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Veneered Checkerboard

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Veneered Checkerboard

Brush up on your veneering skills and get an early start on holiday gifts. Production methods allow you to build identical projects quickly, and different pairings of veneer make each checkerboard unique. It's a truly hand-made gift in no time flat.

Take your time selecting veneers. Be sure you've got strong contrasts and enough of each species to complete your boards.

Whatever time of the year it is when you read this, it's never really too early to get a jump on holiday gift projects. This checkerboard design was the brainchild of contributing editor Rick White one year, as he tried to honor a commitment to start early—even in the middle of walleye season. By using a few production methods and changing the veneer species, Rick built veneered checkerboards that were identical to produce and yet looked different. The design also offered an efficiency that got him back into the boat as quickly as possible.

Introducing…Veneer!

If you have never worked with veneer before, this project is a perfect introduction. It calls for small pieces (which are easier to work with) and makes allowances for rookie mistakes. For example, if you don't get all the edges of the squares lined up perfectly, don't worry: this plan calls for a routed V-groove that will eliminate your mistakes.

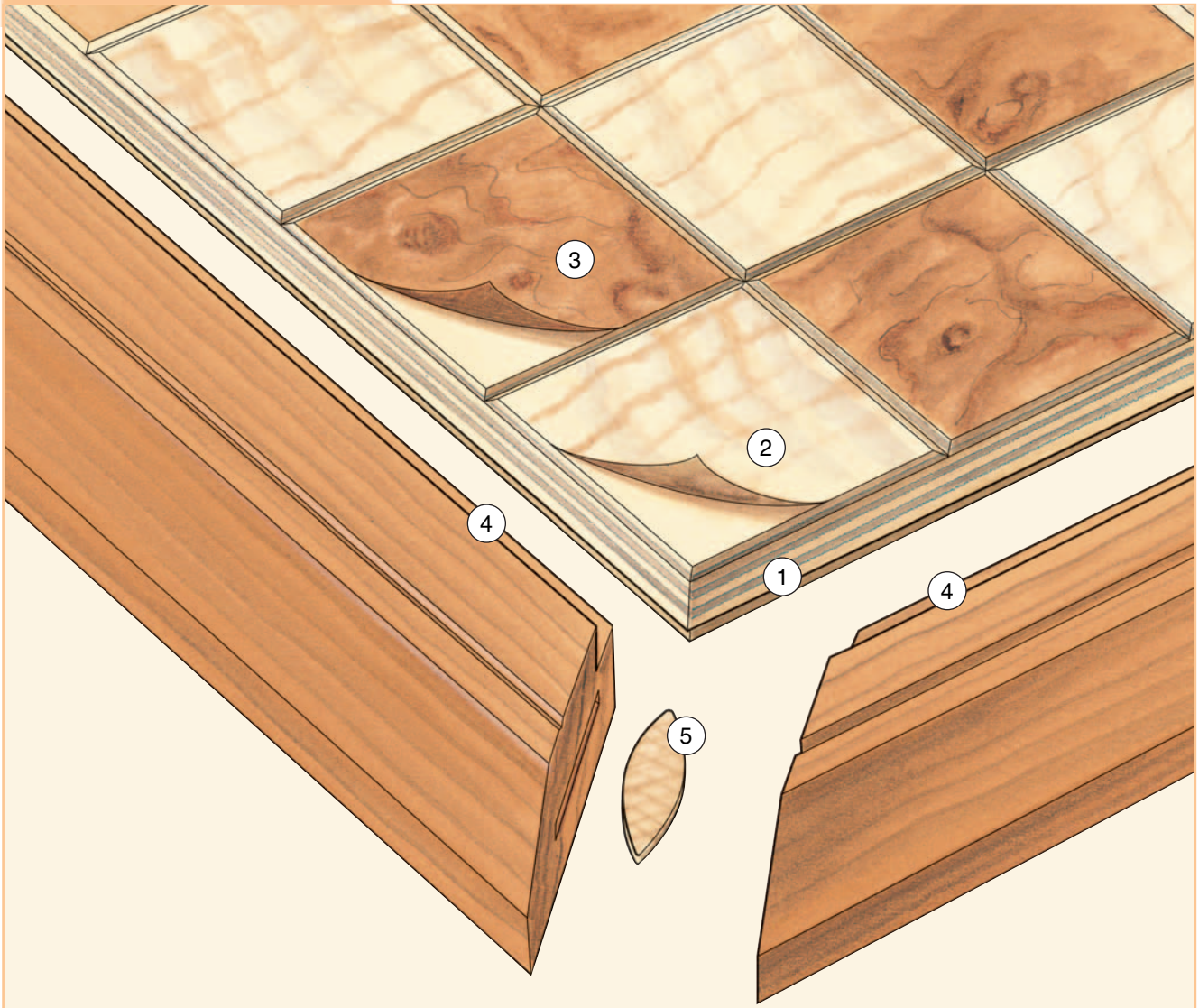
There are several reasons for choosing veneer. It's a responsible environmental decision, because a clear hardwood log yields 30 square feet of veneer to every board foot of solid lumber. And it allows you to use the Apple Ply® core called for in this project, which is far more dimensionally stable than any species of solid lumber. But perhaps the best reason is that it's just a whole lot of fun and a truly rewarding experience.

