Everyday Carry Copper Water Bottle

DEP703 Project 3
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Acknowledgement

I would like to express my gratitude towards my guide Prof. BK Chakravarthy, and Rashmi Ranade along with the team at Studio Coppre for their constant support and valuable feedback at every stage of the project. Their expert knowledge and suggestions, have helped me gain an evolved understanding of the field of Industrial Design and how to use that for collaborative innovation, and have contributed greatly in shaping this project.

Along with that, I thank all the Industrial Design faculty- Prof. Avinash Shende, Prof. P Kumaresan, Prof. Purba Joshi, Prof. Sandesh R, and Prof. Vijay Bapat for their helpful feedback and suggestions.

The staff at IDC workshops shared their knowledge and time with me. Without their support, this project would truly not have been possible.

A special thanks to all my family and friends for their constant encouragement, help and feedback. Last but not the least, a special thanks to Shraddha, for keeping me company during all those long nights I stayed awake cribbing about work.

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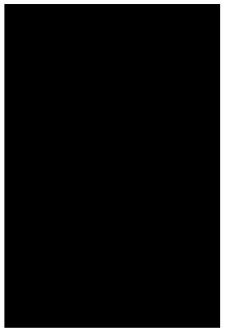


Introduction

Studio Coppre

Studio Coppre was set up to revive the tradition of using copper in our lives, which is vanishing with the advent of steel and plastic. They address the need of bringing highly skilled metal-working artisans into the economic mainstream.

Studio Coppre is a social venture from India working with artisans. They design and produce handcrafted metal (copper) products for home and conscious living. Their products are ethically produced, crafted by hand with pure materials, ethically sourced and environmentally sustainable.

Coppre reflects the legacy of the metal craftspeople, the makers who beat malleable metal into beautiful artefacts in the narrow and dusty alleys of old cities in India. They bring dignity and efficiency to this ancient craft by linking talented designers to craftspeople and presenting their craft to the world.

Project Rationale

India has been a hub for crafts and high quality of handmade goods. Though, in the recent days these artisans have been not able to make a livelihood form practising their crafts. The newer generations of these artisans are also not willing to work in the family business as well.

Studio Coppre studied the issue and figured out that the karigars were without work because they had not changed with the times. They needed to create items that were relevant to our times.

So far people were doing all it took to revive the craft. But to keep it self-reliant meant profits, meant efficiency, marketing and so on. This would require much more than just karigars.

The problems faced by the artisans are manifold. Earlier it was the economics that pushed their children to hunt for greener pastures. Now it is the lack of social pride in this work. According to one of the copper artisans fro Pune. “The problem with this lies in our Hindu caste system. The Brahmins taught, the kshatriyas fought wars, the vaishyas did business. All these had their place in society. But the shudras were the outcastes. And we craftsmen who supplied goods to the vaishyas were also considered outcastes. So there is not respect for the work we do.”

All of this provided a ground to build upon the rationale of having a project in this domain.

Opportunity & Design Gap

There exist a number of copper water bottles in the market which are not something that would attract newer customers and the younger generation which use bottles as a functional as a stylistic accessory. The copper bottles already available do not come with a certification of purity of the material as well.

Copper being a very soft material does not allow a proper closure that would make such a bottle to be used on the go. They generally end up being fridge bottles or stationary water containers. This gives us an opportunity to explore and come up with innovative solutions using technology and engineering potential in the current day.

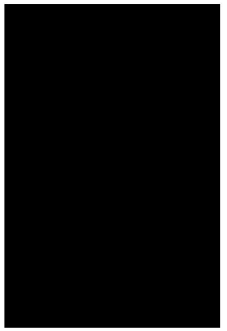
Western worlds have been looking at the Eastern countries, like India, Japan, and China, and have been trying to pick up traditions followed in these places. In the recent days Yoga and Ayurveda has been trending, and the use of copper for having Ayurvedic properties enables us to tap the market potential by bringing new forms and style statements that go with the Yoga lifestyle of these people.

Environment & Sustainability

The environment and use of sustainable materials and manufacturing should be in the forefront of any design process in this day and age. The negative effects of the bad practices in the past have taken their toll and deteriorated the world that we live in. To make sure we leave a liveable environment for the future generations we need to start acting today itself.

Copper is a material that has been in use since the last 5000 years. It is one of the very few native metals occurring on the earth. It is highly recyclable without losing any of its properties from both raw state and manufactured goods. It has a very circular economy as well.

The idea of using cork as a closure comes in mind due to sustainable reasons as well. Cork is a natural material and manufacturing of a cork stopper releases 10 times less CO_2 than plastic and 26 times less compared to an aluminium stopper. It is estimated that for every ton of cork produced, cork oak forests captures over 73 tons of CO2, a vital contribution for reducing greenhouse gas emissions, the main cause of climate change.

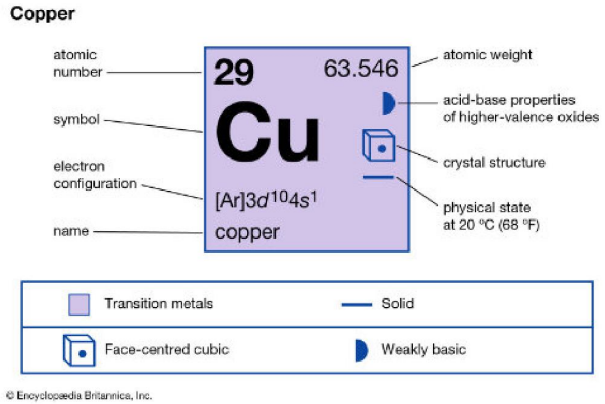


Research

Copper

Copper is a chemical element, which is a soft, malleable and ductile metal from Group 11(Ib) from the periodic table. It has a very high thermal and electric conductivity.

Copper can be found in native, i.e. Pure usable form, in the nature. This led to copper being discovered very early by human beings, dating back to around 8000BC, in the Neolithic Age.



Copper and copper alloys have been used in thousands of products, from antiquity to the 21st century, all around the world. Prior to the mid-19th century, copper was used mainly for its mechanical properties: malleability, workability and castability. Since the late 19th century, copper's role expanded immensely due to its extraordinary electrical and thermal conductivity properties.

In the 21st century, copper remains at the forefront in new and emerging markets, such as antimicrobial products, aquaculture pens, electronic components, renewable energy, heat exchangers and information and telecommunications technologies.

Significance of Copper

According to the International Copper Association, (https://copperalliance.org) copper is an essential nutrient and, therefore, vital to the health of humans, animals and plants. Copper is needed for maintaining normal growth of the foetus during pregnancy, healthy brain functioning and repair of wounds and injuries.

Copper is not carcinogenic, mutagenic or a reproductive toxicant. The human body does not manufacture copper, so it needs to be obtained from food and water. Generally, the concentration of copper in food can be up to 2 milligrams per kilogram in red and organ meats, offal, fish, nuts, chocolate and green vegetables.

Copper deficiency, which is consuming too little dietary copper, can be of concern. Serious diseases ranging from blood and blood vessel abnormalities to abnormal bone formations and hypopigmentation of the skin may be attributed to copper deficiency. Copper deficiency is a risk factor for osteoporosis, rheumatoid arthritis, and

heart disease. Even a mild deficiency can lower the immune system, resulting in frequent colds and flu, loss of skin tone, reproductive problems and fatigue.

While the recommended daily intake for copper is based on age and gender, the average dietary intakes range from 1 — 1.6 mg/day

Health Benefits of Copper Charged Water

The practice of drinking copper-charged water or Tamrajal is an ancient one arising from the knowledge of Ayurveda and is good for both, the environment and you. According to Ayurveda, drinking this water balances the three doshas (vata, kapha, and pitta) in your body. It stimulates the brain, regulates the thyroid gland, reduces the risk of arthritis and joint pains, and even aids skin health and melanin production.

Recycling of Copper

According to the International Copper Study Group (ICSG), about 50% of the copper used in Europe comes from recycling. This reveals that copper requirements are increasingly being met by recycling. This win-win situation is helping to supply the ever-increasing demand for the metal (+250% since the 1960s) while, at the same time, lessening the environmental impact of its production and ensuring its availability for generations to come.

For thousands of years, copper and copper alloys have been recycled. This has been a normal economic practice, even if regretted by some. One of the wonders of the old world, the Colossus of Rhodes, a statue spanning the entrance to Rhodes Harbour, was said to have been made of copper. No trace of it remains since it was recycled to make useful artefacts.

In the Middle Ages it was common that after a war the bronze cannons were melted down to make more useful items. In times of war even church bells were used to produce cannon.

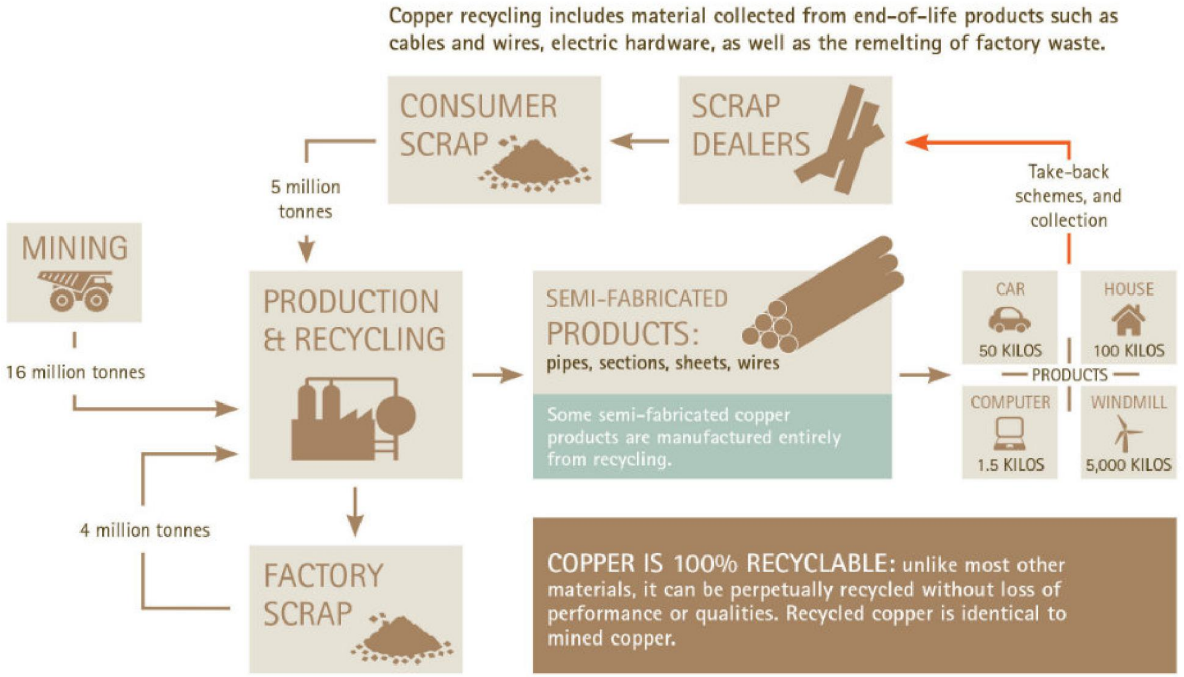
The entire economy of the copper and copper alloy industry is dependent on the economic recycling of any surplus products. There is a wide range of copper based materials made for a large variety of applications. To use the most suitable and cheapest feedstock for making components gives the most economic cost price for the material.

Copper is an essential trace element needed for the healthy development of most plants, animals and human beings. In general, moderate excess quantities of copper are not known to cause problems. Every care is taken to avoid wasting copper and it is recycled where possible. Excess copper is not allowed to escape into the atmosphere as fume, nor into discharged process cooling water, all of which is generally treated to keep within agreed limits.

If the scrap is pure copper and has not been contaminated by anything undesirable, a high quality product can be made from it. Similarly, if scrap consists only of one alloy composition it is easier to remelt to a good quality product, although there may have to be some adjustment of composition on remelting.

If scrap is mixed, contaminated or includes other materials such as solder then, when remelted, it will be more difficult to adjust the composition within the limits of a chosen specification. Where lead or tin have been included, but no harmful impurities, it is usually possible to adjust composition by the addition of more lead or tin to make leaded bronzes.

Recycling copper is a very efficient way of reintroducing a valuable material back into the economy. It requires up to 85% less energy than primary production. Around the world, it saves 100 million MWh of electrical energy and 40 million tonnes of CO2 annually.



Market Study

To understand the market, and have a better understanding of copper bottles as well as bottles in general that are available, as well as their features and unique selling points, a market survey and study was done.

A study to understand what size of water bottles people study, across various demographics was also done. Results of which are presented in a graphical format in the coming pages. All of this study was then used to benchmark the bottle design done for this project as a check and a means to evaluate and go further.

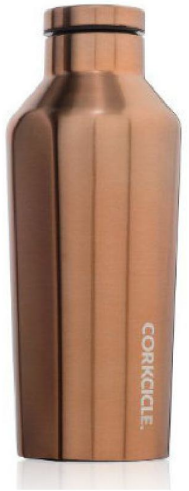
Copper Bottles in the Market

Most of the copper bottles available in the market are made very similar in form as well as the manufacturing technique used. The bottles start as a small disc of copper, and then are pressed in a hydraulic press to form a little dip. This work piece is then put on a spinning lathe to create the final form. Some of the bottles are then hammered by 'thatheras' to give them the signature finish. Other bottles are buffed to have a smooth shiny finish.

The closures of these bottles are generally made in two ways. One in which there is a plastic insert in a copper shell for the threading, and the other in which the copper closure has a threading

References

[4]https://www.thefreedictionary.com/Conceptual+framework



itself. Both of these closures have a silicone gasket to help it have a water tight nature.

Many times the bottles are also lacquered from the outside to keep it clean and patina free for long. This layer lacks consistency, and is not properly applied with drippings visible on just first casual inspection.

All of these bottles are generally used as fridge bottles or stationary bottles as they cannot be carried while being on the go, as they loose their water tightness in use for even a very short duration.

The threading of the neck looses its shape easily as copper is a soft metal, and the tolerances no longer match the specs to be water tight. At times the copper neck can deform so heavily that the cap does not even fit.

The quality of copper used in these bottles is about 20 gauge, giving a final wall thickness of about 0.5-0.6mm.

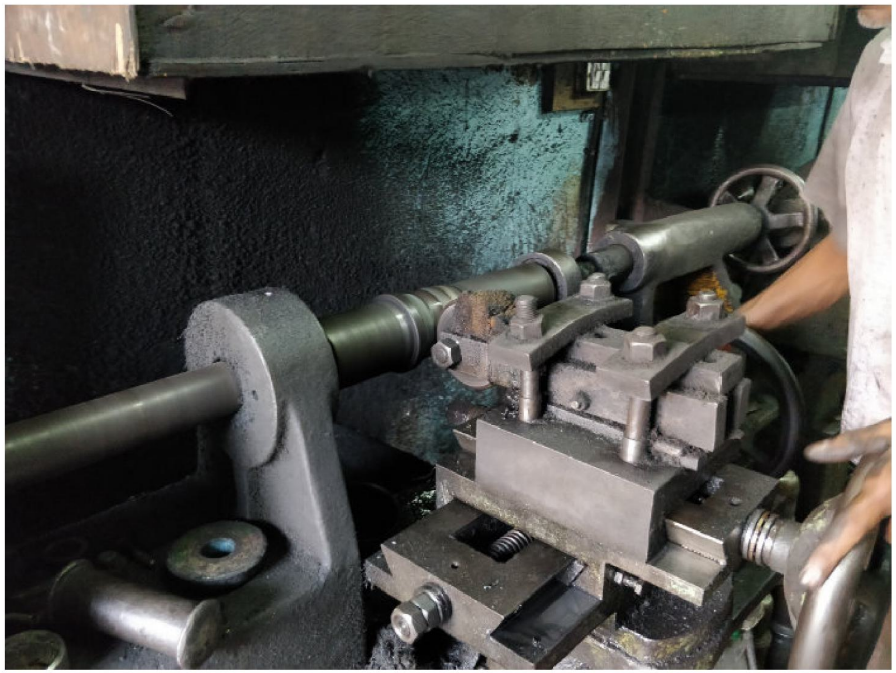
Other Bottles in the Market

Steel Utensil Production

Steel Utensil Manufacturing in Bhayandar, Mumbai

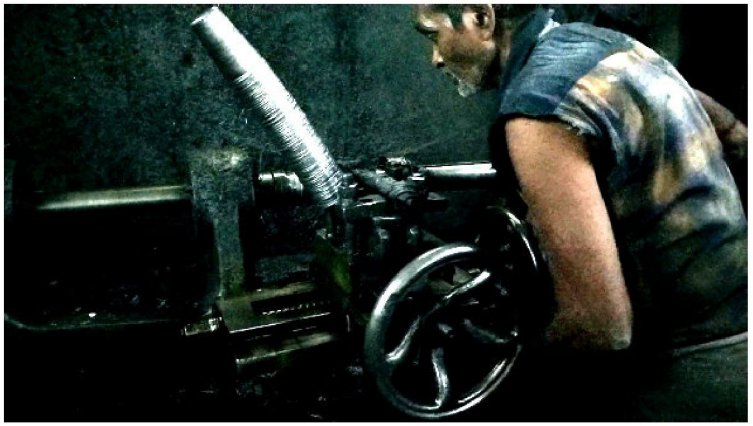
Utensils manufactured in Bhayandar are used and exported all over. There are a large number of manufacturing facilities making a lot of different types of steel utensils and products. Majority of these products are made by spinning a sheet of steel on a lathe.

Each product starts it's journey as a sheet of steel which is punched out in circular discs of the size that is required for the product. These sheets are then placed under a hydraulic press to draw them into a small bowl like form. These drawn work pieces are then taken to a spinning facility where they are placed on a mechanical spinning lathe and then formed into the final shape in a number of steps.



A worker placing discs of steel sheets in the hydraulic press

Split die being used as a guide for the form of the utensil



Final stage of the spinning process and glasses being stacked

The buffing and finishing of the glasses after the spinning process is complete

Copper Artisan Workshops

Copper Craftsmen in Kasba, Pune

Artisans working with copper have been located in this small part of the old town in Pune for generations. Most of the people living here are all families of copper craftsmen, making all sorts of products, small or large.

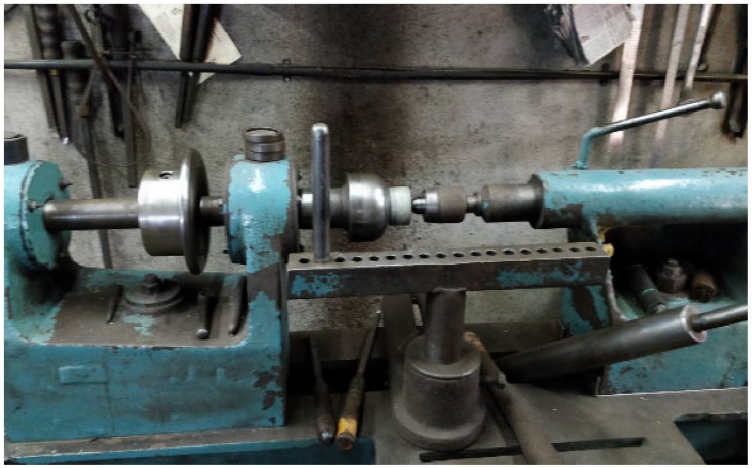
Part of their homes act as a workshop for their craft. A lot of the outdoor spaces such as the verandah, and the lanes(gallis) outside their hoses are used as the spill out zones for activities related to their craft. In the picture down below, we can see copper pots and utensils kept outside after washing to dry them out for the next process.

