

Chisels, and How to Pare

Master the grip and stance before tackling joinery

by Ian J. Kirby

The first step in learning to work wood by hand is mastering the three basic cutting tools: the chisel, the plane and the saw. Each tool requires its own hand grip and body stance for the most effective transmission of power to the cutting edge. The best way to acquire skill is to practice using each tool until the proper techniques become second nature. In this article, I'll illustrate these concepts by showing how to use woodworking chisels.

I cannot overemphasize the importance of practicing fundamental tool skills before you attempt to make joints, let alone whole pieces of furniture. I constantly find beginning woodworkers who are struggling to learn some vital technique in the course of making furniture, with no attempt to develop and perfect their skills before the main event. The result will at best be a nondescript article of furniture that prominently features the scars of its maker's struggle, and at worst it will be failure and disillusionment. Either way, it seems futile. On the other hand, once you have learned how to use the tools, making joints is a simple procedural application of those skills; making furniture is, in large part, the application of jointmaking skills. No manipulative skill is acquired without practice. The potter, the dentist, the athlete—indeed, anyone wanting motor skills—must practice, and practice hard. The woodworker is not exempt.

Fortunately, all of woodworking can be broken down neatly into a series of skill-development processes. In particular, total control of the chisel can and should be learned by diligently practicing horizontal and vertical paring, nothing else. The photo essay on pp. 72-75, therefore, proceeds first through horizontal paring, then vertical paring, and then shows the application of these techniques (plus sawing) to the through dovetail joint. I can only urge you to accept that it will be worth your while to practice with the chisel until you have mastered it before you spoil any good wood.

Central to becoming skilled with the chisel is learning the proper hand grip, and from that point on, going right through the body to the soles of the feet, learning the relationship of each part of the anatomy to the next part. After the grip, we must be concerned with the forearms and upper arms including the shoulders, next the trunk in relationship to the arms, then the pelvic girdle and legs, and finally the feet. To achieve just what's wanted at the cutting edge, the whole body must participate and be in accord. I find that most beginners are conscious of their relationship with the tool up to the shoulder, where their awareness seems to end.

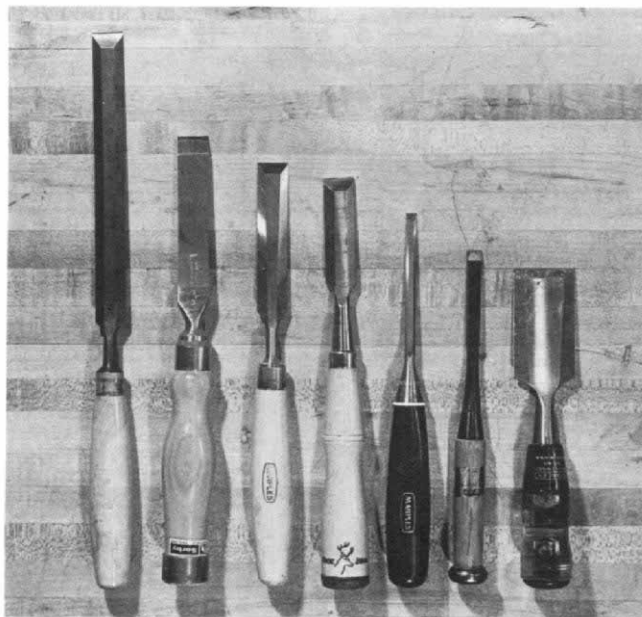
Since there are two main ways of paring with the chisel, there are two different grips and stances to learn. Note that in either mode, both hands are kept behind the cutting edge. There are not too many universal rules in woodworking, but

this has to be one of them: when using a chisel, power it with one hand, guide it with the other, and avoid a nasty cut by keeping both hands behind the cutting edge. It goes without saying that your chisels must be perfectly sharp.

Although many different chisels are available on the market, when you are deciding which to buy, there are only a few factors to consider. In terms of blade section, there are just two types: the square-edged or firmer chisel and the bevel-edged chisel. The firmer can do heavier work, and can even be pressed into service for mortising. The bevel-edged chisel (there is no standard blade thickness or bevel angle) can get into such tight places as pin sockets between dovetails and is most suitable for furniture-making.

