

WOODWORKER'S JOURNAL

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Classic Project



In this plan you'll find:

- Step-by-step construction instruction.
- A complete bill of materials.
- Construction drawings and related photos.
- Tips to help you complete the project and become a better woodworker.

Adirondack Chair



Adirondack Chair

Built by Brent and Connor Kallstrom

When we first saw this rustic Adirondack pine chair we were intrigued with the idea, but we also had some doubts. With the steeply angled back and long curved seat both slatted, how comfortable could the chair be? Well, much to our surprise, it is very comfortable. As a lawn or patio chair, it is something like a chaise lounge, allowing you to stretch out and relax. The wide arms are ideal for that paper plate picnic lunch and a tall glass of lemonade.

Best of all, the chair is easy to make.

Except for the back slats (I), which are cut from wider stock on the table saw using a tapering jig, all the remaining parts are made from 1/2 in. thick common pine boards, and should therefore require no ripping.

Start with the two seat frame members (A). After applying the 18 degree taper to the back bottom, transfer the grid pattern illustrated in the auxiliary side view, and band or saber saw the seat curve. Notch for the lower back frame (G) and radius the back corner as shown. Cut the front

legs (B) to length, and then the back legs (C), using the table saw to establish the 57 degree miter on the top end of the back legs. Cut the two stretchers (D and E) to length, and make the eleven seat slats (F).

Now make the back frames (G and H), as shown in the auxiliary top-view. Use a pencil tied to a string anchored by a nail to mark the respective radii. For part G, the length of the string between the pencil and nail will be 15 1/2 in., while for part H the string length will be 23 in.

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Adirondack Chair

Built by Brent and Gunnar Kallstrom

When we first saw this rustic Adirondack pine chair we were intrigued with the idea, but we also had some doubts. With the steeply angled back and long curved seat both slatted, how comfortable could the chair be? Well, much to our surprise, it is very comfortable. As a lawn or patio chair, it is something like a chaise lounge, allowing you to stretch out and relax. The wide arms are ideal for that paper plate picnic lunch and a tall glass of lemonade.

