

Week 7

1. Ideation refinement
2. Presentation pitch
3. Concept chosen



Ideation sketching

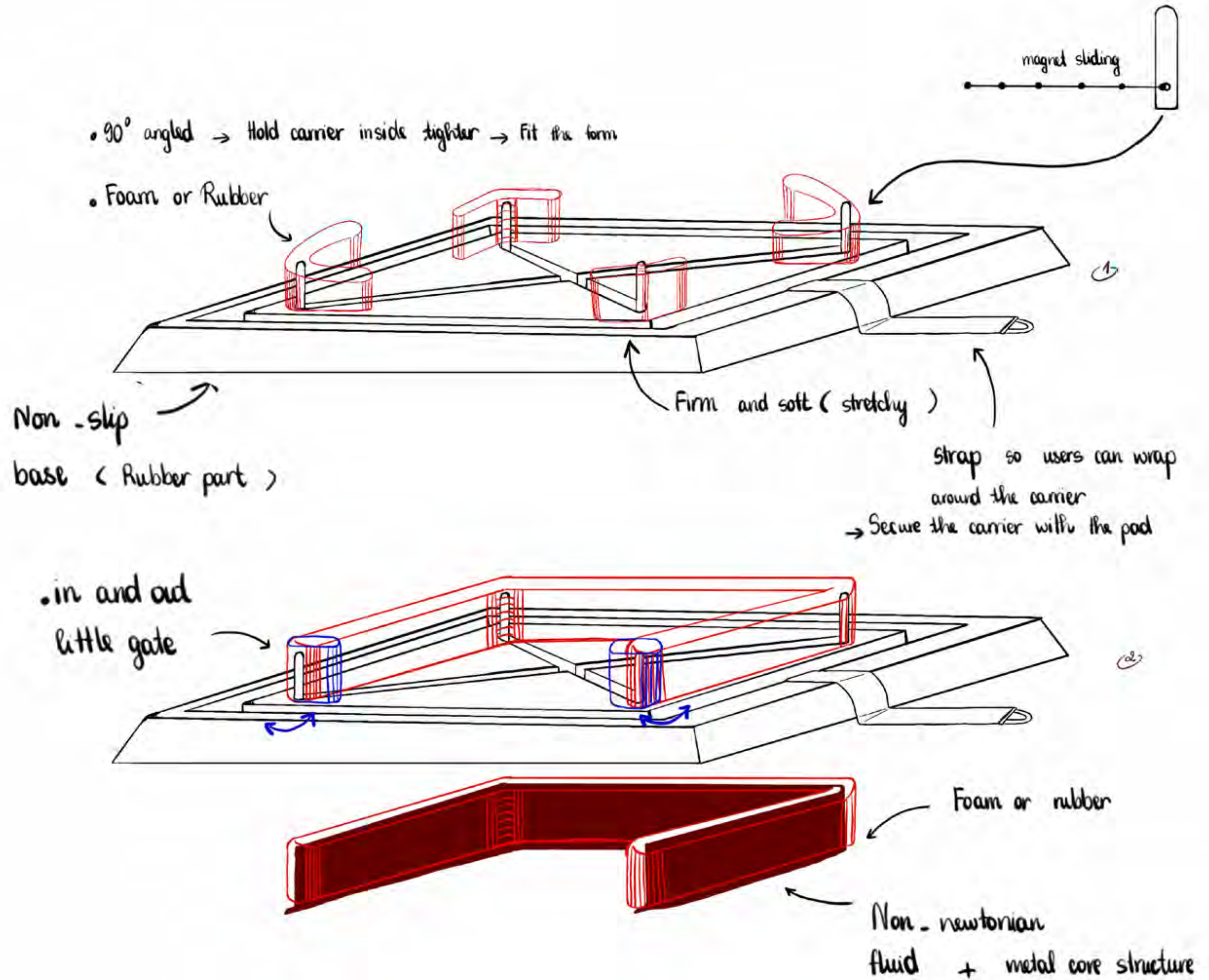
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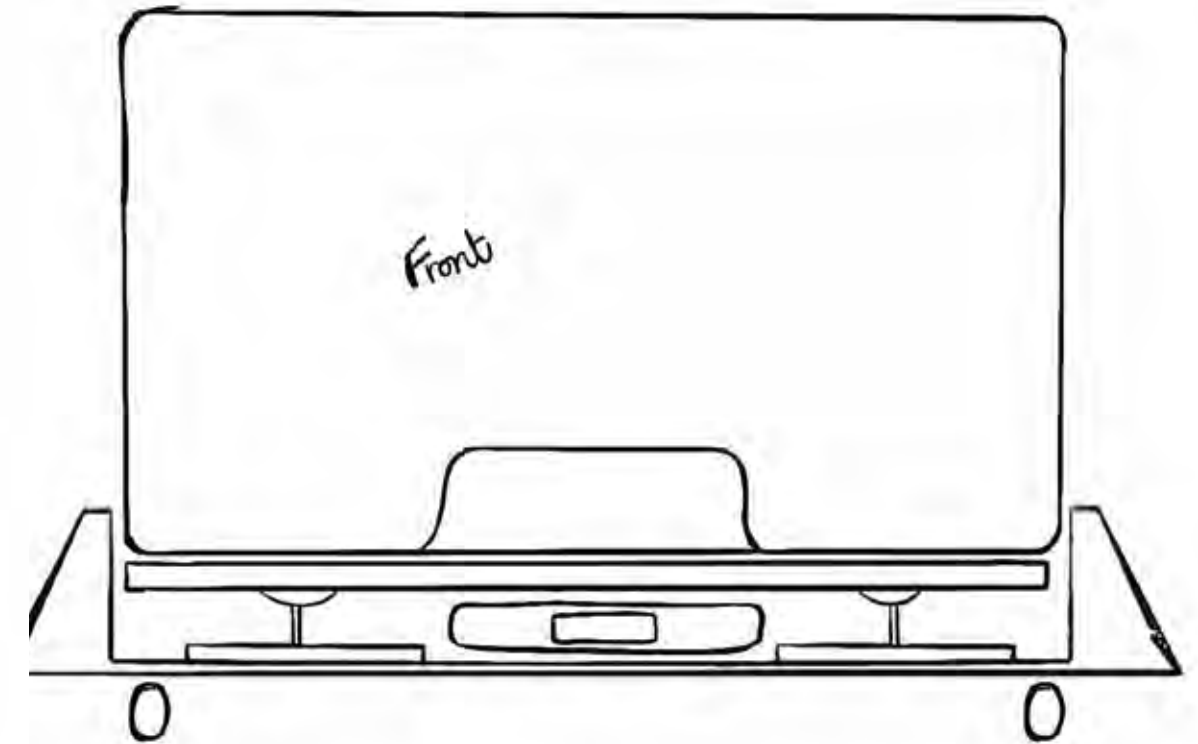
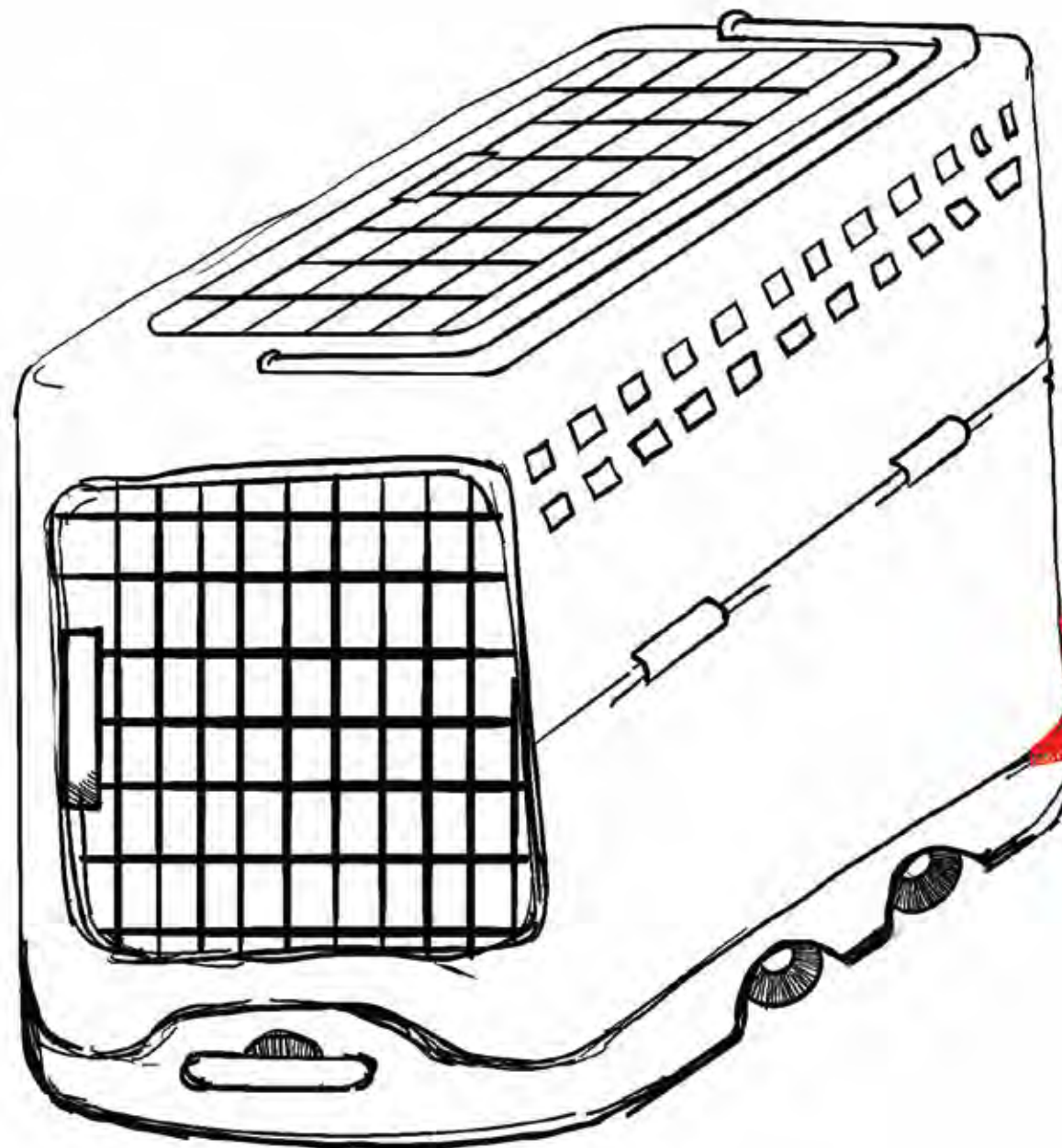
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05

Sketching





- . This design need to come with a close → exaete carrier dimension
- . would be low in co-design
- . Consider a way to optimse the design

Ideation sketching

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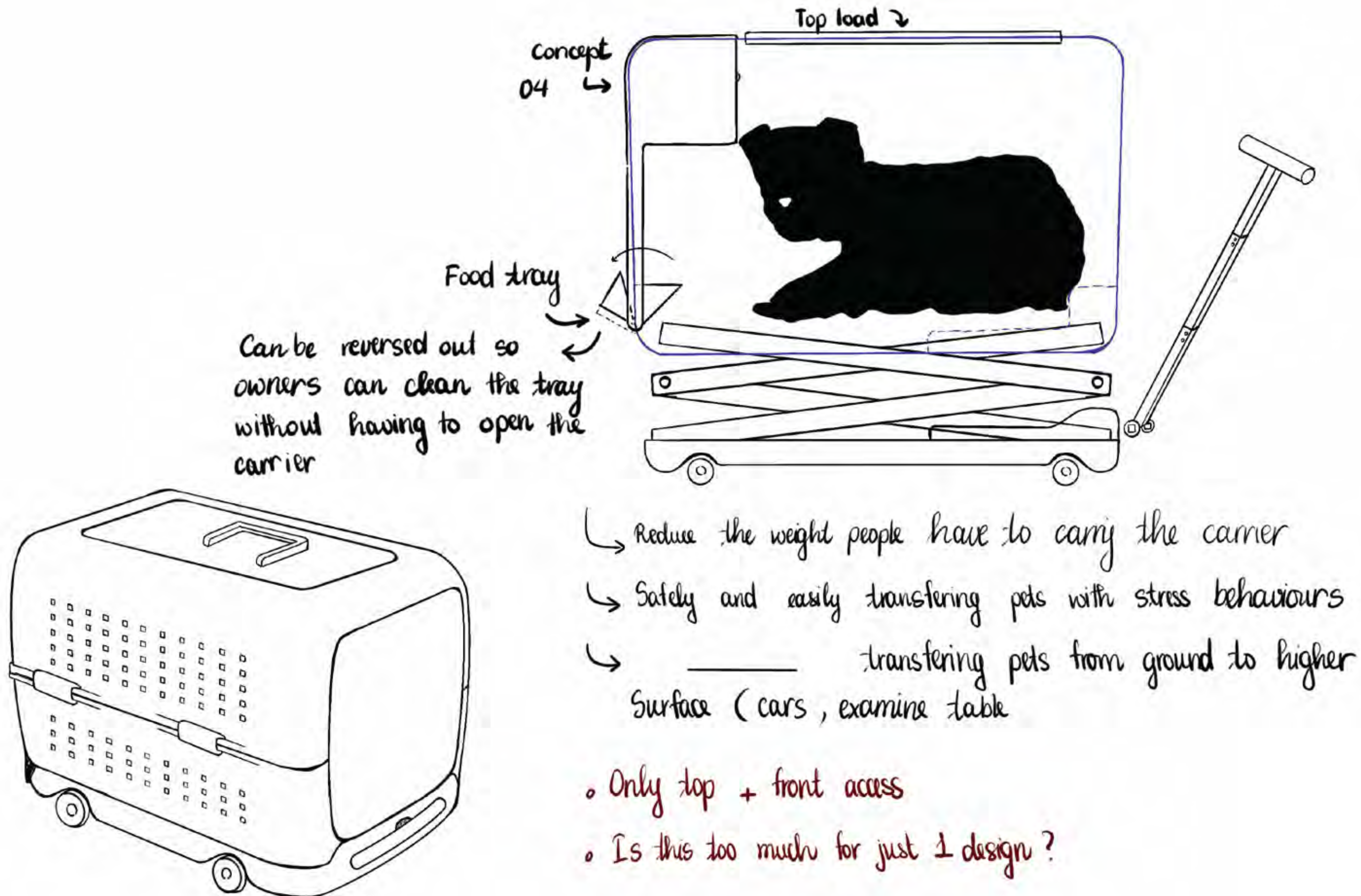
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Sketching



Inspiration for this concept

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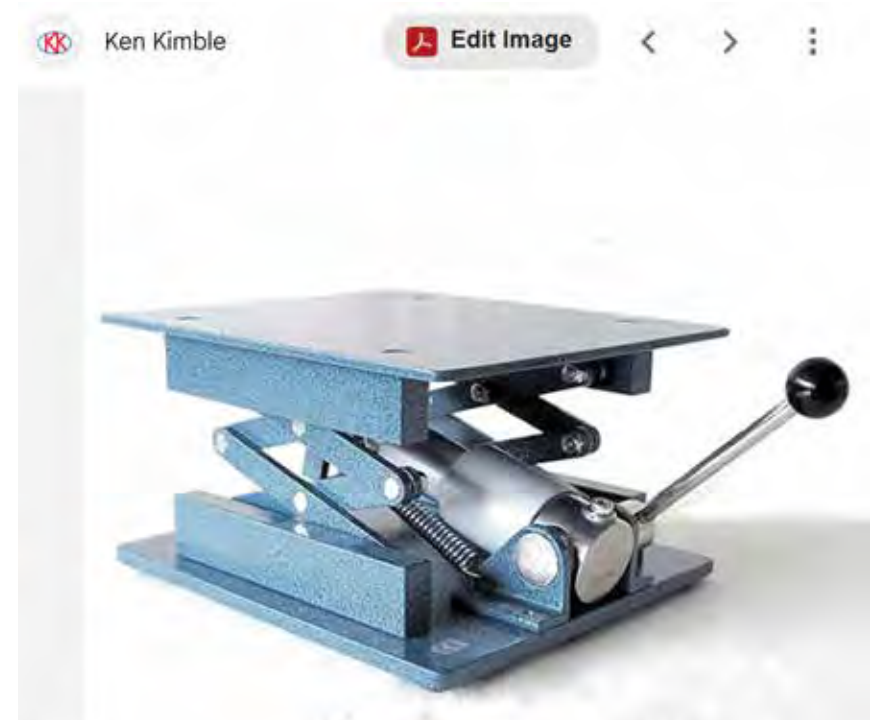
Sketching



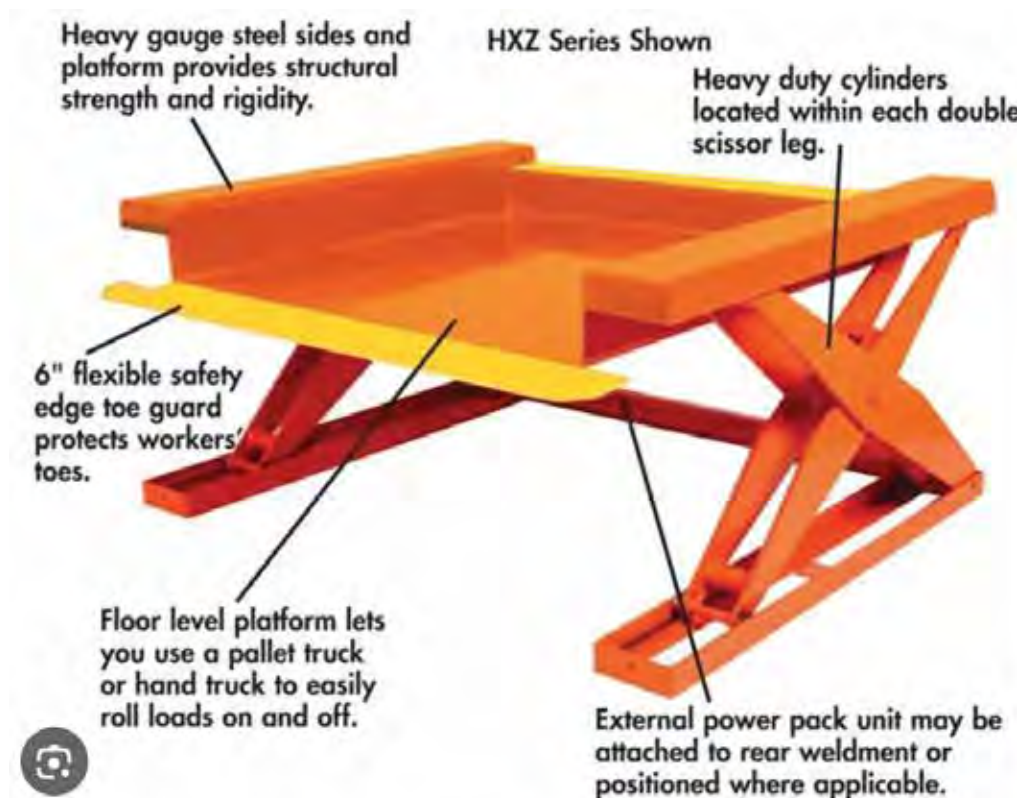
Fiernero 136 kg Hydraulic Scissor Lift Jack 900 mm Lift 4-Position | Motorcycles & Dirt Bikes



4000 Lb Hydraulic Floor Jack Auto Car Lifting Jack 5.3" - 12.6" Maintenance Tool | eBay Australia



Hand Operated Hydraulic Lab Jacks - Ken Kimble



FLOOR LEVEL LIFT TABLE at Nationwide Industrial Supply, LLC

Visit >



Zinko Hydraulic Jack | Hydraulic Lift Manufacturers



WHEN SHOULD I SWITCH TO A SENIOR FOOD?

Even if your pet is not showing any outward signs of ageing, they should still be transitioned to a senior food at 7 years for cats & small/medium dog breeds and 6 years for dogs > 25kg. It is important to recognise that the benefits of feeding good nutrition accrue over a long period of time, so it is important to feed your pet a food appropriate for their changing needs throughout their lifetime.

HOW FREQUENTLY SHOULD WE BE TAKING OUR SENIOR PETS FOR A CHECK OVER AT THE VET?

The general consensus from veterinarians is that senior pets should be checked by the vet every 6 months (or more frequently if there are health concerns). Whilst it might seem frequent, it is actually only every 4 dog or cat years.

Check-ups are an opportunity to raise any concerns you might have, as well as have the vet perform a thorough physical examination of your pet. The vet may also recommend blood and urine tests to screen for diseases. This gives you the best chance of detecting something early so that it can be treated or managed successfully.

Intervertebral Disc Disease

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long, sloping backs predispose them to a multitude of spinal problems. Two of the most prominent spinal issues that German Shepherds are prone to are **Intervertebral Disc Disease** (IVDD) and **Degenerative Myelopathy**. Before we can discuss these spinal diseases, we first must understand what exactly the spine looks like and how it works.

A dog's spine is a fairly simple structure that protects the spinal cord, which is responsible for communicating information to and from the brain. The spinal cord is encased in a bony vertebra with the only exposed portions being the tiny spaces between the vertebrae. These spaces allow for movement of the spine, but are also potential points for spinal cord damage which is why spinal discs sit in these small spaces to cushion the spinal cord. Spinal discs, more commonly known as **intervertebral discs**, are the **pillows for the spine** and are made of a fibrous outer covering, known as the intervertebral ring, which is filled with a pulpy nucleus that compresses as your dog moves.

Some products to support them



HAUTE WHEELS DOG WHEELCHAIR

46 reviews

From **\$17/month**, or 4 payments at 0% interest with **Klarna** [Learn more](#)

\$189.00

SIZE

XXS

ADD TO CART

FREQUENTLY BOUGHT TOGETHER

(Select to add to cart)



https://www.aocpet.com/blogs/aoc-blog/ivdd-other-spinal-problems-in-german-shepherds?srltid=AfmBOoquhs-S-5-QI_-BPY4Ark-pwrLvVJ-yEOC_LVwvJEvEuzffKbPZ

Intervertebral Disc Disease

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5. Cocker Spaniels

Cocker Spaniels are another breed prone to Type I IVDD, especially between the ages of 3 and 6.

Early signs of IVDD in Cocker Spaniels include reluctance to jump, mild hind limb weakness, or signs of back pain. Their feathered coats can sometimes hide physical signs, so regular physical exams are important.

Are large breed dogs at risk for IVDD?

While IVDD is more common in small to medium breeds, some large dogs are also affected, particularly with Type II IVDD. These include:

- Labrador Retrievers
- German Shepherds
- Doberman Pinschers

Large breeds typically show slower-developing symptoms such as hind limb weakness, coordination issues, and difficulty standing after rest. In these breeds, disc degeneration happens over time and is often linked with other spinal conditions.



Our Bella is 10 years and was just diagnosed with Intervertebral Disc Disease (IVDD). Her back two legs have went out and it's been super hard to see and experience this so suddenly for her and us. She is our baby and is on meds and receiving chiropractic adjustments. If you've been through similar, what devices, supplements and or therapeutic treatments worked best for you!? Any suggestions would be greatly appreciated. Thank you 🙏



Intervertebral Disc Disease

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Performance Dog Knee Brace | CCL Dog Rear Leg
Brace
★★★★★ 495 reviews
Sold Out



Custom Dog Knee Brace | CCL/ACL Stifle Rear Leg
Dog Brace
★★★★★ 1021 reviews
\$895.00



L'il Back Bracer Dog Back Brace
★★★★★ 101 reviews
from \$119.95



Bilateral Custom Dog Knee Braces | CCL/ACL
Stifle Rear Leg Dog Braces
★★★★★ 1021 reviews
\$1,690.00



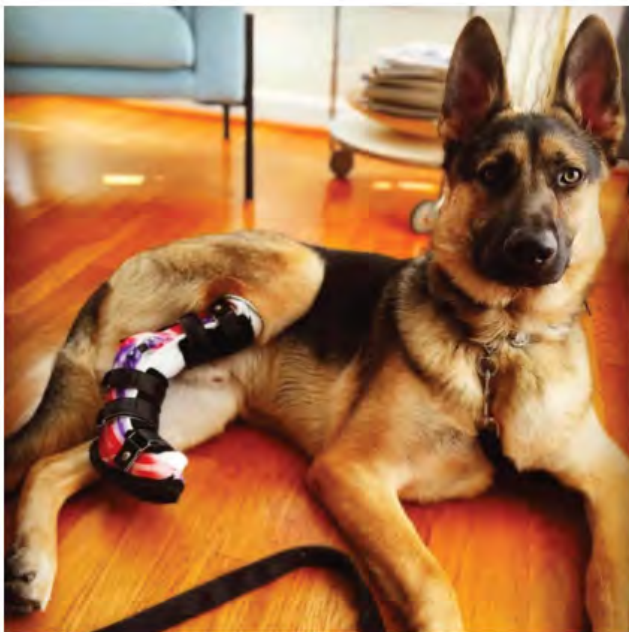
Custom Dog Wrist Brace | Carpal Dog Front Leg
Brace
★★★★★ 25 reviews
Sold Out



EMpower Device System - EM Technology
★★★★★ 26 reviews
Sold Out



Gnowty Bites - Joint Flex - Hip & Joint Support
with Glucosamine
★★★★★ 23 reviews



Custom Hock (Ankle) Brace | Dog Tarsal - Rear
Leg Brace
★★★★★ 1021 reviews
from \$995.00

CASE

STUDY



Old dog is too big to carry and needs to go to the vet

Just like the title says, I have an aging dog that needs to go to the vet (appointment TBD) and we can't carry her. And before anyone jumps on the "get her into the vet ASAP band wagon, we are. We're calling as soon as their office opens up at 9am. It's currently almost 1am. This started a few hours ago, well after their closing time so we haven't been able to call any sooner. In the mean time we're just trying to make her comfortable.

She's a daniff. A bull mastiff Great Dane mix to be exact. Think Marmaduke but boxier and fatter. She's a rescue and best guess on age is 12-14yrs. She does have some mild arthritis in her joints that we've been managing. Shes been going in and out with minimal to no problem (back deck has three steps that she's not too fond of anymore, but uses them like a champ) and just acting like her usual energetic self.

Until tonight. A few hours ago she limped into my moms room crying in severe pain. She can't put any weight at all on her front left leg and, to me, her paw looks a bit swollen. Her hips can barely support her weight without the help of her front leg and she can't get up at all without it. She's refusing to eat out of a bowl or plate but will eat directly from our hands. She's also refusing water from the bowl, but will drink directly from our hands.

I'm not asking for treatment advice or anything like that. My problem is HOW DO WE GET HER IN AND OUT OF THE CAR. She's roughly 120-130lbs as my best guess, at least that's what she feels like, I could be overshooting it. She's gotten fat in her old age but not obese. We have a small SUV (we just call it a car since it's our smallest vehicle) and normally she can get her front end up and then I lift her back end up, but that's not going to work this time. We can't even get her through the house and out to the drive way. We're going to have to take the car to the nearest door to her and get her in that way.

