

OVERVIEW

This sturdy wall cabinet will not only provide you with lots of storage options, but is also a charging station and storage for your common handheld power tools. With built-in door racks and custom shelving, you can easily change the plans to fit your storage needs!

Features

This cabinet is primarily constructed using one full sheet of $\frac{3}{4}$ " birch plywood, including the carcass, the shelves, the drill holder, and the door panel. An angled platform with dividers, made from $\frac{1}{2}$ " birch plywood, is not only stylish but also makes it easy to insert and remove batteries. Built-in shelves behind the doors allows for added storage options for smaller items often used around the shop. This cabinet also has a place to add a few quick-release couplers to hang your pneumatic tools.

STEP 1: Breaking Down Panels

The very first thing we'll want to do is break all of the cabinet pieces to smaller, more manageable sizes. There are many ways to break down a full sheet of 4'x8' plywood. I think the easiest thing to do is to ask your lumber dealer to crosscut the panel down into one 33-1/2" piece and one 33" piece.



I set up the rip fence on my saw to cut the panels for the case down to their final widths. When making cross cuts on big pieces like this, it's very important to keep the workpiece pressed against the fence at all times to prevent any twisting in the workpiece.

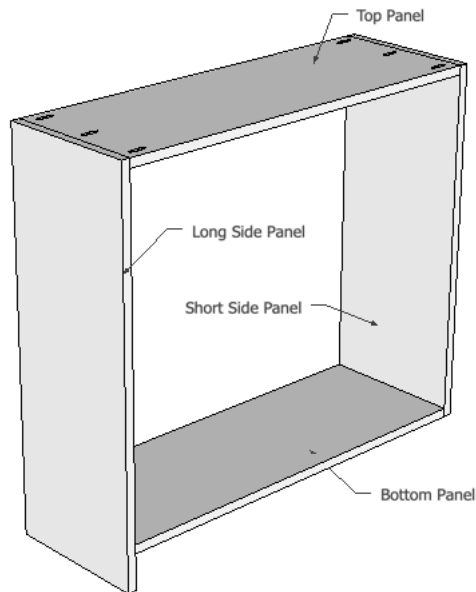


Finally, I used my crosscut sled to cut the panels for the case to their final lengths. Make sure to only work on the panels for the outer case at this point. We'll come back to the partitions later on.



Since all of the pieces for this cabinet are roughly the same size, I like to mark my pieces to keep things organized and avoid cutting the wrong piece later on.

STEP 2: Case Glue-up



Usually for my shop projects I'm more interested in the functionality of the piece and getting it done instead of getting too bogged down in honing complex skills. That's why I will use pocket screws to attach everything in this build. But feel free to use other joinery methods such as dados and rabbets instead of pocket screws, those are very good skills to have and shop projects are a great time to practice.

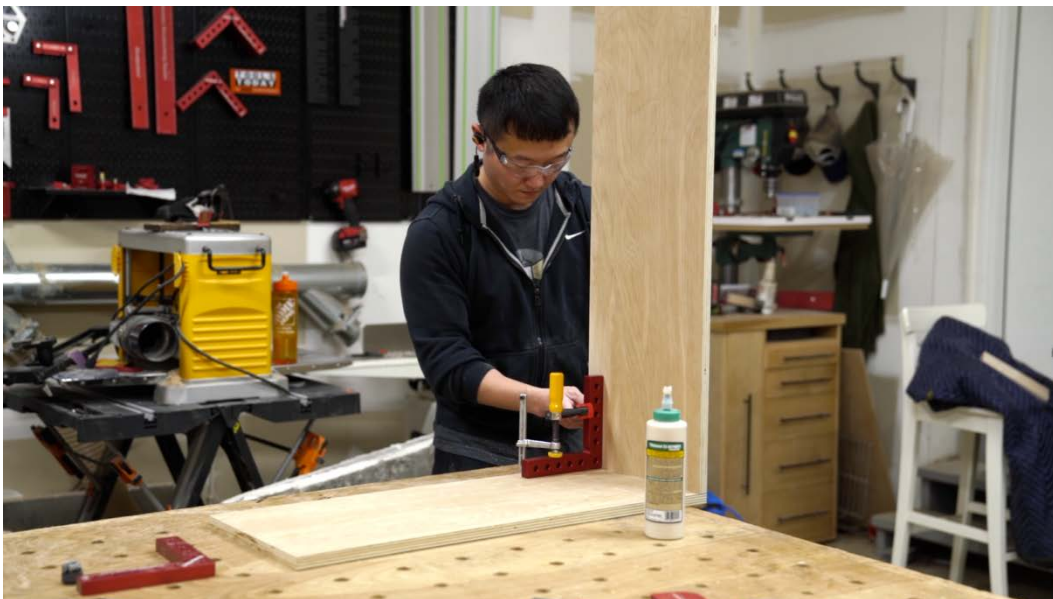


The pocket holes will only need to be drilled along the two short edges of the top and bottom panels of the case. The position of the pocket holes do not need to be precise. I have one

pocket hole on either corner, about 1" from the edge, and another pocket hole somewhere in between.



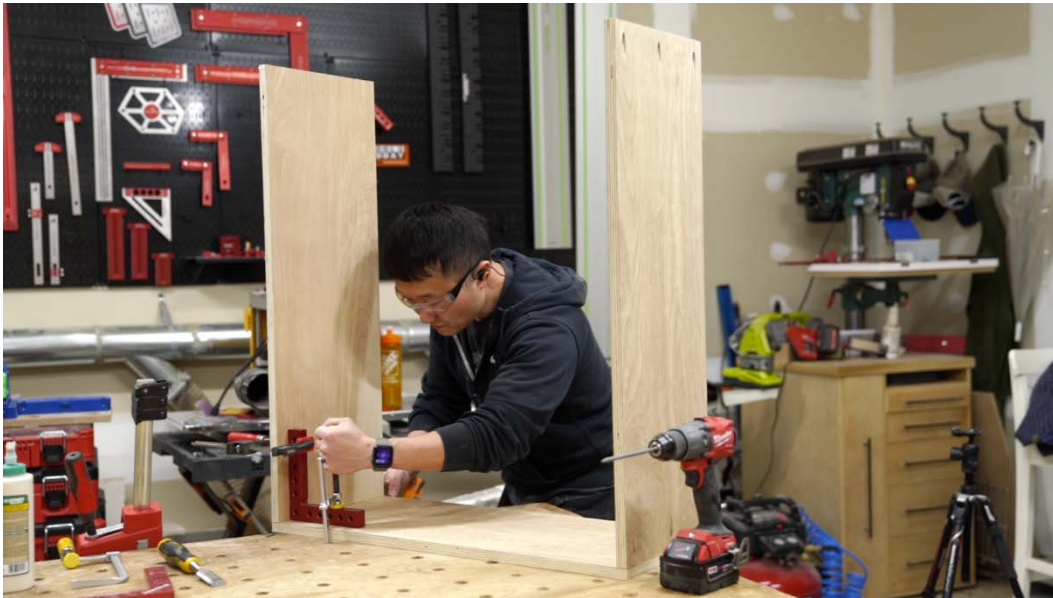
Once the pocket holes have been drilled in the top and bottom panels, I sanded all four panels all the way up to 220 grit before assembly. Since it'll be pretty difficult to sand those corners once everything is glued up.



After applying glue to the edges, I used some right angle clamps to hold the top panel and the short side panel. This will ensure the panels will stay at 90-deg as the glue dried.



It's also important to use another clamp to hold the panels together before driving the 1-1/4" pocket screws in. This will prevent any slipping between the panels when the screws go into the second panel.



