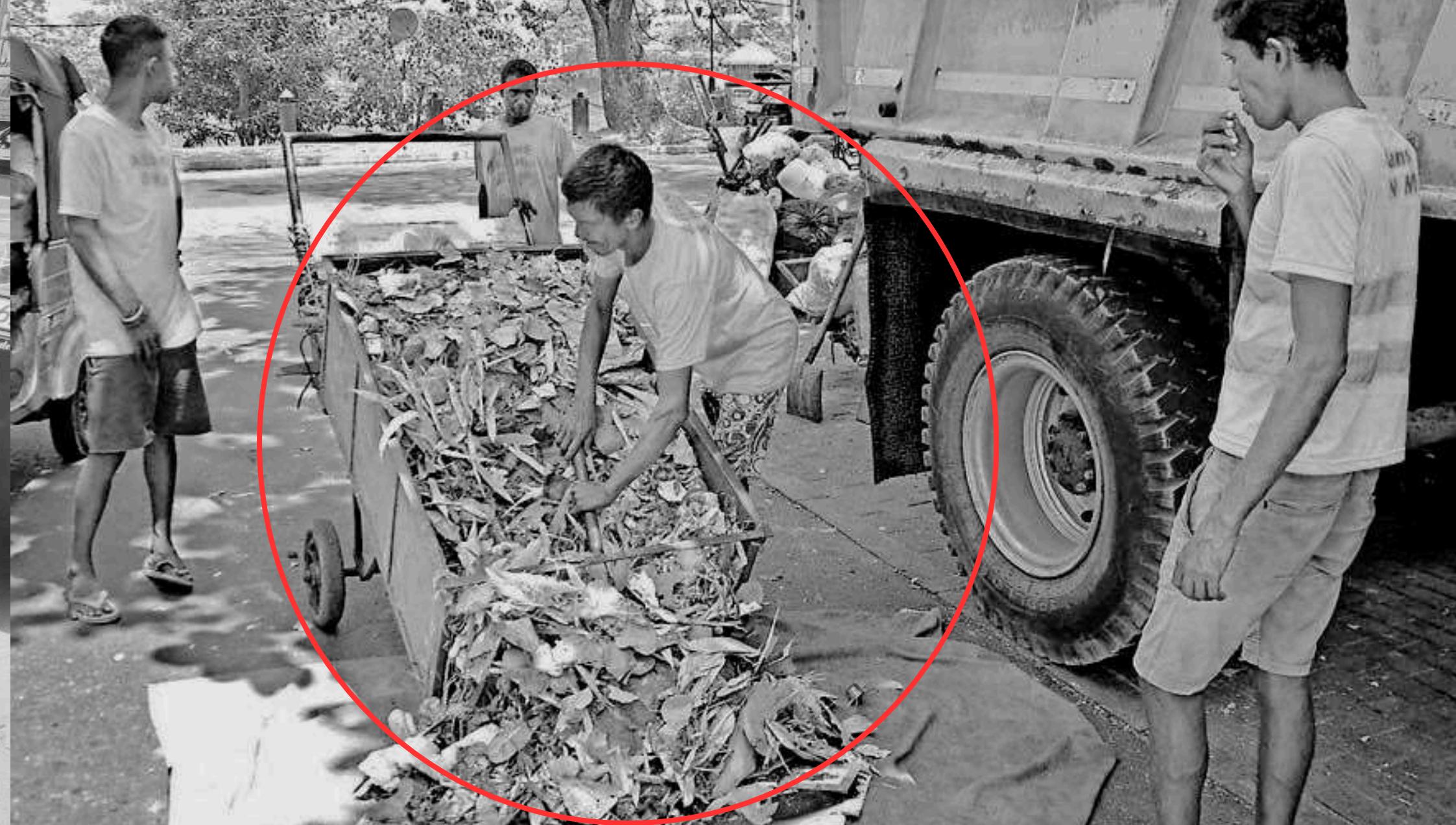


# CLERO.

REDEFINING CLEAN FOR PEOPLE AND PLANET.



NISAL KODITUWAKKU



# PROBLEM IDENTIFICATION.

NO PLACE TO KEEP THEIR PERSONAL STUFF

EATING ON THE ROADS

SORTING ALL COLLECTED GARBAGE BY HAND AT THE END

CART IS LITTLE BIT HEAVY IT SELF



# PILOT VISIT 01



**Anula (Cleaner 1)**

Anula has 9 years of experience, working 12-hour days in the D3-Sri W.W. Kannangara Mawatha area. They are generally satisfied with their tools and love their job despite challenges like low salary and rain.



**Muthumanike (Cleaner 2)**

Muthumanike has been a cleaner for 18 years, also working long hours in the D3 area. They find their tools good and are content with their work, even with difficulties like removing grass and dealing with rain and tree leaves.



**Sunil (Cleaner 3)**

Sunil has 5 years of experience, working a 12-hour shift in the D3 area. He finds removing grass difficult, and has experienced a work-related fall. He emphasizes self-safety and appreciates community kindness.



**Banu & her Husband (Cleaner 4)**

Banu is the most experienced cleaner with 19 years in the D3 Reed MW area, working 12-hour days. They are satisfied with their tools and feel a strong sense of duty towards their job, although they are considering a career change.

# PILOT VISIT 02



# Analysis Findings.

IN BRIEF

3 Main  
Problems

- **RESTRICTIVE:** THE **LACK OF PROPER WASTE-SORTING COMPARTMENTS** FORCES ALL TYPES OF WASTE TO BE MIXED TOGETHER, REDUCING EFFICIENCY AND MAKING DISPOSAL MORE TIME-CONSUMING.
- **CRAMPED:** WORKERS OFTEN OPERATE IN CONFINED SPACES WITH **NO DESIGNATED ROOM FOR PERSONAL BELONGINGS.**
- **UNSANITARY:** THE **ABSENCE OF PROPER PLACES TO EAT** DIRECTLY IMPACTS THE WORKERS' HEALTH AND DIGNITY.

# Problem Statement.

Road cleaners currently face restrictive, unsafe, and undignified working conditions due to heavy carts, lack of personal storage, poor waste-sorting options, and no proper space to rest or eat.

INTO A DESIGN CHALLENGE

How Might I?

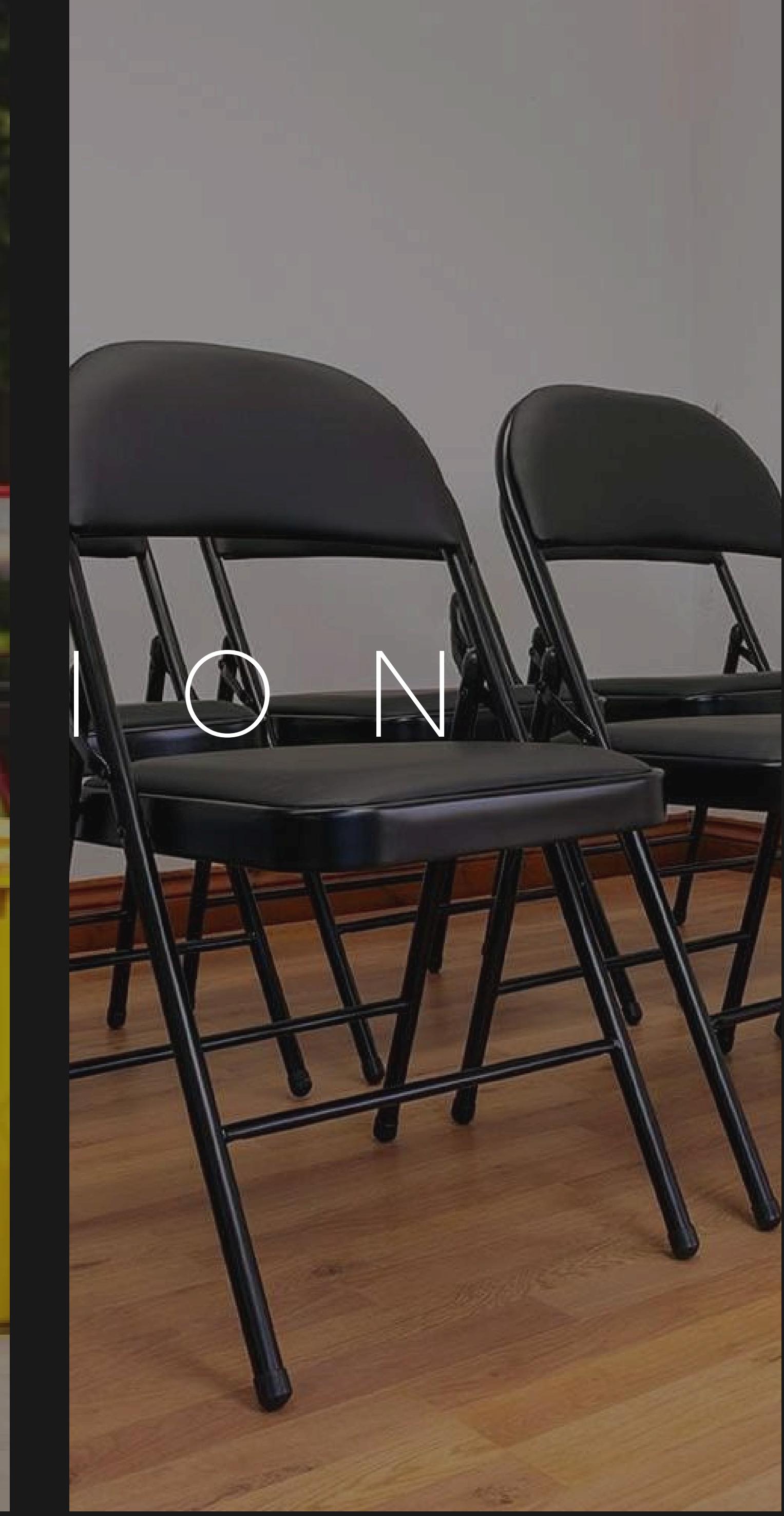
Make road cleaning more efficient, comfortable, and dignified through organized waste sorting, personal space, and hygienic breaks?



I N S



P I R A T



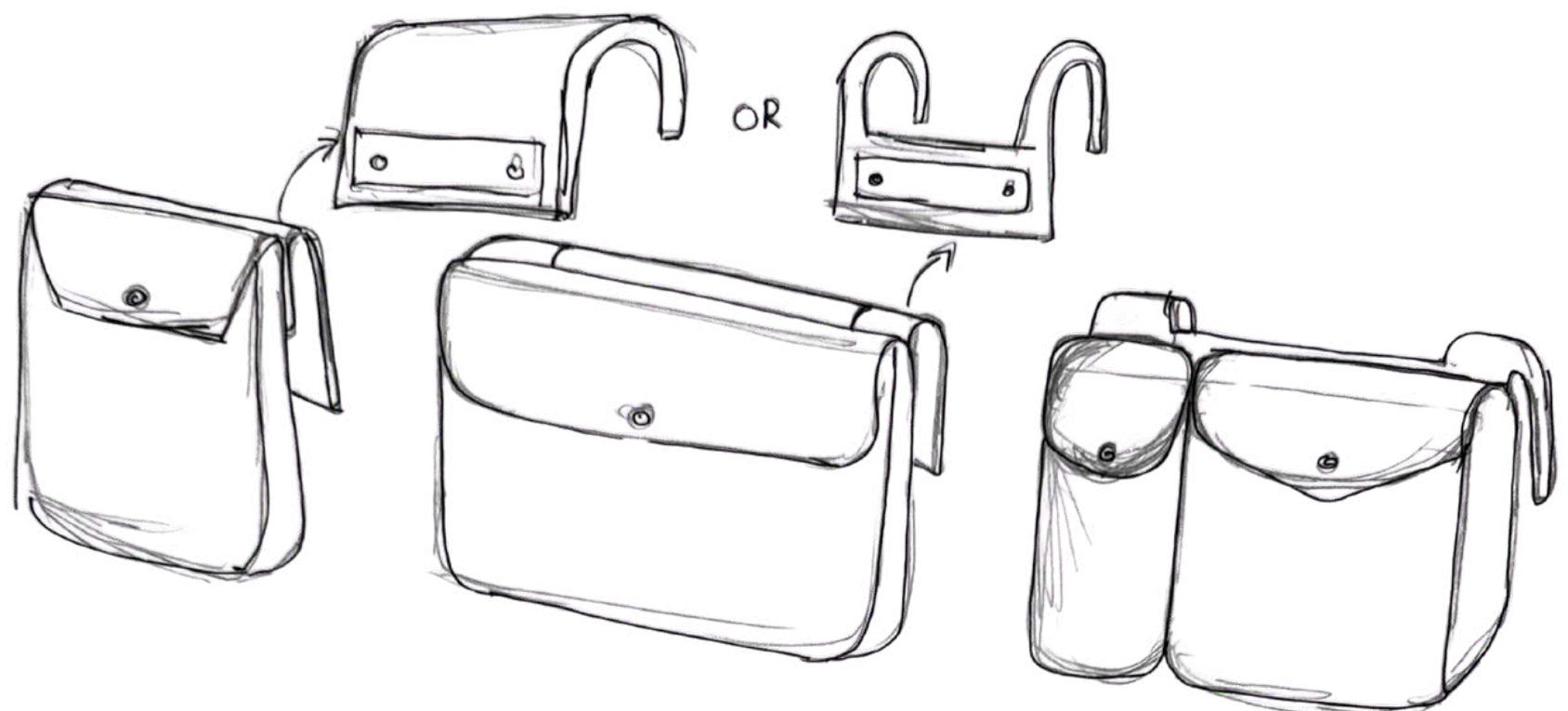
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SCAFFOLDINGS

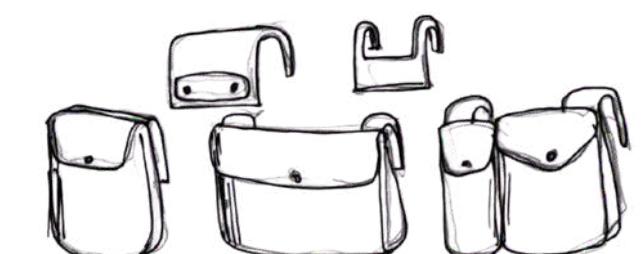
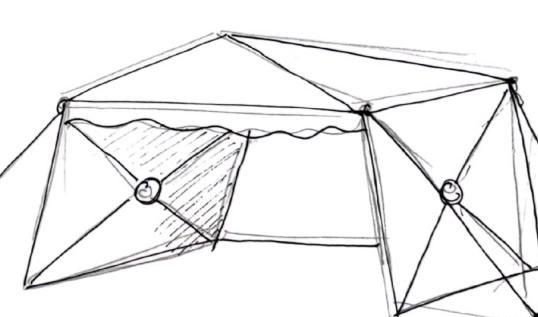
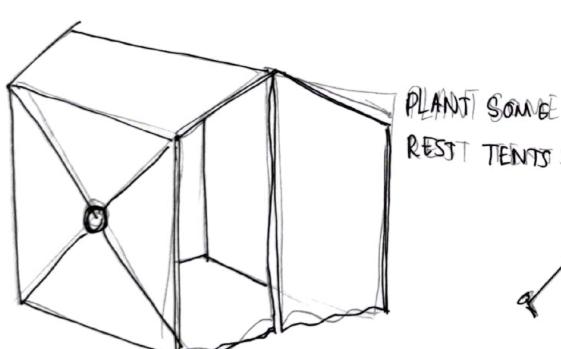
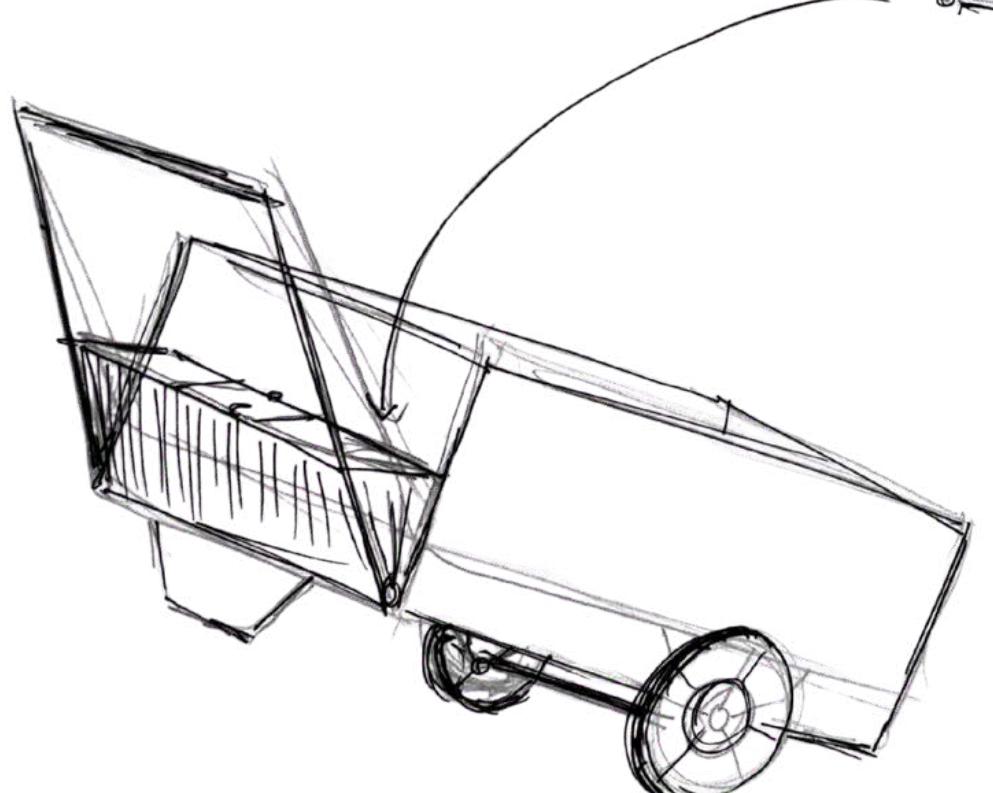
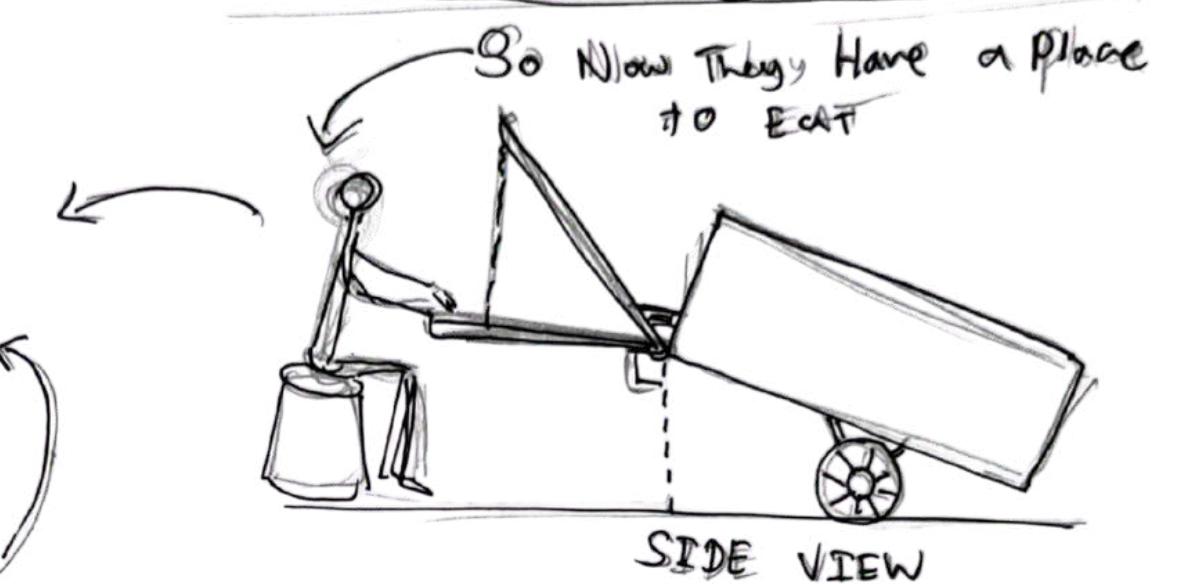
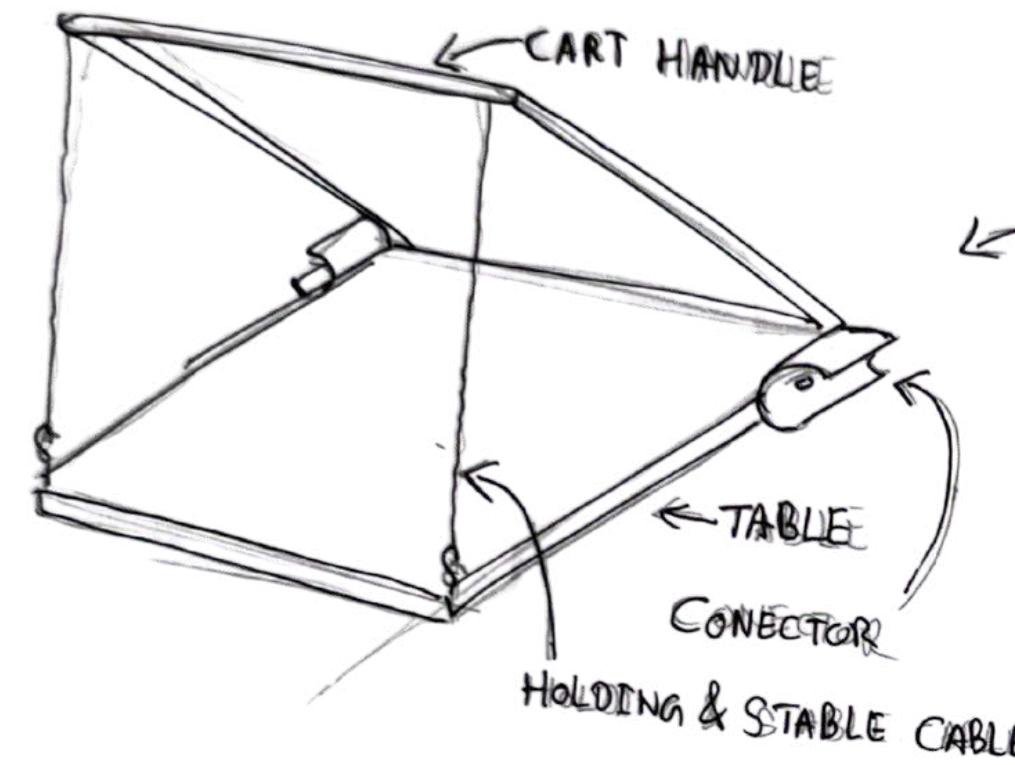
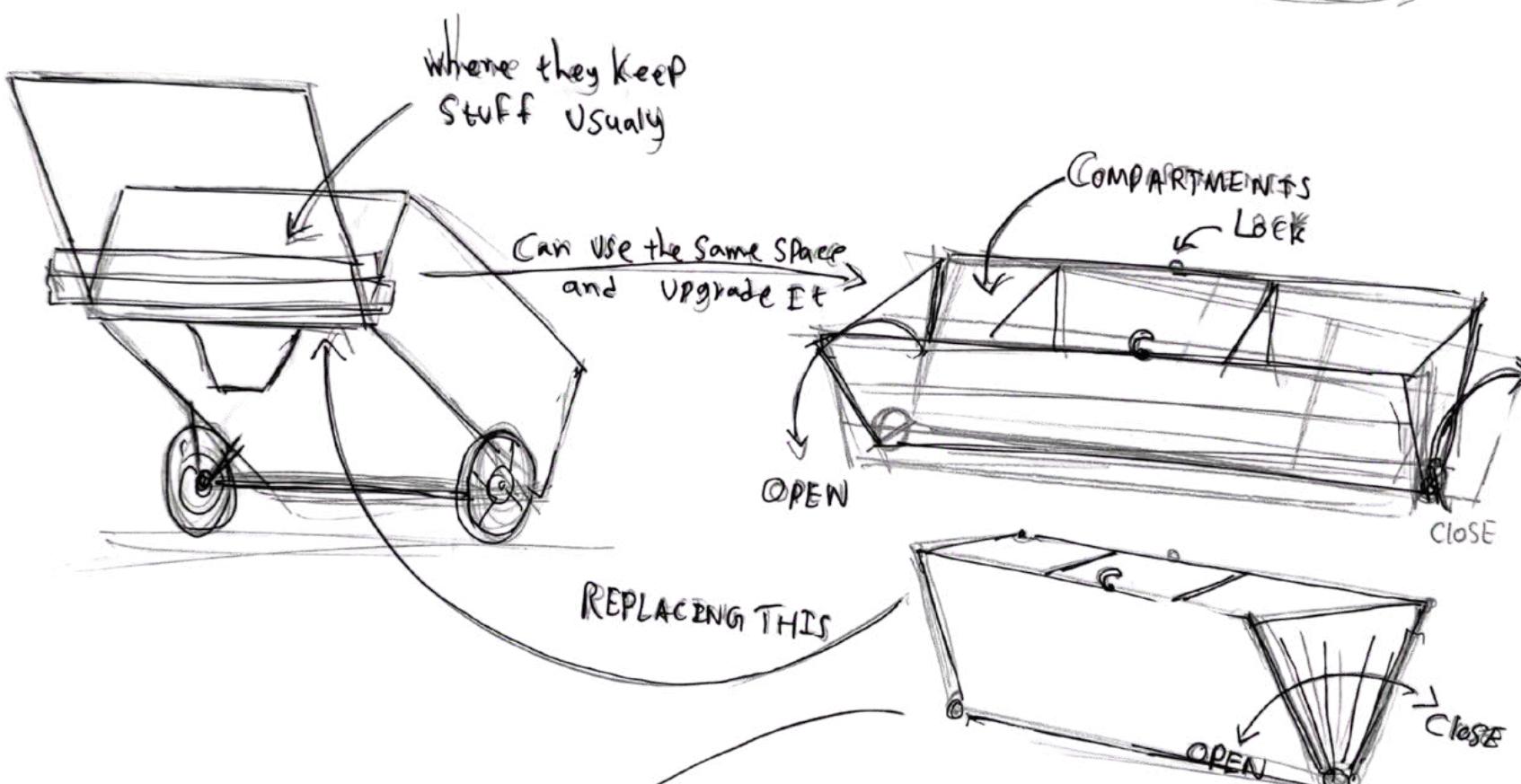
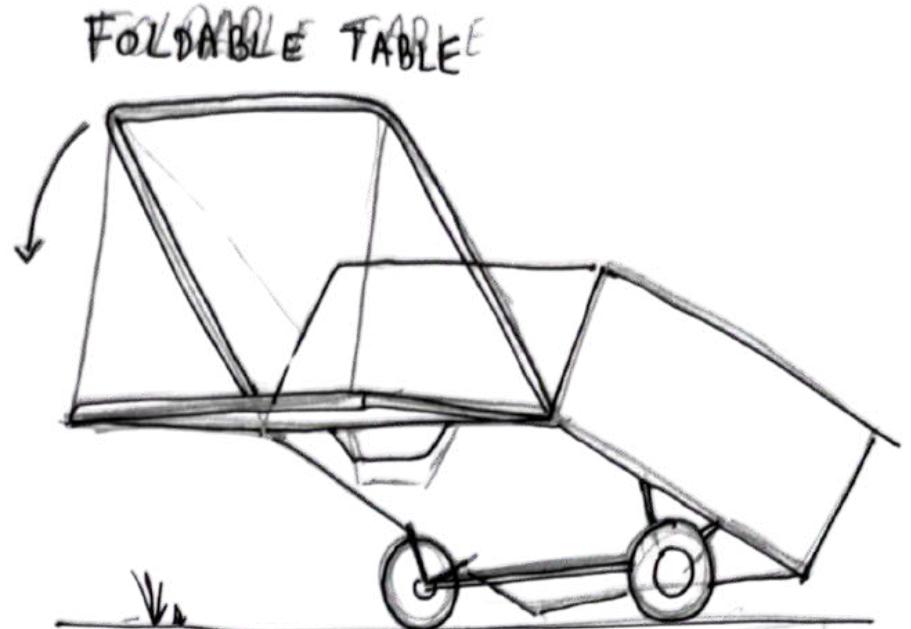
PLASTIC BINS

