

THIS NOTEBOOK BELONGS TO

Maren Vinnie

CONTACT through spiritual means only

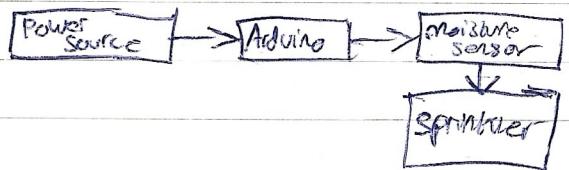
P L A N T E M O N T U R Y

Start date: couple days before 5th. Maybe 3rd or 4th

-Arduino

-moisture sensor

-hella jumper wires (?)



Robotic Arm?

Servo could be open too thick
nevermind) too thick (coincidence)

Exclude robotic arm



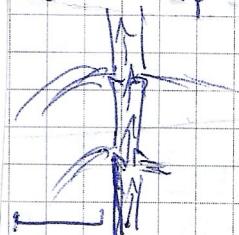
May modify this in the future

Pages

pics of first pieces of work

Taped 5/6 19:30-ish
some flaps left for ext

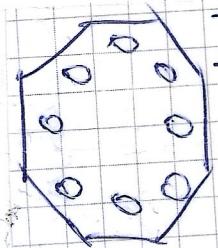
must push water up



↑
trascency
↑
bigger drawing than expected

must be calculated with Survolt

halbach Array



?
middle

servo

middle

servo

middle

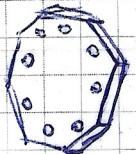
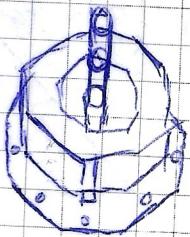
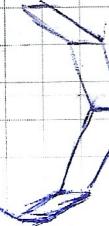
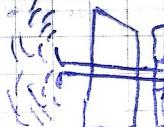
servo

middle

middle

FLIP

electron



Break system down into
subsystems

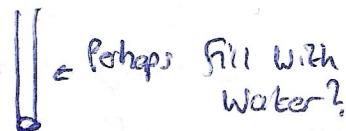
substratum

Plate: consists of octagonal base - call it the octagon with 8 neodymium magnets in a halbach array (Jesus, hence octagonal shaped base) for stability

For now, this should be sufficient
Plate \rightarrow Receptacle - Atomiser
Substratum 1000 Penny

Receptacle must contain soil and electronics. Should be transparent. Electronics could be placed on the inside of structure (see figure \rightarrow)

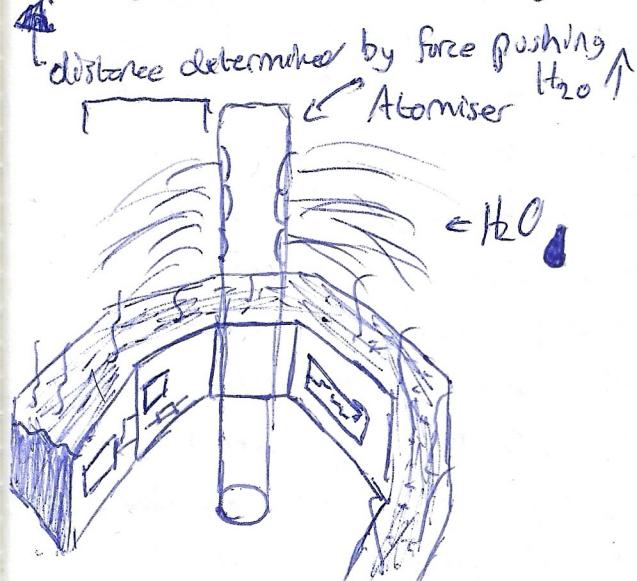
Design or research mechanism?



