

# Ron Gray, Hot Wire Foam Cutting

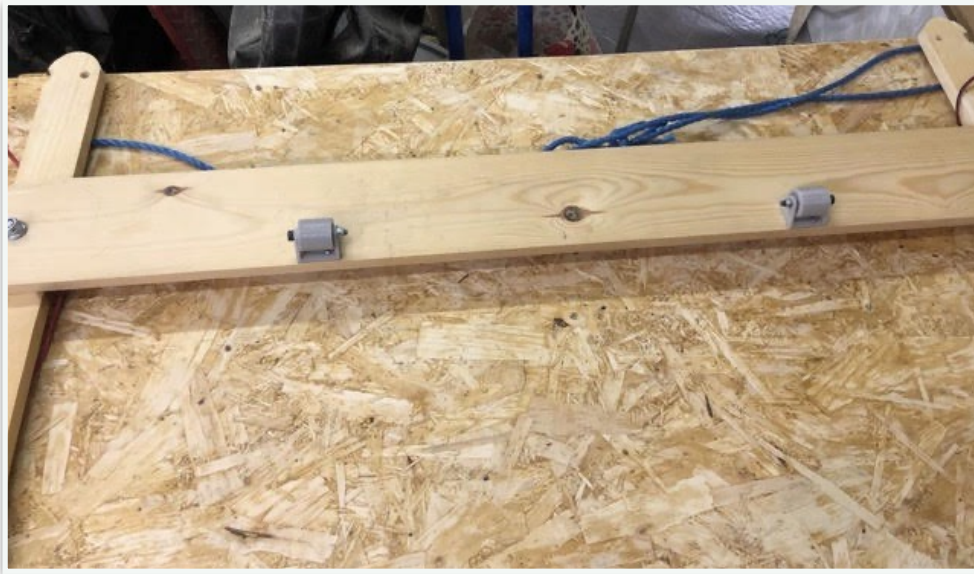
This is the story of my foray into world of cutting foam wing cores.

OK, so here are some photos of my setup which copies things used by others that I found on YouTube. I made most of it from bits of scrap I had laying around, the only things I bought in were the main pulleys and the cutting wire (Nichrome 28 gauge).

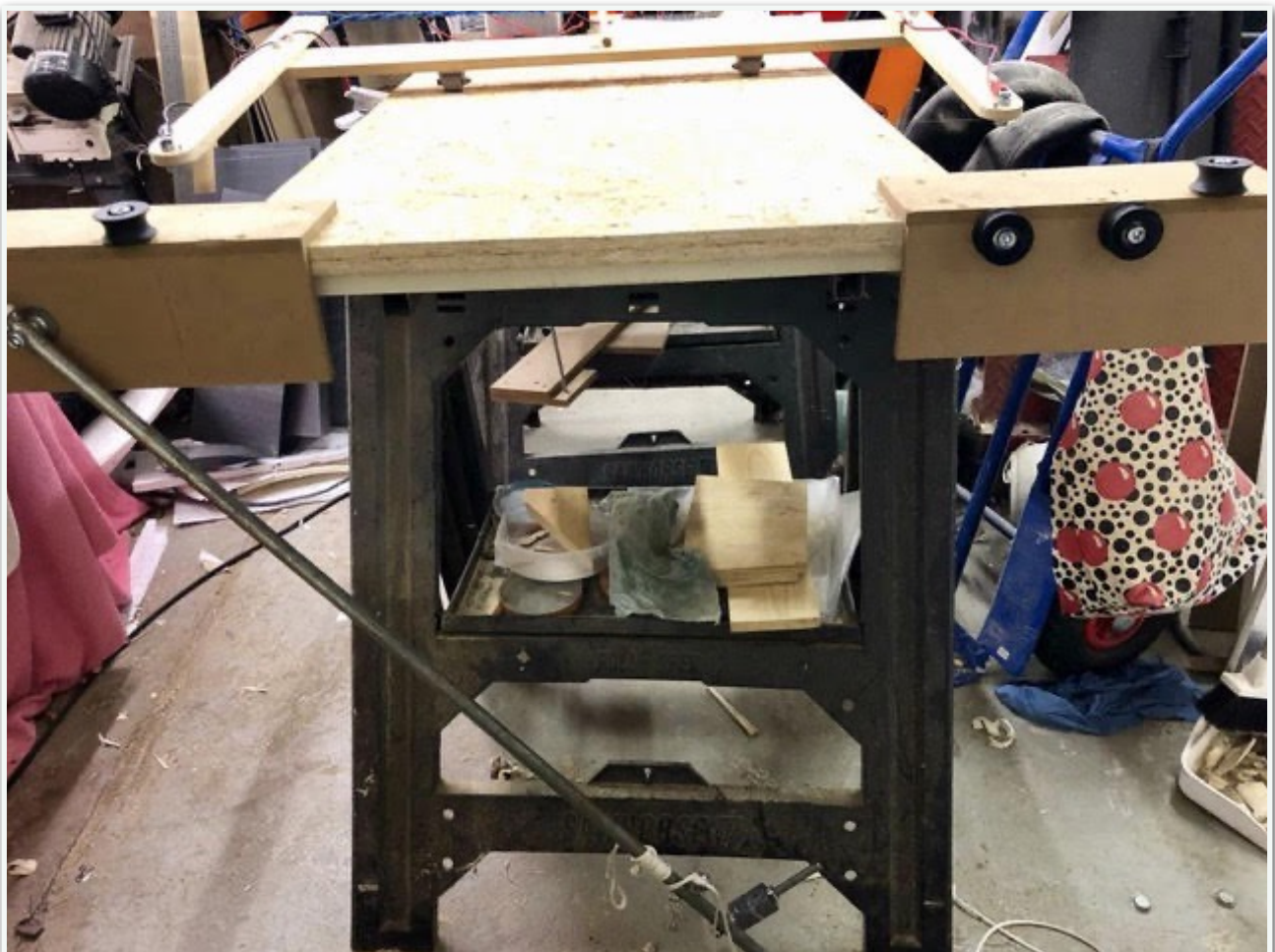
The bow frame using a tourniquet for tensioning the wire. I started by using some elastic luggage straps but they didn't give it enough tension and the wire bowed when cutting.



