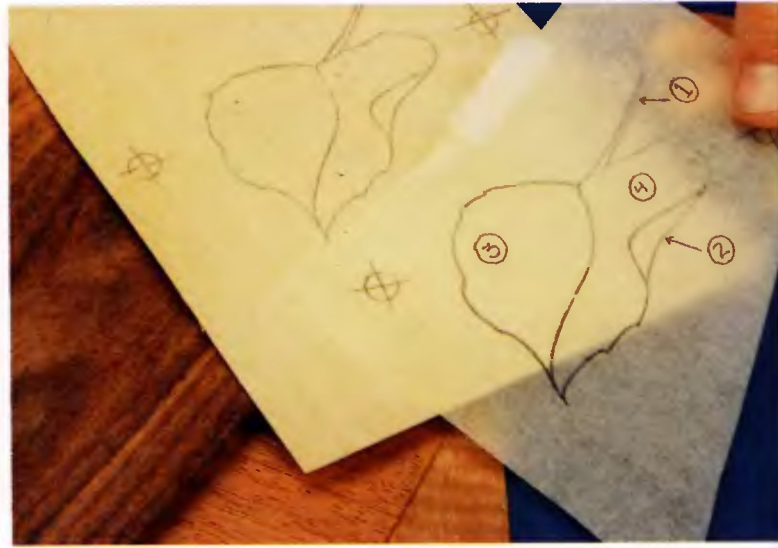
Cutting thin veneer using a fret saw is no different than cutting sawn veneers with a fret saw. The technique remains the same, however, the angle of the fret saw table is tilted to a greater angle to eliminate the saw kerf. Some experimentation will help you determine the correct angle for the materials you're using. Refer to the fret saw directions in the sequence of events checklist for additional sawing instructions.



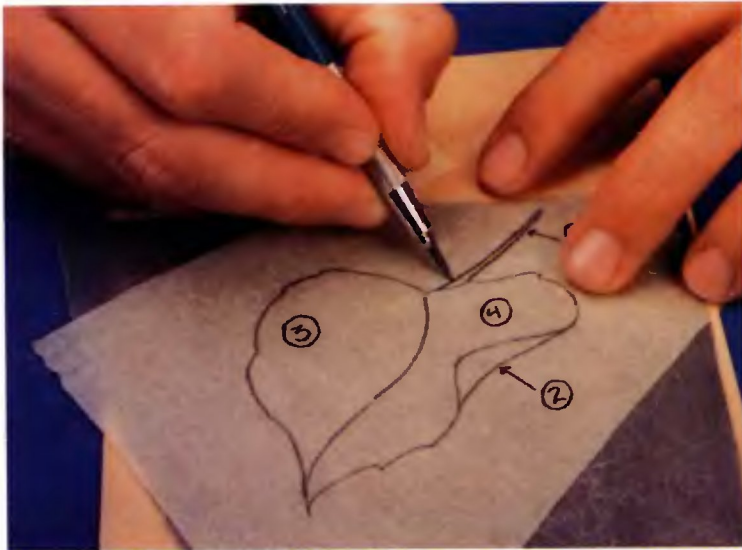
The curled aspen leaf pattern we'll be working on is shown here with a variety of thin veneers. *From left to right:* East Indian rosewood, figured makore, eastern maple, Bolivian rosewood, genuine mahogany, South American mahogany, quilted madrone, olive, holly, European pear, bubinga.



Choose a light-color background veneer such as the maple used here and tape the pattern over the center of the veneer. Slide graphite paper between the pattern and the background veneer.



I've decided to use three different veneers to make up the leaf. *From left to right:* East Indian rosewood for the two large sections of the leaf (#3 and #4), genuine mahogany for the underside of the leaf that's curling up (#2), and makore for the stem (#1).



Trace the entire pattern.



My decision to use these veneers is based on the desire to use a wood with a grain pattern that suggest the veins of the leaf. To help choose the appropriate veneer I made a "window" by tracing one section of the leaf onto a piece of scrap paper. The sketched vein lines in the original pattern point out the type of grain I'm looking for.



Draw two reference marks to allow for repositioning.



I placed the "window" over several areas of a variety of veneers until I found one that contained the type of grain I was looking for. I decided to use the East Indian rosewood because its swirling grain pattern and color would make an interesting leaf design. The color and texture of the rosewood helps me determine the other woods to use in the design.



Since the top of the leaf is going to be fairly dark, I chose a lighter wood, mahogany, for the underside of the leaf. The red-brown of the mahogany, shown on the left, compliments the rosewood and will help create the illusion of the underside of the leaf curling up. The figured makore has a slightly finer texture than the rosewood and the mahogany and will make a nice stem.



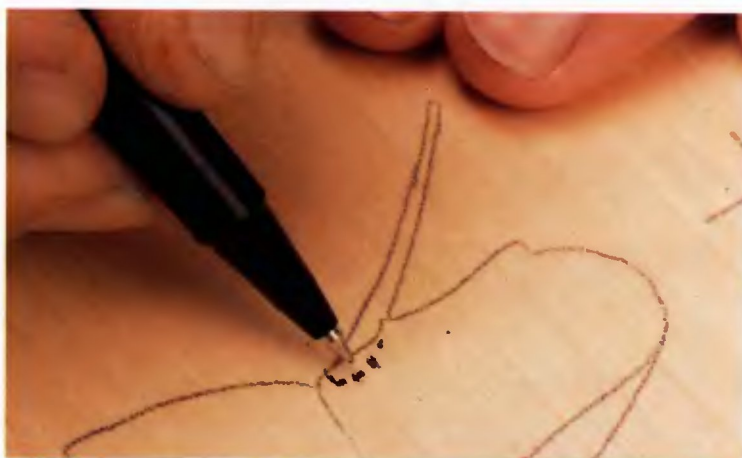
This area of the rosewood veneer shows the type of grain pattern I have in mind for this section of the leaf. This piece won't be cut out until later in the project so I have taped the window in place and set the rosewood aside.



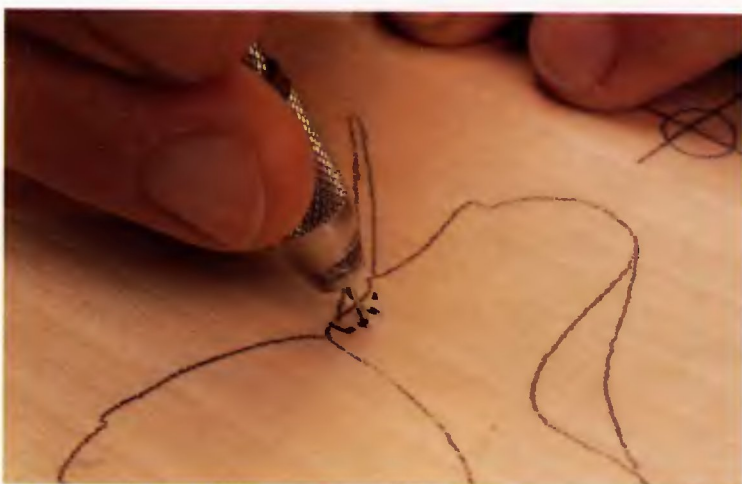
The stem will be the first piece let-into the design. Place the background veneer over the makore veneer that is to become the stem. Remember to have the grain direction of this insert piece follow the direction of the stem. Secure with tape.



When using thin veneers, you'll want to back up the two veneers with a third piece of veneer. This extra layer, which is called a "waster" veneer, supports the insert veneer and prevents the fragile piece from breaking or splintering when being cut. Use an inexpensive veneer for this waster piece like aspen or poplar, and tape in place.



My reason for beginning with the stem is that I can overlap the stem into the leaf. Later when leaf section #4 is cut, there will be a clean seam between the top of the leaf and the stem. It will appear that the stem goes behind the leaf. Draw a dotted line slightly into the leaf. This is where we'll begin the cut.



Drill the hole. Turn the workpiece over and countersink the hole.



Thread, attach, and tension the blade. Begin cutting. By starting in this area, the drill hole will be cut away later.



The shaded stem.



The completed cut. Check for fit.



Glue can be applied to either the insert piece or the opening in the background veneer. Because the stem is so small, apply glue around the edges of the opening in the background veneer and push the stem in place. A sheet of wax paper will protect the workbench from glue squeeze-out.



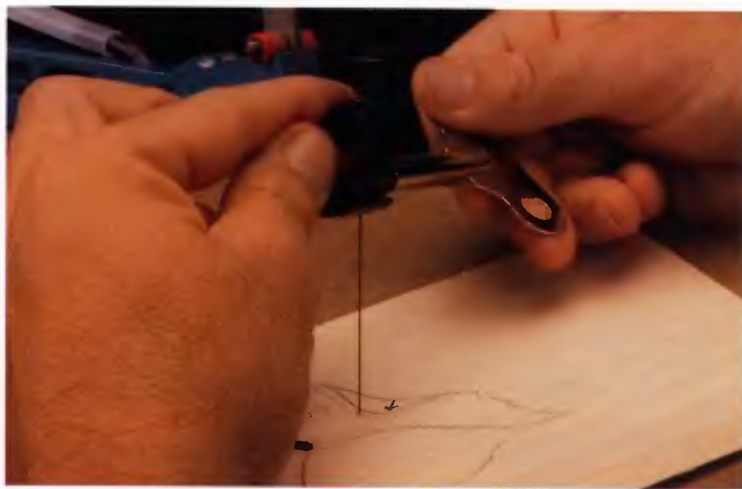
Shade the bottom side of the stem. With thin veneers the shading happens quickly, with some woods in just a few seconds. Be aware that some of the effect of sand shading may be sanded away later when finishing the project. I usually shade slightly darker than what I want to end up with.



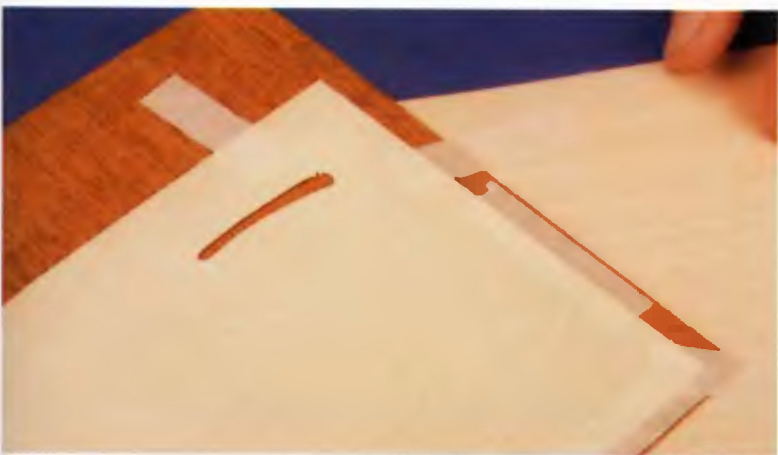
Next we will be cutting out leaf section #2. For the same reason we overlapped the stem into leaf section #4, cutting and overlapping this piece into section #4 will also leave a clean seam between the pieces. The goal is to fool the eye into believing that the underside of the leaf curls up along the edge. Crisp, smooth transitions from one part of the design to the next and overlapping pieces as you build on the design is the key to convincing the eye. Draw a dotted line slightly into section #4.



Place the background veneer over the mahogany insert veneer, paying attention to the grain direction.



Thread, attach, and tension the blade. Begin cutting.



Secure the background veneer to the mahogany and the waster veneer.



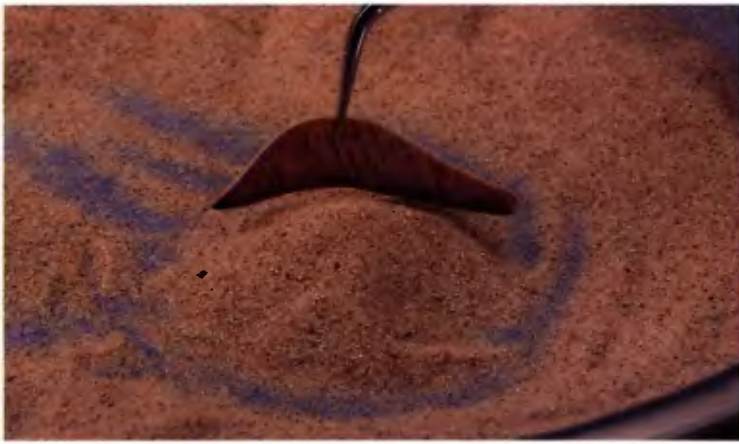
The completed cut. Discard the background waste veneer and the bottom waster veneer. Remove tape and check for a snug fit.



Drill a hole through the veneers along the dotted line in the overlap area. Turn the workpiece over and countersink the hole.



I want to shade the concave side of the curve where the leaf wraps around to the back side. To prevent the two points of the insert veneer from shading more quickly than the inside of the curve, arrange the hot sand in a small mound.



Using tweezers, dip the insert piece into the mound of hot sand. Check the shading every few seconds to make sure that the full length of the curve is evenly shaded.



To begin leaf section #3, return to the rosewood veneer with the window taped in place.



Glue around the edge of the opening in the background veneer and place the insert piece. Wipe away any excess glue.



Slide the background veneer between the window and the rosewood veneer. Once in place, remove the window and tape the veneers together, including the waster veneer.



Leaf section #2, shaded, and glued in place.



Draw a dotted line for overlapping into leaf section #4. I may decide to shade along this center line later so I've drawn the dotted line close to the center line of the pattern. This will allow for easier sand shading if needed. Drill a hole along the dotted line in the overlap area. Turn the workpiece over and countersink the hole.



With the blade in place, begin cutting.



The cut completed. Shown through the opening, *from top to bottom*, is a view of the three veneers: the background veneer, the insert veneer, and the waster veneer.



Check the insert veneer for fit. This is also the time to decide which areas may be enhanced with shading.



Careful sand shading along this outside edge of the leaf will give the design a three-dimensional feel. In addition, subtle shading along the center line will visually separate the two halves of the leaf.



This rosewood veneer overlaps the center line by about 1/16" so the shaded area needs to extend beyond that point. Arrange the hot sand in a small mound as before to shade along the center line.



In the same manner, lightly shade the outside edge of the leaf. Remember that thin veneers shade very quickly so check the progress every few seconds.



This insert veneer is large enough to hold with my fingers so the glue can be applied directly to its edges.



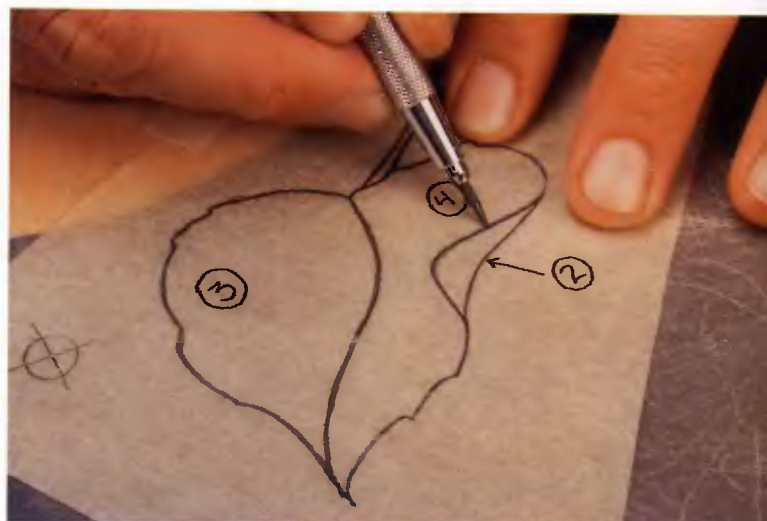
Press the piece into the opening of the background veneer. With a larger insert piece like this, you may want to hold the workpiece in place for a few minutes until the glue sets.



