Cutting Through Dovetails

Pins or tails first: a case for each

by Vincent Laurence

I was trying to explain to someone years ago why I'd just taken a job as an apprentice woodworker after spending four years and $70,000 on an English degree. Suddenly, in the midst of my explanation, his eyes lit up. "You mean," he asked, You're going to learn how to make dovetails?" He understood.

There's good reason for the lofty esteem accorded the dovetail joint. Even without glue, dovetails are very strong. And they've proven their reliability for well over three millennia. Much of their contemporary allure, though, has nothing to do with strength or reliability. Finely executed, hand-cut dovetails are a testament to the skill of the craftsman who made them.

It takes practice to cut a dovetail joint well, but the joinery is relatively simple. Two pieces of wood are connected with interlocking pins and tails. There are only two methods of cutting dovetails by hand: cutting the pins first and cutting the tails, or pin sockets, first (see the stories on p. 82). Both methods work. But advocates of each method tend to be passionate about the advantages of their approach and the obvious flaws in the other. With this in mind, we asked two of our contributing editors, a pair of woodworkers with 99 years of cutting dovetails between them, to tell us how and why they cut dovetails the way they do. Their methods and tools may differ, but both cut flawless dovetails that will last generations. Here's what they had to say.

Vincent Laurence is an associate editor of Fine Woodworking *magazine.*

Pins first

***TAGE FRID** immigrated to the United States from Denmark in 1948. A furnituremaker for 67 years, he also taught woodworking for nearly four decades.*

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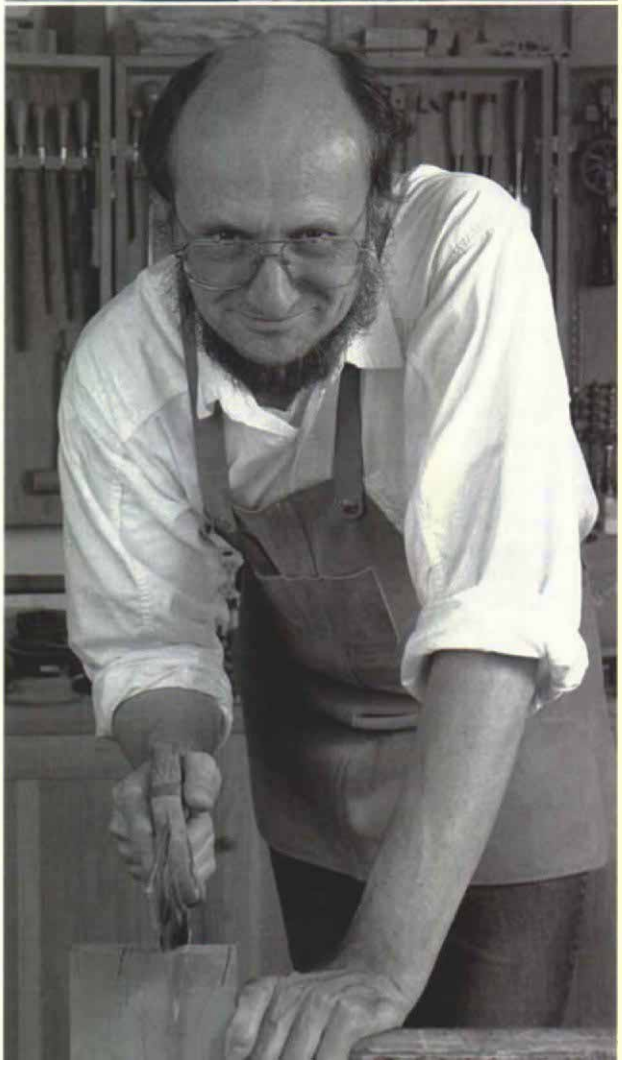
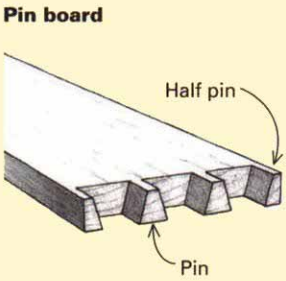


Tails first

***CHRIS BECKSVOORT** builds custom furniture in New Gloucester, Maine, and does restoration work for the Shaker community at Sabbathday Lake, Maine.*