Week 8

1. Continuing in ideation sketching and refining
2. Mechanism brainstorming
3. Inspiration



Concept chosen

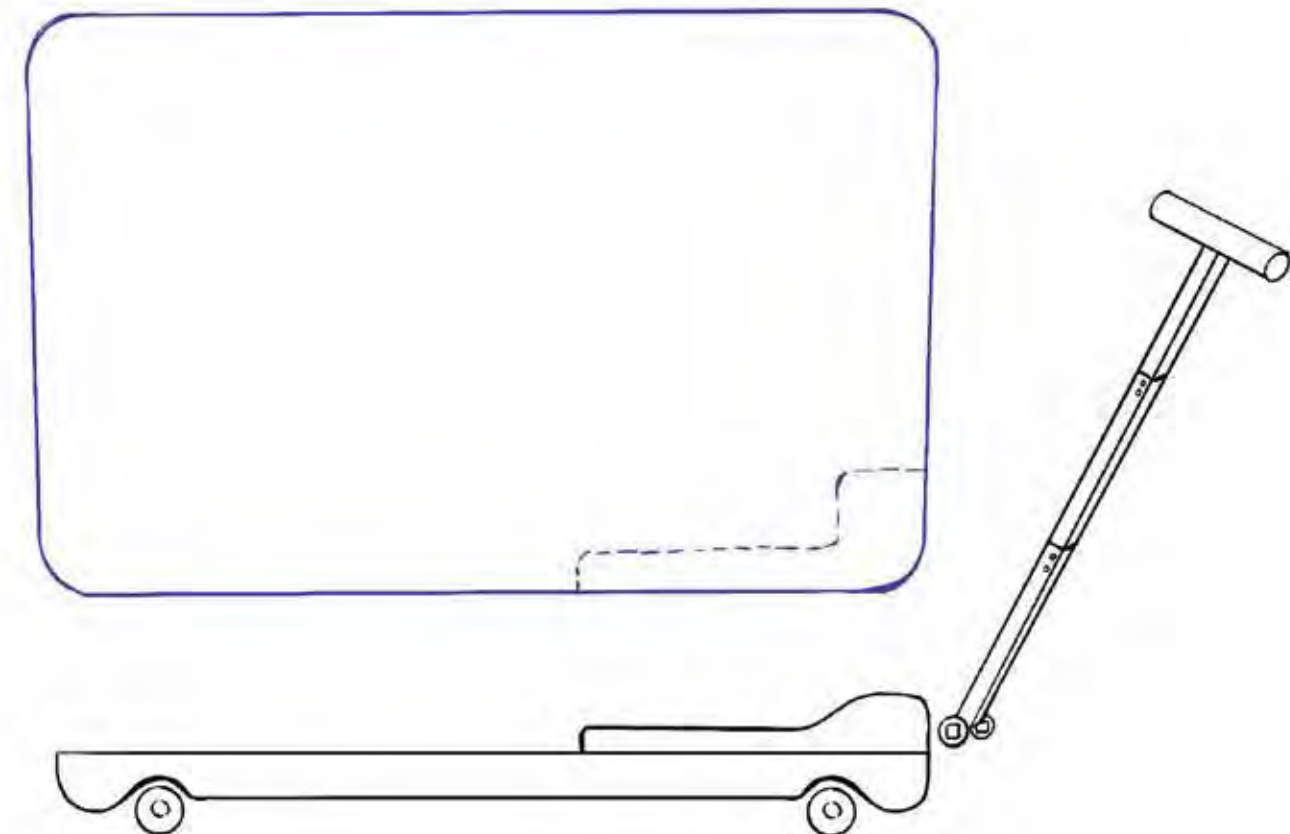
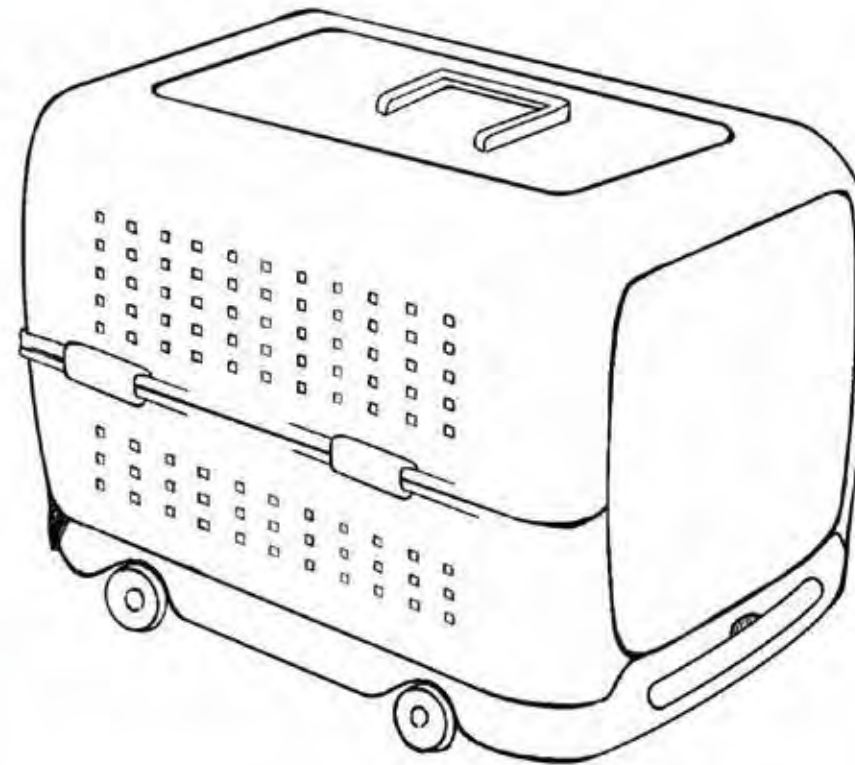
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This product got inspired by trolley design. With retractable wheels for more space saving. This design aiming at making traveling with pet more comfortable for those with II ability

Main components:

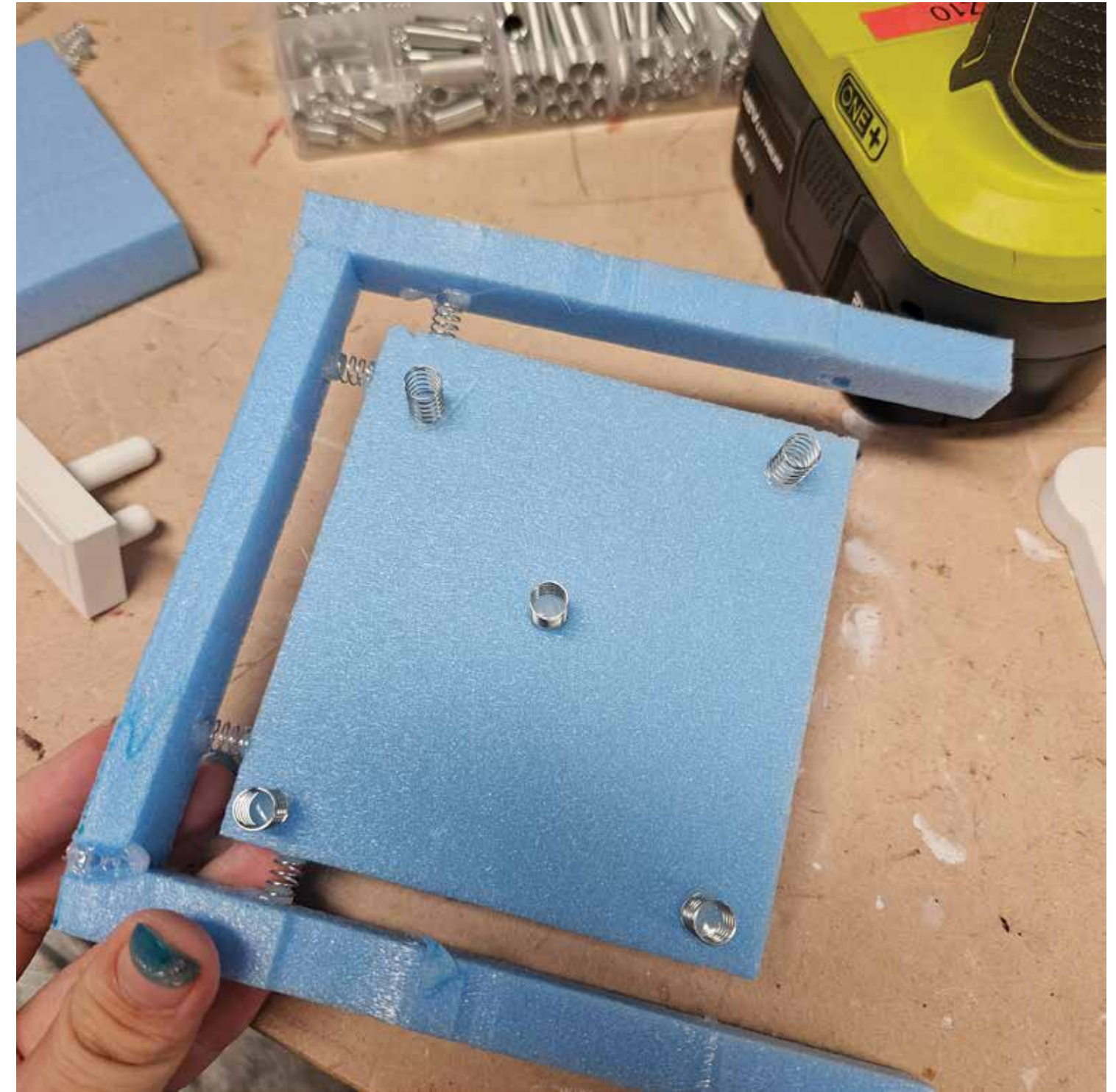
- wheels
- handles
- carriers



Stablizer - Prototyping the mechanism

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Same issue occur: This design is different, it has potential to stop the carrier from moving side to side , but hardly up-down. This is a greate challenge as if the carrier and the stablizer pad can not be joined as 1 piece, otherwise the combination will both moving under external impact

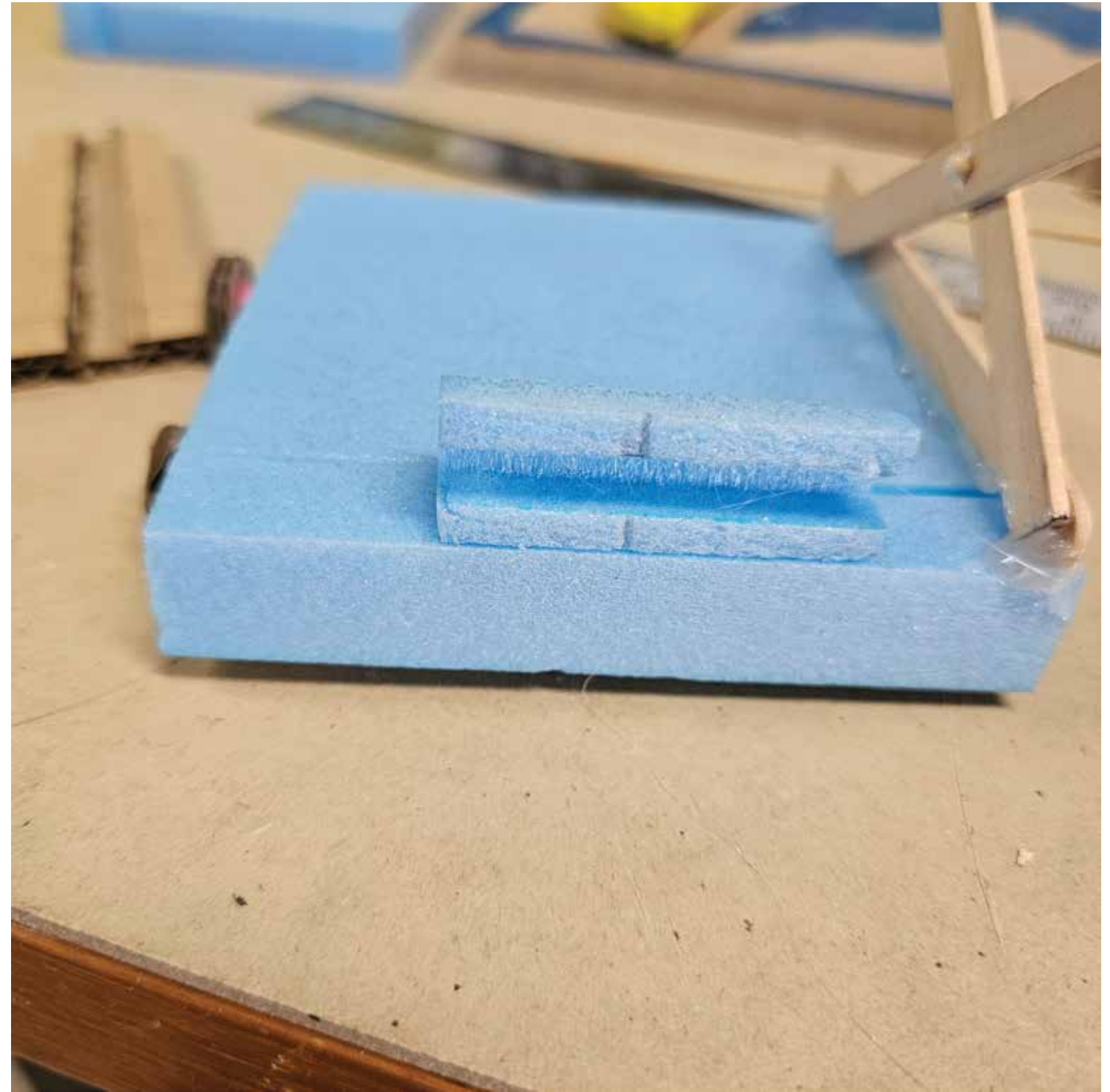
Low fidelity prototype

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Wheel - scissor lift-jack - Main housing base

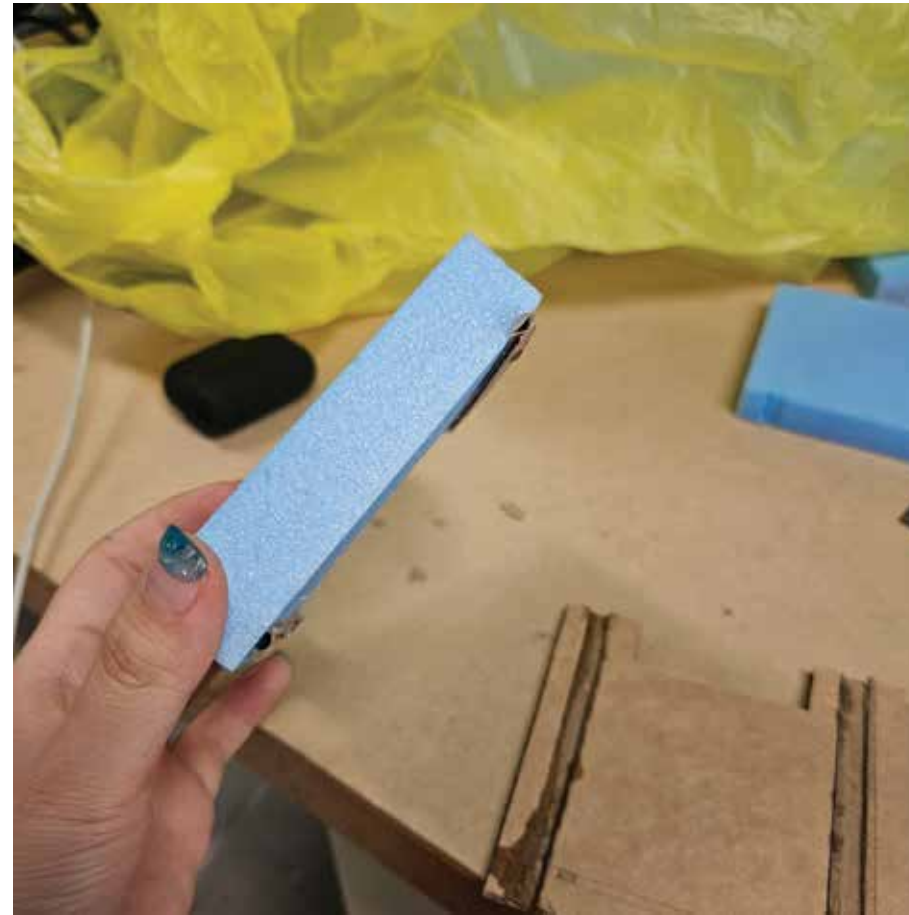


Handle

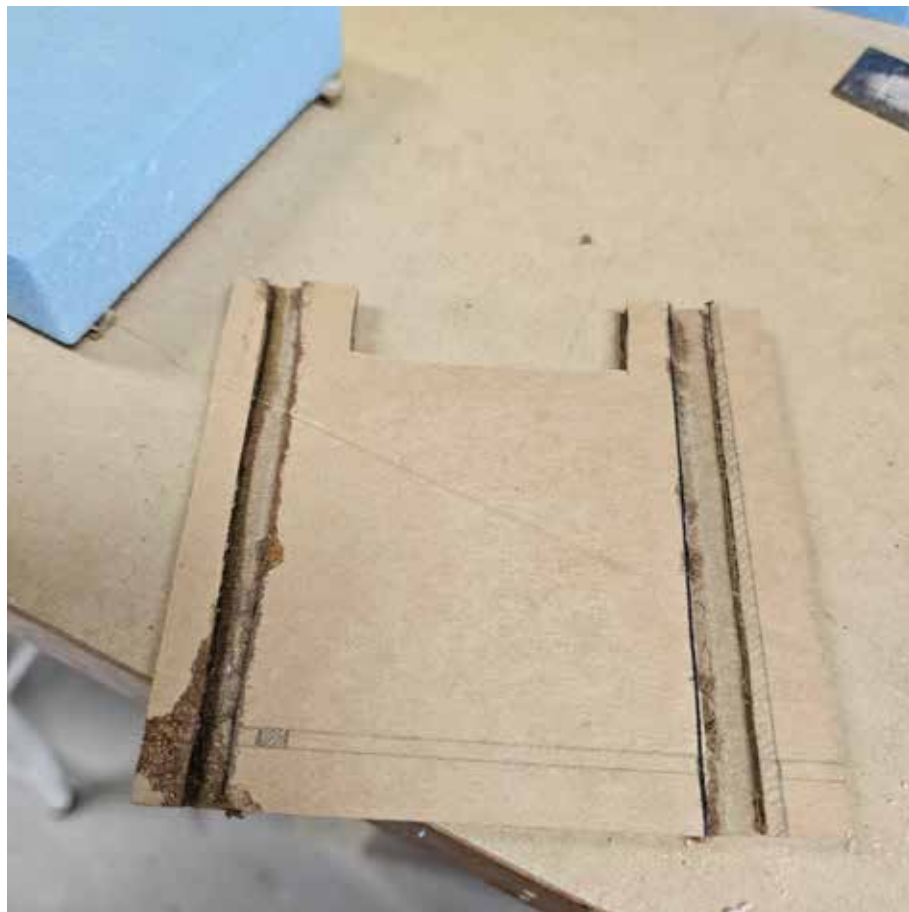
Low fidelity prototype

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T slot - Sliding pad



Potential mechanism - research

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Retractable wheel



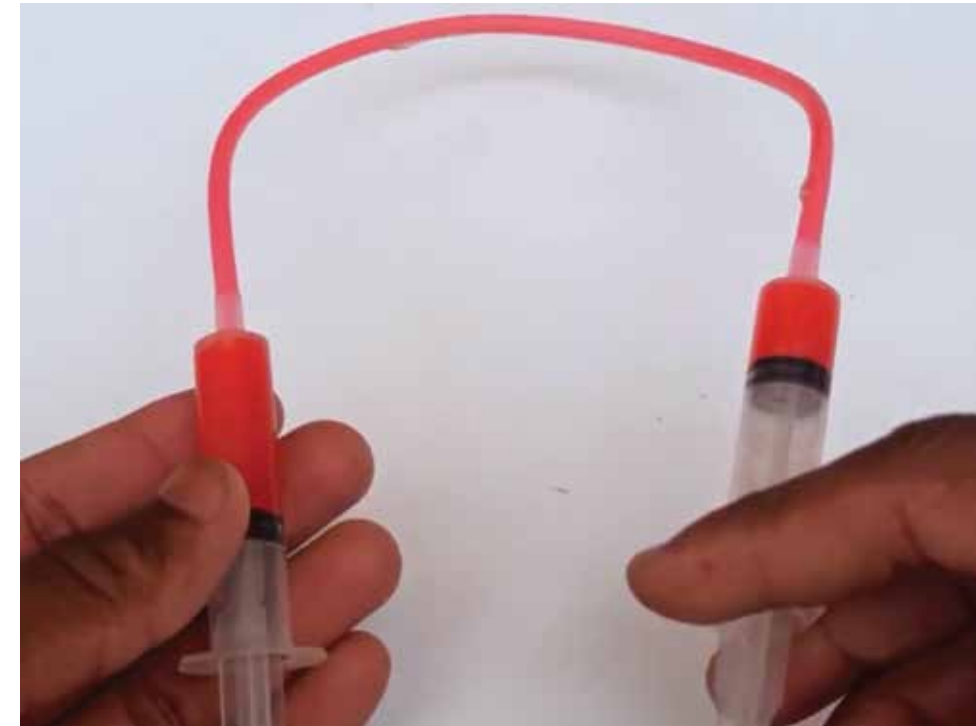
Make Retractable Motorized Air Force 1 Roller Skates!



Sliding T-slot



Water hydraulic pump



How to Make a Powerful Hydraulic Jack using Syringe



Local TOOL1SH000 CP-180 Manu...



NOVEMBER Local All OT Hydraulic L



Manual hydraulic feet-pump

- Can be added-on many extra weight
- Space consuming as well
- Expensive and may unnecessary perform surpassed results

of chronic disease rises. By age 60, the major burdens of disability and death arise from age-related losses in hearing, seeing and moving, and noncommunicable diseases, including heart disease, stroke, chronic respiratory disorders, cancer and dementia (Chapter 3). These are not just problems for higher-income countries. In fact, the burden associated with these conditions in older people is generally far higher in low- and middle-income countries.

Relating to psychological and social benefits, recent studies suggest that pet ownership may improve well-being, life satisfaction, and happiness, as well as decrease loneliness and social isolation, depressive symptoms, and anxiety [16,17,18,19,20,21,22,23,24]. It may also increase levels of physical activity and/or walking of older adult pet owners [25,26,27,28,29]. Other benefits include providing an overall sense of purpose and encouraging a daily routine [24,30,31]. Apart from these benefits for older adults, animal well-being is also important to consider in the pet-owner relationship. Providing daily care to a CA to ensure its well-being entails ongoing duties and responsibilities, regardless of the pet owner's age. Pitteri and colleagues report that dogs owned by older adults have similar physical conditions to dogs owned by adult owners. However, the study suggests that the dogs' quality of life may be influenced by contextual factors, such as older adults' employment conditions, level of education, and type of dwelling [32].

Other potential factors to consider are health conditions and functional decline that may occur as part of normal aging and that affect older adults more frequently. These may exacerbate some challenges associated with pet care

age [32]. Frequently reported challenges related to owning a pet by older adults include: grief related to pet loss and fear of outliving them, pet care being perceived as a chore [9,10,13,17,23,34], risk of falls [35,36], financial costs (especially fees related to veterinary care), and the fear of needing to leave a pet in the event of a relocation [34]. If such challenges become too great for the older adult pet owner, the well-being of the owner and the companion animal may be compromised if the owner struggles to fulfill the basic needs of both parties.

Targeted users - Elderly people

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of months after Violet's former dog passed away. Violet is Jack's sole caretaker, and she has raised him since he was a puppy. Jack is a small adult dog, weighing approximately 12 lbs, and he is sturdy, according to Violet. She reports that these characteristics are an adequate fit for her and enable her to maintain her balance while picking him up. Furthermore, Violet mentions that Jack is in good health and that she ensures that she meets his basic daily needs. Violet, divorced for several years, maintains regular contact with her children and grandchildren. Before the pandemic, she visited them and engaged in activities such as shopping with her daughter. Violet has loved animals since childhood and has had dogs as pets for all of her adult life.

Case study: 77 years old female | Violet living alone with her small adult dog Jack

Violet has physical disabilities, which are mainly due to a medical condition that resulted in having multiple amputations to her lower and upper limbs over the years. She wears below-the-knee leg prostheses and reports having daily lower back pain, which varies in intensity. According to the PRISMA-7, a screening tool that identifies helps her to live independently and safely in her home with her dog. In the community, Violet always uses her motorized wheelchair for shopping with Jack or going to medical appointments. She reports feeling safer this way. For leisure, she enjoys playing games on her computer and spending time with Jack. Lastly, she takes care of her dog independently. Caring for Jack involves feeding him, brushing him, and taking him on daily walks. Violet reports that she has bathed him occasionally in the past, but she now prefers to take him to the groomer because she feels that it is safer than manipulating him in the bathtub, due to her back pain. Violet and Jack's daily walks are adapted to the seasons (i.e., they stop during the wintertime and resume in the spring). As for Jack's healthcare, Violet takes

Violet reports that Jack has never been the cause of a fall and perceives the risk of falling because of him as being null. She points out that Jack has adapted his behaviour to her health condition. For example, he jumps up on her motorized wheelchair instead of her picking him up like in the past. Violet also mentioned that the dog's size is well suited to her lifestyle and habits, that he walks in front of her, and stays out of her way when she walks around in her apartment. Lastly, Violet takes her dog outside only with her motorized wheelchair, weather permitting, and does not pick him up when she feels tired. Moreover, Jack uses puppy pads inside the home, which enables Violet to take care of her dog's needs independently even when she cannot take him outside. She does admit, however, that you cannot predict the future and that it is not possible to assert that a fall will never occur.

"I don't want to get sick. I will be careful and protect myself in any possible way. I have about four or five years left with him, so I tell myself: Don't fool around, you can tough it out five years!"

Her healthcare provider also illustrates the positive role of pet ownership and the pet-owner relationship in Violet's life:

"For Violet I think it's positive—because there could be a negative side to being obligated to follow a certain routine for the dog. If someone wanted to do other activities or wanted more flexibility...but for her it's positive. She has the time to do it, and I don't think it prevents her from doing things that she would do if she didn't have a dog."

