



PRODUCT DEVELOPMENT

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MOCK UPS





LAST ALTERATION

I have slightly extended the toe and the sides of the last by adding a metal rod attached at the toe, insole board pieces glued and sanded, and a thin layer of milliput on top of that.

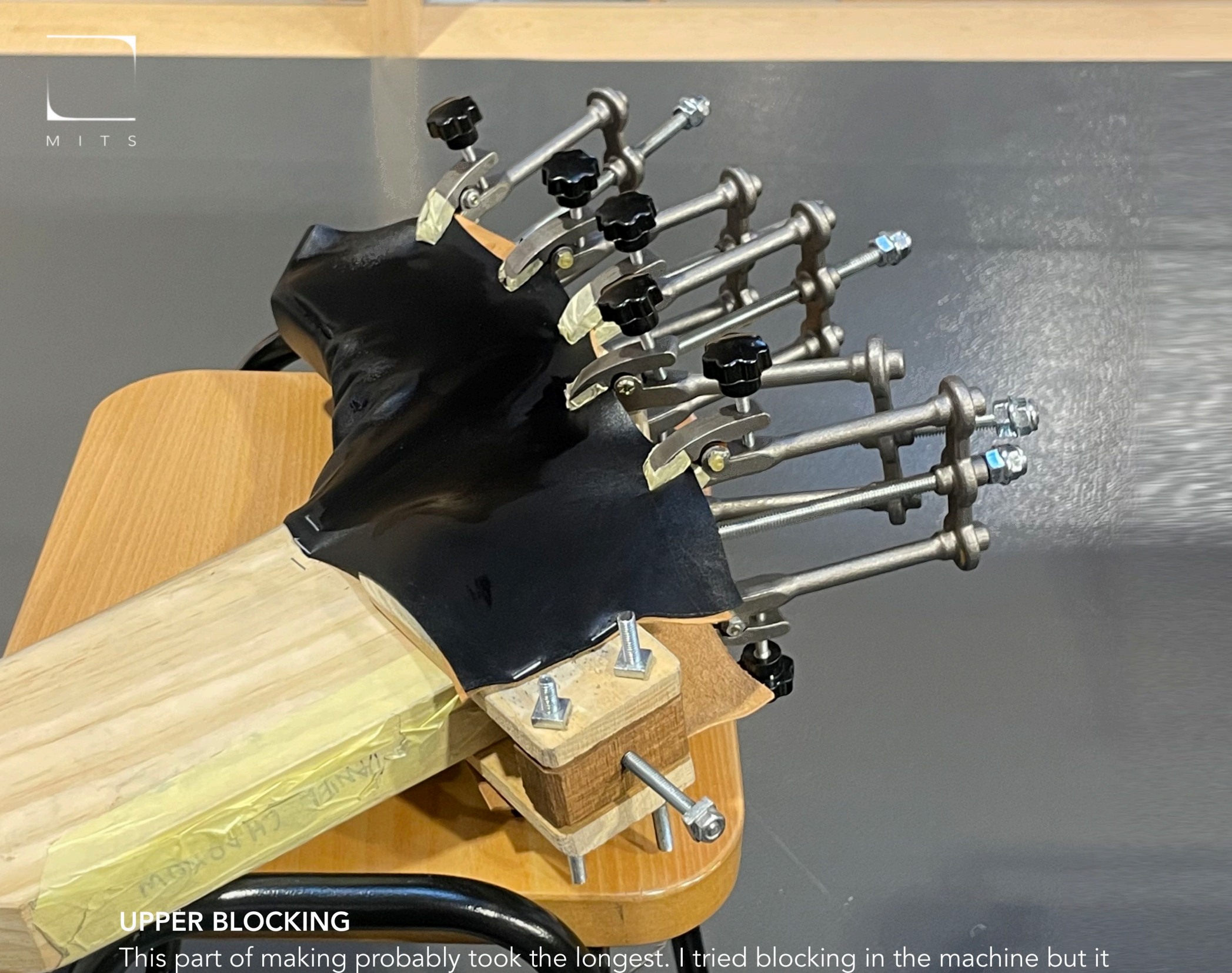
Generally it worked well but after lasting my mock ups for a few times the tip of toe started breaking down. In the future I think it would be better to maybe use less board at the toe and a slightly thicker layer of Milliput.





