Reproduction Ampeg SVT-810e Cabinet Construction Photos

August 2014

In 2014 I got it in my head that I wanted to build a copy of an Ampeg SVT-810E. It was not something that I had a need for but I wanted to see what was involved and how well I could do.

I chose to use 18mm Baltic Birch plywood for the build. That did not make for a particularly light cabinet but I was not really concerned about weight. My goal was to end up with a high quality 810 cabinet that I could say I built myself. I covered the cabinet with the same nubby Tolex as used on the Ampeg SVT-CL. I have used Duratex in the past and, while it would be a great choice for a cabinet like this, I really wanted to see what it was like covering one of these with Tolex.

I started off by working on the pieces that make up the shell of the cabinet: the sides, back, top, bottom, and top & bottom angled pieces. After ripping the sides to the proper width on the table saw I needed to cut them to length. The easiest way to do that and ensure symmetry is to cut them at the same time, which I did using a circular saw and guide.

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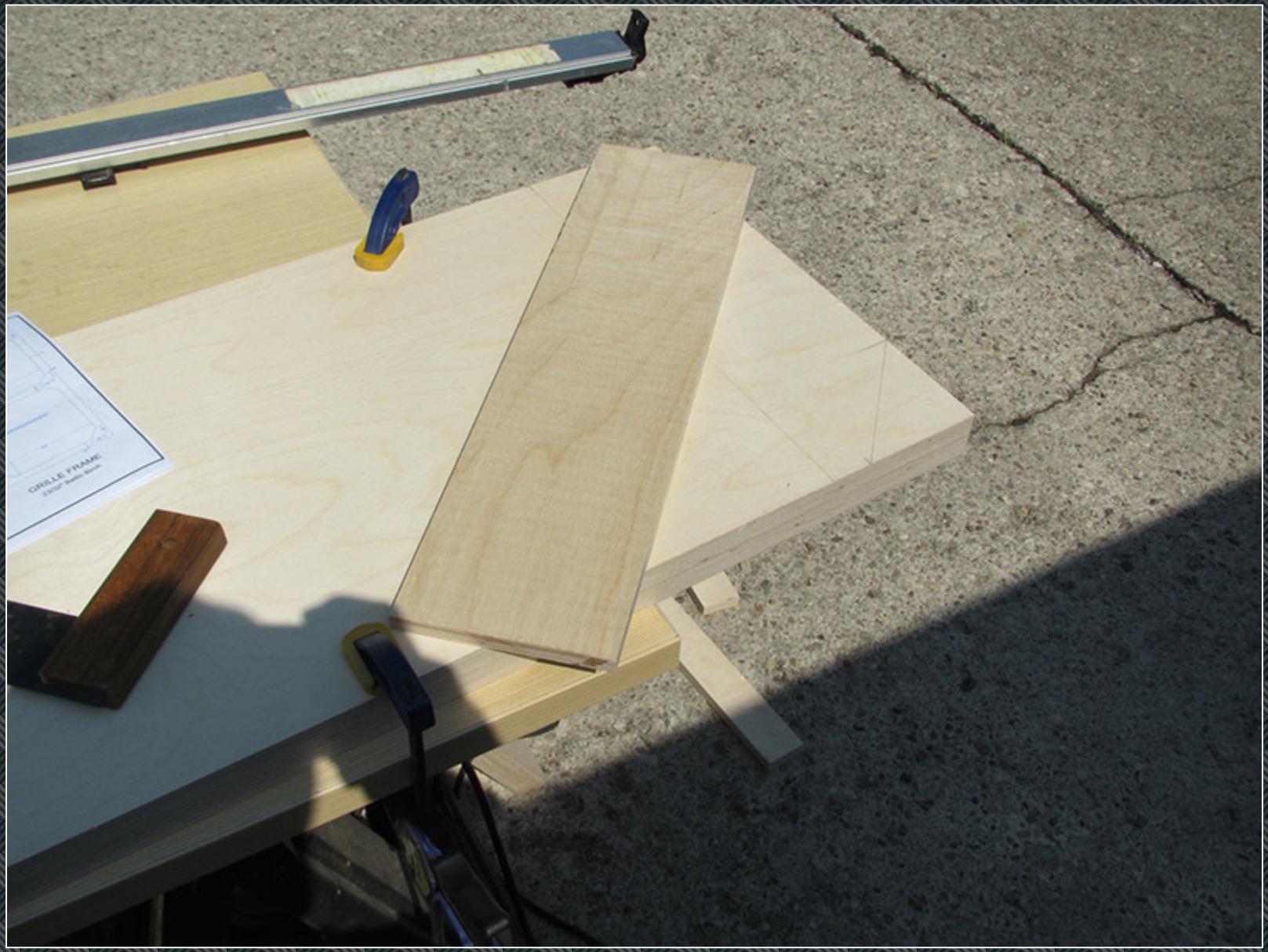
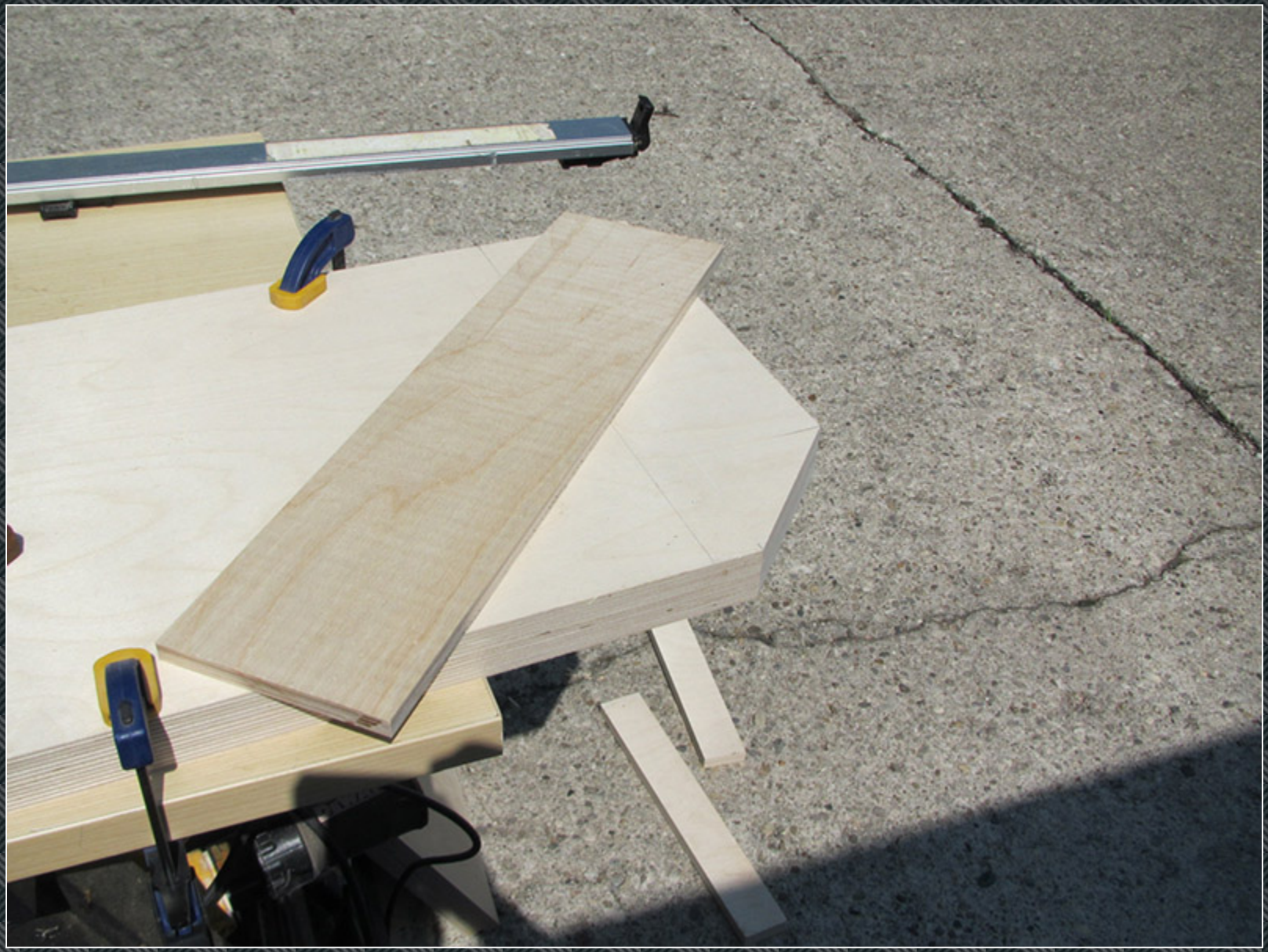
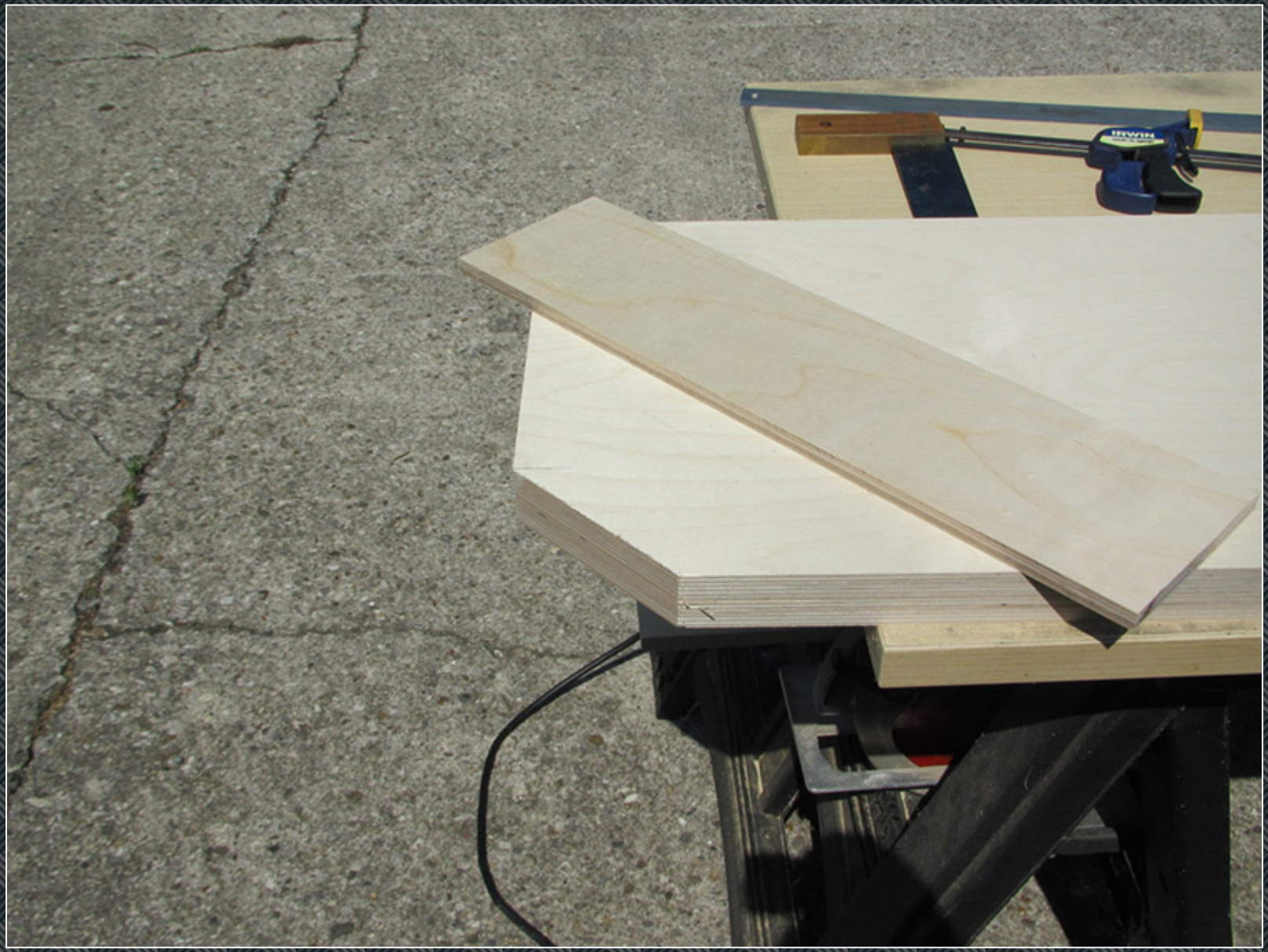


Next I laid out the angle cuts that happen on the top and bottom of the sides. For this I just used a scrap of plywood as a straight edge/saw guide and tacked it down with some short brads. (top angle)



Top angle after cut.

Bottom angle.



Bottom angle after cut.

Here are both sides cut to the correct size and shape.

Next I began to setup to rout the dadoes in the sides. Each side has a vertical dado to receive the speaker baffle and (3) horizontal dadoes that will receive the shelves that divide the speaker chambers. I chose to use a straight edge and a trim router with a 3/4” dado bit. Since the dado bit uses a ball bearing guide it allows me to layout where the dado should be, align the straight edge with my layout lines and rout the dado by following the guide. For this application I decided to use double-faced tape to attach the guide to the sides.

3/4” dado bit.

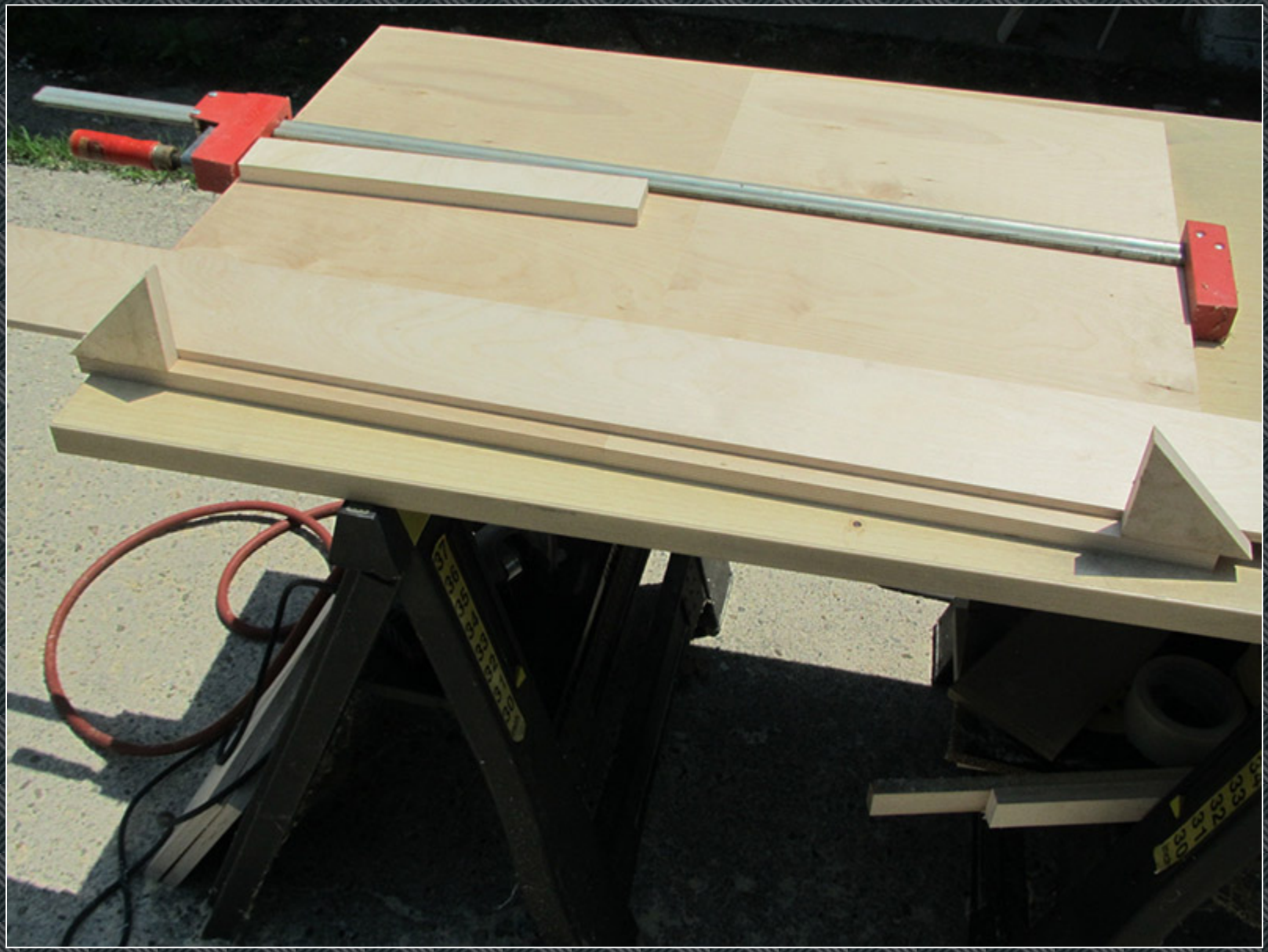
Resulting vertical dado.

Next came the setup for routing the dadoes for the shelves. To ensure that these dadoes would line up properly later I clamped the sides together, back-to-back, and did my layout as if I was working with one large piece of plywood.

This way I could rout continuously across both sides, which ensures the dadoes line up.

Dadoes routed in both sides.

Here are the two sides with all the dadoes routed.



Next I needed to start working on the rest of the shell pieces. I first ran the plywood through the table saw to cut the stock to the correct width, then cut the pieces to the correct size. All of these pieces have a 1/8” deep rabbet routed on each side. These will later receive the side pieces. The back piece also gets three dadoes for the chamber dividers. I used the same process to layout and rout the rabbets in all of these pieces. Using scrap pieces left over from the sides I set the straight edge in from the edge the thickness of the sides and used the trim router as before.

Top and bottom pieces with rabbets.

To be sure that the dadoes in the back lined up with the dadoes in the side I clamped the back and one of the sides together, aligning their midpoints. I could then insert a scrap of plywood in the dadoes in the side, butt the guide against the scrap to position it properly, and rout the dadoes as before.

Back panel after routing rabbets and dadoes.

Here is one of the dangers of using double-face tape to hold down a routing guide. After a few uses the tape doesn't hold as well. If you get lazy and try to go too long before applying fresh tape the guide can shift on you and this happens

Here are all of the shell pieces cut to size, with all dadoes and rabbets routed.

The last thing that needs to be done to the pieces of the shell is to cut some of the edges to a 22.5 deg. angle so that the pieces will fit around the angled corners of the sides. The top and bottom pieces each get one edge beveled while the back and top & bottom angle pieces each get two edges beveled. This could be done on the table saw or with a circular saw but since I already had a 22.5 degree router bit I did it on the router table. (22.5 deg. chamfer bit)

Router bit and fence adjusted to cut bevel.

One of the pieces with two edges beveled.

At this point I was able to do a dry fit to see how things were looking.

(dry fit)

Here is the cabinet top piece laid out for the 8 foot cups.

