BRASS ETCHING TO MAKE A DOWEL ROD BRAND

This process uses electricity and toxic chemicals. Keep children & pets away from the setup. Keep a close eye on the setup while you're working, since short-circuiting can occur. If you read and attempt to follow these instructions, then a) you have determined that you are qualified to perform the activities described herein, b) you are taking responsibility for your own actions, and c) if you hurt yourself or damage something, you agree that the only persons that you will sue are your parents (for failing to raise you to have common sense).

Another introductory caution: be aware that commercial firms will make brands for you. Check the Banjo Hangout forum topic and make sure that you really want to make your own brand.

This procedure uses laser printing to place toner on glossy inkjet paper. The toner doesn't adhere well to the inkjet paper, and therefore can be transferred to another surface (such as brass). Use heat to transfer the toner, which acts as a "resist", i.e., areas beneath the toner will resist etching while adjacent, uncovered areas will etch.

The basic recipe is found at http:\\steampunkworkshop.com/electroetch.shtml. This is an interesting website…… I wouldn't mind meeting these folks.

Some comments about the image that you choose:

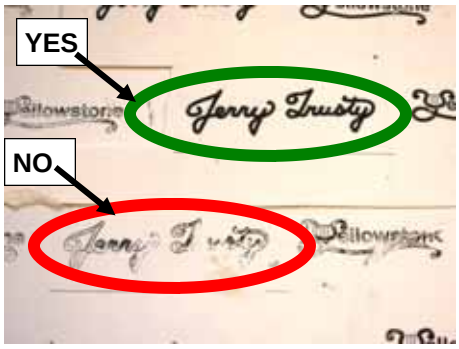
- Choose an image that is bold, i.e., doesn't have too many fine lines. Fine lines will etch in brass, but they lose definition before the rest of the brand is done because the resist degrades. Practically speaking, it's difficult to brand wood with very fine hairlines next to bold areas, so you may as well make your design have a few fine lines as possible.
- If the image has graytones, convert to black & white using photo editing software.
- Otherwise, there is practically no limit no what you can etch.
- The image must be "normal", i.e., not reversed. When you transfer the image onto the brass, it becomes reversed. When you brand the reversed image onto wood, it has the appearance of the original artwork.

Make about a dozen or more copies of the image, because some won't be useable and some will probably become damaged.

Brass will work with the chemical solutions described on the steampunk website. I use 1/2” by 1/4” brass bar. This size will fit onto most banjo dowels. You can find this brass rod on e-Bay. I cut it to 2 1/2” lengths to make the brands. You will need at least 2 pieces of brass.

Follow the steampunk instructions to clean the brass.

Closely inspect the images on the inkjet paper. Find an image that has good, heavy toner and crisp lines.

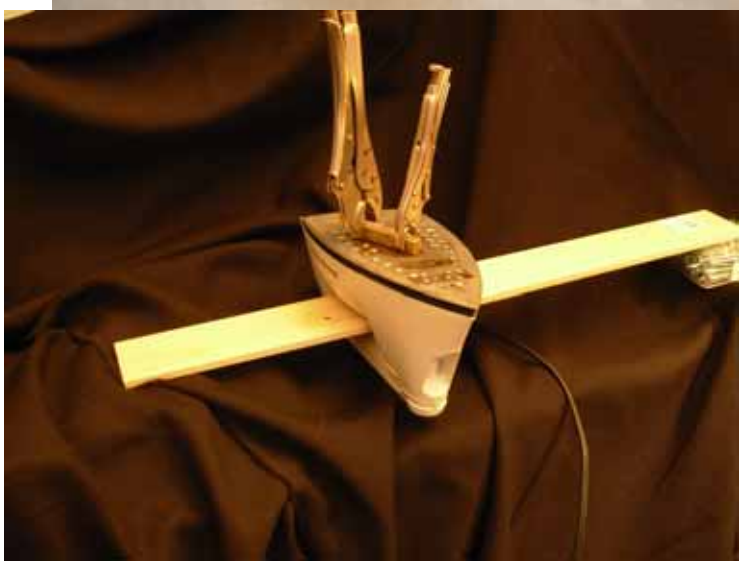


Cut out the image on the inkjet paper. Be careful not to touch the toner, because it can rub off.

Place the paper image side down on the prepared brass.

Take another piece of brass the same size as the brand and place it on top of the paper. Clamp the two pieces of brass w/ paper with a vice grips. Only clamp it about twice as tight as you could squeeze by hand…. if you clamp too tight, the brass pieces may skid when heated and smear the toner.

