

DIY Thickness Sander

by **CWkr** on April 30, 2014

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Intro: DIY Thickness Sander

I wanted to build this so that I could make segmented turnings on a lathe. It proved to be more challenging than I thought, but I learned a lot doing it.

Think of a thickness sander as a planer that has a drum covered in sandpaper instead of knives. The difference between a planer and a thickness sander is that you can run planks that have been glued up in different grain orientations on the sander and it will not be destroyed.

I did not design this -- BUT -- I made it at Tech Shop.

The plans are available for purchase [here](#). Because the plans are for sale, I'm going to show how I made it, but not give measurements or sourcing of parts.

[This is an video example of how this functions.](#)

I spent a lot of time on this and I learned a lot that I did not know. I spent about \$500 on this. To buy one this size would have been about \$2,500.

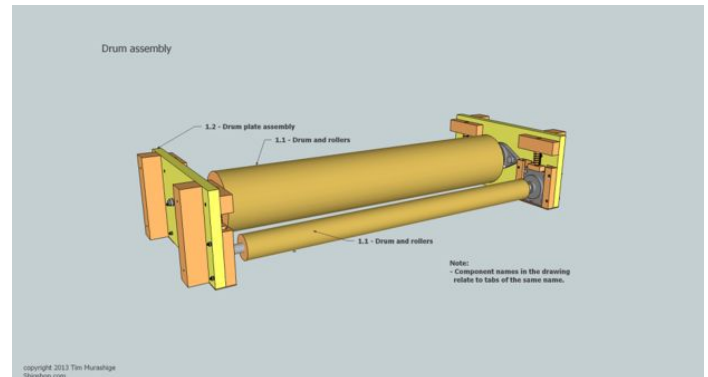
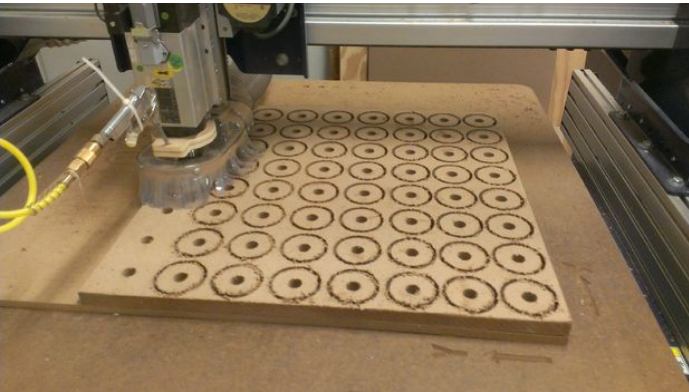


Step 1: Build the sanding drum and rollers

The drum and the conveyor rollers are made from MDF disks that were cut on a ShopBot.

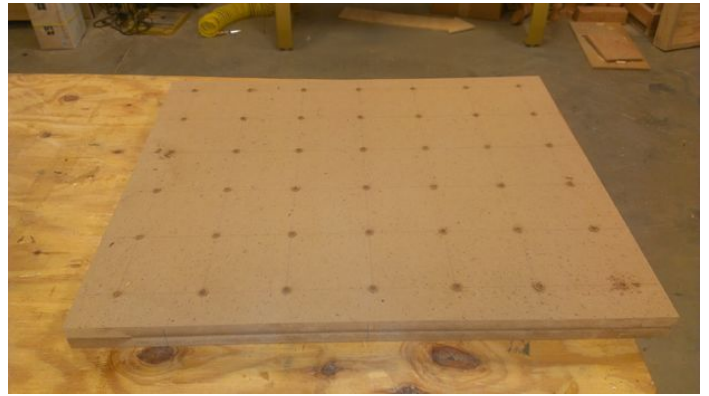
I have a detailed instructable on how to make the drum and rollers

Once you have this complete, you can cut the plywood for the frame.



