

CONTINUED FROM PAGE:

Step 1: Define the Problem

Design Brief

Client: Mrs. Berbawy

Target consumer: Anyone who uses (Family) or hosts parties

End user: people that are invited to the party

Designer: Roma After my mom finished cooking she places problem statement: the spatula on top of the box and sometimes falls off onto the countertop.

Design Agreement: Design a 3D print box with multiple compartments and a backboard to stay onto the wall.

Guidelines:

- must hold kitchen tools and condiments
- fit in a large kitchen
- Multifunctional
- 3D printed
- designed for 2D printing
- fit in a kitchen
- both parts have to be CAD'd
- size is based on 3D printer

CONTINUED ON PAGE:

DESIGNED BY:

Korn Alimchandani

DATE:

3/8/23

WITNESSED BY:

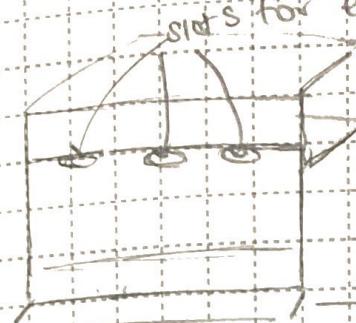
Brett

DATE:

3/8/23

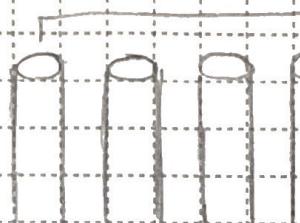
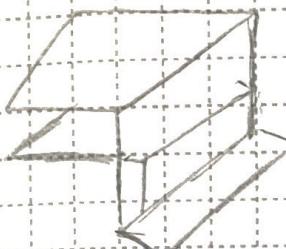
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Sides for each serving spoon
Stop to place into the fabric

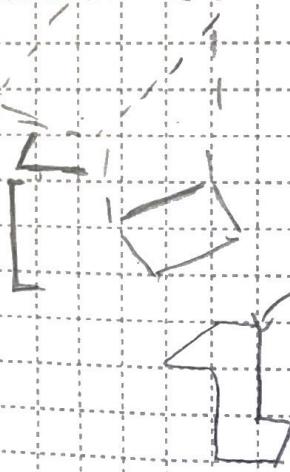
Decision matrix
/ Generate concepts



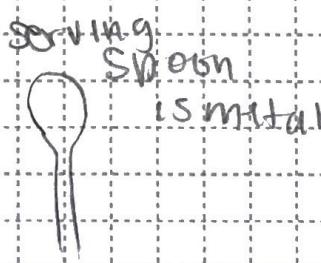
Each hole that will be on the object will be different sizes so that there's more use to the product.

I may need to make the holes more rectangular based on the serving spoon.

height would approx. be 5-6 inches tall and the length from the second insert to the base will be taller.



Could be heat bent and can use acrylic (clear thing)



IDEA IS APPROVED

CONTINUED ON PAGE:

BB

DESIGNED BY:

Roman Alimchandani

DATE:

3/8/23

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Lizit

DATE:

3/8/23



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CONTINUED FROM PAGE:

Step 2 continued: Brainstorming

Instead of hanging out from the table,



should round top so no sharp edges.

Can I put weight in it?

Serving spoons are heavy

yes however will need
to make a hole and
a cap to insert weight

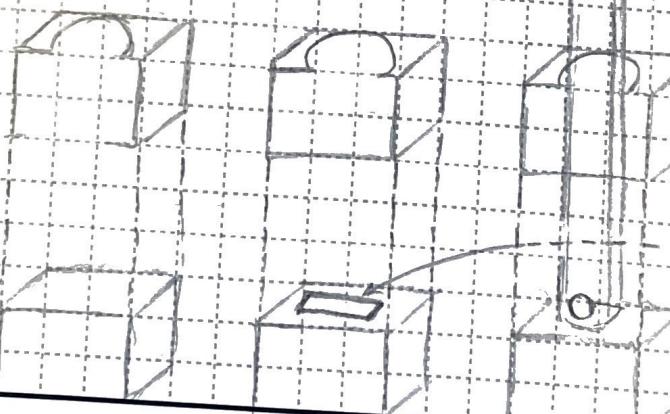


All sides
rounded
no edges

base is to catch all the
droppings of the spoon
excess.



there will be a "loop"
extension that the
scrubby spoon can



wondering if there
should be a "dent" so
that the spoon can fit
into that and help
balance

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Eolina Minchandani

DATE:

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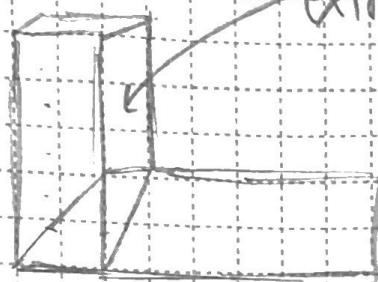
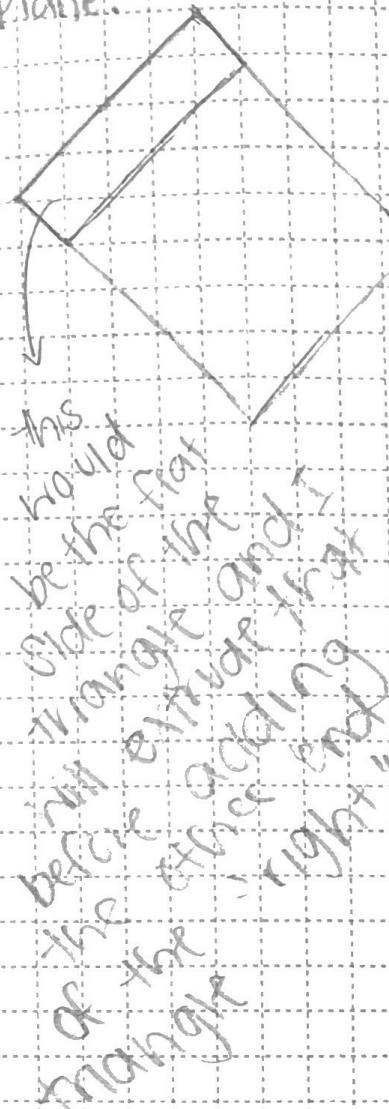
3/8/23



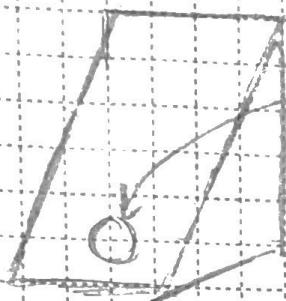
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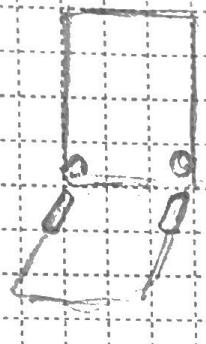
In CAD I would have to start making the base first on the XY plane.



extrude about 4 inch high



may need to add a hole and design a cap for weight put in. however I can also make a removable base.



holes on the 1 and pegs in the base to line up.

