Mark's Model Works

MMW 405 NZR 14-foot Windmill

This model is designed from the NZMRG plan LS11 and based on the preseved, working windmill pump at the site of the old Belgrove Station, on the Nelson Line

https://www.google.co.nz/maps/@-41.4497637,172.9590837,3a,31.8y,123.78h,93.98t/data=!3m6!1e1!3m4!1s5mVXFIFOXyOPbbuNxGieDA!2e0!7i16384!8i8192?hl=en&authuser=0

These windmills were used throughout New Zealand for pumping water into the loco water towers. They were slowly replaced as electric pumps and town supplies become more reliable.

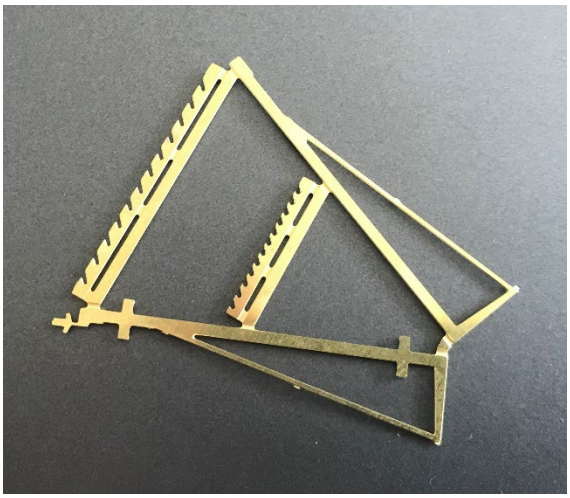
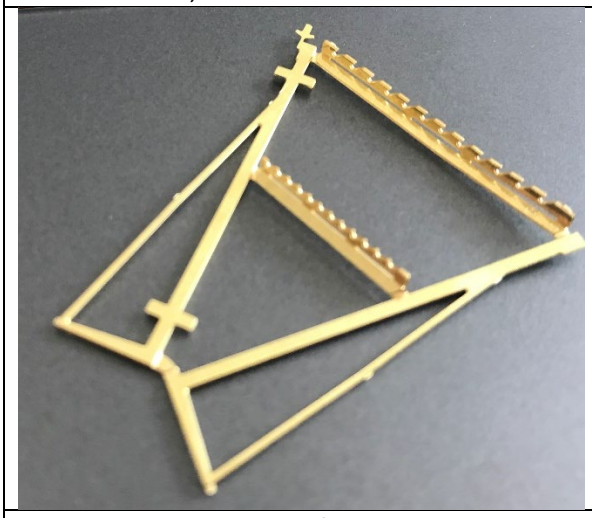
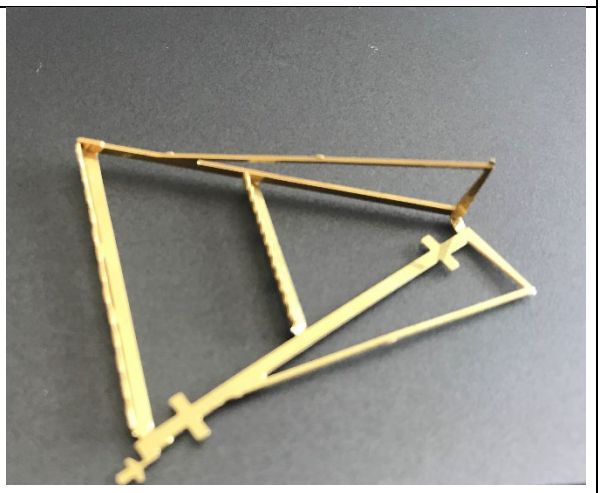
Making this kit

