

The Belt Sander as a Cabinetmaking Tool



This hand-held machine does a lot more than sand surfaces flat

by Sven Hanson

The belt sander has the reputation as a tool for the heavy-handed. Even so, here's one guaranteed "secret of the pros": When a whole lot of sanding must be done on time and on budget, every professional I know relies on the belt sander.

Granted, a belt sander generates a lot of noise and dust, which makes it easy to dislike. But if you select the right belt, put it on a well-tuned sander and carefully monitor stock removal, you just may develop an affection for this machine. When guided by skilled hands, the belt sander will do surprisingly delicate work. And it's fast.

It's more than a finishing machine

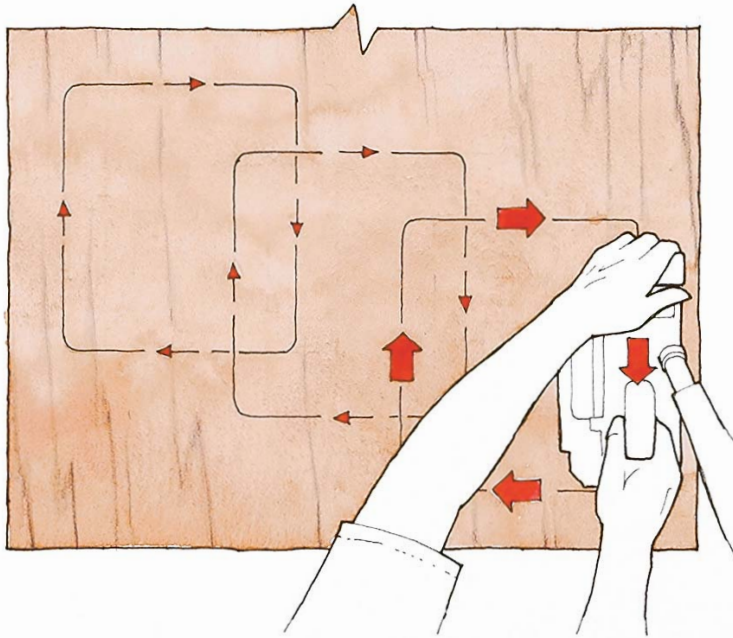
Some woodworkers overlook the more creative uses of belt

A tool with many uses—A belt sander can smooth contours, like this chair seat, as well as flat surfaces.

Figure 1

Smoothing flat surfaces

Move the machine in small rectangular patterns, working mostly with the direction of the grain of the workpiece. Don't force it. Let the weight of the machine do the work.



sanders because they think that they are only for flat surfaces. A belt sander can perform many other jobs—work that's often done with other tools.

Besides flattening, the belt sander will level applied edge molding, round over or square off edges, hollow out chair seats, sand several pieces of narrow or thin stock at the same time, and scribe-fit a cab-

inet to a wall faster than any handplane I ever used.

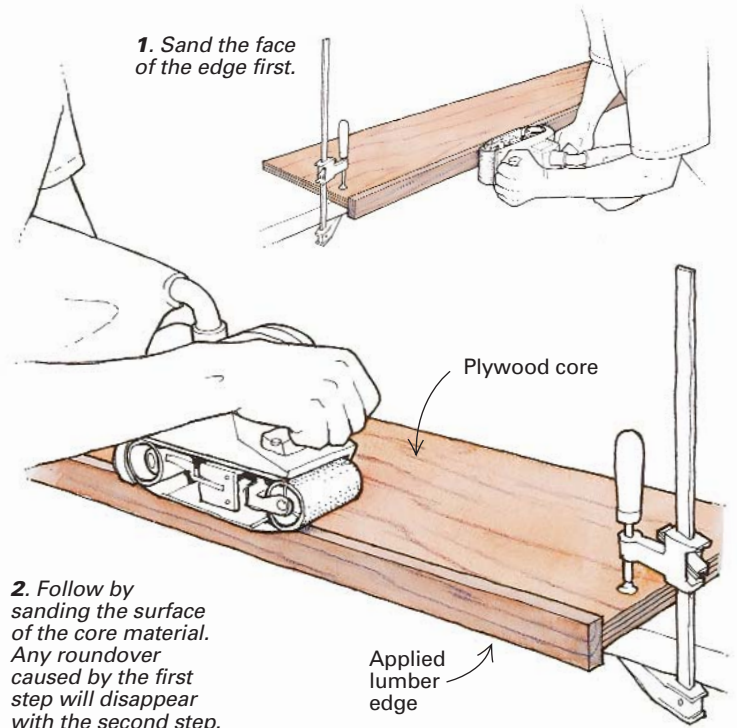
Master the basics first: smooth and flatten