Most artisans have been using the similar processes what have been used traditionally for long to create products. Only recently they have started using newer tools and manufacturing techniques to scale up their production.

Copper vessels and utensils kept out in the sun for drying out

Shaping of sheets of copper to desired shapes by hammering

Cleaning of copper products after washing them with pitambari



Spinning lather used to make smaller utensils like bowls and carafes

Different hammers for hammering/thathera work on the copper products.

An artisan hammering a large utensil, giving it the traditional finish

An artisan hammering a large utensil, giving it the traditional finish

Cork

Cork is the bark of the cork oak (Quercus Suber L.), which means that it is 100% natural plant tissue. It consists of a honeycomb of microscopic cells filled with a air-like gas and coated mainly with suberin and lignin. Other compounds are identified in its chemical composition, although in less quantity, such as polysaccharides, ceroids and tannins.

Despite a multitude of uses, cork has always been very closely connected to wine. Although there are records of amphorae sealed with cork in the 3rd century B.C. which contained wine in good condition, the major revolution in the wine industry only took place in the 17th century, with Dom Pérignon.

Properties of Cork

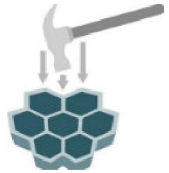
Over 50% of its volume is air, which makes it very light - it weighs just 0.16 grams per cubic centimetre and can float.

It is the only solid which, when compressed on one side, does not increase in volume on another; and as a result of its elasticity it is able to adapt, for example, to variations in temperature and pressure without suffering alterations.

Due to the suberin and ceroids contained in the cell walls, cork is practically impermeable to liquids and gases. Its resistance to moisture enables it to age without deteriorating.

Cork has low conductivity to heat, noise and vibration. This is because the gaseous components contained in cork are enclosed in small impermeable compartments, isolated from each other by a moisture-resistant substance

Cork is also a natural fire retardant: it burns without a flame and does not emit toxic gases during combustion.



Cork is extremely resistant to abrasion and has a high friction coefficient. Thanks to its honeycomb structure, its resistance to impact or friction is greater than that of other hard surfaces.

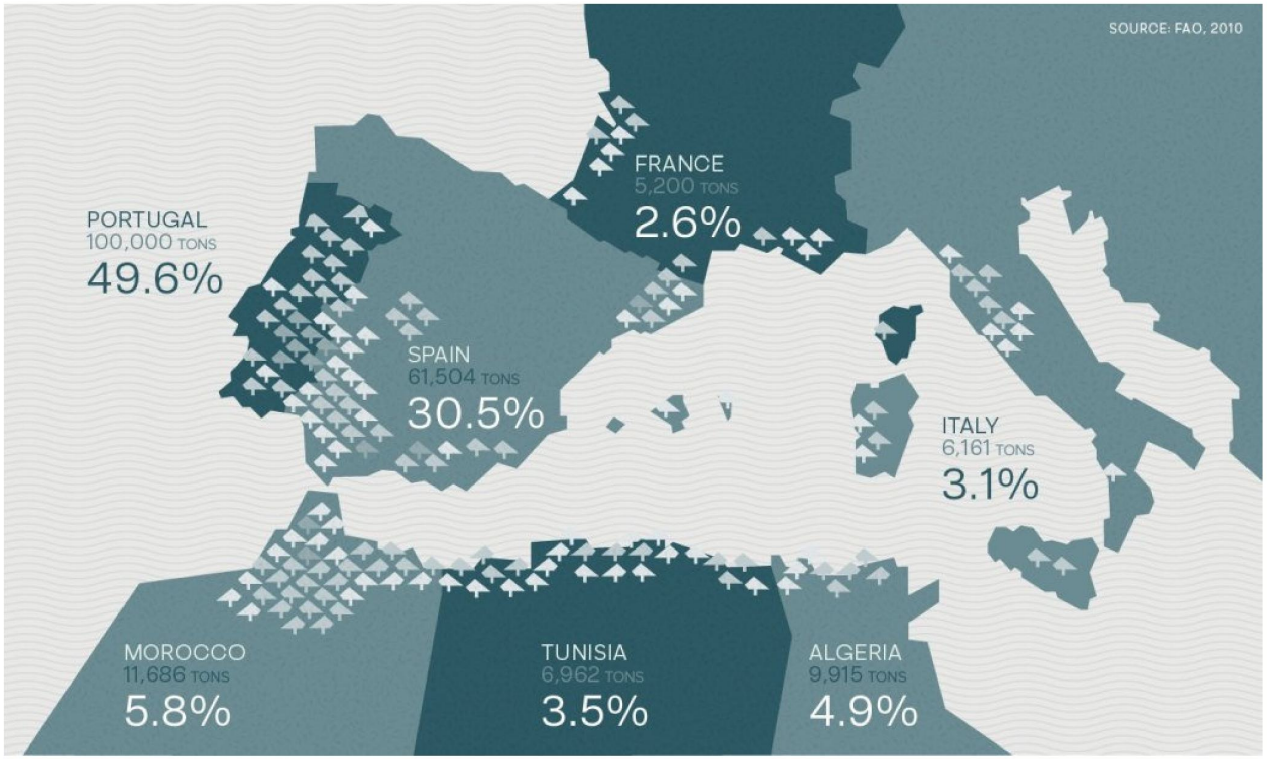
Because cork does not absorb dust, it helps protect against allergies and does not pose a risk to asthma sufferers

The natural texture of cork combines softness and flexibility to the touch with a naturally uneven surface. The variable degree of irregularity is given by the type of cork used and the finish chosen

Towards Sustainability and Good Practices

The montados (cork oak forests) are an important environmental, social and economic pillar in Mediterranean countries. They support a unique and fragile ecology which constitutes a habitat for rare and endangered species. They are the foundation of one of the 36 most important ecosystems in the world for preserving biodiversity - on a par with Amazonia, the African Savanna and Borneo. Over 200 animal species and 135 plant species per 1000 m2 find ideal conditions for survival in the cork oak forest.

It is estimated that for every ton of cork produced, cork oak forests captures over 73 tons of CO2, a vital contribution for reducing greenhouse gas emissions, the main cause of climate change.

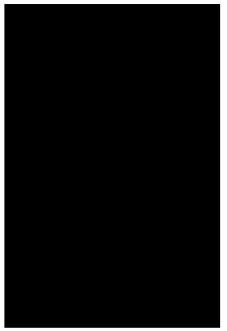


Cork Vendors

The Amorim Group is one of the largest, most entrepreneurial and dynamic multinationals of Portuguese origin. Its origins were in the cork business, back in 1870 and today it is the world leader in the sector.

The visit to Nasik was to one of the only vendors for them in India, and I got to know more about the entire process of cork making in detail. They also let me know the possibilities of design in cork, and what all it has been used for in the current day.

First produce of a cork oak tree, used to make smaller corks or for agglomeration



Design

Design Brief

- for ages 25 and above, wide demographic
- youthful without being funky
- the form of the bottle should be simple, bold
- leak-proof, can be carried around in a backpack/handbag
- It should carry brand name
- hybrid production methods low volume manufacturing married with some craft element i.e. beaten work
- keep the metallic smell of the copper a little away
- some feature that will communicate on-the-go, yoga, wellness, etc.
- use of cork to seal the water-bottle
- the bottle should be easy to clean
- possibility of a sleeve
- use of technology for understanding the material and how it needs to be treated
- collaboration with experts in the domain of nanotech and metallurgy to enhance the life/ usability of the bottle
- possibility of a play of materials and texture
- usage of modular tops for the possibility of reuse in other SKUs of the bottle
- price competent with other premium bottles in the market

Proof of Concept

To check the feasibility of using cork as a closure for the bottles, I needed to work out if it actually works as a proof a concept.

To do so, I procured cork in in all sizes and qualities that was available to test out as the closure. A number of copper bottles already available in the market were also used as a rig for the water bottles.

The cork was then turned on a lathe to make them of the suitable dimensions as required to have a tight seal on the bottle. This worked and acted as the proof of concept to go ahead with the idea of using cork as a closure.

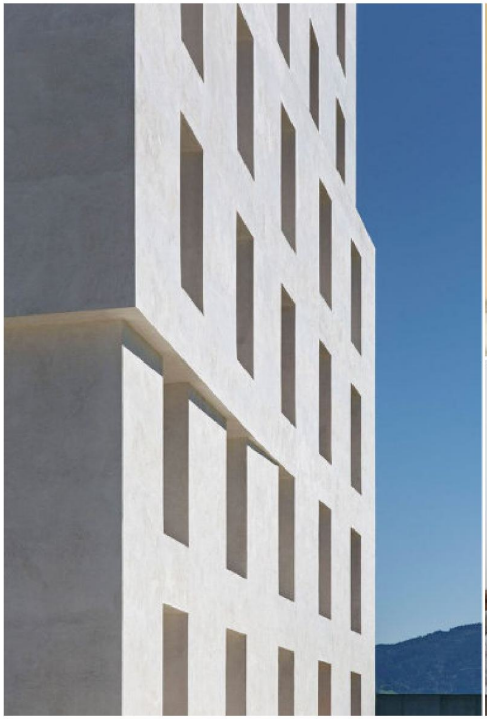
Initial Design Directions

Direction - 1

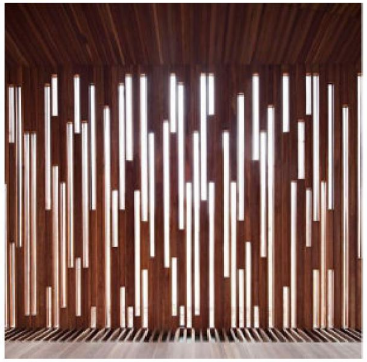
Mood-board

Inspired by clean and minimal products which inspires straight lines and an aesthetic that would fit in all environments. Having these cylindrical forms inspires a timeless design that would last the test of time and would be for the tastes to a wider demographic of people.

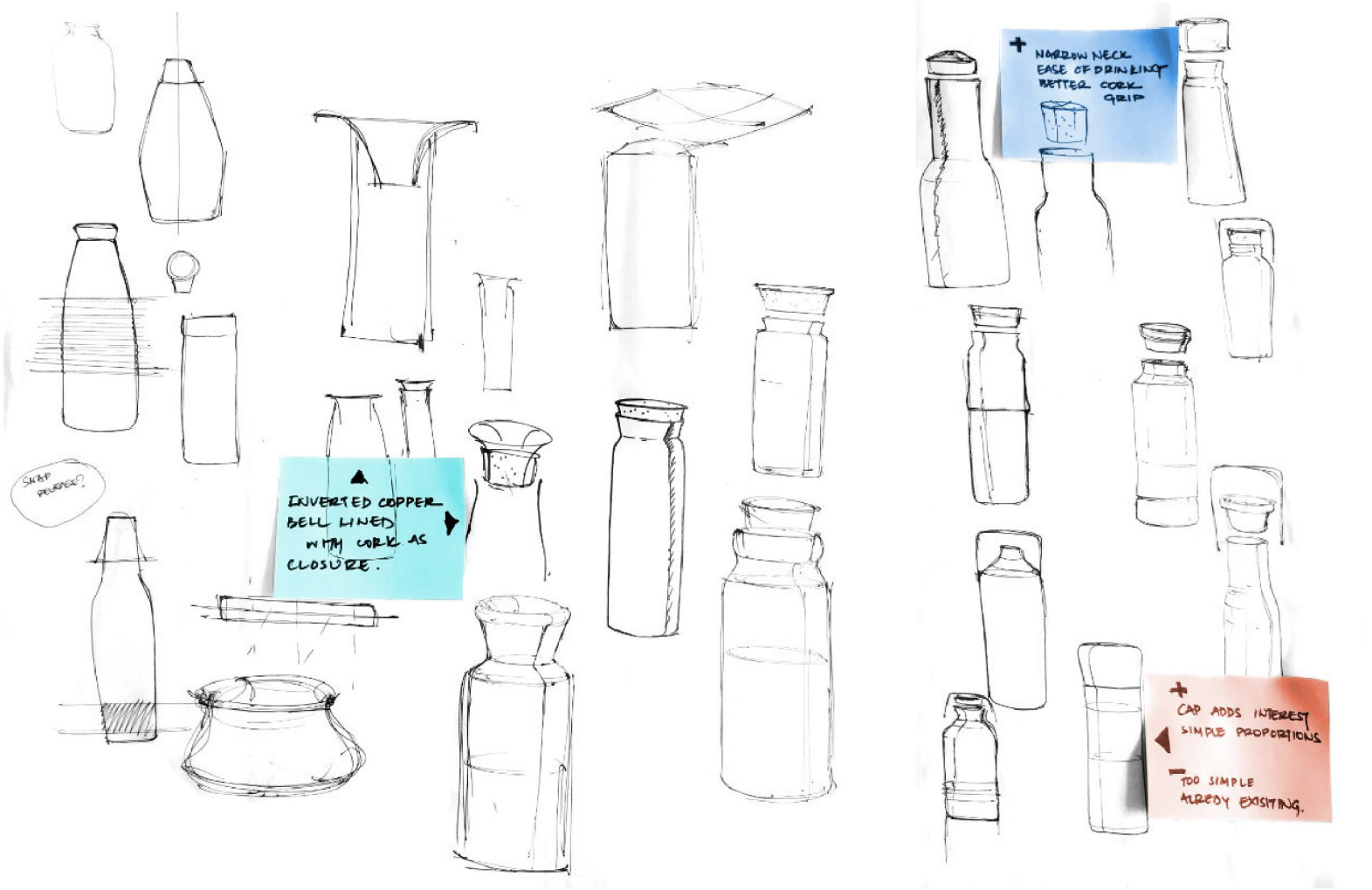
The utilitarian and functionalist form also means that it can be used in professional settings without drawing too much attention to itself.





Ideation Sketches




+
BETTER FIT FOR CORK
CAP FOR DRINKING
EASY TO MANUFACTURE
-
TOO SIMPLISTIC

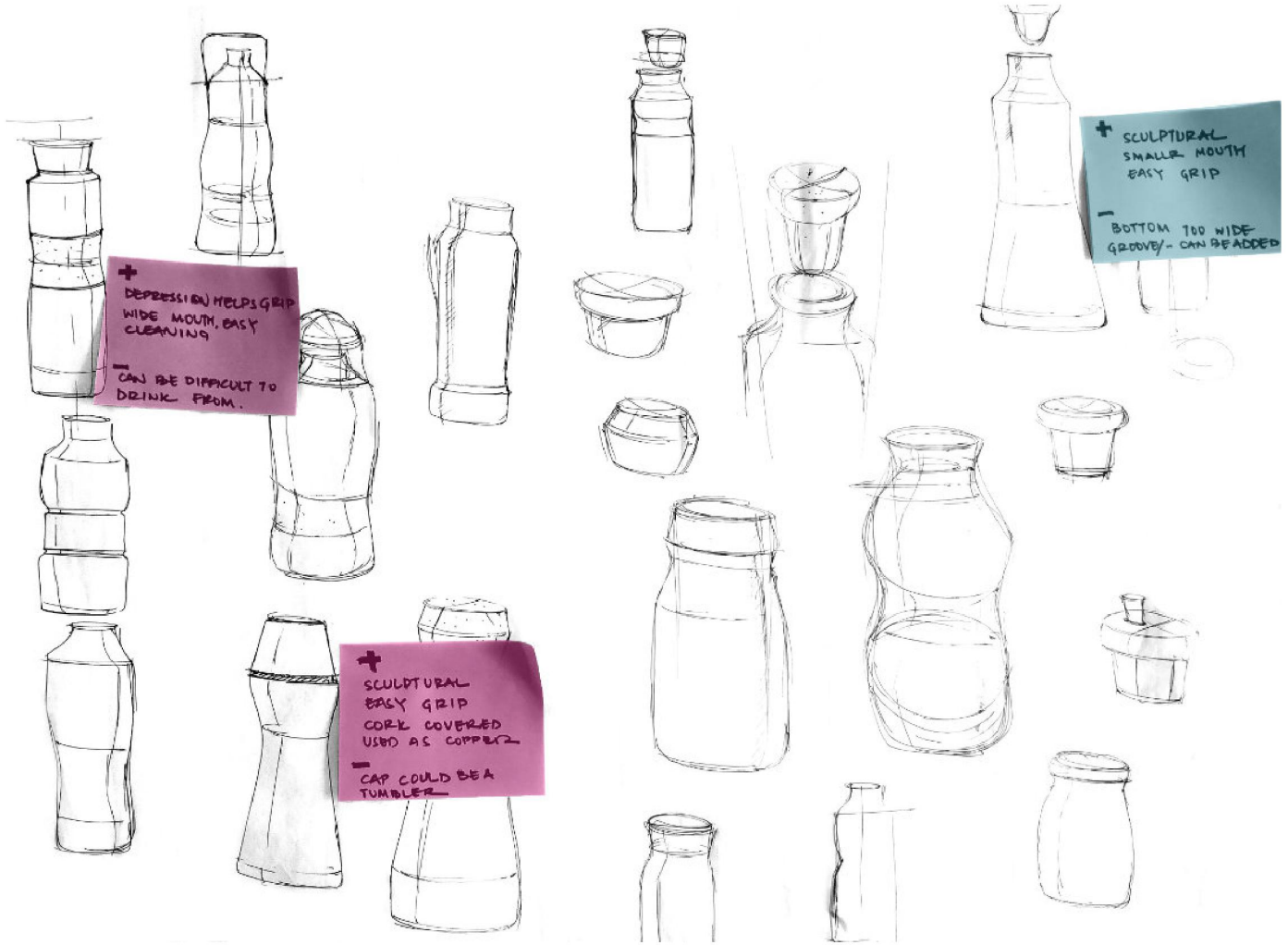

+
EASY MANUFACTURING
YOUTHFUL, SLIM
-
LOOKS LIKE A POTION BOTTLE

Direction - 2

Mood-board

The feminine, curvaceous form directs the mood towards something that is active, yet calm, such as yoga. A bottle that could define motion, and activity yet being planted. The calm feeling by sensing the bottle through vision and touch was what this mood-board inspired.