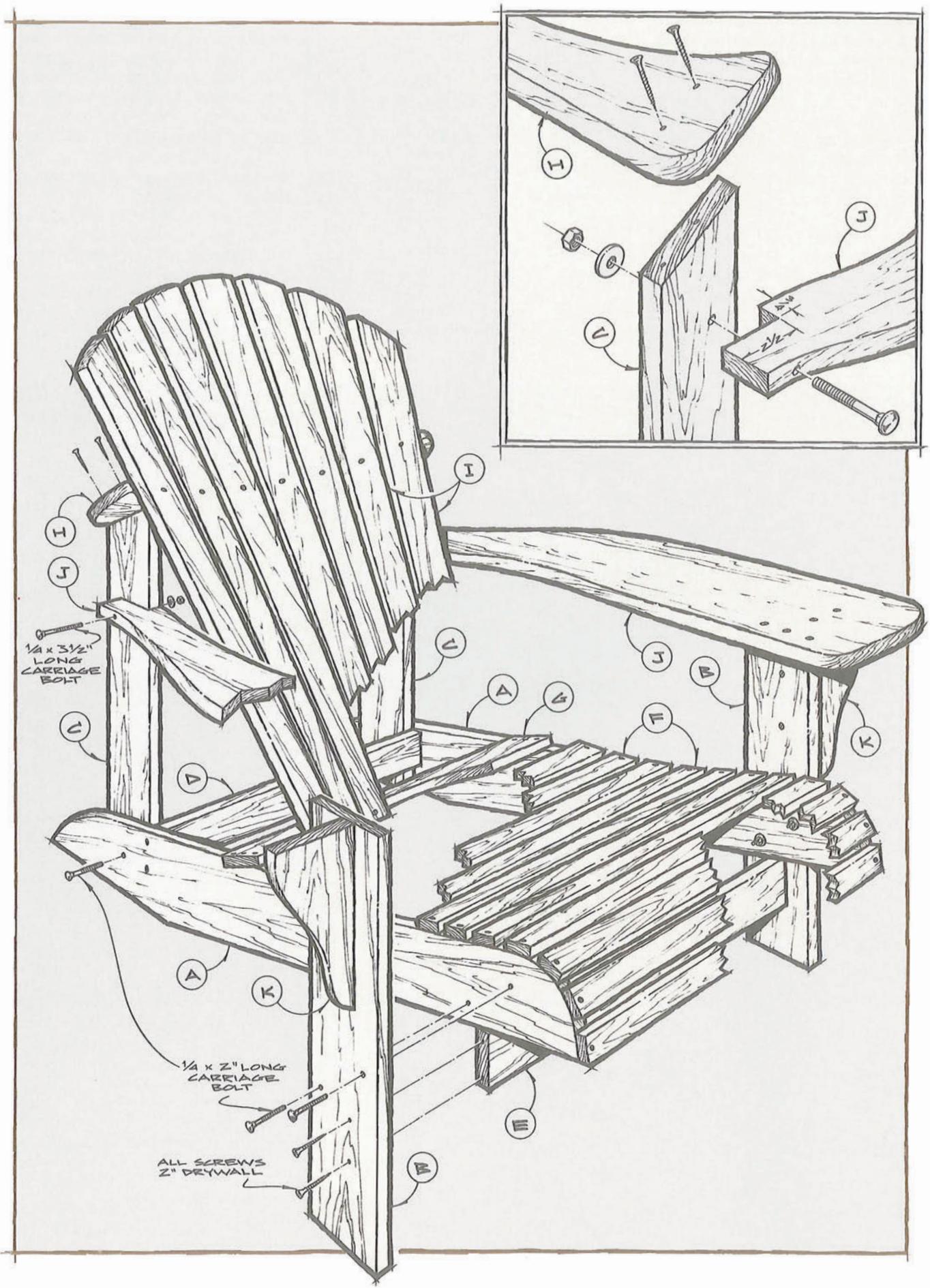
Best of all, the chair is easy to make.

Except for the back slats (I), which are cut from wider stock on the table saw using a tapering jig, all the remaining parts are made from $\frac{3}{4}$ in. thick common pine boards, and should therefore require no ripping.

Start with the two seat frame members (A). After applying the 18 degree taper to the back bottom, transfer the grid pattern illustrated in the auxiliary side view, and band or saber saw the seat curve. Notch for the lower back frame (G) and radius the back corner as shown. Cut the front

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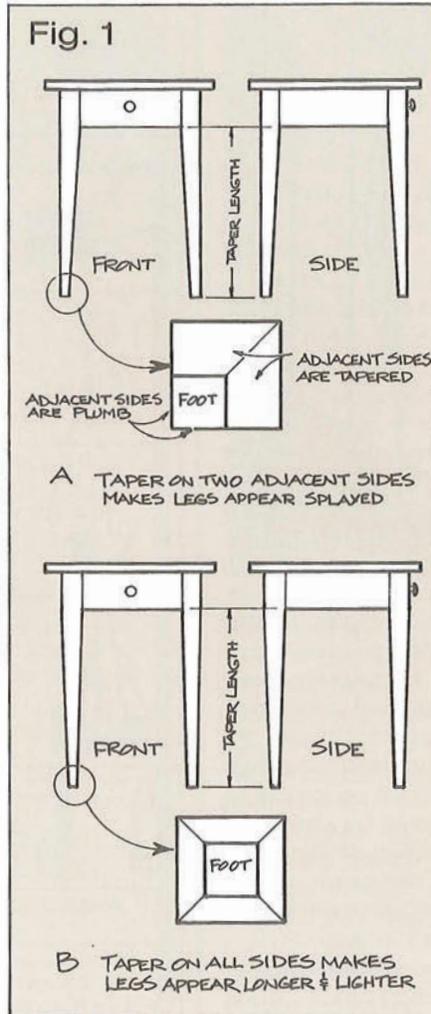
The Beginning Woodworker

