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High-Back Chair



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Southwestern High-Back Chair

by Kingsley Hammett

Building something to sit on is not that difficult. Building a chair you hope will last several generations is a task that can take Miguel Chavez as long as three days. After years of specializing in chairs, he has streamlined his operation with the help of useful jigs to get accurate measurements on repetitive cuts. The end result is a graceful, comfortable chair with through mortise and tenon joints that fit like a cork in a bottle.

Since there are a number of repeat steps in building chairs, Chavez never builds one at a time. If he has an order for six, he'll mill out and set aside parts for twelve.

Kingsley Hammett is the owner of Fine Additions and publisher of Once a Tree, a catalog of wood product manufacturers.

This way he has a head start on the next order. He likes to work in New Mexico ponderosa pine or sugar pine, and starts with air-dried stock in $\frac{3}{4}$ and $\frac{1}{4}$, #2 or better.

Chavez starts with a template and traces the outline of one back leg onto a wide piece of stock (A). He cuts the front angle on the band saw and smooths it up on the jointer. He sets the band saw fence at 2", and runs the stock through holding the front surface against the fence following the bend and cutting off a leg. Then he joints the two flats and repeats this sequence for as many legs as the stock will yield. The top of each back leg is cut with three $\frac{1}{4}$ " steps, a traditional New Mexico motif that reflects the profiles



Miguel "Mike" Chavez Chavez Woodworks

Mike Chavez is a leaf on an enormous family tree that was planted in the 16th century somewhere in the Rio Grande Valley and today spreads its branches throughout the state of New Mexico. His love for the history of this tree is the inspiration for Chavez as a Santa Fe furniture maker.

Like so many of his contemporaries, Chavez is imbued with the self-reliance that marked his forebears. His grandfather was a farmer and rancher on the eastern plains who built his own houses and carved his own *santos* (carved figures of saints). His father rose from carpenter's helper to structural engineer. Thus, when Chavez left high school, he drifted into construction and cabinetry. He worked for other people for five years, collecting tools and acquiring a wealth of knowledge by taking apart and repairing old pieces of furniture. Eventually, he set up his own shop.

"I feel strongly about what I'm doing—not because I have a product to offer—but because it's part of the ongoing history of New Mexico," he says. "Having that heritage has come into play—particularly in the last seven or eight years—due to the popularity of Southwest style."

Chavez's designs have evolved from studying historical New Mexico furniture pieces, talking with older people and being aware of the hardships they experienced. He tries to picture himself among them, somewhat awed at what they managed to accomplish with what little they had. He knows that quality is timeless and hopes what he does today will become an heirloom tomorrow.

of Southwestern mesas and traditional pueblo housing.

The front legs (B) are simply ripped out of another piece of 84 and smoothed to finished size on the jointer. Chavez doesn't own a sander. He finishes every piece with hand planes and scrapers.

He bevels all machine-created 90° angles with his chisel so the edges on the finished chair will be soft and smooth.

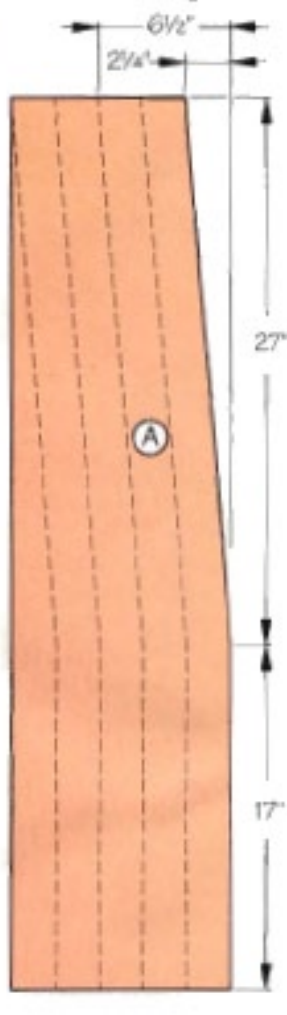
The top rail (C), mid rail (D) and seat rails (E) are all out of 1" stock. Before cutting the seat rails to length, the inside of the rails should receive two 1/4" X 1/4" grooves running their full length. These grooves match the tongues of the corner blocks that support the seat. Locate the first groove 1" from the top edge and the second 1 1/2" from the top edge. Also before cutting to length, Chavez relieves the tops and bottoms of the rails with a three-bead moulding cutter on the table saw. The mid rail gets this same beading but must be cut separately because of its different width. He uses the same setup to bead the outside edges of the legs, but with the wooden auxiliary fence shifted over to expose only one bead of the cutter.

Cut the bottom rungs (F) and stretchers (G) from 1/4" stock. The Cutting List dimensions for these parts include their tenons.

Making Mortises

Chavez cuts his mortises with a 1/2" chisel in a drill press. He mounts his right-angle stop (see the Jig Journal) to the drill press table to establish one end of the mortise. Once that's

Figure 1. Back and Front Legs



cut, he rests a small L-shaped spacer over the stop to set the location of the other end of the mortise. Then he goes back and cleans out the material in between. He cuts these through-mortises to half depth, flips the leg over and finishes the cut from the opposite side to prevent tear-out.