Ideation

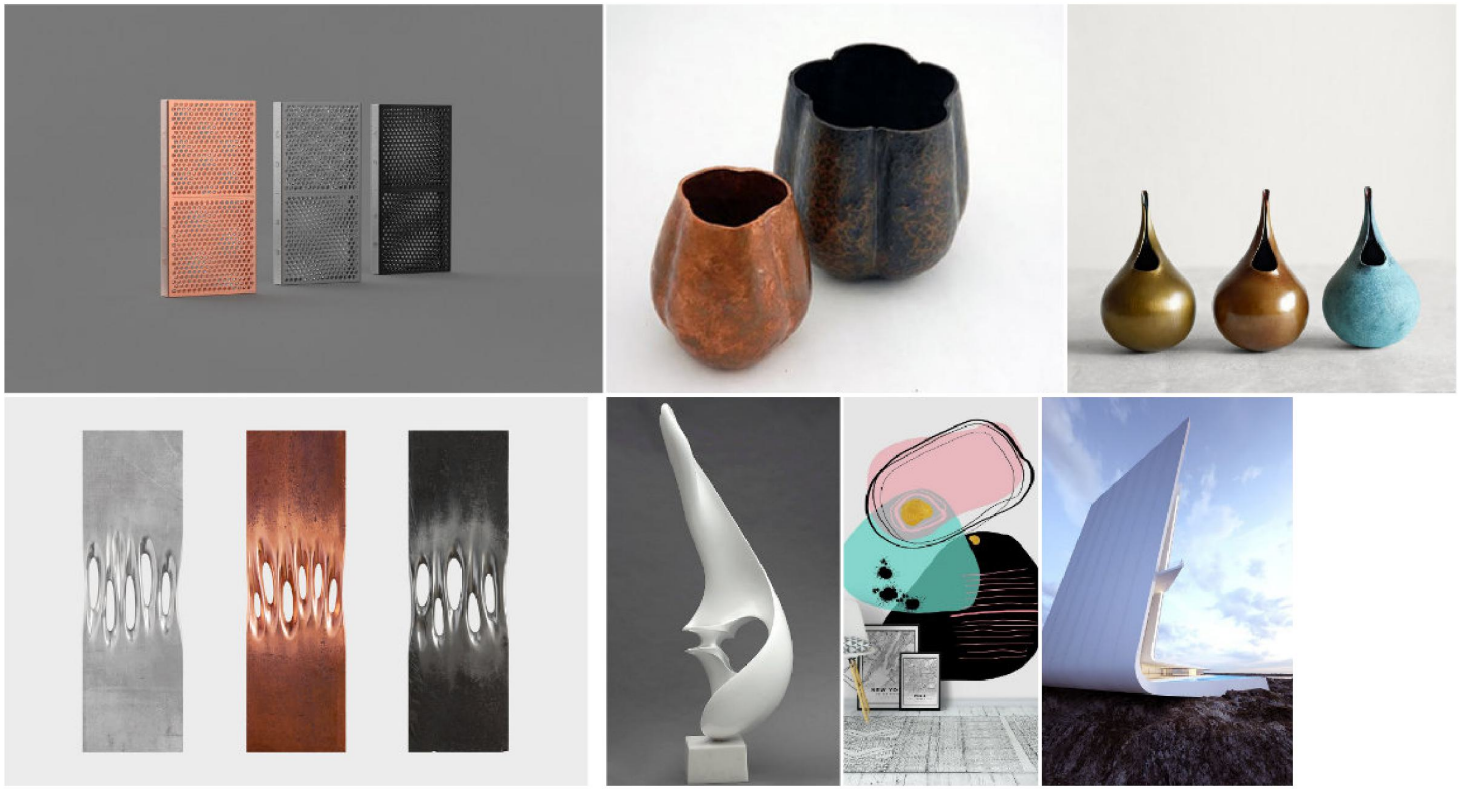

+
DEPRESSION HELPS GRIP
WIDE MOUTH, EASY CLEANING
-
CAN BE DIFFICULT TO DRINK FROM.
+
SCULPTURAL
EASY GRIP
CORK COVERED
USED AS COPPER
-
CAP COULD BE A TUMBLER
+
SCULPTURAL
SMALLER MOUTH
EASY GRIP
-
BOTTOM TOO WIDE
GROOVE/- CAN BE ADDED


+
SIMPLE, GOES WITH THE BRAND
-
TOOLING SLIDEOUT?
+
WIDE MOUTH
EASY CLEANING
BALANCED,
INTERESTING

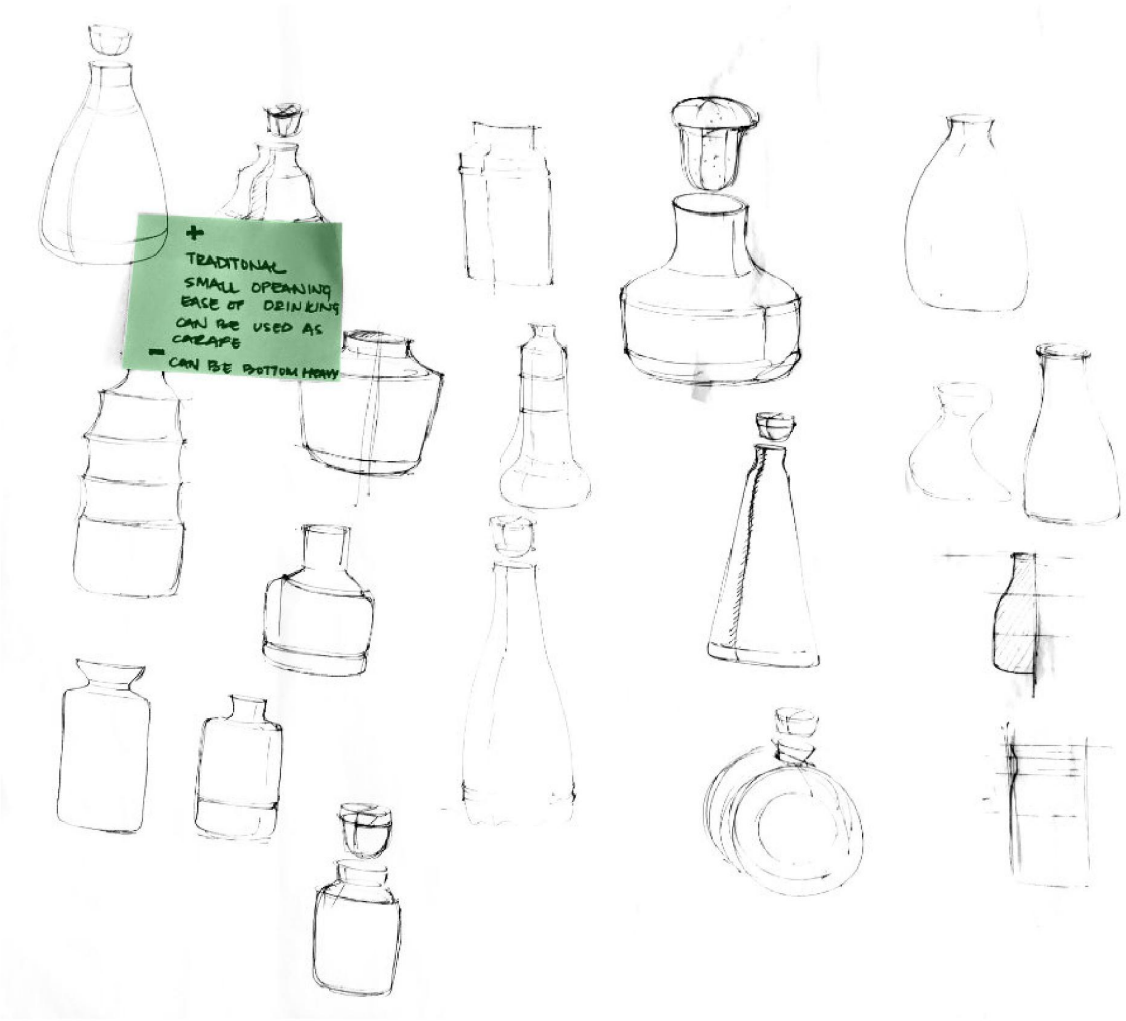
Direction - 3

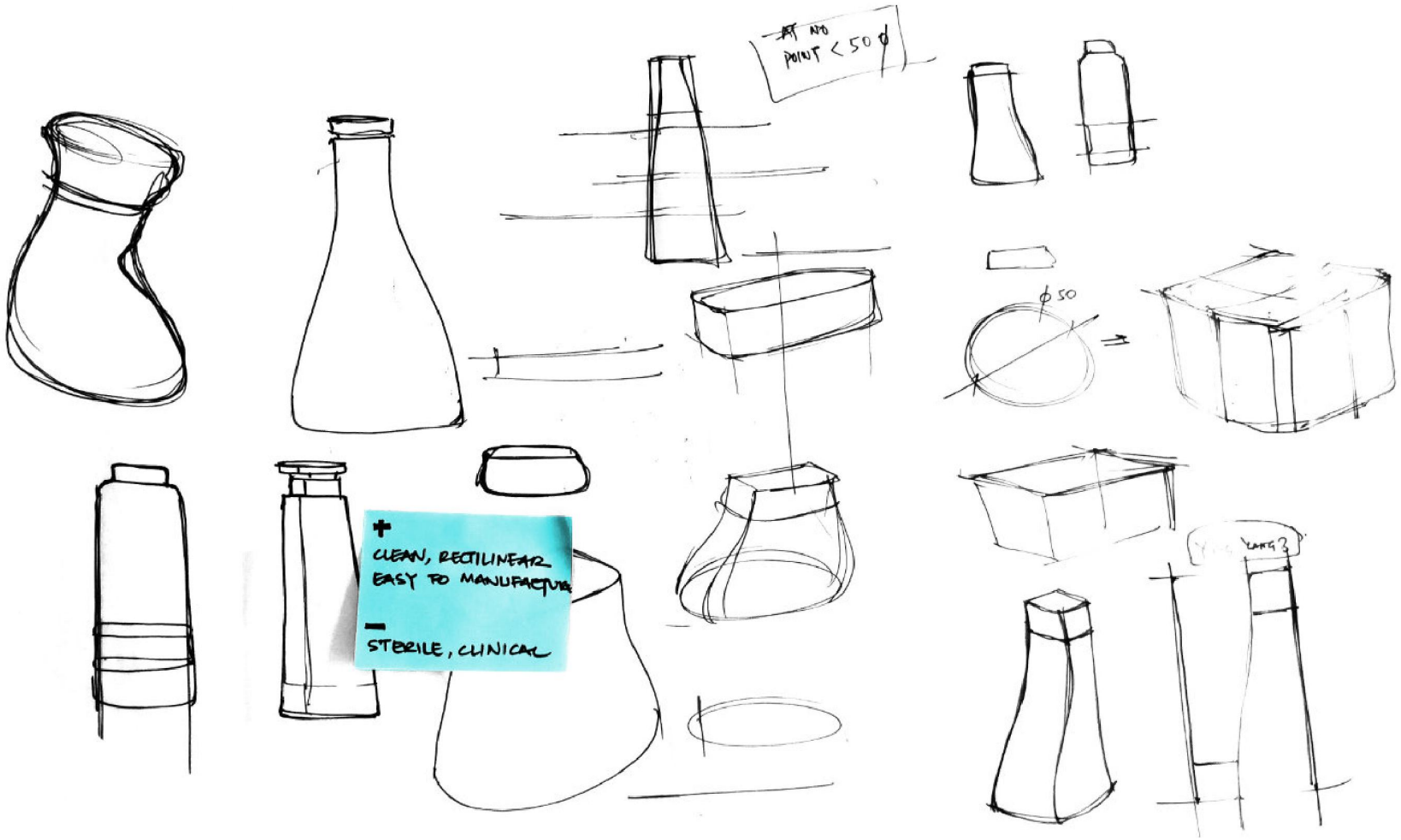
Mood-board

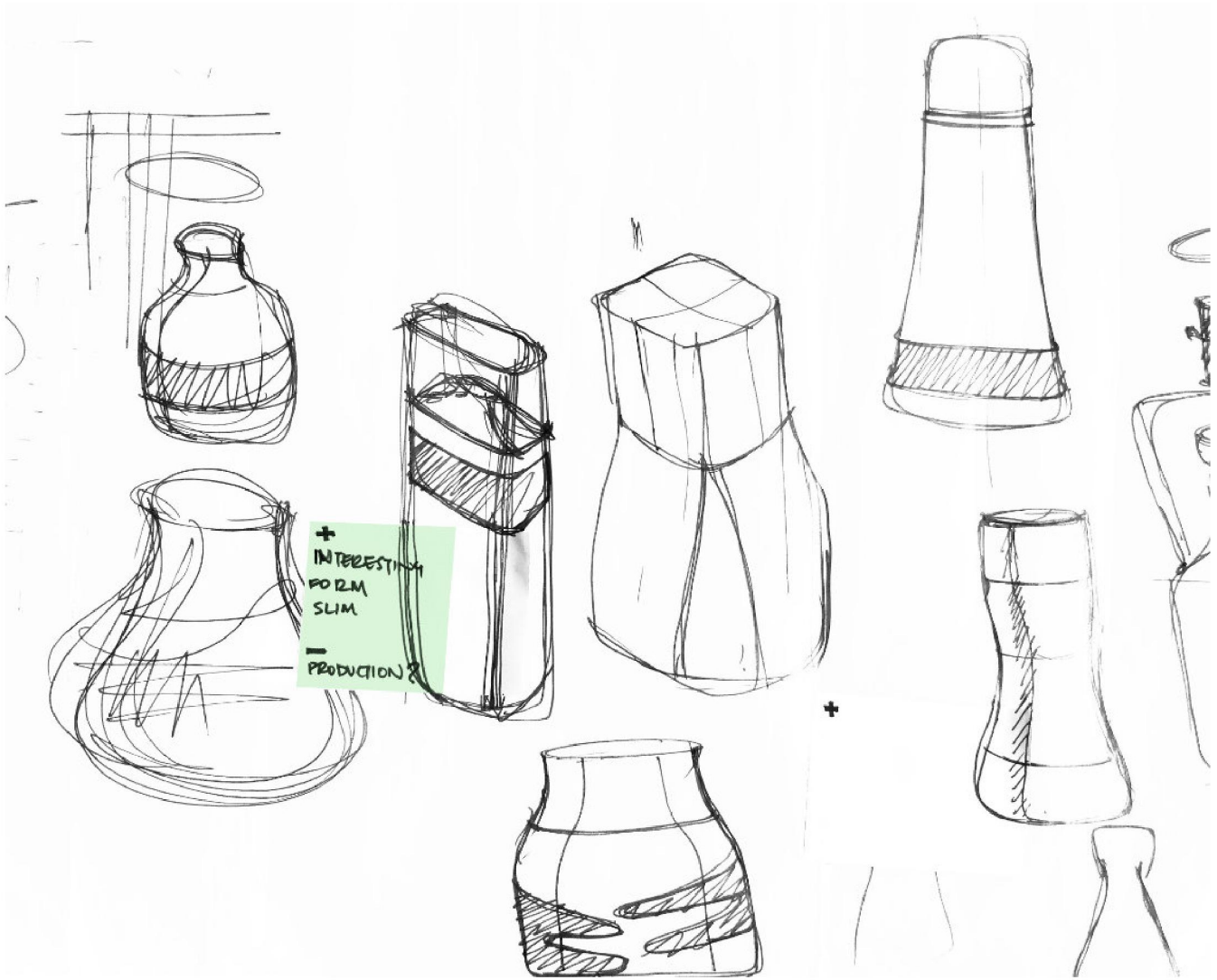
Abstraction and expression through standing out



Ideation


+
TRADITONAL
SMALL OPEANING
EASE OF DRINKING
CAN BE USED AS
CARAFE
- CAN BE BOTTOM HEAVY


AT NO POINT < 50 ϕ
ϕ 50
+
CLEAN, RECTILINEAR
EASY TO MANUFACTURE
−
STERILE, CLINICAL


+
INTERESTING
FORM
SLIM
-
PRODUCTION?
+

Initial Product Renders

All the directions and design ideas initially led towards a formal expression which tried to be connected to the roots of the craft and the Indian heritage. The forms were similar to the vessels used in the olden days.

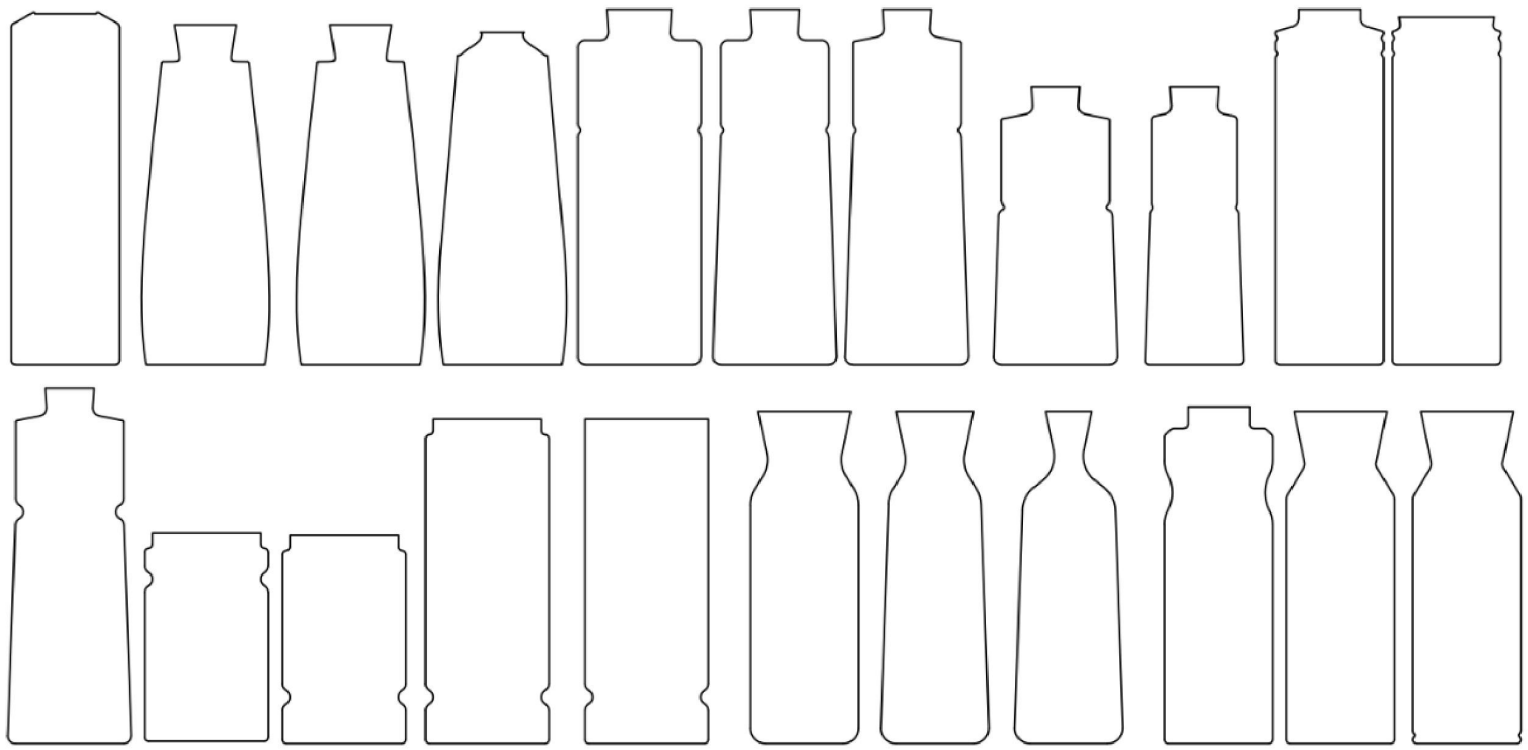
They tell a story about the craft and the refinement of it in the current day. These would help be a beacon of pride for the copper artisan in the global market.