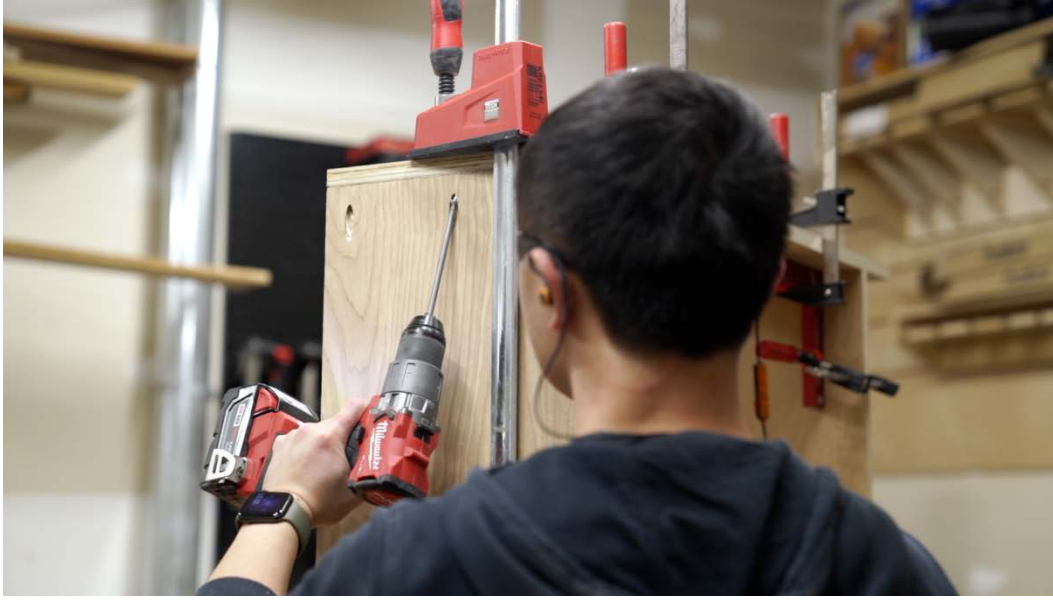
Repeat the same procedure when attaching the other panel to the short side panel.



Finally, it's time to attach the long side panel to the assembly. Assuming the other three panels are all squared up properly, this step will be pretty straightforward, but we don't live in a perfect world...



So I still used a right angle clamp to make sure everything is squared up. Another method to check things are lined up is to measure the amount of overhang. If things were cut close to the sizes indicated in the plans, the overhang should be 3". So just check the amount of overhang is the same along the entire length. If it checks out, then you'll know things are all squared up.

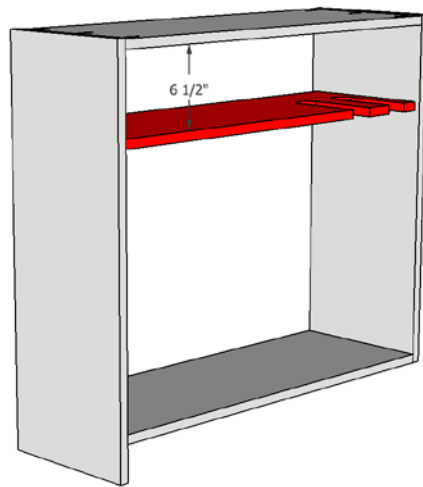


Once again, clamp everything down and tighten the pocket screws.



One of the best advantages of using pocket screws is that once they're tightened, you can remove the clamps. That's because the screws will be enough to hold the panels together as the glue cured.

STEP 3: Horizontal Shelf



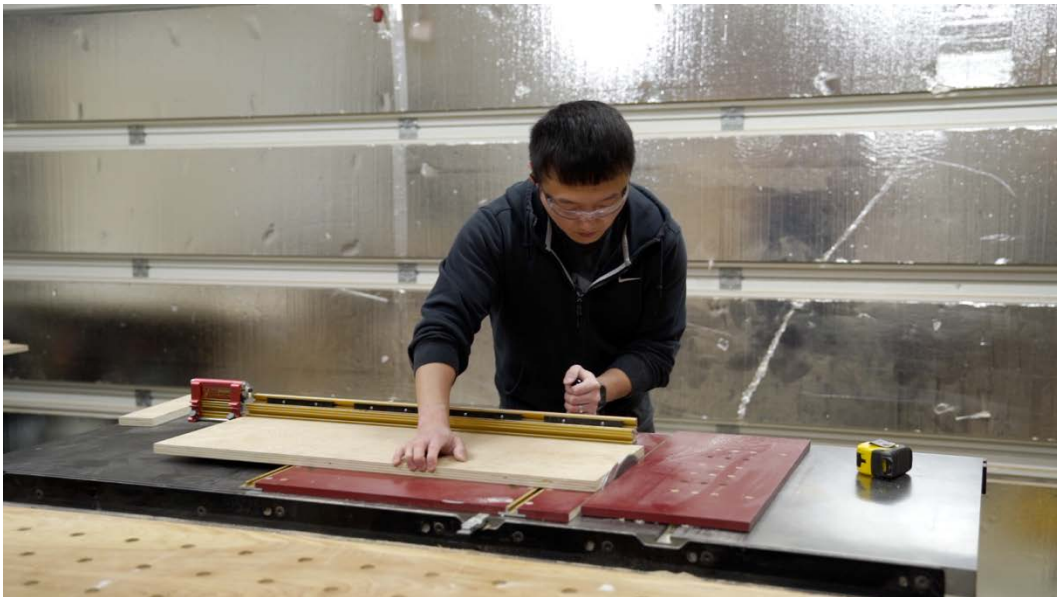
With the case assembled, the first partition we'll work on is the top horizontal shelf because this is the only shelf that will span from one side of the case to the next. In this step I will go into the important concept of "referential measurements", which is something I don't think is emphasized enough for beginner woodworkers.



I started by ripping the shelf to size, which is 1" less than the panels for the case cut previously. This is to leave some space for the 1/2" back panel and also allow the shelf to sit 1/2" inset of the case panels, which is purely for aesthetic reasons.

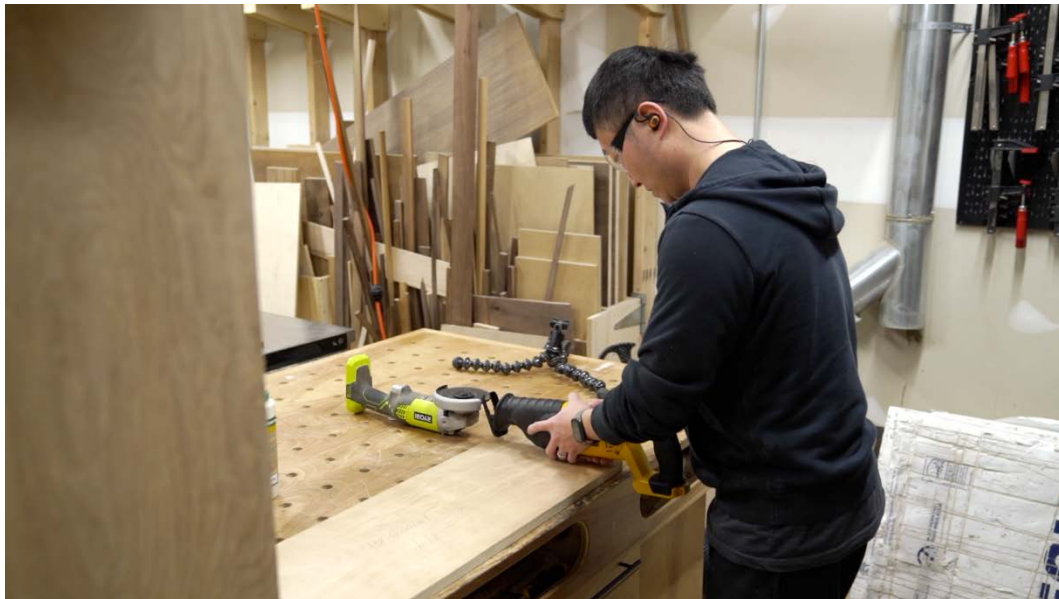


Previously I had mentioned I cut all the pieces about $1/8''$ longer than necessary. That's because it'll allow me to hold the workpiece up to my assembled case, strike a line, and finalize the length of the piece before gluing it in. In this image you see me taking the referential measurement along the side. This is because plywood isn't always flat, so the case might have a slight bow in the center. By referencing against the side, you'll more likely get the perfect length that will actually push or pull the case back straight.



Once I've marked the horizontal shelf, I took it to my table saw to cut it to length. You may have noticed that the length of this horizontal shelf is actually the same length as the top and bottom panels. In this case, you are right. But I wanted to illustrate this method in case you

decide to join the case together with miter joints or with rabbets, in which case the horizontal partition would not be the same length as the top and bottom case panels.



With the horizontal shelf cut to size, I began to layout which tools I wanted to hang. For me, it'll be an angle grinder and a reciprocating saw. If your tools are different than mine, make sure to lay the tools out and measure before cutting based on the numbers in the plans.



To cut the notch for holding the two tools, I used a 2" Forstner bit for the reciprocating saw and a 1-5/8" Forstner bit for the angle grinder. Remember to set your drill bit to a speed to accommodate bits this large. For reference, my setting was about 500 RPM.