Picking the Right Species

There are four material choices to make in this project. For the substrate

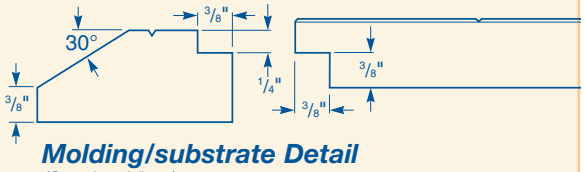
For a project like this checkerboard, a backer veneer isn't necessary. The V-grooves on the top relieve the stress.

Checkerboard Exploded View



MATERIAL LIST – *Checkerboard*

		T x W x L
1	Substrate	3/4" x 16" x 16"
2	Light Squares (32)	1/40" x 2" x 2"
3	Dark Squares (32)	1/40" x 2" x 2"
4	Molding (1)	1" x 2 1/8" x 80"
5	Biscuits, #0 (4)	1 3/4" x 5/8"



Molding/substrate Detail
(Section View)

(piece 1), choose birch multi-ply board with 15 plies (or layers). This product is widely sold as Baltic or Finnish birch, and it is also available as Apple Ply®. As a substrate, it is incredibly stable, void-free and presents a solid edge that can be milled with a decorative profile, then finished.

Your most critical decision will be choosing the veneer species for the squares (pieces 2 and 3). You need to pick two species that will provide a fairly dramatic contrast when finished. The lighter species should also be available as 3/4" stock, to make the molding (piece 4) that frames the board.

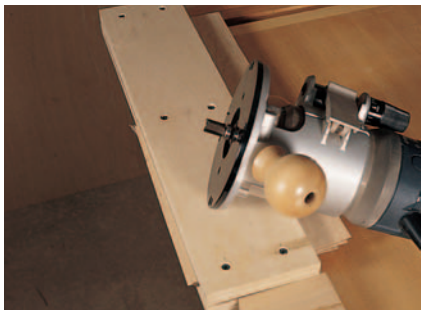


Figure 1: *Sandwich several layers of veneer between two jointed pieces of scrap plywood, then use an edge-trimming bit to establish a straight edge.*

Figure 2: *With the straight edge against your table saw fence, rip the plywood, and thus the veneers, into strips. Then joint both edges of each strip down to a 2" width.*

Figure 3: *With a fine blade installed in the table saw, crosscut the jointed strips into 2" squares, using a long auxiliary fence and a stop block.*

Some good combinations are ebony and ash, cherry and soft maple, and Rick's favorite: walnut burl and birdseye maple. Make sure both veneers are the same thickness (usually either 1/32" or 1/40").

Making a Sandwich

Begin building the checkerboard by cutting the substrate to size (see the *Material List* at left), then turn your attention to the 64 squares of veneer. You can cut enough squares for up to three boards at the same time using the following method.

Select veneer that is at least 4¼" wide. On the jointer, dress one edge of each of two pieces of scrap plywood, then sandwich alternating sheets of veneer (first walnut, then maple and so on) between the pieces of plywood. Make sure one edge of each piece of veneer extends past the jointed edges of the plywood, as shown in *Figure 1*. If you have more than eight pieces of veneer, make a second sandwich.

Pre-drill each sandwich for three sets of countersunk screws (see the *Pinup Shop Drawings* for these locations). The pilot holes should be the full diameter of the screws in the top layer of plywood and in the veneers (to prevent splitting the delicate veneer), but only half the thickness of the screws in the lower piece of plywood, to provide some grab. Drive the screws, then use a bearing-guided flush trim bit to simultaneously create a straight edge along all the sheets of veneer in each sandwich, as shown at left.

