



Will Myers

In the summer of 1996, an afternoon thunderstorm brought down a large red oak on my neighbors land. Prior to the storm, I had never noticed the big tree even though it was only about a 150 yards from my home.

A few weeks later my neighbor asked me if I would like to have it for firewood. When I walked over to take a look at it, there was a beautiful red oak about 38 inches in diameter. It was by far the largest tree in the small stand of timber.

A few months earlier I had bought a larger chainsaw and an attachment to saw boards with it called an Alaskan sawmill. It worked pretty well and I decided I would use it to saw the oak into boards.

The trunk of the tree was only about 9 feet long before the first large limbs branched out. My saw could only cut 23 inches wide so I squared the log up and started sawing 1 inch thick boards.

I had thought I might try to cut a bench top from the tree if it was sound. About 6 inches out from the pith I dropped down and cut a slab. I knew this thing would be tough to move once I got it cut. A six inch thick, twenty three inch wide, nine foot long piece of green red oak is HEAVY! I mean small car heavy! Of course, I was alone that day, but somehow I did manage to get it slid on the back of the pickup. This is how the journey to my new workbench began.

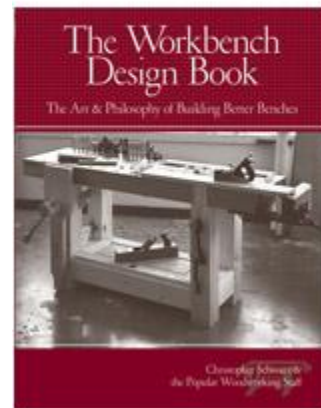
Quite bit time passed. My big chunk of red oak was shuffled around, moved here and there, and seemed to be in the way a lot. In the intervening years the wood had dried. It had twisted pretty badly and cracked on the ends. At the time I cut the bench top out the only plan I had was to build some kind of undercarriage to set it on.

The only reading I had done on building workbenches was in Roy Underhill's "Woodright's Workbook". I had heard of Andre Roubo but really didn't know much about the benches he documented in his book "L'art du menuiser" in the late 1700's.

In 2010 I read a copy of Christopher Schwarz's book "**The Workbench Design Book**". His in depth study of the Roubo's designs got me to thinking about the slab of red oak again.

I really liked the plate 11 bench, but the plate 279 bench Roubo called the "German" bench is the one that really caught my eye. This was the design that I decided to build. Finally in January of 2011, I drug out the slab of oak to try and make something of it.

 Lost Art Press



The first big issue was to get started flattening the slab. The bench top had about an inch or so of twist to it. I pulled out a jack plane and worked around on one end a little going across the grain taking as big a bite as I could.

The wood was hard and dry and after about 30 minutes I knew there was going to have to be another plan. With the slab sitting on saw bucks I put wedges under the opposing high corners to split the difference of the twist. Then I attached a couple of 1x6's to each long edge with drywall screws using a level to get them both in the same plane.

The screws did leave a few small holes. You could use clamps to hold the rails if you wanted to avoid the holes; the screws were just quicker. I borrowed a big router from my uncle and built a sled to attach it to out of plywood and a couple of 1x4 scraps. With a straight cutting bit in the router, I took about 3/8 inch off with each pass. For me, this was terribly boring work. It took around two hours on each side and probably a few years of life off the router.



If you get the guide rails level with each other, the result is a pretty smooth dead flat top. After finishing up with the router, I made a pass over each side with a jack plane to smooth up the few little pieces I missed with the router.

With the top and bottom complete I hand planed the long edges square to finish it up.



I had made up my mind to do as much of the bench with hand tools as possible. I was very pleased with the result but I kind of felt like I had cheated for using a router on the very first step. Have I gone the hand tool route on this step would mean starting with an adz and working off the very high spots, then moving to planes.

In the interest of time, the router was the only way to go. Most references to using a solid slab for a bench top say you should use the heart side as the top and turn the bark side down.



If the top moves, it will crown toward the heart which is easier to plane out later down the road. By orienting the slab this way if it were to crown later it will not open up the faces of the leg joints either. Hindsight is always 20/20, if I had the chance to saw the slab again I would not have the pith of the tree in it.