There are three common blade lengths: patternmaker's (8 in. to 10 in.), bench (5 in. to 7 in.) and carpenter's or butt (3 in. to 4 in.). Patternmakers need a long chisel to reach into deep, awkward places. I prefer the long blade's feel and balance, and it seems easier to control. Patternmaker's chisels are nearly always bevel-edged, and are also made with a cranked handle for paring far out on a flat surface. The bench chisel is commonest amongst furniture-makers, whereas the butt chisel, a phenomenon of American mass manufacture, is the least useful.

For handles, the most prized commercial wood is boxwood; the usual alternatives are ash and beech. The handle is generally driven onto a tang that has been formed atop the metal



Woodworking chisels have evolved into a few basic types. From left, patternmaker's chisel, firmer, standard bevel-edged chisel with boxwood handle (the choice of many furniture-makers), socket bench chisel, Blue Chip, Japanese and butt.

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blade, and seats against a bolster formed between tang and blade. Firmets, in order to withstand pounding, generally have a thick leather washer between bolster and handle, plus metal ferrules top and bottom. Paring chisels, which are not to be struck with a mallet, usually have a single ferrule (at the bottom of the handle) and no washer. A third style, called a socket chisel, in which a tapered cylinder turned onto the handle fits a conical socket in the end of the blade, can also absorb heavy pounding. Handles made of high-impact plastic are quite as good as wood. They are generally formed around the tang and have no ferrule. Even so, they can be driven with a mallet. Once there were numerous handle shapes, and chisels were named after them. Today manufacturers seem to have settled on relatively simple turned forms for both wood and plastic, although recently plastic handles have been injection-molded into new shapes as a result of research into effective grips for maximum control. The Marples Blue Chip, a rounded square in section, is one example.

The Japanese chisels now available generally follow the form of Western chisels, with one exception. The back of the

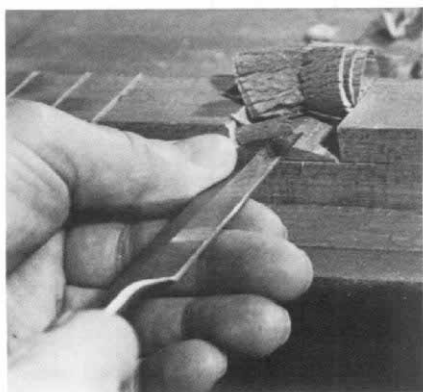
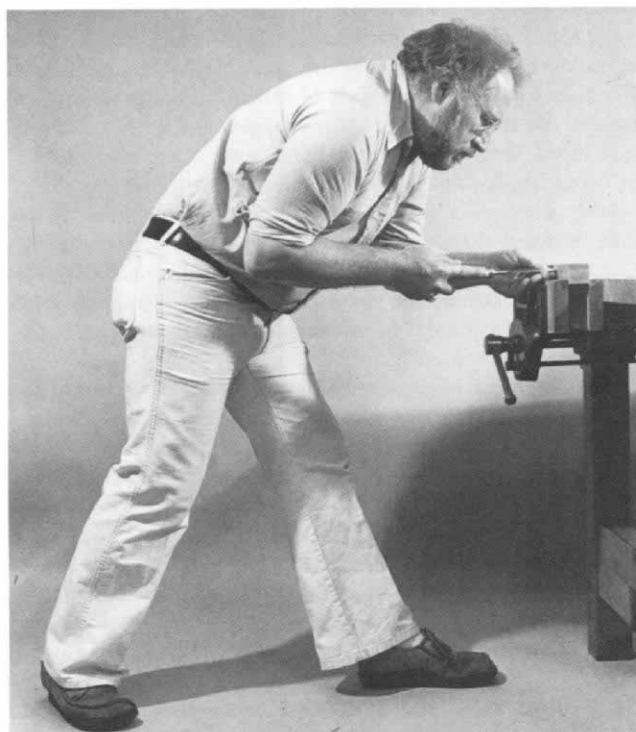
blade is hollowed out, except at the cutting edge. This makes stoning the back of the blade a little easier.

