

# IVER

## A BAR SOAP DISPENSER

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UNIVERSITY



## **IVER - A BAR SOAP DISPENSER**

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Degree Project for Bachelor of Fine Arts in Design, IDEL01

School of Industrial Design, Lund University

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Our oceans are filling up with plastic waste and this fact became the main inspiration for this project. I think it is important that us humans question our consumption and usage of plastic. A way to diminish the amount of plastics ending up in the ocean and nature is through a change in our behaviour and our habits. A lot of the plastics come from using single-use plastics and throwing it away. One example is our consumption of liquid hand soap, where you have to purchase the product in a plastic container. Bar soap is a sustainable substitute for liquid soap, but people are not using it because it feels unhygienic. In this project I have taken upon myself to solve the issue of not wanting to use bar soap as an option for washing one's hands. Through research, testing, brainstorming, sketching, and 3D-rendering, I have developed a small portable bar soap dispenser for home use. The dispenser works similar to a liquid soap dispenser, which a lot of people are comfortable with using, and keeps the bar soap dry and safe inside of it, which will prevent the soap from looking and feeling unhygienic. The project is based on theory since I was not able to test it due to the COVID-19 pandemic, spring 2020.

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# introduction

## *motivation*

The inspiration for this project comes from the increasing amount of plastics in our oceans all over the world.

So... Where does it come from?

A lot of it comes from single-use plastics that us humans use in our everyday life. The EU has decided to ban the 10 most common single-use products found on beaches, e.g. plastic cotton buds, cutlery, plates, straws, drink stirrers and sticks for balloons. They have also introduced labelling or other methods to inform consumers of the plastic content and how to dispose of it. This action is a great way for making a change, and I got inspired to do something similar. To affect the way we, as consumers, think and behave.

European Commission, *Single-use plastics*, [https://ec.europa.eu/commission/news/single-use-plastics-2018-may-28\\_en](https://ec.europa.eu/commission/news/single-use-plastics-2018-may-28_en), 1 August 2018

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# introduction



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# introduction

## *inspirational products*

I looked more into single-use hygienic products and their packaging. I found that a lot of products require plastic packaging and/or more complex packaging with parts of different materials. We like new things because we associate them with hygiene. Use something once and throw it away. But our view of what's hygienic is taking its toll on the environment.

I made some statements about how we should look upon these products. If it is single-use, make it so that it generates no waste. A product can be partly single- or few time-use, e.g. an electric toothbrush with changable heads to diminish plastic waste. If it is possible, make it into a non-disposable product, find new ways to solve the problem. This is by far the best solution according to me.

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# introduction

## *inspirational products*

Some of my favourite inspirational products I found were dry toothpaste tablets that can be packaged without plastic or metal, one-portion shaving cream with solvable "plastic", and the menstrual cup, which saves a person hundreds of tampons per year.

The packagings inspired me because a lot of packagings these days are plastic and we are so accustomed to having some products in plastic, like toothpaste, but it is often possible to rethink the packaging or the entire product in its whole.



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# introduction

## *hand soap*

Hand soap caught my attention because it is something we all use everyday, several times a day. There are two main types of hand soap: liquid and bar soap.

There are traces of people using solid soap from almost 5000 years ago, a mixture of fat and ashes. During the 1800's the industrial production of bar soap started and the product became cheaper and more coveted since people got a better understanding of personal hygiene. In Sweden, liquid soap for hand washing became popular during the 1960's with commercials that promoted the "more hygienic plastic bottle", and in the 90's liquid soap was the preferred choice. Since then the trend of purchasing natural and ecologically sustainable soaps

Tekniska museet, *Tvål*, <https://www.tekniskamuseet.se/lar-dig-mer/100-innovationer/tval/>, 2 oktober 2019

# introduction

## *hand soap*

Liquid hand soap is the more popular choice in the more recent years, mostly because it is seen as more hygienic. But the liquid soap contains many synthetic substances and preservatives. The soap requires buying a new plastic bottle or refill bottle every time, resulting in a lot of plastic waste. Overdosage is also a common issue since the dispensers often release too much product than is needed. The statement that a plastic bottle is more hygienic than a bar soap is false. There was an experiment made where soaps were purposely contaminated with e-coli bacteria and participants got to wash their hands with it. The experiment showed that no bacteria transferred to the hands.



Heinze, J. E., Yackovich, F. *Washing with contaminated bar soap is unlikely to transfer bacteria* (2009)



# introduction

## *bar soap*

I decided to focus on bar soap since it is already a sustainable choice for hand washing that has been around for centuries.

Why is bar soap superior to liquid soap when it comes to ecological sustainability?

- It does not require plastic packaging
- It is concentrated which reduces CO<sub>2</sub> emissions during transport
- The production of bar soap requires 1/5 of the energy compared to liquid soap
- It is cheaper to produce





**brief**

**10**

**develop a new system for hand washing at home which encourages using bar soap**

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# problem

Why are people not using bar soap?

Many people do not use bar soap and after doing some research and interviews, I found there were many aspects contributing to why. I narrowed them down to three main reasons:

- Slipping
- Staying wet
- Leaving a mess



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# market

*existing solutions*

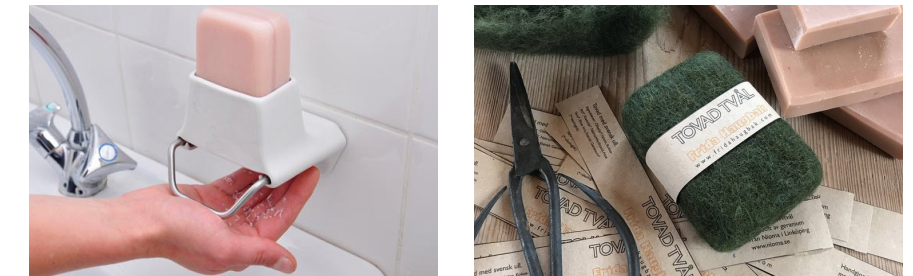
Prevents slipping



Keep dry/draining



Prevents getting messy



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## Agnes Wold

Professor of clinical bacteriology  
University of Gothenburg

### Is bar soap less hygienic than liquid soap?

It is almost impossible for bacteria to grow on a bar soap. The soap's function is to remove grease from our hands when we feel dirty, and both soaps will do the trick. The important thing is that it smells nice and feels good to use.



## Anders Samuelsson

CEO at Skargard AB  
Gothenburg

### Why do you think bar soap feels unclean to some people?

Soaps of bad quality tends to crack and look nasty, and that is where I think this idea comes from. So if you could find a way to make bar soap be perceived as more hygienic, that would be wonderful!

In this project I do not want to focus on the term hygiene because it has little to do with my actual goal. It is shown that there is no difference between using liquid or solid soap. The only difference is in how we perceive them.

Our perception of cleanliness is not the same as hygiene and I want to show this by bringing forth bar soap, a product that many of us find unhygienic and dirty but which has so many great characteristics. The goal is to make the user feel more comfortable with bar soap by creating a system where it is not being affected by factors which may lower the quality of the experience.





## application tests

### *Ordinary*

I conducted tests with some willing participants. I wanted to see what type of application is preferred when using bar soap.

The participants got to use three different ways of applying the soap: the first way was using it in the ordinary way, the second was using a brush as a tool to apply soap to the hands, and the last way was getting the soap shredded into one's hand.



### *Tool*



### *Shredded*

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## application tests

### *conclusions*

The test resulted in a lot of important observations and knowledge. The new knowledge led me to make certain decisions later in the process. I compiled a list of the most important facts.

- Lather = clean feel
- Control of the soap is important
- Bar soap is aesthetically pleasing = looks fancy
- All participants kept the tap running while applying
- Using a tool is complicated and does not feel clean

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## target group

I want to focus on a large target group with people from ages 20 - 90 years and of all genders.

They see themselves as environmentalists with a sense of style. They are people that want to have a clean home but also want to be ecologically sustainable in their everyday life. Some of them might be people in a shared living situation. Thus they cannot decide between using liquid or solid soap, so they need a compromise.

In the long run I want people to see bar soap in a new light and rethink their soap usage.

On the next page you can read about the type of person I think would be interested in purchasing and using this product in their home.