Once the holes were cut, I cut the rest of the material out using my jigsaw. To help make the cuts straight, I pressed the side of my jigsaw against a straight edge. If the cuts aren't as straight as you'd like, use a sander with a 40 or 80 grit sandpaper to smooth things out.



I drilled pocket holes into what would be the top face of the shelf. The reason was this shelf would be above eye level, so if the pocket holes are on the top surface it would not be visible.



With the case laying on its side, I used two scrap pieces of plywood as spacers to help me position shelf.

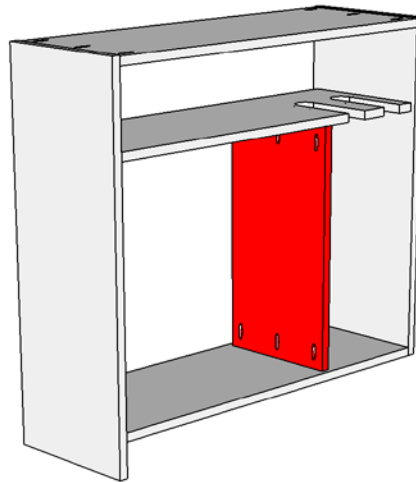


Then I used a $\frac{1}{2}$ " piece of plywood to help me determine how deep the shelf will sit in the case, leaving enough room for the back panel later.

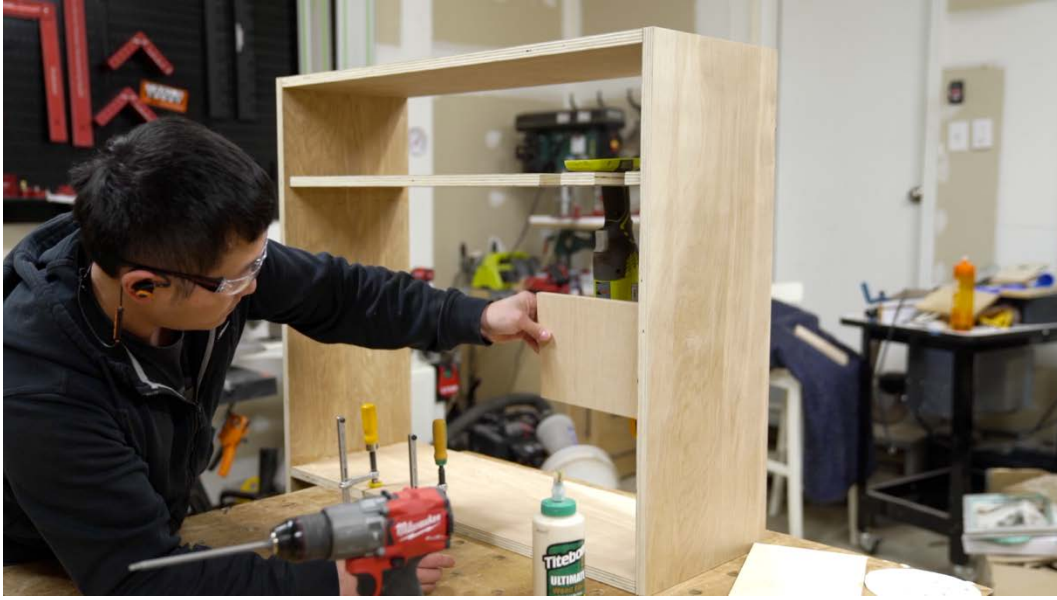


Once again, I used glue and 1-1/4" pocket screws to attach the shelf to the case.

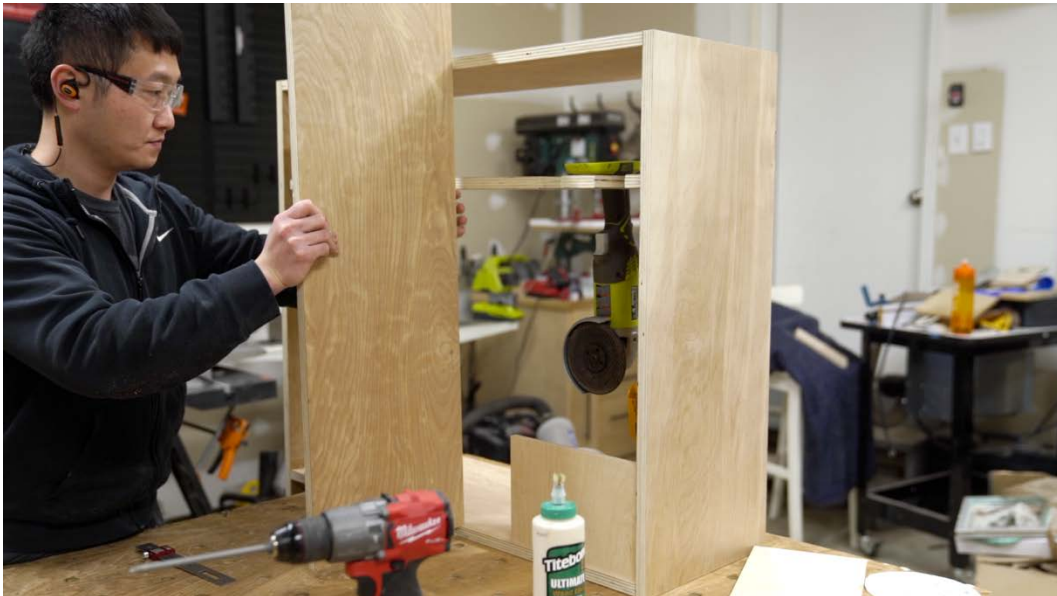
STEP 4: Vertical Partition



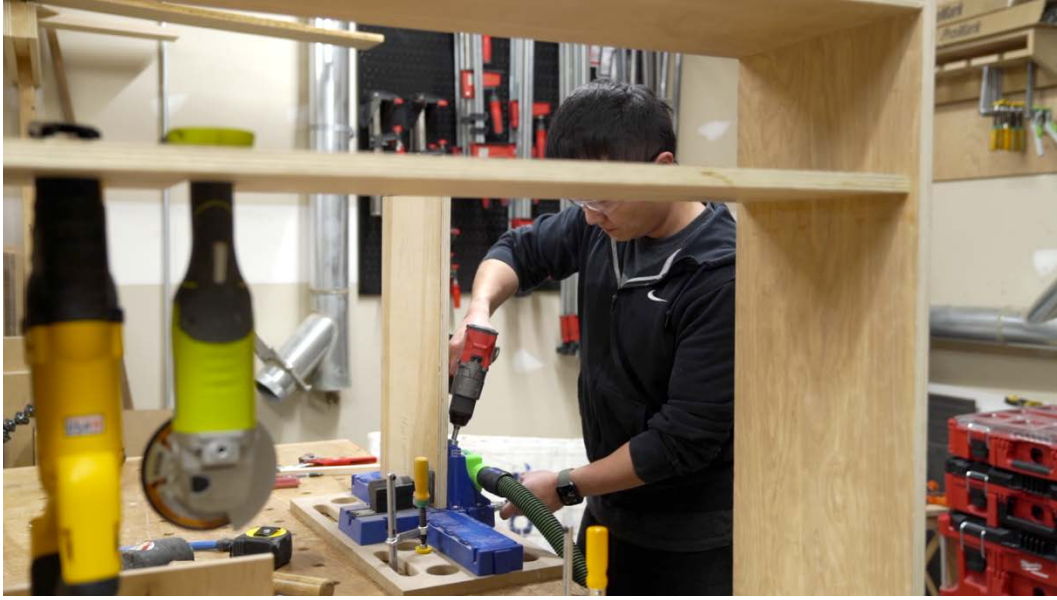
The vertical partition will be pretty straightforward. We just need to make sure it's positioned so that the angle grinder can still be removed easily without scratching the panel every time.



I hung the angle grinder on the horizontal shelf and then used the same scrap piece as I did earlier to help me determine the position of the vertical partition, so that the vertical partition will be kept at least $\frac{1}{2}$ " away from the grinder wheel.



Once again using referential measurements, I determined the length of the vertical partition and cut it to size at the table saw.



I drilled pocket holes on the face that would be facing the angle grinder. There isn't an easy way to hide these holes other than using plugs, but I was never a big fan of those so I just left them the way they were.