CONTINUED ON PAGE:

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Roma Alimchandani

DATE:

20/03/23

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S. J. D.

DATE:

3/8/23

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Design Matrix: Serving Spoon holder

Serving spoon holder with clamp to hang off table

Pros

- may be able to hold more since its on stronger material.

Cons

- would need to use acrylic and wood.
- harder and more complicated project
- excess could fall out of base onto floor

[IDEA DOES NOT WORK]

SERVING SPOON holder placed on top of table.

Pros

- all serving spoons can fit into holder instead of having each individual serving spoon in holder. Saves money.
- helps with mess less to clean up
- Can hold different size spoons

Cons

- if any type of liquid is on the spoon it will drip down and stain the material
- only accommodating 8 to 10 spoons

[IDEA WORKS! YAY!]

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Ronia Klimanandani

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M. M.

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3/8/23

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3/8/23



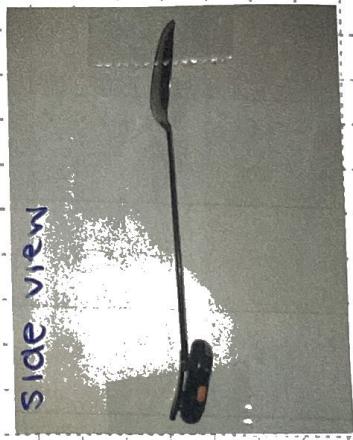
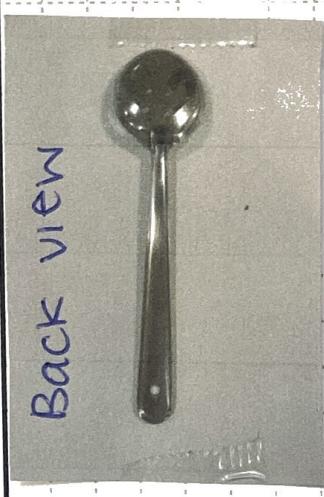
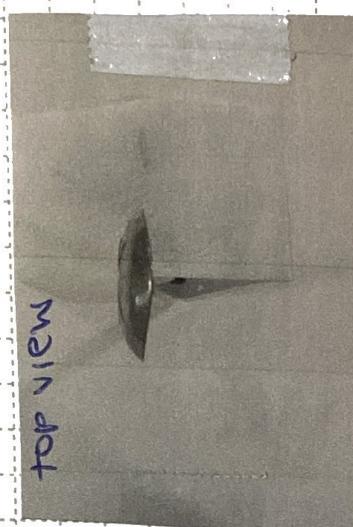
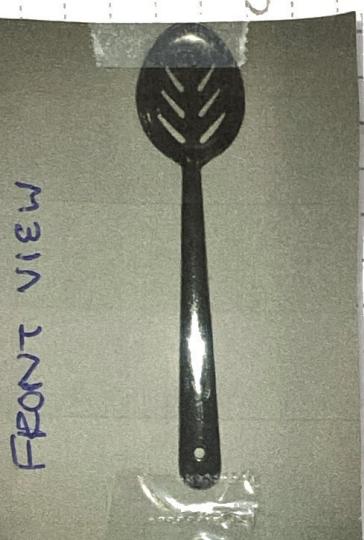
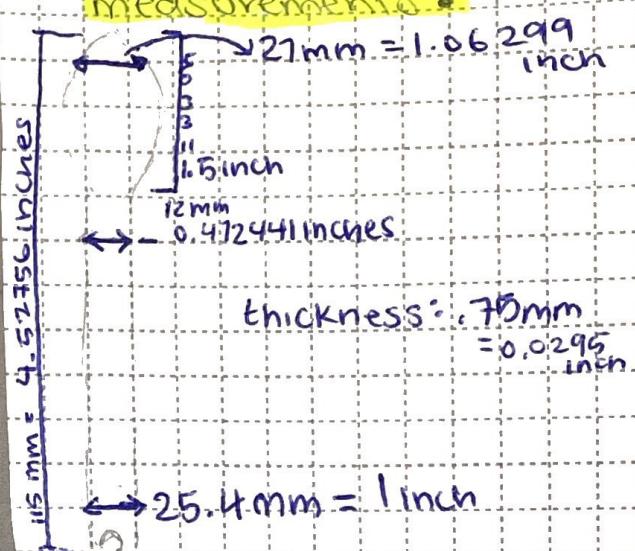
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Generating concepts cont.:

Needed technology exists? Yes however it only holds 1 serving spoon which is inconvenient for parties and other house events.

Scientific research needed? No, just math and measuring



SERVING SPOON #1 ↗

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Roma Afimchanandani

DATE:

3/10/23

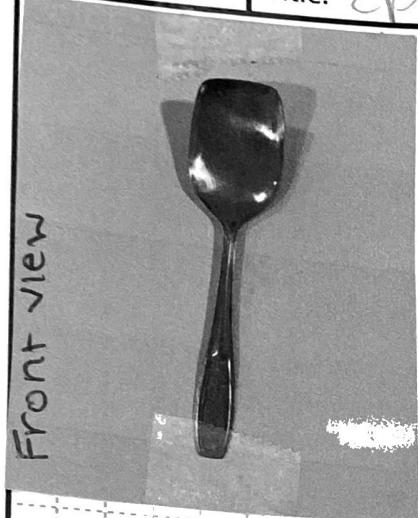
WITNESSED BY:

Parmin Mohelsani

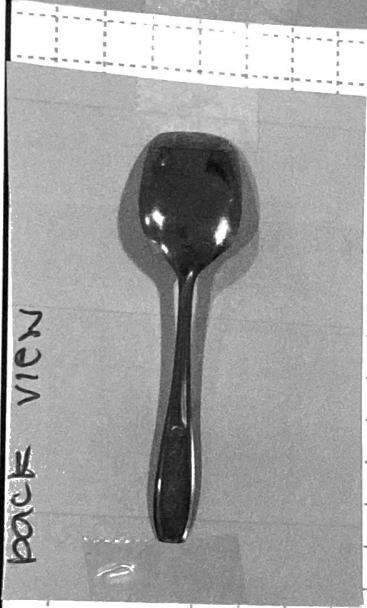
DATE:

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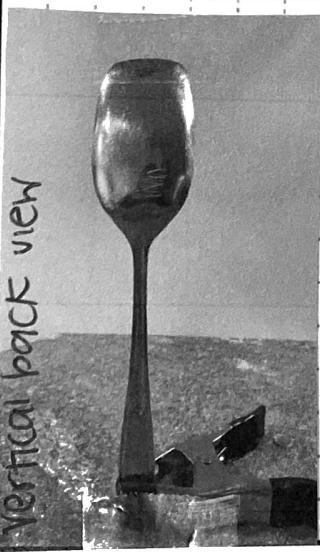
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Front view



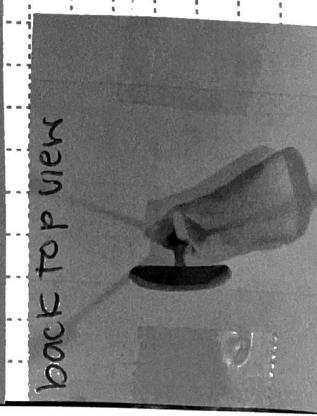
back view



vertical back view



side view



back top view



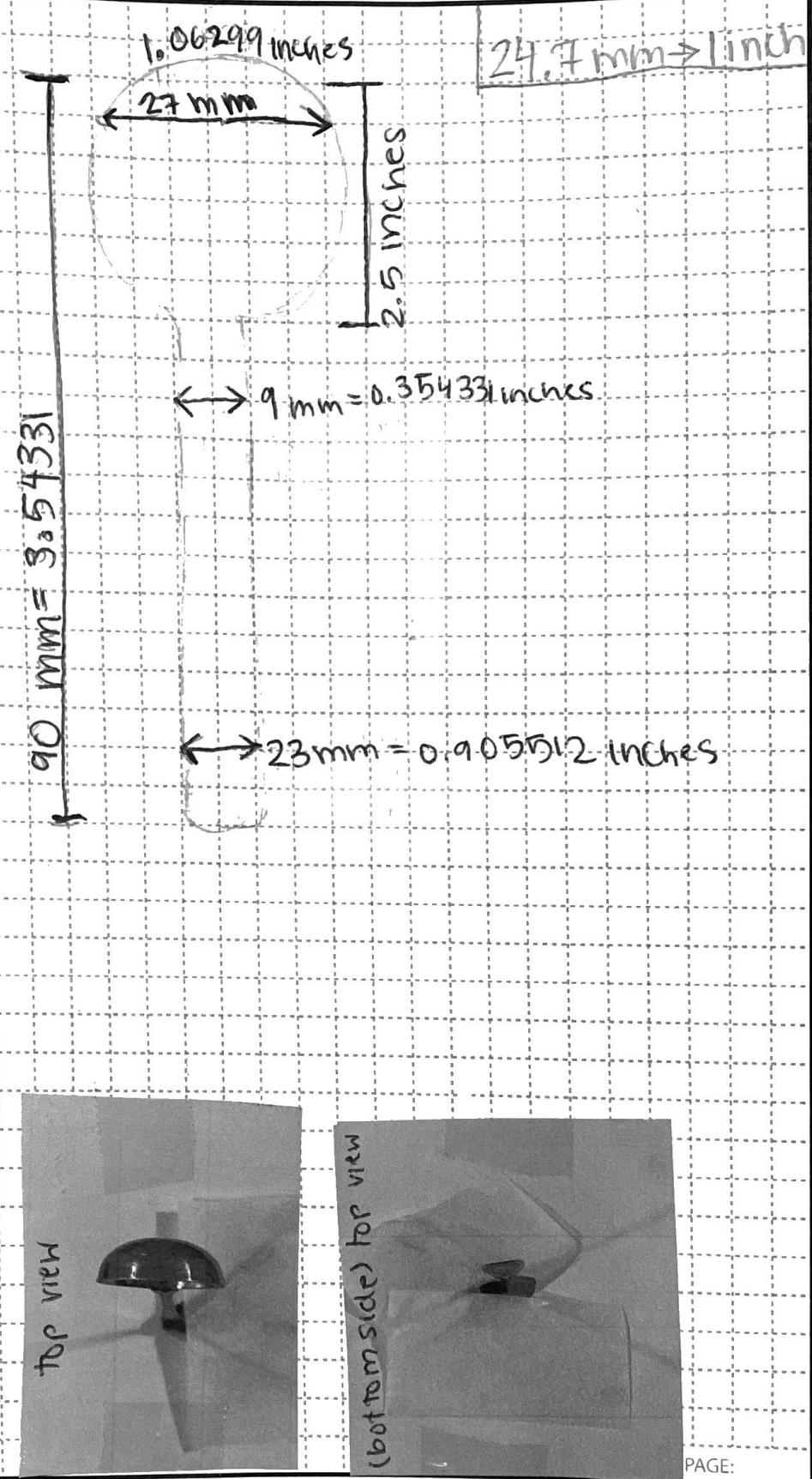
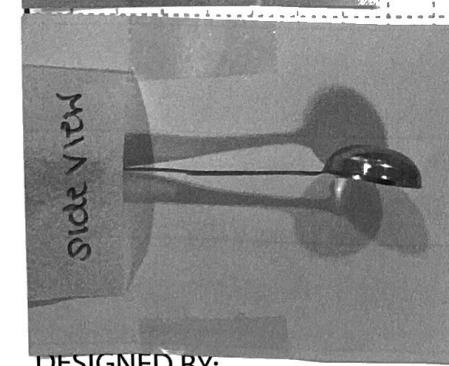
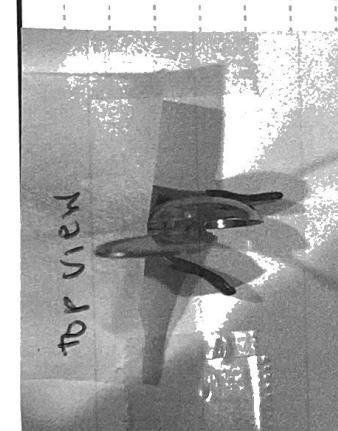
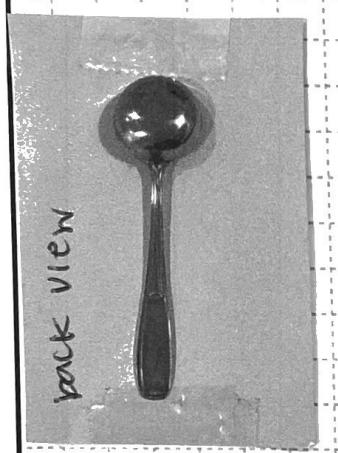
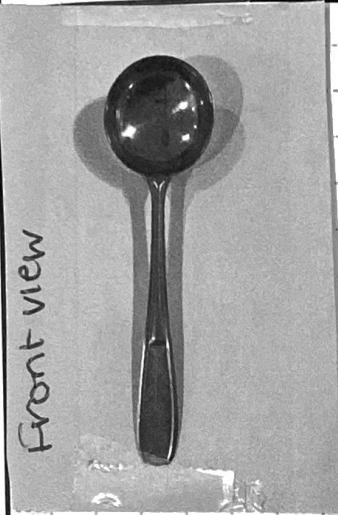
front top view



