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Hand Cranked Document Shredder

by TimAnderson

This hand cranked paper shredder is really satisfying. It's on a cool double-drawerslide disappearing bracket. It sounds like loading a machinegun when you pull it out. Once someone starts shredding you can't stop them til the scrap paper is all gone.

Much skillful photography, craftsmanship, video editing, etc by [Fungusamungus](#)



step 1: Plot summary up to this point...

Someone took apart their electric shredder and left the parts in a pile.

"Bicycle powered shredder" thought I. First I would try it by hand just to get a feel for it.

I had a crank handle from an astronaut-torturing machine that happened to fit over the shredder's drive shaft.

There was a hole for a retaining pin in the driveshaft. I drilled the crank to match, pounded in the pin, and Voila! Hand-cranked shredder.

Then I clamped it to a table and everyone started shredding documents until we couldn't find any more paper.

It all happened so fast I didn't take pictures of the steps, but your junk shredder and your crank will most likely be totally different. Try a handle from an old meat grinder or a crank from a bicycle.

Hand shredding is so satisfying and convenient I don't know if I'll make the pedal grinder.

If you do it let me know how it turns out.

Next came the process of fitting it under a table in just the perfect way. Continue...



step 2: Saw off the Extra Stuff

Fungus hacksaws off some legacy sheetmetal.

My granddad used to say: To carve a wooden bear take a piece of wood and cut off everything that doesn't look like part of a bear.



step 3: Two Double Drawerslides

After much harrumphing we decided to bolt two drawerslides face-to-face like this and weld one such assembly on each side of the shredder. That would get it to extend and retract as far as we needed.



step 4: Setting up the Assembly

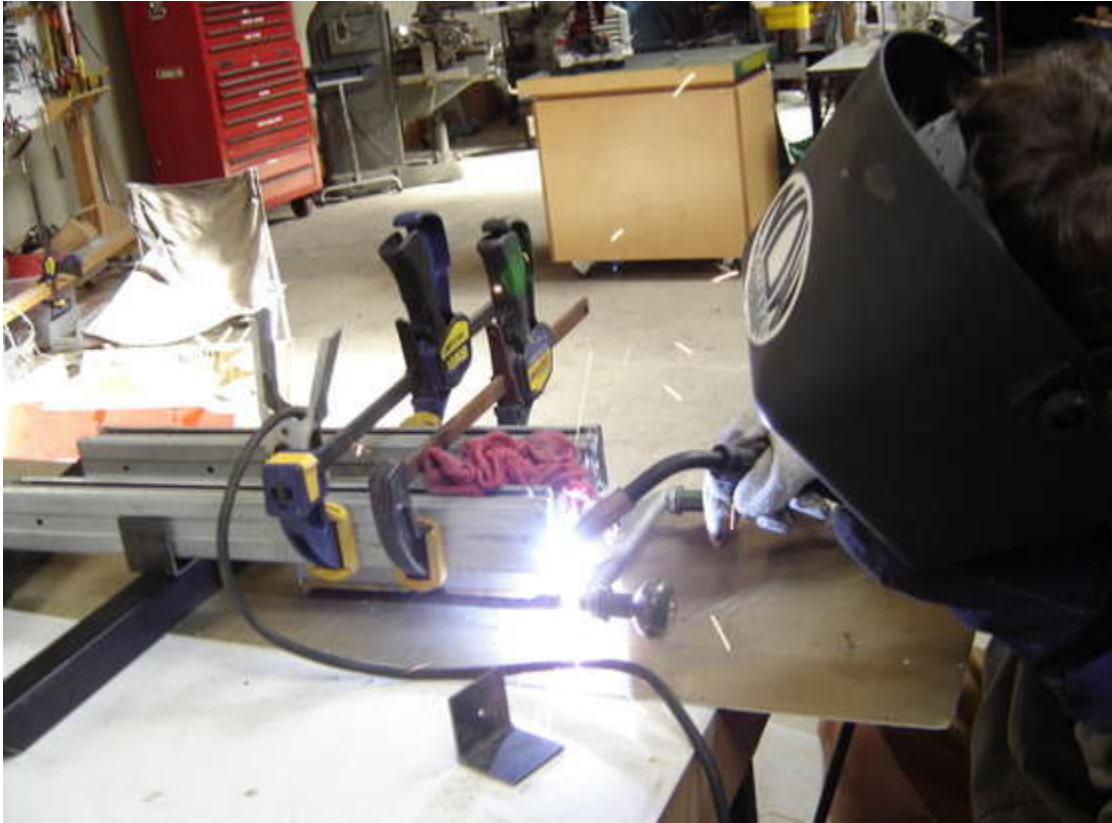
We put the whole thing together with clamps and blocks so we could weld it properly. The slides needed to be level and parallel. Fungus mikes out our tolerances.