When buying chisels, you get what you pay for. I'm inclined to stay with the well-known manufacturers because they use steel of appropriate and reliable quality. On a tight budget, I'd start with bevel-edged bench chisels in widths of $\frac{1}{4}$ in., $\frac{3}{8}$ in. and $\frac{1}{2}$ in., filling out the set as need arises and finances permit. Since plastic handles are molded in place, they are usually in line with the blade from top and side views. This is not always so with wooden handles, so be sure to check. Also, examine the back face (flat side). Except for Japanese chisels, it should come ground absolutely flat, although it is often made convex by overly enthusiastic finishing at the foundry. Having to flatten the back can cost you hours of work at the sharpening stone. To avoid slicing the left-hand index finger, which guides the chisel, always take the sharp edges off the length of the blade. Place the chisel at 45° to its back on a medium stone and give it about ten light strokes. As with any tool, buy the best you can afford. One good chisel is better than two poor ones.

Horizontal paring

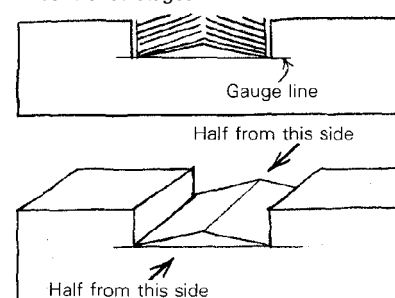


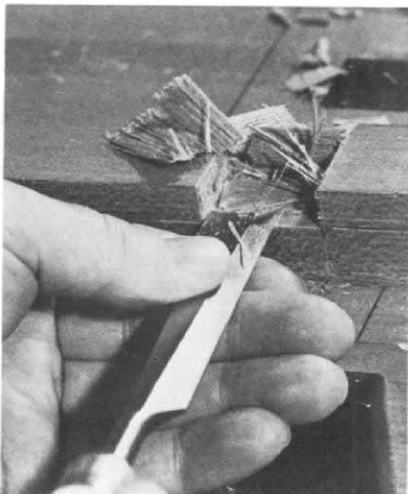
To pare horizontally, put the chisel in the palm of your right hand, index finger extended, photo above. (Kirby is right-handed; left-handers will have to reverse.) Line up blade, finger and forearm—this is the line that transmits the body's power. Rest the back of the chisel blade on your left forefinger, thumb on top, back of hand toward workpiece. This hand guides, and brakes, the cut. Now stand at the vise, take a step back with your right foot, and turn the foot so it's almost parallel to the bench edge, photo right. Bend at the waist and lock your right arm so your elbow is on or near your hip. Now push off with your right foot so the whole movement comes from your lower body and legs—your arms and trunk stay locked. You'll quickly find the most comfortable link of arms and body to suit your physique.



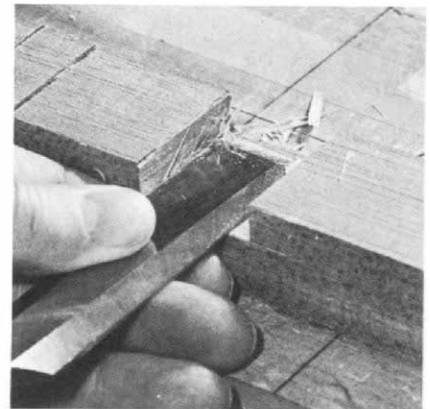
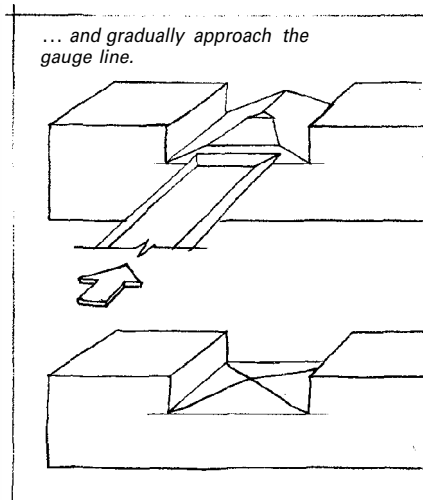
Horizontal paring is done on endgrain when cleaning out dovetails (p. 75, step 7), and on cross grain when cleaning dados and cross-laps. In either case, the wood fibers must first have been severed by sawcuts down to a gauge line. Then the waste comes out in stages, half from one side, half with the work turned around. The pattern of paring is the same, cross grain or end grain. To practice, mark out and saw a cross-lap housing in a length of 2x2 hardwood (lauan in the photo). Pare horizontally to just beyond the middle of the work, but tip the chisel alternately left and right so you reach the gauge line at either side of the housing while leaving a peak across the middle. The drawing at right shows this strategy of approaching the line in controlled stages.

Remove the bulk of the waste in controlled stages...