My thinking at the time was to put the other side up because it was clear with no knots for the entire length and width of the slab. One other thought, I did not wax the end grain to prevent checking. My thinking at the time was by not waxing the end it would help the slab to dry faster. If I had known there would be a 15 year hiatus I would have waxed it. I think it would have helped dry more evenly and prevented a lot of the checking of the ends.



Well on the way to making my new Roubo workbench, I was thankful to have such a beautiful piece of wood to work with. My wheels were constantly turning as I thought about seeing each step of this project unfold. Not only was I excited about the project of building my own workbench, but all the things I would use it for once it was finished. Now with this part complete, it was time to turn to the legs which we'll cover in Part II.

Will Myers



My name is Will Myers. I live in northwest North Carolina with my wife and two daughters. I am an amateur / hobbyist woodworker. I enjoy hand tool woodworking but I do use power tools for monotonous tasks sometimes.

I have always been drawn to woodworking. As a child I had a love for making things and sometime in my teenage years I discovered [Roy Underhill](#) and his show "[The Woodwright's Shop](#)", this really fueled the fire.

My favorite thing about hand tool woodworking for the most part, is the simplicity of the tools themselves, yet the feats that can be accomplished using them. Being able to accomplish a task with precision and control that a lot of power tools cannot, and maybe most of all being able to produce projects by your own sweat and ingenuity.

After I completed the flattening of the slab, it was about six months before I finally got back to it. There were a couple of reasons for this.

First, I was busy juggling the rest of things I had going on in my life. Second, I couldn't make up my mind on the joint I wanted to use to attach the legs to the top. I agonized over this. I know your thinking "it's just a bench", but the truth is I was scared of messing up.

The joint I wanted to do was the dovetail-tenon combination that Roubo had documented. This is a really simple joint, but to really look good it needs to fit tight, especially around the dovetail's vertical face.

If I hack huge dovetail sockets and mortises into the top and can't get the legs to fit decent, I would be in trouble. Big slabs of wood of any kind are hard to come by and even if I had another tree big enough, it would need to dry for four or five years.

I thought about doing a single large tenon. This would have been more than adequate, and much safer.

Eventually, I would come back to the Roubo joint in my mind because, for whatever reason, it just seemed right for the bench. I was nervous to say the least, but I decided I would give it a try.

I cut a test leg joint before I started on the real thing. I would definitely recommend doing this. On the test joint you will figure out where the pitfalls are very quick. It also allows you to get your technique down.

At the time I sawed the slab I did not cut anything for legs so I bought some dry eight quarter red oak for the legs and stretchers. I glued up two pieces of the eight quarter stuff to end up with legs that are slightly under 4x6 inches and 36 inches long.



To start, I cut one end of the legs to square it up, get this as close as I can because

the whole joint depends on it. Then I used a marking gauge set to 3/16 or so thicker than the thickness of the top. I ran it all the way around the end each leg, this is the shoulder line.

Next I set a mortise gauge to mark the back of the dovetail and the second pin to mark the front of the tenon. I then set a gauge to mark the back of the tenon and run it around. Once I got all the gauge marks made, I run a pencil thru them to make them easy to see.



Last I set a bevel (I don't know the angle I set it were it looked right to me) to layout the side of the dovetail. After marking the angle on the top each leg use a square to run lines to the shoulder lines. Be sure and mark the waste clearly this could save heartache later on.

The thickness of the dovetail and tenon are really up to you. These were 1 1/4 thick tail, 1 inch space, 1 1/4 tenon with a 3/8 inch shoulder on the back. By using the marking gauges you will get the joints more uniform and it is easier to layout.

This is not a have to. I used the legs to lay out the mortises, then numbered the to keep them together. If there were slight variations it wouldn't matter.



Building a Roubo Bench - Getting Started

Sawing these joints by hand is a work. If you have a vise to clamp these in for

sawing this is a big help. I did not have one so I used a F-clamp to hold them to a wall mounted bench I have.