## target group

### *user cases*



Anna and Lisa are students of environmental engineering and they live together in a shared flat. They enjoy having friends over for tea and walking their dogs.



Markus is a 32-year old nurse. He has his own garden and likes to go hiking on the weekends. He owns a simple house in a smaller city that he shares with his girlfriend and one child.



Maria works as a biologist at the botanical garden. She likes going to the theater and is a part of a book club. She treats herself to the occasional home spa treatment and glass of wine.



# function analysis

## Basic functions

Function	Class	Comment
Hold bar soap	MF	
Feel hygienic	N	sensory
Prevent slipping	N	
Keep dry	N	away from water
Be portable	N	not wall-mounted
Be eco-sustainable	D	materials, durable, production
Keep fresh	D	soap looks new
Be storable	U	

## Application

Function	Class	Comment
Apply product	MF	bar soap
Control dosage	N	prevent overuse
Apply water	D	
Apply effectively	D	

MF = main function, N = necessary, D = desirable, U = unnecessary

# function analysis

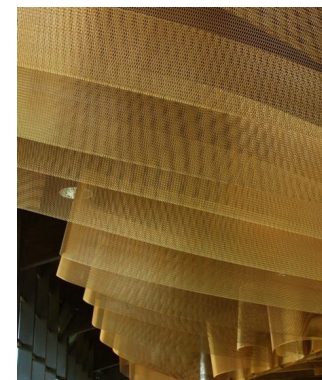
## Aesthetics

Function	Class	Comment
Express cleanliness	N	shape & materials
Express ecology	N	
Match bathroom aesthetics	N	follow trends
Express simplicity	D	usage
Display soap	N	soap can be seen

## Maintenance

Function	Class	Comment
Easy to clean	N	
Exchangeable parts	D	
Minimise bacteria	D	sterile materials
Demountable	D	for cleaning
Be water resistant	N	

# mood board







# ideation

## early sketches



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# ideation

## early models

When I made models of some of the sketches I realised that none of them would work as I wanted them to, because they still require that you touch the soap with your hands which wouldn't solve the issue with the soap not feeling hygienic.

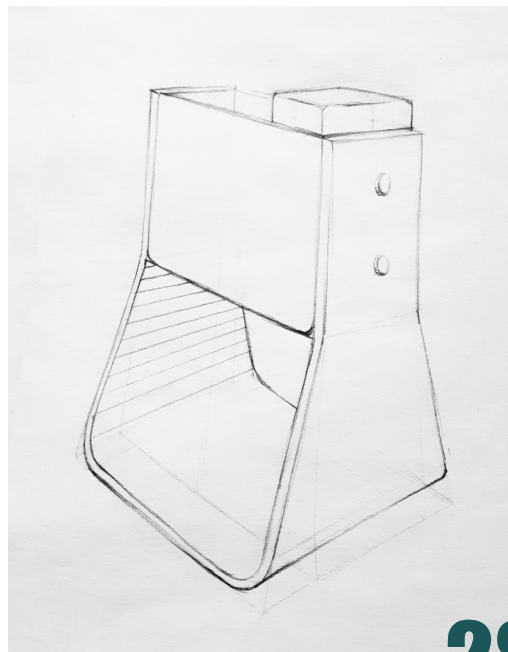
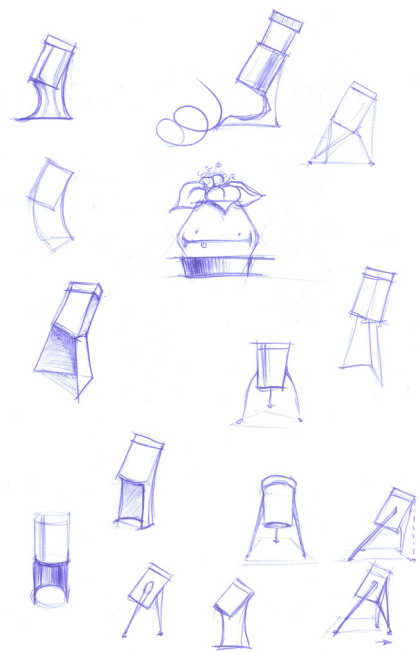
The mockup in the bottom was the best one but its rotational mechanism didn't allow it to stand on its own.



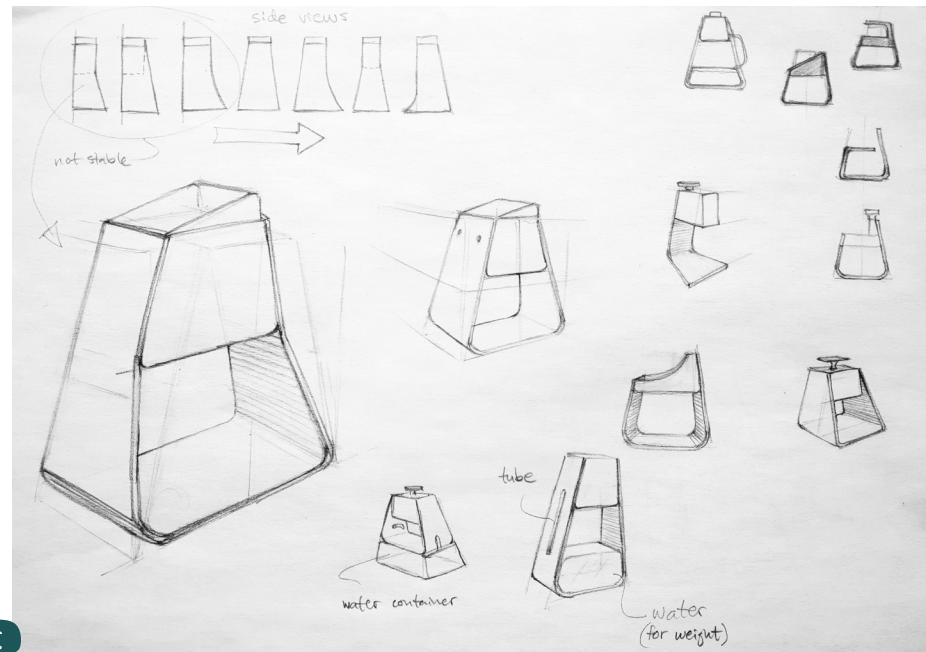
27

# ideation sketches

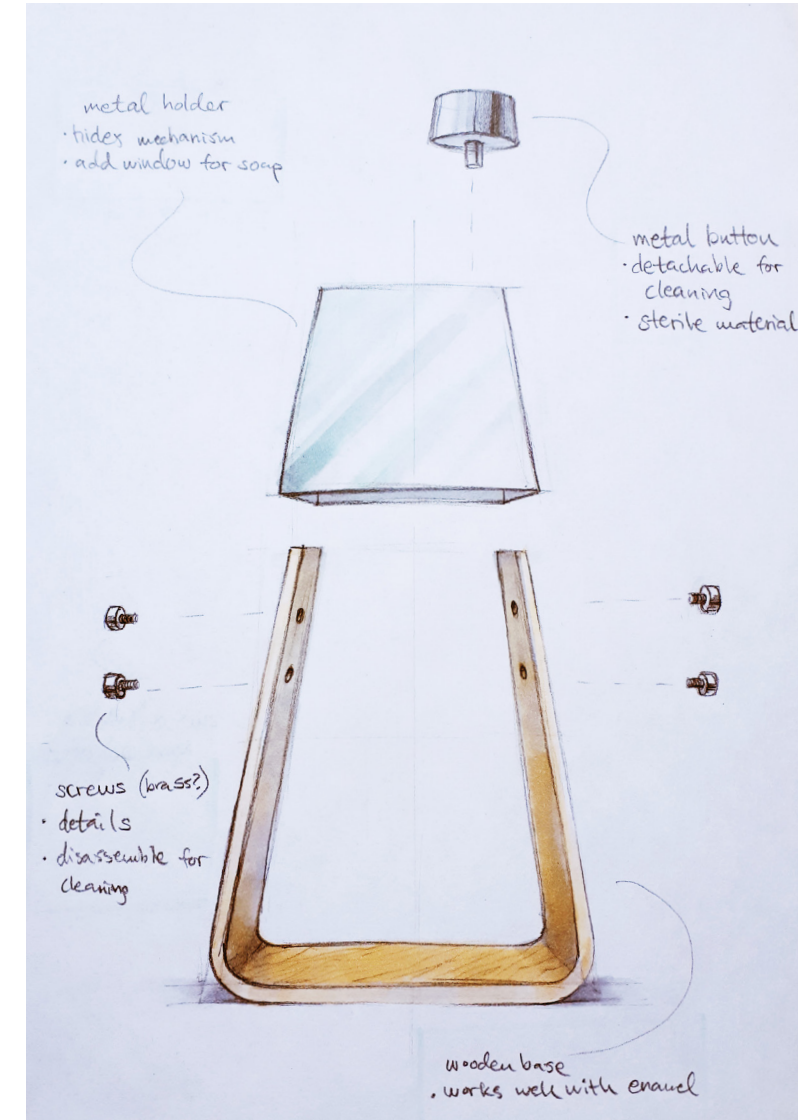
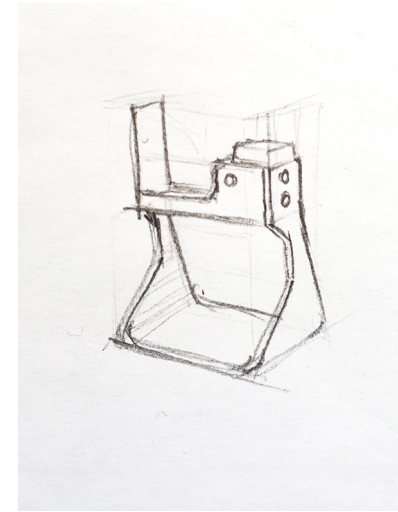
I started over. Then came the idea of a dispenser more similar to a liquid soap bottle, but instead of pumping out soap it would grate bar soap into the hand: a movable object that is to be placed on the sink.