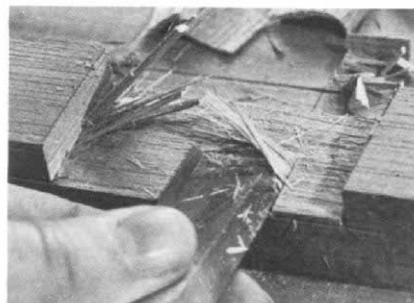
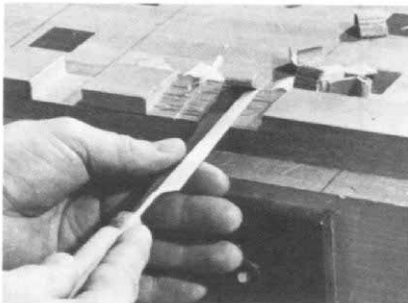




Remove the peak by holding the chisel flat, but with the handle about 10° below horizontal. As you approach the gauge line, the cut will slope upward away from you. Click the chisel edge right into the line for the last cut, but maintain the upward slope. Then turn the work around in the vise and repeat from the other side.

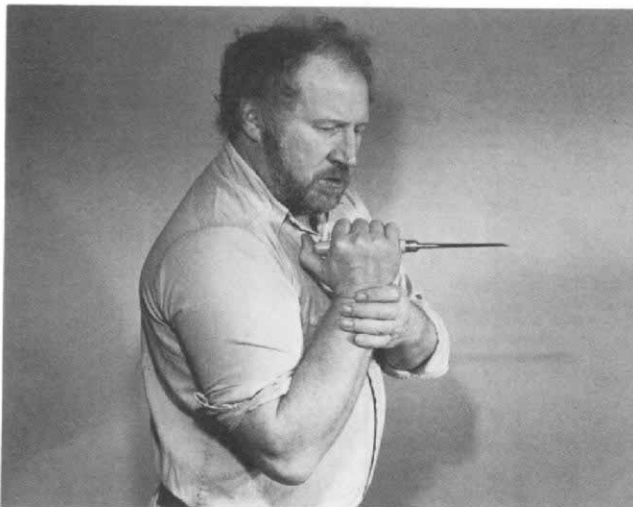


At this point the waste will be all gone, except for a small pitch in the middle of the housing. Remove it by raising the handle closer to horizontal with each cut, until on the final pass you feel the chisel go onto the gauge line on your side and see it exit on the gauge line at the far side. A little nibbling to clear out the corners, and you're done.