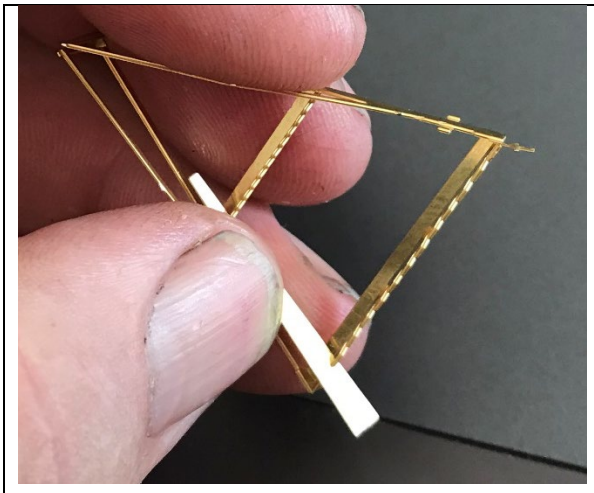
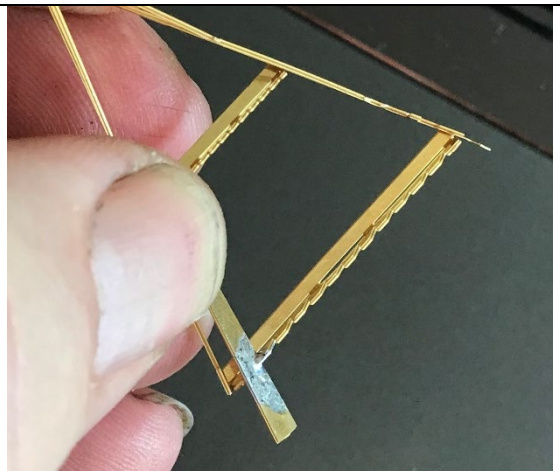
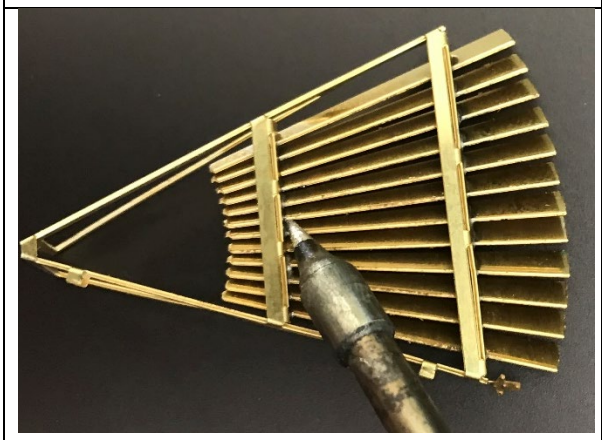
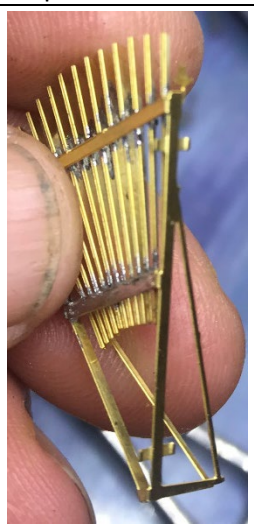
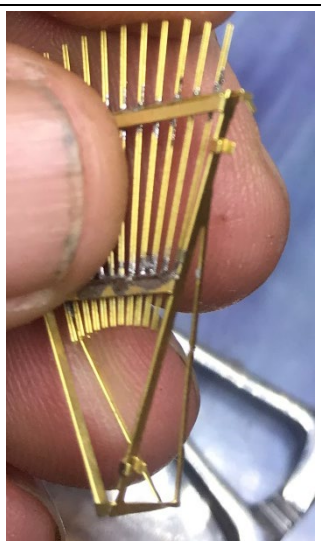
These etches are designed as a scratch building aid for the fan and the vanes of the windmill. To complete this model, you will need a selection of brass tube and wire as listed below.
Also, very useful is solder paste.