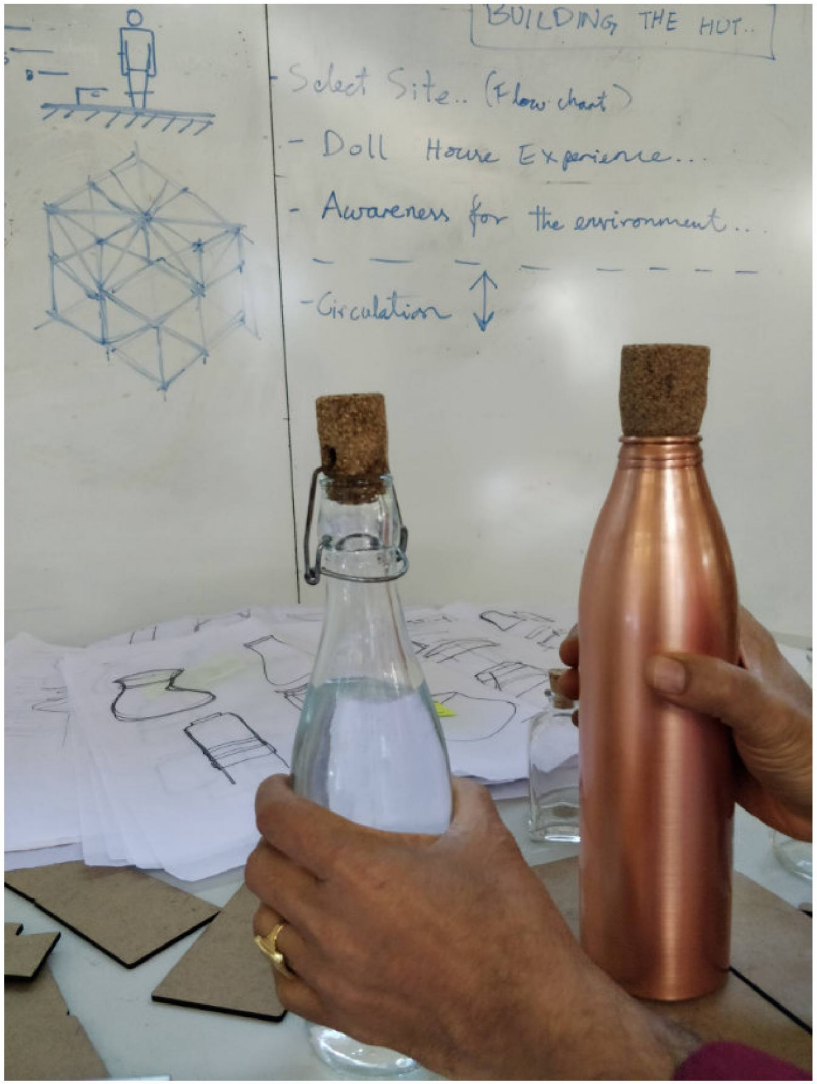
Further Explorations

Working with Studio Coppre in this project their feedback and direction was very important in this project. After discussions and internal presentation with the Studio Coppre team, it was decided to have more modern and contemporary approach to the formal language. Their clientele is mostly located in the USA and Europe, thus having a very traditional Indian form would not be something that a lot of their customers are interested in. Having worked in the international market for long this valuable feedback was taken to steer the design in a different direction.

2D Montages

Quick and dirty prototypes to have a feel of the scale of the bottle were created using MDF. These montages were then used to mock up these forms in a lathe. These 2D montages helped to get out of the sketches and tweak the forms more in a defined manner.





Comparing various closures and closure mechanisms

All 3D models, mockups, and working rigs for the bottle assembled for presentation

Feedback from Studio Coppre

Stage I
- Cylindrical and Hourglass design directions
- Cork is a great choice for a lid
- Stand for minimalism and simplicity of form
- Bottle to have a wide-mouth
- Having a steel top to drink from

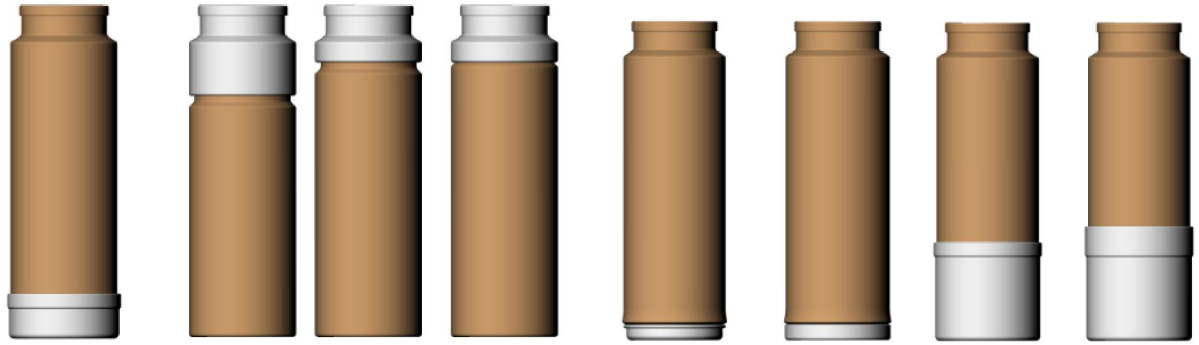
Stage II
- Cylindrical and Hourglass design directions
- Cork is a great choice for a lid
- Stand for minimalism and simplicity of form
- Bottle to have a wide-mouth
- Having a steel top to drink from

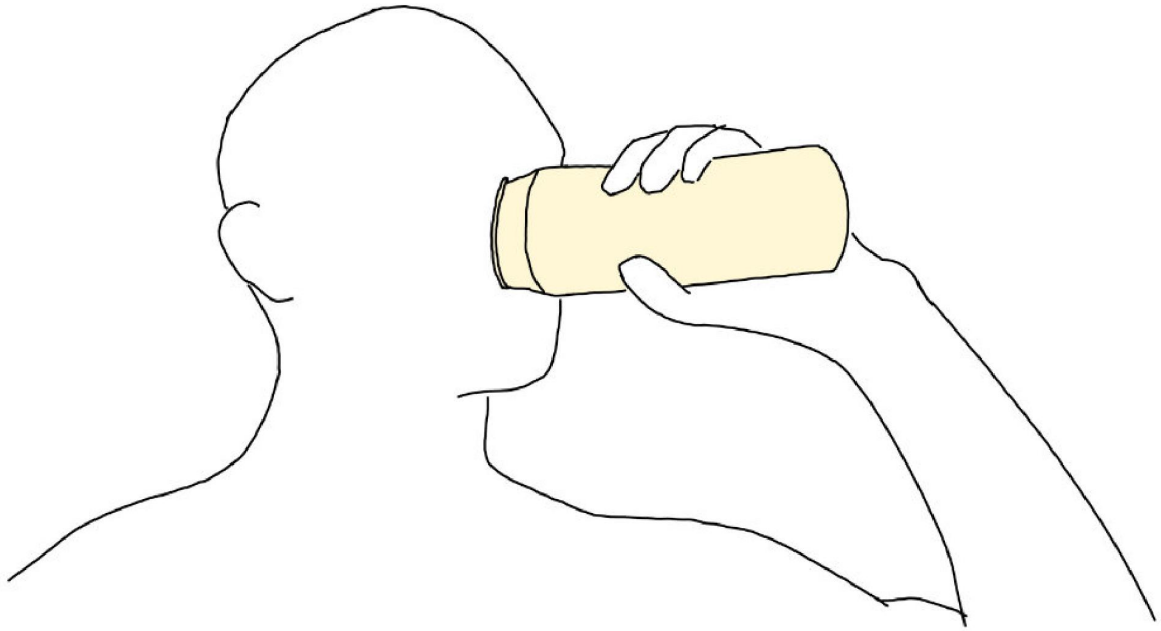
Approved Design Directions

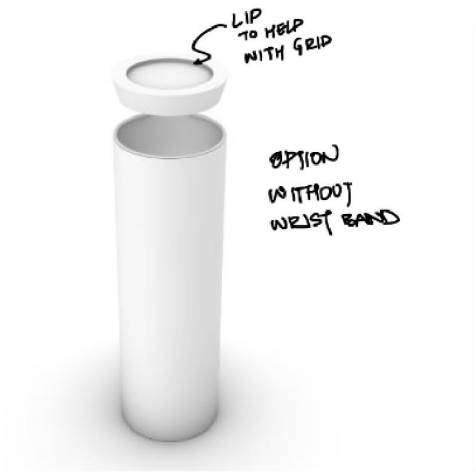
Direction 1- Straight

The form development and refinement started with taking a cylinder and then tuning into something neutral still that would stand out. The exploration led to the forms that we see below, which follow the trends in the western markets of “cult” water bottles. But somehow these went into more of a masculine and rugged feel.

The idea of adding a steel rim and a steel bottom cap was suggested by the Studio Coppre, as a lot of their western clients do not like the metallic taste and smell that drinking directly from a copper container might induce. The steel cap at the bottom helps against dents and deformation of the edge, as copper is a very soft and easy malleable material.

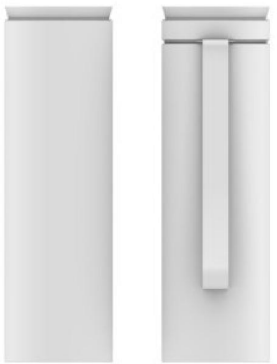


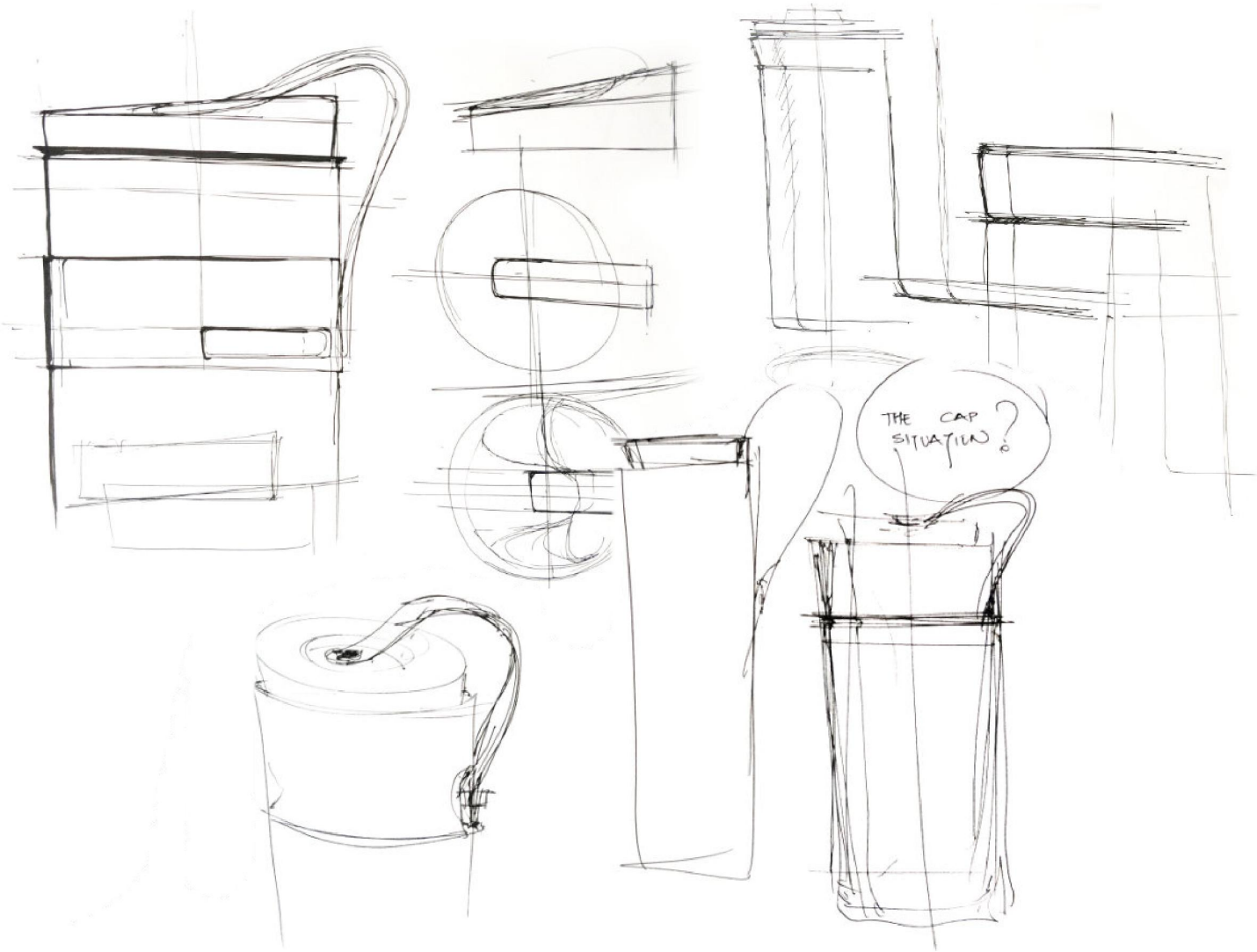


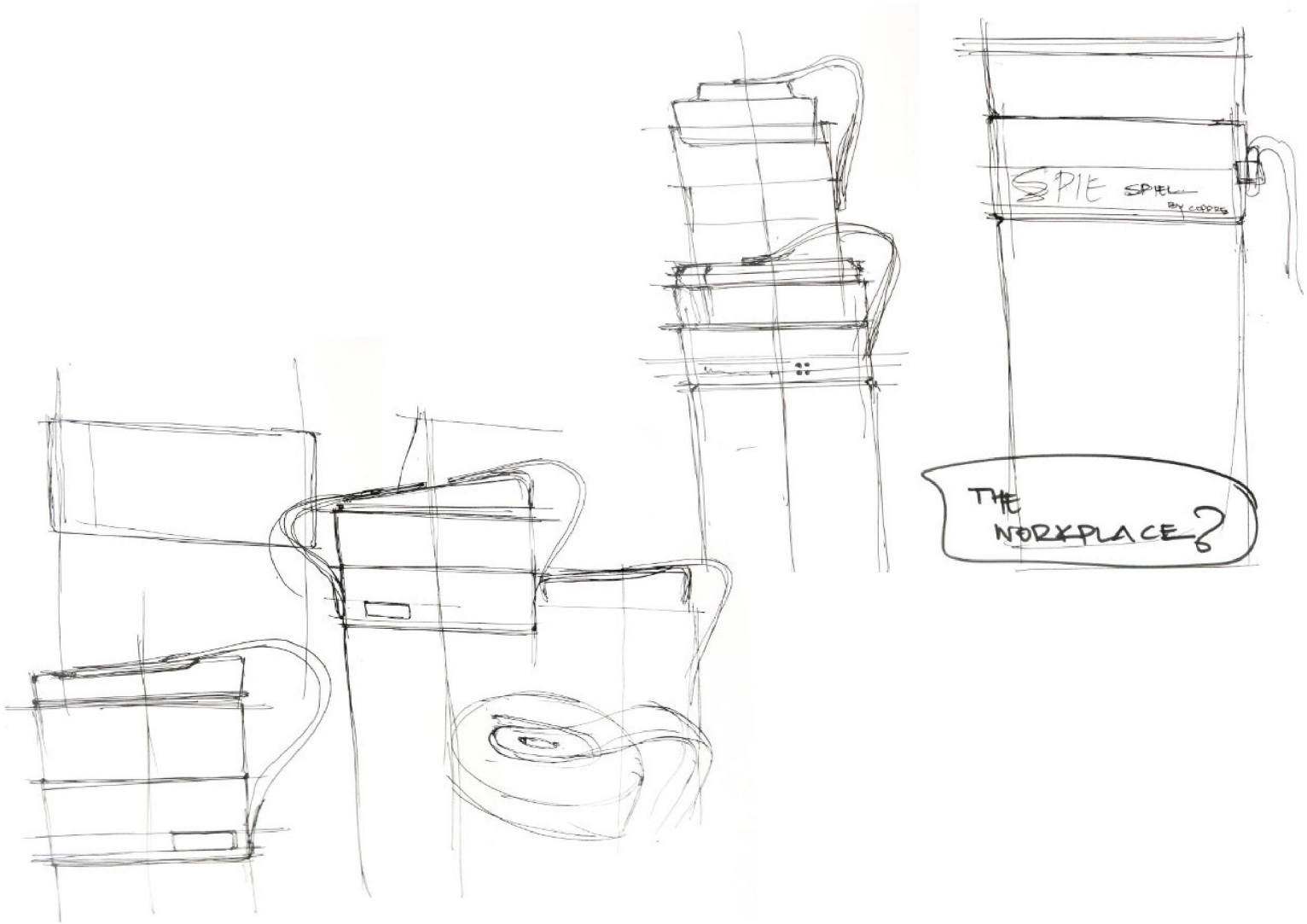

LIP
TO HELP
WITH GRIP
OPTION
WITHOUT
WRIST BAND


CORK
CAP
STEEL
TOP
FABRIC
WRIST
BAND
COPPER
BODY


COPPER
&
STEEL
KNURLED
TOGETHER



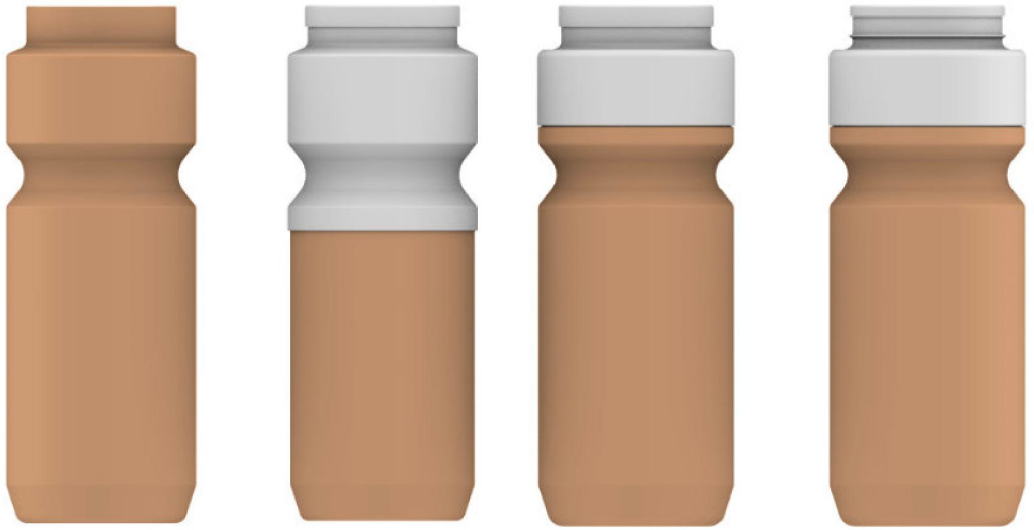

THE CAP SITUATION?