Leaving the veneer in the sandwiches, set your table saw fence exactly 2 1/16" from the blade. Rip the sandwiches into strips (see *Figure 2*), with the previously squared edges against the fence. If your veneer was a little over 4" wide, this process will yield two strips. If the veneer was wider,

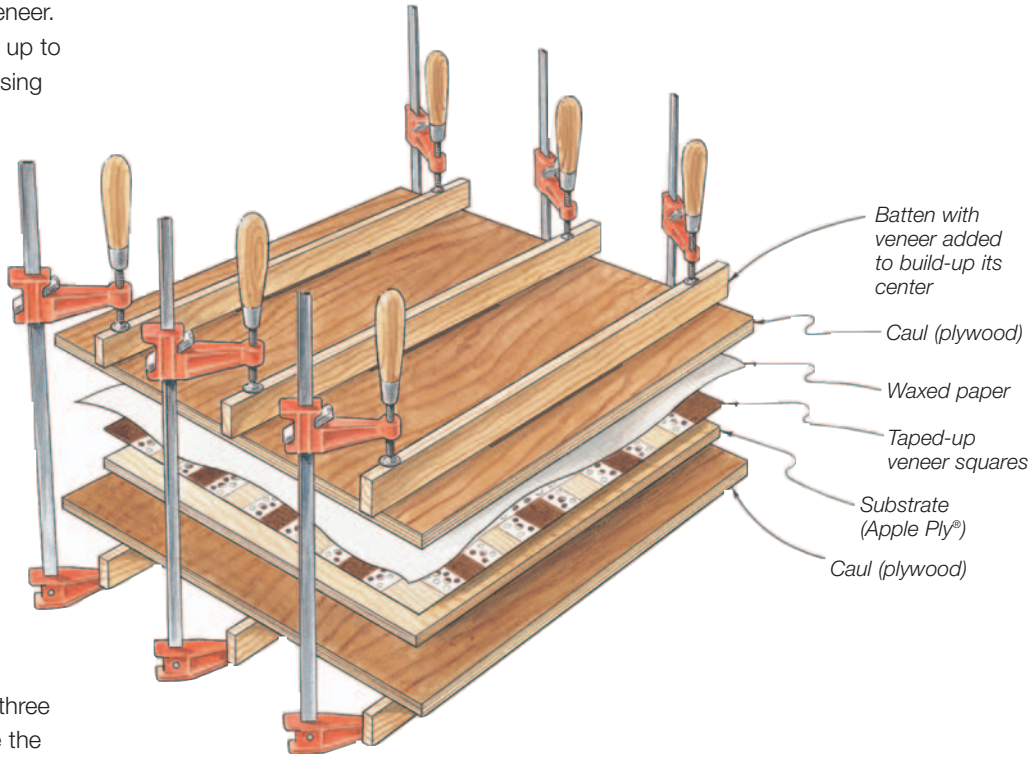


Figure 4: *Use special, quick-sanding veneer tape to assemble the squares of veneer into a grid. Apply the tape to the best side.*

obviously you'll get more.

After ripping, pass both edges of each sandwich across the jointer, taking 1/32" on each pass. The screws will hold the sandwich together, and the result will be sandwiches exactly 2" wide.

Crosscutting the Veneer into Squares

Here's the beauty of this production method: you can leave the veneers in their protective sandwiches all the way through the process until they are actually cut into perfect 2" squares. The next step is to attach a wide auxiliary fence to your table saw's miter gauge, then place a stop on the fence exactly 2" past the far side of the blade (see *Figure 3*).

Install a fine crosscut blade with at least 60 teeth in the table saw. The sandwich and the auxiliary fence combine to provide zero clearance support for the crosscuts, but a fine blade ensures there's no tearout. Trim the first end off a sandwich (including one set of the screws), then carefully proceed along the sandwich, making another cut every 2".