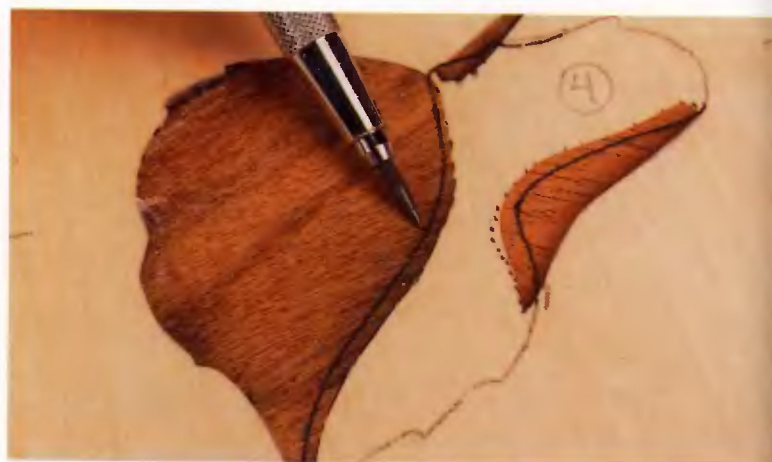
The leaf section completed.



The final cut in this project will be leaf section #4. In preparation we will need to reposition the pattern over the workpiece using the reference marks.



Slide the graphite paper between the pattern and the workpiece. Trace the pattern along the three overlap areas: the stem, the mahogany underside, and the center line of the leaf.



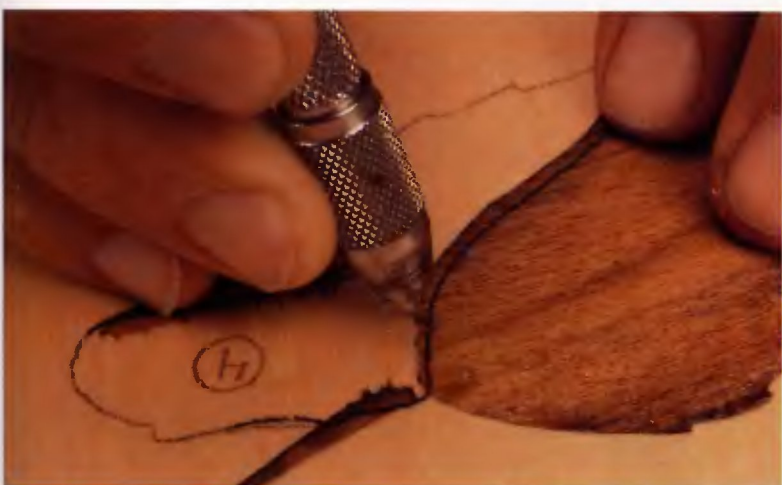
We will now be cutting the final leaf section along the newly traced lines in the overlap areas.



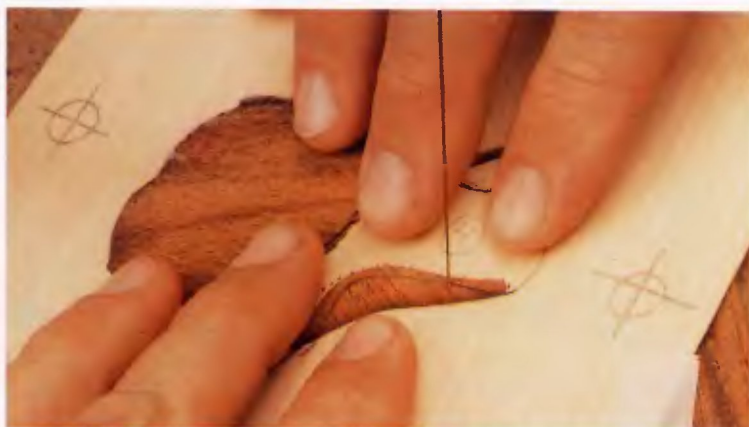
Having chosen the area of the rosewood veneer to be let-in to leaf section #4 by using another paper window, place the background veneer in position. With the design in place, remove the paper window, and tape the veneers together. Remember to include the waster veneer.



Once again, when pivoting around the point, ease off on the pressure to prevent the teeth from cutting while you make the turn. This corner is sharply pointed, requiring that you rotate the workpiece almost 180 degrees. Use extra care as you slowly manipulate the workpiece. It may help to lightly touch and release the foot pedal while rotating the workpiece a little bit each time the blade moves, then repeat to rotate a little bit more until you've made it around the sharp corner.



Drill the hole, angling the drill bit to slightly exceed the tilt of the saw table. Turn over the workpiece and countersink the hole.



Cutting through the overlap area. Fingertips are positioned close to the saw blade to firmly press the veneers against the saw table top and guide the blade along the line.



Thread the blade through the workpiece and attach it to the saw's blade clamp. Tension the blade and begin to cut.



Check the final leaf section for a tight fit.



The two areas indicated here will be enhanced by some very light shading, helping to create the three-dimensional illusion.



Some veneers react to the heat of the sand by shrinking, no longer accurately fitting into the opening. This shrinkage can be corrected by wetting, then toweling off the insert piece. The veneer can be wetted several times until it expands to fit back into the opening. This piece of rosewood shrunk enough to warrant submerging the veneer in water for a few seconds. Apply weight to flatten the veneer for three or four minutes as it dries. Check the fit and repeat wetting the veneer as needed. Once dry, glue the piece in place.



Arrange a mound of hot sand to shade the concave edge.



For concave edges that are difficult to place in the mound of hot sand, subtle shading can be accomplished by holding the insert veneer with tweezers above the hot plate and repeatedly pouring hot sand over the area to be shaded.



The single curled leaf completed.

A Third Project: Copper Iris



The selection of veneers is one of the first steps in a marquetry project. Nature provides a multitude of colors and textures that can be used to create the art. Shown here are a sampling of some vibrant colors that suggest a flower. From left to right: satinwood, chakte kok, English walnut, ebony, osage orange, purple heart, and apple.



The design I have chosen is a single copper iris. I will be using sawn veneers in this project.



The most important choice of veneer for the iris are the petals. I like to use a very brightly color wood to represent the copper petals in the flower. The chakte kok will work nicely for this design.



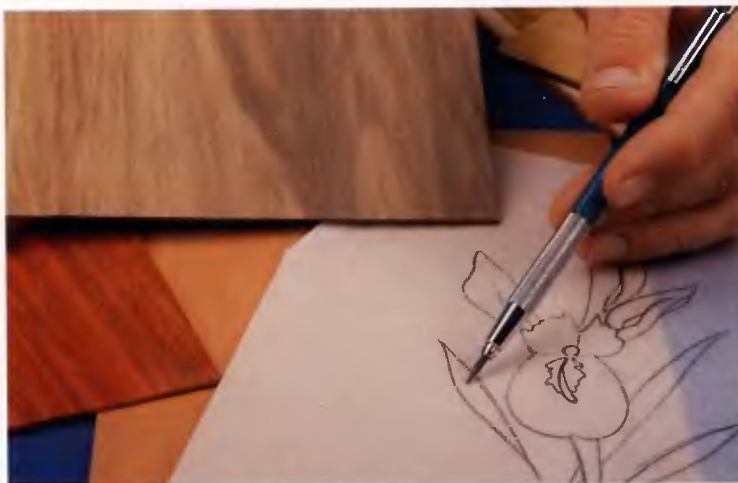
The purple heart and ebony veneers provide a colorful contrast for the smaller highlights in the design.



The background color should compliment the color of the petals. This background veneer is European pear.



The unusual lighter grain in the apple veneer is perfect for an abstract background for some of the darker highlights in the large petal.



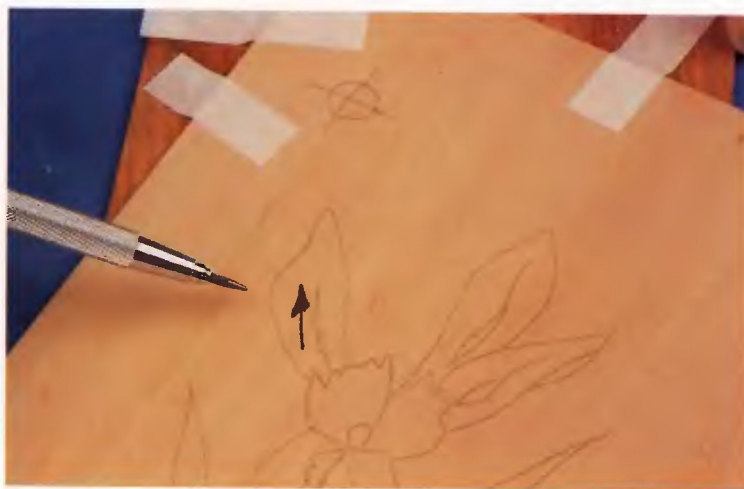
The next veneer to choose will represent the leaves in the design, which makes up a large section of the total picture. The English walnut veneer, when combined with the red tones of the chakte kok and the European pear, creates the illusion of a green tint.



The bright yellows in the osage orange and satinwood will work nicely as the stamen. I will make my final choice as the project develops.



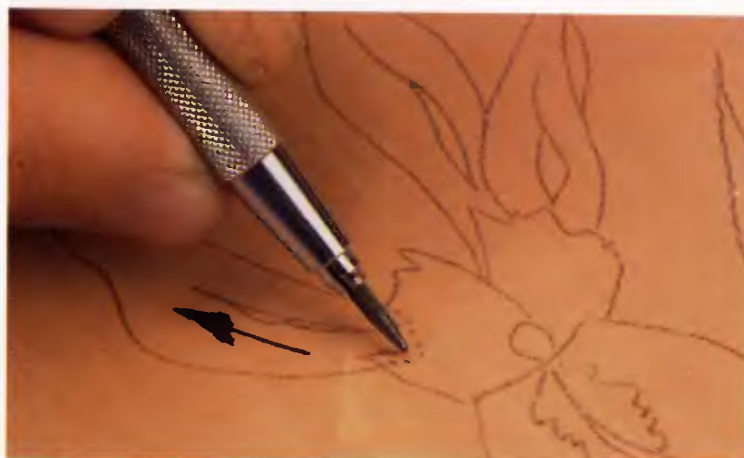
Make a tracing of the iris. Center the iris on the background veneer and transfer the design.



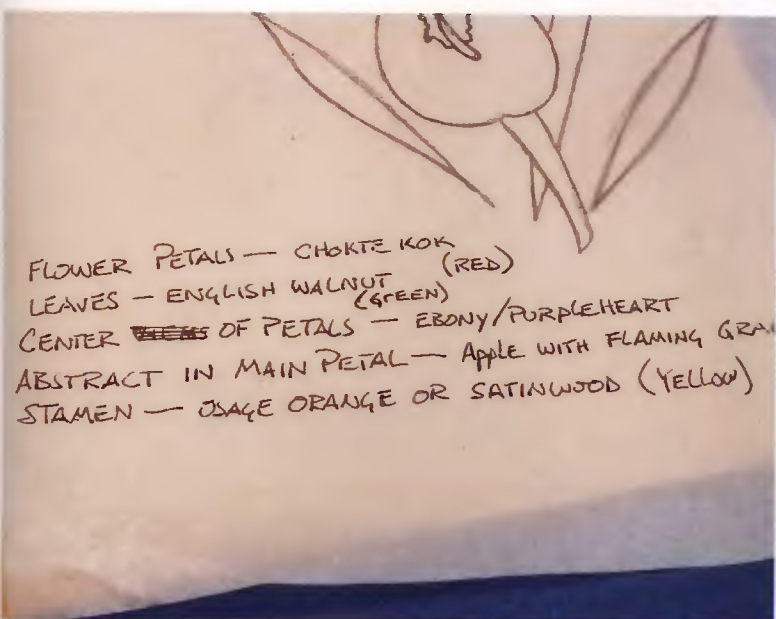
We'll start with the long petals in the top part of the picture because they are in the background of the design and will eventually be overlapped by the smaller petals. Position the upper left long petal, over the chakte kok veneer, orienting the grain along the petal's length. Tape the veneers together.



Remember to draw reference marks for repositioning.



This cut will overlap into the smaller petal. Draw a dotted line and drill at a slight angle.



To help you remember the veneers and colors used in different sections of the iris design, make a key on the sketch.



Turn the workpiece over. Draw a circle around the hole and countersink the hole.



Thread the saw blade through the hole in the veneers.



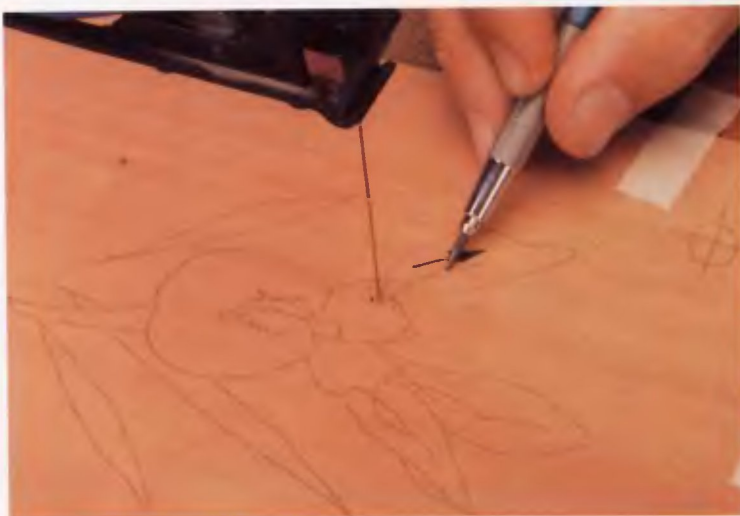
The first insert piece, cut and ready to test fit.



Attach the saw blade to the blade clamp and tension the blade.



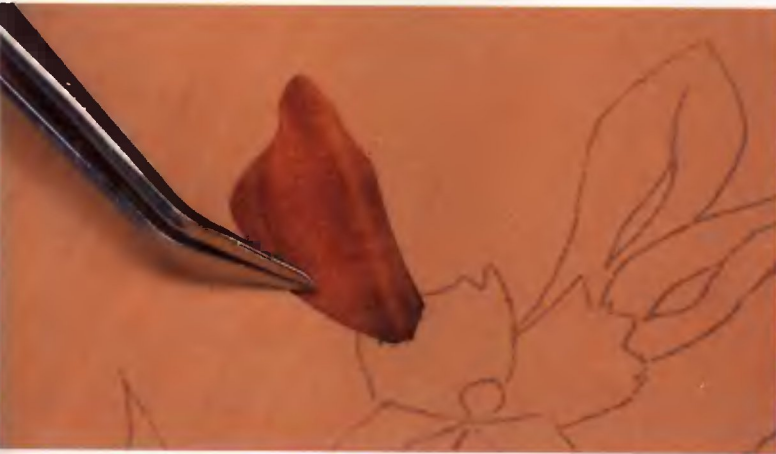
Because these longer petals should appear to be behind the smaller petals, we'll shade this lower end. Knowing that the lower end of this petal will be cut away when the smaller petal is cut, we'll shade farther up the insert piece.