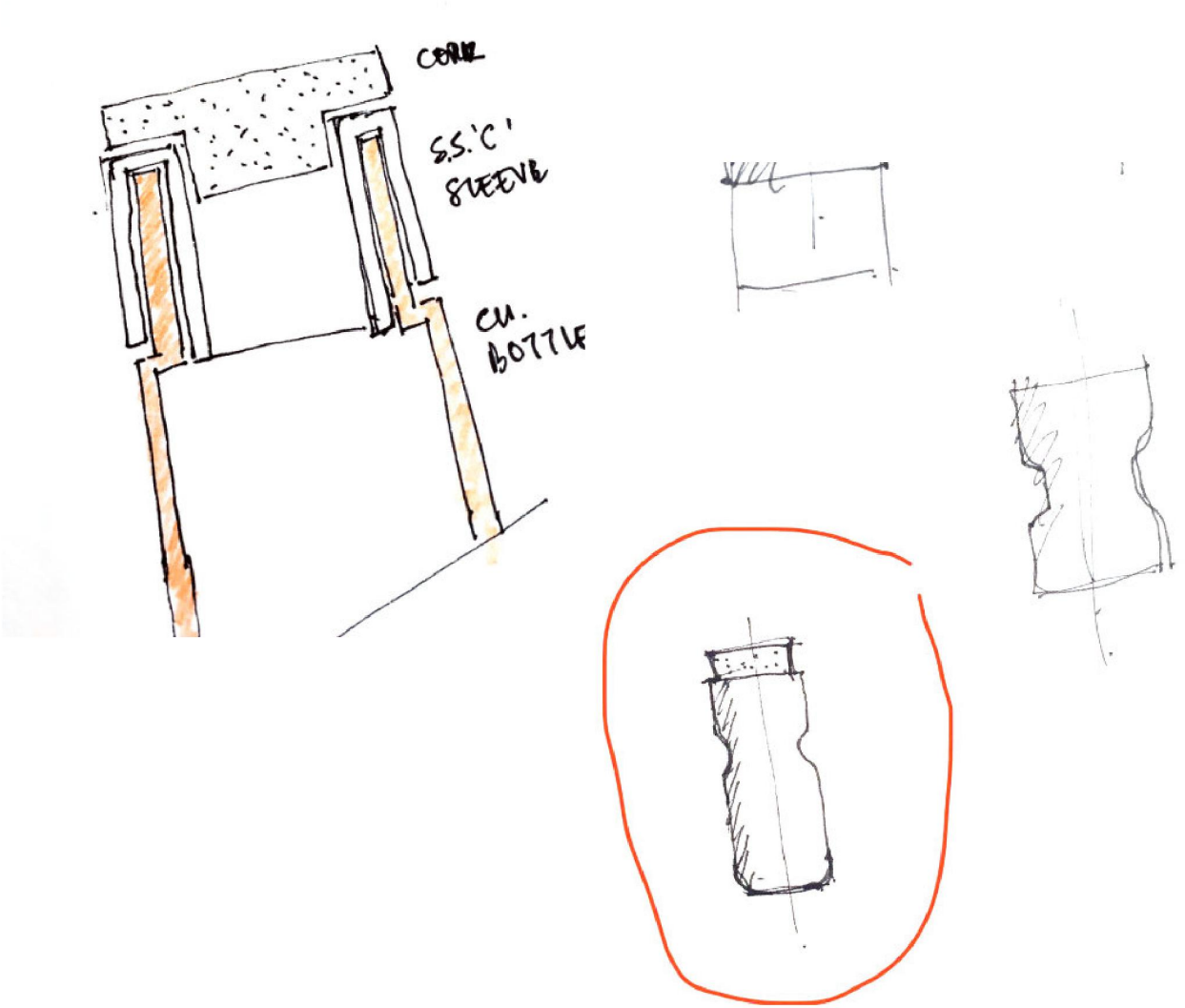

SPIE
THE
WORKPLACE?

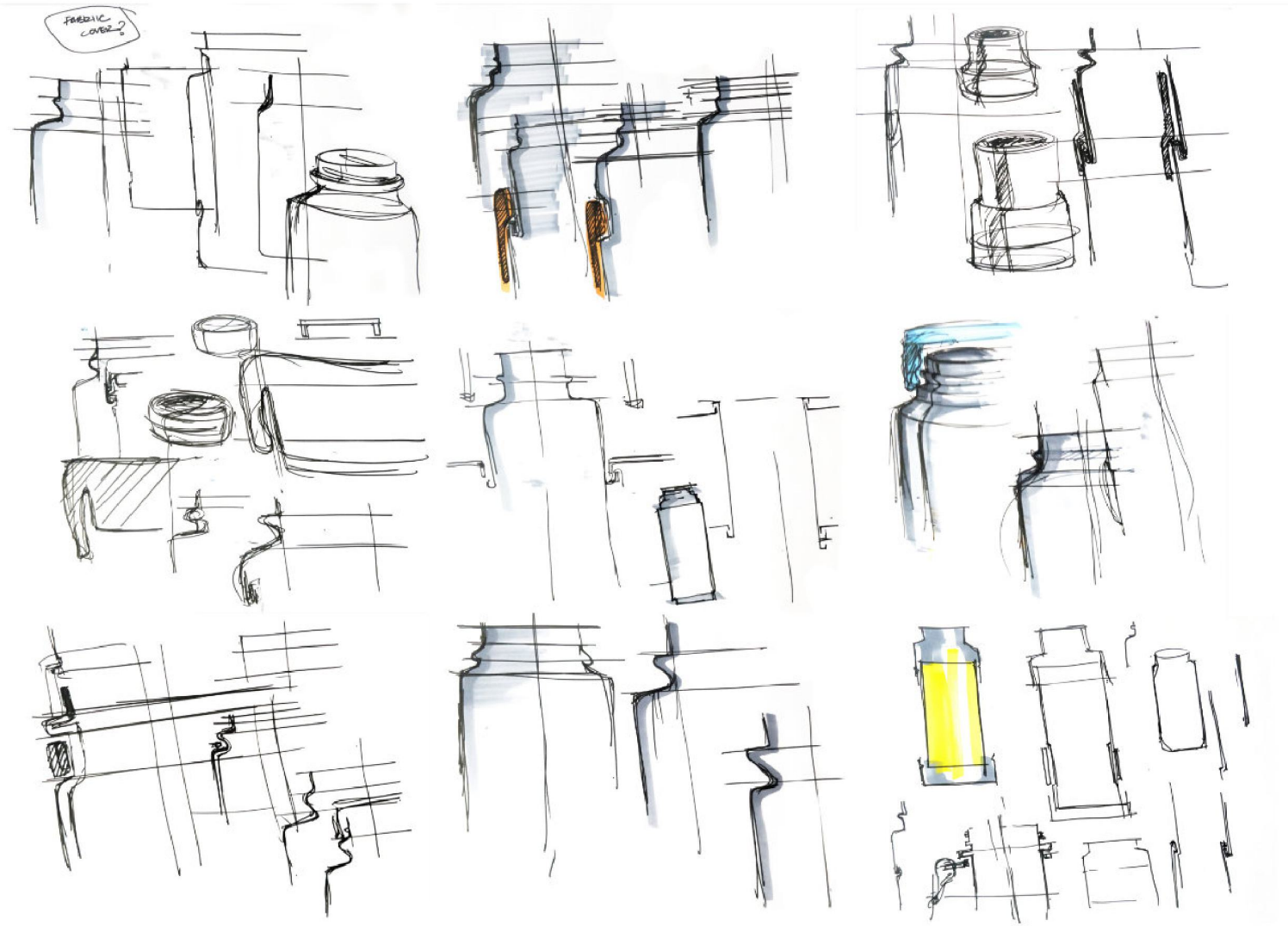
Direction 2- Pinched Hourglass

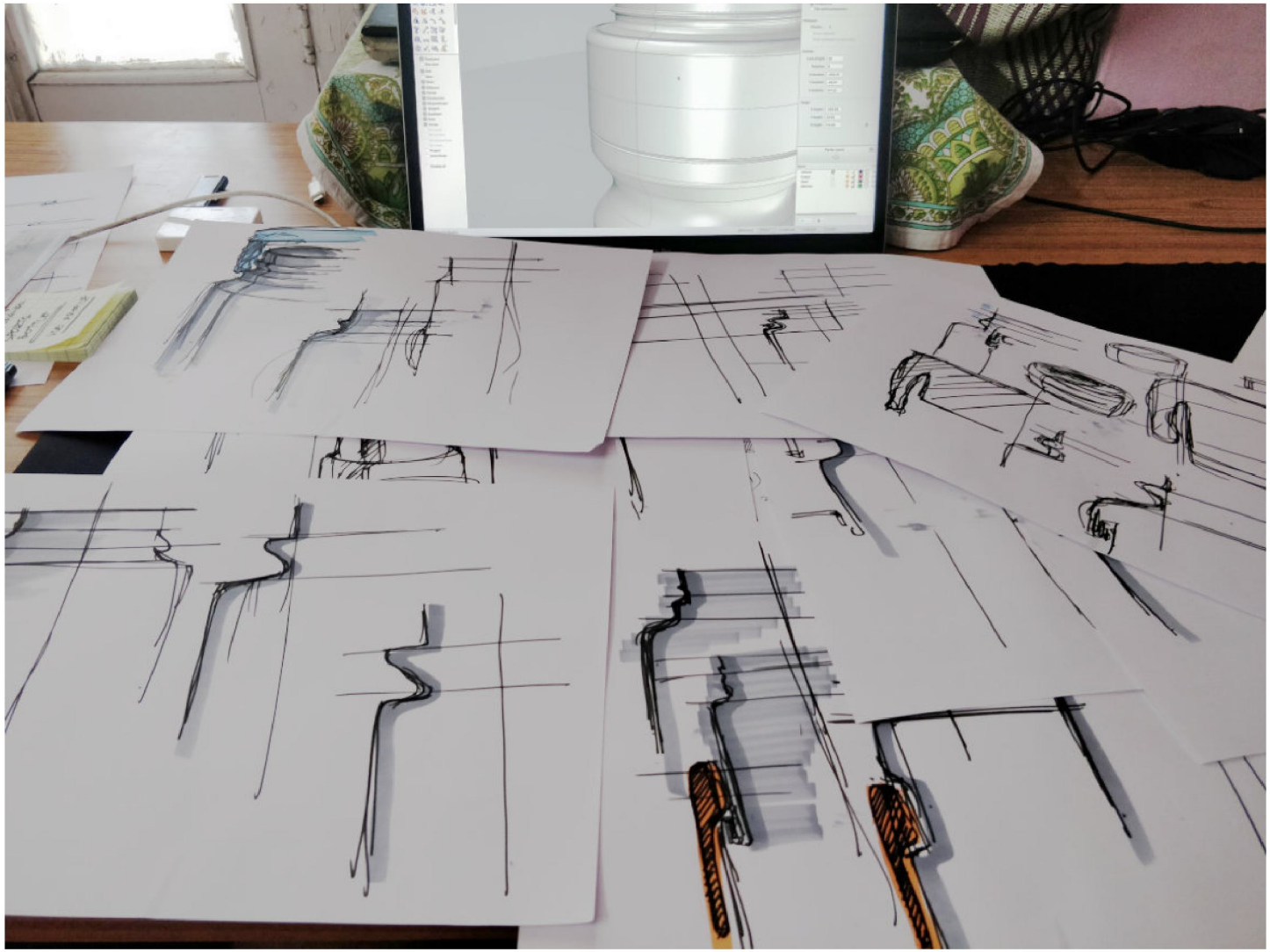
There is a distinct form with a pinched hourglass sort of a formal language that is very much preferred by athletes and sports bottles. These forms are very iconic and can be used to stand out.

Having this pinch also helps provide a place to put your hands while carrying and drinking from the bottle.



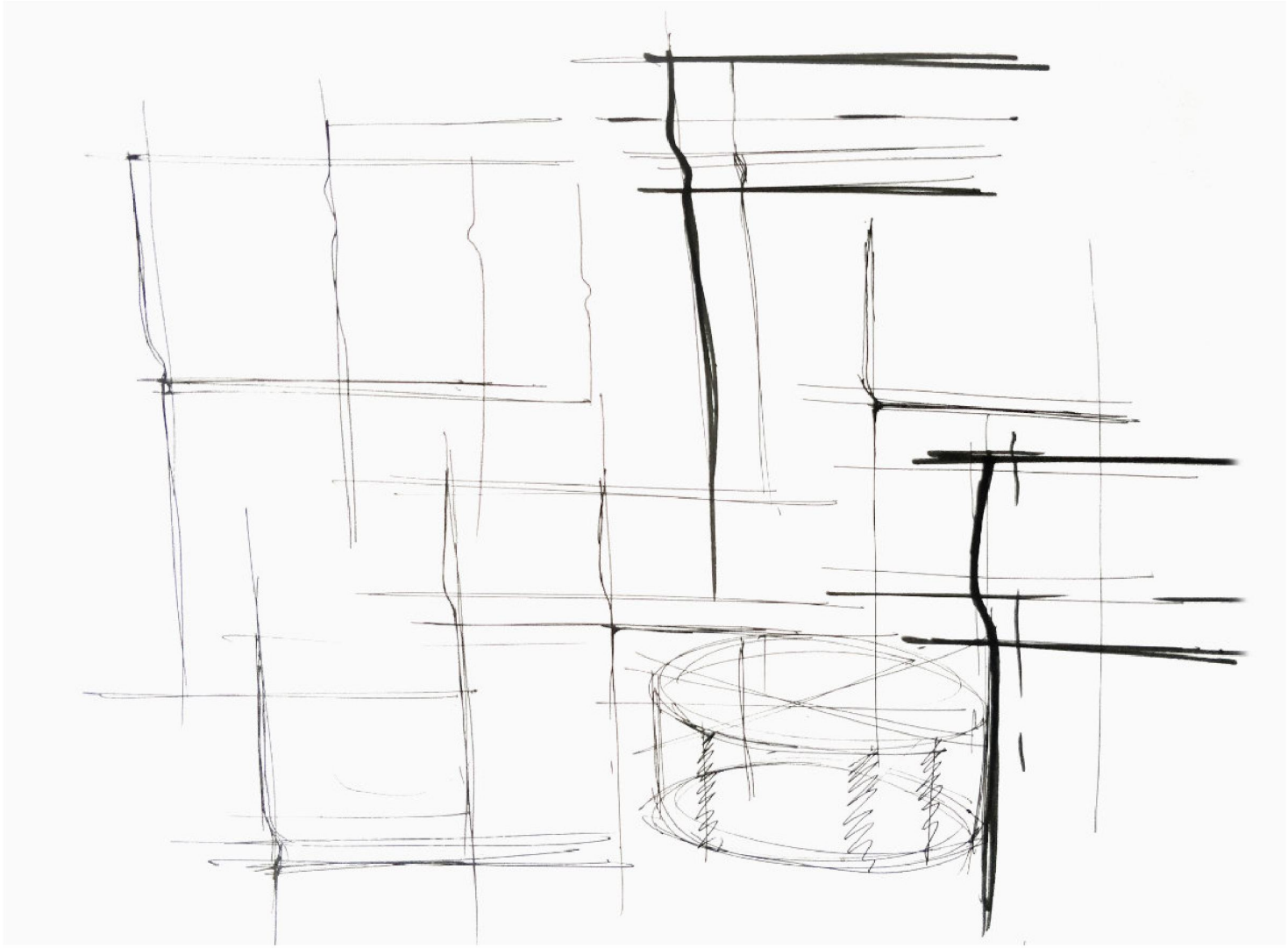

CORK
S.S.'C'
SLEEVE
CU.
BOTTLE

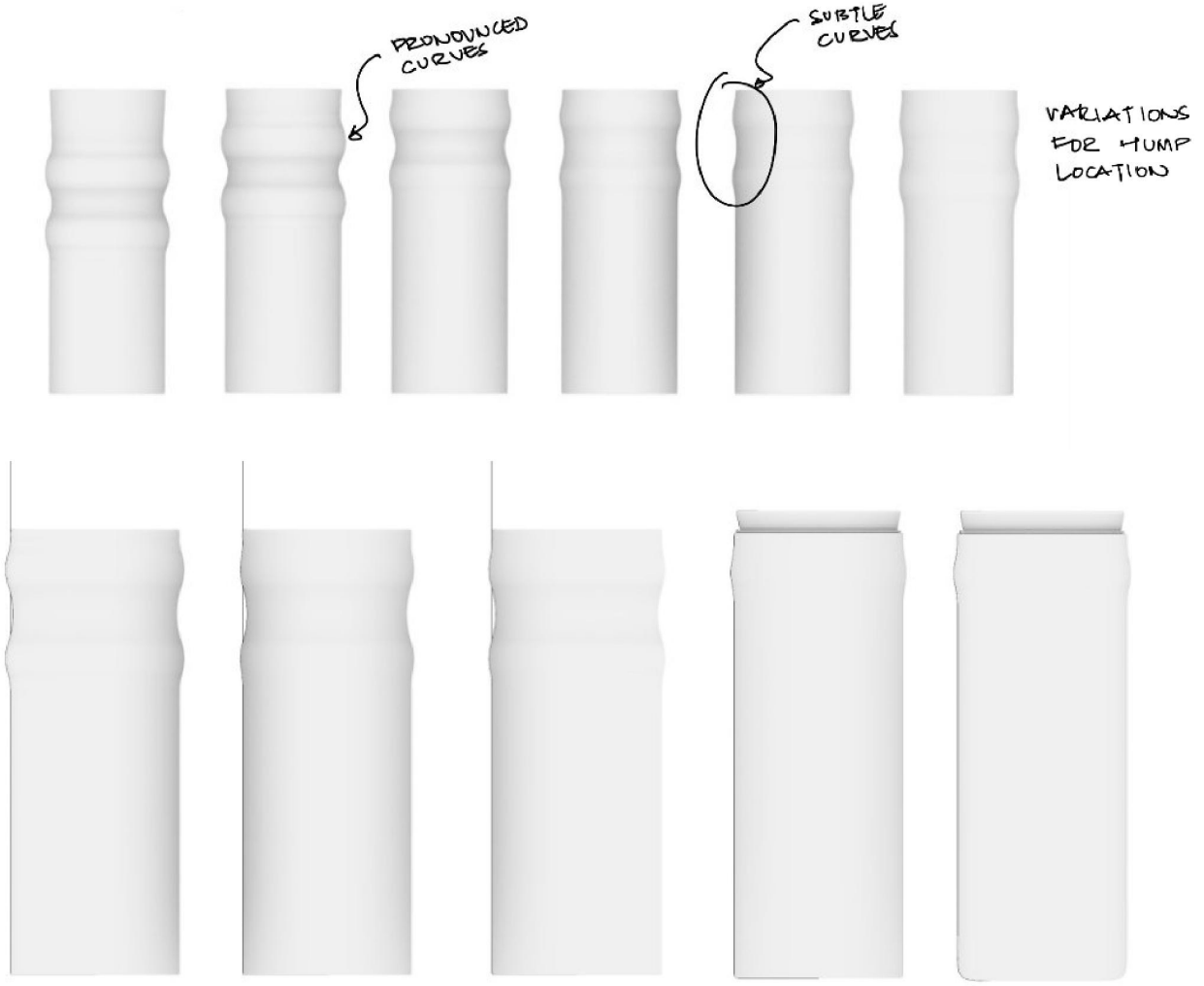

FABRIC
COVER?