Serving Spoon #3

Title: SPC Design Challenge

Page: 48



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Ron Alimchandani

DATE:

3/12/23

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Parmin Molekani

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3/12/23

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These are all the 3 spoons together. Since they are different sizes, in case I will make the "bases" of the spoons different lengths + heights based on the spoons so it will be slanted.

can be 1.5 in apart



* Side note: the holes won't be circular if have be slots because the spoons are flat.

longest → shortest

One issue is that the bottom of the spoon is larger than the top of the stem of the spoon. This means that if I am making slots it would have to be the size of the bottom of the stem to slide through.

Keeping in mind of the size constraints I've made both the top and the bottom the same sizes as the bottom of the spoon as well as not making the bottom slot cut all the way through.

In addition the size constraint of my item is slot is too big for the printer mini. Than fully, the new printers that are being built are within the size constraints of my item.

DESIGNED BY:

Roma Alimchandani

WITNESSED BY:

Parmin Mobeedi

DATE:

3/13

DATE:

3/13

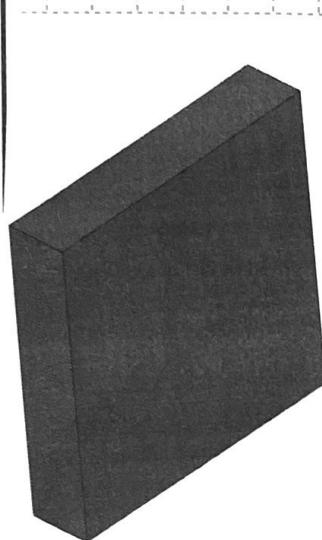
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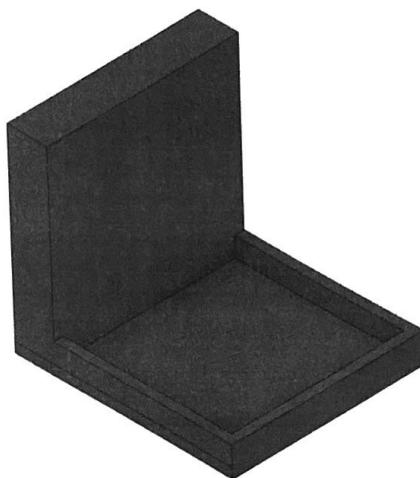
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After brainstorming and trying to make this idea possible, I started to add the item on fusion 360.

Step 1

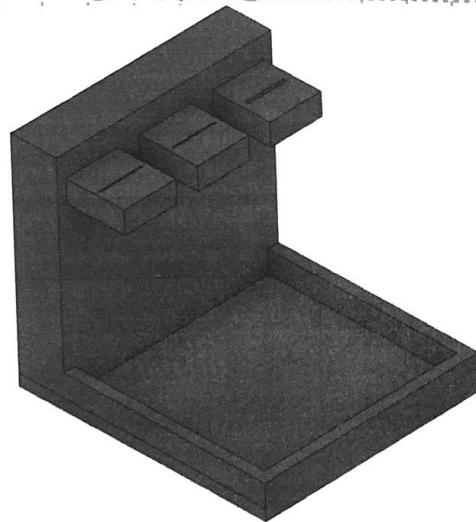


Step 2

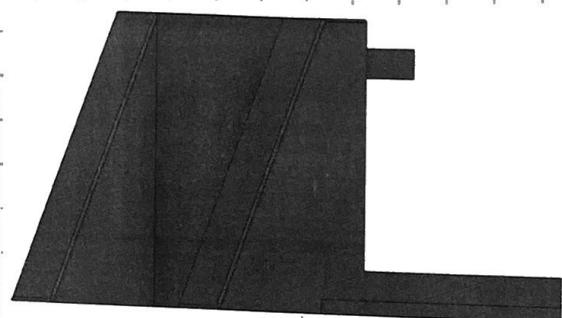


I decided to make a base for the food droppings that will fall clean from the spoon/ any excess.

I extruded the back of the base
Step 3



Step 4



Then I decided to make a back part to help hold the metal spoons. At first I completely filled this part ~~in~~ however it's going to waste a lot of filament. therefore I made it on 2 sides instead of 1.