step 5: Weld it Together

The tricky part was welding it without melting the plastic bearings on the shredder. I draped a soggy wet rag over the metal between the weld and the plastic bearings. Then after welding I mopped at the hissing welds to chill them as soon as I could without cracking them.

I used the shop's wirefeed welder. To make welding easy, use Miller's online welding calculator to find out what amperage, gas pressure, wire feed rate, etc. for the material and type of weld you're doing.



step 6: Bracketizing Step One: Rough Marking

I found four small iron angles in the stock pile. Perfect to attach our device under a counter. They needed additional holes. Here's how "shop guy" does that.

Setup your assembly with clamps or by hand and mark where the mating hole will go.

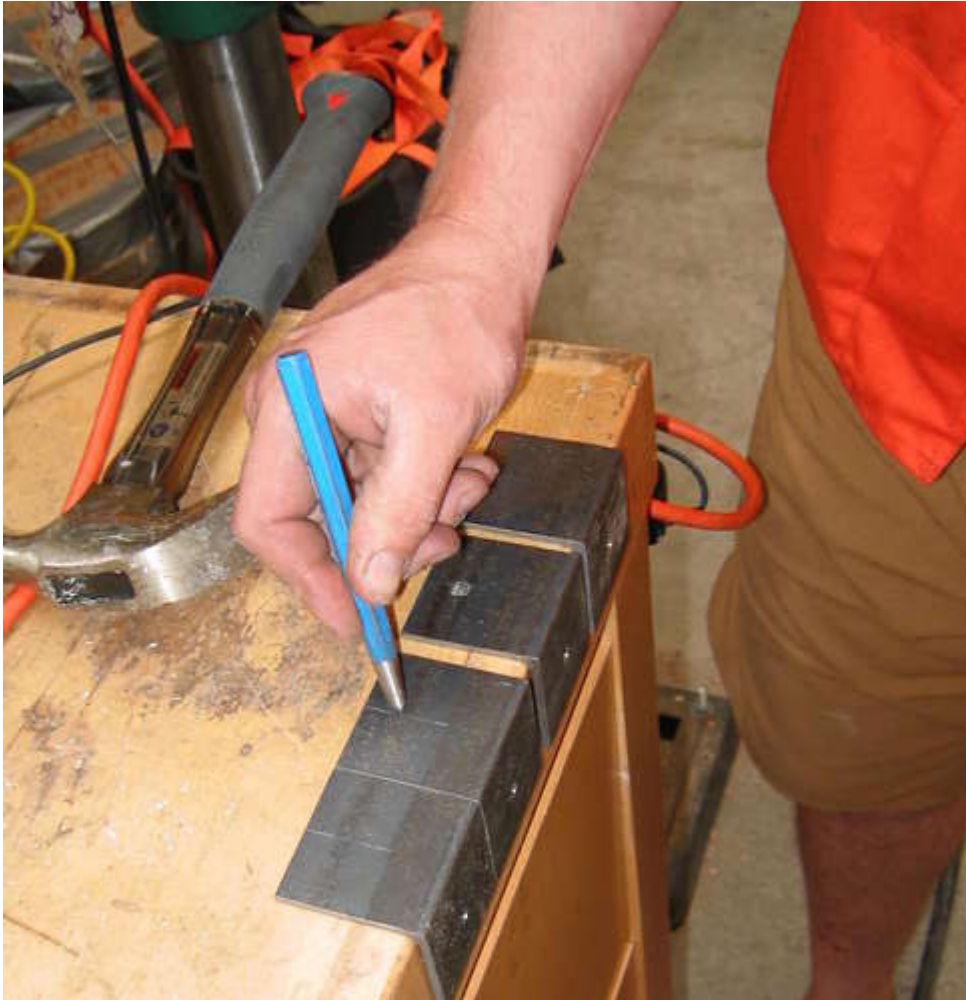
**step 7: Bracketizing: Cross Scribing with Caliper**