Use a firring strip or other piece of wood to securely suspend an iron upside down. Turn the iron on its hottest setting. Place the brass on the iron surface and balance so that the vice grips will stand upright. Let the brass heat for about 15 minutes. Keep an eye on it.

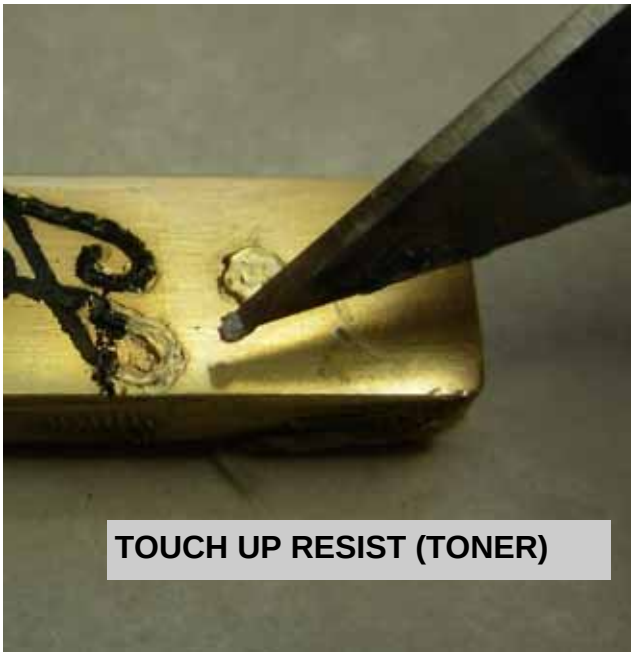


Carefully take the brass off the iron and release the vice grips. Drop the brass into soapy water. The two pieces of brass will stick together. Soak the brass for about 15 minutes to release the two pieces of brass from each other. Don't pry the two pieces apart, since that can ruin the resist. If the two pieces don't readily come apart, slip an exacto blade between the two pieces and rock it very gently to separate the pieces slightly, then put them back into the soapy water to soak.

When you finally have the two pieces apart and after they have soaked in the soapy water, check out the quality of the toner image (resist). It will be reversed from the original image. Check that the toner coverage is uniform and the edges of the toner are crisp. If needed, you can touch up the resist with fast-drying paint or superglue. Carefully remove any remaining paper, being careful not to disturb the resist.