Cutting Tapers, Wedges and Other Shapes with the Table Saw

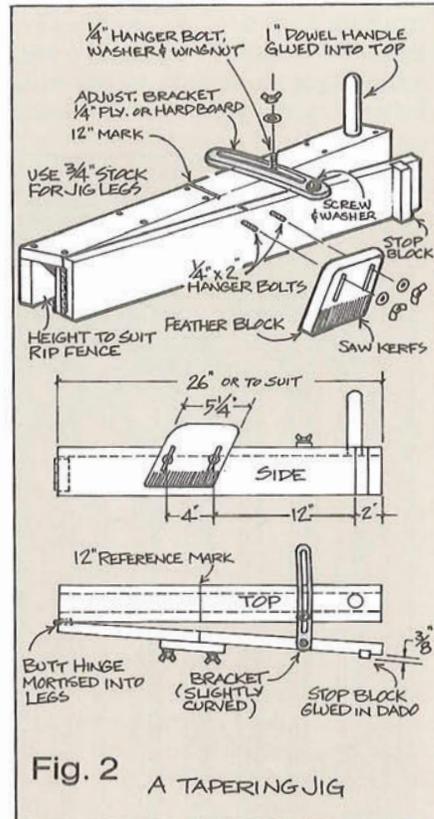
Cutting Tapers

Most of the cutting done with the table saw results in pieces with parallel edges and ends, but it's sometimes necessary to make parts that have tapered sides, or are otherwise irregular in shape. A typical example would be the tapered legs of a table or night stand.

Table legs may be cut with a taper on two adjacent surfaces — usually the in-



side and back, leaving the outside and front surfaces plumb (Fig. 1A). This type of leg is typical of many Shaker designs and displays a taper when viewed from the front, back and sides.



When a light and long-legged effect is desired, table legs are generally tapered on all four sides as shown in Fig. 1B.

Taper cuts made with the table saw are not difficult, but they do require a jig which will maintain contact with the ripping fence while holding the workpiece and feeding it into the blade at the proper angle. Manufactured jigs can be purchased, but they are somewhat expensive and a perfectly satisfactory jig can be made easily as shown in Fig. 2.

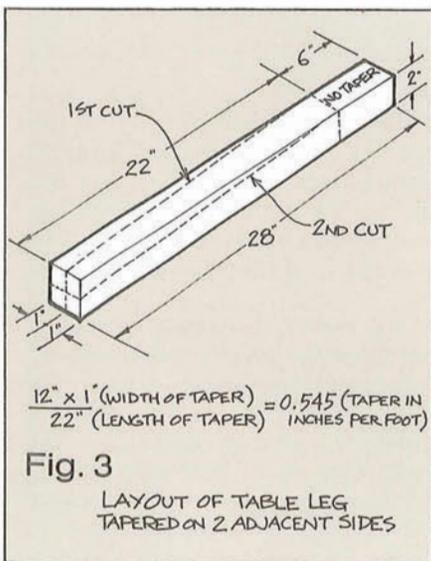
Unlike most taper jigs that bear against the fence, this jig is designed to straddle it for added stability. A handle that keeps the hand far above the blade and an adjustable hold-down are additional safety features that are worth adding. The movable leg and the two parts that ride each side of the ripping fence should be wide enough so a taper on a leg of large section can be cut without the danger of the blade cutting

into the slotted adjustment bracket. As with all shop jigs that will be subject to years of use, you should use straight and seasoned hardwood and give the completed jig a few coats of a sealer such as shellac.

After the jig is assembled, measure exactly 12 in. from the hinge end and scribe a mark, or better still, cut a thin kerf with a dovetail saw across the top of the jig. Tapers are usually calculated in inches per foot, so this mark provides a reference point from which the legs of the jig are spread to get the correct cutting angle.

The formula for determining the taper inches per foot is 12 multiplied by the width of the taper. The product is then divided by the length of the taper. Fig. 3 shows a layout for a table leg which is to be tapered on two adjacent surfaces. Note that the upper 6 in. of this particular leg will remain square so that aprons can be fitted to it. The leg is 2 in. square at the top, and the adjacent sides will be tapered so that the foot will be 1 in. wide.