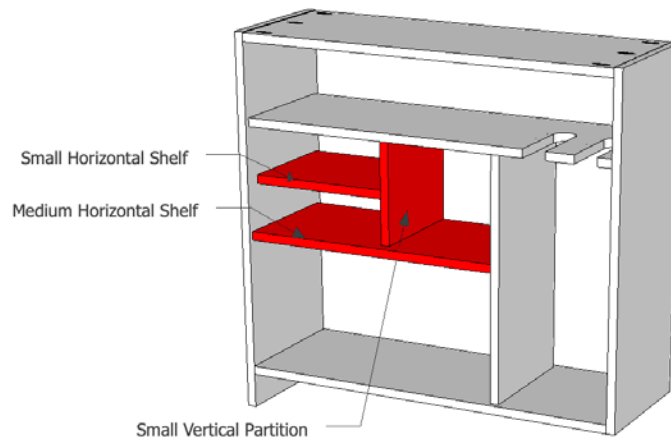


With the spacers placed vertically on the bottom of the case, I applied glue to the vertical partition and put it into position.



Finally, securing it to the bottom panel and the horizontal shelf using glue and screws.

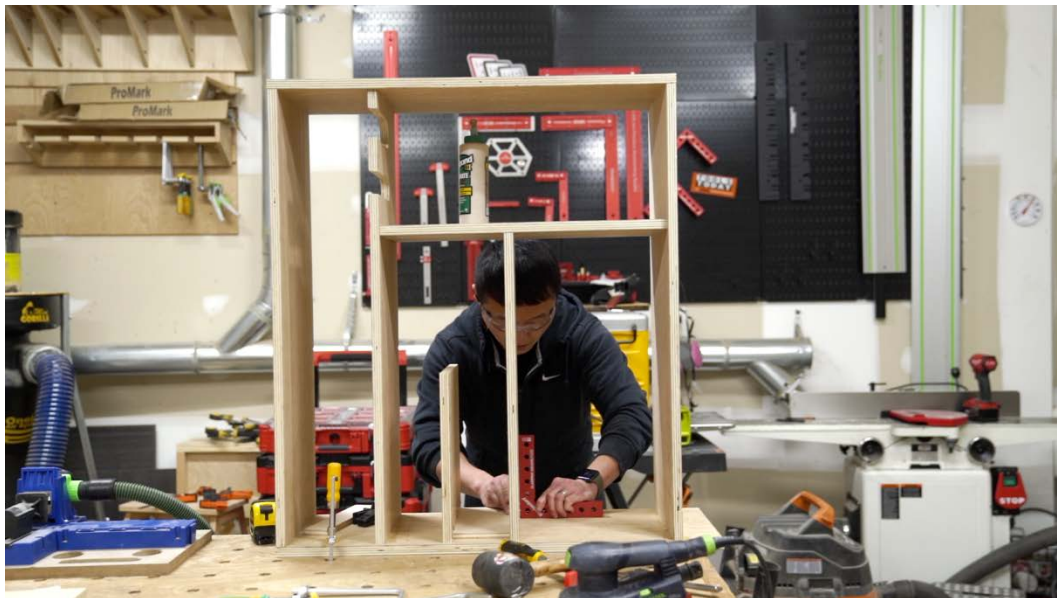
STEP 5: Rest of the Partitions



Once you have installed the horizontal shelf and the vertical partition, the rest of the partitions will be pretty straight forward. Use referential measurements, start building one partition at a time.



The first partition I worked on was the small horizontal shelf because the length is only dependent on what you want to put here. I used a piece of scrap as a spacer to position the panel.

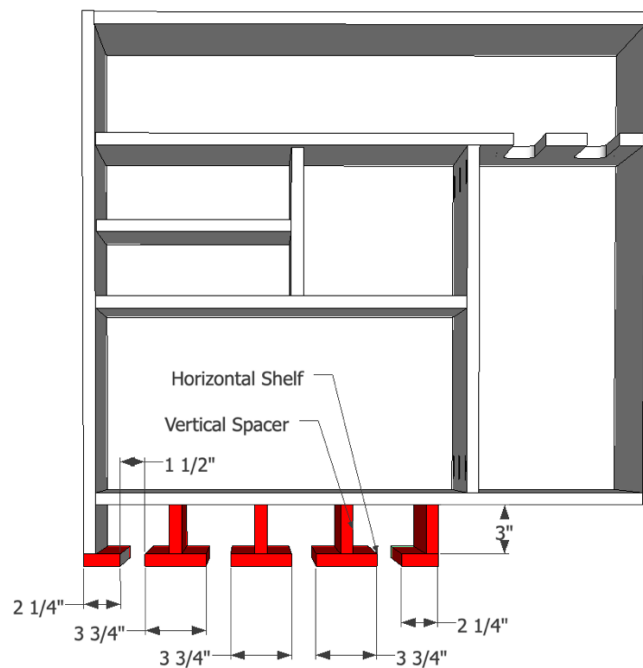


The next partition is the medium horizontal shelf. Use referential measurements here to measure and mark the length that spans from the side panel to the main vertical partition. Use the same techniques as before to attach it to the case.



The small vertical partition is the last one to attach. Take a referential measurement between the top and lower horizontal shelves to determine the height of the piece, and then position it against the middle, smaller horizontal shelf cut previously.

STEP 6: Drill Holders





I ripped the pieces for the drill holders on my table saw, following the measurements in the cutlist.



I marked the center of the horizontal shelf, then applied glue on the vertical piece and attached the two pieces. I simply used the center ply on the vertical piece to center the pieces.



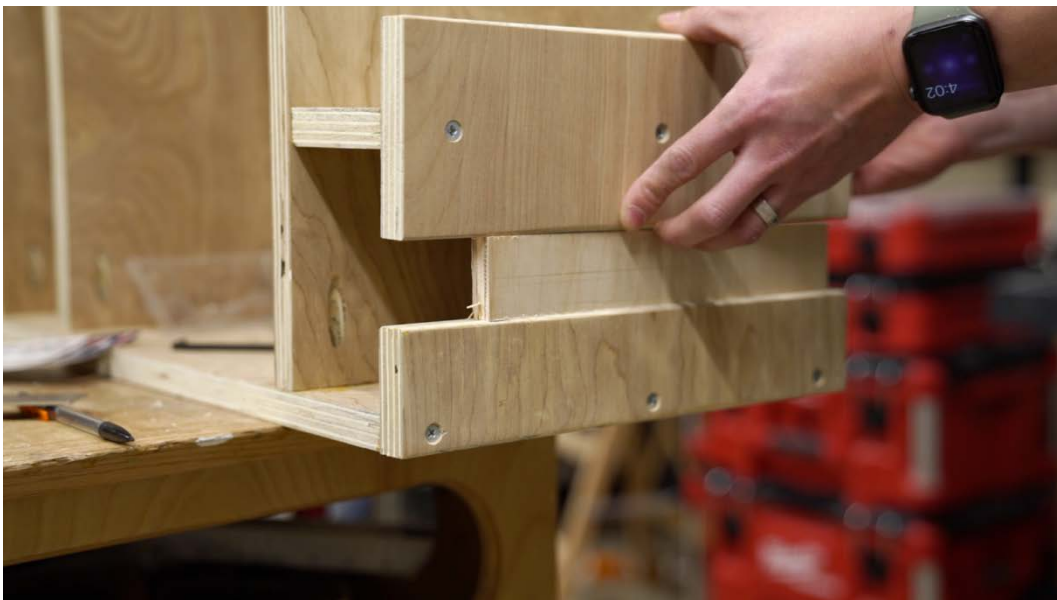
I held the two pieces with some clamps and then secured the two together with 1" screws.



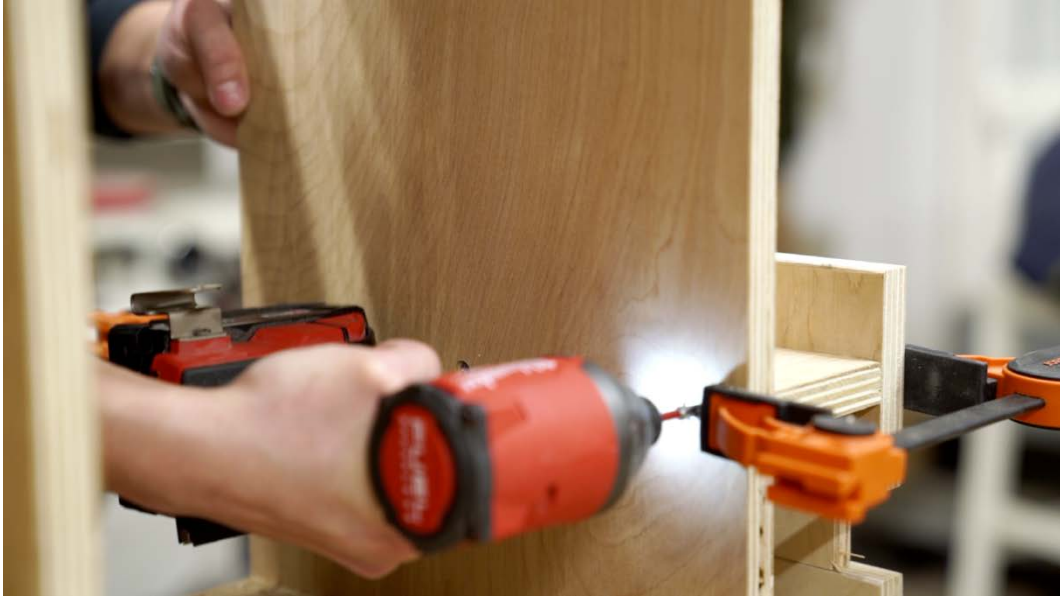
I also used glue and screws to attach the horizontal shelf to the overhang piece on the left side panel. If you have a difficult time to hold the two pieces together, shoot a couple of brad nails like I did.



