

Acoustic Panel Wall Art



by RayP24

Hi!

I made this acoustic panel wall art composition to help reduce the reverb in my son's recording studio, aka: his bedroom. But it would feel at home in any interior that needs to fill a blank wall with an interesting feature and also reduce the reverb (echo) that blank walls, generate.

It's as if this DIY project is punching above it's weight because you get so much from so little material and equipment. All the frames came out of a 4' x 2' x 3/16" plywood panel which is being extremely efficient. Its cheap stuff, very thin but with 5 ply this board stays straight and rigid. It's not as good as birch plywood but it's good enough for what we need. The fabric is foam backed headliner fabric. More on that later.

It's easy to make and it's light, so very easy to hang and, if I do say so myself, it looks great! I used only a few tools. Mainly a jigsaw. If you don't have one you could probably borrow your dad's or your daughter's or your neighbor's or your brother's, they'll be delighted to help ;)

Supplies:

MATERIALS:

4' x 2' Thin plywood sheet 3/16" (Metric: 1200 x 600 x 5 mm). Get it as **5 PLY** if its **3 PLY DON'T GET IT** its not as rigid
Headliner fabric.

Also: 6 mm Staples, 3 x 20 mm Wood screws, Wood glue, Wall mounting screws and rawl plugs.

TOOLS:

Jigsaw

I cut 99.9% of the plywood with a Jigsaw, I don't think you could get a laser cutter to maximize the board like I did, you'd probably need a margin in from all sides.

Also: Drill, Stapler, Pencil, Tape measure, Ruler, Scissors, Hand saw.

What's headliner fabric? It's the fabric used to finish the interior panel of the roof of a car. It's the perfect fabric for this project as it provides a thin foam backing that will give the circles a soft edge and reduce noise. It's main purpose in a car's interior is just that, to reduce the noise level in your car. Lots of upholstery dealers sell this stuff by the yard and its fairly cheap. The color choice is usually pretty boring but I've combined a few different tones to get a more interesting effect.







<https://youtu.be/oBI5nqq53YU>

Step 1: The Design

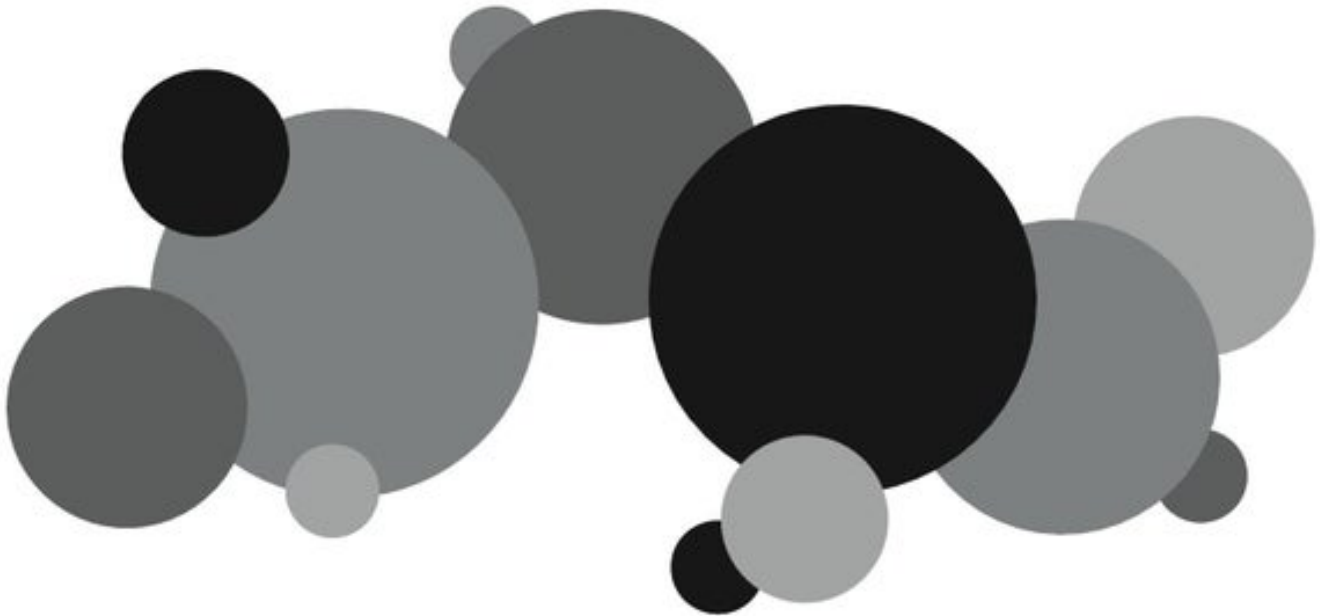
My first thought was to just cut circles out of one big board but then I figured I could use a lot less material if I cut them concentrically like hoops each one smaller than the next and that they fit inside one another. This way a 4' x 2' board (120 x 60 cms) can stretch to quite a large composition across a wall also making the overall weight of the art work considerably lighter. And chancing my arm on a more technical note, I believe that acoustic panels are open at the rear and slightly set out from the wall so that the noise absorbing material can also absorb sound waves rebounding off the wall into the back of the panel. So, over lapping the circles will create that space out from the wall and being open at the back will also eliminate the reverb more effectively.