FOLDING CHAIRS

# SKETCHING & IDEATING.

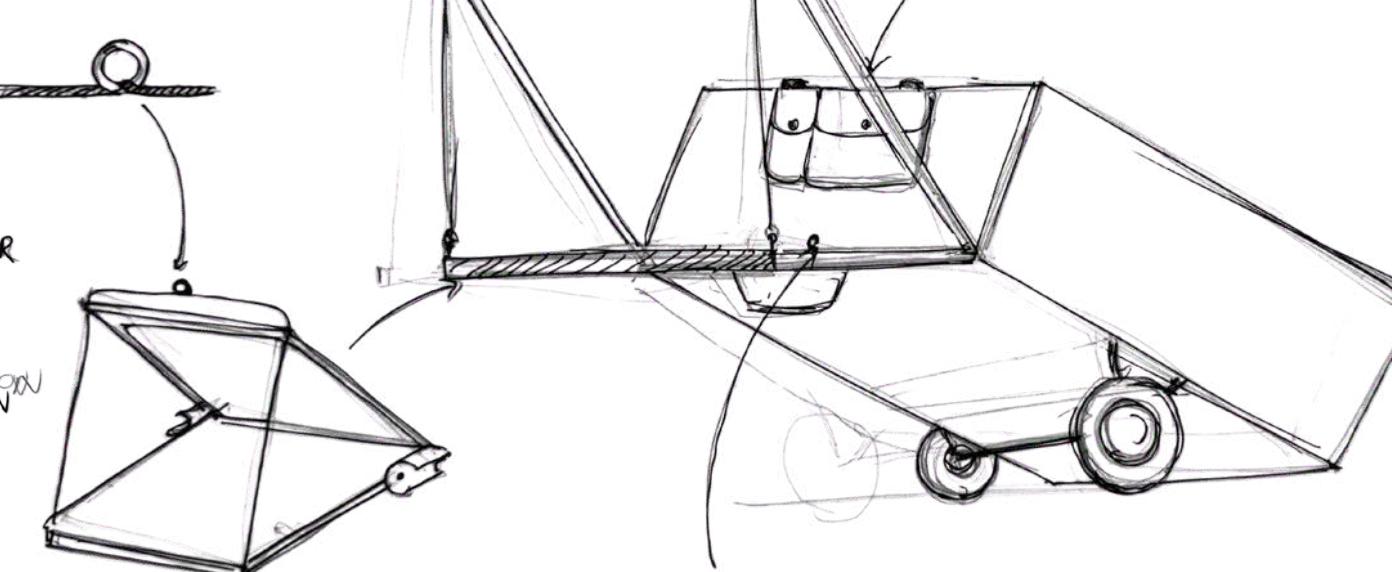


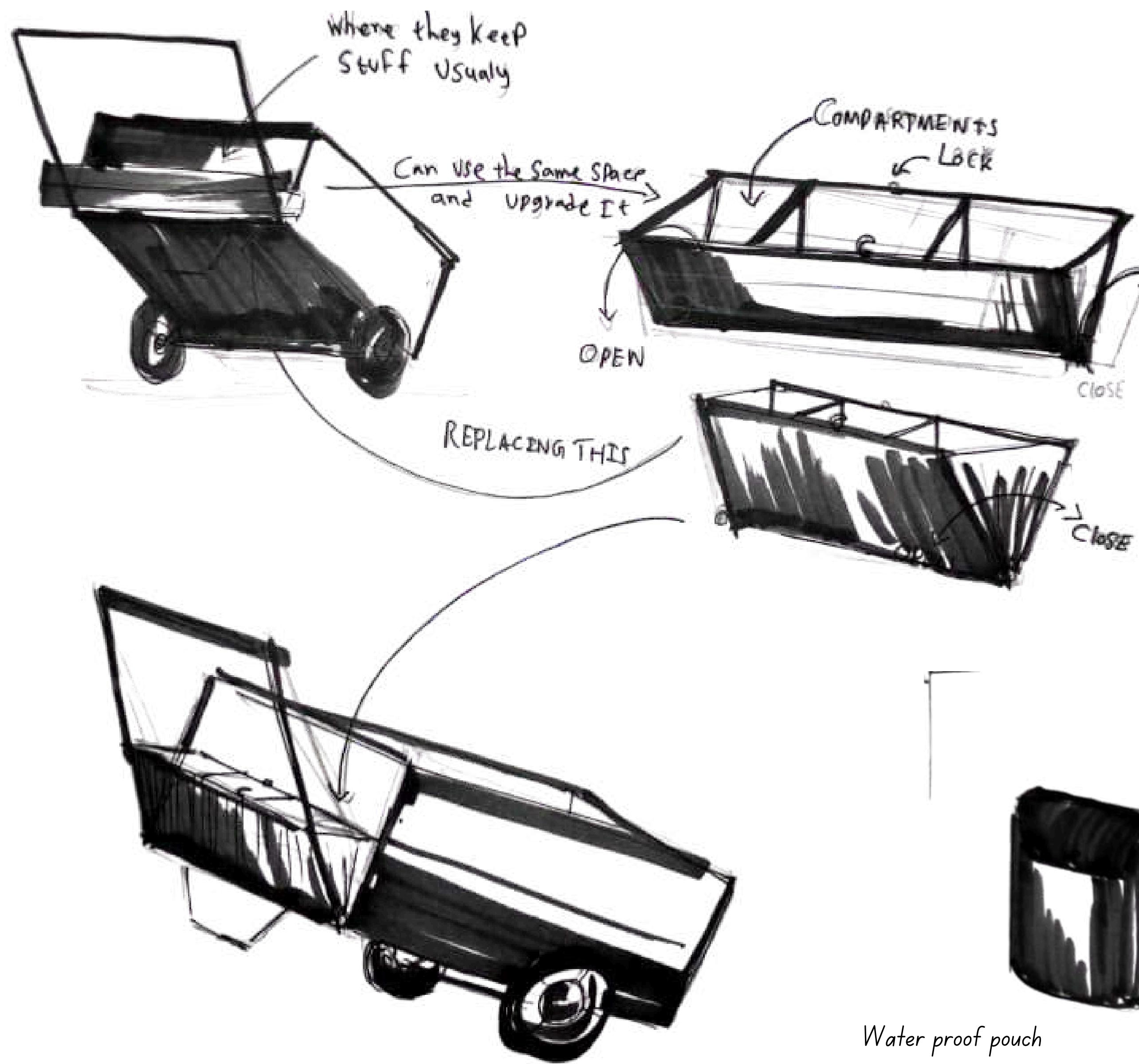
PLANTING  
MOBILE  
TOILETS  
FOR THE  
CLEANERS



FOLDABLE TABLE + FOLDABLE CHAIR

IS A GOOD COMBINATION





can be mount by hanging

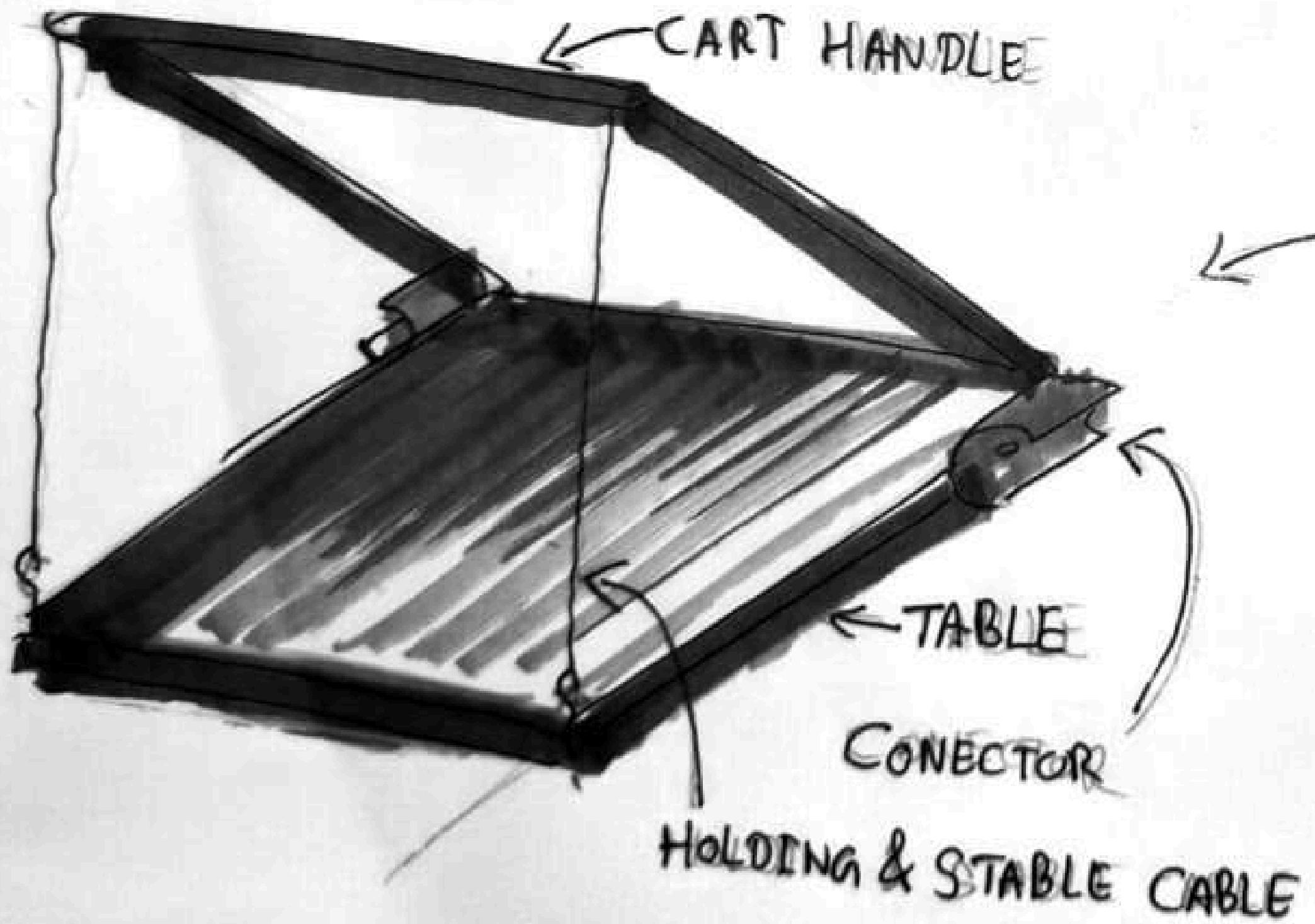




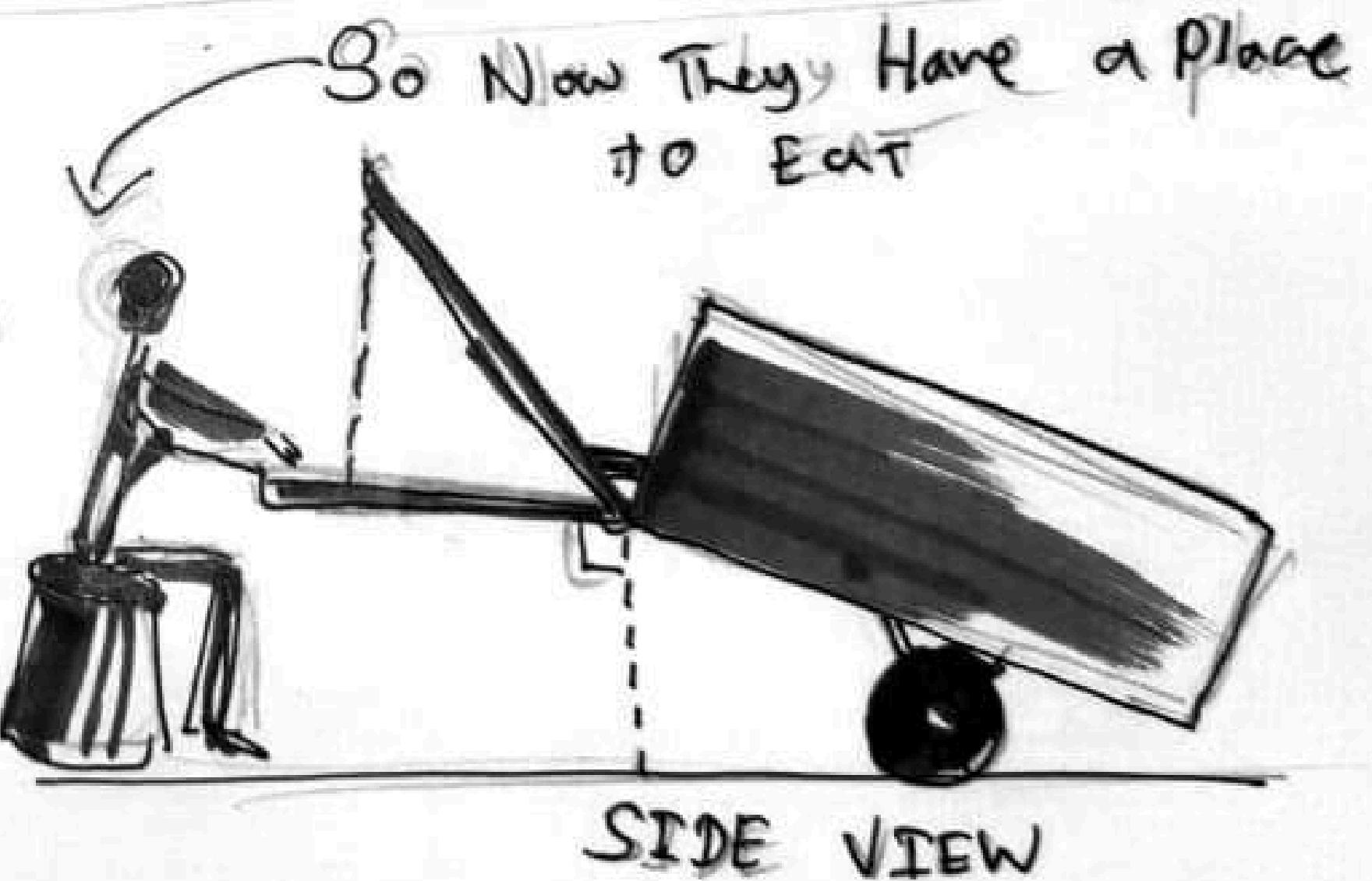
PLANTING  
MOBILE  
TOILETS  
FOR THE  
CLEANERS

for sanitary purposes

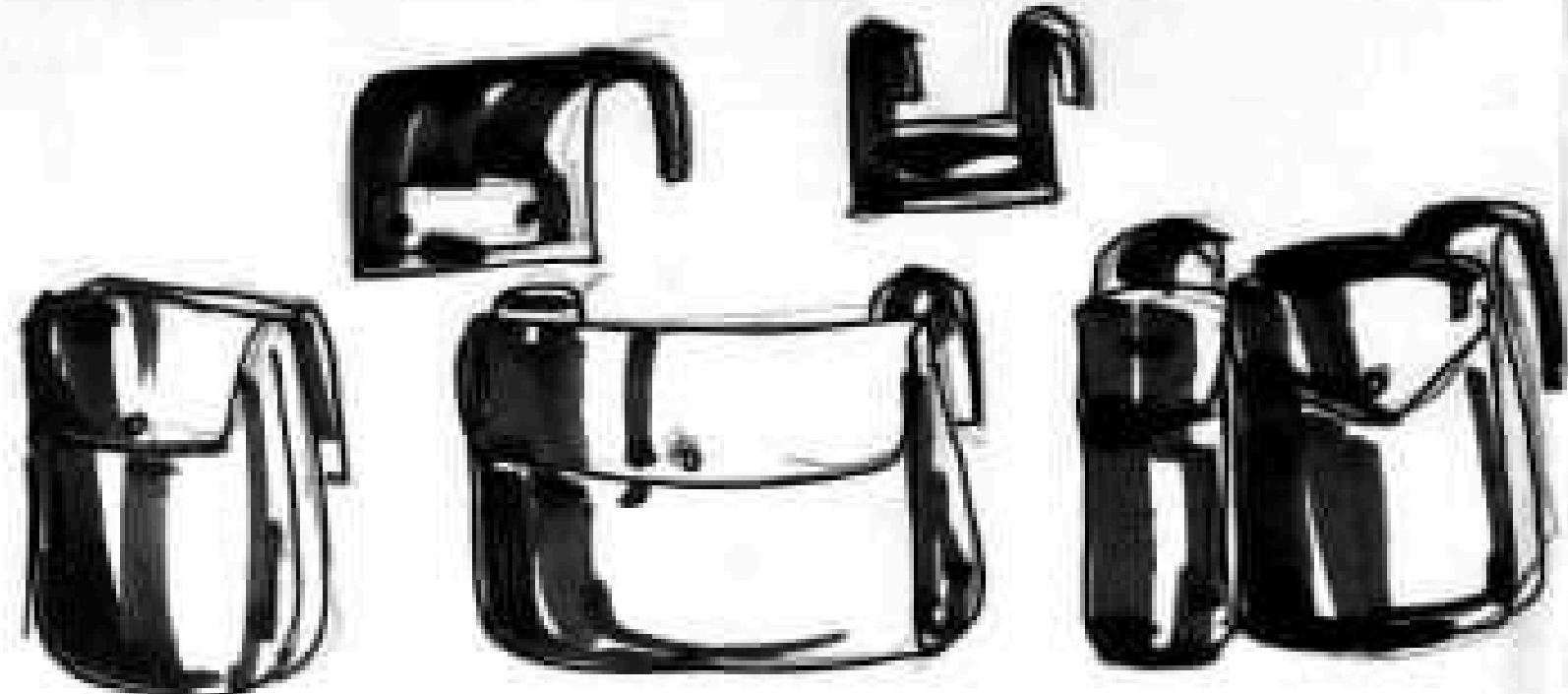
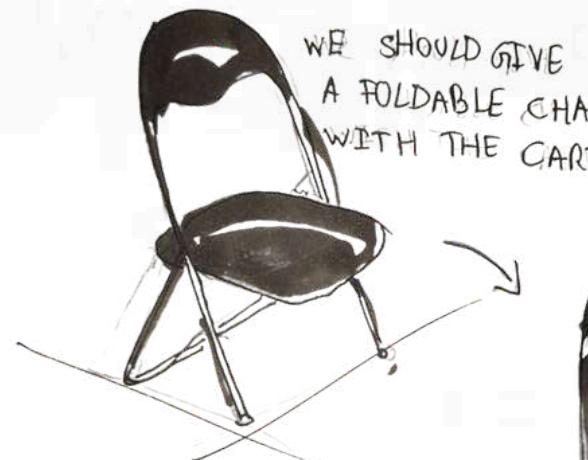
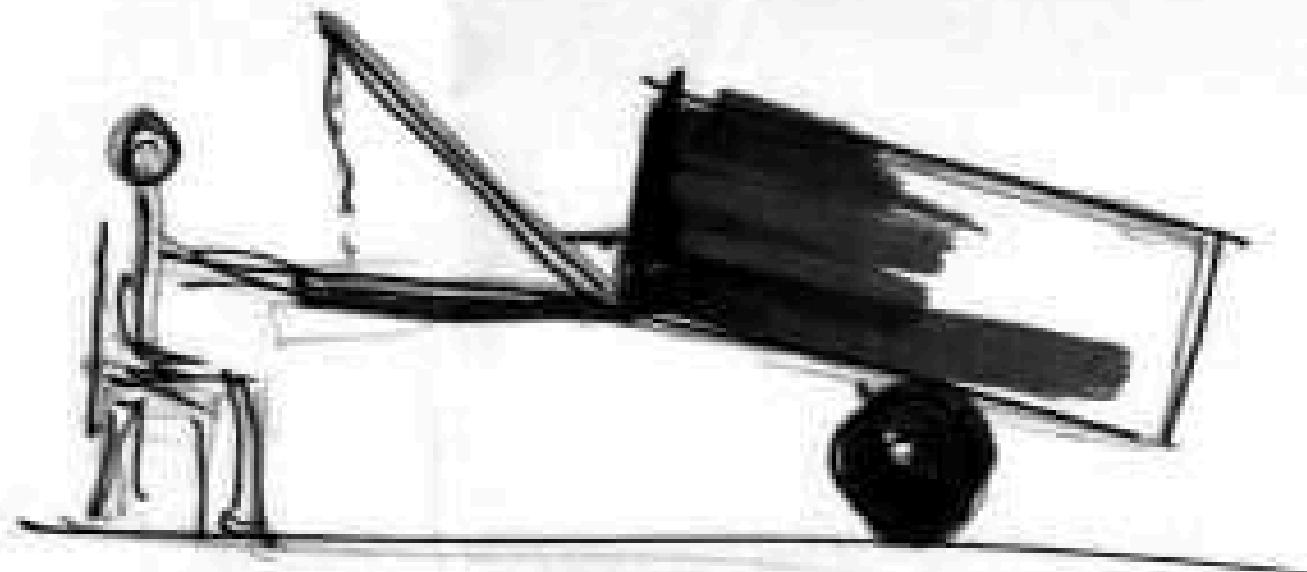
Some Other ideas



