



golden retriever

A motorized vehicle capable of collecting tennis balls.



Created to collect tennis balls with ease and efficiency, the Golden Retriever is engineered for maximum mobility, extreme versatility, and supreme functionality. The TenPal Golden Retriever will reinvent your perception of tennis.





mood



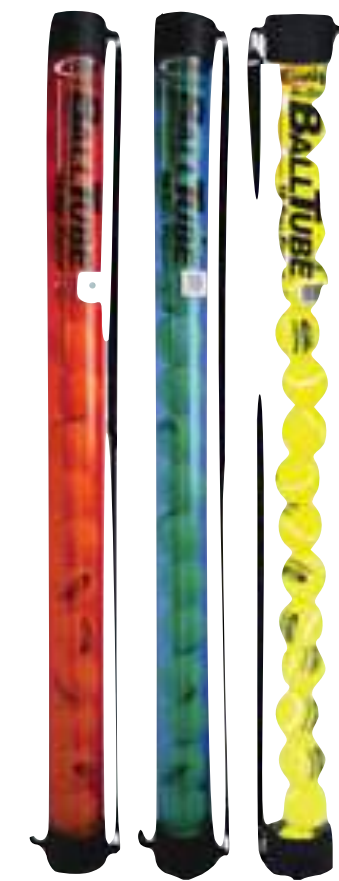
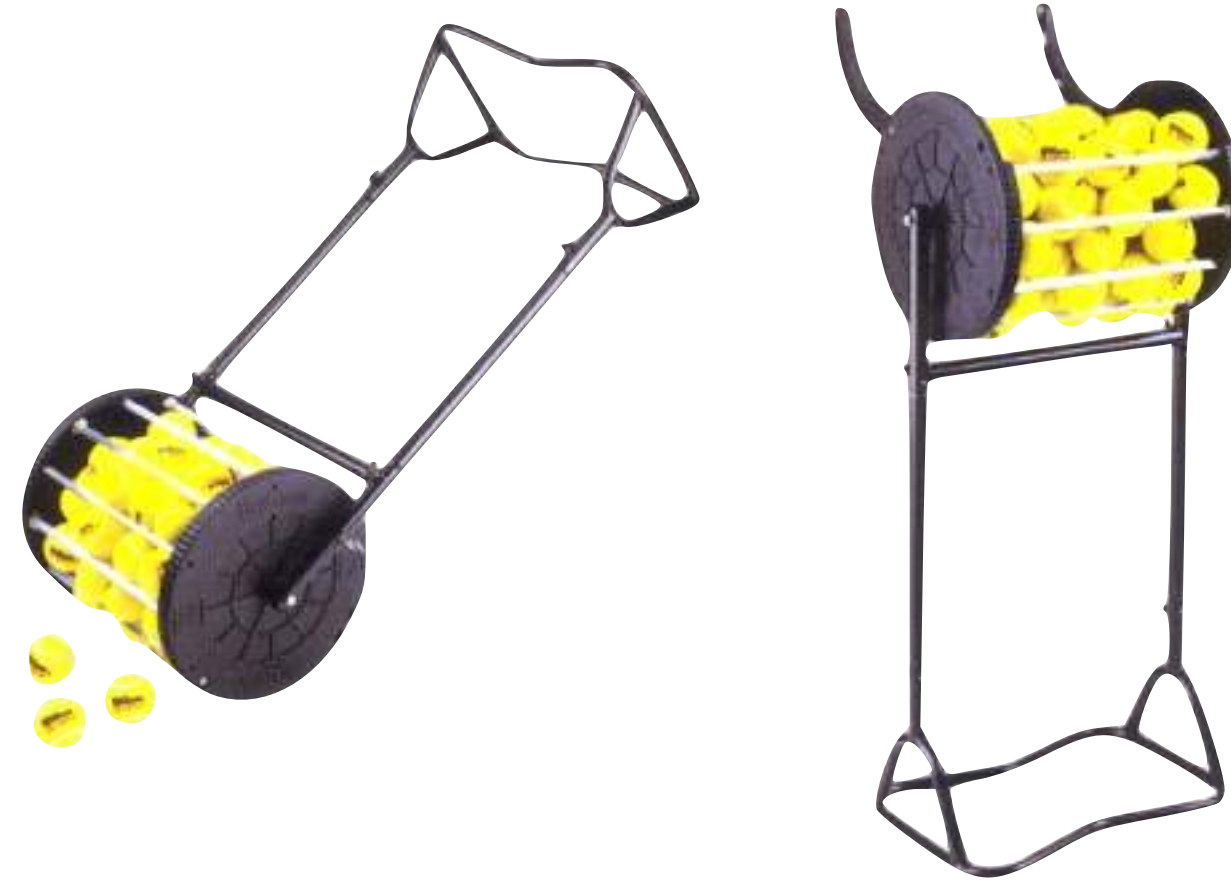
mood



benchmarking

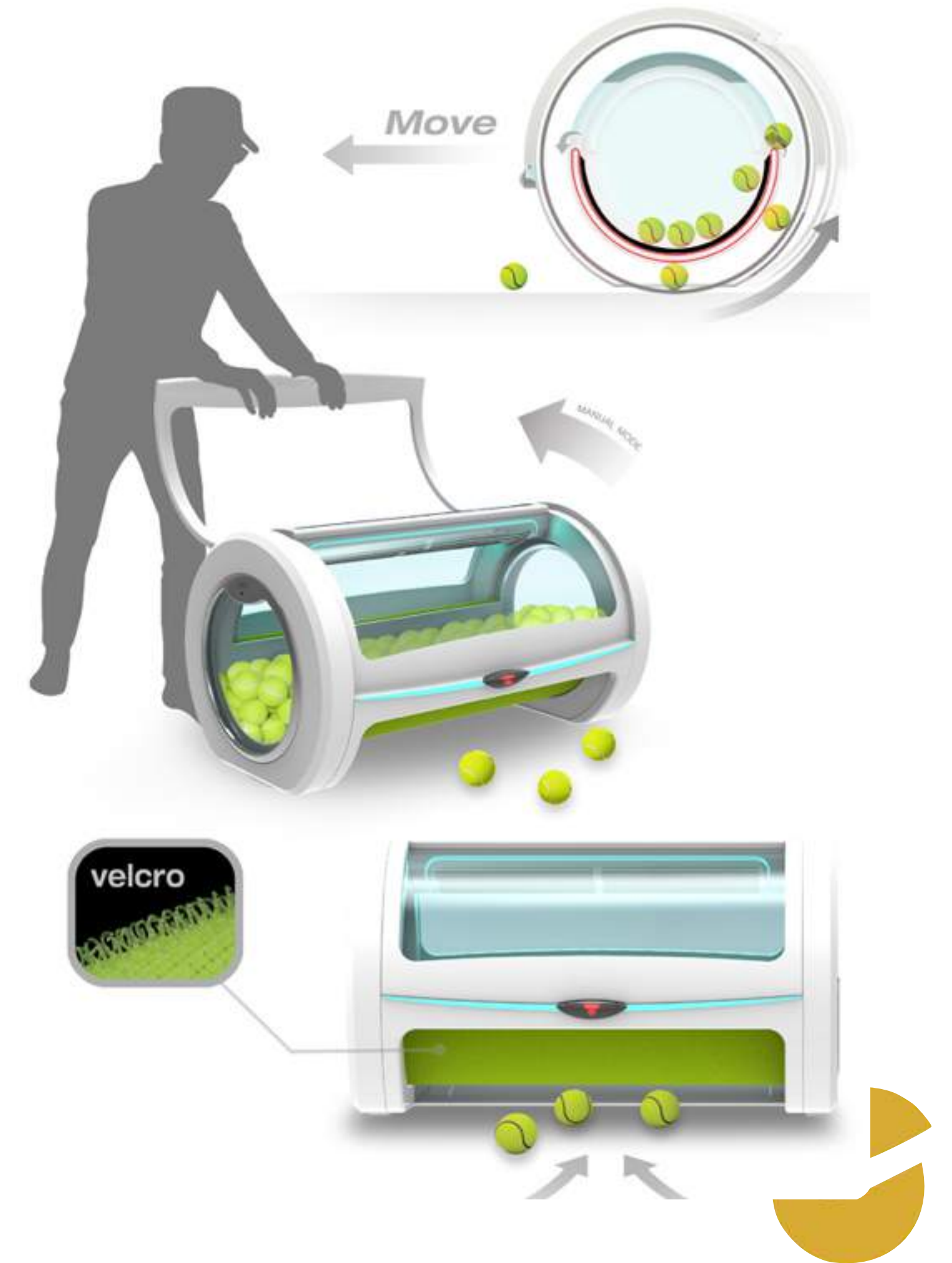
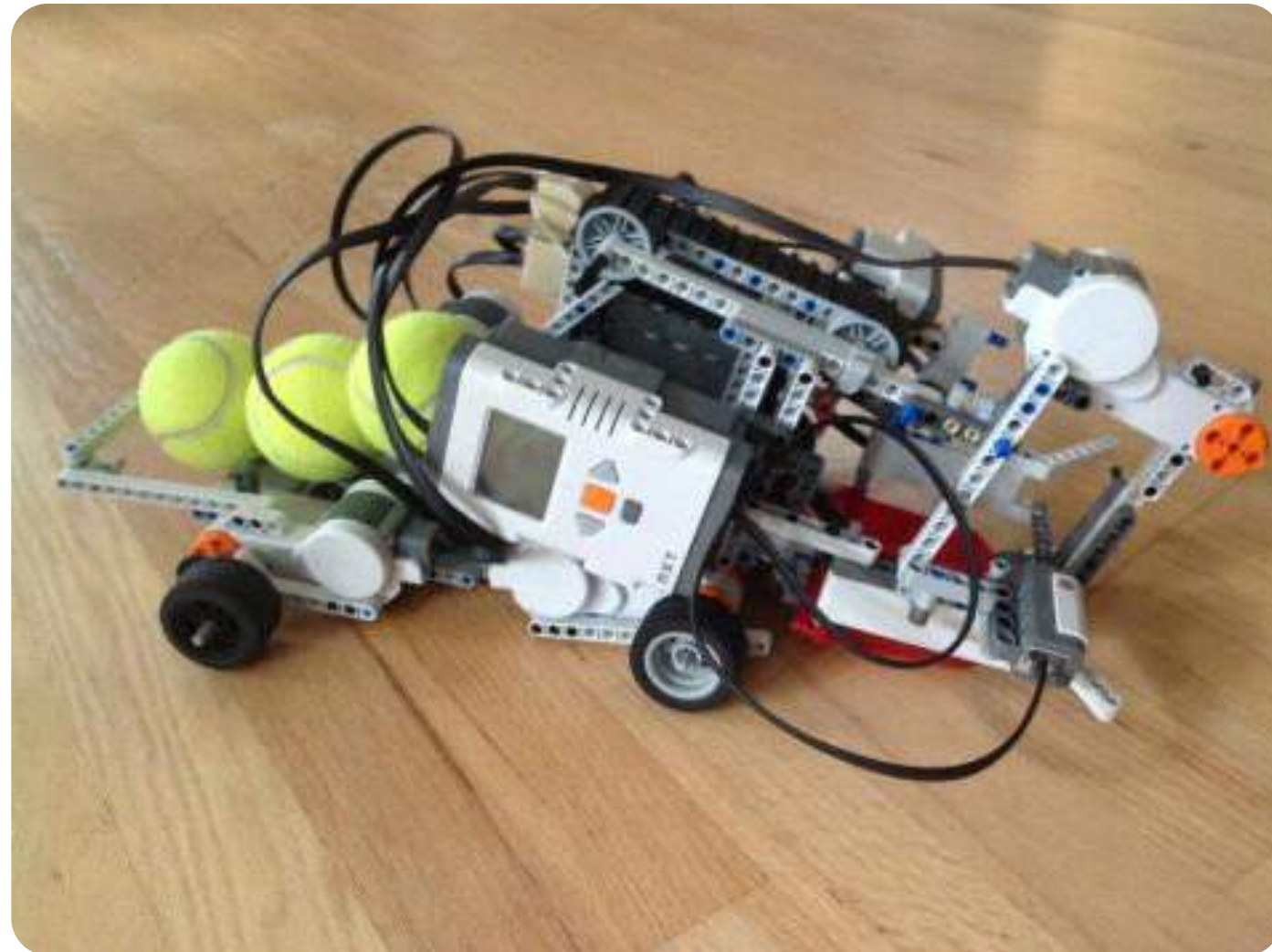


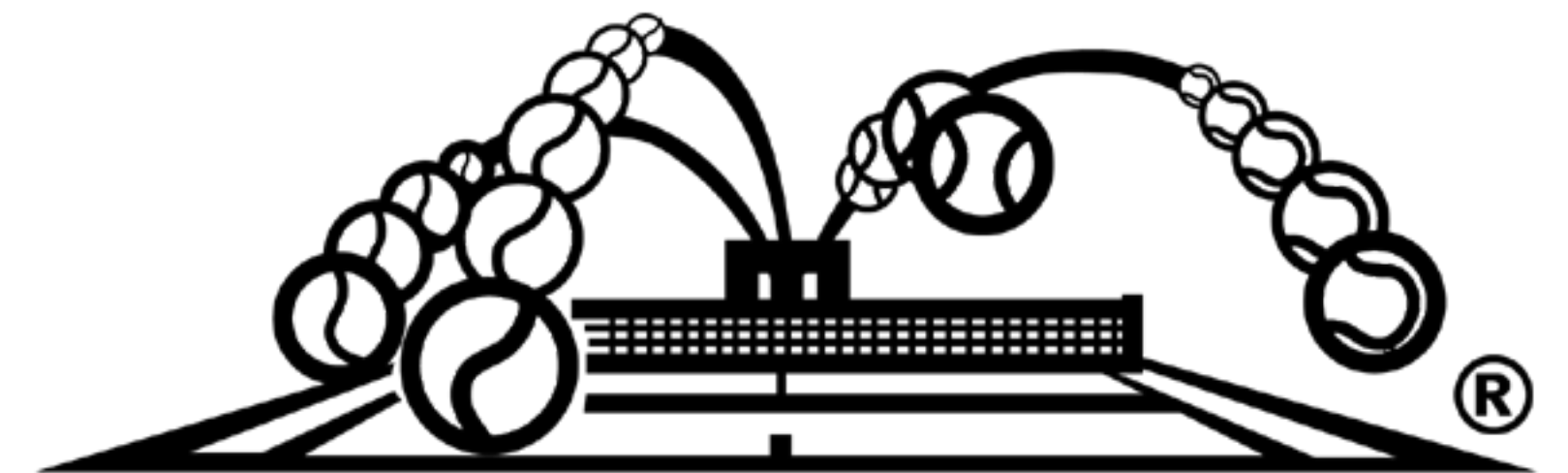
# COMPETITORS





# COMPETITORS





**PLAYMATE**

BALL MOWER





# BALL MOWER

## KEY FEATURES

as of <http://www.playmatetennismachines.com/mower.asp>

- Folding Arms
- Convenient Compact Storage
- Aircraft Aluminum Construction
- 1 Year Limited Parts Warranty

MSRP \$485.00 USD





# BALL MOWER

**amazon** review

★★★★☆ **Great quality, matches the features and the picture provided**

By Meera Al Sowaidi on September 28, 2014

“Great quality , matches the features and the picture provided. Unfortunately not as convenient as expected therefore not being used as often. Not all balls are instantly rolled in into the tray instead it's pushed away. Plus, too expensive.”





# BALL MOWER

## INTERVIEW #1



Coach Edward



## ARROYO SECO RACQUET CLUB

- + Easy to use
- + Weather resistant
- + Foldable arms
- + Works well/high efficiency
- Folding mechanism easy to break
- Balls get stuck/jammed often
- Sometimes not all balls go in





# BALL MOWER

## Issues with existing product

Not motorized

Arms work, but could be better

Not aesthetically pleasing

Some parts not durable

Balls may jam machine

## Opportunities

Add motor, remote, and/or self driving capabilities

Add additional hinge to arm

Make a design that fits the tennis court decor, but is also modern in style

Use consistent construction

Create different collecting mechanism





## INTERVIEW #2



Coach Bruce Li

“The most important quality of a tennis ball collector would be its efficiency in collecting balls.”

“It’s also important that the machine is interesting — something that will improve the quality of a tennis lesson.

“Portability is crucial. The machine must be light and have a small footprint, but still be able to contain 80-100 balls.”

“For the coach, function is more critical than exterior design. But for students, design may be more important, for students will be attracted to a good design.”