After making the base I started with the slots for the serving spoons by extruding out of the back

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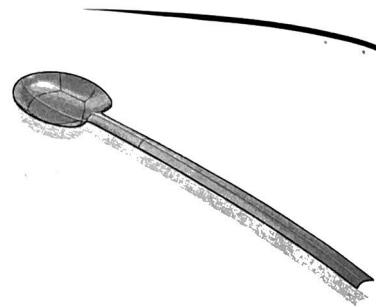
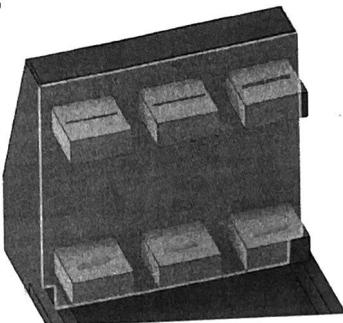
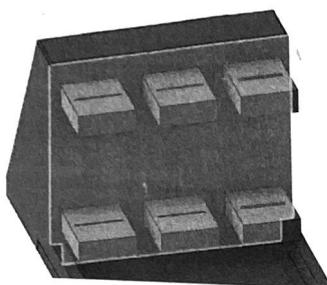
3/24/23

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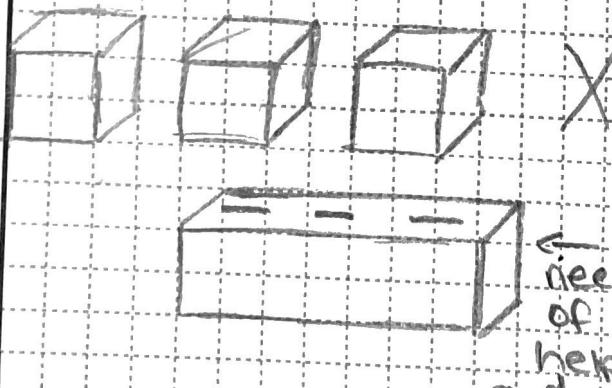


I then added 6 slots since the base is larger than the section before the spoon part, so I made all slots the same size according to the spoon so it can slide in properly.

One of the tasks that has given was to make the hem that's being fitted within the design in a rotting. I then made a spoon and measured it according to my spoon I have at home. One issue happening is when I created the spoon, I needed to make it thicker, however I'm not sure how to extrude the bottom because there isn't an option to do so.

In addition to trying to make it thicker, I also need to be able to align it to my item, however when I try to align it, it aligns the top with the slot.

* make sure to change 6 slots into 2 long lines



← after creating this, I will need to extrude into the back of the object. This will help fix the lack of support and overhang.

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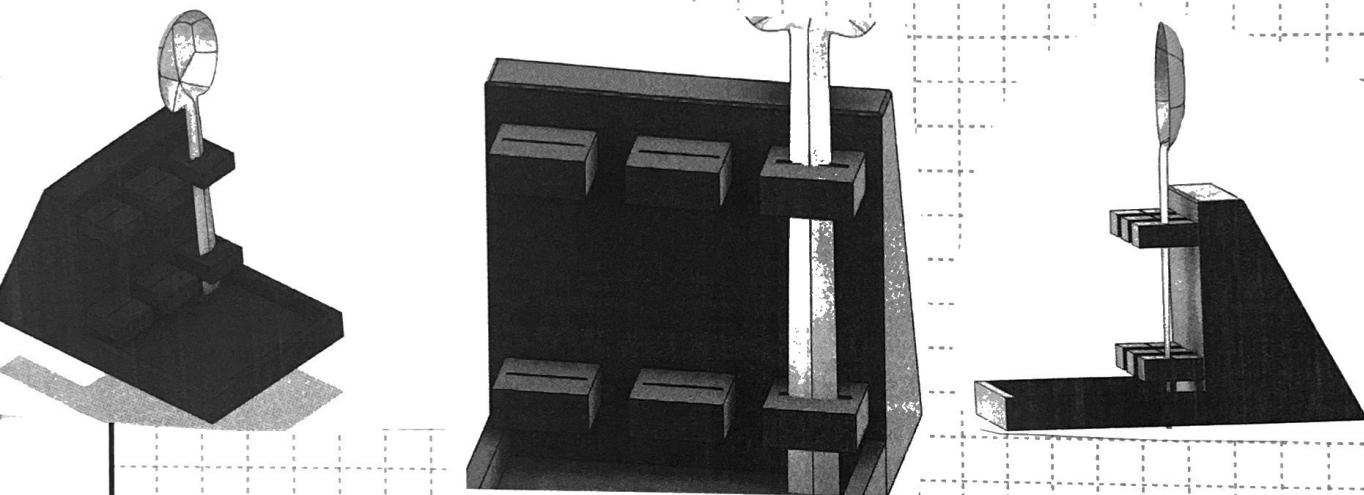
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Chamfered : 0.06 inch

In addition to make sure the design looks appealing as well as fixing mechanism, I will chamfer the insides of the base. And for the slots instead of making them rectangles, I would need to make it more fitting to the spoon.

I would need to project and then create an ellipse on both ends of the rectangle. This will be done for all the rectangles.

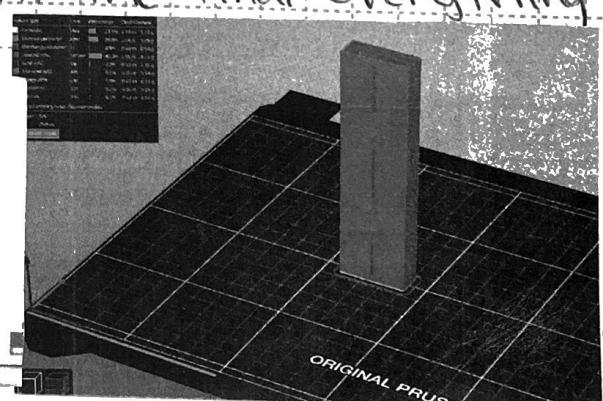
To make sure this idea works, I designed the spoon and tested it with my stem.



Distance : 0.542 0.607
0.500 0.616

From there I put my design on prusa for test printing so that when I print the final everything would be good.