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# ideation sketches

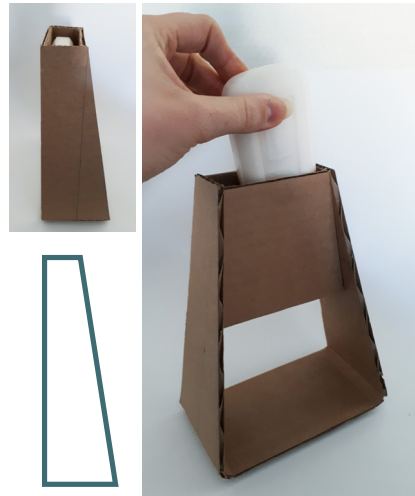


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# ideation

## models - testing stability



Not stable  
Good height  
Needs more depth in bottom



More stable  
Good height  
Needs more depth in bottom



Centered point of gravity  
Too high  
Needs more depth  
Unflattering shape

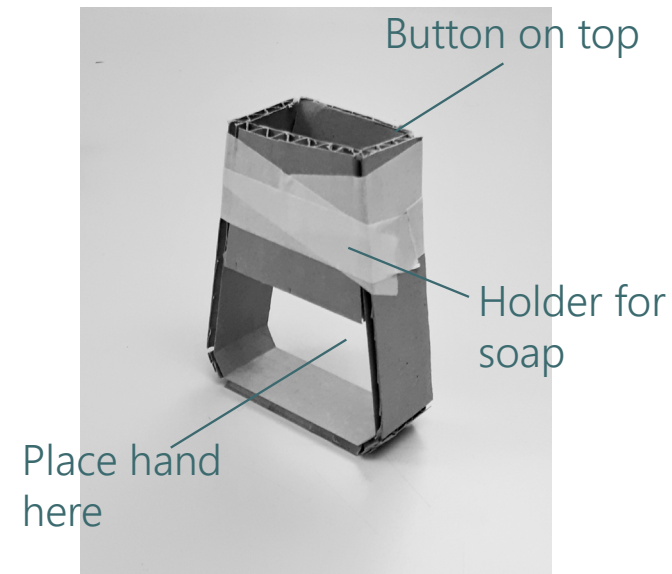


Centered point of gravity  
Good stability  
Stylish shape

# ideation

## models

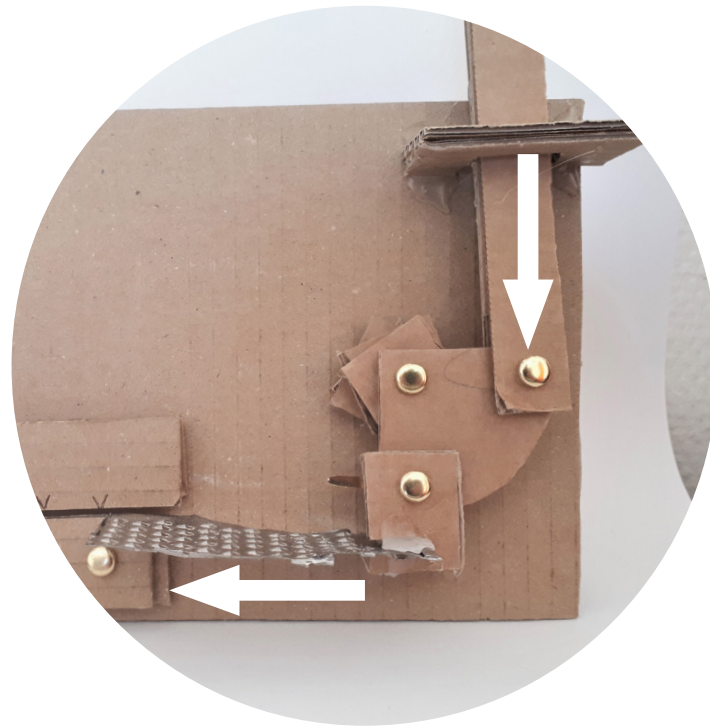
I tested the model on a sink. Comparing it to a liquid soap dispenser, I tried to match the size and height. This makes it look familiar and proportional when placed on the sink.



# mechanism

It is important that the mechanism is effective and easy to understand for the user. People are accustomed to the vertical motion of a liquid soap dispenser, and I wanted to mimic this action to make the product easy to understand. Press a button, get soap. Simple!

In this product's case, the vertical movement needs to be translated to a horizontal movement to move the grater and shred the soap.

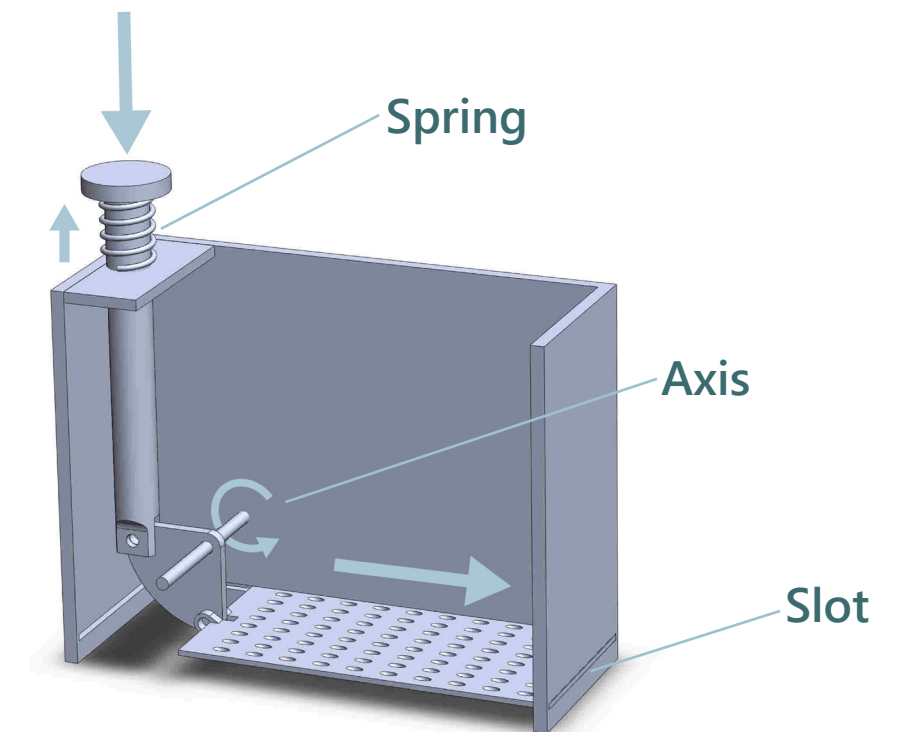


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# mechanism

The user presses down the button which triggers the shredder to move vertically and move out through the slot. When the button is let go of, the spring will put it back in its original position.