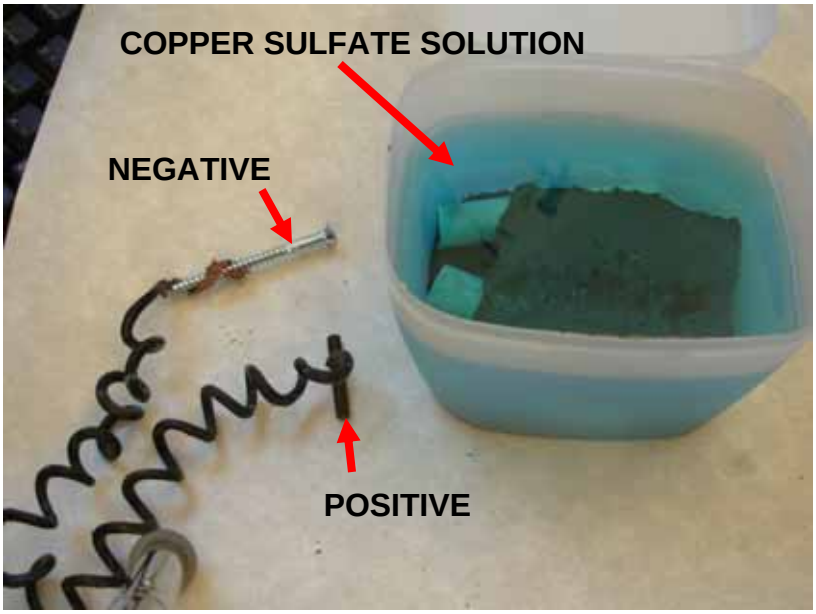
POOR TONER TRANSFER

GOOD TONER TRANSFER

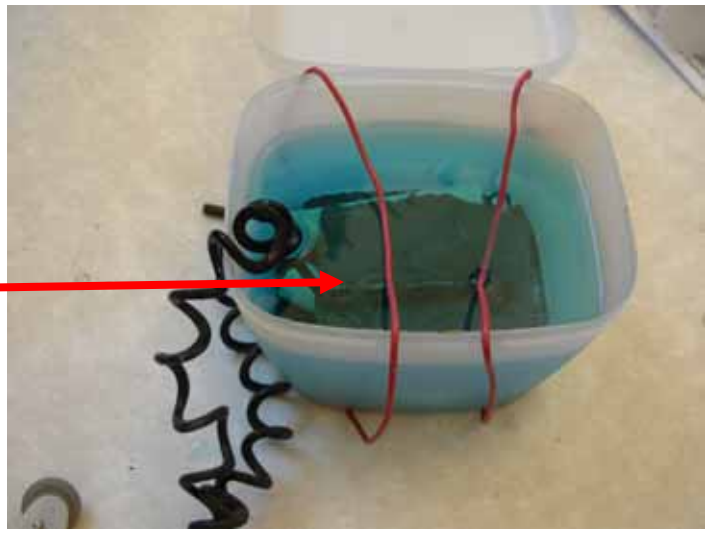


TOUCH UP RESIST (TONER)

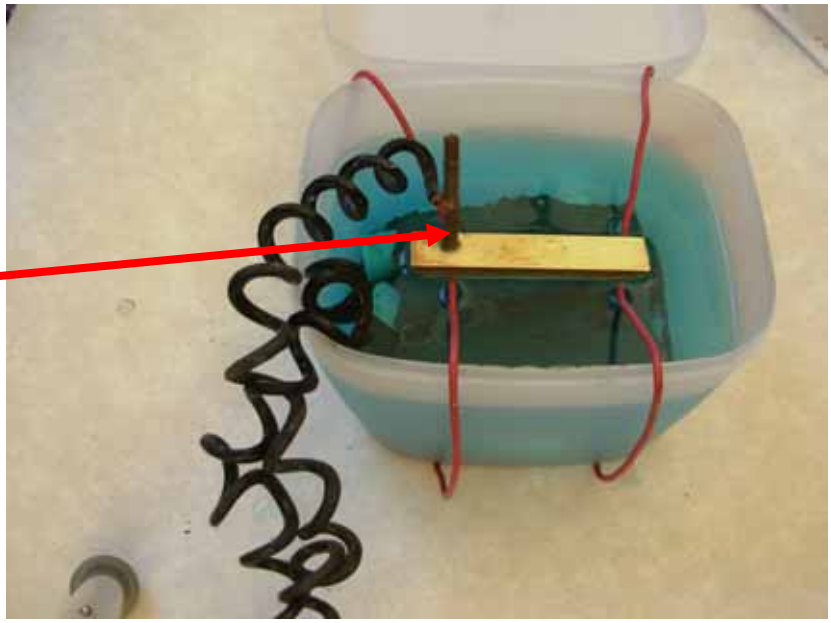
Set up the etch bath. I have used a small bath that I can put the negative terminal in the bottom and hang the brass (positive terminal) on wires at the top of the bath. Mix the copper sulfate solution according to the steampunk directions. The etching will get up to speed faster if the water is hot. I microwave the water until it steams, then add the copper sulfate. Don't breathe the vapors from the bath.



I wrap the wires around a rod so that the negative terminal has a large exposed surface area. Put the negative terminal in the bottom of the bath.



Suspend the brass bar at the top of the bath, making sure that the wires that suspend the bar don't touch the design. I attach the positive lead to a short piece of rod or a small bolt and rest it on top of the brass bar to complete the circuit in a way that can easily be disconnected.