“As for additional features, a sound indicating that the basket is full, or cool exterior lights would definitely add to the product.”



target market analysis





# PRIVATE COACHES



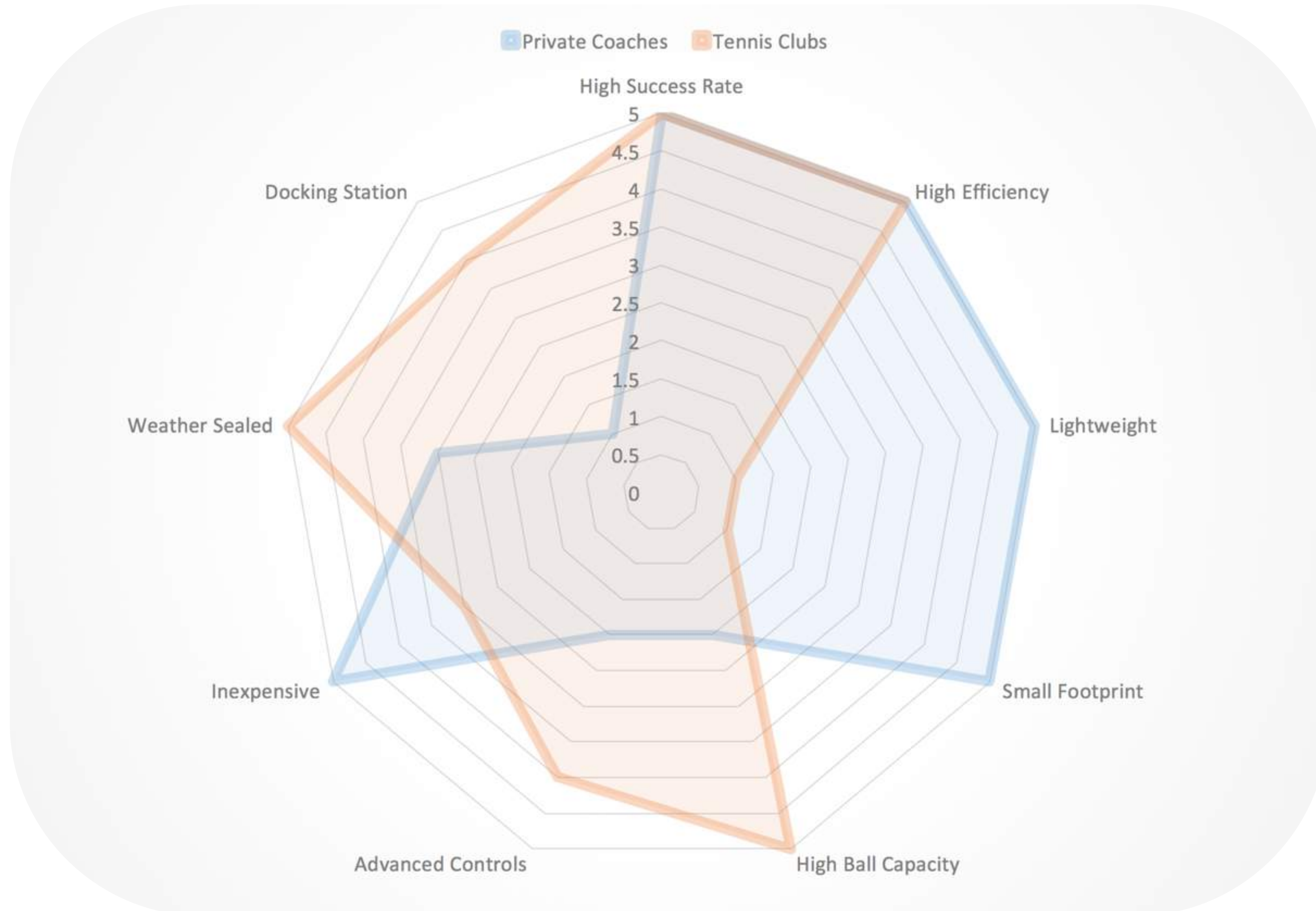
# TENNIS CLUBS



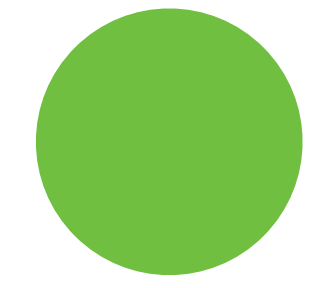
	Private Coaches	Tennis Clubs
High Success Rate	<b>5</b>	<b>5</b>
High Efficiency	<b>5</b>	<b>5</b>
Lightweight	<b>5</b>	1
Small Footprint	<b>5</b>	1
High Ball Capacity	2	<b>5</b>
Advanced Controls	2	4
Inexpensive	<b>5</b>	3
Weather Sealed	3	<b>5</b>
Docking Station	1	4