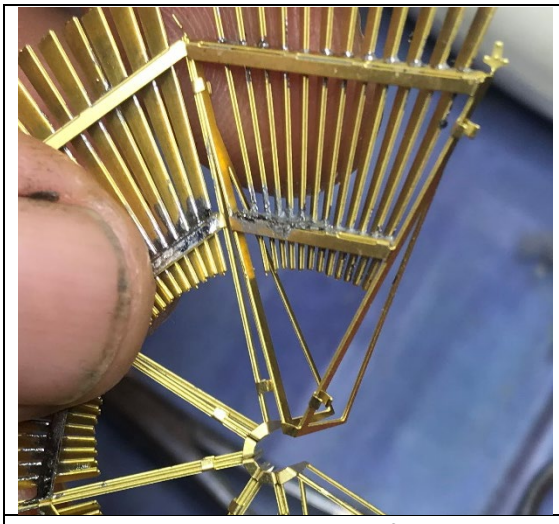
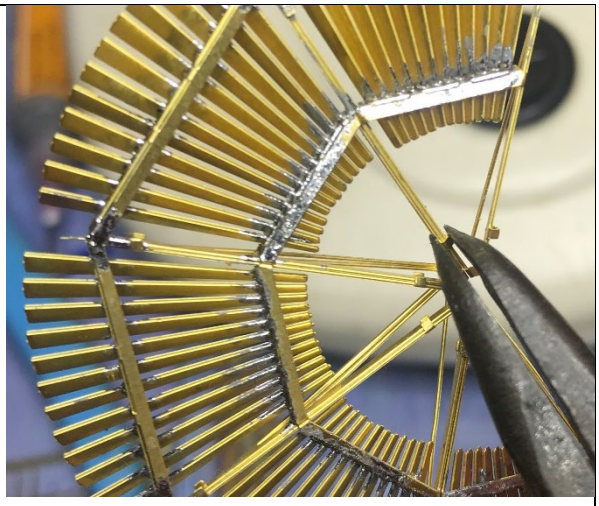
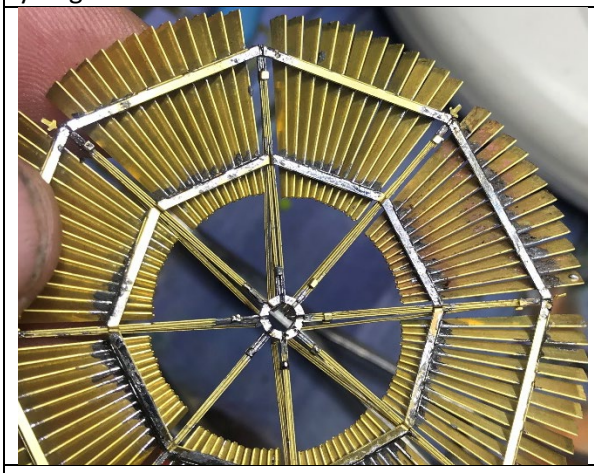
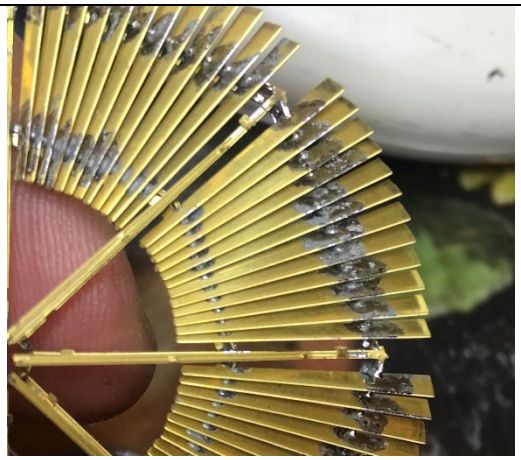
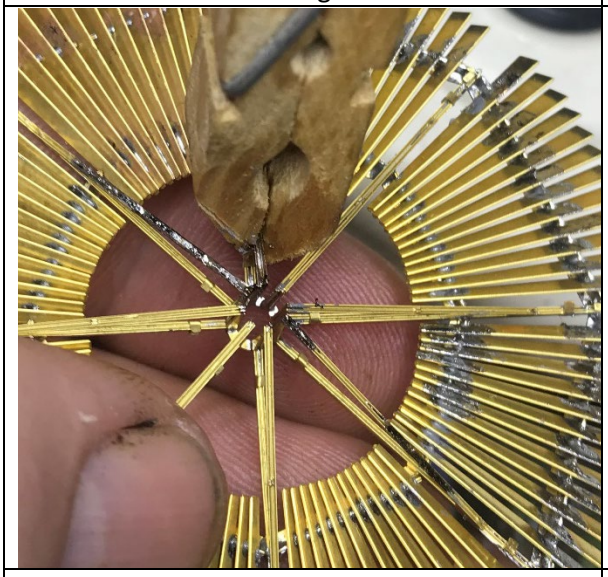
- 3mm and 2mm OD K&S brass tube
- 1.0mm and 0.3mm brass wire Northyard
- slide fit brass tube from Albion metals any of these 1.2 and 1.0 or 1.1 and 0.9 or 1.0 and 0.8mm

