

18th-century Carcase Joinery: The Lower Case

How to build your first as if it's your hundredth.

Period accounts indicate 18th-century American cabinetmakers typically produced a wide variety of products. They were neither quite as specialized as some would have it, nor did they produce particularly great quantities of any one product.

Philadelphia cabinetmaker John Head made an estimated 20 high chests in his 35-year career. The Wistar high chest, currently residing in the Philadelphia Museum of Art, was made early in his career. And though it is indisputably a masterpiece, it could not possibly reflect years of “lessons learned” building this particular product.

This is part three of my series on building a standing desk for my shop using the tools and techniques of 18th-century cabinetmakers. In this article, I'll begin constructing the basic structure or carcase of the desk. I'll focus on the joinery, as well as the tools and techniques used by early craftsmen.

Legs – Start Rough, Refine as Required

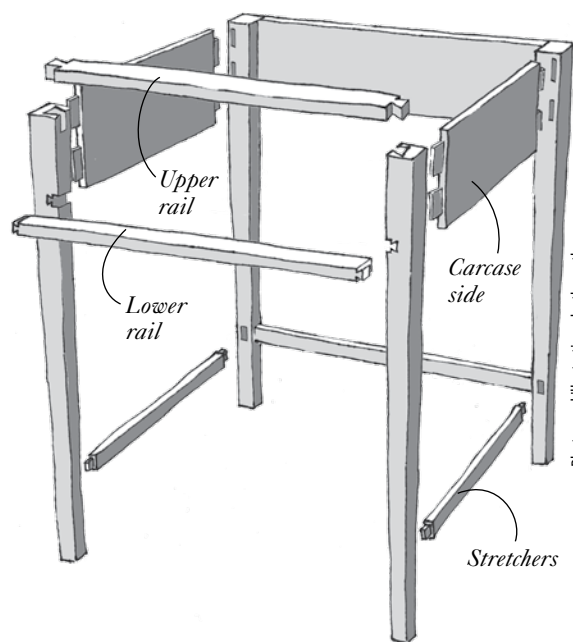
I began the lower case by preparing the legs. The legs were sawn out of a thick piece of pine, then quickly rough-planed square. It is my understanding that tapering legs with machines requires special jigs. I used a hatchet. In a matter of minutes, all the legs' tapers were rough chopped and rough planed. But there was still much more to be done.

To get nice-fitting joints, the two mating faces (where the mortises go) need to be square. But I also wanted the aprons flush with the outside faces of the legs. So those outside

faces needed to be squared up as well.

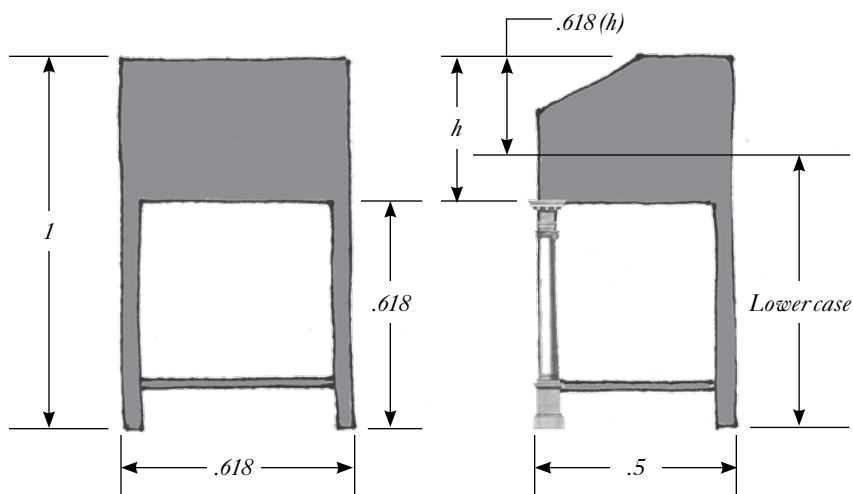
Additionally, I found it advantageous to make the left and right legs similar. Technically, I could have planed to my gauged line, but I found it easier to simply match-plane the legs. Having the right and left legs the same allowed me to make the left and right aprons the same. Because of the drawer, the front and back pieces are necessarily different so I saw no need to match front and back legs.