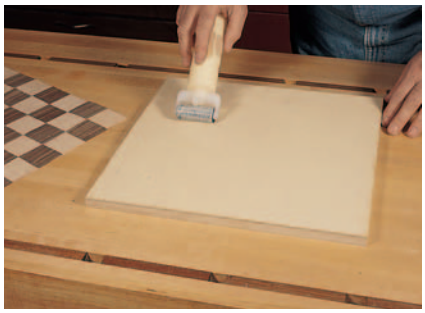


Figure 5: *Apply glue to the substrate only before stacking the assembly in your veneer press. Roll it out for even coverage.*

Taping the Squares Together

Once your all veneer squares are cut to size, lay them out on a tabletop and orient them so all the grain patterns run in the same direction. In the first row, you should have a white square on each player's right. Turn the best side up on each square, then start taping them together with veneer tape as shown in *Figure 4*. This is a special soft paper tape with holes in it to reduce the amount of coverage, and thus the amount of sanding required to remove it. Make sure the lines are straight: a small gap won't hurt if it's necessary to keep everything aligned.

A Shop-built Veneer Press

To apply pressure to the center of the checkerboard as you glue it to the substrate, you'll need to build a veneer press (see the *illustration* on page 119). Inside of two sheets of scrap plywood (called cauls), you'll place the substrate, then the veneer, and on top of that a layer of wax paper.

The press applies pressure in the center first, and then to the outside edges. This is done by means of a series of battens—sticks that are thicker in the middle than at the ends. The easiest way to make them is to simply glue two layers of 7"-long veneer to the center of each piece of stock, as indicated in the *illustration* on page 119.

Apply standard yellow glue with a roller, spreading an even light coat on the substrate only (see *Figure 5*). Carefully lay the taped-up veneer in place, briefly allow it to tack, then assemble the press and apply clamps to the battens.

Milling the V-grooves

After you remove the assembly from the press (give it a day to cure), sand it lightly to remove any residual glue, but don't sand through the veneer.

Install a 45° V-groove bit in your router table and expose 1/16" of it

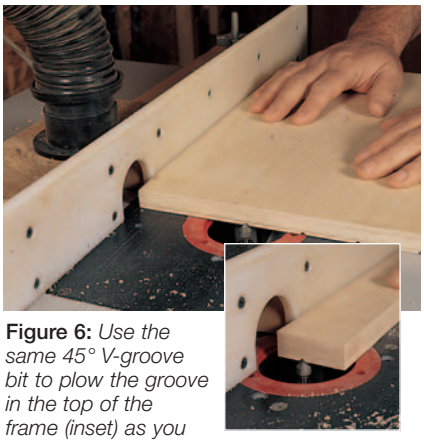
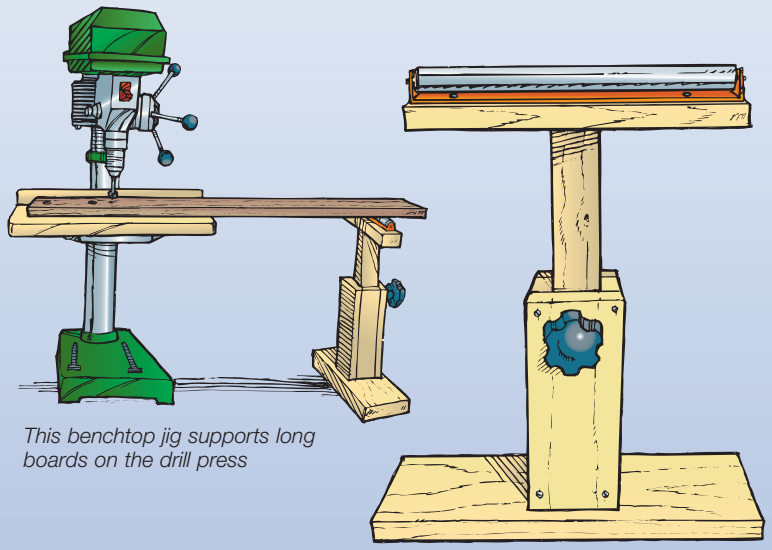


Figure 6: *Use the same 45° V-groove bit to plow the groove in the top of the frame (inset) as you did for the checkerboard grid.*

QuickTip

Project Support

With a roller, a knob with threaded 3/8" stub, a 3/8" insert, some screws and scrap hardwood, you can construct a roller stand to support long projects being drilled on your benchtop drill press. Outfit the base of the support with a square opening about 1/16" larger than the support piece on either side, so the support will easily slide into the base. To provide for varying heights, install a knob with a 1/8" threaded stub that presses a moveable block against the support. Install a threaded metal insert in the front block for the knob's stub.