Before attaching the rest of the holders to the cabinet, I used my orbital sander to round over the sharp edges.

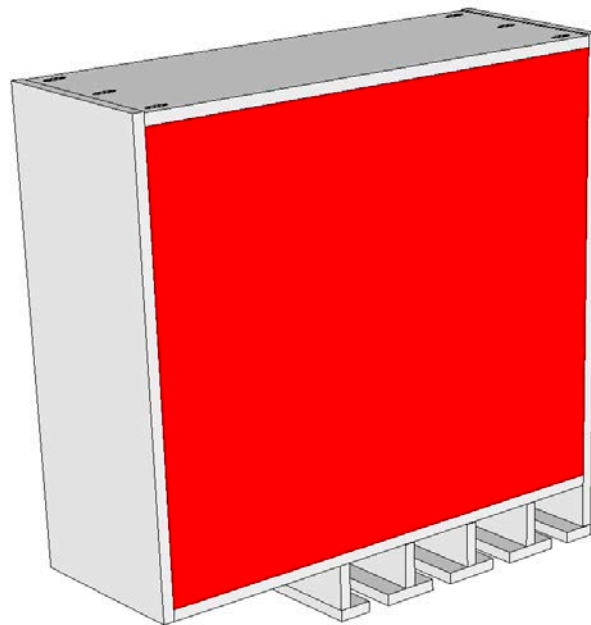


For my drills and drivers, I found that keeping a 1.5" gap between the holders was just right, where the tools will be held securely but still easily taken out and put back in. Make sure to measure your tools to get the fit you want.



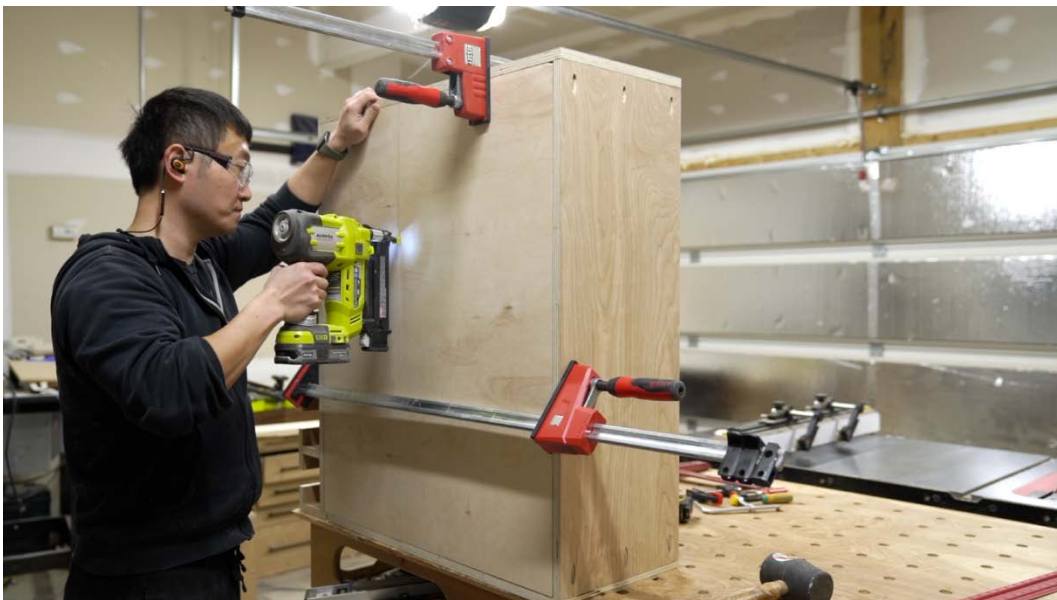
The tool holders are held in place with glue and screws.

STEP 7: Cabinet Back





I took a measurement of the back of the case, and then cut the back piece from a piece of $\frac{1}{2}$ " plywood.



I applied glue along all of the back edges of the partitions attached earlier, and then put the back panel in place. But before shooting any brad nails in, I laid out lines on the back panel indicating where the centerline of the partitions are. Now we can just shoot the brad nails without worrying about things poking out on the other side.

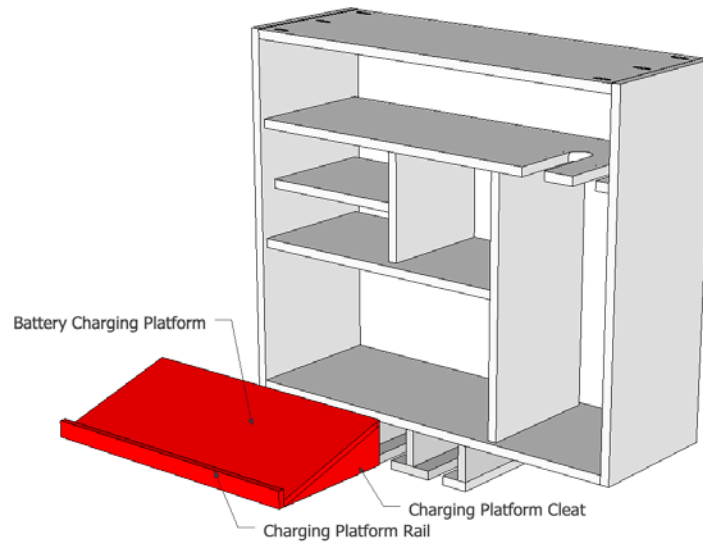


I also shot brad nails on both of the side panels, into the edge of the back panel.



I used screws to fasten the top and bottom panels to the back panel, instead of bradnails. This will provide a bit more strength and the screws won't be visible unless someone crouched down to look for them.

STEP 8: Charging Platform



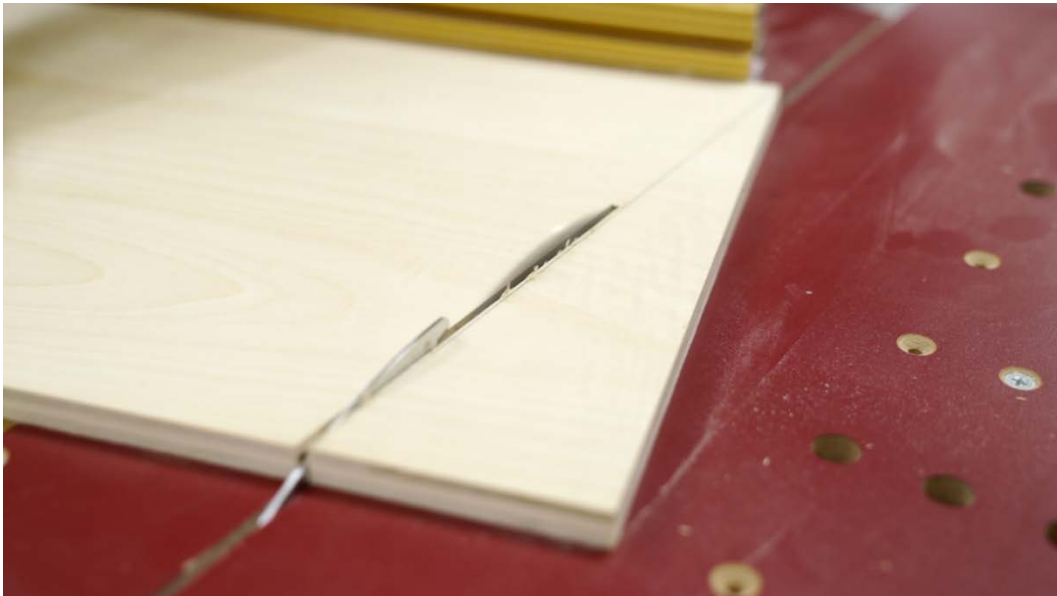
The charging platform assembly is made from $\frac{1}{2}$ " plywood. It is angled about 16 degrees to make it easy to remove and put in the batteries, while also adding some cool aesthetics.



