

Cooking starter kit design for new cooks



Industrial Design Project - II
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Declaration

I declare that this written submission represents my ideas in my own words and where others ideas and words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all the principles of academic honesty and integrity and have thus not been properly cited or from whom proper permission has not been taken when needed.

A handwritten signature in black ink, reading "Anushree", with a horizontal line drawn underneath it.

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Approval Sheet

The project titled 'Lifestyle Cookware Design' by Anushree Banerjee is approved for partial fulfilment of the requirement for the degree of Masters of Design in Industrial Design.

Guide:



Internal Examiner:



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Chairperson:

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I would like to thank my classmates Apurba, Minal who helped me in prototyping. Also Thuli, Supriya and Anshul for their valuable advice.

I would like to thank Kinny sir for helping me a lot.

A handwritten signature in black ink, reading 'Anushree' in a cursive script, with a horizontal line drawn underneath the name.

Anushree Banerjee
Thankyou!

Abstract

Learning to cook is one the most basic needs of every adult. For new cooks starting out life after college cooking is an important step to become more independent and ensuring they eat healthy. Cookware is an important investment for them. Creating a range of utensil for this new generation of cooks is a challenge due to multiple reasons. Making modular set of utensil which allows for healthy cooking, allows versatile range of cooking with limited utensil. Designing value for money and contemporary looking starter kit for fast-paced yet passionate , tech-savvy youth setting up their kitchen. .

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User Study - Hostel rooms



Sanvvi, 28
Mumbai
Single

- Phd student living in hostel for 3 years.
- Cooks and eats with her friend.
- Cooking utensils consumes a lot of space in the room.
- Needs a versatile utensil.
- Uses the window space 8' X 3' as a space to cook.

Issues

- Difficult to use pressure cooker in the small space because it is difficult to clean and makes the cooking process messy in such small space.
- Cooking is time consuming

- Generally eats in the mess.
- Sometimes cooks in the room when want to try for recreation, or mid-night snacking.
- Uses a water heater to cook basic meal like Maggie, boiling egg, etc.

Issues

- Does not heat the pan evenly.
- Does not reach optimum temperature for oil.
- Only limited options of cooking.



Supriya, 24
Mumbai
Single



User Study – Shared Flats



Bhavya, 25
Mumbai
Single

- Living in a rented two room apartment with 2 flat mates.
- Has a maid to help her in cooking

Issues

- Heavy utensil.
- Space consuming

- Living in a rented two room apartment with 2 flatmates.
- Wants to multitask
- Does not have much time to cook.
- Wants to eat healthy
- Ends up eating out.
- Shifted house recently, packing utensil to be shifted is a huge problem.

Issues

- Wants limited utensils.
- Is a new cook wants some guidance for cooking.
- Where to keep ladle while not cooking the utensil.



Riddhi, 22
Mumbai
Single



Eating habits

1. Most of the kitchen is equipped only with stove, one induction stove. And rarely microwave.
2. Takeouts and ready-to-eat food are eaten a lot.
3. Rice and Dal are staple because it is easier to cook.
4. Poha or paratha .
5. Sauted Vegetable with less oil.
6. Chai and coffee and boiling water and eggs.
7. Lot of quick to cook food is made.
8. Cleaning is a dreaded activity.

***Eating
Process***

Preparation

Cutting Weighing Mixing Seasoning the
Ordering ingredient Pre-heating pan

Cooking

Stirring Boil Fry Simmer Roast/Bake
Steam Flipping
Sweat Broil/Grill Saute Torch/Flame
Tossing

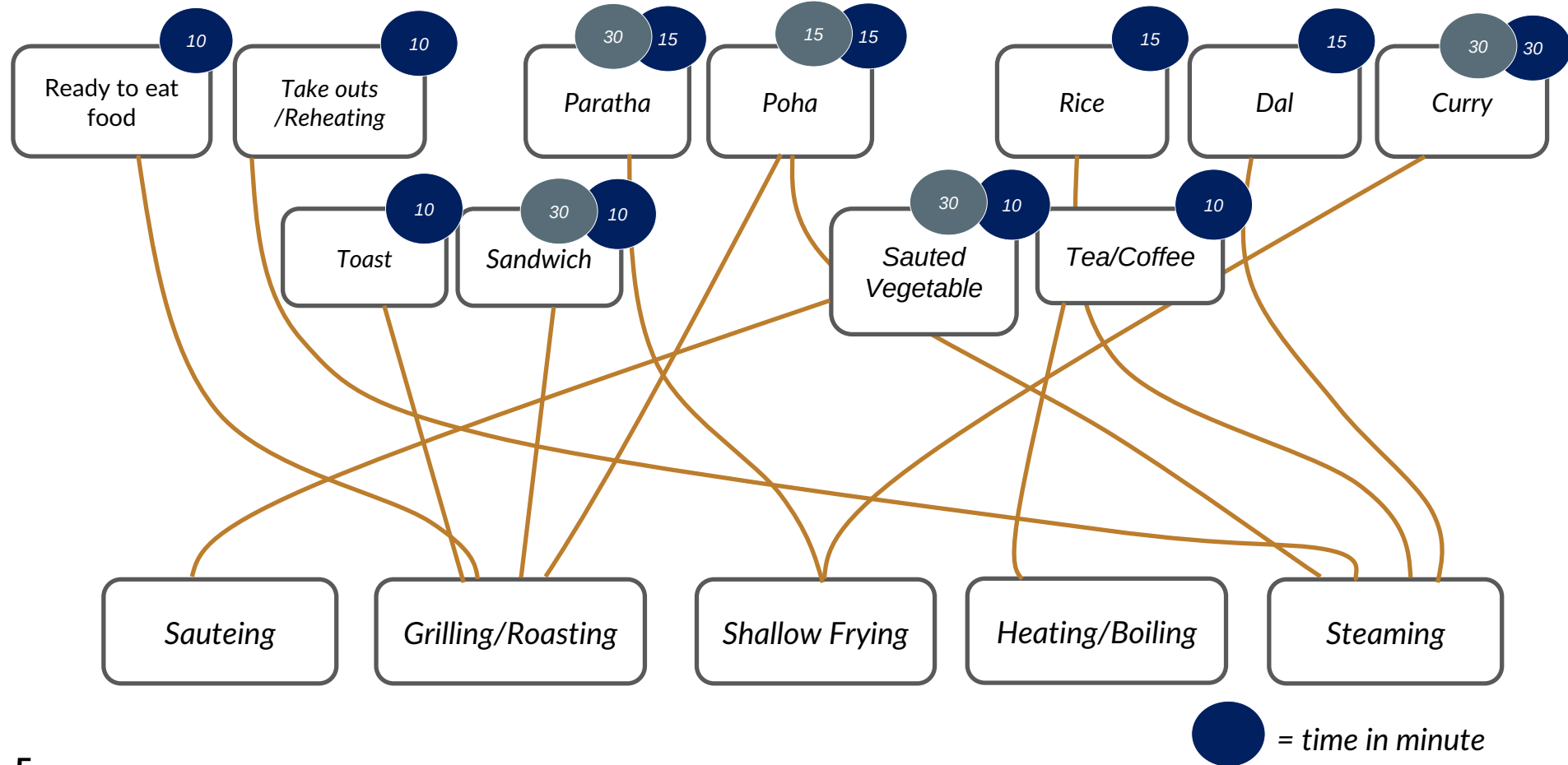
Serving

Reheating Straining
Pouring Garnishing Transferring

***Cleaning
And
Storing***

Washing Storing Maintenance

Food menu and time consumed



Eating habits

Heating/Boiling

Tea - **180 ° F to 190 ° F.**
Coffee - **160 ° F to 180 ° F**
Pasta – **180 ° F to 212 ° F**
Chicken – **165 ° F**
Boiled Egg - **212 °F**

Grilling/Roasting

Bread,Pav,
Paratha,Dosa,
Uttapam-
350 ° F

Shallow Frying

Fried Fish, Omlette,
Paratha
375 ° F

Sauteing

Sauted Vegetable,
Fried Rice -
212° F

Steaming/ Pressured Cooking

Rice - **250 °F** (20
minutes)
Dal - **250 °F** (20
minutes)

Interview with Shalini Mukherjee, Nutritionist

-Does not advise to eat boiled or grilled food.

-Advises to eat flavorful food. Coconut Oil / Ghee/ Fat is important for absorption of A B E D

- Happy Quotient is important.

-Pan Sautéed vegetables.

-Advises to replace non-stick pan in 6 months because the the coating is not good for health.

-Stainless Steel takes less time for cooking food.

-Cooking in advance is fine since people are so busy. Keeping food for next 3 days is fine.

-Would like a cookware which is fast, sustainable, convenient.

-Ideal cookware would be a stainless steel one which is non-stick and does not require stirring too often.

Market Study

Traditional Cookware with manufacturing Tech



**FireClay Cookware
TRESO**



ALL CLAD Non-stick



Alessi

Cookware as art pieces



Alessi



**Marcel Wanders
for Alessi**

Microwave Utensil



Joseph & Joseph



Epicure

Camping Utensils



SeatoSummit

<https://gearjunkie.com/x-series-cookware-sea-to-summit>



Dormroom Cookware



Electric Summit

<https://www.amazon.com/Continental-CE23721-Small-Electric-Grill/dp/B000MDZF6Y>



Bajaj



Aroma Houseware

Electric Tiffin



Milton



Nexx

Prestige Stainless steel utensil plant, Khardi

16.9.2018



Manufacturing Consideration



1. Two bolts so axis rotation is restricted
2. Injection moulded in a way it is easy to screw during manufacturing



1. Forged Pan for variable thickness.
Even distribution of heat
But
2. Not successful in indian market



The base is 430 stainless steel which is better conductor is used in the base. And 304 for the body which is foodgrade.