When cutting the frame rests on the board so I made (3D printed) a couple of wheels so that it could move smoothly. I plan to surface the board to make it smoother.



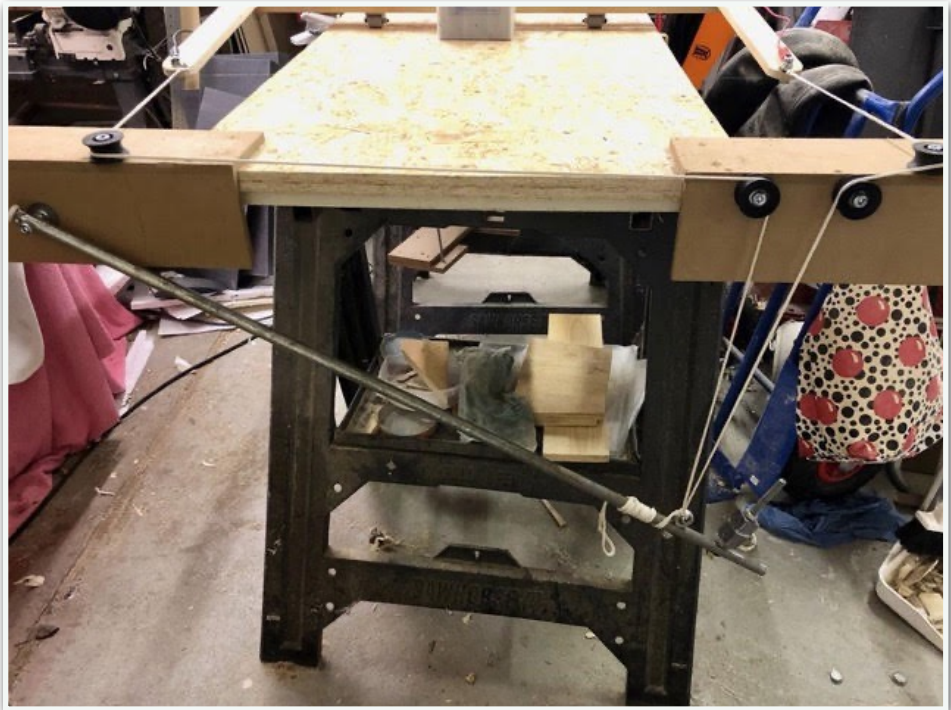
On the end of the board are 2 plates on which are mounted the pulleys to route the pull cord down to the pivot weight bar.