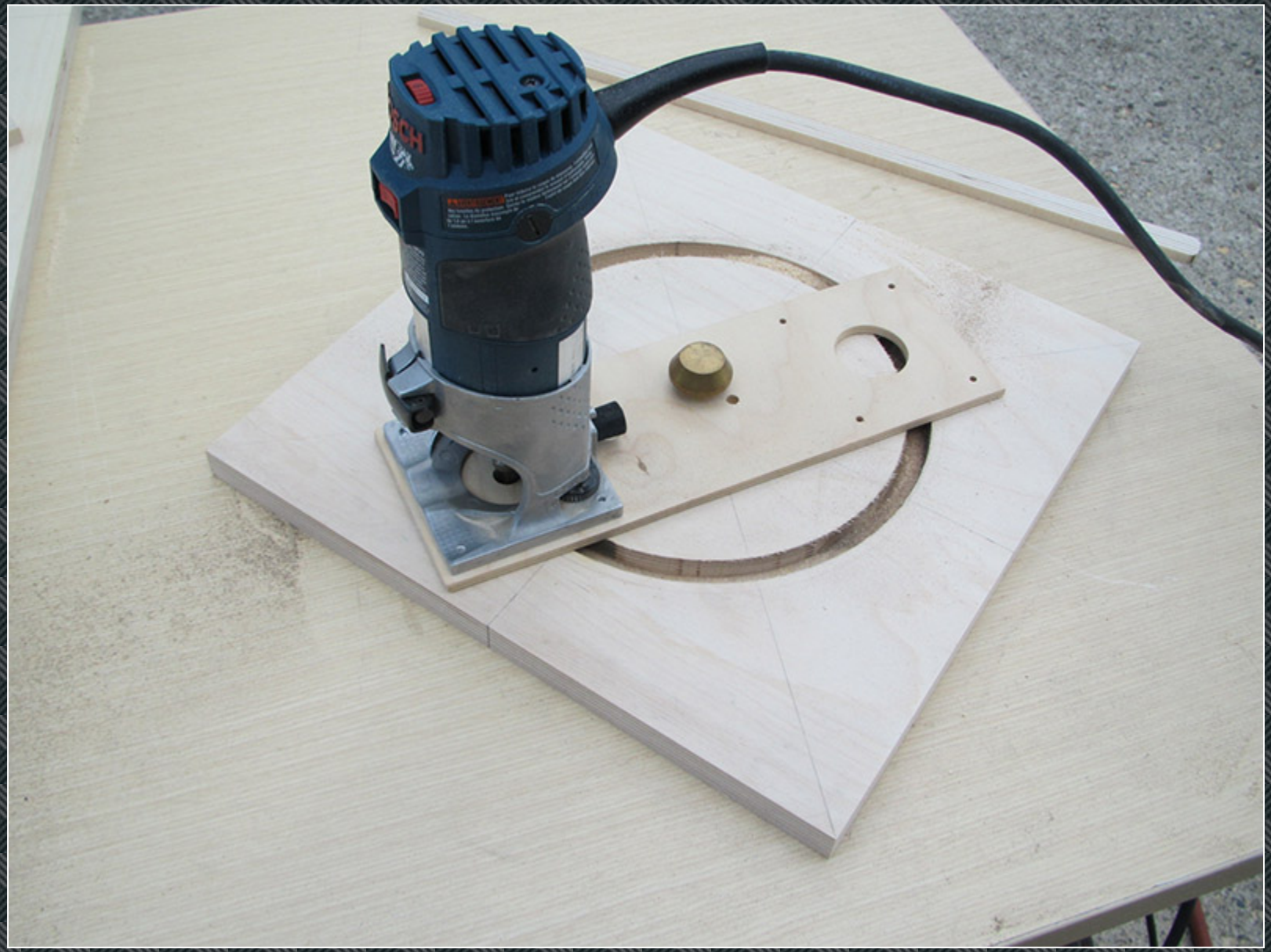
Drilling the foot cup holes using a 1-1/4" Forstner bit.

Starting to layout the centers of the speaker cutouts on the baffle.

Baffle with all centers laid out.

To make it easier to mark the cutouts for the speakers I made a template that can be used to mark the cutout for the speaker. Later, the same template will be used as a routing template when making the cutouts.

I extend the center lines down the edges of the template so that I can line it up with the layout lines on the baffle board.

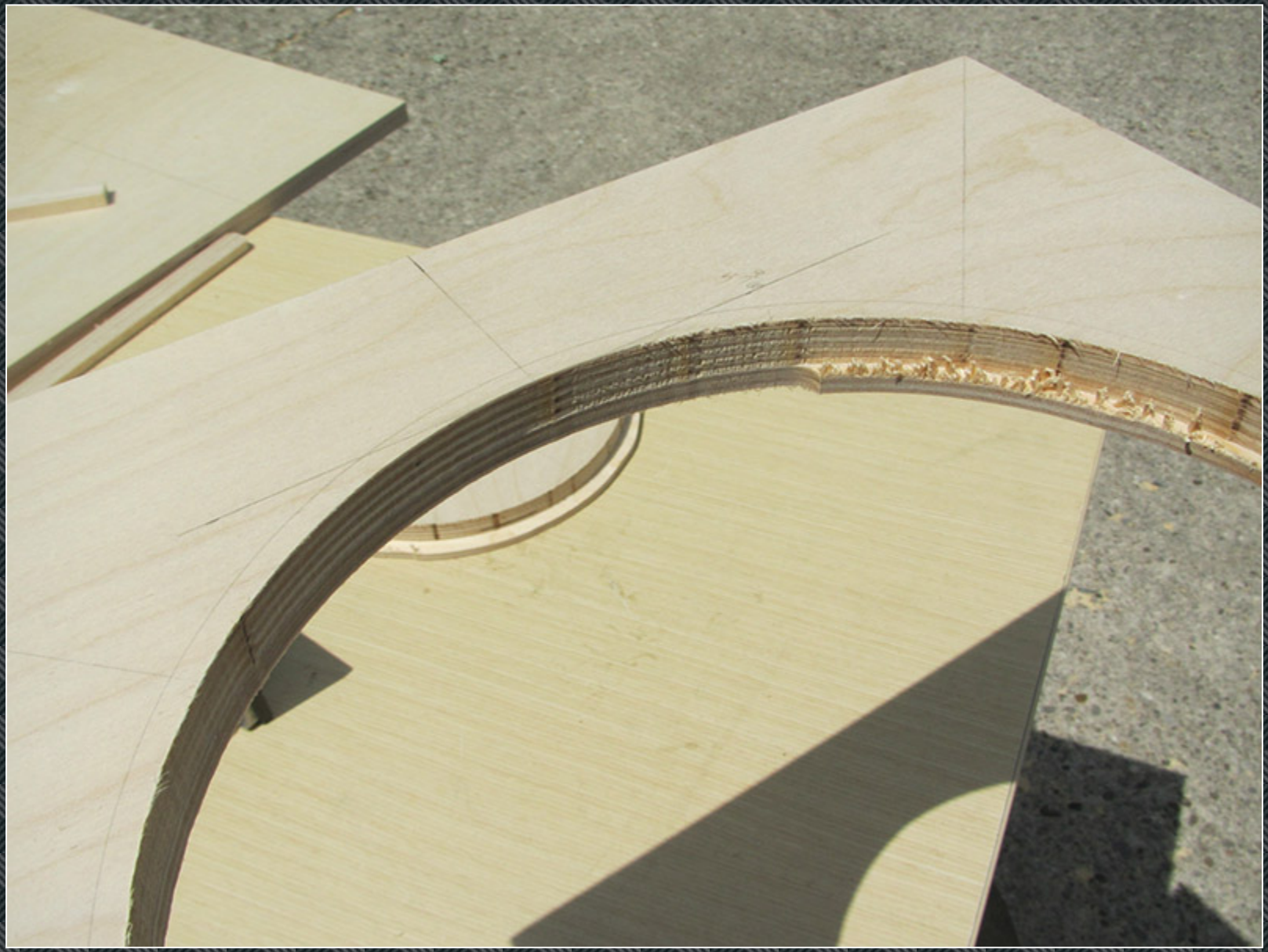


I replaced the base on my trim router with a circle-cutting base made from a scrap of 1/4” plywood. Using this setup I rout most of the way through the plywood. I can’t go all the way through or the center pivot point will start moving as I get toward the end of the cut.

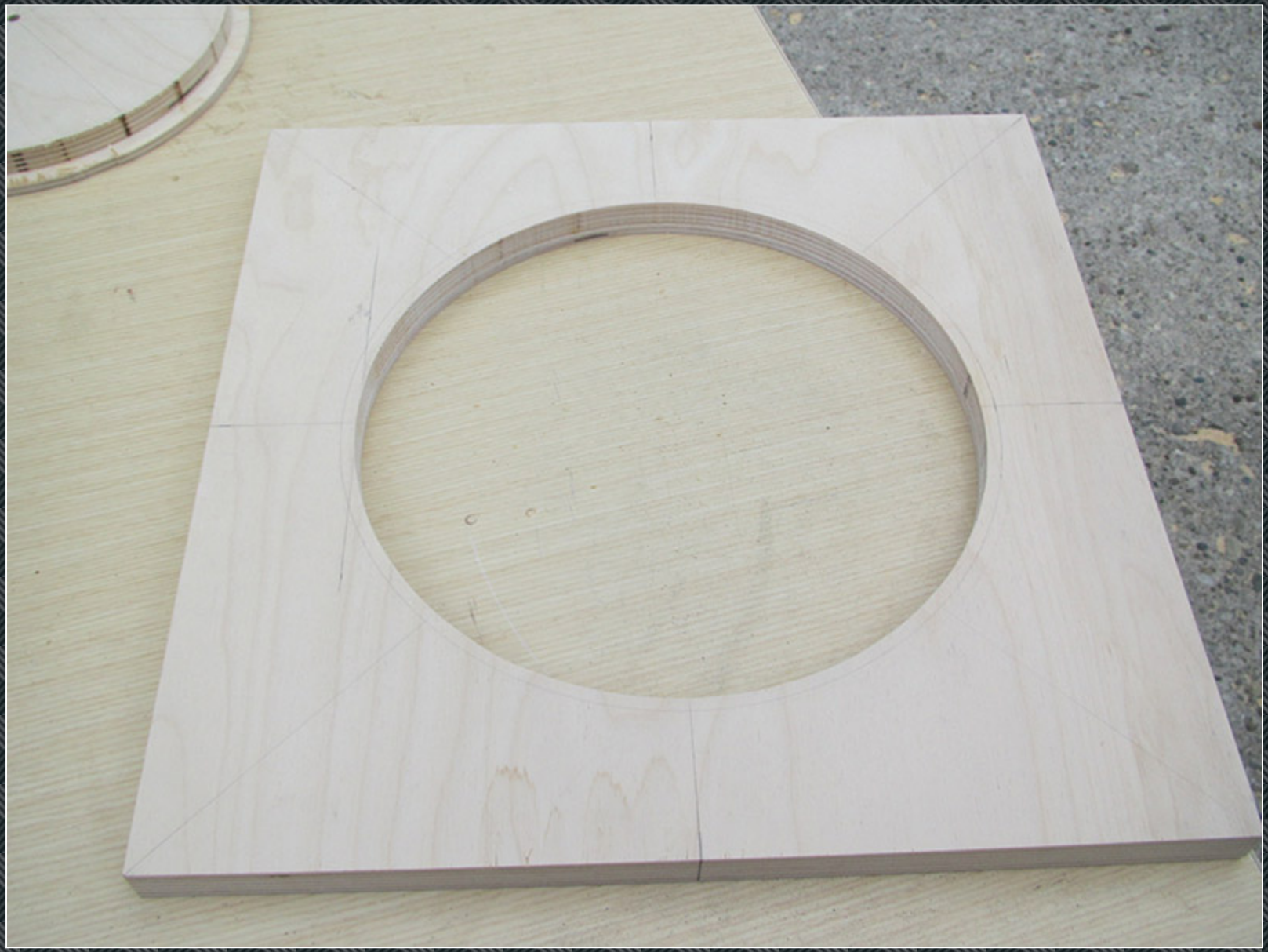
I finish cutting out the circle with a jig saw, leaving a ridge that will be routed off using the trim router.

Here you can see the ridge that is left after removing the cutout. Enough of the circle is cleanly cut out that it can be used as a template to rout away the ridge.

Trim router with combination template/trim bit.



Here you can see the ridge partially routed away.



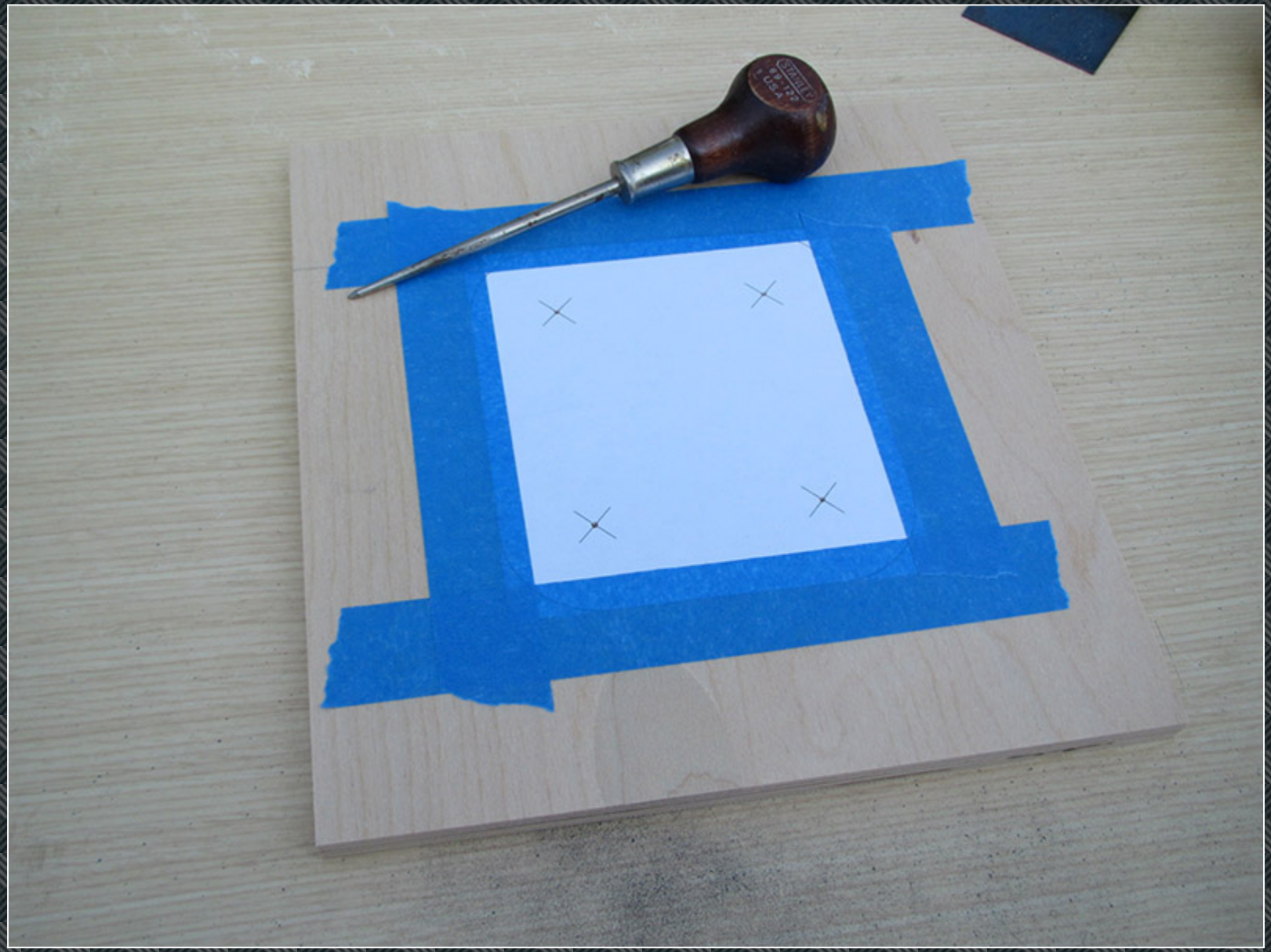
Here is the finished cutout. Once I receive the speakers I will use one of them to mark the mounting holes and then the template will be finished. It's a little bit of work initially but it will make the baffle cutouts cleaner and quicker to do.

I also decided to make a template for fabricating the grille baffle, using 3/8” plywood. To make the template I laid out the basic pieces of the frame using pieces of 1/2” plywood and tacked them down using a pin nailer.

I then did the same with all of the corner pieces.

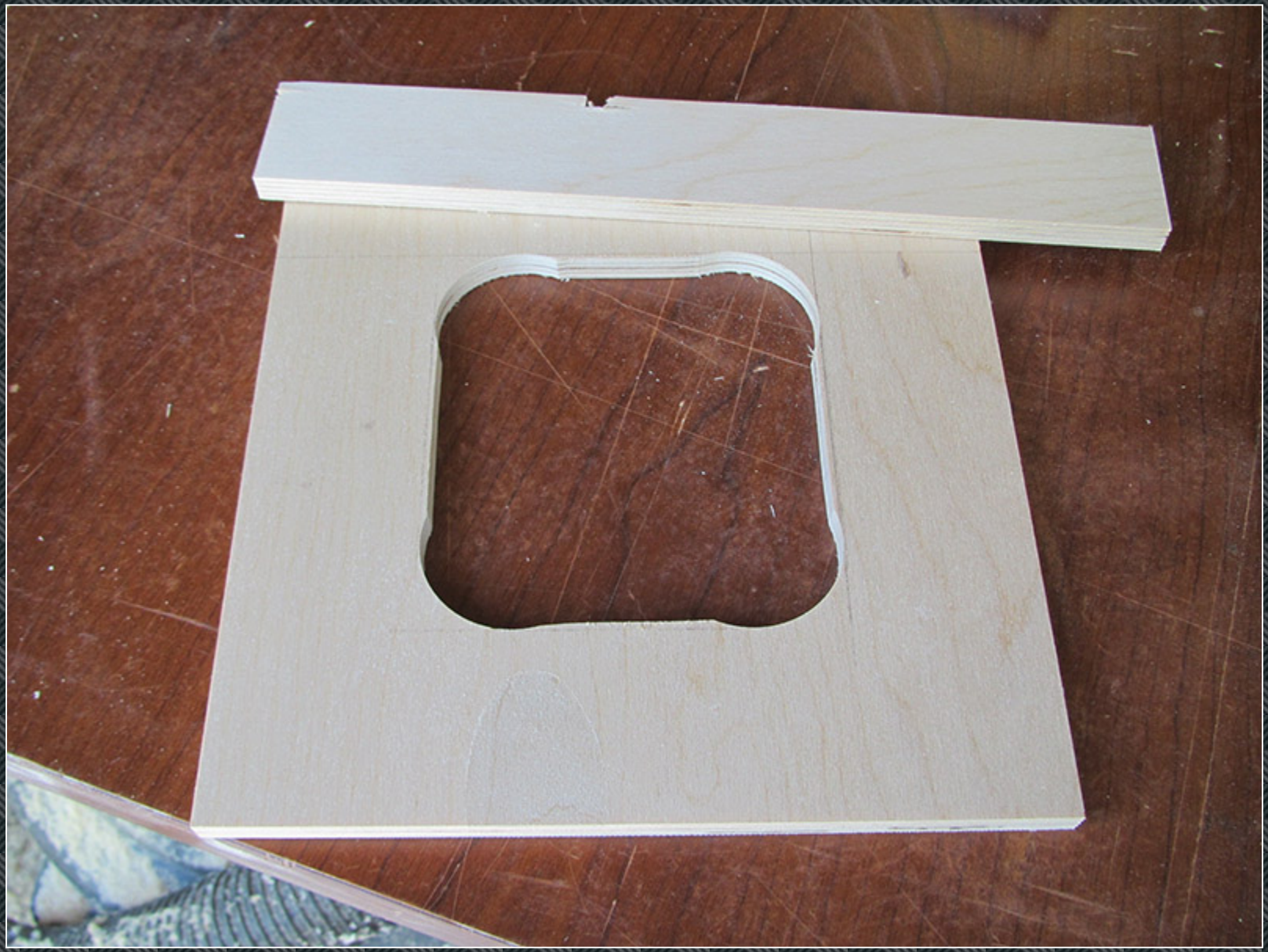
Here the jig saw has been used to rough-cut out the pieces of the frame. At this point I used the trim router again to clean up the cutouts.