High impact forgig/Brassing



Blanking
Hydraulic Press
High Impact Press
Punching
High Impact Forging
Automated Buffing and Polishing



Quality Control (Safety and durability)

(Following En standards of quality)

Abrasion Test

Torsion Test

Impact Test

Base Stability

Pressure test ,etc

Different Features (Saftey /Clutching)



Base Analysis

Flat Base	Round Base
 1) Suitable for Induction 2) Uneven heat distribution/ If thin walled material might warp. 3) Suitable for items like omelette, roti which requires flat base	 1) Unsuitable for Induction 2) Spreads heat evenly 3) Suitable for deep frying 4) Stirring and Tossing is easier

Material Analysis

Aluminium

Used in stovetops

Cook low heat food

Cook more delicate food

Better heat distribution

Quickly heats up

Cast Iron

Can be used in stovetop as well the oven

Can last for decades. People prefer it for health benefit of iron in the food.

Need to be seasoned before use

Cleanup is more difficult

Stainless Steel

Can be used in stovetop as well the oven

Versatile

The only issue is food sticks but we need to do is have the pan in the right temperature and appropriate amount of oil is used.

Porcelain Coated Pan

Can be used in stovetop as well the oven

Versatile

Timeless

Not non-stick

Not very

Utensil	Cooking Method	Dishes	Problem
Kadhai	Deep frying,Boiling, stirring, tossing,Stewing,Roasting	Fried Food, Gravy Based Food,Indian Sabzi, Maggi, Pasta	1)Not suitable for induction 2)Wobble on the gas stove, Difficult in food transfer 3) Oil residue 4)No provision for spatula or ladle
Tava	Grilling, Roasting, Paratha,Dosa,Uttapam	Tikki, Papad, roti, Grilled Chicken/Fish	1) Inefficient heat distribution leading to warping
Saucepan	Boiling	Tea/Coffee, Milk, Pasta, Maggi	1)Thin walled saucepan warps soon 2)The handle dislodges 3)No spout makes it difficult to pour 4)Difficult to reach the screw to tighten.
Frying Pan	Shallow Fry,Tossing, Low oil cooking	Omelette, Tossed vegetable	1)Long handle obstruct space. 2) Handle breaks down
Handi	Deep Frying, Boiling	Dal, Biryani	1)Difficult to clean because of narrow mouth
Pressure Cooker	Boiling, Steaming	Rice, Dal, Chicken Stew	1) The whistle is dangerous and difficult to clean 2)Difficult to clean due to the shape. 3)No indication for quantity of water versus food item.

Key Insights

Portability and modularity

1. Difficult to carry the utensil when you are shifting houses.
2. Not too heavy
3. Does not take too much space in the kitchen
4. Fits in oven as well
5. Storing in the fridge

Healthy-Eating

1. Using low oil or no oil
2. Leafy vegetables
3. Baked veggies and fish
4. Steamed food
5. No toxins - material

Price

1. Value for price.
2. Ready to invest more if it is **multifunction**
3. Ready to invest more if it is **cook and serve**
4. Want to invest for few numbers of utensils.(only necessary pieces)

Multi-Tasking

1. Stirring constantly
2. Cooking many items simultaneously
3. Put and forget
4. Reminders from the utensil

Cleaning

Cleaning is a dreaded activity.

Design Brief

- To design a starter kit with set of essential utensils for beginner cooks of age group 22-30 years.
- The users are living in hostel or shared flats.
- The cookware should be compatible with induction as well as stove .
- Primary use is cooking and secondary is reheating of takeouts.
- Can be used to boil, steam, saute, shallow fry.
- Modular utensil with multiple uses.
- Easy to pack and takes less space.
- Easy to clean.
- Convenient.
- Non-stick surface which utilities less oil.
- Allows steaming and multiple level cooking.

