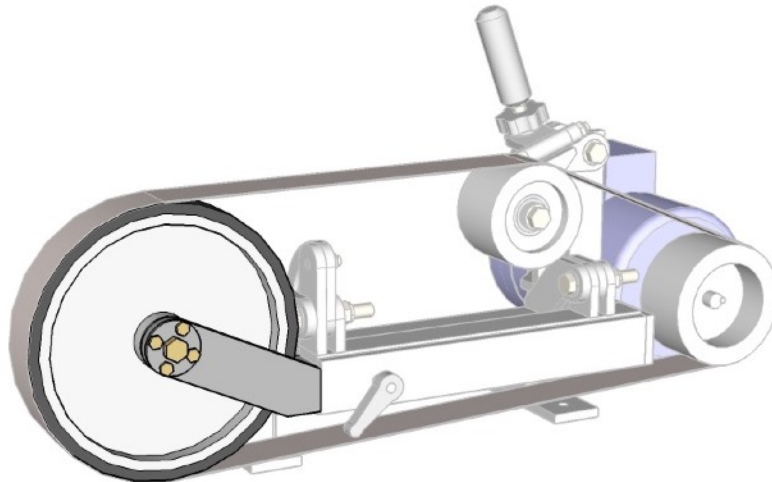


# Contact wheel attachment plans

An attachment for the 2x72" tilting belt grinder



## Some important notes:

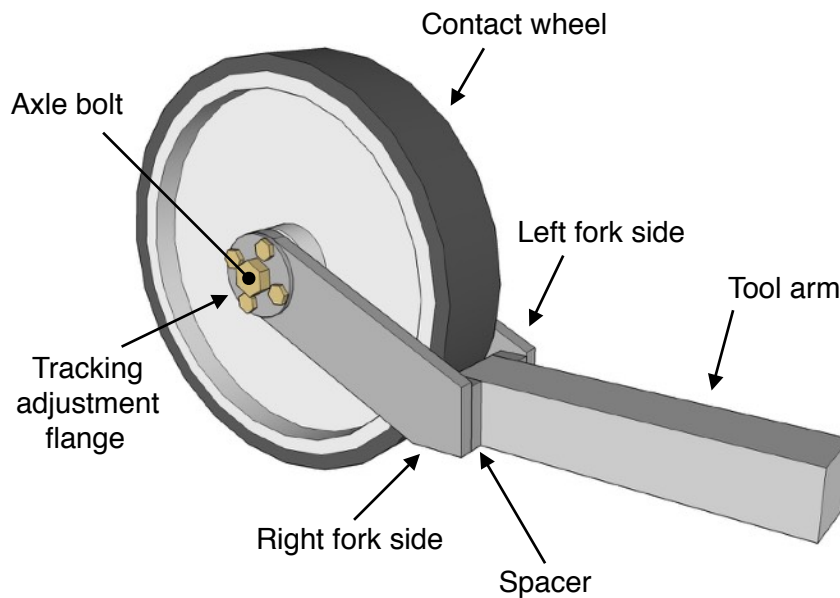
1. To use this attachment, you will first have to build my 2x72" tilting belt grinder. Plans for it (the grayed out part shown above) and the platen attachment are available here: <http://etsy.me/2sm5uvq> Plans & Sketchup models for other attachments and jigs are available on my website, here: <http://jerswoodshop.com/2x72-tilting-belt-grinder/>
2. It is assumed that you will build and use this attachment in a safe manner, therefore, few safety precautions are set forth in these plans. Build and use at your own risk. I am not responsible for any injuries caused by the manufacture and use of the belt grinder or this attachment.
3. Building assumptions: It is assumed that you have a basic knowledge of fabricating and metalworking. These plans will give you a few pointers and what techniques worked best for me, but they will not tell you how to set your welder, etc., since I assume you already know how to do that. All welds on the build may be ground & touched up for looks, so long as you don't grind away the structure of the weld. Everything should be built with good precision, for best results.
4. Painting should be left to the end of the build, after testing is complete. Some parts may need to be modified slightly, so it's best to leave painting for after that's done.
5. If you haven't seen the YouTube build video for this attachment, please watch it: <https://youtu.be/mhO45mww61c> These plans are written with the assumption that you have seen this video, so you'll know at least a little about how the project goes before you start.
6. If you have any questions, or if you find any errors in these plans, you can contact me at [jerswoodshop@gmail.com](mailto:jerswoodshop@gmail.com).

