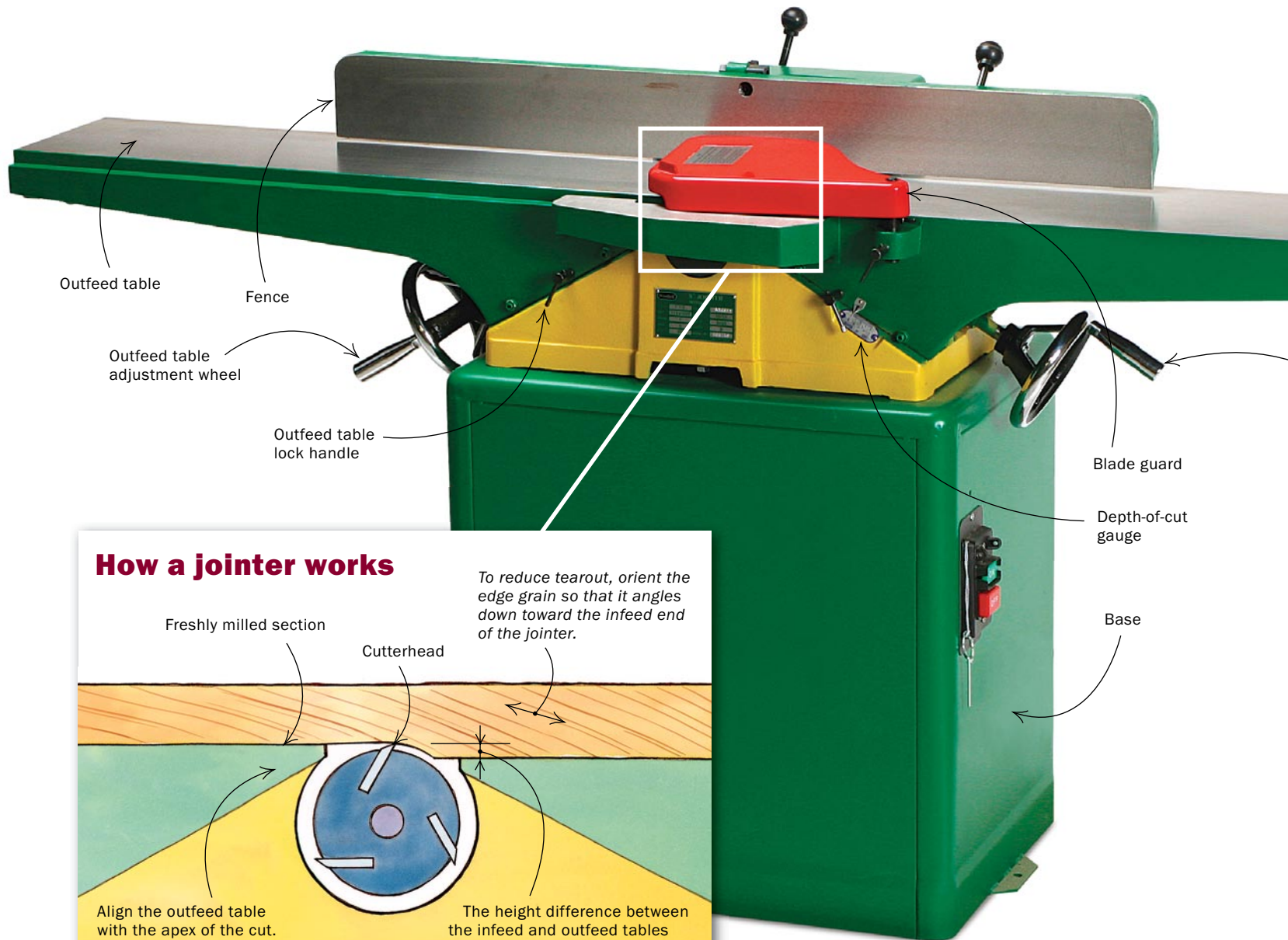


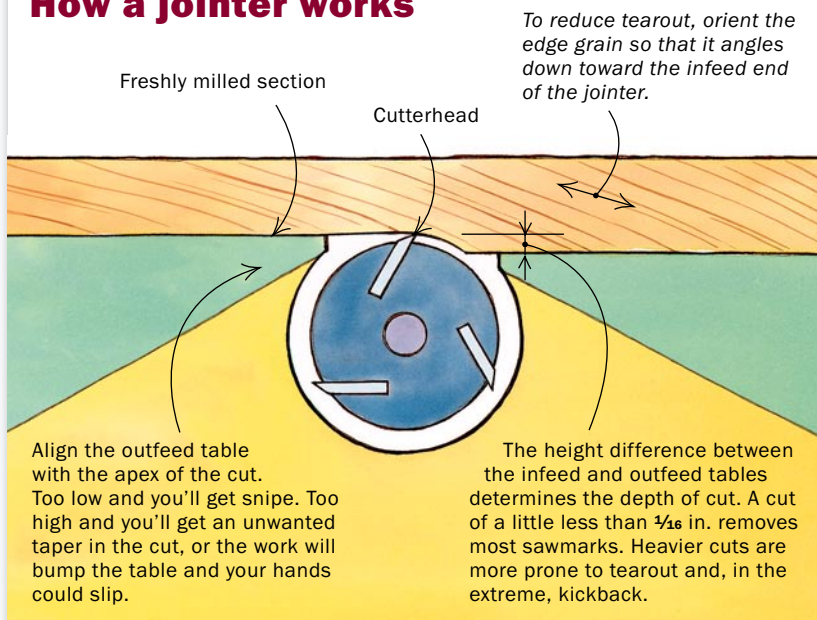
# Get the Most From Your Jointer

Shop mainstay makes flat boards—and much more

BY J. SPEETJENS



## How a jointer works



The process of cutting accurate, tight-fitting joinery relies on beginning with straight, flat stock. It is the foundation of quality work. That's why the jointer—a machine designed to straighten and flatten rough boards—is central to everything I do as a woodworker.

A jointer consists of a horizontal cutterhead mounted between two dead-flat, cast-iron tables that sit end to end. A board pushed lengthwise across the machine passes over the cutterhead as it moves from one table to the other. The outfeed table is set to match the height of the knives, with the infeed side slightly lower. This height difference determines the depth of cut. The machine quickly creates a flat face on a rough board or a straight edge that is square to that flat face, both crucial steps in milling cupped, bowed, or twisted stock to be flat, straight, and square.

But the jointer handles more than these core operations. It offers a convenient alternative to other tools that need special templates, jigs, or other lengthy setups to

taper legs, fit doors, and cut long chamfers, bevels, and roundovers. Here's how to get the most from this pivotal machine.

### Follow the fundamentals for clean, safe cuts

There are some basic guidelines for operating the jointer safely and for getting high-quality results.