Radical

ovative

Current

Known

old fashioned

established

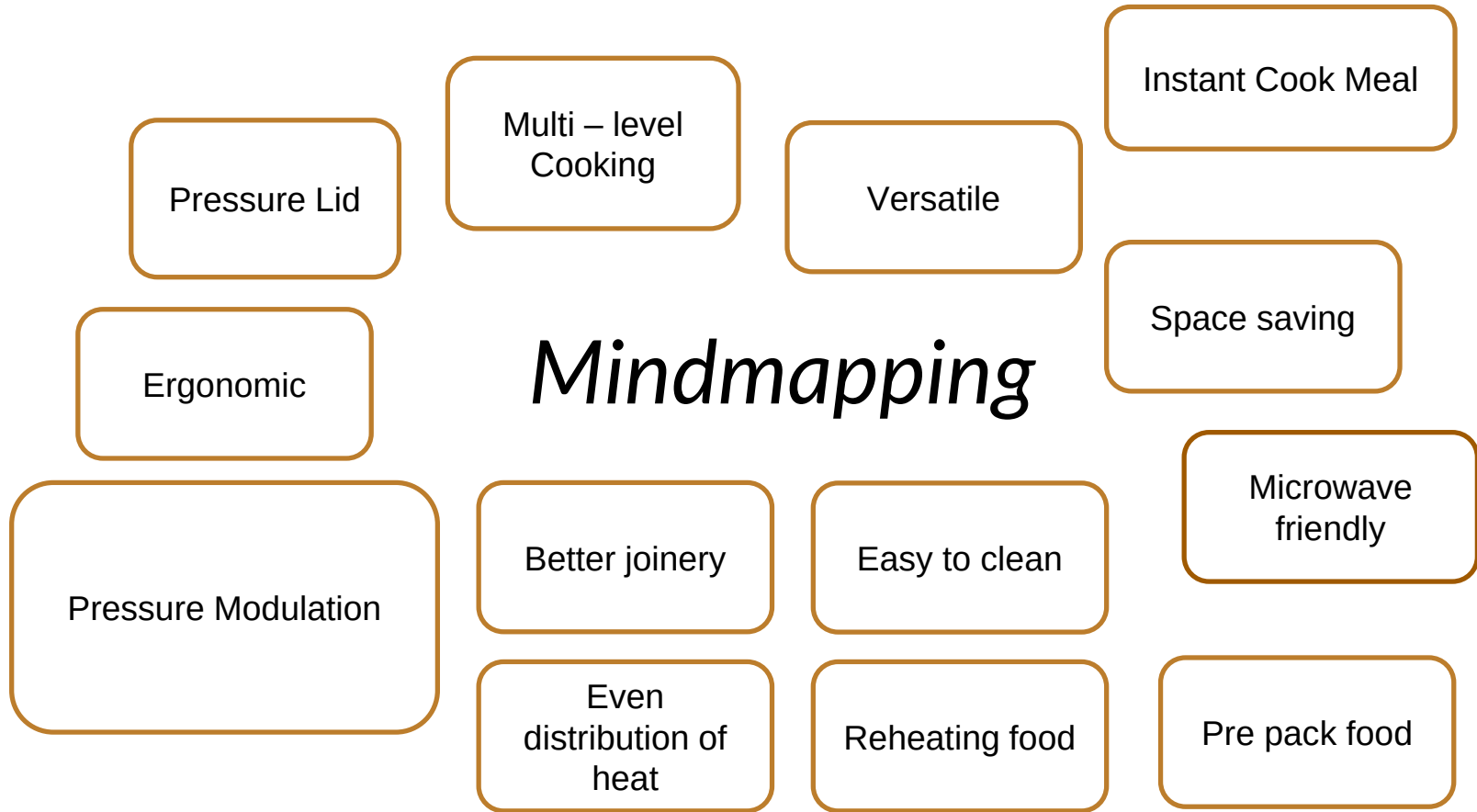
actual

distinct

xtreme

Lifestyle





Mindmapping

Instant Cook Meal

Versatile

Space saving

Microwave
friendly

Pre pack food

Easy to clean

Reheating food

Better joinery

Even
distribution of
heat

Pressure Modulation

Ergonomic

Pressure Lid

Multi – level
Cooking

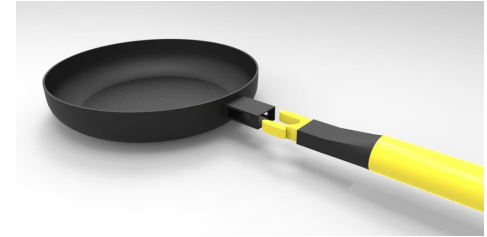
Ideation Clusters



A
Modular Utensil/
Multiple level
cooking

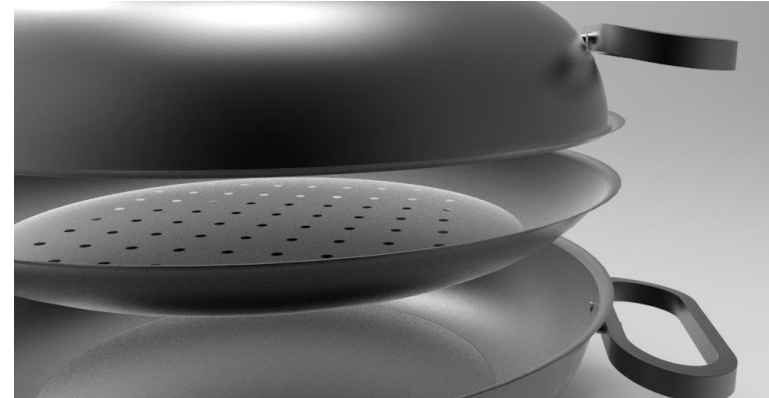


B
Pressurized Cooking

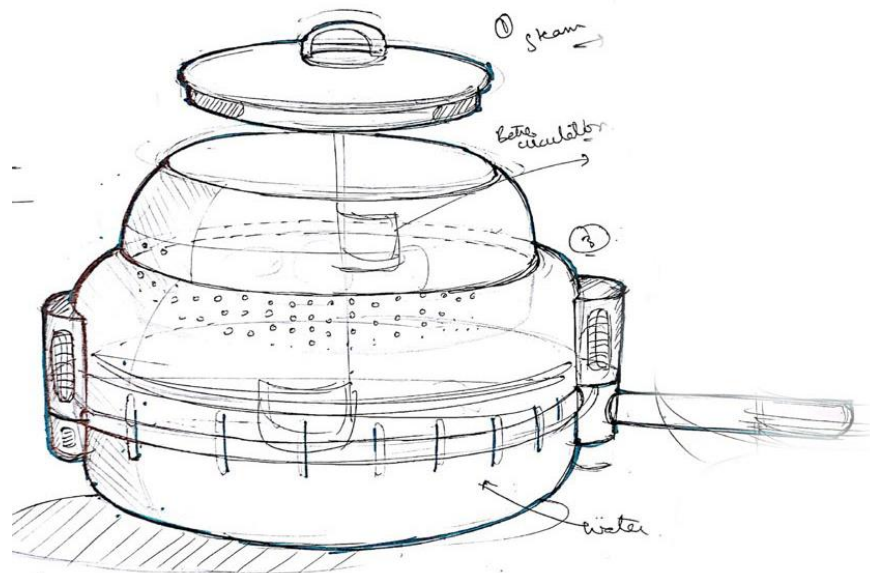


C
Removable Handle

Direction A
Modular Utensil



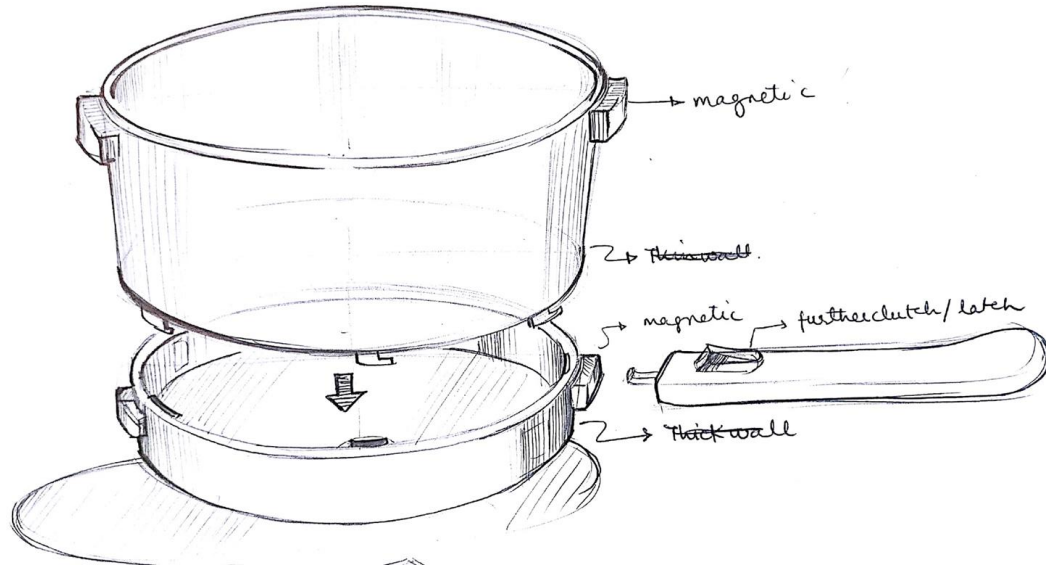
Direction A
Modular Utensil/ Multiple level cooking



camel + work

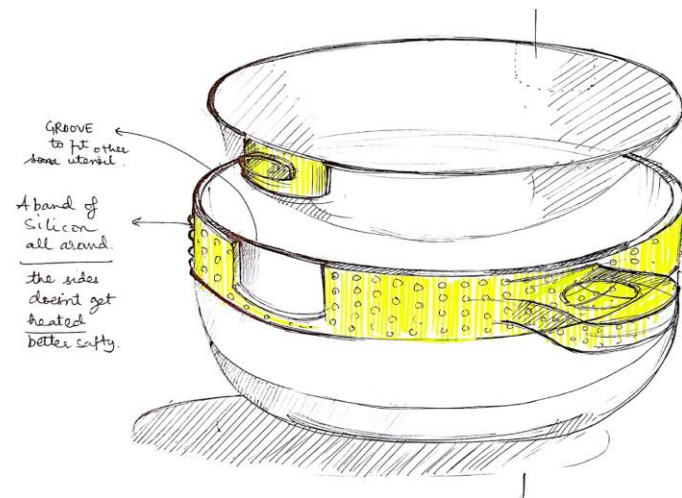
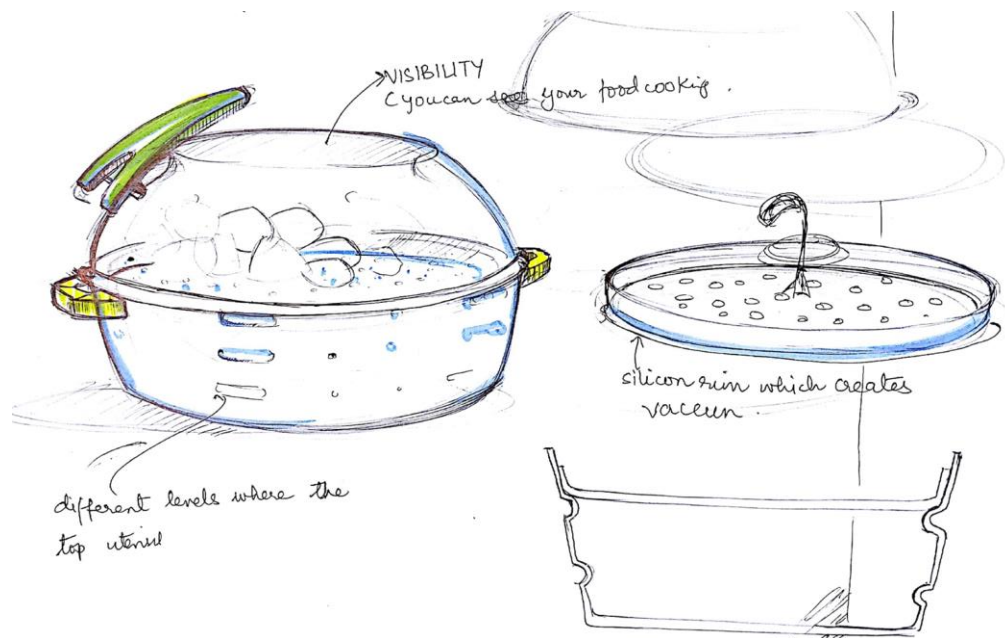
food & wine 3 piece stainless steel work and steamer