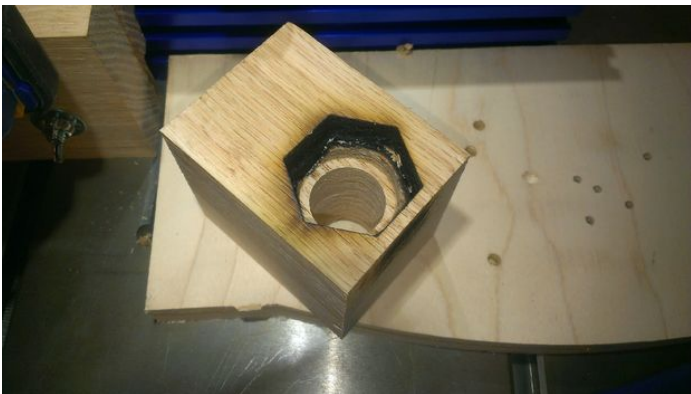
Step 2: Glue the platten

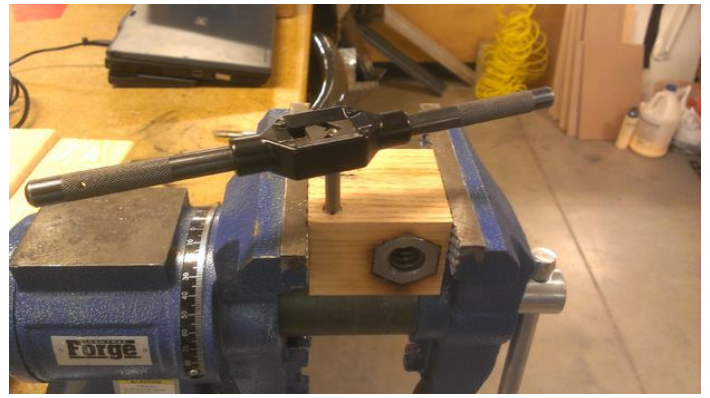
You need to glue two large sections of 3/4" MDF for the platten. Use a lot of clamps and cauls



Step 3: Make the holder for the Acme nuts

The platen is raised and lowered by running Acme screws through Acme nuts. This is how I made the holders for the nuts.





Step 4: Modify the Acme Screws to accept bushings

I used a metal lathe to turn the lead screws down to accommodate the brush bushings that allow the screws to turn.

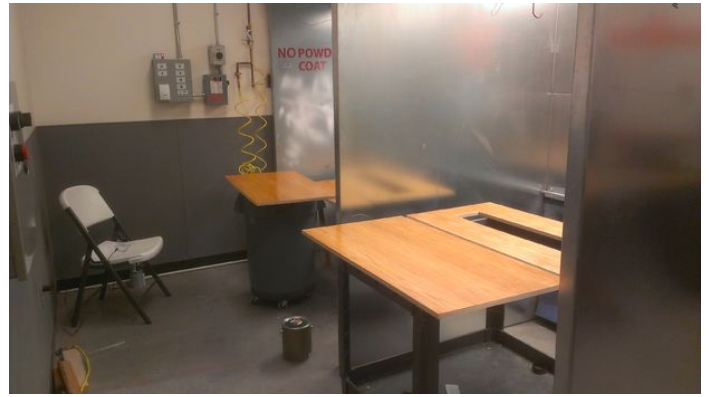
I have a detailed instructable on how to do this task



Step 5: Cut the main supports from plywood

The sides, top, and shelves are made from furniture grade plywood. I finished them with polyurethane before assembly.