For safety, keep the guard in place and use a push pad and a push stick whenever possible to keep your fingers away from the cutterhead. I use a push pad and a push stick for all face-jointing operations and a push stick for all edge cuts on boards less than 3 in. wide. The minimum safe length that can be cut on most jointers is 12 in. Use a roller stand or other support for long or heavy boards.

For most material, orient the stock so that the grain angles down toward the infeed side of the cutterhead. For woods with interlaced or curly grain, make light test cuts to determine the best feed direction.

Concentrate on applying light downward pressure to the surface of the board as you feed it over the cutterhead at a moderate, consistent pace. Apply only enough pres-

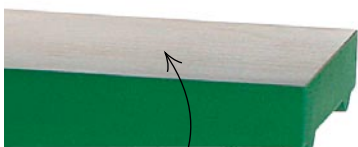
sure to prevent the board from bouncing on the cutter. If you deflect the bow or cup during the cut, it will remain afterward.

Feeding stock into the cutterhead too quickly will cause tearout or a wavy surface. But if you go too slowly, you risk dulling the blades or burning the wood. Stopping in the middle of a cut will leave a burnished dimple or a burn mark.

### Face-jointing flattens cupped, bowed, or twisted stock

After rough-cutting stock slightly oversize, the next step in creating dimensioned lumber is face-jointing. The goal is a flat surface that will ride on the planer bed when the stock is thickened. For most boards, make your first jointer pass with the bow or cup facing down.

To face-joint boards shorter than 4 ft., stand near the cutterhead and use your left hand to apply light downward pressure with a push pad near the leading end of the stock. Hook a push stick over the trailing edge if you can reach it comfortably. If not, start the cut by feeding the board with your right hand and then