Direction A
Modular Utensil/ Multiple level cooking

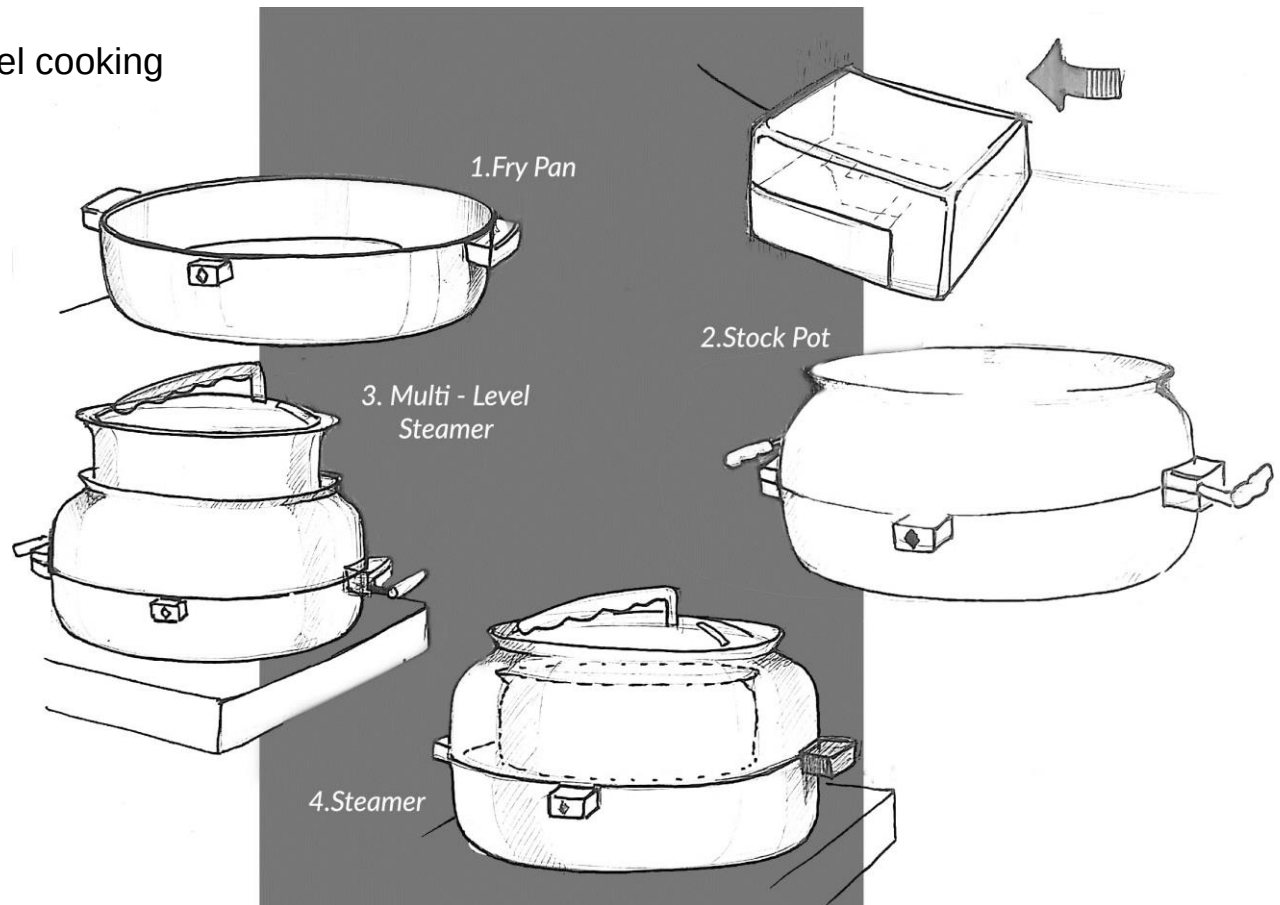


Direction A

Modular Utensil/ Multiple level cooking



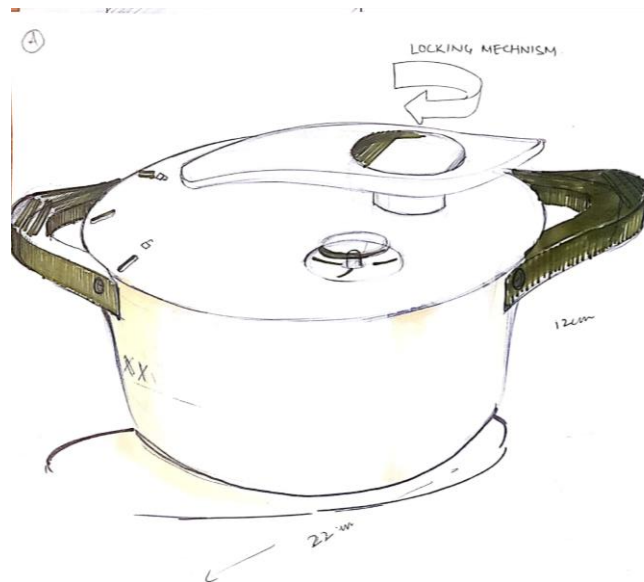
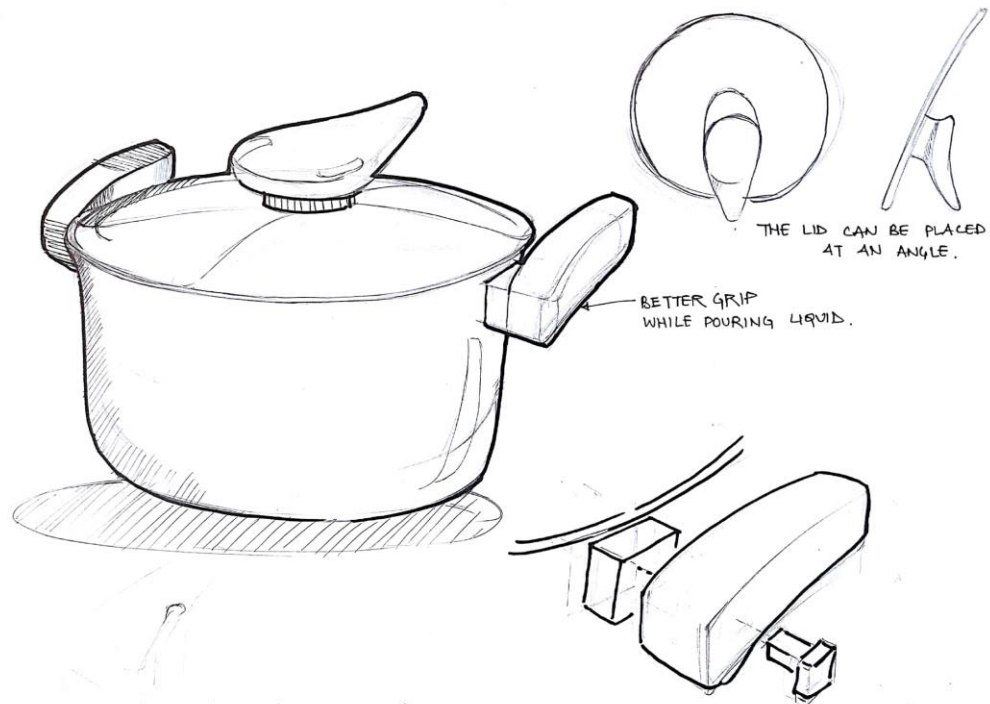
Direction A
Modular Utensil/ Multiple level cooking

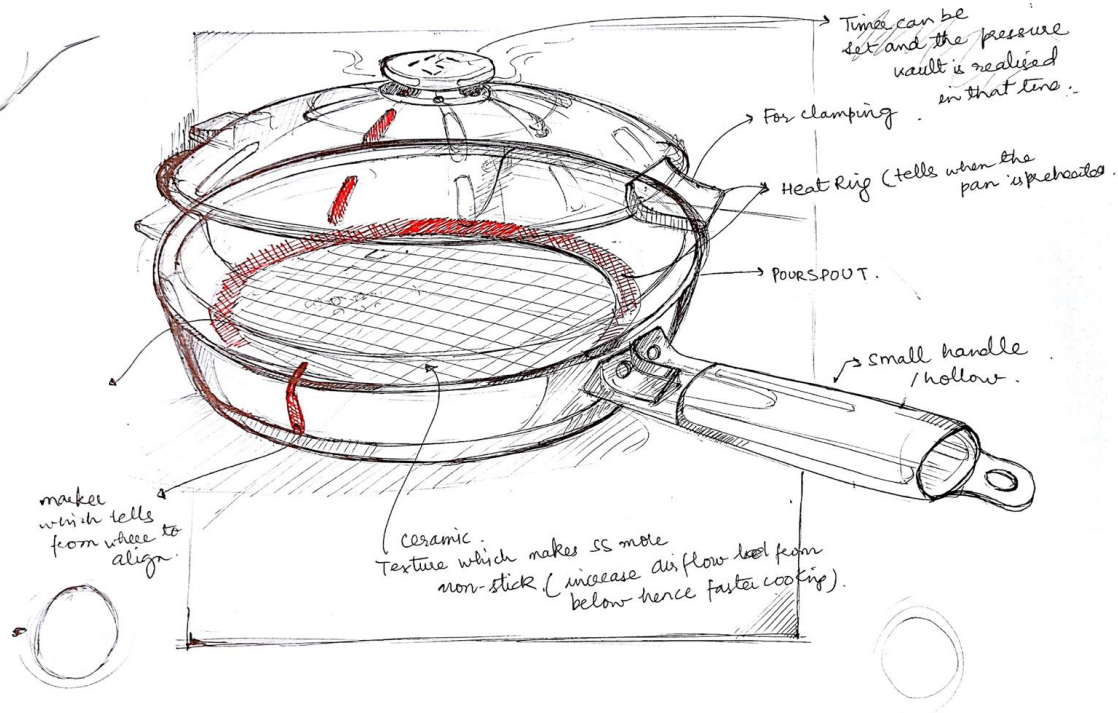
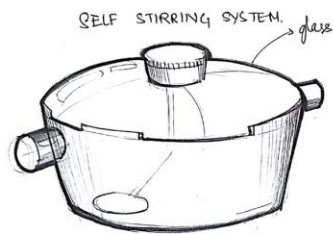


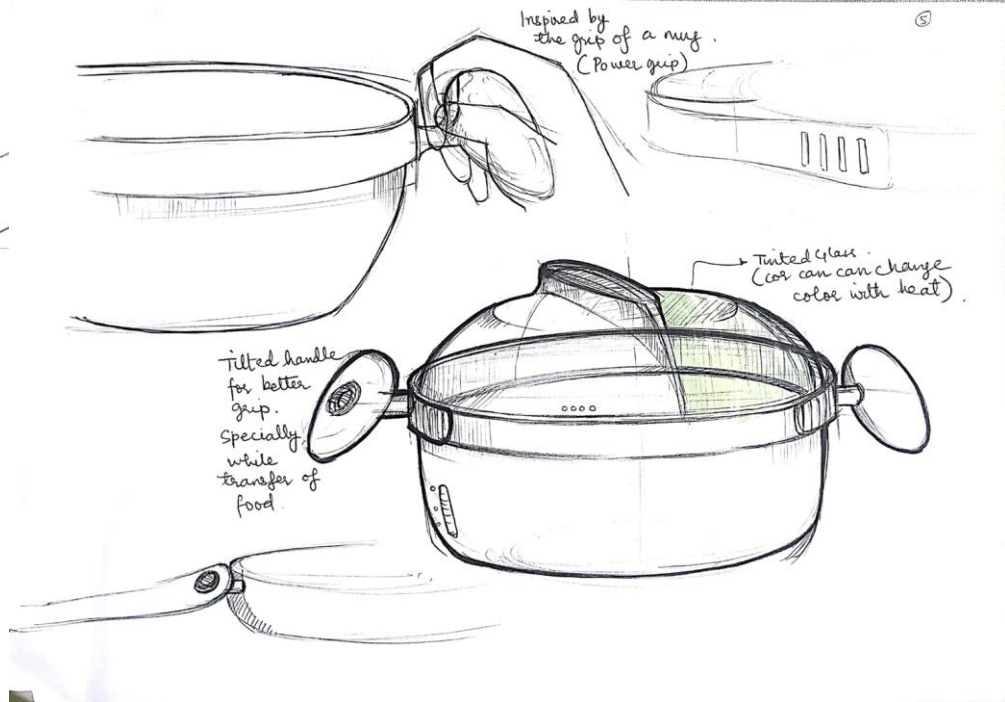
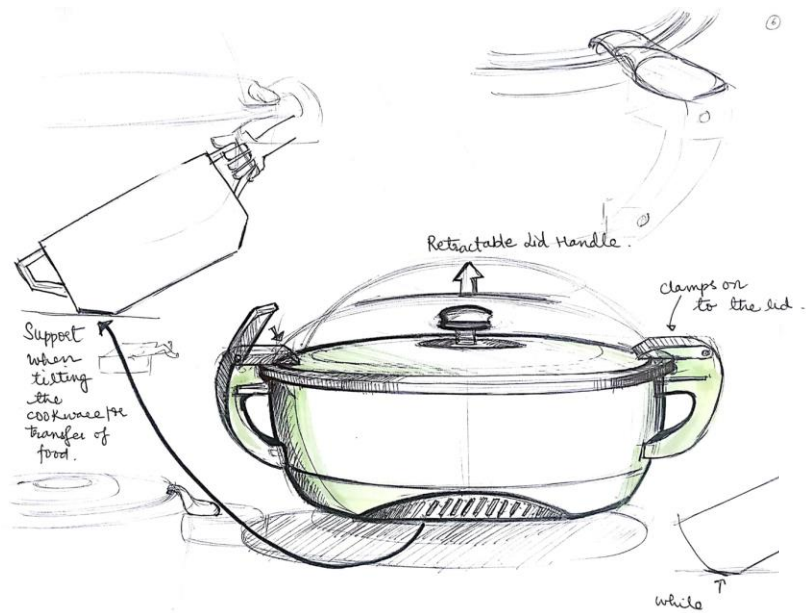
Direction B
Pressurized Cooking