With the legs squared up, I was ready to cut the mortises. The mortise gauge was set to produce a tenon in the middle of the thin apron boards. That setting was then transferred to the legstock. When joining a particularly wide board like this one, it's typical to see multiple



Photos and illustrations by the author

This drawing suggests a more or less typical approach to mid 18th-century furniture building. The joinery reflects my sensibilities and technical capabilities. Learning period “best practices” is difficult. I recommend Jeffrey P. Greene's “American Furniture of the 18th Century” (Taunton). Even if you're not an 18th-century furniture fan, the appendix shows useful hand-tool only, solid-wood construction methods.



Though it would appear in a slightly different form, this would be all the design information an 18th-century cabinetmaker could expect. The imposition of the Ionic column determines both the minimum size for the leg taper (not shown) as well as the position for the stretcher. For more information on the design of period furniture refer to my story in the February 2007 issue (#160). Eighteenth-century furniture illustrations, when they existed at all, did not include construction details.

by Adam Cherubini

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tenons as opposed to one long tenon. I believe this was done to save time mortising.

When the Tenons are Too Wide to Saw, Cut Rabbits

Craftsmen in the 18th century used backsaws with blades as long as 20" to saw tenons, but the average tenoned carcass side was probably too wide to be sawn. I marked out the tenons as usual then cut them with a moving fillister plane (which cuts a rabbet). The fillister does a good job making tenons on a wide board but a lousy job making tenons on a short one. (See photo on the next page.)

Lower Stretchers

With the upper mortise-and-tenon joints fitted, I turned my attention to the lower stretchers. I positioned the stretchers using the column orders (see my blog at artsandmysteries.com for more information on column orders). The height of the stretcher off the floor is the height of the base of the column. Because the legs are tapered, I simply held the stretchers against the legs and scribed the taper on the stretchers. These tenons were marked and sawn with a backsaw.

Building the Front – Sliding Dovetails

After completing the carcass sides and lower stretchers that join the sides and back, build the front. The front legs are held together with sliding-dovetail joints on the ends of two rails that define the drawer opening. The lower rail slides in from the front. The upper rail slides down from the top. Both rails are as wide as the legs are thick. You'll see why later.

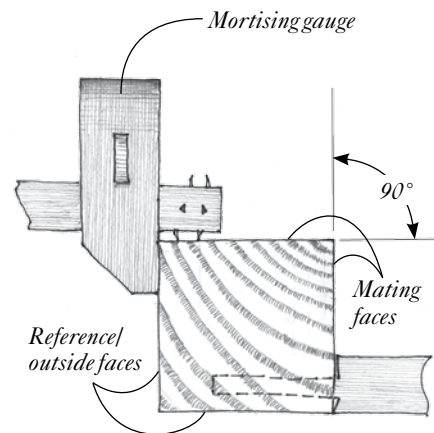
I began by sawing the dovetail shape on each end of both rails. Then I simply laid them on the project and traced around with the knife end of my striking knife. I did not taper the dovetail in any way. Using my backsaw, I simply sawed out the knifed lines and chopped out the waste with my chisel. One trick you see in period sliding dovetails is that although the rail stock is as wide as the leg, the dovetail rarely spans that full length. The dovetails are often cut off such that they only extend 1" or so into the thick leg stock.

Adding a Drawer to the Lower Case

The only thing that separates this piece from a table is the integration of a drawer. The basic full-height leg construction with an upper

apron, mortised and tenoned into place, easily dates to the Middle Ages. In 17th-century pieces, drawers were hung on side rails almost like modern ball-bearing drawer slides. The rails were typically either let into notches in the legs or nailed in place. This is an easy and effective approach to integrating a drawer. The only downside is that it requires a side-hung drawer. Side-hung drawers require thick sides in which a groove is let for the runner. Hardwood sides are less prone to wear than

softwood sides. Consequently, drawers made this way were often fairly heavy. I chose to use the 18th-century method, requiring runners, guides and kickers.



I tend not to four-square stock (make each face square to its adjacent faces), but in this case, the ends where the apron attached really needed to be squared.



I like to brag about how roughly and quickly I work because I think it marks a significant departure from my perception of "Norm-al" woodworkers. The truth is, this is only the first step. I start rough, then refine where needed. In this picture, I'm producing the leg taper with a hatchet.