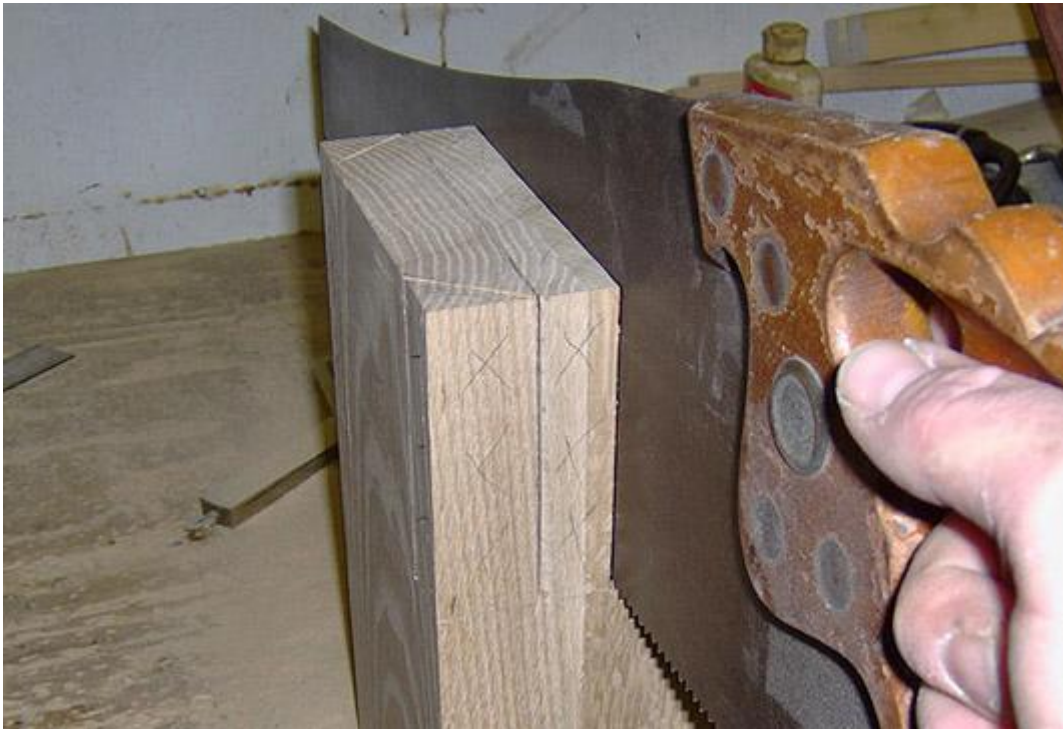
I used a dovetail saw to kerf in the very top of the dovetail before I went to the larger back saw to make it easier to start straight.



I then went to a 14 inch backsaw sharpened rip. Take your time, cut on a diagonal down the face of the dovetail. This is a critical cut, this is very visible in the finished joint. Depending on the depth of the joint you may have to finish it up with a panel saw.



Once this is complete move on to the back of the dovetail and tenon cheeks, cut halfway from both sides. Stay on a diagonal, this is much more accurate than trying to saw straight down. Finish up with a panel saw if need be.



Building a Roubo Bench - Getting Started

With the rip cuts made, make the shoulder cuts to remove the waste.



With this done, I used an auger to bore thru the waste between the dovetail and tenon. Drill halfway from both sides, clean up the bottom with a chisel.

In the oak this was much faster than trying to chisel all the waste out.