# relative importance of selected features



PORTABLE

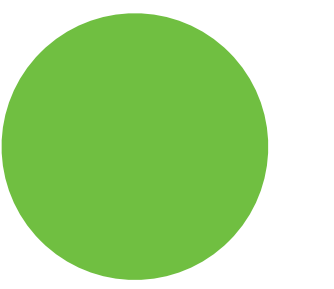


Private Coaches

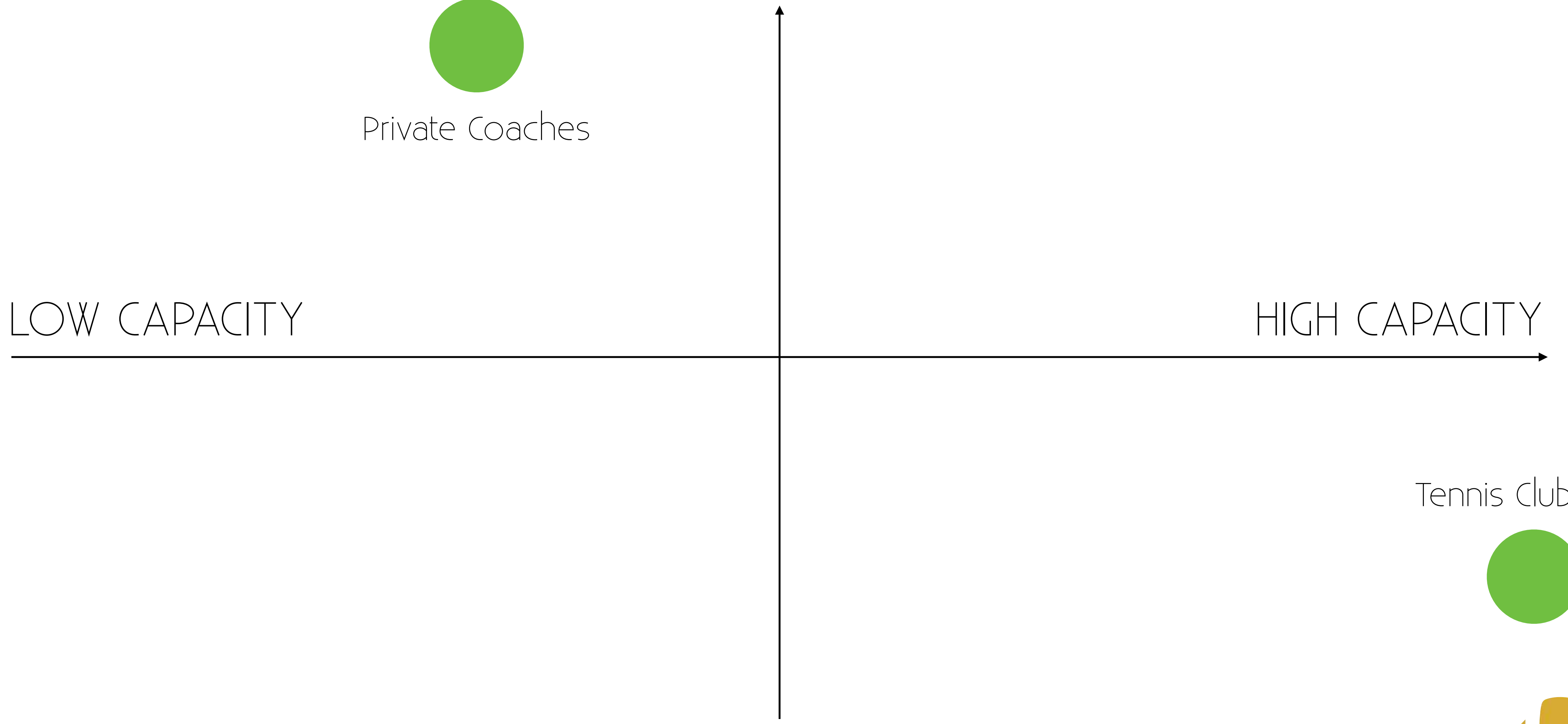
LOW CAPACITY

HIGH CAPACITY

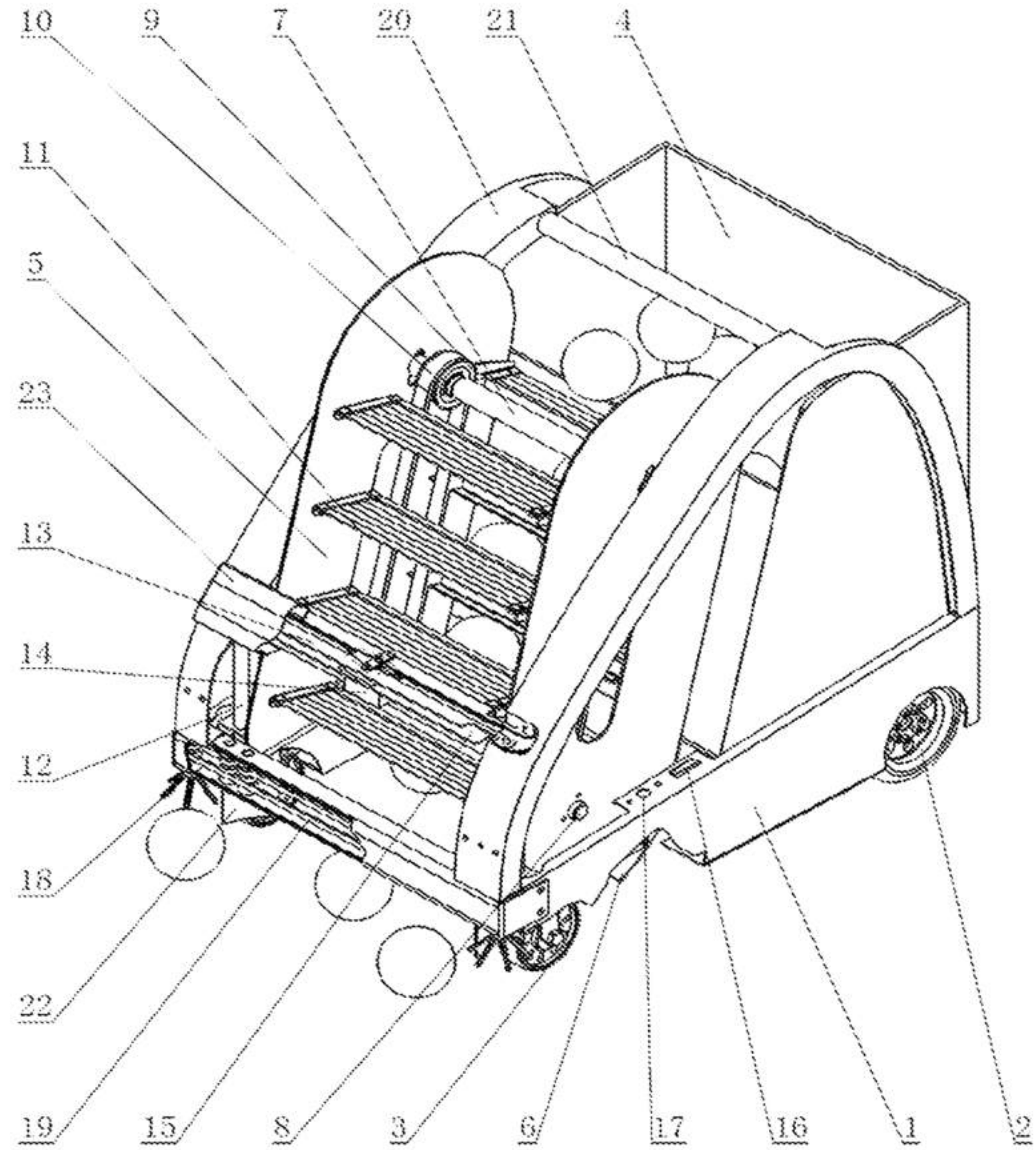
Tennis Clubs



NOT PORTABLE



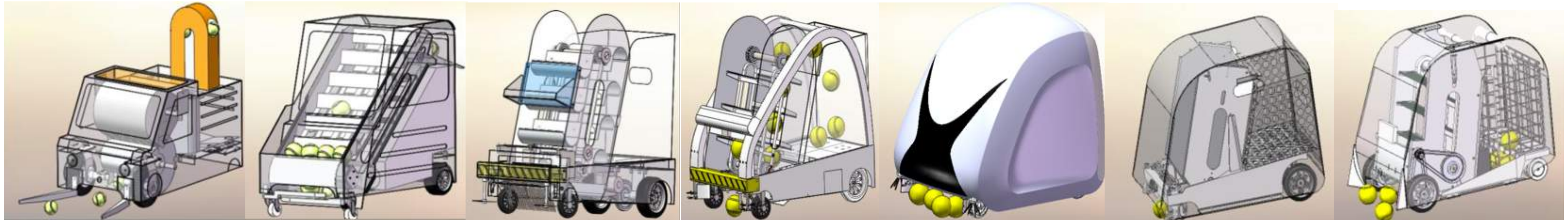






# previous generations

JAN 2012 INITIAL IDEA



**JULY 2012**  
Prototype 1

**OCT 2012**  
Prototype 2

**DEC 2012**  
Prototype 3

**OCT 2013**  
Prototype 4

**MAY 2014**  
Prototype 5

**OCT 2014**  
Prototype 6

**NOV 2014**  
Prototype 7



**MAR 2015**  
Prototype 8



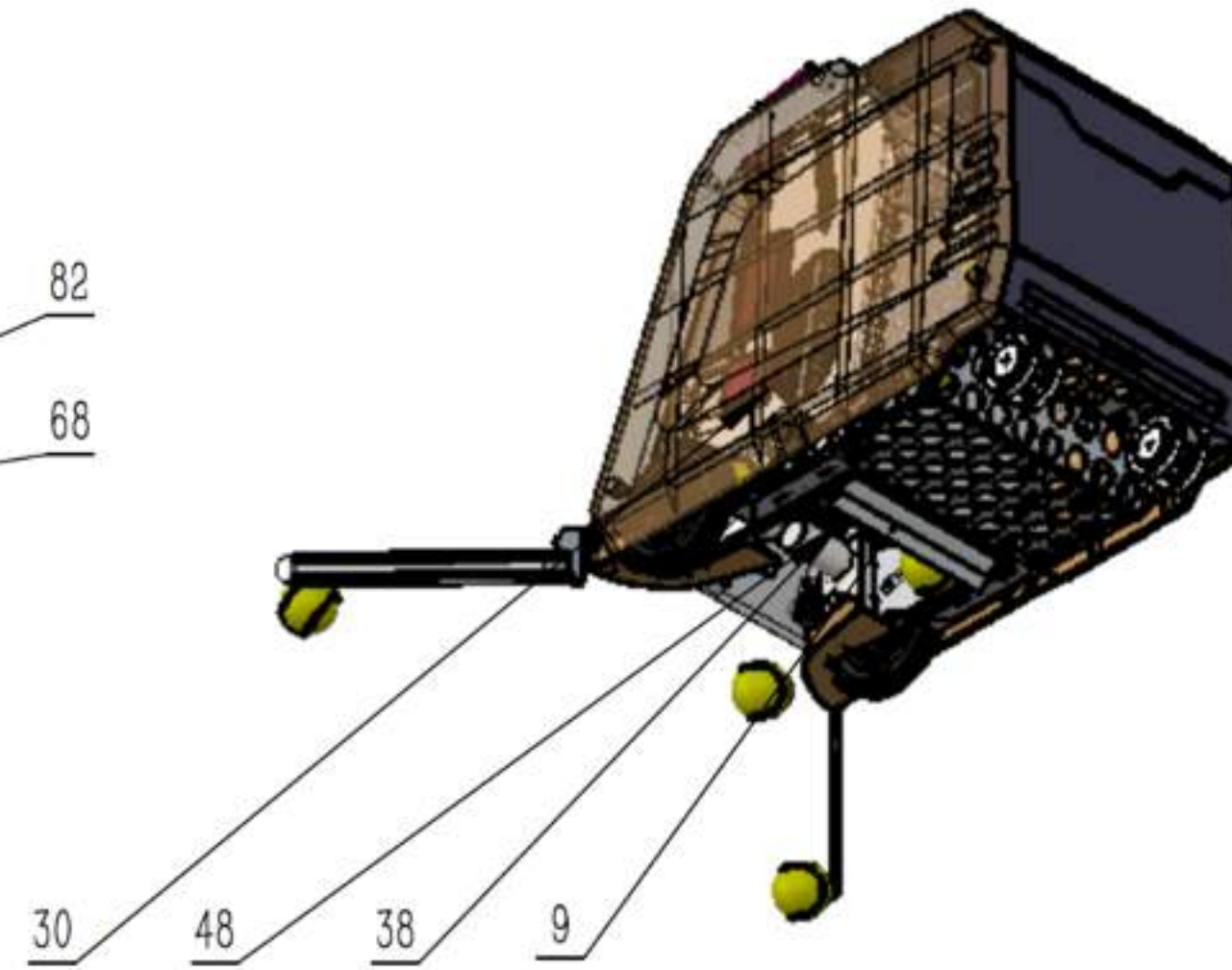
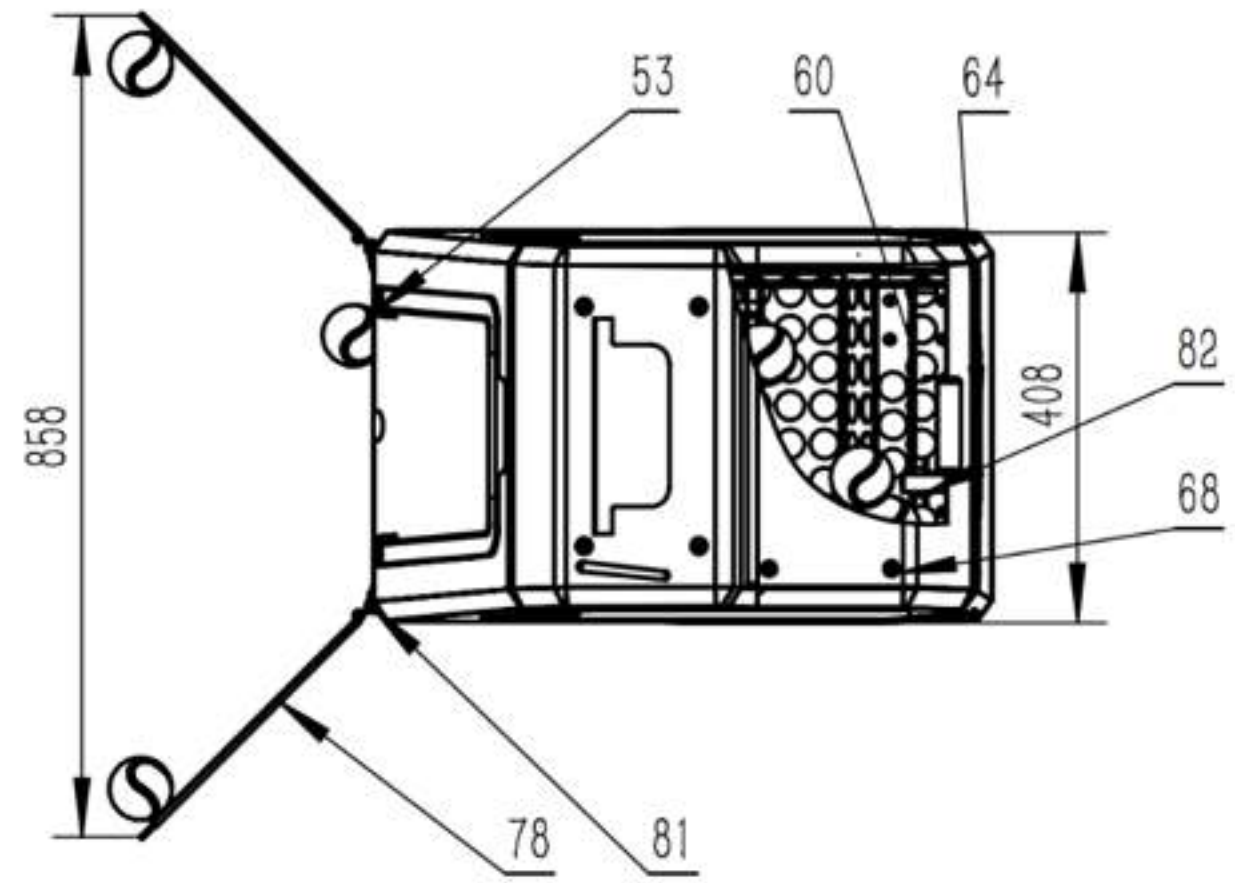
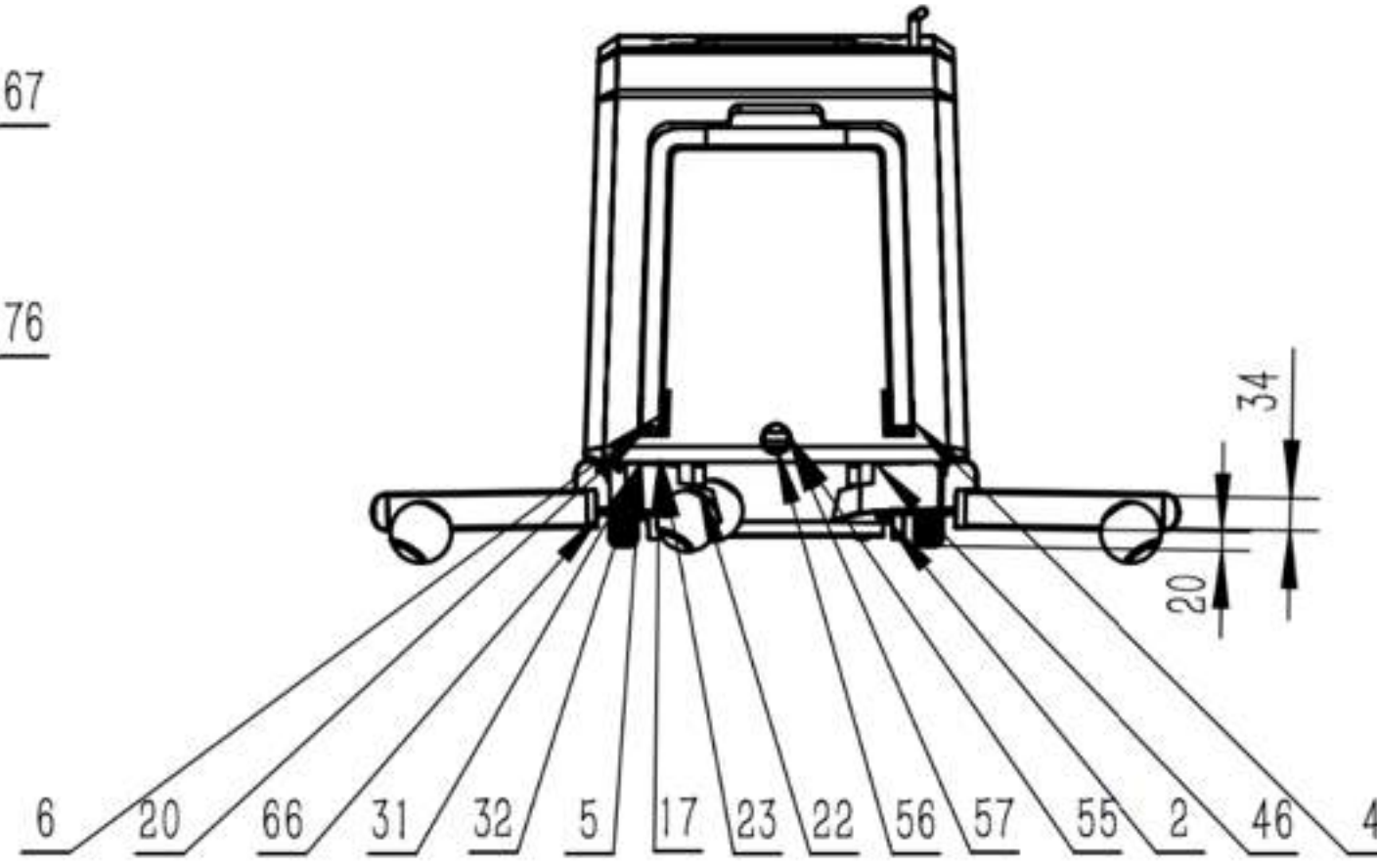
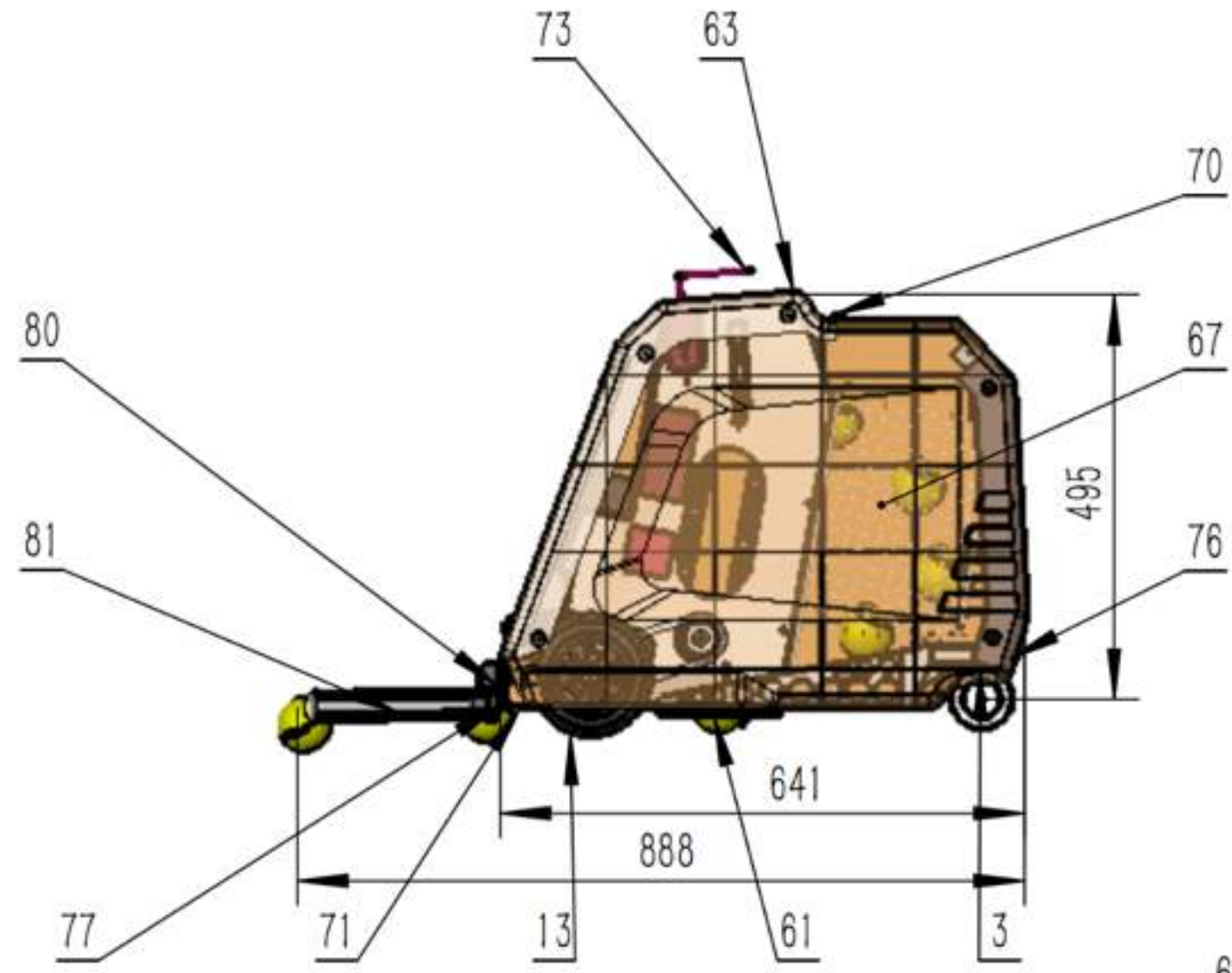
**JUNE 2015**  
Prototype 9



**MARCH 2016**  
Prototype 10  
Current generation







PR CHINA



STATE INTELLECTUAL  
PROPERTY OFFICE

Patent No. CN 201310097897  
Filed March 26, 2013



UNITED STATES



US PATENT AND  
TRADEMARK OFFICE

Patent No. 9,114,285 B2  
Filed March 11, 2014





# further objectives

## Issues with existing product

Ball storage is irregularly shaped

Arms work, but could be better

Not aesthetically pleasing

Handle feature — caster wheels do not lock

Battery not removable

Still relatively heavy (45lb)