A



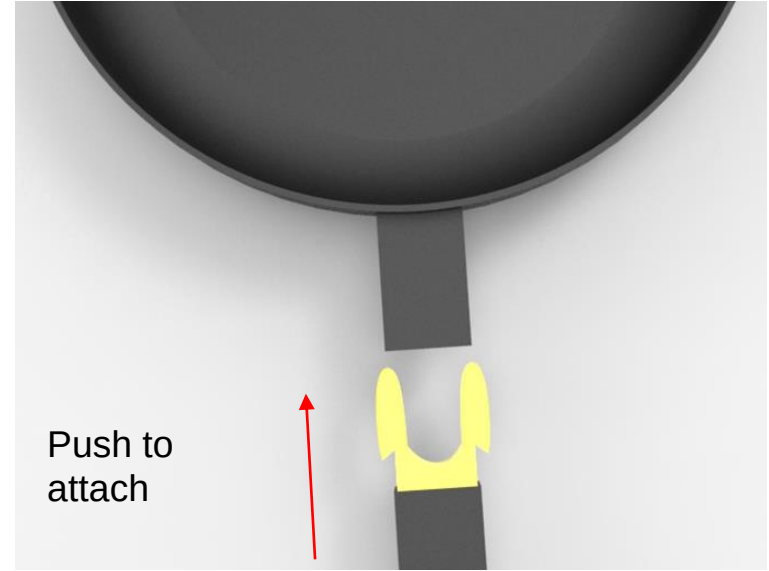
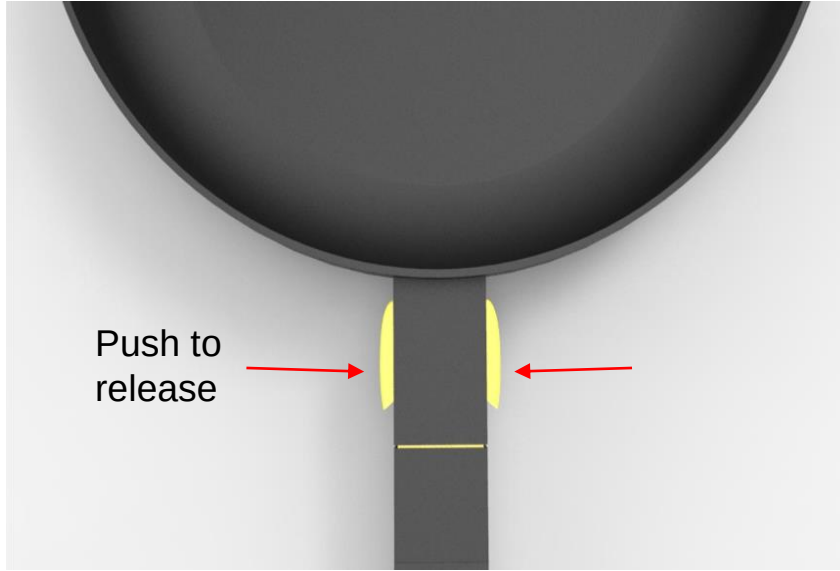


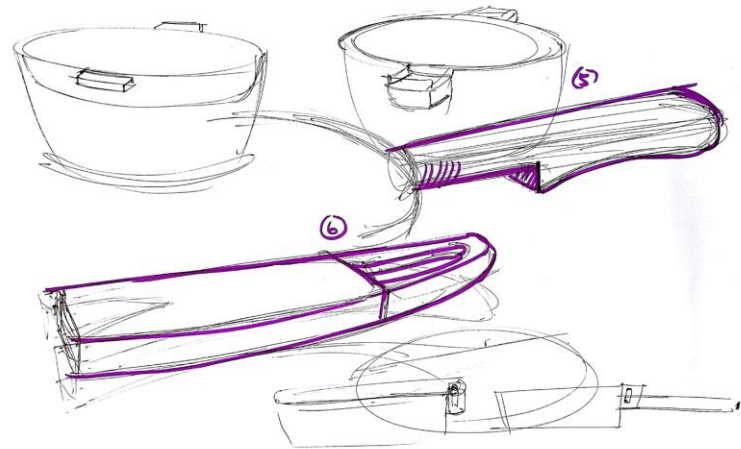
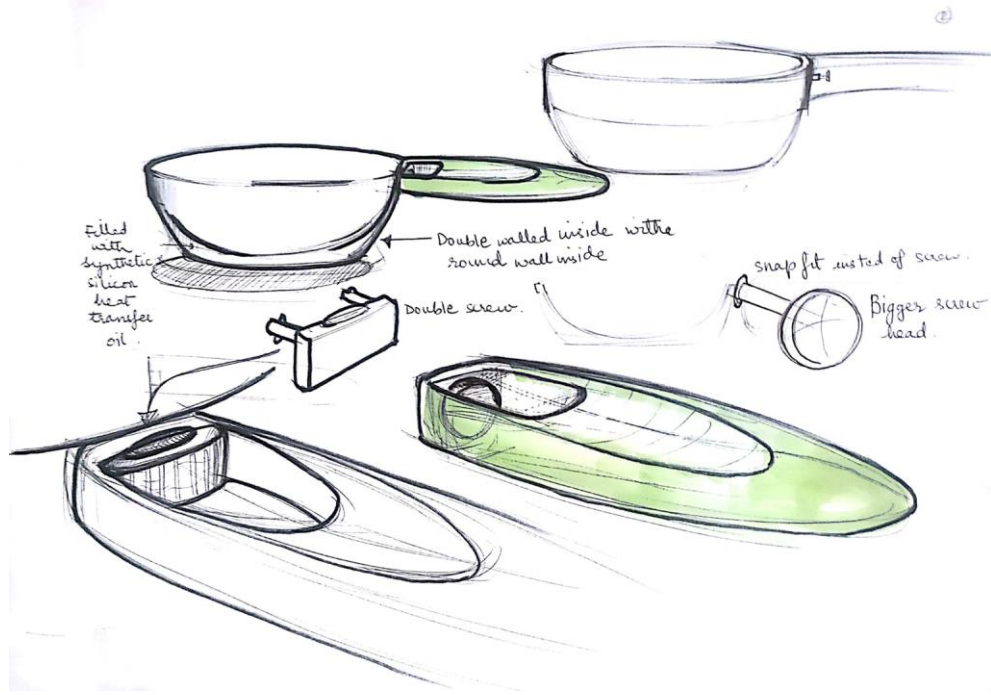


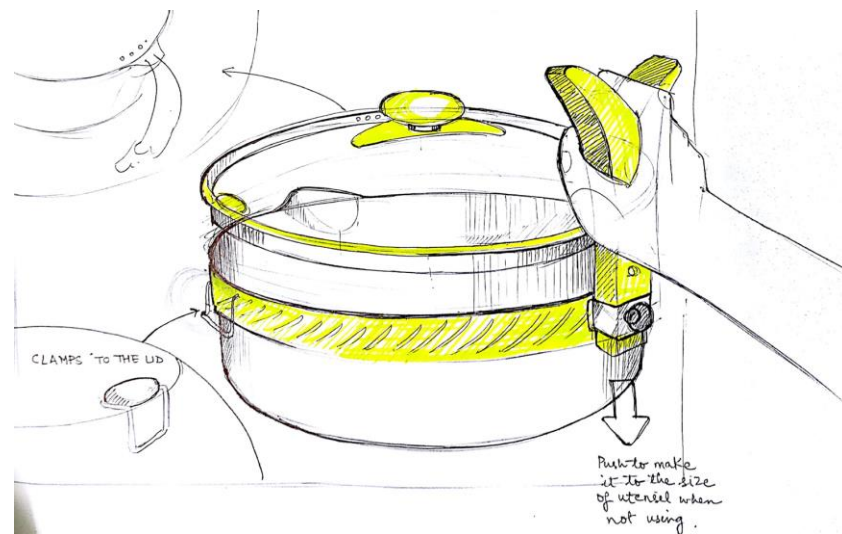
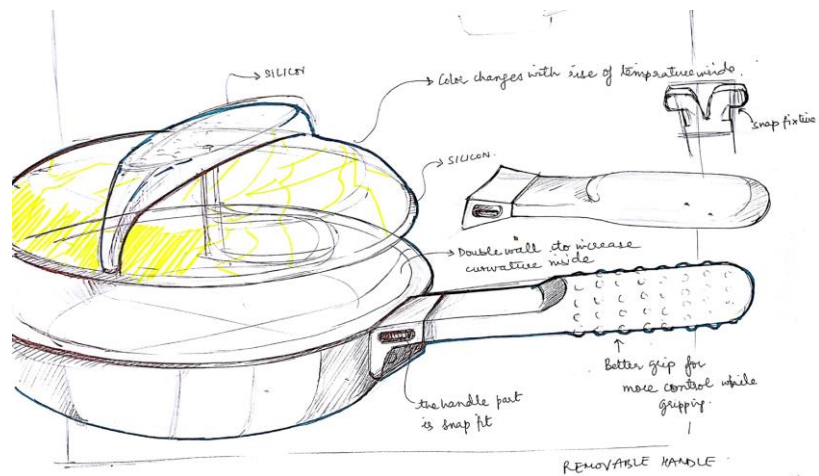
Direction C
Removable Handle