I attached some swivel links to the ends of the pull cord so that they can be easily detached when I want to do 'free hand' cuts.



This next shot shows it rigged up with the frame fairly well back on the board. I need to make a hold back to retain the frame, a battery serves this purpose at the moment.



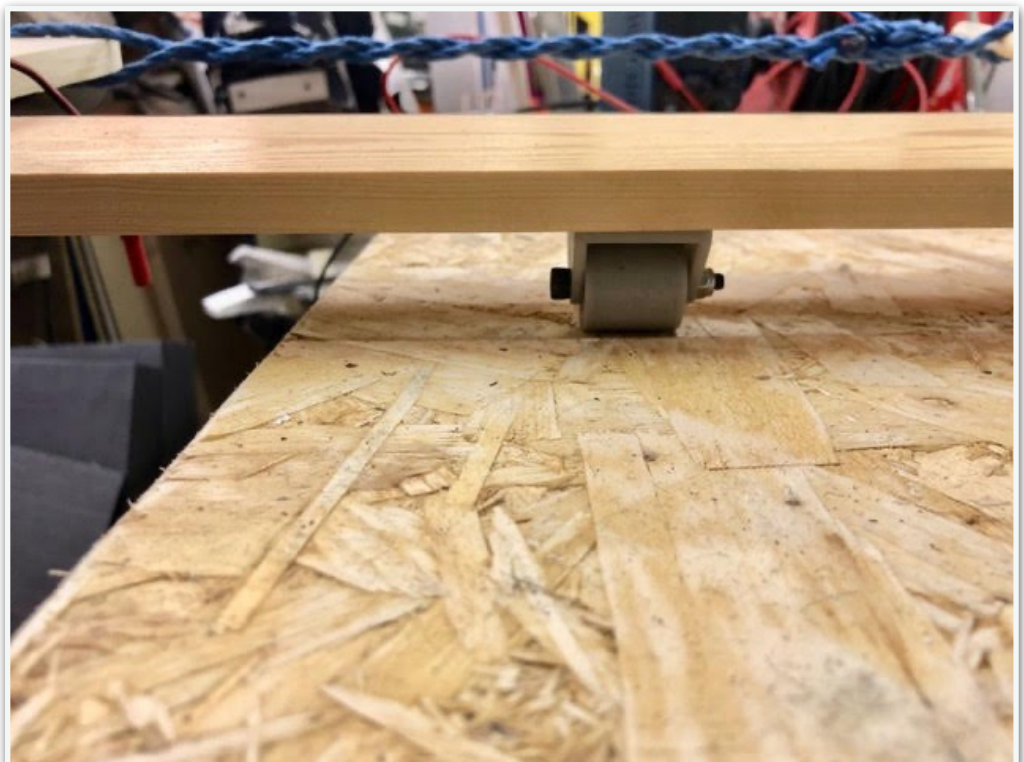
This is the pull cord weight which is adjustable. I can also separate the 2 pull cords to position them apart in order to carry out taper cuts.



The pull cord quick release attachments.



The bow frame running wheels.





When cutting an airfoil I put some lead weights on the bow frame arms to ensure that the hot wire follows the profile end plates.

My DC power supply.



I've tried different foams.

The first I tried were odd bits of packaging, the white polystyrene type. This cut really well on low power settings and gave a nice clean cut.

Off cuts from model 'plane kits (the leftovers from veneered foam wing!) cut really well as you would expect and again required low power settings and also less weight on the pull cord weight bar.

Next up was some Kingspan insulation board I ordered from Wickes, oh dear what a mistake it will not cut and made a horrible smell!

Lastly the grey foam board that I eventually cut the wing cores from, this was supplied by [Bluefoam.co.uk](http://Bluefoam.co.uk) and is a very dense foam which cuts really well but I had to up the voltage to 18v and I needed double the weight on the weight bar.

I'm going to get some white polystyrene boards in to compare the finished article but it will have to go some to beat the grey board.

The interesting thing is that I was going to veneer the foam cores but the grey board is so dense and smooth that I'm going to use laminating film directly onto it. I tried it on a scrap bit of board and it can really take a lot more heat than white foam can and on my test piece I got no crack skin look. I'm going to glue on balsa leading edges although I could probably get away without them as the edges of etc foam are quite firm even before laminating them.

Bottom line is, this is an incredibly cheap form of construction which I think will be very strong.

And here it is in action:

<https://youtu.be/U7YvTieDo5k>