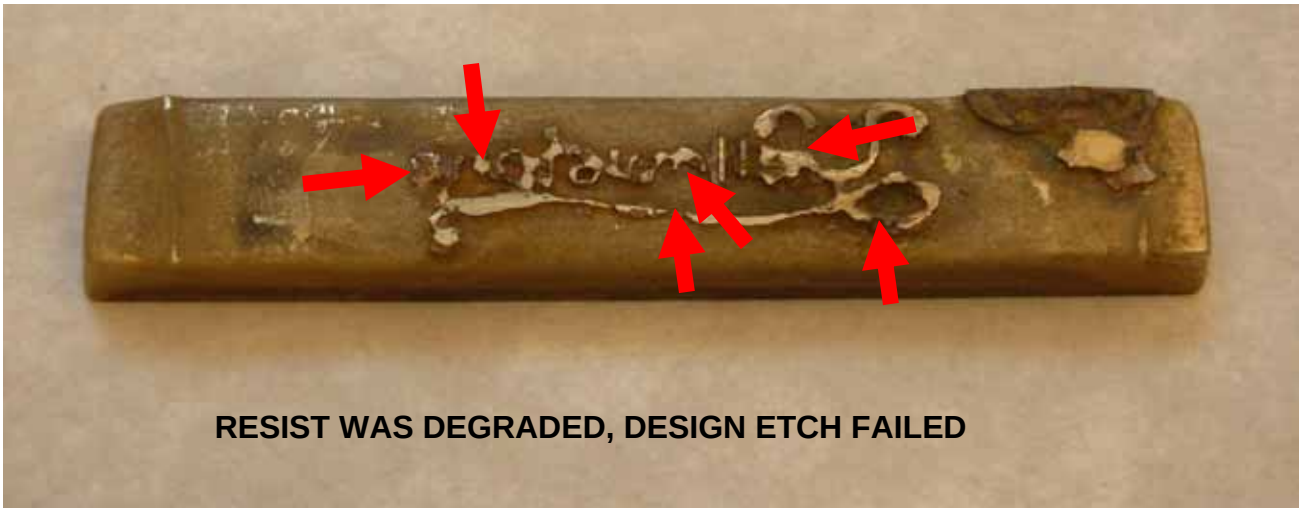


Attach the positive bath lead to the positive lead on a battery charger. Attach the negative bath lead to the negative lead on the charger, and turn the charger on. Make sure that the charger is working properly and isn't overloading.

Within a few minutes you should see discoloration and eventually a feathery growth on the negative terminal. The feathery growth is metal being deposited as it is being removed from the positive terminal (the brand).

Keep an eye on the bath and check the bar about every 15 minutes. Turn off the charger, remove the brass bar, and gently wash it under running water. The dark brown deposit should readily wash off the bar. Check on the integrity of the resist. If the resist is starting to degrade, you may be able to blot the brass with a paper towel, dry it, then touch up the resist. If you're lucky, you'll get maybe 0.5 mm of etching before the resist degrades. Sometimes this is where the effort may fail if the resist degrades and metal within the design is etched away. If this happens, you can sand down the design, make a new, clean, flat surface on the brass bar, and start over.

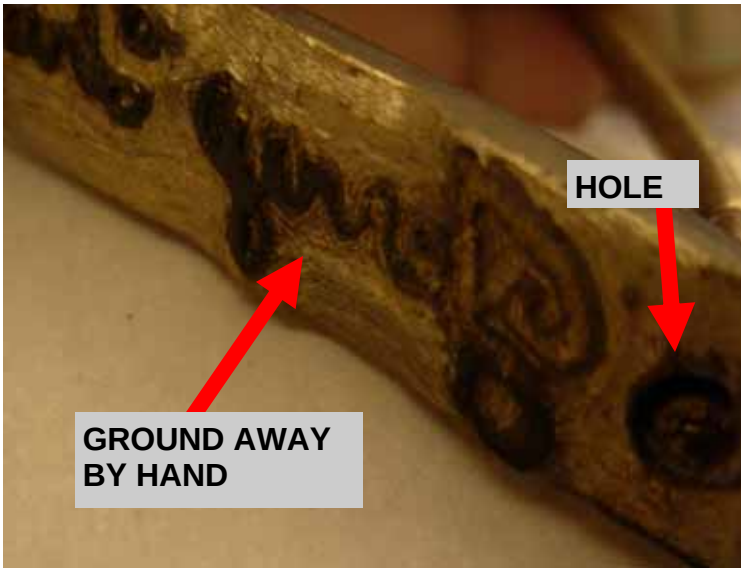
When you've etched as much as you can without degrading the resist (this is a subjective, judgment call), take the bar out of the bath and rinse off the etching solution. Use 00 steel wool to remove the remaining resist.



RESIST WAS DEGRADED, DESIGN ETCH FAILED

PRETTY GOOD RESIST SURVIVAL, GOOD ETCH

Use a Dremel drill to grind away the brass away from the raised design. If the design has fine spaces between parts of the raised brand, use an Exacto knife to gouge out the brass. You want the design to be the highest part of the brand, and the surface of the brand should slope down around the design.



Drill one hole at each end of the design. Size the hole so that 1/8 brass rod will fit easily. If the fit is too close, then you may have trouble getting braze to flow in between the rod and the hole.

Loosely fit the rods in the brand extending away from the design and braze them to the brand (use acetylene or MAP gas). I use brazing because it is more durable. Because you're not going to heat the brand to the melting point of solder when you use it, you may be able to get away with plumbing solder to join the rods to the brand.

Bend the ends of the rods together and insert them into a file handle. Grind the surface at the rods to lower any high points.

To use the brand, heat with a propane torch. Experiment with wood scraps and figure out how long you need to heat the brand. If the brand gets too hot, it will char the areas adjacent to the design. When you apply the brand, rock it a little bit so that all areas of the brand contact the wood.

Don't try to brand on top of thick finish. If necessary, remove some finish with 00 steel wool at the location where you want to brand. After you're through branding, you can touch up the branded area with tung oil or some other finish. If you're not too aggressive with the steel wool, you'll keep the color of the wood.