handwork

Prep rough lumber with hand tools

WITH THIS BEDROCK SKILL, YOU CAN FLATTEN ANY SIZE BOARD, FREEING YOU FROM THE LIMITATIONS OF YOUR MACHINES

BY ANDREW HUNTER

Online Extra

To watch a video showing how to mill lumber by hand, go to **FineWoodworking.com/extras.**

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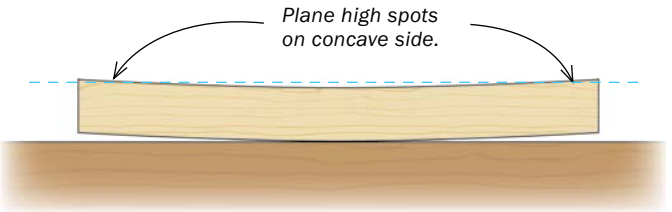
Start with the saw. *Cut the parts ¼ in. oversize in length and width. You'll trim them to final size after the flattening is complete.*

Prepare the board



Mark the highs and lows. *Using a flat bench or table as a reference surface, find the high and low spots on both sides of the board and mark them with a pencil.*

Take out the wobble. *Working with a jack plane on the concave side of the board, plane flats along the two long edges until the board, when flipped, lies firmly without rocking.*

Flattening and dimensioning boards by hand is the bedrock of hand-tool woodworking. Nothing can teach you more about wood than taking it from rough to ready with a handplane. You'll improve your skill at reading the grain and sharpen your eye for a true surface. Through repetition, you'll develop a sense of controlled strength that will benefit every aspect of your work. And once you've developed the ability to mill by hand, your projects will no longer be limited by the size of your jointer and planer.

If possible, be kind to yourself with the species of wood you choose for hand milling. Softer woods free of knots and irregular grain are best. Most of the time, I mill a board in two separate stages: rough and finish. In the rough-milling stage, I first cut the board to rough length and width. Then I flatten the board, bringing it to within 1/16 in. of final thickness. I remove the bulk of material from both sides without worrying about making perfectly smooth surfaces. I do this because a board needs to be somewhat flat before it can be made perfectly flat—if it bends under the pressure of planing, the

TIP DEALING WITH KNOTS

Knot-free wood is best for hand-milling, but sometimes knots are unavoidable. To figure out which direction to plane over a knot, put a finger at the center of the knot on each side of the board. The offset between your fingers will indicate the angle of the knot. Plane with the angle. It also helps to soak a knot with water to soften it beforehand. The swollen cells will be less likely to tear out.

Photos: Jonathan Binzen; drawings: Kelly J. Dunton

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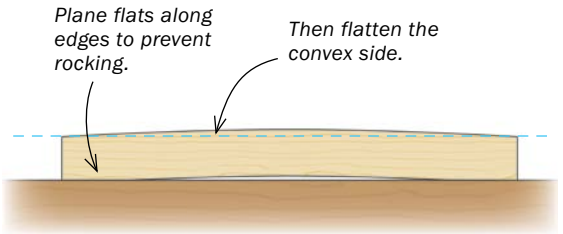
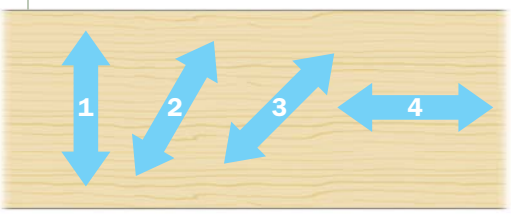
Flatten one face



Start across the grain. *Rough flattening starts with a short-bodied plane set to take a coarse shaving. Take strokes directly across the grain, skewing the plane slightly for a slicing cut.*

CHANGE DIRECTION AS YOU GO

In the rough-milling stage, plane in the sequence shown below with the roughing, jointer, and smoothing planes. For the finish-milling stage, skip the roughing plane and omit angles 1 and 2.



springback will leave the board out of true. The two-stage process also allows me to let the rough-milled stock rest for a day or so—and move, if it's going to—before I plane it to finished thickness and smoothness.

To begin rough milling, shave the edges of the concave side of the board until, when flipped, it will lie flat. Don't worry if it doesn't contact in the middle; your aim is just to get it stable. Now start the rough milling with the convex side of the board.

Whether you use Japanese handplanes like me, or western ones, I recommend using three planes to do all the flattening: a scrub or jack plane (with its blade set for an aggressive cut), a jointer plane (long body for best jointing), and a smoother (short, wide body for a smooth final surface). The sequence of cuts with all the planes in the rough milling stage follows a similar pattern. Begin with strokes directly across the board—90° to the direction of the grain—and follow with strokes 60° to the grain, then 45°, and finally along the grain. Take side-by-

Check progress with a straightedge. *Using a pencil, Hunter marks high spots with X's and squiggly lines, low spots with O's. Sighting across a pair of winding sticks (right) will tell you if there's any twist in your planed surface.*

Along the grain with a longer plane. *After working through the angles with the roughing plane, follow up with a jointer plane. Use the same planing sequence of angled strokes, ending with passes along the grain. Then finish up with a smoothing plane, following the same sequence of strokes.*

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Bring the board to thickness

Leave it a little thick. *Set a marking gauge to 1/16 in. over the board's final thickness. Working off the newly flattened surface, scribe a line around the workpiece.*

Second side gets flattened. *Repeat the same sequence of planes and planing angles to flatten the second side and bring the board to the marking gauge lines.*

side strokes, overlapping them slightly. After you have rough-flattened the first face, set a marking gauge to 1/16 in. thicker than your intended final thickness and scribe a line around the board. Repeat the rough-milling process on the second side, working down to the scribe line. When you've finished, let the rough-milled board sit overnight (at least) with plenty of air circulation before final flattening.

Begin the finish milling with the show face. You can skip the roughing plane and start with your jointer plane. Also skip the 90° and 60° strokes. With the blade set for a fine shaving, take a series of strokes at 45° to the grain across the full width of the board, and follow this with a sequence of strokes along the grain. Check with the straightedge and winding sticks, and if things look good, you're ready to clean up the surface with a freshly sharpened smoothing plane set very fine. Again, take strokes at 45° and then along the grain. Then use the marking gauge to scribe a line around the board to the final thickness, and finish-mill the second side, using the same sequence of strokes as on the show face and working right to the scribe line. Once the surfaces are flat, you can trim the board to final length and width. □

Andrew Hunter designs and builds custom furniture in Accord, N.Y.

Trim and square the edges

Shave it to size. *By elevating the workpiece and using your plane on its side, you can use your bench like a shooting board and plane the board to final width (left). After using a knife to lay out the finished length of the board and sawing just shy of the lines, use a jointer plane to trim to the scribe lines (above). To avoid blowing out the grain, take half passes with the plane, shaving from the outside toward the middle.*

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