After prying off the tacked-on pieces with a putty knife and doing a little sanding I have a nice, clean grille frame template.



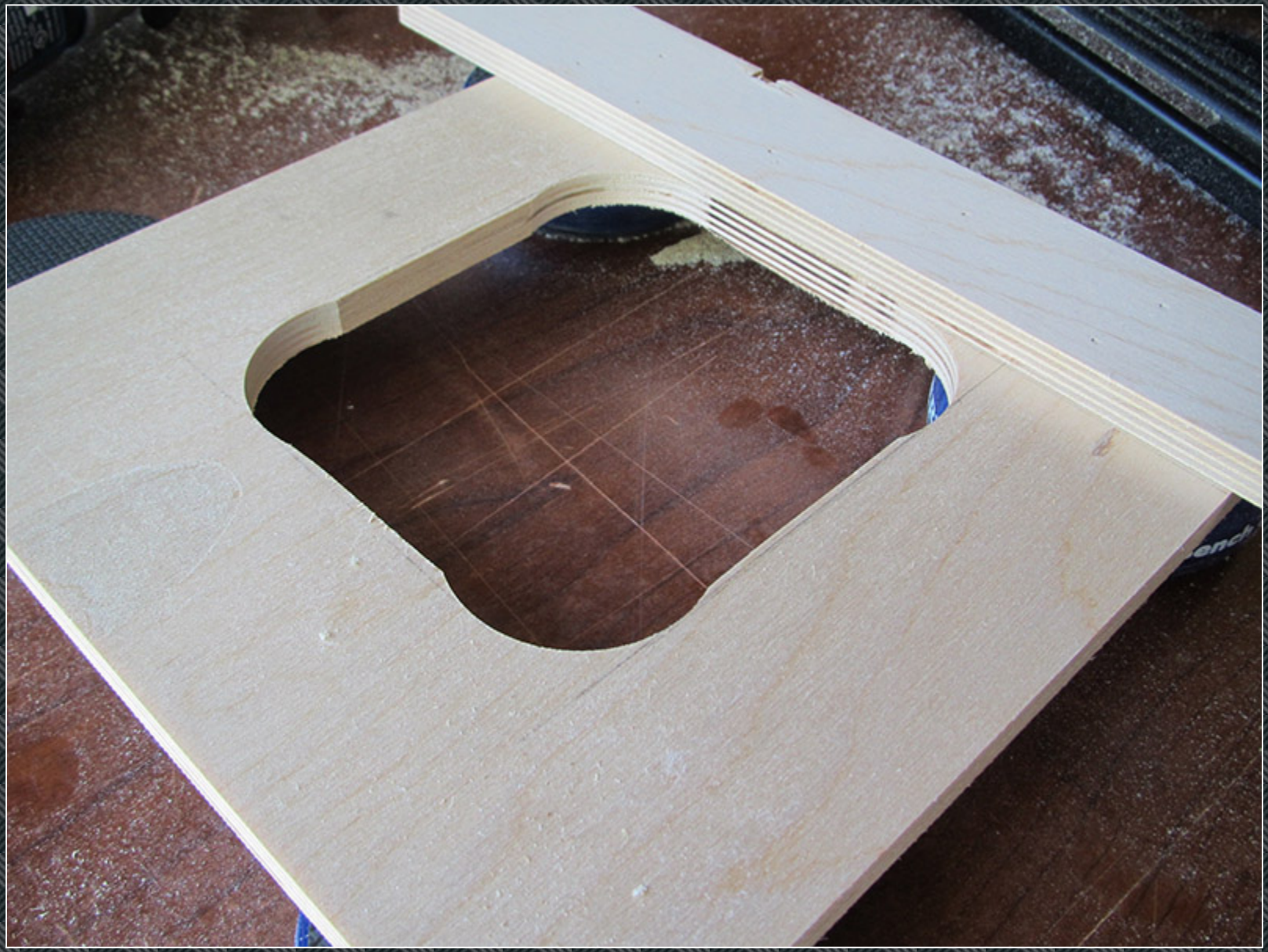
Here I am starting to make a couple of routing templates for the jack plate. The small jack template was pretty straight forward since the corners needed to be about 1/4" radius and most of my trim and template bits are 1/2" diameter. The larger template was tougher because of the large radius on the corners. It worked out that a 1-7/8" diameter Forstner bit was the radius I needed. I did some calculating and made a paper template that showed the center points of the corner radii and marked them with an awl.

I removed the template and drilled (4) 1-7/8" holes.



After removing the center section with a jig saw (staying inside the lines) I had the rough shape of the cutout; the corners are defined but the straight sides are still rough.

I attached a straight edge, one side at a time, tangent(?) to two of the corners and used the trim router to clean up the edge between the corners.



One side cleaned up. After doing all four sides I had a usable template.

Using the jack plate to check the size of the template.

Here are the two jack plate templates. The smaller one is used to rout the opening all the way through the back. The larger one is used to rout the recess for the jack plate flange. I have marked the midpoint of each side of the cutouts so that they can be positioned on the layout lines on the back.

Layout lines for the jack plate.

Here I have used the smaller template to mark the cutout location.

Here I have done a rough cut using the jig saw.

After attaching the template to the back with double face tape, I used the trim router and a template bit to clean up the cutout.

Next I taped the larger template to the back and routed the recess for the jack plate flange.

Finished jack plate cutout.

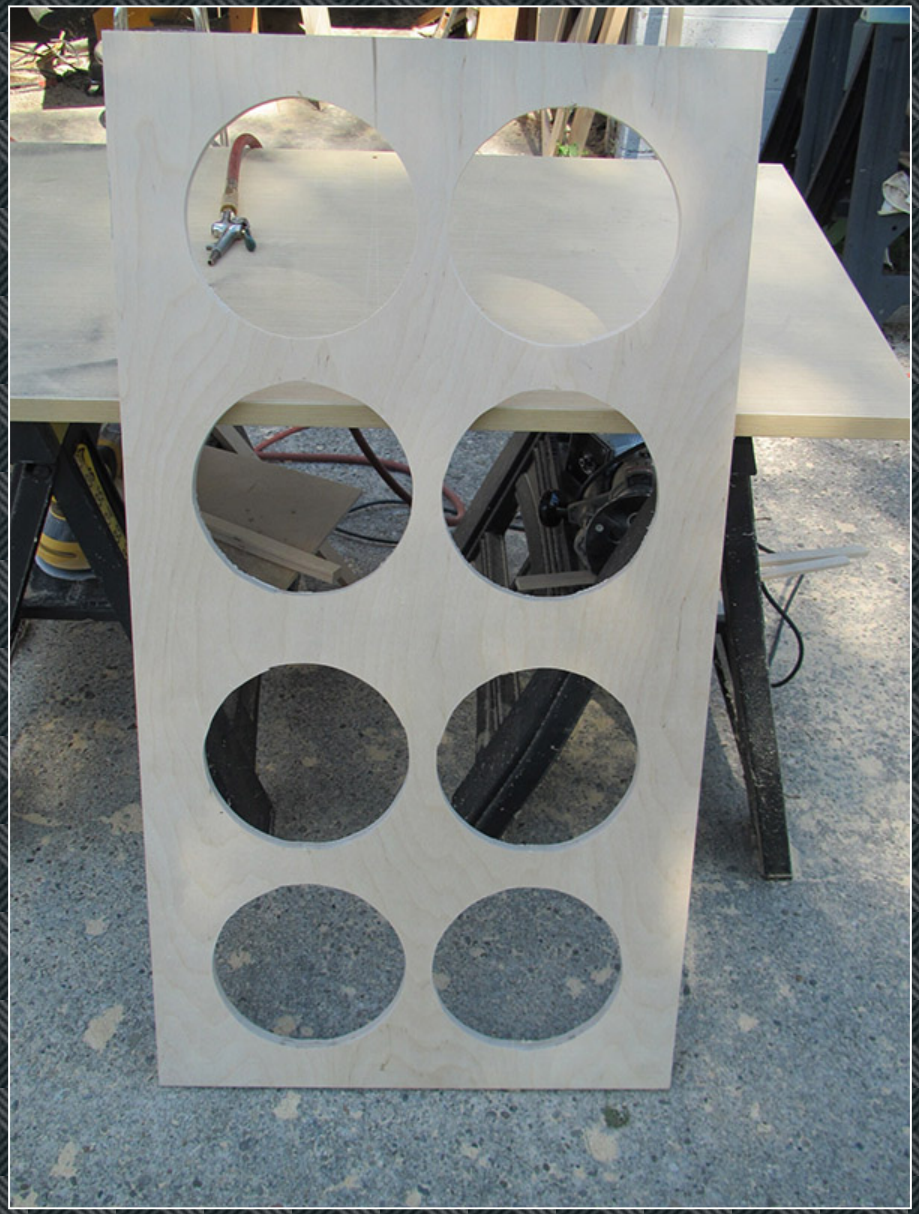
I sized the recess a little larger than the jack plate itself. This will allow room for the Ttolex and the jack plate gasket.

I decided to move on to the grille frame next. I used the template that I made previously to mark the cutouts then cut them out using the jig saw, staying inside the lines.

Using the template and a router to clean up the cutouts. The grille frame is 3/4" plywood. Routing that with a trim router and a 1/4" shank bit would be pushing it so I switched to a full size router and 1/2" shank trim bit.

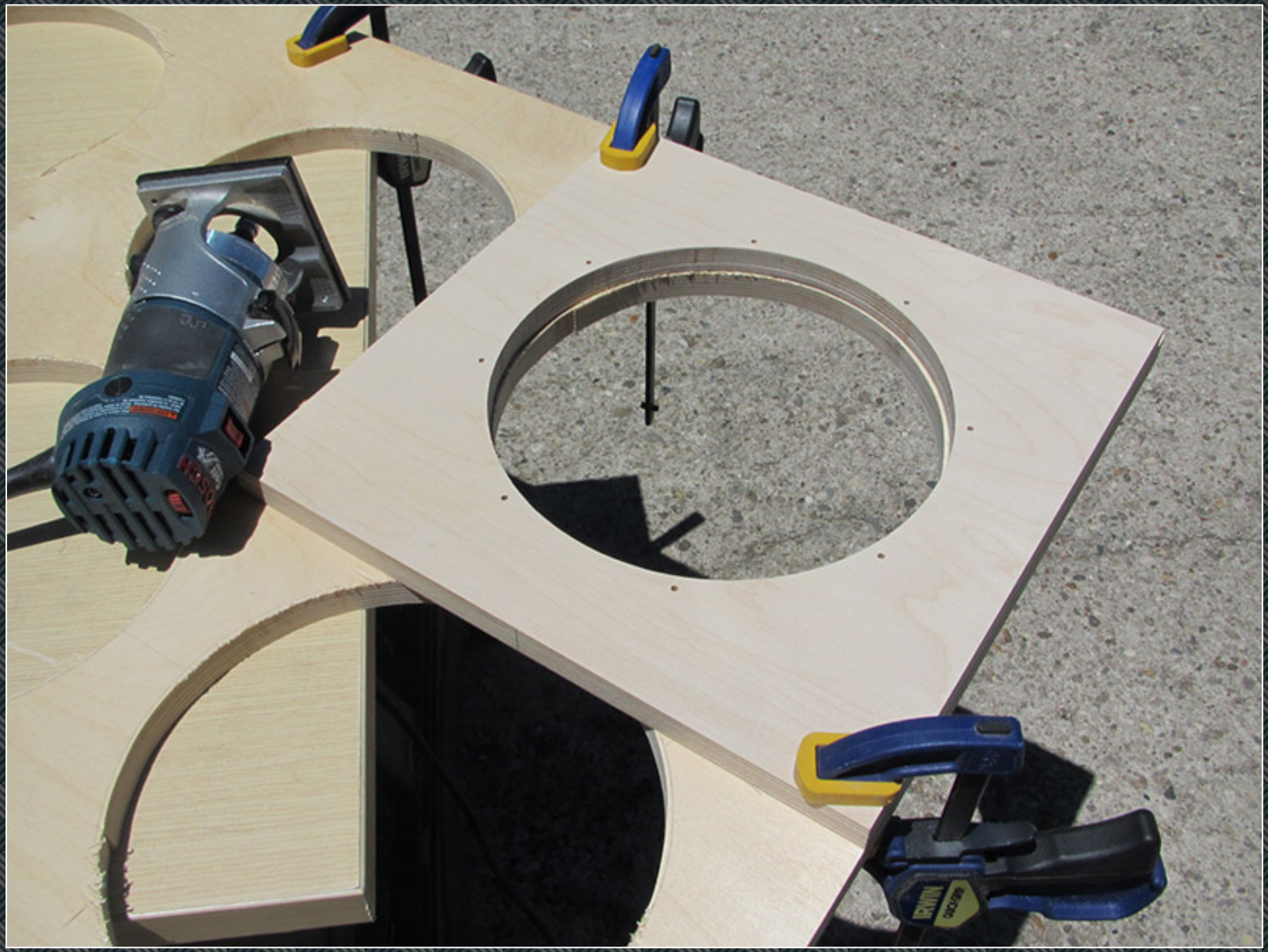
The completed grille frame.

Next, I got working on the speaker baffle again. I used my speaker cutout template to mark the speaker cutouts on the baffle.

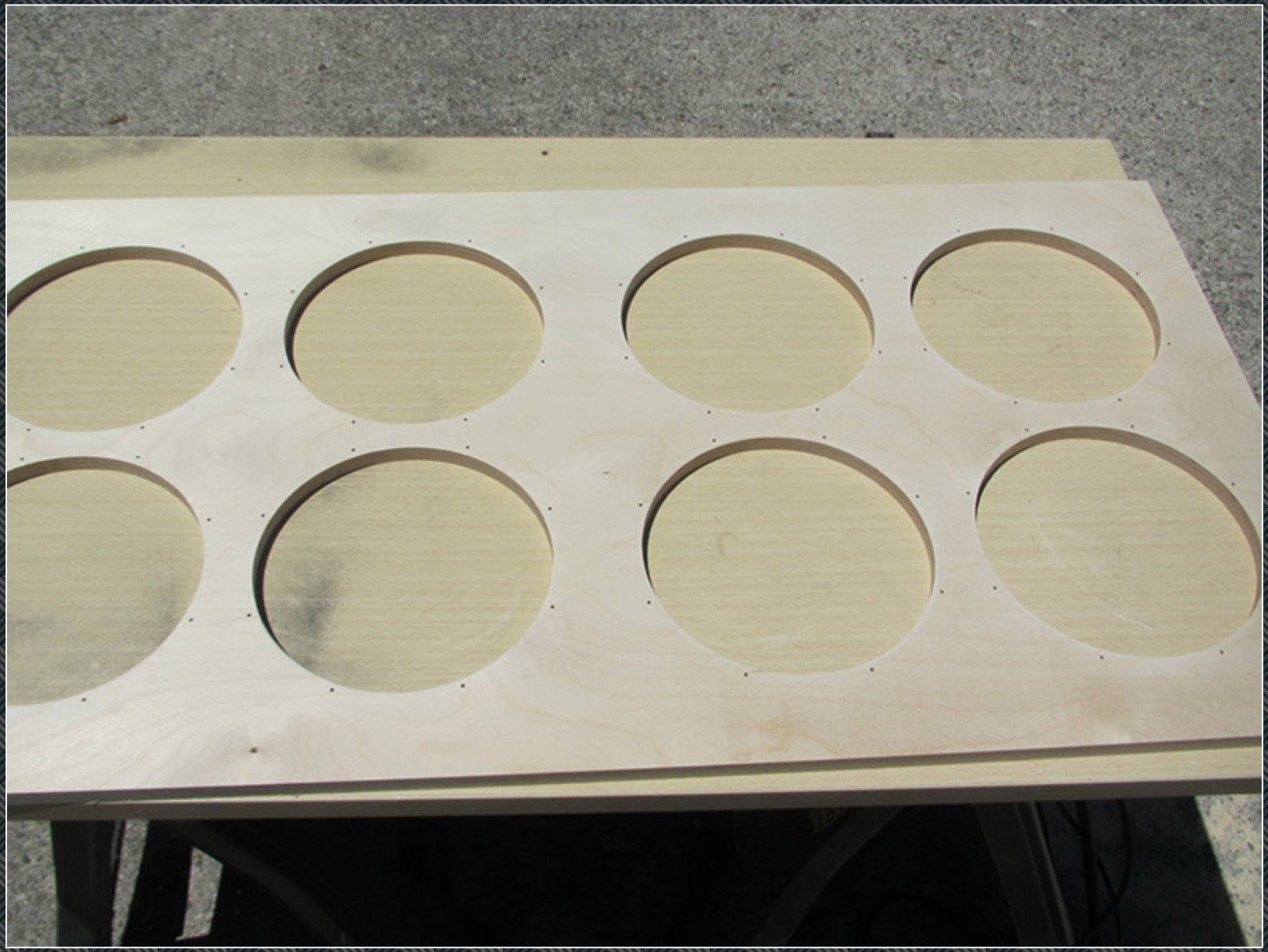


Speaker baffle after roughing out the cutouts with the jig saw.