I started off by cutting a piece of $\frac{1}{2}$ " plywood to width. It's good to leave about $\frac{1}{2}$ " extra material than the depth of the cabinet at this point.



We'll start off by making the charging platform cleat that will hold the charging platform at an angle. Instead of going off of a specific degree, I drew a line going from 3" on one edge and 0" on the other. This came out to something around 16 or 17 degrees.



I set my crosscut sled to line up with the layout line I made earlier. Since the cleat is small, my final piece will be on the offcut side of the saw blade. It's not important to cut perfectly to the line for this.



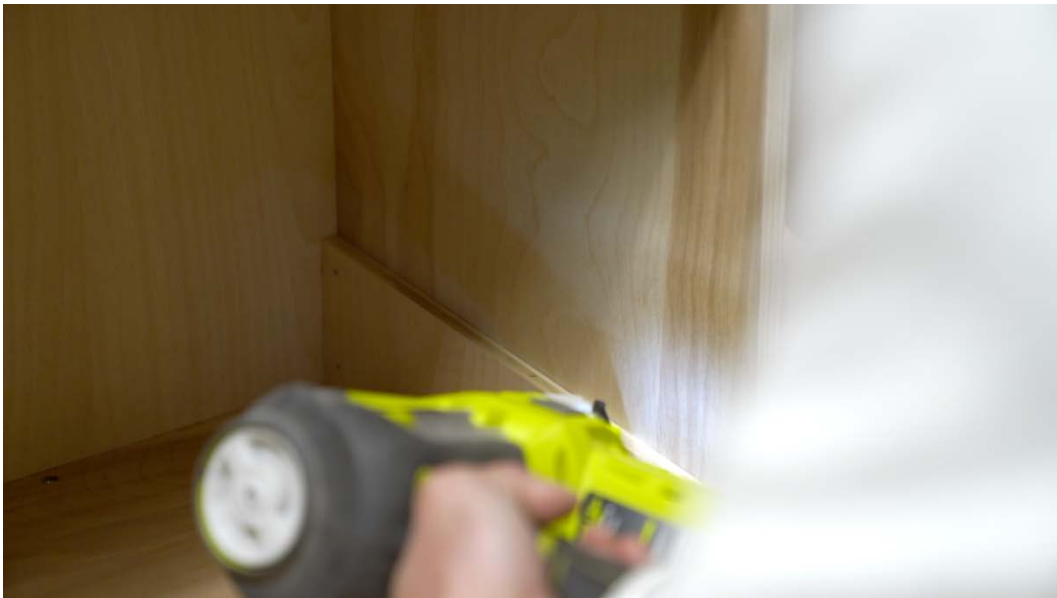
Once I got the first cleat ready, I transferred the size to what's left of my workpiece



Since the angular edge was already cut into the larger workpiece, I set my crosscut sled back to 0-deg and cut to the layout line. It's more important to cut to the layout line this time because we want to make sure both cleats are the same size.



I'll eventually be adding a $\frac{1}{2}$ " rail to the front edge of the platform. So I cut off the sharp end of the cleat to accommodate it.



The cleats are attached to the inside walls of the side panel and the vertical partition with glue and brad nails.



Since the platform panel will sit at an angle, the front and back edges will need to match this unknown angle created by the cleats so we don't end up with a gap between the platform and the back panel. We also want the front edge of the platform to be flush with the front edge of the cleats. To get the angle correct, I used an angle gauge to take a reference of the angle of the cleats.



Then I can simply transfer this angle over to my table saw by setting the blade to the same angle as the gauge. As someone who is always adding angles to the things I build, this tool is one that I use constantly.



Here is a side profile of the angled cuts on the front and back edges of the platform.



Before I finally attached the ledge to the front of the charging platform, I added a piece of spacer along the bottom of the front edge of the platform to prevent any sagging.



With the platform glued and attached to the cleats, I installed some 1/2" screws for attaching the battery chargers.



Make necessary adjustments to the screws until the battery chargers sit snugly on the platform so they won't become loose when removing the batteries.



I drilled a 2" diameter hole on the side of the cabinet for the power extension cord to come out of. To keep things nice and neat, I added a 2" desk grommet.



Finally, I used the offcut from the charging platform to cut a couple of $\frac{3}{4}$ " wide strips to make dividers between the chargers. Once again, this is more of an aesthetic piece than functional.

STEP 9: Applying Finish

With the cabinet complete, it's time to apply finish. The finish I always use for shop projects is the store-bought Shellac with wax. One reason I like to use this particular finish is because of its lower working temperature, so I have less restrictions during the colder months here in

Ohio. Also, I find that the wax in the finish makes it really easy to remove dried glue and epoxy from the surfaces that has this finish applied.



But first, I used some compressed air to clean off all of the saw dust from inside the case. Alternatively you can use some mineral spirits to wipe the dust off. Afterwards, I removed the chargers and the extension.

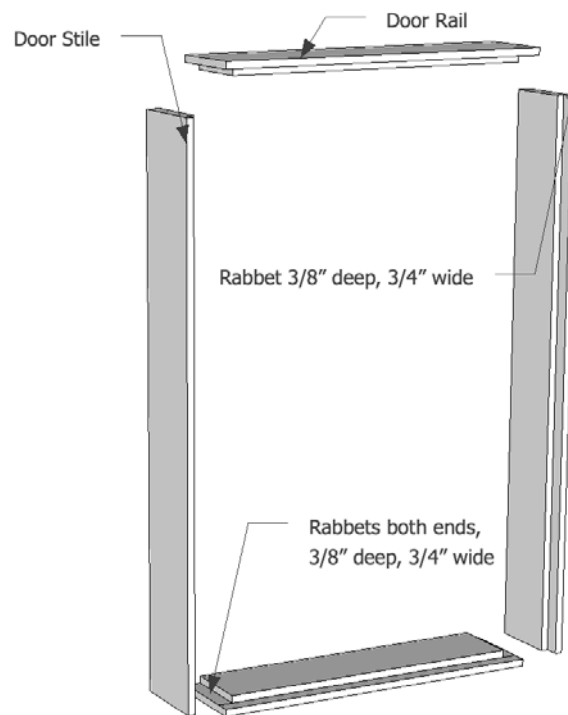


I started out by applying finish on the outside of the cabinet first, starting from the back, moving my way to the sides, and top and bottom panels.



And then finally applying finish to the inside of the cabinet, which was probably the most tedious part of the build. I applied two layers of finish, lightly sanding with 220 grit in between.

STEP 10: Door Panel





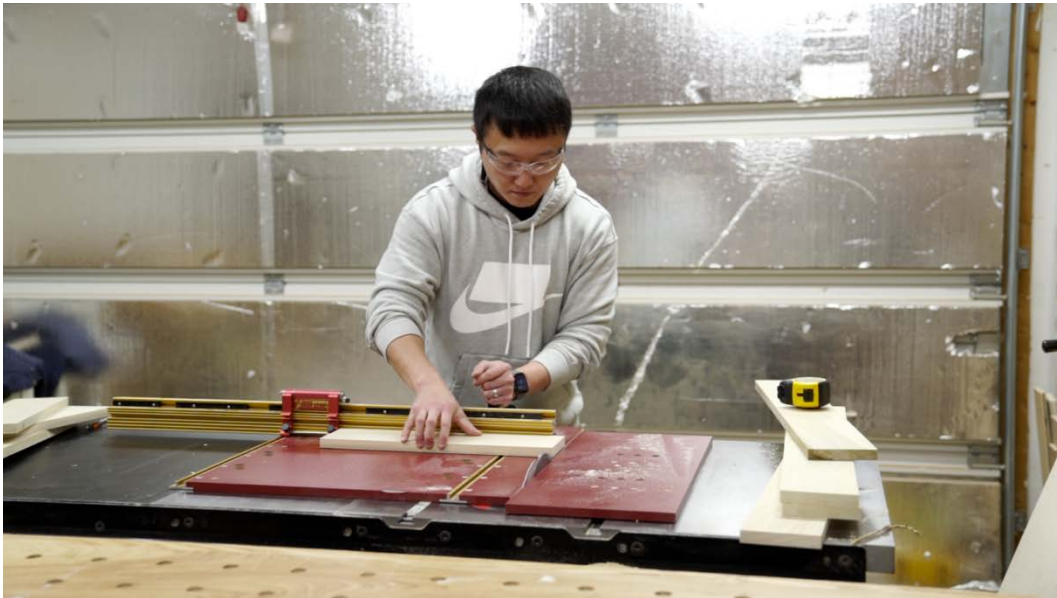
Since the rails and stiles of the door frame will be made from solid lumber, I started by milling the rough lumber on my jointer to get a flat face and squared up one of the adjacent edges.