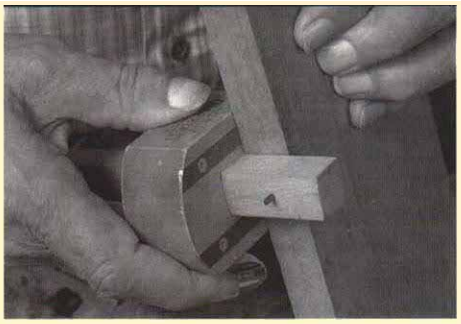
Tage Frid: I cut pins first

I started my apprenticeship in 1928, at the age of 13. At first, I drove a push cart, delivering furniture around the city of Copenhagen. After a year, I told the master to whom I was apprenticed, "All right, I know how to drive the push cart. I'd like a bench now, so I can learn some woodworking." Within a month, I was cutting dovetails. I've cut quite a few since then and have taught hundreds of students.

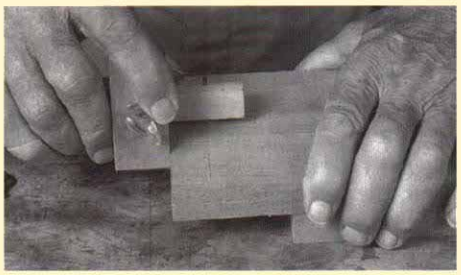


Cutting the dovetail pins first makes sense. It's easier to hold the pin board in place to mark the tails than it is to hold the tail board against the end of what will be the pin board. Also, the walls of the pins provide a good surface for the awl as you mark the tails. And by marking from the inside of the joint, the angle of the pins will cause the awl to cut cleanly across the face grain of the tail board rather than follow the grain.

Another reason to cut the pins first is that when accuracy counts—when cutting the second half of the joint to fit the first—you're cutting to a line on the face grain, not on the end grain. It's easy to split this line right down the middle (but be sure the sawkerf is on the waste side of the line). Doing that in the end grain is almost impossible. It's easy to lose the line in the end grain with the first sawcut. By cutting the pins first, I don't have to worry if the saw bounces around a little on the end grain—I just cut the tails to fit. —*T.F.*



Set the marking gauge 1/64 in. wider than the stock, *so the pins and tails will protrude slightly.*



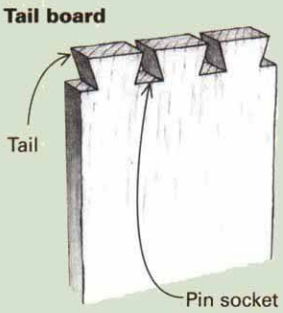
Gauge the baseline *on both sides of both boards being dovetailed together.*

Mark pins and half pins *on the end of the board. You can space them by eye, or use a ruler for more consistent spacing. A pencil mark is plenty accurate at this stage, because the pins are the first parts of the joint to be cut.*

Chris Becksvoort: I cut tails first

The first time that I made dovetails, I consulted a woodworking book. It stated, in no uncertain terms, that the pins had to be cut first. Also, my father, a European-trained cabinetmaker, insisted that dovetails must be cut pins first.

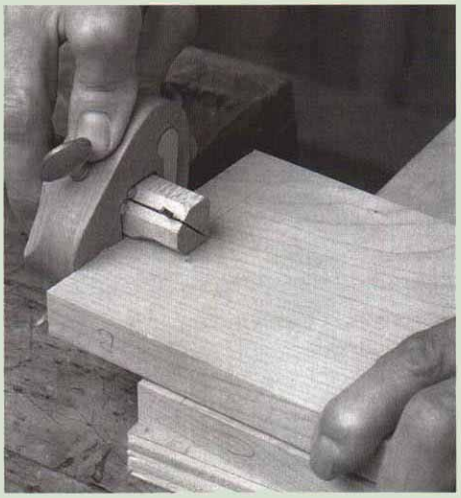
But because I was a teenager with an attitude, I took these stern pronouncements as a challenge. I made the tails first, and I have been doing it that way ever since.