## Parts list:

“Used in...” indicates which step(s) in the plans use this part. Refer to that step or steps for more information about that part.

Part/material name	Size	Quantity	Used in...
Rubber-coated contact wheel	8-10" diameter, 2" wide, 1/2" bore bearings	1	Step 11
Steel flatbar	3/8" x 2"	19"	Steps 1 & 3
Steel square bar	1-1/2" x 1-1/2"	10"	Step 2
Steel plate or flatbar	1/8" thick	2" x 2"	Step 8
Grade 8 bolt	1/2"-13 x 4"	1	Steps 6 & 11
Grade 8 bolts	1/4"-20 x 1/2"	4	Step 11
Grade 8 locknut	1/2"-13	1	Step 11
Flat washers	1/2"	6	Step 11
Flat washers	See instructions	4	Step 11

## Nomenclature:

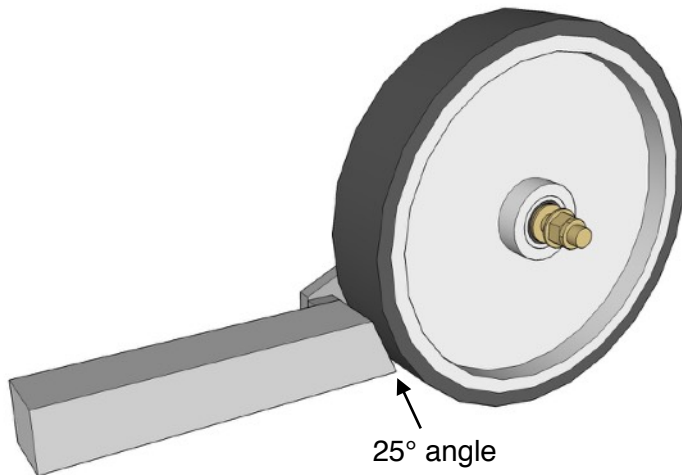


## Step 1

Start by making the fork sides, from 3/8" x 2" flatbar. For now you can make the left & right sides identical. You can refer to the drawing on the right for dimensions, or simply print this page and use it as a template; just be sure to check the dimensions to confirm it printed to scale.