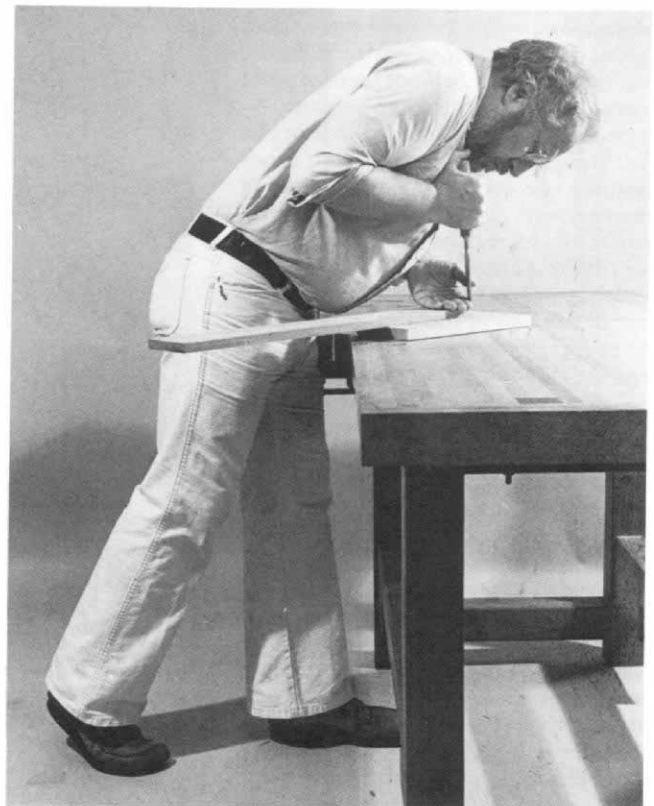


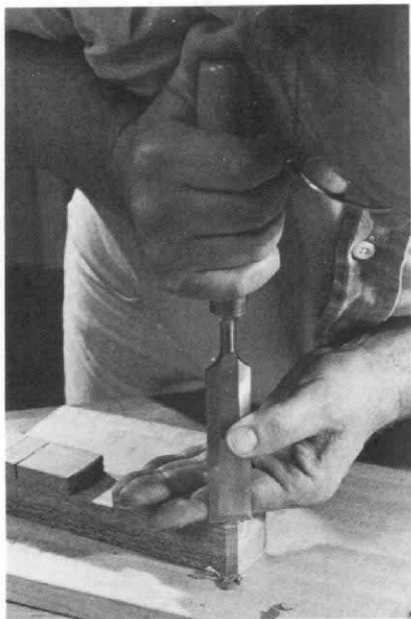
To cut a wide housing, saw the shoulders and saw a series of crosscuts spaced a little less than a chisel width apart. With the handle lower than horizontal, work a flat slope from one side and then the other, leaving a center pitch. Take small bites. The final cuts, as before, go from gauge line to gauge line. You'll find that this grip and stance provides ample power and control—the chisel should never come flying out of the wood on the far side. If it does, take smaller bites to get control of the relationship between the hardness of the wood, the sharpness of the tool, and your own strength.

Vertical paring

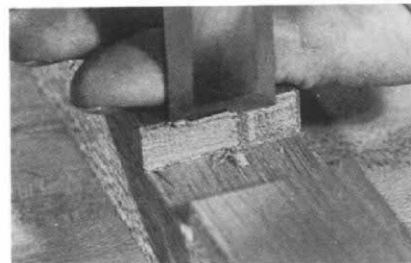


Vertical paring requires an entirely different grip and stance. Hold the chisel as if it were a dagger, thumb on the handle's end. Try to tuck your thumb into your shoulder joint. Rest the back of the chisel's blade on the middle part of your left index finger, left thumb on top of the blade. Stand with your left foot forward, and bend from the waist so the back of your left hand rests on the work. Lock your arms, rock your weight onto the forward foot, and flex your knees. All downward power comes from the hips and shoulders, not from moving your arms. Your head should move only as far downward as the chisel's edge moves, and no farther. (continued, next page)





This grip enables you to concentrate the whole power of your body onto the cutting edge. The left hand, braced on the work, provides fine control and acts as a brake. Practice by paring the corner off a block of wood—you'll readily see, quickly learn to sense, any variation from the vertical.



Vertical paring is how we usually clean up tenon shoulders. You can practice on the walls of housings cut in the horizontal paring exercise. With a $\frac{3}{4}$ -in. chisel, place about half the blade's width in the knife line and pare straight down. Move over half the chisel's width for each subsequent pass, using the knife line and the surface previously cut as your guides. Try to sense how every part of your body functions in relation to the tool, the workpiece and the bench. Practicing these basic techniques is worth all the effort you can muster, for confidence here will make joinery an automatic and simple procedure, not the tense and chancy event that discourages many beginners.

Chisel skills and the through dovetail

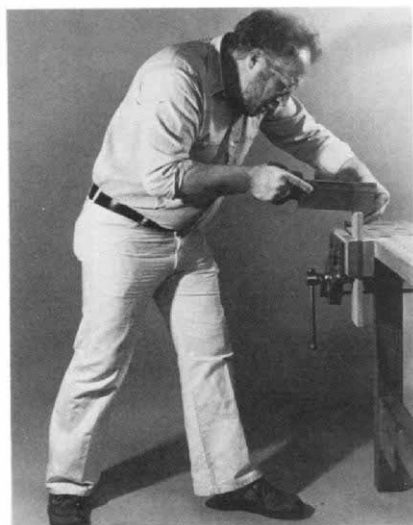
Paring with the bench chisel is one of the prerequisite skills for making through dovetails. The other major skill is sawing, which I've discussed in my articles on the mortise and tenon joint (*FWW* #13, #15 and #18), but which I'll review in the following photo sequence. I suggest that you practice dovetailing with hardwood stock about $\frac{3}{8}$ in. thick and $4\frac{1}{4}$ in. wide. From the start, get into the habit of preparing the ends of the stock clean and square, by crosscutting with a carbide blade or else by knifing deeply around and hand-planing the end grain. When making drawers and casegoods, this end-grain surface is the register that governs final fit (*FWW* #21, March '80, pp. 73-76).