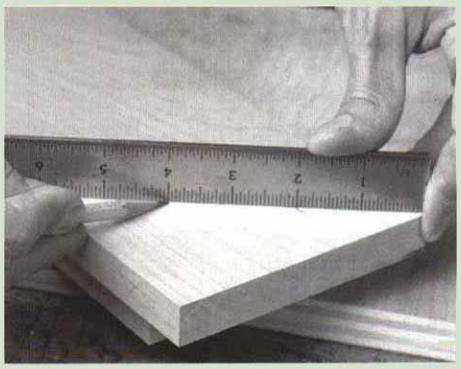
I find that this approach is more efficient because I can cut the tails for a pair of boards at the same time by taping them together. And because I'm not trying to match tails to pins, the cut isn't critical. When it comes time to mark the pins from the tail boards, accuracy *is* critical. And that's another reason I prefer cutting the tails first.

I think a knife is the most accurate tool for transferring position, more accurate than an awl and far more accurate than a pencil. But a knife will tend to follow the grain on the face of a board, which is the surface that you're marking if you use the pins to lay out the position of the tails.

When cutting the tails first, I end up marking out the pins on end grain. The knife doesn't drift or wander with the grain; it marks out the pin locations with great precision. Then I saw just outside the line and pare to the line. The result is a tight, strong, attractive joint every time. —*C.B.*



Scribe a baseline on both sides of all the boards you're dovetailing. *For boards that are the same thickness, you need only one setting—the thickness of either board. When the pin board and tail board are different thicknesses, the thickness of each determines the baseline for the other.*



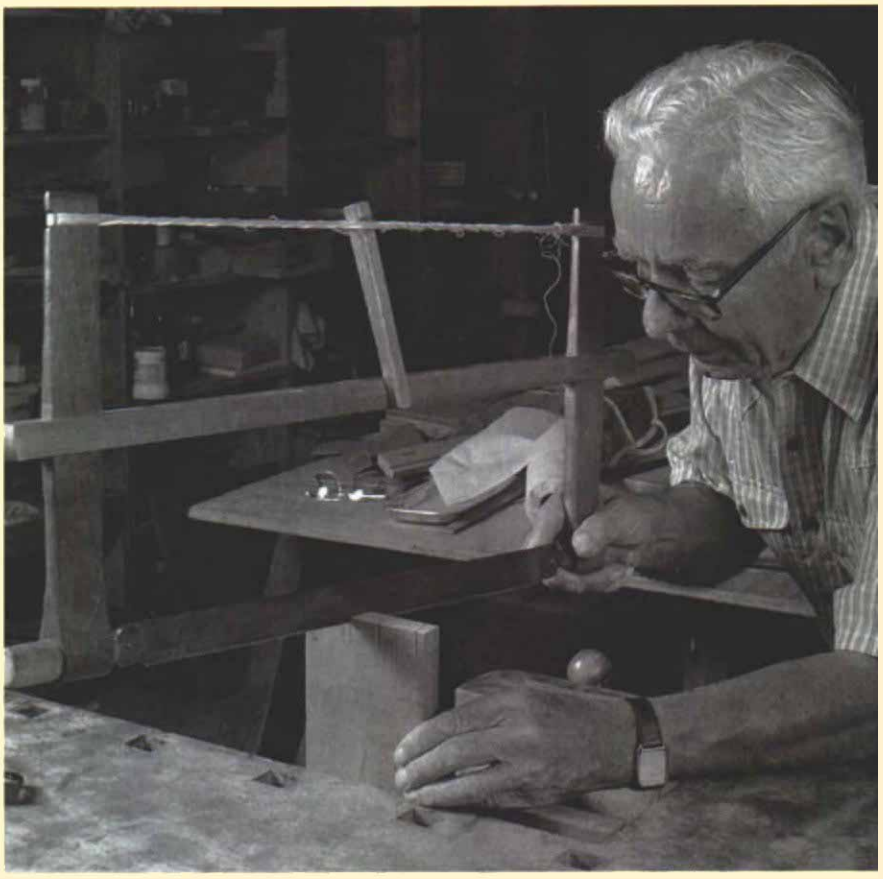
Lay out center lines for the pin sockets on the tail board. *For a board with two pins, I divide the board into thirds, as shown. There's also a half pin at each end.*

Drawings: Christopher Clapp; photos: Vincent Laurence

Use a bevel gauge to extend pin and half-pin marks *across the end of the board. A 1:6 ratio is about the right angle for most hardwoods.*