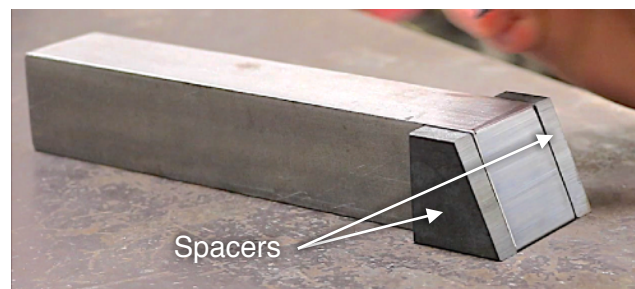
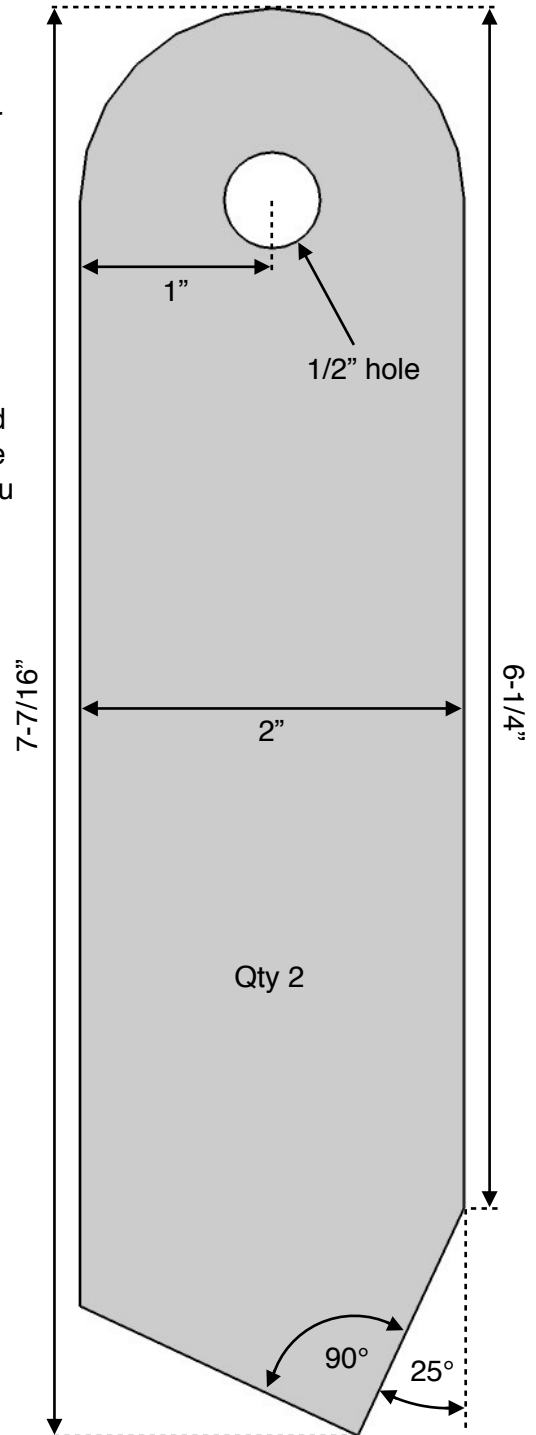
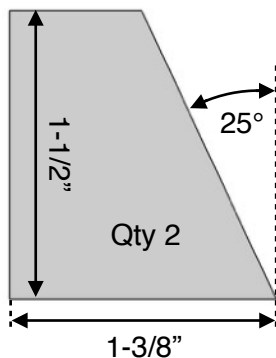
## Step 2

Cut one end of the 1-1/2" square bar at a 25° angle, and about 9-10" long. The 25° angle will make the end of the bar fit close to the curve of the wheel, which will help you get a stronger connection between the tool arm and the fork sides when you weld them together.



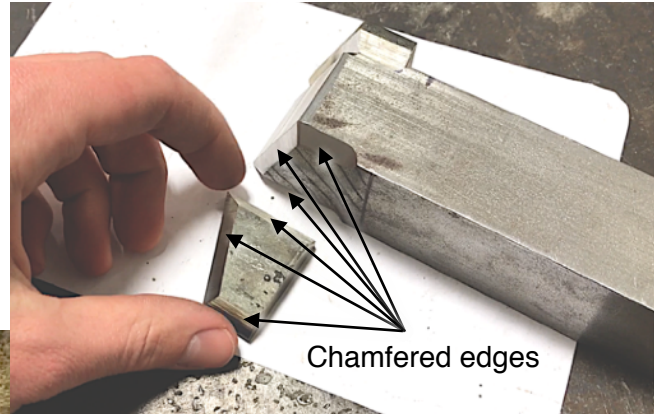
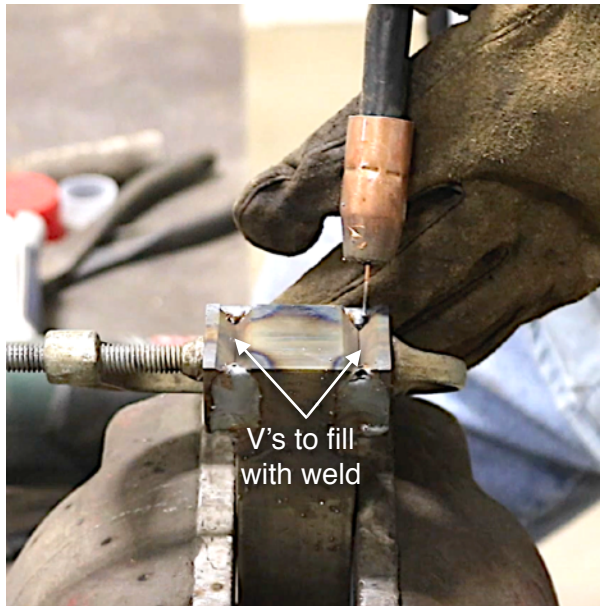
## Step 3