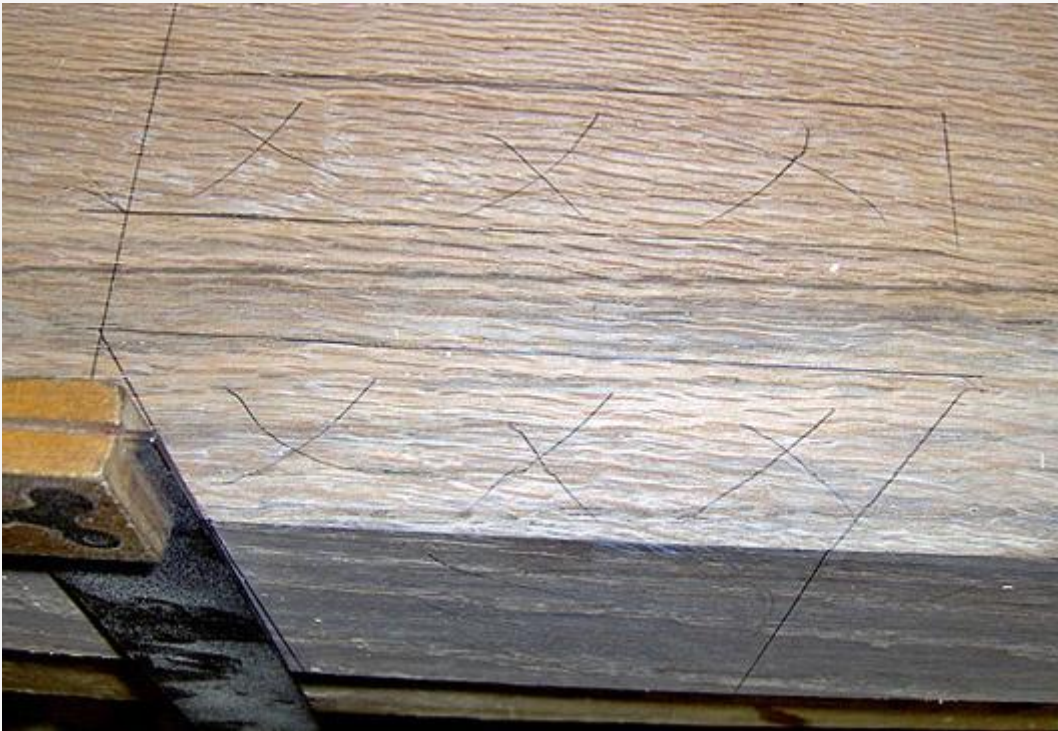


When all the legs are cut it is time to move on to the mortising. This is really pretty simple. At this point you really need to know what kind of vices you are going to use and position the legs accordingly.

Once this was decided I marked a square line on both ends of the slab where the legs would go. I set the leg against this line and flush with the face of the bench. Then traced around the tail and tenon with a pencil.



Once I traced it I used a square and run two lines down the edge of the slab for the edge of the tails. Once this was done I flipped the slab over, aligned the dovetail on the leg with these lines, and traced the tail and tenon on this side too. Mark all the areas to be wasted away.



I cut the tail shoulders with a back saw, and then cut a few kerfs thru the waste just shy of the baseline. With a chisel and mallet I spilt away the majority of the waste working half way from one side and finishing up from the other side. I used a chisel and square to level up the bottom to the baseline. The mortise is simple too but requires more work.

I used a 1 inch auger and bored several holes halfway thru the slab, then flipped it and finished boring from the other side. After I the boring was complete I squared it up with chisels and a mallet. When I got to this point I would try the leg in the joint.

They all required some fitting work, the first one I cut I spent about three hours tweaking before it finally seated up. The rest went much quicker but still took a little fine tuning. Don't forget to number the legs to their corresponding mortises as you get them fitted.





These are big joints and a lot of sawing and chiseling to create them. In my opinion it is well worth the time and effort. When they finally go together it is a wonderful feeling. They are beautiful to look at too.

In the next segment I will cover the stretchers and getting the bench on its feet. I will also cover the vises I came up with.

If you have any comments, please email me at sbhemi@yahoo.com

Happy building!
Will Myers
October, 2011

After all that sawing, mortising and chiseling, I was ready to move on to the stretchers. Which meant more sawing, mortising and chiseling. (Hurray!) Really, this part goes pretty quick. I cut all the mortises first. With the slab upside down I put all the legs in their mortises, measured where I wanted them to go and laid them out with them in the bench.

I did it this way so I would be sure the mortises were in the correct locations on the legs. It is easy to get confused with way they should be oriented. After I got them laid out I removed them and started hacking. The mortises are 1 inch by 5 inches.

The ones for the front and rear stretchers were 5 inches deep, the ones for the end stretchers were 3 inches deep and intersected inside the leg. That's a big mortise but they are straight forward and go fast. I used a 7/8 drill bit to remove most of the waste, then squared them up with a chisel.



The stretchers on this bench are 2 in x 6 ½ in. I put the legs back in the bench and scribed the tenon shoulders directly off the legs. Chris Schwartz recommends this in his book, but I didn't give it much thought when I read it. The reason for doing it this way is because the legs probably will not be perfectly square to the bench top (these were not). If you have the dovetail/tenon joint fitting tight and the leg is out of square there is not much can be done without trimming the joint. This could open the dovetail faces or the tenon face were they come thru the top. If you scribe the stretchers directly off the legs then it will not matter.

I sawed the shoulders with a back saw, if the grain was straight in this area I spilt waste away. If it looked like it would run the wrong way I sawed the cheeks also. I then trimmed them up and fitted them to there mortises. I cut the end of the tenons to a 45 degree angle for where they meet one another in the leg.