Extend the pin marks down to the baseline *using a combination or try square.*

Cut to the gauged baseline. *Split the line with the sawblade on the waste side.*



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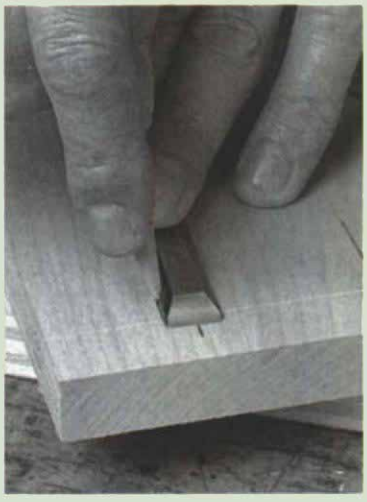
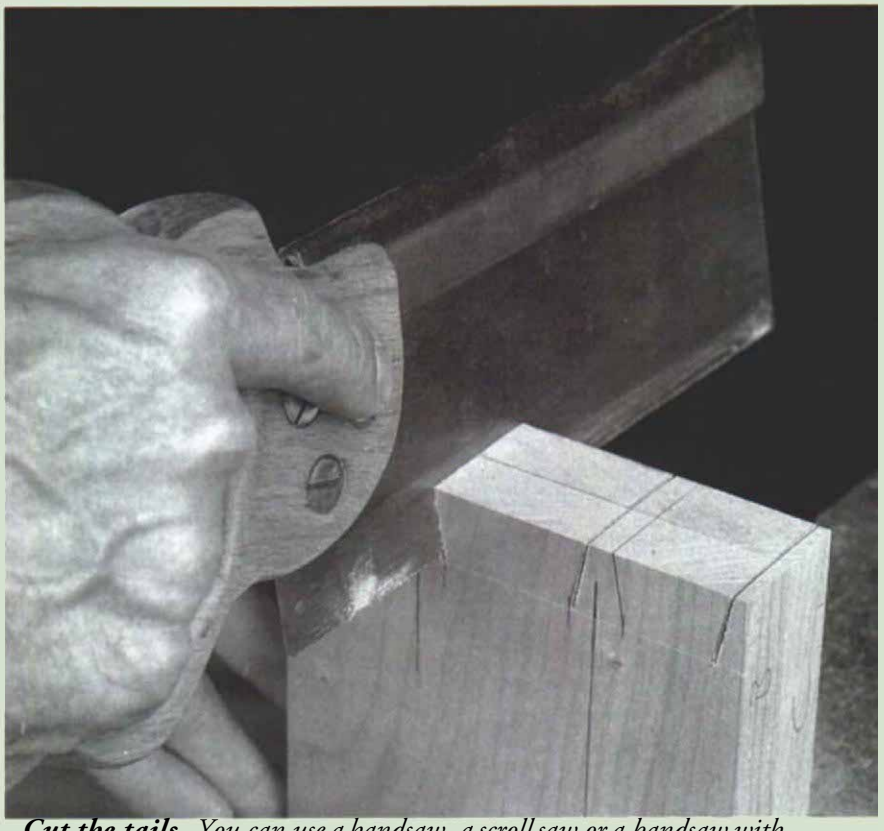


Use a chisel to determine the width of the pin sockets. *This makes chopping the sockets much more efficient. Place the chisel over the center-line, and use a pencil to mark each side. Then mark out the half-pin sockets on the ends.*

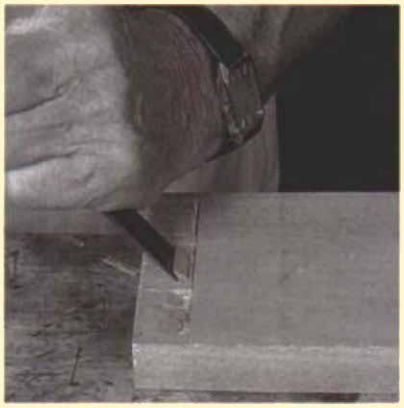
Mark the angles of the pin sockets *with a dovetail gauge or a bevel square. Transfer these lines across the end grain. Now tape the two tail boards together, so you can cut pin sockets on both at the same time.*