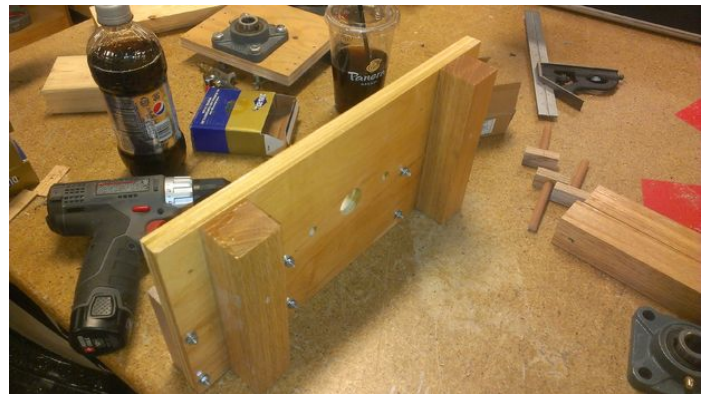




Step 6: Mill the drum supports

There are a ton of little parts that are made from oak that support the bearings for the conveyor rollers and the sanding drum itself.

The measurements on this is critical. You really need to follow the plans well.

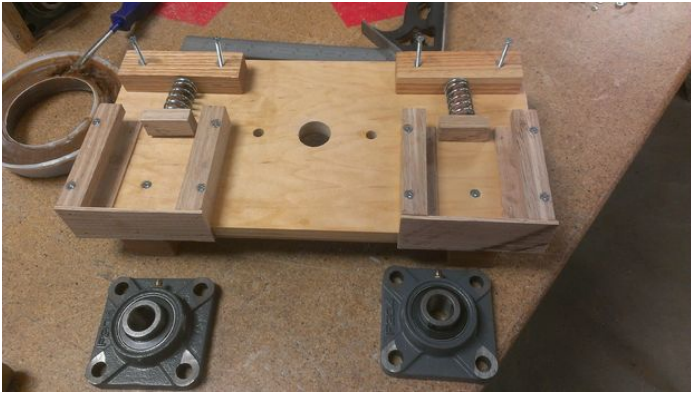




Step 7: Grind the bearings and assemble the bearing / drum supports

The bearings need to have the flanges ground down. This step was trial and error for me. I did not grind enough off and I had to take the whole thing apart and do it again.

You want to make sure that you have the bearings moving freely. Also, make sure that you don't use large springs like I did in this photo. I purchased a spring assortment from Home Depot and these were too strong. I had to take the springs out once again to correct this mistake on my part



Step 8: Complete the drum / pressure roller assembly

The function of the small rollers is to provide downward pressure on the wood as it is going through the sander.

You need to make sure at this point that the bearings move up and down smoothly.

Failure to do so will result in you taking the machine apart to fix it.



Step 9: Assemble the platen

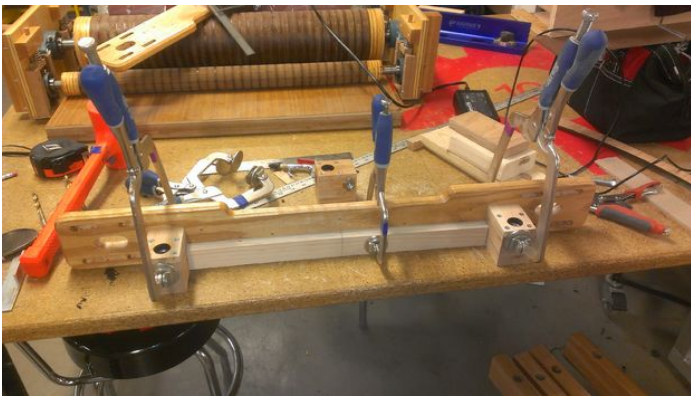
All of the wood with the exception of the sides is oak.