Low fidelity prototype overall view

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Week 9

1. Prototype with paper and cardboard for dimension
2. Do not over complicated it - in the same time be detailed about the design
(Alex feedback)
3. Dont rely on the sensor too much, or try to find a way to test it
4. User experience
5. Ergonomics



Handle Ergonomics - Dimension

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ARTICLE NUMBER	57230-2181
BARCODE	4062695006015 / 4062695006022 / 4062695006039
AREA OF USE	All Mountain & Enduro
WEIGHT(S) IN G (PAIR)	approx. 102 / 116 / 138
SIZE(S)	S / M / L
CIRCUMFERENCE IN MM (1/3 OF TOTAL LENGTH)	96 / 99 /105
LENGTH IN MM (LEFT/RIGHT)	140
CLAMP DIAMETER HANDLEBAR IN MM	22.2
MATERIAL	Shock Absorption TPE Compound
MATERIAL CLAMPING RINGS	Aluminum
MAXIMUM TORQUE IN NM	3
E-BIKE READY	Yes
DIN/ASTM CATEGORIES	5

Bicycle handle
- Rubber - Textured surface

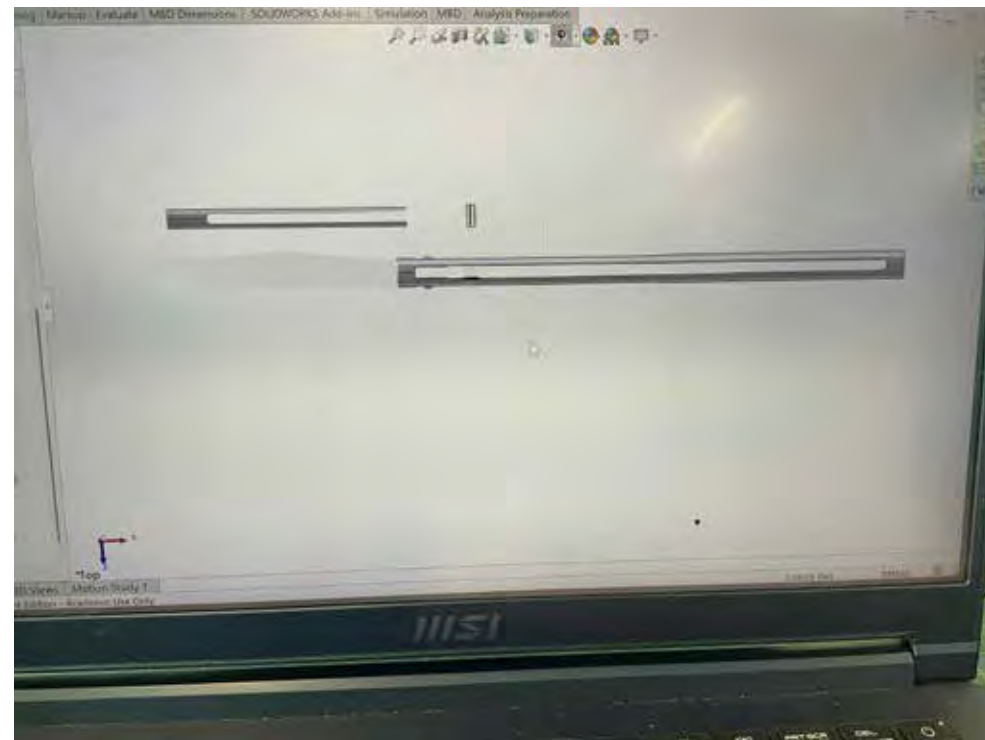


22.2 Diameter
140 in length

Handle Ergonomics - Prototyping the mechanism

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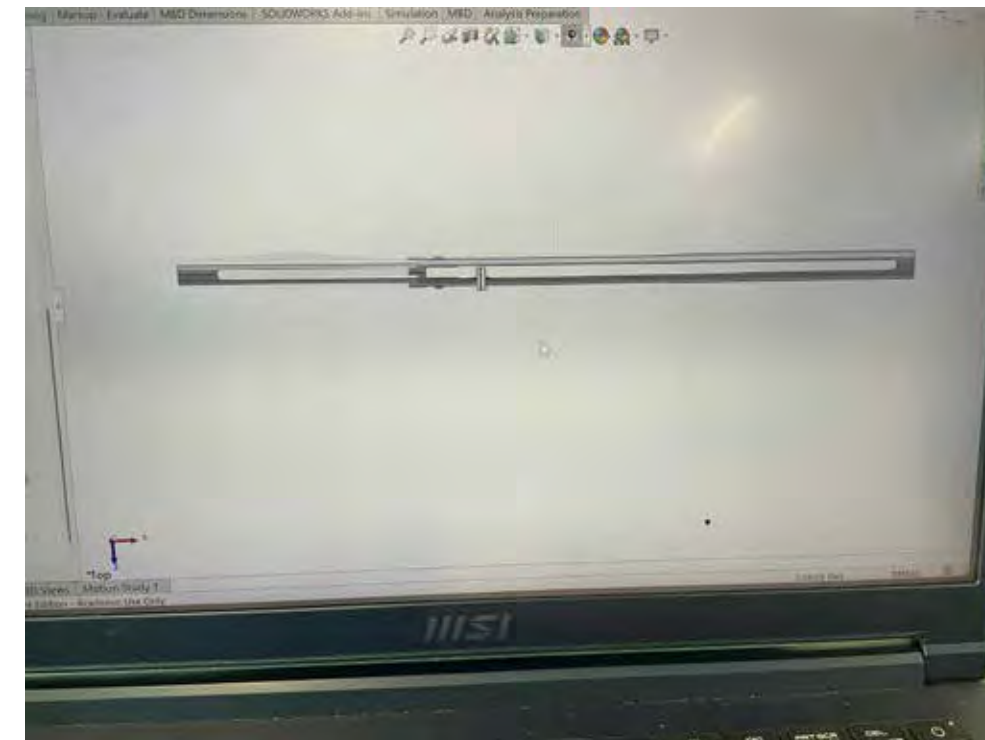


A top part with a grab/ cylinder handle

Body (base)

A hinge to hold the base with the handle body

3 components

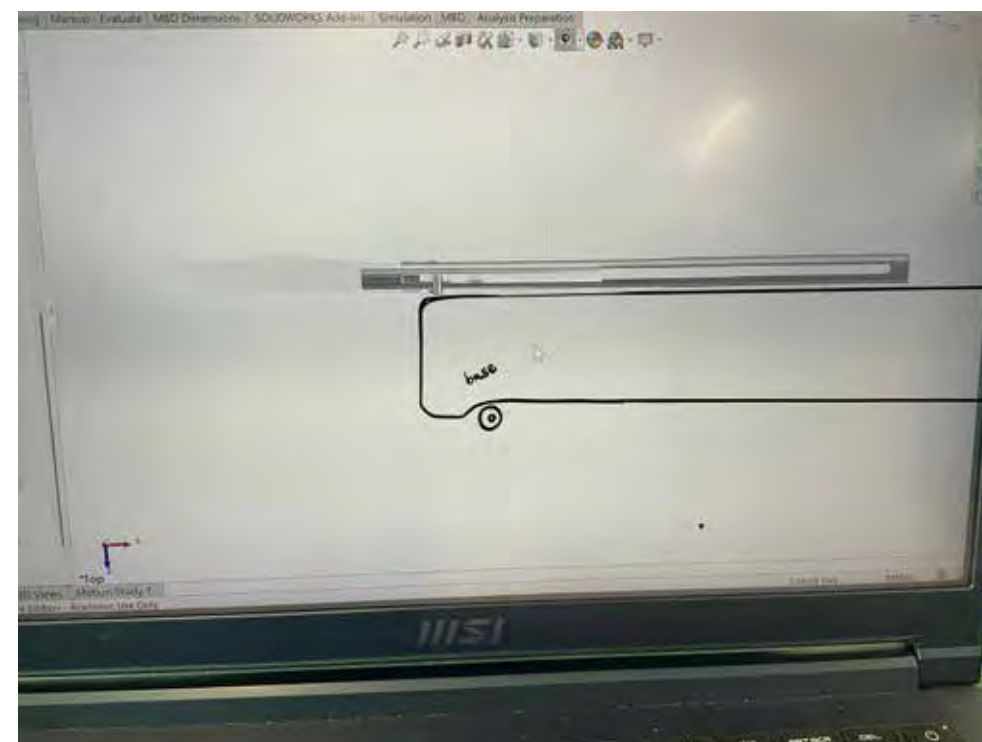


Representing the telescopic handle extrude

How they should be assembly



Maximum length



Minimum length + hidden inside the carrier

Handle Ergonomics - Prototyping the mechanism - CADing

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Sending the CAD out to print for earlier stage prototype

- + Ergonomics dimension tested out
- + See any inconvenience within the function

Low fidelity prototype

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Low fidelity prototype

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Handle are hidden inside the design at this time



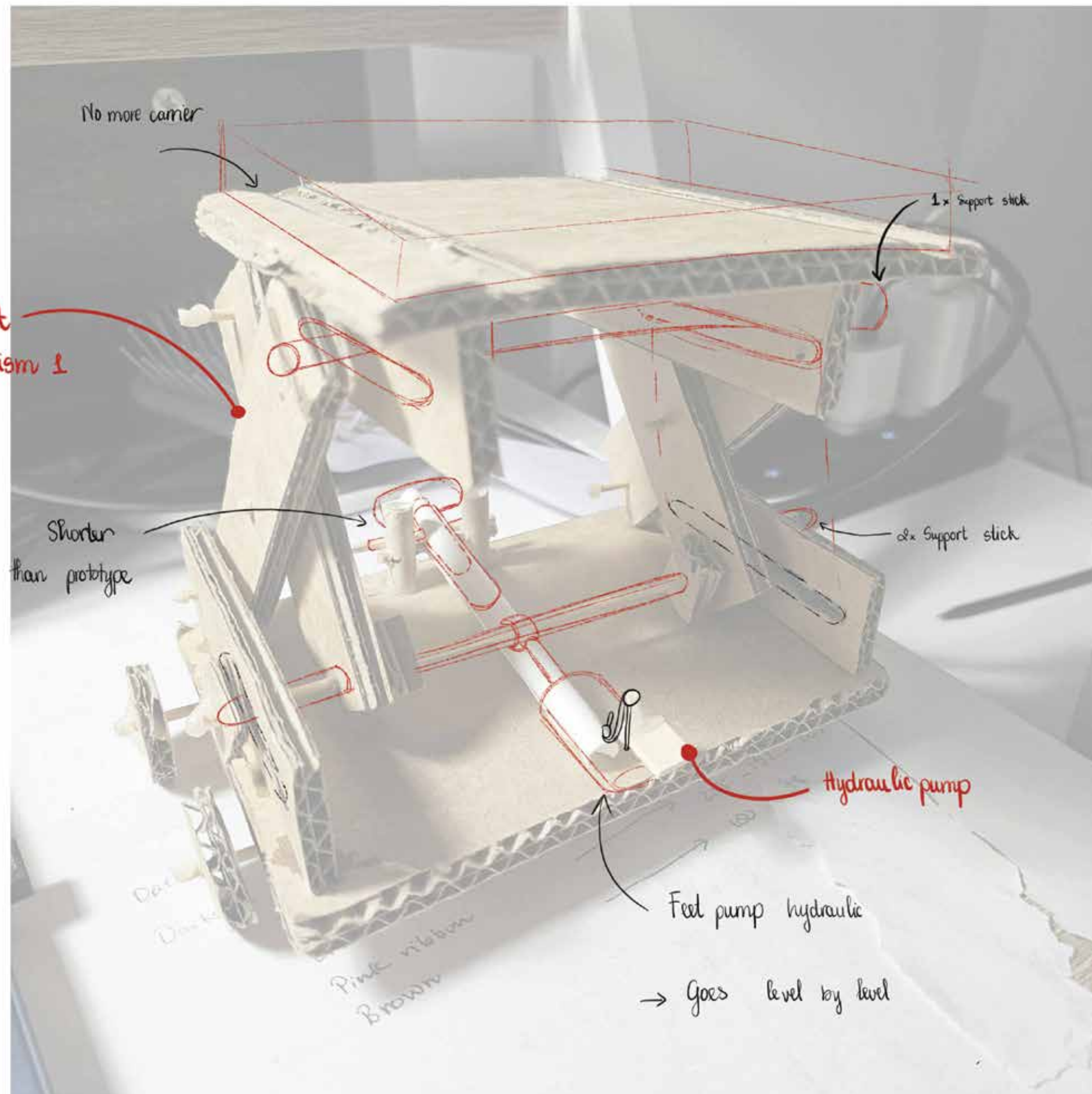
Pull out the handle



Internal exploring

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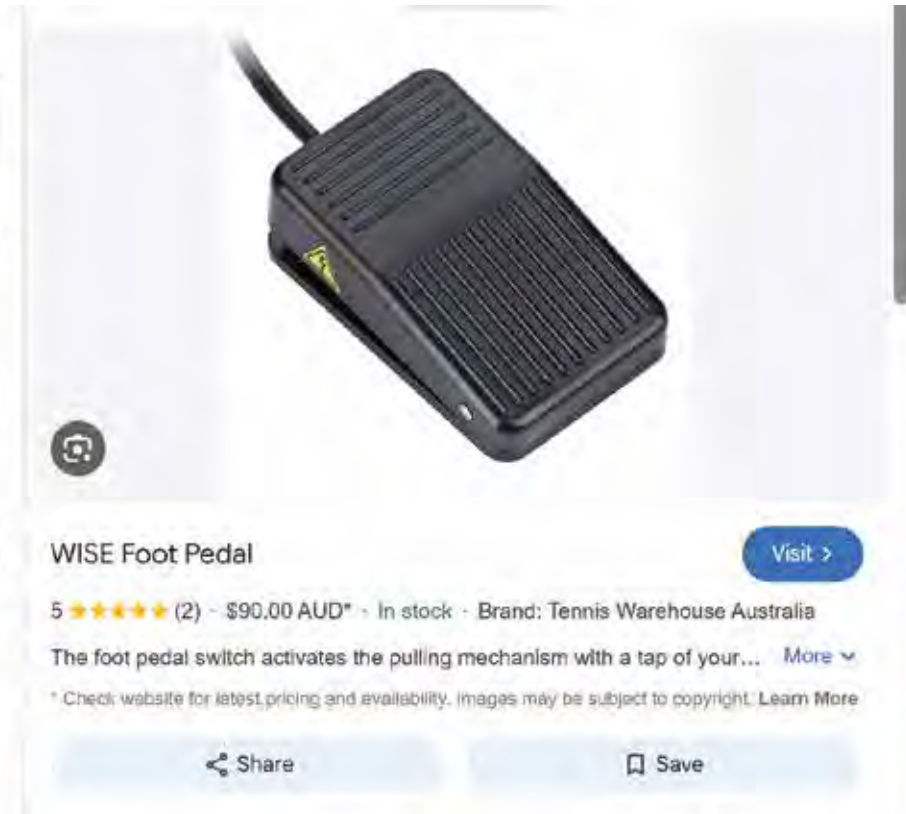
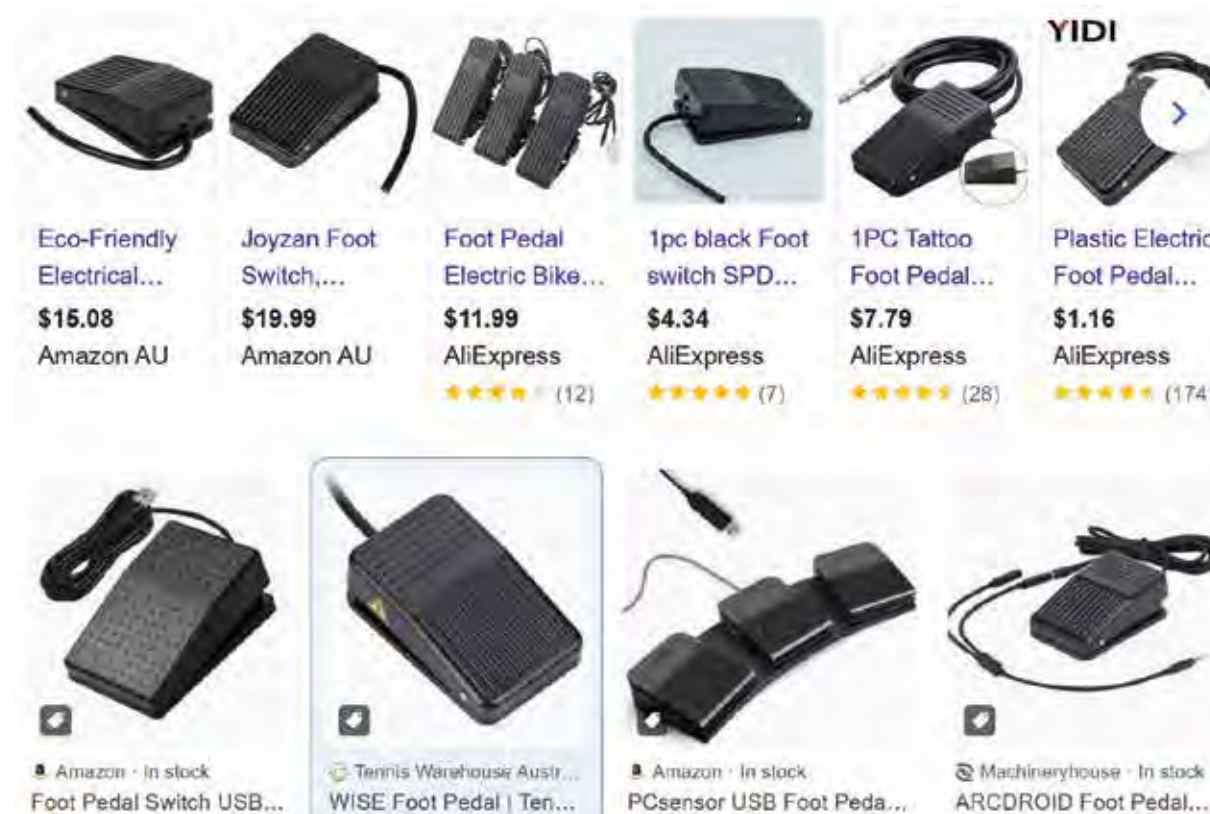
As I exploring the design through prototyping, some changes and decisions were made:

- + No more carrier attached to the design
-> Co-design goes along with market product
- + Make a storyboard of User-interaction

Component exploring - Pedal

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Ergonomics and Dimension:

- Can base on the dimension of existing product
- Considering material used

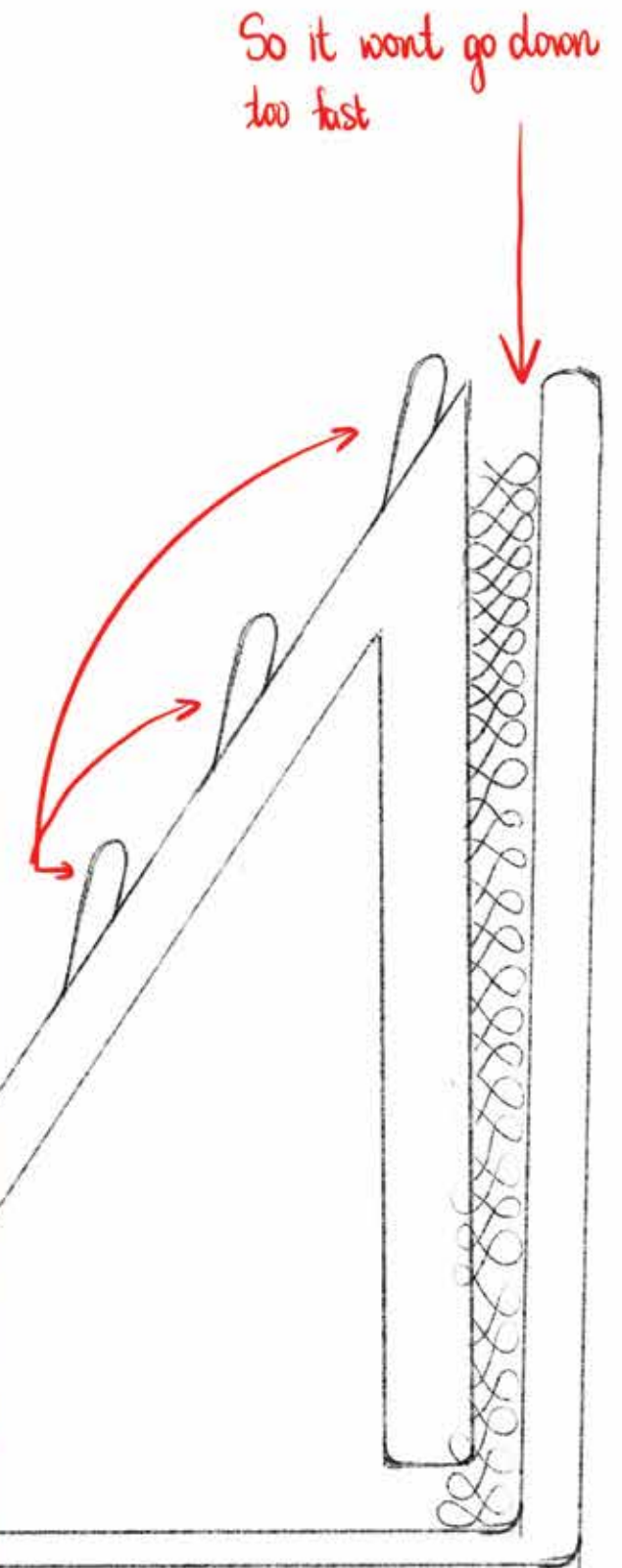
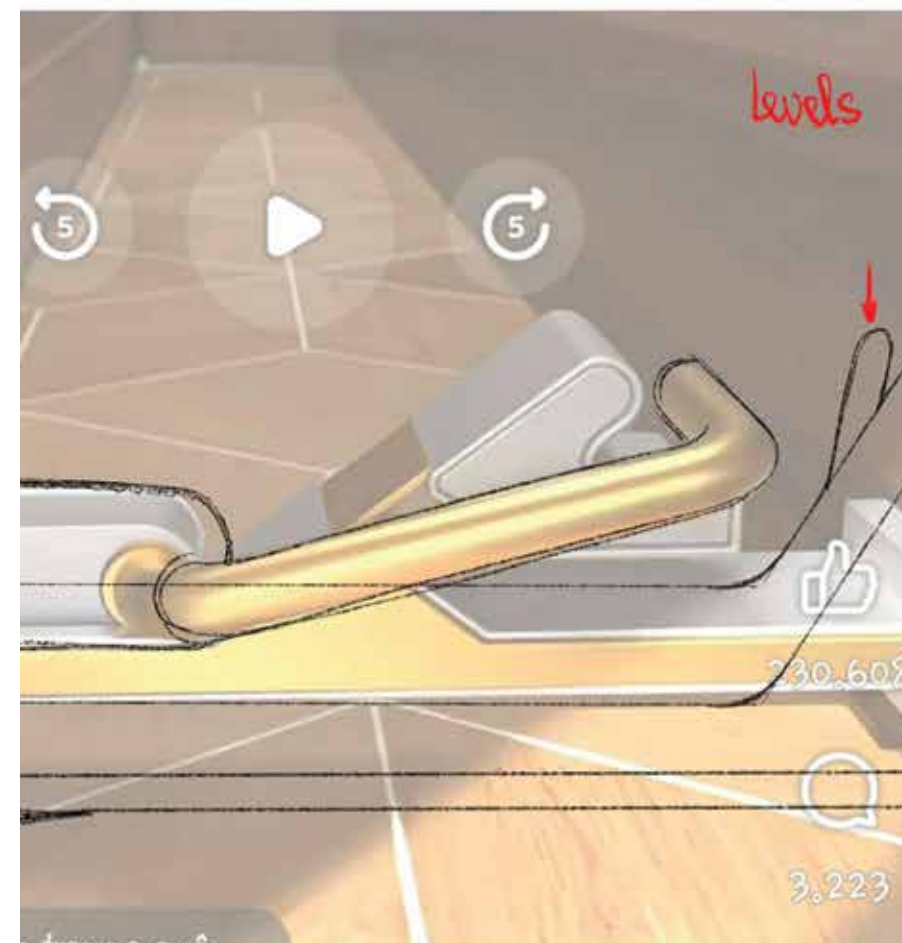
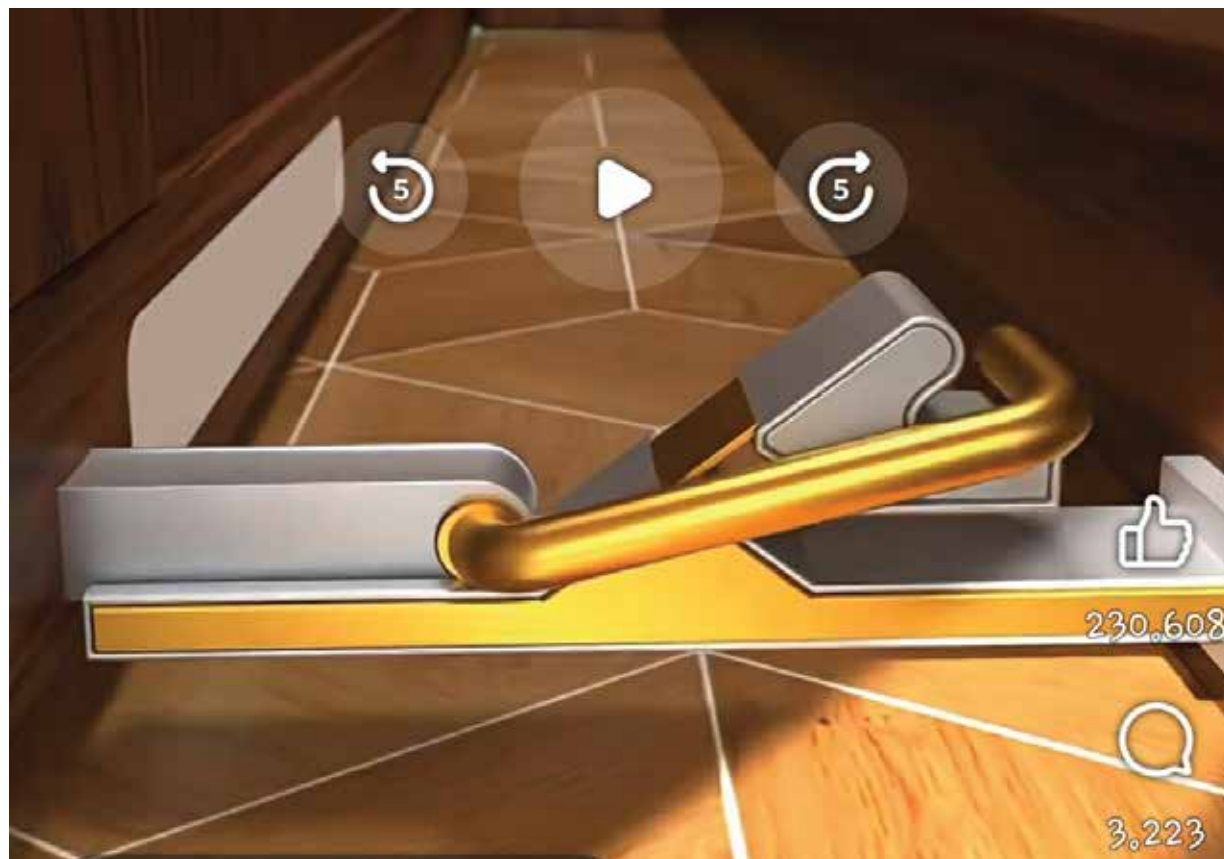
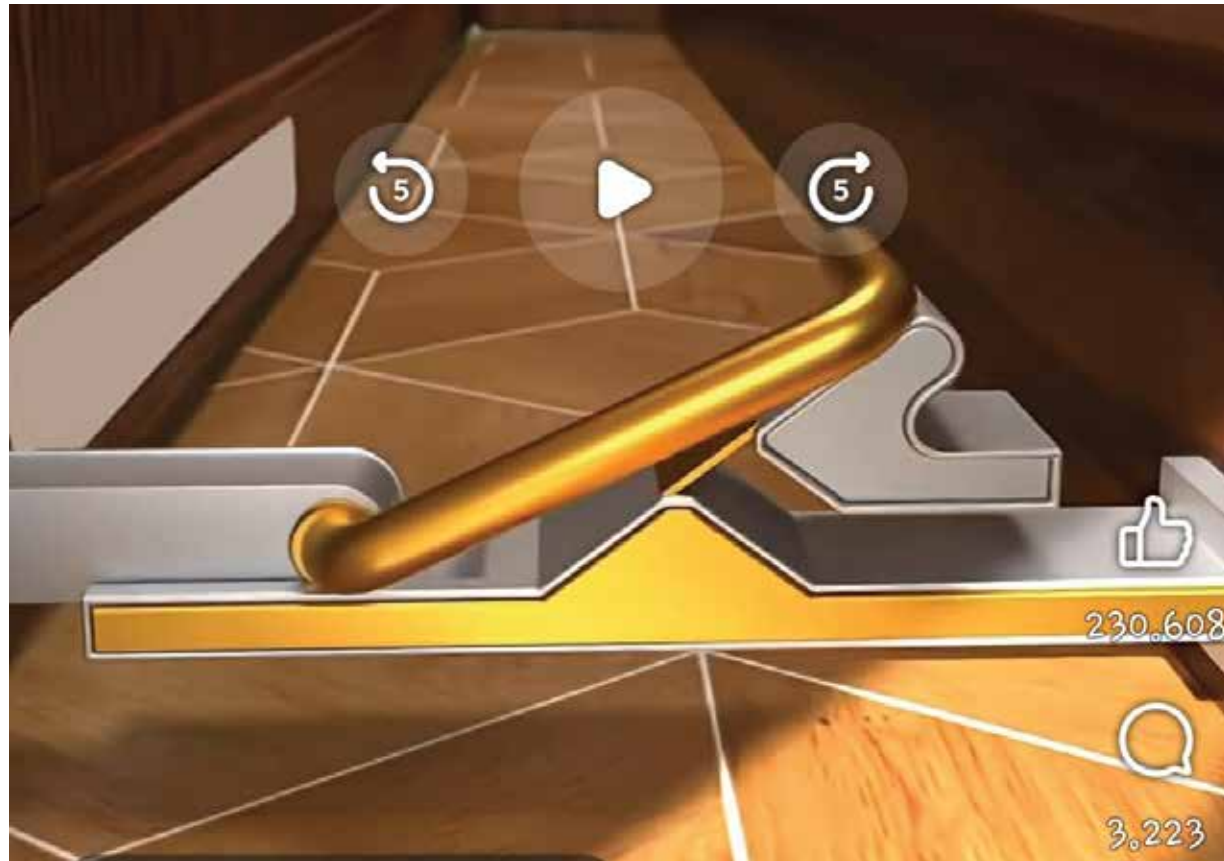
Features:

- Feet pump pedal can be rotated
- Smooth interaction

Hydraulic pump - Alternatives

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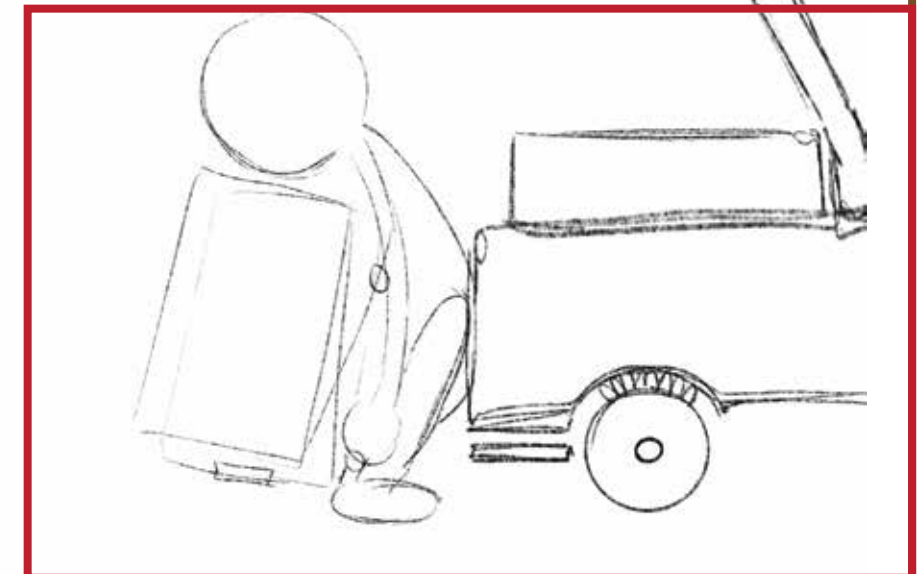
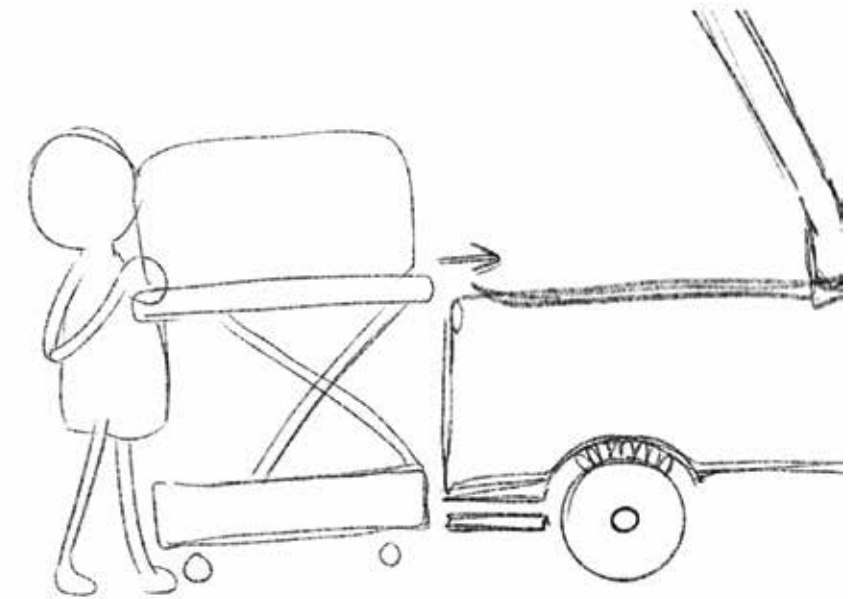
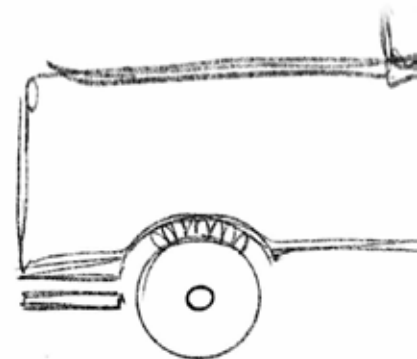
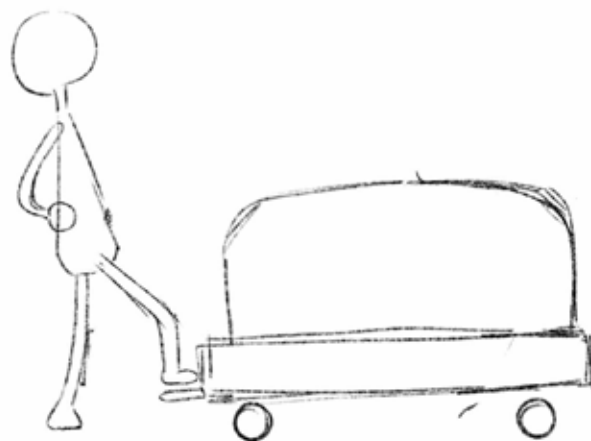
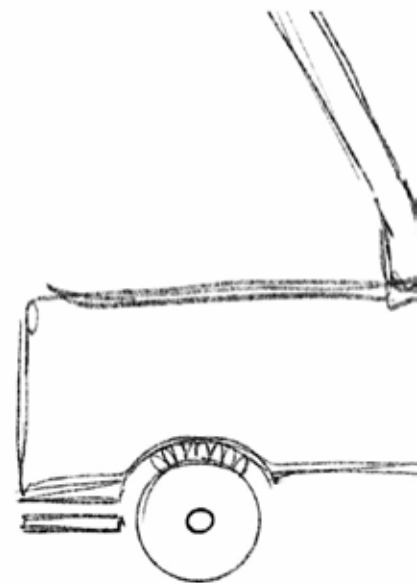
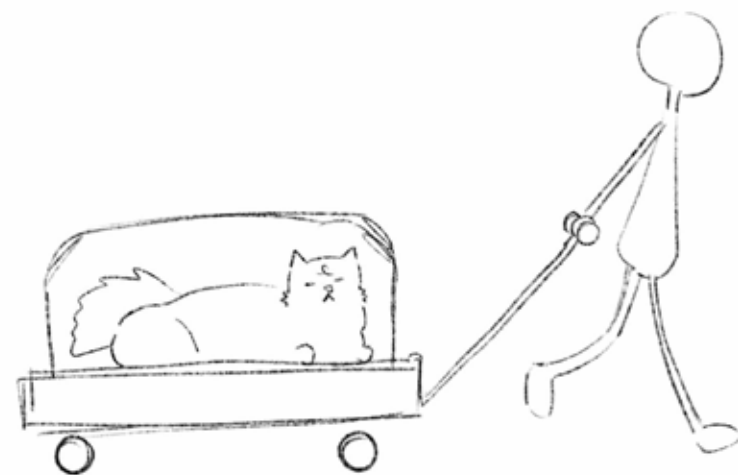
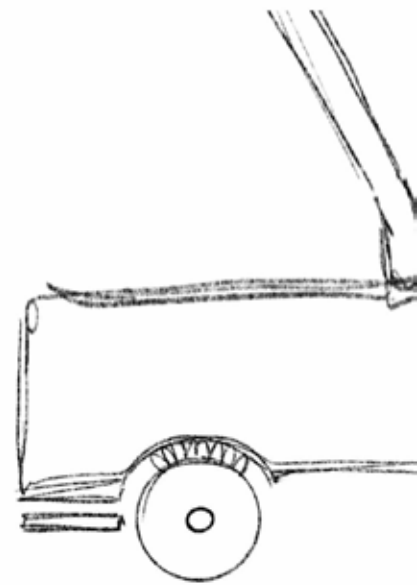
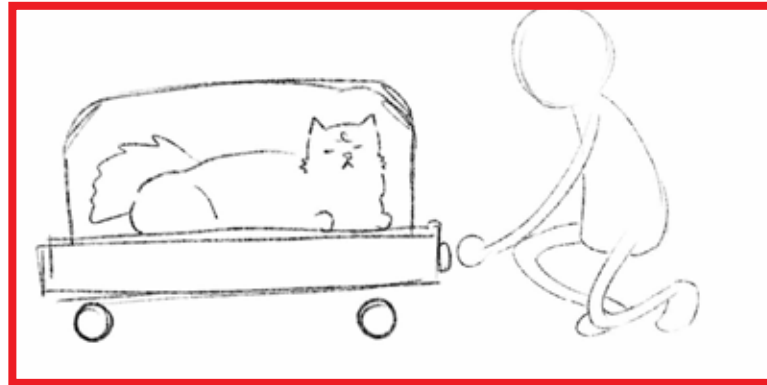
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Low fidelity prototype

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These red box marked bending position - which i want to eliminate

Low fidelity prototype

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Most springs of diameter of 15mm came in very strong and thick filling, which make me want to test out some customised spring



Following the youtube tutorial, I tried to make one manually

1. Take out different types of wire
2. Secure the stick (one with demanded dimension)
3. Wrap the wire around the stick tightly

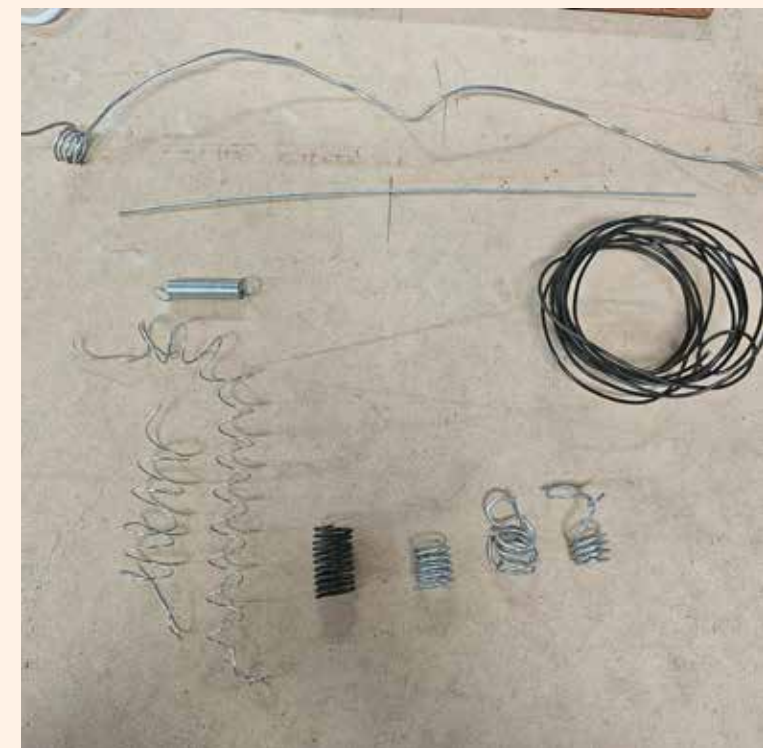
The resulting showing I have successfully made one

Prototyping Decision making

Viscos Damper

It was really hard to not add multiple Viscos damper (12 at minimum for stablizer and balancing). Which i decided to remove this feature and focus more on other features

Before romove the feature, I tried to prototype the vicious damper using different types of spring but results can hardly measure



Handle printed out

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The handle comes in 2 parts:



- Top one when assembly is very whimpsy and unstable
- Bottom one when assembly can be wicked as well
- > Might have to change to another way to make the final prototype
- > alex suggest : Super glue mix with BakingSoda can turn to a mixture like cement

Week 10+11

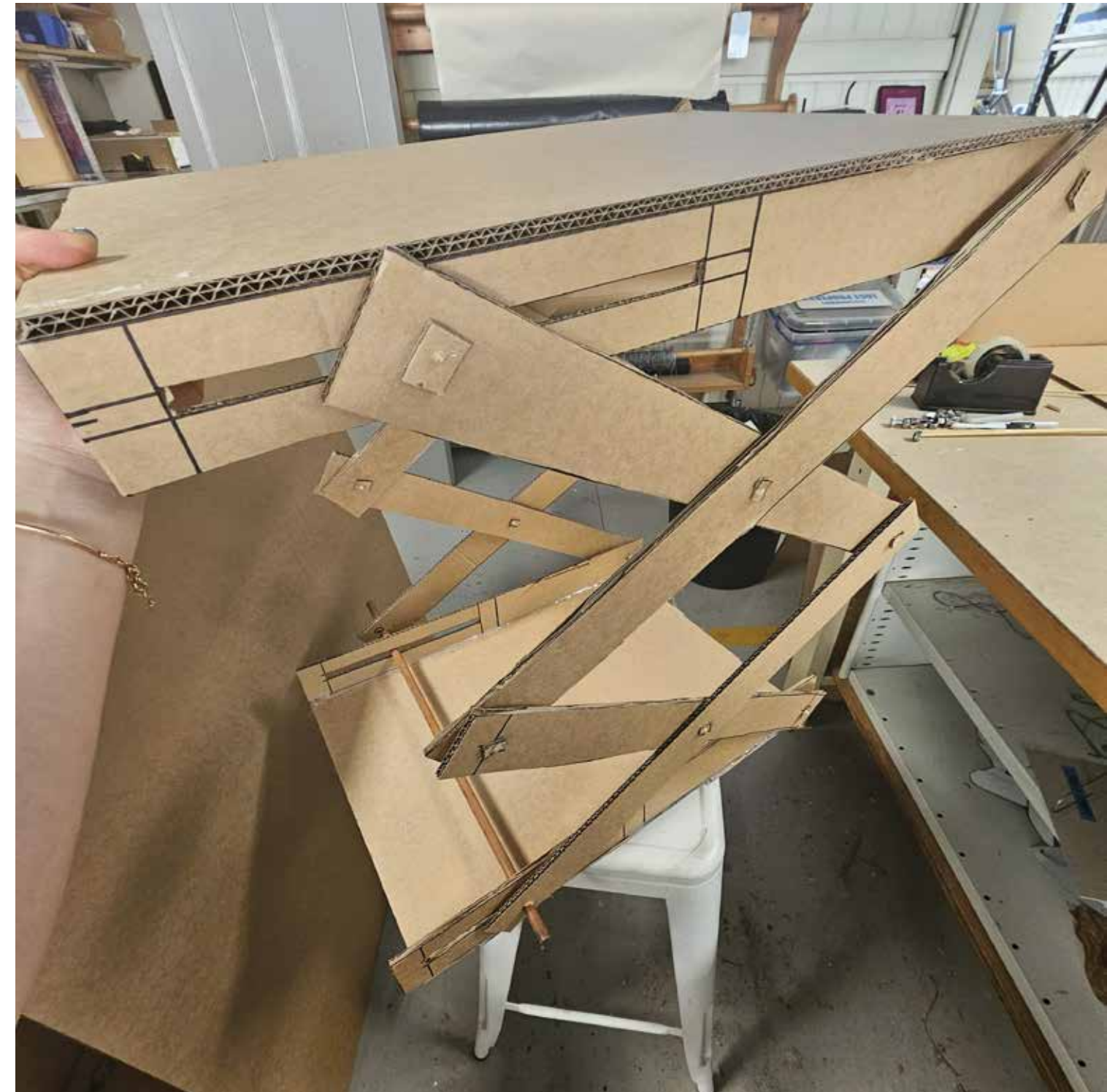
1. 1:1 scale prototyping
2. Start of final model making
3. User testing with 1:1 scale prototype
4. Ergonomics
5. Materials



1:1 Prototype

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Alex suggest : making a prototype on scale 1:1

Problem Detect : 1 level is too low (Approximately 600mm to 750mm height) so i add on another level - allowing the design to go up to 1200mm to 1500 : Suitable for even higher car

1:1 Prototype

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Material used : 3mm Cardboard : As I pushed the mechanism:

- pedals on the side broke
- Really hard to push

Need to add more supports

1:1 Prototype

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Rough appearance of Main housing

User-interaction testing

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- Sliding pad extrude to the height of the car
- Top platform can be hanged on to the car

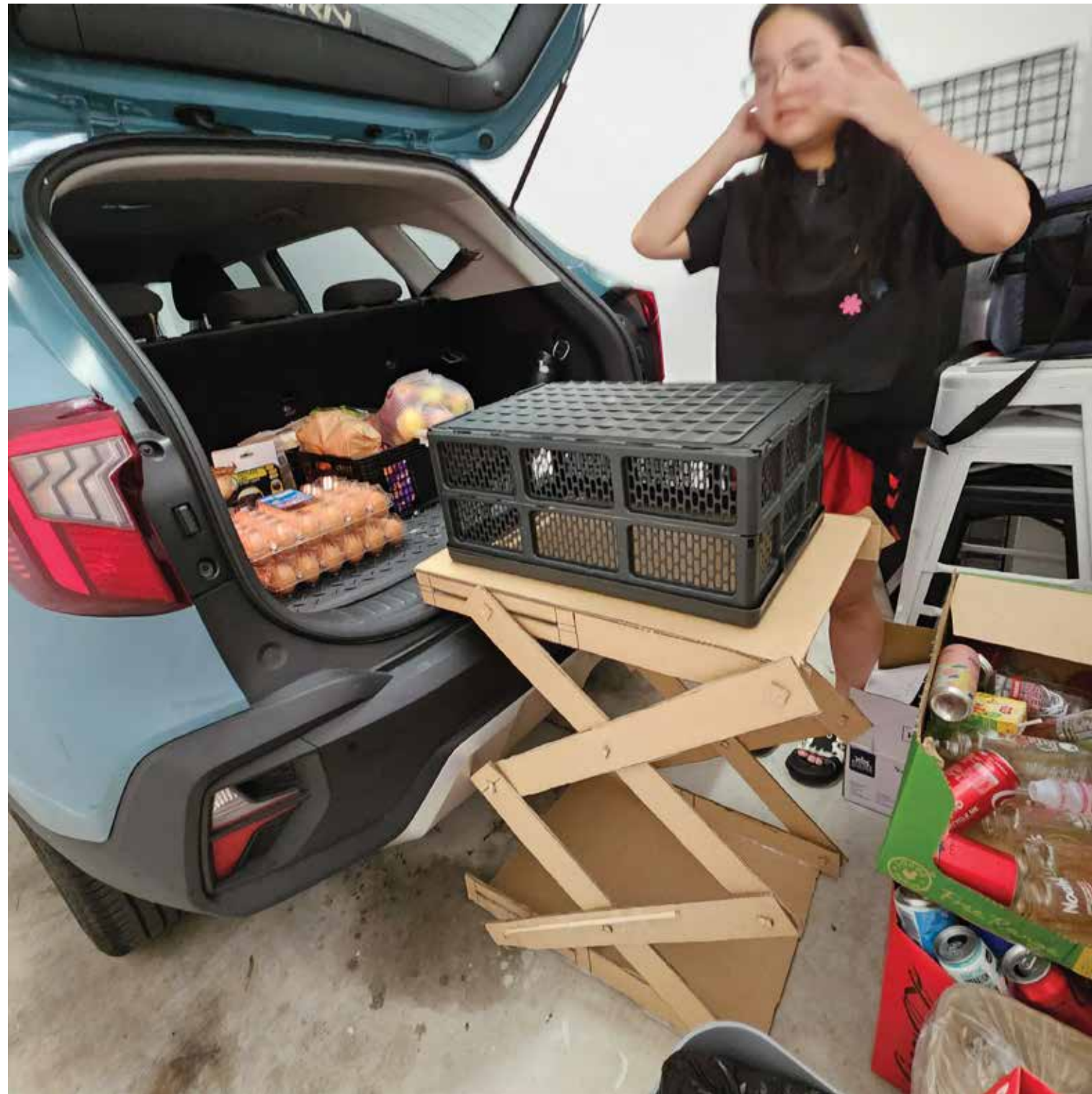


- The milk crank re-presenting the pet carrier

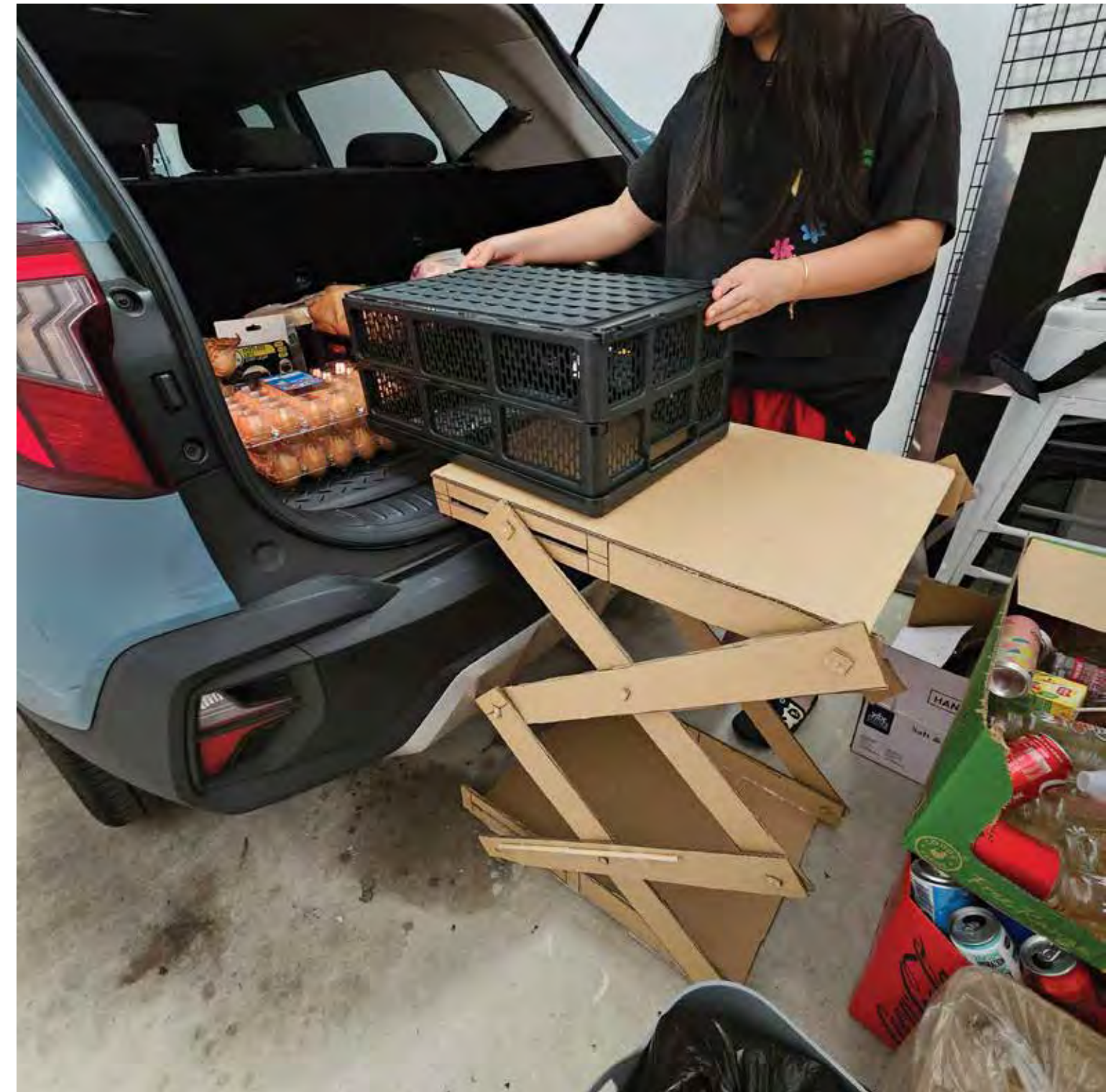
User-interaction testing

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At this point the design can be hanged on the car by it own

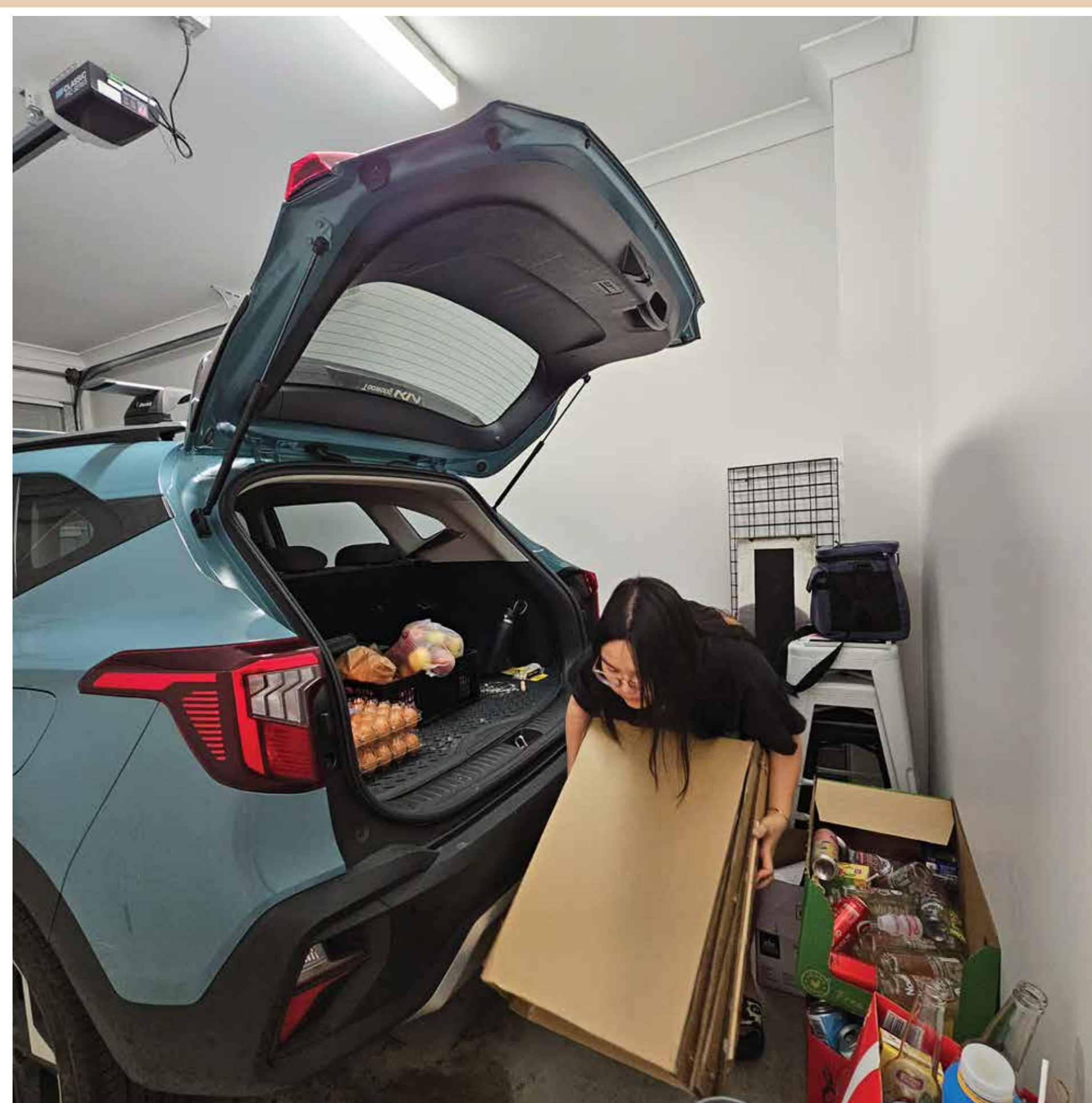


Slide the carrier on to the car

Bending Position

I want to remove this bending position:

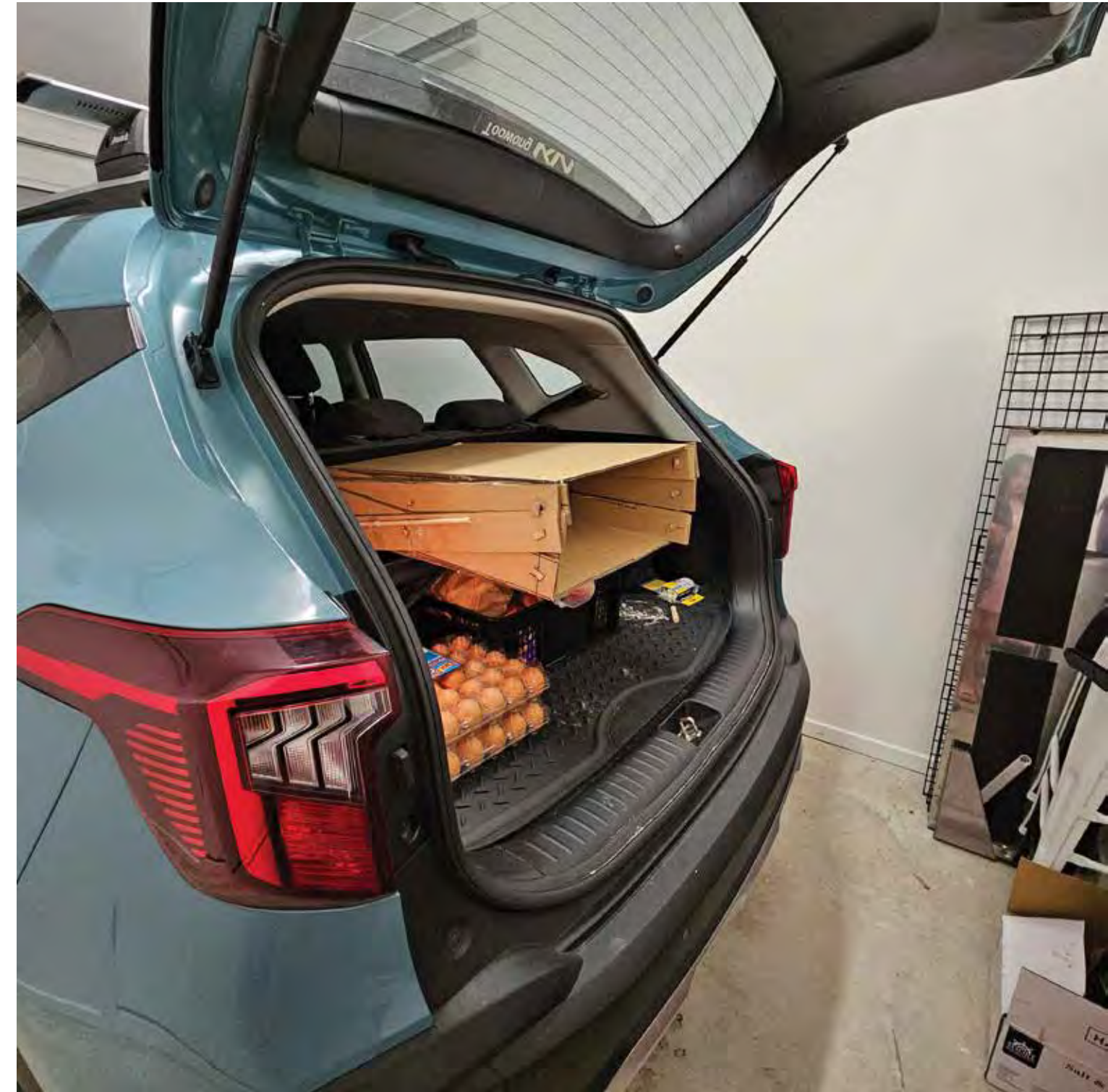
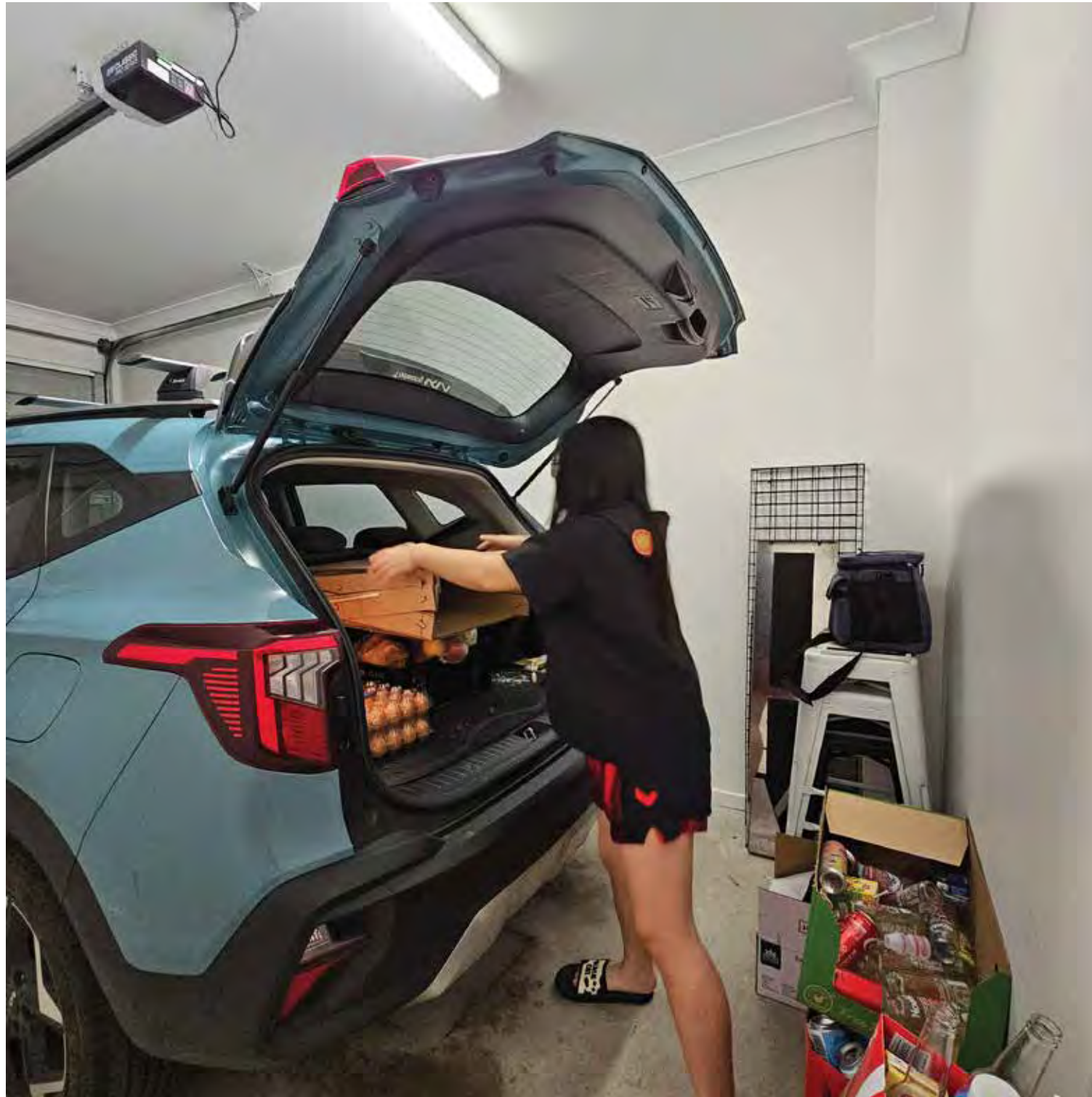
- as it would be no point to contain any difficult position performance
- Design should be lightweight to reduce any action required strength
- Select sustainable and light weight material



User-interaction testing

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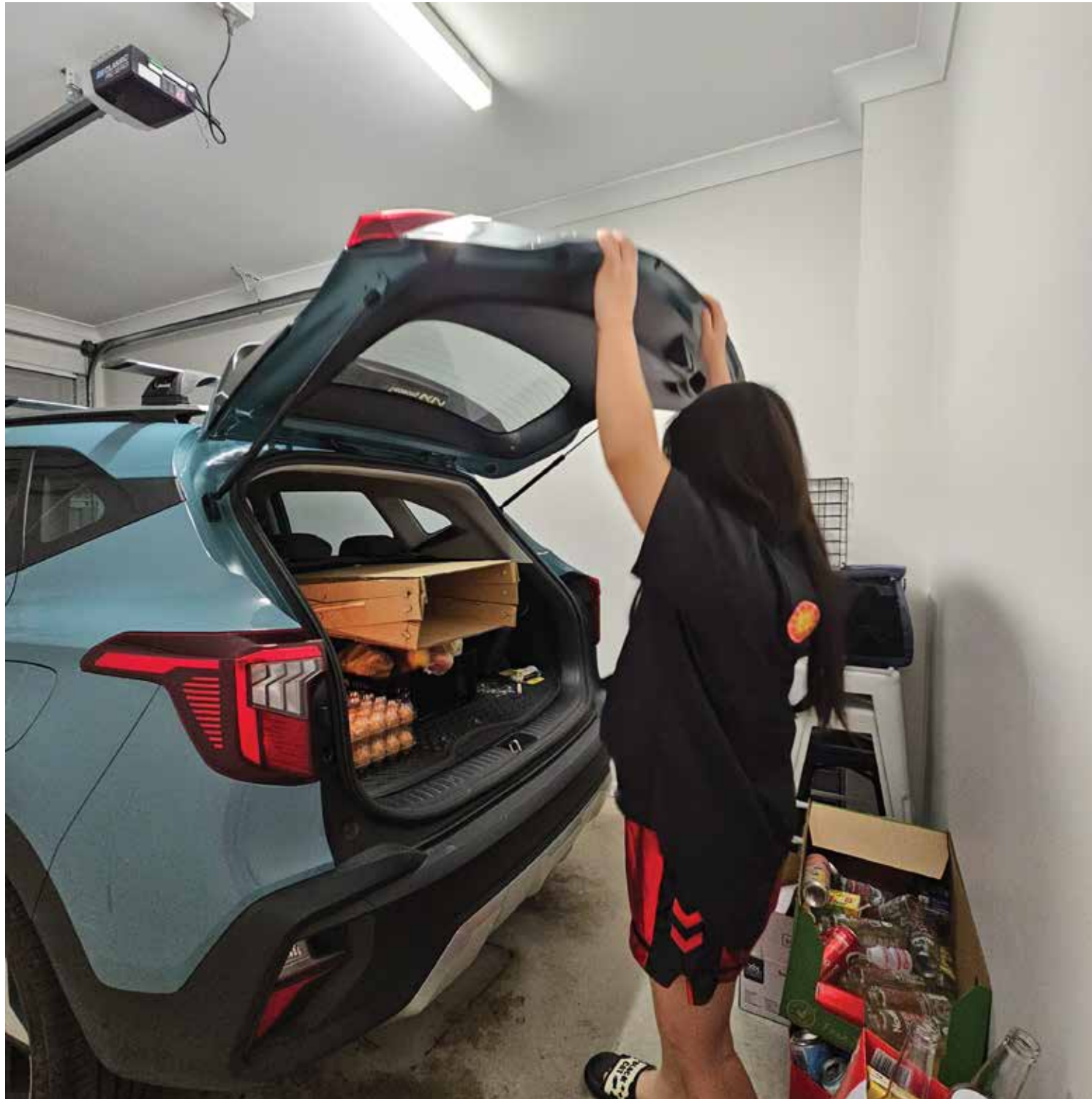


Inside

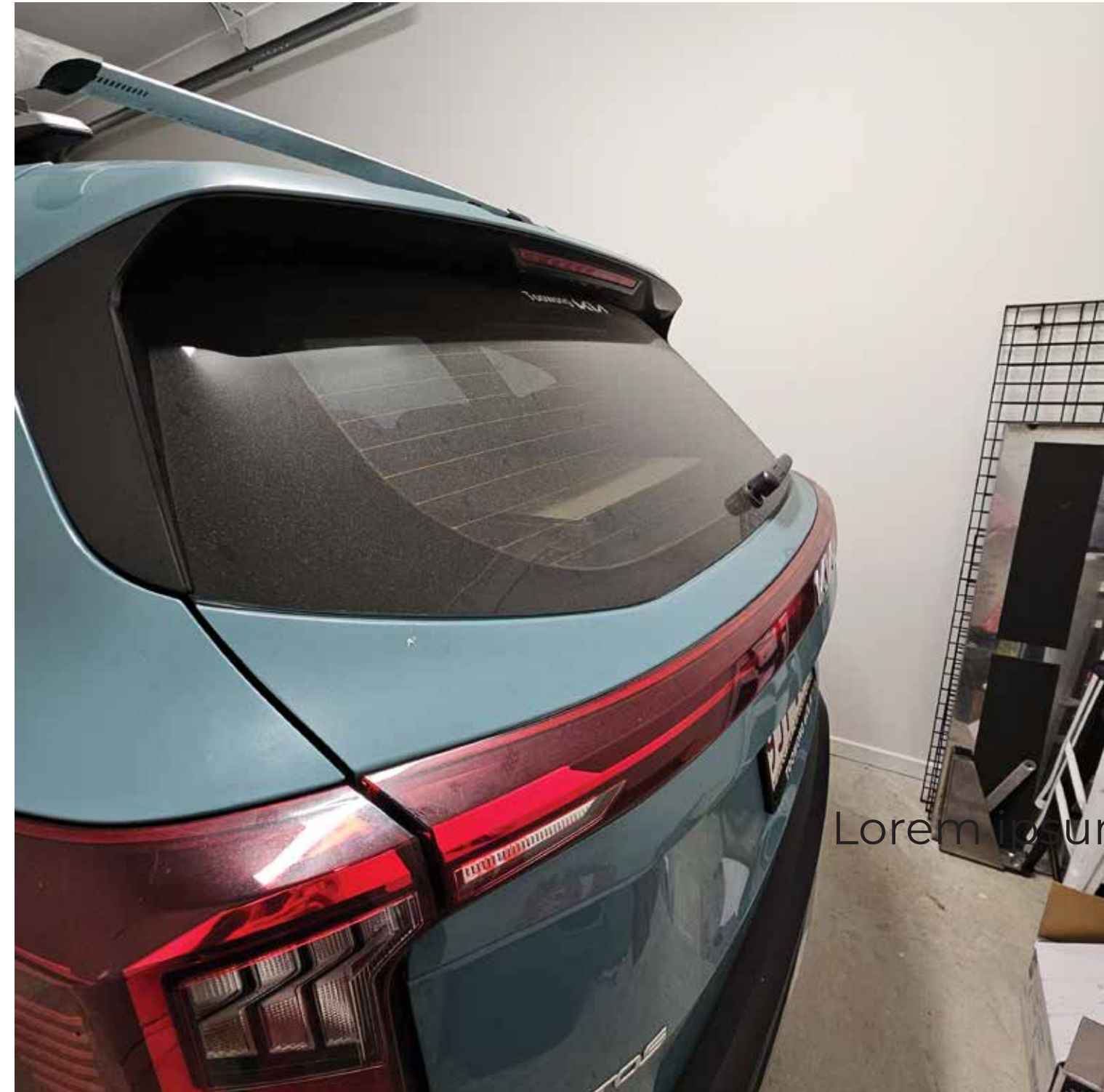
User-interaction testing

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Closing the door



Lorem ipsum

Handle Ergonomics - Length

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n11376163

The handle can have some joints so it will stop at different certain length (long-short length are adjustable)



User interaction testing: With the adjustable length and ergonomic size grip, the design is looking forward to provide ergonomic fit for 1% female to 99% male

Dragging the carrier around the house and see how would it interact with other elements (door, stairs, ell bumps, etc)



Laser cutting

Alma Phan

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○	◦	○
○	◦	○
○	◦	○
○	◦	○
○	◦	○

○	◦	○
○	◦	○
○	◦	○
○	◦	◦
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○	◦	◦

○	◦	◦
○	◦	◦
○	◦	◦
○	◦	◦
○	◦	◦



Material used : MDF wood

Thickness: 3mm

The 3mm thickness is the same with the cardboard prototype, which brings me concern of weak durability

So i rather lazer cutting twice and merge them together using PVA wood glue

Joint

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n11376163



FRAINBOWZ
100PCS Spl...

\$7.99

Amazon AU



Paper pin, Bra
ds for card ...

\$2.74

Temu



300pcs Mini Brads Fastene...

\$12.99

Amazon AU



OLYMPX 5
cs of 3.5" (

\$150.00

Australia C



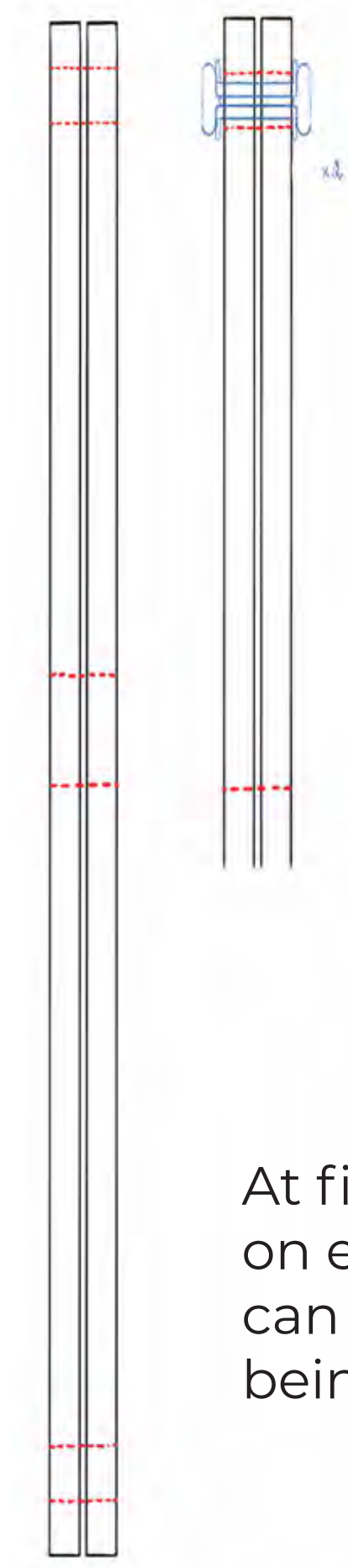
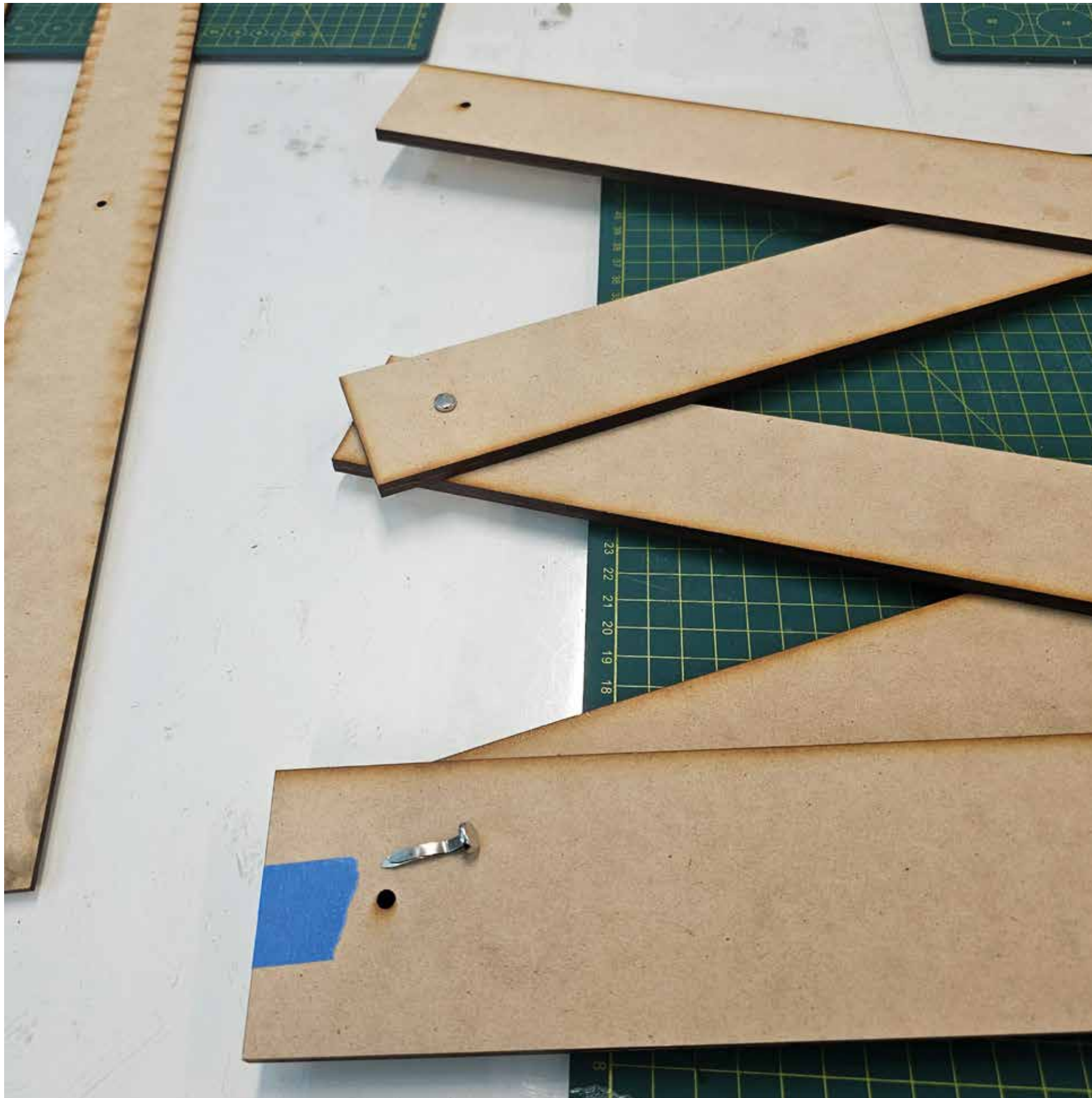
Using Screws can add-on extra unnecessary weight + Losen by the movement of pedals

Workshop guys recommended using this

Securee Joint (1)

Alma Phan

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At first i want to put 2 on each sides so they can rotate without being loosen

Secure Joint

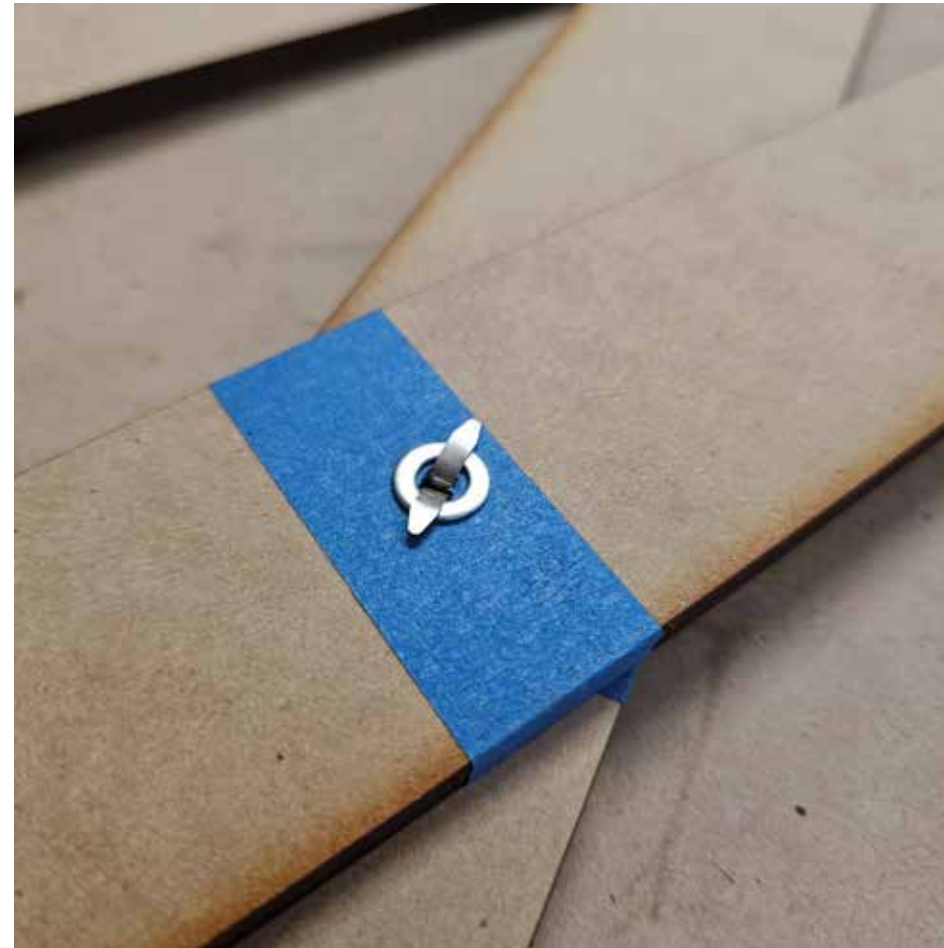
Alma Phan

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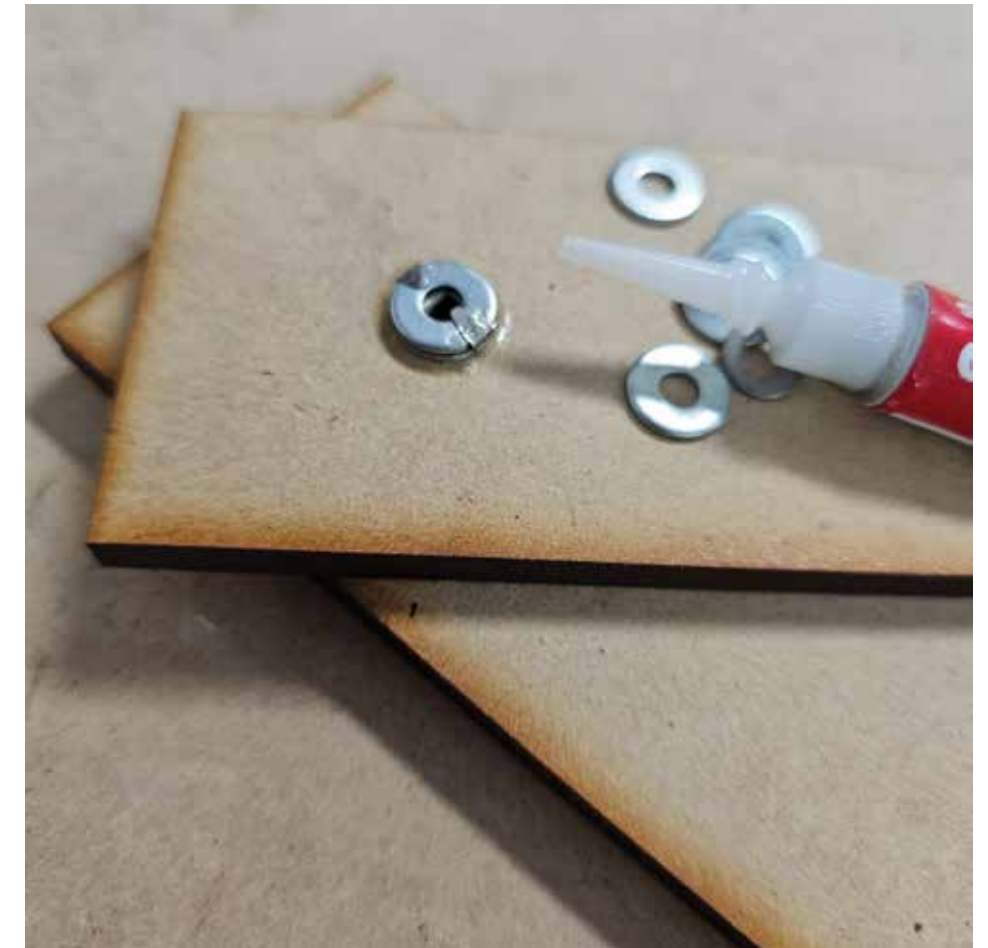


Secure joint (1) did not work so i have to change to another plan

Preparing some bearings
(M4 -M6)



Get the fastener through as picture shown

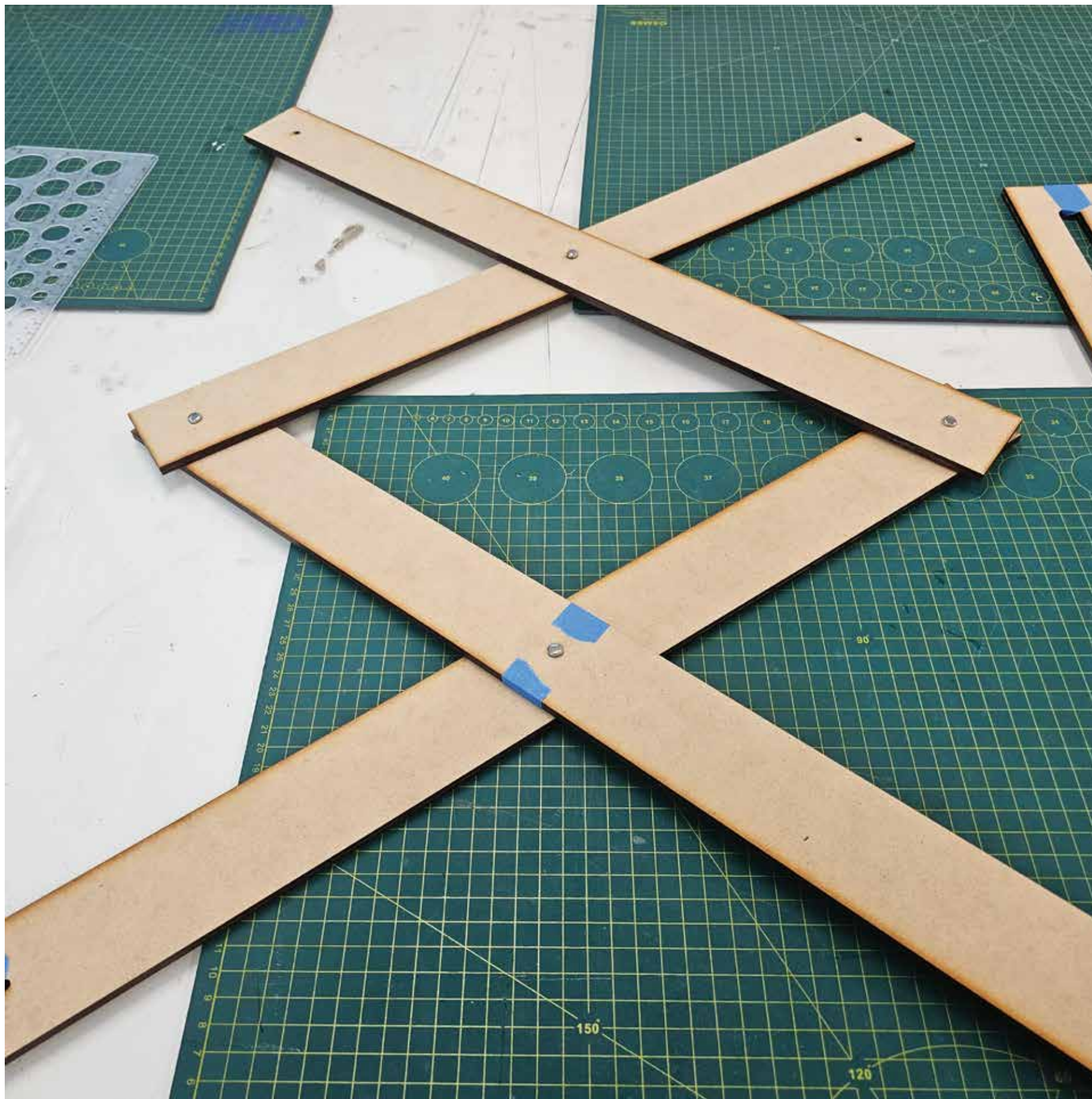


Place another bearing on top and secure them with the fastener itself and super glue

Secure Joint

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Making 2x of these using secure joint as shown before

Choice of Material

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Studying from existing product :

- Alloy steel :
 - + Light weight
 - + Durable
 - + Resistance to external impact
 - + Smooth and nice finishes
- Capable of holding Medium to Large dog (15kg to 40kg)
- Stable when go high (approximately 1200mm high with 600 per pedal)



Week 12

1 Design lock - position, all comment and mechanism position all figured and lock down

2. Finalise CAD

3. Aim for functioning product

4. Send out to 3D printing and collect



Electric Hydraulic pump

Alma Phan

n11376163

1.Parameters:

Material: Aluminum alloy

Input Voltage: 12V DC

Stroke Length: 50mm/100mm/150mm/200mm/250mm/300mm/400mm;

Working frequency: 20%

Ambient temperature: -20°C to +75°C.