Choose two edges as "reference edges" and set your caliper to the desired distance. The caliper has hard sharp jaws that make a good scribe. This is an approved technique. Scratch two lines that cross where you want your hole.

**step 8: Finding the Center**

Take your center punch and run it along one of the scratches until the tip drops into the deep spot where the two grooves cross.

Get an old Industrial Arts textbook. It'll have these tricks and more.

**step 9: Center Punching**

Hit your center punch once with a hammer. Hit it as vertically as possible. Look at your centerpunch mark. Your eyes will be pretty accurate. If you don't like where it is you can push it around by centerpunching at it from an angle.

**step 10: Lube Your Bit With a Candle**

Soft wax like beeswax or microcrystalline wax is best, but all I could find was this paraffin candle. I like wax better than oil because it makes less of a mess and picks up the chips well. When the wax melts it's a fine oily lubricant.

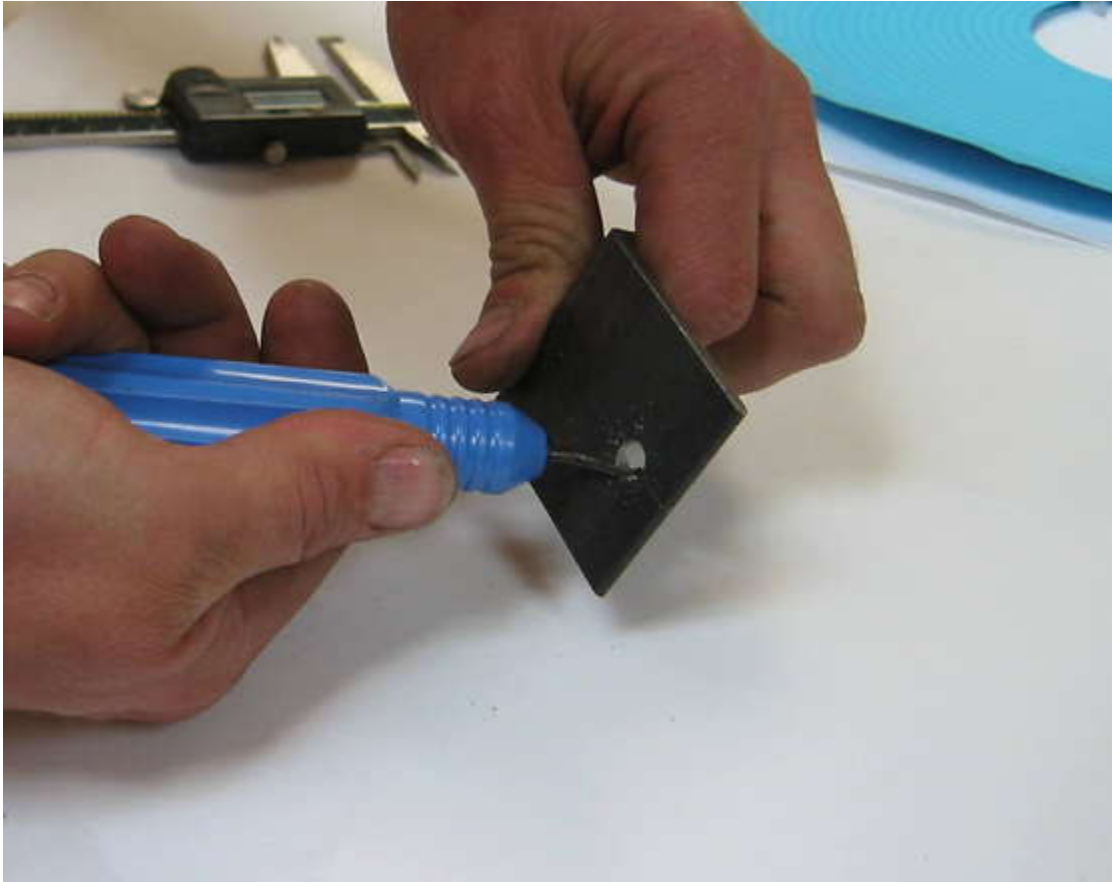
**step 11: Drill the Hole**

Consult your industrial arts textbook for proper info on drill sharpening, tool speed, and feed rate. It varies with the material. It's interesting how a drill, saw blade, and lathe bit have similar cutting parameters.

Small pieces must be clamped or the drill will bind, spin them, and mess up your hands.

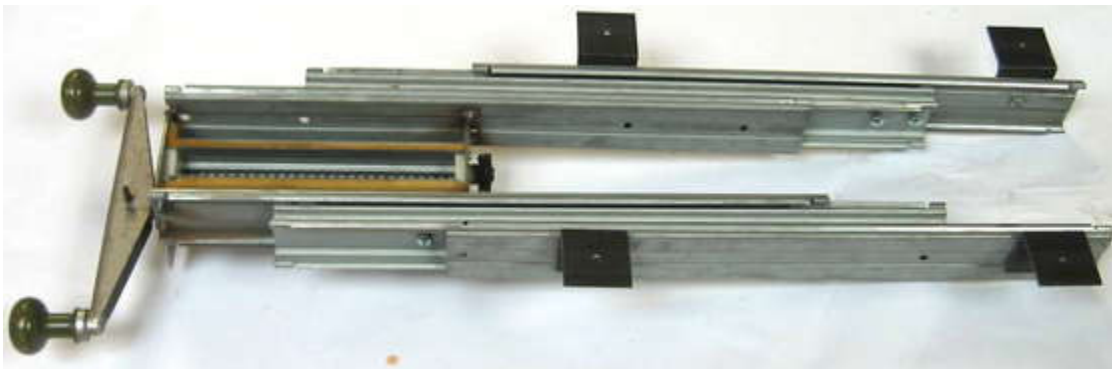
**step 12: Deburring Tool**

Not really a necessary step in this case, but it's fun to do. Get a cheap deburring tool from Wholesale Tool or MSC. It's especially good for cleaning up cut tubing ends.



step 13: Houston, we have Brackets

Here's the completed assembly, in "out of battery" position.



step 14: Standoffs

The counter we wanted to mount the unit under has a lip around it, so we added these 2x4 chunks as standoffs. I would have just juggled, dropped, and cursed, but Fungus had the bright idea to duct-tape them in place temporarily.



step 15: Pattern and Mounting Holes

We laid a piece of paper over our brackets and poked through it where the mounting holes were. We used this pattern to mark where the holes went under the counter. Then we drilled undersized holes for the screws to bite into.



step 16: Bolting it On

This was probably the hardest part of the whole process. We tried it in another location first, but there just wasn't enough room under it for a human to work properly. We gave up and put it under this more spacious counter.



step 17: In Action

Here's a movie of the shredder in use.

step 18: The Shred Bed

Once you've shredded your documents what next?

How about using the shreds to make your own improvised futon?

For initial tests we used giant drawstring bags. For comparison we filled one bag with crumpled newspapers to make a "crumple bed". Marion tests them out. Conclusions: It takes a huge quantity of stuffing to make a futon. The crumplebed is lumpy, not as good as the shred bed. The shred bed is very comfortable. Marion had just finished one of her final exams and took a nap right there.