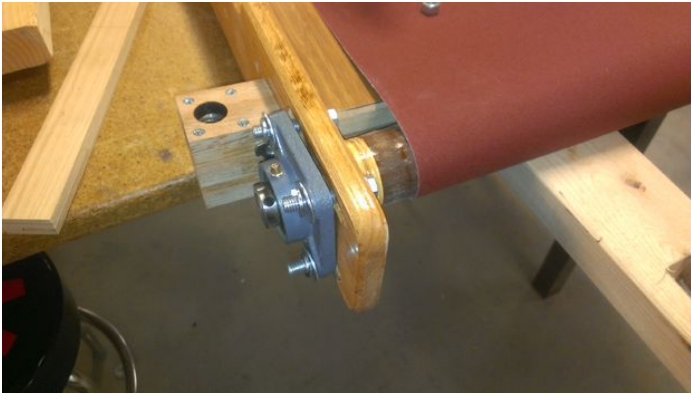
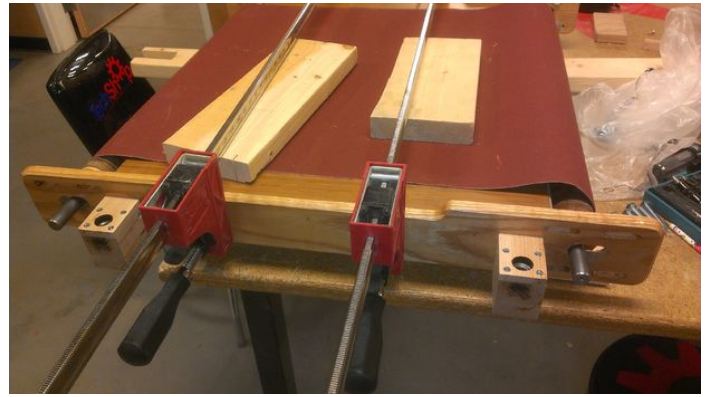
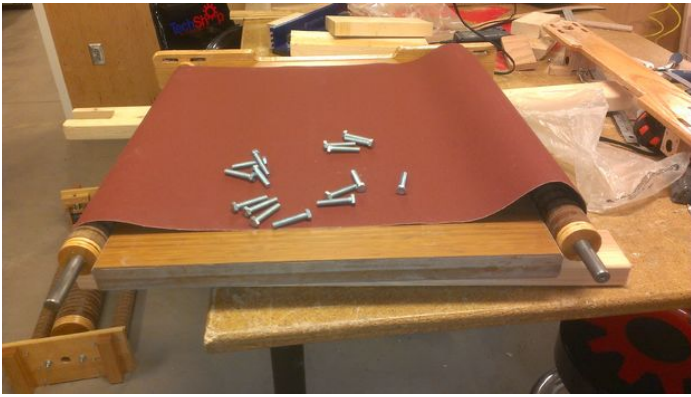
In these photos, the acme nut supports are being affixed to the platen sides. The MDF has been covered with formica to make it slick.

The measurements on the nuts are critical. After you affix the nut holders to the sides, you screw the sides to the MDF.

Before you screw the 2nd side on, you need to place the conveyor (a big sanding belt) over the platen.

Once this has been done and before the second side is on, you need to add the rollers and the bearings. This was a challenging part to have everything work right.





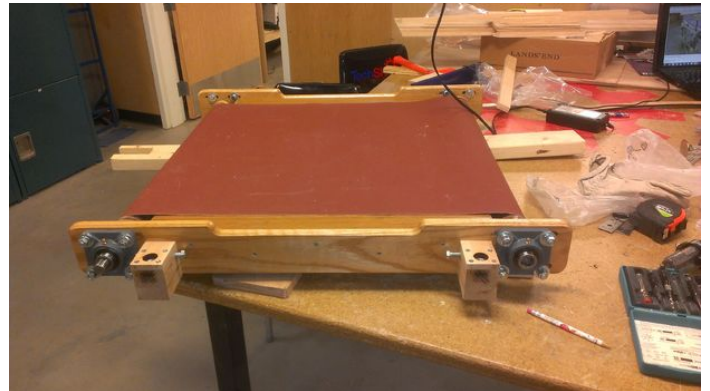
Step 10: Insert the Acme screws and cross members