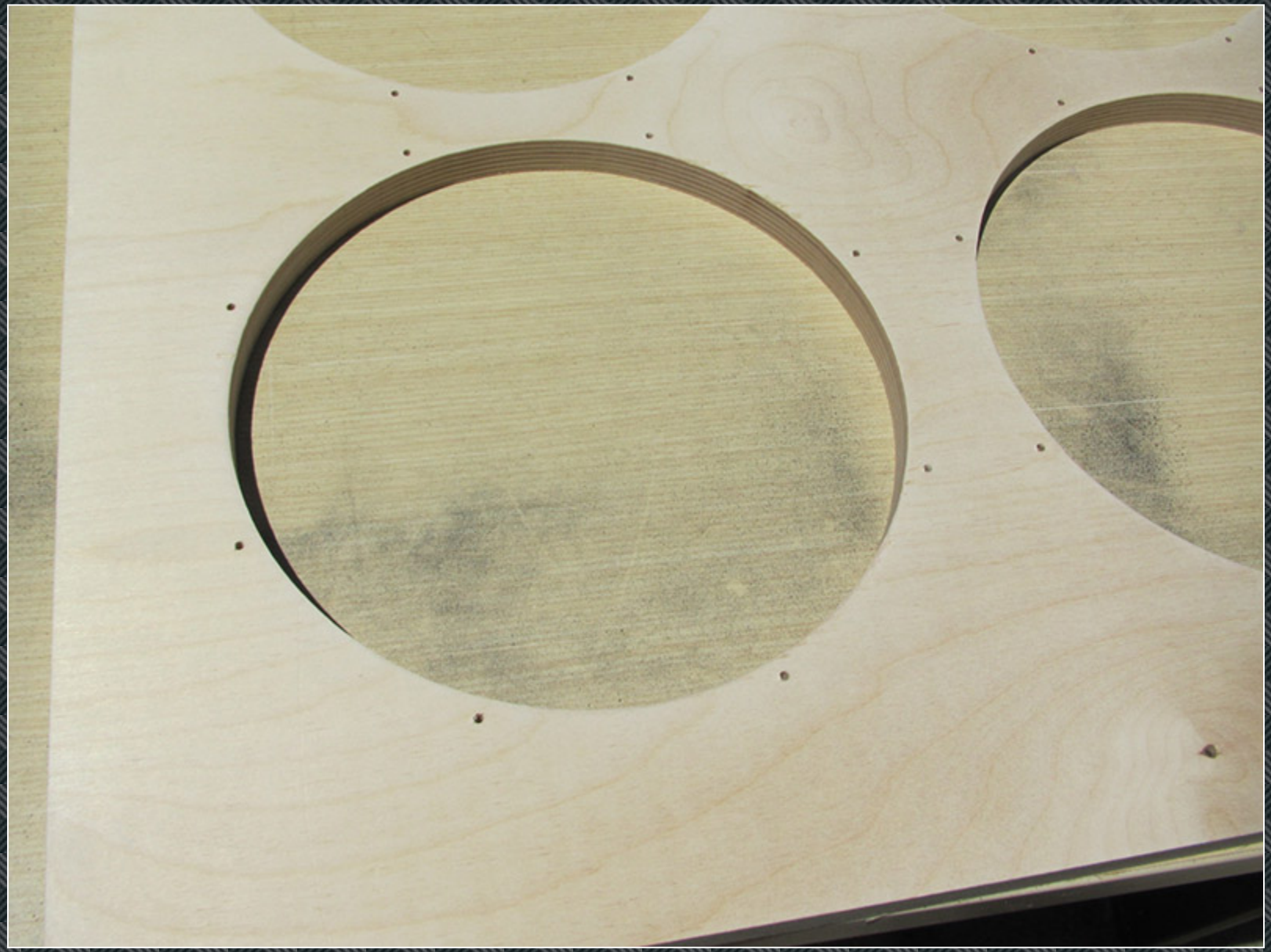
Checking the fit of my speaker cutout template with one of the speakers. The speaker was then used to locate and drill the mounting holes in the template.



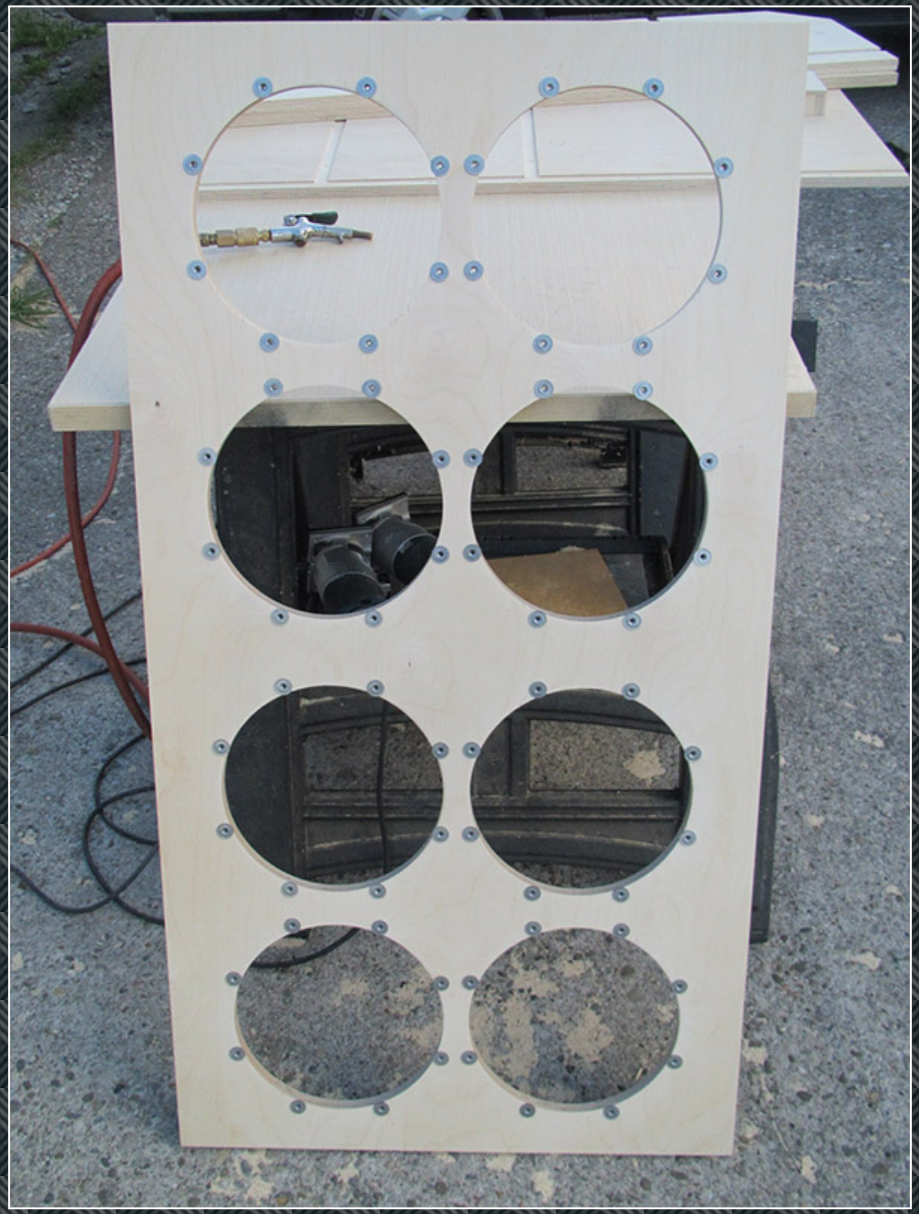
Using the template to mark the mounting holes and clean up the cutouts.



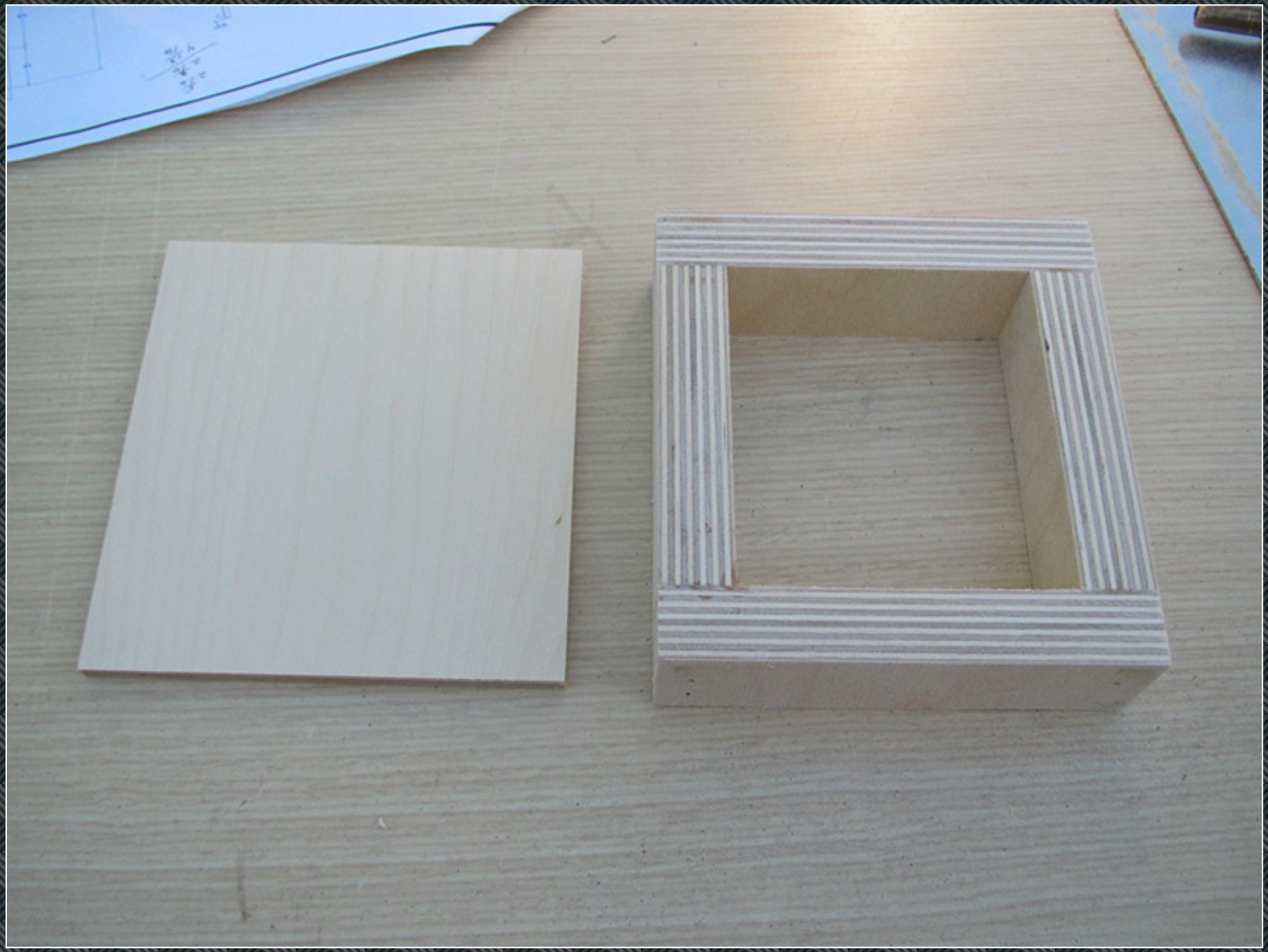
Speaker baffle with cutouts cleaned up and mounting holes drilled.



Close up of one of the cutouts.



64 hurricane nuts later…



Since the jack plate I'll be using will have two Speakon jacks and two 1/4" jacks there is the potential for air leakage through the 1/4" jacks. One way to seal them would be to use a 1/4" rubber plug but I figure that is too easy to lose the first time one of the 1/4" jacks gets used. I decided to build a small sealed box to enclose the jacks within the cabinet instead.

Here the 'top' of the box has been glued on using Gorilla glue. Gorilla glue is a polyurethane glue that expands as it cures, which should insure an airtight glue joint. I will be using the same glue for gluing any part of the cabinet that needs to be sealed.

Finished box.

Box glued and clamped over the jack plate cutout in the back.

Clamped removed.

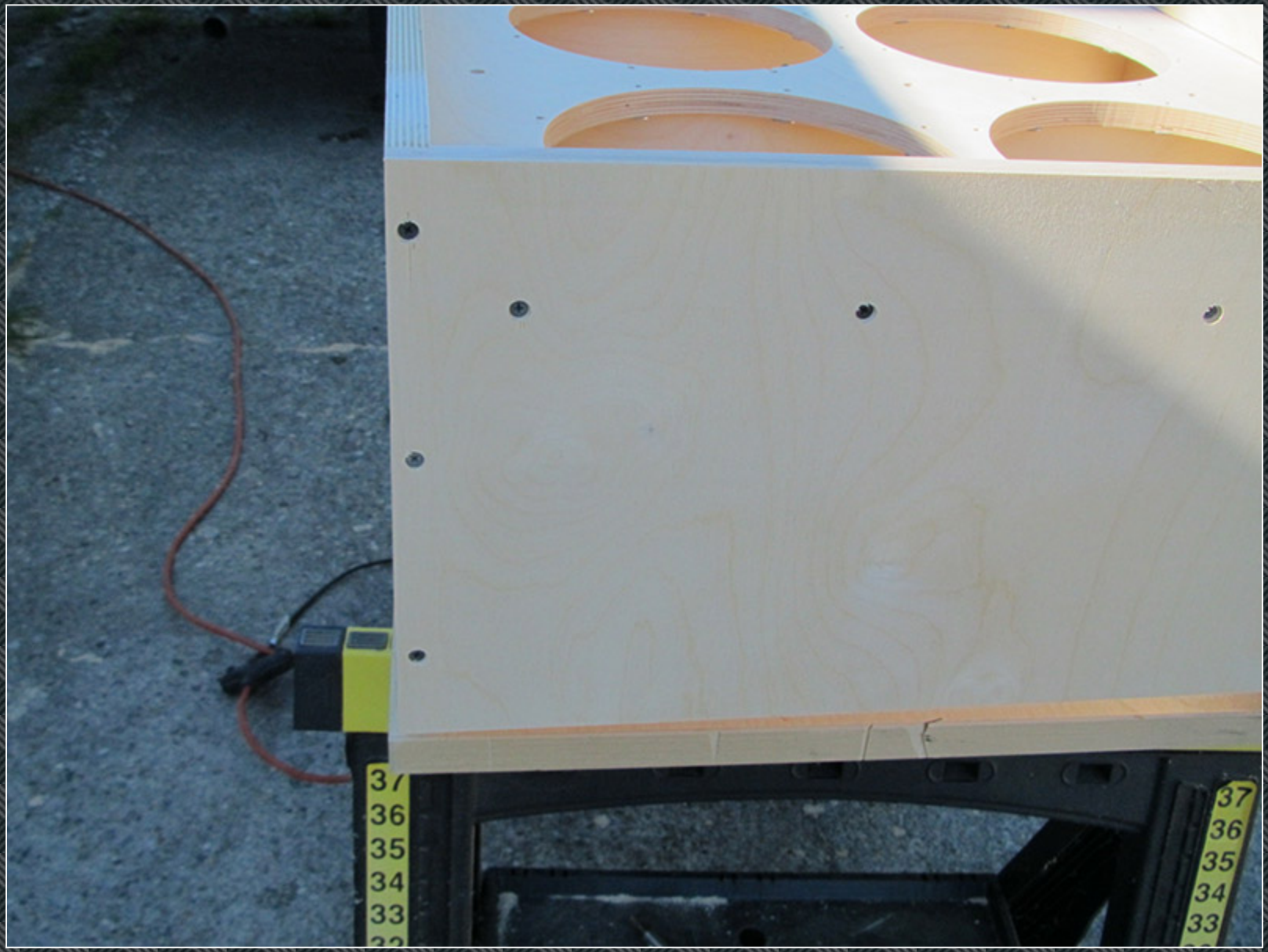
The divider pieces cut to size, with holes drilled for the speaker wires.

Front view of partially assembled cabinet (speaker baffle, sides, top, bottom, and dividers).

3/4 view.

Rear view.

Checking the fit of the grille frame.

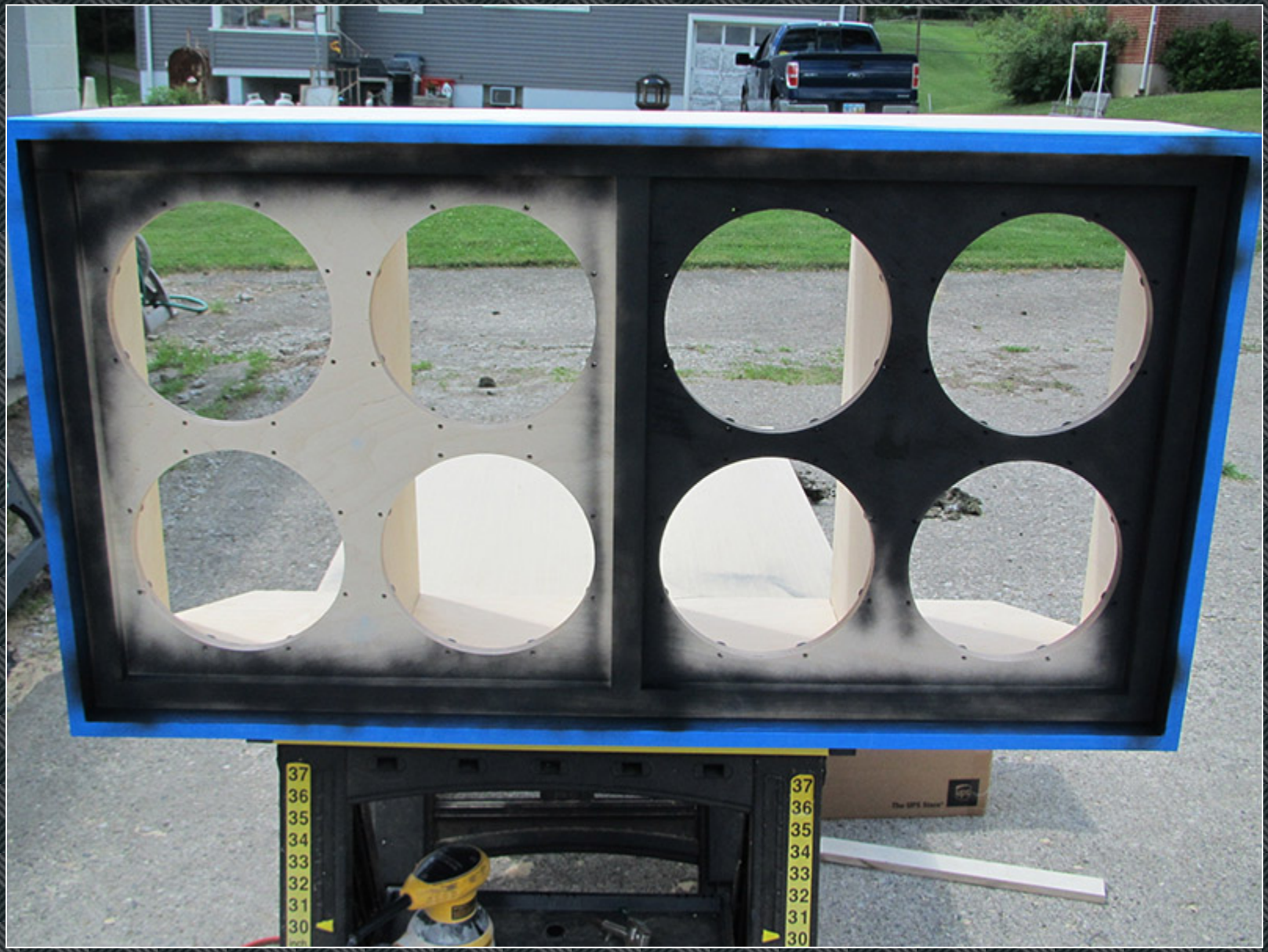


When I got ready to fill the screw holes I realized I had a slight problem on the top and bottom pieces. The edges on the cabinet get edged with a 1/2" radius and that was going to cut into the screws that were run into the sides. I just made sure I counter-sunk them a little deeper.

These are the 1-1/4" wide cleats that the grille frame will mount to.

Cabinet with all of the cleats installed.