Cutting Tenons

To get a clean shoulder on his tenons, Chavez first cuts them on the flat side of the rails with a regular blade on the radial arm saw. Then he comes back and removes the rest of the material with a dado blade. Next he sets up a fence and a stop on one of his two band saws, and rips the piece to



Cut the shoulder waste on a band saw.

Clean up the tenons with a chisel and block plane.



establish the width of the tenon. Then he goes to the second band saw to crosscut away the waste. He makes offsetting tenons where the seat rails (E) intersect at the corners as shown in Figure 2 on page 40.

Chavez cleans up any saw marks on the tenons and shoulders with a sharp 1" chisel and small block plane. He dry-fits each tenon to each mortise and marks them with letters so he knows where each will wind up. His tenons stand proud by $\frac{1}{4}$ ", reminiscent of California Mission style. In a detail all his own, he bevels the protruding tip of every through-tenon, as well as the outside edge of every mortise.

Hand Carving

Rope carving is a traditional element seen throughout New Mexico architecture and furniture. Some say it represents the rope on the Franciscan habit; to others it's the colonial way to reproduce the carved stone columns remembered from the churches in Spain.

Chavez starts with the 45° angle on his sliding square and scribes a continuous line from top to bottom around the spindle blank (H). He repeats that pattern with a second line parallel to the first.

He scores the lines with a sharp knife, or a dovetail saw, then chisels down to these stop-cuts from a point between the two lines in a rolling, rounding motion (see photo, page 40). He alternates the pattern on the four spindles so two twist from left to right while the others go from right to left.

He follows the same method to carve the rosette into the top rail. Trace the outline from a template (see the PullOut™ plans), score the lines, follow the line with a round gouge that fits the contour of the carving, and chisel to the lines.

For a detail that sets his chairs apart from all others, he bandsaws a $\frac{1}{8}$ " deep line around the foot of each leg at about $1\frac{1}{2}$ " from the floor, and chisels from the bottom of the leg up to the line.

Jig Journal



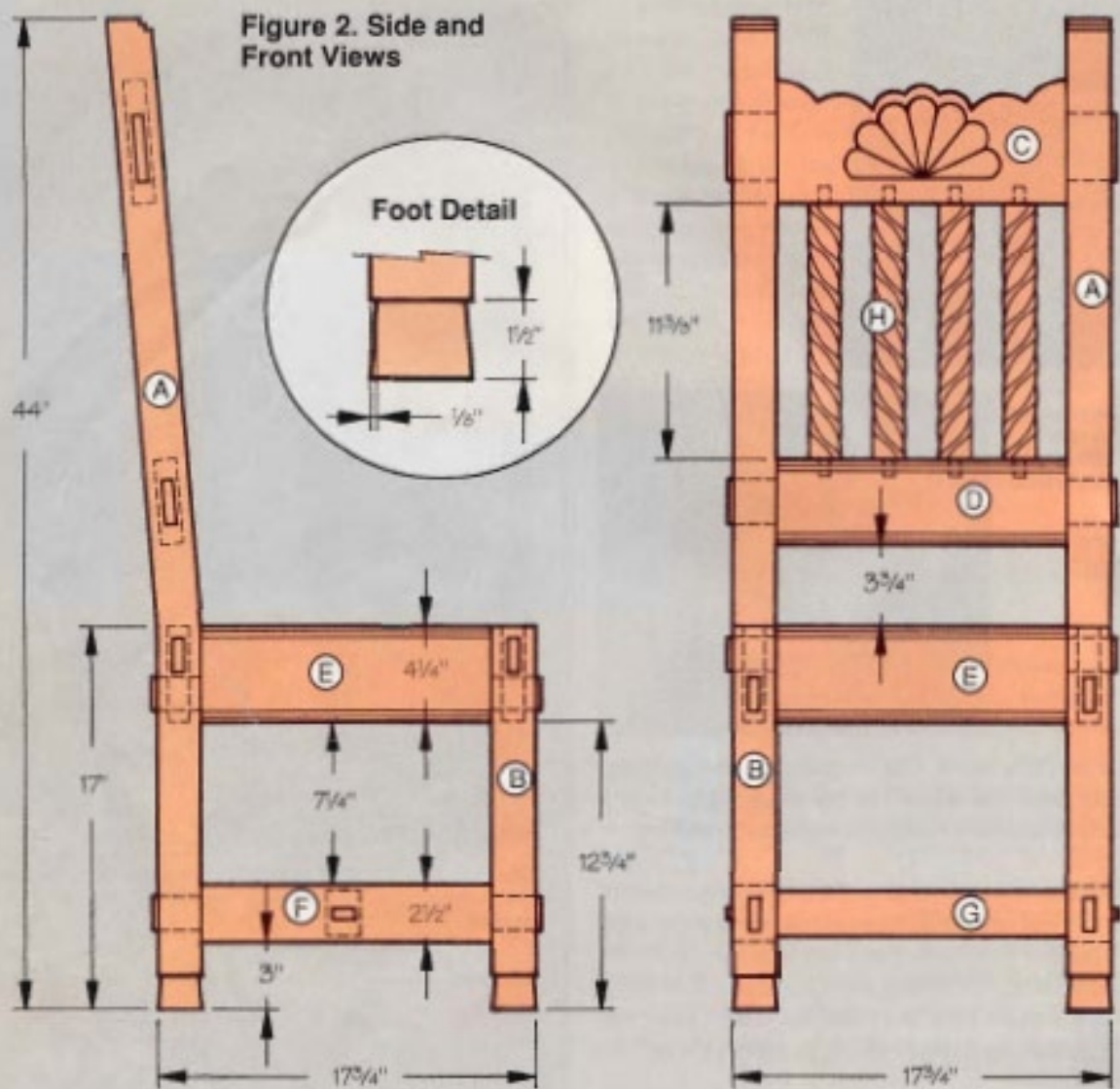
Chavez uses this stop to locate the mortises. A spacer that hangs from the stop sets the second position of each mortise.