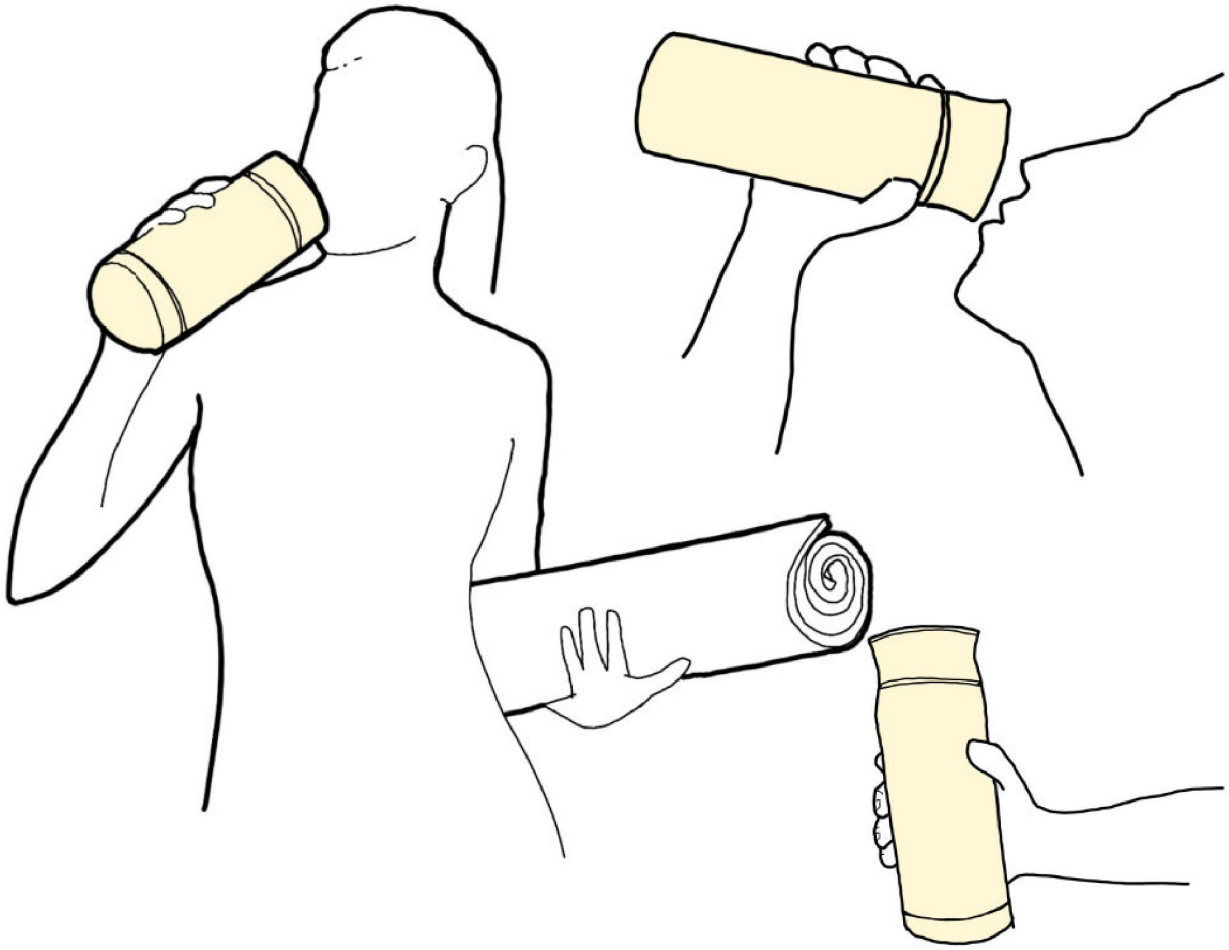


Direction 3- Curvaceous

The team at Studio Coppre was very interested in curvaceous forms as it went with their design language and the portfolio of products. This formal expression was also a in line with Yoga and the subtleties made it a little feminine without being anything aggressive which could mean that it would appeal to all genders and could be targeted at a wider demographic audience, worldwide.



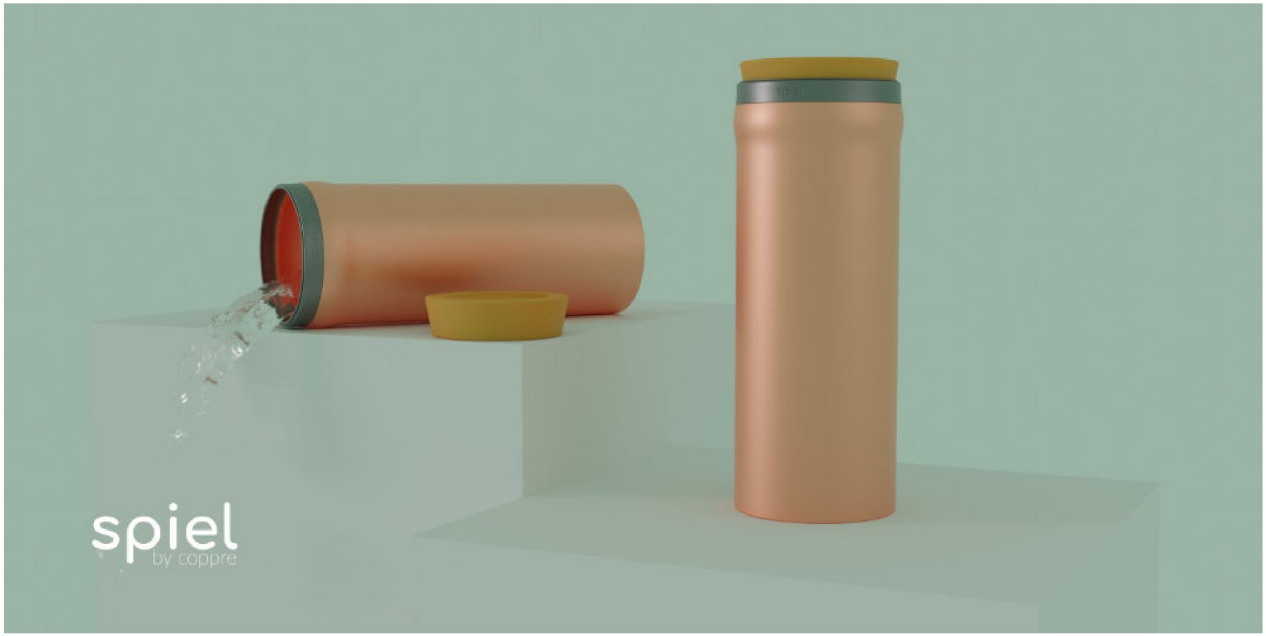

PRONOUNCED CURVES
SUBTLE CURVES
VARIATIONS FOR HUMP LOCATION

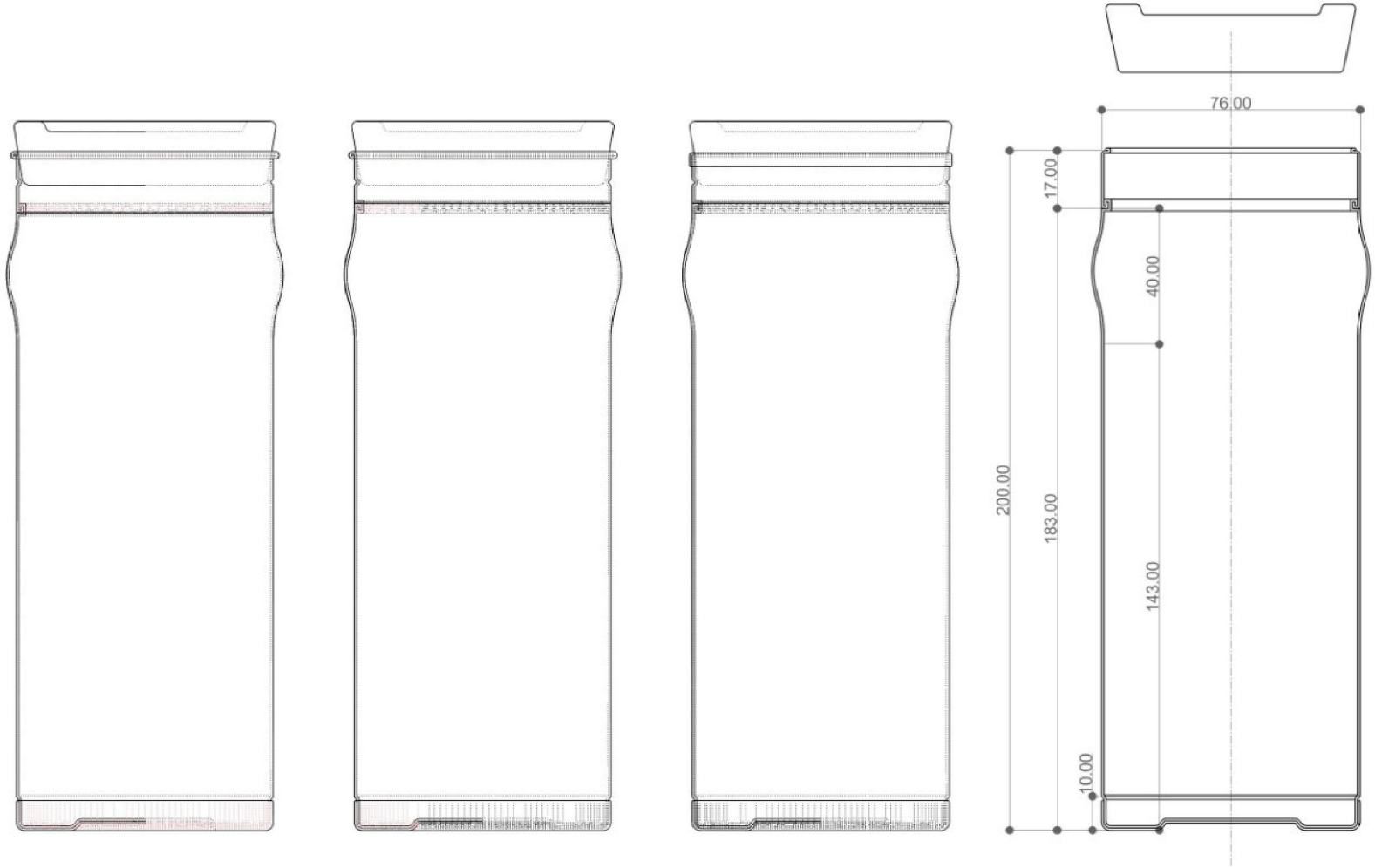


Final Design Directions

Collection I

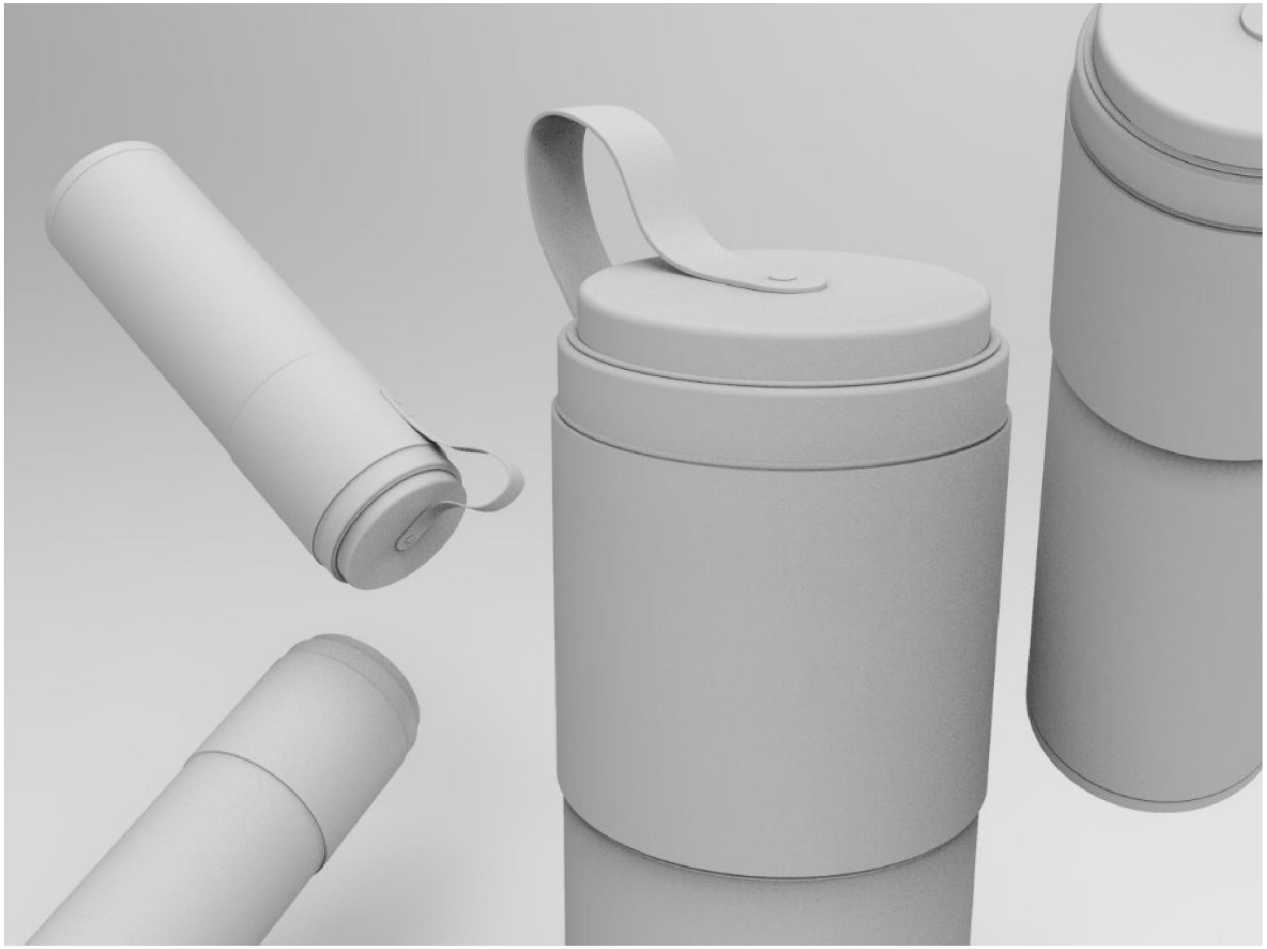
This collection made with curvaceous features and and yoga and active lifestyle in mind. Yoga is a gentle, subtle art. This bottle signifies inner strength that gentle moves downwards from the mouth of the bottle to base, thus making one feel grounded, like Yoga does.