Last, I drilled the peg holes with the hole in the tenon offset towards the shoulder about on 1/16 of an inch to pull them up tight when the pegs are driven in. I numbered these joints as well to avoid confusion latter on. I have a sliding dead man on the front so I made two 45 degree cuts on the top of the front stretcher for it to slide on.



After all the joints were complete I assembled the legs, stretchers and top without glue to make sure everything would fit together.



After the dry fit I tweaked some of the joints. At this point it was finally time to glue it up. I used the Titebond II extended dry glue and drafted my uncle to help speed up the process. After we glued and assembled everything, I clamped the stretchers with pipe clamps and drove the pegs in. In the home stretch, on to the vises.



From the beginning I knew what type of vises I wanted to use, a leg vise and a traditional type tail vise.

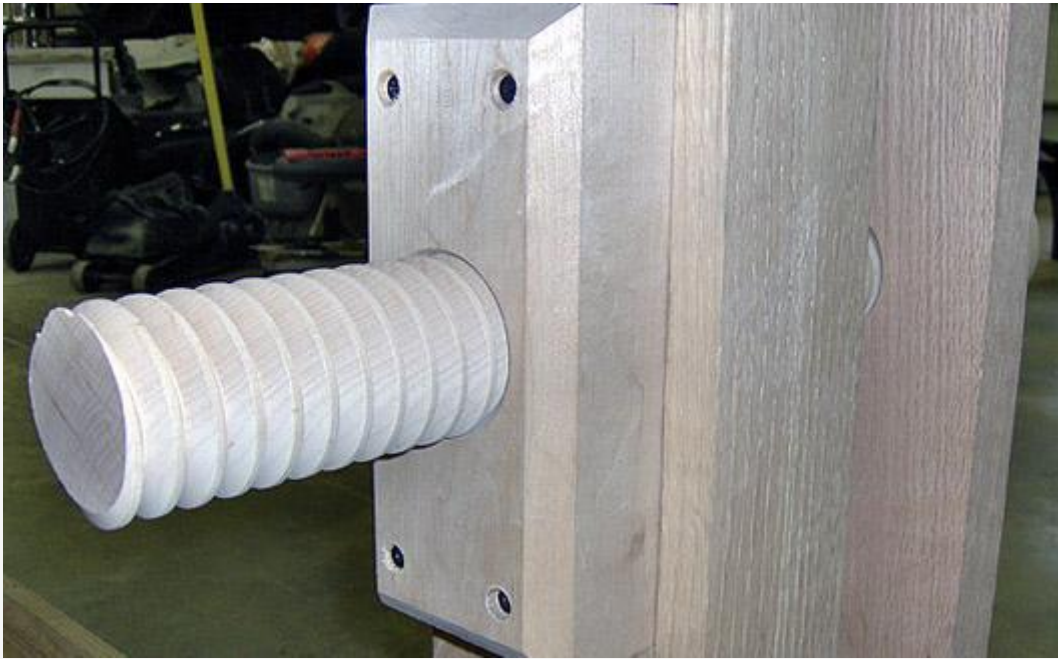
The leg vise is simple and easy to fabricate. I made my leg vise chop from a 2 in. by 7 in. piece of oak. The parallel guide is 1 in. x 3 in. oak. I put the parallel guide above the stretchers. I cut the mortise for it before I assembled the legs to the bench. This mortise side walls and parallel guide need to fit as close as possible to prevent the chop from flopping side to side.

The joint on the parallel guide is a shouldered tenon that I cut two kerfs in, then wedged and glued into place. I drilled the parallel guide pin holes in two rows with the holes 1 in. apart staggered ½ in. from each other. After fitting up the chop and parallel guide I installed it on the leg of the bench, clamped it in place. Then I drilled a 2-5/8 hole thru the chop and leg at the same time so the hole for the vise screw would be aligned between the two.

After this was complete I cut a ½ deep mortise for the wooden screw nut to set in on the back side of the leg. Then I chamfered the edges of the nut with a plane and screwed it to the leg.

The wooden vise screw was purchased from Lake Erie Tool Works and would defiantly recommend them. The vise screw is perfect in every way, it is a beautiful piece of work. With this complete I assembled everything, run the screw in , and scribed the top of the chop where it meets the bench top. I then cut it to length and rounded over the ends with a chisel and planes.