FOLDABLE TABLE

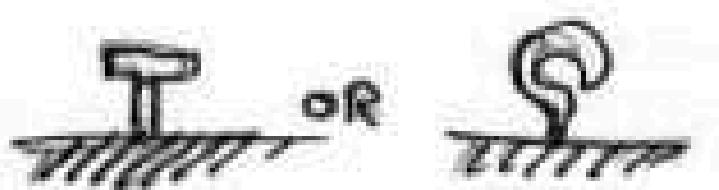
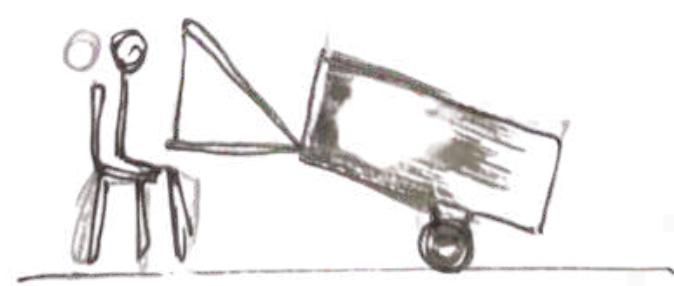
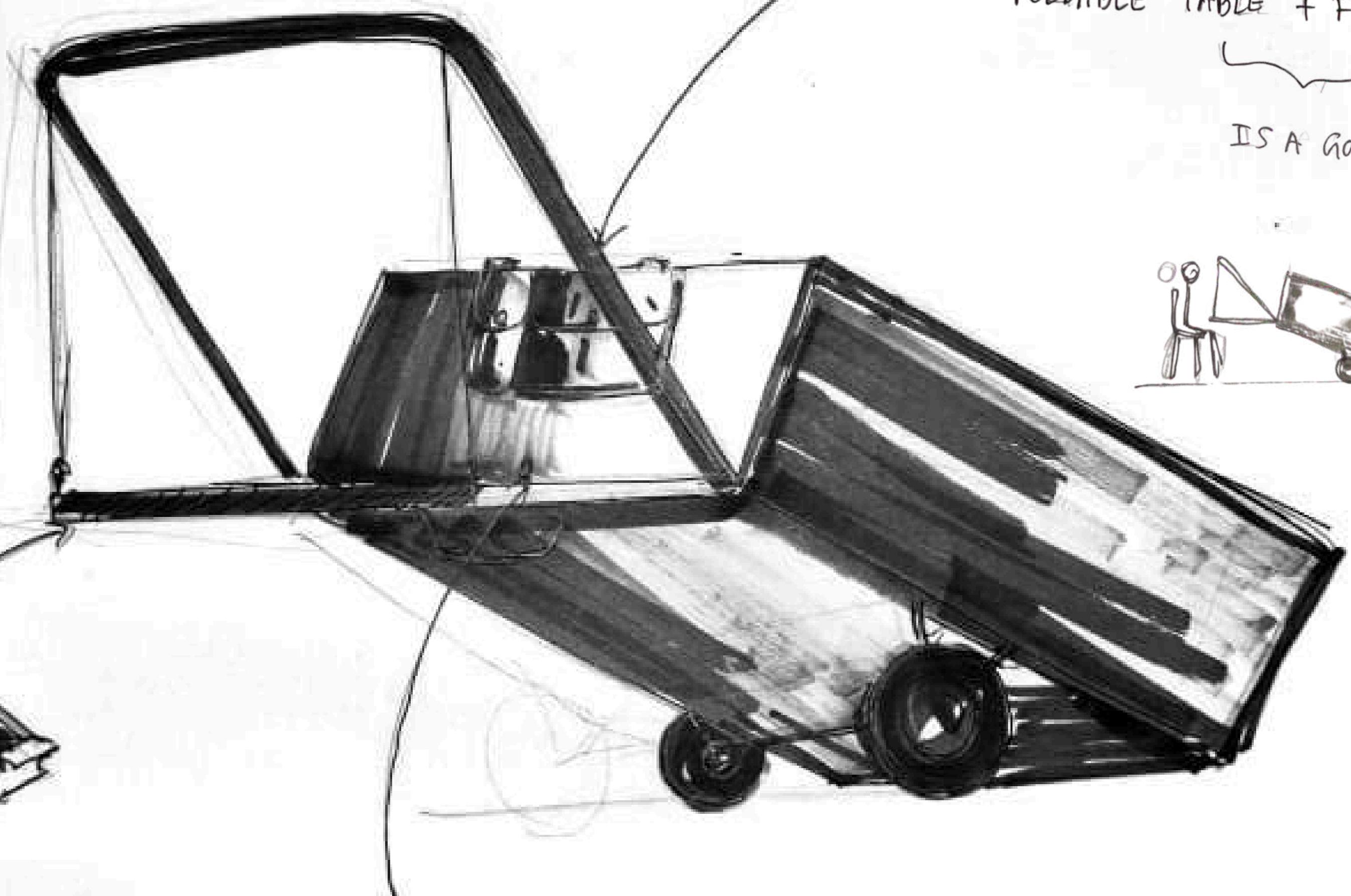
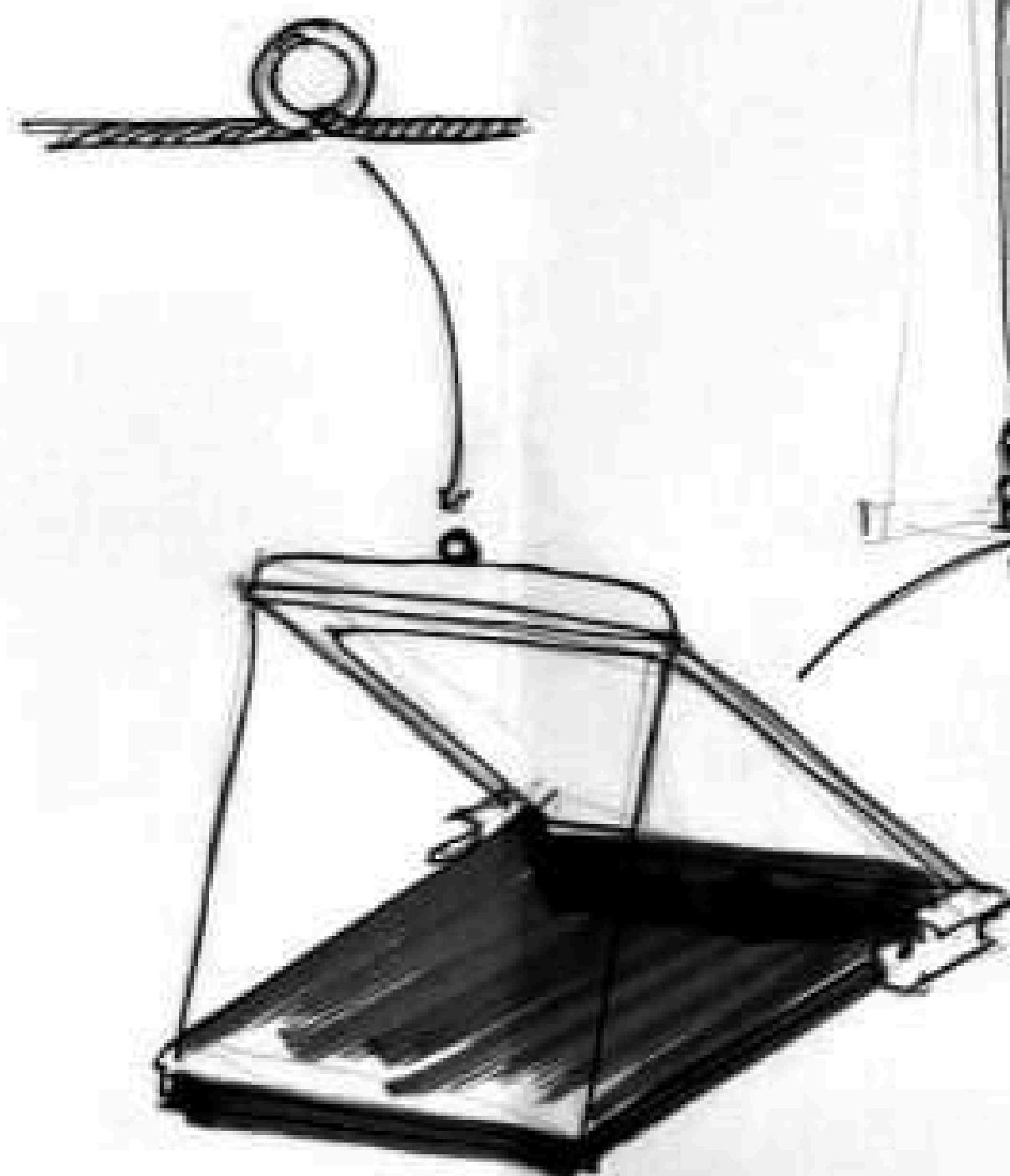


SIDE VIEW

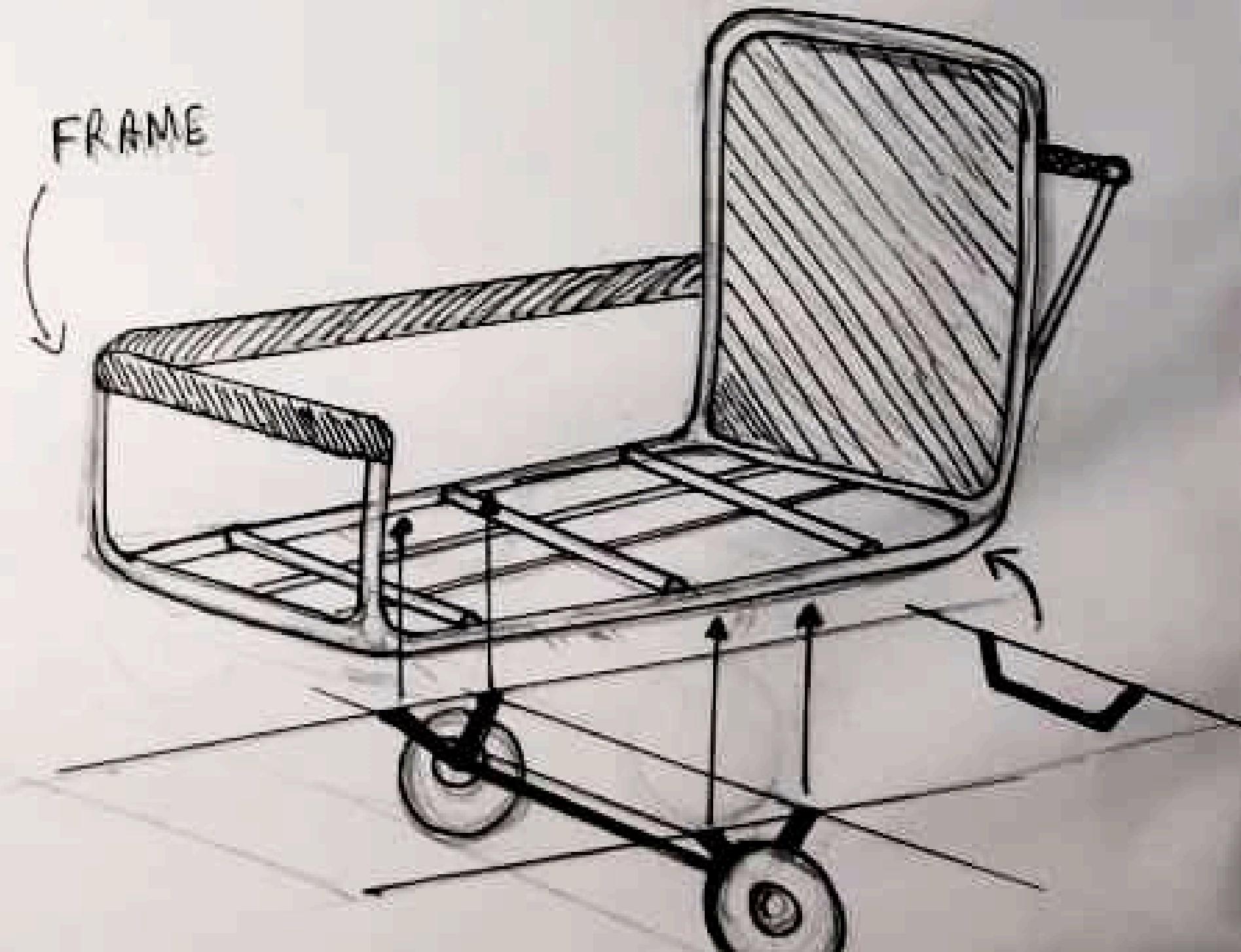
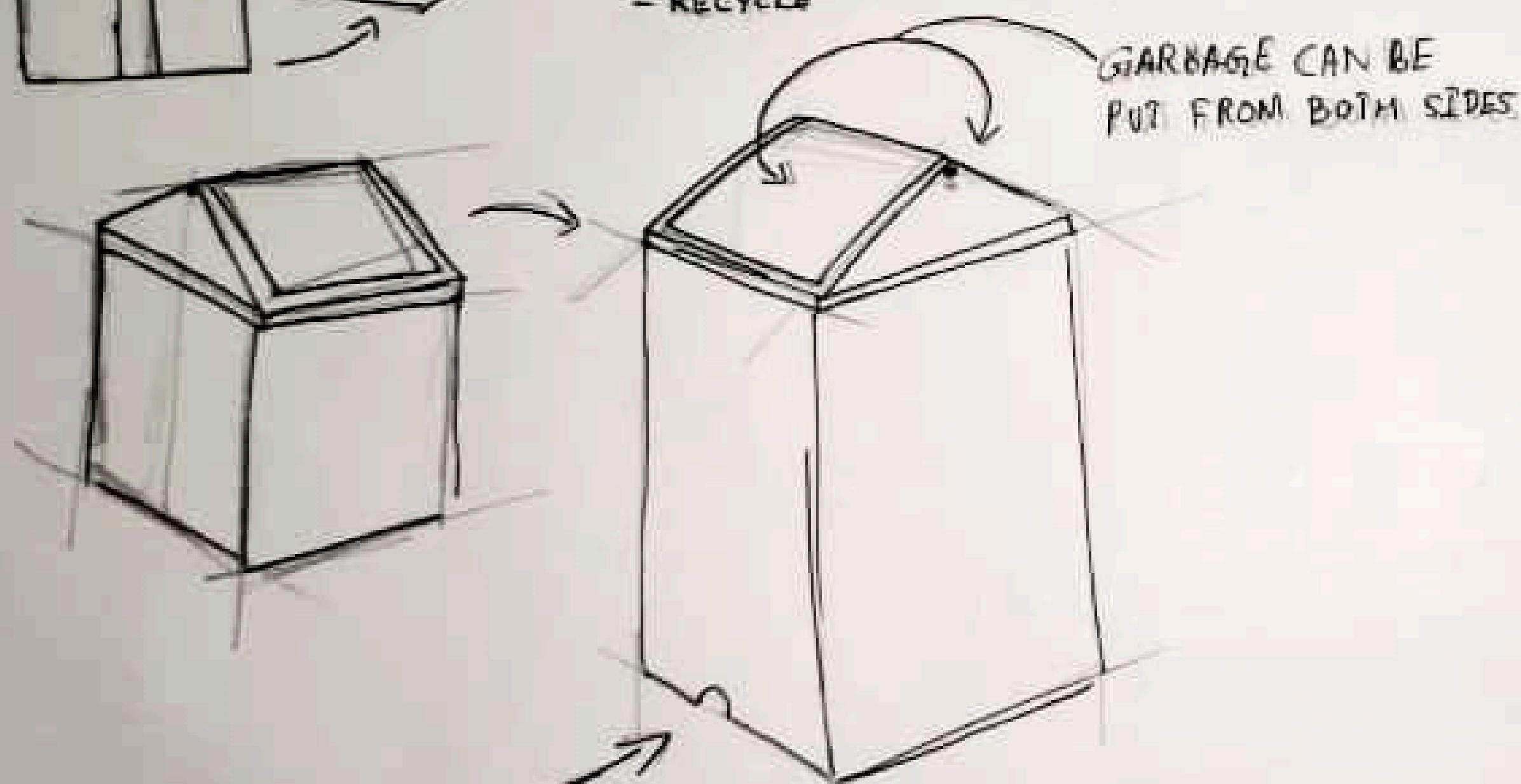
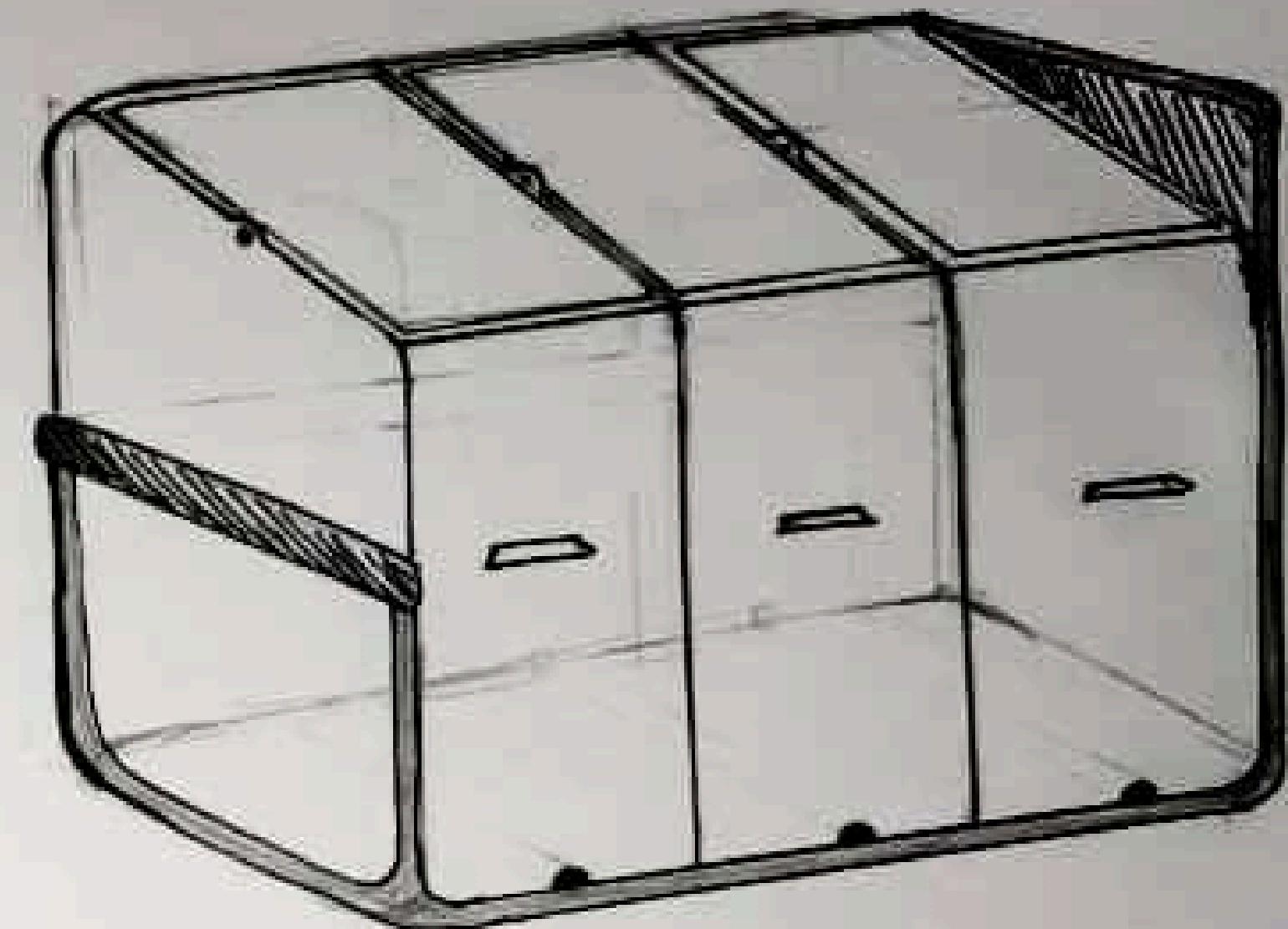
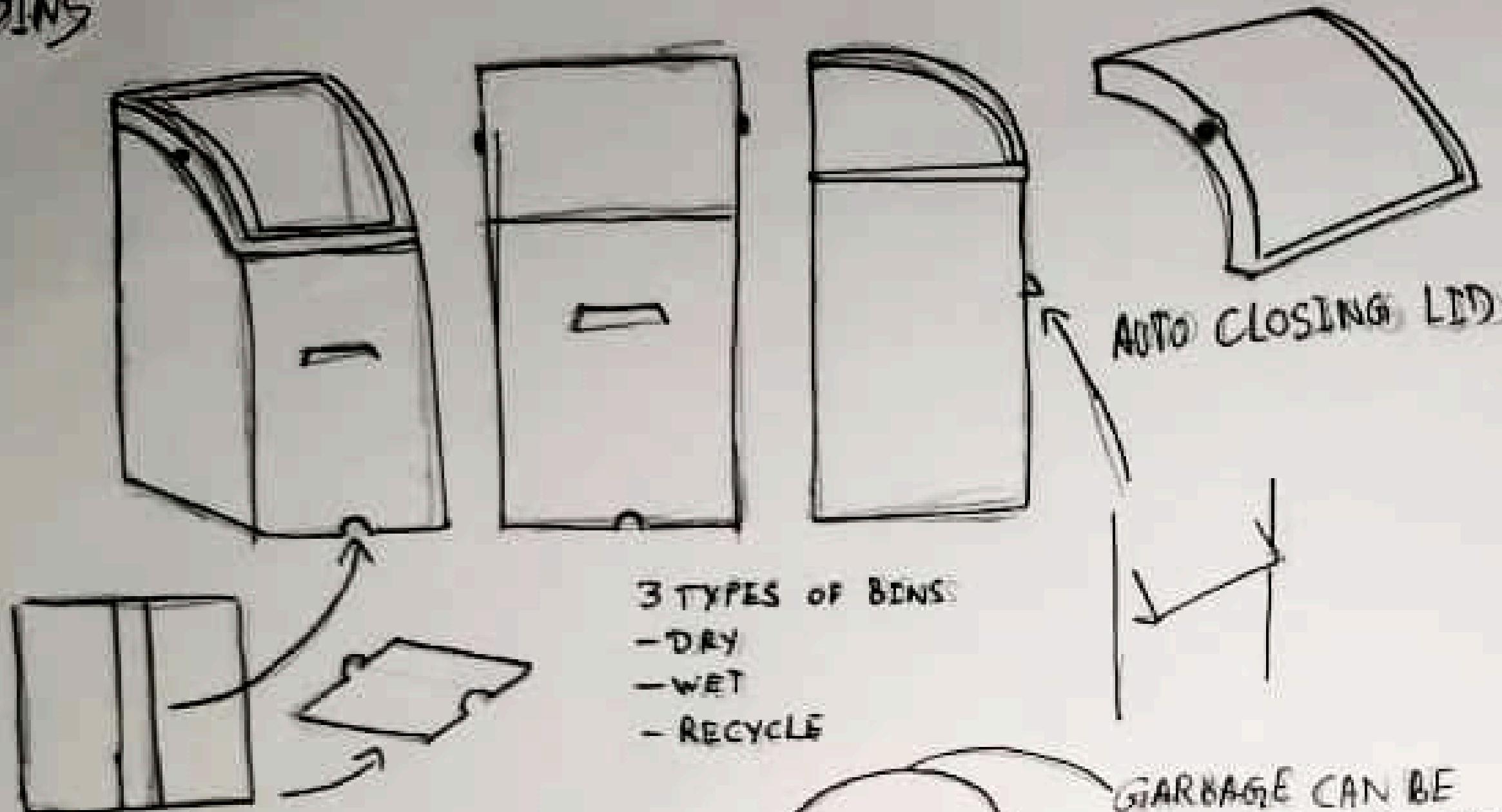


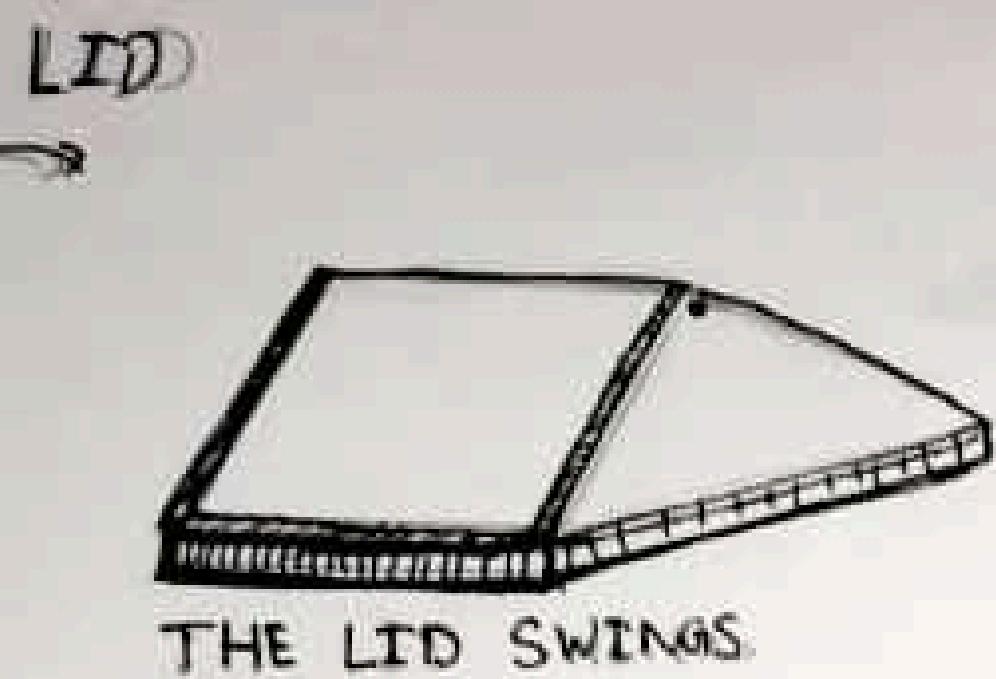
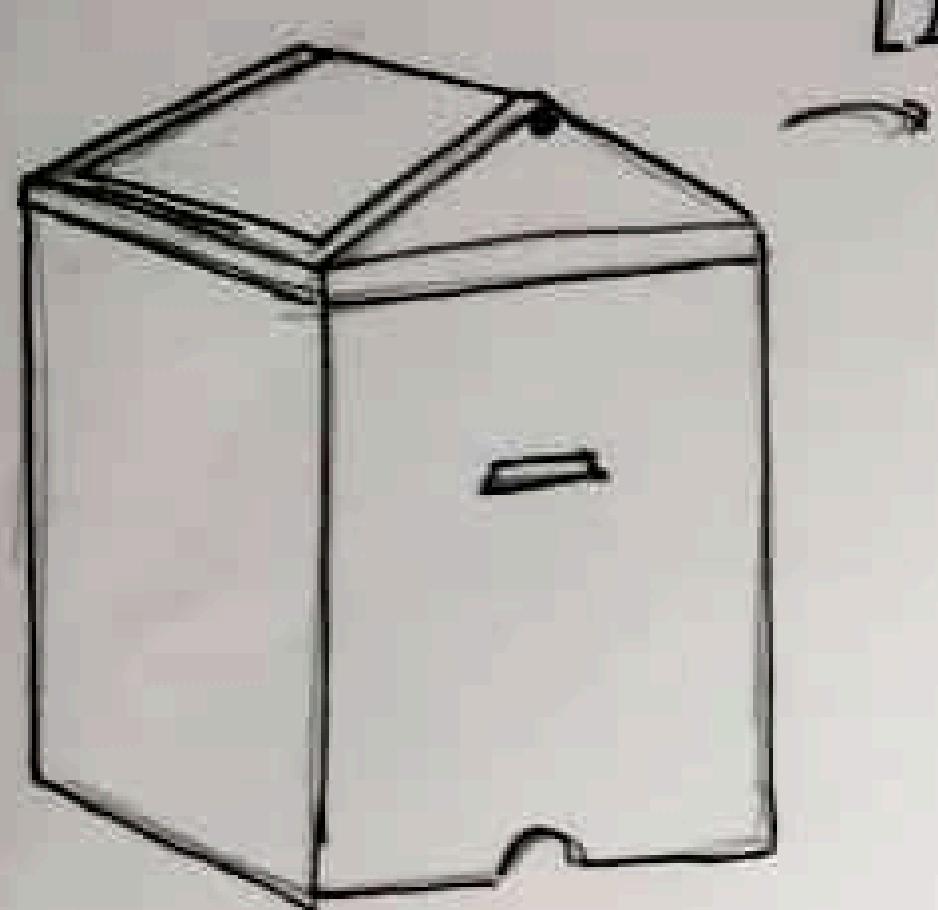
WE SHOULD GIVE  
A FOLDABLE CHAIR  
WITH THE CART