Sliced Info	
Used Filament (g)	22.15
Used Filament (m)	7.42
Used Filament (mm³)	17858.91
Cost	0.56
Estimated printing time:	
- normal mode	2h46m
- stealth mode	2h47m



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Export G-code

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DATE:

4/6/23

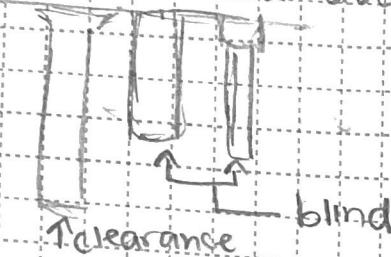
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Continued on page 55

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Hole definitions:

- through : hole cuts through entire thickness
- clearance : hole large enough to allow screw in & pass through
- blind : hole doesn't cut through entire thickness



(+) ← through

blind

▫ Countersink

- conical-shaped recess around hole @ surface

- used to accept tapped screw

▫ Counterbore

- cylindrical recess around hole at surface

- used to relieve a bolt head or nut

▫ tapped

- has internal thread

hole notes:

Φ ← diameter

H ← Counterbore

V ← Countersink

↓ ← depth or deep symbol

Thread notes

- thread is dimensioned with the use of lead notes

▫ two methods

• UNC ← UN = US

• ISO ← other countries

metric

M12 - 1.5 H THRU

↑ ↑ ↑ going through

diameter pitch
in mm

* fractional #: = Unified
national / states

major diameter

5 1/16 - 18 UNC ← coarse

↑
thread per inch

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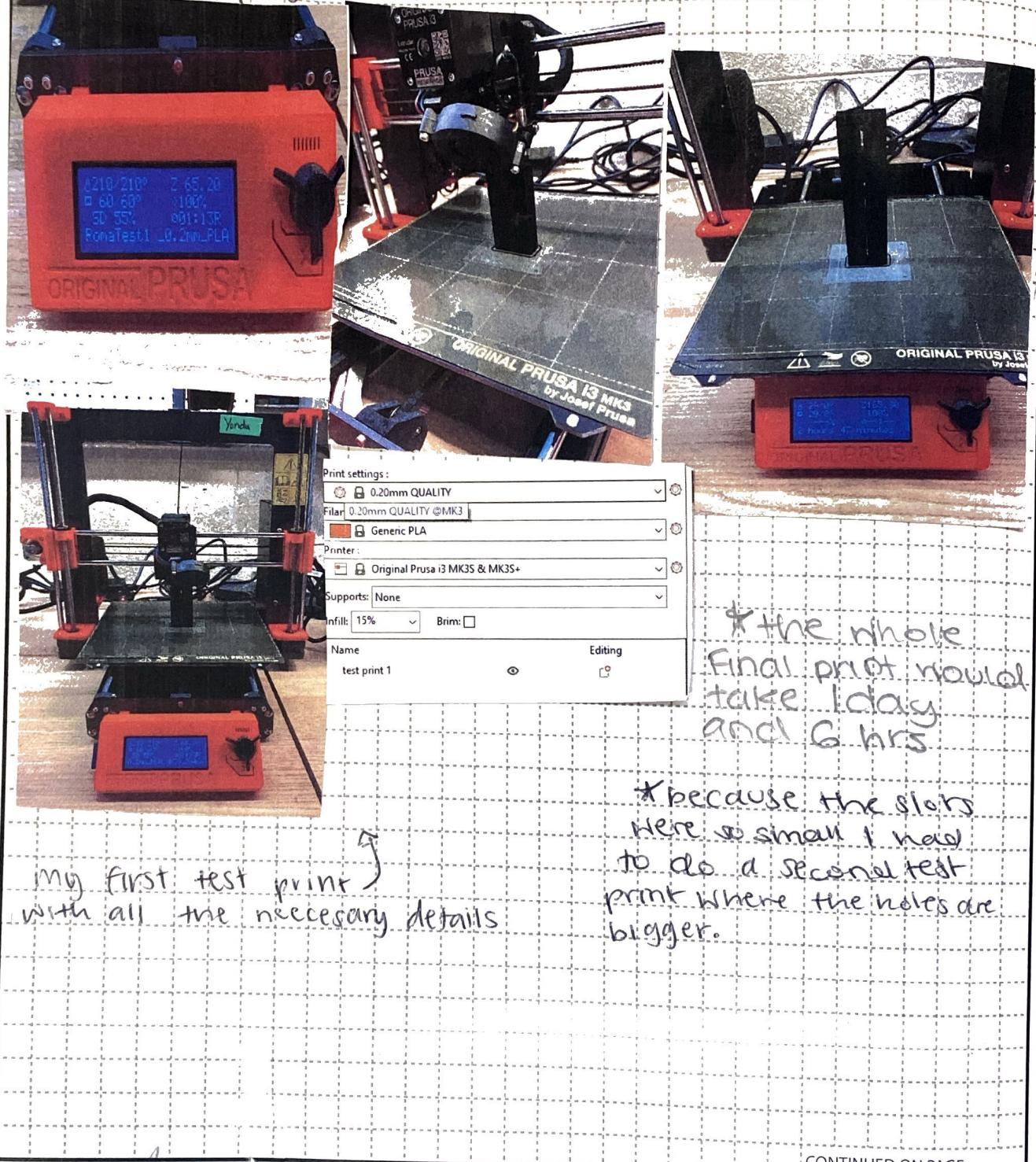
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CONTINUED FROM PAGE: 52

When receiving my 1st test print, I noticed the holes were too small for the spoons.



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4/26/23

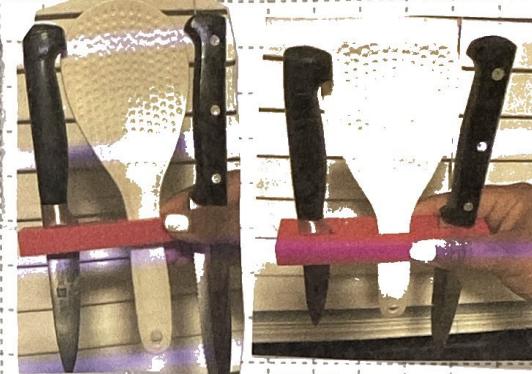
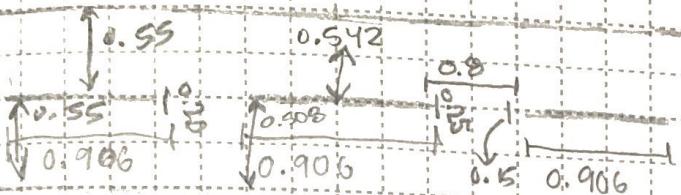
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realizing the holes were too small, I created 2 more test prints.

