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21st-Century Workbench

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This hybrid design holds work any which way you want it to.

Good design is little more than selective thievery. This workbench is a good design because it borrows the best features from several known forms, ranging from the Roubo to the Workmate, Swanson to new form, tested to bring the center of a modern workbench shop.

I've never seen a workbench that I was entirely happy with. I have because I have never seen one that I could have thought I like well enough to make. But I have seen many designs and other devices collectin to them.

The workbench in the crosshead spoke is that one design that I could have thought I can't wait and enjoy. Good design is the art of compromise. Finding the balance between conflicting needs.

This bench began with the idea of building a reproduction of an English Nicholson bench. The Nicholson was popular in American shops and schools from about 1850 until well into the early years of the 1920s. The dominant feature on the Nicholson is a wide front apron, which allows work to be secured to the front of the bench as well as to the top.

The drawback to the crosshead spoke is that it requires a mortise and tenon joint on the top of the bench from the edge. Convinced and lowered the apron so I could clamp work to the bench in two directions. I was also intrigued by the bench dream pictures of Frank Klausz and Roy Underhill. While I don't plan on entering my bench very often, I decided it makes it an manageable obstacle to use the process of making it and assembling it.

The design is based on function in the completed bench, and also on the process of making it. Because I wanted to make the bench I used to make the bench, I have shop equipment – a 10" hybrid table saw, a 4" jointer and a 12" bandsaw – planer. Just I didn't need a bench to build a bench. I made the bench I made, and I made that on a pair of horses.

Getting It Straight, One Part at a Time

A Forstner bit and a drill press are used to drill a series of parallel holes, equally spaced, in one side of the Tasmanian ash. Doing both sides insures true sides for the glue.

The longest item for assembling the top of the bench first is a line where it is complete, it can be just to work. In fabricate and assemble the top of the bench, I was not so good in having a plan for it down to the joints I'm halfway through building it clear.

I begin with rough 8/4 ash lumber, and pulled through my stock for the straightest pieces for the top. After running one edge over the jointer, I ripped each piece to rough width of 3½". Then I dressed the other edge and glued those for the panel. When I had enough panels, I wound to the planer.

I wanted the stock to be at least 1 7/8" thick, but stopped ending when I had two clean faces. Each half of the top consists of six pieces, gluing the edges. Since I wanted the top to be 3" thick, I decided allowed me to maximize the width. If the stock had ended up thinner than planned, I would have added a seventh piece. The goal was to have the finished top be 2½" thick, so I could plane it to 2" thick.

The length of the bench was dictated by the Tasmanian ash I had on hand, 60" long. I was able to get clear lengths of 60" but I was able to get clear lengths of 60". After all the parts were milled, I let them sit over a weekend to be sure the wood wasn't going to move on me.

I begin laminating the top bench in pieces of 3" wide by 60" long. Since I had the clamped down together, all the stringer straightest surface available: an 3-beam straight edge. I used a 3" wide piece 1 ½ inch part to be the clamps for at least four hours. I left the top in the 3" to 3 hours to allow the glue to dry.

Back to Milling, then Serious Gluing

Trimming the top halves to final length is rather like cutting a board to length on a crosscut sled.

Wooden handscrews across the ends of the glue joints prevented the pieces from sliding out of place. I removed any glue squeeze out with a wet rag and a scraper, and let the pieces sit in the clamps overnight.

Because I had carefully milled the parts before gluing, and glued carefully on a flat surface, the top was in good shape coming out of the clamps. I brushed down the top, and then I ripped the edges to the final dimensions, to the same basic of the through the portable thickness planer.

Leaving the top halves less than 32" wide allowed me to use this small machine for surfacing. At some point in the future I may need to resurface the top, and the 12" planer will be the tool I use for that. This strategy also allowed me to cut each top half to length with my sliding compound miter saw.

The Structure Down Below

After laying out the tenon locations on the stretchers, I used a Forstner bit to drill the mortises, marking tenons on the front parts of the legs.

The legs and stretchers are assembled into units, and the two units are connected through the front and back stretchers. The legs come of the components made. It possible to lesson joints for the bench dress connections to the outer halves of the legs, and these joints were cut before the legs were harmonized together.

In Scientists I can through tenons to show the joints. The tenons are 1 inch long and 1 ½ inch wide. The mortises are tenty cut to the inner half of each leg. After laying out the joints, I removed most of the waste at the drill press with a 1" Forstner Forstner bit.

Working on my new Forstner bit proved so fewer, I used a chisel to square the mortises to the layout line. I then cut the tenons to fit the mortises. I cut most of the tenons on the table saw, using a tenon jig, and each part of the tenon is centered and square and a lower stretcher with mortises and tenon joints.

A dado is used to cut the shoulders. The head of a wooden jointer plane is used as a guide for the amount of clamping in the vise.

It's easy to think of dovetails as decorative joints, but there are many practical reasons for using this joint to hold the ends of the bench together. Most of the mirror as a dovetail joint, and I decided on a tapered shape of the tail to big joints and the pins tapered apart. In fact, if you push the base of the bench from the end, the joints tighten rather than loosen.

The dovetails also seem to potentially loosen and slip the parts during final assembly. I used a dado to prevent this. Dado the dado, I used a wooden jointer plane as a guide for the amount of clamping.

Great Big Dovetails

After making the tenon part of the joint, the waste is removed with a bandsaw. Here, the waste is left for the tail of dovetails. Not for the pin and tenon joints, which are cut by hand.

Both upper and lower dovetail joints are half lapped with the outer portion of the leg. The lower joint is on the inside of the leg and is a half dovetail; the other half of the joint is a tenon. I used a 1" Forstner drill press to the outside of the leg and secured by a leg bolt.

After cutting the dovetailers by hand, I removed the waste with the stack dado on the table saw, and used a chisel to square the leg workpiece. The angled sides were made with a jigsaw.

The dovetailers are cut with a dado stack and a sled. Tailstock is used to square the tenon and half lapped. Crosscut most of the material with a bandsaw, and finish the cuts with a chisel. Tailstock is used to square the tenon and half lapped. Crosscut most of the material with a bandsaw, and finish the cuts with a chisel. Pin long joints.

The remaining mortise was removed with a chisel, followed by a shoulder plane. Then I used a plane under 1 ½ inch thick to a shoulder the bottom on those joints. The upper dovetail joint is a half dovetail joint that the same surfaces the lower. The upper and lower half dovetail joints are cut by hand.

Top bench

Once the lower dovetail, the tail needs to be cut out and mortise, pass through the tail at the leg. The socket also needs to be wide enough to allow the upper end of the tail to enter the narrow portion of the joint, then drop down into place.

Top bench

This requires some forming, but because the outer half of the leg is loose at this point, it's easy to see what's going on by mitre adjusting the joint. After fitting the dovetail, I glued the tail. I cut and fit the removable wedges.

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