FOLDABLE TABLE + FOLDABLE CHAIR  
IS A GOOD COMBINATION

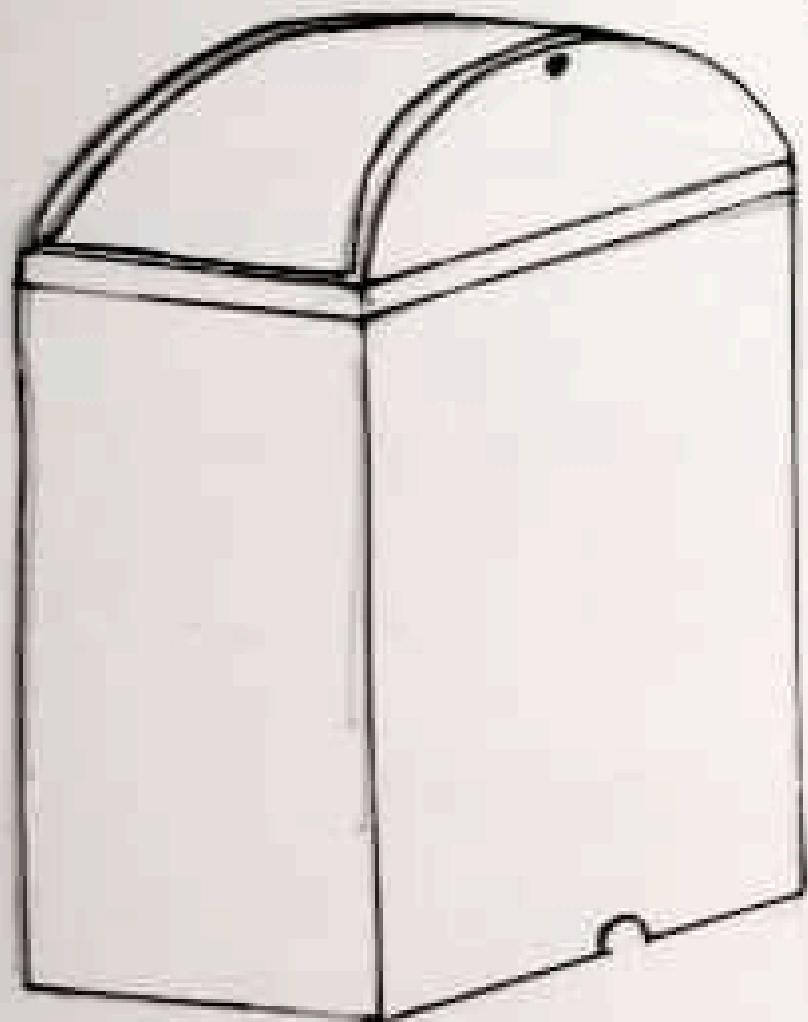


BINS

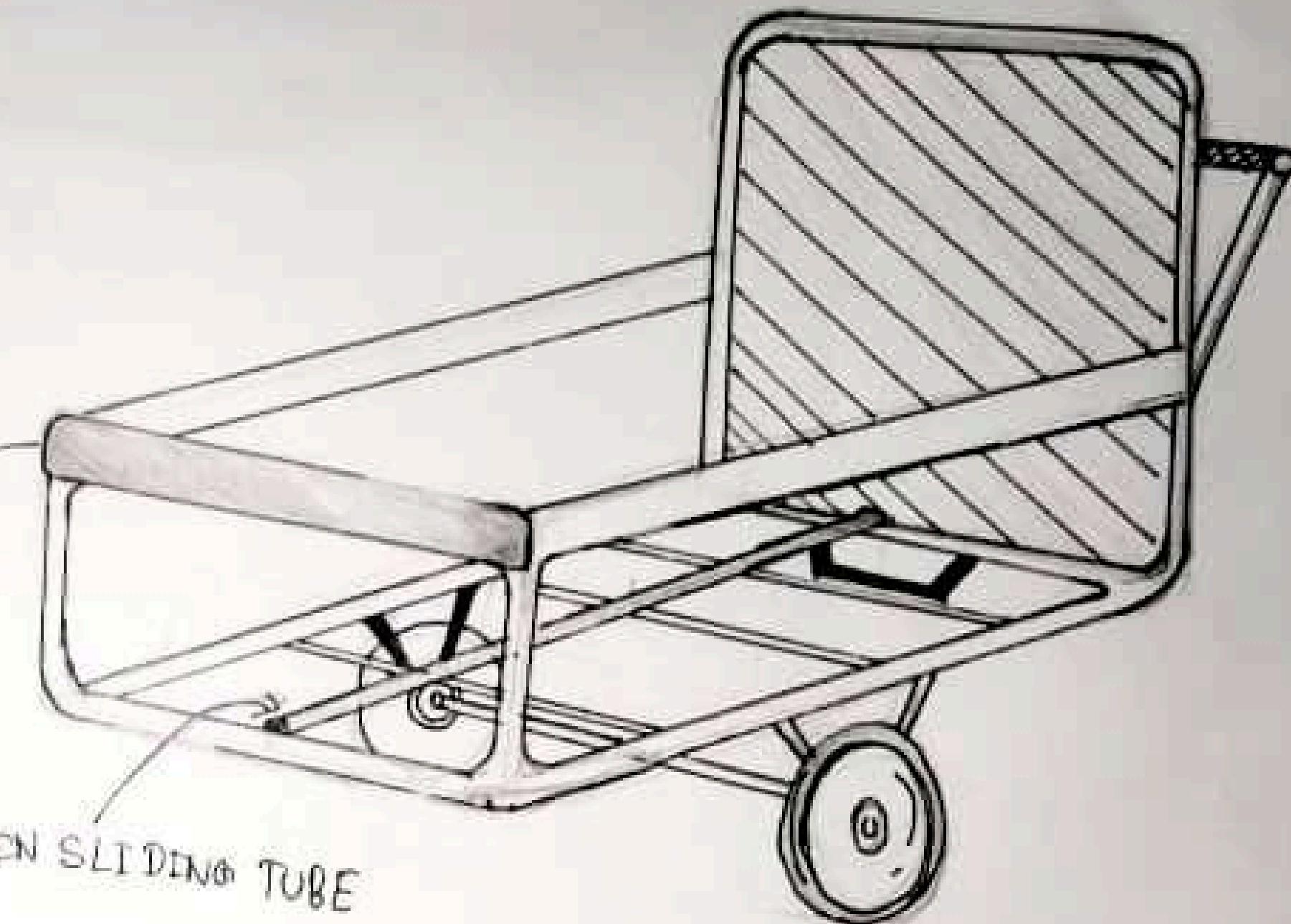




THE LID SWINGS



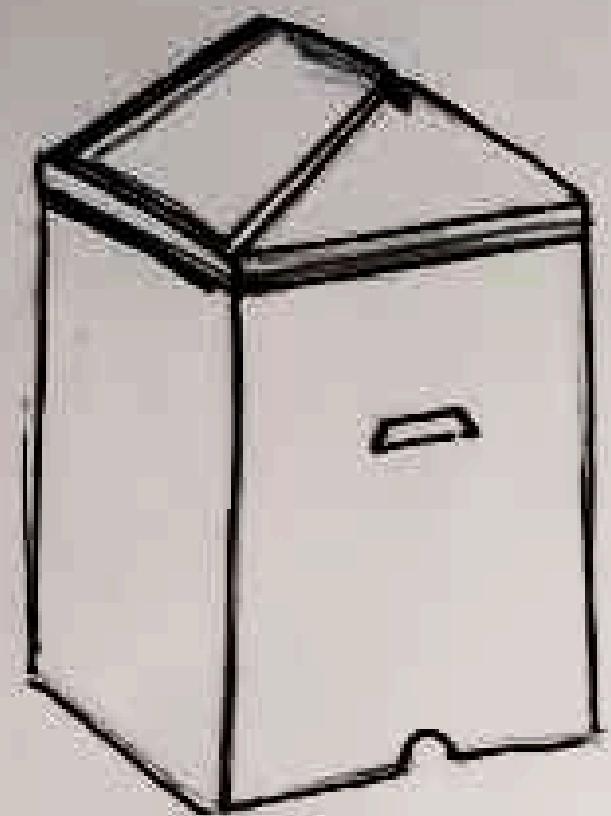
THIS BAR CAN BE  
REMOVED



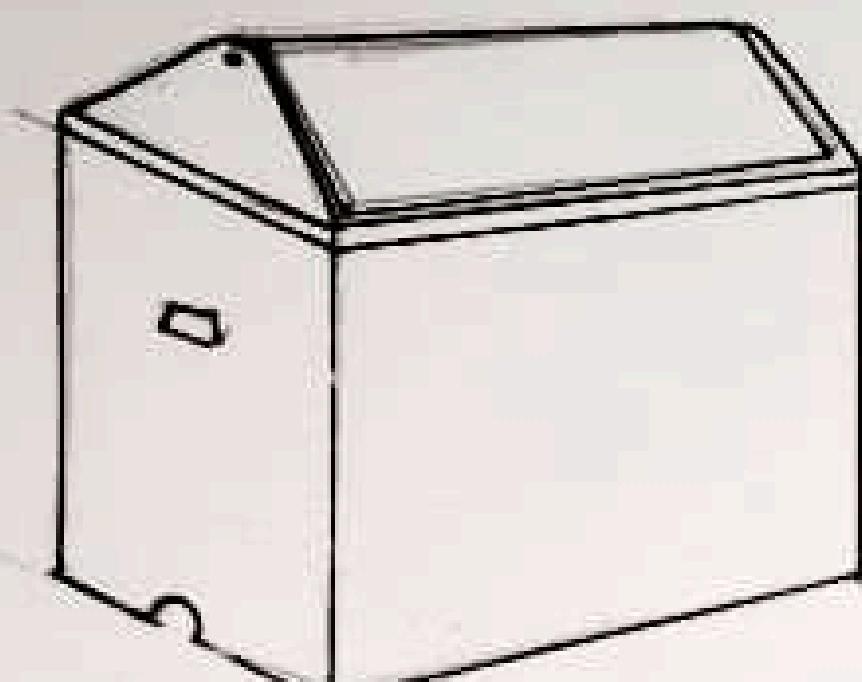
BIN SLIDING TUBE



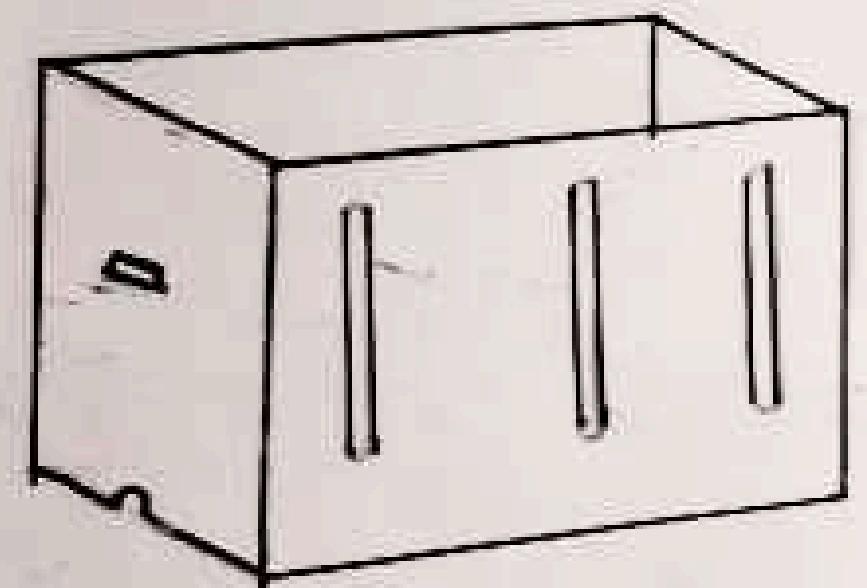
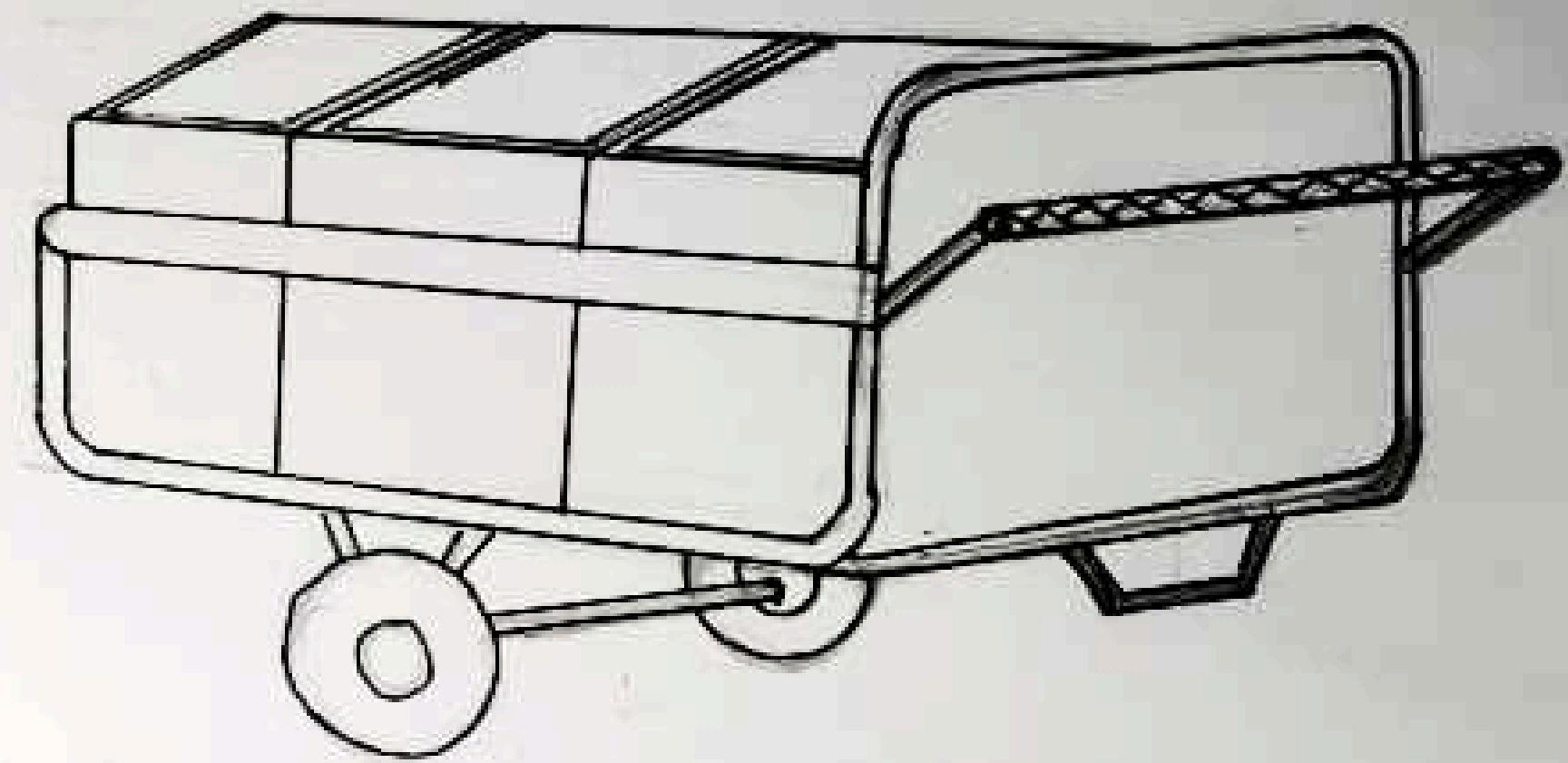
# TYPES OF BINS THAT CAN BE MOUNT IN TO THE CART



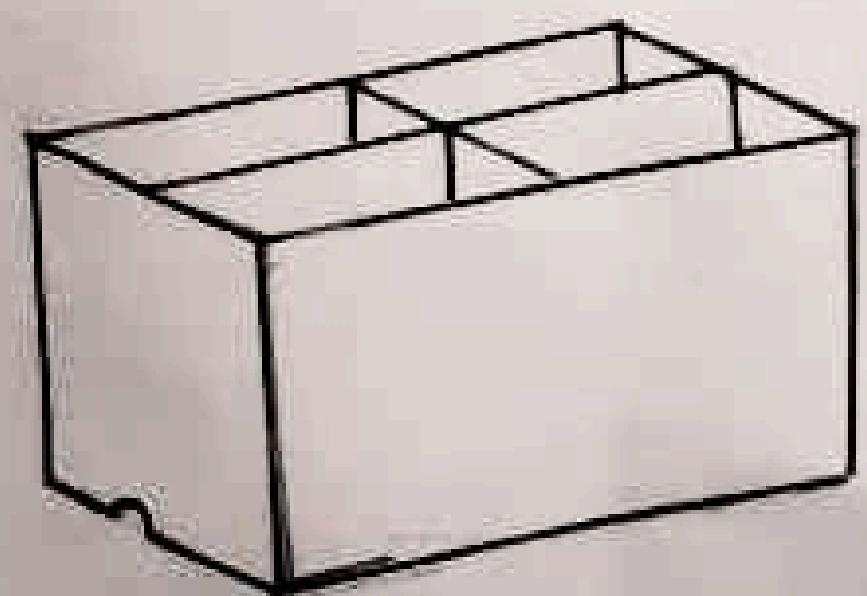
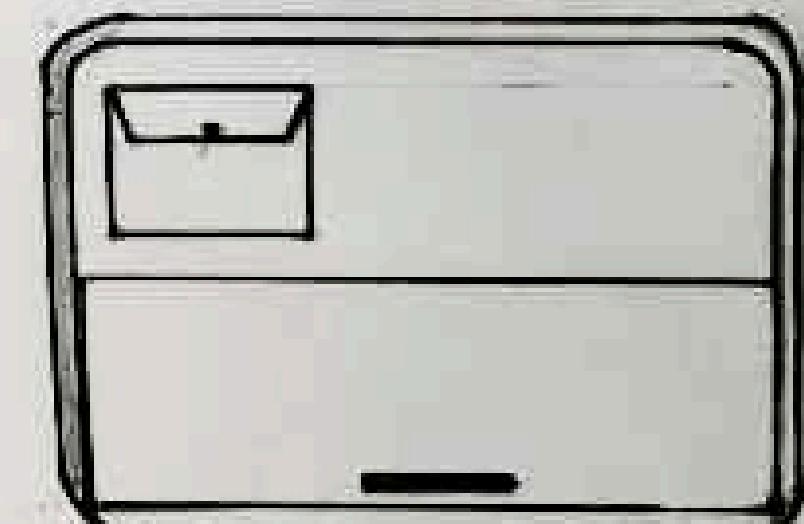
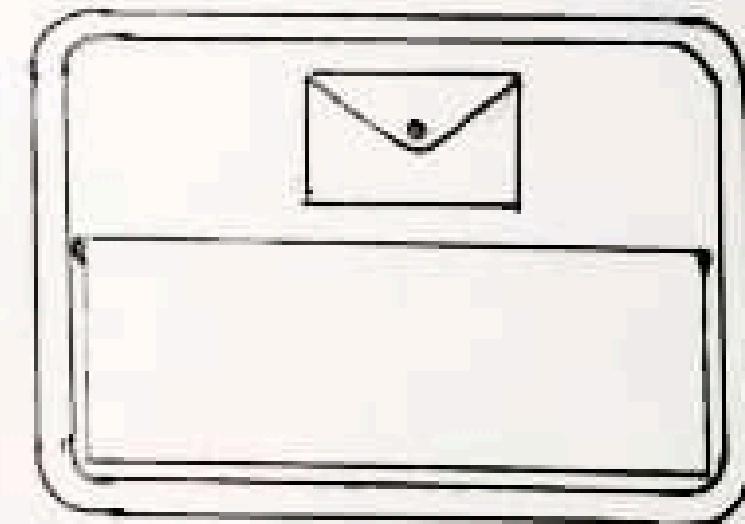
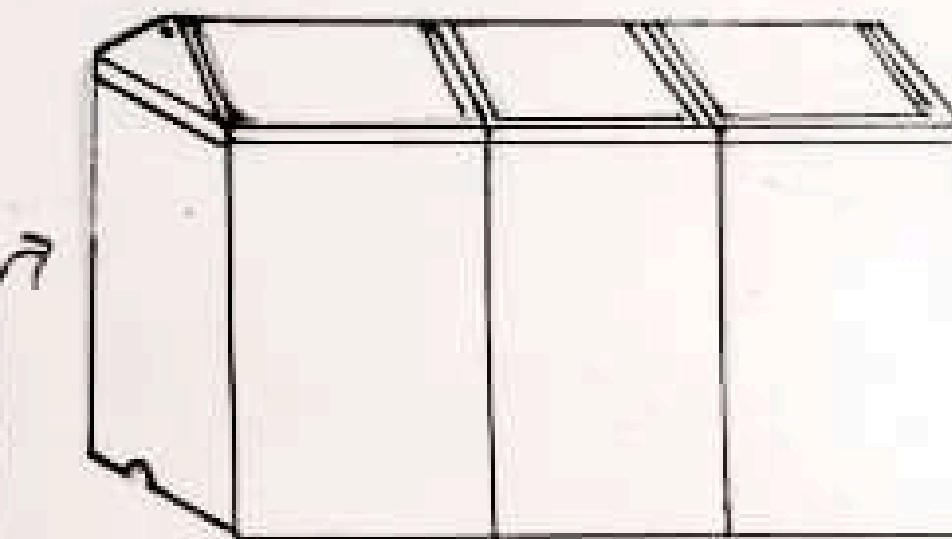
Solo BIN