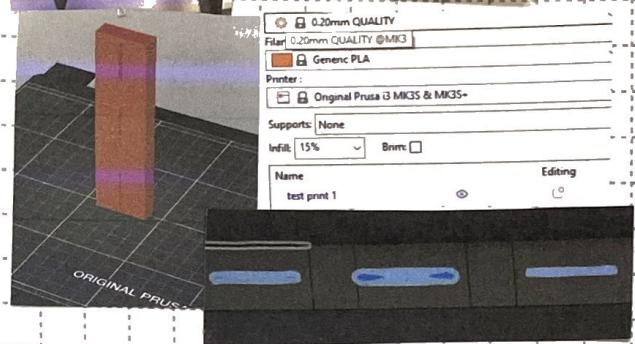
The second test print, the holes were a bit bigger and it was able to fit knives and a spoon. I then had to recalculate the measurements. the measurements of the holes:



Seeing this 2nd test print, the holes were a bit bigger however it wasn't big enough for the 2 slots on the sides.

We had to clean the house and run

some errands today including the spoons I had to make this so I sized it to other utensils I have.



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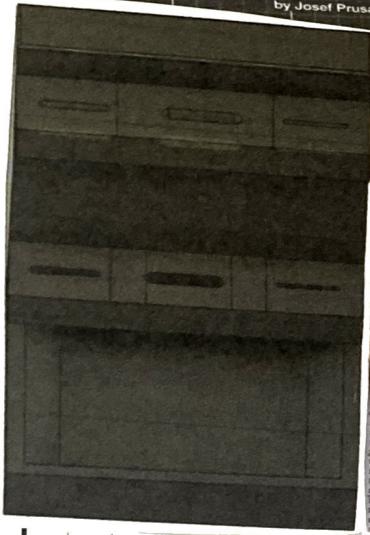
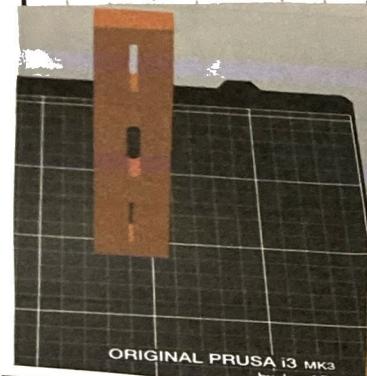
3/28/23

80


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After testing out the second test print, I then had to resize based on the new utensils I had received.



The print settings

- 20mm quality
- Hatchbox PLA
- Prusa MK3S
- Supports: none
- Infill: 15%



FRONT
VIEW
(Far)



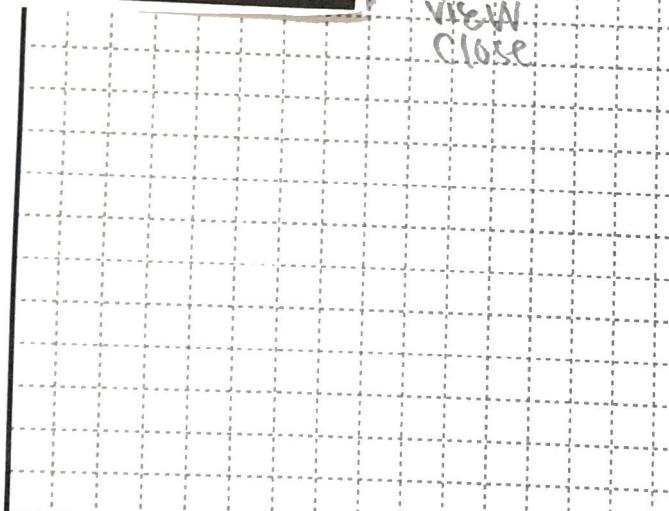
Side view



Side view

Since both rows are completely open, I realized it shouldn't be an issue.

FRENT
VIEW
close



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DATE:

5/4/23



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Continued from page 57

Page: 59

Title:

Epic design Challenge

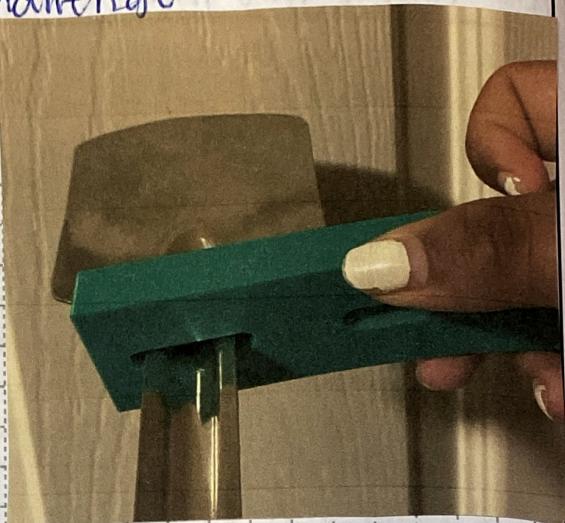


FRONT
VIEW

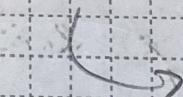


Here are some
close ups of
the 1st specula
that will be going
in the left slot
of the design.

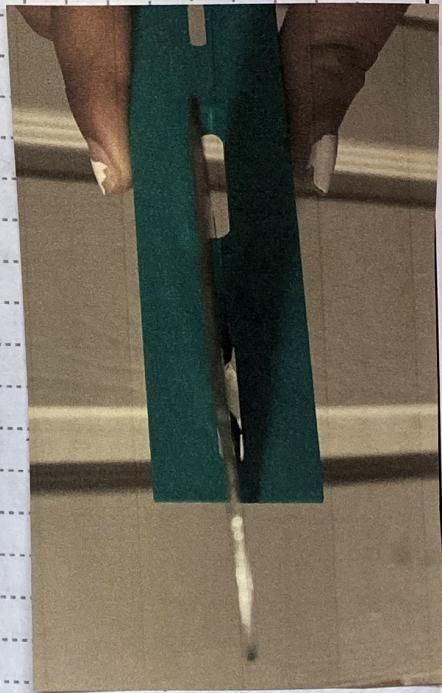
Bottom
view



TOP
VIEW



Close up of it
going in the slot



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A handwritten signature in black ink.

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A handwritten signature in black ink.