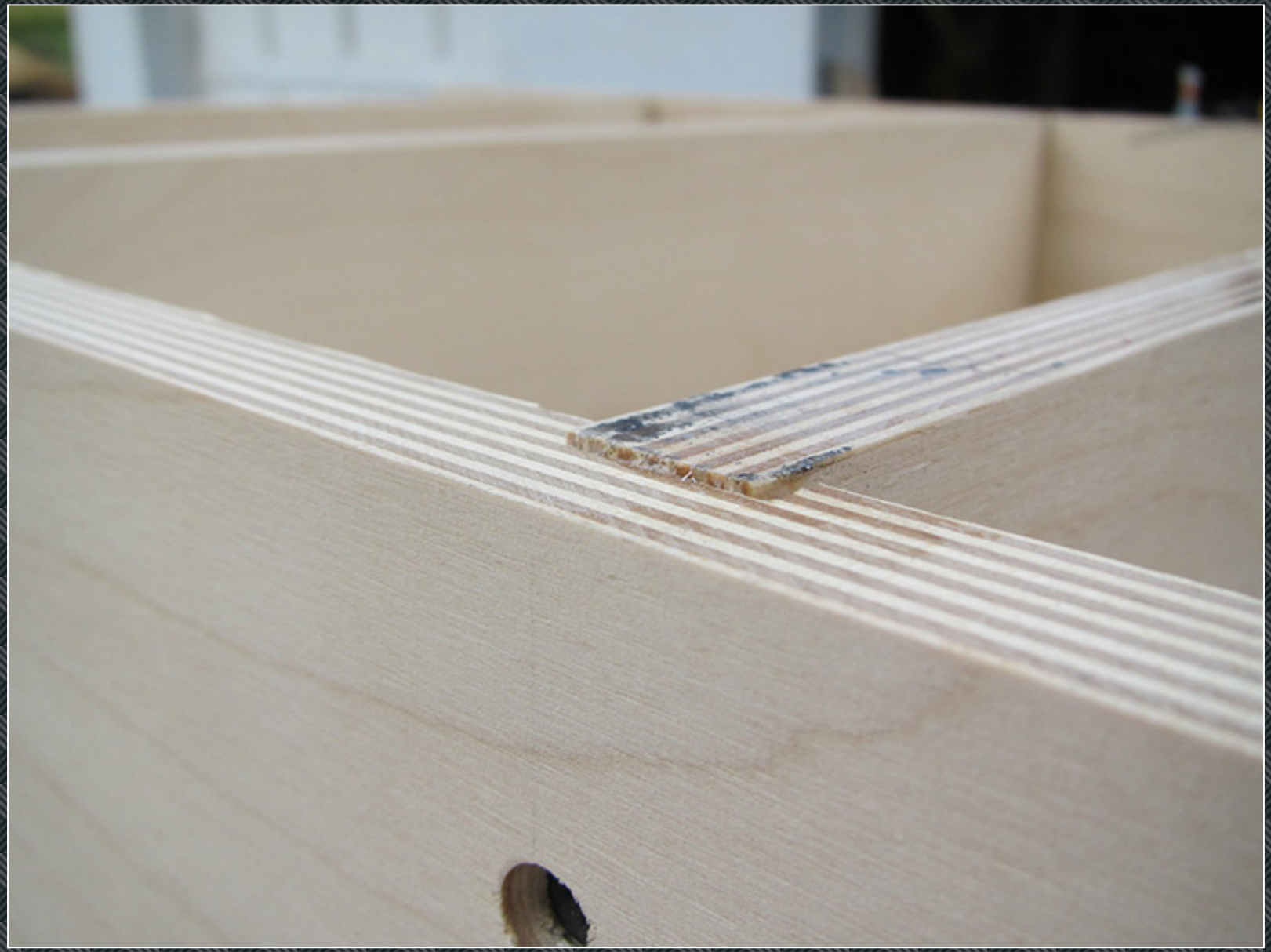
Just for the heck of it I decided to see where the cabinet was weight-wise. Without the back, speakers, grille, and misc. hardware it's at 64.4 lbs.



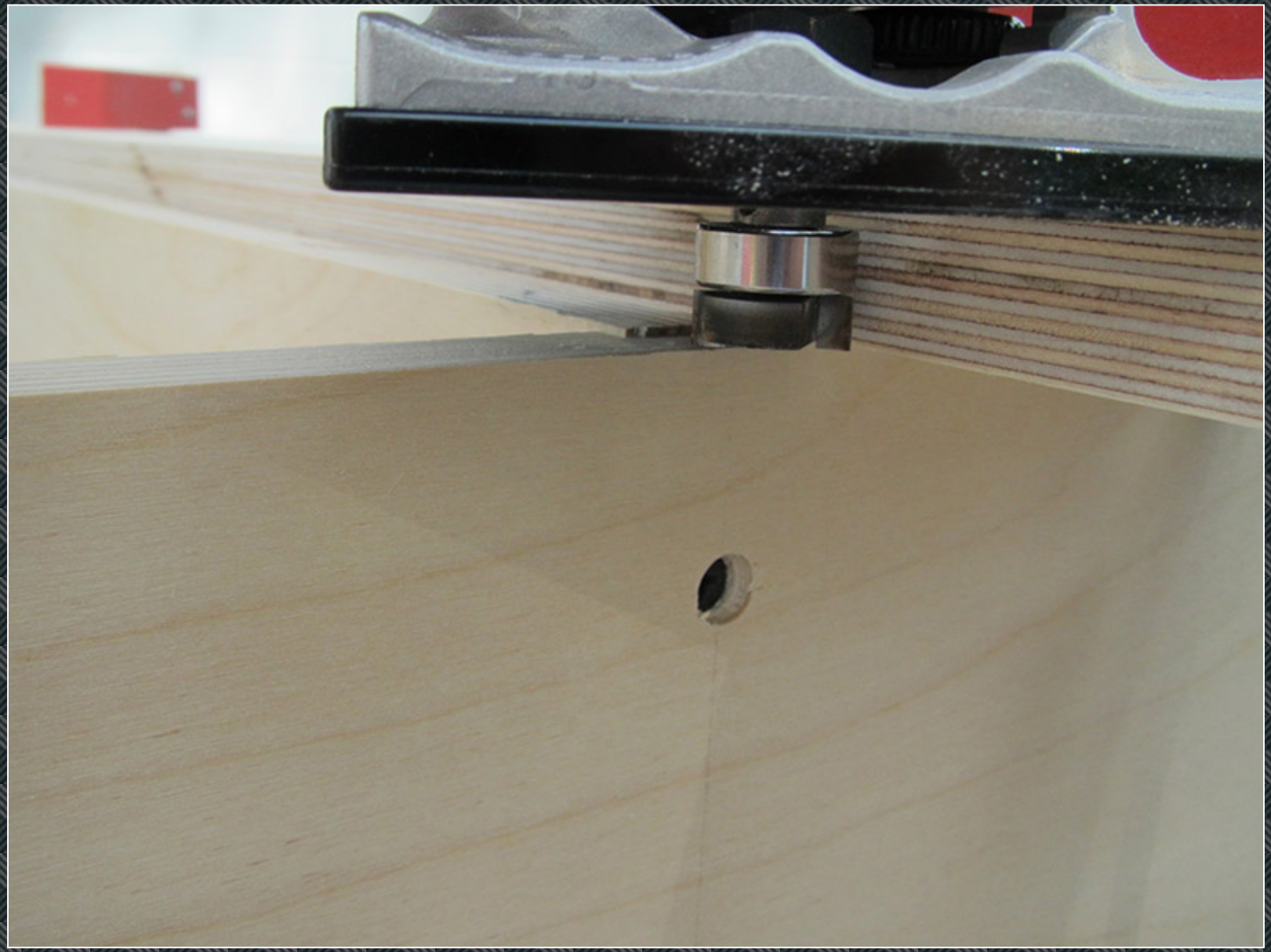
With the cleats installed I could start painting the baffle black.

Cabinet after painting the baffle.

The grille frame painted black.



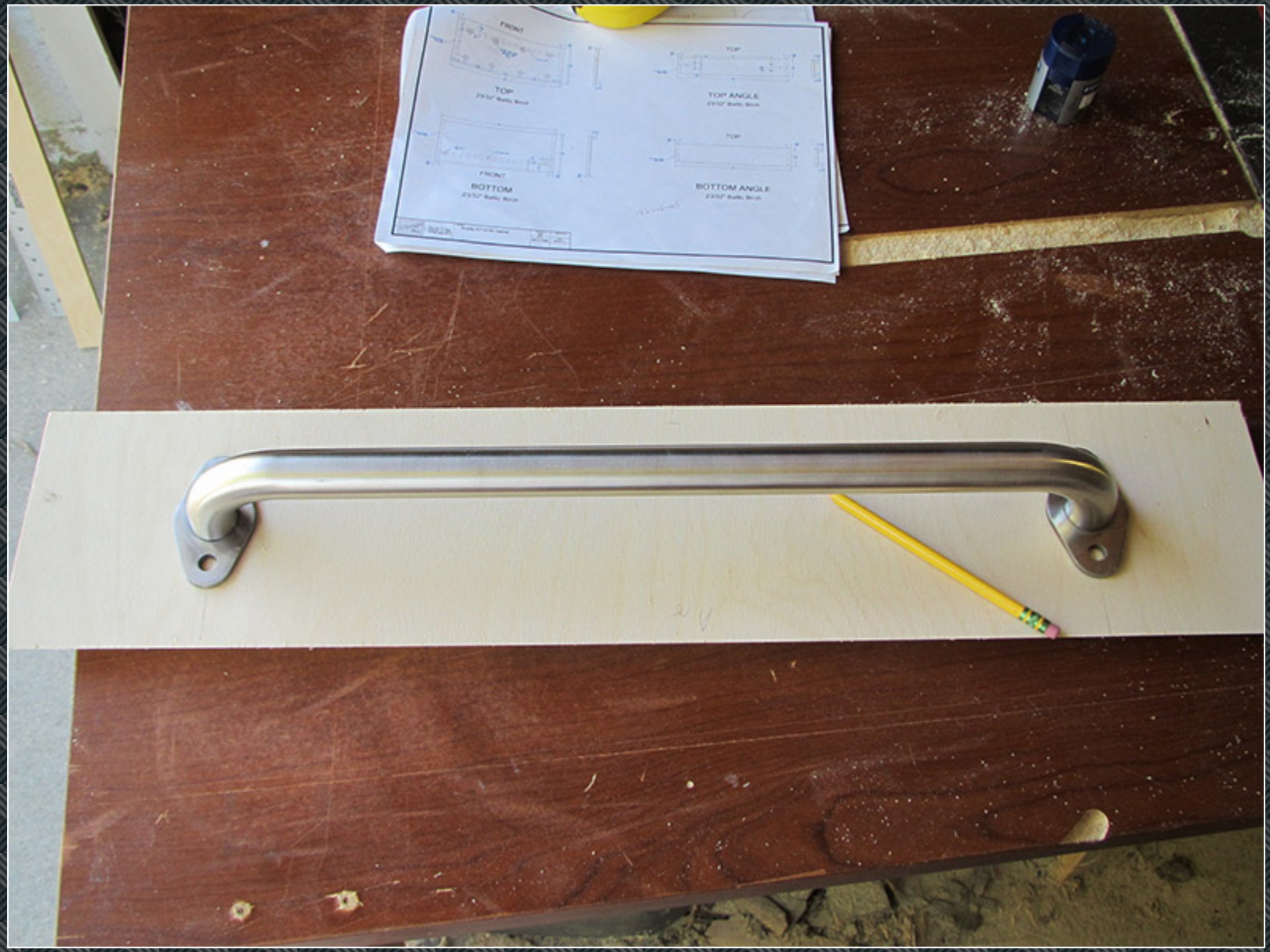
During the rush to get everything positioned properly and glued and screwed, the back edge of the dividers came out slightly off on one side of the cabinet. For the back to fit properly later they should be flush with the back edge of sides. The first thought might be to sand them down but that's not a good solution in this case, since it would be hard to tell where to stop sanding. Plus edge-sanding 3/4" Baltic birch can be slow unless using a belt sander and that would be too aggressive in this situation.



Instead I opted to clamp a piece of 3/4" scrap across the back of the cabinet to use as a surface on which to run my trim router. The router depth is set so that the bit is just flush with the back of the side. Then I just run the router across the back edge of the divider until it's no longer removing material. It's important to not press down as you move further out onto the guide board or it can deflect, resulting in the removal of too much material. By fixing the problem this way I should still get a nice tight joint when the back is installed.

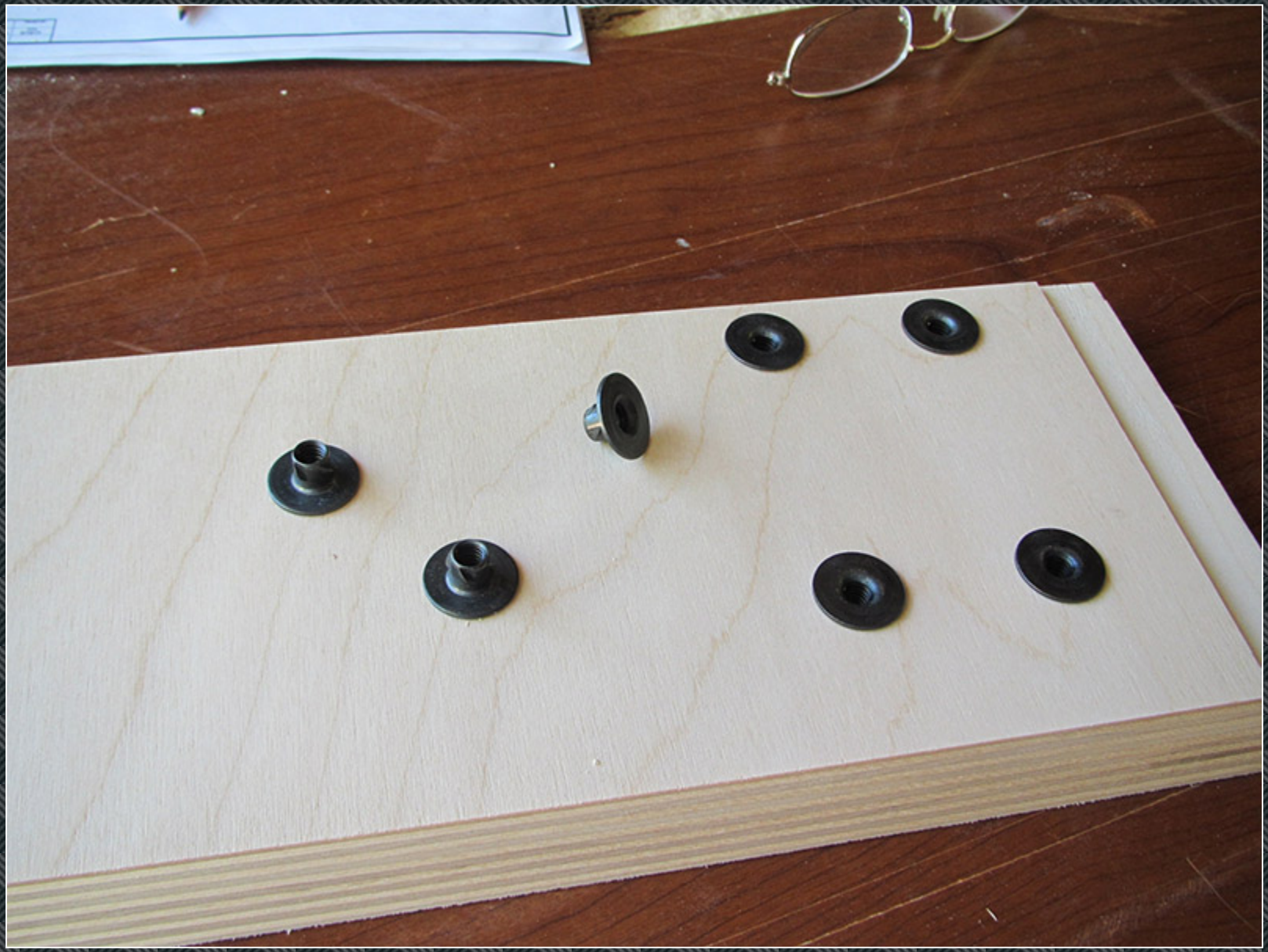
One more dry fit of the remaining pieces.

Using the kick plate to mark the holes for the casters.



Marking the holes for the towel bar handle.

Drilling the holes for the 1/4-20 hurricane nuts that the casters will bolt to. The same type nuts are used for the towel bar.



Installing the hurricane nuts.

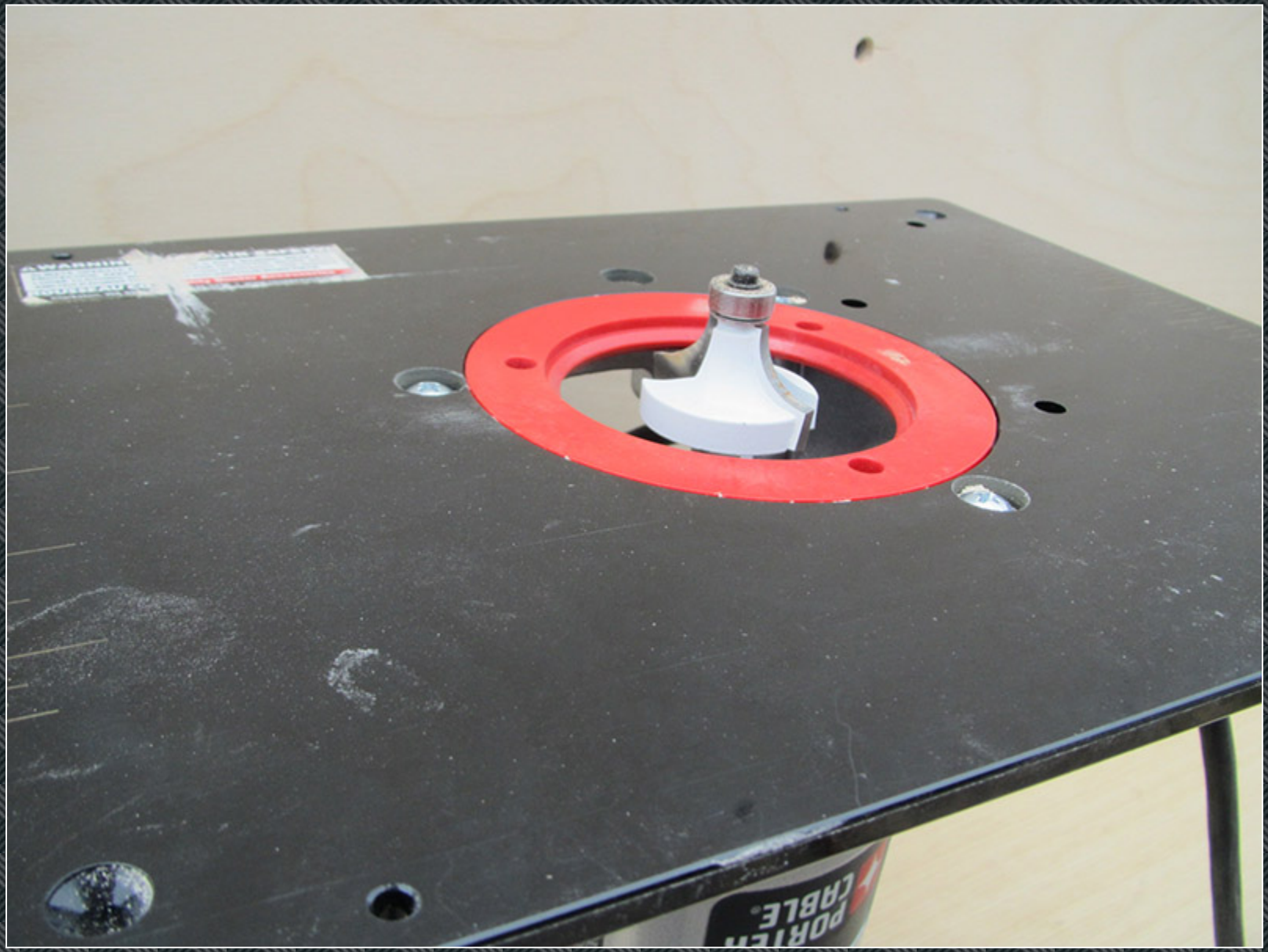
From what I have been able to determine Ampeg used to use a 1" thick material called Amberlite to line their 810 cabinets. I could not find a source for it so I opted for what I thought would be the closest match: Owens-Corning 703 fiberglass. I am not a fan of fiberglass and I know there are other options out there (mattress topper material, etc.) but in this case I decided to go with what I thought would be the closest match to Ampeg's material. The 703 product is semi-rigid and cuts easily using a straight edge and a knife.