## Opportunities

Make ball storage more rectangular

Add additional hinge to arm

Make a design that fits the tennis court decor, but is also modern in style

Lock caster wheels

Reposition battery to allow for removability

Detachable basket to cut down on size and weight

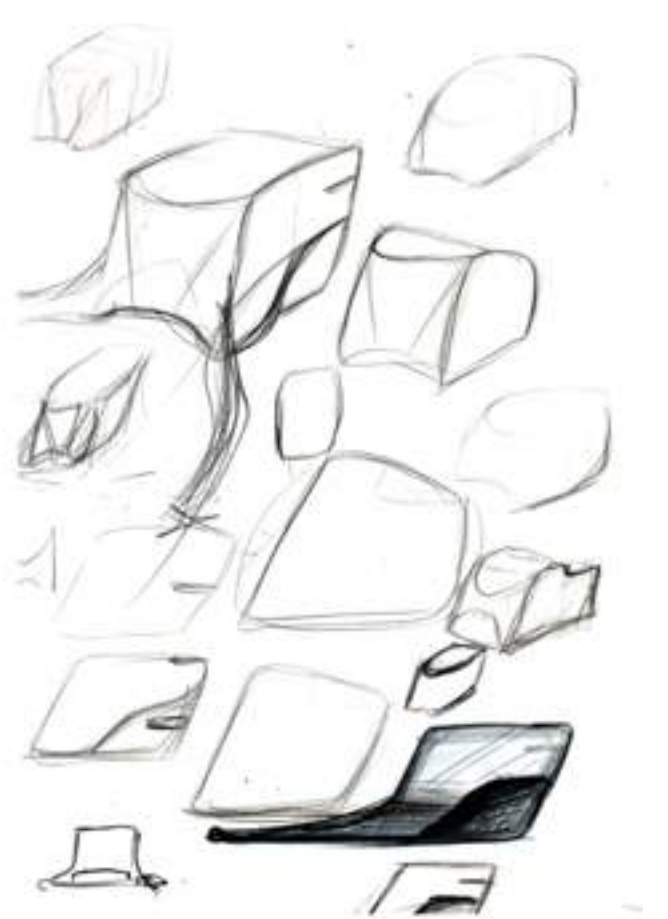
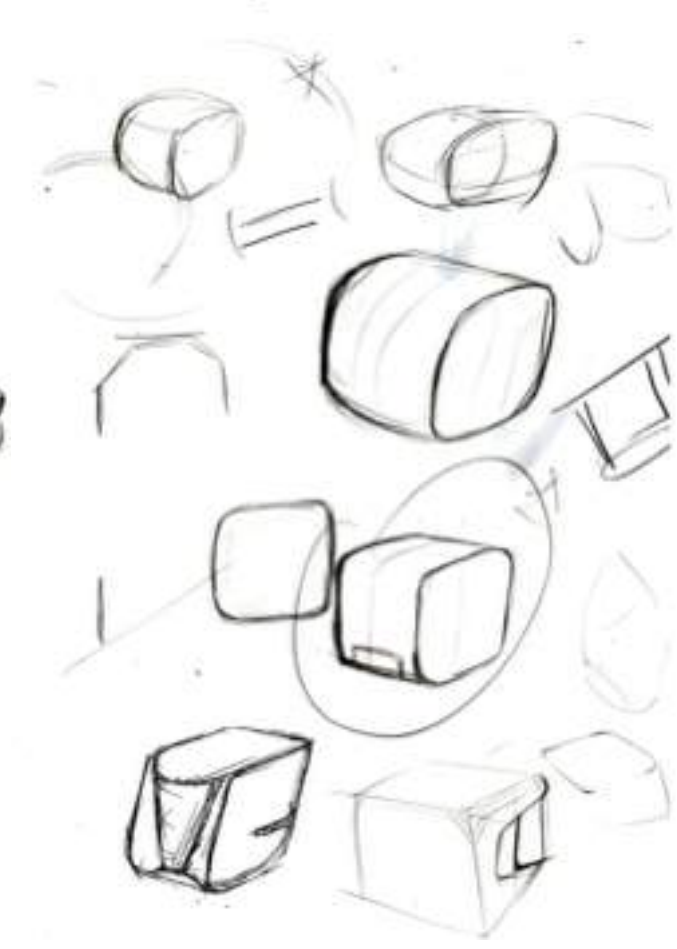
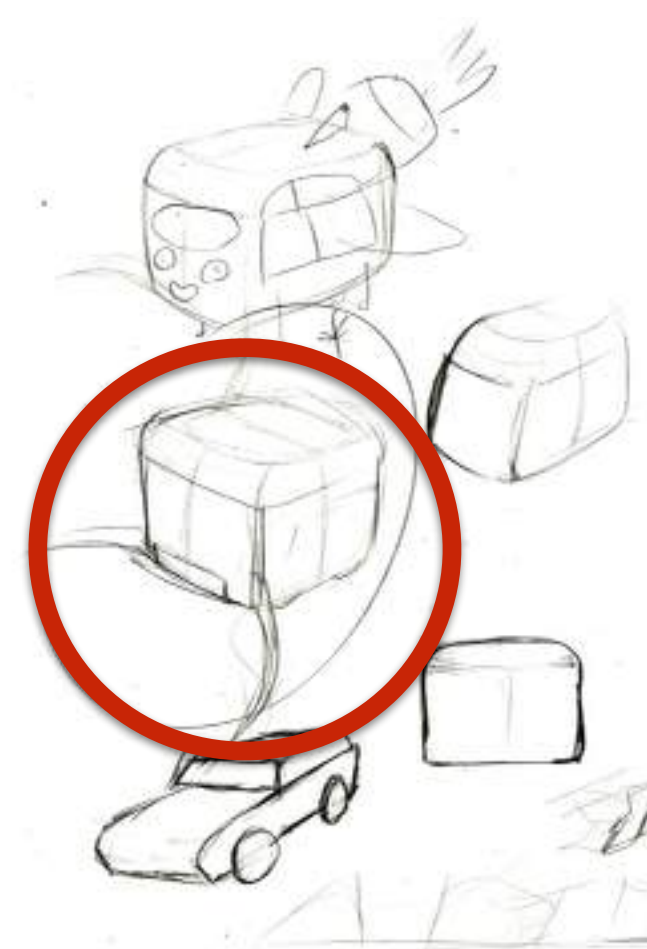
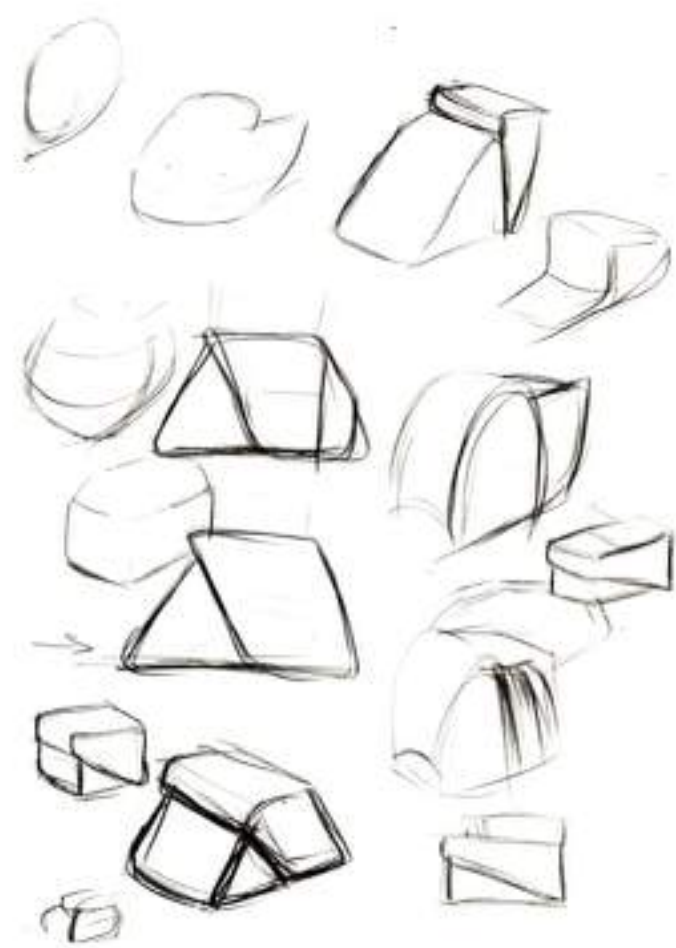
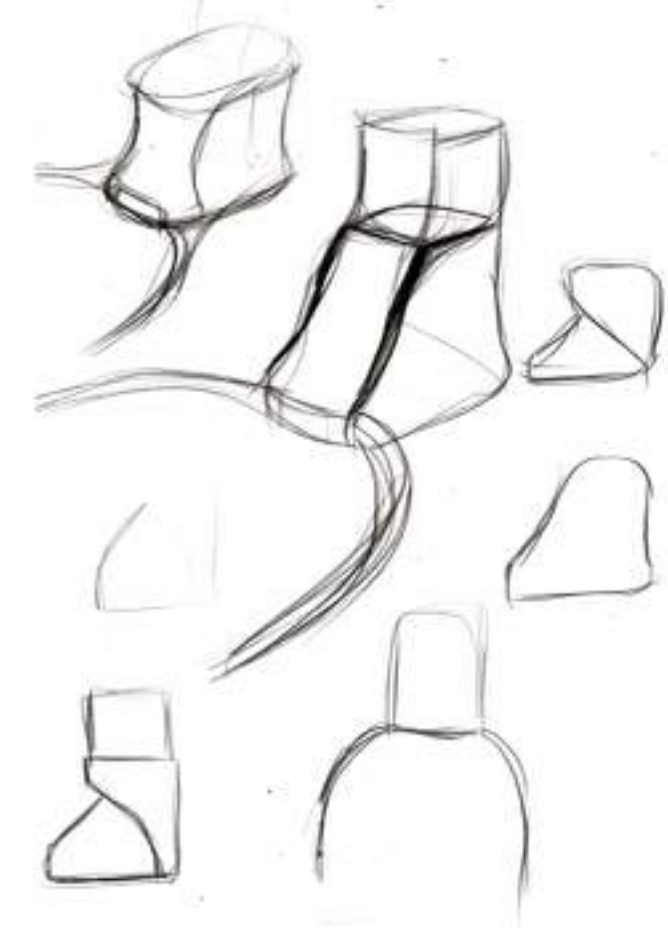
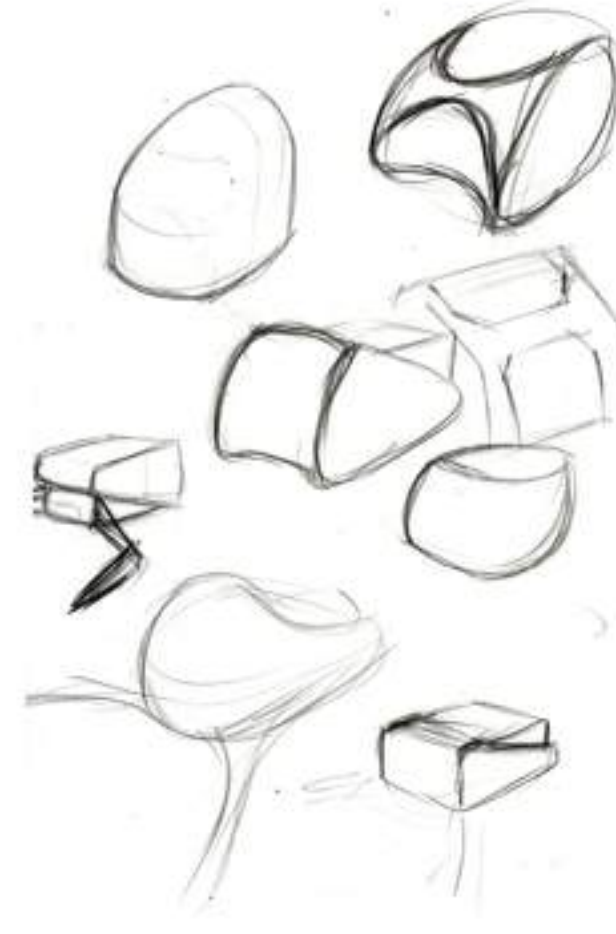
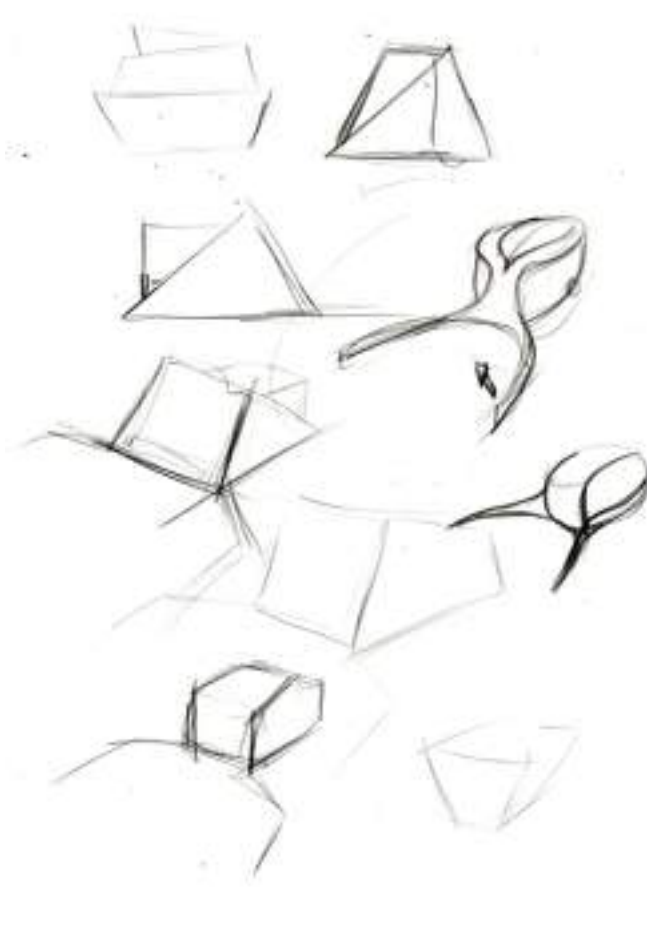
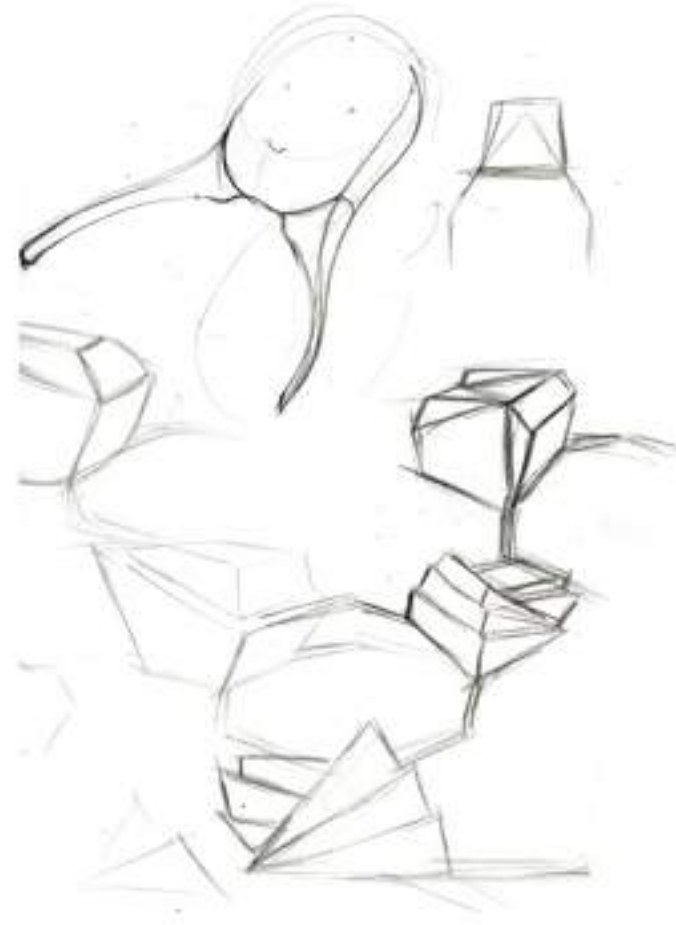
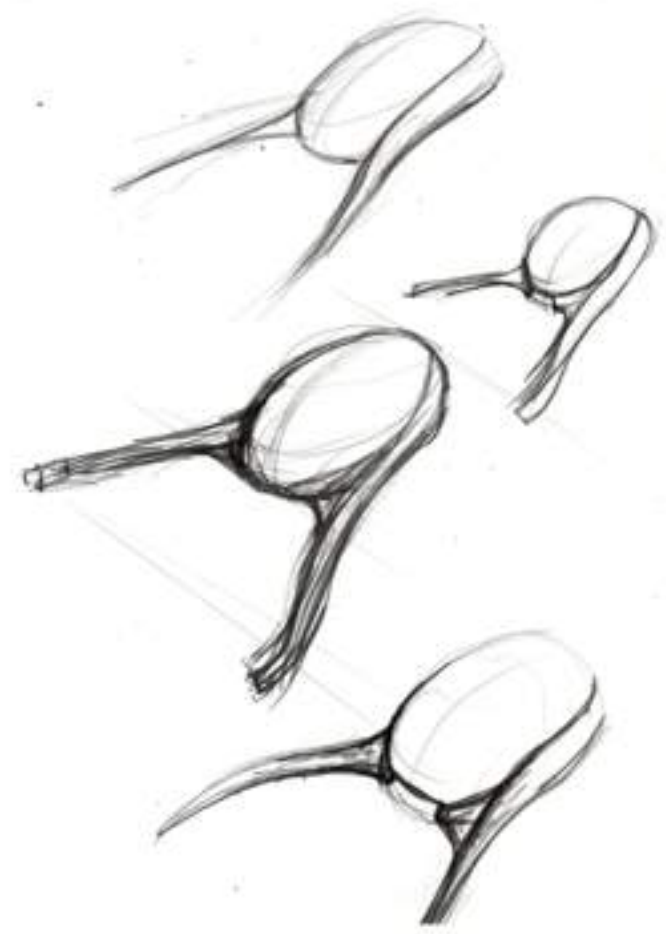




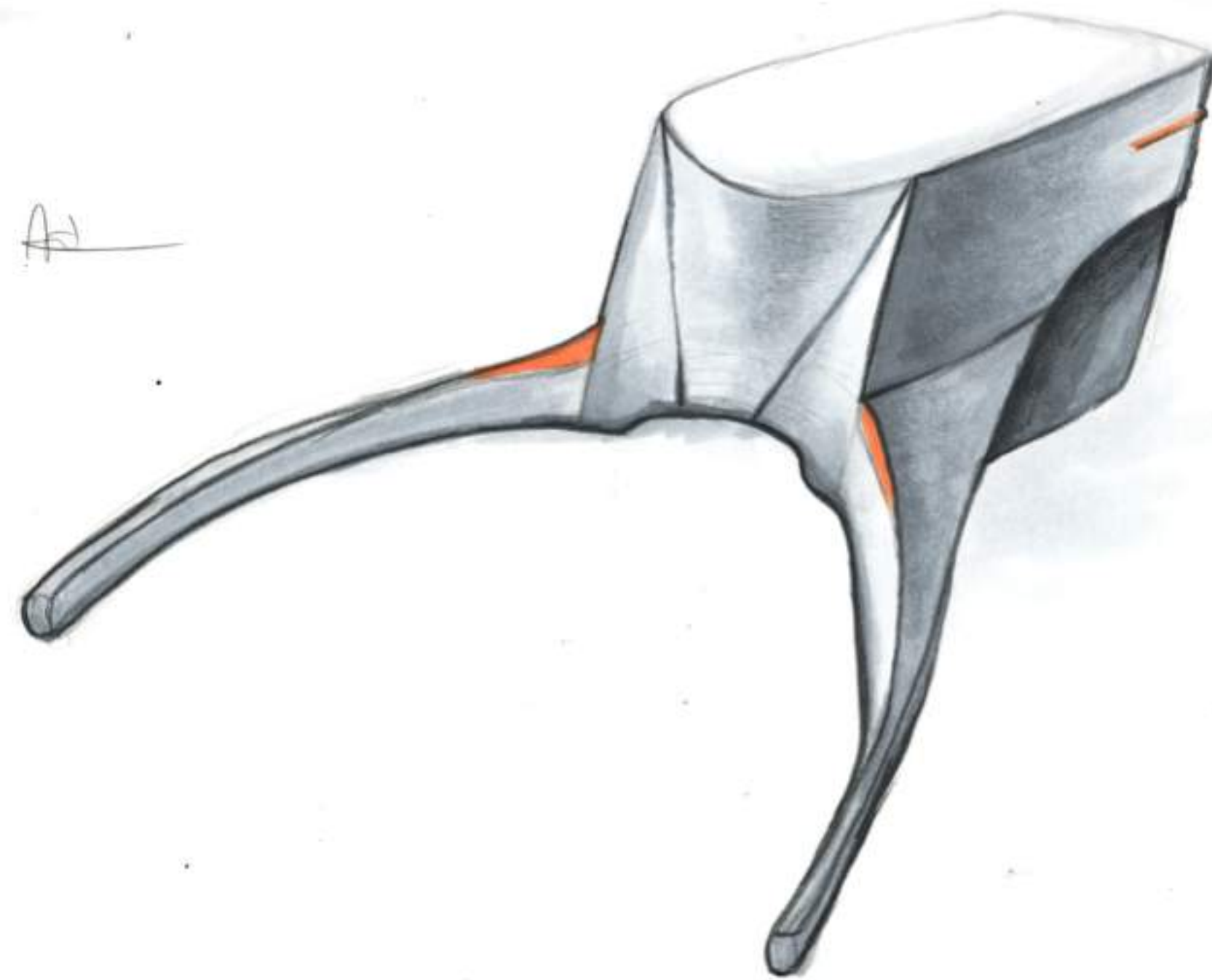
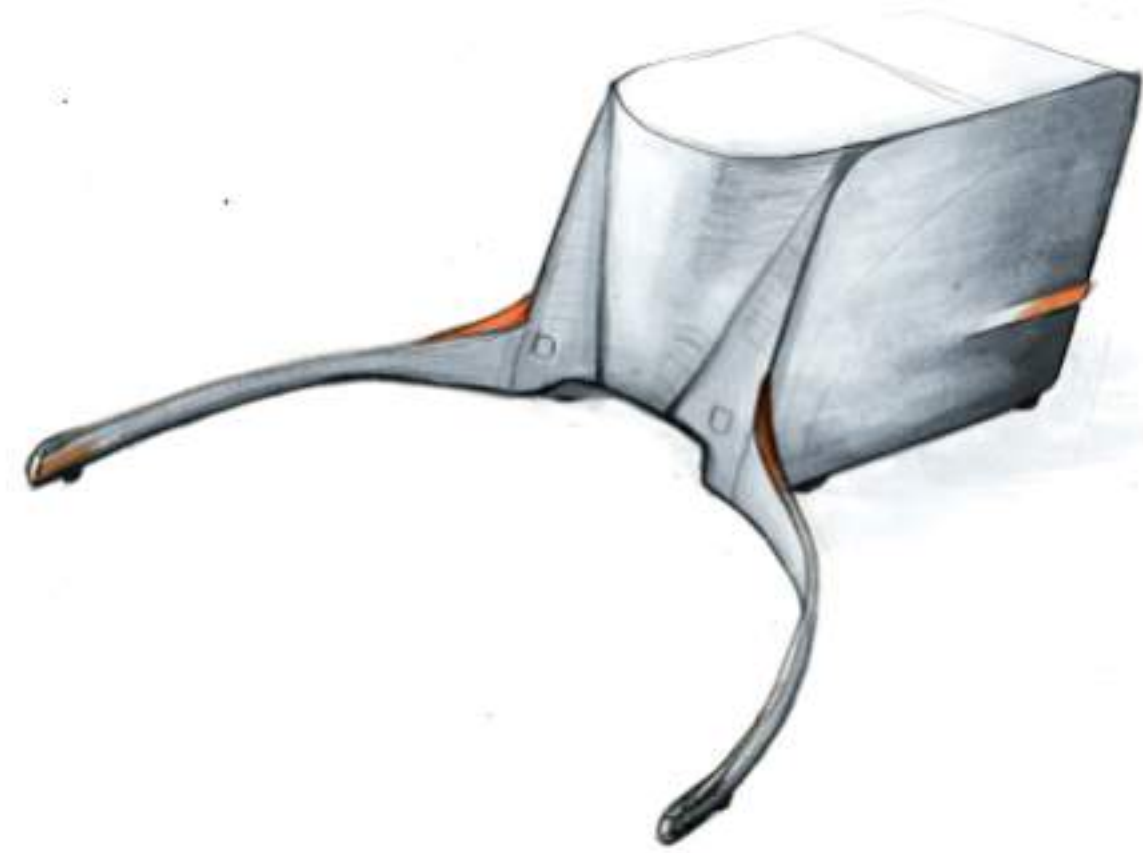
# initial ideation