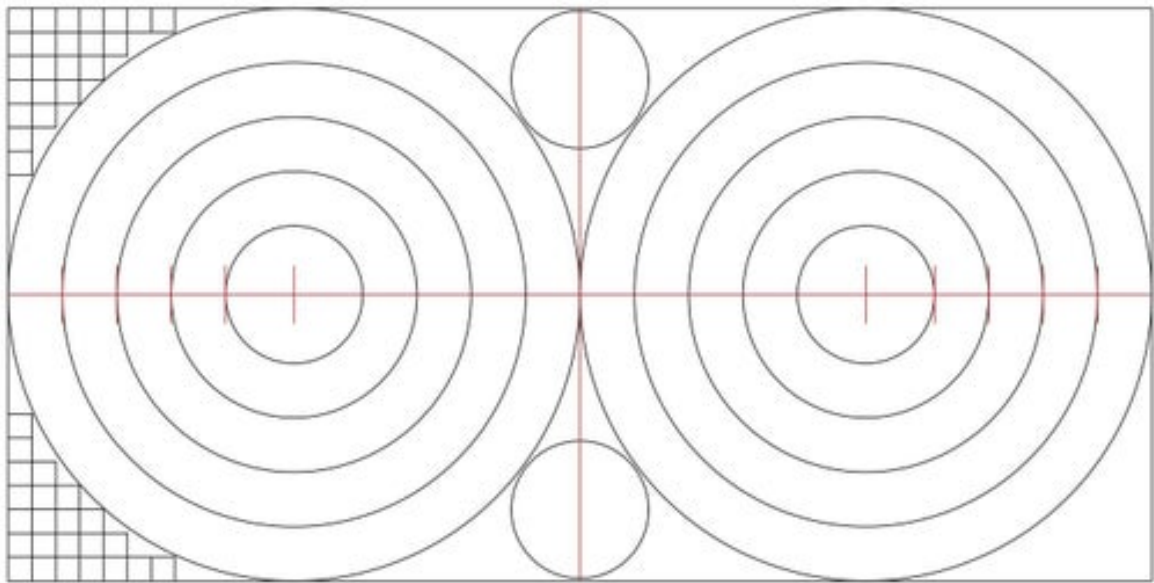
I spent little or no time deciding the layout of the circles. Once I had them drawn up as they would be cut from the board I just dragged and dropped them into a random composition with all the circles slightly overlapping. If you're going to follow my design print out one of these pictures to use as a map to follow. If you're going to come up with your own layout/design have it drawn out or printed for you for the same reasons. I also made little spacer blocks from some of the off-cut material.

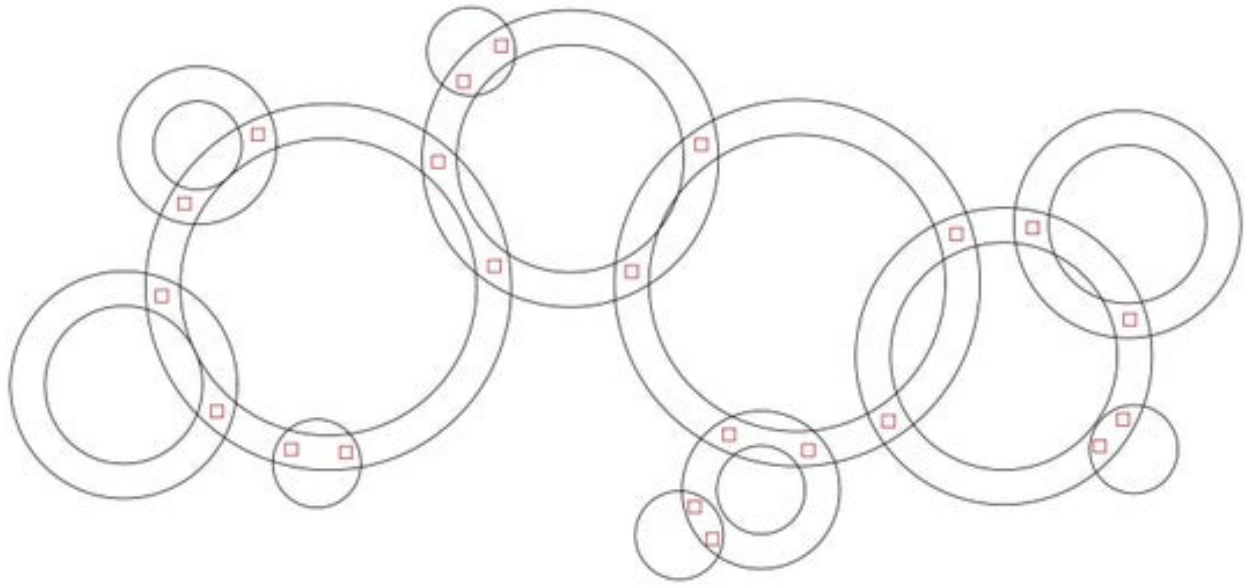
You could come up with a composition different from mine. The concentric idea works really well but they could be concentric squares, hexagons or triangles; or even irregular pebble-like shapes. Although the beauty of assembling the

circles into this composition is there is no "off-square" sides. If you decide to make squares, for example, the straight edges would want to be aligned with the edges of the other pieces.

If you have a vertical or diagonal space more suitable for something like this (stairwell or diagonal attic wall) just change the layout. It's also going to look good if you only buy one color of fabric.