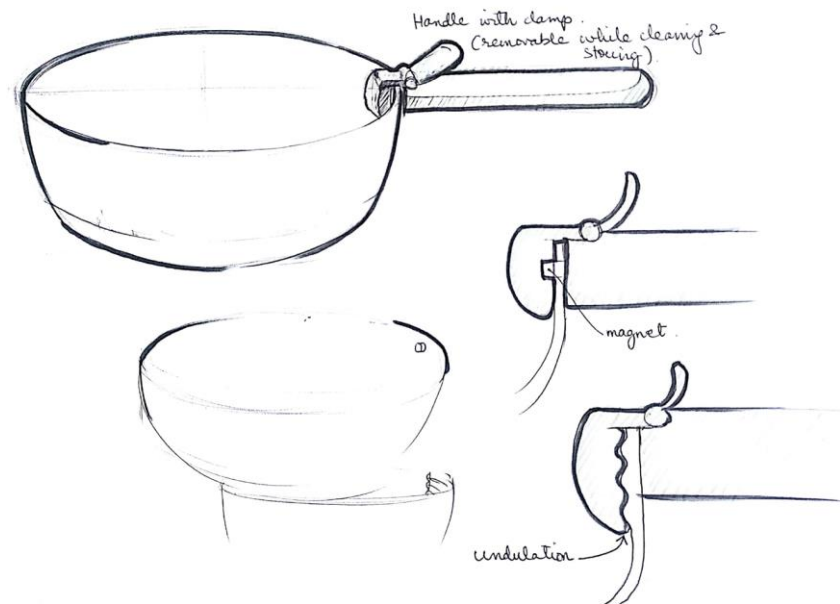
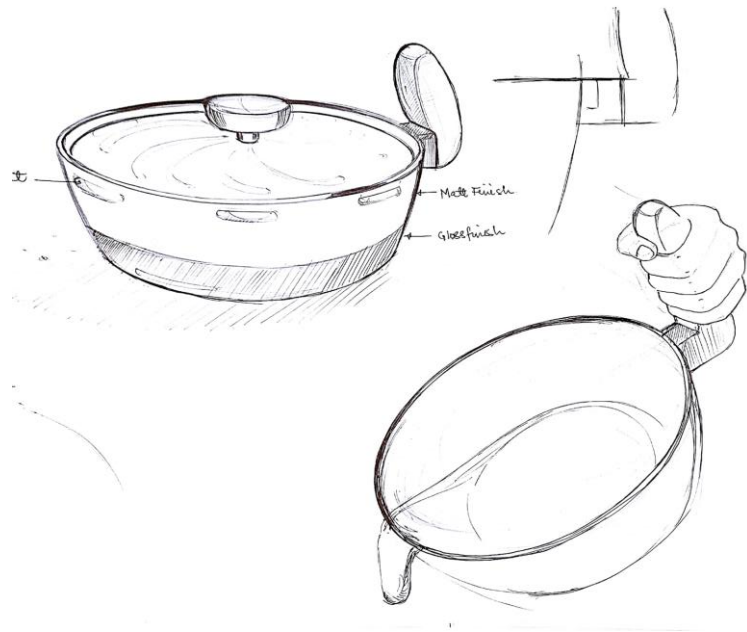