It's possible to start the joint with either the tails or the pins, but I prefer to begin sawing the tails. This is because the tails are not cut straight down, but to an angle, and the saw is liable to wander. It doesn't matter whether the angles are constant, only that all the cuts are straight. If you make the pins first and transfer their angle to the tails, then you must cut a constant angle to a line—a constant angle not on the line won't do. If you have never practiced sawing down a line, draw a multitude of lines on scrap and just make cuts. It's worth emphasizing that the joint is made entirely from the saw. There's no need to chisel or file the side grain of the pins or tails. Although the joint has been elevated to a sort of ultimate standard, it's in reality simple—in no way

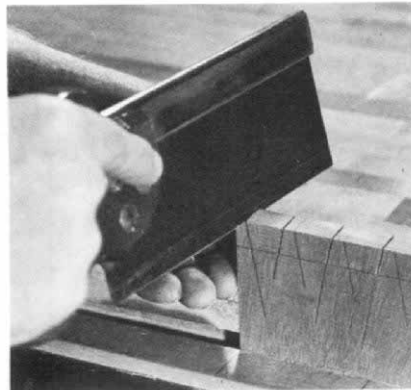
as difficult to make as the mortise and tenon. Don't be afraid of the dovetail.

Begin by gauging a line just less than the thickness of the stock at the ends of both pieces. After assembly, the outside surface of the stock will be planed to this thickness. Hold the wood upright in the vise. Using $\frac{1}{4}$ -in. and $\frac{3}{4}$ -in. incre-

ments, square lines across the end grain of the tails piece with a sharp pencil. I set the sliding bevel to a slope of one in six to mark the lines down what will be the outside of the joint (for practice, mark both sides). I carry these lines several inches below the gauge line to make it easier to sight the saw.



1. Sawing stance is not unlike that for horizontal paring. Three fingers grip the saw, with the index finger extended. With feet well apart, wrist locked, power comes from the shoulder and upper arm. The other hand guides the saw into the work. A good preparatory exercise is to grasp the saw, close your eyes, and attempt to set the teeth down on the bench—level and square. Open your eyes, check with a try square, and try again.

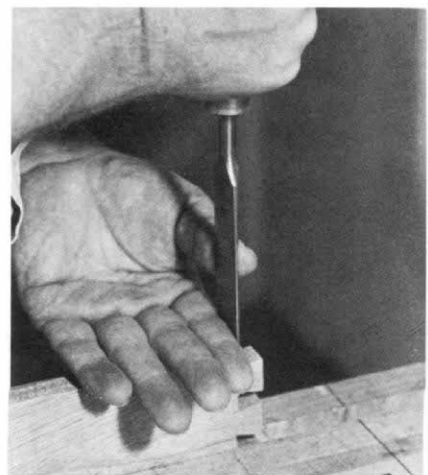
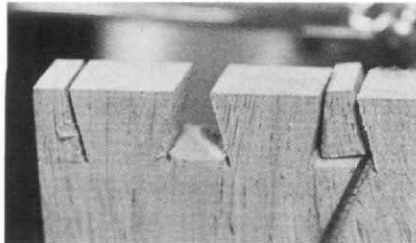


2. To saw the tails, place the wood upright in the vise. Square lines drawn right on the vise make this easy. Some people put the wood at an angle so they can saw straight down, but it's better in the long run to learn control. Start the cut with the saw at the tail angle, on the far edge of the wood. Spend the first strokes bringing the kerf across the end grain, then bring the sawteeth to level. Saw down the outside of the pencil line, leaving no wood between line and saw. Don't try to adjust the angle mid-way—you must have a straight cut. Do try to keep the sawteeth horizontal. When you are down to the gauge line at the front, you will also be down to the line you can't see at the back.



3. Leave the wood upright in the vise and, standing as at left, remove the bulk of the waste with the coping saw. Its blade should slide easily into the kerf, down to within $\frac{1}{8}$ in. of the gauge line. Rotate the saw's frame to twist the blade in the kerf, and it will turn the corner in its own thickness.