# initial ideation

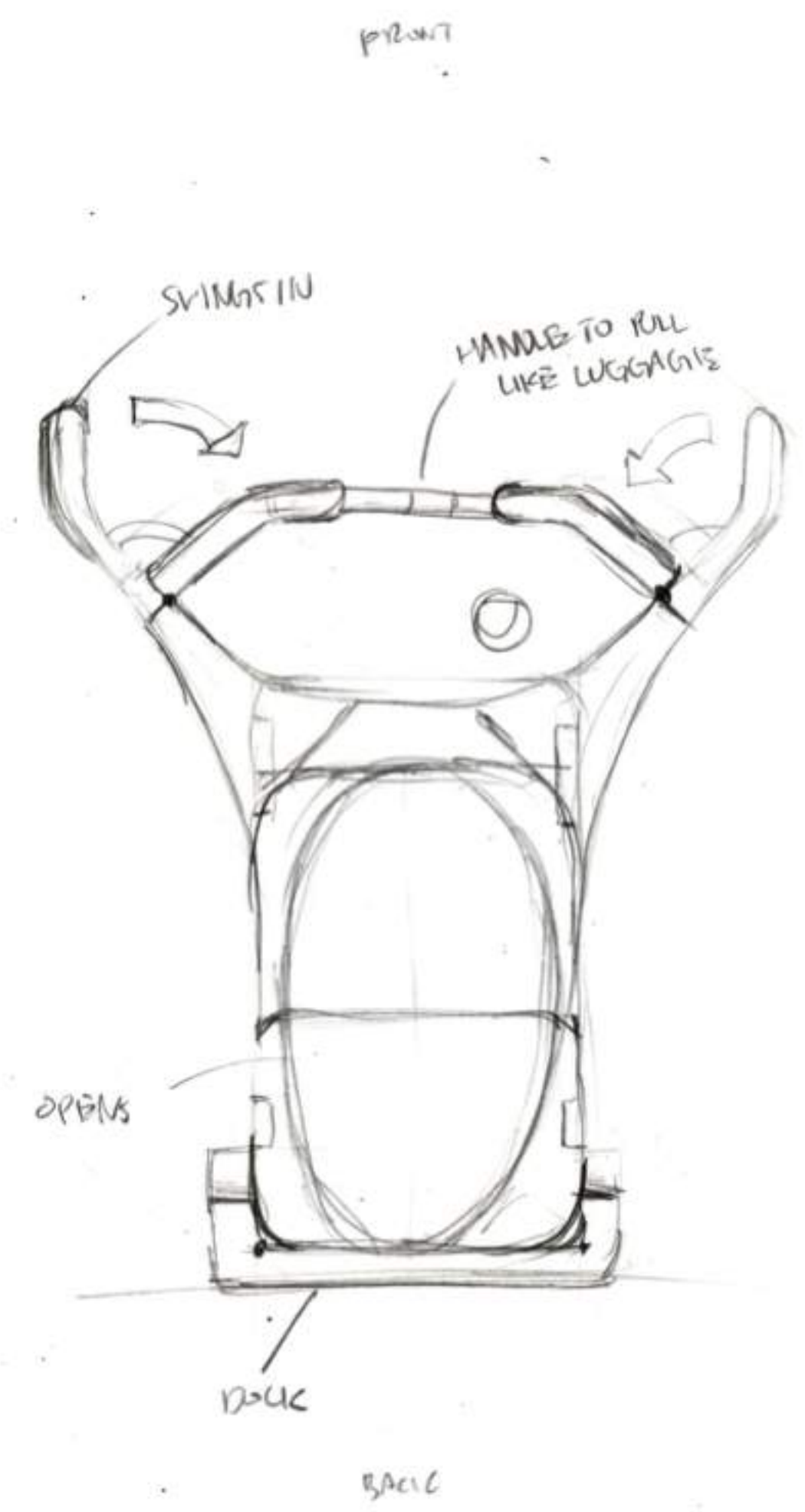
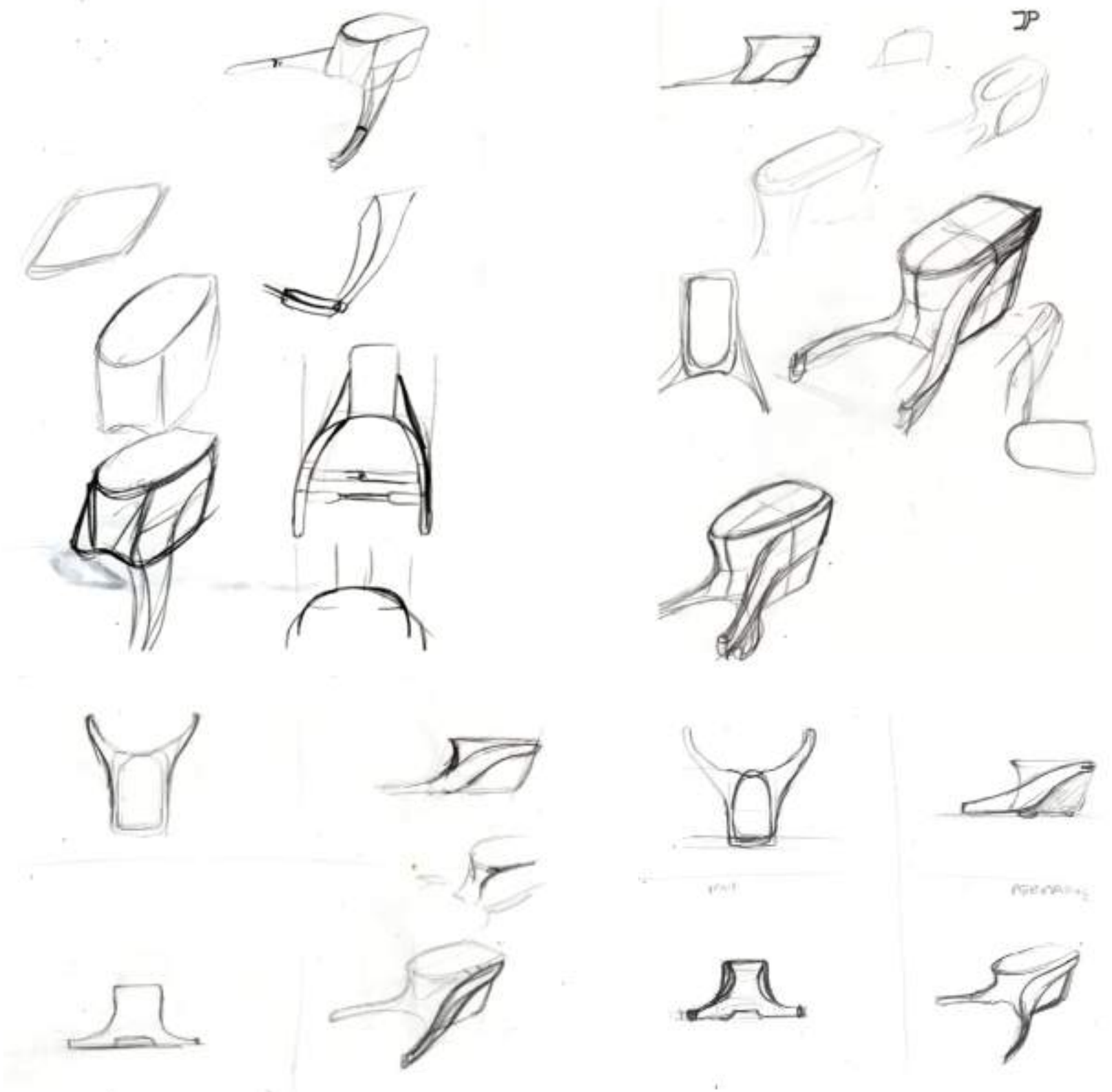