Next, I flattened the opposite face and brought the workpiece down to their final thickness of 3/4" inch.



I ripped the shelves down to their final depth of 4-1/4"



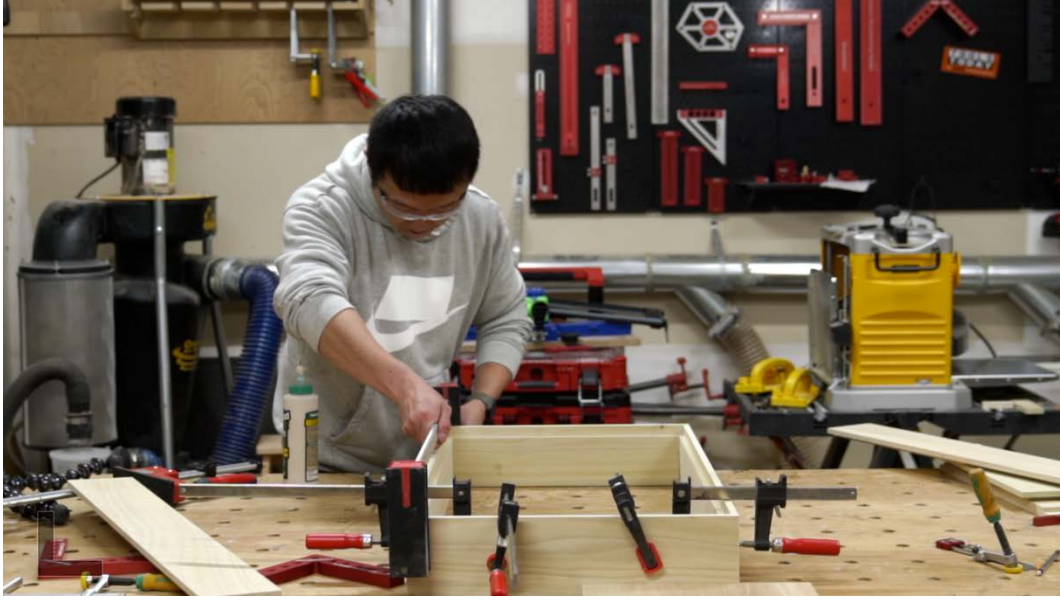
I determined the length of the rails by laying them out on the cabinet, and then cut them to their final lengths. At this point do not cut the stiles to length yet.



Both the rails and stiles will receive a rabbet along the length of the part, measuring about $\frac{3}{8}$ " deep and $\frac{3}{4}$ " wide for accommodating the $\frac{3}{4}$ " door panel later.



The stile and rails will be joined with a rabbet joint that's cut into the two ends of the rails. I used the stiles to help layout where to cut the rabbet and proceeded with making the cut with my miter gauge at the table saw.



Finally, I glued up the door frame assembly together with glue and clamps. I used some right angle clamps to keep the pieces squared up as the glue cured.

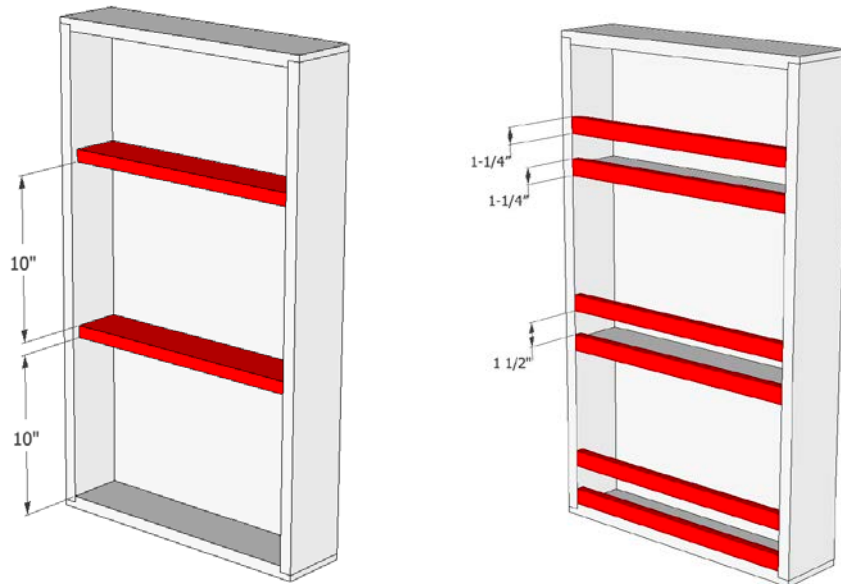


With the door frame glued up, I took measurements for the door panel and then cut it to size.



I applied glue in the rabbets of the door frames and set the door panels into rabbets. To hold the panels down in the frame, I used some clamps that fit into the dog holes of my workbench. Alternatively, you can place some heavy weights on top of the door panel to hold things down.

STEP 11: Door Panel Shelves

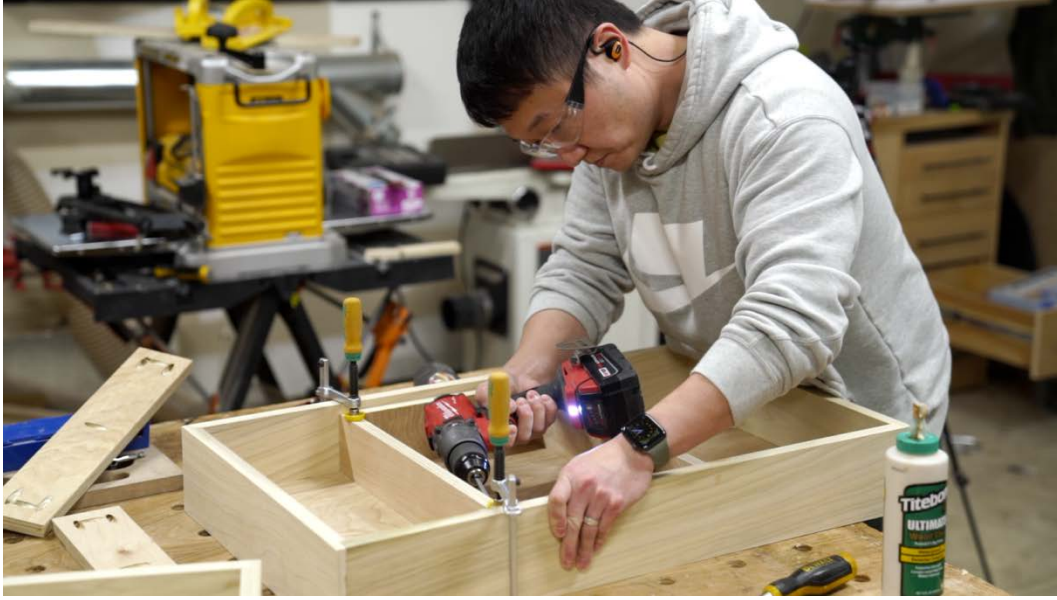




I measured the space between the door stiles and cut the shelves for the door down to length, along with the small rails that will keep things from falling down. Both of these parts will be the same length, just different widths. The width of the shelves should be $\frac{1}{2}$ " shorter than the door frames, to allow for some rails to be attached later.



The shelves will receive pocket holes on both ends, as well as along one of the long edges to attach to the door.



Using a couple of 10" long scrap pieces as spacers, I positioned the shelves and attached them to the door assembly.



Once the shelves are in place, I attached the small rails at the bottom of each shelf. The bottom edge of the bottom rail will be attached to the top face of the door frame.



All the other rails will be attached to the front edge of the shelves,



Finally, an additional rail is added 1-1/2" above the lower rail, which will help to keep taller items in place as the door swings open and shut. Both rails can be attached using glue and clamps, without needing any screws.