I decided that seeing the shredder as it peeks out through the slot would be a fun detail and a way for the user to see the mechanism.



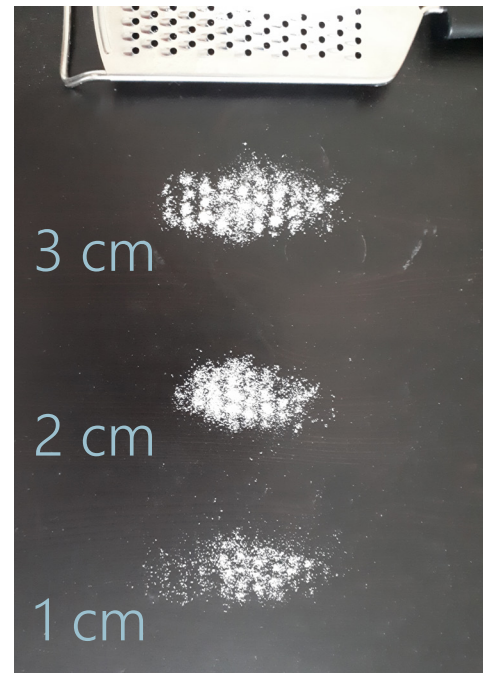
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# mechanism

## *dosage*

To test how much soap is needed for every wash, I marked a grater and tested different dosages with the same force. I then proceeded to wash my hands with the different doses several times. The conclusion was that a 2 cm drag along the grater resulted in an ideal dose.



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# materials

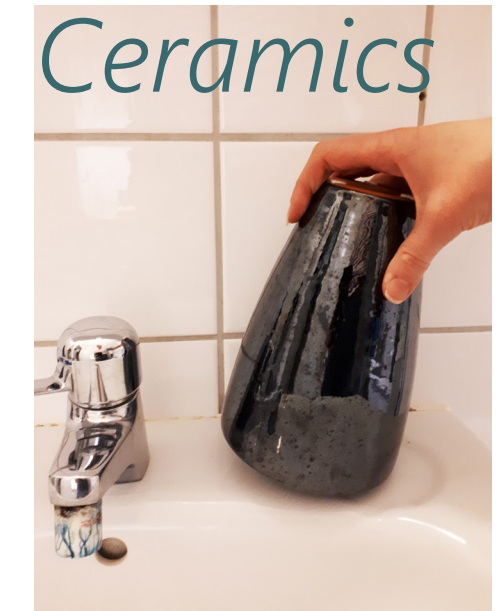
## *tests on porcelain sink*



Will not harm porcelain  
Very light  
Nice aesthetic touch



Heavy  
Might harm porcelain  
Stable



Delicate  
Might brake or harm porcelain  
Familiar material

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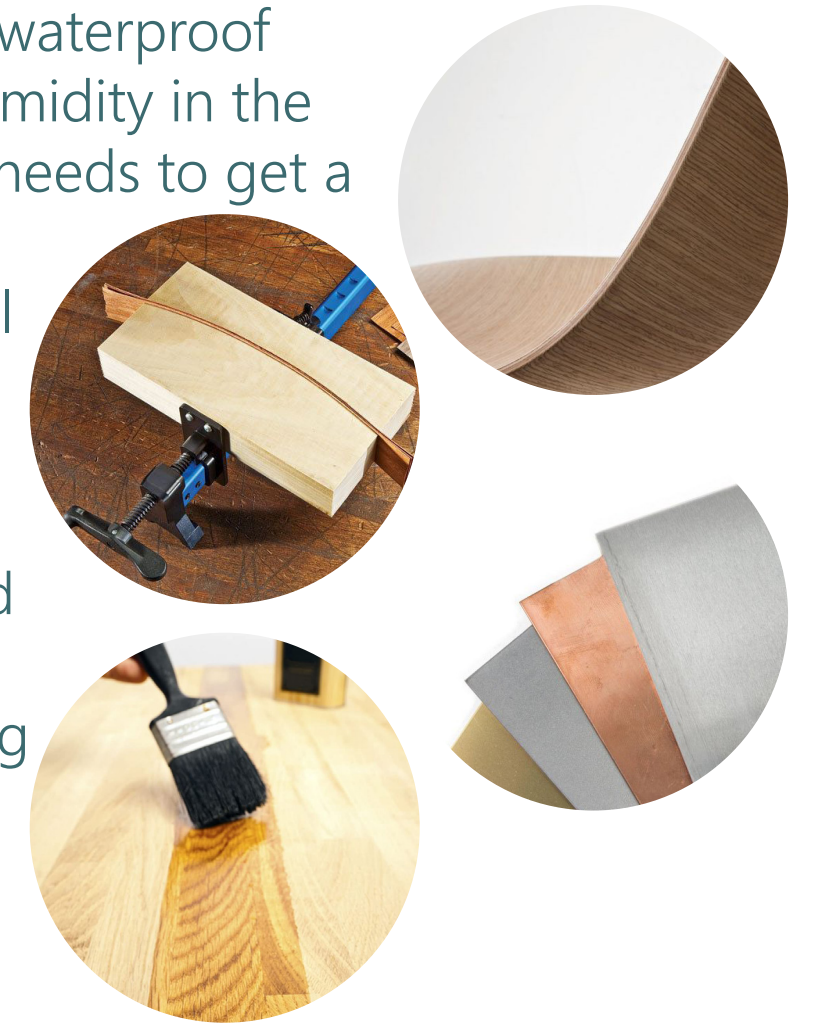


The best choice of material, because of its lightness and softness, is wood. Bamboo is another good choice for the product but I wanted to work with a more local material. The best type of wood for damp environments such as a bathroom is beech or oak. They are also good for bending which is crucial for my design.

To get the desired shape I want to use bent lamination which is the technique of layering thin pieces of wood and gluing them together.

Stainless steel is going to be used for the top button for easier maintenance and cleaning. The "housing" is going to be made out of 2 mm sheet metal. It will be lacquer painted and come in a range of colors so that it can match many different bathrooms.

In order for the wood to be waterproof and not be ruined by the humidity in the bathroom the wooden part needs to get a surface treatment. Oil is the most sustainable and natural treatment if comparing to the more synthetic choices like sealants. The best oil to use for my product is linseed oil because it brings out the wood grain without changing the colour of the wood too much and it is a great water repellent.



## evaluation of models

From the mockups that I made out of cardboard I found some details that I needed to add or change.

**Weight** - To get the right dosage there needs to be something to weigh down the soap. My idea is to add a piece of a heavier metal to place on top of the soap.

**Fixing soap** - In order for the soap to be shredded properly it also needs to be fixed in place. My solution for this is an adjustable screw or wall that allows the user to use different sized soaps.

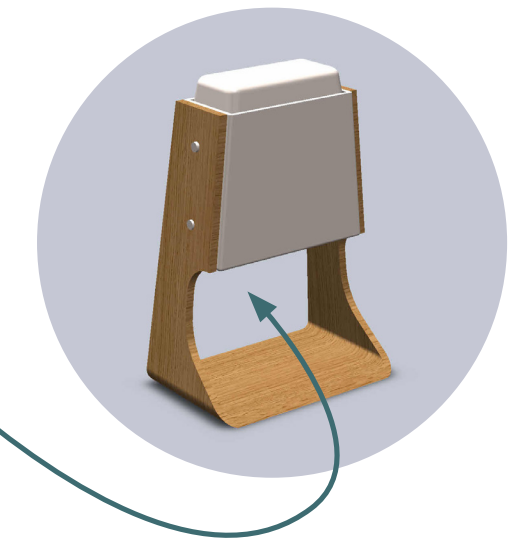
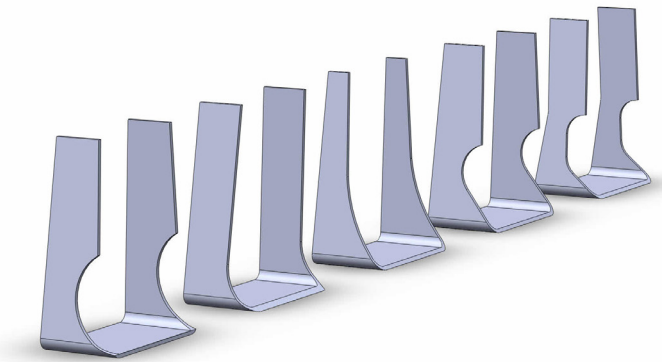
**Button** - The placement and shape of the button must be further investigated and semiotics also needs to be thought through.