# initial rendering





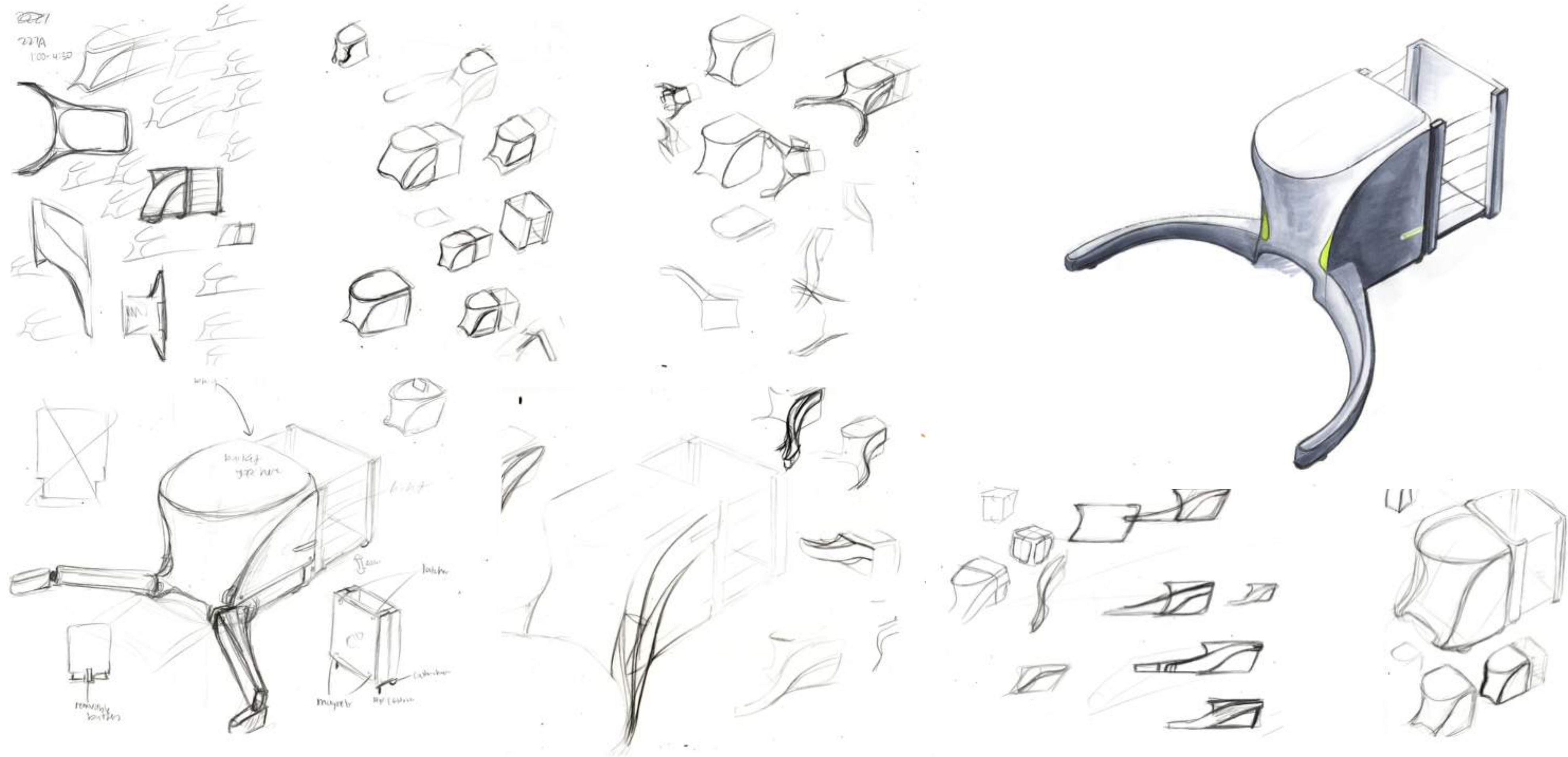
# Further ideation



# INITIAL MODELING



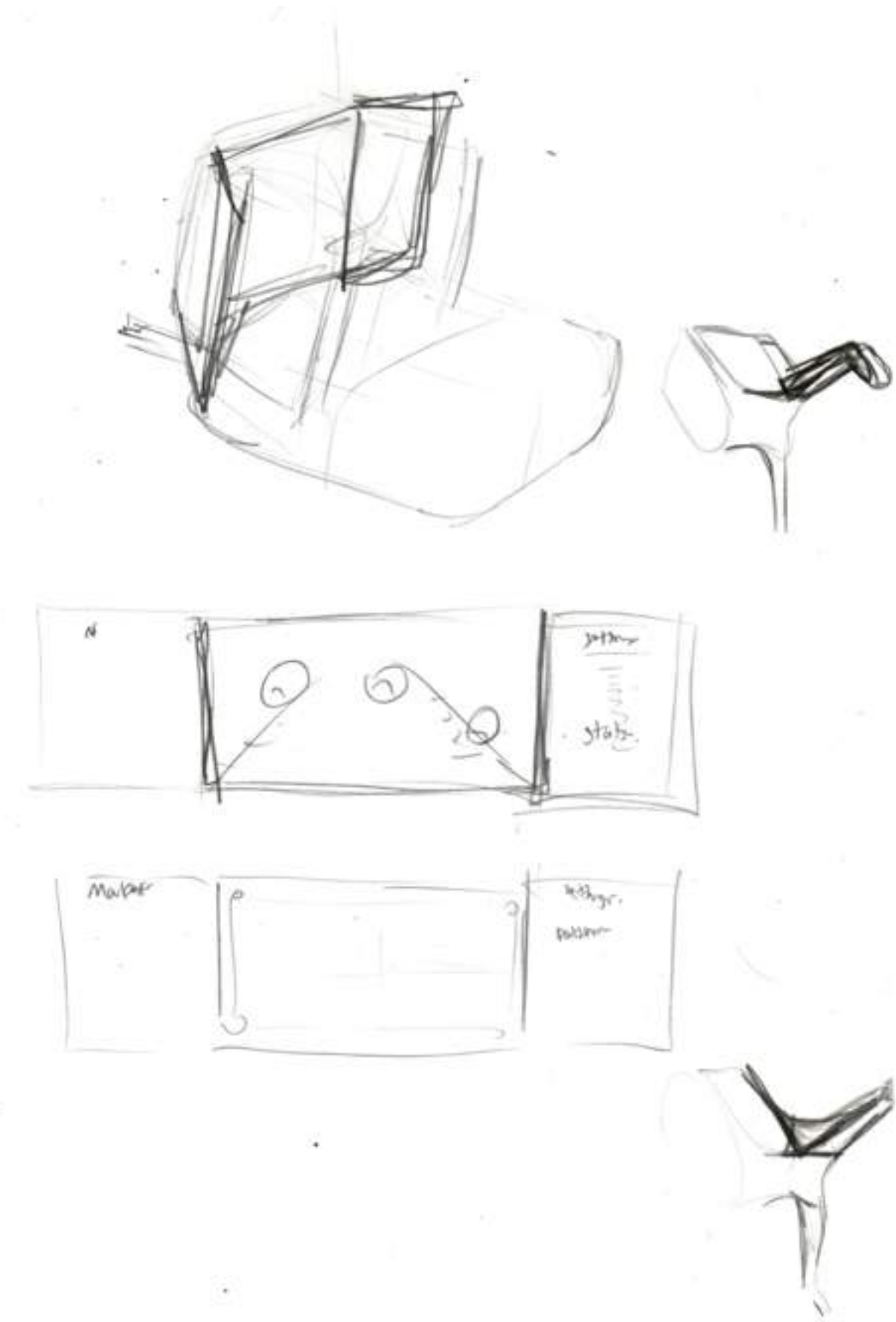
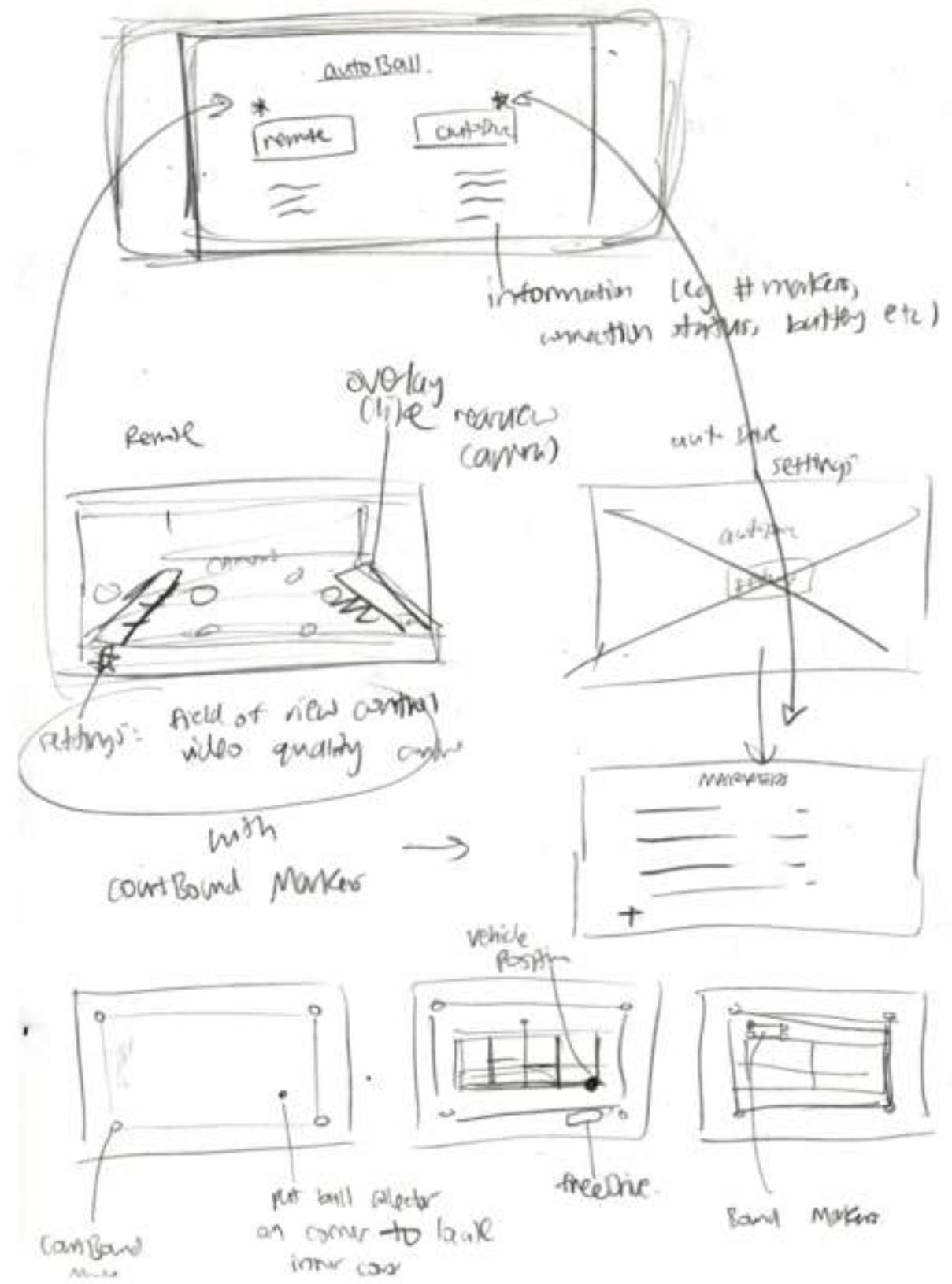
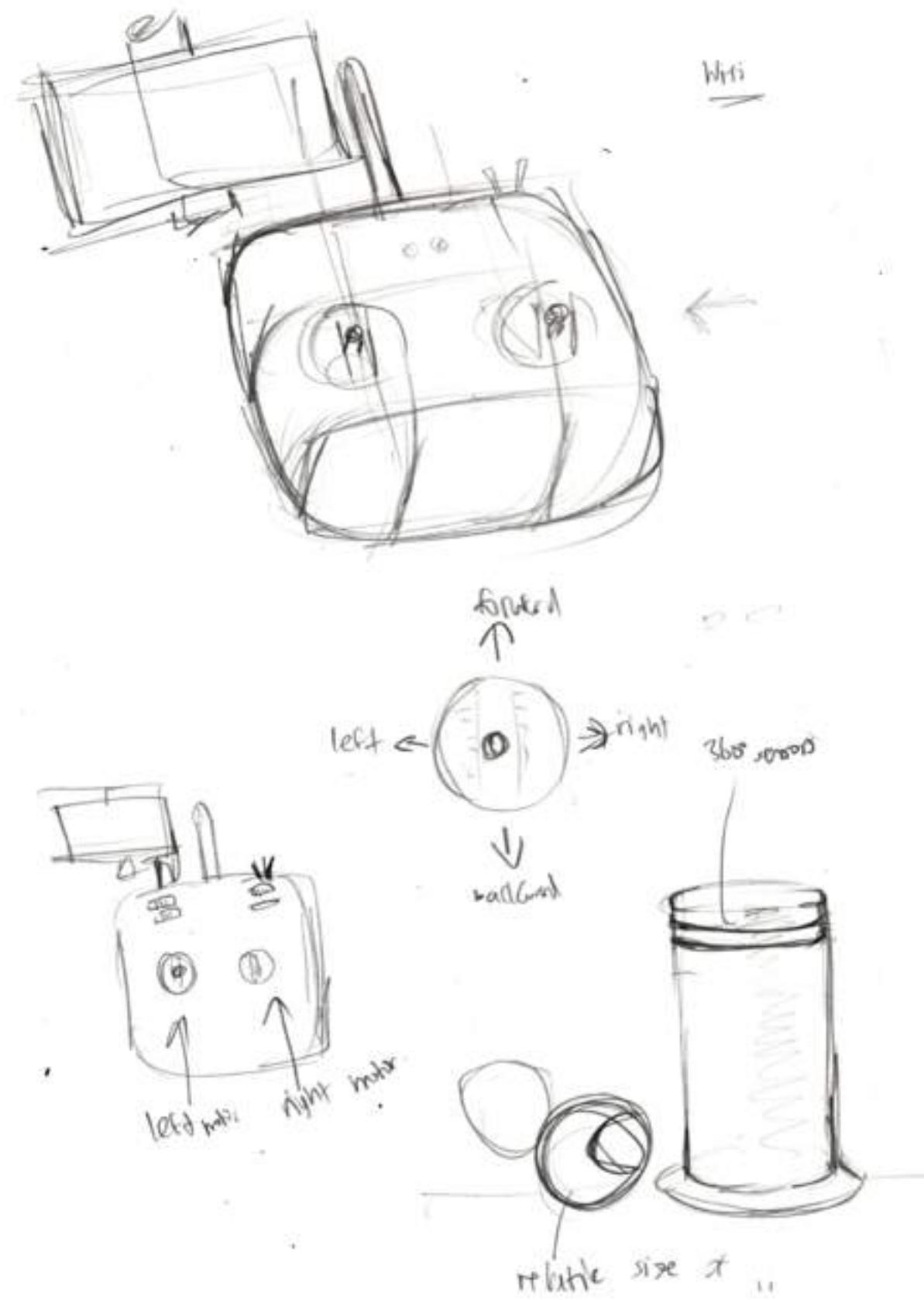
even more ideation



# additional modeling



# remote ui ideation





remote



# remote

golden retriever



golden retriever pro



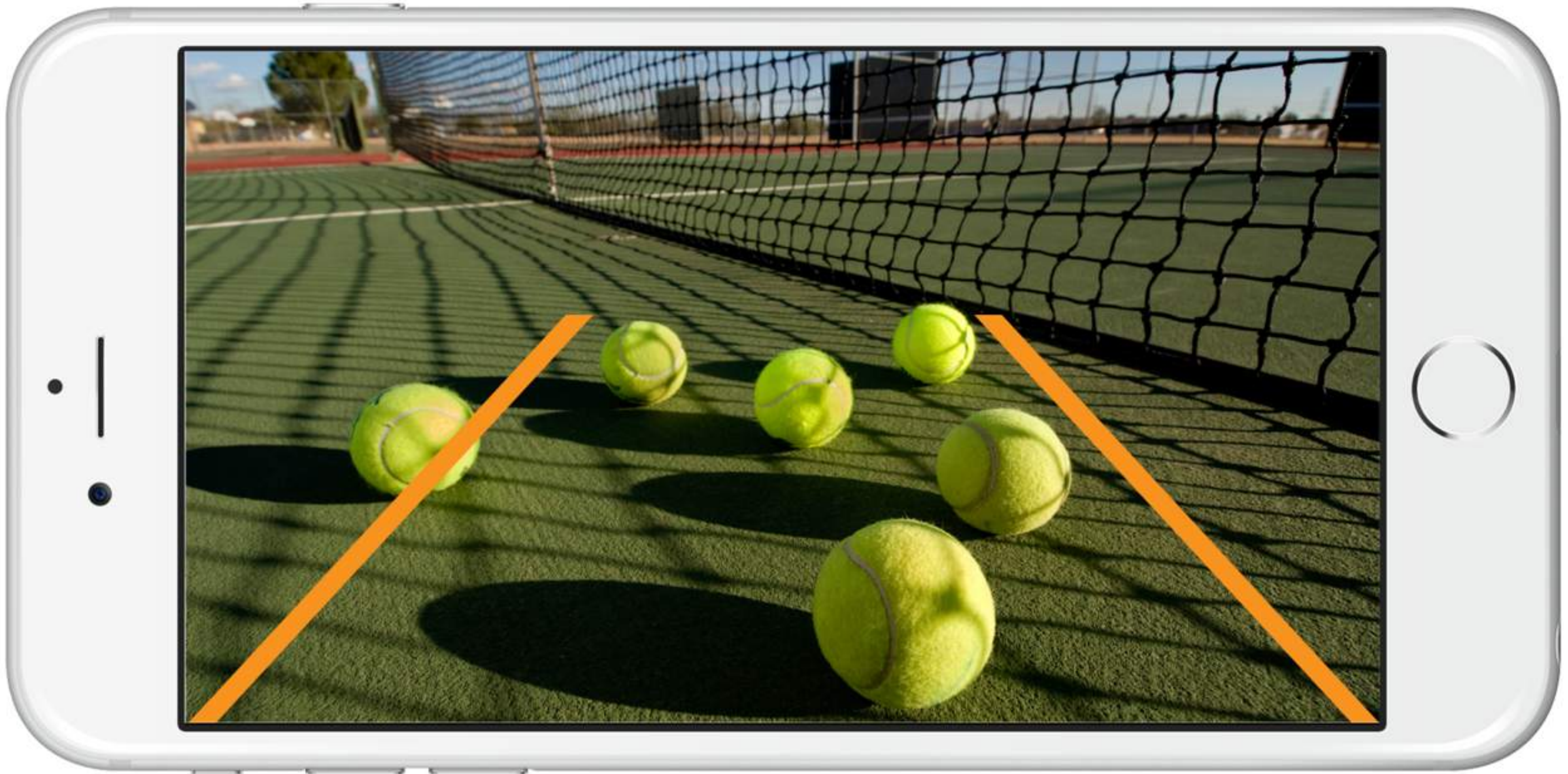


# golden retriever



# golden retriever pro





autodrive



courtBound Markers

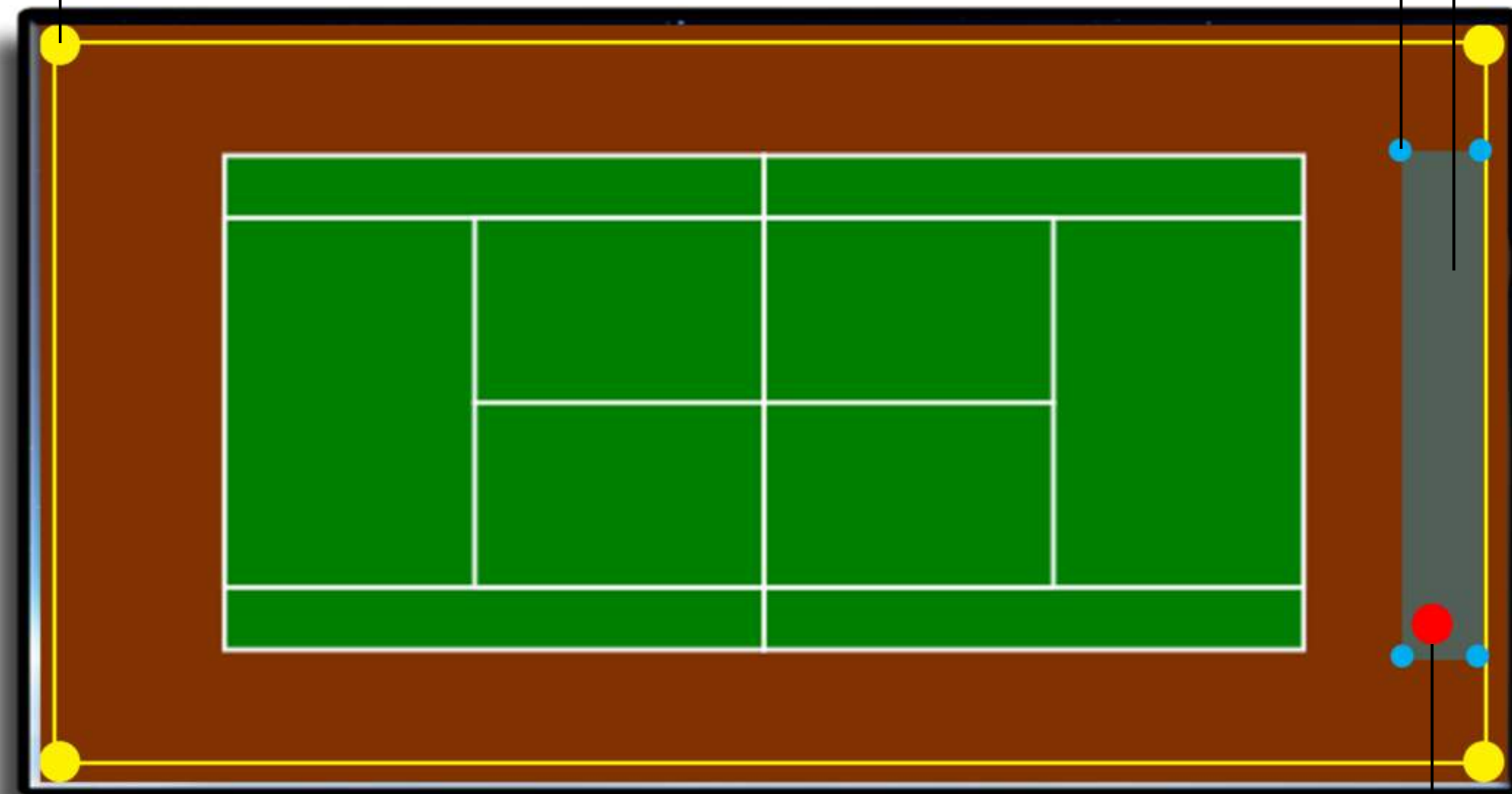
Virtual Markers

Collecting Area

MARKERS

- x4
- x4
- x1

+ -



SETTINGS

PATTERNS

- Zig-Zag
- Random
- Spiral

Marker Management

autoBall Location

Settings Pane



The logo icon is a yellow circle with a stylized, curved shape inside, resembling a lowercase 'e' or a similar abstract form.