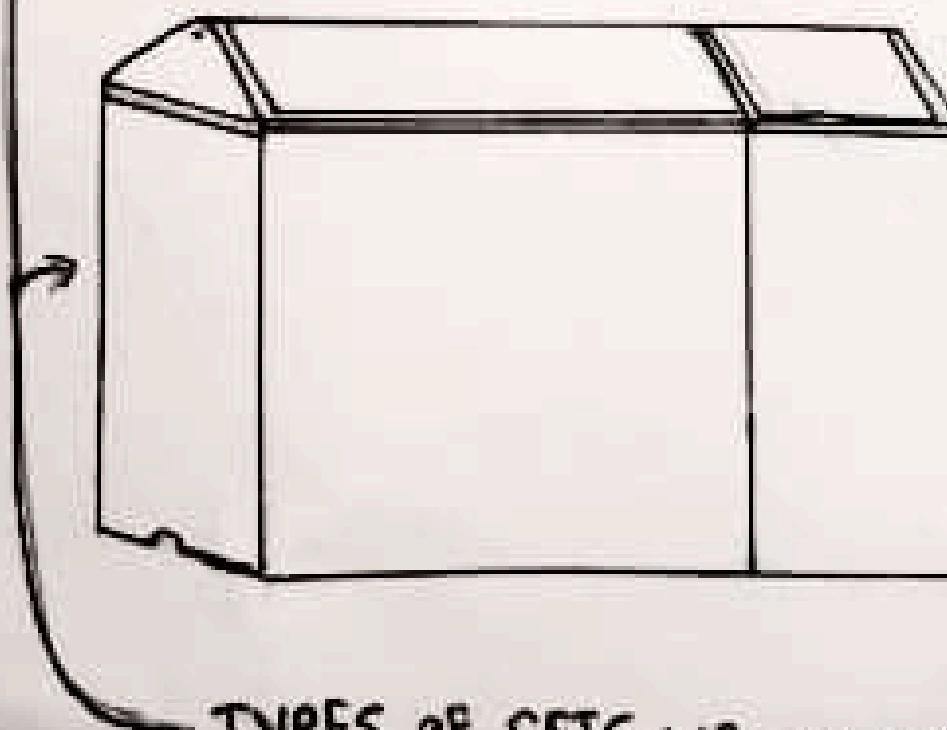
DUAL BIN



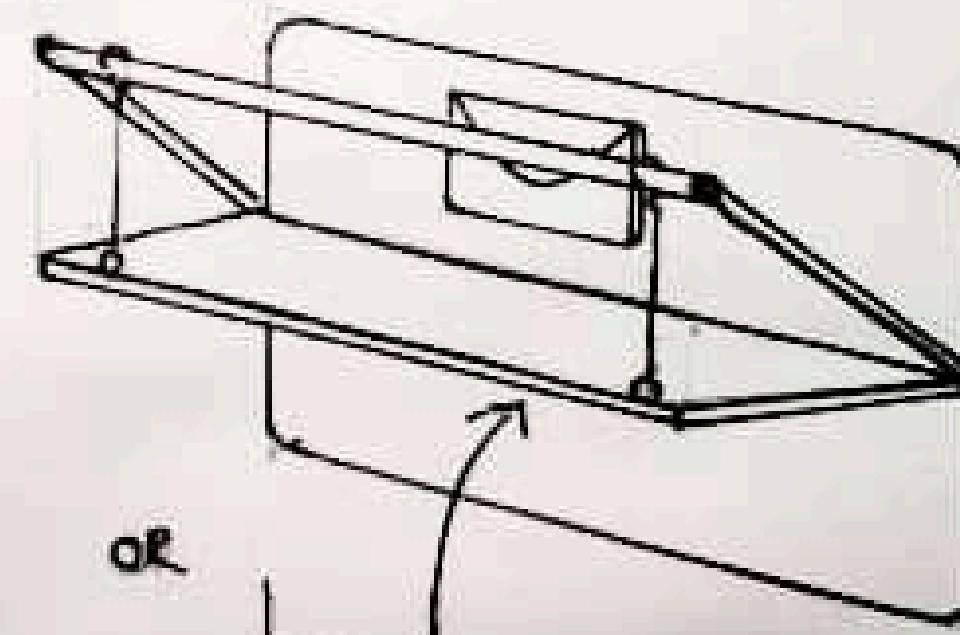
LARGE SOLO BIN



INVERTED SINGLE BIN



TYPES OF SETS WE CAN MAKE



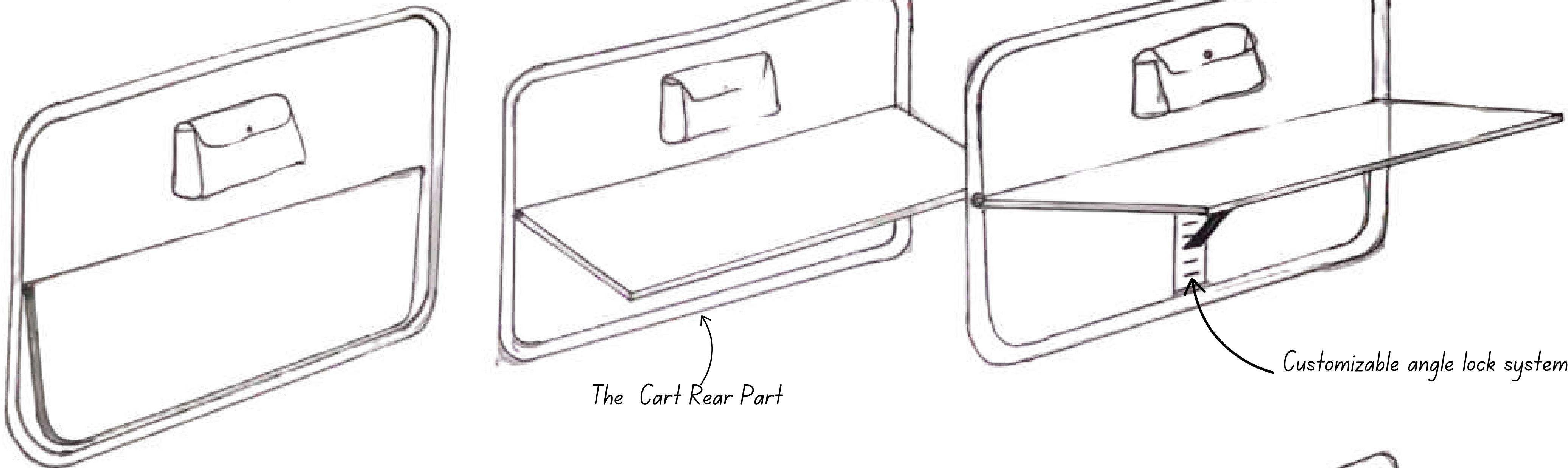
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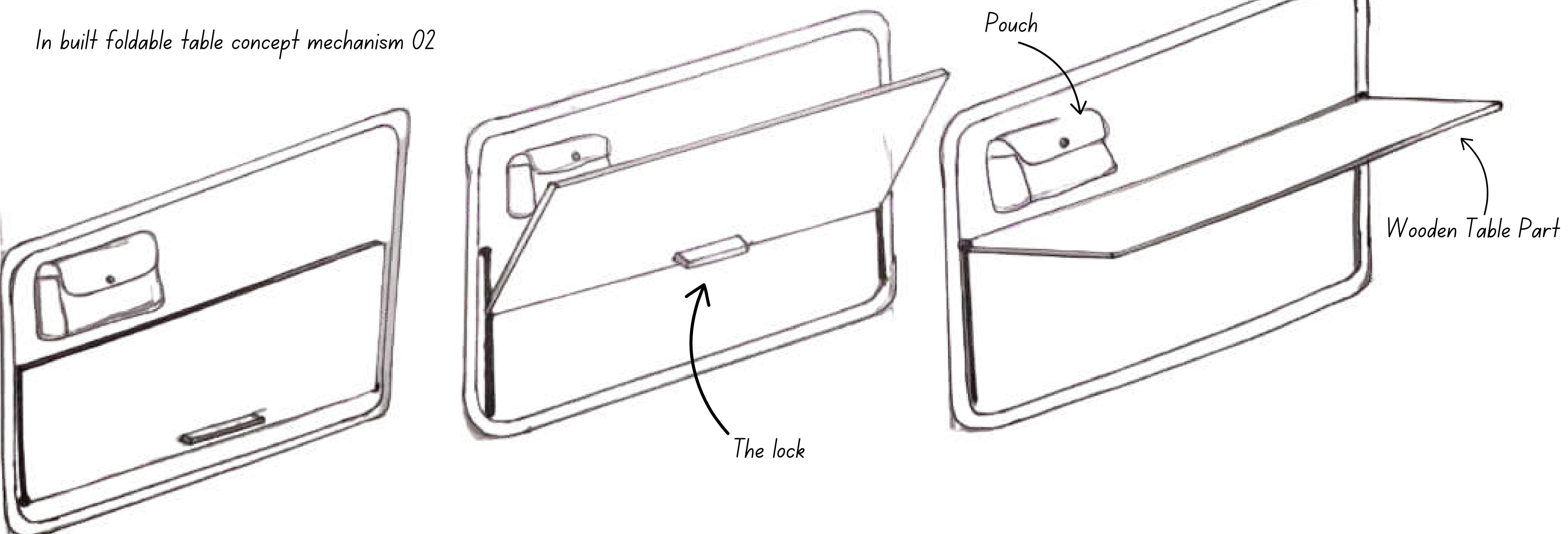
Lock



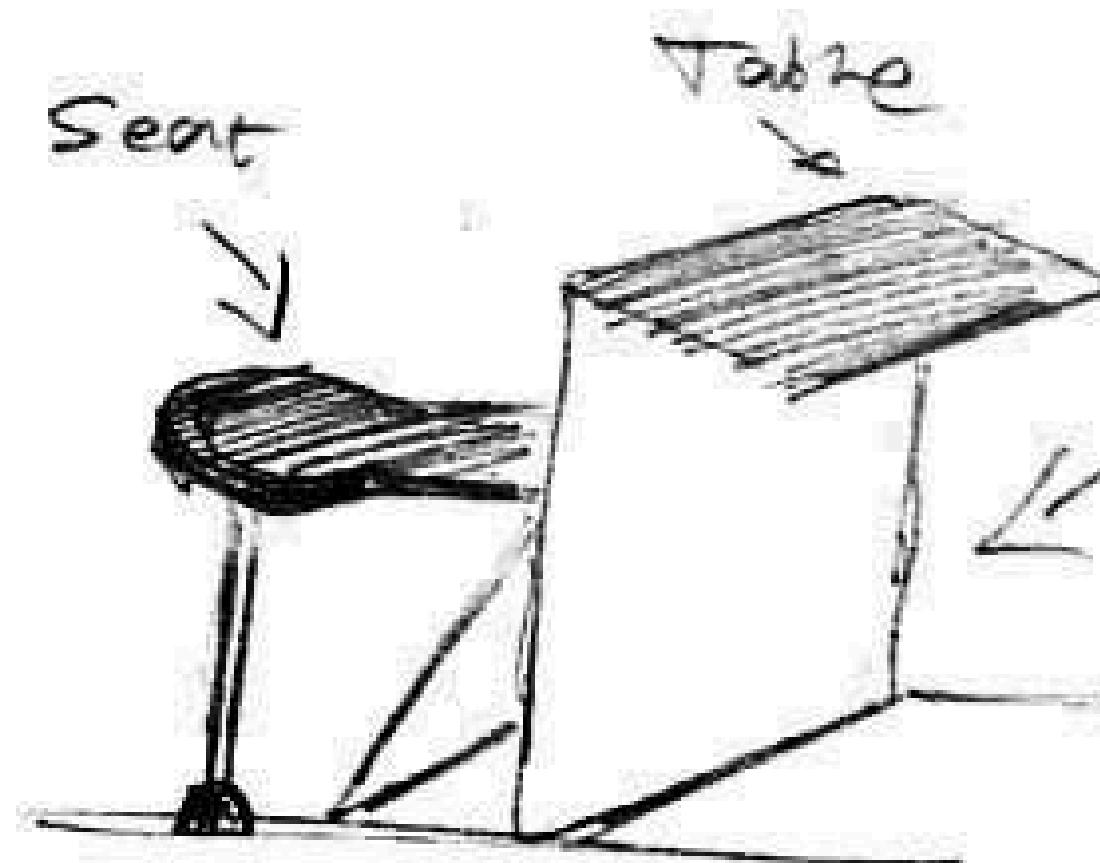
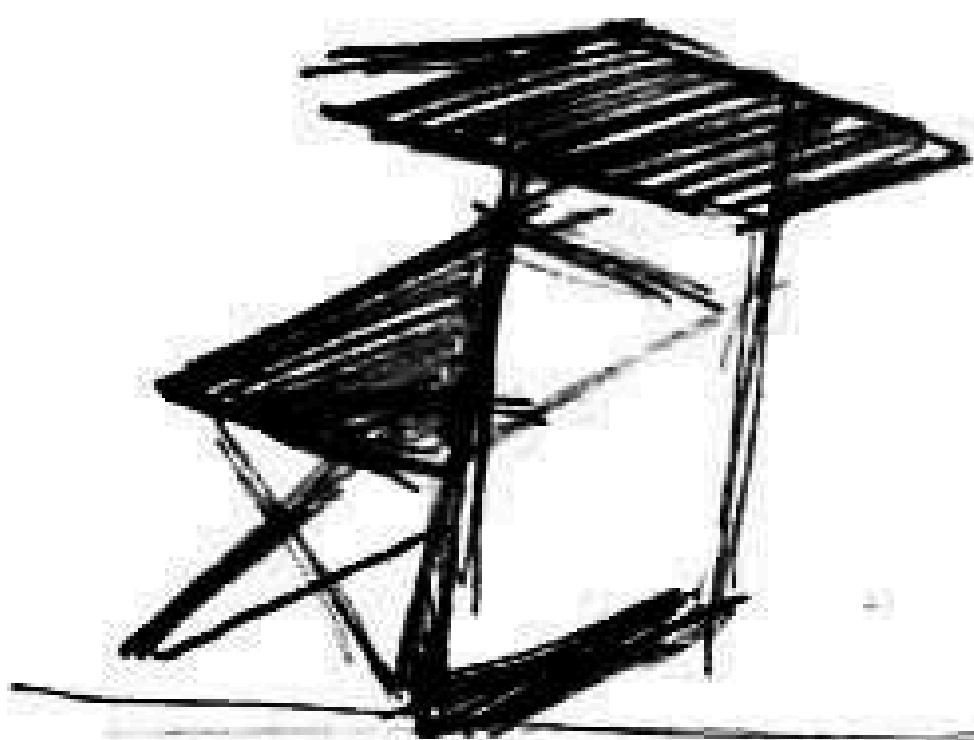
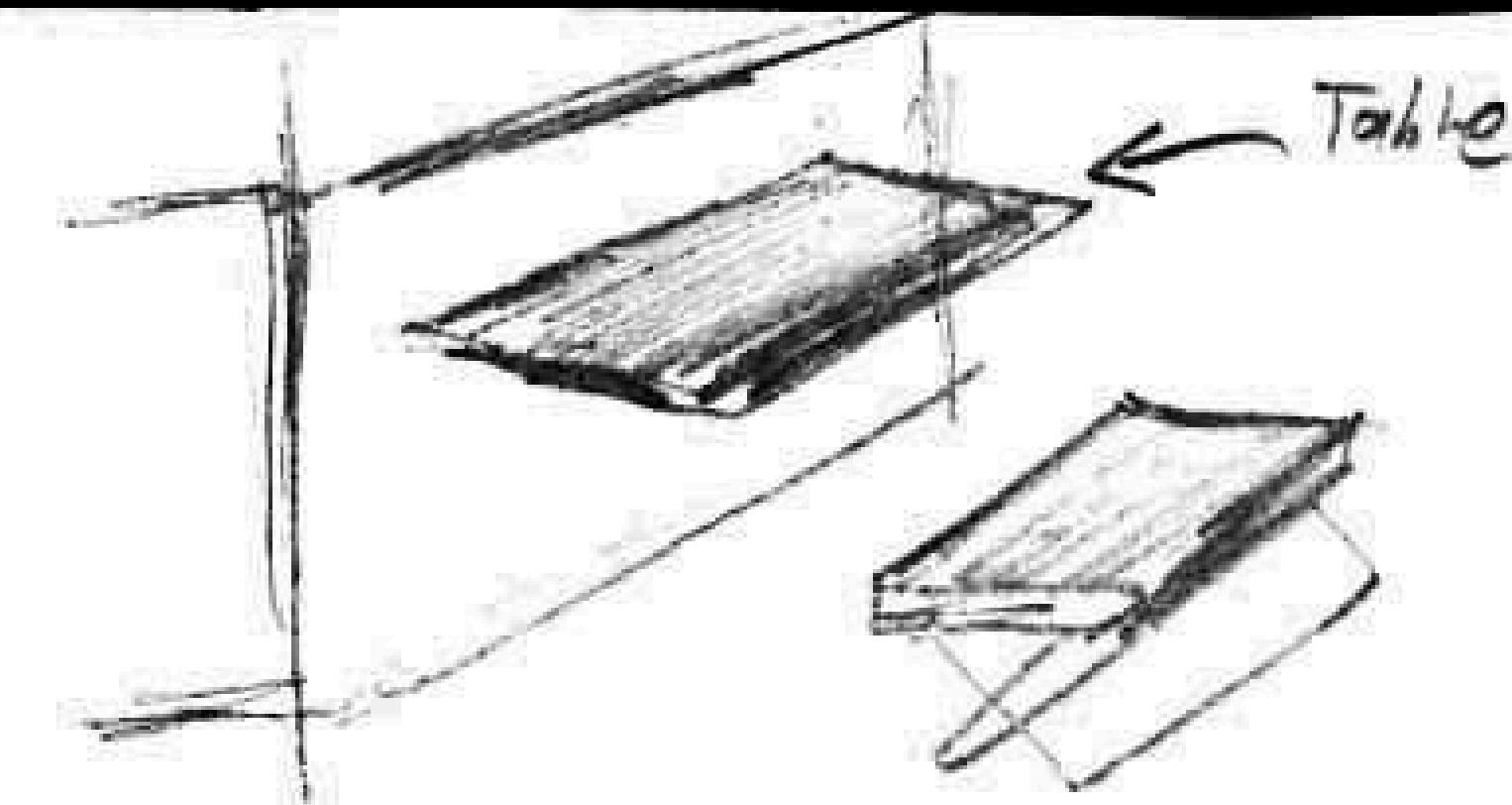
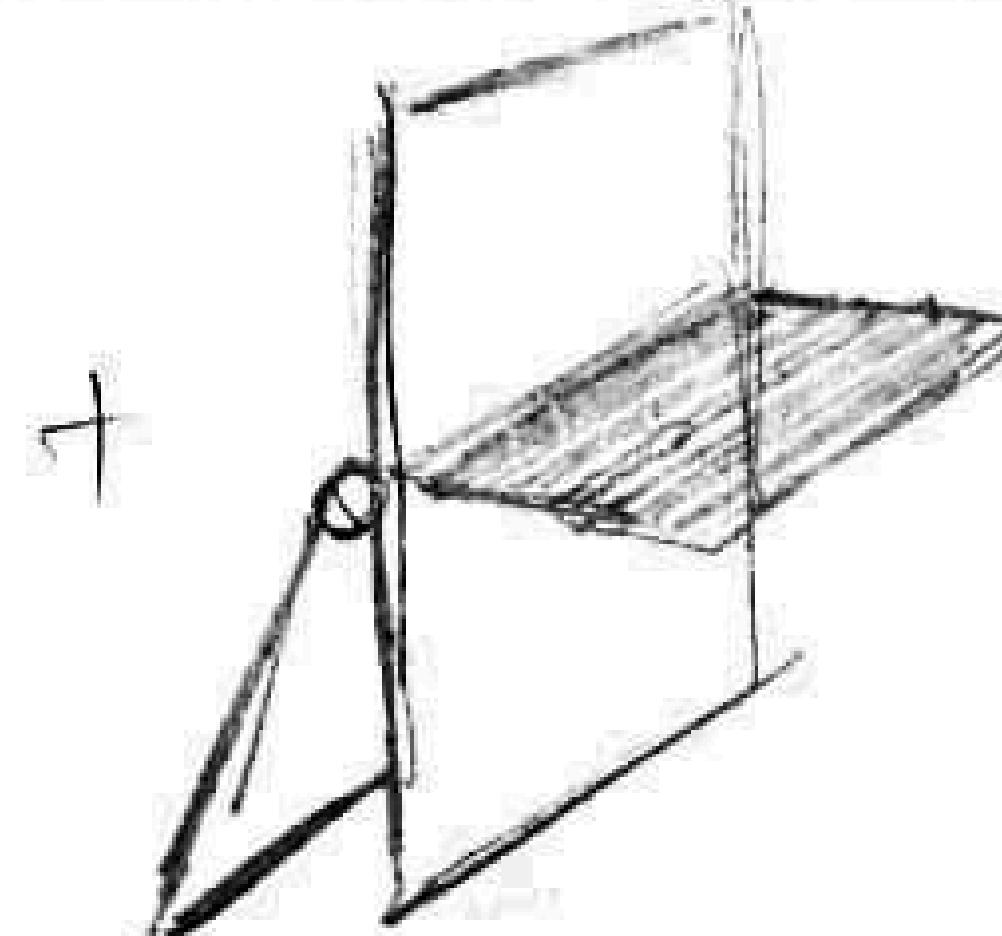
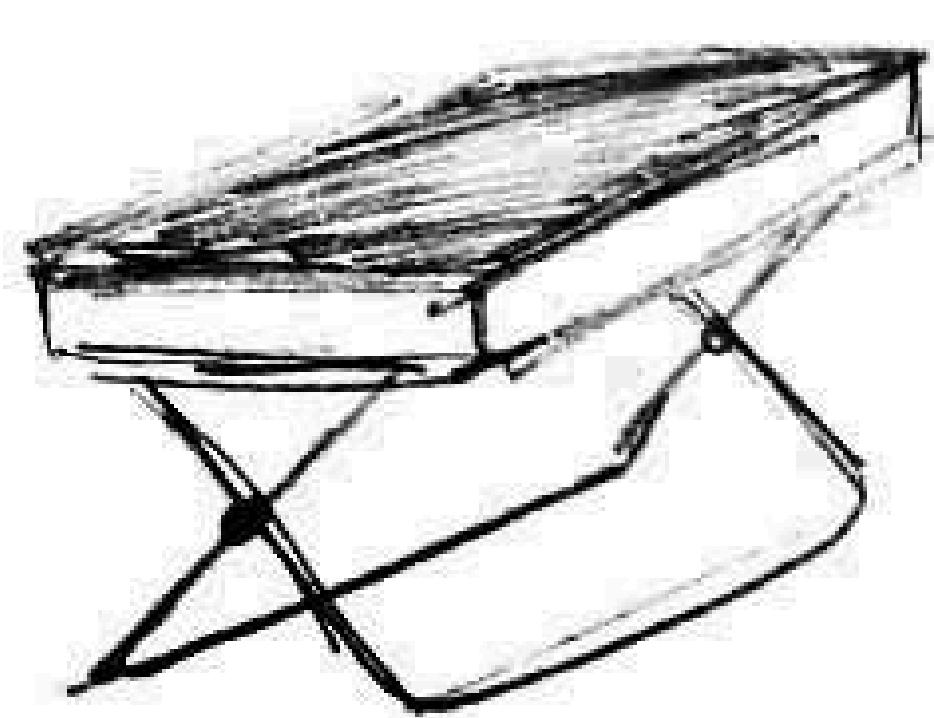
In built foldable table concept mechanism 01