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## CAD models

Some different silhouettes was made to avoid the users hand coming in contact with the wooden sides resulting in a more clean experience.

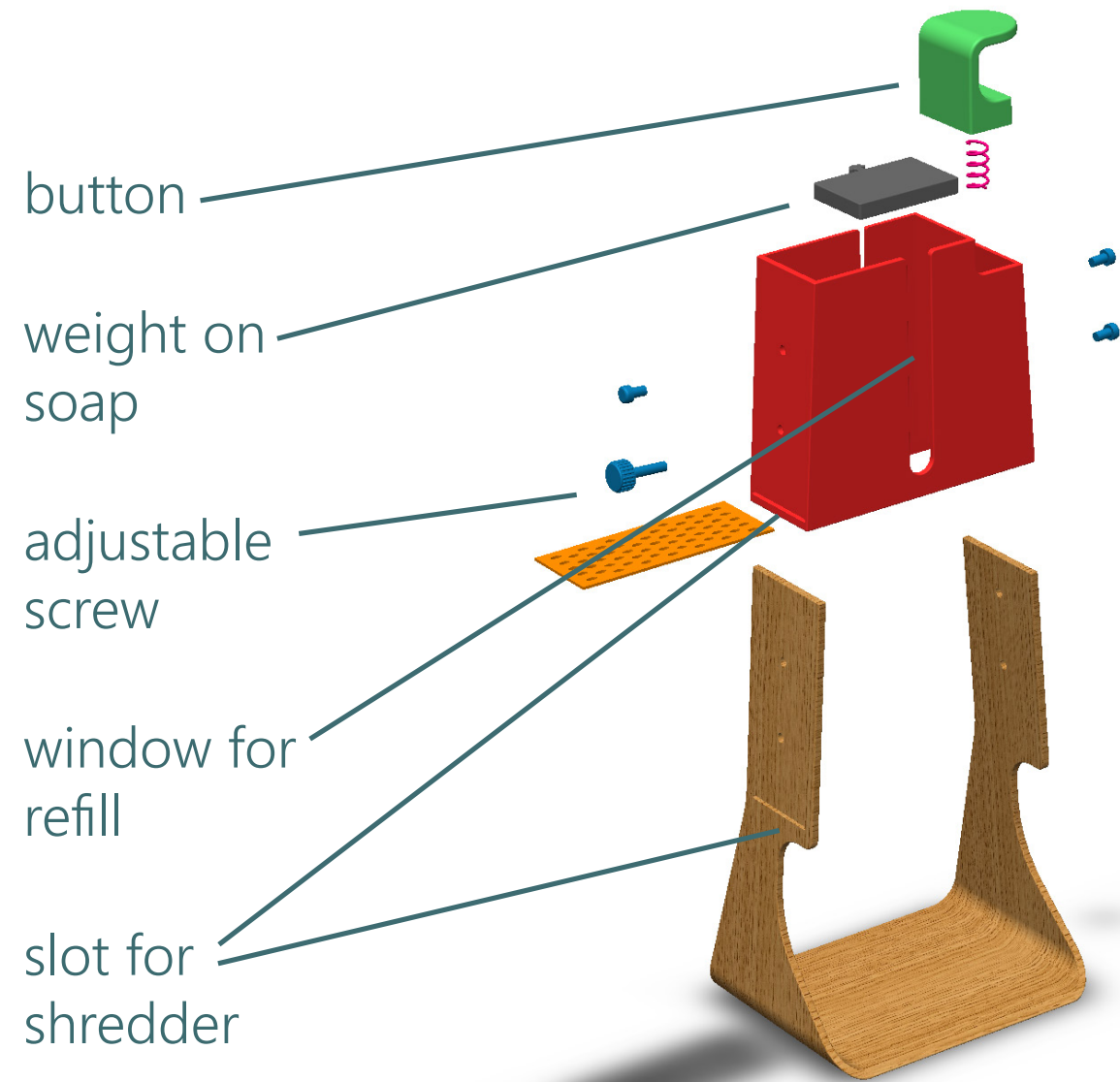
The carved out silhouette allows the user to apply the soap without touching the dispenser more than necessary.



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# CAD models

*parts*

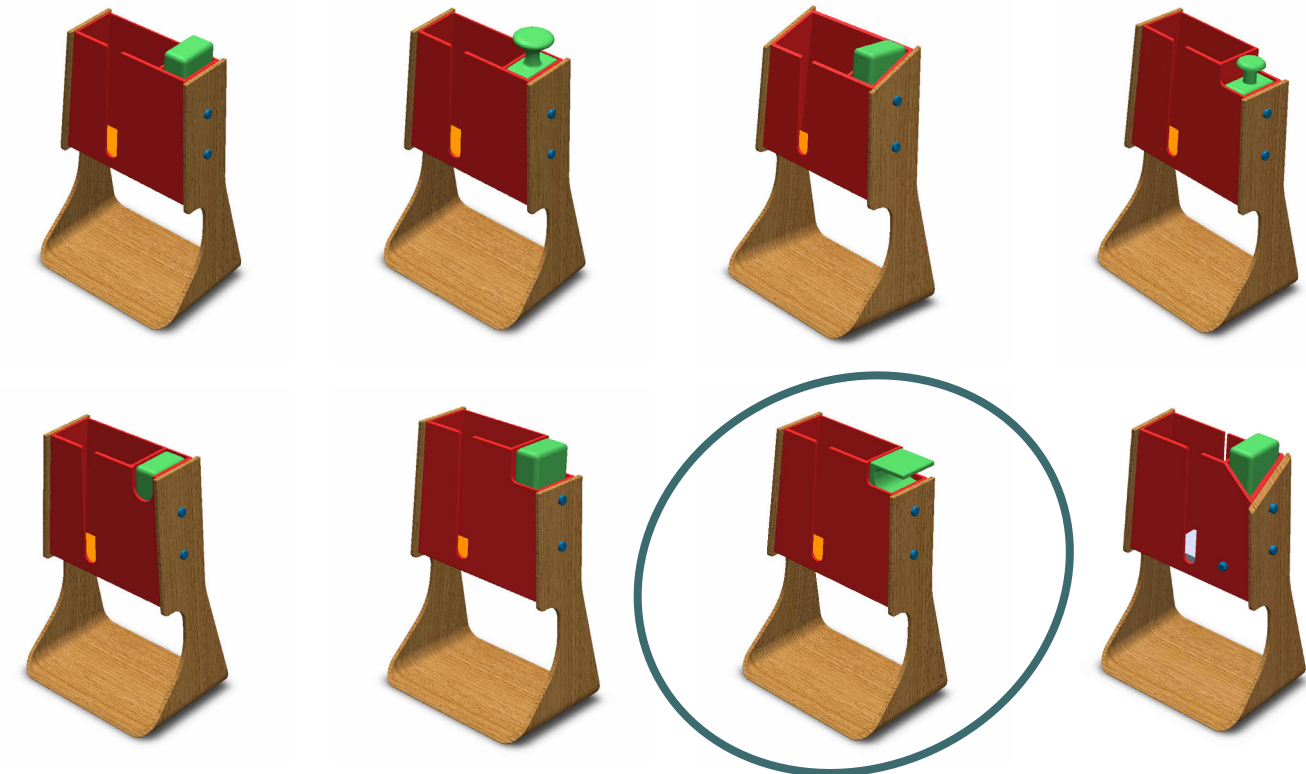


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# CAD models

*button placement & shape*

Testing out different button looks, their placement and their shape for the best experience. I stuck with the circled one because it is the best integrated into the design.