The total width of the taper in this case is 1 in. (from 2 in. down to 1 in.), and the taper extends for 22 in. Applying the formula and punching in the



numbers on our trusty pocket calculator, we get $\frac{12 \times 1}{22} = .545$ which, for all practical purposes, can be rounded off to $\frac{1}{2}$ in.

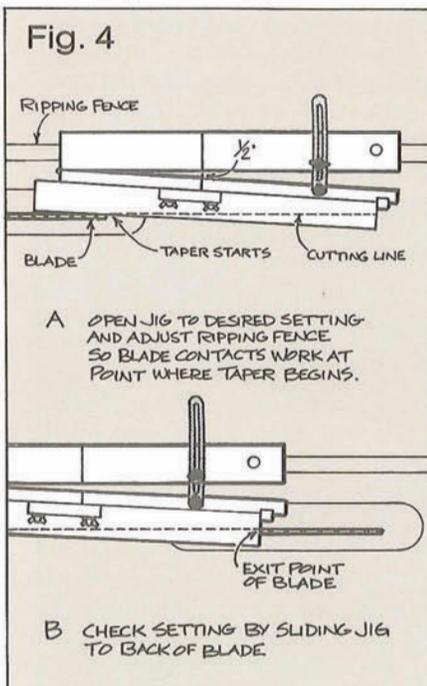
The jig is then set so there is $\frac{1}{2}$ in. between the legs at the 12 in. mark. The leg stock is placed with the end to be tapered butting against the stop block. With the jig in place on the ripping fence, the fence is adjusted so that the blade will make contact with the leg at the point where the taper is to start which, in this case, is 6 in. below the

top of the leg (Fig. 4A).

Before turning on the saw, you can double-check the jig setting by moving the jig to the back side of the blade and bringing the end of the workpiece into contact with the blade to see clearly the point where the blade will exit at the completion of the cut (Fig. 4B).

Adjust the feather block hold-down to bear lightly against the workpiece. Turn on the saw and begin feeding the workpiece into the blade using a notched stick to apply pressure against the outboard side of the workpiece to hold it firmly against the jig. After the taper cut has been made, the leg is rotated 90 degrees and, without changing the setting, the jig is used to cut the taper on an adjacent side. The process is repeated for the remaining legs.

When opposite sides of a workpiece must be tapered, the jig is set for the



amount of taper per foot of one side and the cut is made on all the workpieces. The jig is then opened up to double the original setting and the workpieces are rotated 180 degrees for the second cut.

To taper legs equally on all four sides, set the jig to taper one side and make that cut, then without changing the setting, cut a taper on either adjacent side. Repeat this with the remaining legs, then open the jig to double the setting, readjust the fence and taper the remaining sides of all legs. The basic rule to remember is: use one setting for tapering adjacent surfaces and double that setting for tapering opposite sur-

(continued on next page)

faces.

Most furniture plans give the dimensions of a part at the points where the taper begins and ends, and this information plus the length of the taper is all you need to determine the taper per foot. Occasionally, a plan may show the taper of a part in degrees, in which case you can measure up $7\frac{1}{8}$ in. from the hinge end of the jig and make another mark across both legs. For every degree of taper required, spread the legs $\frac{1}{8}$ in. at this second reference point.

The tapering jig can also be used with a dado cutter to run grooves on a bias on a workpiece that has parallel edges. By measuring the angle between the groove and the workpiece edge on a drawing, the jig can then be set using the $7\frac{1}{8}$ in. reference point.