Scale notes

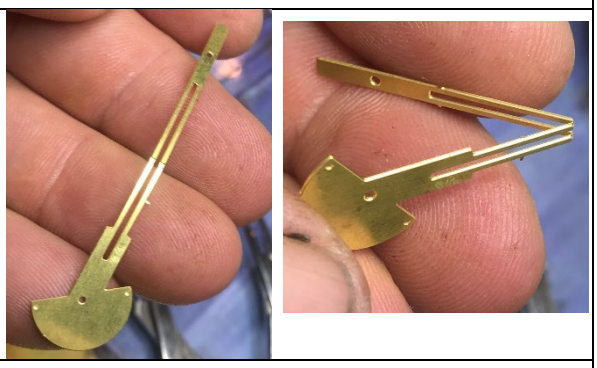
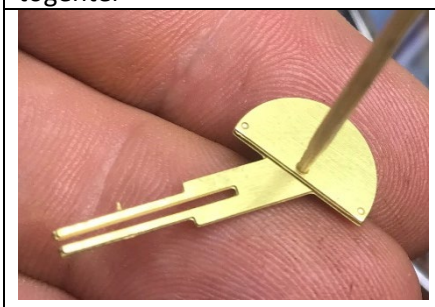
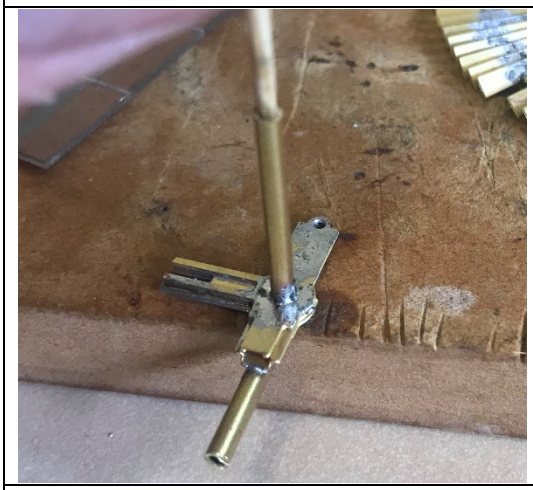
The instructions are written for the 64th version of the kit, for the 48th scale version you will need to multiple the lengths and measurements up by 64/48 or 4/3

Fan assembly instructions	
	
Etch parts (*9mill version shown)* 1 x Vanes etch, 8 x Fan sector etches	Carefully remove the fan sector frame
	
Bend the blade guides 90˚ toward the etched line	Bend the sector frame sides 90˚ toward the etched line

	
The blades are notched and in the correct order, remove them from the etch one at a time. Insert the blade into the first guide move it back or forward until you feel it drop into the notches	Add a small dollop on solder paste to the blade and the outer guide rail, solder in place. Gloves or asbestos fingers are needed. Check the blade alignment as you progress it is easier to fix before the next blade is in place Repeat for the other 11 blades.
	 
Check the blade alignments in the inner guide rail. Use a block to hold the blades into the rail Apply solder paste along the rear side of the rail and blades, solder along the rail ensuring all the blades are soldered. Repeat for the other 8 all of the fan sectors	Bend the tabs on the edge of each fan sector to 90˚ toward the etched line to form a U shape

	
Clip each sector into the tabs of it neighbouring sector Check the alignment between each sector as you go	Bend the tabs around to hold the sectors together Solder the solder at the join in the outer guide rails
	
Check the alignment in the center of the fan and solder the centers together	Twist and folder the outer bracing plates onto the centre of each brace. Solder in place.
	