For smoothing, you only need to follow two rules: Keep the sander moving in small rectangular patterns across the work surface, as shown in the drawing above left, and don't press down. Allow the sander to bal-

Figure 2

Leveling applied edge molding

1. Sand the face of the edge first.



2. Follow by sanding the surface of the core material. Any roundover caused by the first step will disappear with the second step.

ance itself. Let the machine do the work with its own weight. I draw lines across the surface with a no. 2 pencil. As the lines disappear, I know where the sander has been.

Improperly handled, a belt sander quickly rounds over edges that should remain square. I avoid this problem by sanding from the inside out. I always sand surfaces, such as

a tabletop, from the internal areas out toward the edges. And I always sand in the same direction as the grain of the workpiece. When the sander reaches an outside edge, I barely extend the pad over it. I try to keep two-thirds or more of the platen on the work surface.

To flatten a surface, I use a straightedge to mark the highs with X's and the lows with O's,

The abrasion equation: choose the right belt for the job

I call the roughest grits available—24, 36 and 40—picnic-table grit. Belts in those sizes perform quick and dirty tasks, like cleaning up an old, painted picnic table. Most other work requires something just a little less aggressive.

For flattening rough laminated boards and smoothing irregular surfaces, 60-, 80- and 100-grit belts work best. Belts made of 120- and 150-grit will sand off light tearout and perform preliminary smoothing in tight-grained woods, like maple or cherry. A used 150-grit belt can accomplish the final smoothing in open-grained woods like oak or ash. For most of my work, I like to begin sanding with a new 150-grit belt. The wood must be

smoothly surfaced. Sharp and well-adjusted planer knives make a difference. I finish with a well-used 150-grit belt, using very light pressure against the surface. After that, the surface needs only a small amount of orbital sanding to be ready for finishing.

Belts made of 220- and 320-grit abrasives can be hard to find, but they're great for smoothing fine-grained and exotic woods, like ebony or bubinga. They're also good for putting a very smooth surface on any wood species, almost to a polish.

Grade counts as much as grit: Manufactured belts come in grades that I would call premium, adequate and cheap. With

as shown in the photo at right, as though the surface were a topographic map full of hilltops and swamps. I also check the diagonal to see if the surface twists, and I mark the high and low corners. I'll sand a little extra on the high corners and take it a little easier on the low ones.

I sand until the first set of X's disappears, leaving the O's in place, and then I mark the peaks once again and continue. Once the high spots are eliminated, the low spots will sand out effortlessly.

Edges can drive you over the edge

One of the most valuable uses of the belt sander is leveling applied edge molding to an adjacent surface, such as a shelf or the carcass of a cabinet. When I have glued molding to the edge of a \$90 piece of walnut plywood, I really can't afford mistakes in bringing the edge flush to the surface.

I begin by sanding the face of the applied edge, as shown in the drawing at right on the facing page. After that, I mark the surface of the plywood with pencil lines and then sand with a slightly used 150-grit belt to bring the molding flush and to restore a crispness to the edge.

I keep the sander in constant motion, with one part of the belt always hanging no more



Mark the highs and lows with a soft pencil to indicate which areas need more sanding. The author makes his first pass over the surface of a glued-up cherry panel with high spots marked with X's and low spots marked with O's.

sanding belts, price is a real good indicator of quality. One source I use a lot is Klingspor Abrasives in Hickory, N.C. (800-228-0000). The company sells all kinds of sanding supplies, including belts in three different grades.