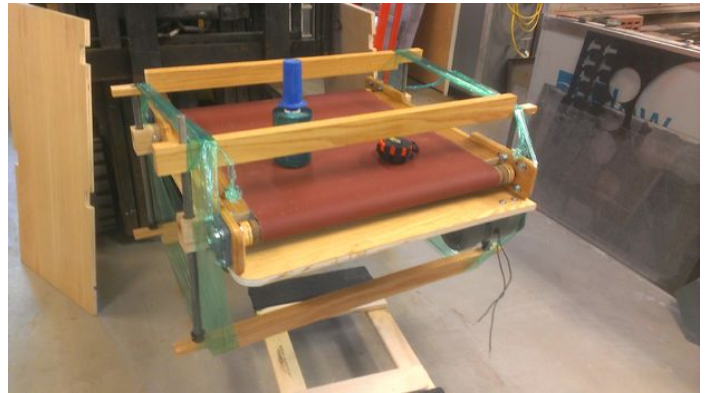
If you look at the engineering on this, it's really amazing that this is made from wood. The bolt on the square block allows you adjust the tracking on the conveyor and keep it centered.

There are a lot of places where I had to do metal work -- for example -- I had to cut keyways on the drum and the conveyor drive shaft.

To learn how to do this operation, click [here](#).

I used an arbor press to insert the bushing into the oak cross supports. I held everything together temporarily with plastic moving film



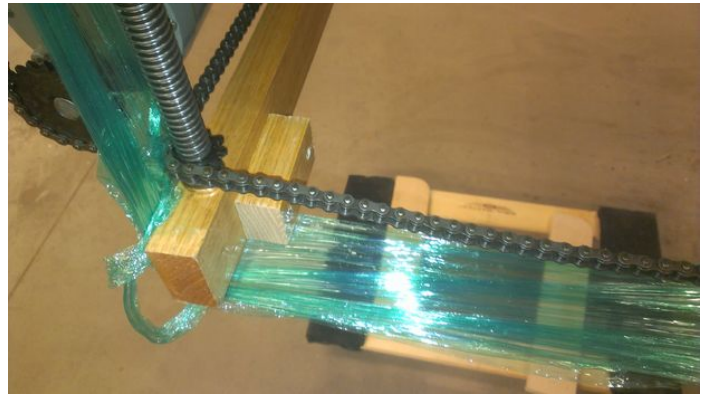


Step 11: Put the chain on the sprockets

I never thought that I would use a fork lift to make something, but it really came in handy.

It made installing the chain that raises and lowers the platen a walk in the park.

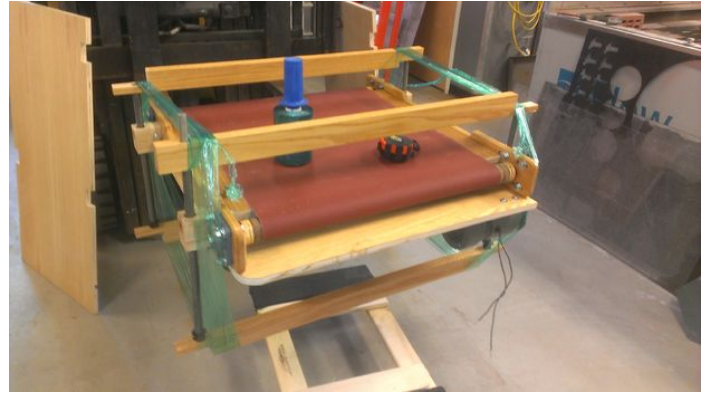




Step 12: Install the sides

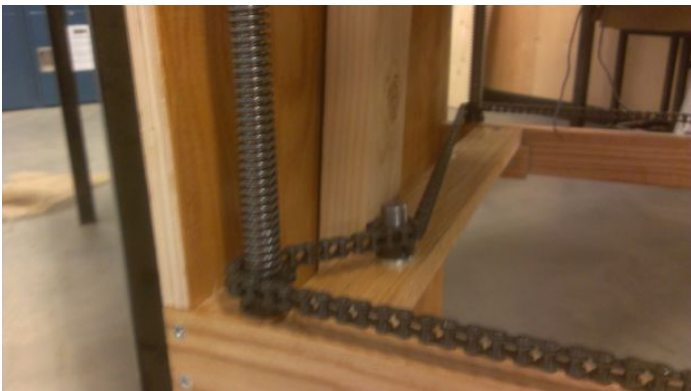
Once again using the fork lift, it is easy to install the sides and test fit the top.