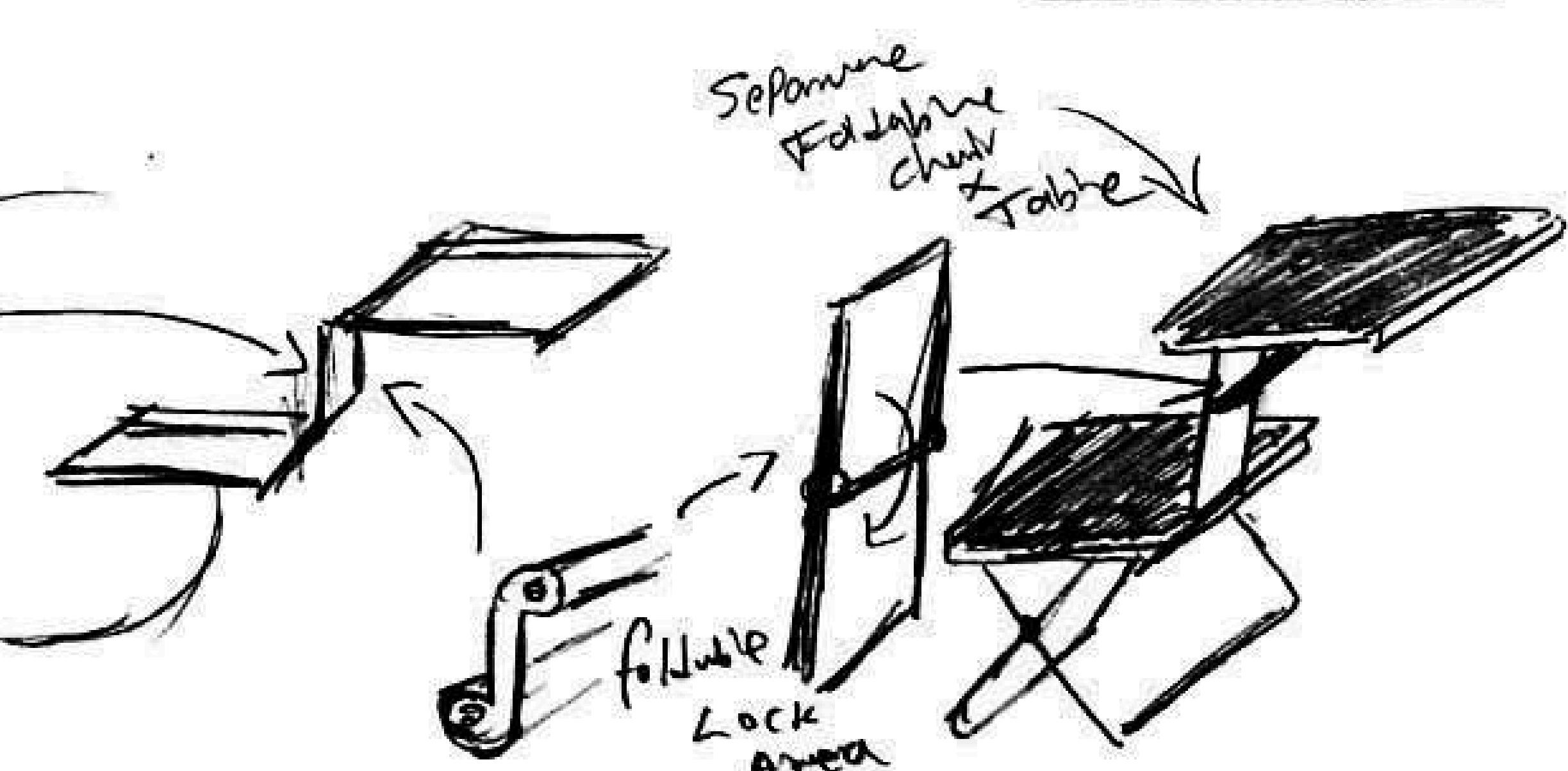
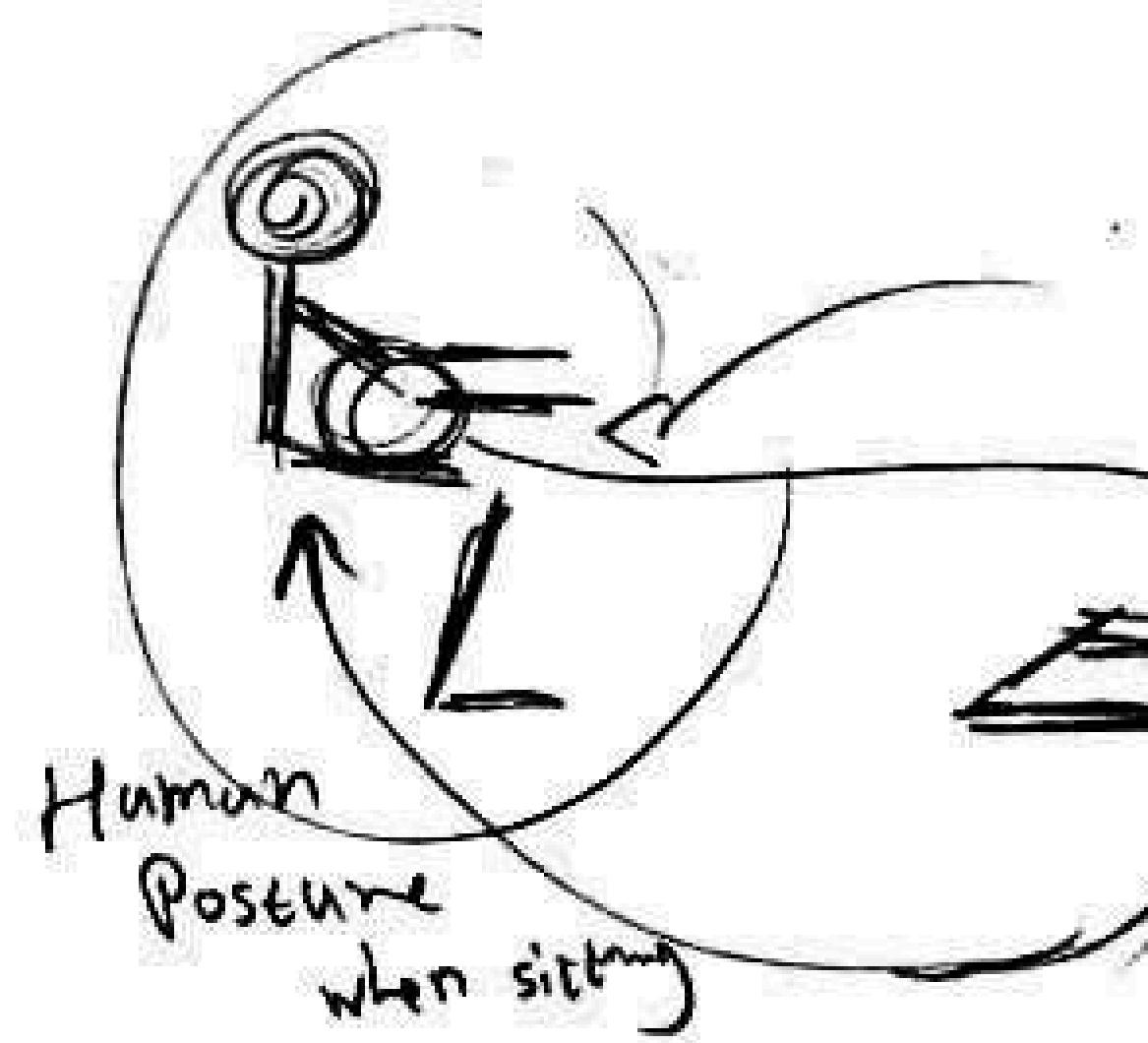
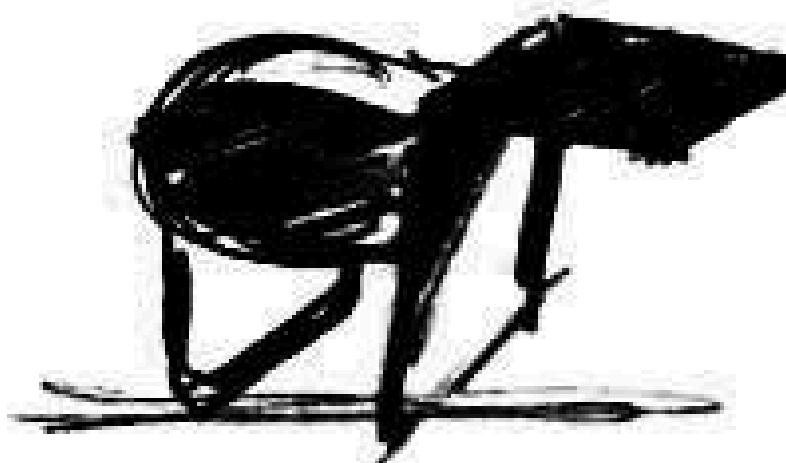
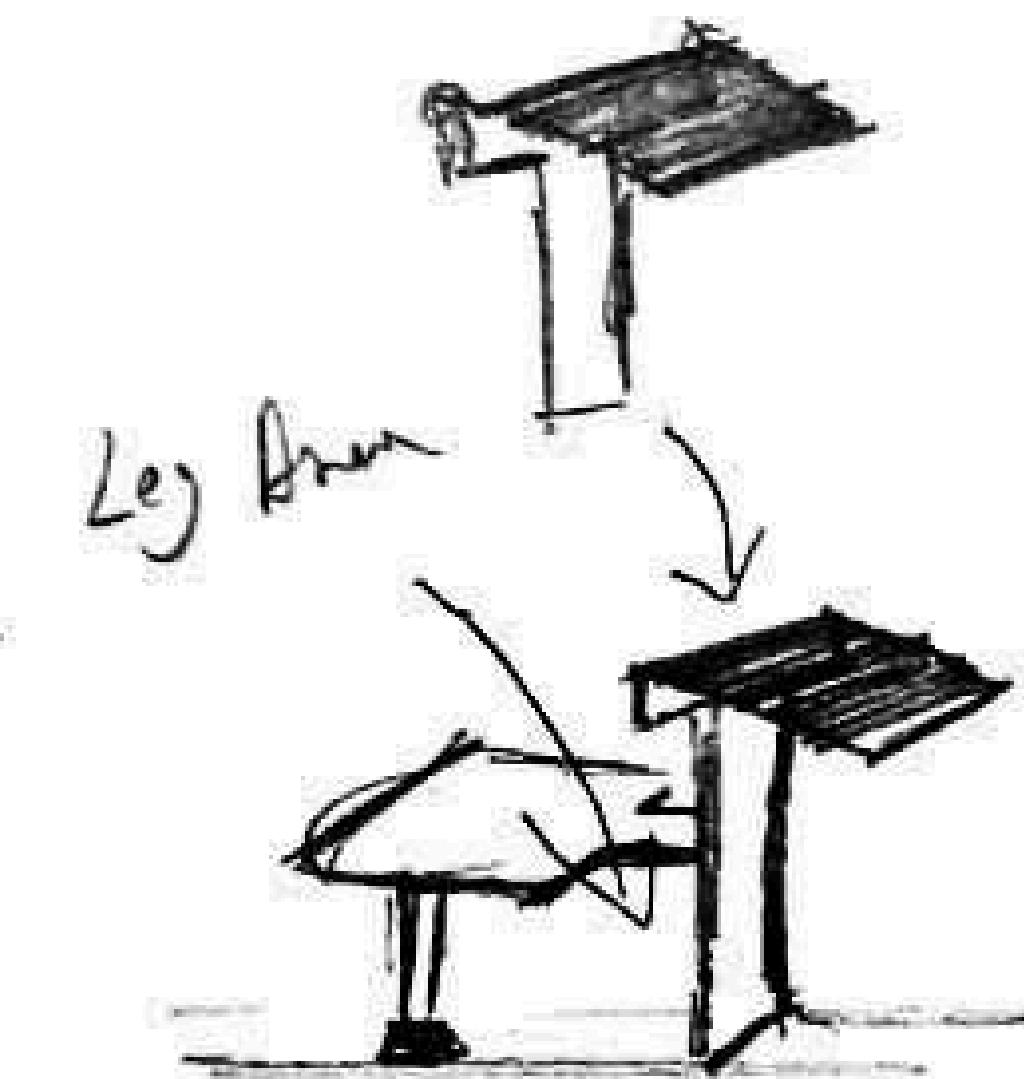
In built foldable table concept mechanism 02



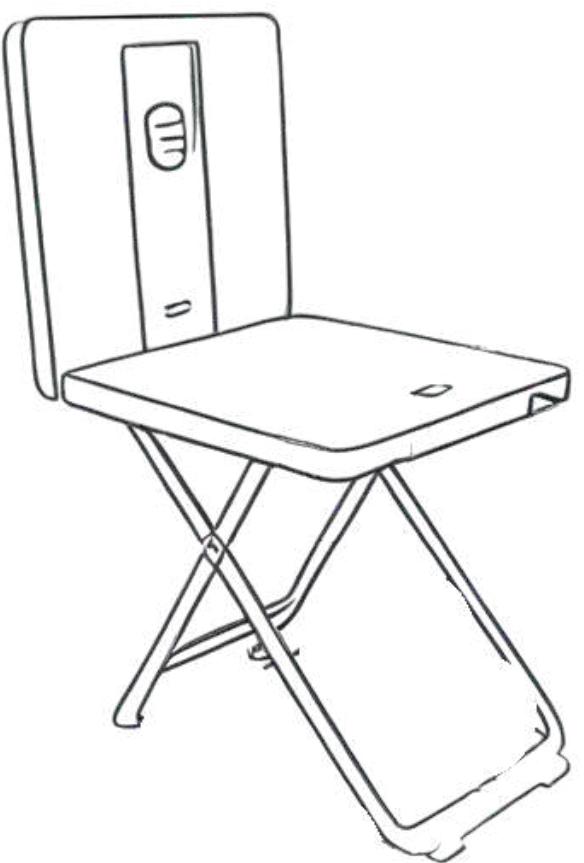
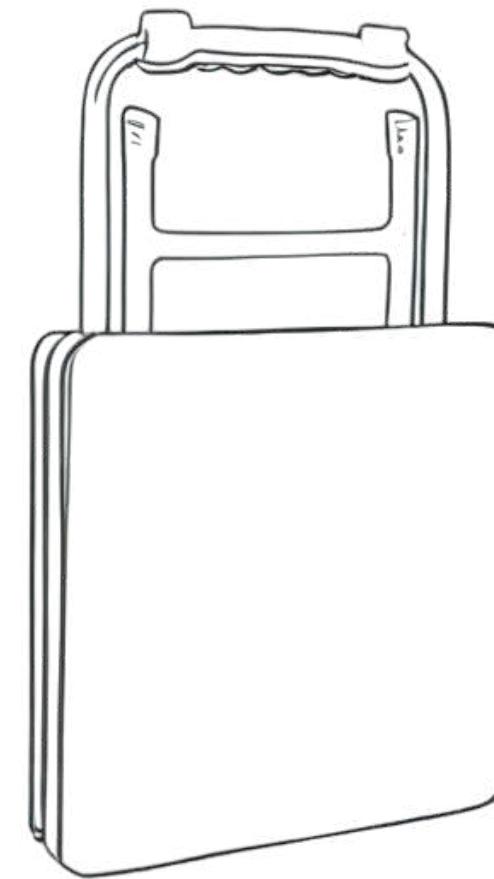
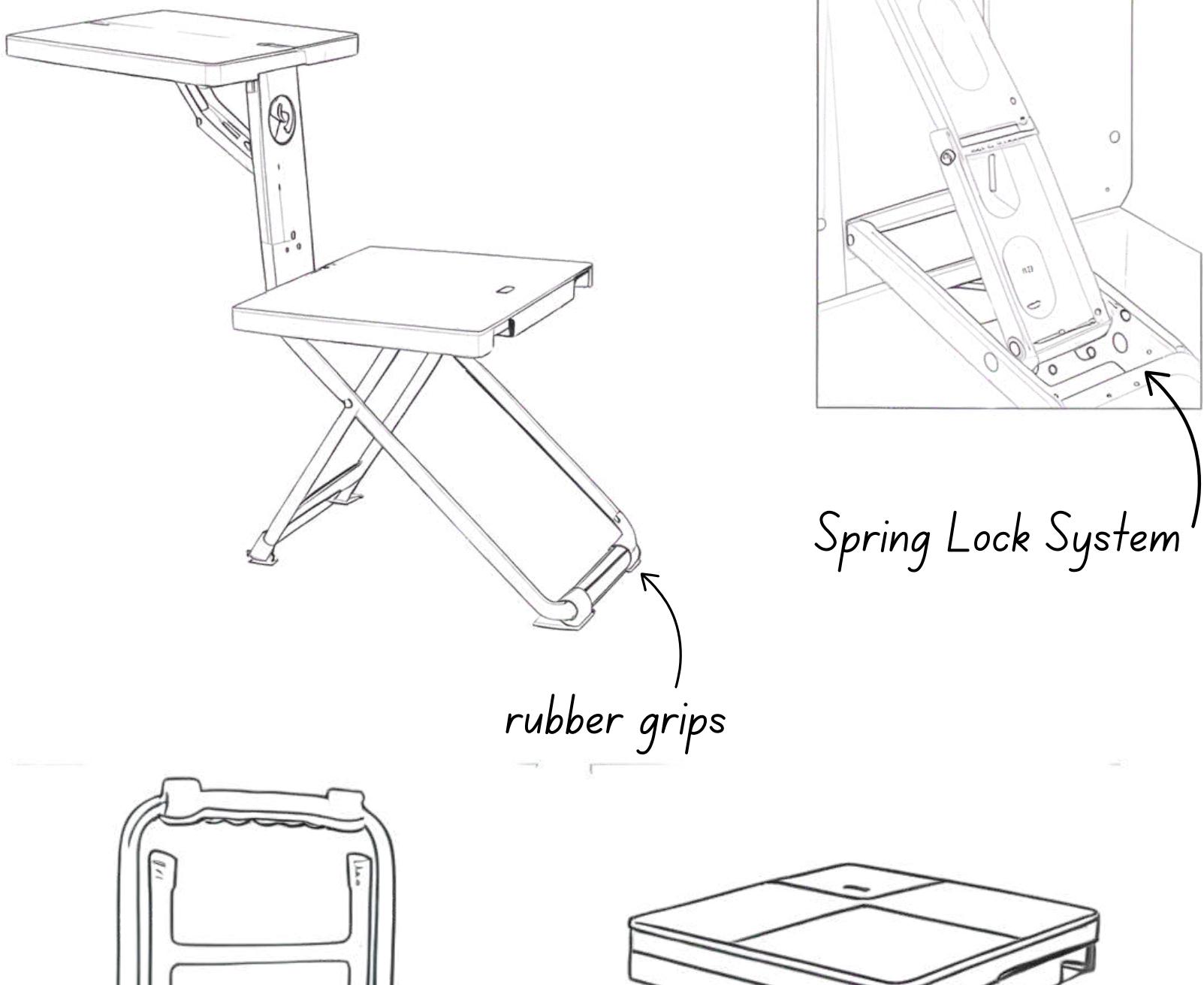
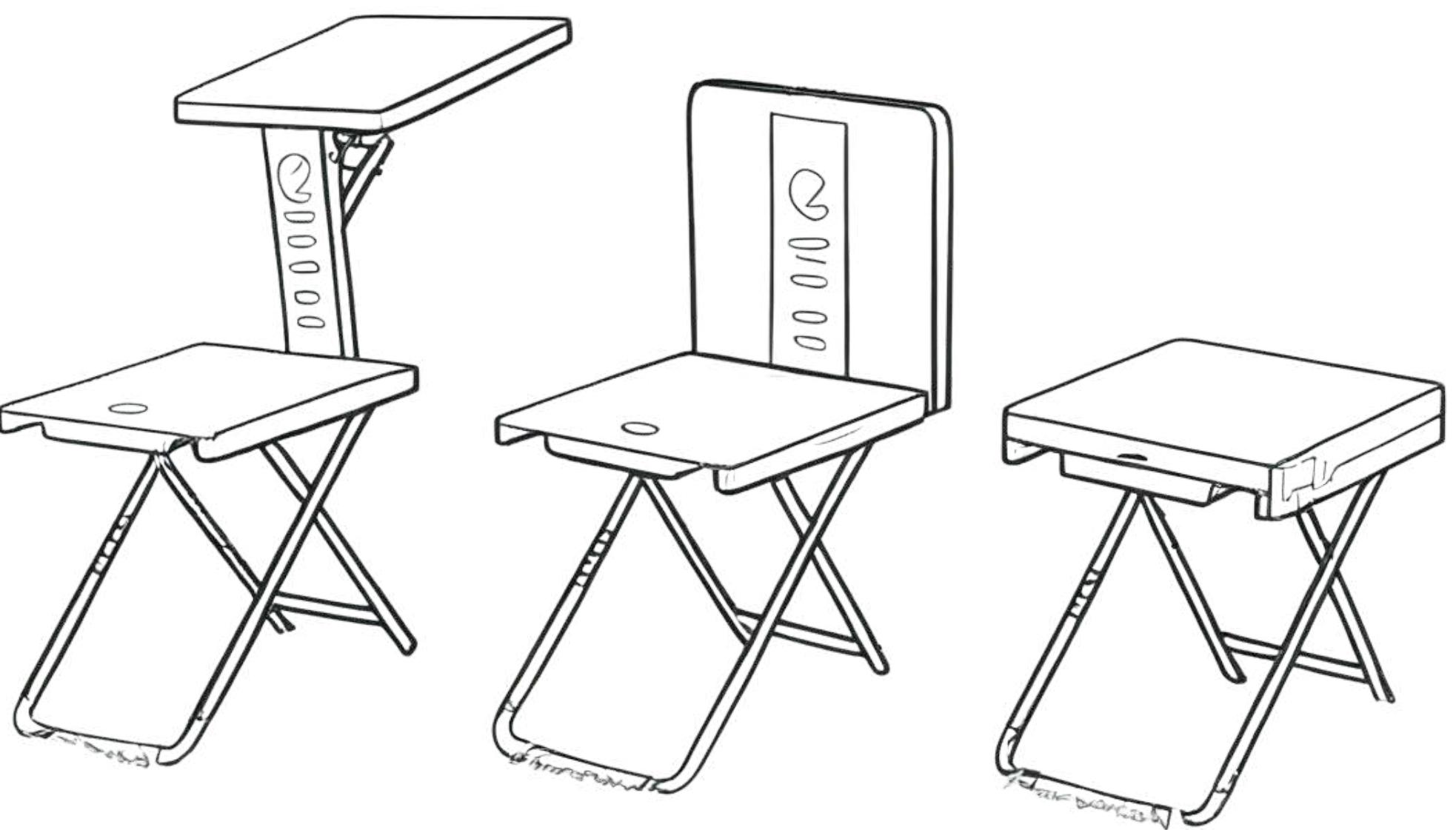
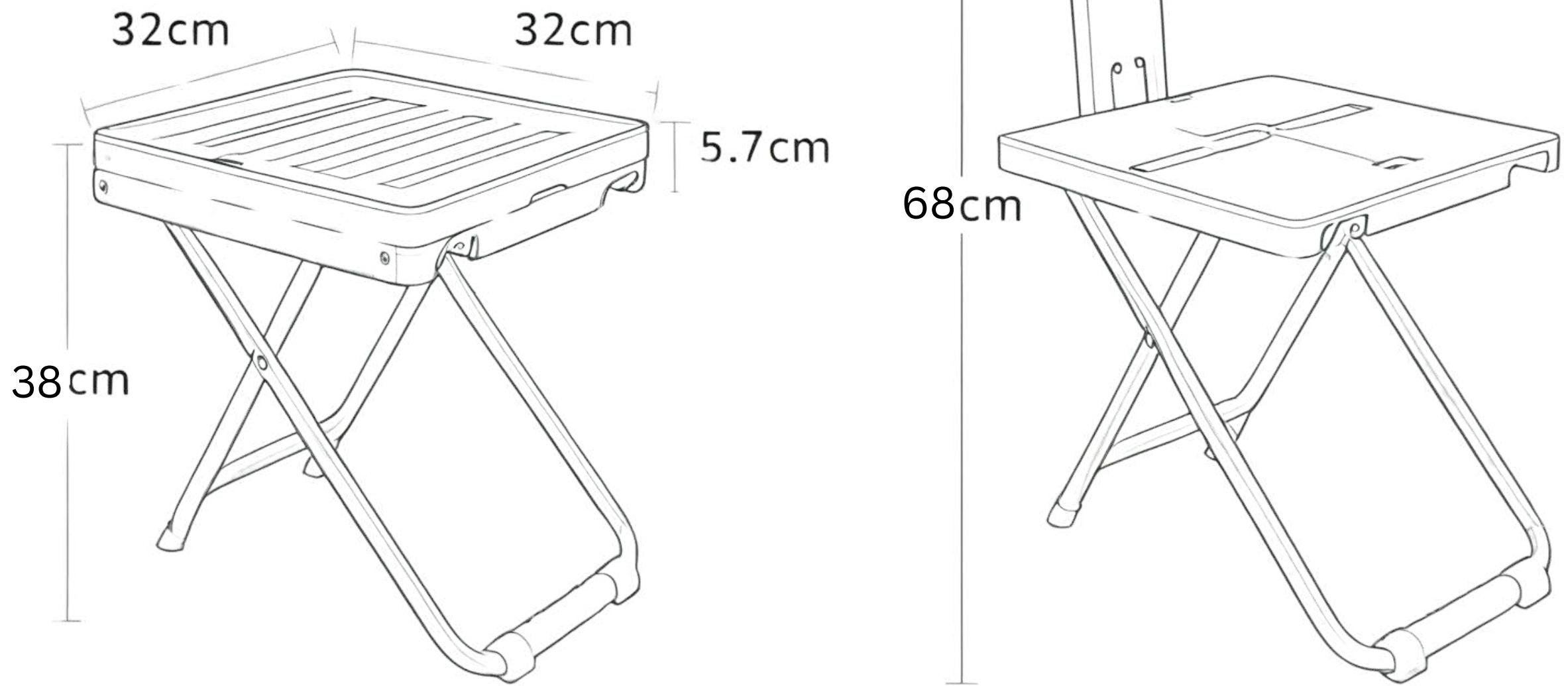