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**finished concept**



**42**

**finished concept**

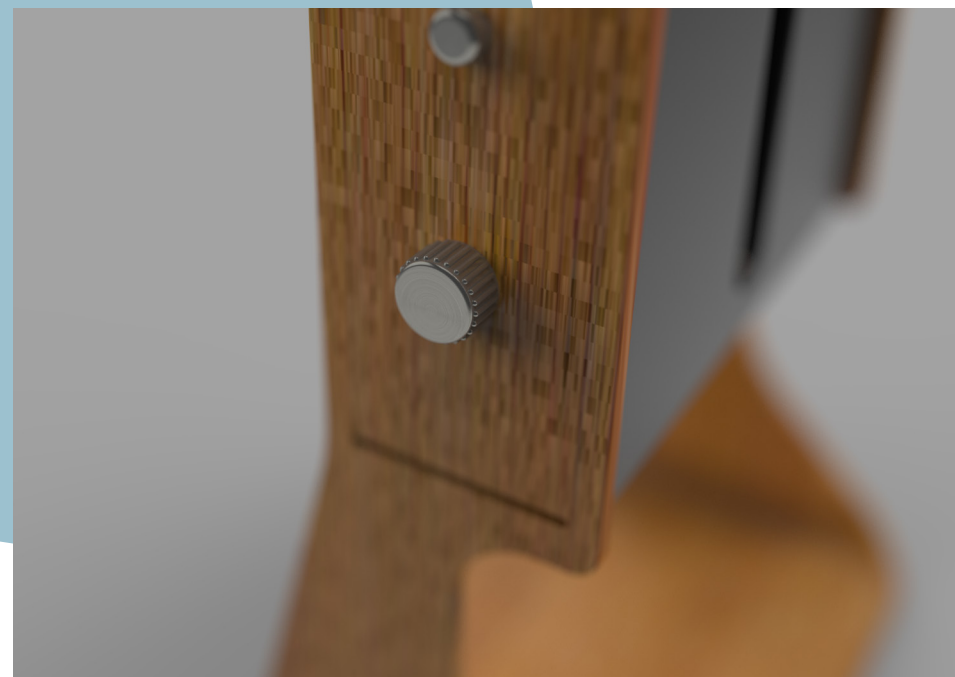


**43**



**finished concept**

*details*



**44**

**finished concept**

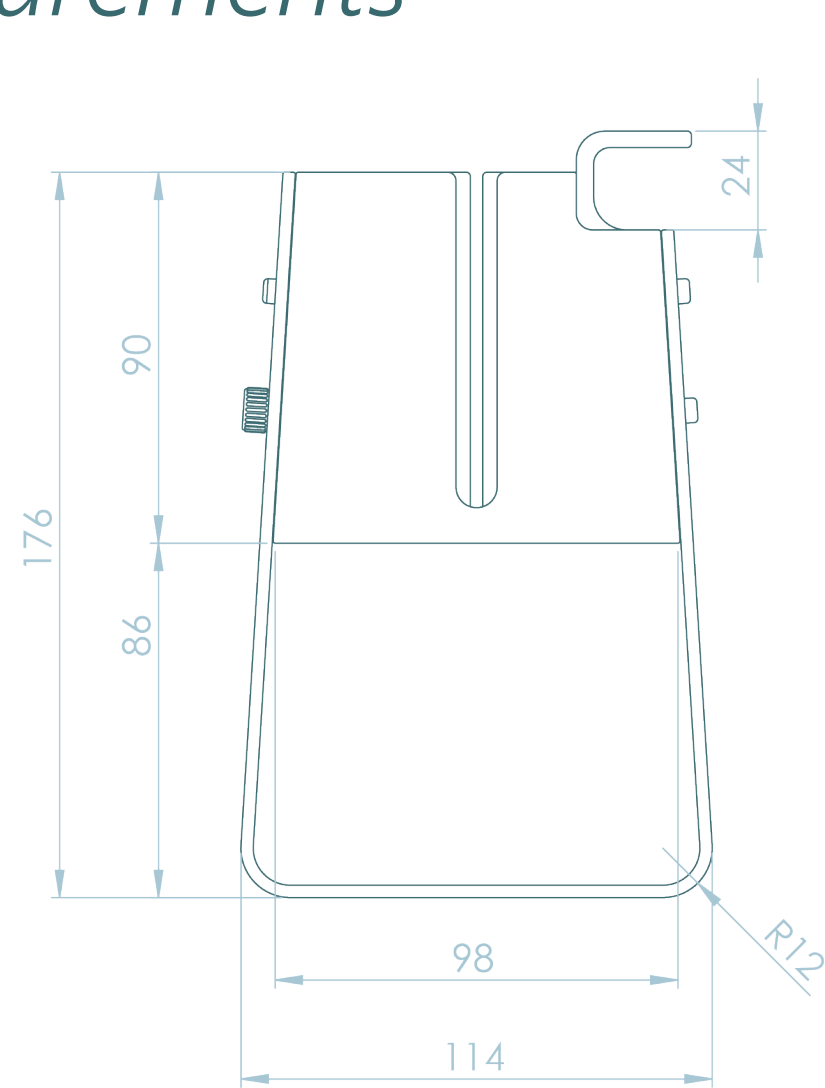
*details*



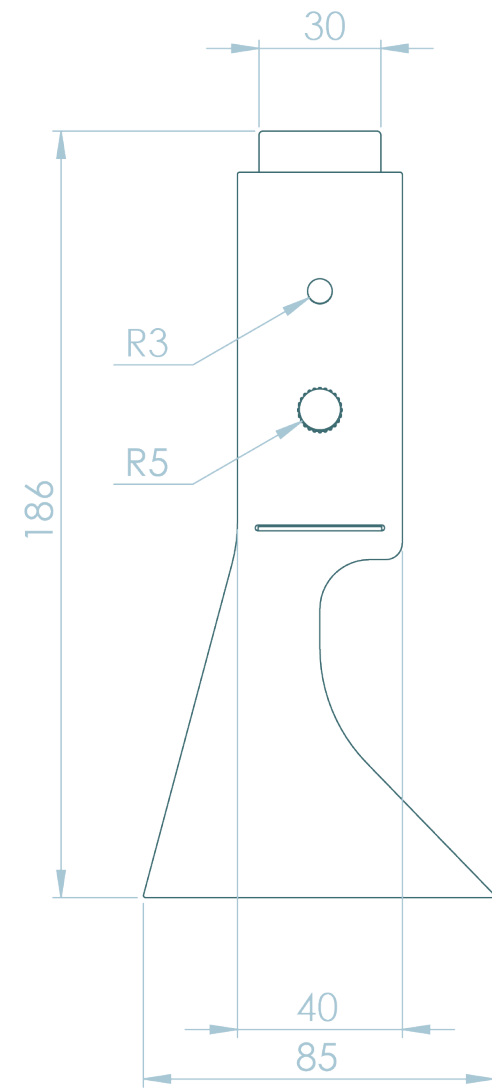
**45**

# finished concept

## measurements



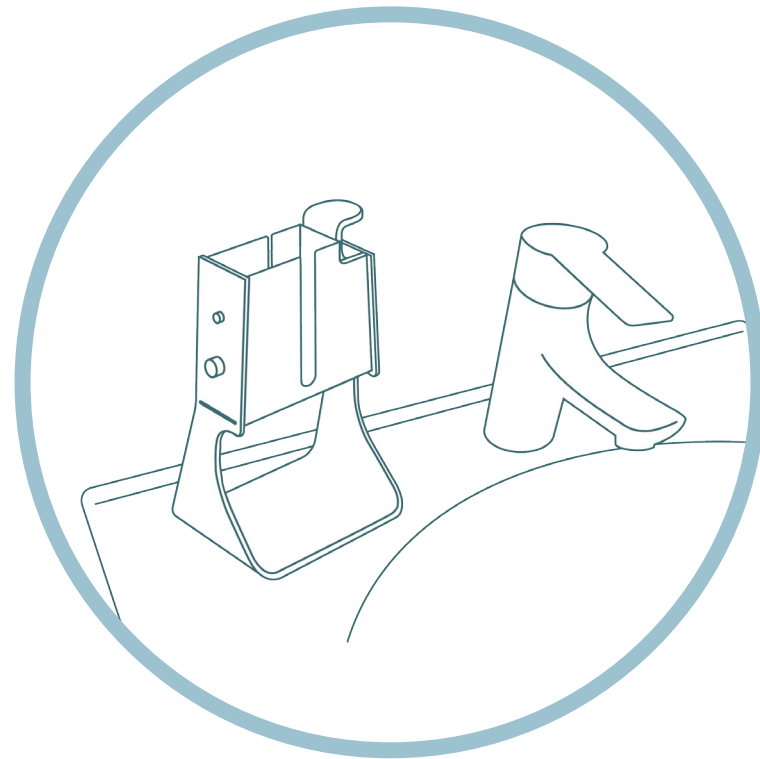
46