INSOLE + SHANK

While I was waiting for the milliput to dry, I made my insole. Nothing specific, wet insole board, sole press, left it to dry and next day cut the edges and attached the shank. For this particular model shank ended up being unnecessary because the heel was made in metal. But because I did not know if the heel in metal works out or a different material will be needed, I did add a shank.

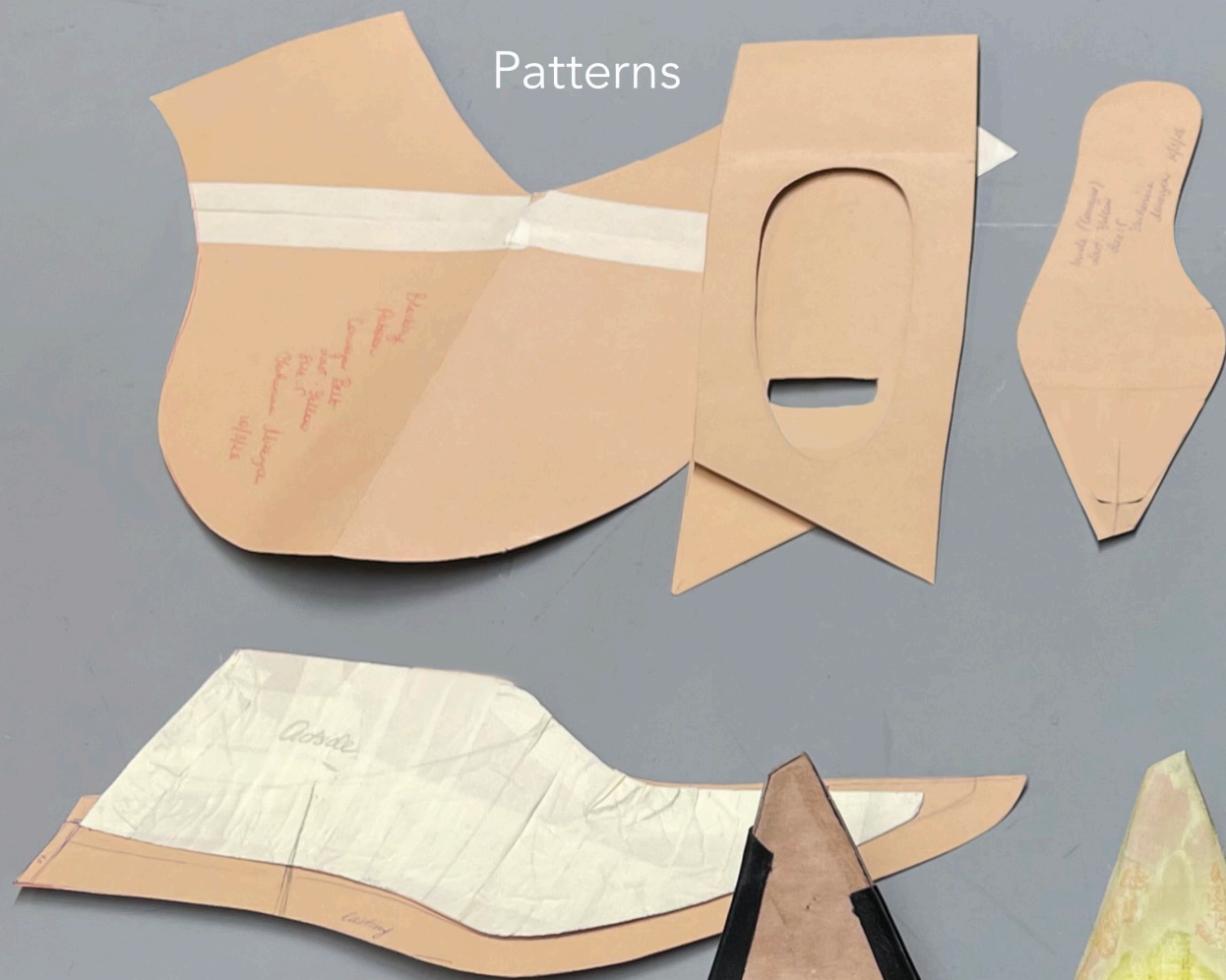


UPPER BLOCKING

This part of making probably took the longest. I tried blocking in the machine but it created bad wrinkles close to the center. Because I didn't have enough leather I could not risk it and made a decision to block by hand. Initially I tried blocking upper and lining together on the same block, but because I used veg tan for the lining and nappa for the upper, it was difficult because veg tan is stiffer and need more water but was placed underneath nappa. I came on Saturday after already stretching it for two days and Mark told me that I should separate them. So I did, and again, stretching, putting some leather stretching gel, wetting it down, screwing more in, waiting and repeating the process every few hours. In total it took 5 days to stretch but I think it was worth it.