All of the pieces cut to size.

All of the pieces installed in the cabinet and on the back. I used 3M spray adhesive to attach them.

The fully-assembled cabinet.

I was getting ready to rout the 1/2" round over on the cabinets edges and covered the speaker cutouts to help minimize any clean up later.



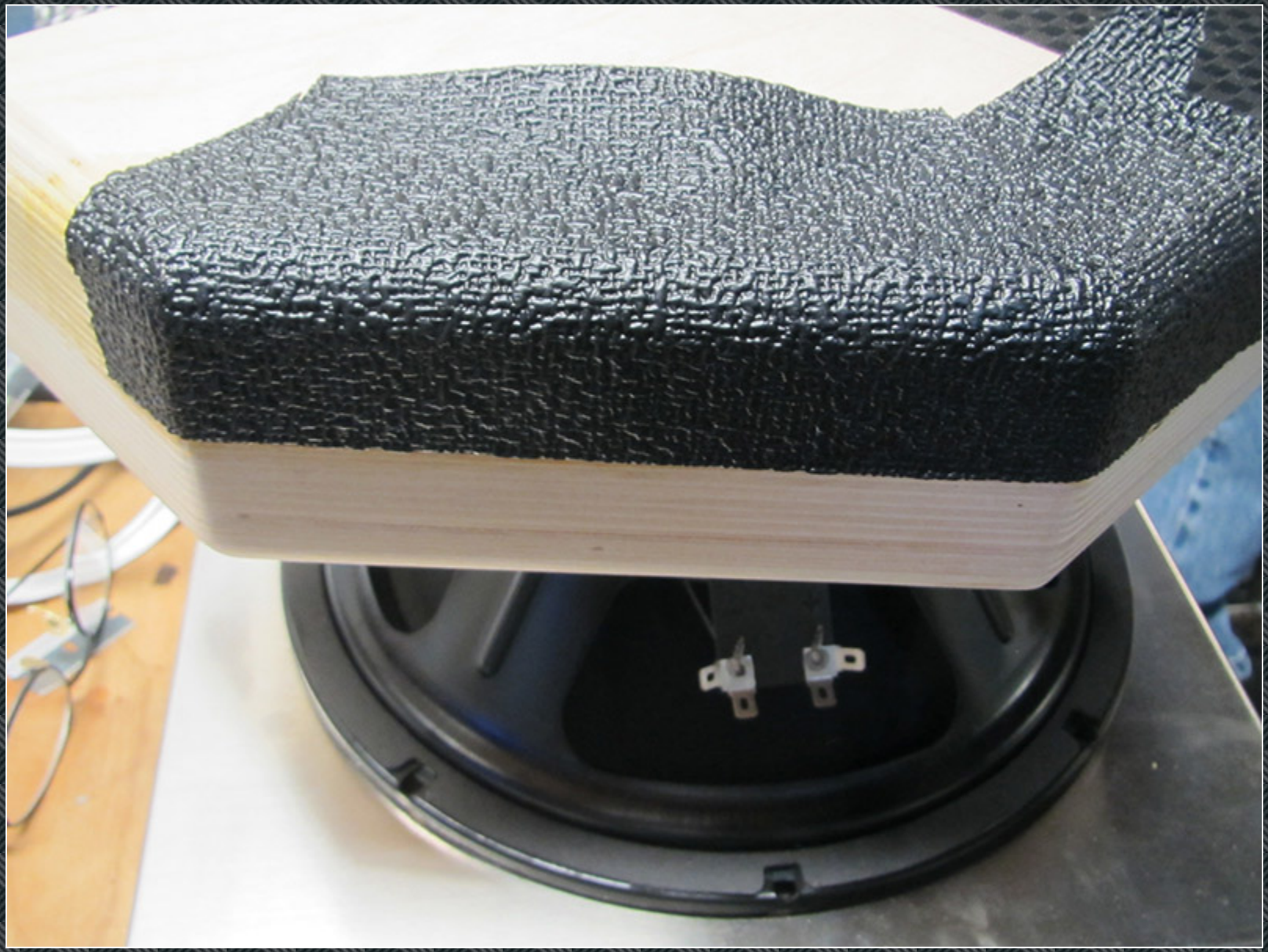
This is the 1/2" round over bit I will be using.

There's no one else here today so I couldn't get any action shots but here is a closeup of a finished corner.

Close up of one of the back edges.

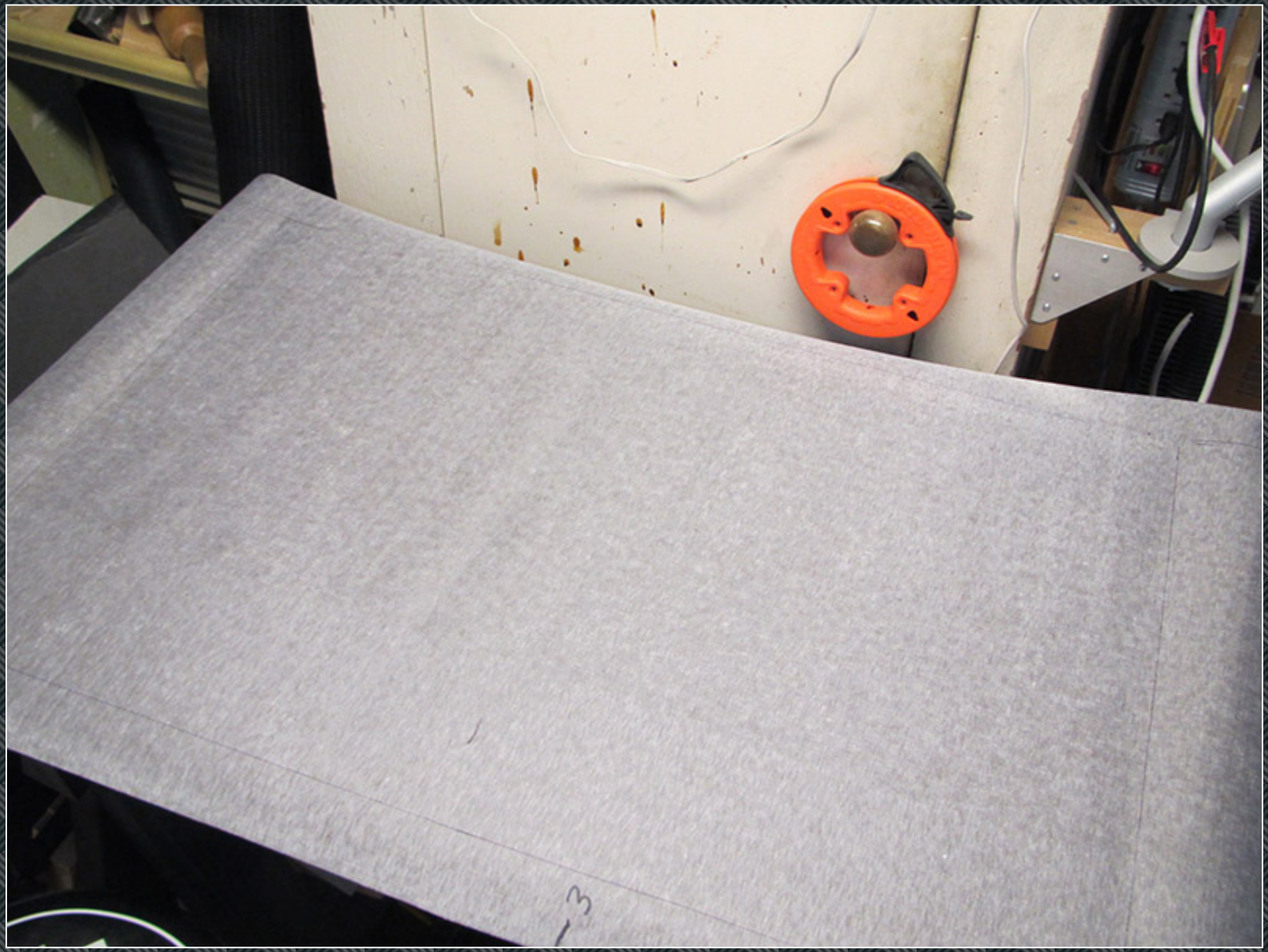
Here is the front of the cabinet sanded and ready to be covered.

Here is the back of the cabinet ready to be covered.



As I got ready to begin covering the cabinet I did a little bit of practicing on a sample. I wanted to be sure there weren't any surprises when I cut and fit the Tolex together at the angled corners on the back.

The back piece laying loosely on the cabinet so I can mark the edges on it.



Piece showing the markings for the flat part of the back.

First glue application on the back. I am using a water-based contact adhesive.

Glue drying on the back.

After lining the piece up and applying it to the back I used a J-roller to make sure it's flat and well-adhered.

I used a heat gun to soften the Tolex where it covered the jack plate cutout. Then I pressed the plate in (upside down) and set weights on top of it while I let the glue bond.

This is what it looked like after removing the weights and the jack plate.

Here the excess Tolex has been cut away.

Laying the jack plate in to check the final fit.

Letting the glue dry on the bottom and the bottom angle.

The Tolex glued down on the bottom.

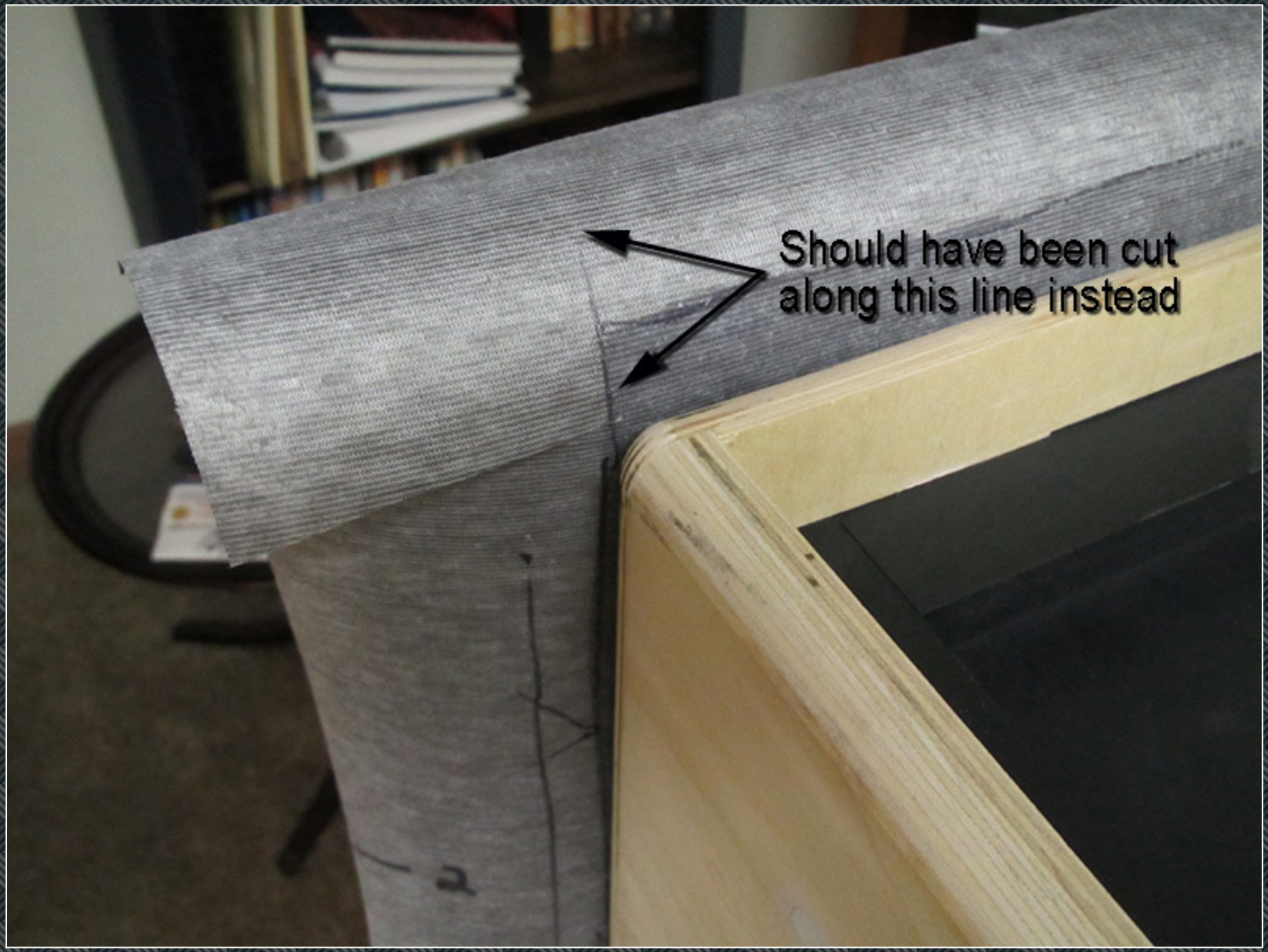
Letting the glue dry on top and top angle.

The Tolex glued down on the top.

Cuts made to create flaps that will fold over the side.

Here the flaps are temporarily stapled down so the cabinet can be rolled on its side without creasing them.

Preparing to fold the top flap over the top front of the cabinet.



Here's a closeup of a mistake I made at the corners when I was cutting the flaps loose.

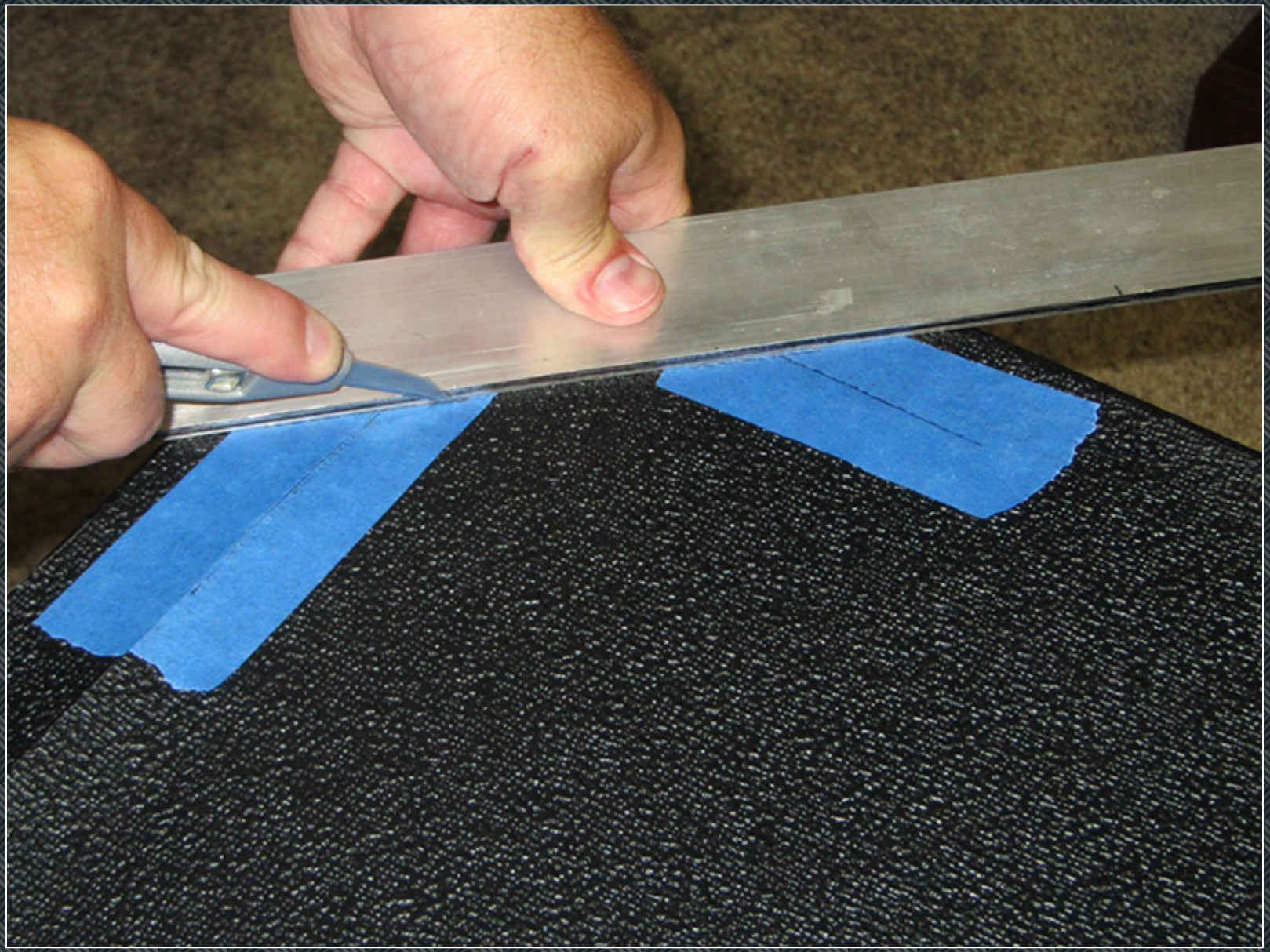
Glue applied to the top flap.

The side pieces cut to rough size and shape.

Letting the glue dry on the first side.

Making sure there is a fresh blade in the knife for the double cuts that will be made later on the sides.

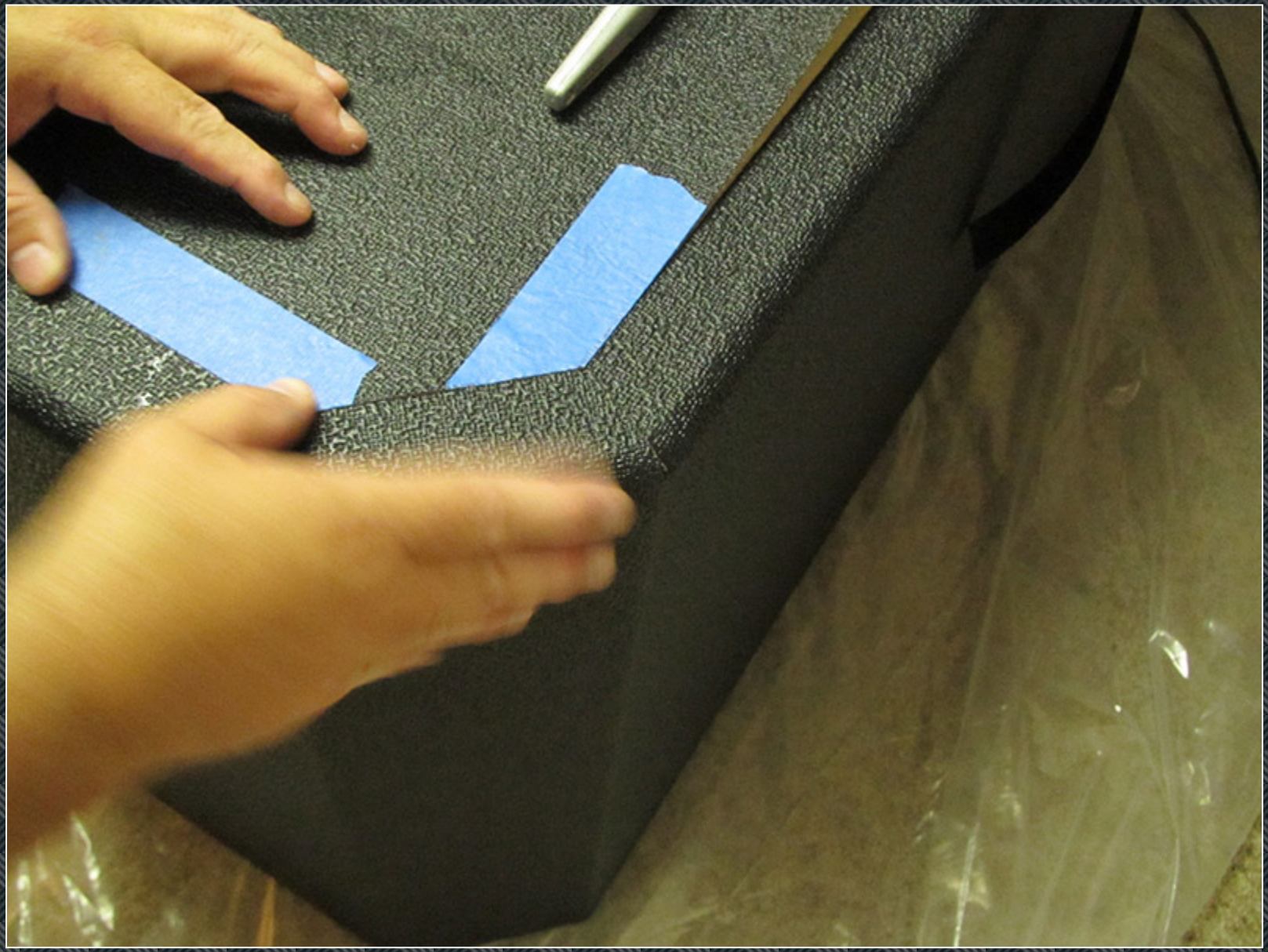
First side finished.