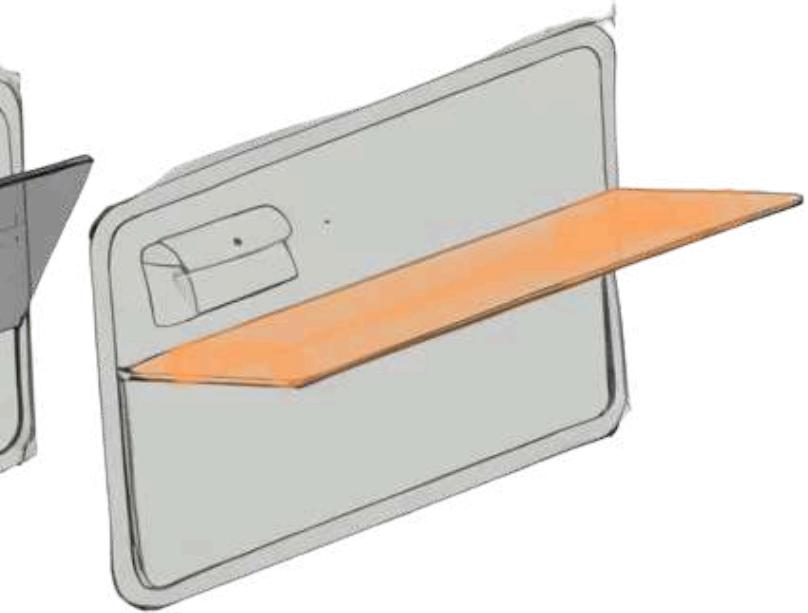
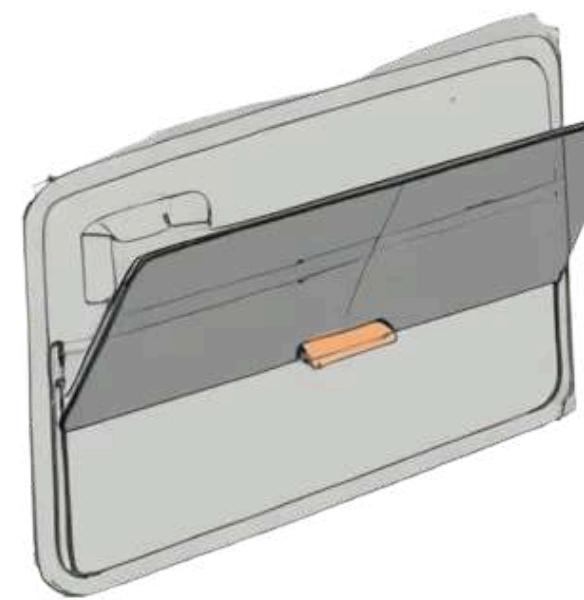
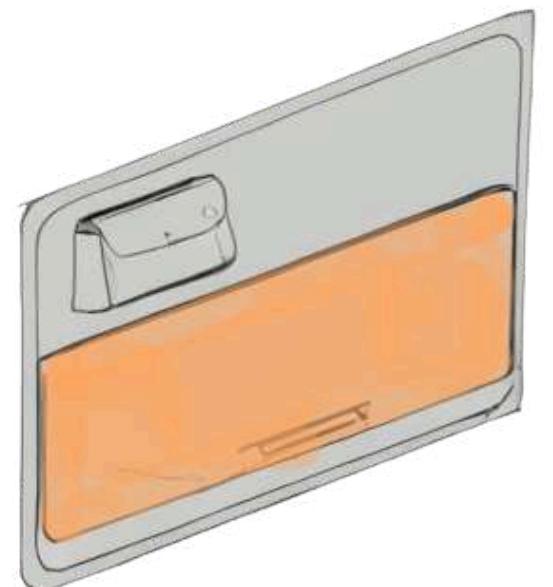
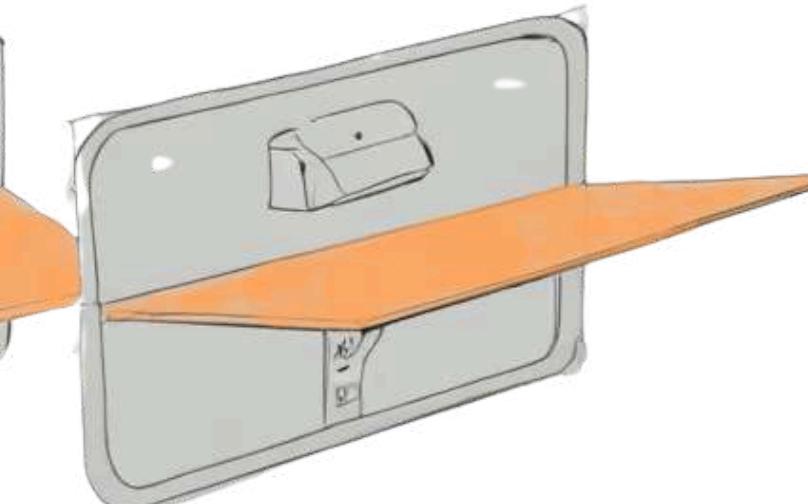
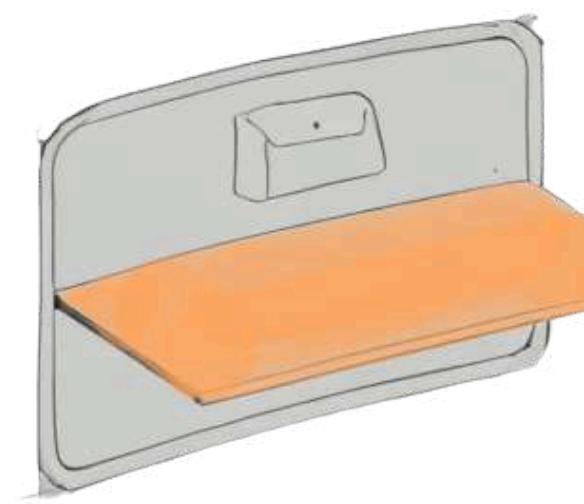
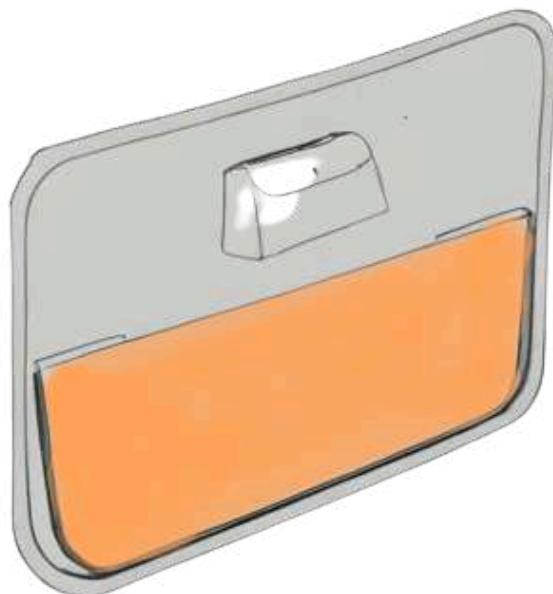
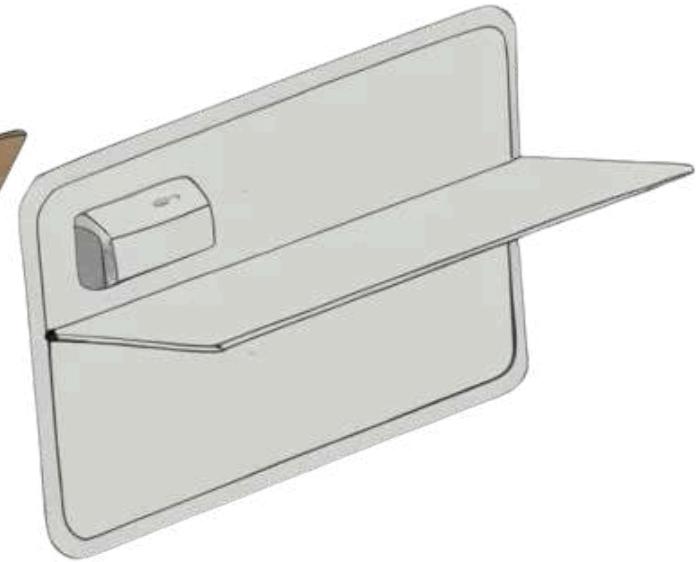
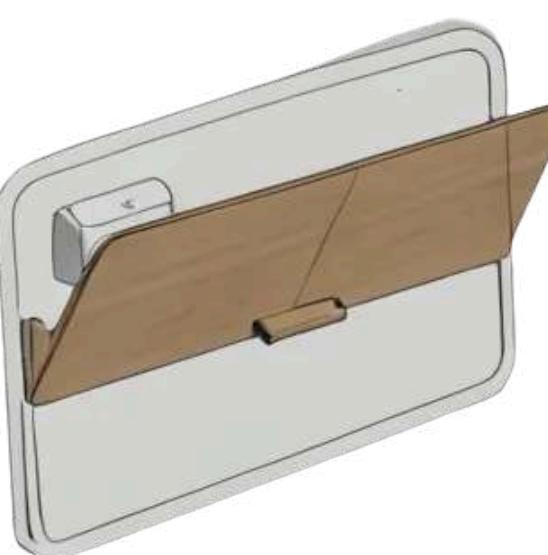
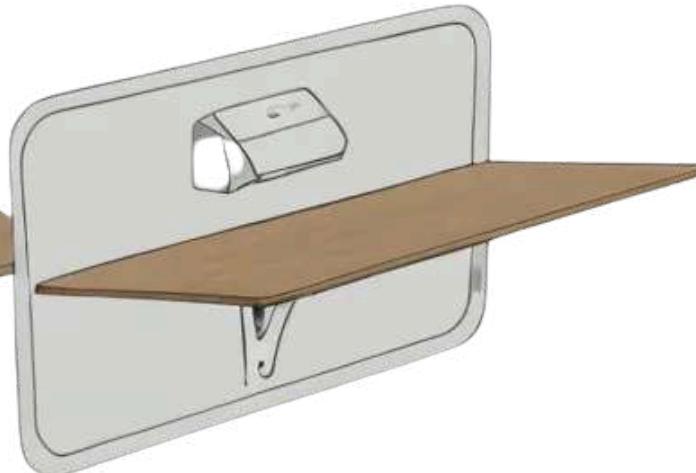
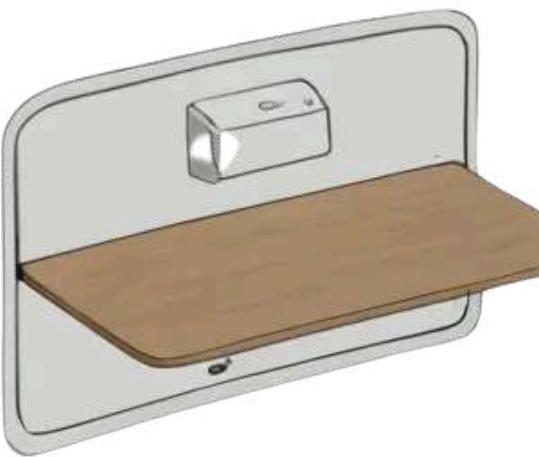
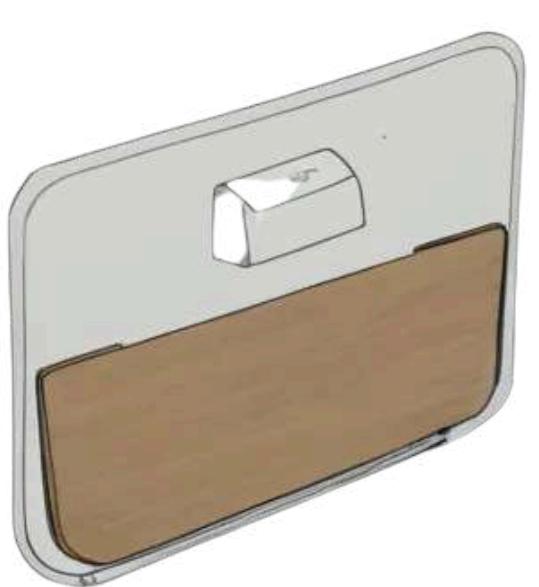
Soul  
Cut them



*Foldable Chair sizes*



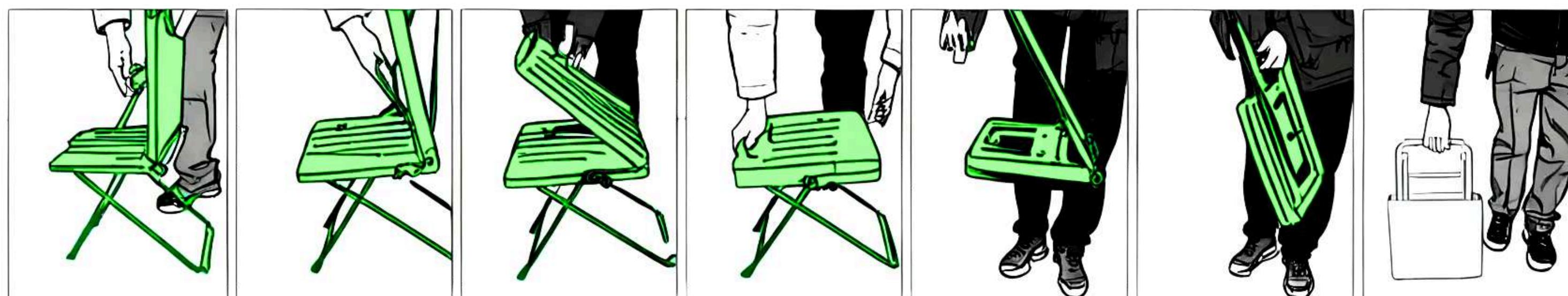
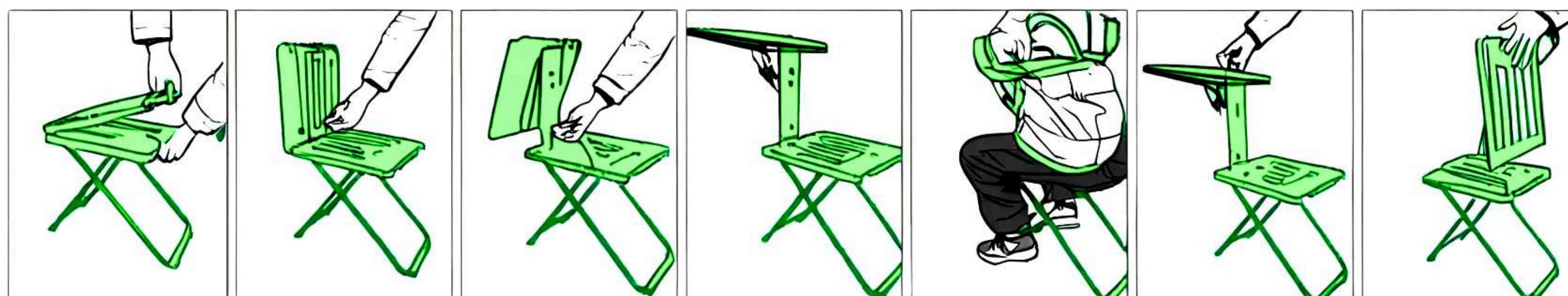
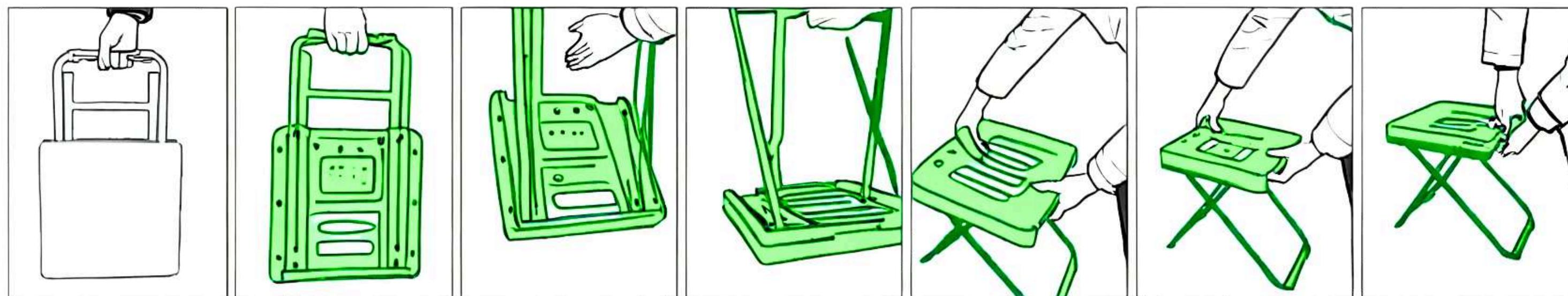
# CONCEPT VISUALIZATIONS.



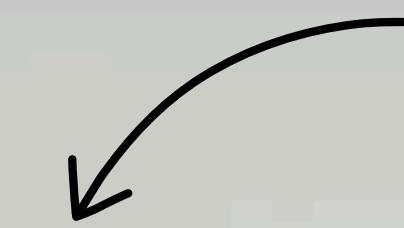
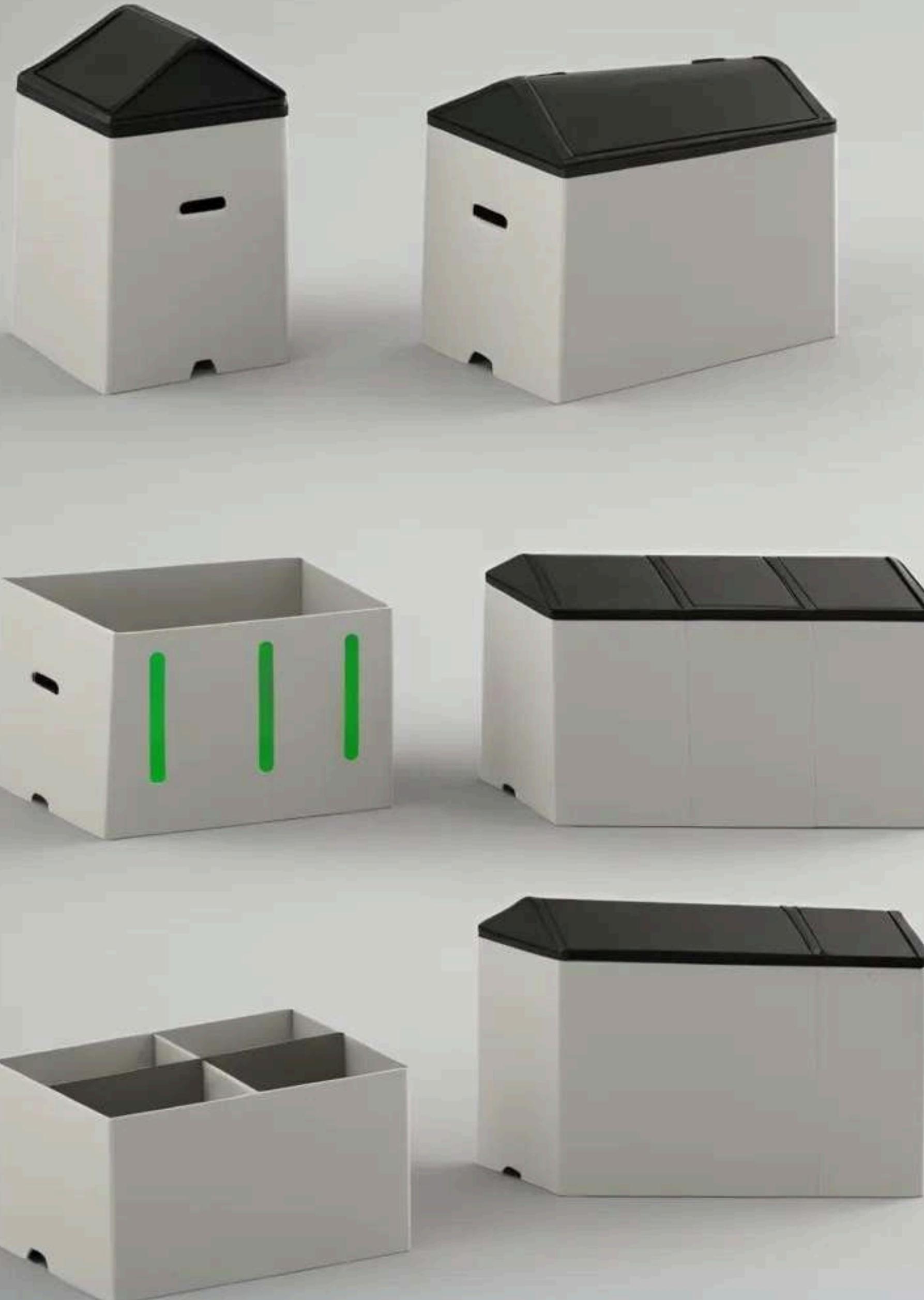
*Other Lock systems*



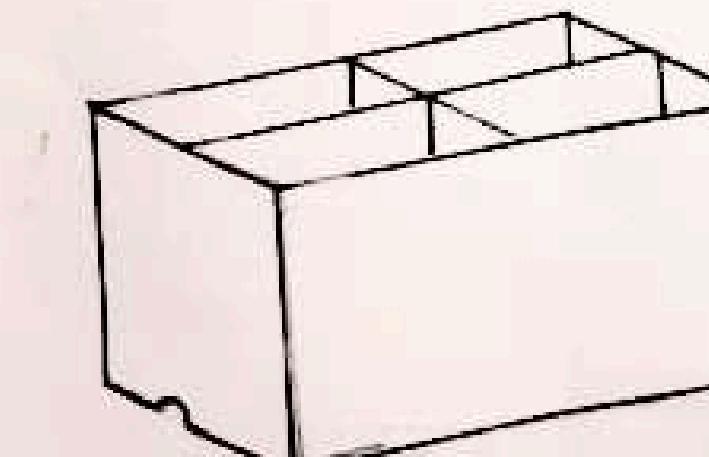
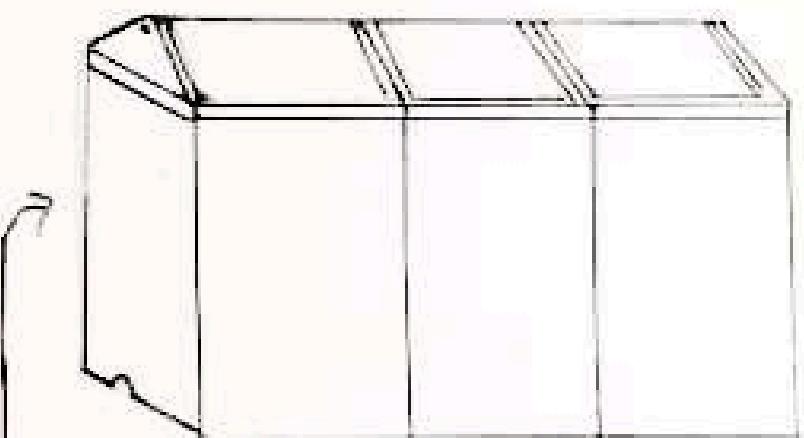
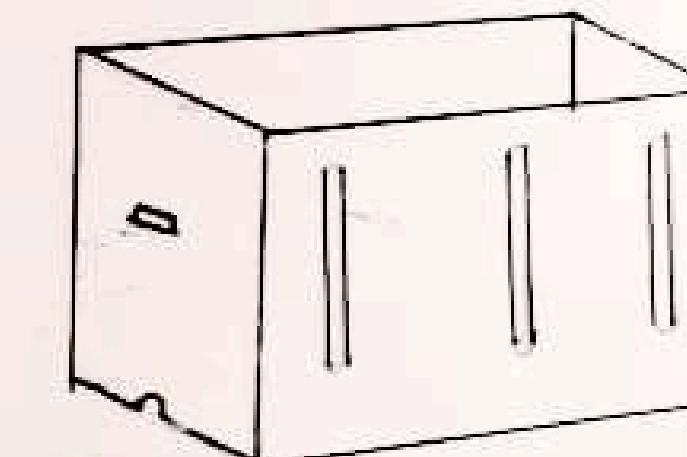
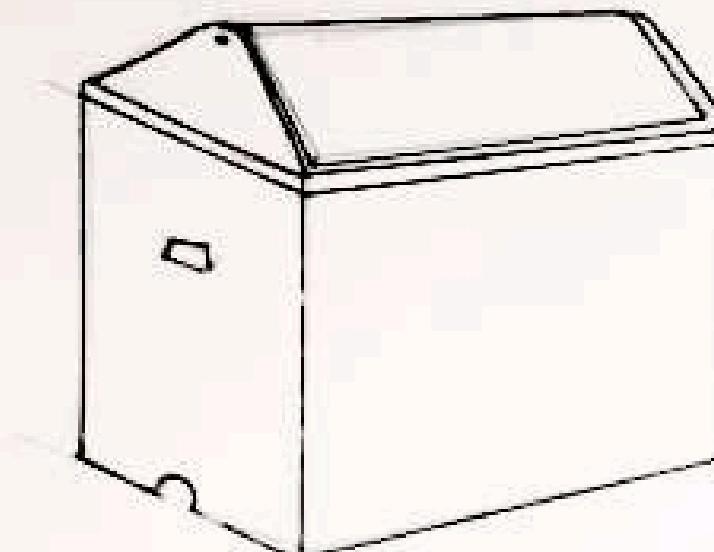
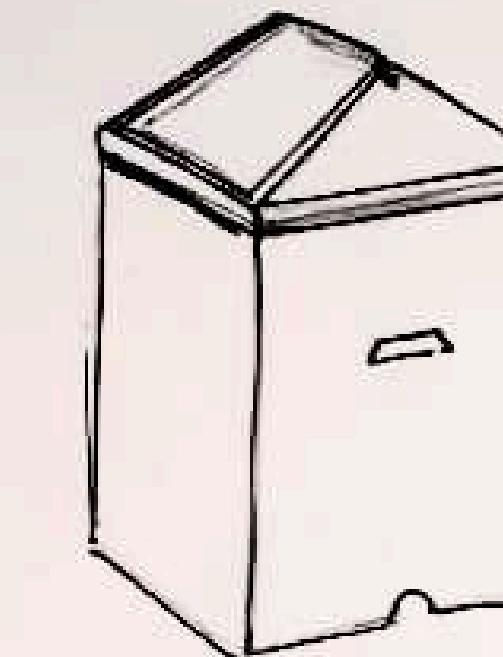
## Folding Steps