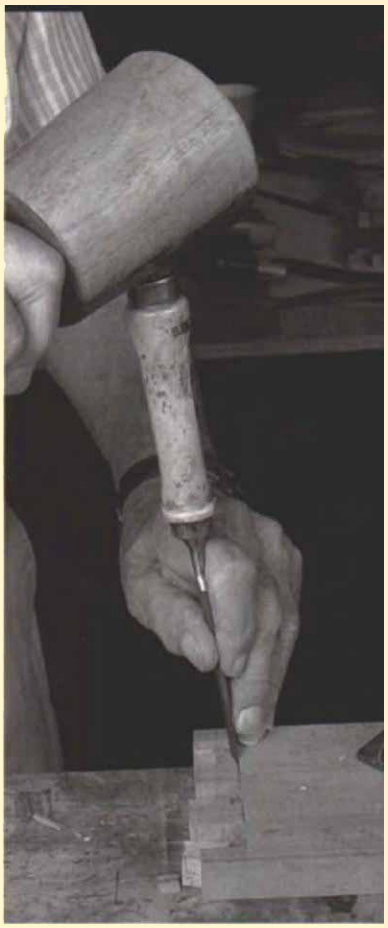
Cut the tails. *You can use a handsaw, a scroll saw or a bandsaw with a fine blade to make cuts to the baseline. Remember to cut on the waste side of the line. Also, cut the two half-pin sockets now.*

Frid: Pins first (continued)

Deepen the baseline *with the corner of a chisel* ***(near right),*** *and then chop a slight bevel to the baseline from the waste side* ***(far right).*** *This will prevent fibers from tearing out beyond the baseline when removing the waste between pins.*

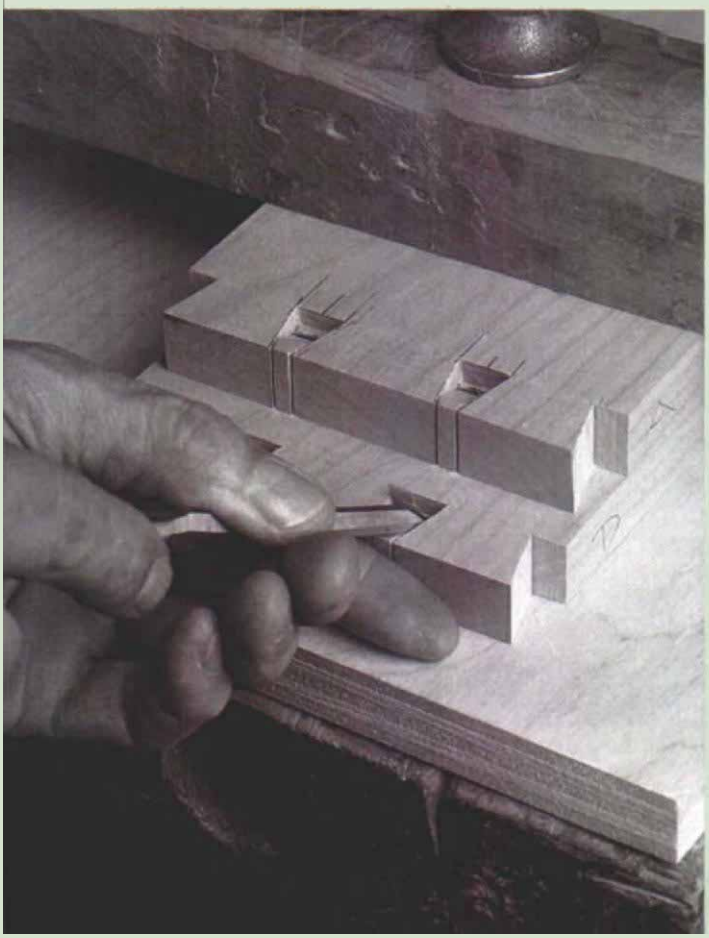


Alternate chopping from the face of the board and the end (photos right). *When chopping on the face, hold the chisel in at a slight angle so that the tail slot is undercut. Chop just about halfway through the board. Flip the board over and repeat.*