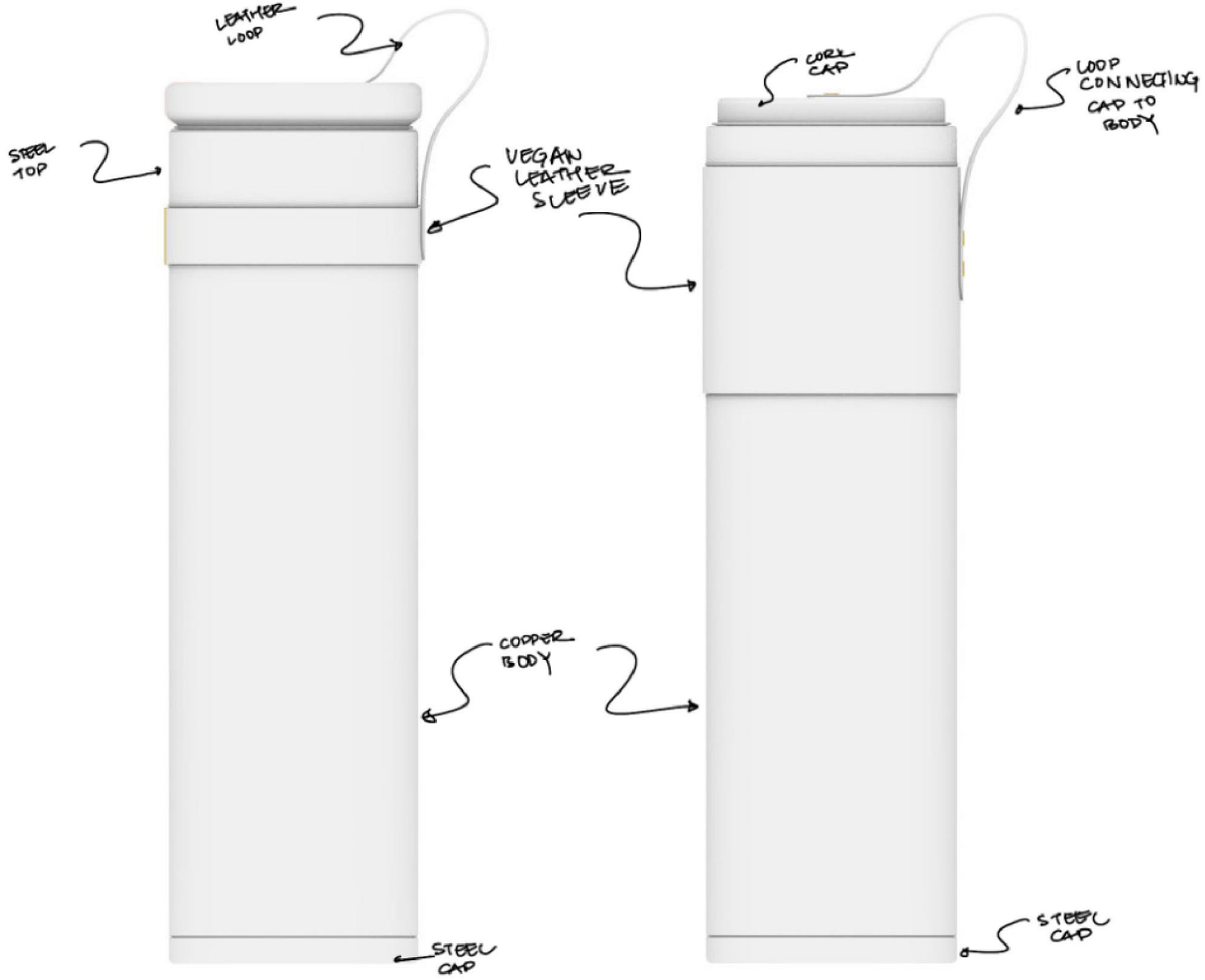

spiel
by coppre


76.00
17.00
40.00
200.00
183.00
143.00
10.00

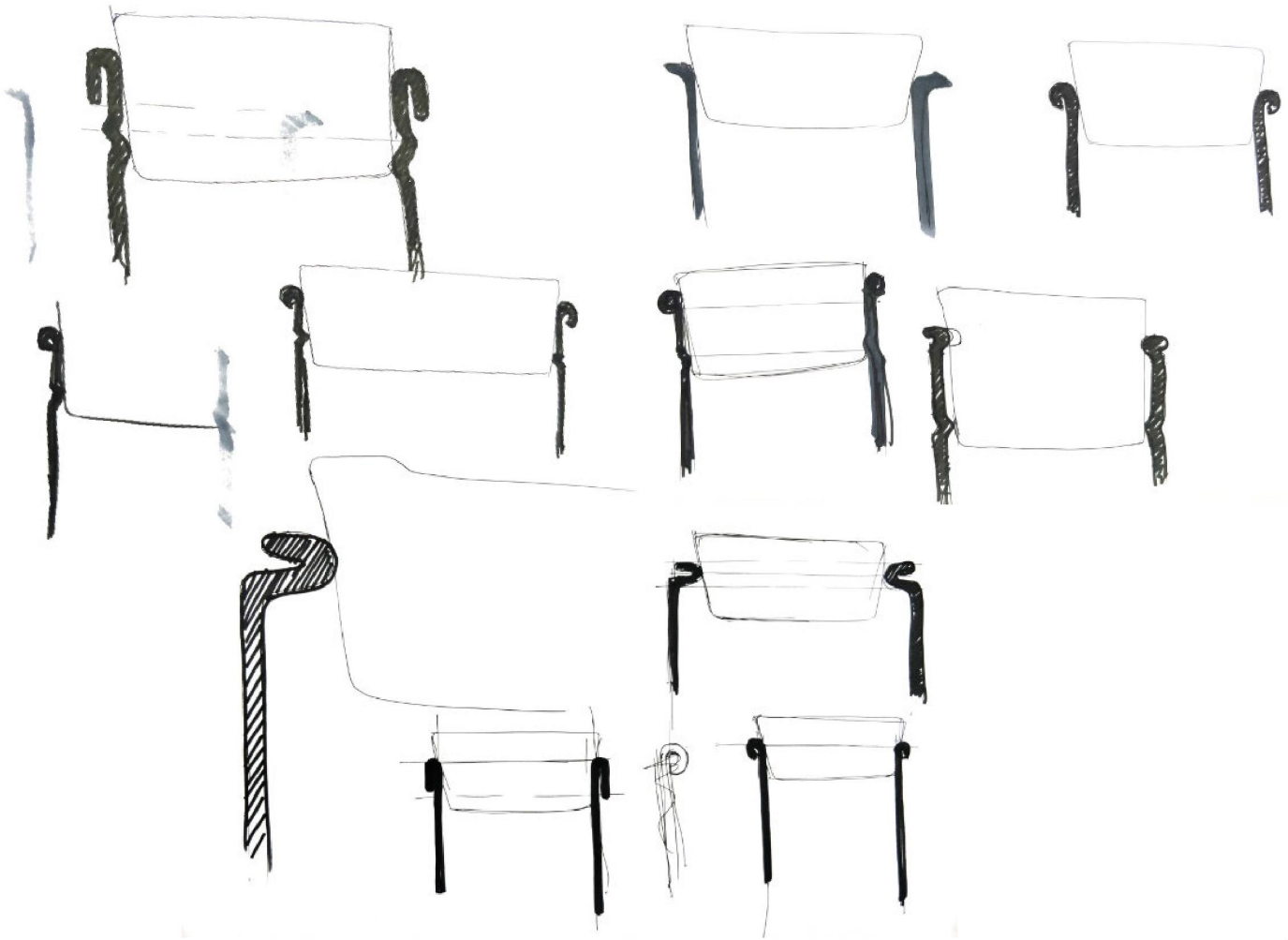
Collection II

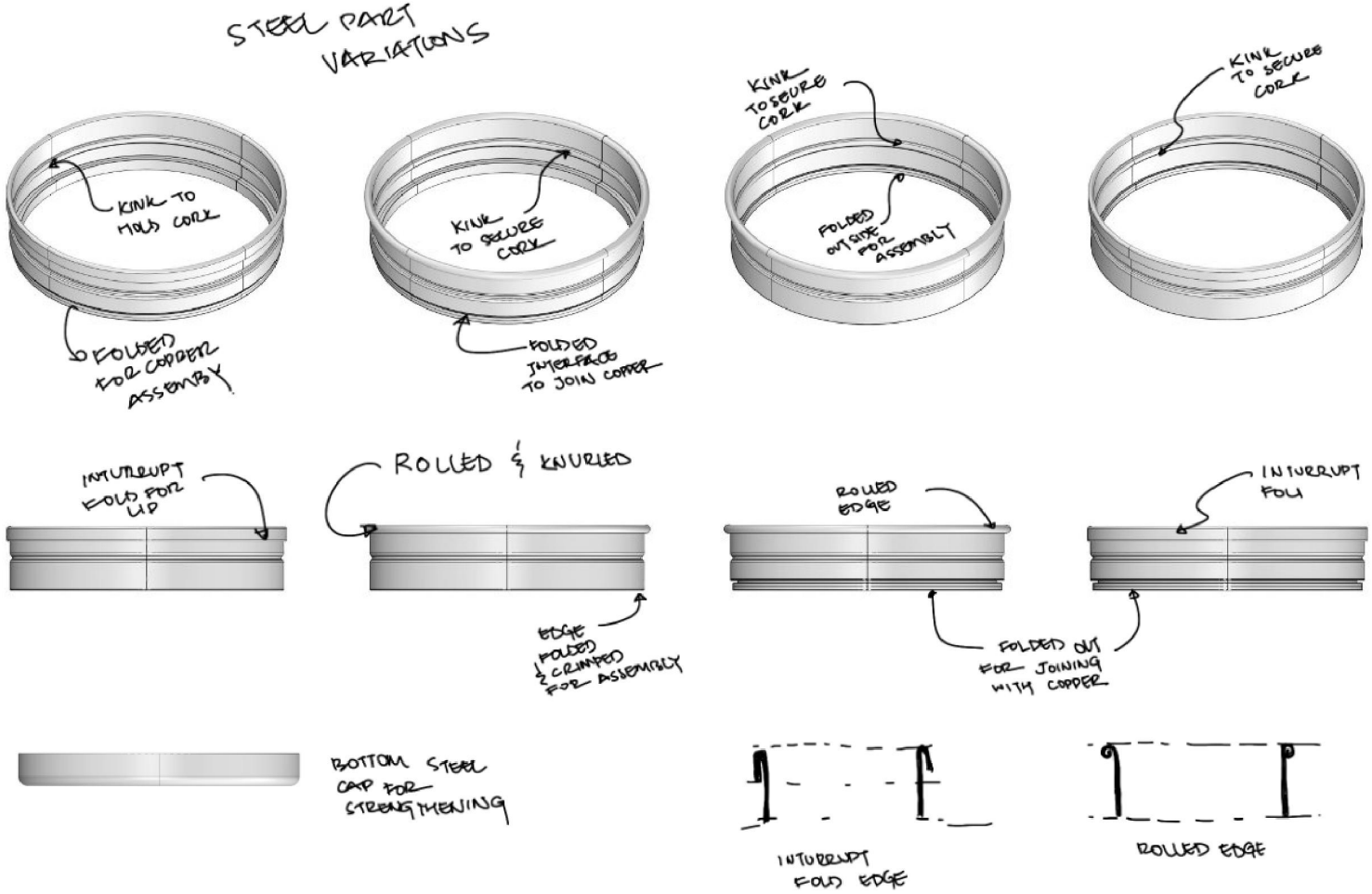
The work collection uses its rectilinear form with premium vegan leather materials, helping it fit into any executive's workspace as well as to be carried with them on person. The leather strap keeps the cap in its place and helps to drink out of on the go.



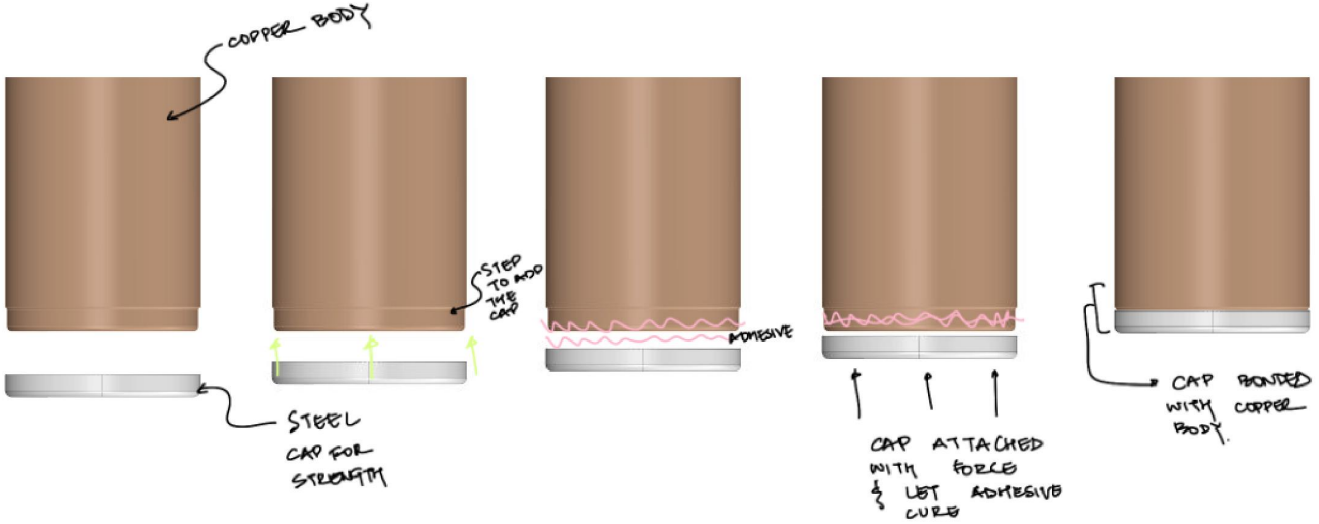

LEATHER LOOP
STEEL TOP
VEGAN LEATHER SLEEVE
COPPER BODY
STEEL CAP
CORK CAP
LOOP CONNECTING CAP TO BODY
STEEL CAP

Minor Details

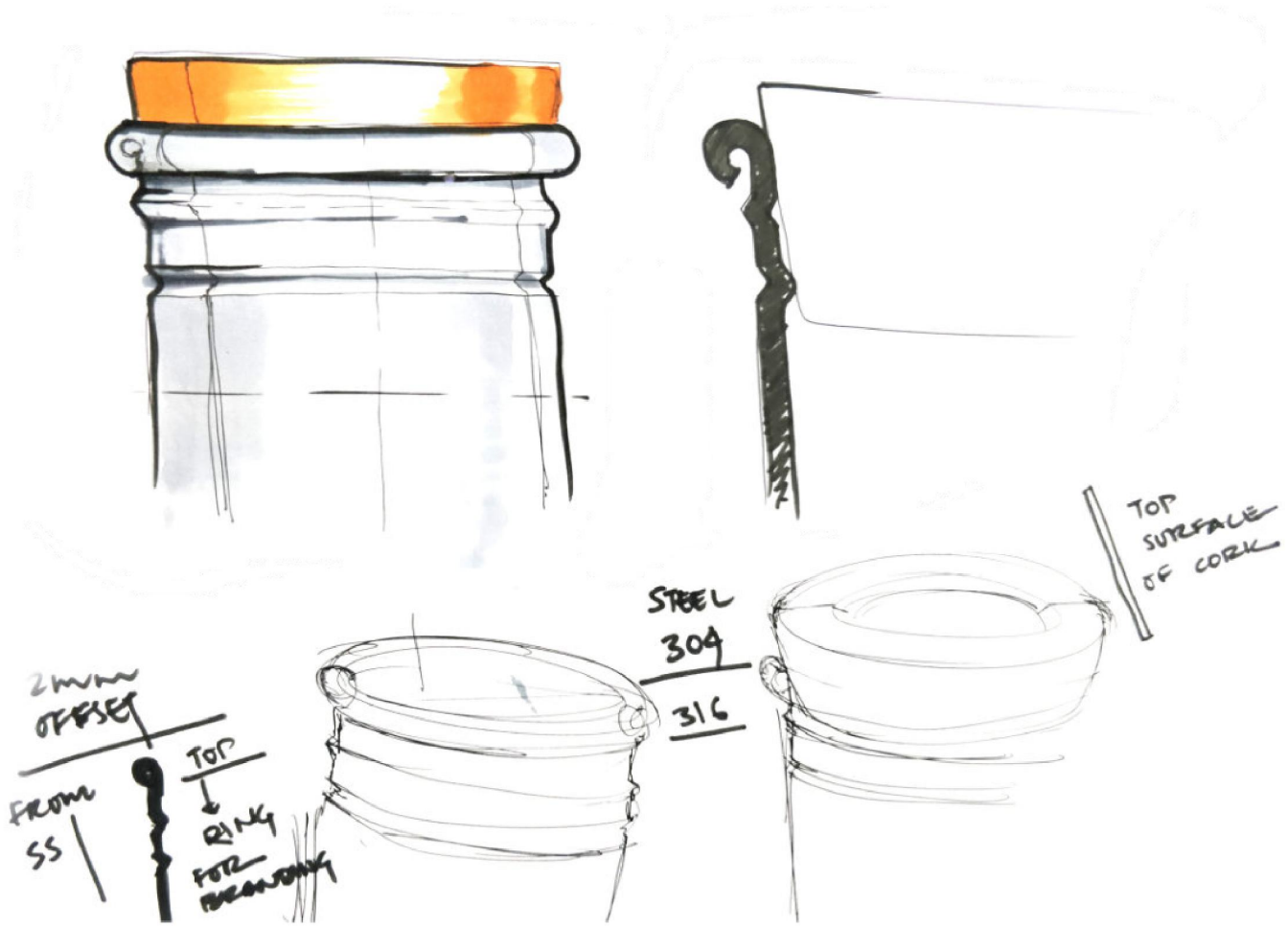


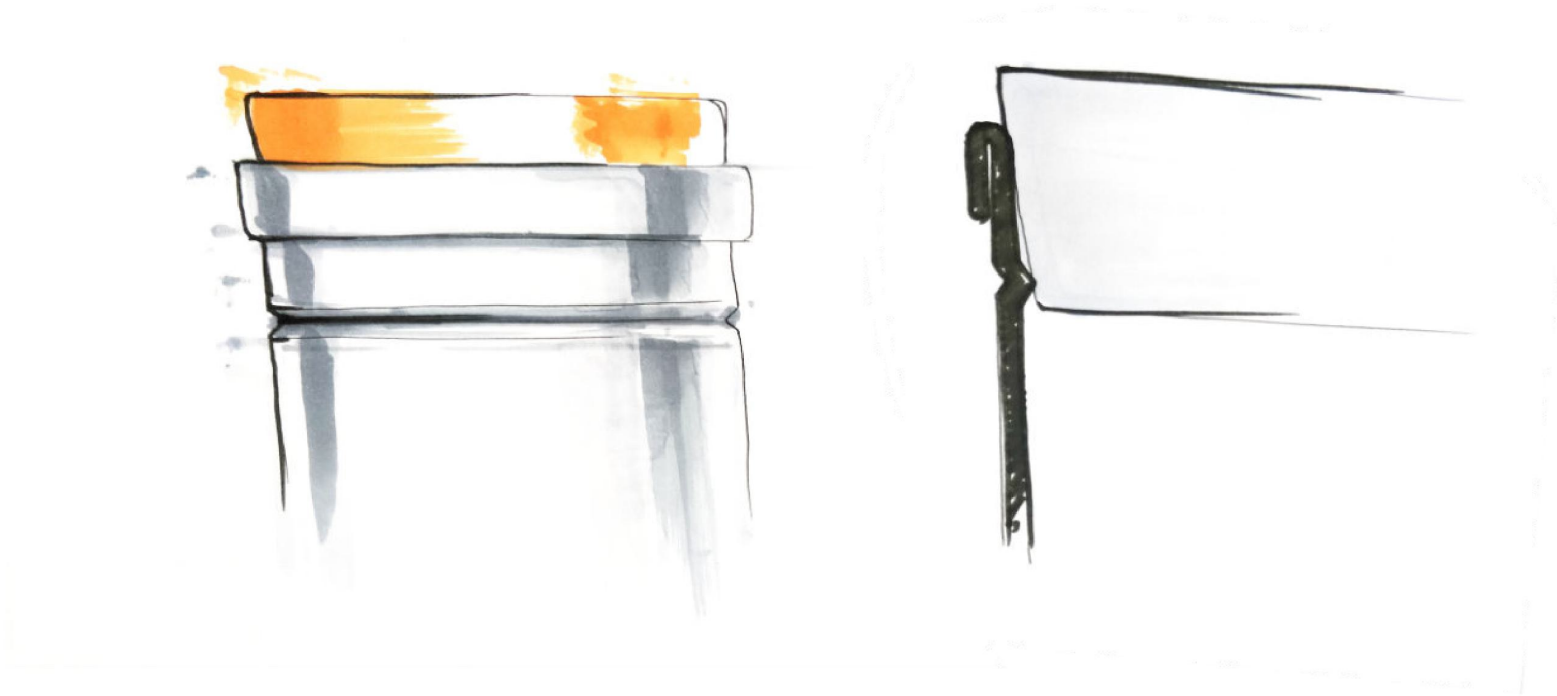

STEEL PART VARIATIONS
KINK TO HOLD CORK
FOLDED FOR COPPER ASSEMBLY
KINK TO SECURE CORK
FOLDED INTERFACE TO JOIN COPPER
KINK TO SECURE CORK
FOLDED OUTSIDE FOR ASSEMBLY
KINK TO SECURE CORK
INTURRUPT FOLD FOR LID
ROLLED & KNURLED
EDGE FOLDED & CRIMPED FOR ASSEMBLY
ROLLED EDGE
INTURRUPT FOLD
FOLDED OUT FOR JOINING WITH COPPER
BOTTOM STEEL CAP FOR STRENGTHENING
INTURRUPT FOLD EDGE
ROLLED EDGE