final renderings  
and features

golden retriever



# Features

UNDERSIDE



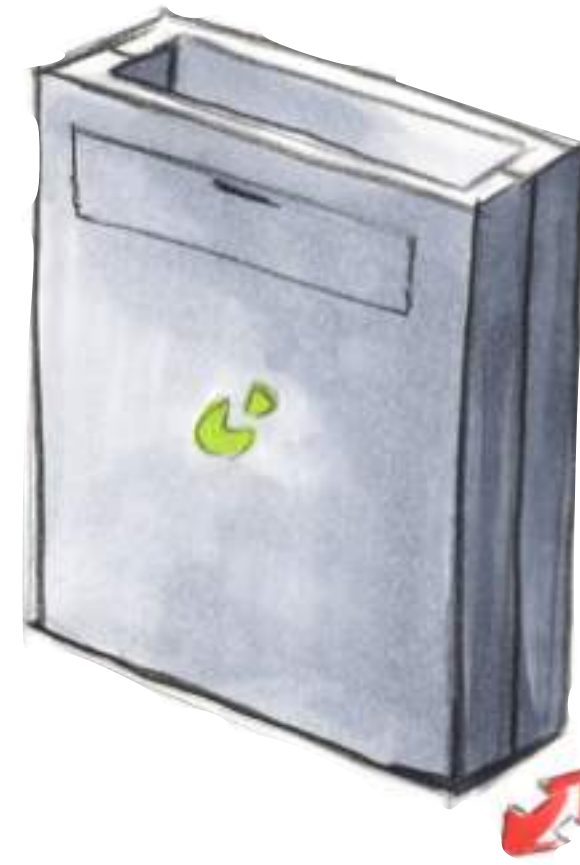
SLIDERS



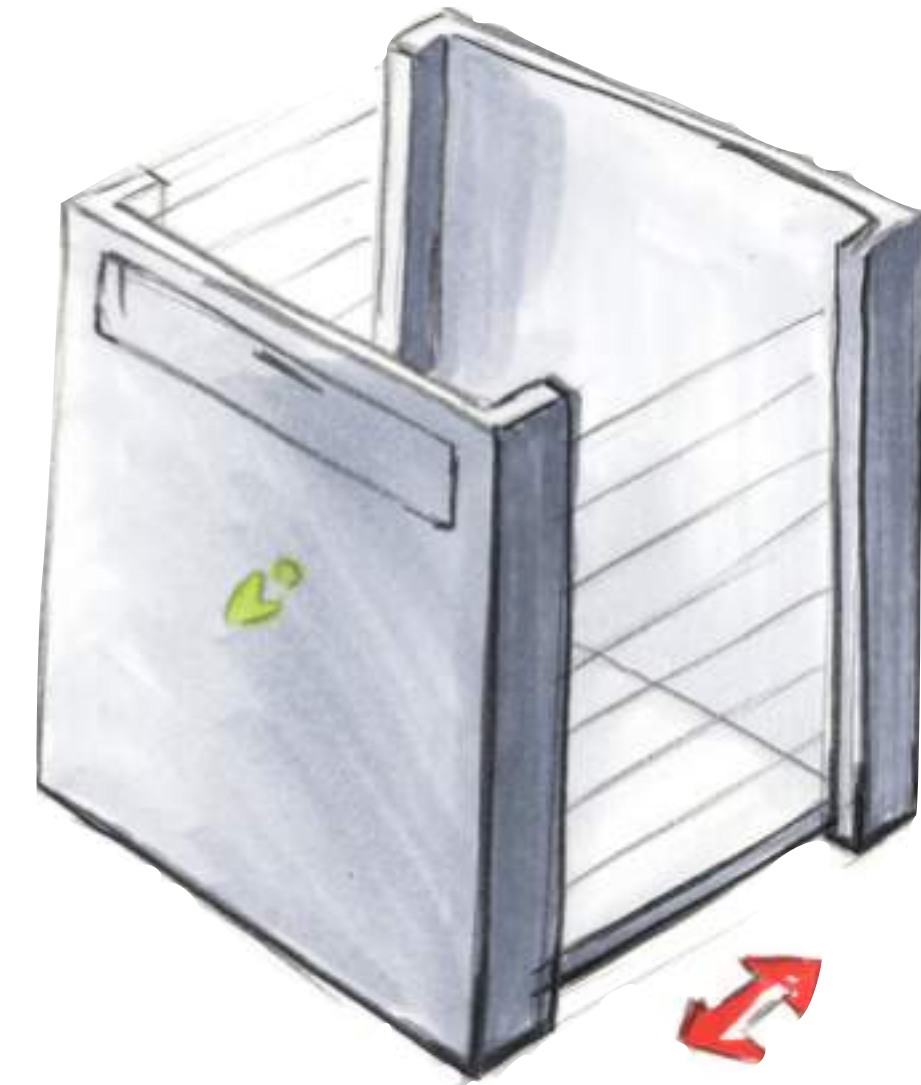
REMOVABLE BATTERY



ARMS



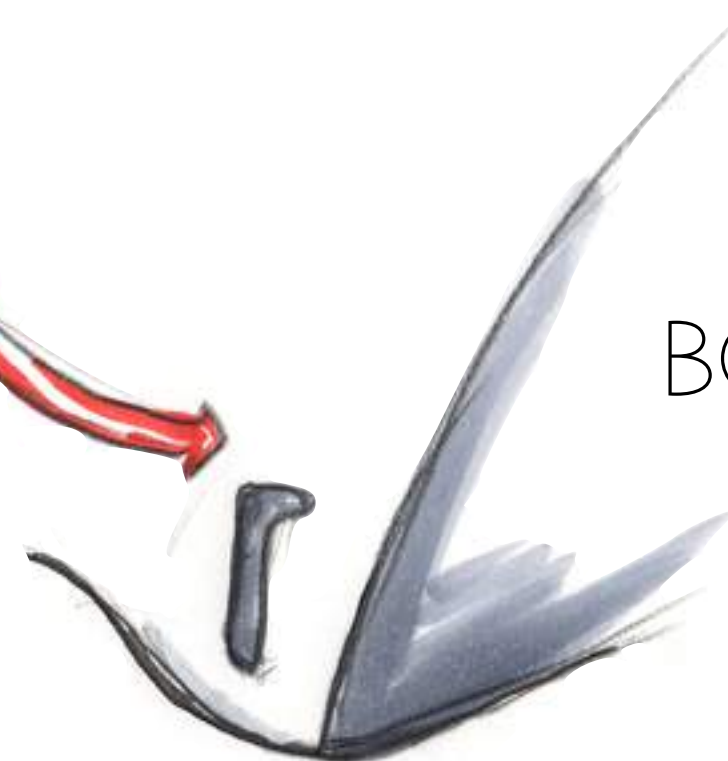
MALE



BASKET



FEMALE



BODY

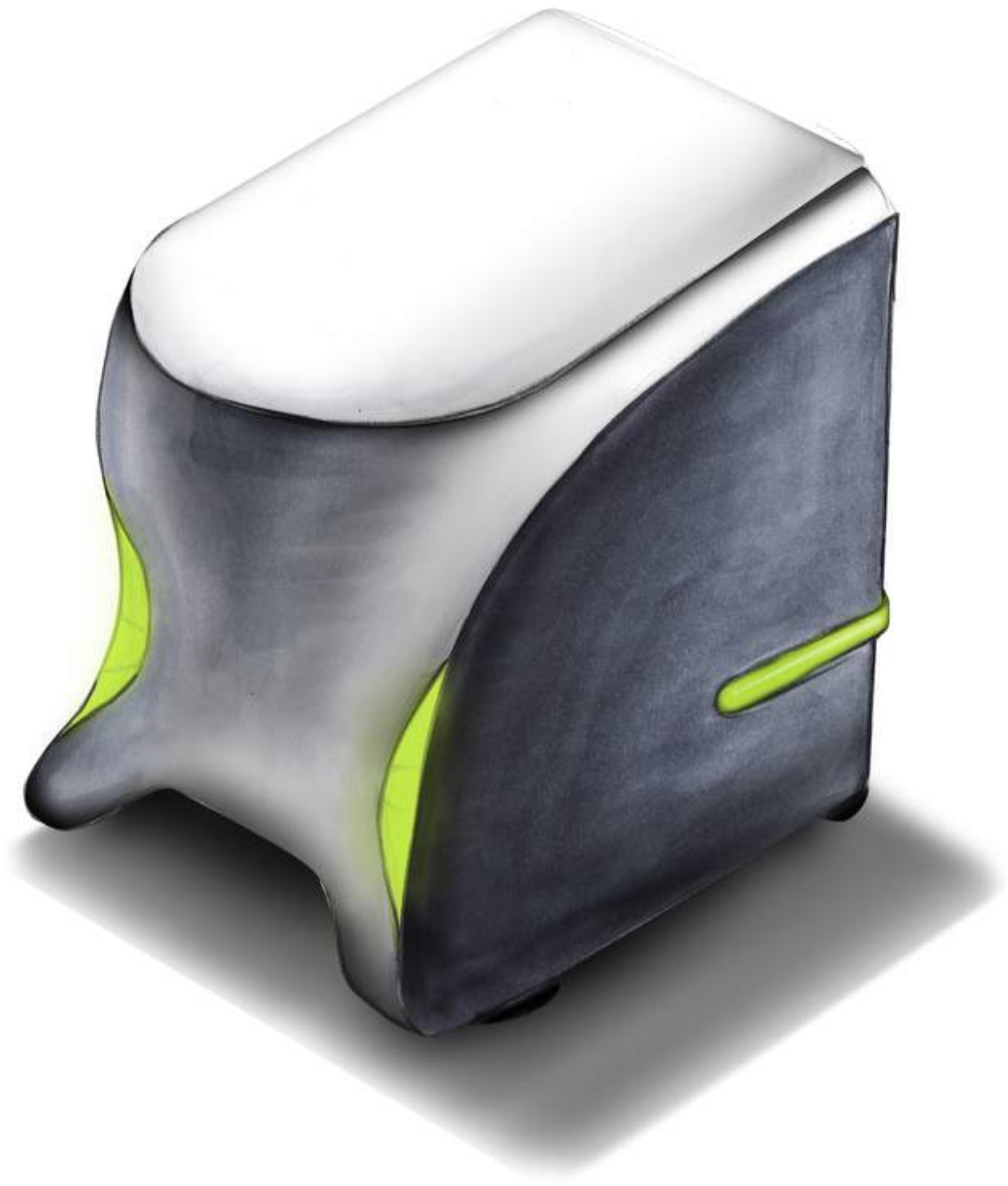




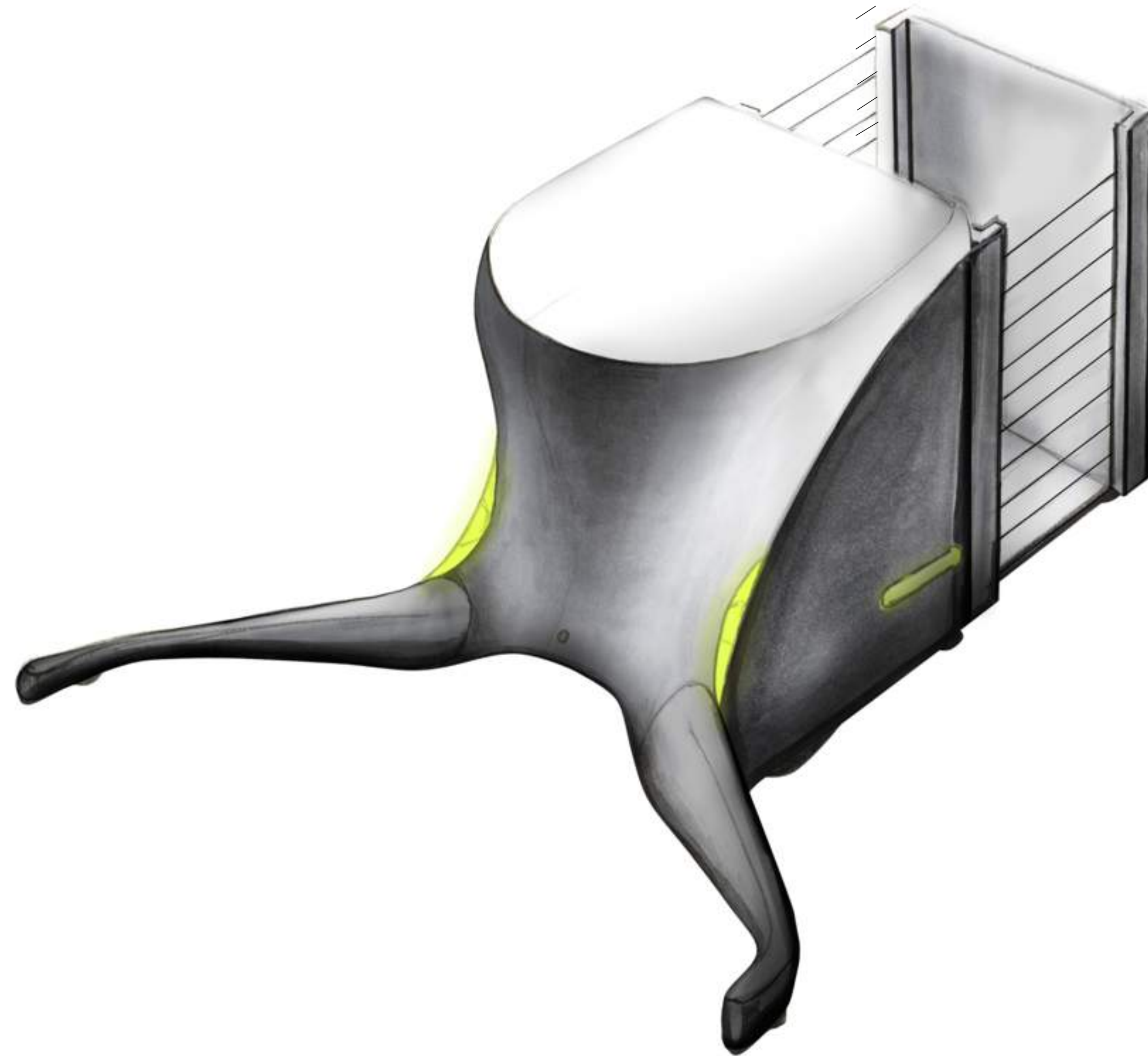
exploded view

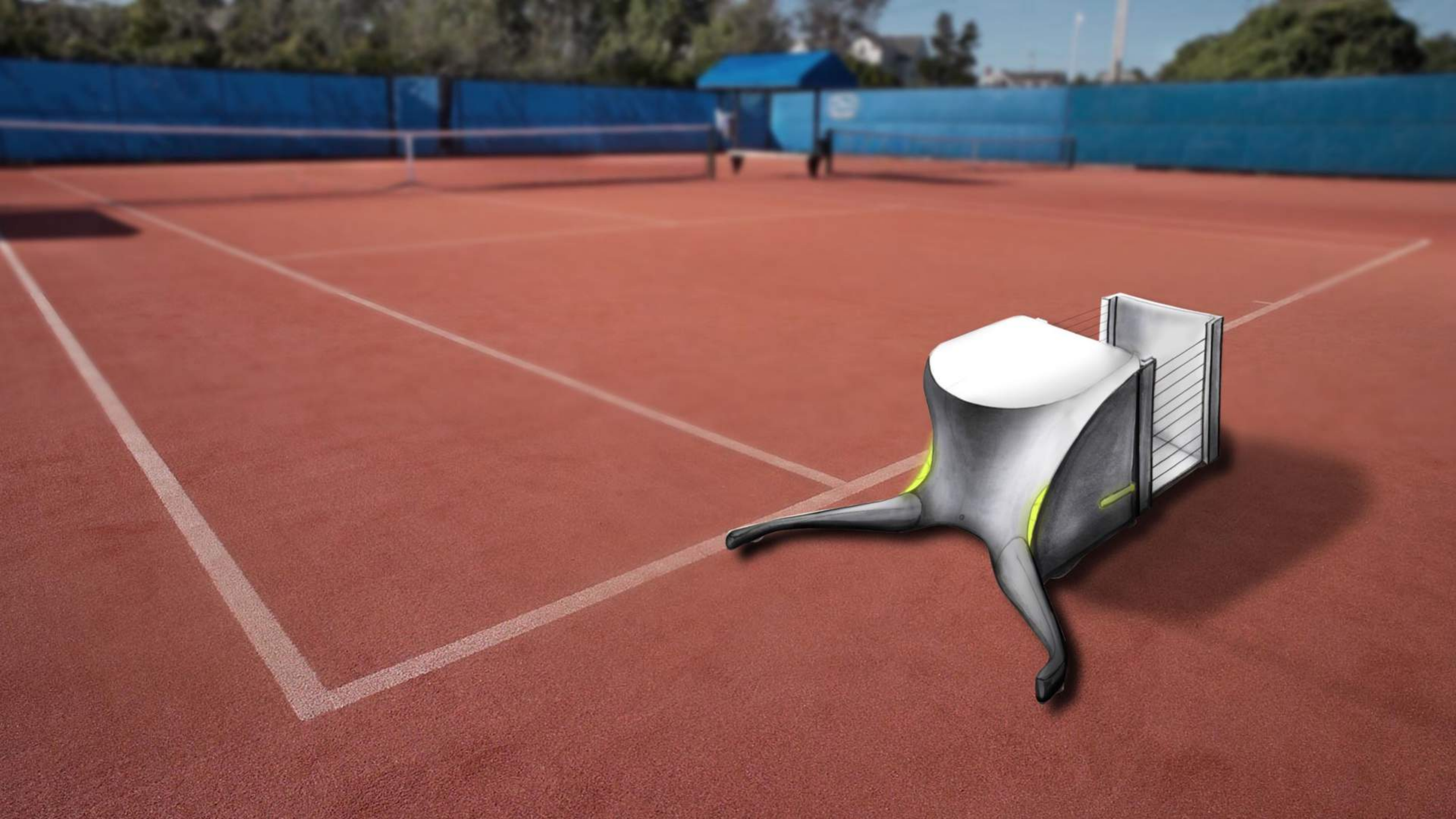


body only



Full rendering

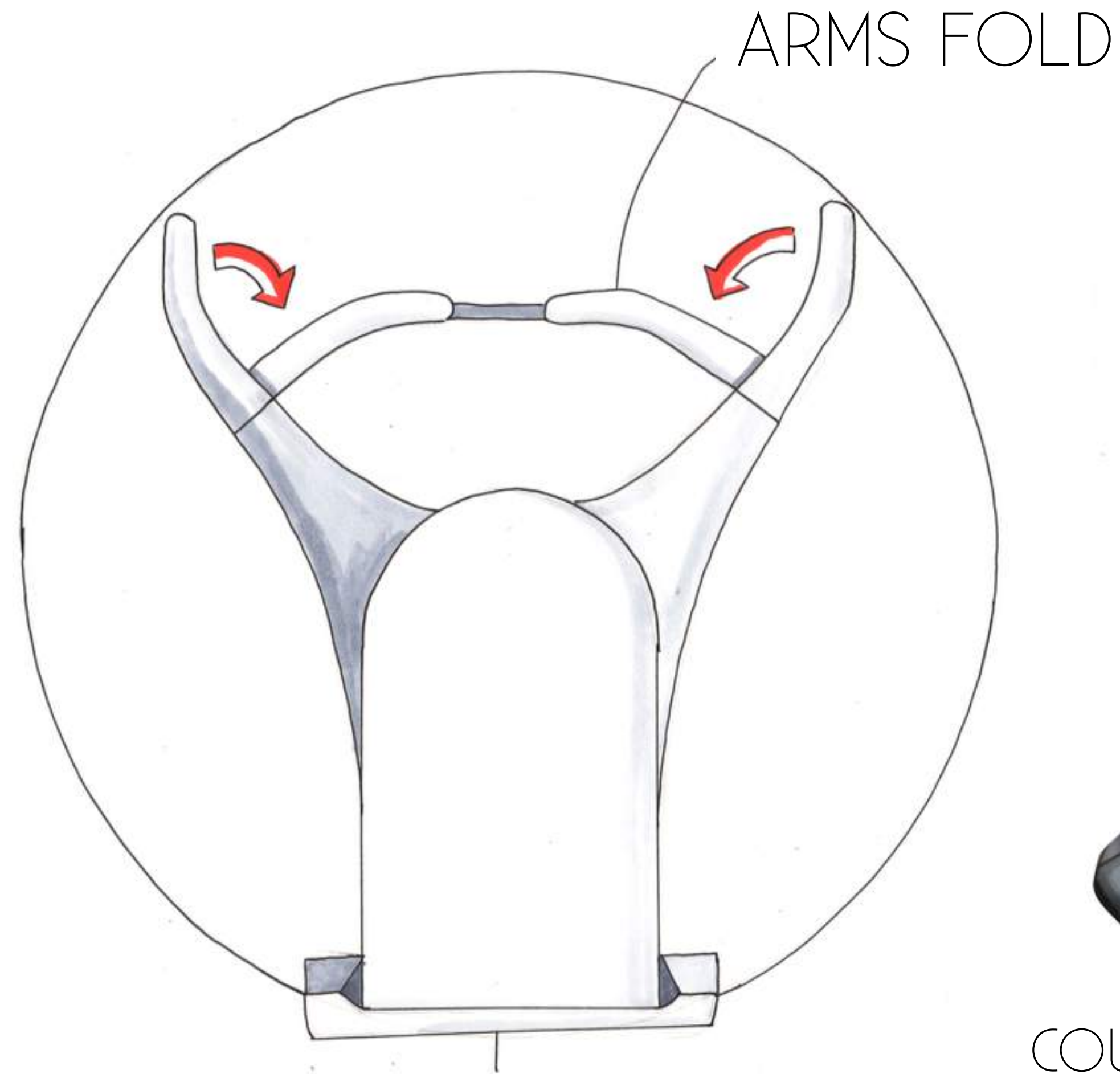




golden retriever pro



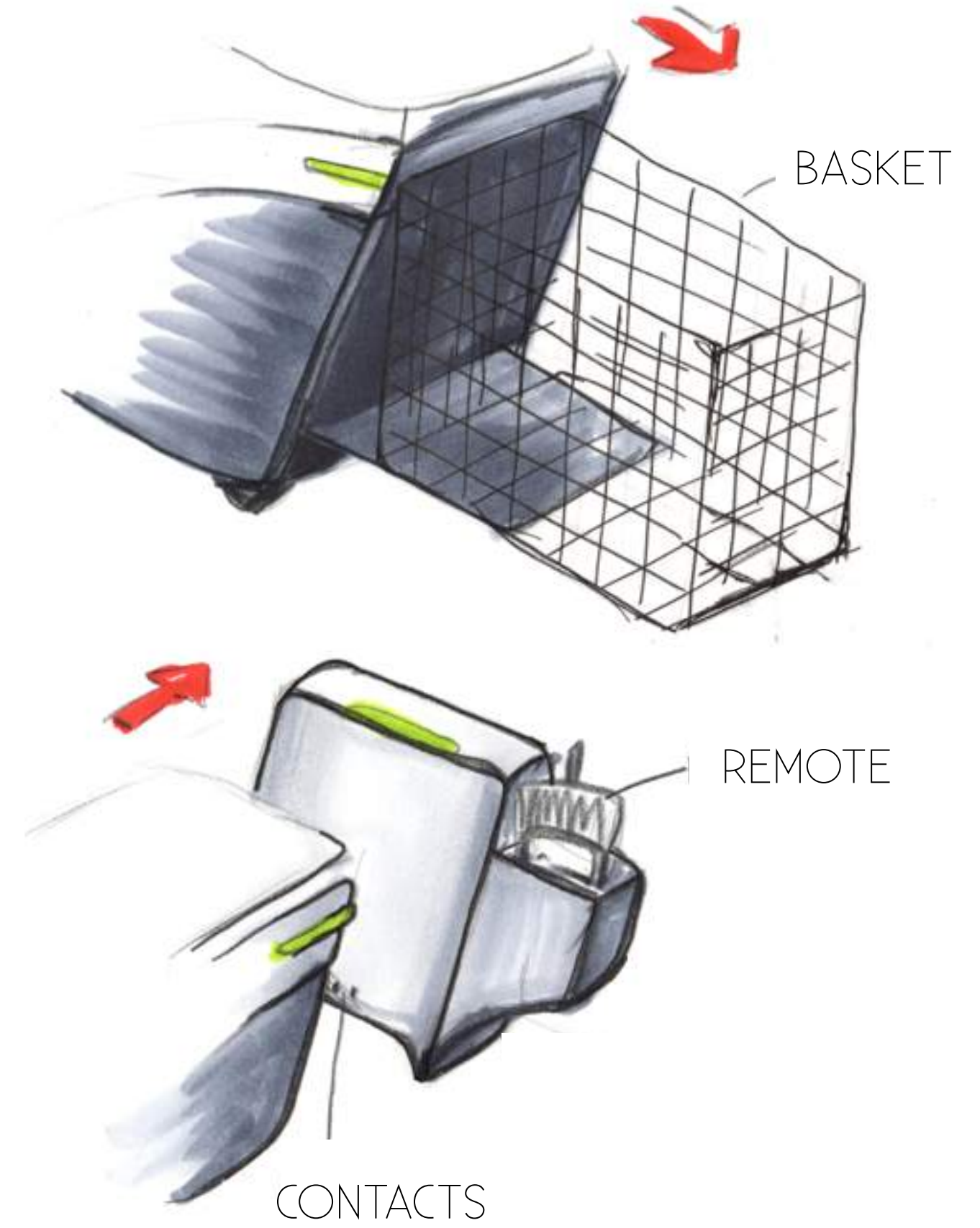
# Features



DOCKING STATION



COURTBOUND MARKER



DOCKING STATION



Full rendering



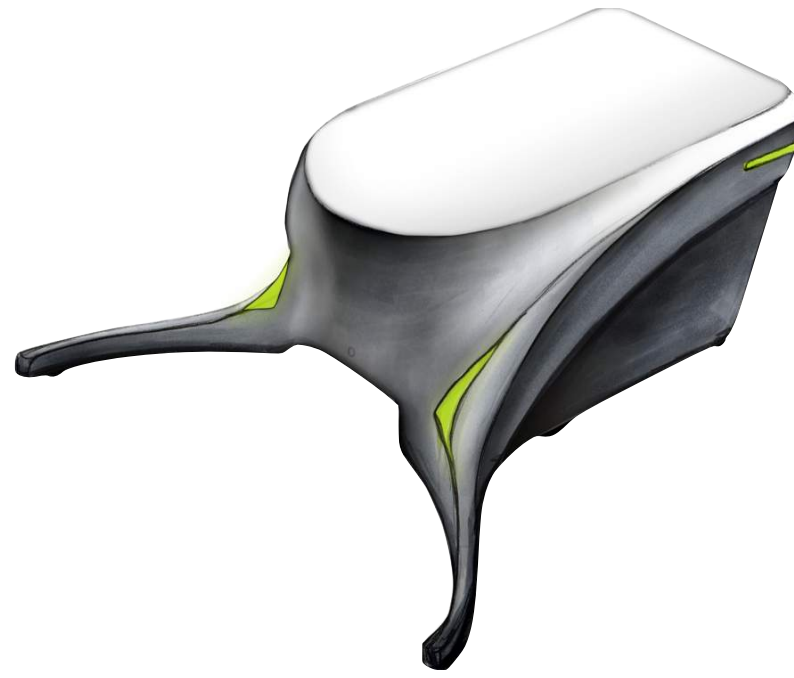
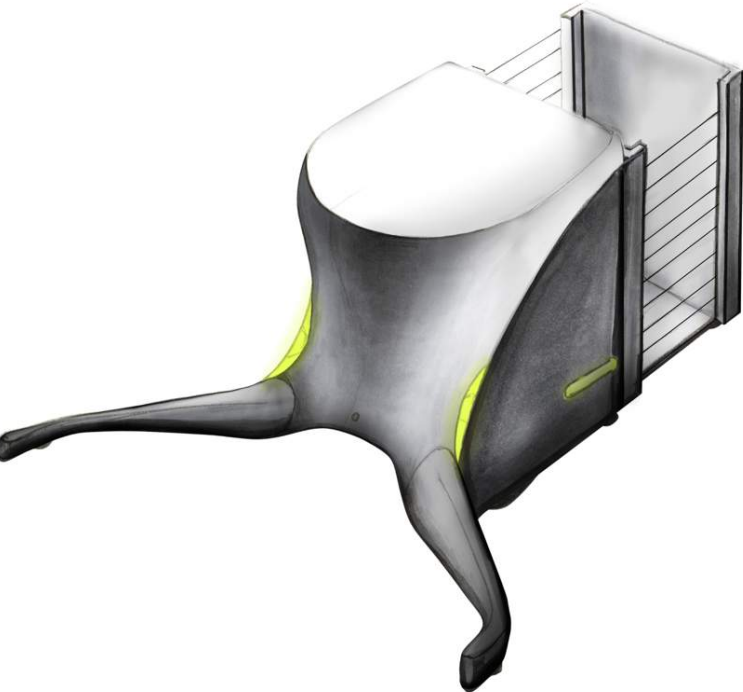






golden retriever

golden retriever pro



Price

\$1499

\$2999

Size and Weight

Body: 35.0 x 40.8 x 49.5 cm. 15kg.  
w/Basket & Arms: 95.5 x 85.8 x 49.5 cm.  
22kg.

Arms folded: 96.4 x 66.0 x 49.5 cm  
Unfolded: 124.0 x 91.5 x 49.5 cm.  
35kg.

Exterior Construction

Matte ABS Plastic