2.Way of working:

When the linear actuator is connected to the power supply in the positive direction, the linear actuator will extend. When the linear actuator is connected to the power supply in the reverse direction, the linear actuator will retract.

3.How to install linear actuators:

Connect the two wires of the linear actuator to a 12V battery

Black wire to the positive terminal and red wire to negative terminal will make the actuator extend. To make it retract, just reverse the terminal connection

To simplify the last step, you can prepare a reverse polarity relay or switch for the actuator.

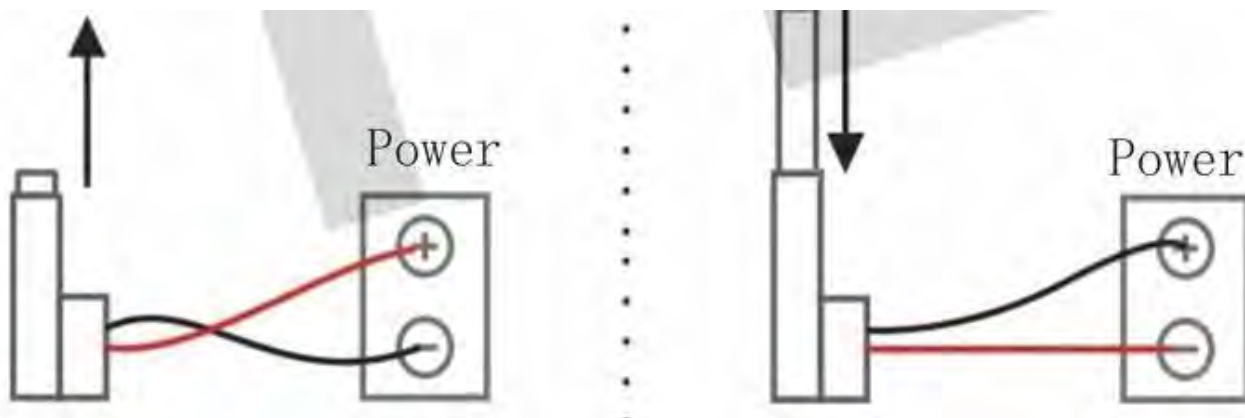
When you want the actuator to extend and retract, just press the switch.

The linear actuator will hold its position when the power is off. It will automatically stop when reaching the end.

4.How to protect your stroke linear actuator:

Please use the 12V DC power adapter. Please do not exceed the rated load.

All the stroke linear actuator have duty cycle, they are unable to work all the time without stop. The duty cycle of this actuator is 10%. it means that your actuator needs 18 minutes to rest for every 2 minute of work. If the actuator keeps working for long time, the motor is easily burnt out.



[Electric Actuator] 12V DC Electric Actuator Electric Telescopic RodMicro Hydraulic Actuator Electric Window Opener Multifunctional Telescopic Rod300N 50mm-250mm
1.6K+ sold | Sold by >

4.6 ★★★★★

AU\$52.58 Pay AU\$13.14 today

✓ Free shipping | ✓ AU\$5.00 Credit for delay

Model

50MM-300N 30MM/S 100MM-300N 30MM/S
150MM-300N 30MM/S 200MM-300N 30MM/S
250MM-300N 30MM/S

Qty 1

Add to cart

1. Parameters:

Material: Aluminum alloy

Input Voltage: 12V DC

Nosnost: 1500N~150kg~330lbs, Rychlost: 4mm/s;

900N~90kg~198lbs, Rychlost: 10mm/s;

500N~50kg~110lbs, Rychlost: 20mm/s;

300N~30kg~66lbs, Rychlost: 30mm/s;

Stroke Length: 50mm/100mm/150mm/200mm/250mm/300mm/400mm;

Pracovní frekvence: 20%

Jmenovitý výkon: 20W, maximálně 30W.

Teplota okolí: -20 °C až +75 °C

Manual Hydraulic foot pump

Alma Phan

n11376163



- Bulky
- Heavy
- Very expensive
- Going to consume a lot of space

Manual Hydraulic foot pump & Electronic foot pump

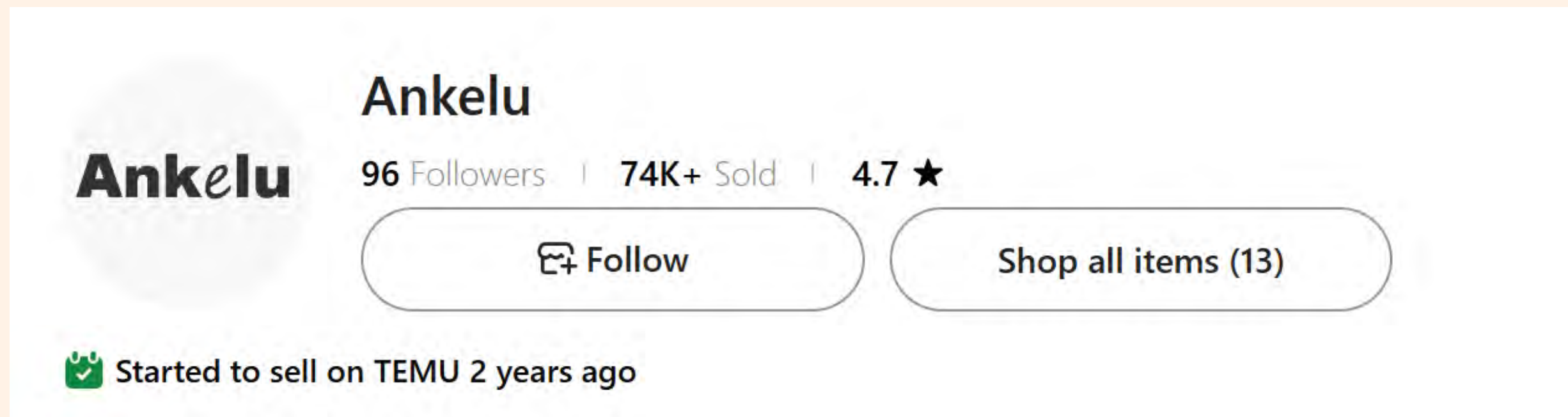
Viscos Damper

For this part, I decided to go for electronic one as it would be durable for heavy weight (perform just as demanded no need to be heavy duty)

Chosen product : 400mm/ 90kg

Battery used : 12V

Supplier : Temu



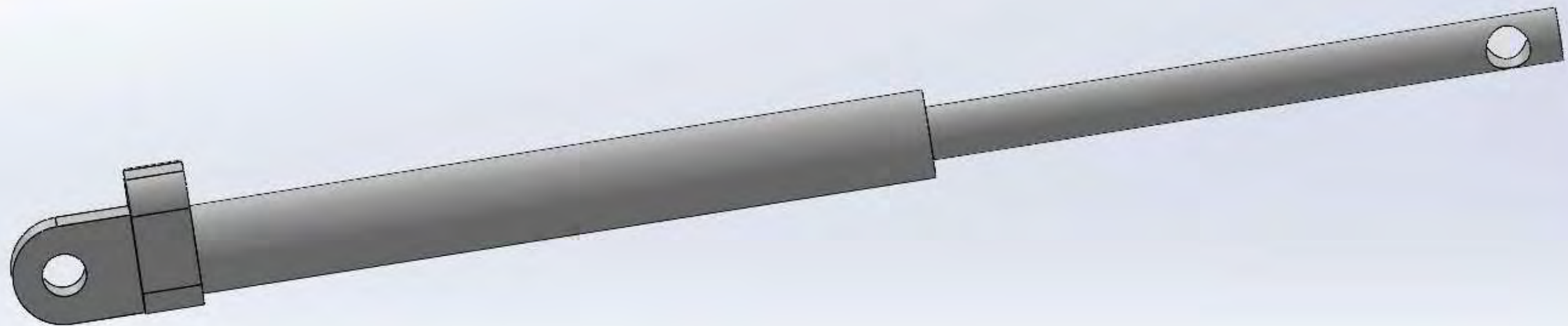
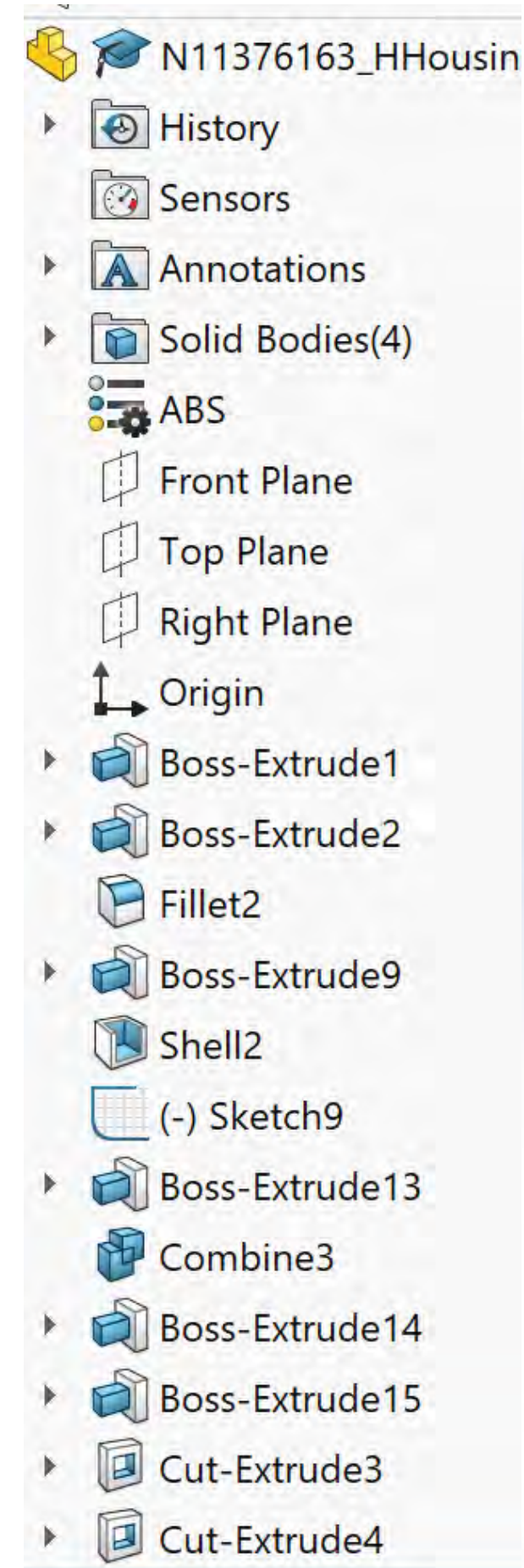
The screenshot shows the profile of a seller named 'Ankelu' on the TEMU platform. The profile includes a circular logo with the name 'Ankelu' in a stylized font. To the right of the logo, the seller's name 'Ankelu' is displayed in bold. Below the name, the statistics '96 Followers', '74K+ Sold', and a '4.7' star rating are shown. There are two buttons: a 'Follow' button with a plus icon and a 'Shop all items (13)' button. At the bottom, a green checkmark icon is followed by the text 'Started to sell on TEMU 2 years ago'.

Ankelu

96 Followers | 74K+ Sold | 4.7 ★

[Follow](#) [Shop all items \(13\)](#)

 Started to sell on TEMU 2 years ago



I made a mistake where my purchase got cancelled, to make a new purchase (1st purchase is by mid week 11 - at this time is end of week 12)

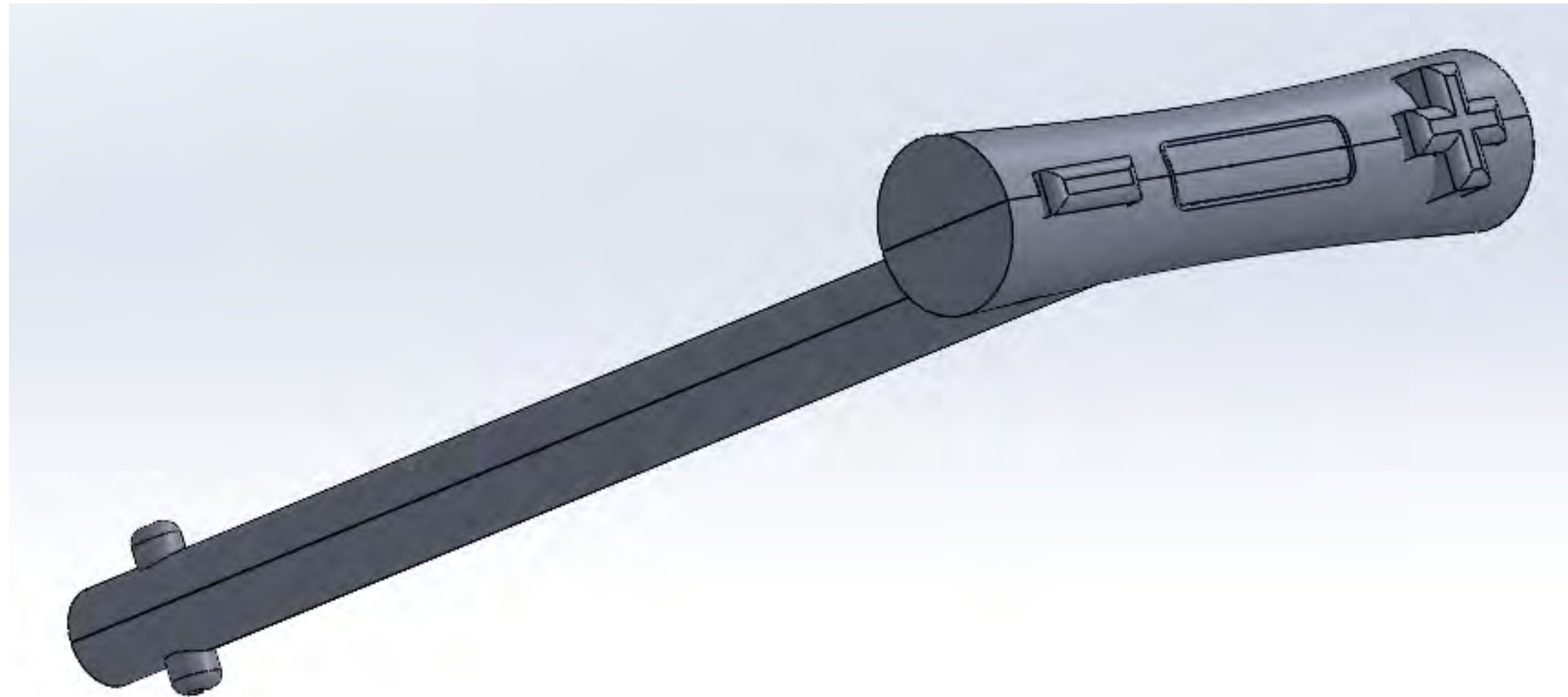
- For the best I just ordered and make a 3D printing along
- Worst scenario it did not come in time, i can just refund

Old Design Handle

- Whimpsy
- Unstable
- Can be hide inside carrier main housing

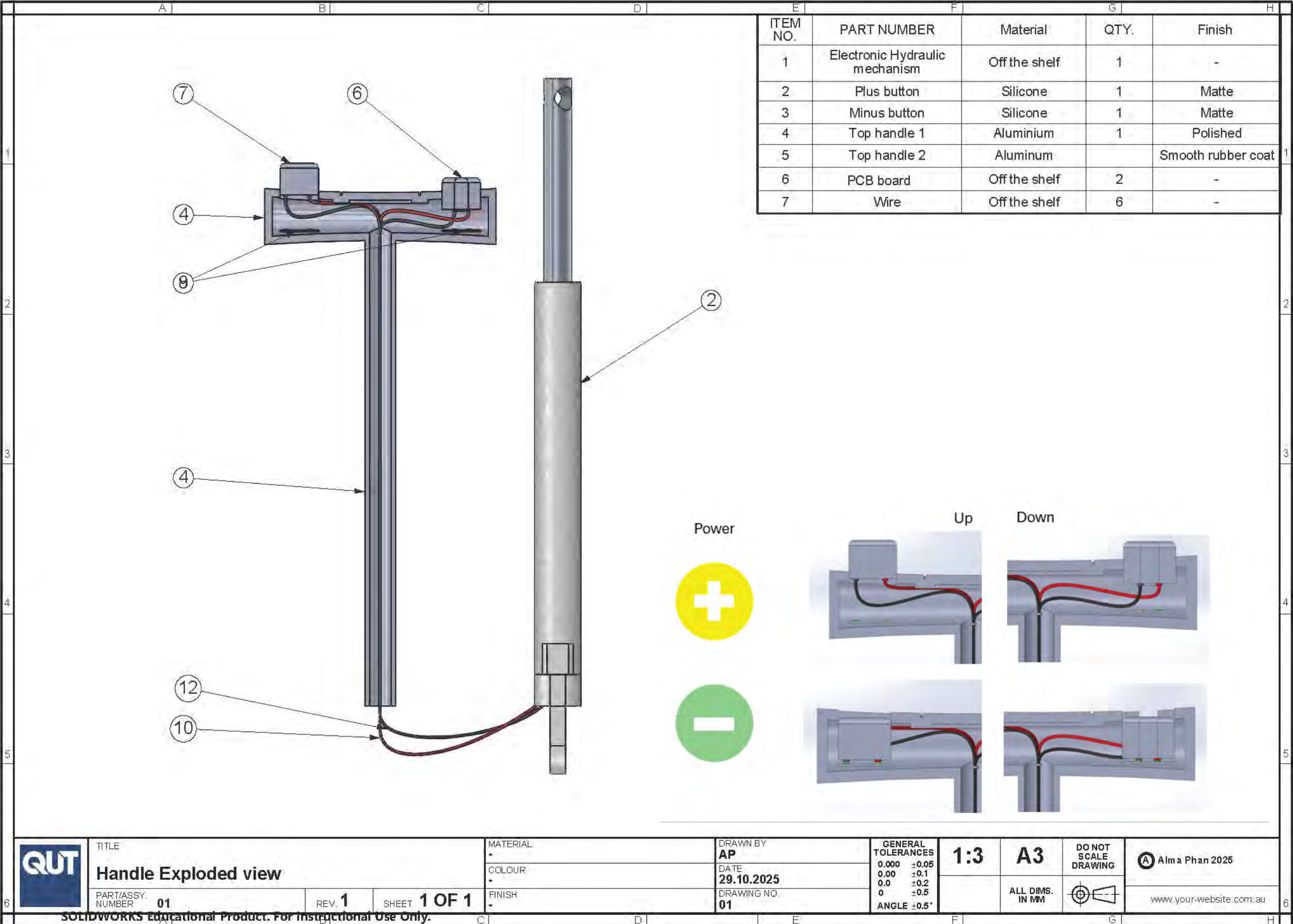
New design Handle

- More stable
- Coporates direction control
- Still need to be adjustable in height to be more convinience



Handle

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n11376163

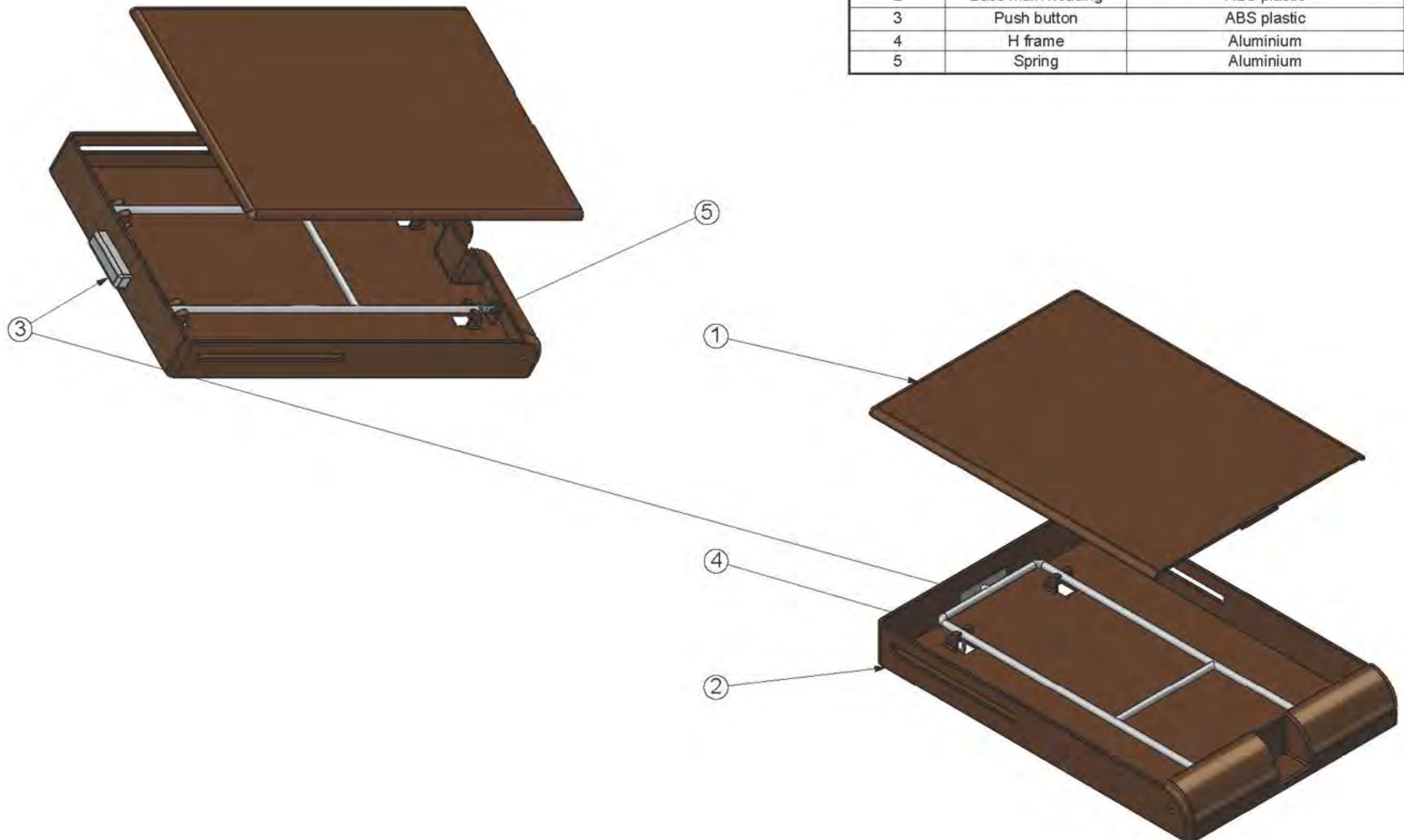


Retractable wheels

Alma Phan

n11376163

ITEM NO.	PART NUMBER	Material	QTY.
1	Base lid	ABS plastic	1
2	Base main housing	ABS plastic	1
3	Push button	ABS plastic	1
4	H frame	Aluminium	1
5	Spring	Aluminium	2

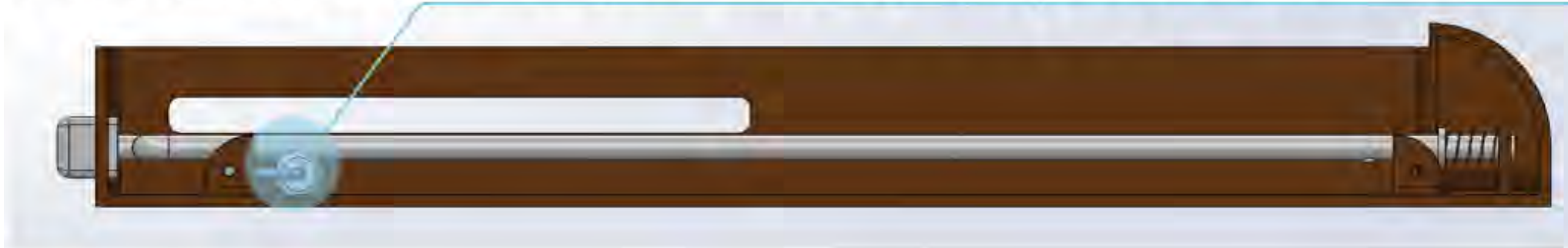


Retractable wheels

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Mechanism guideline – Click-Pop out wheel



Step 1: The magnetic wheel is currently attached to the magnet that is engraving inside H frame



Step 2: as user push the button, the magnet is now being pushed to the front and no longer within the range the wheel can attach