In this picture you can see the two squared up rear legs. They are square but not exactly the same size. The long try plane shown remedied this problem in seconds.

The drawer runners are tenoned into the back of the upper and lower rails. I find it advantageous to have the rails as wide as the legs so I don't have to notch the runners around the legs. Different craftsmen attached



It's tough to saw tenons on a wide board. I'm using a fillister plane instead. The disadvantage of this method is that the shoulder of the tenon is defined by the end of the board (where the plane's fence rubs). That means the length of the board must be just so. So this isn't a better way to cut tenons, but it's a reasonable alternative for wide carcass sides. See my blog for a demo.



I think it's helpful to bury the shoulder inside the leg. This makes the creation of the rail much easier and allows the inside surface of the leg to vary that much more.

them differently in the back. Some simply nailed or doweled into their end grain through the back piece. Others chopped a hole in the back to permit a short tenon. I chose to chop the holes as shown in the illustration below.



I mark the tenons directly from the mortises. It's important to have nice crisp ends on your mortises. When the ends are rounded over even a little bit, it's tough to know how wide to make each tenon.



The upper rail holds the tops of the two front legs together. I think the trick to getting any dovetail tight is sawing accurately. Beyond that, what you want is for that wedge shape to pull against the shoulders. If the top is too tight, the wedge shape can't do its job. So I shaved away a bit of the top of the tail to get a tight fit. This joint won't be visible in the finished piece.

Locking It Up

I've left this piece unglued to give me a little more freedom to make changes as I build the upper case. The lower sliding dovetail is so tight, I doubt I could get any hide glue in it. The upper dovetails could probably use a bit of glue. Hide glue prefers a slightly gappy joint. When a joint is very tight, hide glue tends to extrude out. The mortise-and-tenon joints are too tight for hide glue and not tight enough for yellow glue to develop much strength. These joints will get drawbore pegged. The upper pegs will be tight, but the lower pegs will be driven into elongated holes in the tenons to account for shrinkage of the sides relative to the legs. When this lower case is complete, it will only need a few drops of glue in it.

Conclusion

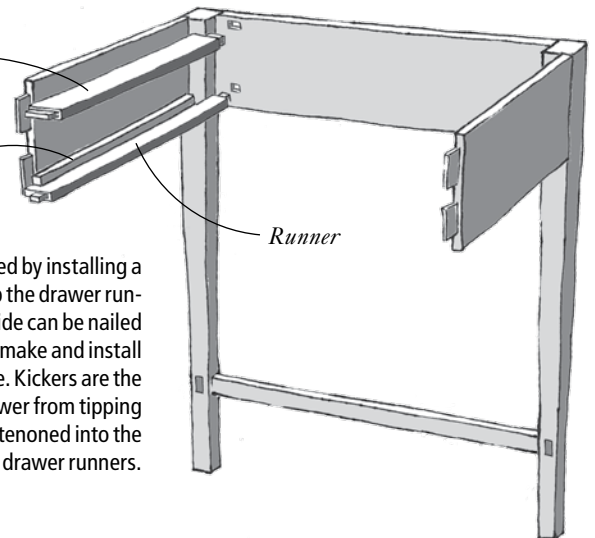
Though we don't know exactly how period craftsmen were able to efficiently build such a variety of objects, we do have some evidence. Despite the attempts of antique dealers to distinguish one piece from another by shop, or region or style, similarities in basic construction are overwhelmingly evident. Period craftsmen built similar things similarly.

In this instance, the joinery presented is virtually identical to that of a baroque (Queen Ann) lowboy. The legs on my desk are tapered where the baroque piece's legs would be cabriole. The lower stretcher would be omitted in the baroque piece. Otherwise, the joints, the tools used and the techniques are all identical. By using a common suite of joints and applying them to different objects, we can develop the skill needed to build our first as if it's our hundredth. **PW**

Kicker

Guide

Runner



The drawer runners are completed by installing a little stick (drawer guide) to keep the drawer running straight in and out. The guide can be nailed or glued in place. I prefer to make and install them after the drawer is made. Kickers are the upper runners that keep the drawer from tipping down as it is removed. These are tenoned into the upper rail just like the drawer runners.