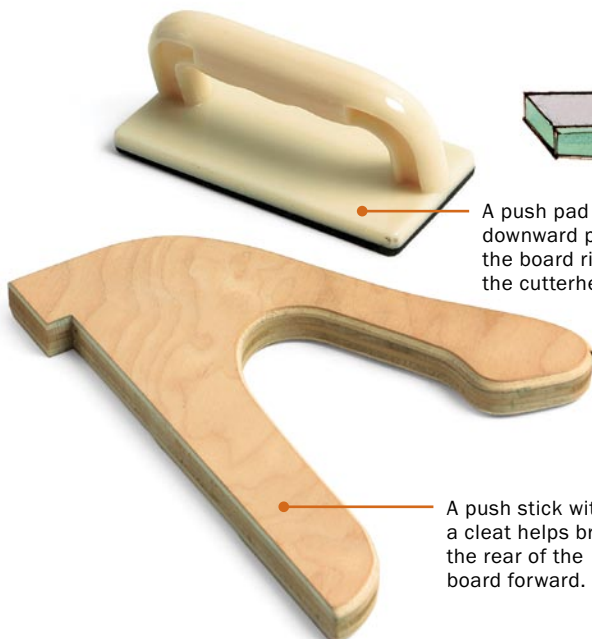


Infeed table

Infeed table adjustment wheel

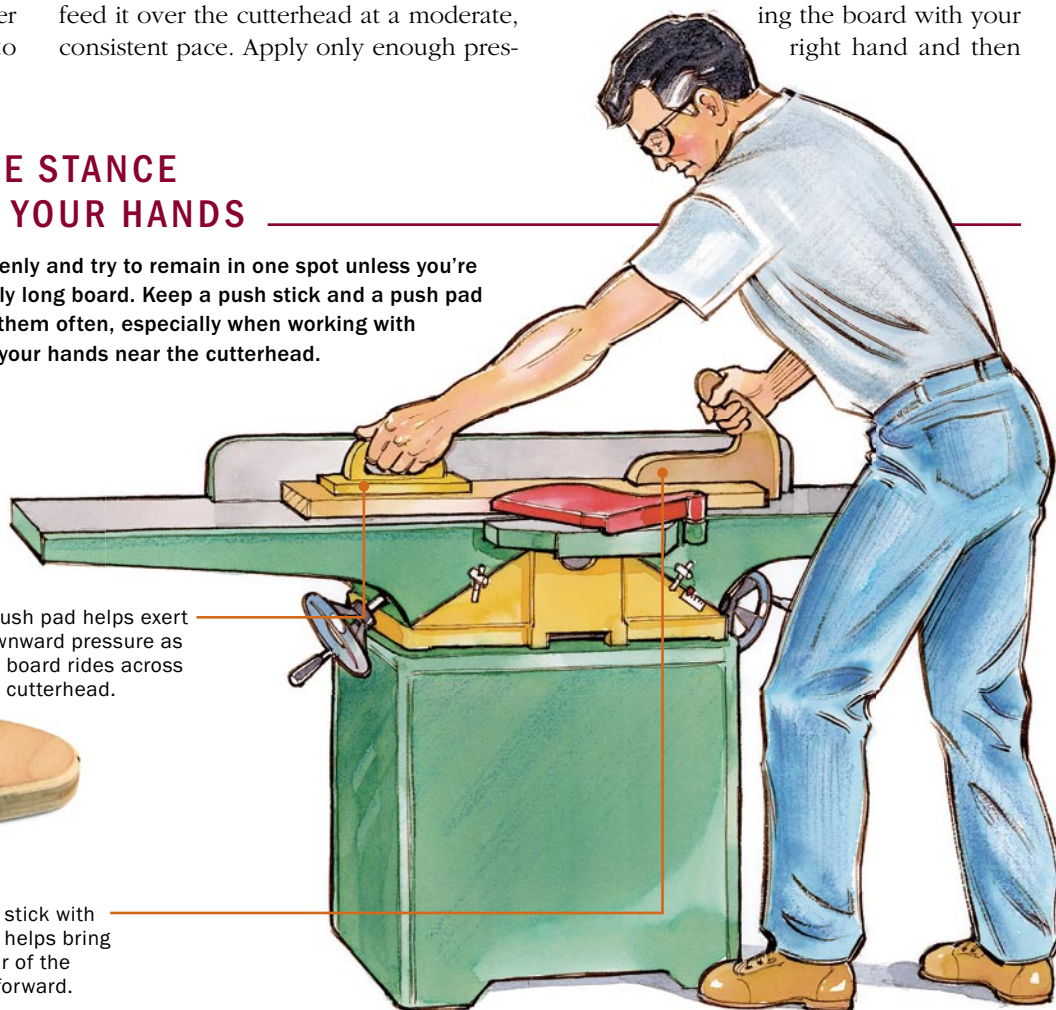
## KEEP A STABLE STANCE AND PROTECT YOUR HANDS

Distribute your weight evenly and try to remain in one spot unless you're working with an especially long board. Keep a push stick and a push pad near the jointer and use them often, especially when working with small stock that will put your hands near the cutterhead.



A push pad helps exert downward pressure as the board rides across the cutterhead.