Snap Fit

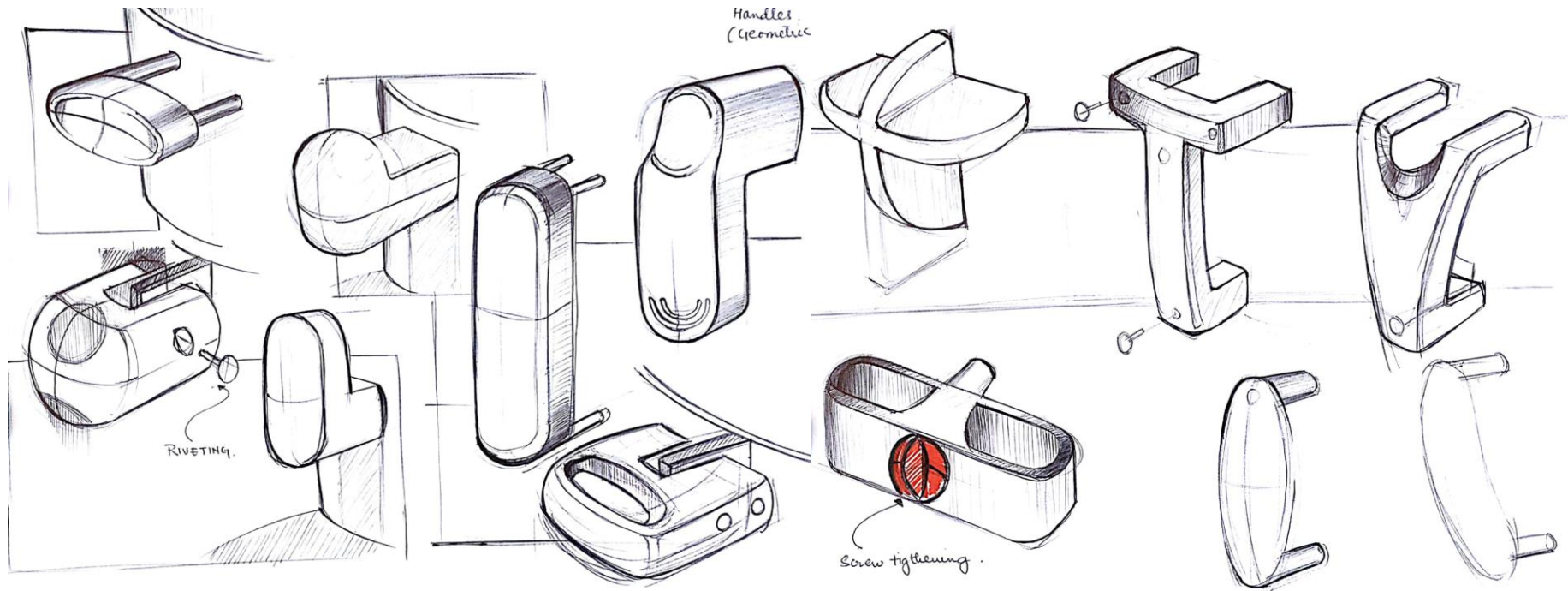




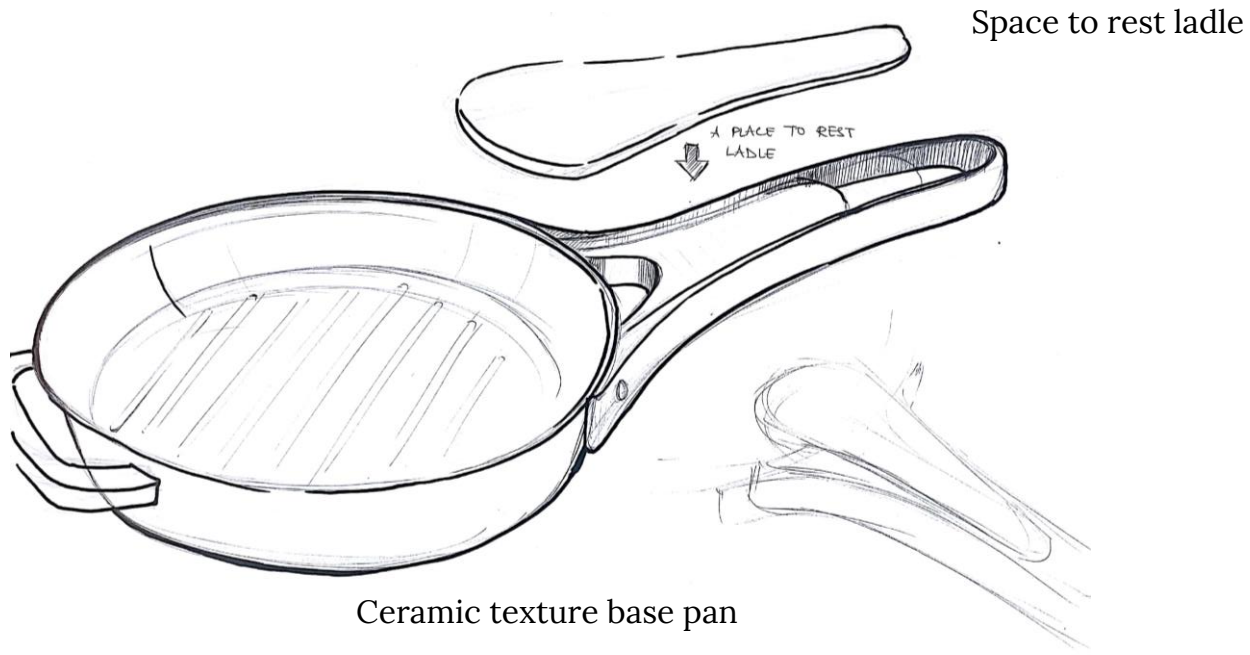




Handle Ideation



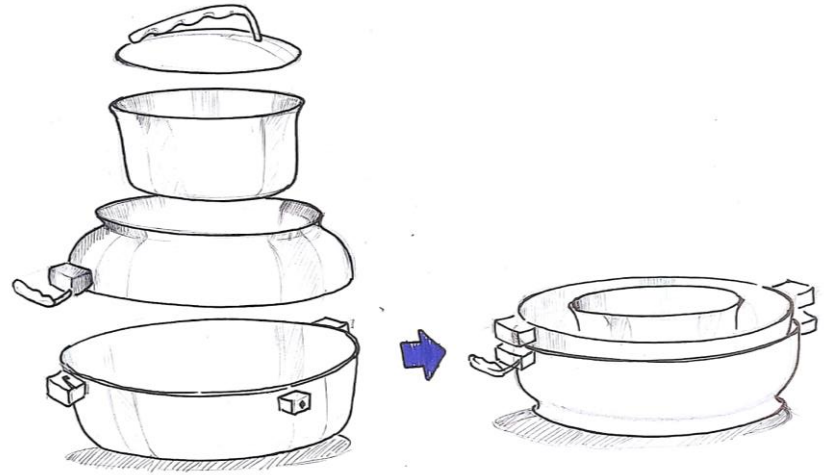
Wider handle,
More support while
Food transferring



Final Design

Nestle Kit – Salient Features

A starter kit with modular feature which can be fixed together to create more volume . The whole set reduces to a compact pack taking lesser space in the store or kitchen counter itself.





UNPACKED



PACKED

*Two in one utensil
Easy to pack when shifting houses.*



Fry - Saute - Pan



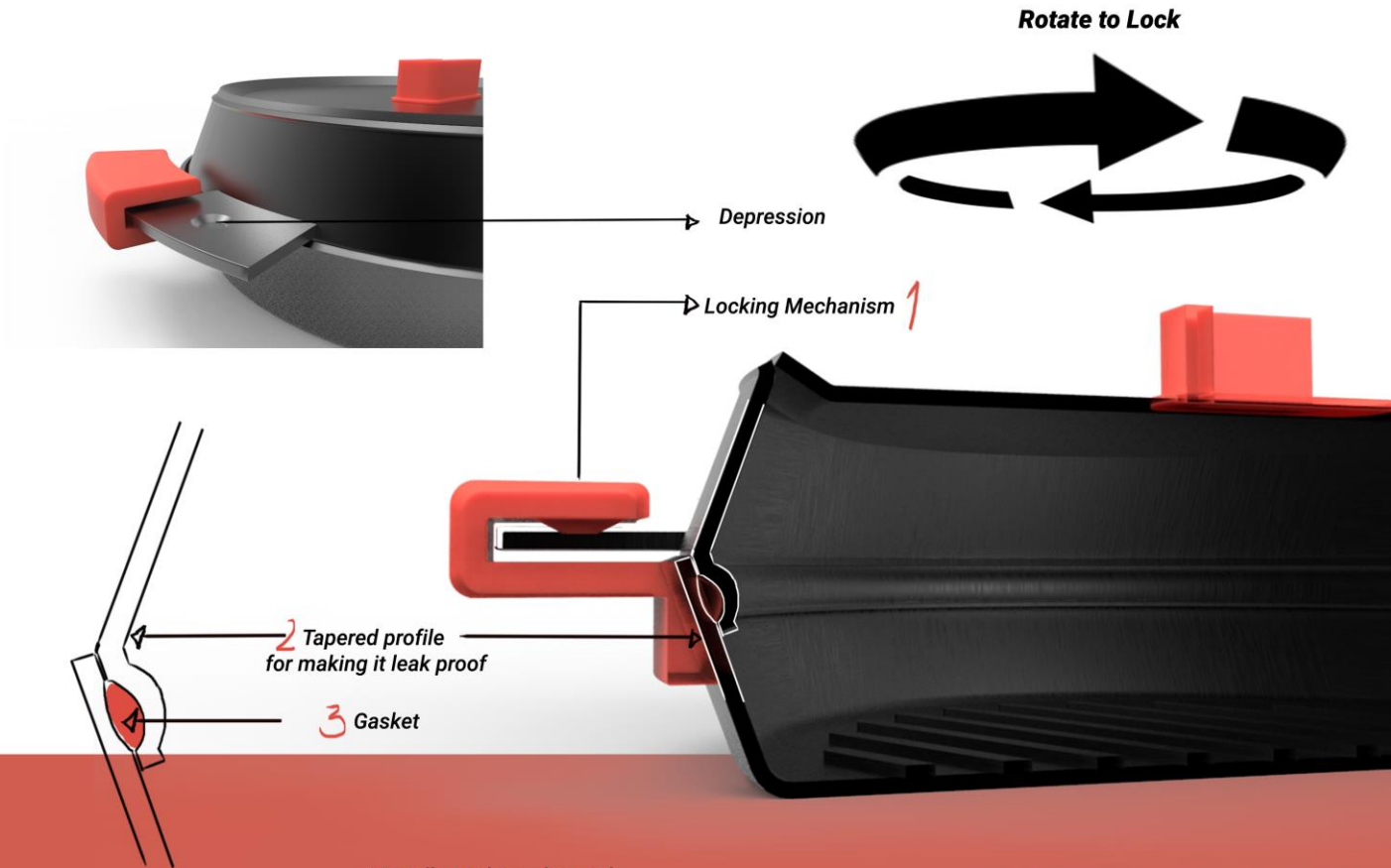
NESTLE KIT



Stock Pot

***A versatile utensil kit that saves
space in your cupboard while letting
you cook various kinds of dishes.***

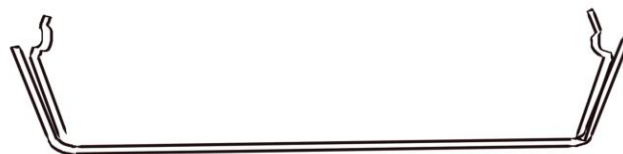




3 Way - Leak Proof

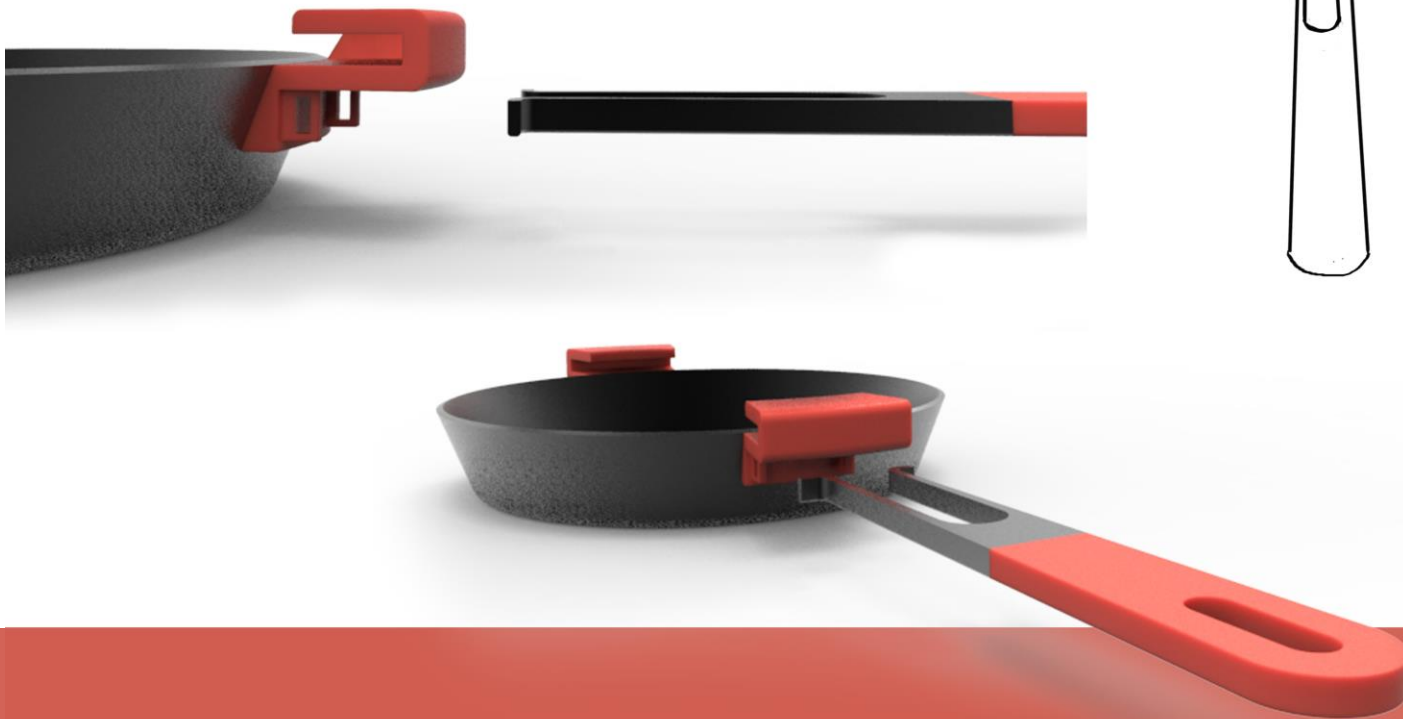
- 1.Handle Locking clamped
- 2.Tapered profile
- 3.Gasket