Begin to cut along the line. This center highlight or "vein" of the petal will be cut out later. For this step cut out the entire petal.



Shading the petal insert.



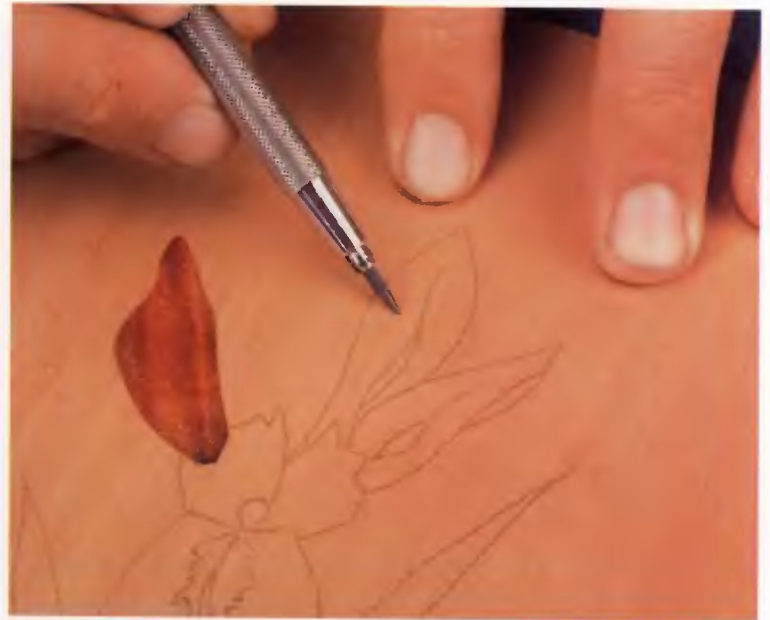
The shading completed.



Lightly tap with a small hammer for a snug fit.



Apply glue around the edges of the insert piece.



This flower petal is drawn behind the adjacent petal. It needs to be the next step so that the adjacent petal can overlap.



Press the insert piece into place. Wipe off excess glue.



Tape the veneers together. Draw a dotted line to overlap into the smaller petal as well as the adjacent petal.



Drill a hole through both veneers along the dotted line. Turn the workpiece over and countersink the hole.



This area of the petal bordering the adjacent petal will be shaded to suggest a shadow.



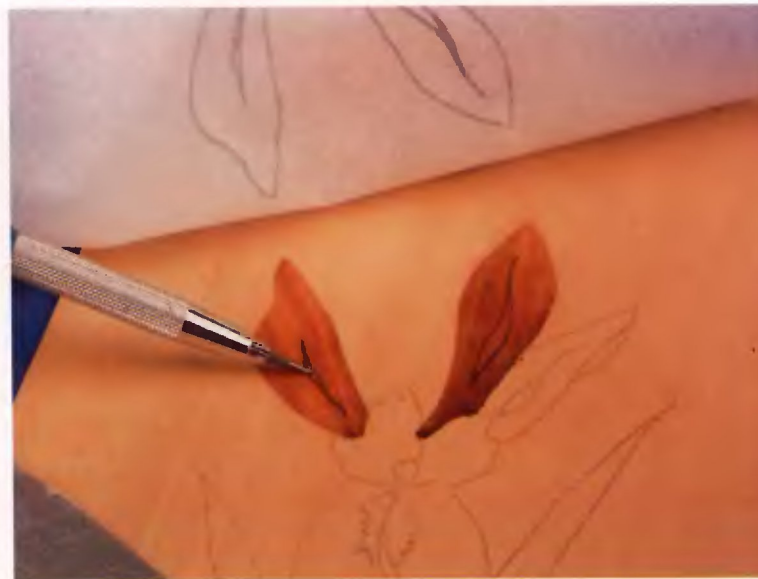
Thread the blade and begin cutting. As always, remember to rotate the workpiece clockwise. Following the steps taken in the previous petal and cut around this entire petal. Pivot when you reach the tip of the petal, easing off the pressure on the blade to keep the saw blade teeth from cutting as you slowly turn.



Sand shading completed along the bordering edge. Glue into place.



The cut completed. Disengage the saw blade and remove the workpiece.



The third flower petal is going to be handled in a slightly different way. I'm going to jump back to the first flower petal and let-in the ebony highlight. Reposition the pattern on the background veneer and transfer the highlights or "veins" of both petals.



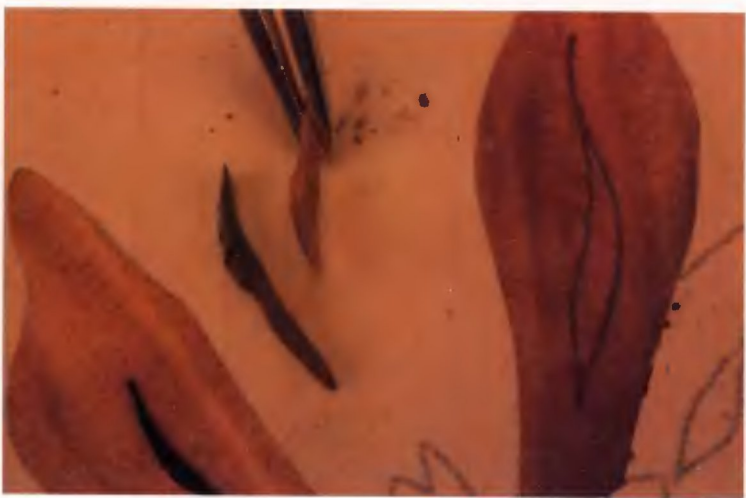
Turn the background veneer over and place the ebony in position over the flower petal. Tape in place.



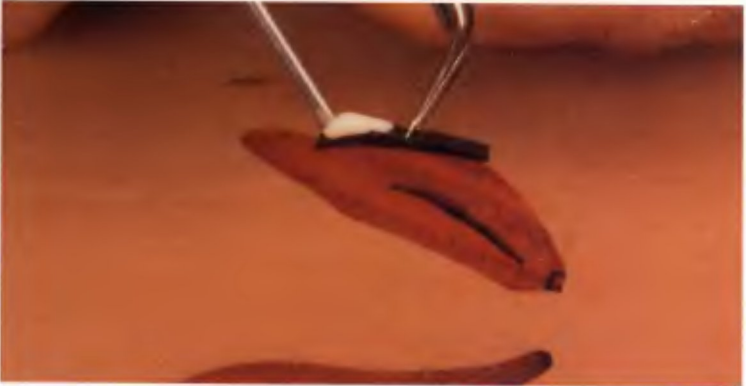
Drill or "pierce" a hole through the vein along the line. Angle the drill bit greater than the angle of the saw table, or at least 7 degrees. By angling the drill bit this way, the drill will enter the waste piece on the background veneer and exit the waste piece on the insert veneer. Turn the workpiece over, circle and countersink the exit hole.



Since the angle of the drill hole is greater than the angle of the table, the workpiece won't lay flat on the saw table after threading the blade. With both hands lightly on the workpiece, touch and release the "on" switch of the saw. By causing the saw to take a couple of strokes, the blade will bring the workpiece flat on the table. If the blade breaks, remove the pieces from the blade clamps and re-thread a new blade. Begin cutting, carefully following the pattern line. When reaching a corner, carefully rotate the workpiece 180 degrees without allowing the teeth to cut the workpiece. Follow the saw kerf that was just created as you start back up the other line, merging into the drawn line. This will leave a very fine point on both ends of the insert piece.



Notice that much of the waste piece (in the tweezers) is cut away in the saw kerf while the ebony insert piece is finely pointed. When working with tiny pieces like this, it's a good idea to sweep the work area regularly in case you drop the insert piece.



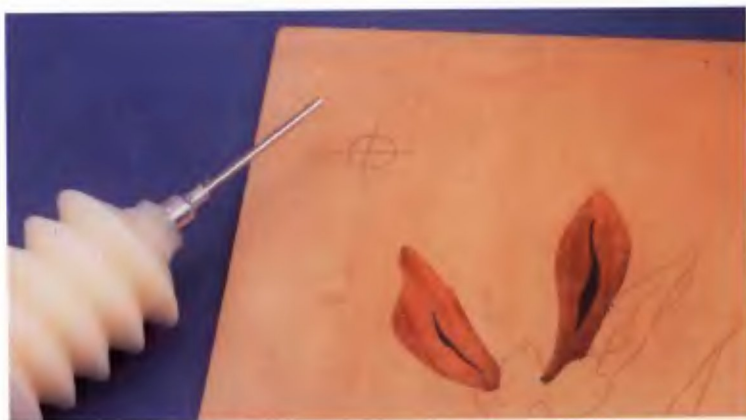
Check the insert piece for fit. Apply glue to the edges and press into place.



Tap lightly and wipe off excess glue.



The first petal completed.



The second petal, completed in the same manner.



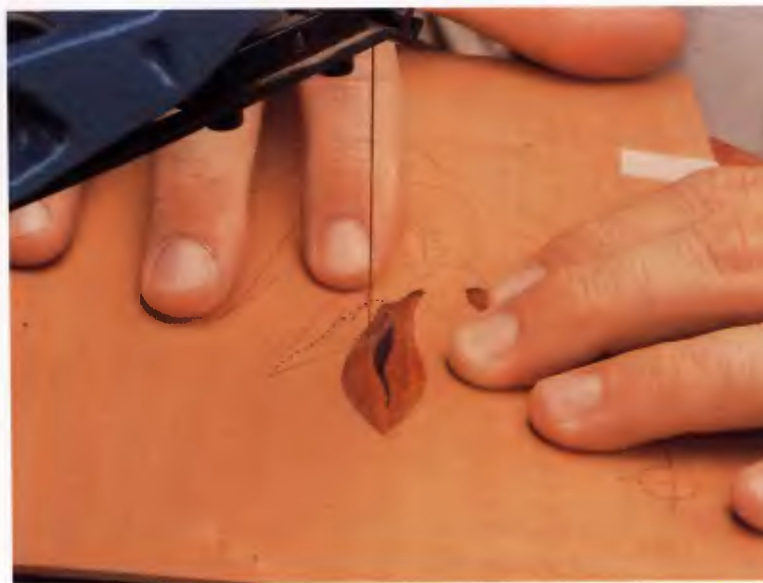
Reposition the pattern and transfer the third long petal along the line bordering the second petal.



This next petal is curled towards you with part of the back visible. I will be making this petal in several steps and taking the opportunity with this petal to show another method of letting-in the ebony highlight. The first cut is going to split the petal in half lengthwise. I've drawn a dotted line indicating where the first cut will be. Remember to extend the dotted line to overlap the smaller petal at the bottom.



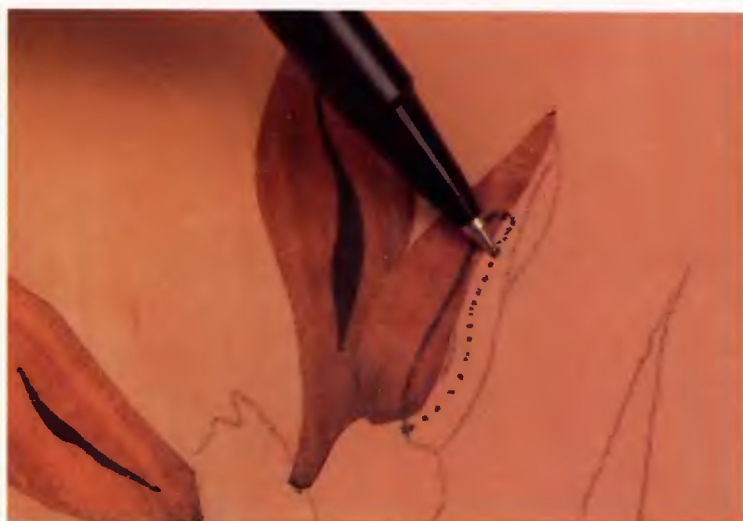
Pierce at the dotted line, turn the workpiece over and countersink the hole.



Cutting through the overlap area.



Test fit the insert piece. Notice the lighter color of this piece which looks like it's in front of the shaded petal.



With this alternative method to letting-in the ebony highlight, I'm overlapping each insert piece as I go along so that each subsequent cut will build on the previous one. Draw a dotted line overlapping in the uncut area of the petal.



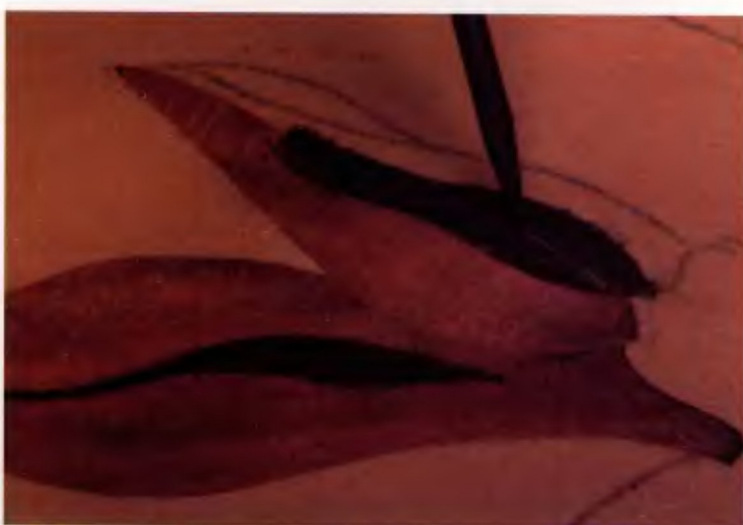
The insert piece has been shaded along the bottom to suggest a shadow which will be behind the smaller petal. Notice that I avoided shading the edge bordering the other petal.



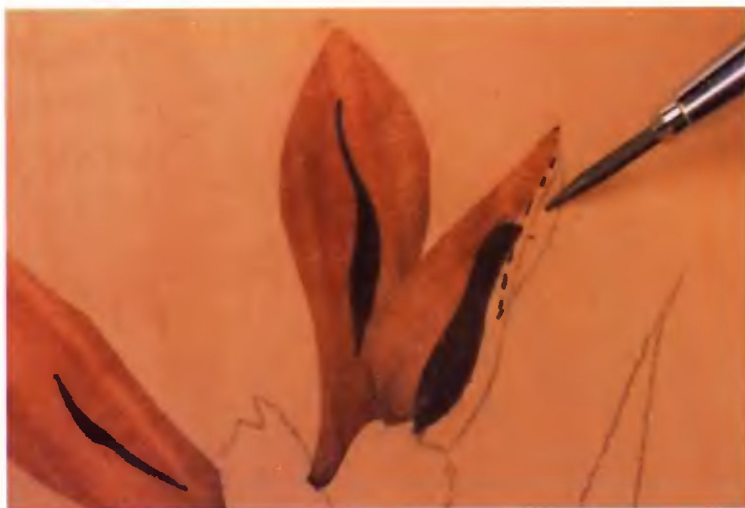
Pierce at the dotted line, turn the workpiece over and countersink the hole. Make your cut and test fit. Shown here is the ebony insert glued in place.