This was a good feeling to get it this far!



Step 13: Tighten the chains - install the sanding drum

You can now tighten the chains that elevate the platen and also install the sanding drums. I've also put the drive belt on that will go to the motor

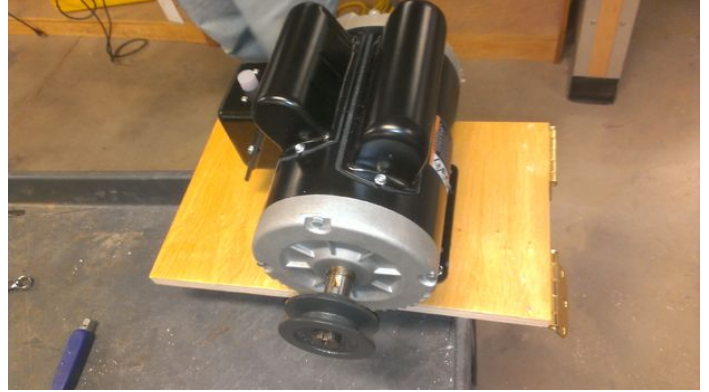




Step 14: Wire and install the motor

I used a 1725 2HP motor that I bought using a coupon from Harbor Freight.

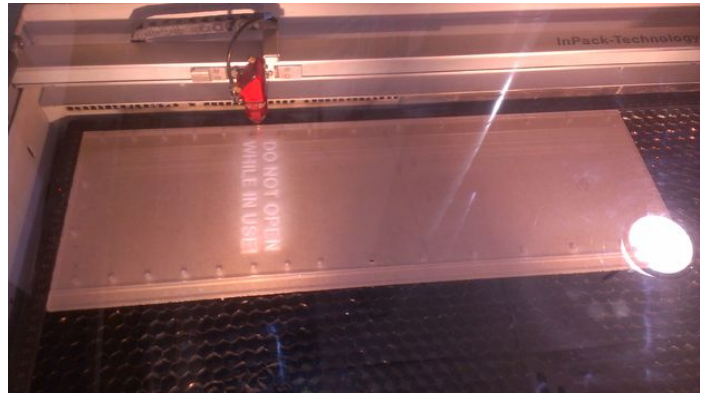
This was fun because I started the motor and the drum spun ;-)



Step 15: Build the dust port

I used laser cut acrylic instead of wood slats as indicated in the plans because I thought that it would be cool to see the sanding dust fly. I also used a heat gun to get the plastic to bend to the dust shield.

You MUST use a dust collector when you use the sander.





Step 16: Install the control panel, motor, and drive chain

The next to last thing to do is to install the control panel, drive chain and motor.

I have several instructables on the following:

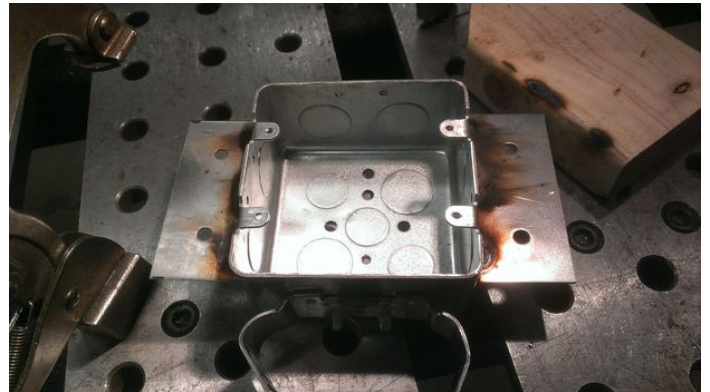
Building the chain guard

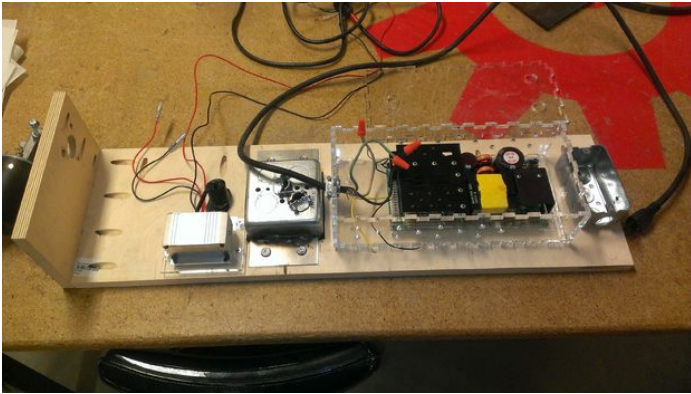
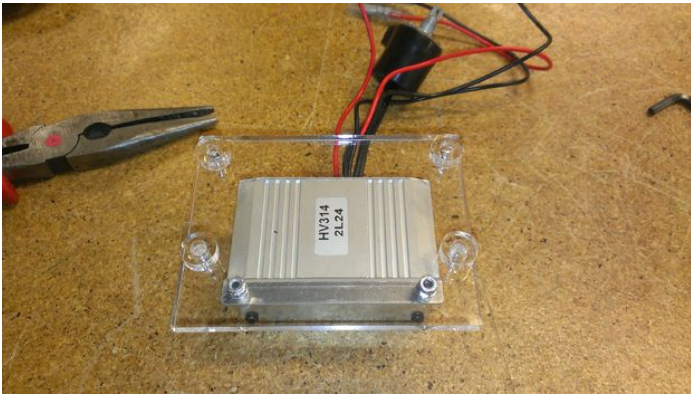
Adjusting the tension of the chain

Using a Kreg jig to make pocket holes

At this point, you can adjust the tension of the conveyor belt.







Step 17: Install the velcro and the sandpaper

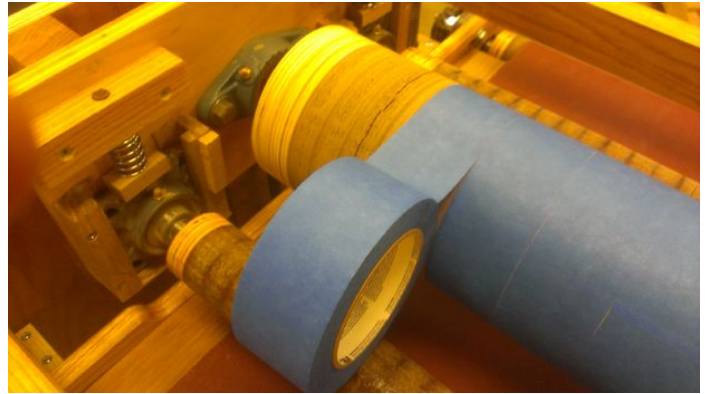
Cover the drum with painters tape incase you ever need to take the velcro off.

Wrap the drum with the adhesive backed velcro and then put the sandpaper on. The sandpaper is loop, the white is hook.

That's all there is to this. All you have to do is hook it up to a dust vacuum and you are ready to sand!

This is an example video of how this works

I made it at Tech Shop!



Related Instructables



Sanding Drum for a Thickness Sander by CWKkr



Milling a keyway in a steel shaft
by CWKkr



Adding Neoprene Rubber to Homemade Drum Sander (video) by savvas_papasavva



Mini Buck Rogers Thunderfighter
by popsicle_mini-models



Mini BSG Colonial Viper Mk II Popsicle Stick Model by popsicle_mini-models



DIY Drum Sander by HUKBMBEAR

Comments