NESTLE KIT



Easy to Pack

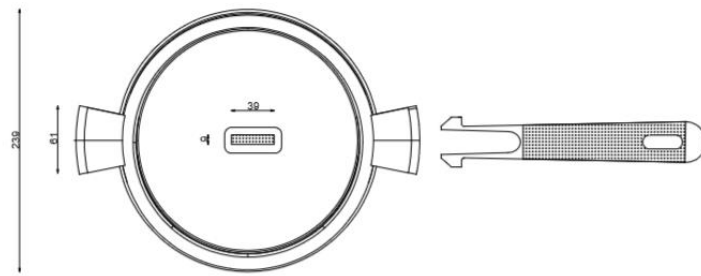
NESTLE KIT



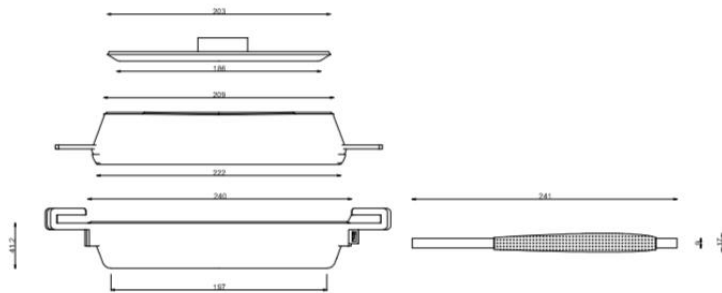
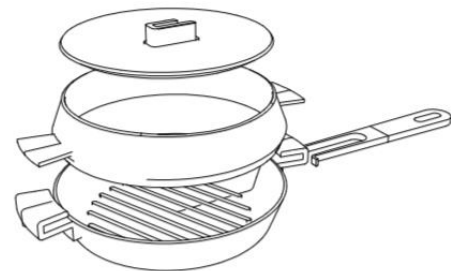
Removable Handle - Snap Fit

NESTLE KIT

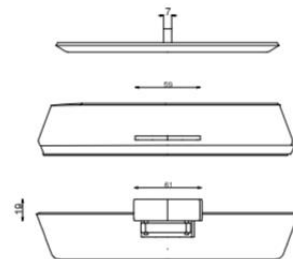
Dimensions



PLAN VIEW



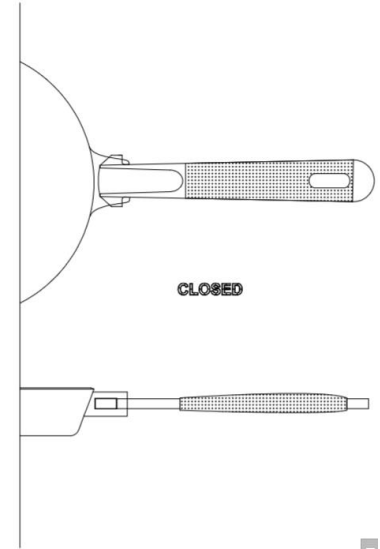
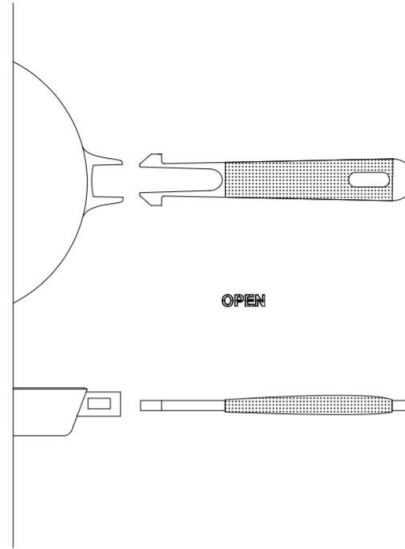
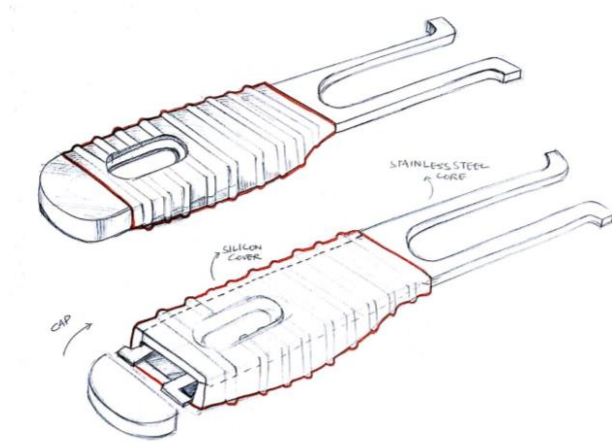
FRONT VIEW

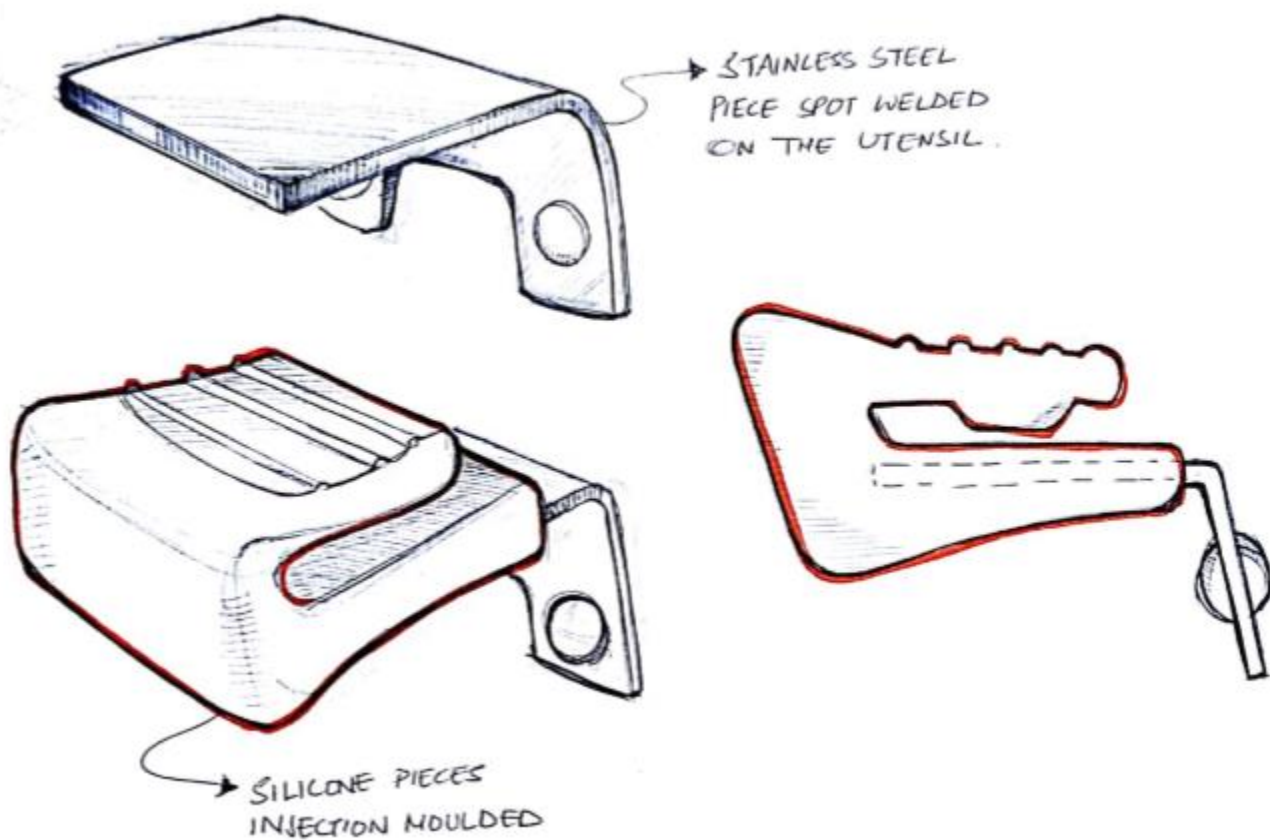


SIDE VIEW

All dimensions are in mm.
Total volume is 3litres
Thickness of wall is 1mm

Dimensions - Handle details





Material and Manufacturing Technique



Stainless Steel – 0.9 mm

The base is 430 stainless steel which is better conductor is used in the base. And 304 for the body which is food-grade.

Manufacturing technique – Deep Drawing



Anti-stress Silicone

Anti Stress silicone is used for manufacturing the handles.



Rubber gasket

Trapezoidal (internally mounted) made from Hi-Grade, Hi-Quality Synthetic Rubber (Nitrile/NBR)

NBR has ability to withstand a range of temperatures from -40 to 108°C (-40 to 226°F) makes it an ideal material.

Prototyping



The prototyping was done in the lab to test the usability of the concept. The parts were vacuum-formed and engineered to take to take the required shape. During prototyping I realized few improvements which needs to be made in the design.

Prototyping - User Testing - Role Playing



a. The collapsed state of the utensil



b. The increase volume.
c. The Lid handle details allows for a
ladle/detachable handle to rest.



d. Being used as a pan



e. The utensil on stove



e. The utensil with lid on

Prototyping - User Testing - Role Playing



a. Released state where the handle is stuck to the pan.

The removable handle.

The concept works on snap fitting details.

When the faces of the details are pushed from both the sides, it comes together and then it can be fit into the groove when released.



b. The ends are pushed from both the side and the handle is pulled apart.

Learning and Feedback

1. User feedbacks were positive as this kit allows the user to save space as well as have provision of increasing the volume and doing steam based cooking as well.

2. Another feedback was to include the hanging feature which would make the entire kit hangable on the kitchen counter.

3. More thought needed to be put in how the gasket will be attached to the kit.

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- 3) <http://whfoods.org/genpage.php?tname=dailytip&dbid=92>
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- 6) <https://www.williams-sonoma.com/shop/cookware/cookware-shapes-uses/>
- 7) <https://www.cristel.com/int/en/products/grip-removable-strate>