Once again, reposition the pattern. Transfer the ebony highlight area to the background veneer. Remember that this line was cut away with the last step.



Again, reposition the pattern and transfer the line representing the side of the ebony highlight that was cut away.



Before cutting along the portion of the petal that borders the highlight, I'll cut the curled area at the top. Draw a dotted line that overlaps slightly into the petal. Pierce the dotted line, turn the workpiece over and countersink the hole.



Notice the insert piece is shaded to a darker tone that will differentiate it from the rest of the petal.



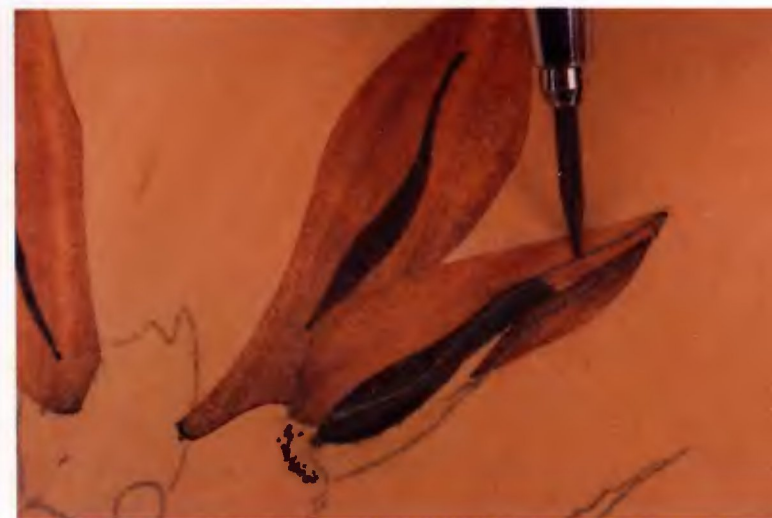
Cut the curled area of the petal along the line.



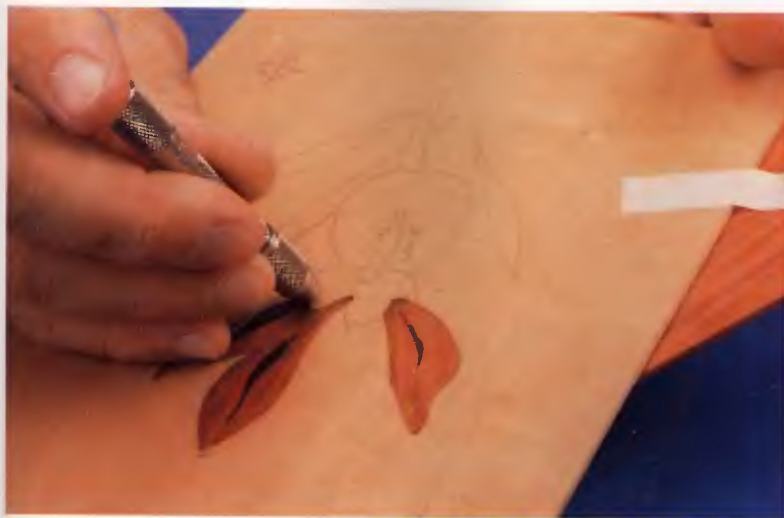
Reposition the pattern and transfer the line that was cut away previously. Now we're ready to complete work on this petal.



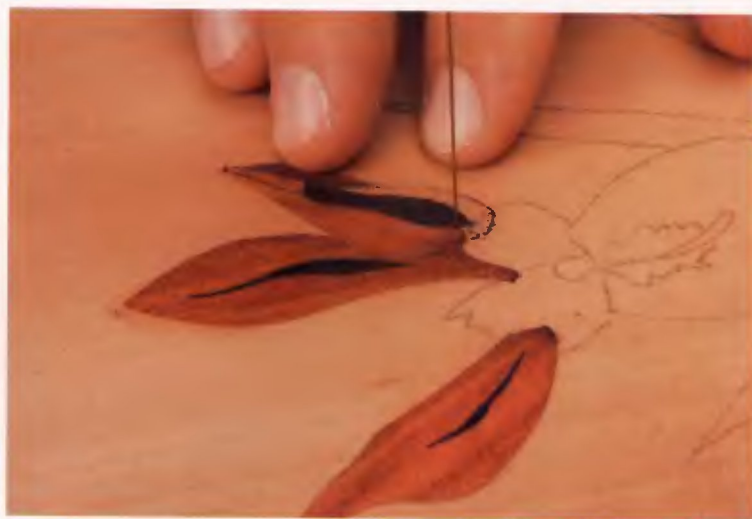
To suggest the back side of the petal, I shaded the edge of the insert piece bordering the rest of the petal.



I've drawn the line shown to connect the point of the petal to the transferred line on the ebony highlight. Again, notice that I've drawn the dotted line to overlap the smaller petal.



Pierce the overlap area on the dotted line, turn the workpiece over and countersink the hole.



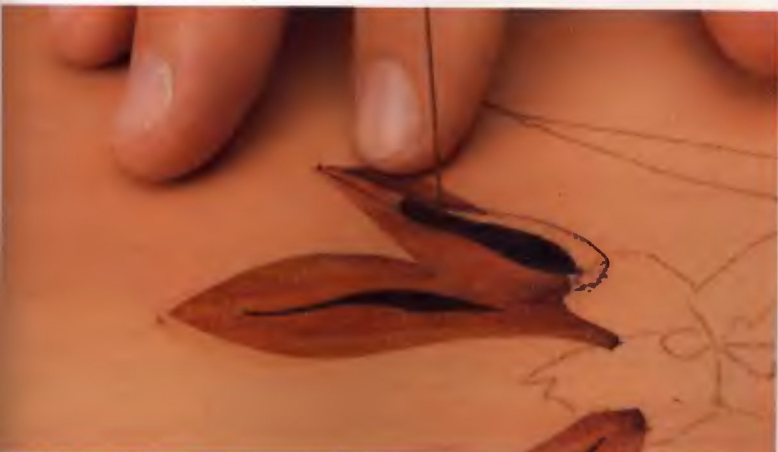
As I approach the other end of the ebony highlight area, I will gradually taper the cut, leaving a point in the ebony. Test fit the insert piece.



Thread, attach, and tension the blade. Begin cutting.



I want to shade the lower part of the petal to match the other piece. Glue into place.



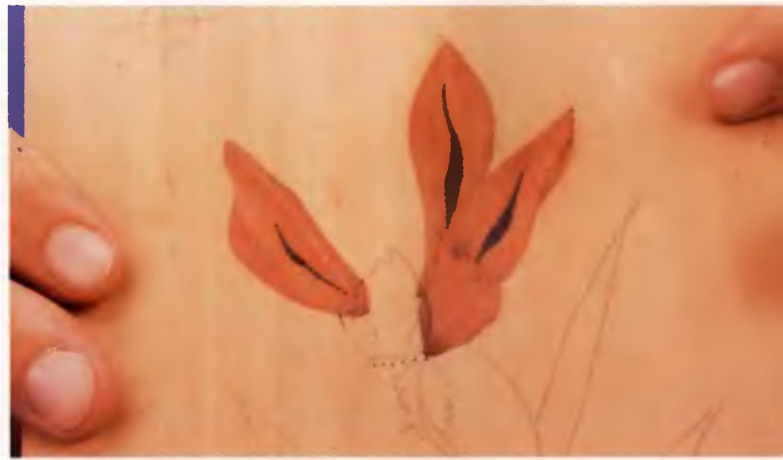
As the blade enters the area of the ebony highlight, I'm following the pattern line, being careful to leave a tiny sliver of ebony, to create a fine point.



The third petal completed.



I will now let-in the small petal on the right. I choose to work on this petal first because it appears behind the bordering small petal.



With the first small petal in place, and having repositioned the pattern, I transferred the line that was cut away. A dotted line was drawn in the overlap area of the second small petal.



With the cut complete, test for fit. The jagged edges at the top of the petal are cut as you would a sharp corner, regularly releasing the workpiece to allow the blade to center itself.



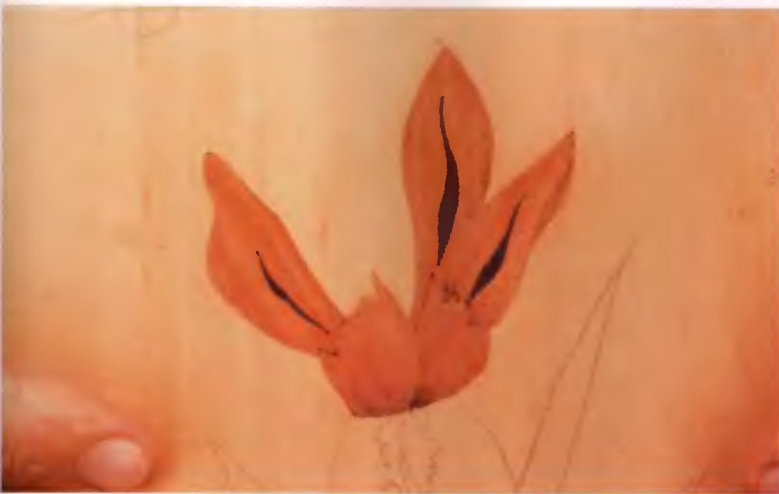
While cutting the jagged edges, remember to ease off on the blade as you pivot at each corner, creating fine points.



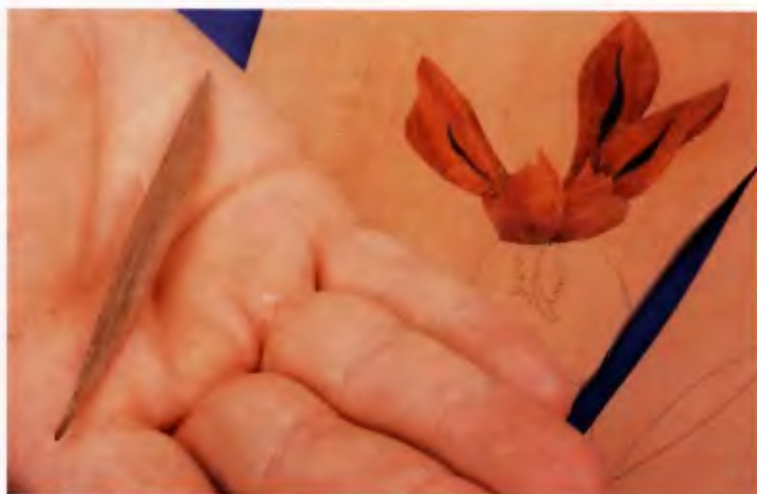
I have shaded the lower portion of the petal to create a sense of depth where all the petals come together.



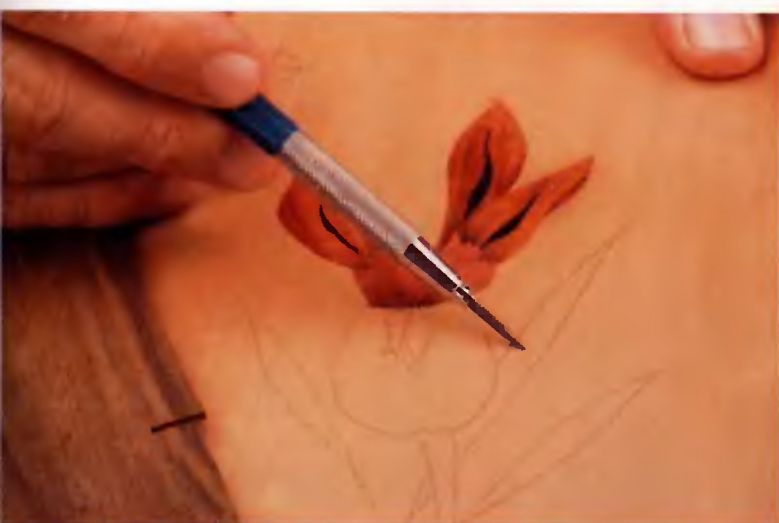
The second small petal, similarly shaded, and glued in place from the back or wrong side of the workpiece.



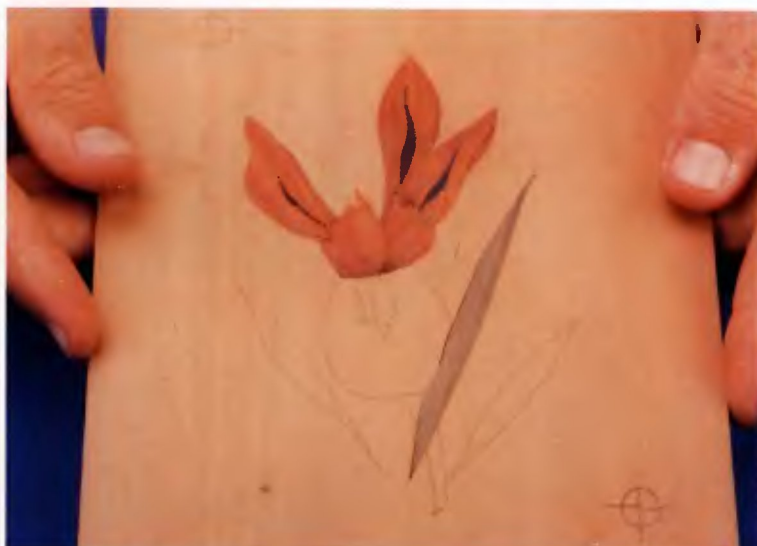
Notice the effect of shading to visually bring one petal out in front of another. This is the look we're after.



Follow the steps to prepare for cutting, and cut out the first leaf.



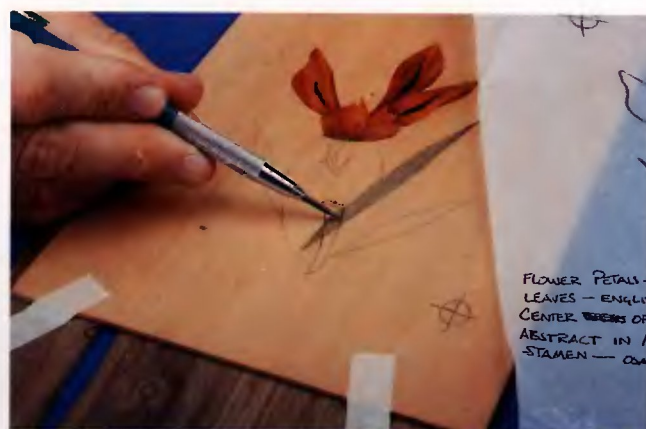
Now I'll move to the leaves and stem. I will work on the longest leaf in the center of the design because it is behind the stem and the large petal. The English walnut, which has a greenish tint when next to the chakte kok and pear, will work nicely here.



The color contrast is just what I was looking for. I did not shade the leaf this time because the English walnut veneer had a darker grain which I have carefully positioned to take advantage of natural shading. English walnut is ideal to suggest the green leaf but can be difficult to find. Other medium brown woods, however, can also create the illusion of green. A little experimentation should lead you to some possibilities.



Draw a dotted line through the petal and stem. The leaf will be cut out as one continuous piece. Notice the English walnut veneer is taped in place with the grain running in the direction of the length of the leaf.