Cutting Wedges

The tapering jig can be used for cutting large wedges, but it's sometimes necessary to cut small wedges for locking parts such as table trestles and stretchers together. When a number of small wedges of the same size are need-

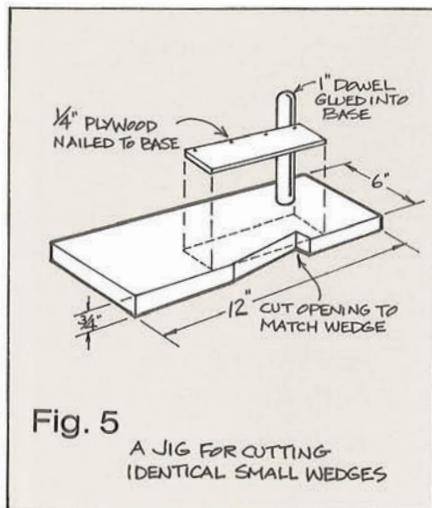


Fig. 5
A JIG FOR CUTTING IDENTICAL SMALL WEDGES

ed, the jig shown in Fig. 5 will do the job quickly and with safety.

To make the jig, a notch the same size as the wedge is cut from a piece of plywood. This base should be wide enough to keep the pushing hand a safe distance from the blade. A dowel handle also helps in this respect. A small piece of thin plywood tacked over the top of the wedge opening will keep the cut wedges from flying out as the cut is completed.

In use, the ripping fence is set so the blade just grazes the outside of the jig. The stock is inserted into the notch with the grain direction as shown, and the jig is moved along the fence while

the stock is held firmly against the jig until the cut is completed (Fig. 6). Cut as many wedges as needed by turning the stock over on the opposite face for each cut.

Cutting Irregular Shapes

Shapes such as trapeziums (four-sided with all sides out of parallel), rhombi (diamond shapes) and polygons can be a problem to cut with the table saw, especially if they are small. Usually one or two cuts can be made utilizing either the fence or miter

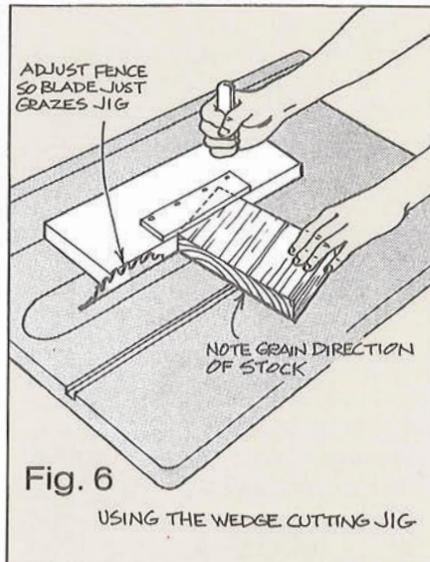
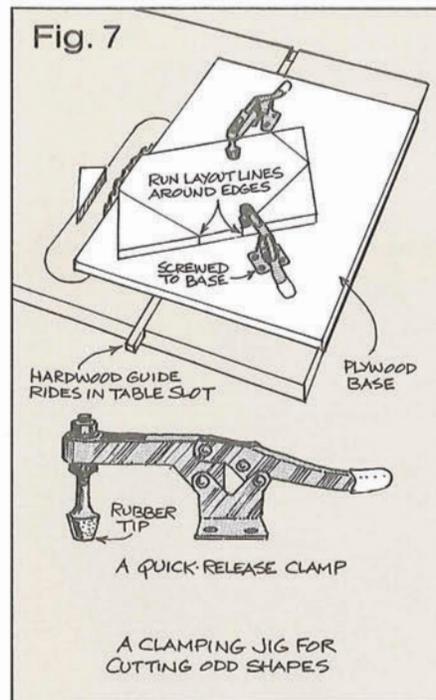


Fig. 6
USING THE WEDGE CUTTING JIG

gauge, but then the workpiece probably cannot be held securely for the remaining cuts. If only a few irregular parts are needed, it's best to lay out the shape on the stock and cut it slightly oversize with a handsaw. Then you can plane and sand the edges right to the line.

If you make a lot of puzzles, toys or other items that require strange shapes, it will be worthwhile to construct a jig such as shown in Fig. 7. This will be a big help in cutting many different shapes with safety and accuracy. It consists of a $\frac{1}{2}$ in. plywood base with a hardwood strip to fit in the table slot. Cut the base wide enough to extend from the left edge of the table to slightly beyond the cutting line of the blade. After the guide strip is glued and screwed in place, make a pass through the blade to trim the edge of the base exactly flush with and square to the blade.