Patterns



Mock up



Upper



Lining



Insole



Altered last



READY FOR ASSEMBLY



CLICKING AND CLOSING

After blocking, I cut upper and lining together in a shape of a pattern, a curve was slightly different but Ian I was told not to worry about it as it goes away while lasting. Constructionwise I chose to do a bagged seam, double stitch at the back, reinforcement tape.





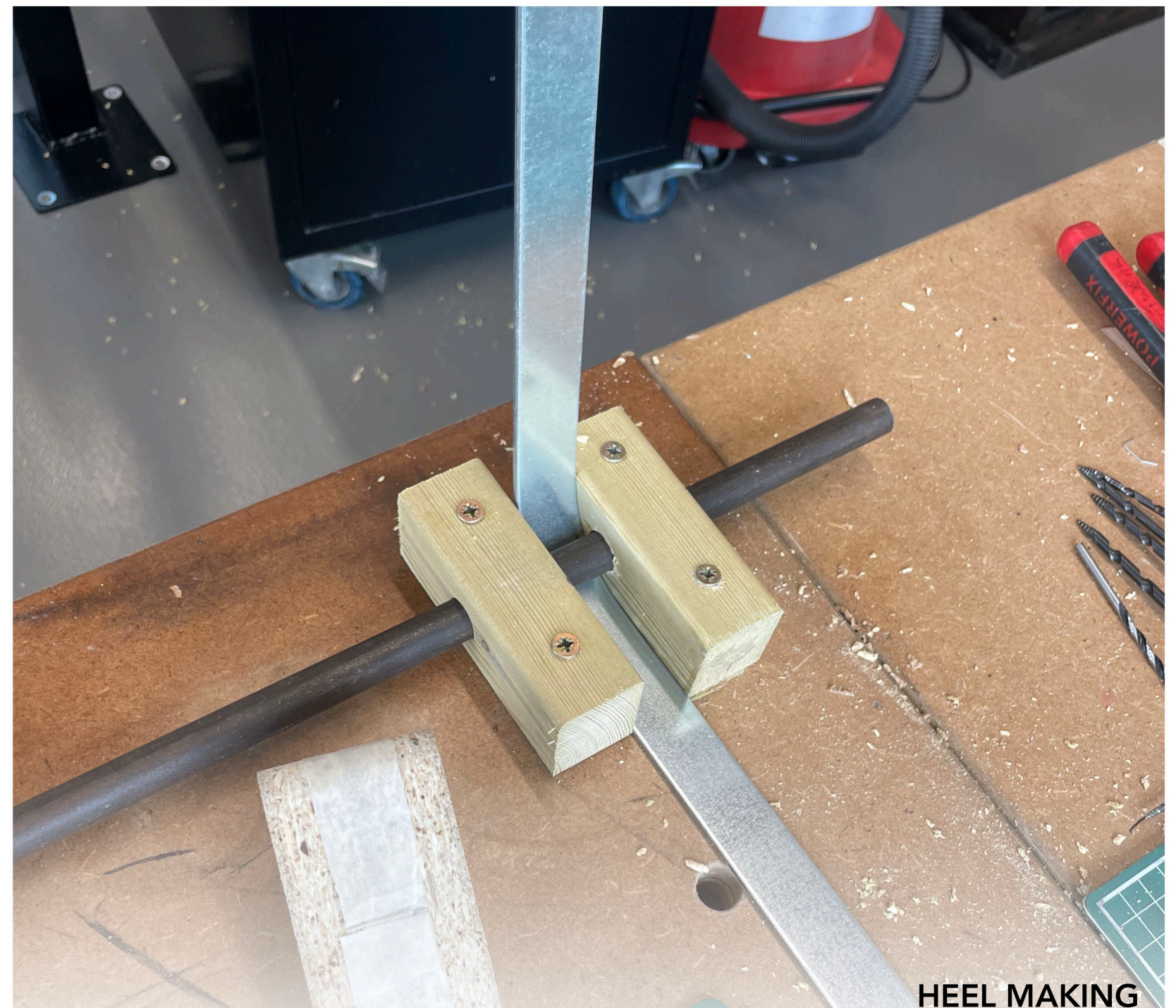
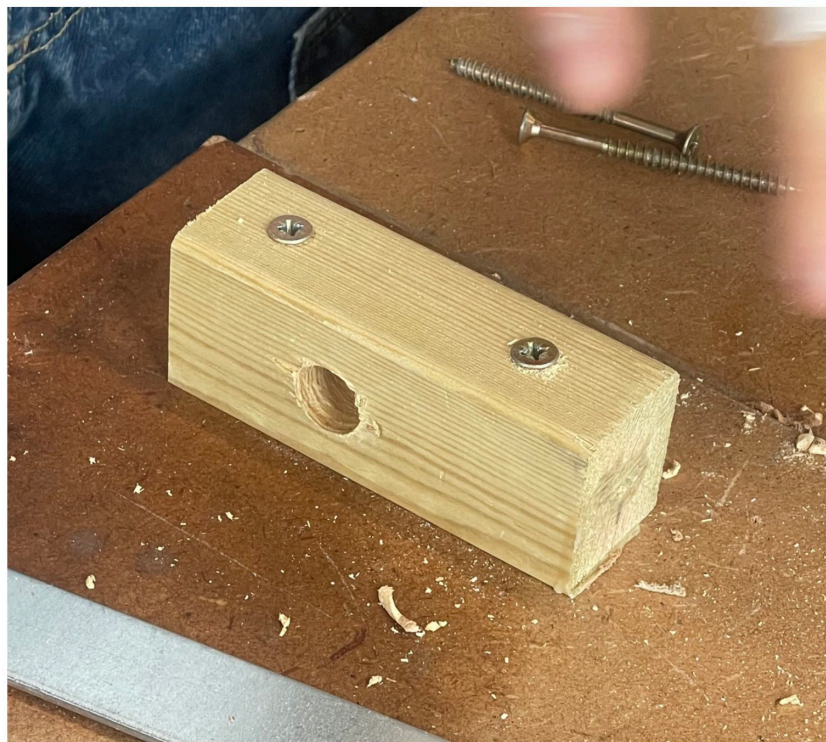
MAKING