Since the inside of the fork is wider than the tool arm, you will need a pair of spacers to fill the gap. These will be cut from 3/8" thick flatbar, to the shape shown below. (this may be used as a 1:1 template)



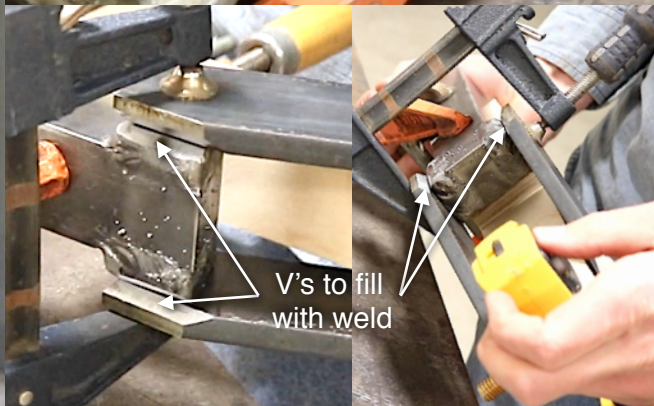
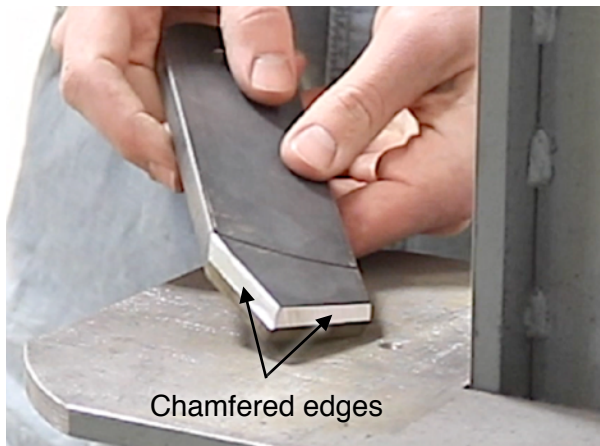
## Step 4

Weld the spacers onto the tool arm. You want to get the strongest connection possible, so be sure to chamfer the edges of the parts to create a "V" to fill with weld. I don't recommend grinding these welds down at all, as any amount of material you remove will be weakening this critical joint.



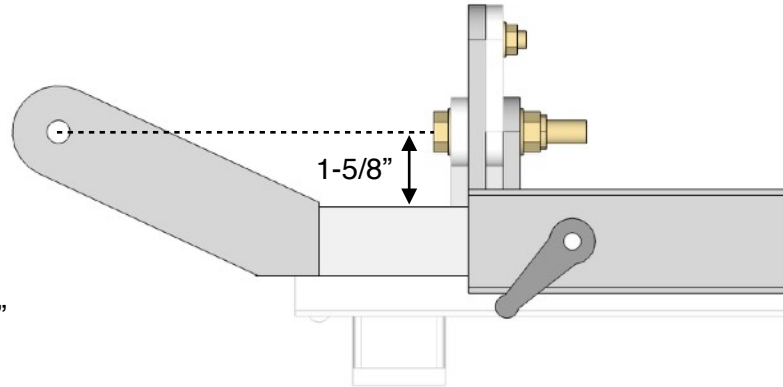
## Step 5

You're almost ready to position and weld on the sides of the fork, but before you do, chamfer the edges that will be welded to create a "V", as you did in step 4. Be sure to chamfer the correct edges so the left & right fork sides are mirror images of each other. (Don't weld these on yet; proceed to step 6)