Clamp the top stays and solder together	Cut a 10mm length of 3mm tube. Insert in to the centre of the fan. Some filing may be required to allow it to fit

	
Push the through the fan until it is flush with the front and has about 2mm out the back Solder the tube in place	Deform the centre hub bracing by pushing into a piece of foam with the some 2mm tube
	
Use a tooth pick or cocktail stick to help align the hub brace in the center	Solder the hub brace to the stays Bend the tees over each side of the stay

Vane and Pivot assembly instructions	
	
Consertina fold the main pivot and solder it togehter	Fold the tail vane pivot 180
	
Add the control sector plate second layer and solder it all together	Cut a 15mm length of 2mm tube, solder to the top for the main pivot with about 10mm over hang Note if you are motorisng the fan you will need to have this higher to allow for the bevel gears
	
Cut a 20mm length of 2mm tube ream the amin pivot hole to fit and solder the tube in place	Cut a 6mm length of 1.1mm tube Ream the hole a the rear of the main pivot to fit the tube Solder in place with

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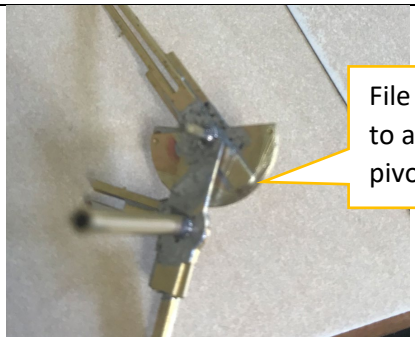
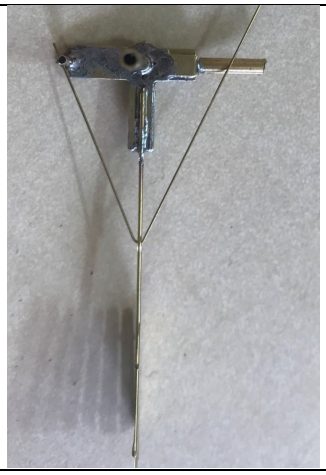
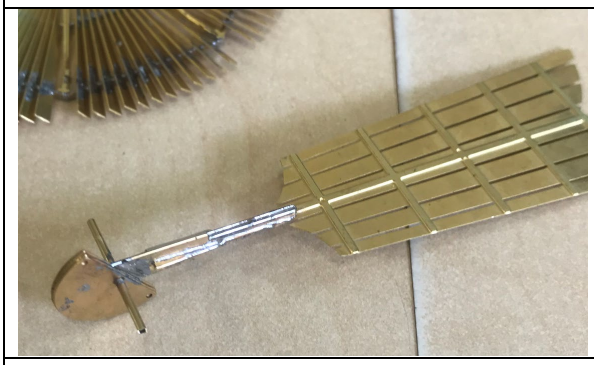
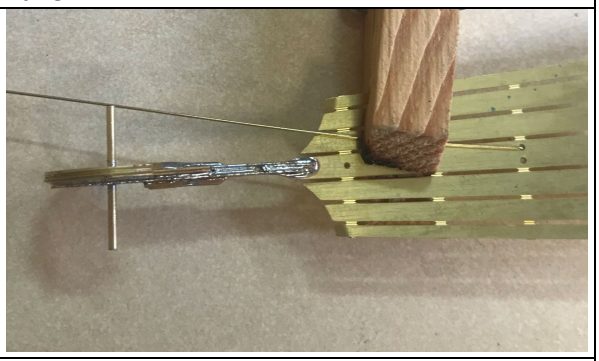
<tr><td>   </td><td>  </td></tr>
<tr><td>Cut a 15mm length of 0.9mm tube
