



# The Sides

*Bending and  
Laminating the Sides  
Linings  
Assembling the Neck  
and Sides*

AS A YOUNG PLAYER, I COULDN'T WAIT FOR MY GUITAR LESSON EACH WEEK. THE PROSPECT OF LEARNING A NEW PIECE WAS VERY exciting. Even more exciting to me was that, because I traveled into Manhattan on the Staten Island Ferry and subway for my lessons, my teacher let me play his guitar at the lesson so that I wouldn't have to carry mine. He had a 1960s vintage Ramirez 1A. It sounded so much better than my guitar that it was hard to play mine afterwards. Everything about it was different than mine—better trebles, and booming basses; the only negative was that it was harder to play. But I never forgot that sound.

Needless to say, my first guitar was built from a set of Ramirez 1A plans. The plans called for the sides to be laminated. The French luthier Daniel Fredrich also laminates the sides on his guitars. As I admired both of these builders and had a fair amount of experience laminating shapes making furniture, I felt I must also do the sides this way. As I gained more experience building guitars, I began to understand that there are many advantages to laminating the sides. First, a lamination is stiffer than a solid piece of wood, and with sides, stiffness is important. Secondly, by removing some of the heavier rosewood and replacing it with a softer, lighter wood such as cypress or Sitka spruce, you end up with something stiffer and lighter. Laminating offers another advantage, because the parts are relatively thin and already bent, after the glue cures there is no spring-back; thus, the sides maintain the shape of your mold exactly. This will give you a very consistent volume inside your box. It is no doubt a bit more work, but I think there are enough advantages to justify the effort.



**7-5** Keep the wood moving on bending iron

exact shape, only close. The laminating will take it the rest of the way. A good bend at the waist will eliminate any spring-back after laminating. A little practice on a less expensive wood may ease the anxiety when working with the rosewood.

### Sanding and Laminating the Pieces

Once you have all the pieces bent, they must be lightly sanded before laminating. Prepare a space to do the glue-up. Some newspaper may be helpful to keep glue off your bench. We will use the lamination mold prepared in Chapter 3 along with the Masonite cauls. According to the spacing of your blocks on the outer caul, you will need an equal number of clamps. I generally use yellow PVA glue on all laminates. Use a roller to apply the glue to the inside of the rosewood, and remember to strive for the right amount of glue. The right amount will always produce a thin bead around the edges after the clamps are applied. Mate the Sitka to it and place it against the surface of the mold, making sure the two pieces stay lined up and the bottom edges are against the table. Begin applying the clamps at the waist. As you tighten, be sure the pieces remain lined up. Work the clamps from the waist out to the ends. After all the clamps are on, turn over the mold and wipe off the glue that has squeezed out on the bottom. Let the glue cure overnight; then repeat for the other side (**7-6** through **7-12**).



**7-6** Side mold and laminations

## Thickening Considerations

The rosewood will be milled to a final thickness of approximately 0.065 inches, and the inside laminate, in this case Sitka spruce, will be milled to about 0.045 inches. The Sitka, being soft and thin, may be difficult to thickness by hand. A drum sander will work best if you have one; if not, it may be possible to rent milling services from a local shop. Milling any wood this thin in a planer can lead to catastrophic results, so I don't recommend it. If you are cutting the stock from a plank, use a well-tuned band saw and cut each part approximately 0.020 inches thicker than the final dimension to ensure a smooth surface after milling. Another alternative is to use a commercially available veneer (0.6 mm, or 0.020 inches, thick) and use two pieces to make up the thickness if necessary.

final thickness, use the scraper with the grain to remove all the plane marks (7-2 and 7-3). This should bring you to the final thickness.

Once the sides have been thickened, lay the two pieces side by side on the bench. The sides need to be oriented for optimal visual effect. The sides should be book-matched, meaning they should be mirror images of each other. Decide which end you would like at the heel, and draw an arrow in chalk on the outer surface pointing toward the heel on each side (7-4). This will avoid confusion when bending. Next, take your sides to the bending iron and lightly moisten the surface that will touch the iron. Place the wood on the iron, and move it slowly back and forth to avoid burning (7-5). Just slight pressure is needed to bend the wood. You will feel it give as it heats up. Remember, you don't have to get these to the



7-3 Scraping with grain to remove plane marks



7-4 Chalk mark pointing to the heel

## BENDING AND LAMINATING THE SIDES



**7-1** Wood options for the sides

The sides will be made by laminating a piece of Indian rosewood, the outer face, to a piece of lighter wood, which can be cypress, Alaskan yellow cedar, Sitka spruce, or something comparable (**7-1**). All the wood used for the sides should be quartersawn. If you have purchased a set of Indian rosewood sides, they are approximately 32 inches long, between 4 and 5 inches wide, and about  $\frac{3}{16}$  inches thick. The rosewood may be thickened by hand if necessary, but using a drum sander will be faster. It is also sometimes possible to have the sides thickened for you by the supplier. When thickening wood by hand, especially a rowed-grain wood like rosewood, plane either across the grain or at a 45-degree angle to the grain, and make sure your plane is sharp. By planing across the grain, it is easier to get a consistent thickness. Planing with the grain on the rosewood can lead to some nasty tear-out. Once you have come within approximately 0.005 inch of the



**7-2** Planing against the grain