With the first leaf glued in place, I'll move to the stem. The pattern is repositioned and the cut-away stem lines are transferred. A dotted line is drawn in the overlap of the large petal.



Prepare the workpiece for cutting. I will be following the pattern line of the stem and cutting through the leaf where it overlaps.



I shaded the top of the stem where it disappears under the large petal.



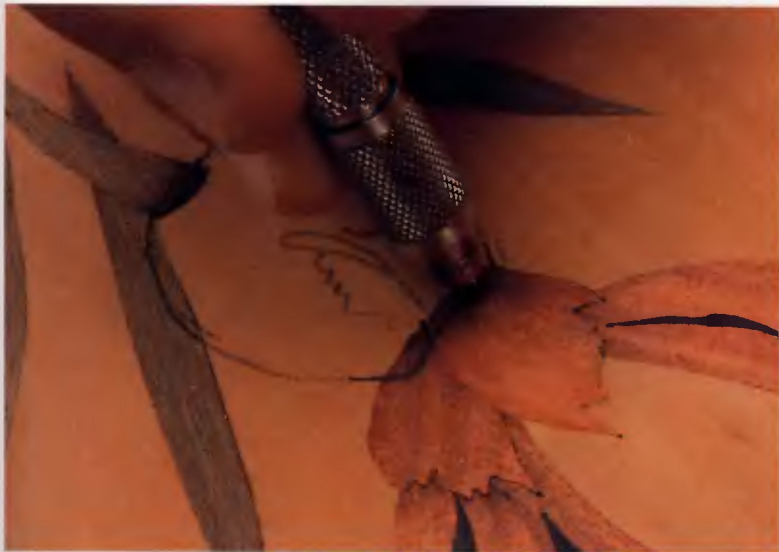
The last two leaves completed.



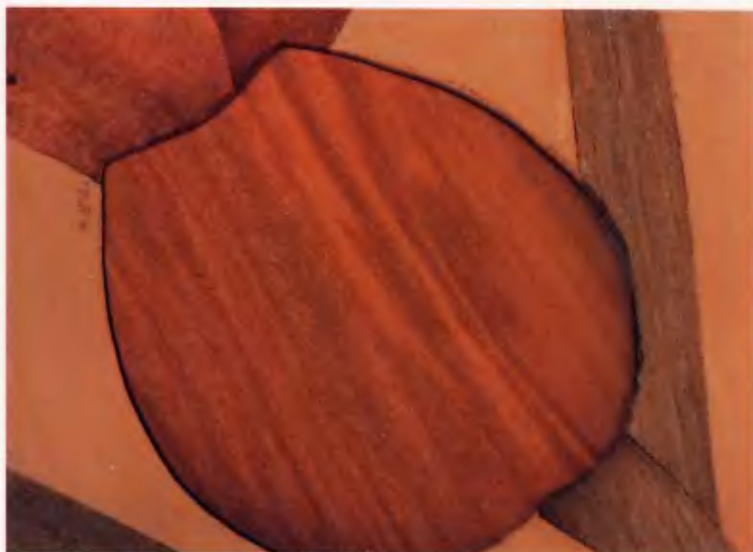
I will now work on the last petal. A paper window helps to find a good grain pattern for the petal. This area of the chakte kok will make a nice presentation.



Transfer the pattern. This cut will follow the pattern line entirely around. There are no dotted lines representing areas to be cut away later because no piece will overlap this petal.



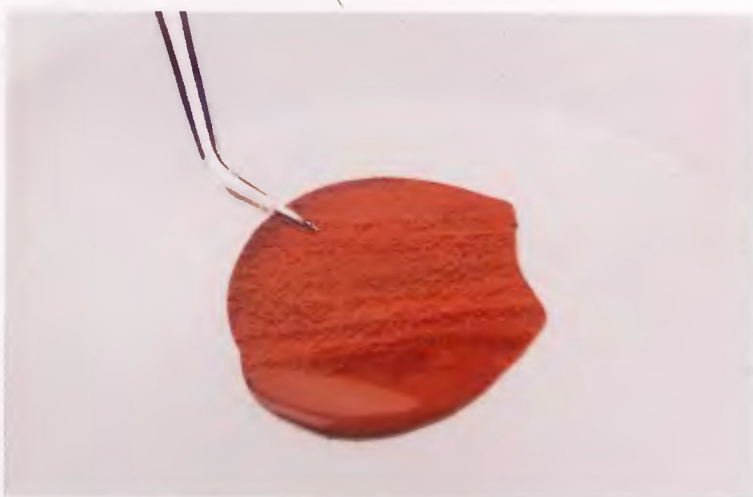
Piercing the background veneer along the bottom of the small petals aids in concealing the drill hole because the insert veneer is the same wood as the small petal.



I kept this veneer in contact with the hot sand a little longer than usual to achieve the shading I was after. This, however, resulted in some shrinkage of the piece and it no longer fits into its opening.



Proceed with cutting out the large petal.



I wet the insert piece to make it expand. The thicker sawn veneer takes a little extra soaking to expand to its original size.



Shading along the lower curve of the petal will give the appearance of a rounded edge.



Once the insert piece has dried and fits the opening, it is ready to be glued in place. If the wood doesn't completely respond to the soaking, leaving small gaps, the glue will help complete the expansion and fill any tiny gaps.



The next piece to be let-in will be the round stamen in the center of the flower. I've decided on the satinwood for its bright color. Transfer the stamen as well as the abstract center of the petal on to the background veneer.



When completing the cut on a particularly small piece of veneer, beware of the insert veneer falling through the slot in the saw table. Once you've stopped the saw blade, place your hand below the table slot in case the insert veneer falls through.



Pierce the design where the round stamen joins the top of the large petal. Turn the workpiece over and countersink the hole.



In this case the cut veneer pieces did not fall through.



Proceed slowly along the pattern line around the stamen, remembering to occasionally release the workpiece and allowing the blade to center itself.



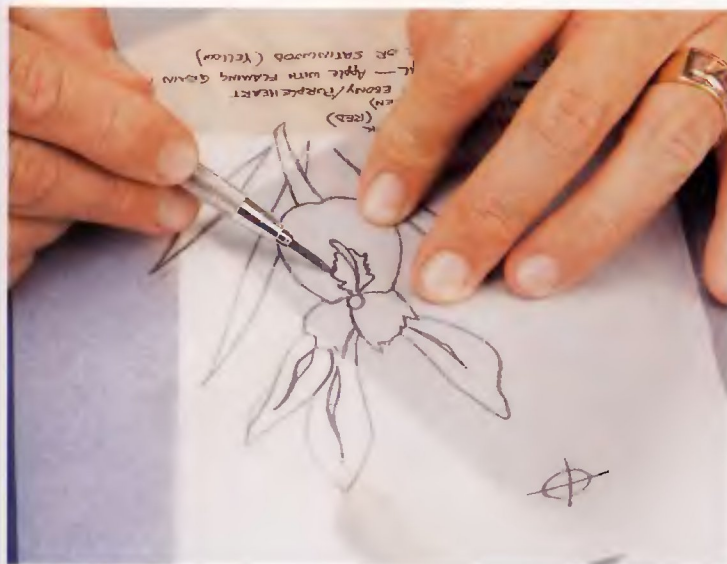
Check for fit. Seeing the piece in place, I decided to add a little sand shading on the bottom for a three-dimensional effect.



Notice that, as always, the insert piece is glued in from the back of the workpiece. Before applying glue, make a little registration mark on both the insert and the background veneer to correctly position the pieces.



With the workpiece located over the chosen area of the apple veneer, tape the pieces in place.



Transfer the abstract shape from the center of the petal to a piece of paper and cut out a window.



Pierce the workpiece here at the bottom of the abstract shape where the drill hole will be cut away with the following piece. Turn the workpiece over and countersink the hole. Begin cutting.



I will be using the apple veneer for this insert piece. Choose an area on the veneer that has a pleasing grain pattern using the window.



The completed cut ready to test fit.



The abstract shape insert glued into place.



Transfer the last vein shape to the workpiece. Tape the two veneers together. Pierce, turn the workpiece over and countersink the hole. Cut out the insert, carefully working your way through the turns.



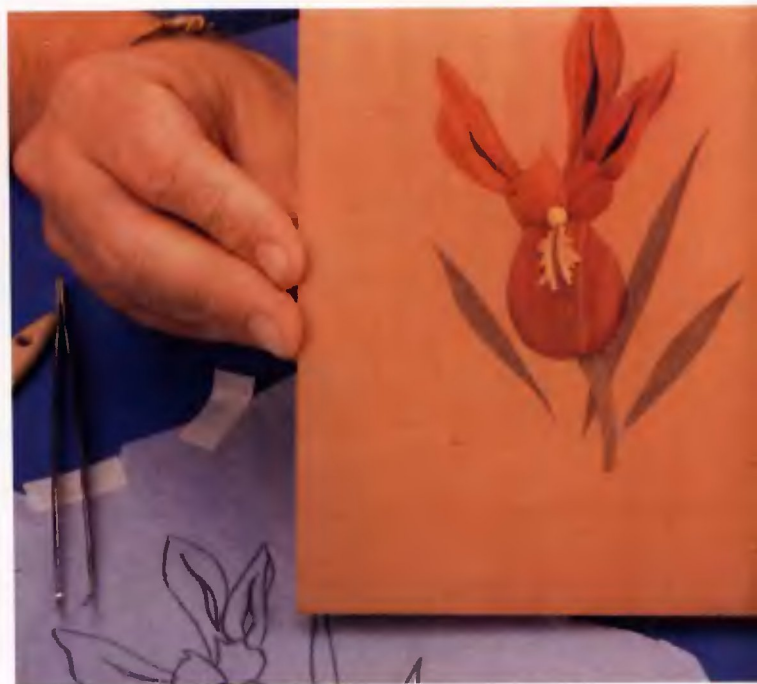
For the final piece of the design, I am considering two vibrant contrasting colors of wood. The ebony would tie in to the black veins in the other petals and be a safe choice. The purple heart might offer an interesting contrast and add a new bright color to the design.



After testing the fit, glue and lightly tap into place.



I've decided to use the purple heart.



The copper iris project completed.



The back of the workpiece is seldom flat by the time the design is completed. This is a result of slight differences in the thickness of the various veneers. The first step in finishing the completed marquetry design is to flatten the back. This will allow the marquetry piece to be glued to a high-quality plywood core. A flat back surface assures a good glue bond.



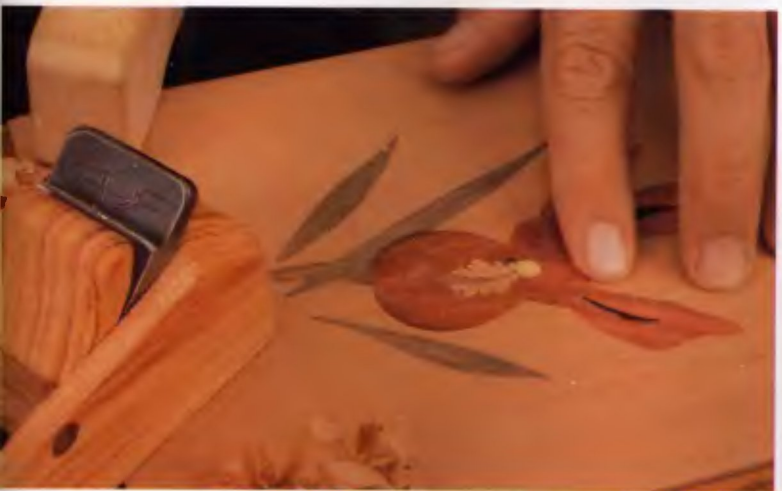
Further flattening of the surface may be accomplished using a sharp cabinet scraper. Remember that we're still working from the back of the workpiece. When using a scraper, be sure to work the entire surface to prevent creating any dips.



The back can be made flat using a sanding block or hand plane. Plane across the whole surface of the veneer, not just around the marquetry, until the surface is flat and has been taken to an even level. You may have to experiment planing from different angles to find a direction that doesn't tear out the various veneers.



If you prefer to use sandpaper, wrap a quarter sheet around a hardwood block. Here I'm using 150 grit paper to level the back surface. If the surface was more uneven, I might choose 100 grit for the initial leveling then proceed to 150 grit. This grit can be the final step for the back of the workpiece since it will provide a good glue surface.



Check frequently for an even surface.

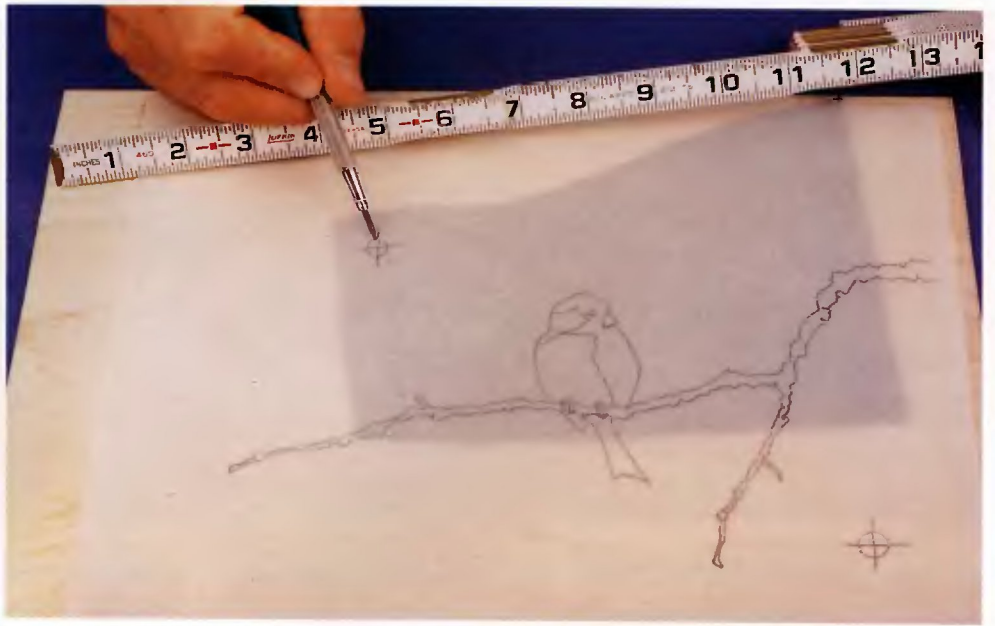


Turn the workpiece over with the good side up and carefully level the surface. You can use a scraper or a sanding block with 220 grit sandpaper to get a finished surface. I avoid hand planing the good side since the various veneers representing many grain directions may result in the grain tearing out.



To prepare the workpiece for presentation, it will be glued to a piece of high quality plywood. Any time you're working with plywood as a core you will need to perform the same set of steps to each side of the plywood. In this case, a blank veneer the same thickness as the workpiece veneer will be glued to the back side of the plywood. This will prevent the glued-up panel from cupping or warping. I apply yellow or white woodworkers glue to one side of the plywood, then place one of the veneers on the glued surface. I then turn the panel over and apply glue to the opposite side, place the veneer, and tape everything together. Then place the panel on a flat work surface, protected by newspaper, and lay a piece of thick plywood on top. This plywood assures that the panel will have even pressure across its entire surface. Clamp the plywood to the work surface, sandwiching the marquetry panel between, being sure to locate the clamps directly over the marquetry panel. After 3 or 4 hours, the panel can be removed, glue squeeze-out can be cleaned up, and a finish can be applied. Once the finish has dried, the panel can be framed for a wall hanging or wood edge-bandings can be applied for use as a jewelry box lid.