Ream the hole in the tail vane pivot to fit
Drill a 1mm hole in a block of wood to 6mm deep, use this to align the tube in the tail vane pivot and get it square, solder in place</td><td>Check the fit in the main pivot
clean up the solder as needed
test the pivot is free and has the correct travel
You will need to file back the tail vane pivot spine to allow full travel</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Insert the side vane into the main pivot and soler in place</td><td>Open out the hole in the side vane and insert a 0.3mm rod to form the side vane stays.
wrap the wire around the pivot tube and bend over the other side and tuck it into the front of the main pivot, solder at the hole in the side vane</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Add the tail vane and solder in place
File a notch in the top of the tube
File a notch in the front of the control sector plate</td><td>Added the 0.3mm wire stay from the upper hole in the middle of the tail vane over the ntoch in the tube</td></tr>
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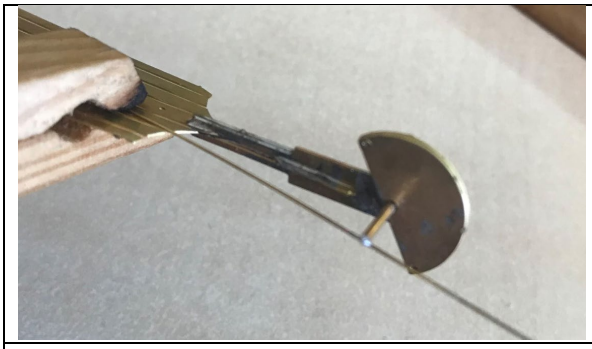
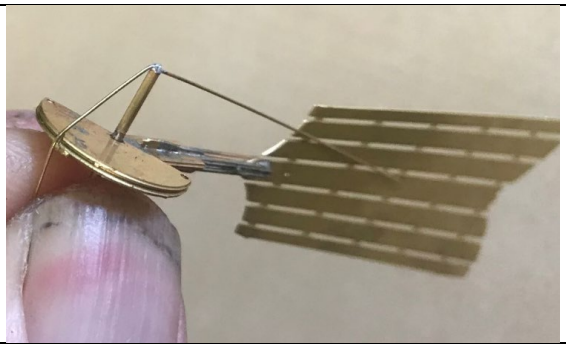
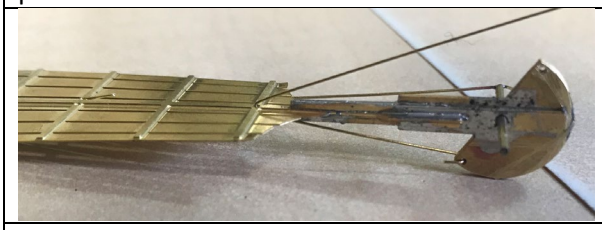
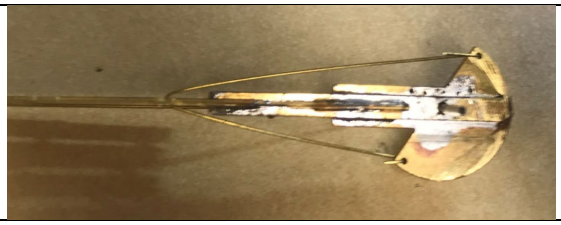
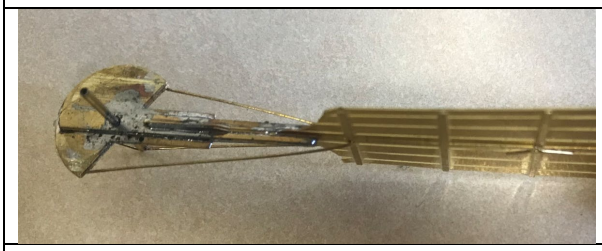
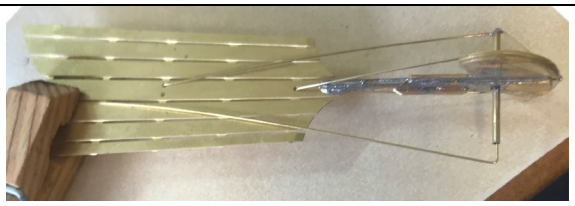
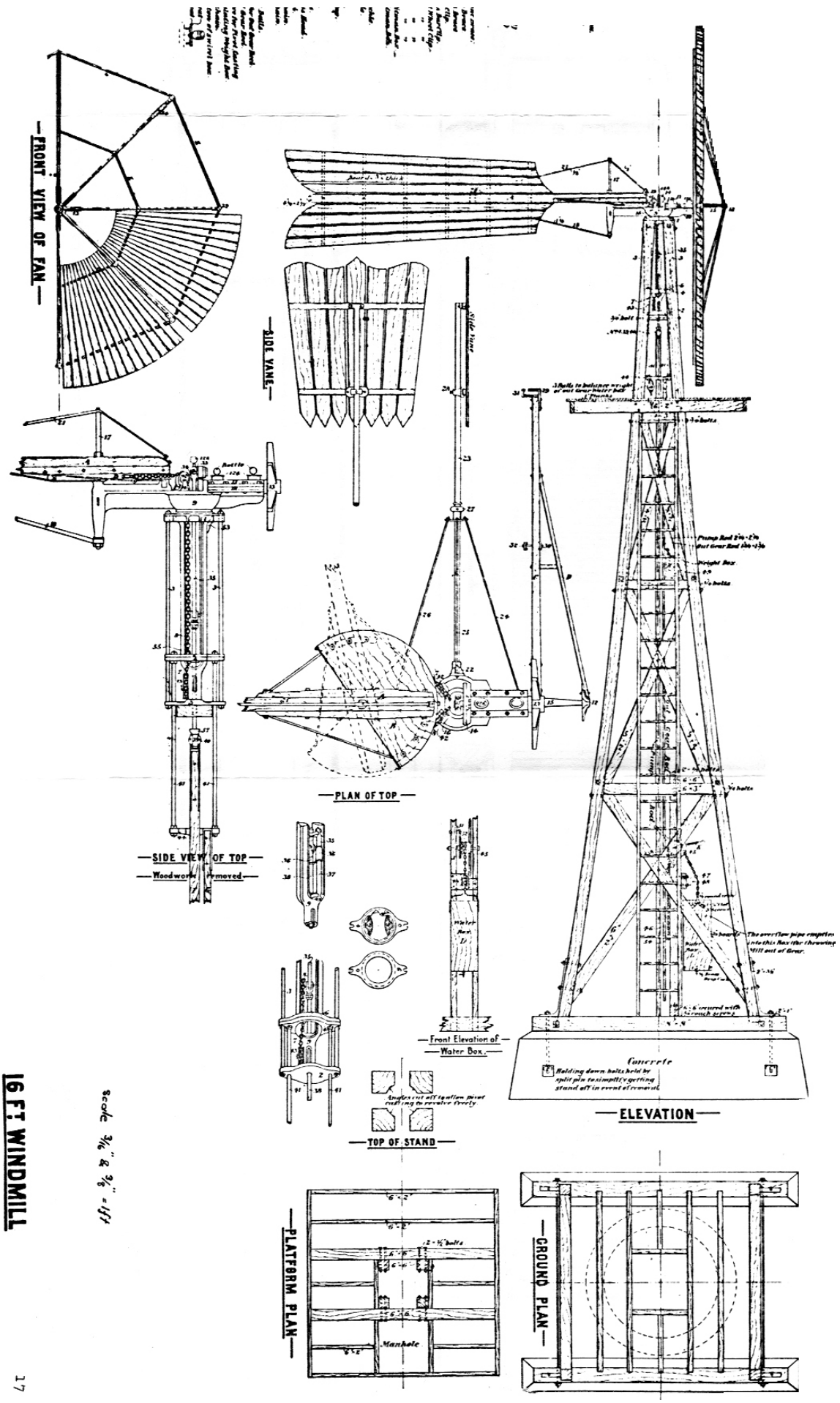
	