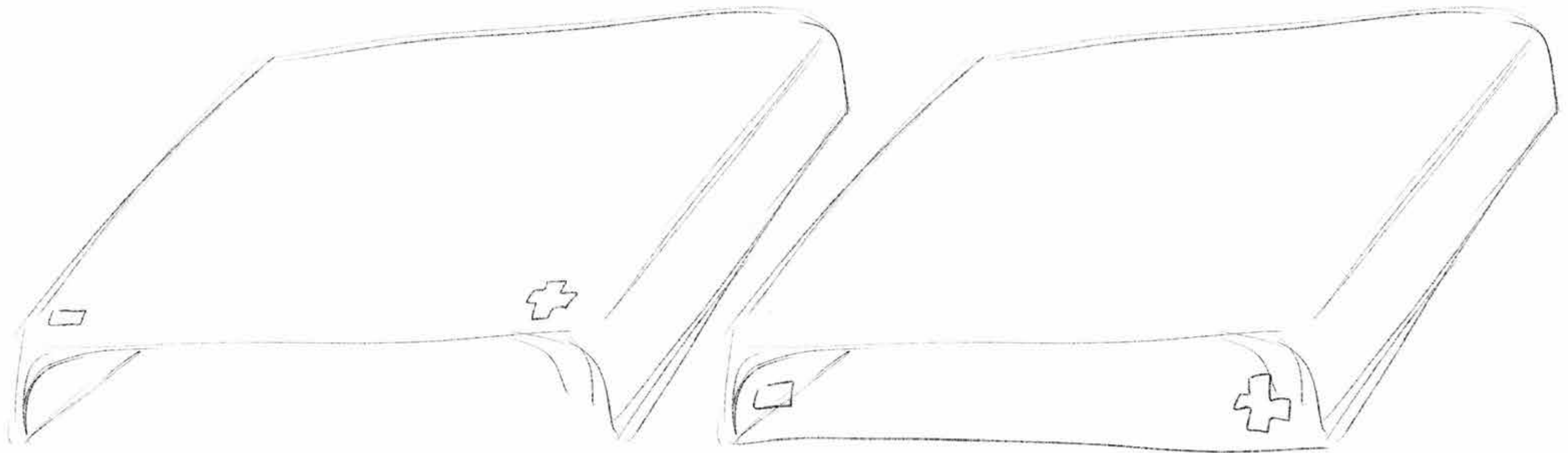
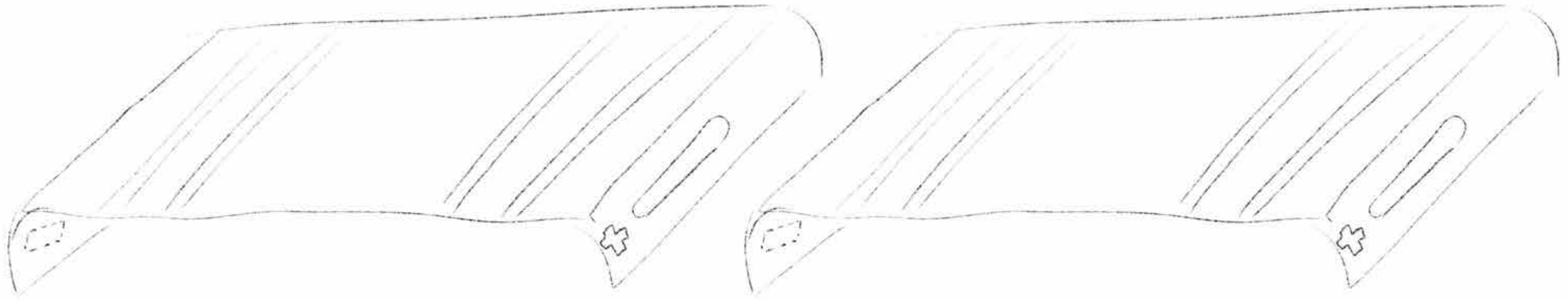
Step 3: The wheel dropped down



Inspiration of Sliding pad

Alma Phan

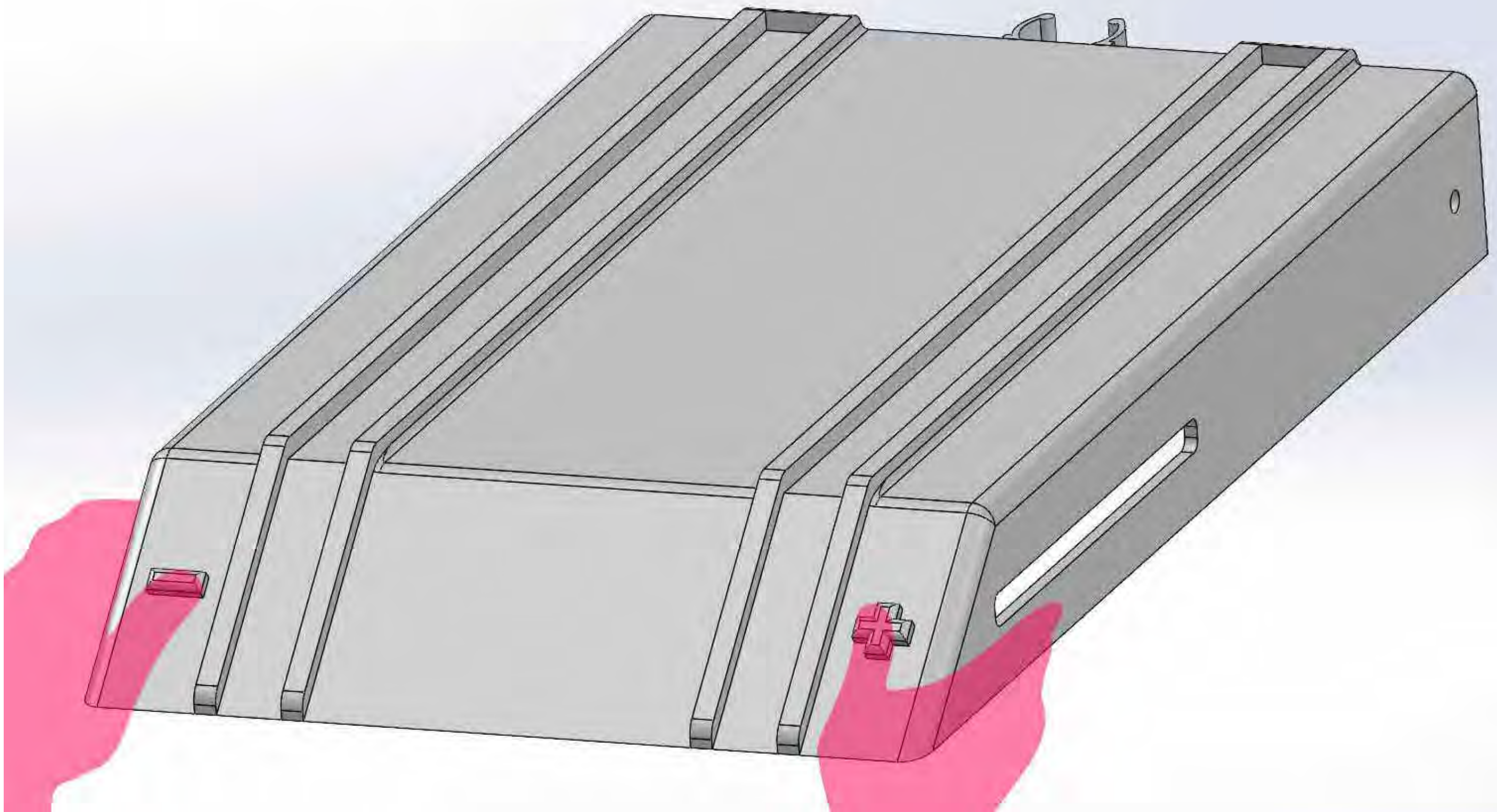
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Top platform

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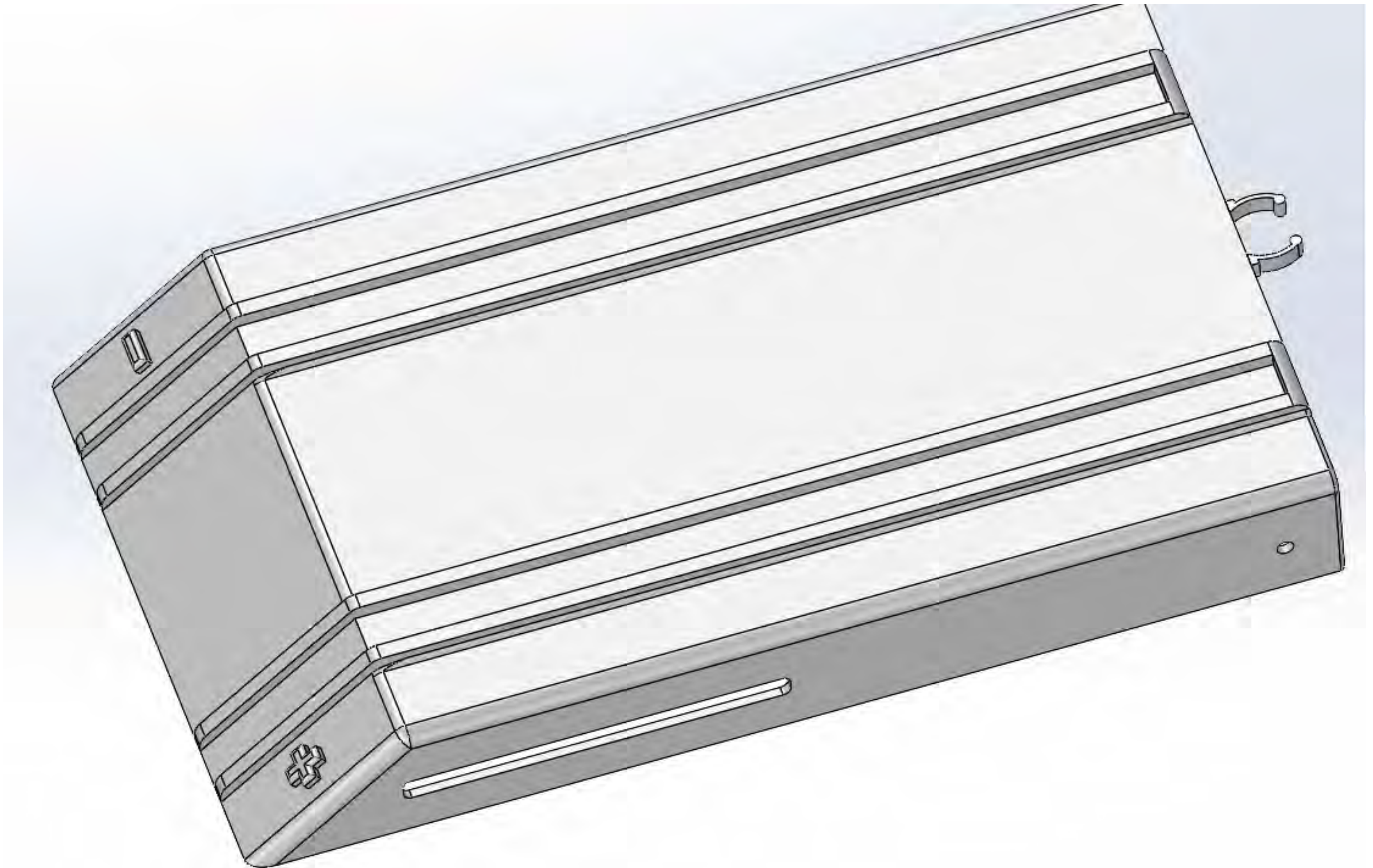
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Top platform - with angled slide

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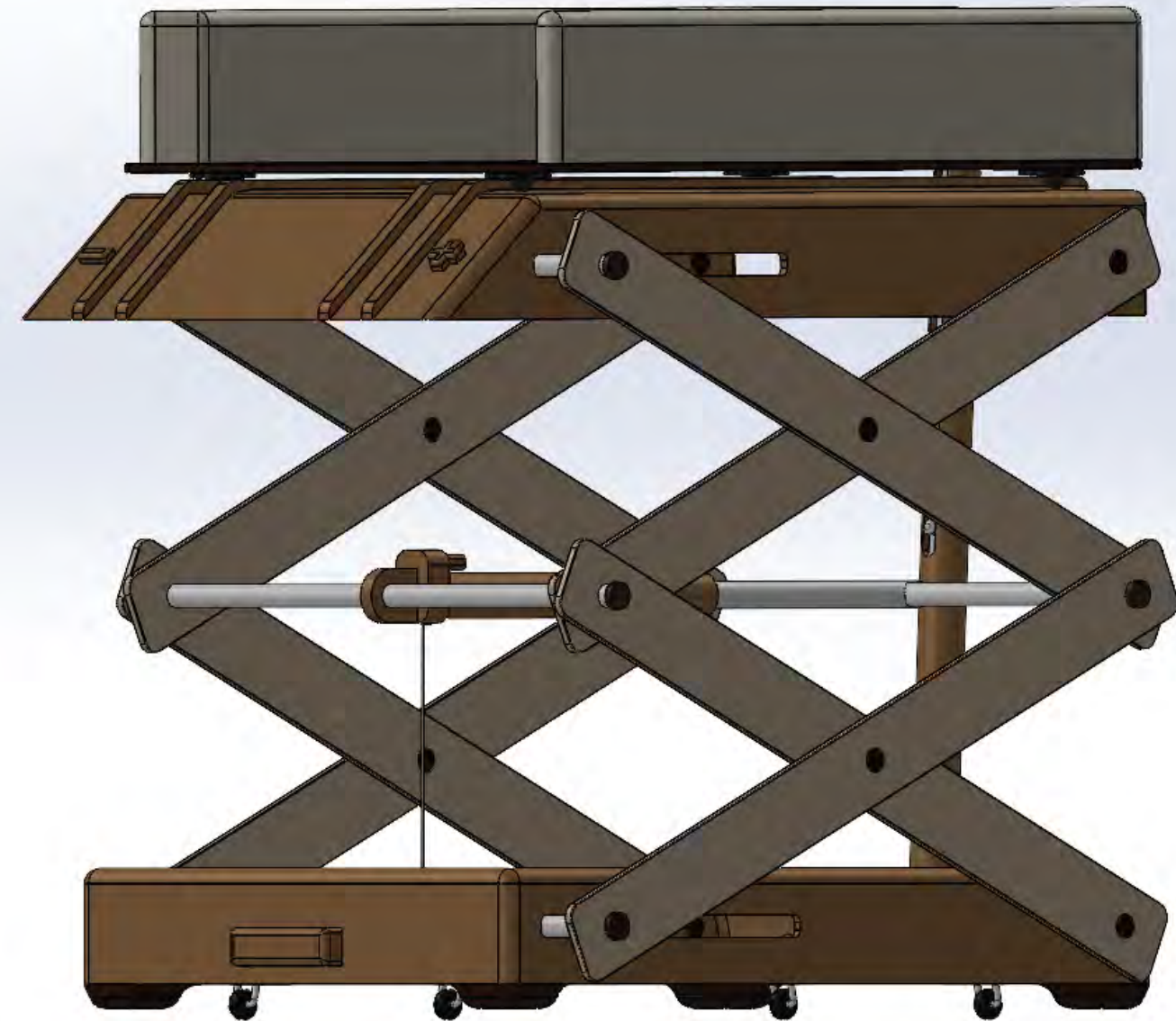
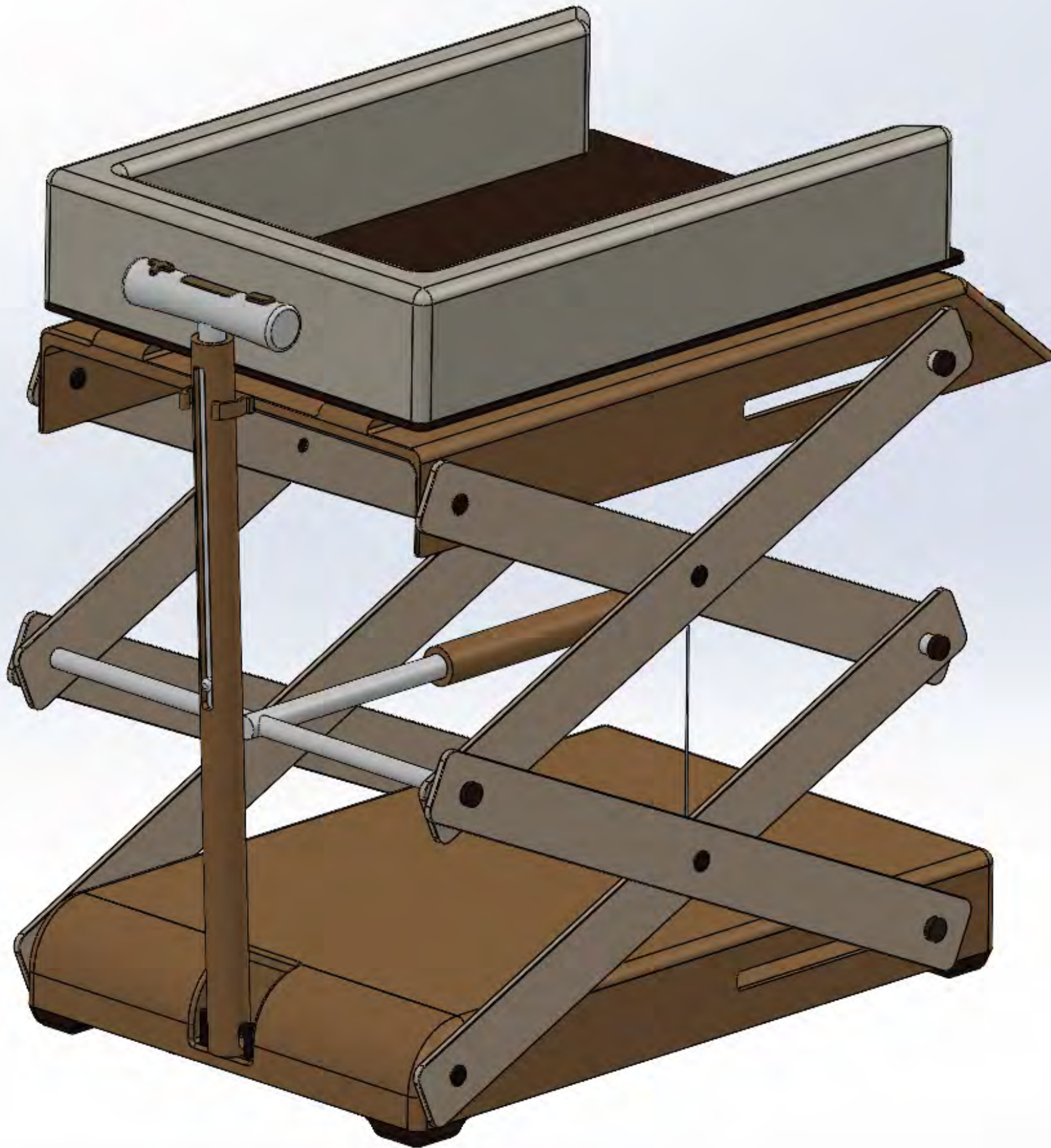
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CADing - Final design

Alma Phan

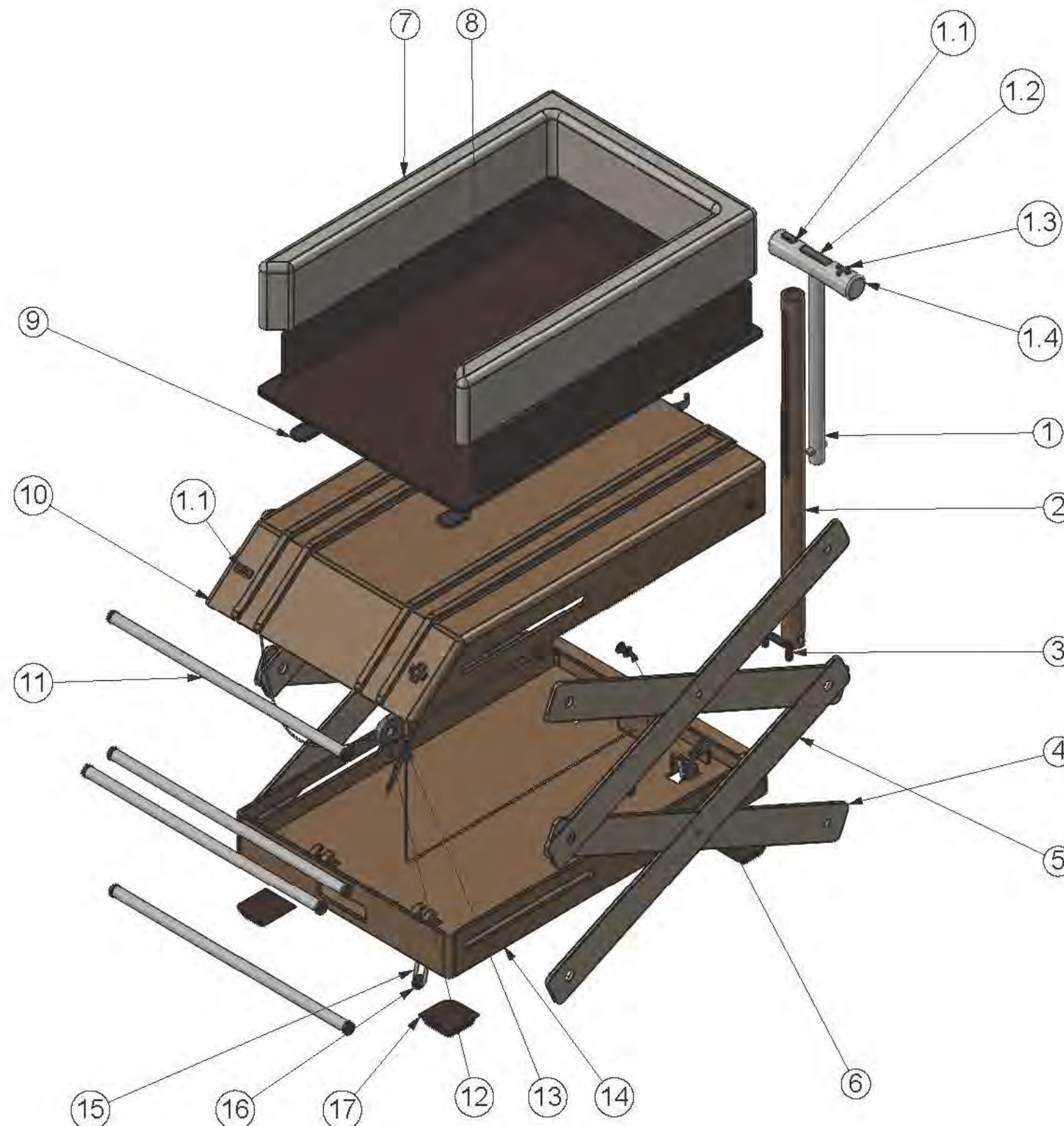
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CADing - Final design

Alma Phan

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ITEM NO.	PART NUMBER	Material	QTY.
1	Top handle 1	Aluminium	1
1.1	Minus button	Silicone	2
1.2	Click extrude handle	ABS plastic	1
1.3	Plus button	Silicone	2
1.4	Top handle 2	Aluminium	1
2	Handle body	ABS plastic	1
3	Hinge	ABS plastic	1
4	Small-Big Pedal	Aluminium	4
5	Big-Big pedal	Aluminium	4
6	Pedal lock	Off the shelf	8
7	Foam support	Foam	1
8	Sliding pad	ABS plastic	1
9	Sliding wheel	Off the shelf	4
10	Top base	ABS plastic	1
11	Sticks	Aluminium	4
12	Electronic Hydraulic mechanism	Off the shelf	1
13	Wire	Off the shelf	8
14	Bottom base	ABS plastic	1
15	Metal	Metal	4
16	Caster wheel	Off the shelf	4
17	Damping leg	Off the shelf	4



TITLE

Exploded view

PART/ASSY.
NUMBER 01

REV. 1

SHEET 1 OF 1

MATERIAL

COLOUR

FINISH

DRAWN BY

AP

DATE

29.10.2025

DRAWING NO.

01

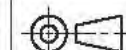
GENERAL
TOLERANCES
0.000 ± 0.05
0.00 ± 0.1
0.0 ± 0.2
0 ± 0.5
ANGLE $\pm 0.5^\circ$

1:6

A3

DO NOT
SCALE
DRAWING

ALL DIMS.
IN MM



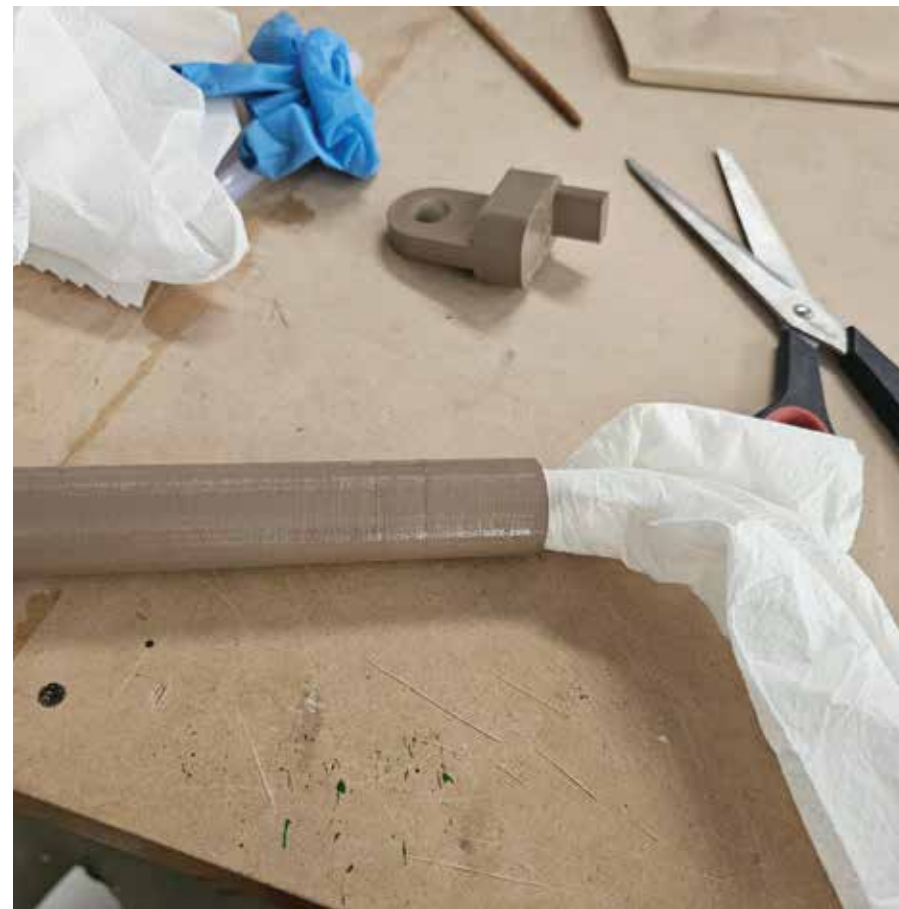
Alma Phan 2025

www.your-website.com.au

Final model making - 3D printing collecting

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There was a problem where white component would go inside the brown housing and did not come out, so i stuff paper inside

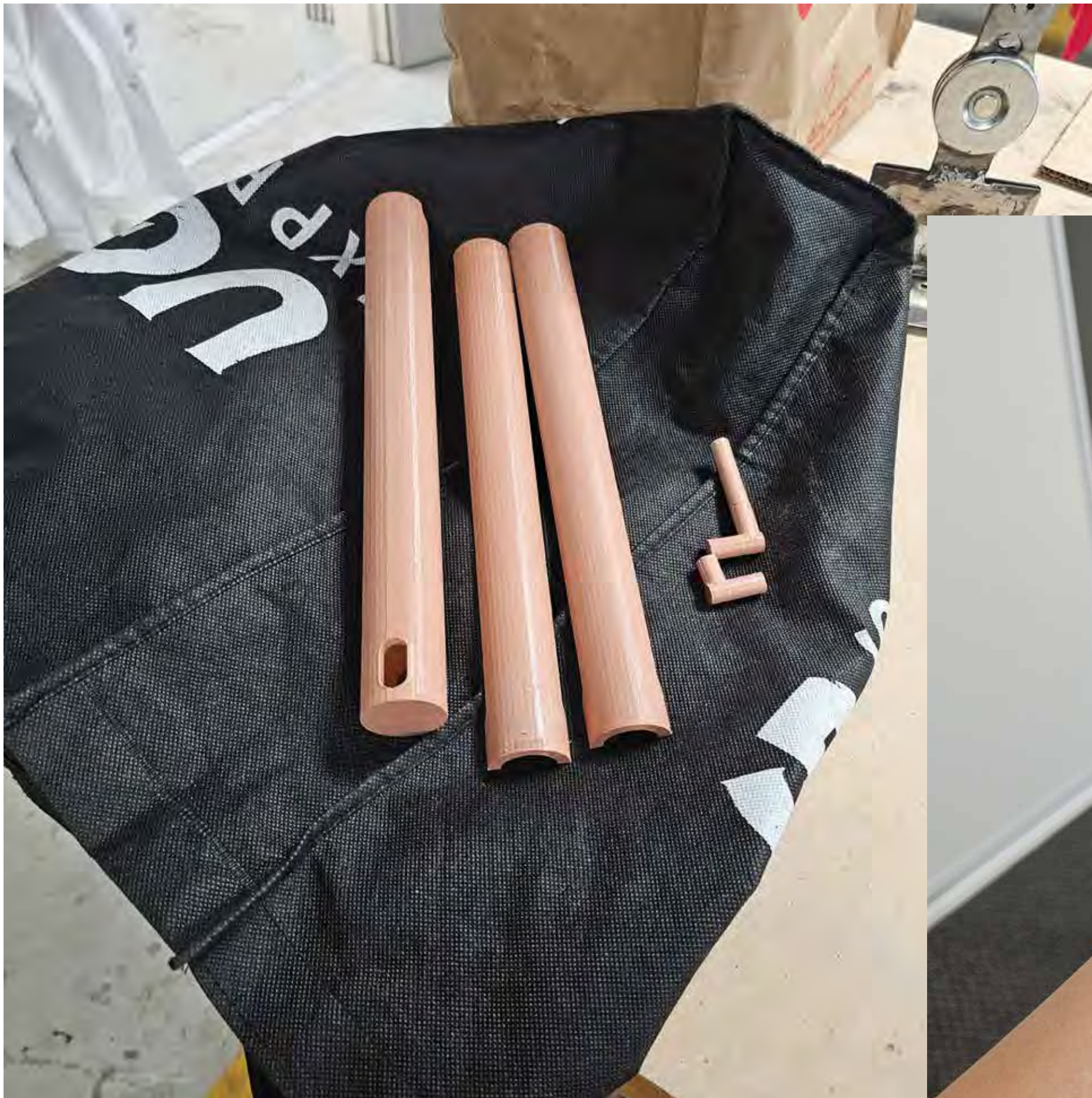
Lastly glue them all thogether using super glue