Anodized Aluminum & ABS



## golden retriever

## golden retriever pro

Battery

In use: 3 hours  
Standby: 24 hours

In use: 8 hours  
Standby: 48 hours

Ball Capacity

100

230

Features

Detachable & Collapsible Basket  
Detachable Arms  
Basket Full Lights  
Active Infrared Beacon  
FrontView Camera

Foldable Arms (into handle)  
Removable Battery  
Basket Full Lights  
Active Infrared Beacon  
FrontView Camera

Compatibility

Docking Station: Yes (body only)  
CourtBound Markers: Yes  
autoBall Remote App: Yes

Docking Station: Yes  
CourtBound Markers: Yes  
autoBall Remote App: Yes

What's In the Box

autoBall (Body, Arms, Basket)  
Remote  
Charger  
User Guide

autoBall Pro  
Remote with Screen  
CourtBound Markers (4)  
Docking Station  
Charger  
User Guide



# accessories

## CourtBound Markers

Set of four markers

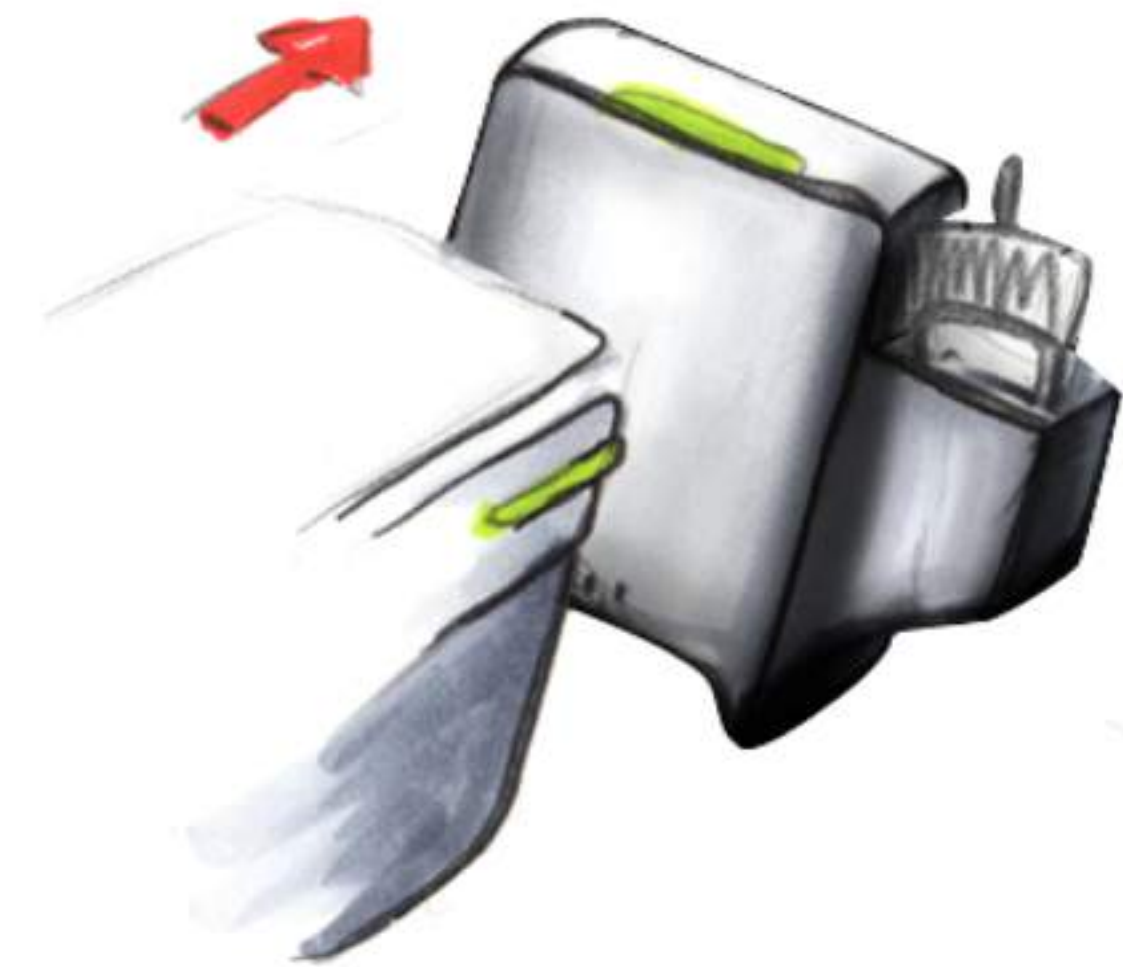


Aluminum construction

Included in autoBall Pro

\$199

## Docking Station



Included in autoBall Pro

Aluminum construction

\$199



# FULL ROLLOUT