Right Angle Stop

Take a piece of 1" X 2" stock and cut a $\frac{1}{2}$ " slot down the center to within 4" of each end. Fasten a 3" piece at right angles to one end. Now mount this stop to your drill press table with two $\frac{1}{2}$ " bolts and wing nuts. Set your chair leg blank centered against the fence beneath the mortise chisel where the first cut will go. Slide the stop out to the end of the leg, and tighten the wing nuts. Set all succeeding chair legs against this stop, and make your first mortise cut on each. To make the second mortise cut, hold an L-shaped spacer between the angle stop and each chair leg. Remove the material in the middle, and each mortise will be of the same length and at the same position on each chair leg.

Figure 2. Side and Front Views



Chavez lays out the pattern with a combination square.



Carve down to each line from both directions with a rounding, rolling motion.



Assembly

Chavez uses a little glue on each tenon, and assembles the back legs with rails first, the front legs with rails second, and then puts these two subassemblies together with the side rails last.

Chavez drills a 1/4" hole in the center of each mortise and tenon, rounds the tip of

a piece of cedar (slightly more than 1/4" square stock for a tight fit) in an old pencil sharpener (he likes to use pegs of a harder wood than he used in the chair), bevels the other end with a chisel, and drives it home with a claw hammer. All tenons receive half-blind pegs. The chair back tenons are pegged from the rear of the chair.

High-Back Chair

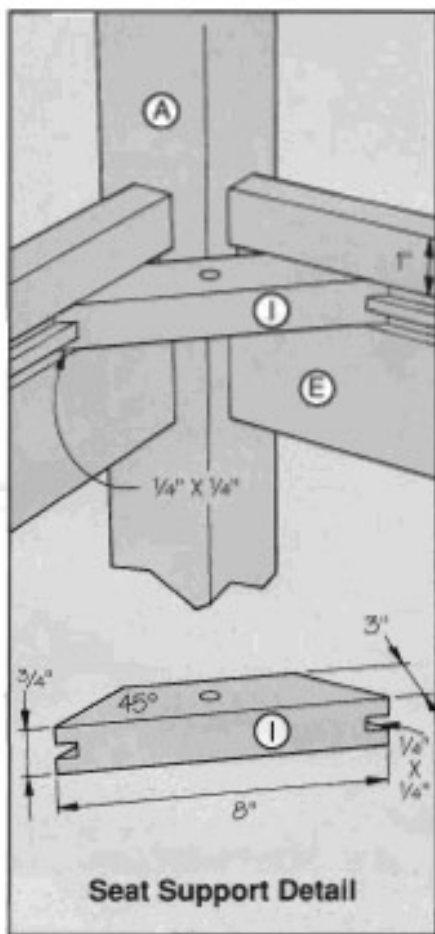
Cutting List

Qty	Part	Finished Size			Piece
		T	W	L	
1	A	2"	6 1/2"	44"	back leg stock
2	B	2"	2"	17"	front legs
1	C	1"	5 1/2"	17 3/4"	top rail
1	D	1"	3 3/4"	17 3/4"	mid rail
4	E	1"	4 1/4"	17 3/4"	seat rails
2	F	2"	2 1/2"	17 3/4"	bottom rungs
1	G	2"	1 1/2"	16 1/4"	stretcher
4	H	1 1/2"	1 1/2"	12 1/8"	spindle blanks
4	I	3/4"	3"	8"	corner blocks
1	J	1 1/4"	17 1/4"	17 3/4"	seat



Make the front and back subassemblies; then add the side rails and stretchers.

He fastens corner blocks (I) inside the chair frame about an inch below the surface. Cut the four corner blocks out of $\frac{3}{4}$ " plywood. Miter their ends to 45° and dado each end with a $\frac{1}{4}$ " X $\frac{1}{4}$ " cut down its



Seat Support Detail

center. The seat (J) needs to be notched for the back legs. An alternative to the solid wood seat is an upholstered plywood insert attached to the corner blocks. **PH**



Chavez carves a tapered foot at the bottom of each leg.

The cedar pegs stand a little proud of the finished chair.