Ian put a back counter for me and then I started lasting it. Because my last has a metal heel plate so we had to attach it with pieces of board. It needed lasting with heat and water to help all the wrinkles go away.



Finished lasting, add the stiffener. I did sand the stiffener at the edge a bit to make it sharper. And put it into a heat setter machine.





HEEL MAKING

There were a few approaches on making a metal heel. First one was creating these blocks drilled to the table to bend the metal piece one way or another. I cut the exact shape of the heel to bend around to make sure the curves are correct. There were a few issues with that:

1. super difficult to bend exactly the curves needed, which changes the height of the heel, making it impossible to fit to the last.
2. On my design the heel would have to be straight at the back and sharp at the bottom.

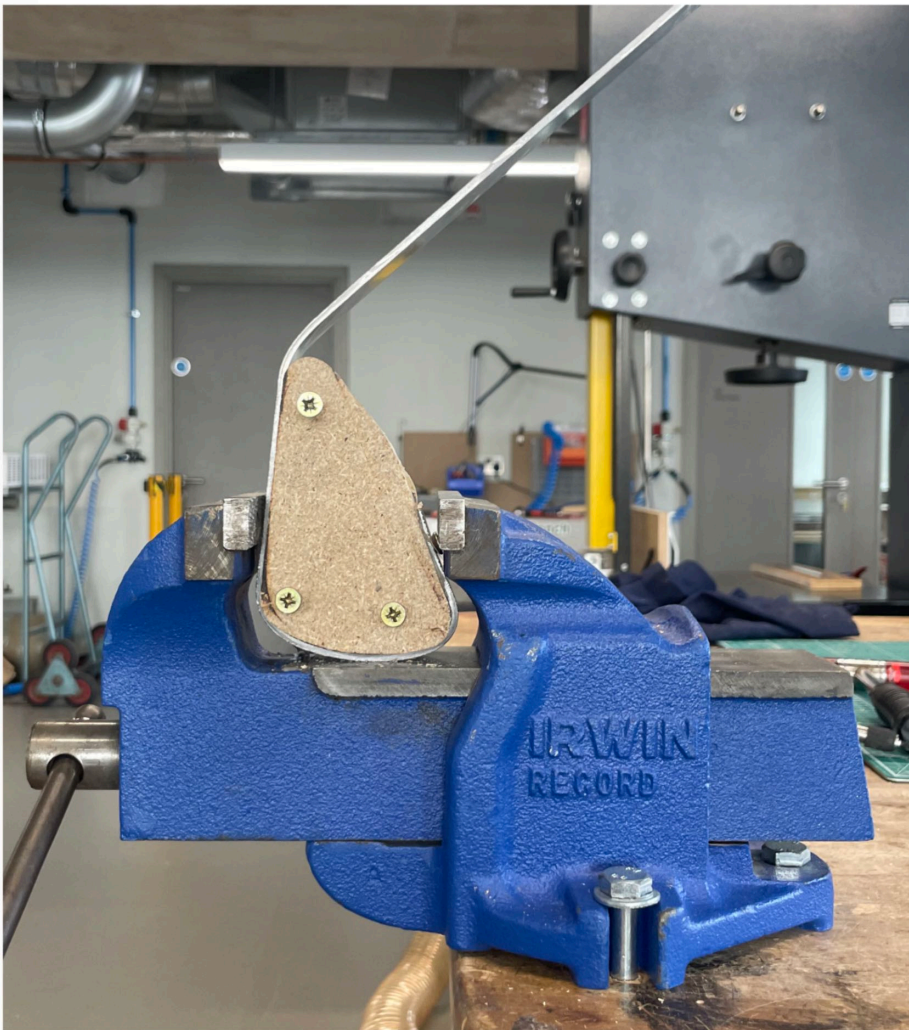
Had to change both of these because straight back would make it super difficult for conveyor to stay attached and created an ugly curve at the top because of how thick the material is and how unnatural the direction was. Sharp bottom would simply had to be sealed but it would become a breaking point. We made a seam in the middle so both ends were attached to the insole, making it a much stronger construction.