# Types of Bins

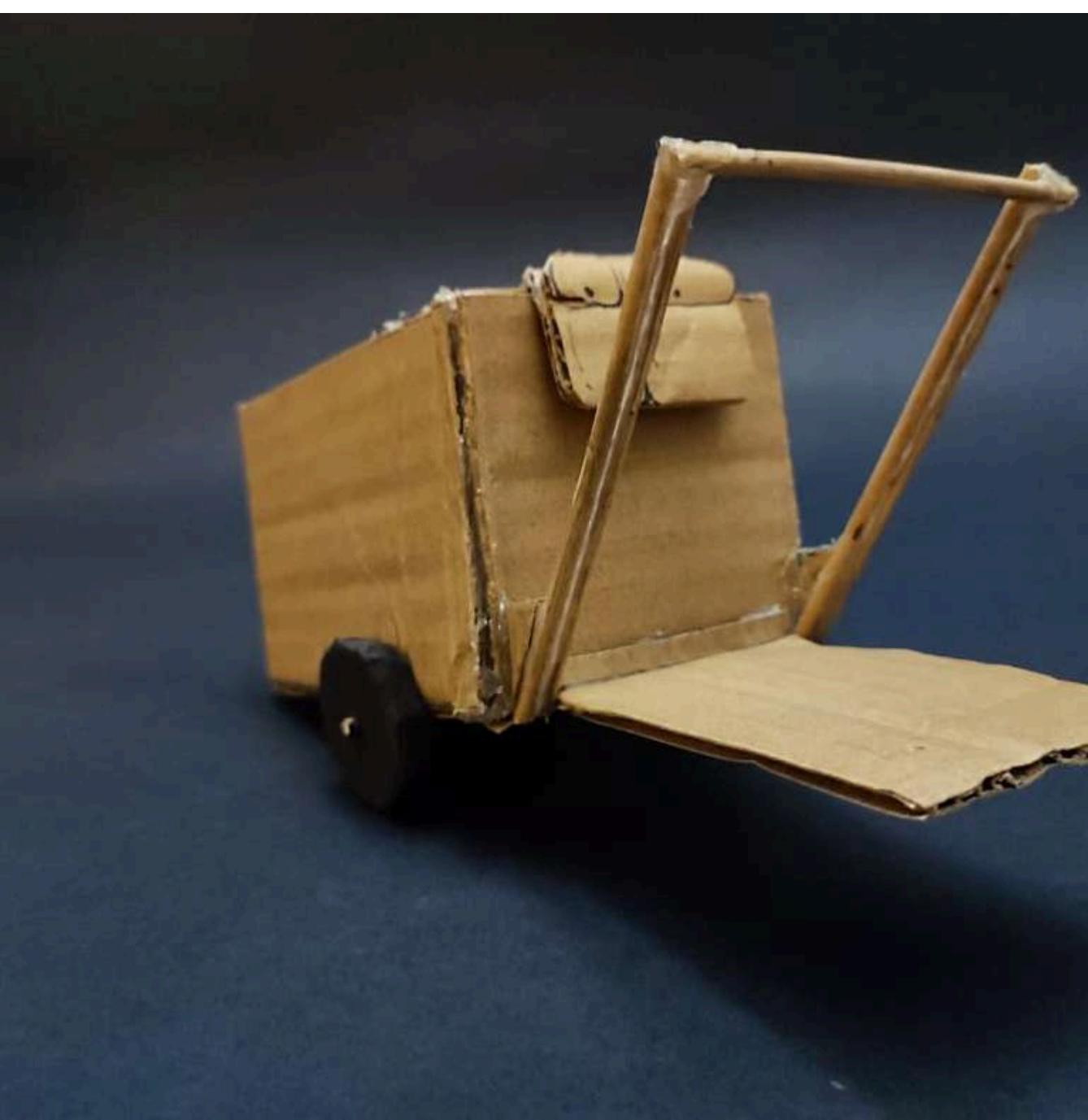
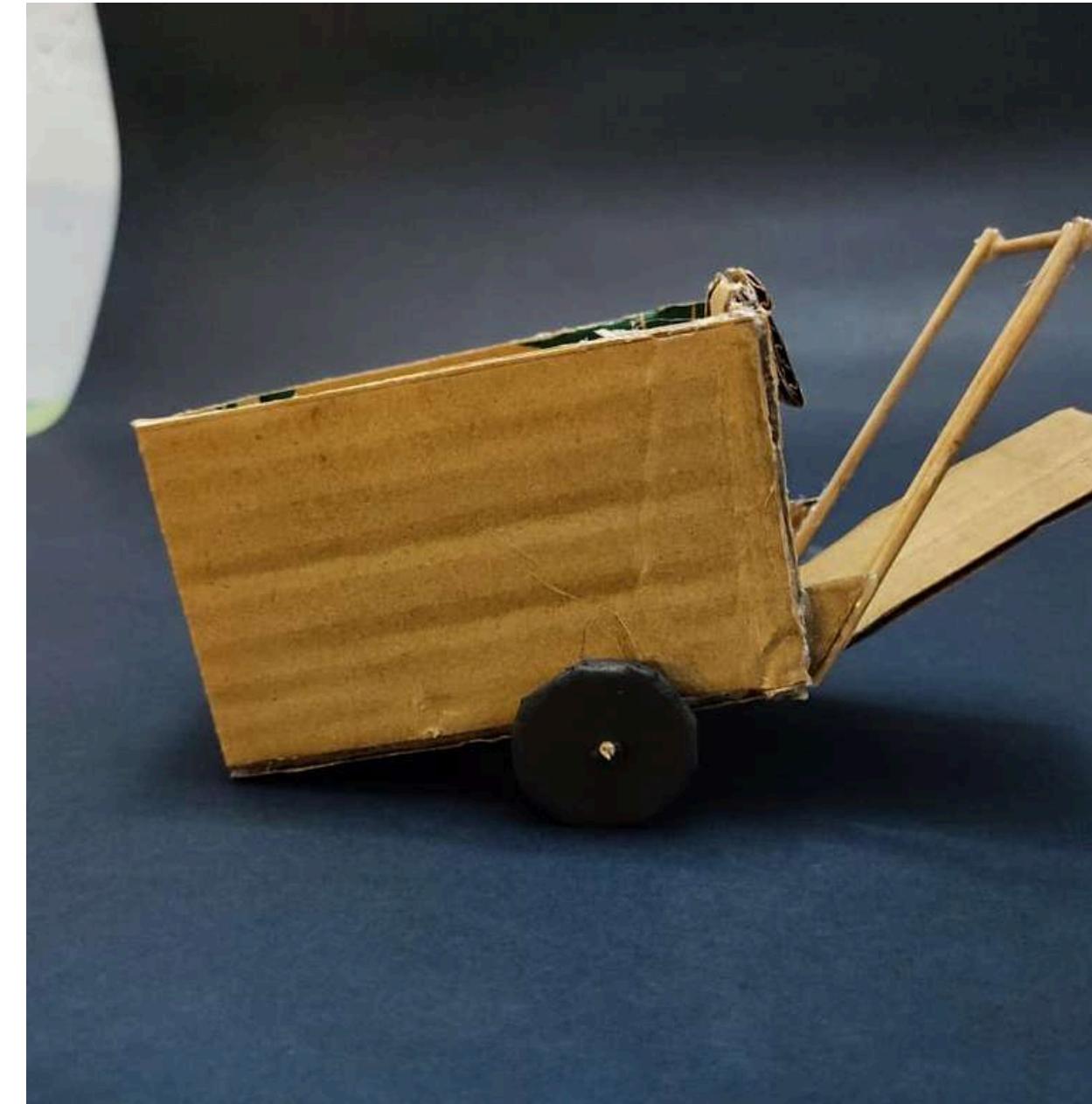


TYPES OF BINS THAT CAN BE MOUNT IN TO THE CART



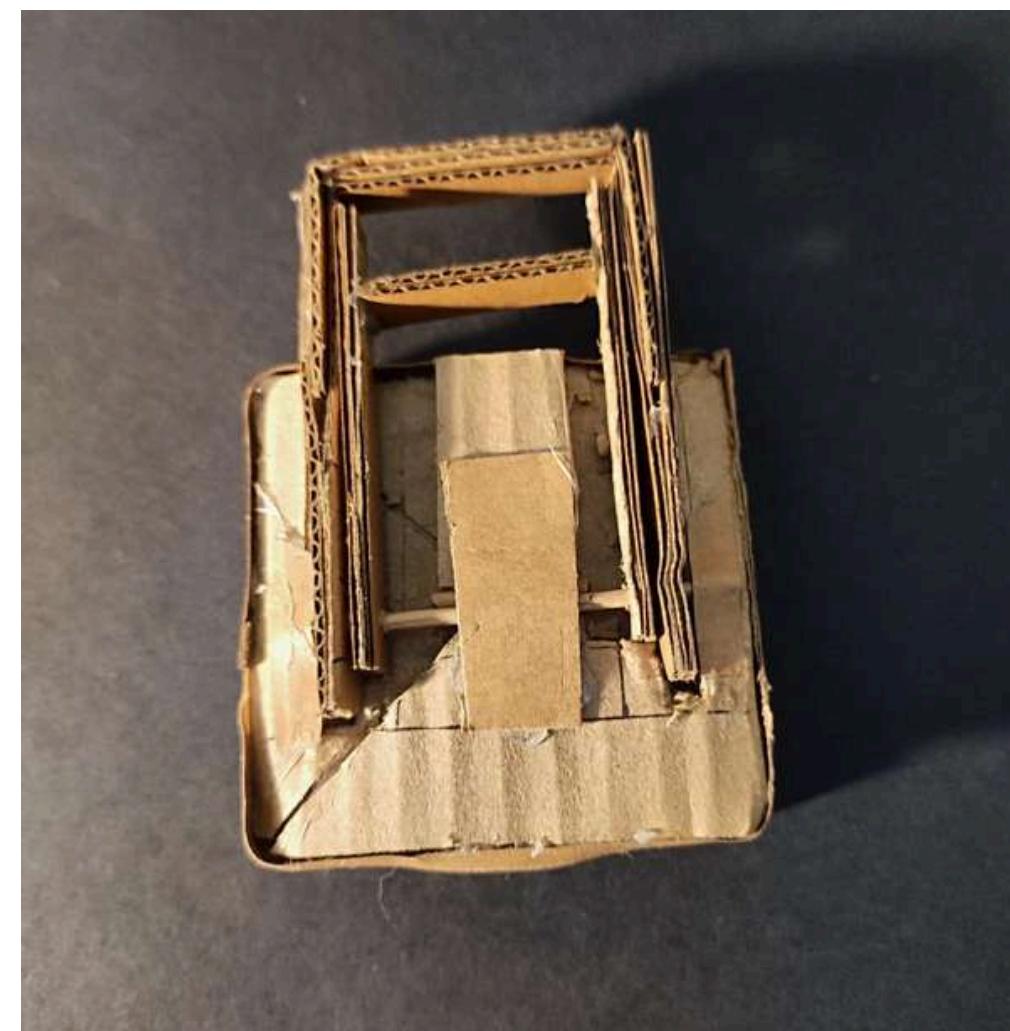
SETS WE CAN MAKE

# PROTOTYPING •



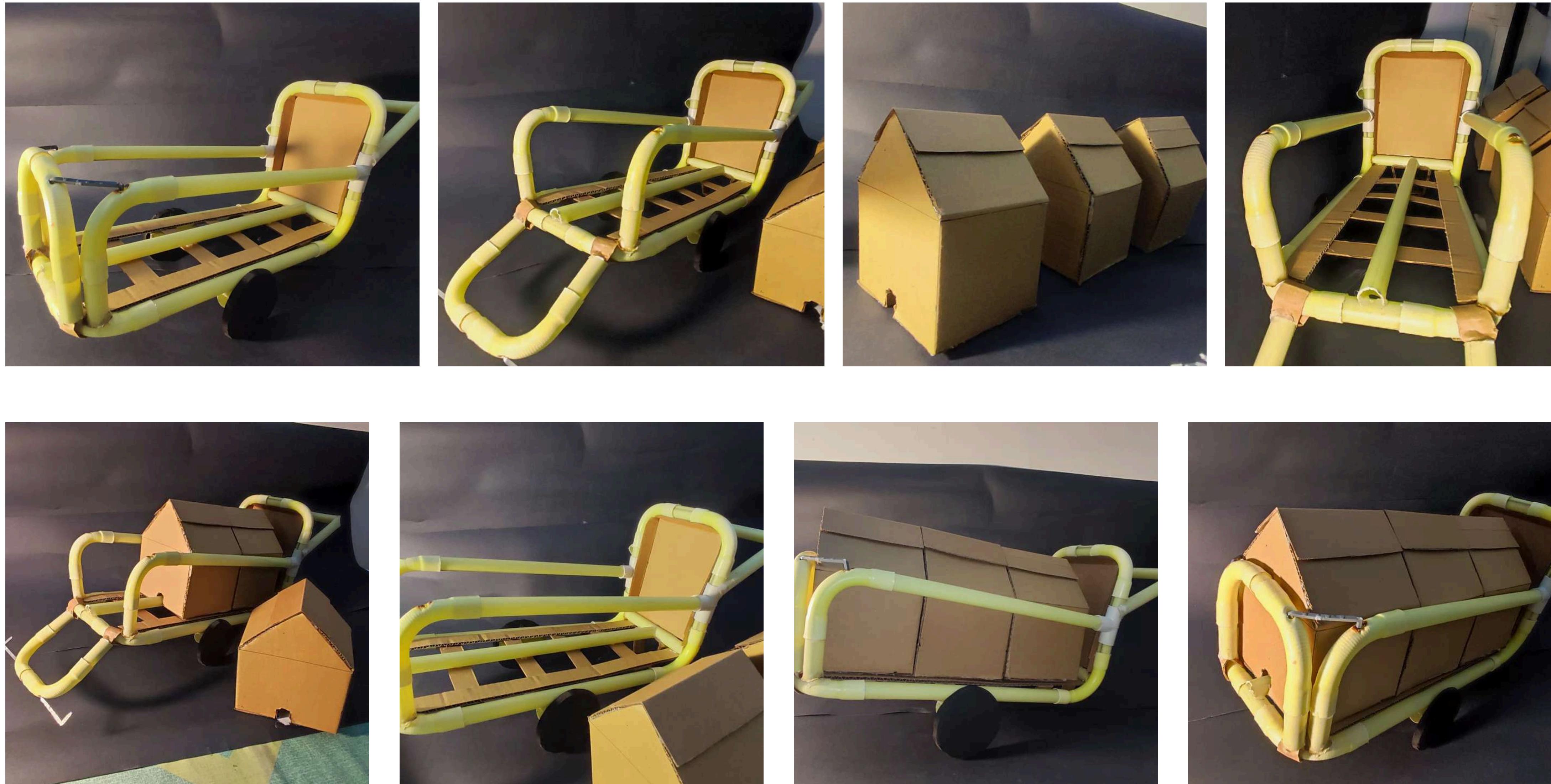
GARBAGE CART  
PROTOTYPE 01

# PROTOTYPING •



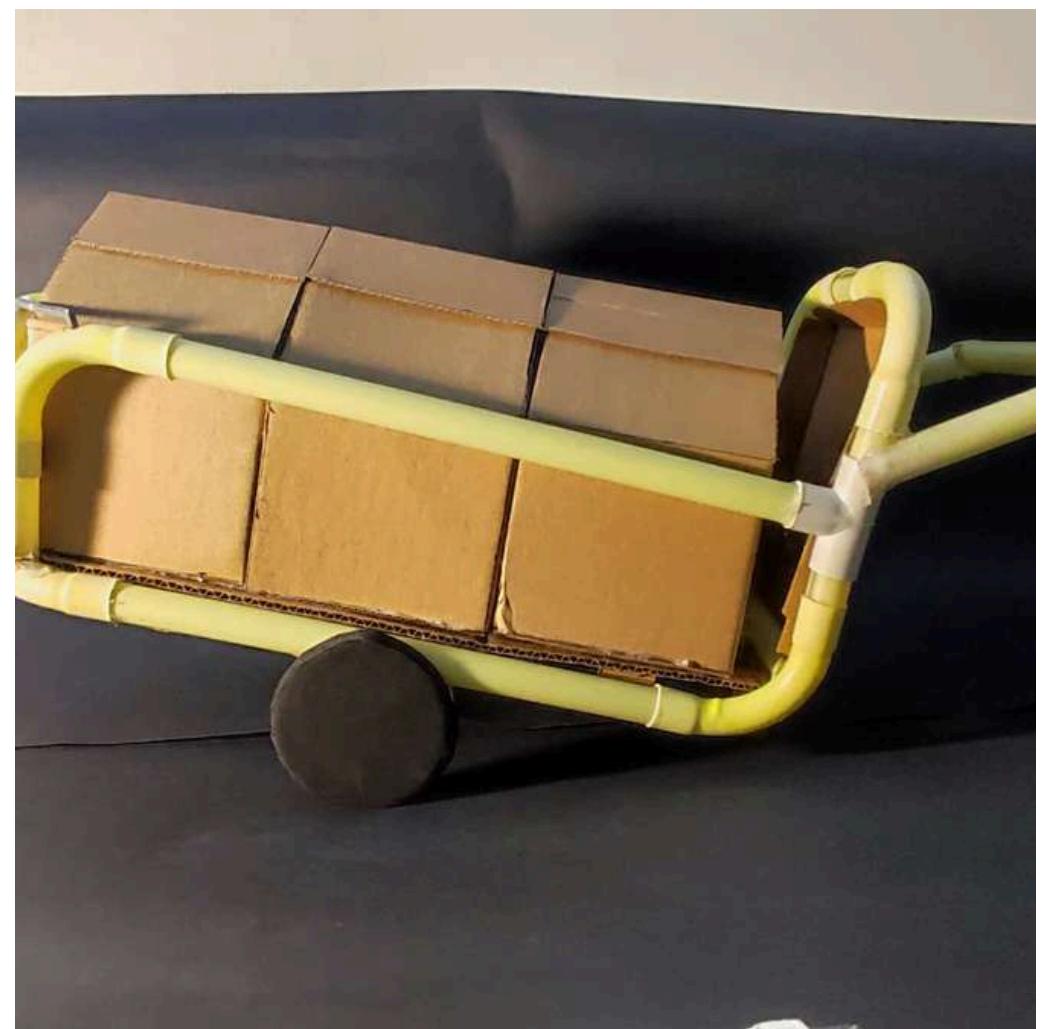
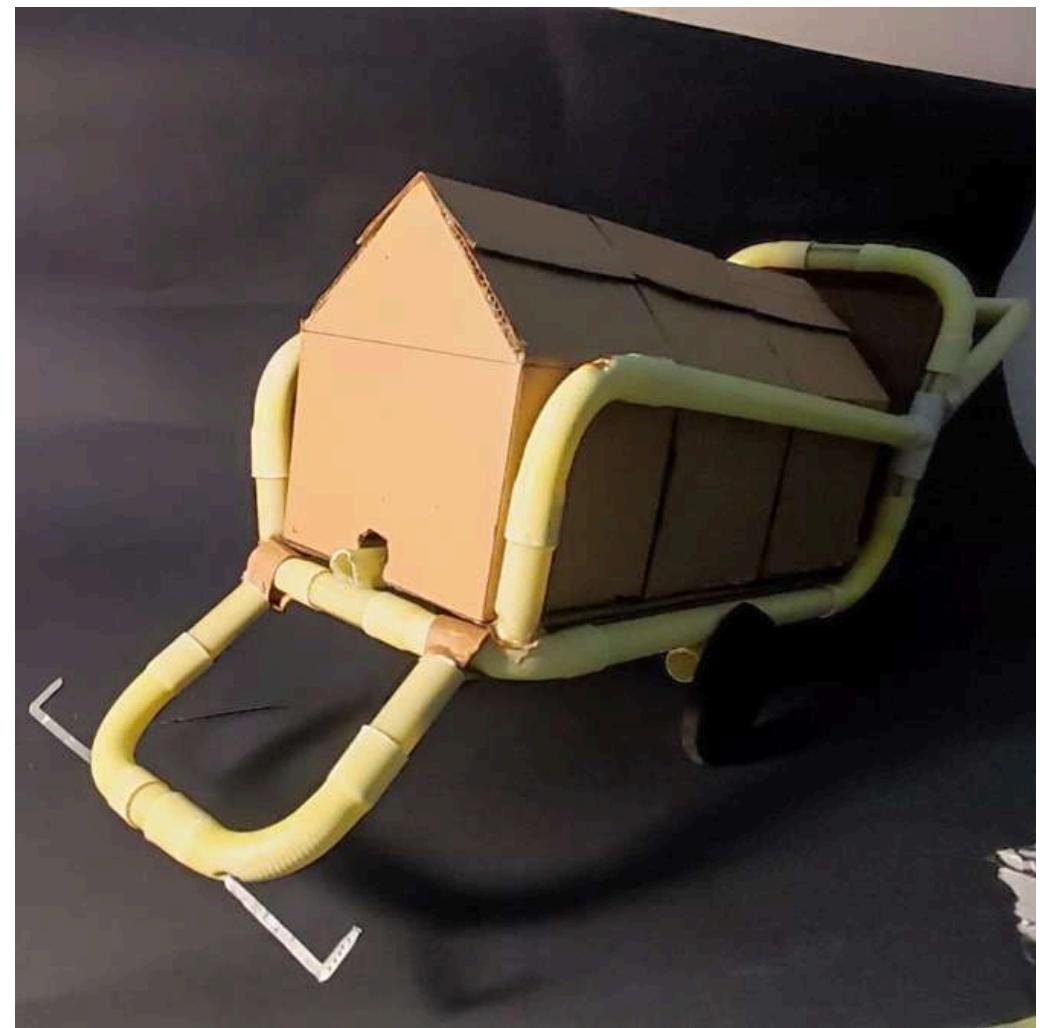
FOLDABLE CHAIR X TABLE PROTOTYPE

# PROTOTYPING •



GARBAGE CART PROTOTYPE 02

# PROTOTYPING •



POUCH PROTOTYPE



# Product Concept

## Stage 01



# Product Concept

## Stage 02





# Product Concept

Finalized





FEATURES •

Takes less  
materials  
to make

AND LESS WEIGHT



AI

ALUMINUM

# Secure and clean storage



WATER BOTTLE,LUNCH PACKET  
AND SOME EXTRA CLOTHES.

# Easy waste- sorting compartments

DRY/WET AND RECYCLE



**Built-in space  
to rest and eat.**

HYBRID FOLDABLE CHAIR X TABLE

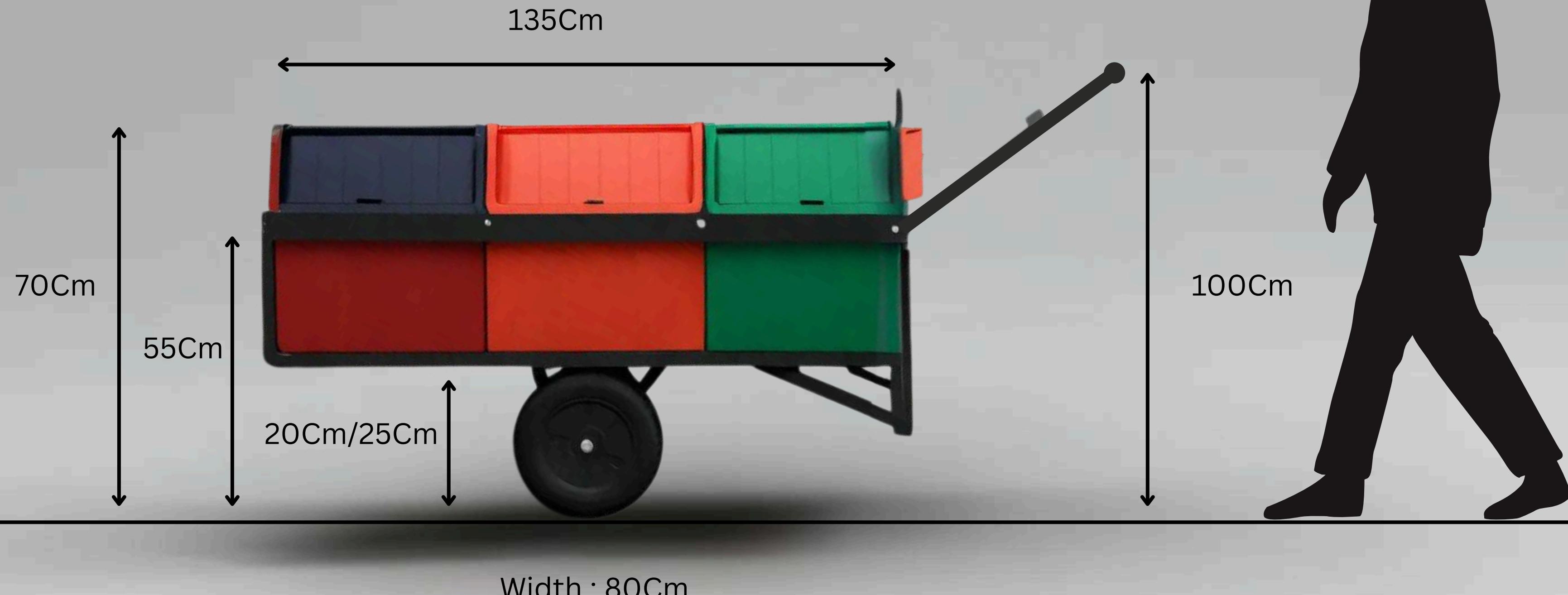




# ERGONOMICS & MATERIALS

- **Frame:** Aluminum alloy
- **Wheels:** Solid rubber tires + steel axle
- **Bins:** Recycled plastic (from bottles / HDPE)
- **Personal Storage:** Waterproof pouch – synthetic leather
- **Seat & Table:** Aluminum hinge + recycled plastic panels
- **Handles:** Rubber grips
- **Safety:** Reflective strips

The average height  
of a Sri Lankan  
**151.4 cm - 163.6 cm**





**Thank You**