The tail vise is not as simple. This thing required some thought and engineering. I wanted a traditional tail vise but I did not want it to have wooden guides. I figured they would get sloppy in time. I purchased one of the tail vise guide kits from [Woodcraft](#), I had to work on the tracks to make them work for what I had in mind. All in all, the kit was ok. The better choice would be [Lie-Nielsen's](#) tail vise kit, but it was more than my budget would allow at the time.

I made the chop before I made the cut out in the bench top. The chop is made up of glued up eight quarter oak. I made the whole thing slightly oversized so that once I had it together and mounted on its track I could plane it to the dimensions of the bench top. The back L piece is dovetailed to the main body of the chop, this was a challenge.

This is a big dovetail joint but not much different than any other. The biggest issue I had was the waste between the tails. The tailboard is about four inches thick, a coping saw wouldn't even begin to touch it. Chiseling it out would have taken forever, I ended up using an auger and boring it out. Then leveled up the bottoms with a chisel, it worked great.



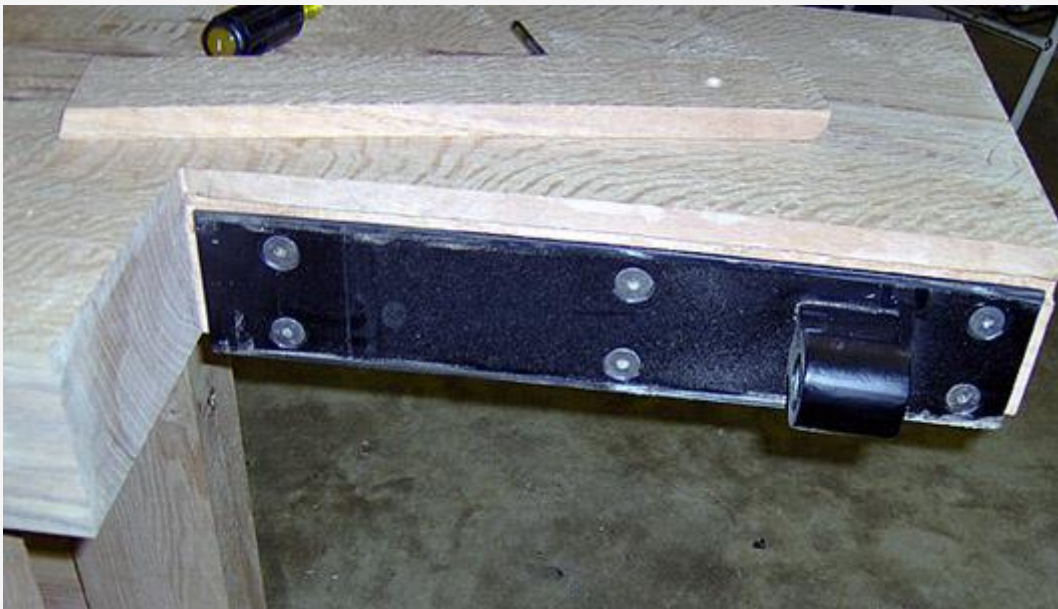
After gluing up the big dovetail joint I made up some blocks for the steel tracks to mount on. After these were cut to shape they were glued to the inside of the chop.

The front block is under cut on the back side for the cover piece that goes on top to slide under. This way I only needed one screw to hold it in place.





At this point I laid out the cut out on the bench top and cut it with a hand rip and crosscut saws. With the cuts made I planed and chiseled the faces square and smooth. I mounted the guide plate for the tail vise with 3/8 by 2in machine bolts after drilling and tapping the bolt holes in the bench top. The guide plate did not have hole this size so I had to drill bigger holes and larger counter sinks for the 3/8 bolts.