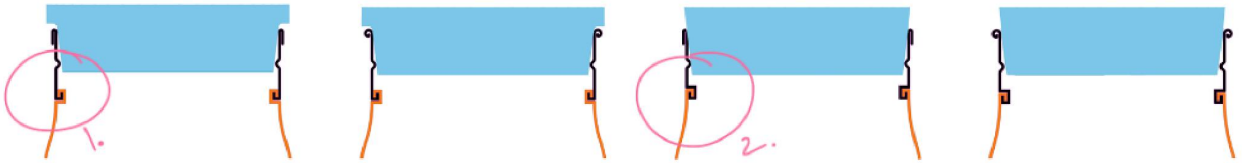
Steel Cap Assembly



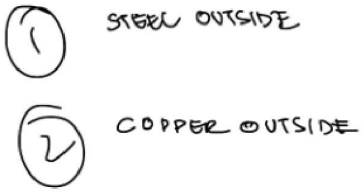
Steel Copper Assembly

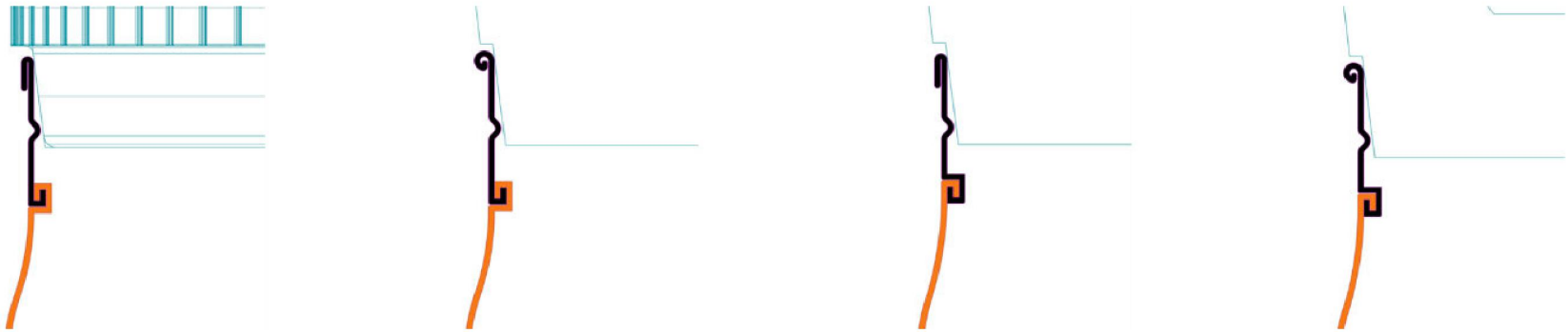


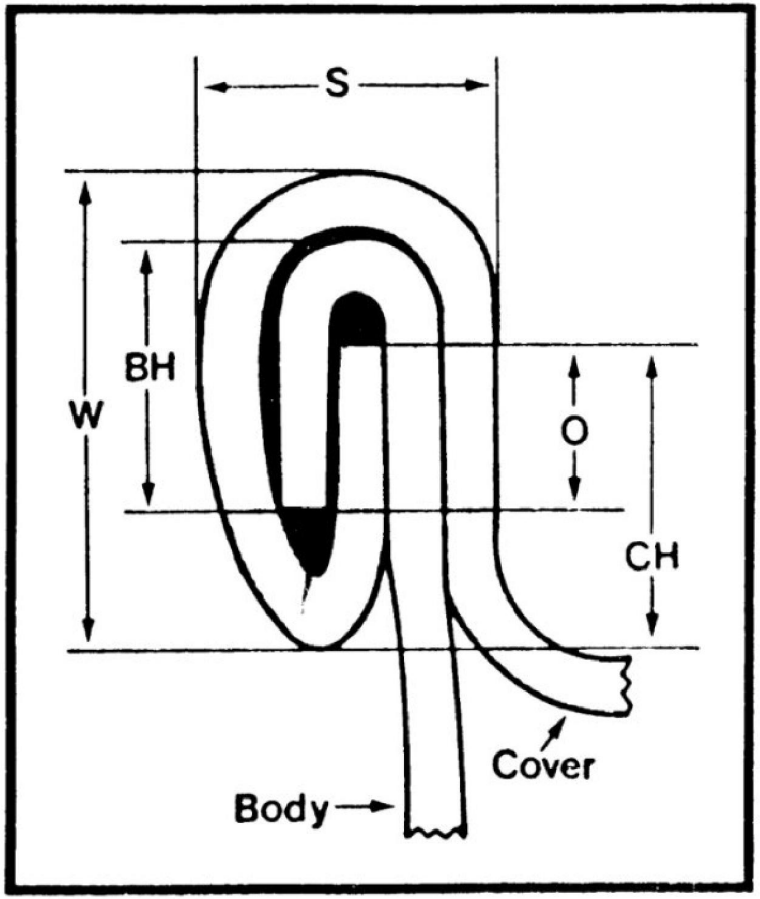


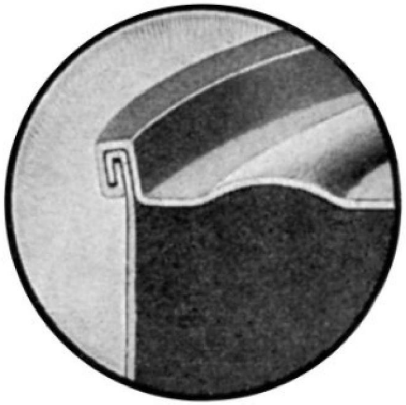



Steel
Copper


1
STEEL OUTSIDE
2
COPPER OUTSIDE







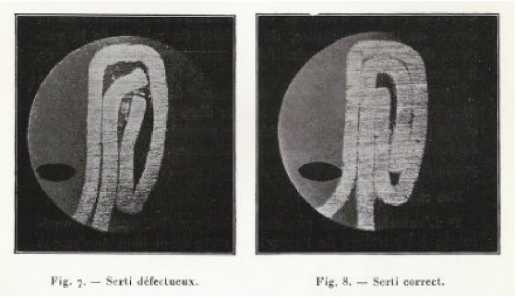
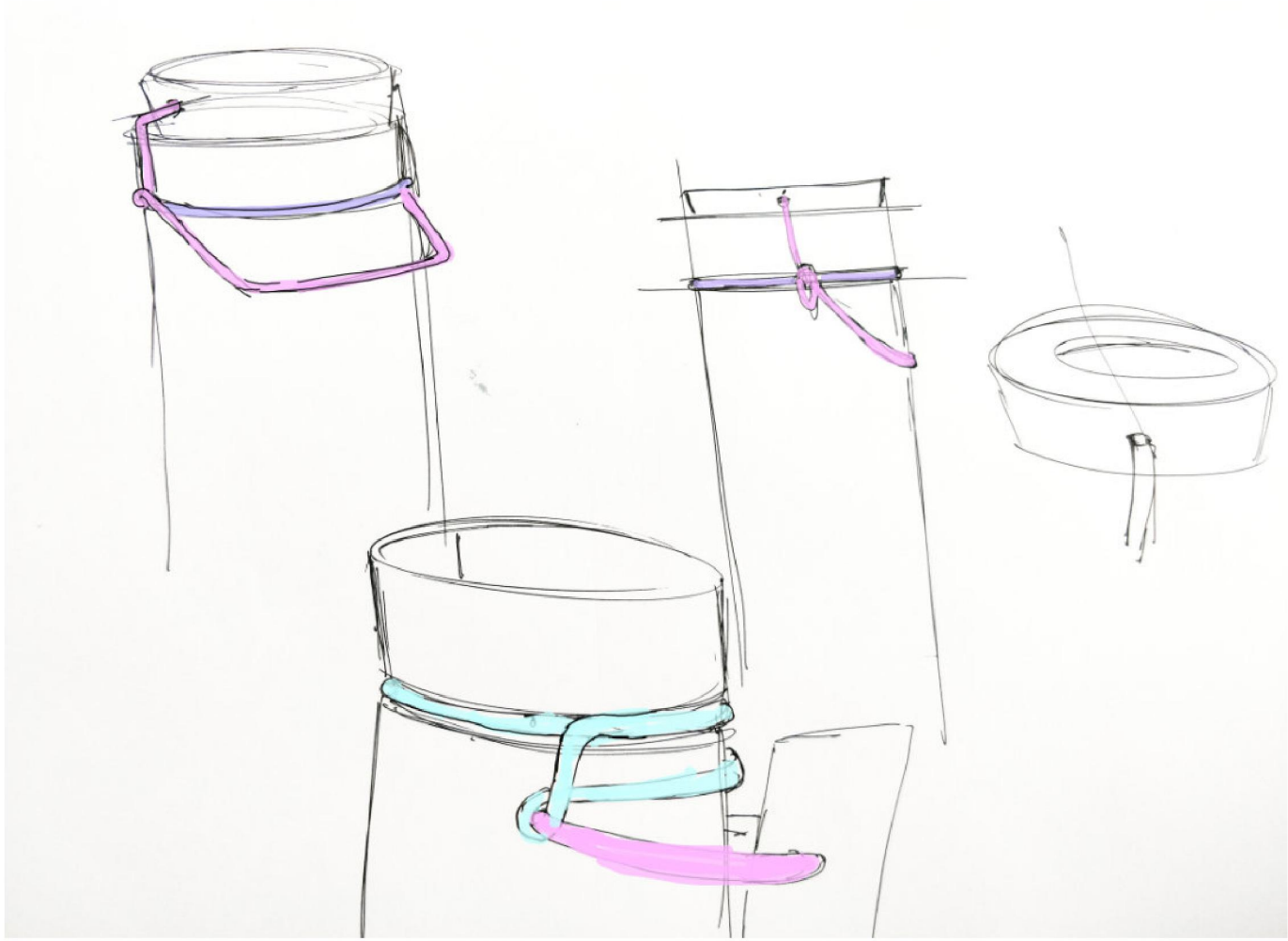


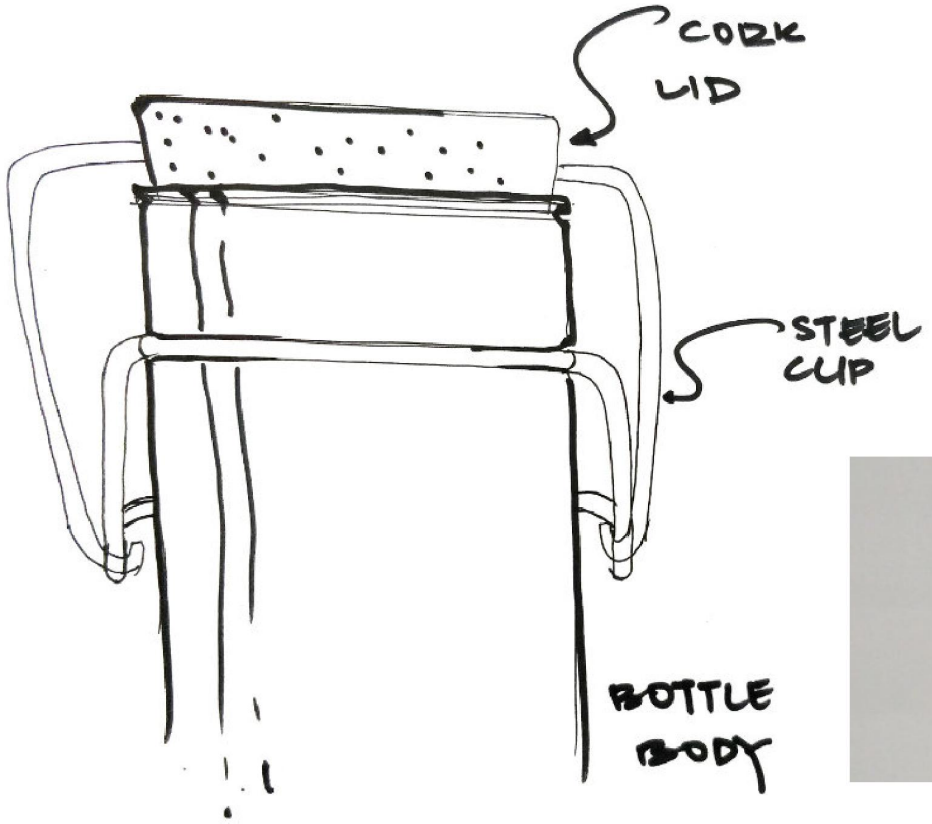
Fig. 7. — Sertí défectueux.

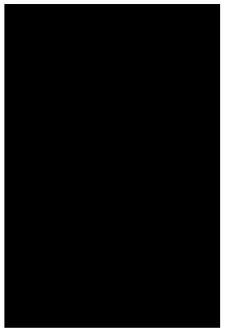
Fig. 8. — Sertí correct.

Alternative Steel Clip Closure




HOLE FOR STEEL
COIZE
SPRING
STEEL


CORK
LID
STEEL
CUP
BOTTLE
BODY



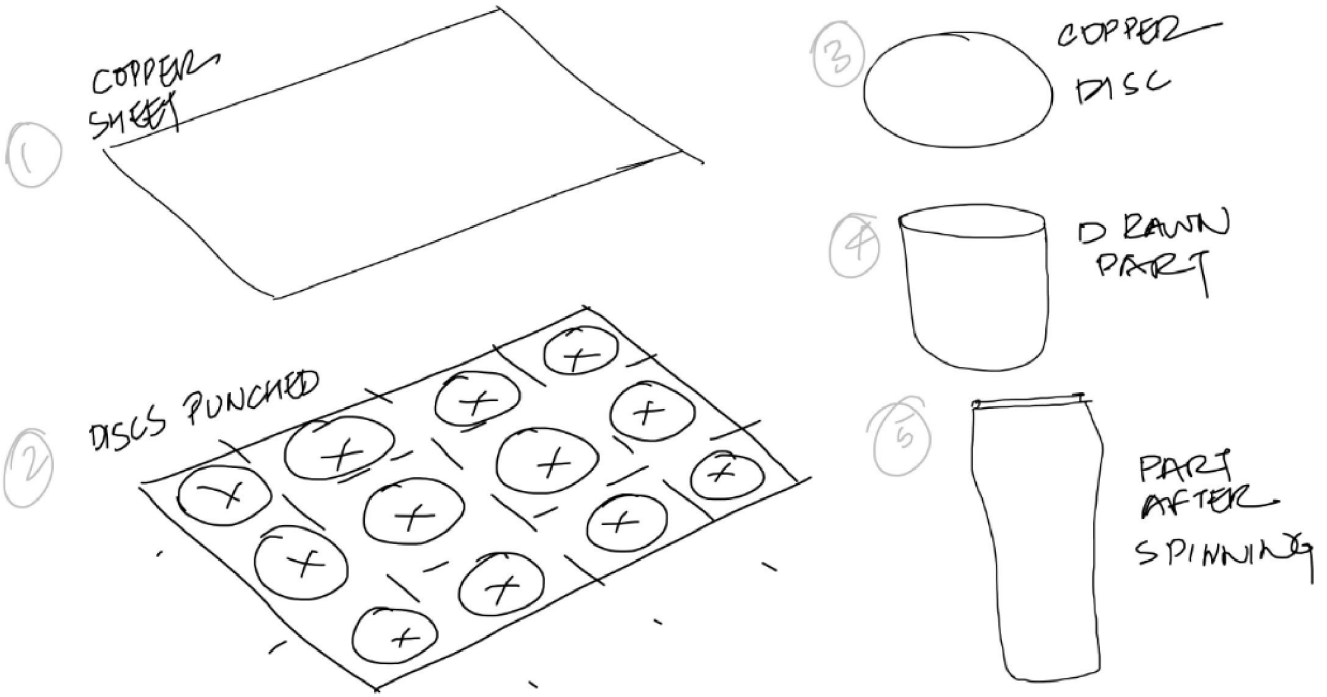
Manufacturing

Production Methods

Copper

Main body of the bottle is to be made in copper using two processes, involving both industrial as well as a handmade method.

Sheets of copper would be punched out into discs of required diameter and then would be put into a hydraulic drawing machine, which would form these into work pieces that can be used by the artisans to form them into the shape of the body of the bottle by using a spinning lathe.

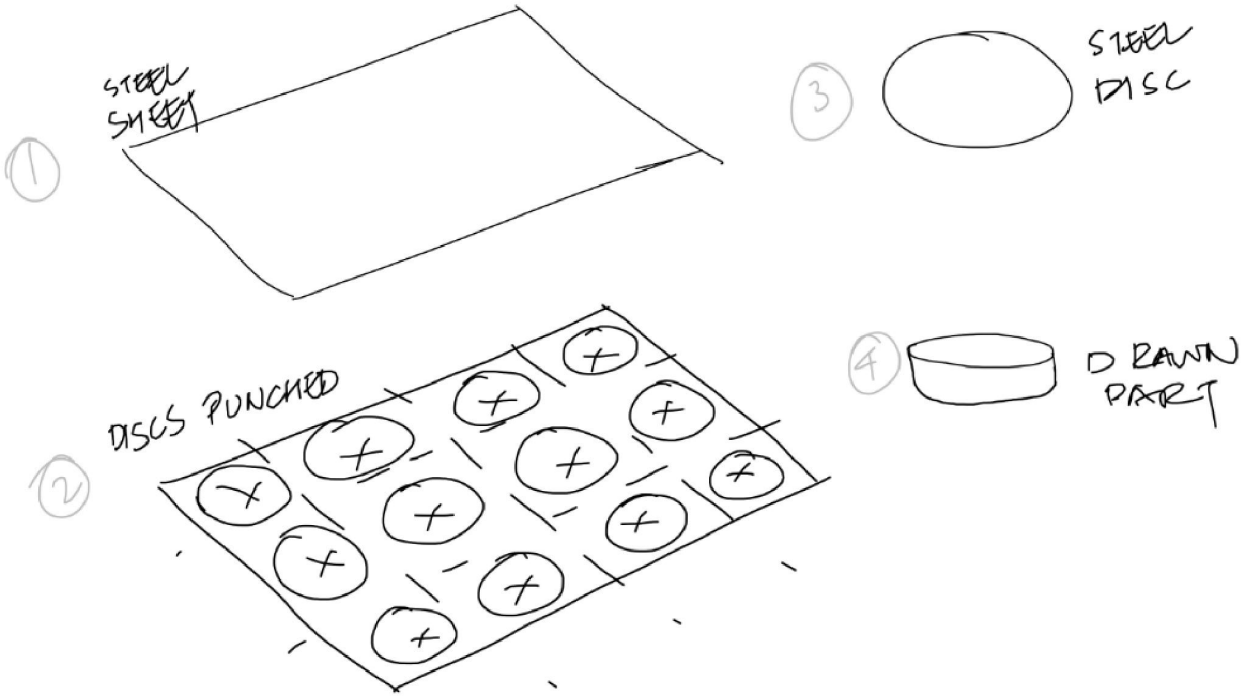


Steel

Steel parts fo the bottle would be made by industrial processes to achieve the precision and finish that is expected out of them. Steel is a harder material as well so using industrial processes is helpful in that case as well.

Sheets of steel would be punched out into discs of required diameter and then would be put into a hydraulic drawing machine, which would form these into the final form of the steel pieces.

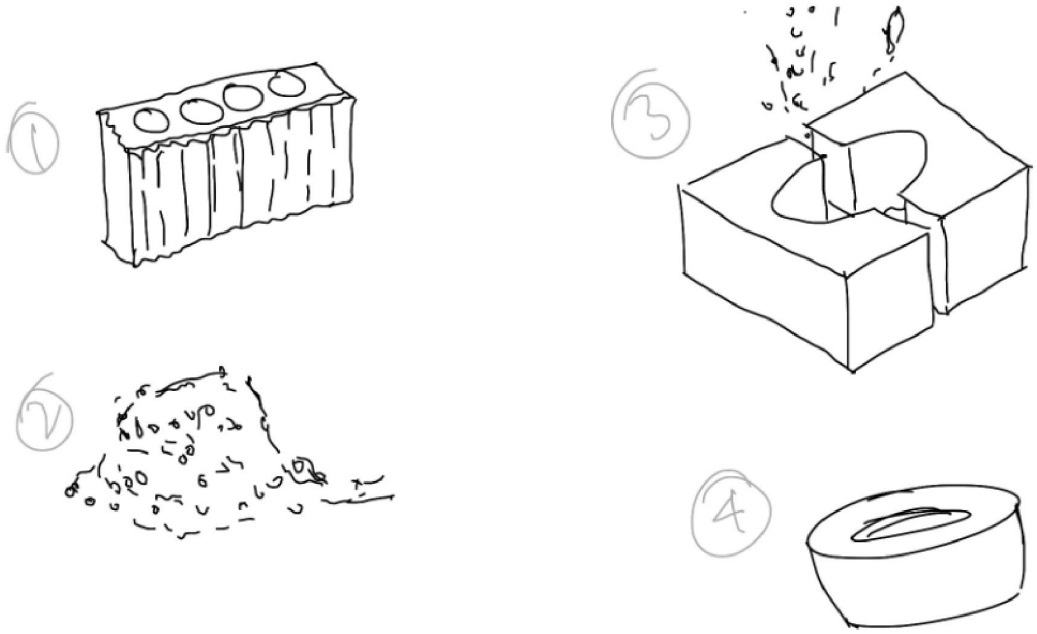
There is also a possibility of using hydro-forming as a method to produce the steel parts in a more precise and dimensionally accurate form.



Cork

The closure used for the bottle is going to be made from agglomerated cork, which is made from the by-products of natural cork production formed into granules. They're bound together with mixing adhesives and pressurisation.

These agglomerated corks can be moulded into any shape and size by methods similar to injection moulding.



Material Specifications

Copper 20 Gauge - .035" Thick .889mm
Stainless Steel SAE 304 stainless steel 8/8 stainless steel. 18% chromium, 8% nickel)
SAE 316 stainless
Cork Closure

Resources

References

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- Cork Innovation — https://www.amorim.com/en/how-we-do-it/r&d-innovation/
- Sustaibility in Cork — https://www.amorim.com/en/sustainability/approach/