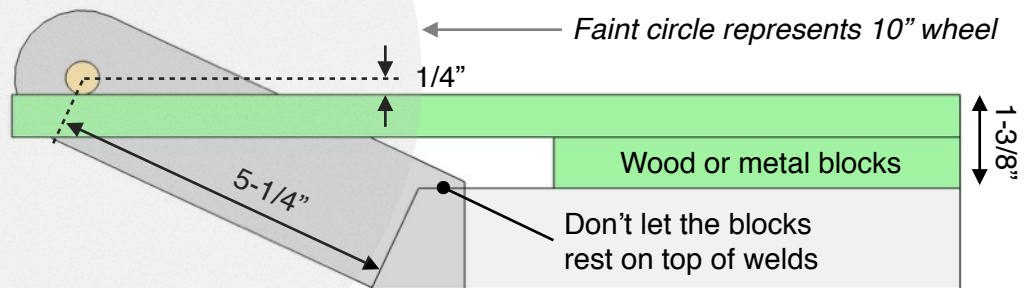


## Step 6

It's time to position the fork sides and weld them onto the spacers. The centerline of the axle bolt needs to be at the same height as the hinge axis on the grinder, which is 1-5/8" from the top of the tool arm. The easiest way to get this height right is to simply clamp 1-3/8" of scrap blocks to the top of the tool arm, for the axle bolt to rest on top of. *Note: the blocks need to be 1-3/8" high, not 1-5/8", to account for the 1/4" radius of the axle bolt.* You can use wood or metal blocks, but be sure they are flat and straight. Make sure the blocks are resting flat on the tool arm and not on top of your welds, then clamp them securely to the tool arm. Slip both of the fork sides onto the 1/2"-13 x 4" bolt, double-checking that the orientation is correct, then let that bolt rest on top of the blocks.

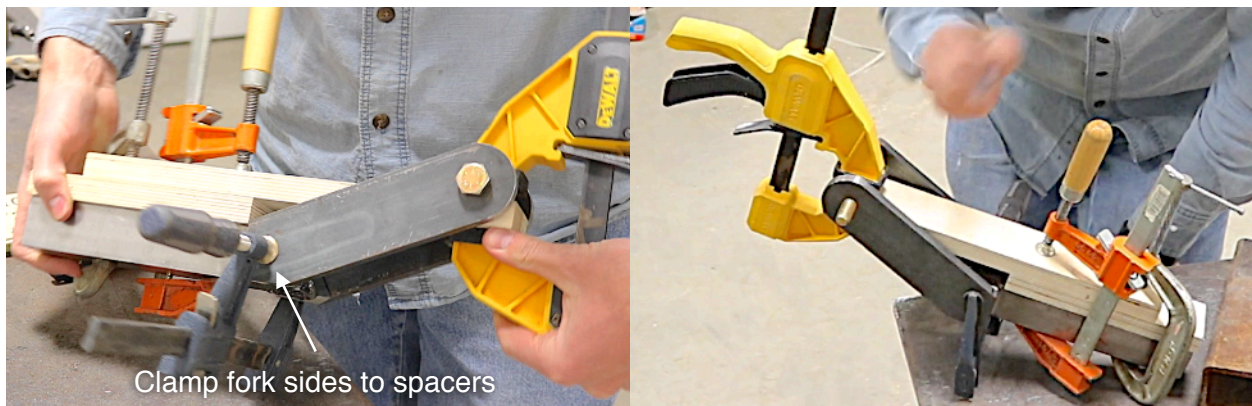


The bolt across the top of the blocks will hold the fork sides at the right height, but we still need to get them in the correct spot front-to-back. It



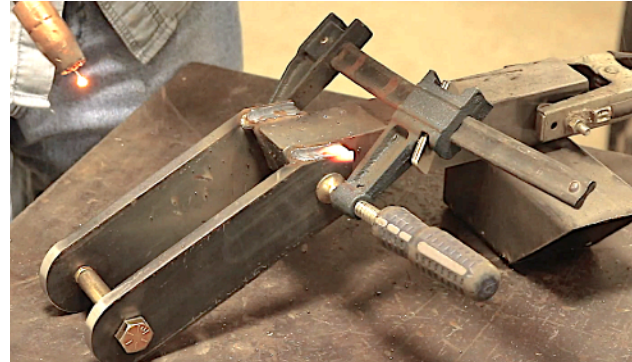
needs to be far enough forward that a 10" contact wheel will fit without rubbing the end of the tool arm or the welds, but not so far forward that a belt can't reach around it. I recommend placing it so the center of the axle bolt is 5-1/4" from the end of the tool arm, as shown above. *Note: even if you only plan to use this attachment to hold an 8" wheel, it's best to build it big enough to hold a 10" as well, just in case you ever need to. There's no advantage to making it smaller.* Once this is in the correct position, clamp the axle bolt down to the blocks.