Cheap belts are often light brown. They're usually available in local hardware stores and are made with an abrasive material that's not sharp enough or tough enough to stand up to a lot of sanding. These belts also have an inferior cloth or paper backing, and the abrasive is glued on with hide glue. Hide glue softens with exposure to heat and dissolves in any hint of water. Sanding generates heat. Wood contains water. Go figure.

Both adequate and premium grades have a place in my shop. The less expensive belts often fall short in some ways, but I use them in two typical situations: on surfaces that contain hard materials, like metal or minerals that quickly wear out even the

hardest of abrasives, and on gummy or resinous surfaces. In both cases, the less expensive belts do the same work as premium belts for two dollars less per belt.

The premium grades always use a strong, blemish-free cotton or polyester cloth backer, accurately graded, very hard abrasives, and two coats of phenolic resin to bond them together. The abrasives are electrostatically placed on the belt with the long axis pointing up. Then they're held captive by a strong, flexible resin. Premium-grade belts last longer and cut more consistently.

If you have some cheap belts or sandpaper sheets that need beefing up, try putting a thin coat of Waterlox (a sealer that's made with tung oil and phenolic resins) over the abrasive side. That will give you the equivalent of a resin-coated belt, which will help hold the grit to the backer and make the sandpaper wear better. —S.H.

Turn the belt sander into an edge sander. With both hands free to move the workpiece, you can control the cut better.



than one-third off the surface, to keep from sanding through the veneers. When the pencil lines disappear on the veneered area, I creep a little farther out, hanging the pad over the edge. To avoid a disaster, I stop often and check my progress.

Being right-handed, I prefer to hang the front or right side of the platen over the edge—not the left or the back. This way, it's easier to see the belt and where it's cutting.

But if I'm sanding edging on a larger workpiece or the inside of a cabinet, I sometimes have to use the sander's left side or back edge. I find it useful to mark some prominent black lines right on the body of the machine, which indicate the position of the left and back edges of the platen.

Another method I especially like for sanding the edges of solid stock is to place my machine on its side in a jig, as shown in the top photo at left. This leaves both hands free to control the cut.

Hollowing chair seats

The front wheel of the sander quickly digs out concave areas in flat stock (see the near left photo). When a hollow area has a double curve, as a chair seat does, I stuff a small rag beneath the sander's friction pad (see the far left photo). The rag flexes the belt downward in the center and shapes it better to the curve of the seat. Pressing down flattens out the belt some. Maintaining only a light pressure allows the sander to cut more of a curve.

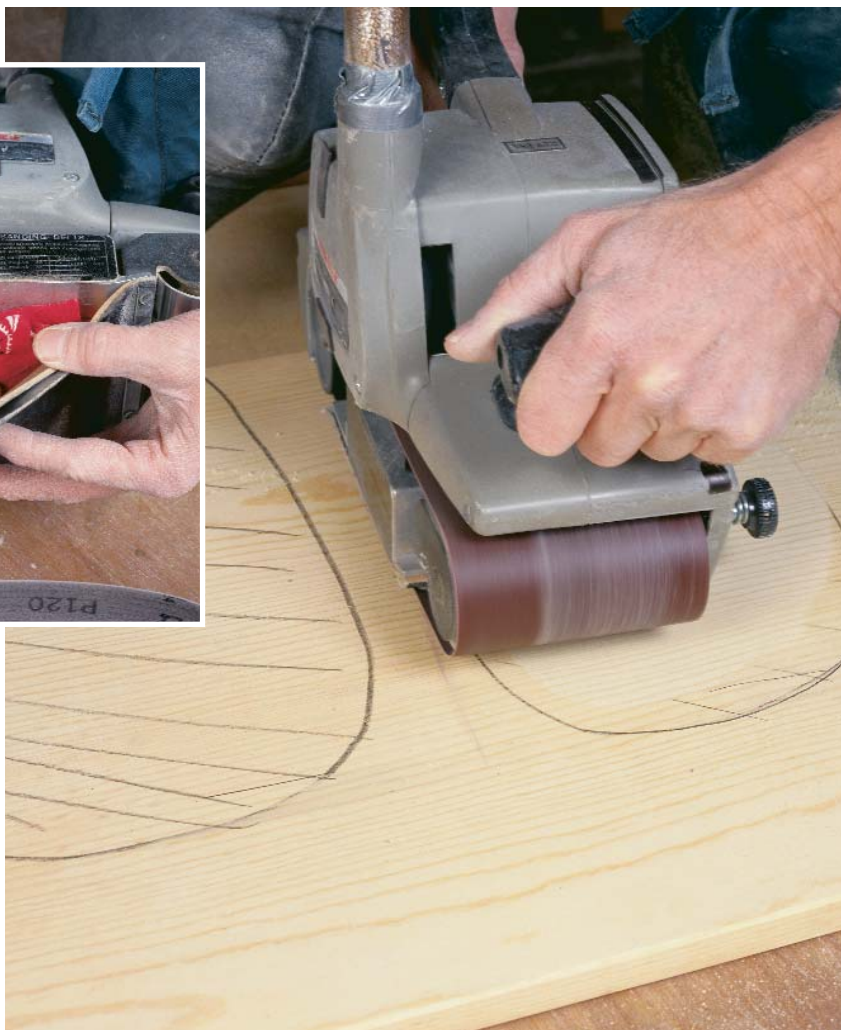
Fitted with a fresh 60-grit belt, the sander cuts rapidly. Even if you prefer shaping a seat with a rounded drawknife or an in-shave, you still might want to sand the surface this way to prepare it for finishing.