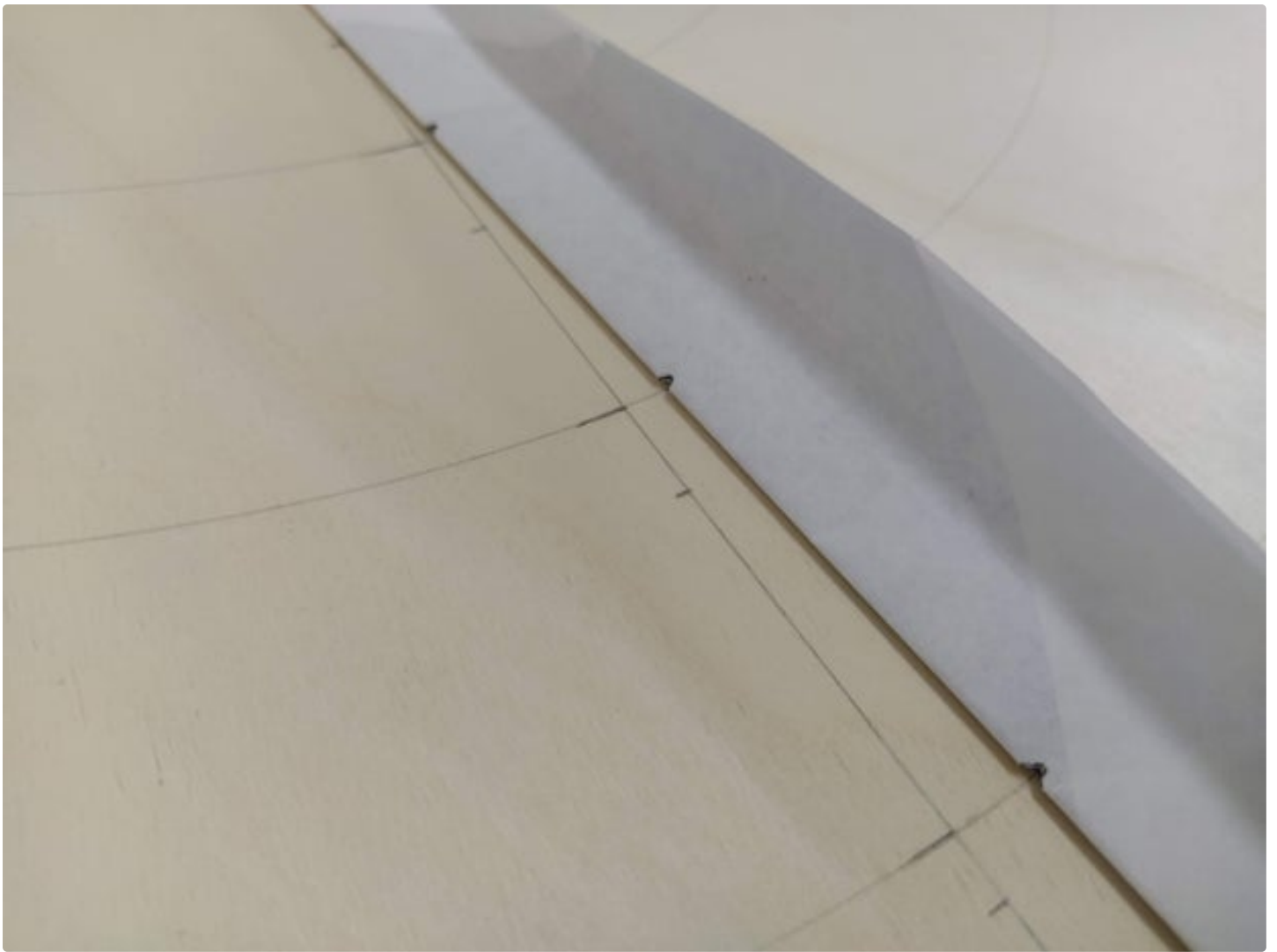
Step 2: Draw the Circles on the Board

To start, draw a line right down the center of your board. Mark it halfway and half again so that the line is divided into 4 equal parts. Next mark the hoop thicknesses: mark 2 1/4", 4 1/2", 6 3/4" and 9" (57 mm, 114 mm, 171 mm and 228 mm) on the line coming in from both ends. I made a compass by folding a sheet of paper across the diagonal (that way it's long enough to draw the largest circle) and folded it over again at a width of no more than an inch and cut off the excess. Tack it down to the center. Transfer the marks already on your board to the edge of the paper strip where they coincide. Cut little notches in the paper with a craft knife or sharp scissors. Draw the circles. The notches will help keep the pencil in place while drawing them. Easy peasy!

To draw the two additional small circles draw a line across the center of the board. tack your compass to somewhere along this line making sure the small circle will fit without falling off the edge of the board. See picture no. 4 here

Don't worry if it's not perfect. In the end, this is a composition where all the circles will be overlapping each other. We're not doing any joinery here, the edges of these pieces won't be lining up with other material that needs to fit perfectly so if they are a bit wonky it won't matter. Also, any small irregularities get hidden when covered with the foam backed fabric.







Step 3: Cut Out the Circles

Before cutting out the concentric circles, drill a hole big enough for your jigsaw blade. This is to have a starting point to cut the circles. But be sure to locate the holes on the outside edge of the circles as seen here in the first picture. The largest circles, and the two small circles on the side, come right out to the edge of the board so you will be able to just bring the jigsaw right up to the line and cut. Start by cutting the outside circles and work your way in.

I'm super happy with how all these pieces came out of such a small board. So much so I couldn't resist putting them back in their places for this photo. Anyway, back to work.

I was planning on leaving the smallest circles whole but then I remembered I had a hole saw so I could cut out a neat and tidy small hole from them too.

Sand all the edges with a 240 grit sandpaper. Took me a good half hour of sanding











Step 4: Spacers and What to Do With Them

I drew one inch (25mm) squares on one of my off-cut pieces and doubled it's thickness by gluing it to another off-cut. I cut it all up with the jig-saw and the last few cuts, putting the material in a vice, with a hand saw. Then sanded all the edges.

Layout the circles as you want them to be and label them A to M from left to right. Label them on the print out too. Mark two points where each circle overlaps with its neighbor, seen here in picture no. 4. You only need to mark the circle overlapping on top. Drill small pilot holes (smaller diameter than your screw size). Flip them over and glue the spacers to the circles right on top of these holes. I put a heavy board on top and a few other heavy items to apply pressure.