You now have established the only really important dimension: the position of the axle as compared to the tool arm. In preparation for welding the fork sides on, pivot the fork sides on the axle bolt until the position where they line up best with the spacers, then put a clamp across the lower end of the fork sides, pinching them against the spacers, as shown below.



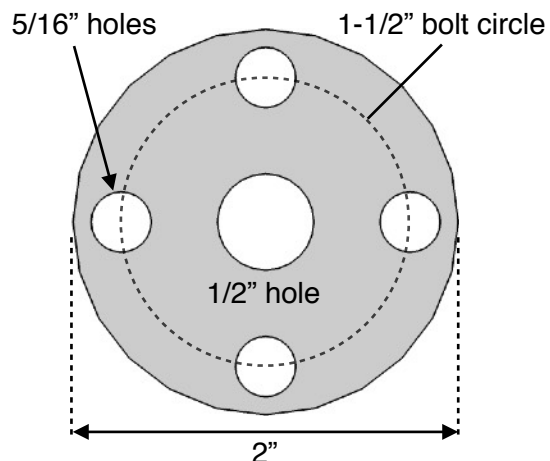
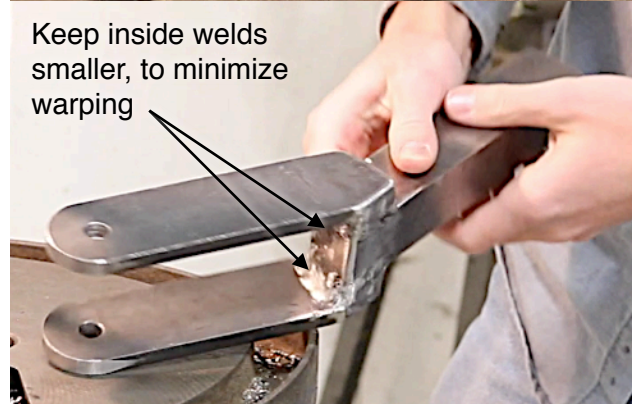
## Step 7

Double-check your setup from step 6 to be sure you have positioned the fork sides correctly, then weld them onto the spacers. You'll need to start by tacking them securely in place, then removing the clamps and blocks so you can reach all the joints to finish welding. You obviously want these welds to be super strong, but I do recommend going a little lighter on the welds inside the fork; try to keep the weld fillet a little smaller there. This will help to ensure the wheel doesn't rub the welds, but more importantly it will prevent the fork sides from warping toward each other too much.



## Step 8

I chose to put a tracking adjustment on my contact wheel attachment, so that I can tweak it to track exactly the same as my platen attachment. This way I can switch seamlessly between different attachments without having to adjust anything. The tracking adjustment flange is essentially a big washer, with four holes drilled around the outside. It can be made from thin material, anything over about 1/16" should work fine. The middle hole needs to be precisely 1/2", so the axle bolt will fit with little to no play. The four holes around the outside need to be about 5/16", so they fit loosely on a 1/4" bolt. The drawing below may be used as a template. De-burr the holes and edges.