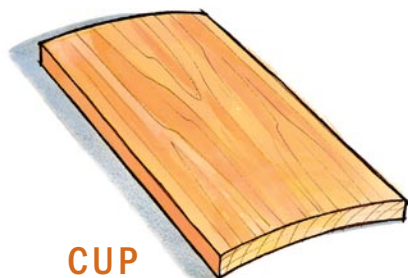
A push stick with a cleat helps bring the rear of the board forward.





# Jointer basics: flattening the face and squaring an edge

The jointer plays two crucial roles in squaring stock. After you cut stock to rough dimensions, use the jointer to flatten one face prior to thickness planing. Afterward, use the jointer again to straighten one edge before ripping the board to final width.



## CUP

Cup refers to the curve across the width of a board and is most pronounced in flatsawn lumber. You can minimize waste in jointing by ripping rough stock beforehand into the narrower widths you'll use in your project.



**Flatten a cupped board.** Mill with the concave side facing the cutterhead so that the board rests on the two "lips" of the cup. Don't press down hard in the middle. Exert just enough pressure to keep the stock from chattering as it crosses the cutterhead.



**The first pass shows results.** The edges that contacted the cutterhead are flat. Subsequent passes will widen this area until the entire board has been surfaced.



## BOW

Bow is the curvature of a board's face along its length. You can reduce bow in a piece of long stock—and minimize the waste in jointing—by cross-cutting it into shorter lengths.



**Bow, like cup, should face the cutterhead.** To correct a bowed board, apply light pressure at the leading and trailing ends of the board. Do not press down in the bowed middle.



**The cutterhead joints the ends of the board first.** On subsequent passes, the cutter will take more of the stock.

switch to a push stick before your right hand gets near the cutter. Keep the push pad in your left hand positioned over the first few inches of the outfeed table.

For longer boards, I stand at the trailing end to start. I feed the cut with my right hand, switching to the push stick as the cut progresses. I keep the push pad in my left hand as far forward as I can reach comfortably, exerting light downward pressure.

For pieces that are bowed and cupped on opposite faces, make the first pass with the bowed face down. Use the push pad to control rocking, removing the most material from the middle of the board's width.

Minor twists are not difficult to deal with, but large twists—if improperly identified and managed—can prevent you from getting the maximum thickness out of a piece. Place the board on a clean, flat surface. With three corners touching the table, gauge the height of the elevated corner.

For twist of  $\frac{1}{8}$  in. or less, use the push pad to rock the board so that two diagonal corners are touching the infeed table and the other two corners are elevated equally. Place the push stick at the rear corner that is touching the table to avoid deflecting the raised corners. Reassess the twist after the first pass.

For boards with larger twist, place a stack of small veneer shims, about  $\frac{3}{4}$  in. by 1 in., under the high corner at the board's trailing edge so that the two high corners are elevated equally. Joint as if you had a minor twist. Make sure that you don't deflect the raised corner on the leading edge. One pass should reduce the twist enough that shims are not needed for the remaining passes.

## Edge-jointing straightens crooked boards

After you've jointed one face flat and used the planer to make the opposite face





## TWIST

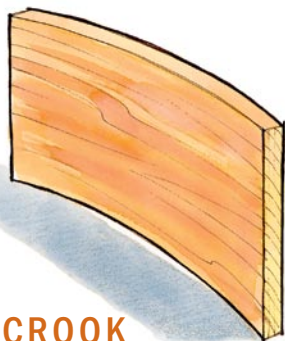
Twist occurs where the two long edges of a board are bowed to varying degrees and so are not parallel. To maximize yield when jointing twisted stock, keep the board as level as possible as it rides its two low corners.



**A little shimming can help.** Mill large amounts of twist out of a board by shimming the high corner in back to about the same height as the opposite high corner.



**The first pass yields two starting points.** The low corners touching the table are surfaced first. On subsequent passes, apply pressure on these corners to keep the board level and steady.



## CROOK

Edge-jointing straightens a board's edge by removing crook, a concave curve along an edge. The process also makes the edge square to one face. You can joint an edge before rough-cutting stock to create a reference surface for the saw's rip fence.

parallel, the next milling step is to joint an edge to make it square with the two faces. Most of the time, I joint the crooked or concave edge.

For safety, I edge-joint stock that's between 1½ in. and 3 in. wide using the tip of my thumb and the side of the index finger of my left hand to guide the board and keep it against the fence while feeding the stock with a push stick in my right hand.

For wider boards, I feed and guide the cut freehand, but I make sure to hook a few fingers or a thumb over the top of the jointer's fence to prevent my hands from slipping toward the cutter.



**Edge-joint with the bowed or crooked side down.** Use a push stick at the back edge for any stock less than 3 in. wide, along with a push pad in front for anything narrower than 1½ in.