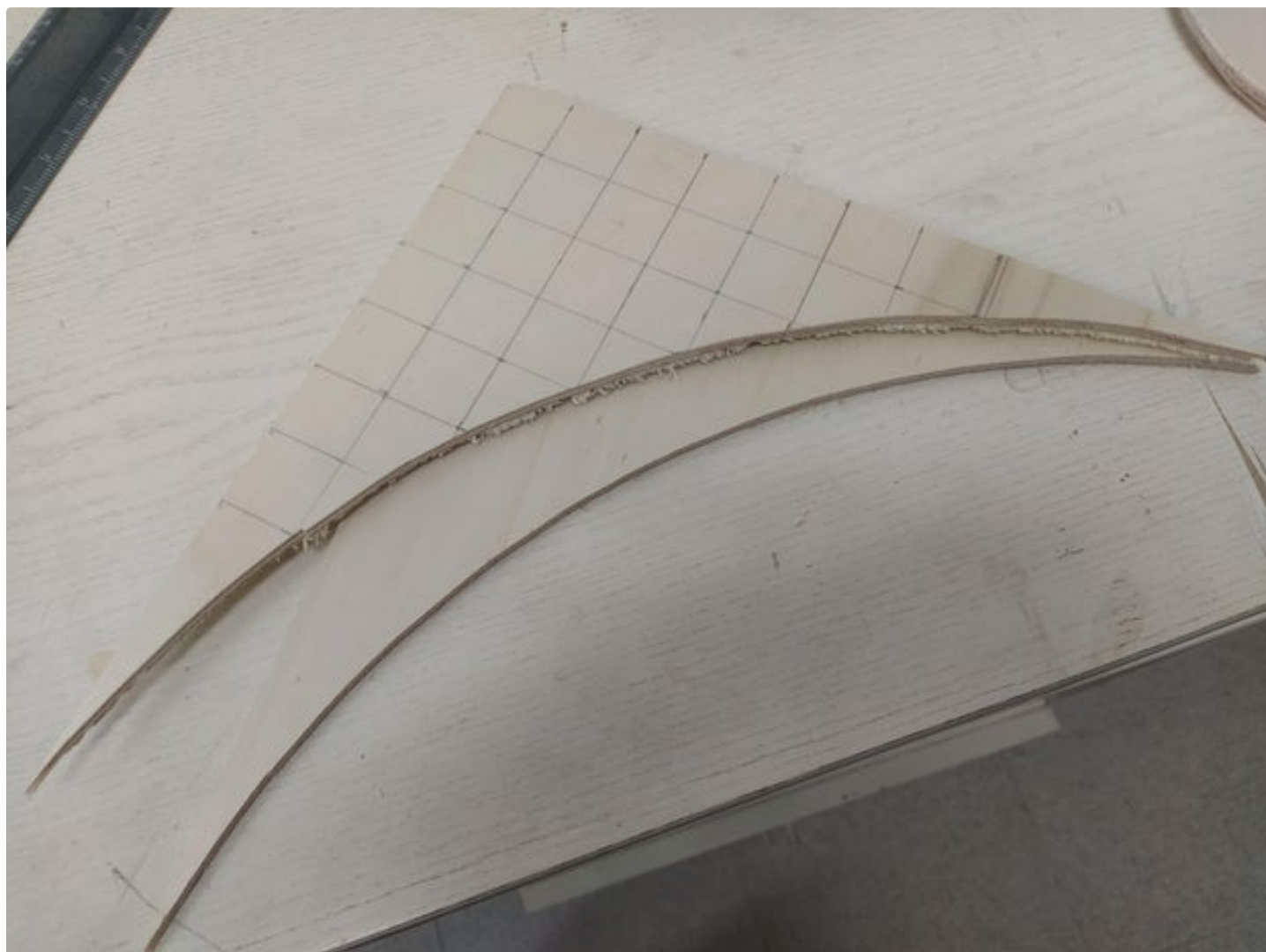
Leave for a few hours or until the next day then come back and drill the same holes again right through the spacer blocks that are now glued in place

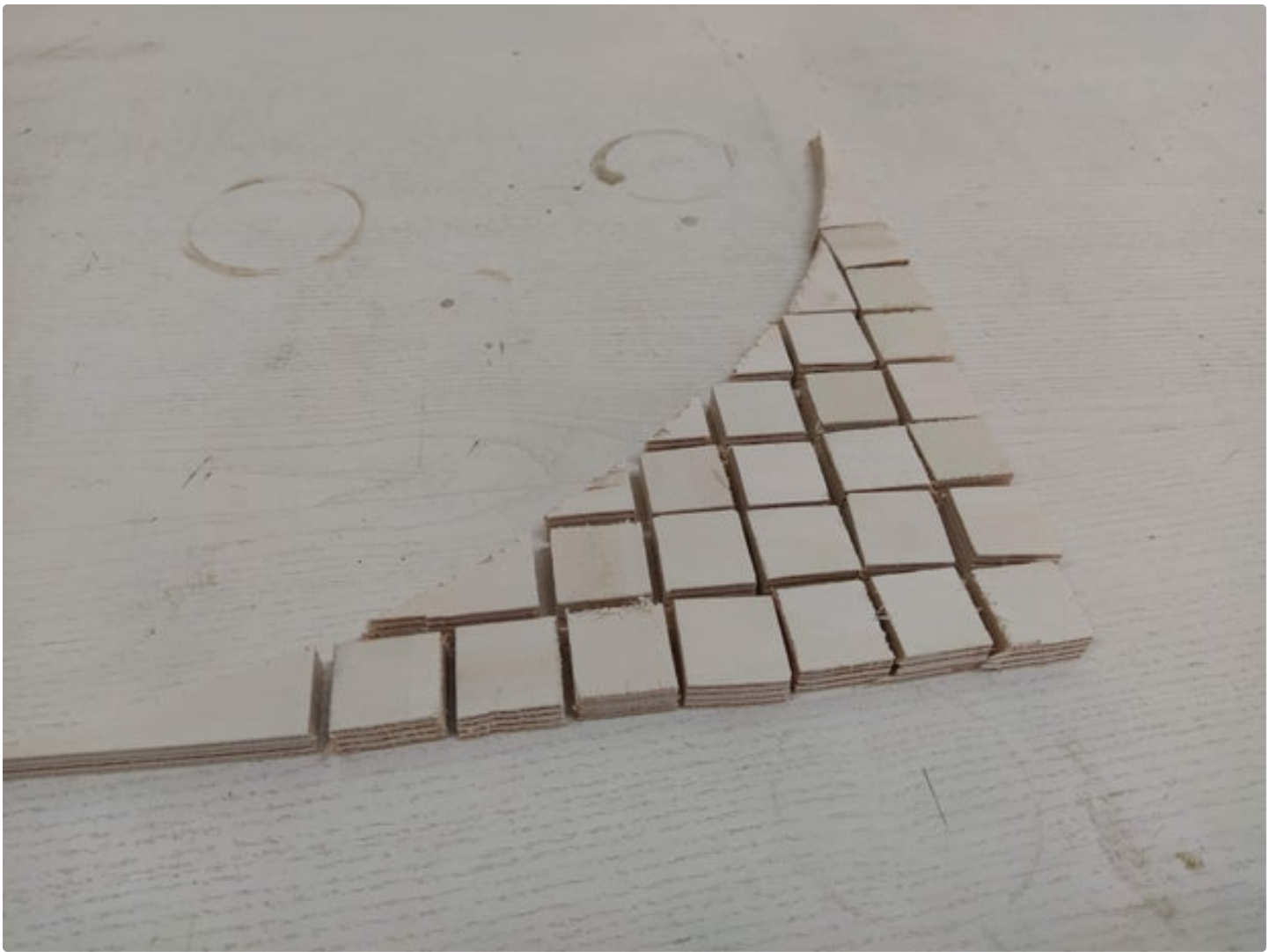
Set up the composition again and drill the holes through to the other circle.

Screw the circles together from the rear and you can start to get an idea of the over all size of the wall hanging and which parts are sticking out from the wall more. It might seem like a two dimensional composition but with the overlap it starts to look more complex.