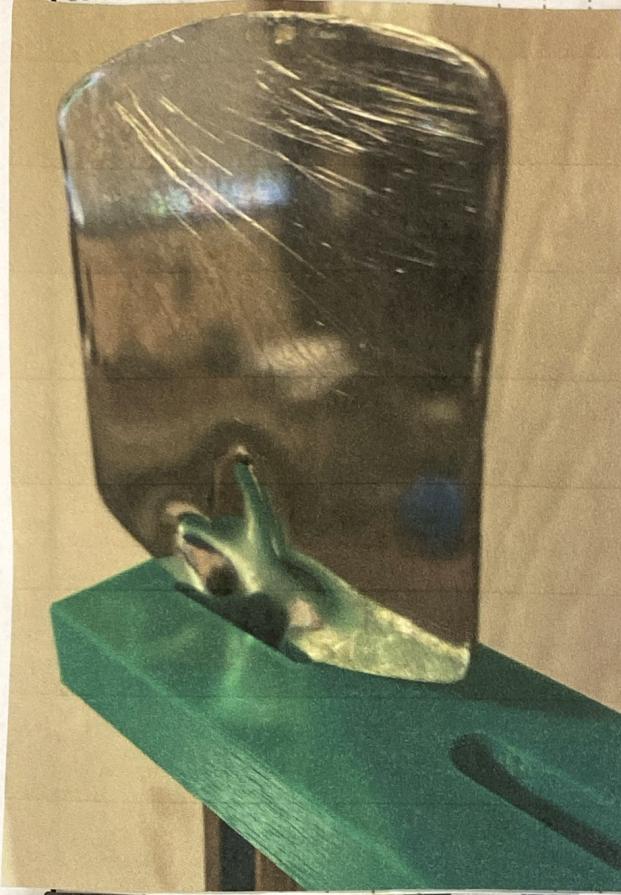
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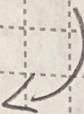


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HERE IS A CLOSE UP OF THE SLOT AFTER THE UTENSIL WAS PUT IN.



the main reason why I'm building this epic design is because of the utensile always having to fall out or having to be put on another plate which is unnecessary when my epic design is made & used.



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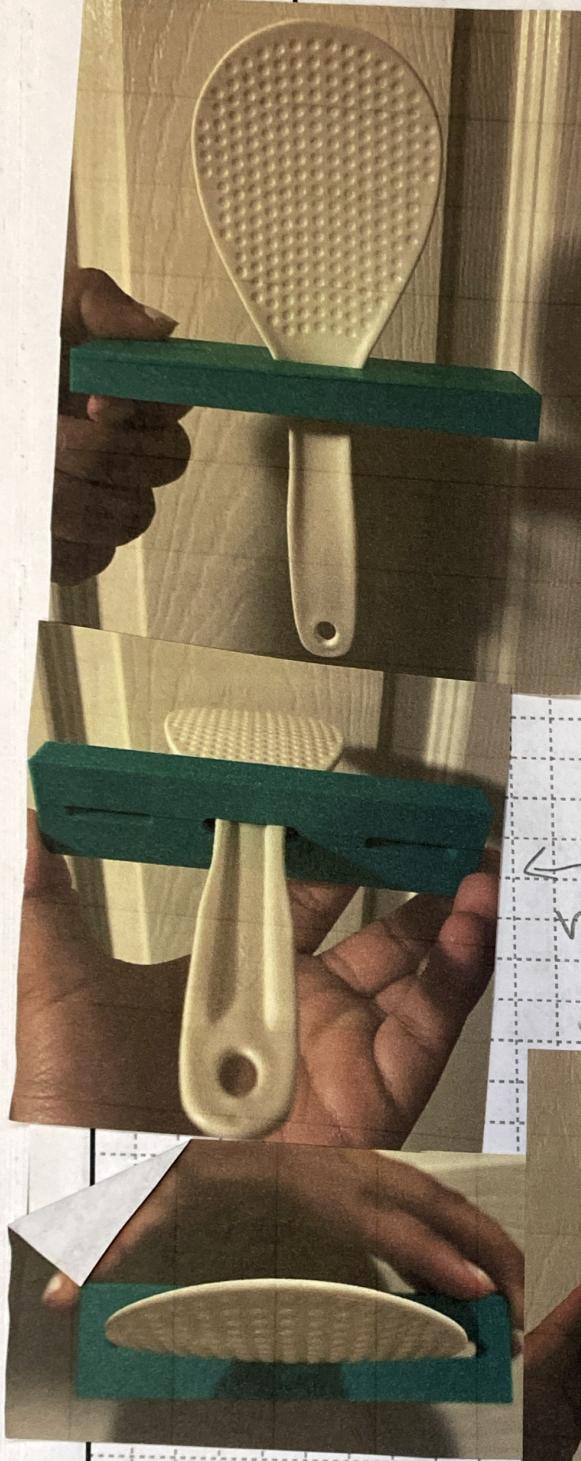
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Epic design challenge



← FRONT

These are the close ups of the middle slot

This utensil is used for rice and other sticky forms of food but mostly rice.

← BOTTOM
in slot shown

SIDES

→ TOP (close up)



Top 9

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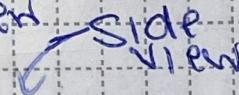
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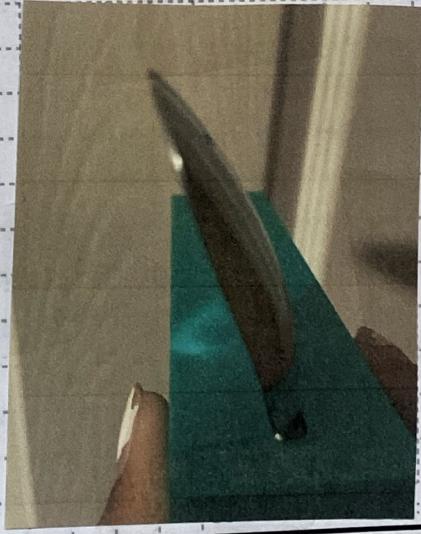


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CONTINUED FROM PAGE:

TOP
DIAGONAL
VIEWFRONT
VIEWbottom
slot view

side view



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FINALLY ALLOWED TO PRINT! (MAY 5 2022)
 The print took 1 day and the printer I used was
 Ender. I used Hatchbox PLA and no supports.

- * One change I made before printing was the size of the base... The base was too long and unnecessary and a waste of filament. I also Chamfered the insides so that all the liquids fall and stay in the base.
- * fix last clip/tape cut
- * stress test: place an actual table and forcefully put the spoons in.
- * maybe change sound and add a instrumental?



Scan me!

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