A Fourth Project: Winter Bird



Trace the pattern and transfer to the background veneer. The background veneer measures 13 1/2" x 9".



The project is a winter bird. Shown with the pattern are various veneers that I am considering. Under the winter bird pattern is Norway maple which will be the background for the design. This background veneer is large enough to use as a jewelry box lid. *The woods from left to right:* jarrah, English walnut, olive, yew, English walnut (different cut), English walnut (another different cut), holly, narra, yew (quartersawn), redwood burl, lacewood, redwood burl, kwila. For this project I will choose the veneers as I progress.



The bird will be worked on first because it sits behind the branch. I've decided to use two different pieces of English walnut for their rich color and swirling grain pattern. This swirling grain pattern in the veneer will work nicely to suggest feathers.



Locating the small English walnut veneer in the exact position behind the large background veneer is challenging. To help me line the two veneers in position, pierce two holes through the bird's head, one at each side.



Starting the the top of the bird and working my way down, I've transferred part of the bird's head and face on to a piece of scrap paper to make a window.



Flip the background veneer over, connect the two holes with a straight line extending well beyond the holes.



I chose this part of the English walnut veneer because the swirling pattern of the grain runs in the direction I want for the head.



Likewise, pierce two holes through the window into the insert veneer outside of the bird's head.



On the back of the insert veneer, connect the holes with a straight line extending beyond the holes.



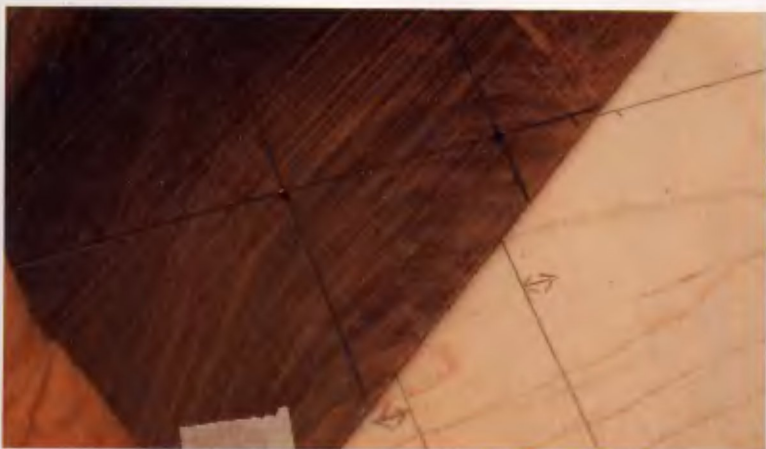
The dotted lines indicate the piece that I will cut out.



Draw two perpendicular lines on the back side of the background veneer. Make sure you know which side of the veneer is the top.



Pierce through both veneers, angling the drill bit towards the outside of the piece we'll be cutting.



Similarly, draw two perpendicular lines on the back side of the insert veneer. Placing the two veneers together using the indicator lines will help you to accurately place the section of the insert veneer you have chosen in the right spot. While I don't do this to locate all of my veneers, this particular grain pattern was just what I was after so it was worth a little extra time. Tape the two veneers together.



Turn the workpiece over and countersink the hole.



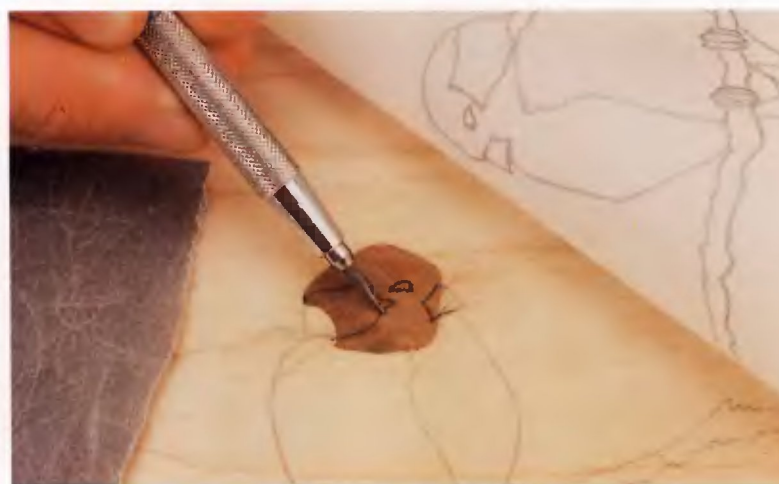
Thread the blade and attach it to the blade clamp. Tension the blade and begin cutting.



Press into place and lightly tap with a hammer for a snug fit.



Test for fit.



Reposition the pattern and transfer the missing lines in the head.



Glue the edges of the insert piece.



I have chosen the yew for the ring around the bird's eye. Notice that I have drawn a cutting line slightly outside of the eye. Most of this will be cut away with subsequent cuts but will add a pleasing softness around the eye.



Pierce the veneers, turn the workpiece over and countersink the hole. Make the necessary preparations for cutting.



The ring around the bird's eye completed.



Cut around the outer ring of the eye.



Next I will let-in the bird's eye. Reposition the pattern and transfer the eye on to the previously inserted piece.



Working from the back side of the background veneer, glue the insert in place.



The black ebony will be a sharp contrast for the bird's eye.



Pierce, turn the workpiece over and countersink the hole. Remember that with smaller pieces or pieces having no overlap, the piercing needs to be at a greater angle than the tilt in the saw table in order to eliminate the drill hole in the sawing process. Cut around the eye. Because the eye is an important feature and sets the mood of the design, it is worth taking the extra time to carefully cut.



The eye glued into place.



When working on the eye I don't want to take any chance of losing the ebony eye through the slot in the saw table. Rather than complete the cut as usual, severing the insert veneer, I stop just shy of that. Remove the blade from the upper clamp and carefully slide the workpiece up and off the blade.



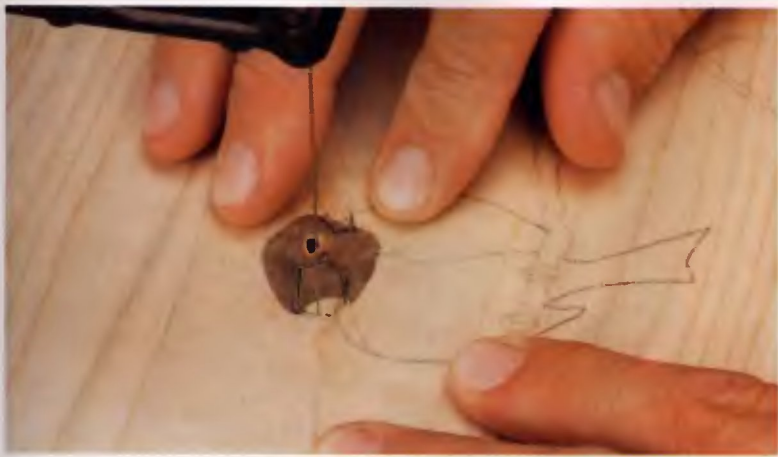
For the side of the bird's face, I have chosen the olive for it's creamy streaked color.



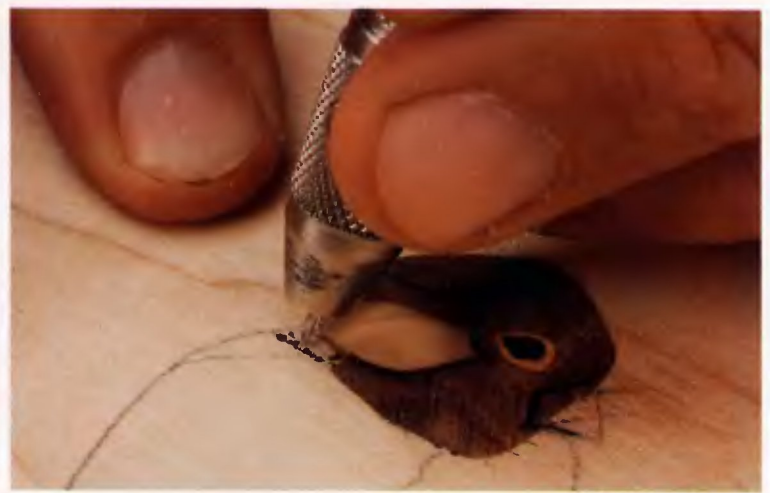
Turn the workpiece over with the wrong side up, use a small knife to complete the cut.



In this case we will be using a different method to make a window. I have pierced inside the line of the piece which is the face area of the background veneer. This window will allow me to see the grain of the olive right next to the English walnut already let-in to the head.



Cut around the inside of the line of the face.



Pierce through the veneers, turn the workpiece over and countersink the hole.



Position the opening in the background veneer over the desired area of the olive veneer. Once satisfied, tape the veneers together.



Cut along the line drawn on the bird's head.



Draw a dotted line in the overlap area which is the bird's shoulder.



Cutting with a window in the background veneer is no different than other cuts. Keep cutting along the line as if the window is not there.



Check for fit and glue into place.



The dotted line overlaps onto the bird's other wing. We'll be cutting out the breast area through part of the branch and feet.



With the face completed, I will again use the English walnut for the bird's shoulder and back side. You will notice that I have added a line in the pattern separating the back wing from the breast area. The dotted line indicates the area that overlaps onto the breast area. Make the necessary preparations and cut.

Pierce through the veneers, turn the workpiece over, and countersink the hole. Start to cut.

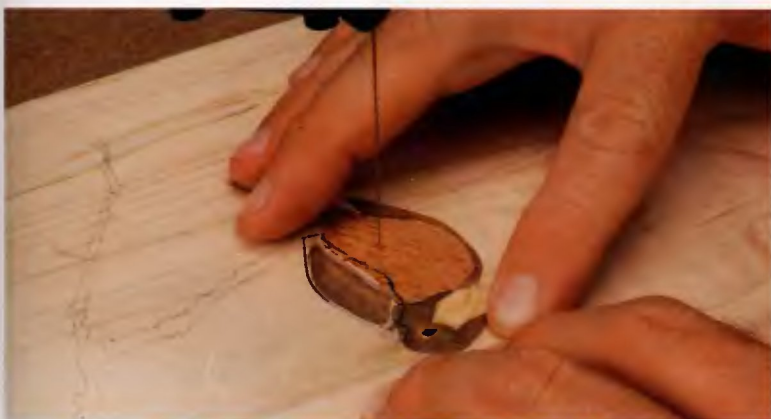


The bird's shoulder and wing are beginning to take shape. For the bird's breast I will use the lacewood. The little rays or flecks of color common to lacewood provides a wonderful texture for the breast area.

Test fit the insert piece. Glue in place to complete the bird's breast. The word *chatoyant* is sometimes used to describe the reflective or iridescent quality in some woods. The lacewood is a good example of this quality. The rays change and glimmer as your eye moves around the wood.



To complete the second wing on the bird, I'll return to the swirly grain in the English walnut. Once again I have made a window through the background veneer to help me locate the appropriate grain for the bird's wing.



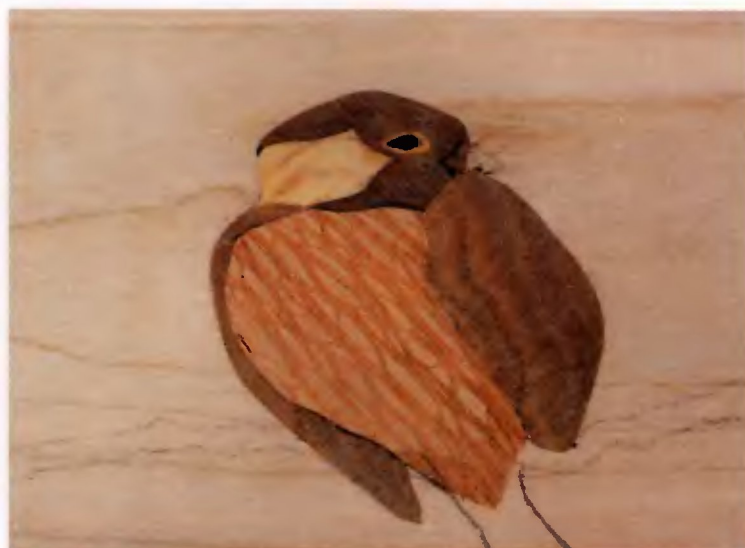
Again, cut out the wing as you would with any other cut.



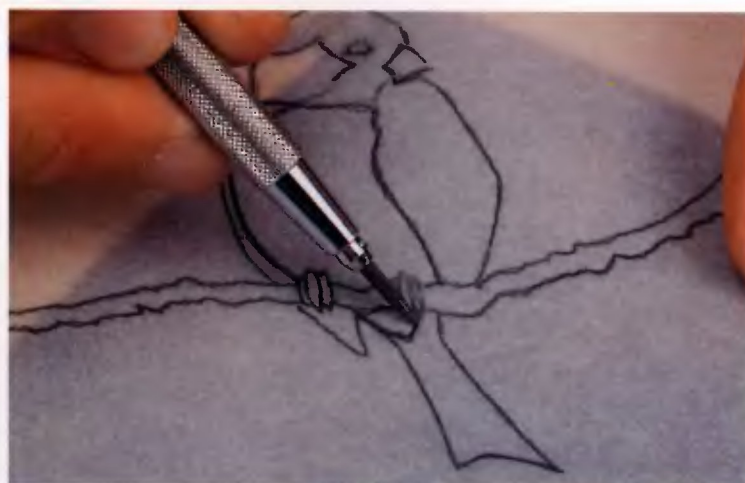
With the cut completed, remove the workpiece and check for fit.



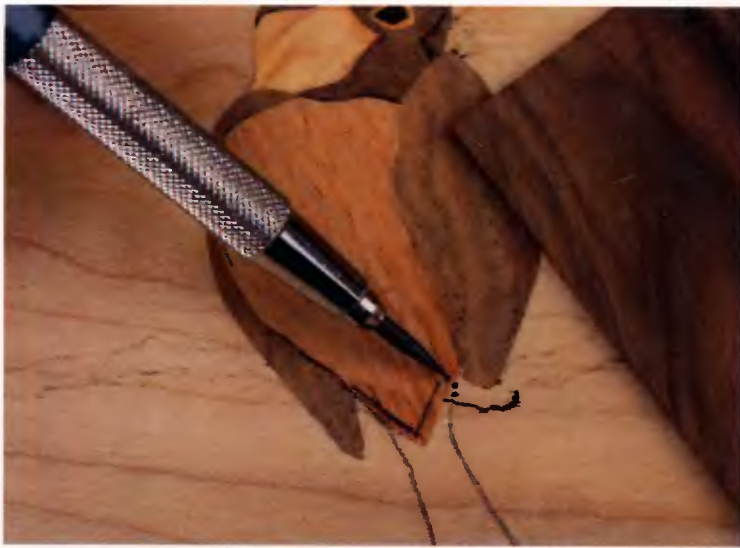
From the back side of the workpiece, glue and lightly tap the wing into place.