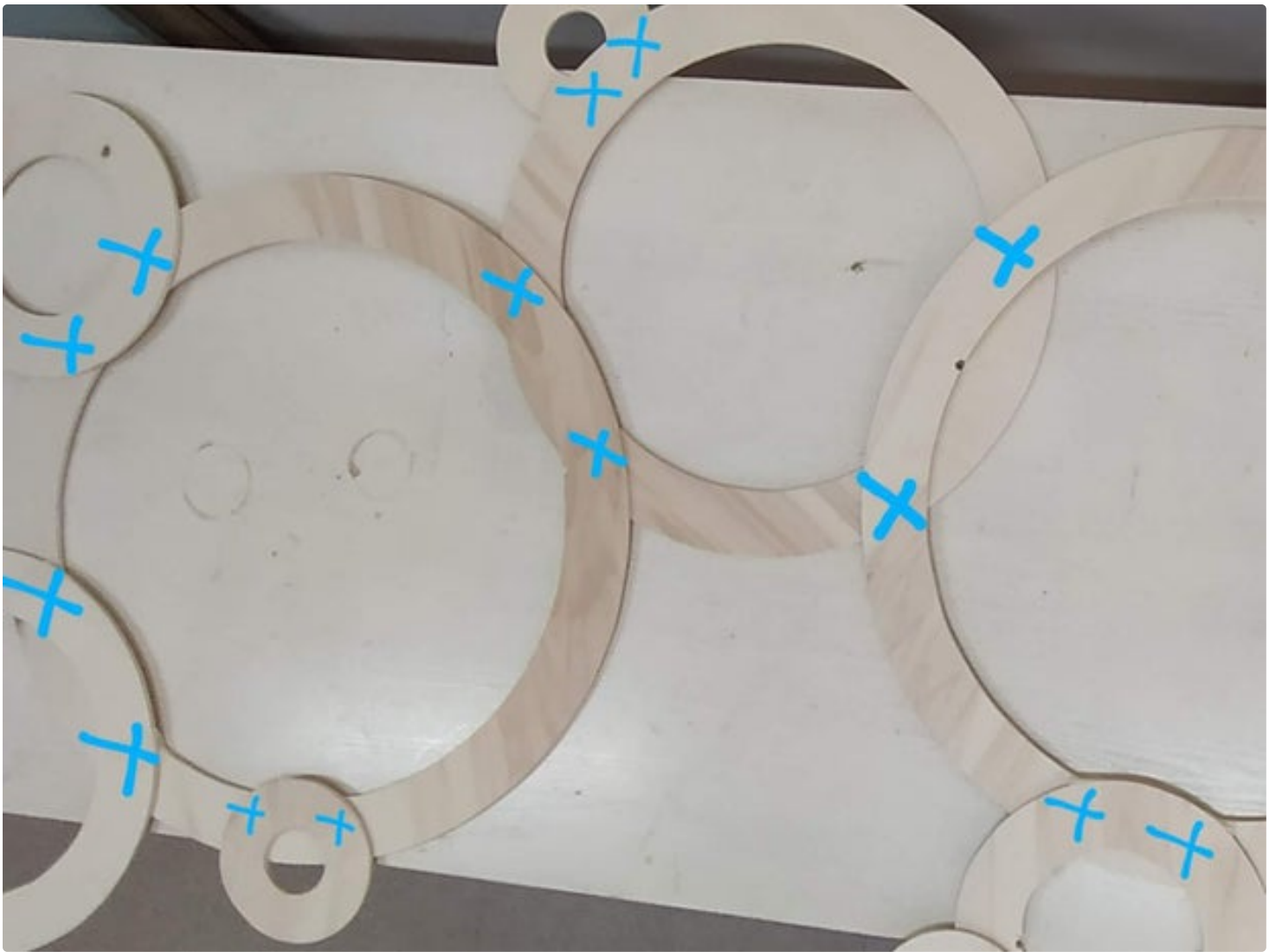
It was at this point I realized I needed to change the position of the small black circle at the bottom. It was overlapping towards the front of its neighbor which overlapped it's neighbor too. Basically it was starting to stick out too much so

instead of in front of it's neighbor I just put it behind. I needed to glue on two more spacer blocks but it wasn't too much of a set back. I've made the changes to the drawings so you shouldn't have this problem















Step 5: Cut the Fabric and Staple the Fabric

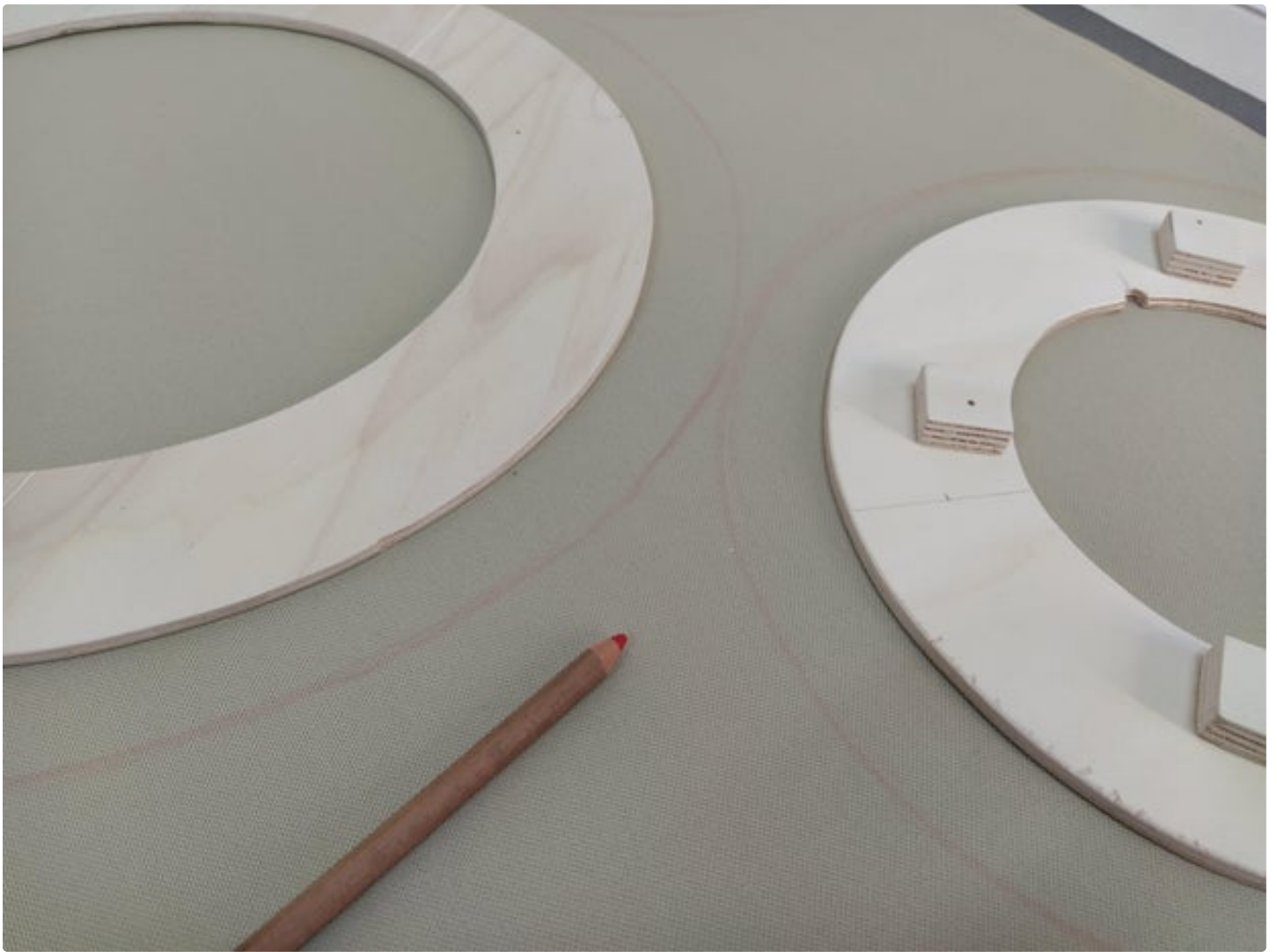
Here I am trying to be as efficient as possible with the board and I've gone and bought loads of fabric!!! Well not really, I didn't pay for all this fabric they gave me what was left on the rolls. But also the width of the fabric is 160 cms (more than five feet) so now I have enough headliner fabric to open a small car manufacturing company!