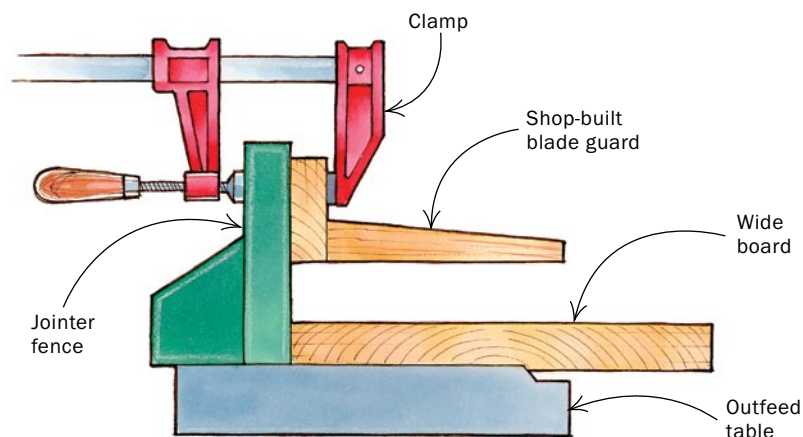
# Beyond the basics: wide boards, tapers, and profiles

## FLATTENING WIDE BOARDS

Face-jointing boards wider than your cutterhead requires removal of the blade guard. Create a new blade guard before attempting this.



**1 The task is half finished.** An initial pass surfaces one side of the board, but leaves the other rough. If the rough strip is narrow, clean it up with a handplane.



**2 Joint the other side.** The finished surface may still be somewhat uneven and require cleaning up with a handplane before it is ready for the thickness planer.



narrower than 1½ in., I use both a push pad and a push stick.

The most efficient way to straighten a badly crooked board is with a series of cuts that start at the end and go to the point where the edge of the board clears the cutter; then reverse the board and joint from the other end. Do this until most of the crook is removed. Finish up with at least one pass that runs the length of the board.

After one edge has been jointed, you can straighten the second edge with a ripping cut on the tablesaw.

### Make tapered cuts to shape or fit parts

Among other things, tapered cuts can be used to straighten convex surfaces, fit doors and drawer faces to their openings, or mill a tapered leg. Make a tapered cut by lowering the work onto the cutters while the

machine is running. Carefully pull the blade guard back with your left hand or push it aside with the end of the board. Place the board's leading end about ½ in. over the near edge of the outfeed table and feed the cut as normal. The amount of the taper is equal to the depth of the cut. Depth settings of ⅛ in. or less reduce the risk of tearout. Multiple cuts make larger tapers.

The type of taper and the proportions of the piece to be tapered will determine the best way to lower the work onto the cutter. To mill a taper on the face of a board, on the edge of a long, narrow board, or on a board that will receive only a partial taper, place the leading end onto the outfeed table. Lower the near end of the board onto the infeed table.

To taper the edge of wide boards or cabinet doors, set the trailing edge on the

infeed table and lower the leading edge carefully onto the outfeed table. Note that even a properly adjusted jointer will leave a small divot where the work was lowered onto the cutter. If the divot is significant, clean it up with a light pass over the entire length afterward.

You also can use tapered cuts to straighten the back side of a board that is bowed or to straighten the convex edge of a crooked board. Rock the board backward with the push stick, elevating the front edge above the cutter and onto the outfeed table. Ease up on the downward pressure on the push stick and lower the board onto the cutter. Feed the rest of the cut as normal. □

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## TAPERING A LEG

For a partial taper, place the leading end on the outfeed table and gently lower the piece onto the infeed side before passing the work over the cutter.



**Tapering a leg.** Begin the taper by resting the workpiece on the outfeed table and lowering it onto the cutterhead.



**Take several passes.** Begin each pass in the same way. Soon enough, the taper becomes pronounced.

## CUSTOM PROFILES

Tilt the fence to easily chamfer the edges of a board along its length or to mill bevels up to 45°. Combine bevels to cut simple profiles.

### BEVELING NARROW STOCK

**Tilt the fence back to bevel narrow stock.** This allows clear access with push sticks and push pads. Take care—very narrow boards tend to slip away from the fence.



### BEVELING WIDE BOARDS

**Tilt forward to bevel wider boards.** In this way, the stock is less likely to be levered away from the cutterhead as you make the pass.



### BULLNOSE PROFILE

**Only a few passes are needed to create this bullnose.** Adjust the fence back and forth as needed to cut the various angles that are required. The multifaceted surface can then be sanded or scraped smooth.