After bending it cold, me and Piran went to the jewellery department to try bending it hot. Looked cool but it was much more complicated and still made it difficult to get the curve needed.



At this point we had to cut more straps to keep trying bending it and Ian came down to help me with that. Machine could not cut through the metal so Ian did it by hand.



For final heel I drilled my inside of the heel model to the table and drilled the edge of the metal strap to the middle so that I could just walk around the table, hit it with the hammer and bend it. And it worked. For final curve I detached it cause I found it easier to hit from the top.

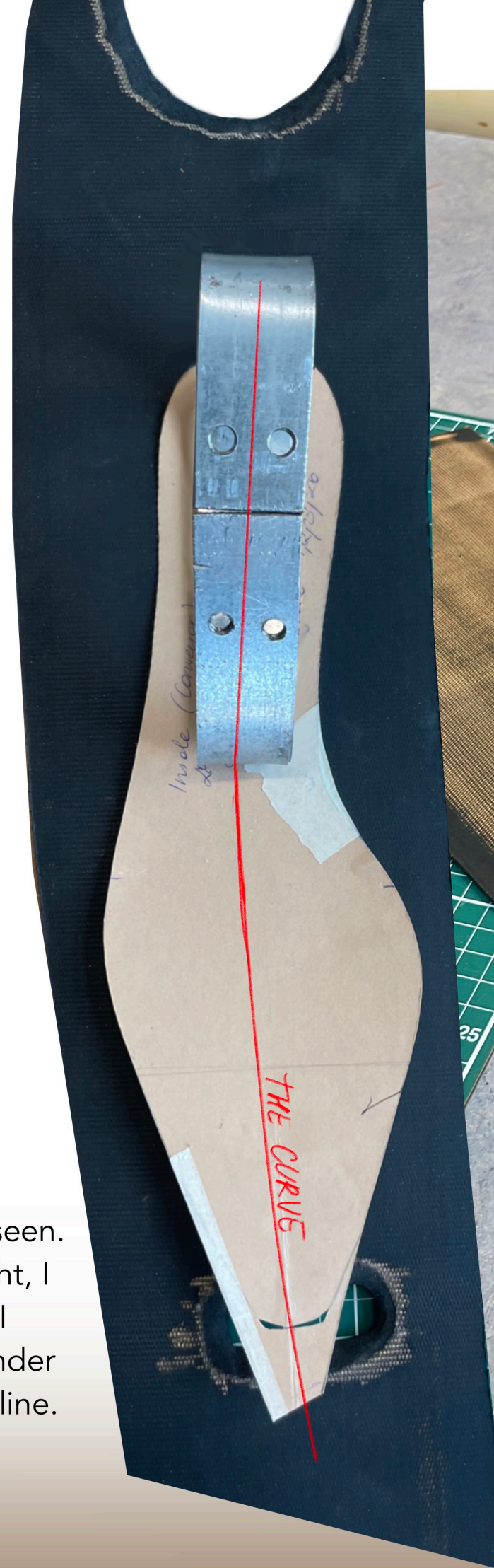


Then to prepare heel for attachment we made 4 holes in the insole for the screw to go in - MM6. And then in both the heel and the shoe we had to cut internal threads to be able to screw the screws in. My biggest mistake in this prototype happened here, with the heel attachment. I did not realize that my last has a curve, it's not straight, and the toe and the heel do not follow one line. Ideally the heel should be attached a bit under angle, but in this case it was impossible because of the shank. The problem I'm talking about would not be visible here because it only appears when the conveyor is put on.