This benchtop jig supports long boards on the drill press

A threaded insert and a knob control the variable height to match that of the drill press table

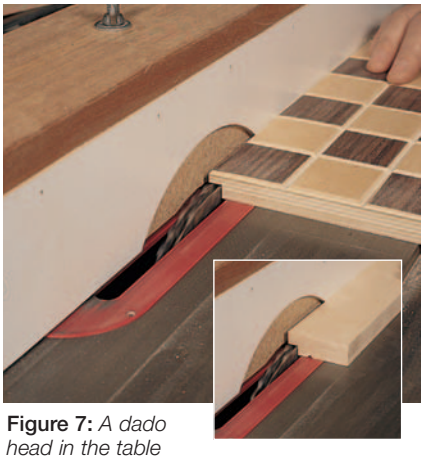


Figure 7: *A dado head in the table saw cuts rabbets in the substrate and the frame (inset).*

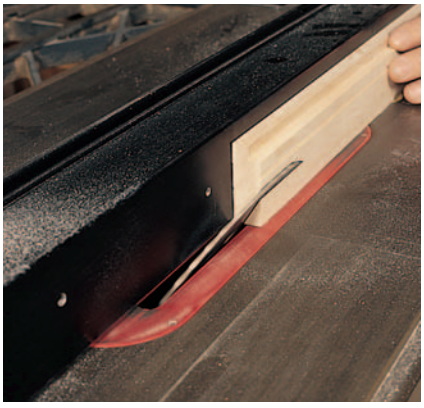


Figure 8: *Once you've completed the V-groove and rabbet on your molding, switch to a fine rip blade for the chamfer cut. Be sure to use a featherboard and push stick for this operation.*

CHECKERED HISTORY

Early in the last century, Sir Gardner Wilkinson discovered a portrayal of King Rameses playing checkers (or draughts) in the ancient temple of Thebes, circa 4000 BC. This verified that the game had preceded chess. Checkers was introduced to Europe from Egypt around 1500 AD.

above the tabletop. Make a pass on some scrap, adjusting the height if necessary. Plow the two center grooves in the board (see *Figure 6*), then move the fence 2" to make the next series of cuts. Plow four grooves this time, rotating the board 90° after each cut. Repeat the process to complete the decorative "V"s. Use the same bit to chamfer the outside top edges of the board, then leave it in the router.

Completing the Molding

After you have ripped the molding to size, plow a groove into its top face using the same V-groove bit you did for the checkerboard's top (see the *inset* for Figure 6). The *Pinup Shop Drawings* provide the exact location. Once that's completed, switch to a straight bit to mill the rabbet on the top of the molding (see *Figure 7*), and a matching rabbet on the bottom edges of the substrate. You can also use a dado blade to cut the substrate rabbet, as shown in *Figure 7*.

Complete the molding by setting your table saw blade to 30° and chamfering the top outside edge (see *Figure 8*). Reset the blade to 90°, then sand the molding and miter it to length, dry-fitting it to the substrate as you do.