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## how to use

## how to use



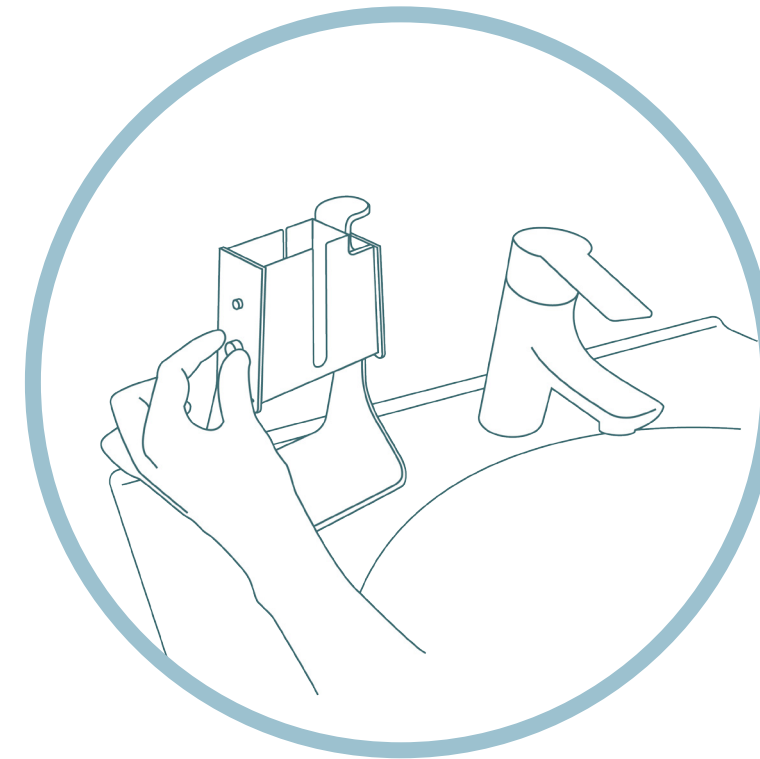
Place dispenser on the sink

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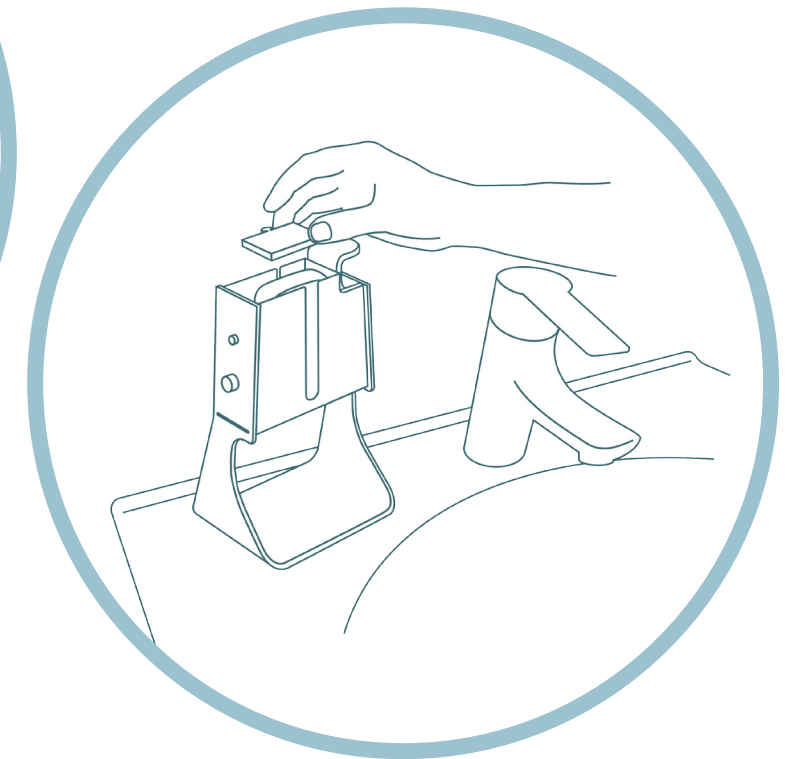
Add soap of choice

## how to use



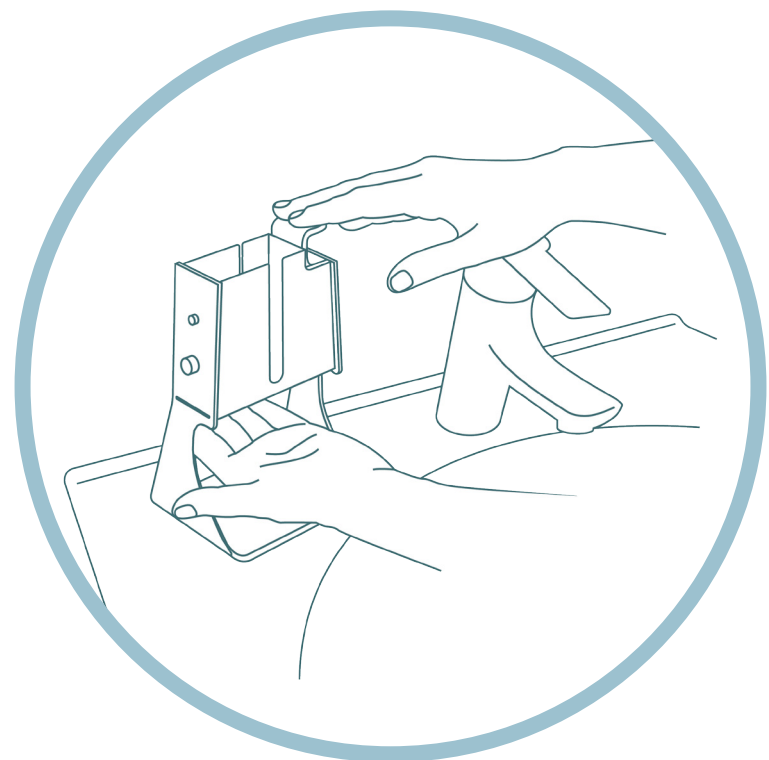
Adjust screw to fit size  
~50 - 64 mm

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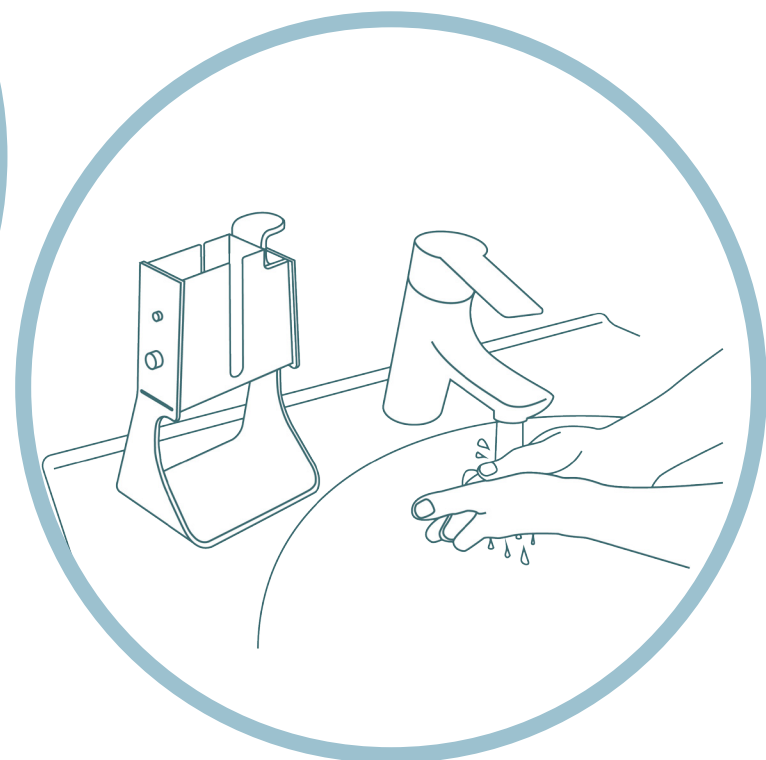