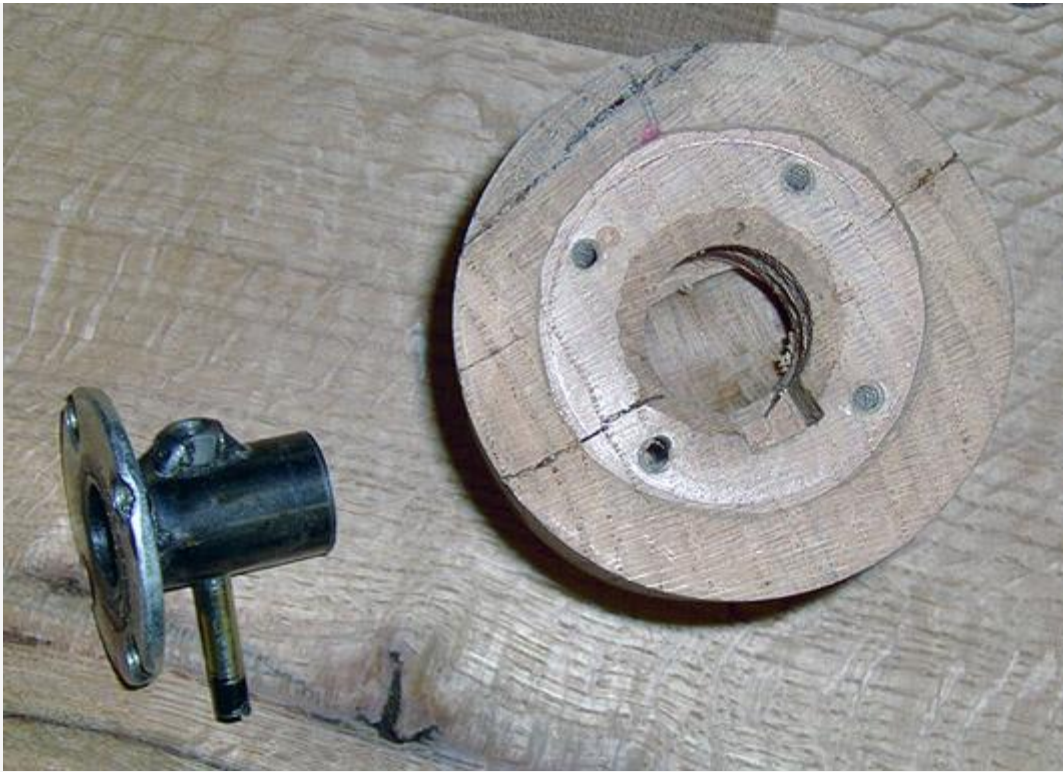
With the guide plate mounted to the bench top I then attached the chop. It required some fitting to get it to slide smoothly on its track.



Once I had it moving nicely I slid the chop up to the nut for the vise screw and marked it. I then drilled an 1 1/8 inch hole thru the chop for the screw.

The kit had a tee fitting on the end of the screw for the handle. It looked terrible so I made a bushing out of one 3/4 steel pipe (3/4 steel pipe is almost 7/8 on the inside) and a large washer. The end of the screw was 7/8, the pipe was a bit smaller inside so I bored it out to 7/8. With this done I welded the washer to the pipe.

I then drilled four holes in the washer and made countersinks for the screws. I put the assembly in position on the screw and drilled a hole all the way thru both pieces for the lock bolt. I welded a nut on one side of the bushing for the lock bolt to thread into.