## Step 9

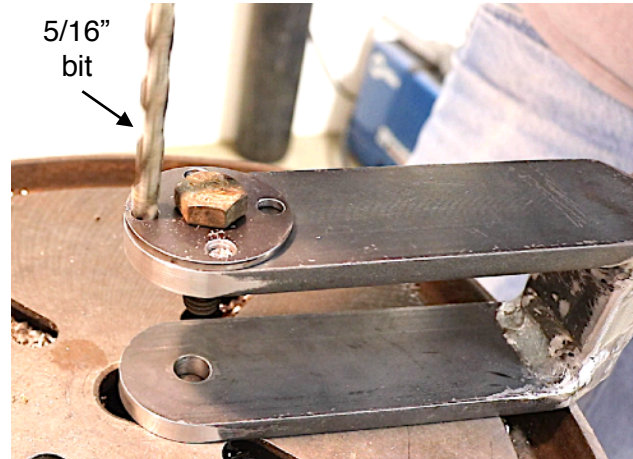
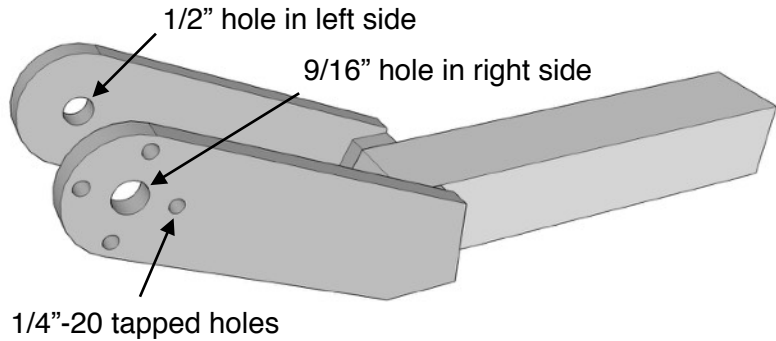
Drill out the hole in the right fork side to 9/16". This will allow the axle bolt to be tilted slightly, and then the tight-fitting hole in the adjustment flange will hold it in the right spot. Do not drill out the left fork side.



## Step 10

Drill and tap a ring of four holes in the right fork side to accept the 1/4"-20 bolts that will hold the tracking adjustment flange in place. These holes need to align very closely with the 5/16" holes in the flange, and if you are concerned that you may not be able to make them line up well

enough, you can just use the flange as a template to start your holes. To do this, use a 1/2" bolt through the center hole to hold the flange securely to the fork side. Be sure to have the center hole in the flange concentric with the 9/16" hole in the fork side. Use a 5/16" drill bit the transfer the hole locations (drill just deep enough to mark the positions), then, switch to a smaller bit to drill through. Tap the holes 1/4"-20. *Note: it's a good idea to keep track of the orientation the flange was in when you used it as a drilling template, so you can put it back on the same way later.*



## Step 11

The fabrication is done; you're ready to assemble and test the attachment. You can paint it now if you want, or wait to disassemble and paint it after testing. Don't paint the tool arm, and don't get paint in the tapped holes. Start assembling the attachment by bolting the adjustment flange to the fork side using four 1/4"-20 x 1/2" bolts. It's best to use washers on these bolts, but if you do, be sure to get some with a very small outside diameter (I used M6 metric washers). Otherwise they will interfere with the head of the axle bolt. Install the wheel by sliding the 1/2"-13 x 4" axle bolt in from the right side (there will likely be no room for a washer under the head). Use at least one flat washer on each side of the wheel, and add more if they are needed to fill the gap between the bearing and the fork side. Add a washer and a locknut to the end of the bolt on the left side. Leave all of the bolts loose for now, and follow step 12 to adjust the tracking.



## Step 12

Before beginning the process of tweaking the contact wheel's tracking, run your grinder with a different attachment (such as the platen) to establish correct tracking of the Power Unit. *Do not adjust the tracking on the grinder anymore during the rest of this step.* Reinstall the contact wheel attachment.

The adjustment flange should be able to move at least a little bit both vertically and horizontally. Adjust the flange to approximately the center of its range, and then tighten a couple of the 1/4" bolts. Put a belt on, run the grinder slowly, and observe if the belt tracks to the left or the right. Correct the position of the flange accordingly, repeating until the belt tracks in the center of the contact wheel. Tighten the axle bolt and be sure the bolts on the flange are all tight. You should now be able to switch between the different attachments without needing to change the tracking. This is a one-time setup so you should be able to leave the tracking adjustment flange alone from now on.