Quick release toggle clamps are screwed to the base in position where they will be able to hold the stock for most, if not all of the cuts without repositioning. These clamps are extremely useful for many jig applica-



tions and well worth the cost of about \$25.00 for a pair. Get the kind that exert vertical pressure with a holding force of 300 or more pounds. Not all mail order suppliers carry them but one firm that does is Woodworker's Supply of New Mexico, 5604 Alameda NE, Albuquerque, NM 87113.

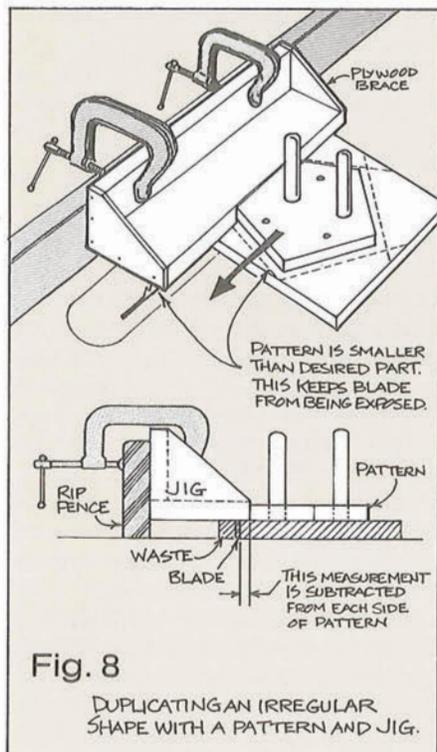


Fig. 8

DUPLICATING AN IRREGULAR SHAPE WITH A PATTERN AND JIG.

To use the clamp jig, you must lay out the shape on the stock with lines dark enough to be seen easily. It's a big help if you extend the lines around the edges of the stock as shown. Align a

cutting line exactly flush with the edge of the jig and engage the clamps. After the cut is made, loosen the clamps and rotate the workpiece for the remaining cuts.

If you need to make many identical parts and screw holes in them are not objectionable, a pattern cutting jig can be used (Fig. 8). This jig consists of an L-shaped auxiliary fence which is clamped to the ripping fence at a height above the table equal to the thickness of the workpiece. The edge of this jig serves as a guide for a pattern which is screwed to the workpiece. In use, the workpiece slides under the guide and is cut to the same shape as the pattern.

If the pattern is cut to the same size as the desired part, the guide must be set exactly flush with the outer teeth of the blade. Since the blade guard cannot be used, a safer approach is to cut the pattern $\frac{1}{2}$ in. smaller all around and set the blade back $\frac{1}{2}$ in. in from the guide edge.

The jig should extend out far enough from the fence to allow plenty of room for waste pieces so they will not get jammed between the fence and blade. Still, it's best to remove these often. The stock should be fed slowly, with firm contact being maintained between the pattern and the guide. That's why two sturdy dowel handles are fastened to the pattern. If the pattern is skewed slightly during the cut, a kickback will occur. For this reason, the jig should not be used with small patterns or those which have a short side that will not provide a good bearing surface against the guide.

While the table saw is indeed one of the most versatile shop machines, it does have its limits. It's possible to cut discs with a pivot jig, and gentle convex and concave curves can be cut using shaped fences, but why bother if a band saw or even a saber saw is available.

For safety's sake, always use the blade guard if possible when cutting any parts that do not have parallel sides and ends. Use jigs with push handles located well above and to the side of the blade, and always secure the workpiece so that it will feed into the blade without twisting.

We hope this feature has provided an introduction to tapering, and some of the many related and specialized operations that are possible with the table saw. As a first tapering project, you may wish to try the veneered end table (page 34), which features tapered legs.

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Thank you again for your purchase, and happy woodworking!

Matt Becker
Internet Production Coordinator