Place weight on top of  
the soap

## how to use



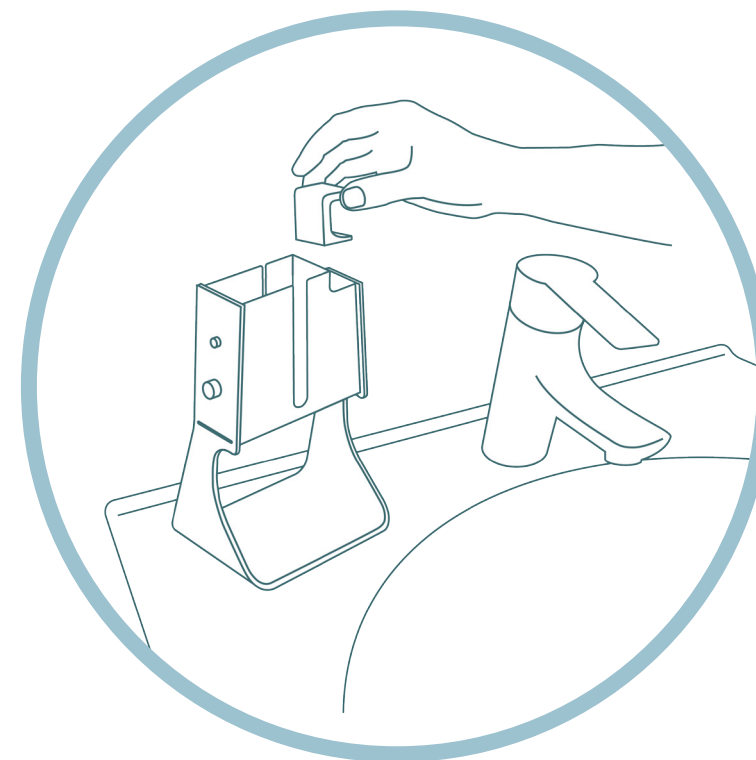
Apply soap by pressing the button



Wash and rinse hands

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## how to use



Remove button for cleaning



Unscrew to clean separate parts

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## context pictures



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## context pictures



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## context pictures



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## context pictures



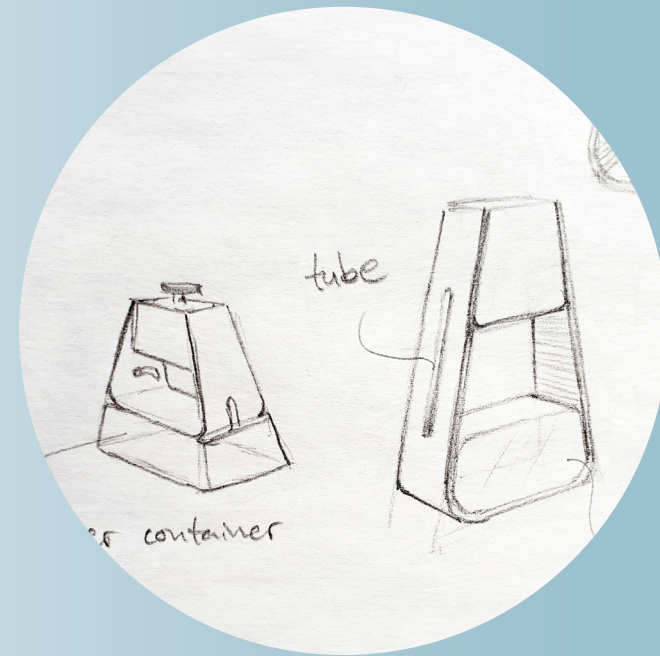
55

## discussion

### *further development*

One thing I have talked a lot about in this project is the water saving aspect. It was something that was in my vision very early on but it got lost somewhere in the process. It would have been interesting to see how this issue could be solved. I did some early sketches on it and it would have been nice to investigate further.

The idea was to add a water "tank" in the bottom to heighten stability and to apply water when the button is pressed. This way a lot of water could be saved.



## discussion

### *name*

The word "river" in Swedish means "to grate", taking away the first "R" makes it Iver. I want the users to be reminded of the word because that is what the product does. Iver is also an adaptation of the Scandinavian name Ivar. The word in it self means "eagerness", and you should want to use the product and wash your hands.

**IVER**

My aim was to create a product that makes bar soap the preferred choice for hand washing because of the soap's ecologically sustainable attributes. I wanted people to see that the feeling of what is clean is not the same as it being hygienic.

During this project I have many times asked myself if this product would in fact change anything. If this product actually could be a way to get users to prefer bar soap. Did I make a difference? Could this change how consumers think and how they decide? Is it just yet another useless product that leads to overconsumption?

The product ended up a bit over-complicated and might to some be seen as quite useless, but at the same time I

would like to think that this product challenges the way we are used to think about and use hand soap. I hope that this product can inspire me and other designers to use our power to design a more ecologically sustainable world and to battle over-consumption.

It is important to me that what I design is not just something nice to look at, but that it has a function and a meaning behind it. I want the products to question how we live our everyday lives and how we consume. Through my design I want to inspire as many people as possible to think differently and to think about our impact on the planet.



Some of the features and mechanisms would have been good to test in real life, with a working prototype. It is quite difficult to grasp the mechanism when one is not able to see it or actually use it in real life.

Because of the pandemic outbreak of COVID-19 in 2020 when this project was done I was unable to make use of a workshop and to get hold of the right materials, thus not being able to thoroughly explore, test and visualize this product.

## Articles

European Commission, *Single-use plastics*, [https://ec.europa.eu/commission/news/single-use-plastics-2018-may-28\\_en](https://ec.europa.eu/commission/news/single-use-plastics-2018-may-28_en), 1 August 2018

Tekniska museet, *Tvål*, <https://www.tekniskamuseet.se/lar-dig-mer/100-innovationer/tval/>, 2 oktober 2019

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Koehler, A. and C. Wildbolz. *Comparing the Environmental Footprints of Home-Care and Personal-Hygiene Products: The Relevance of Different Life-Cycle Phases* (2009)

## Plastic waste

<https://www.svd.se/svenskarna-kallsorterar--men-plasten-branns-upp>

<http://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Plast/Nedskrapning-av-plast/>

<https://www.sopor.nu/fakta-om-sopor/statistik/>

## Soap

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<http://www.shenet.se/recept/tvalflytande.html>

<https://tvalaochtvara.se/tipsochrad/tvalens-historia/>

<https://www.soapguild.org/consumers/soap-ingredients.php>

<https://dontwastethecrumbs.com/8-tips-for-stretching-a-bar-of-soap/>

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<https://thenotice.net/wp-content/uploads/2012/07/LUSH-Toothy-Tabs-Dirty-tablets.jpg>



<https://ecofriend.org/amazing-dissolvable-shampoo-pods-will-reduce-waste/>



<https://in.pinterest.com/pin/568016571743043088/>



<https://www.pinterest.se/pin/657033033124201741/>



<https://tecnoreviews.online/jabon-liquido/>



<https://www.pinterest.se/pin/776096948274106957/>



<https://www.masquerade.co.za/shop/french-soap/other-soap/rotating-soap-and-holder/>



<https://plainmagazine.com/tetra-soap-coastline-barriers/>



<https://www.uncommongoods.com/product/ceramic-self-draining-soap-dish>



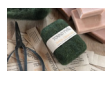
<https://www.amethic.com/ethique-savonnerie-artisanale-amethic/>



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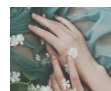
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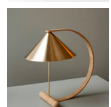
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