The second wing is complete.



Next I'll let-in the bird's tail. Transfer the line at the bottom of the breast area below the branch. This line was cut away when the breast was let-in.



I've drawn a short dotted line that overlaps into the branch that will be cut away later. This will be a good place to conceal the drill hole. The piece of English walnut I've chosen for the tail has straighter grain to suggest the straight feathers of the tail, and a darker tone than the wings to suggest that the tail is farther away than the wings.



The straight grain in the tail is exactly what I was looking for. I'm holding the handle of the brush across the design where the branch will later be let-in. The darker tone in the tail now makes it appear farther away. The colors chosen in any marquetry design adds dimension and depth which really makes a difference in making the picture come alive.



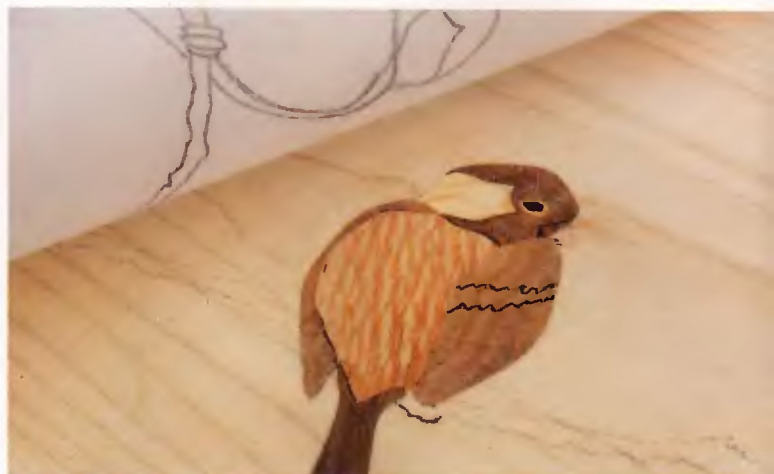
The English walnut veneer for the bird's tail is taped in place. I've made sure to position the veneer so that the grain follows the direction of the tail feathers. The veneers have been pierced and a countersink hole has been made. The workpiece is ready to be threaded and cut.



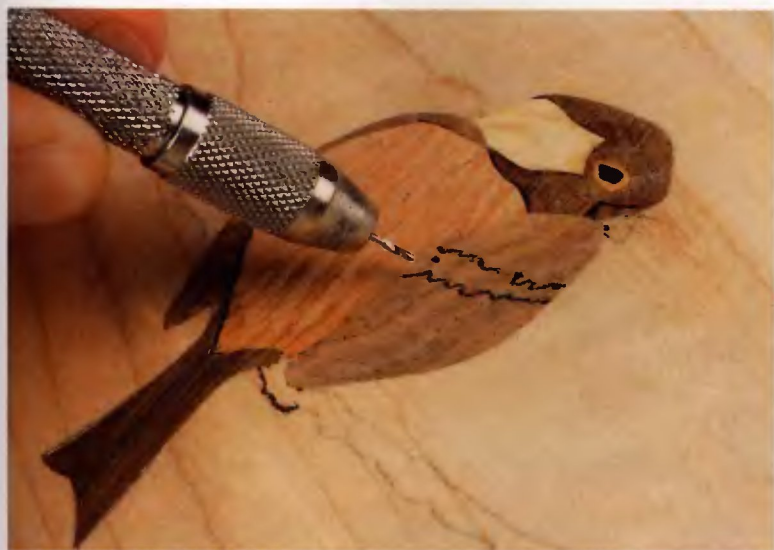
I've decided to break up the pattern in the second larger wing by adding a band across the wing.



The tail is cut and ready to test fit.



This band is transferred on to the workpiece.



Pierce a hole and cut around on the inside of the line to make a window.



I like the stripes in this straight-grained yew veneer. By moving the window around over the veneer, I can choose an area I like best for this band in the wing. Notice the window roughly follows the pattern line. Tape the veneers together.



Pierce the workpiece and prepare for cutting. Remember to angle the drill bit slightly steeper than the saw table to allow the saw blade to cut away the drill hole. Progress along the pattern line. I'm cutting through both veneers.



The insert veneers with the waste slivers left from the window.



Glue and lightly tap the insert in place.



The band in the wing completed.



To complete the head, I will now make the bird's beak. I'm letting-in the beak at this point in the project because the beak is in front of the wing. I've chosen the osage orange for the beak for its bright color range from yellow to brown.



Next we'll let-in the first piece of the branch. The wood I'll be using is kwila, another beautiful lesser known species, which has a coarse grain that will suggest the rough texture of the branch. I've taped the workpiece over the kwila veneer with the kwila's grain direction following the length of the branch.



To help me locate the area I want to use for the beak, I've made a window in the workpiece and cut out the insert.



I will be making the branch in several short sections. One reason for this is that the entire branch will not fit in my pan for sand shading. The other reason is that it allows me to shade junctions of the branch to give the design an overall sense of dimension. I've drawn a dotted line that will overlap and be cut away by the second section of the branch.



The beak is glued and lightly tapped in place. The osage orange works well to complete the look I'm after. Notice the brown streaks in the grain visually separates the upper and lower halves of the beak.



In this design I'm not really aiming for realism or trying to re-create a specific bird and branch. I'm more interested in creating a stylized feel, suggesting a winter scene. The jagged lines in the leafless branch help to suggest this feeling.



To add some depth, I will shade along the bottom of the branch.



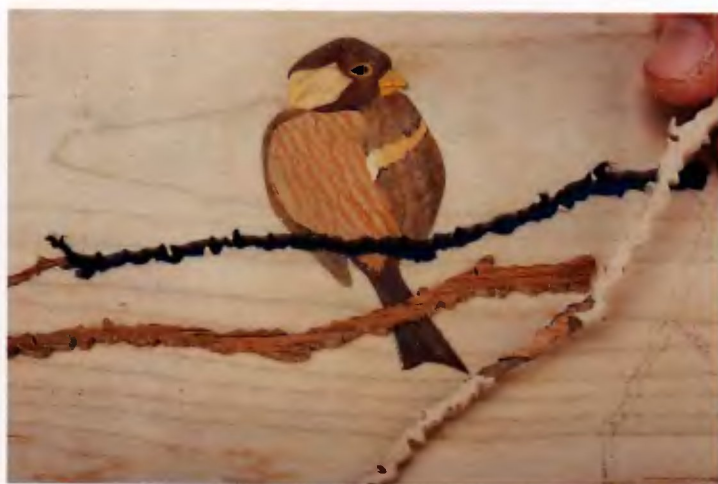
With the first branch in place, I need to make a decision on where to cut the next branch section. The long piece I will cut just fits in the pan for sand shading.



My pencil is pointing to the line overlapping the first branch insert. The dotted line where I'm pointing will be the drill hole to begin the cut.



Cut along the jagged pattern line. Remember to regularly allow the blade to center itself.



The cut is completed. Notice that this last cut is made through the body of the bird, which is behind the branch.



With the cut completed, glue the branch section in place.



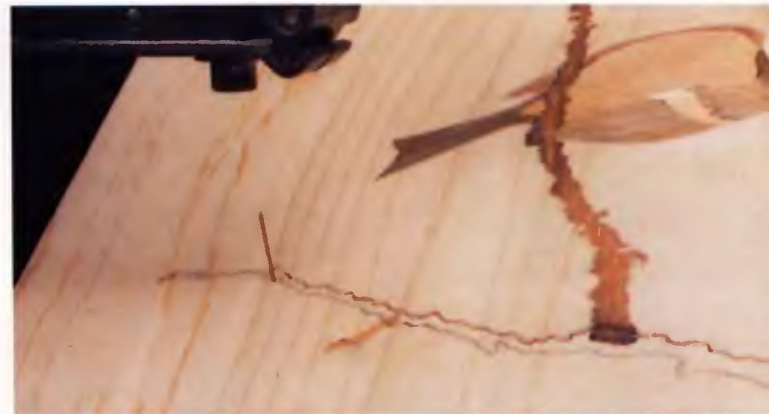
The second branch section is completed. The shading along the bottom and at both ends of the branch adds depth and interest to the design.

Sometimes in the middle of a cut, the blade breaks. This sometimes happens when the blade has seen a lot of use, or from over-flexing the blade through its many quick turns along this section of the pattern.



Before moving to the next long section of branch, I'll let-in this little twig section. Pierce in the overlap area and prepare for cutting.

Set the workpiece aside. Install a new blade in the bottom saw blade clamp. As always, grasp the blade between two fingers.



With the twig let-in, I'll move to the lower part of this branch section. Again, the dotted line is where I'll begin. Prepare the workpiece for cutting.

Look below at the bottom of the workpiece to locate the saw kerf near the point where the blade broke. Thread the new blade through the kerf, clamp the blade into place, and tension the blade. Carefully move the workpiece to reach the point of the line where the cut ended.



The cut is completed and ready to be lifted off the saw table.



Again, I'm shading one edge of the branch section.



With this branch glued in place, I will now complete the entire branch.



The last section to complete the branch will be let-in. Once again, the dotted line at the end of the branch will be the end of the design while staying within the background veneer. The reason to stay inside the background veneer and leaving a margin is that it maintains stability of the workpiece. I purposely made the background veneer slightly larger than the final size to allow room for this.



The workpiece ready to be drilled and cut. Here I'm pointing to the area that will overlap the previous section of the branch. After completing the cut, shade the bottom edge of the insert piece to complete the branch. Shading the concave edge of this piece is difficult in sawn veneers. It helps to lean the insert piece slightly face down into the sand.



Glue in place.



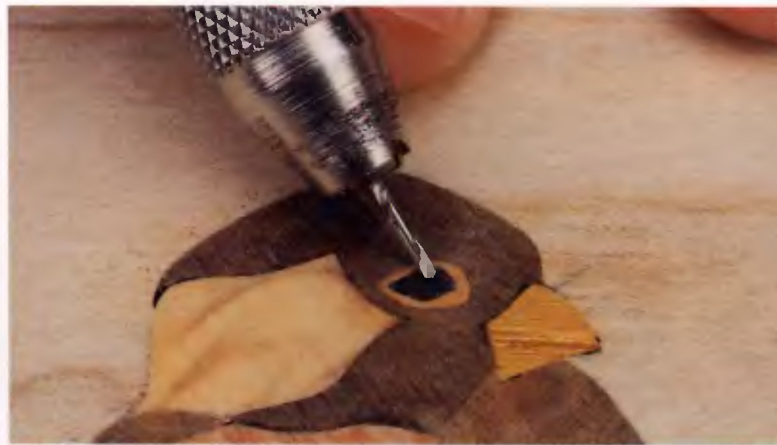
Because I've followed a stylistic approach to this design, I hesitate to let-in the toes in three separate tiny pieces in each foot. With a tightly striped piece of wood such as this bocote, my problem is solved. The three separate pieces making up each foot can now be cut out as one larger piece.



The second foot is completed.



With the tiny window cut out in the foot area, I can see the grain below in order to place the toes.



The last step to completing the bird is to add a highlight to his eye. Because of the tiny size, rather than let-in a piece of veneer into the design representing the highlight, I will pierce the eye with a tiny #72 drill bit. The placement of the highlight is crucial to make the bird believable. Make a small dot with a pencil to experiment with the location. Once comfortable with the proper spot, use an awl or knife point to create a small starting hole for the drill bit to follow. Do not countersink the back side.



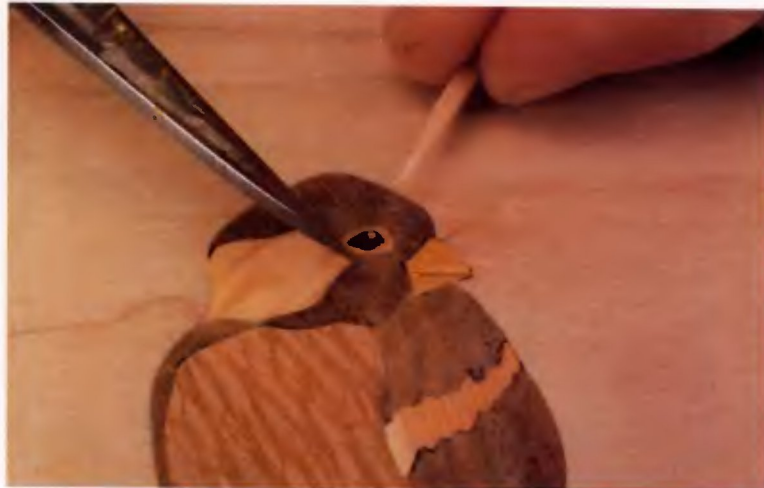
The first foot is completed.



With a small sliver of light-colored wood like maple or holly, carve a round tapered point at one end.



Test fit the carved sliver. If it fills the hole in the bird's eye completely, it's ready to glue into place.



With a knife, slice the sliver flush with the surface of the workpiece. This completes the design.



Place a tiny dot of glue into the eye and use your finger to force the glue into the hole.



For a fine finish, sand the marquetry project to get an even surface. Be sure to sand both sides of the workpiece. Sanding not only levels the marquetry picture, it removes any transferred graphite lines and excessively shaded areas.



Push the carved sliver into the hole until it stops. Allow to dry 5 or 10 minutes.



If you plan to mount the marquetry picture, remember to glue an equally thick veneer to the back-side of a plywood core.