Here I am making the cuts on the second side using my knife and an aluminum angle. The idea here is to fold the back flaps down onto the side first. Then the over-sized side pieces are laid onto the side of the cabinet so that they overlap the flaps. The cut is then made through both thicknesses of Tolex.

Making the long cut down the back.

After making the cuts you lift up the side piece and remove the pieces that have been cut from the flaps.



Then the side is pressed back down. If this has been done correctly the seam should be nice and tight.

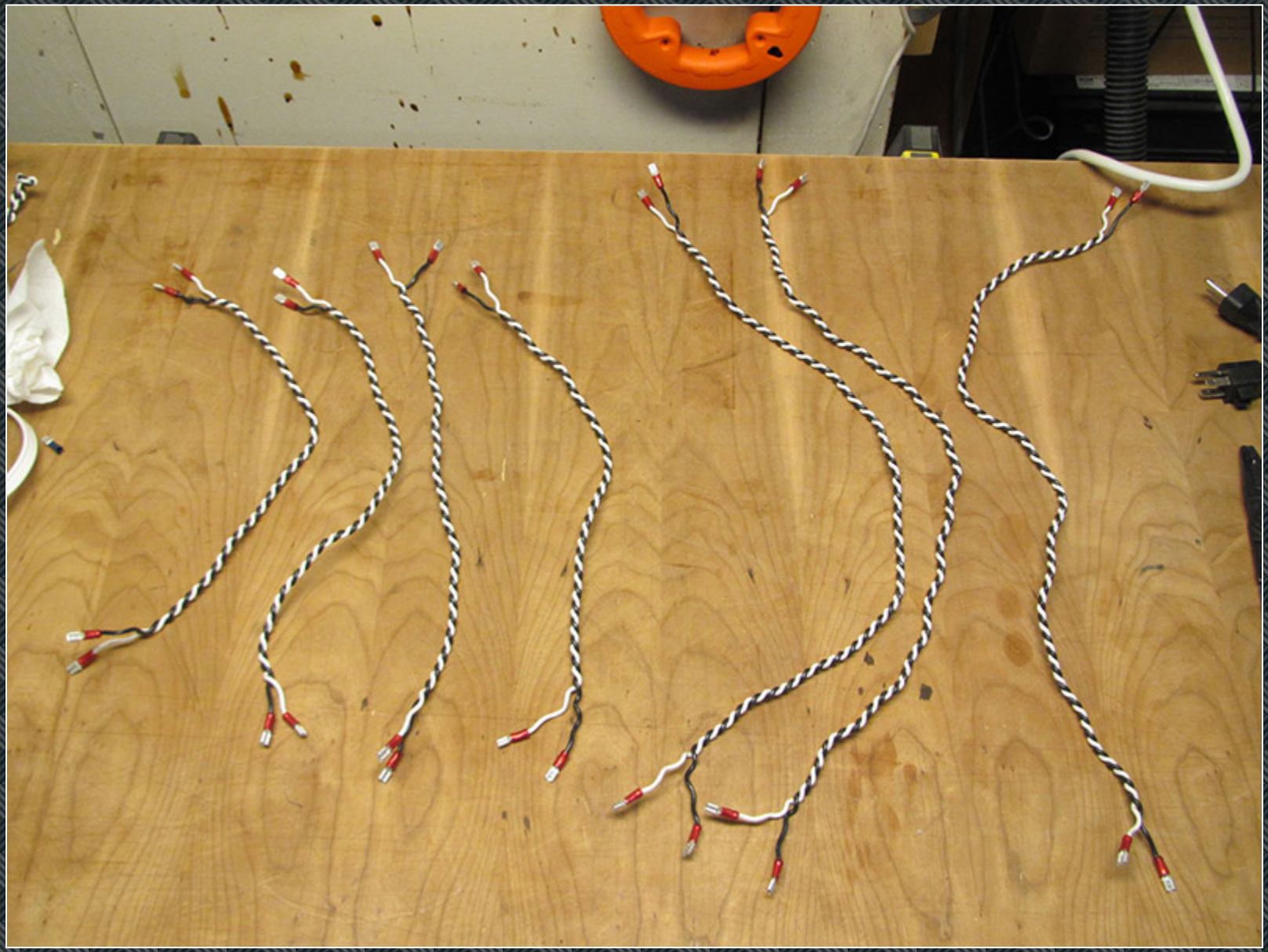
Here's how the cabinet looks so far.

Here I have cut away the Tolex that was covering the holes that were drilled during fabrication.

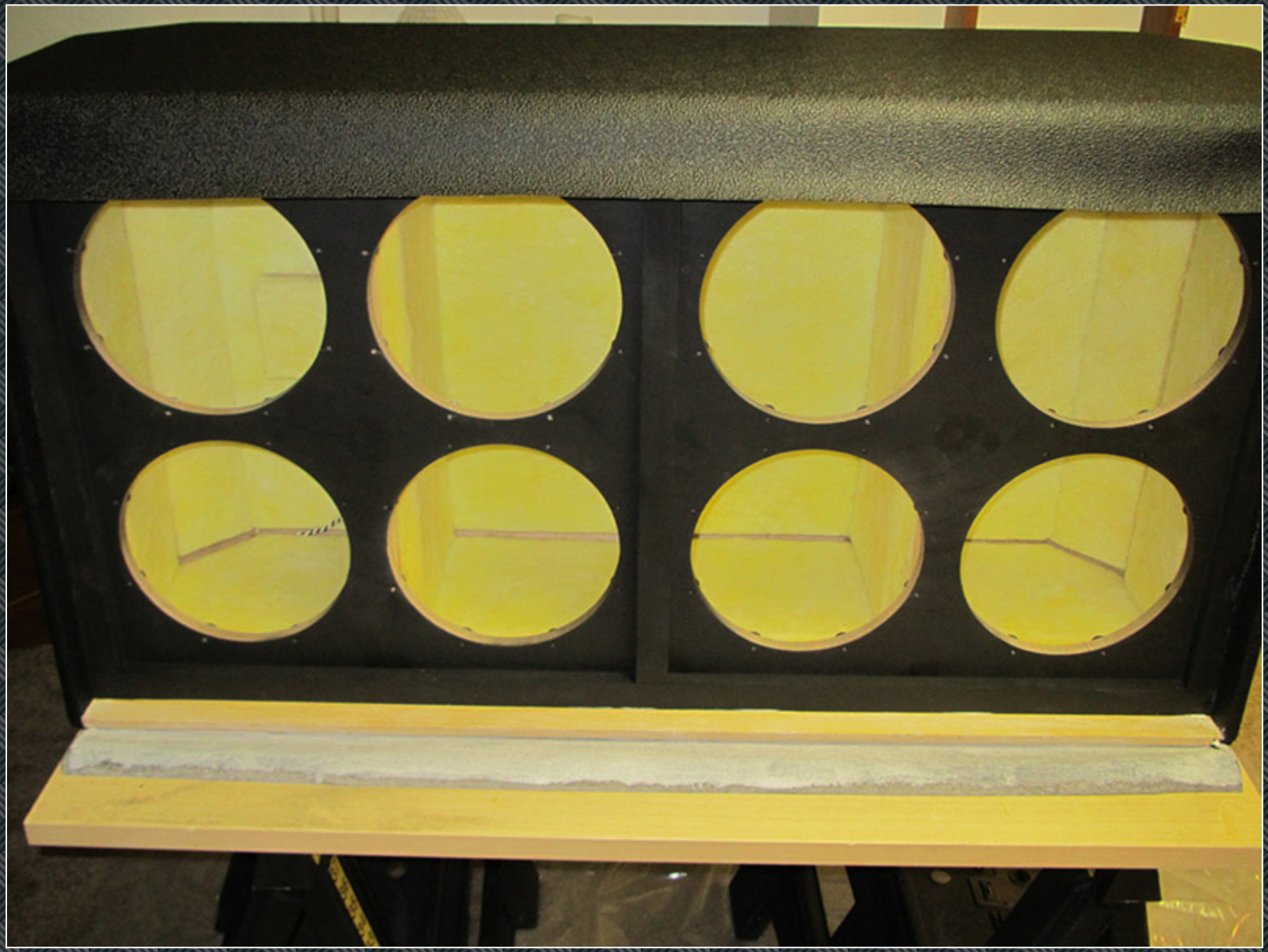
The installed foot cups.

The wired jack plate ready to be installed.

Letting the glue set on my corner repairs.



While I was waiting for my corner repairs to set up I made up my wiring harnesses.



Gluing one of the side flaps.

Close up of one of the corner repairs.

The same corner with the metal corner installed.

Marking the holes for the rubber feet that go on the bottom.

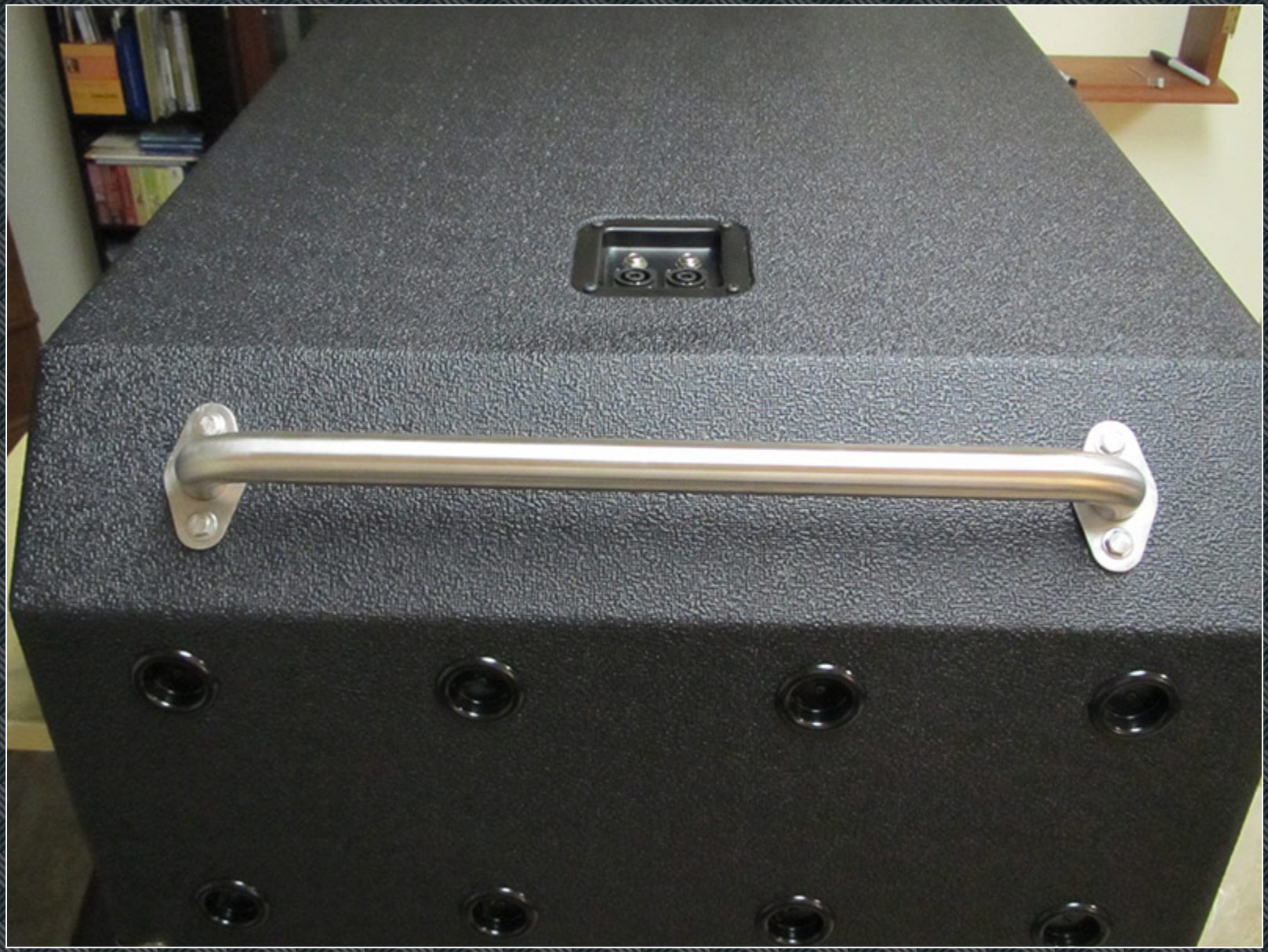
Both rubber feet installed.

Drilling out the Tolex covering the caster mounting holes.

Installing the kick plate.

Installing the casters.

Drilling out the Tolex covering the towel bar mounting holes.



The installed towel bar handle.

Laying out the mounting holes for the skid rails.

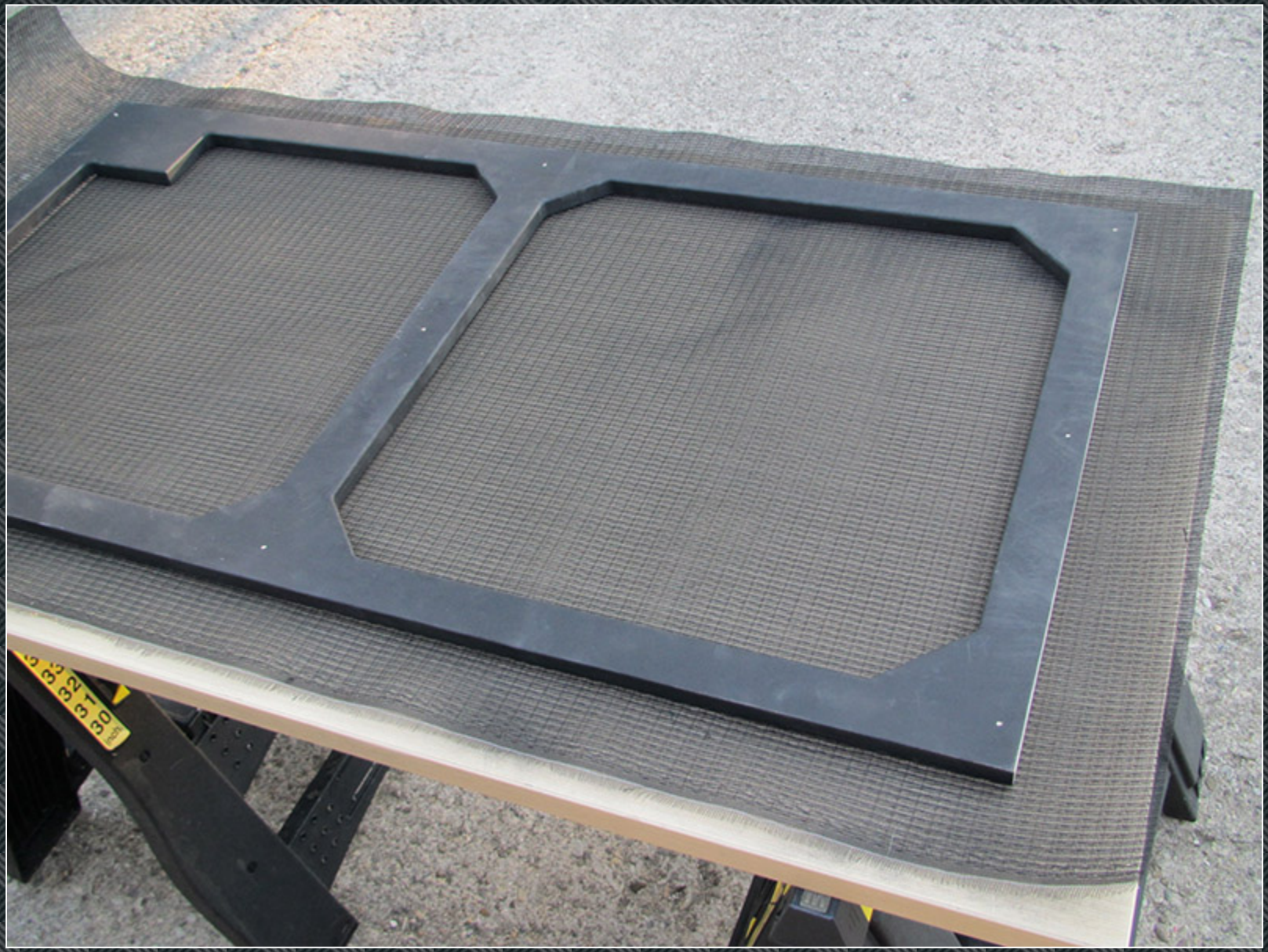
Rear view of the cabinet.

When I was installing the wiring harnesses between the compartments I decided to wire-tie a 1" piece of the twisted wires to each harness. I figure the wire tie will act as a stop to limit how far the wire can be pulled into the chamber below and the stub of wire will help stuff the hole before I add the silicone.