Managing narrow stock

Balancing a powerful sander on top of narrow stock requires a light touch and good nerves.



Hogging out the hollow of a chair seat. The author stuffs a small rag (above) underneath the cork and graphite cover to the platen. The belt now can cut shallow contours.



If you plan to sand a lot of stock that measures less than 3 in., you may want to consider a belt sander with a 3-in.-wide platen instead of the more common 4 in. size. The narrower platen is less likely to cause you trouble, and the machine balances more easily on narrow pieces.

You can do a good test of a sander's equilibrium by setting it on top of a narrow strip of wood until you find the balance points, left to right and front to back. The closer you balance the machine to the center of the cutting surface, the better the results will be. When I sand 2-in.-thick molding with my 4-in. sander, I mark the pieces first with pencil lines. Also, I watch the belt as it goes over the front wheel to see that the center of the dust trail on the belt lines up with the center of the strip.

Sanding thin strips

Balancing a heavy belt sander on strips of wood narrower than 1½ in. is difficult because the tool can rock from side to side. And if it does, the edge quickly becomes uneven and out of square.

One way around the problem is to place two or three pieces of molding side by side, clamp them together and then sand them all at once (see the top photo at right). The machine will level out on top of the set and sand them uniformly. If you don't have enough molding, make sacrificial strips of wood, and put them on either side of the workpiece.

On-site scribbling

"Land of Curvy Walls" should be the motto on license plates here in New Mexico. Walls in the adobe houses that are traditional in this part of the country are rarely as flat as you'd find in a modern wood-frame house finished in drywall. The houses are certainly charming, but the curves can make cabinet instal-



Gang narrow pieces together. This technique solves the problem of balancing a heavy machine over a single piece of narrow stock.



Scribe to fit. By using the front wheel of the belt sander, you can cut into tightly scribed areas, like this plastic laminate backsplash. A saw would likely chip out this material, and a block plane would dull very quickly.

lations a little challenging. No built-in cabinet or countertop looks well-fitted without scribbling or carving away the edge to match the wall (see the bottom photo above).

I begin by placing the cabinet box or countertop plumb and level, as close to the wall as possible. I copy the shape of

the wall onto the mating back edge with a scribing compass. Then I sand to the line. You can, of course, use a saw or a plane. But the sander—if you use the front wheel—can best follow the scribe lines.

I prefer to sand with a 60-grit belt with an aluminum-oxide abrasive that's tough enough

to grind down the occasional brad, staple or screw. On any large job, though, you will find plenty of these booby traps that will tear up a good block plane or sawblade. □

Sven Hanson builds custom cabinetry and furniture in Albuquerque, N.M.