Anyway, the cutting out bit is very straight forward. Put the circles down on the fabric and mark a circle around it leaving a margin no more than an inch and a quarter (3 cms) Cut out all the pieces for all the circles and get ready to staple

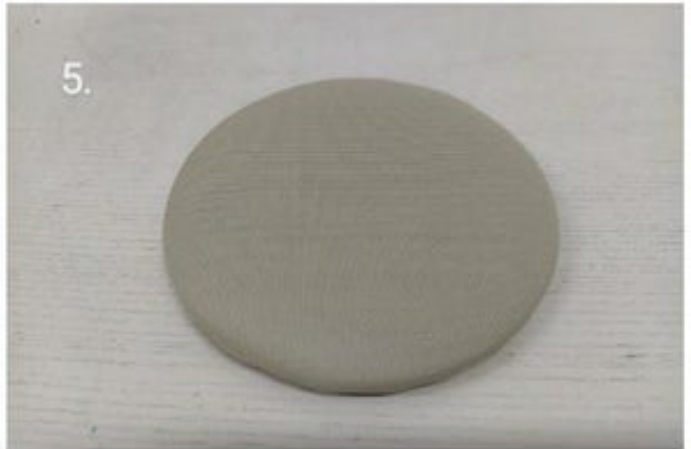
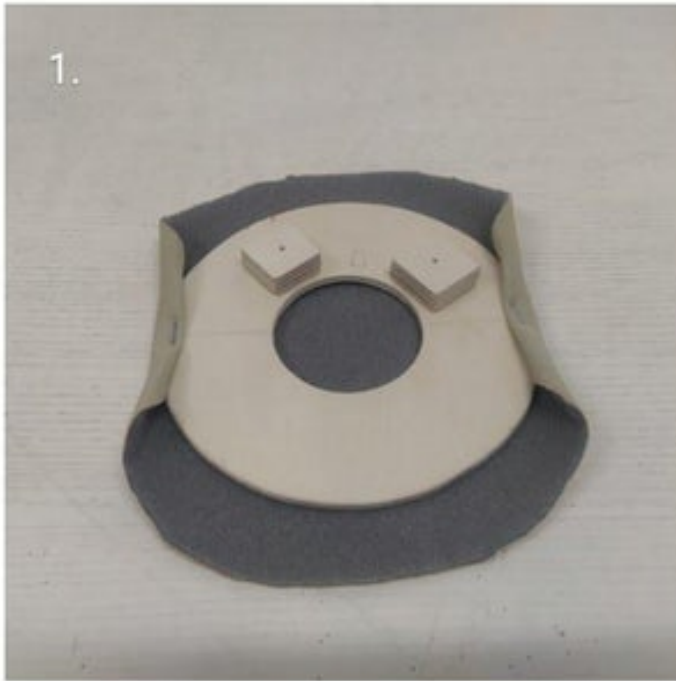
So, to staple the pieces to the plywood circles place the fabric face down on the work bench and center the plywood circle on top. Just at one point, fold the margin of fabric in half to double its thickness and then fold it in on top of the board. Then, while holding it in place with one hand, go ahead and staple it as seen here in picture no. 3. **ACHTUNG!!!** The tips of my staples were coming through the board. Only ever so slightly but with the shot from the stapler it's left teeny tiny marks on my bench. So chose wisely where to do this work or use a large cutting mat underneath. Repeat the process all over the board. Put the second staple opposite the first one, then two more to form a cross. Then staple again in-between the first four staples and so on until all the edge is well secured. If a small crease is still sticking up hit it with another staple. And don't worry if you've never done this before the foam backed fabric is very forgiving.