Ian split my sole and I used the rough part in the middle so that it glues better to the conveyor. I made it so thin cause it doesn't have any practical purpose apart from hiding all the layers underneath. Conveyor plays the main sole purpose in this shoe.



On this photo the curve I mentioned earlier is seen. My mock up didn't have a heel and it was straight, I much prefer that. If I were to make another one I would get rid of the shank and place the heel under angle so that conveyor could go straight in one line. Because of this appearing I had to change my pattern into a curved one.





CONVEYOR BELT

This was the most fun experiment partially because I had no idea if it was gonna work out.

I ordered it from Wales, it is a used conveyor belt specifically from a coal mine. It came as a taped tube, weighed 19kg and was 12mm thick. I had to ask my flatmate to bring it to uni cause I could not carry it all the way.

It started simple, I knew I had to get rid of the thickness. After sanding it down by hand and trying to cut through the layers I came to Ian and said that I was unhappy. After few hours later he came back to me offering to try an old sole splitting machine. And it worked. Well, it did break down a few times while I was using it but the goal was achieved.



A fun and not so fun part was trying to guess the thickness. Because the machine is not too precise, we never knew if it's gonna cut through the reinforcement layer, and my main idea was to make it thinner but still make sure it keeps the conveyor features and properties, I wanted the texture inside. Therefore, we have done loads and loads of tries and then I was picking from what I had.

I did have a perfect piece but put the pattern upside down and at the end had to redo it. But I was actually happy about it because I thought that the one we split fit better the design look.





ASSEMBLY

The last bit after cutting out the pattern, sanding down the holes that touch the upper and the edges to make sure they close nicely was adding branding and gluing it all together with epoxy.

One thing I have done incorrectly was stamping conveyor after I sand down the edge. I should have done it on the straight surface, but I created it by adding another sanded down piece underneath.





ESTIMATED COSTING TABLE - CONVEYOR MULE

Category	Component	Material / Notes	Estimated Cos
Upper	Main upper	Italian nappa leather	18
Lining	Internal lining	Veg tan leather lining	10
Structure	Conveyor side structure	Conveyor belt material (£50 sheet ÷ 8 pairs)	6.25
Hardware	Heel metal strap	Bent metal support strap	12
	M6 screws	4 screws from Amazon pack	1.35
Branding	Logo stamps	2 logo stamps	30
Internal Components	0.3mm outsole sheet	Thin sole layer	3
	Insole board	Standard footwear board	2
	Shank	Structural support	3
	Toe puff & stiffener	Shape reinforcement	2
	Sock lining	Internal comfort layer	2
	Thread & adhesives	Bonding + stitching	2
	Blocking & assembly labour	Blocked upper, single rear seam, bagged top seam construction	55
Metal Work	Strap fitting & screw mounting	Manual alignment + finishing	10
Finishing	Edge finishing & QC	Leather finishing and inspection	6
Packaging	Dust bag + box estimate	Basic luxury packaging	8
Development	Prototype misc / sample transport	Workshop & sampling logistics	10

Estimated Totals

Type	Cost (£)
Prototype / Development Pair	£180.60
Estimated Production Pair	£150.60

DEVELOPMENT NOTES

Construction Notes

- Upper is blocked over structure rather than conventionally panelled
- Only one rear seam reduces stitching complexity
- Bagged top seam gives cleaner luxury finish
- Conveyor structure acts as integrated outsole + support system
- Metal heel strap requires precise alignment and fastening

Primary Cost Drivers

1. Italian nappa upper
2. Metal heel structure
3. Hand assembly and blocking
4. Prototype construction complexity

Potential Cost Optimisation

- CNC or cast metal strap for repeatability
- Injection moulded support structure instead of cut conveyor material
- Reduce manual finishing stages

CONVEYOR MULE



CONVEYOR MULE