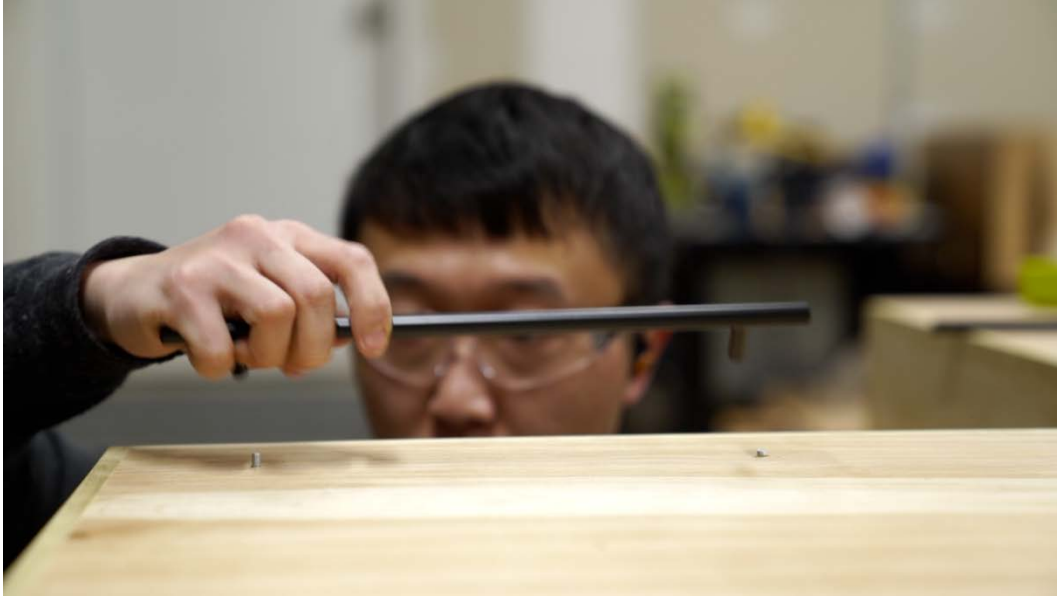
STEP 12: Door Handles



With the door construction completed, it's fairly easy to install the door pulls. I placed the door panels side by side and roughly positioned the handles at a location that would be at eye-level once the cabinet is hung

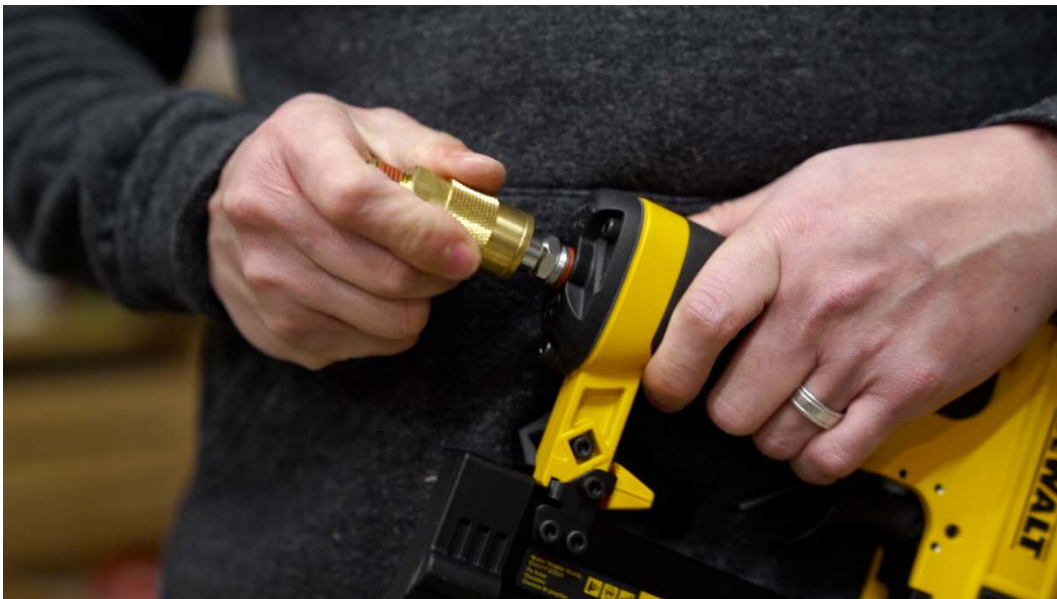


After marking the locations for where to drill the holes, I used a small jig to help keep the drill perpendicular as I drilled the holes for the handles.



Finally, I inserted the screws from the back side of the door and installed the handles.

STEP 13: Pneumatic Tool Quick Release



If you have some pneumatic tools that you want to store, I think the best way to do this is using some of these store-bought quick releases with a 1/2" male end.



I determined the best position of my tool so that it does not end up protruding past the front side of the cabinet, and drew a line to represent the centerline of where to drill the holes. I placed a piece of blue tape on the end of my drill to indicate when I need to stop so I don't blow through the top surface of the bottom panel.



Before attaching the quick-release connectors to the cabinet, I applied some 15-min epoxy to the threads of the male end of the connectors. This will provide some additional holding strength between the plywood and the connectors.



Once the epoxy has been applied to the threads, I simply screwed the connectors into the bottom face of the bottom panel.

STEP 14: Door Install



I used a couple of steel piano hinges to attach the doors to the cabinet because these are very strong due to the number of screws used to hold everything together. The reason I'm attaching the hinges on the outside is so I can attach all of the screws into the face grain of both the cabinet as well as the doors. Since it's unknown at this point what I'll be storing on the door shelves, I didn't feel comfortable drilling the screws into the edge grain of the plywood cabinet.



In order to keep the doors closed, I installed a steel plate to both of the doors...



...and two pieces of magnets along the top edge of the case.

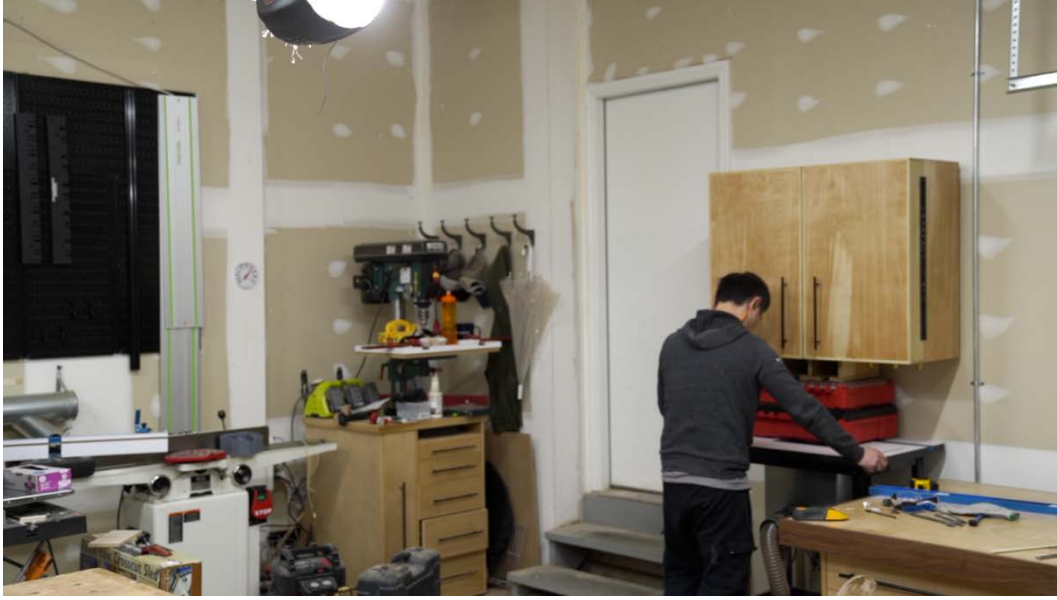
STEP 15: Hanging the Cabinet



The cabinet is very heavy, so make sure to hang the cabinet on studs.



Once I found the two studs, I used a level to strike a line that would extend past the cabinet both on top and bottom so that it'll be easy to find where to drill once the cabinet is in place.



To help me move my cabinet in place, I moved the cabinet from my workbench on to some tool boxes sitting on top of my router table. You can do this with any shop cart, of course.



I placed a level on top of the cabinet and shimmed underneath the cabinet until it's level. Once everything looked good, I used some 2-1/2" screws to drill the cabinet straight into the studs.



I placed a total of 6 screws through the cabinet, three into the left stud and three into the right stud.

STEP 16: Stock Up the Cabinet

Before we end the plans, I wanted to show how I stored my tools in the cabinet to give you a good idea of why the cubbies were spaced the way they are for me. So feel free to make any adjustments to the plans as you see fit for your needs.