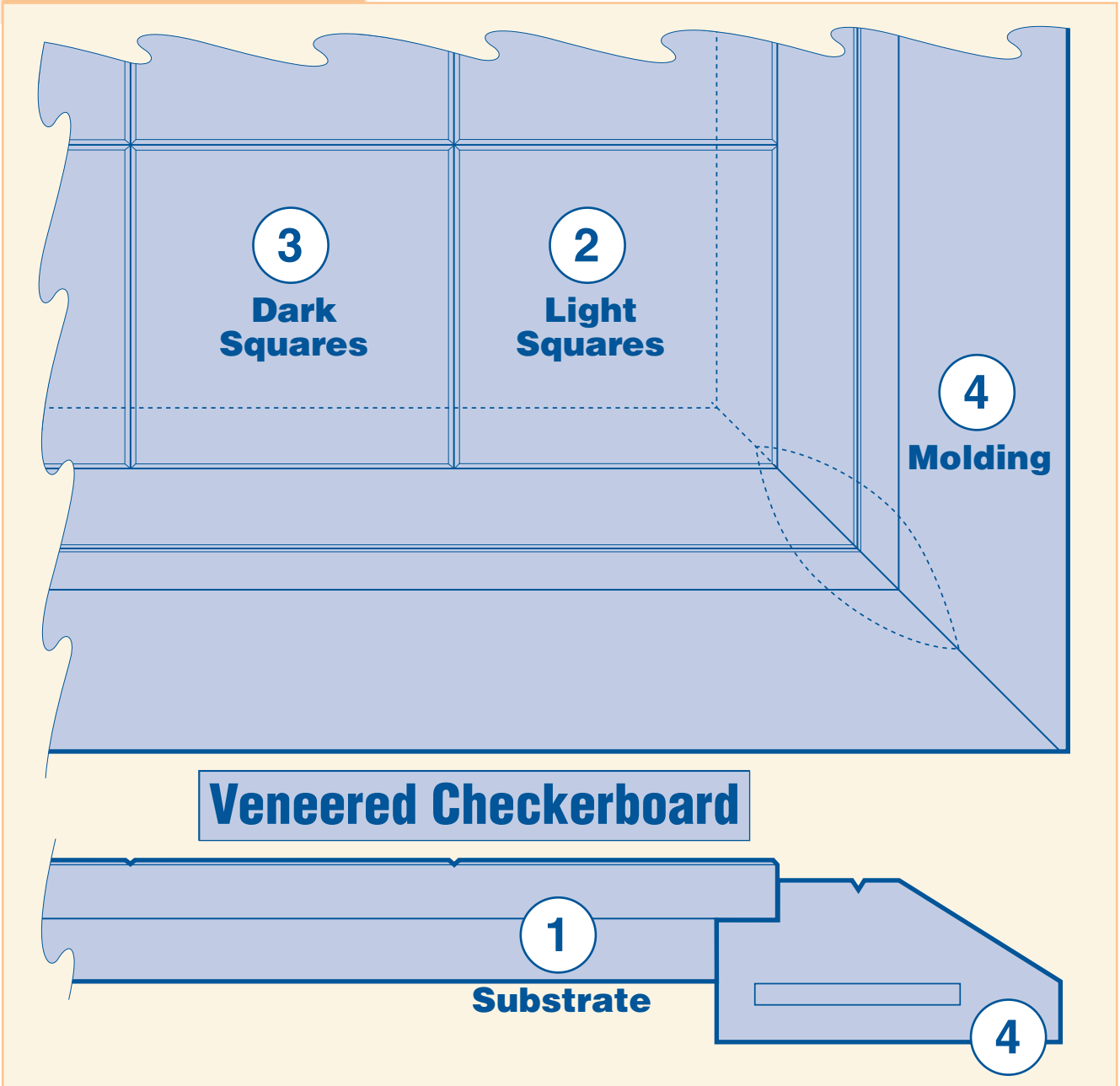
Glue-up and Finishing

If this were a picture you were framing, a coat of glue on the miters and a few clamps are all that would be needed to assemble the frame. However, a checkerboard gets a lot more use than a picture frame, so reinforce the miters with #0 biscuits. Cut the slots, apply the glue and clamp the frame together. Make sure it's both flat and square as you apply pressure with a band clamp (insert the board while clamping, as shown at left, but remove it before the glue sets).

After the glue has cured, apply a coat of glue to the rabbet in the frame and install the checkerboard. Secure it with spring clamps, using pads to protect the veneer. Clean up any glue squeeze-out immediately with a damp rag.

Sand the entire project with 220-grit paper, going easy on the veneer if you're using a power sander. Then apply three coats of clear satin polyurethane finish: it's durable enough to stand up to heavy use. Sand lightly between these coats with 320-grit paper, then hop in the car and go find some big sheets of gift wrapping paper! Chances are, you'll be way ahead of Santa for the next holiday season.

Technical Drawings



MAKING YOUR OWN CHECKERS

Here's a quick and easy way to make a set of checkers to go with your veneered checker board. Use 1½" dowel and a smaller 1" or 1¼"-diameter dowel for the inside piece. Please note that dowels do vary a bit in their actual diameter, so you may need to vary the speed of the drill press to accommodate variations in the individual dowels. (A slower bit speed will increase the hole's diameter… go faster and its smaller.) Start by drilling a hole through a block of wood and slice a kerf intersecting that hole as shown in the *photo* at left. Use a piece of notched plywood to locate your block's hole perfectly centered under the bit. Insert the larger diameter dowel into the block of wood, clamp it tightly in place and, with a very sharp Forstner bit (the same diameter as your smaller dowel), bore out the center of the large dowel, creating a hollow tube. Slide a length of the smaller dowel into the larger dowel and, with the aid of a miter gauge, crosscut disks about 3/8" thick. Use a nickel as a spacer to raise the center of the checker just a bit as you glue it in place. Gently sand the checkers smooth and stain them to achieve two different groups of twelve.