Solder the wire onto the top of the tube Fold the wire down from the top of the tube to the notch in the front of the control sector plate	Solder the wire onto the plate Clean up any excess solder and file the underside flush
	
Open out the holes in the control sector plate, Insert 0.3mm wire and bend over, feed the wire through the hole at the front of the tail vane	Bend the wire around to meet up with the other side of the control sector plate, tirm and feed through the hole Solder the wires into the sector plate from the underside
	
File the wire and the solder back to flush on the underside of the control sector plate	Bend a wire to fit into the bottom of the tube. Insert in the tube then measure to the lower hole in the tail vane, bend the wire and test fit. DO NOT SOLDER IN PLACE YET!!

	
Insert the tail vane into the tube in the main pivot	Insert the wire lower stay into the tube and lower hole in the tail vane bend the wire over at the tail vane hole Solder of the other side and file flush
Final assembly instructions	
For the final assembly choose weather you are go to have the vanes in the control on (striaght out the back) or off (out to the side by the side vane) positions and fix in place The control chains can be added like is illustrated in the plans Design and build a tower to suit, either out of wood or metal Mount the tube into the top of a tower, a sliding fit tube can also be used to allow the fan to move around	


—FRONT VIEW OF FAN—
—SIDE VANE—
—PLAN OF TOP—
—SIDE VIEW OF TOP—
Woodwork removed
Front Elevation of Water Box
—TOP OF STAND—
—ELEVATION—
Concrete
—PLATFORM PLAN—
Manhole
—GROUND PLAN—
16 FT. WINDMILL
Scale ¾" & ⅜" = 1ft