When you're done all the circles it's worthwhile going back to examine your workmanship on the first circles you did. In the last picture here, you can see the black circle was done first. It had a wider margin which caused there to be lots more fabric buckling up between staples so I blasted it with loads more. No problem ;)

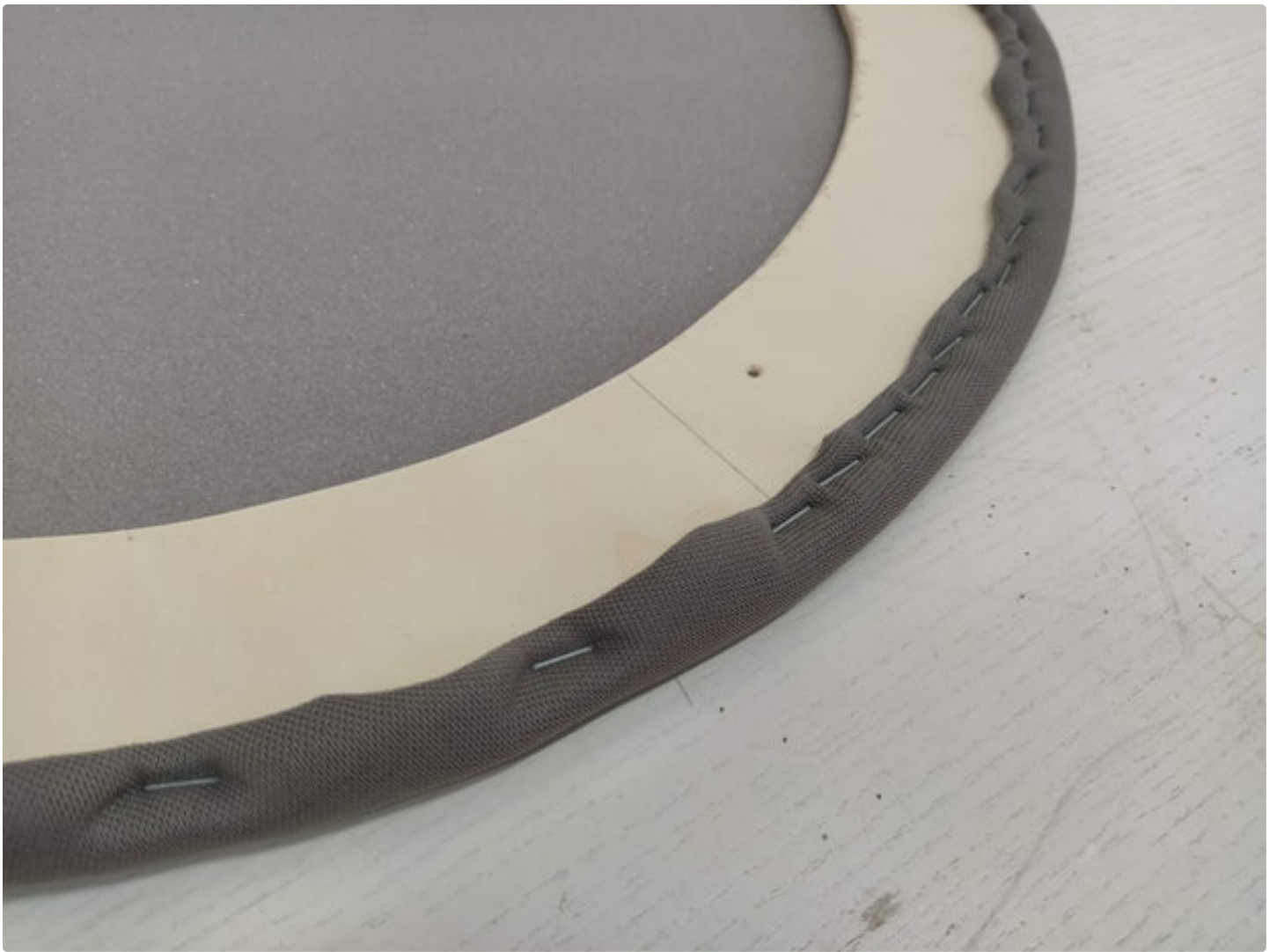










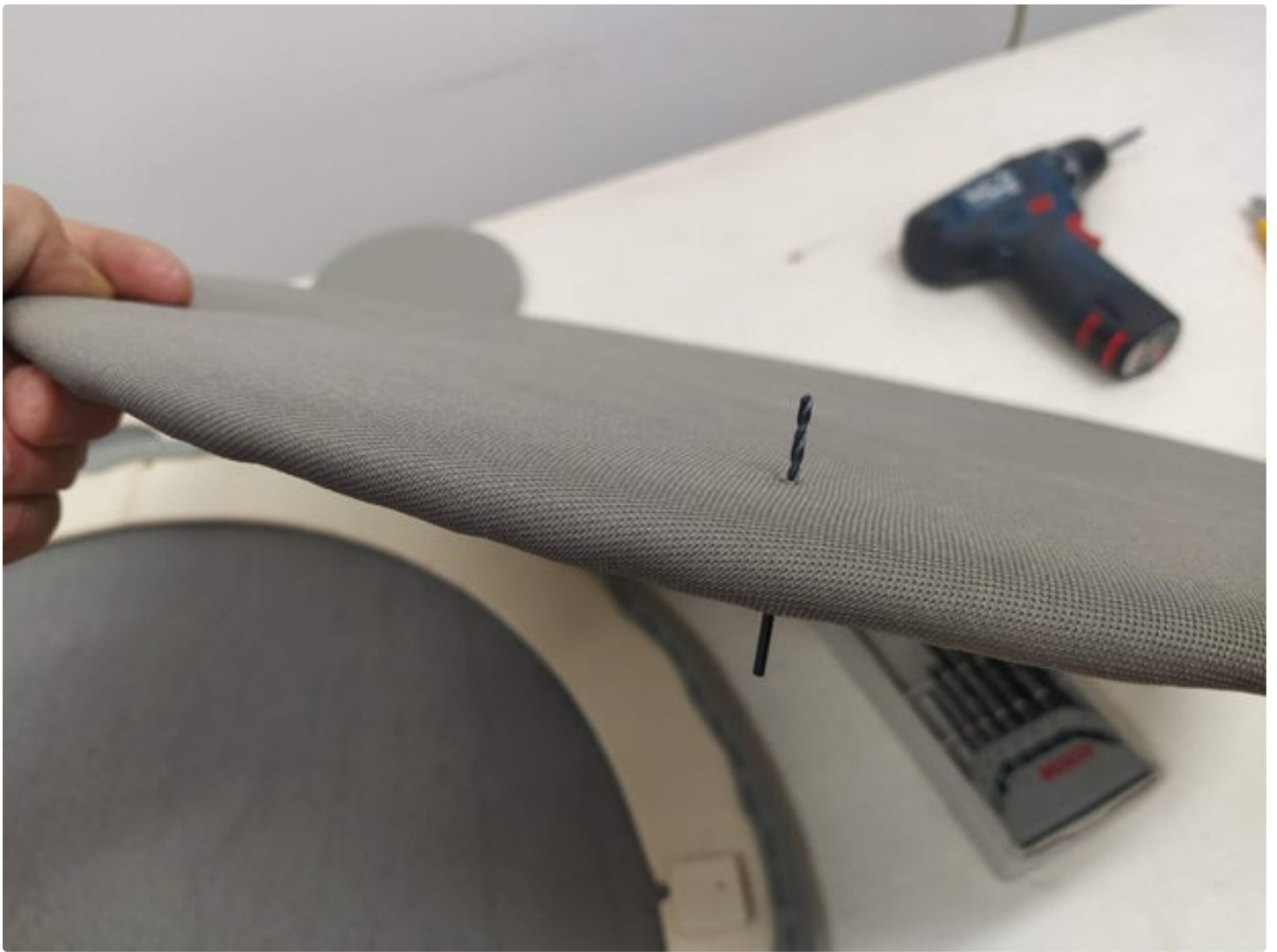


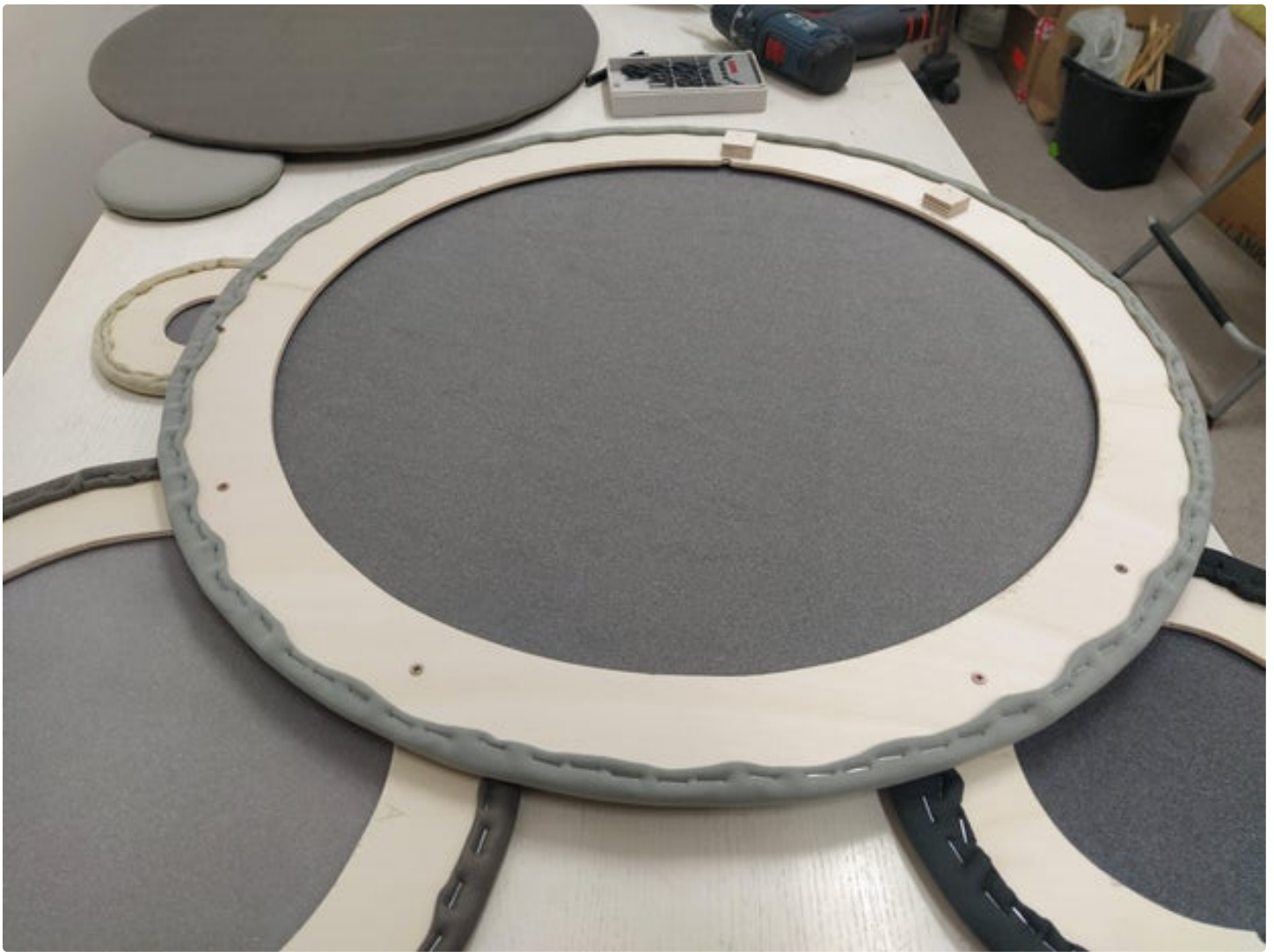


Step 6: Assemble the Circles

So get out your diagram again and screw all the pieces back together like they were before you put on the upholstery. But this time you'll also be passing the screws through the fabric. I thought this wouldn't be a problem but it turns out that the fabric gets snagged and twisted around the wood screws. My solution was to get the drill bit and puncture a hole in the fabric by hand and then I was back on track. So assemble all the circles again and you've got it!











Step 7: Hang and Enjoy!

Hang the panels from two screws with the heads of the screws sticking out from the wall the necessary distance in order to catch the frame but not too much so that it would be seen sticking out through the fabric.

Thanks for following along, I hope you enjoyed it. See you next time!





So the big question...how effectively did this project dampen the acoustics in the room?



Thank you, you asked the right question. It does soften the sound quite nicely. I noticed it most while I still had it in my workshop space, I was aware that it seemed much quieter. However, it's not the only object in his room dampening the sound. He has some rugs, soft chairs and of course his bed all playing their part. Our house has tiled floors so every bit helps.



Thank you. I can see how doing two sets of these, one for each side of a room (home theatre or tv room perhaps), would be a worthwhile project.

Bookmarked! :-)



Any space that has a lot of echo if the walls are bare, a dining room for example. But put the second set on an adjacent wall not opposite wall, that way you'll get rid of more reverb



Beautiful! And so many possibilities.



Thanks, I like your work too btw, especially the solar system :)



And thank you too.



I love this. Excellent use of materials, but so simple and such great execution. Nice work!



Thanks. I try to keep things simple but this one gives great results too