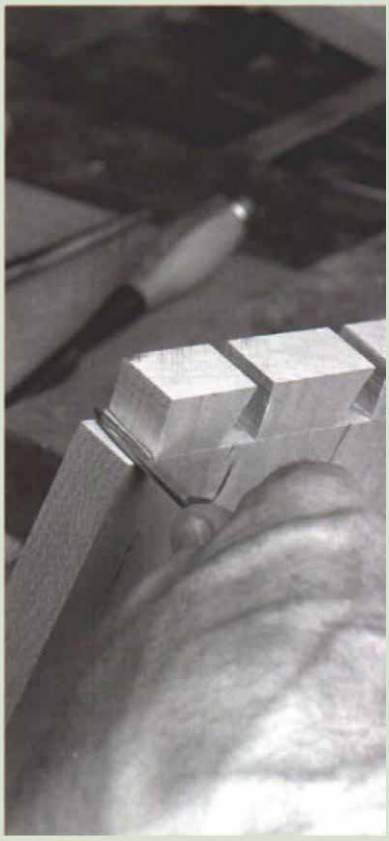


Continue chopping the board *until the remaining waste drops out.*

Beckvoort: Tails first (continued)

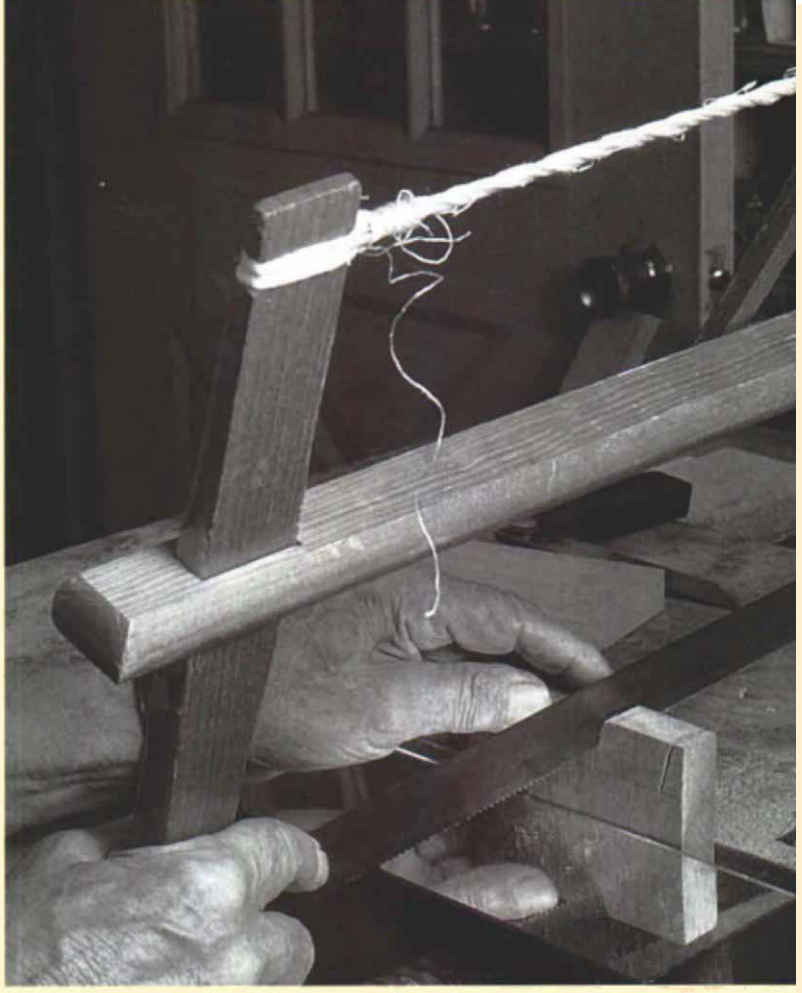


Chop out the waste. *Start by creating a small groove on the waste side of the baseline. Then chop alternately in at a sharp angle* ***(left)*** *and downward at a slight angle* ***(above).*** *Don't chop in from the end of the board yet. Keeping the corner intact prevents tearout when the waste is removed from the center of the socket. Once you've chopped about halfway through the joint, flip the boards over and repeat. This time, though, chop from the end.*