Final model making - 3D printing collecting

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New handle



Week 13

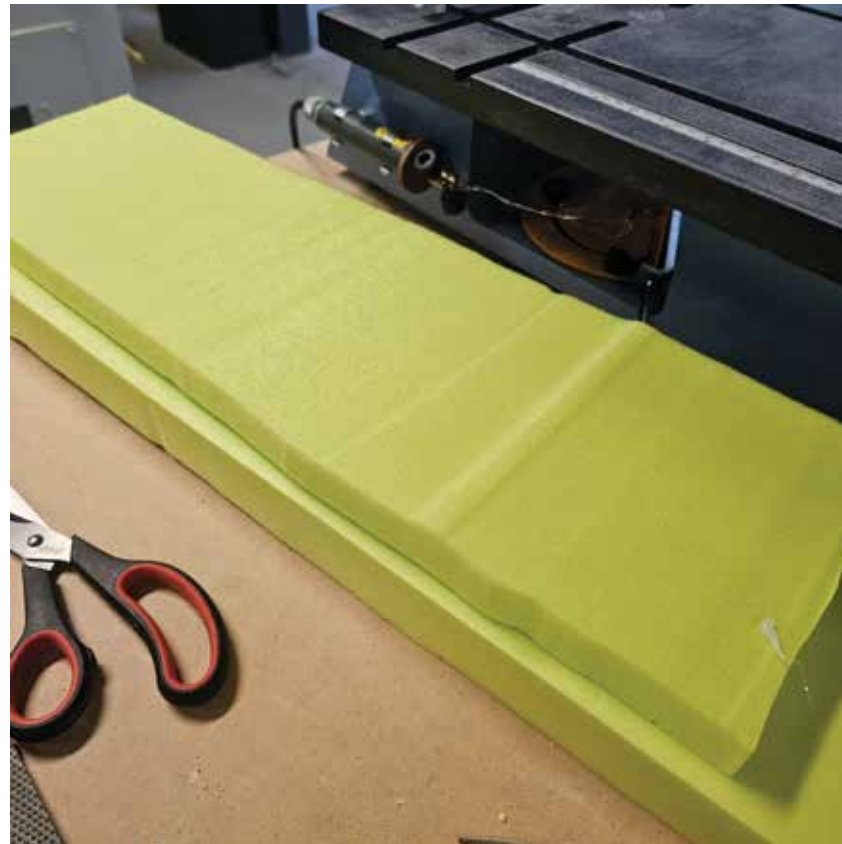
Assignemtn 2 submission



Final Model making

Alma Phan

n11376163

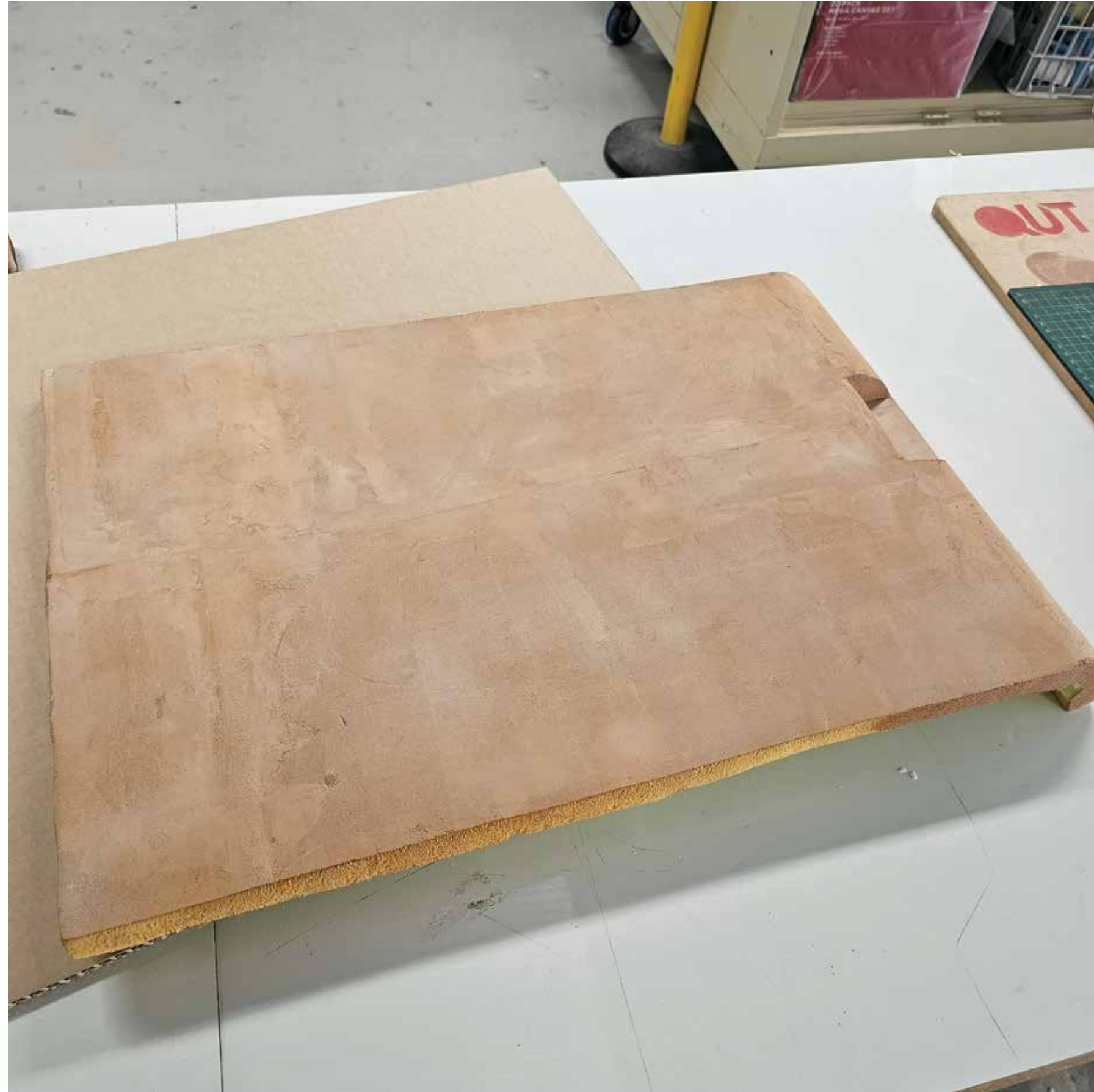


Foam
cutting and
sanding

Final Model making

Alma Phan

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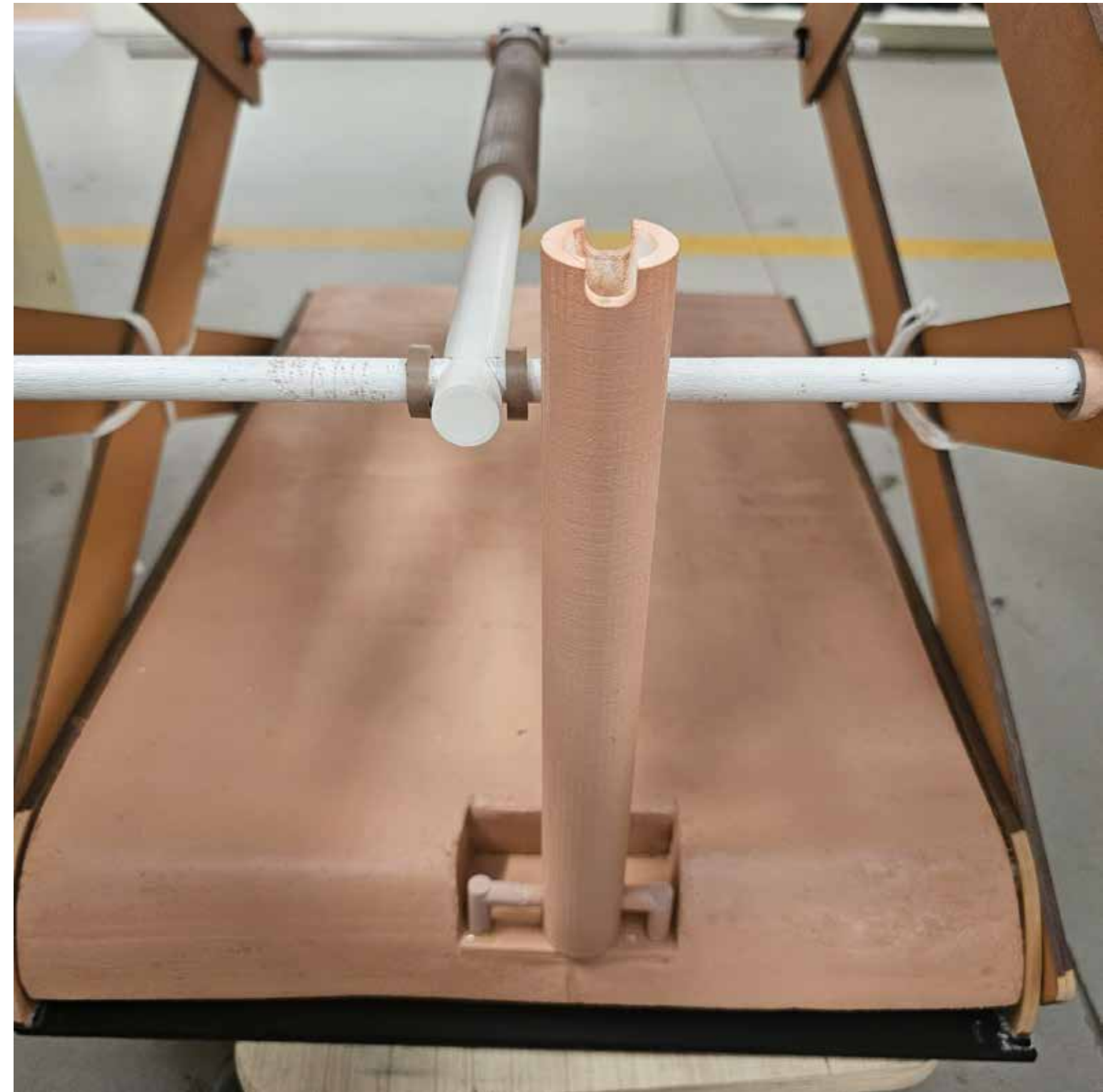


- Using rapid-dry Gout to fill out bubble surface of the foam
- Multiple sanding for best result

Final Model making

Alma Phan

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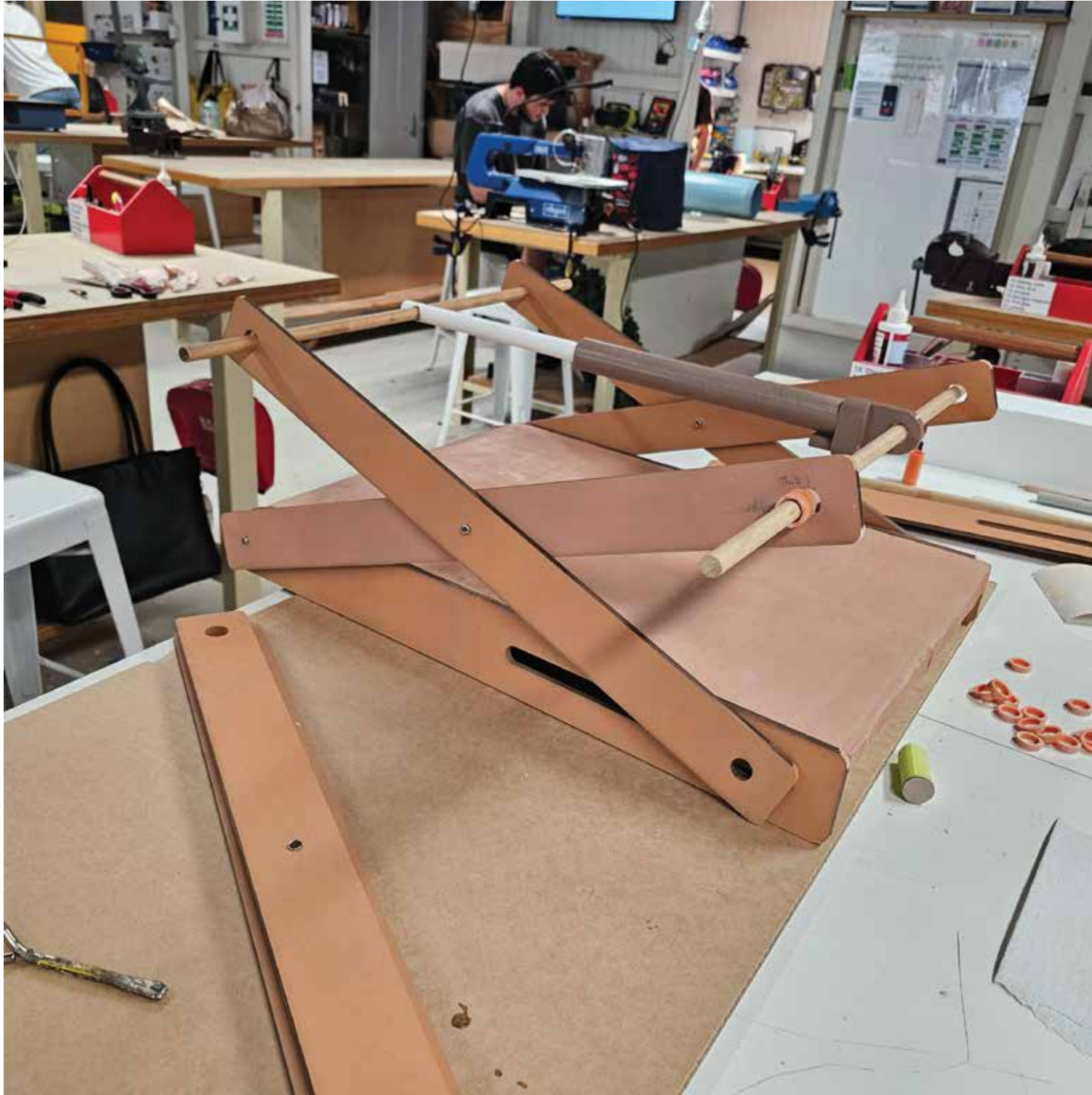


Glueing them all together using super glue and baking power for durability and stronger joint

Final Model making

Alma Phan

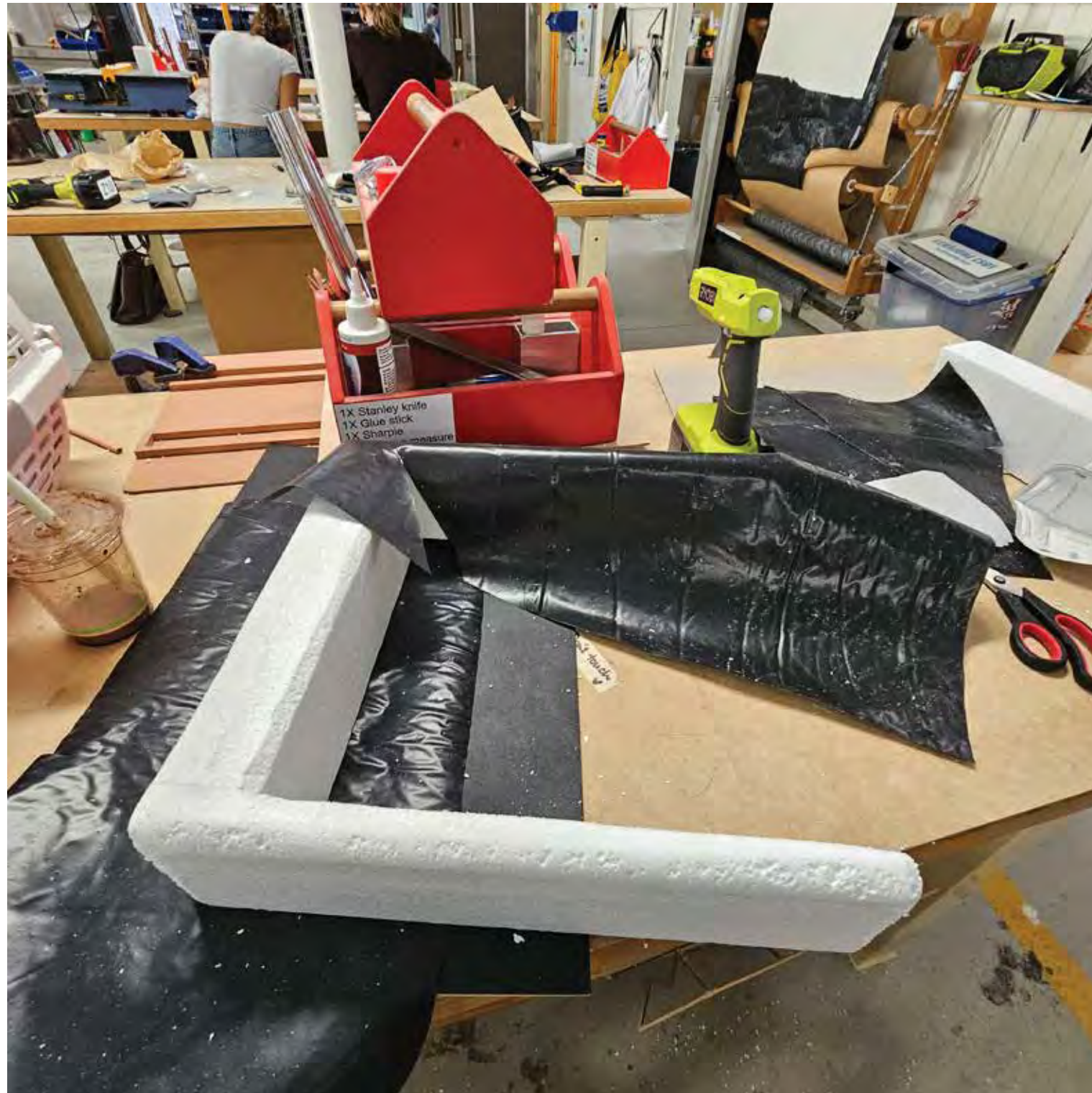
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Final Model making

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Final Model making

Alma Phan

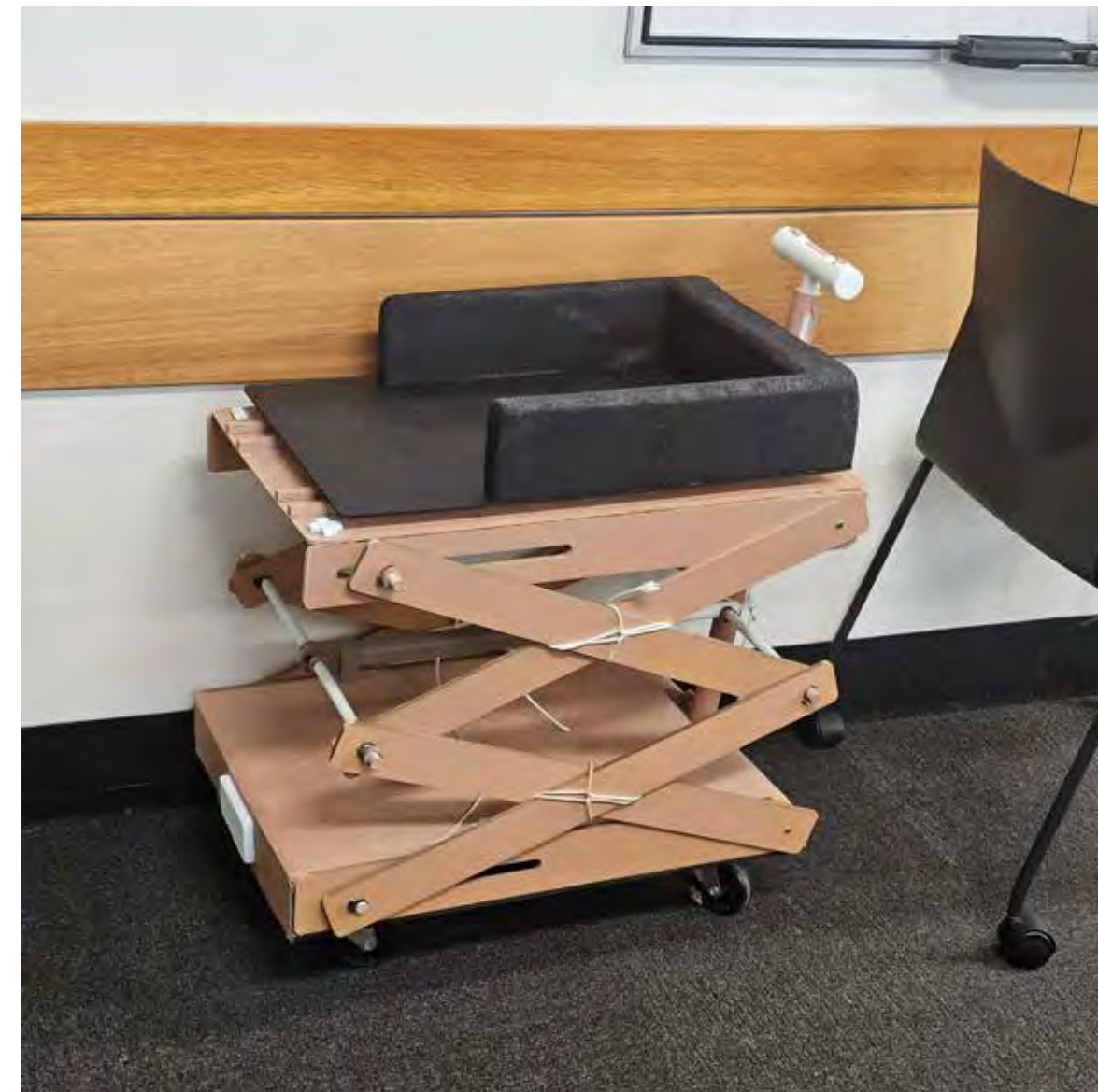
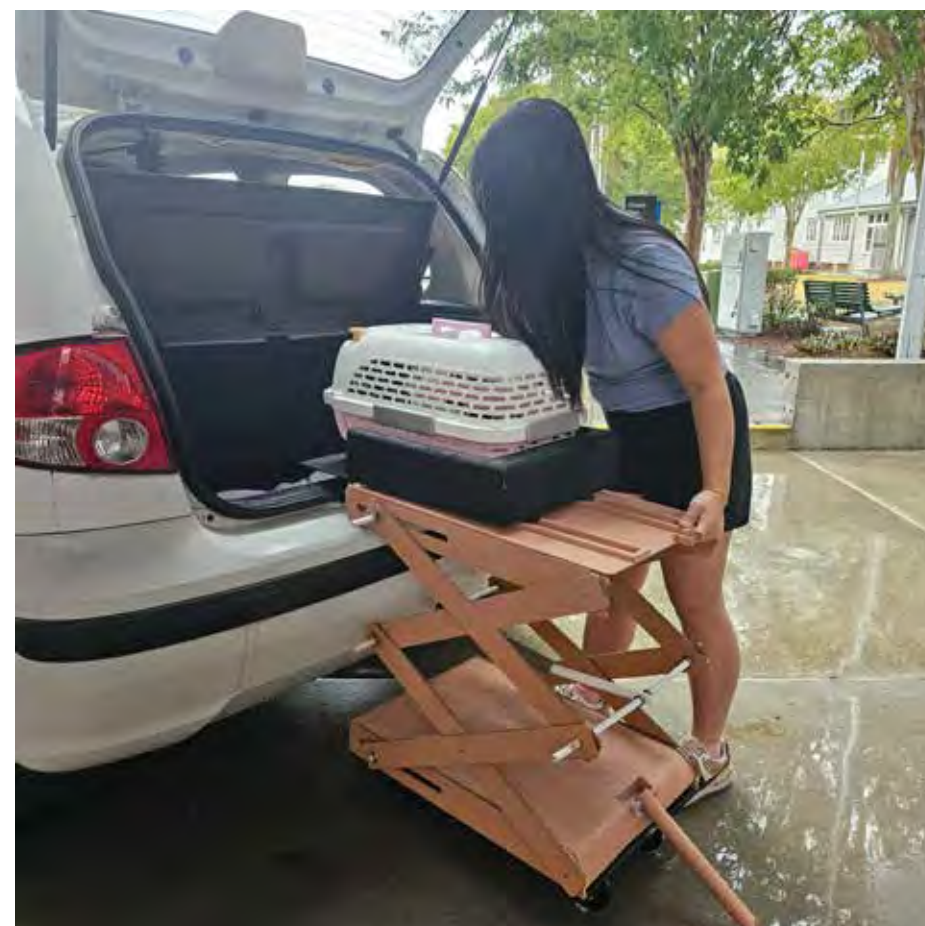
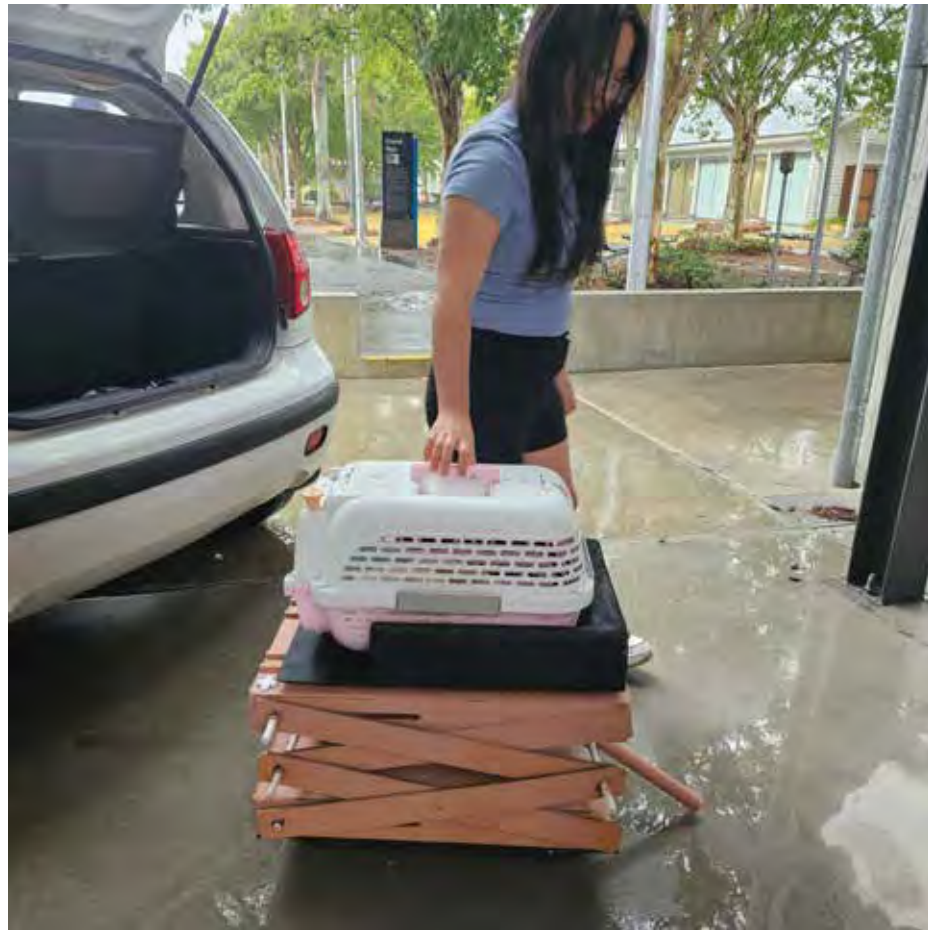
n11376163



Final Model making

Alma Phan

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Photographs of my design



After finished scale 1:1 Final model

-

Finalise all other requirements included:

- + Rendering at high quality
 - + Photographs of final model
 - + Technical report
 - + Product video
- 
- 
- 
- 