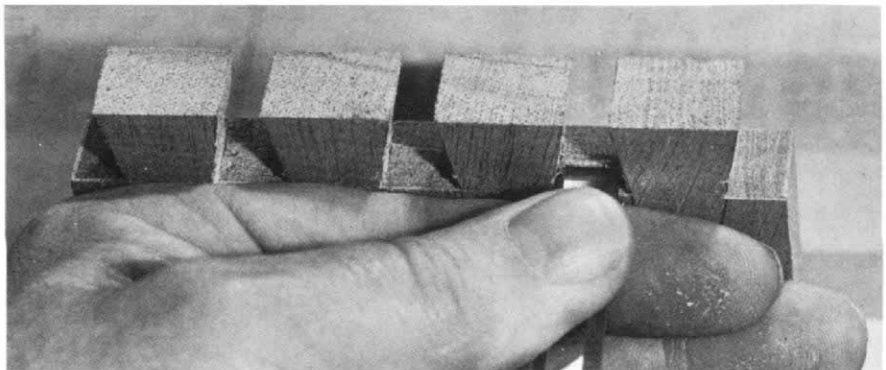
4. With practice, it's easy to keep the saw horizontal, and to cut very close to the gauge line, below. Some people chop all the waste out with a chisel. This is laborious, and some woods crumble so badly that the chisel pulls material out of the root of the joint.



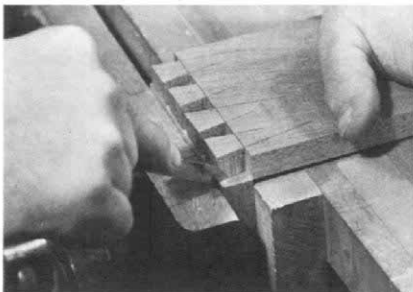
5. Turn the wood on its edge in the vise and saw out the waste where the half-pins will fit. Clean up this shoulder by vertical paring, before turning the wood to do the other edge.



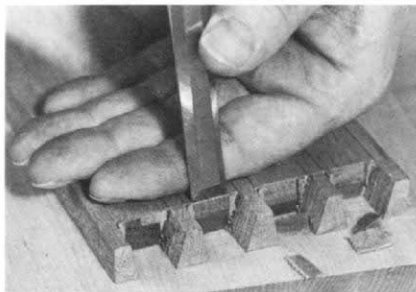
6. To clean up the bottom of the joint, select the widest bevel-edged chisel that will fit between the tails and lay the wood flat on a cutting board. Pare down from both sides with the chisel about 10° back from 90° (left), until you can place the chisel into the gauge line. What's left is a small pitch in the middle of the joint. To remove it, place the wood upright in the vise.



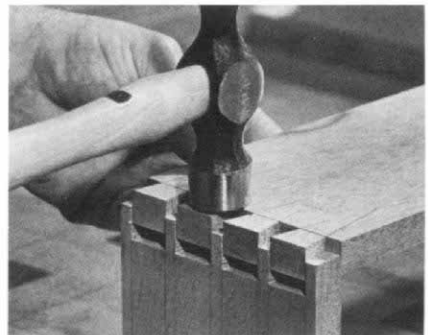
7. Using the same chisel horizontally, pare straight across from gauge line to gauge line. The resulting surface will be flat and square, exactly where it should be. There is no virtue in undercutting the end grain, and no need to do so. Among other things, you lose the positive nature of the internal fit. Note that the initial incision made by the cutting gauge is where you finally place the chisel. An important part of the joint was completed at the start of marking out—a common condition in woodworking.



8. Now put the pins piece in the vise, projecting $\frac{1}{8}$ in. above the bench top, and align the tails piece on it. You can adjust the fit of the joint according to the density of the wood by moving the tails piece minutely backward or forward. A tight joint in mahogany, which crushes easily, would be too tight in hard maple. Use a sharp knife to transfer the tail profiles, bearing down hard toward the outside corner. Then, with a square, pencil these lines several inches down the wood.



9. Saw the pins as you did the tails, endeavoring to split the knife line. If you fear the line, study what you are doing through a magnifying glass. You'll see that it's quite possible. A method of reminding yourself which side is the waste side is to leave the tails piece in position on the bench. Remove the waste with the coping saw, then pare the end-grain flat. Use the widest chisel that will fit the narrow side of the aperture, and sweep it askew to reach the whole surface.



10. Tap the joint home with a hammer, directing each blow to the center of each individual tail. You don't need a block of scrap to protect the wood, and you shouldn't substitute a mallet because it's liable to damage the work. On a wide joint, you'll hear a change in pitch as the hammer strikes a tight tail. This is the best way to isolate just which part of the joint needs adjustment. □