Use a chip-carving knife to *clean the corners.*

Mark the tails from the pins (top left). *Hold the pin board securely in place on the tail board. The edges of both boards should be flush with each other and the inside face of the pin board should rest on the baseline of the tail board. Scribe the tail layout from the inside of the joint so that the awl follows the pins, not the grain. Extend the marks across the end of the tail board* ***(bottom left).*** *Then cut the tails down to the baseline* ***(right).*** *A mirror makes the layout lines easier to see. Split the line on the waste side.*



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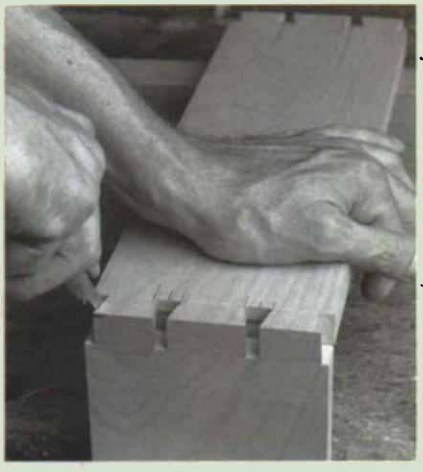
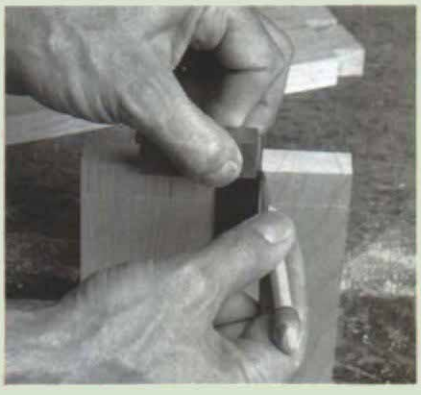
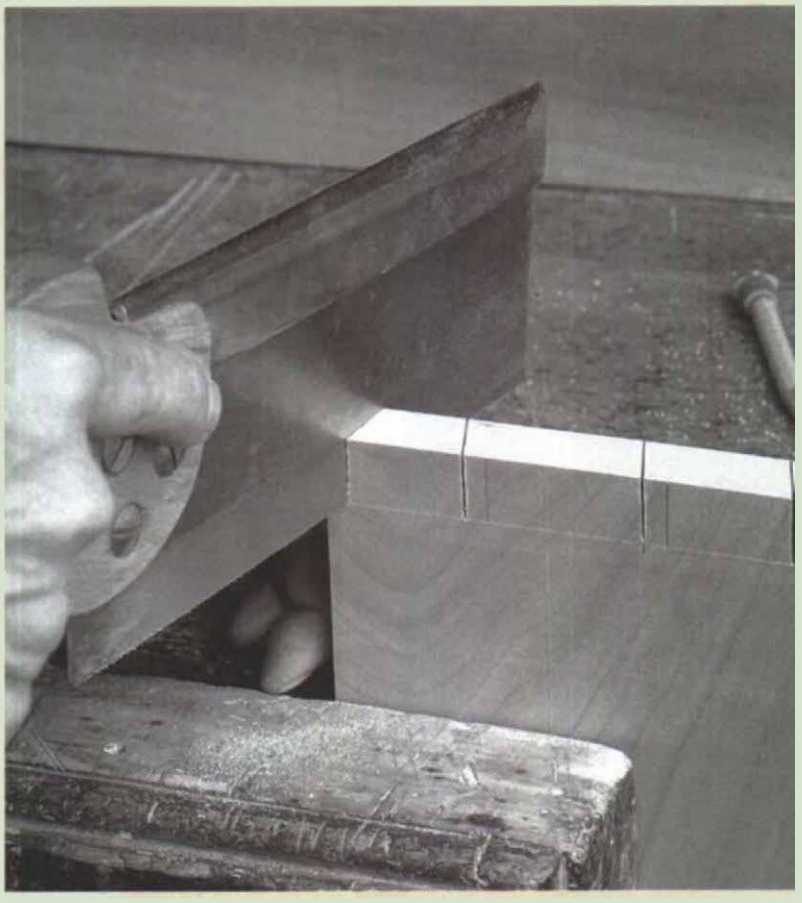
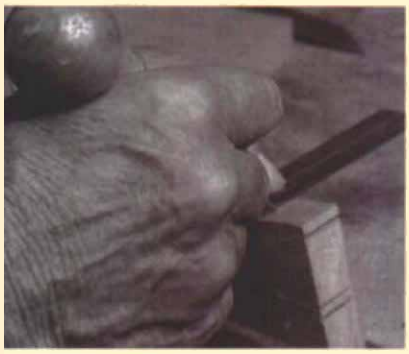