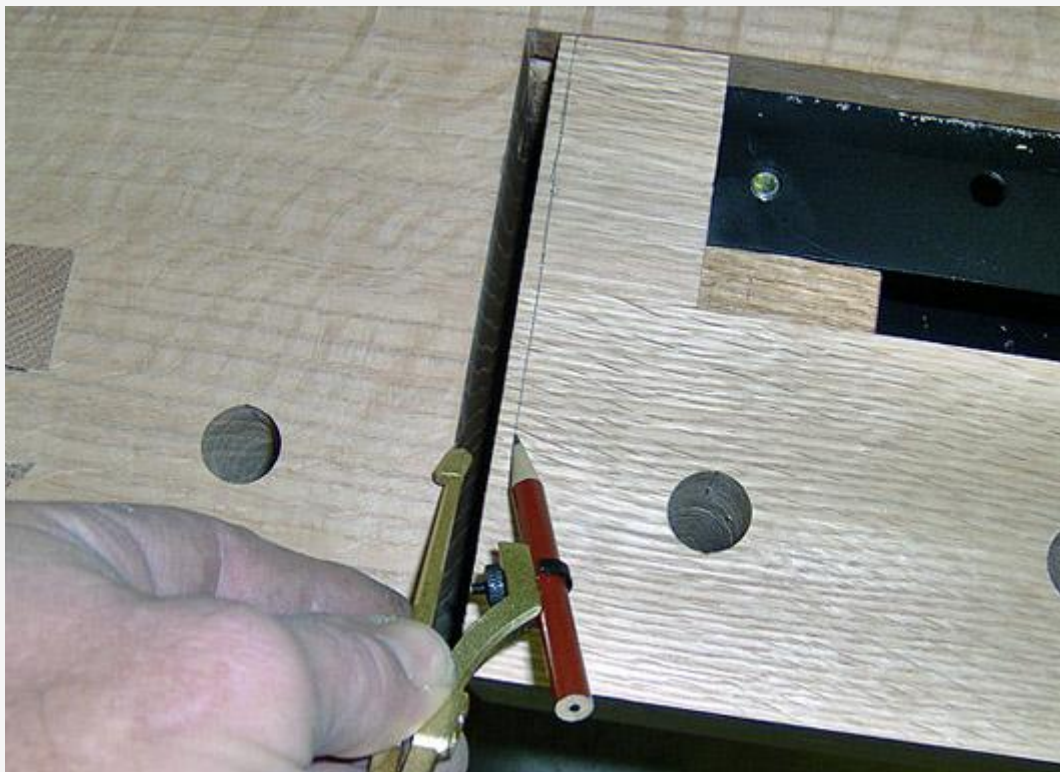


With the bushing made I turned a piece of oak on the lathe to look like the end of the face vise screw. I bored a hole for the bushing and screwed it into the knob.





The last thing to do was square up the jaw face where it meets the bench. I left it long when I made up the chop, I used a pair of dividers and scribed it off of the bench side. I sawed it to the line and it fit perfectly.



After the vises were complete I installed the shelf. I cut a some 1 x 2 inch stock and nailed it to the inside lower edge of the stretchers. I milled out some 3/4 x 6 inch boards and cut a shiplap joint on the edges. I then used some 2 inch nails to secure them to the stretchers.



Well, we are about to the end of this journey. In the next part will be finishing up, a little about the experience of building the bench and the pictures of the completed bench also.

Thank you for coming with me this far!

The last thing I did on the bench was go over the legs and stretchers with a smoothing plane. I also did the final flattening of the top. Then I put a light finish on it. I used a 2/3 Danish Oil and 1/3 Satin Poly mix.

I wiped on the first coat and let it dry for three days, sanded it lightly and then added a second coat. I really didn't go to extremes with the smoothing or the finish, I made this thing to use. The top had some tear out that I didn't get completely out in a couple of places but I really didn't care.

There is also some checking in the top, I did not try to fill them with anything. I am sure in time the dings and scratches will be numerous anyway and that's fine with me. I think the signs of being a useful tool are the ultimate finish.



Gleanings on the Roubo

Building this bench has been quite an experience. It has been a challenging project, not so much in it's complexity but in the huge joints and sheer mass. The truth is the Roubo design is about as simple as it can get, yet it seems to suit every task that I have tried with it so far. It is funny that most people don't recognize it as even being a work bench of any kind.

I have had many people at the shop ask what it is. As a joke I replied to this question from one fellow that it was to be a table to go behind my couch. He never gave it another thought and went on to another subject. I guess even though this design has been in the spotlight the past few years the great majority still have no clue about them.



From what I can tell so far the biggest asset this bench has to offer the hand tool woodworker is mass. It acts like an anvil under the hammer, it does not flex, shake or move under stresses.

It also has a simple beauty to that is hard to describe. When I am working on other things in the shop it seems to pull my eye to it, or when I walk by it I want to reach out and touch it. I know this sounds like a crazy thing to say (and probably is) about a 342 pound oak workbench, but it is true.

If you ever build (or have built) one you might understand what I am talking about.



If I had to build this bench again today I don't know of anything I would change. I have not used it a tremendous amount yet, down the road there may be something I wished were different. At the time of this writing I love it the way it is.





If you are thinking about building one of these benches there are quite a lot of versions of them. As I said earlier my inspiration was Roubo's plate 279 bench, but it really is not a copy. The leg joint is more the plate 11 bench type. I used a single face vise, the 279 bench has a sliding vise also that I did not use (this would be an easy later addition).

I guess what I am saying is there is a lot written about the Roubo design. Do some research before you begin, look at what other folks have built. Pick what you think will work for you and keep it simple as possible. Take your time and build it well. Barring a catastrophe of some kind it should last longer than most anything you will ever do.





The Boss likes it!

Happy building!
Will Myers
November, 2011

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