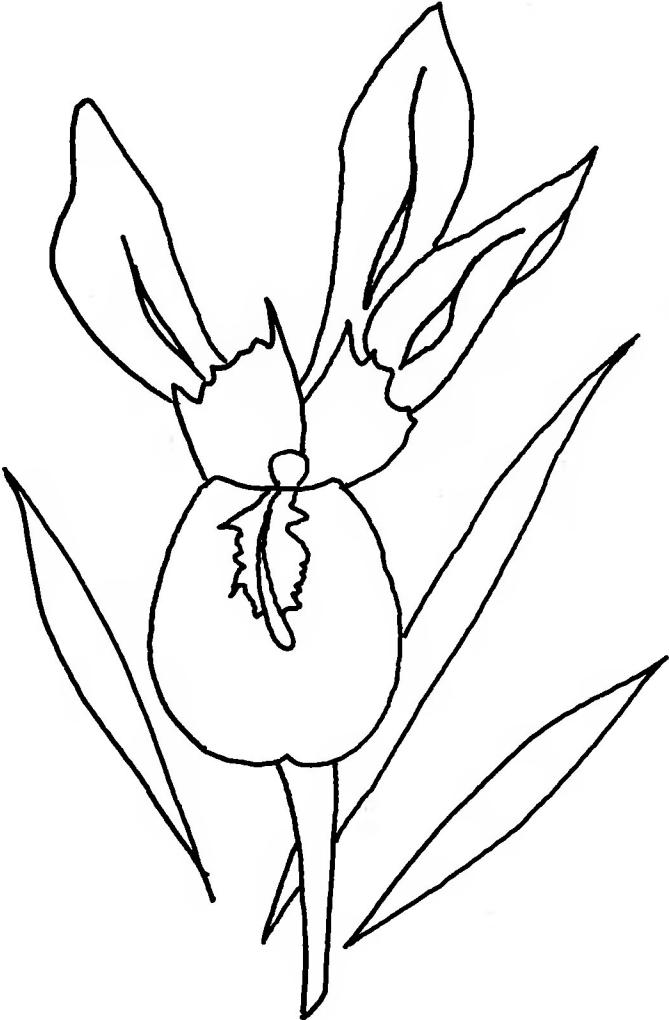
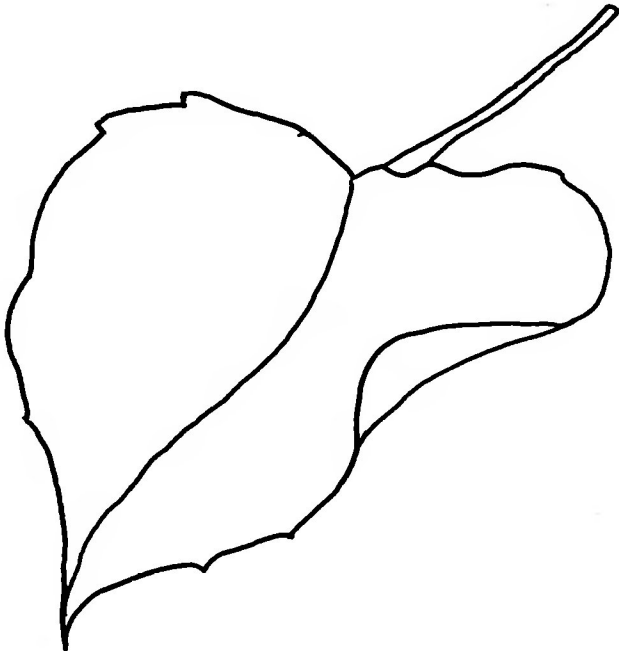
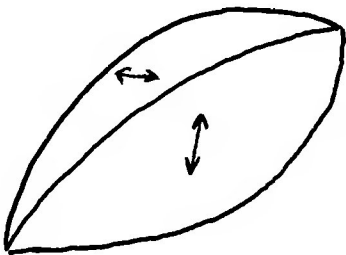


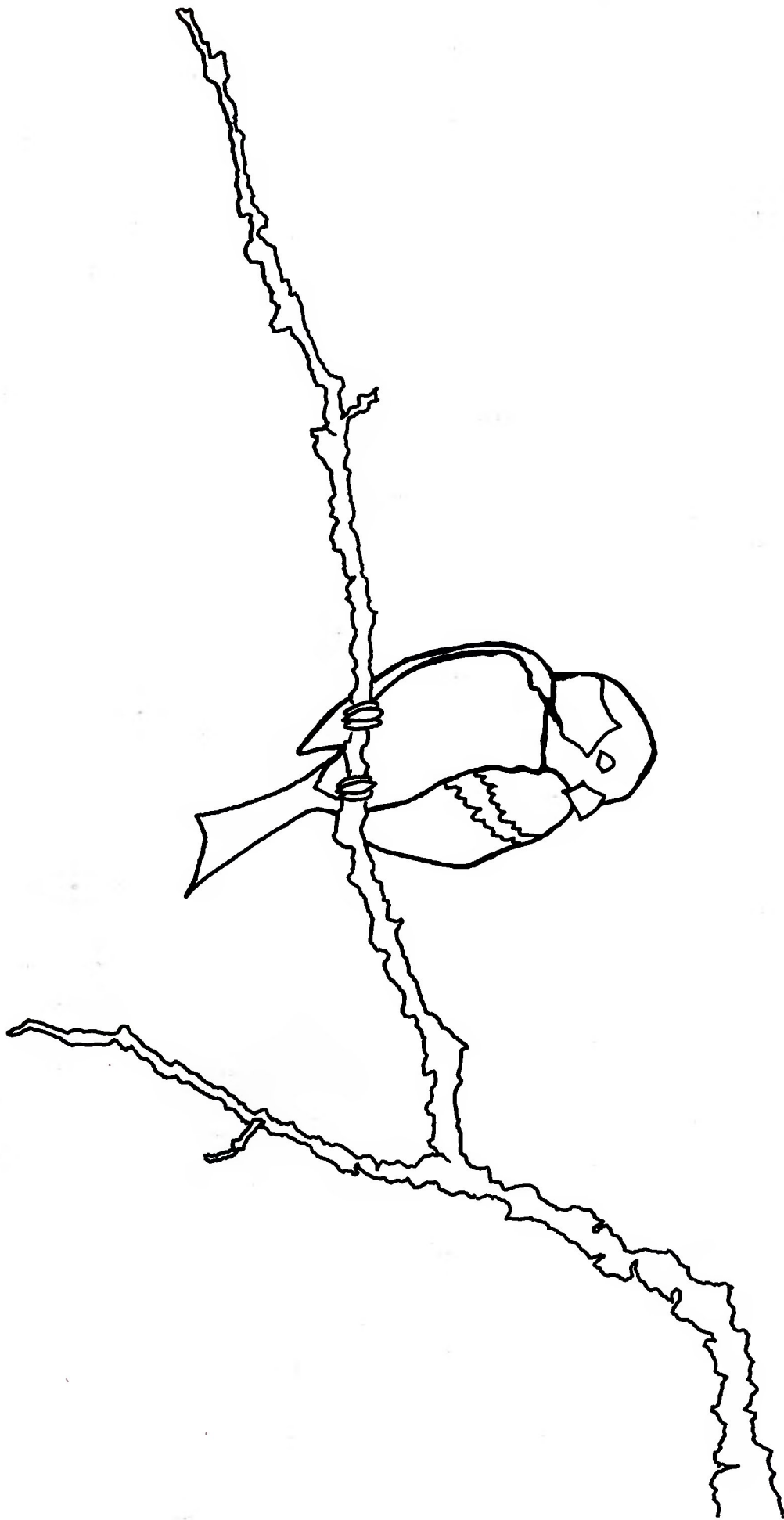
After the marquetry is mounted it can be displayed as a wall hanging or incorporated into a woodworking project. Shown here is a jewelry box in the same design but using different veneers. Applying shellac to the final project will bring out the rich warm tones of all the veneers. You can now begin to explore more challenging projects.



Admire the final projects.

Patterns





Glossary of Terms

Background veneer. The piece of veneer that has the design or pattern drawn on it and to which other veneers are added to create the design.

Bandsaw. A powered saw with a continuous steel blade traveling around rubber tired wheels.

Birds-mouth. A platform or table with a V-shaped notch in the front where cutting with a fret saw takes place.

Book-match. Two halves of a piece of wood or veneer that when opened like a book, create a mirror image of each other.

Cabinetmakers triangle. A triangular mark drawn on a board to aid in re-assembling veneers in the sequence that they were cut.

Caul. A flat piece of wood used to distribute pressure evenly when clamping.

Chatoyant. (*shah-toy-ent*) Describes the reflective or iridescent quality in some woods.

Commercial veneers. Very thin slices of wood, usually 1/28" or 1/40" thick.

Counter-sink. To form a flared depression around the top of a drilled hole.

Double-bevel. A marquetry technique of cutting 2 layers of veneer at once with the saw blade angled.

Drift. The angle at which a bandsaw blade naturally cuts.

Fret saw (jeweler's saw). A U-shaped metal frame with a fine blade held tightly at the open side.

Grain. The arrangement of fibers in a piece of wood.

Grit. The number of grains of abrasive, per square inch, in sandpaper.

Guide blocks. Adjustable blocks of a friction resistant material that help prevent a bandsaw blade from flexing side to side.

Gullet. The fish hook, negative shape between the teeth of a saw blade.

Insert veneer. A piece of veneer which is cut and placed into a marquetry design.

Kerf. The width of material a saw blade takes out as it cuts.

Let-in. The act of cutting and placing a veneer into a marquetry design.

Marquetarian. A person who creates designs or pictures out of thin wood veneers.

Marquetry. A technique where different colors of wood veneers are cut to fit precisely together, creating a design in a single sheet.

Pin vise. A small screwdriver-like hand tool containing a collet for holding tiny drill bits.

Resawing. Sawing thin veneers out of solid wood planks.

Scroll saw. An electric saw with a small vertically reciprocating blade for cutting irregular lines.

Set of teeth. The amount of bend to one side or the other of the teeth of a saw blade.

Shading. Toasting a piece of veneer in hot sand to create a 3-dimensional effect.

Thrust bearing. A circular bearing which contacts the back of a bandsaw blade during use.

Veneer. A thin sheet of wood, usually no more than 1/8" thick.

Waste piece. The area of the background veneer that is replaced by a new veneer upon completion of a cut.

Waster. An extra commercial veneer secured to the bottom of the workpiece to provide support.

Window. A specific shape cut in paper or wood used to locate a desired grain pattern.

Workpiece. A pair of veneers secured together on which the marquetry design is being created.

Sequence of Events Checklist

Scroll Saw

The background veneer is always the piece with the design or pattern drawn on it. All other veneers are insert veneers and are added to the background veneer to create the design.

Place a contrasting or insert veneer under the background veneer making sure the pattern is completely over the insert veneer.

Tape the two pieces of veneers carefully together with masking tape.

Drill a hole to match the angle of the tilted saw table, starting on the inside of the drawn line and angling the bit towards the outside of the drawn pattern.

Turn the workpiece over and countersink the exit hole. This makes threading the blade through the veneers much easier. Marking a circle around the exit hole also aids in finding the countersink hole when the workpiece is turned back over for threading.

Thread the saw blade through the hole with the teeth of the saw blade facing down and towards you. The pattern should now be visible on the background veneer and should be uphill of the blade. That is, if your saw table is tilted down to the left, the waste piece should be on the right (uphill) side of the blade.

Attach the top of the blade to its clamping device and adjust the tension on the blade so that the machine doesn't rattle in use, but isn't so tight that you're constantly breaking blades.

Begin sawing the shape, rotating the workpiece clockwise which feeds it into the saw blade and keeping the waste piece of the background uphill of the saw blade. When the cut is complete, the waste piece will be replaced with the new insert veneer currently taped below.

To prevent bending the blade to the side or towards the back, occasionally pause the saw and release your hold from the workpiece to

allow the blade to center itself. Some flexing of the blade towards the back of the saw is to be expected.

When reaching a corner of the shape, keep the blade moving in place as you carefully turn the corner. This will allow you to make a tight turn and prevent the blade from breaking.

After removing the workpiece from the machine, remove tape and set aside the waste veneers.

Set the cut-out insert veneer in place from the back side of the background veneer. It should be a snug fit.

Turn the workpiece over. You are now a Marquetarian!

Shade the insert piece with hot sand if desired.

Apply glue along the edge of the insert veneer and press into the opening. Check for a flush fit from the front side of the background veneer. Tap the insert veneer further into place with a small hammer if needed.

Fret Saw

Clamp a fret saw table or birds-mouth jig to your work bench. Tighten the blade at the handle end clamp of the fret saw with the teeth facing away from the saw frame and down towards the handle. Hook the top end of the saw on the fret saw table and place the handle against your shoulder. Thread the saw blade through the countersink hole and slide the workpiece all the way to the handle. Applying pressure with your shoulder, flex the saw frame and fasten the opposite end of the blade.

The rotation of the workpiece is opposite (or counter-clockwise) of the rotation used on the scroll saw. My left hand keeps downward pressure on the workpiece while rotating the workpiece into the teeth of the blade, which are facing away from me. With the table tilted down to the left, the waste piece in the background veneer is uphill or to the right of the saw blade.

My right hand operates the saw vertically. To steady the sawing motion, I rest my elbow against my leg. This helps assure that the saw stroke is consistently vertical. Make every effort to saw within the birds-mouth opening, pausing occasionally to check the saw blade's position. With my left hand manipulating the workpiece, I saw along the pattern line, rotating the workpiece until the cut is completed.

Helpful Hints



Some woods like this bloodwood are very resinous, making them difficult to saw. The resin clogs the teeth of the saw blade. Sliding a small piece of wax paper between the background veneer and the insert veneer helps to lubricate the saw teeth as you work, making the process a little easier. You still may need to use a small, fine wired brush to occasionally clean the teeth of the blade.

If the contrasting veneer that you have cut is not a snug fit, and falls through or is a loose fit, try angling your saw table slightly more to the left. For example, try changing the scale on the saw table from 7 degrees to 7 1/2 degrees. Making the angle steeper will create a tighter fit.

If the contrasting veneer that you have cut is too large and won't fit into the opening, try decreasing the angle of the saw table slightly. It may take several practice pieces, changing the saw table's angle each time, to determine what is perfect for your situation.

When shading insert veneers, check frequently for scorching. Leaving the piece in contact with the hot sand for too long may result in some shrinkage.

If an insert veneer shrinks in the hot sand, it's possible to expand the piece back to its original size by soaking it with water for a few seconds. Once the insert veneer correctly fits the opening again, allow it to dry flat before gluing into place.

Give some thought to your marquetry work area, especially for sawing. Choose a stool or chair that places you in a comfortable working position, not so high that you're hunching over the saw table or so low that you strain to follow the progress of the saw blade. The table of my scroll saw is 41" above the floor and the stool I use is 29" high. When seated, the saw table is about 2" higher than my elbows. I find this working height very comfortable and can saw a few hours at a time without feeling fatigued. When using a fret saw, I work at my cabinetmaker's bench which measures 37" high. The adjustable fret saw table I use is about 8" tall and the stool is 29" high. This places the saw table height at about the middle of my chest when seated. This is slightly higher than the scroll saw height previously mentioned, but I find it works well for me. Experiment with different combinations. The important thing is to be comfortable, in a well lit area, allowing yourself to focus on the marquetry technique.

Sweep the floor around your work area regularly. It's very frustrating to drop a tiny piece of your design into a pile of tiny pieces that look just like it. If you do lose a little piece to the floor, try turning out some lights and shine a flashlight across the floor. This can make smaller pieces stand out.

If you lose a piece of your design (we can only assume they wind up in the same place as missing socks), it's easy to make a replacement. Tape a new insert veneer below the background. You'll see the insert veneer through the void where the missing piece should be. Proceed through all the marquetry steps as usual, the only difference being that you're only cutting through the insert veneer, keeping the side of the saw blade against the opening in the background veneer. The new piece will fit precisely in the opening.

The Art of Marquetry

Craig Vandall Stevens

The idea that one can paint a picture using the natural colors of wood, precious metals and gems is an ancient one. Artifacts enriched with colorful designs were left behind in the tombs of the Egyptians. By modern definition, these surface decorations are more closely related to inlay. In the mid 16th century, Italian craftsmen began using marquetry as a furniture decorating art. Marquetry is a technique where different colors of wood veneers are carefully cut to fit precisely together, creating a design in a single sheet. This veneer sheet or picture is then glued to a solid, stable surface.

The art of marquetry as a means of decorating a surface has become one of the most rewarding aspects of Craig Vandall Steven's work as a furnituremaker. Using a technique called the double-bevel cut, *The Art of Marquetry* takes the novice to the advance woodworker through a fully illustrated step-by-step process from design to the finish. Hundreds of color photographs in the book demonstrate how to saw your own veneers out of solid wood planks, the tools and materials required, using the scroll saw and the fret saw, choosing wood, design, shading with hot sand, and finishing.

Patterns for four different projects are included as is a gallery of variations and applications to inspire the marquetarian in you.



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