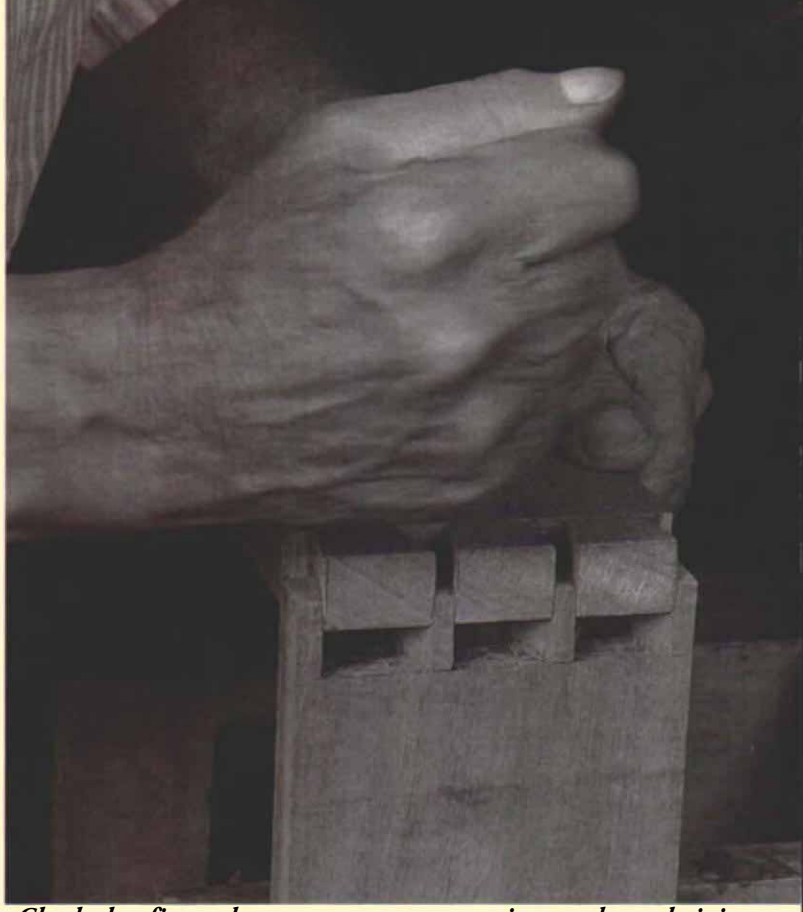
Mark out the pins from the tail board. *Clamp the pin board into a vise, and set the tail board perpendicular to it. Make sure the edges of both boards are flush, and be sure the inside edges of all the sockets align perfectly with the inside corner of the upright board. Apply pressure to the top board, and mark the dovetails with a sharp knife* ***(top left).*** *Extend the pin marks down the side of the pin board using a small square* ***(bottom left).*** *Cut down to the baseline on the waste side of the line* ***(right).***



Frid: Pins first (continued)



With an awl, connect the baselines from both sides of the board (top left). Chop away the waste between the tails, first creating a little bevel to prevent tearout at the baseline. Alternate chopping from the end and face until you're halfway through the board (bottom left). Then flip it over and repeat. Clean out the corners (below). The little bit of wood remaining at the base of the tails often prevents dovetails from closing.



Check the fit, make any necessary corrections and tap the joint closed. It should go together with a light tap of your hand. Don't forget that the joint will swell when you apply the glue.

Becksvoort: Tails first (continued)

Chop out waste between pins. *Clamp the boards so their inside faces are up* ***(top left).*** *This prevents the chips from becoming wedged between the pins when you finish chopping out the waste from the other side. When you're about halfway through, turn the boards over and re-clamp* ***(bottom left).*** *As with the tailboards, once you've flipped the boards over, you can chop in from the end. Pare to the line with a chisel* ***(below).***

Test-fit the joint. *If you've cut and pared right up to the lines, the parts should fit like they were made for each other, a snug friction fit that comes together with a light tapping of your fist.*