Ben’s Story of the Brass Plate

The etchant I used is a mixture of ferric chloride (saturated solution, ~40%, 40-45 Baume) with citric acid.  It's called Edinburgh etch - the guy who developed it lived there at the time. The reaction products of plain ferric chloride are solid, and impede the etching process.  This requires brushing the article, or suspending it upside down or vertically, neither of which is very effective, particularly on fine designs.  Brushing also runs the risk of damaging the mask.  With the citric acid added, the products are soluble, so the problem goes away.

More details at <https://www.nontoxicprint.com/etchcopperandbrass.htm>

I did the design in PowerPoint.  I printed it onto BCQLI 10 PCB Circuit Board Thermal Transfer Paper using a laser printer, and transferred the image onto the brass using an iron.  The snag here is that the image needs to be mirrored.  I have an older Brother printer which has a mirror capability.  My new printer (also Brother) does not, and I haven't been able to find any that do (I'm sure there must be commercial ones).  Although you can produce a reverse image in PowerPoint, it is a bitmap not a vector image, and loses sharpness and has scaling problems.

I also have some free software (Inkscape) which will produce a satisfactory reverse image.  It's quite capable, but is a bit quirky, and doesn't seem to print actual size, although it may be that I haven't figured that out.  If  not, it will require an iteration to get the print the required size.  I've played with it, but not used it in anger.  PowerPoint prints to size pretty accurately.

I etched for about 4 hours, although I did change the solution after about 3hrs.  The depth of etch was arbitrary.  I don't know whether the change was necessary - I was flying by the seat of my pants.  How quickly the etchant gets used up will obviously depend on the size of the workpiece, the amount of etchant, and the design.

The metal is brass from a kickplate (you need to be careful to get solid brass - not anodized aluminum).