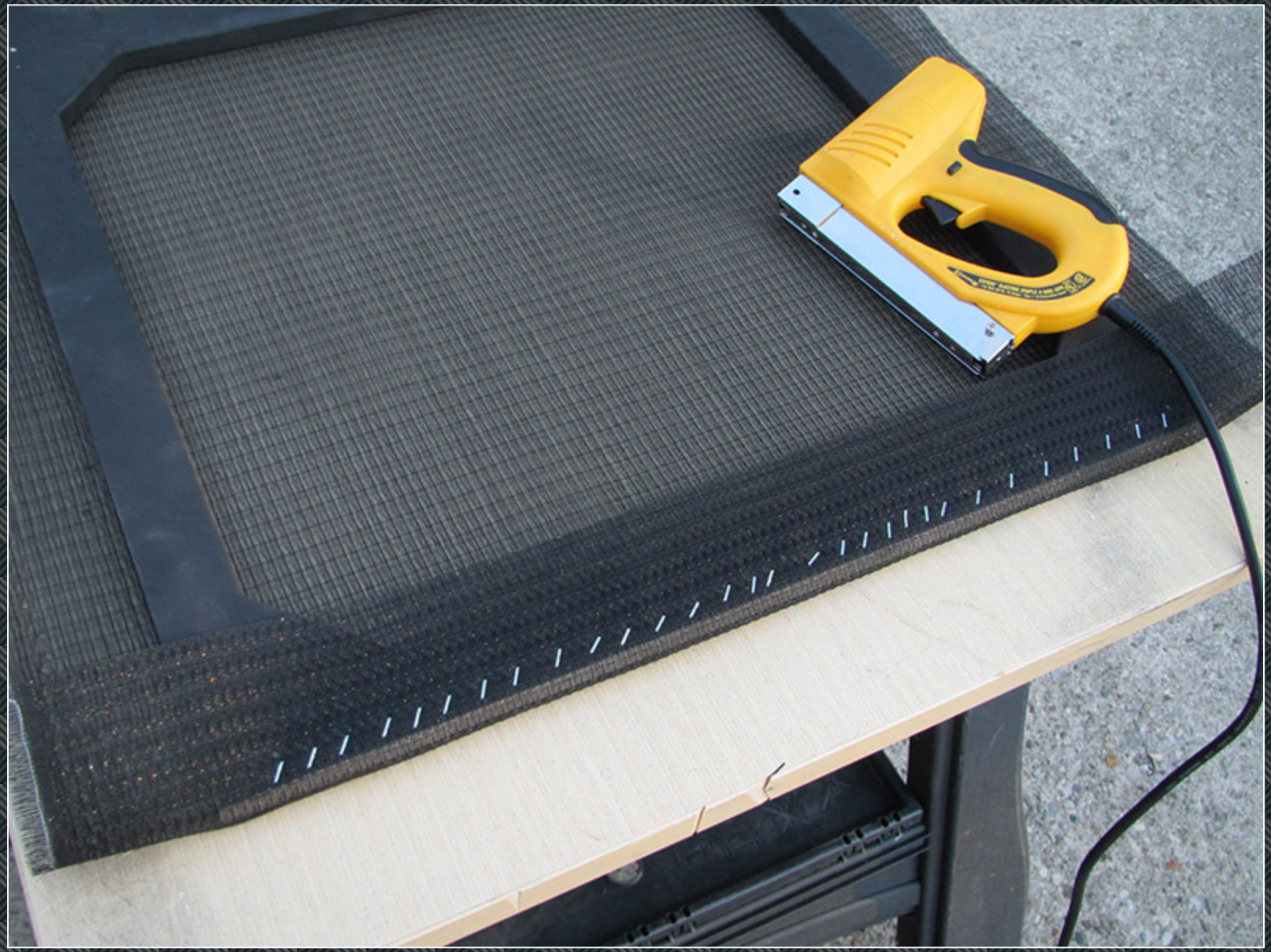
A shot of the front. I guess the chambers are sealed well enough. Even the slightest press on one cone causes the adjacent cone to move out. I've also done a battery check to make sure the speakers are wired in phase.

The cabinet next to my Heritage B15 stack.

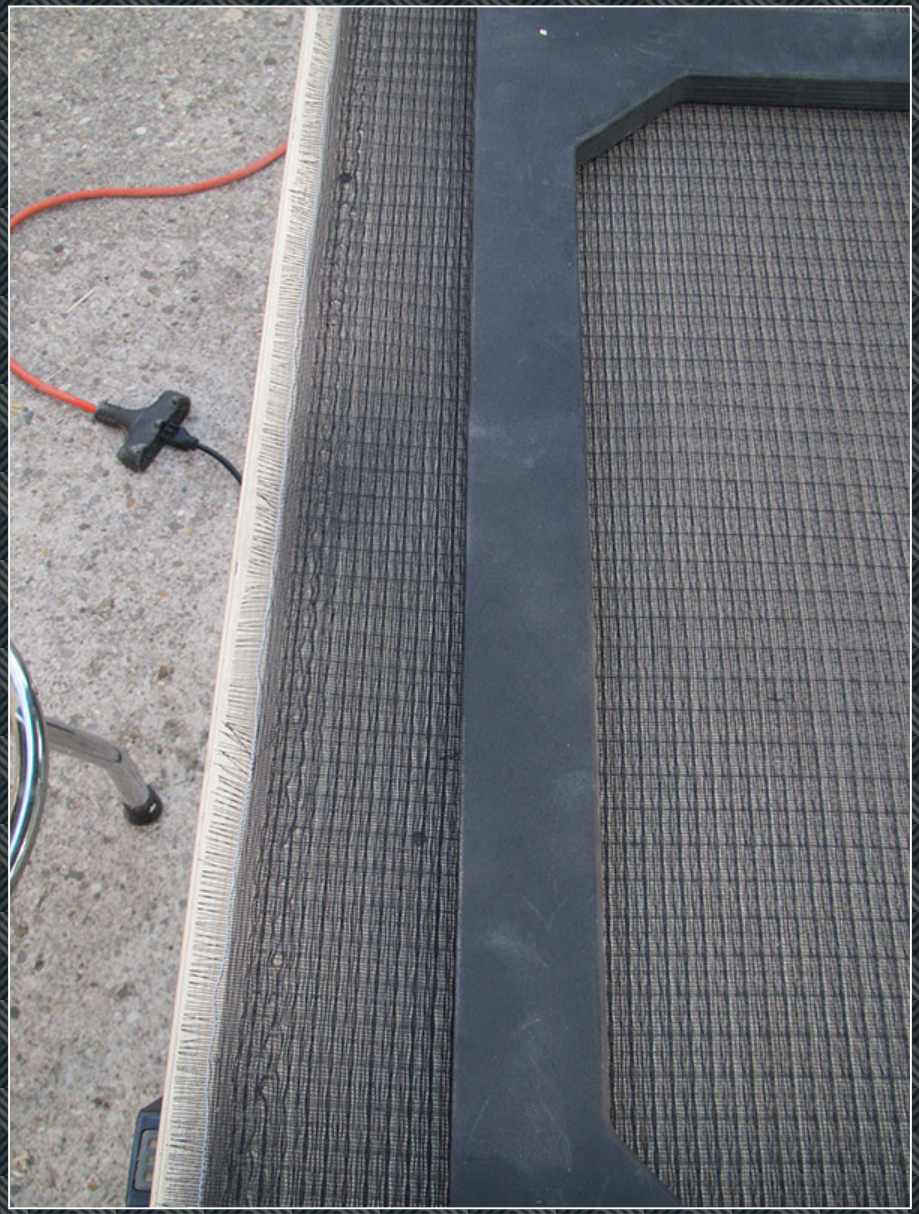
I decided it would be easier to lay out and mark the holes for the grille fasteners before the cloth was applied. (since building this cabinet and covering several similar grilles I now mark these holes after the cloth is installed)



Getting the frame lined up on the grille cloth.

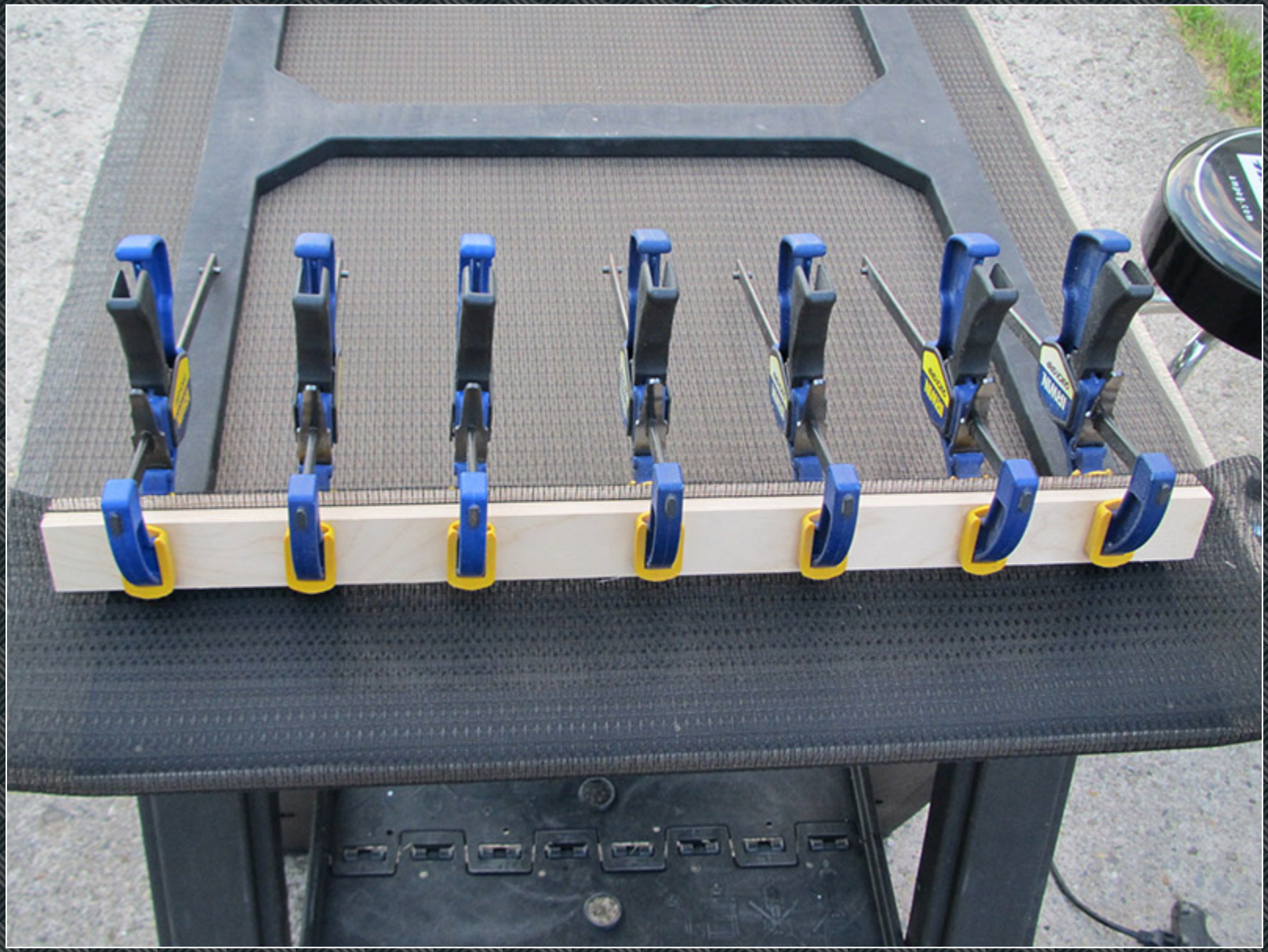


Installing grille cloth is one of my least favorite tasks. I start off by stapling the cloth to one end, keeping the horizontal pattern aligned with the end of the frame. I start in the middle and work out toward each side. You want to be sure you don't pull the cloth to one side or the other while doing this.



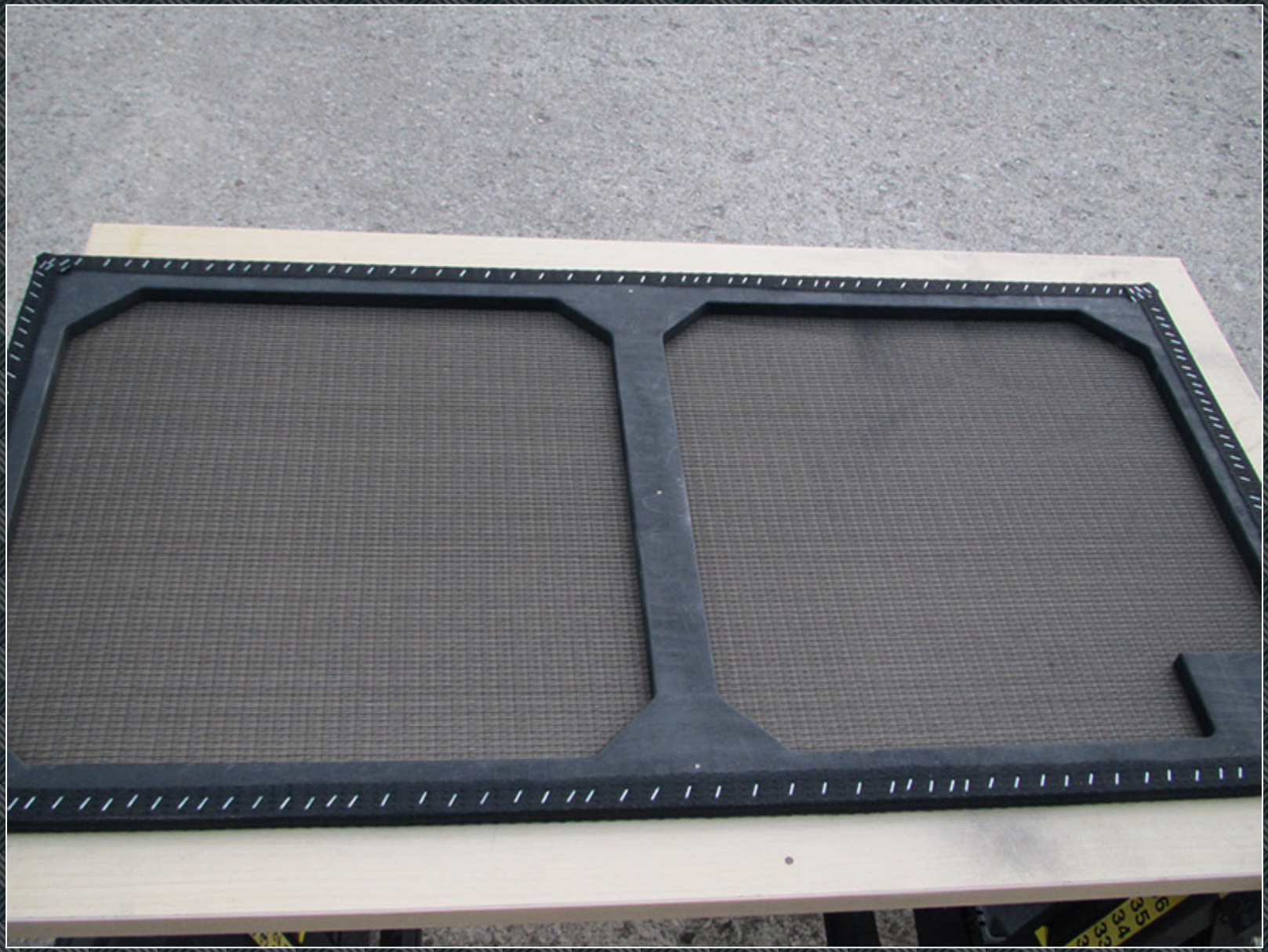
While preparing to staple the other end make sure that the vertical pattern is aligned properly by sighting up the side of the frame.

To pull the cloth before stapling the other end I decided to try something that I attempted a few years ago for covering the grilles on my B15 cabinets. In that case it didn't work well because the B15 grille has four protruding mounting studs that got in the way. This frame doesn't have those so I thought I would give it a try again. Basically I take two strips of plywood and attach a piece of non-slip tape (the stuff with grit) to each.

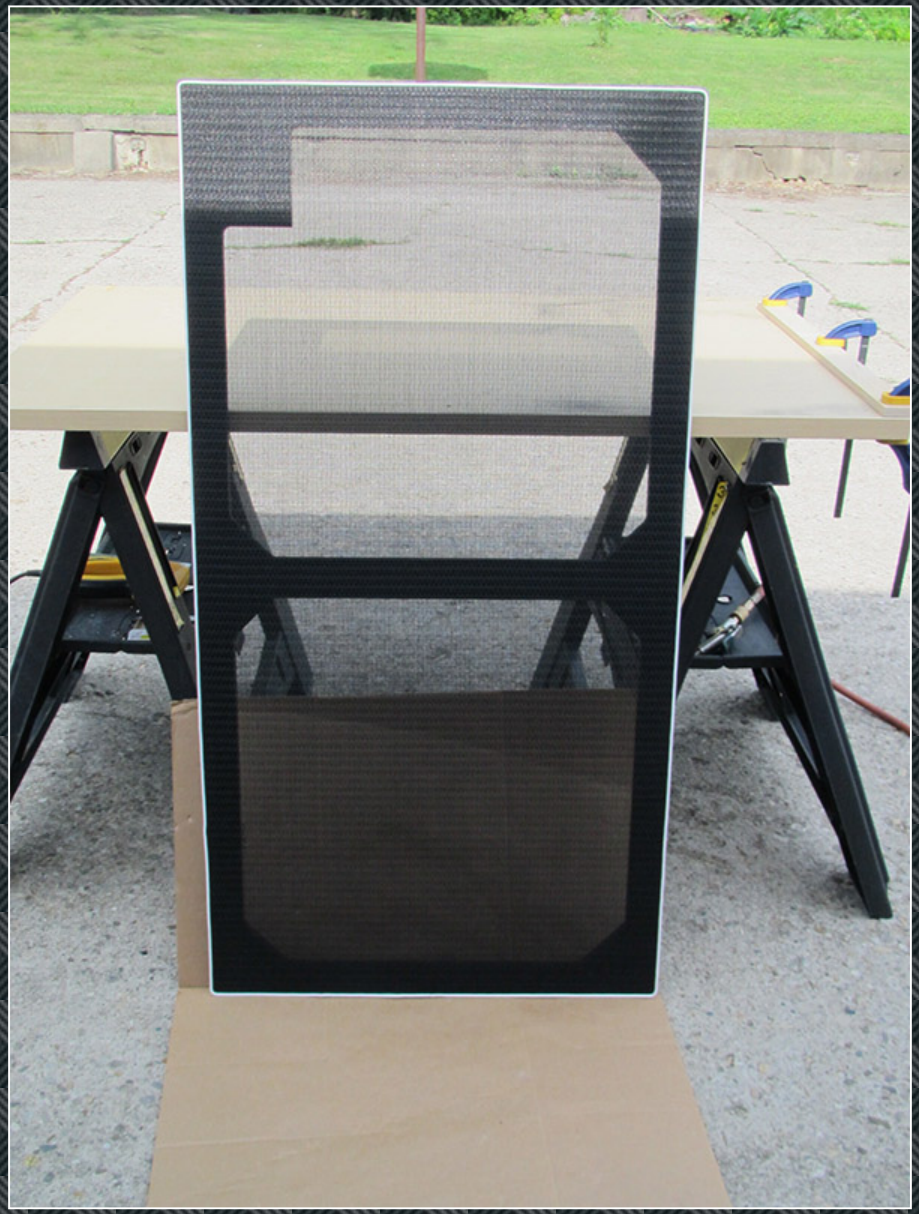


Then I clamp the loose end of the cloth between the plywood strips. This gives me something to hold to try to pull the cloth evenly. I pull the cloth as tight as I can but have never had good luck if I try to pull it too tight. I tend to skew the pattern somewhere when I do that. (since switching to a pneumatic staple gun I have found this process to be overkill)

Here I have stapled one side. You don't really want to do any pulling here or the vertical lines will get all out of whack. The important thing is to keep the pattern straight and aligned with the side of the frame.



All four sides have been stapled and the excess grill cloth has been trimmed away.



49,000 staples later (or so it seems) the welting is installed on the frame.

Front view of the finished cabinet.

3/4 view of the finished cabinet.


Vintage
Blue