24/5

use electromagnetic ball to create displacement \rightarrow next pg

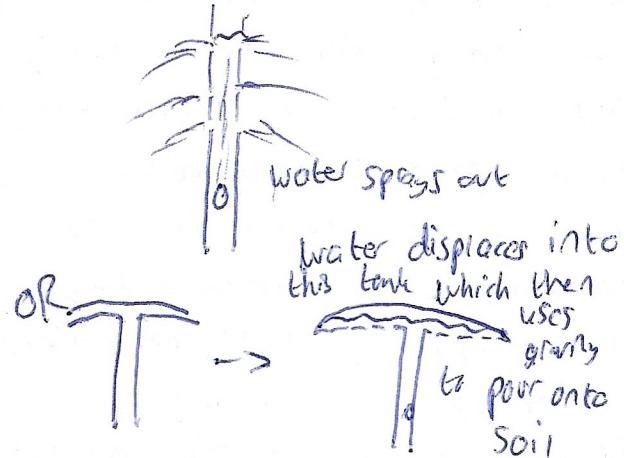
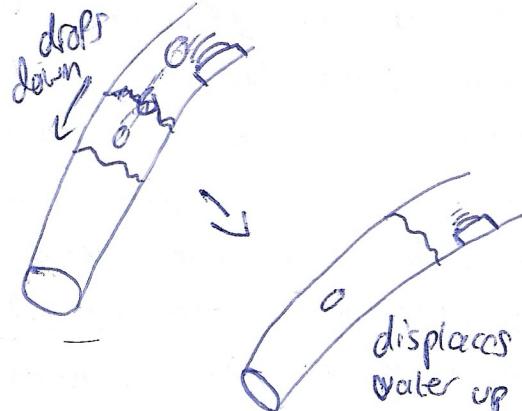
Probably need to equate SUVAT and $F=ma$?



I realised that something has to push the water up.

Admittedly, or well rather allegedly when I was high, my creativity and introspection was amplified. I pondered briefly on my realisation and thought what if something was pushed down to push the water up, creating a force described by Newton's third law (?), the equal & opposite one

So a ball, called the Jaeger, will move down into the water creating displacement where the water will be displaced through bony holes. The jaeger can be electro magnetic and controlled and used multiple times as appropriate until the soil is fine.

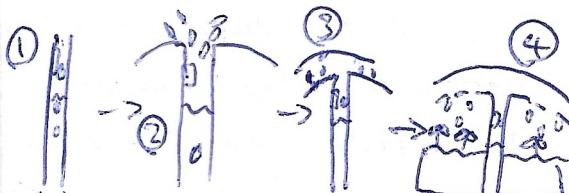


2/6/2025 Around 2 AM

After thinking of different ways to achieve self-watering (side note: I GENUINELY do not know why I end up trying to solve the most difficult problems, from energy creation (Perpetual Motion machine is the death of me) to hovering man, and now self-watering), I googled it to see what my species has come up with, and lo and behold, wicks! Capillary wicks! This, coincidentally, brought me back to my A-levels with my hydroponics X chromosome wicks design. So we shall be going with that. Wicks. This will be an easy project apparently. As for the 2 designs I came up with, they ended up seeming inefficient for the application.

It is almost depressing I would say, that I wasn't able to conjure an inventive self-watering system, but this inventing gig is a process I guess.

1) Electromagnetic Jaeger



moisture sensor goes off if soil lacks sufficient moisture. Electromagnet drops ferromagnetic stainless steel (unlikely to rust or erode) ①, which displaces water up by splashing it ②, this water enters an upper basin where there's a slope ③, this slope has gaps (evenly distributed) causing the displaced water to drop into the soil.

I don't know why I bother writing, it is too old fashioned and unnecessary. Anyways.

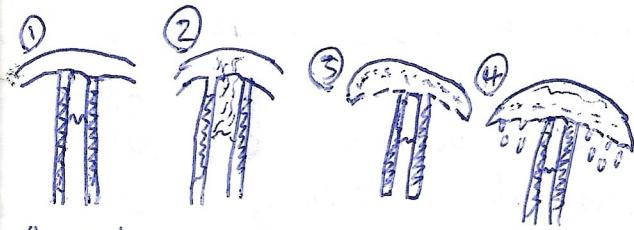
Problems: Insufficient amount of water would be displaced. This could be tackled by repeating drops at the Jaeger, but then it may behave too slowly or inefficient. And if there was enough water displaced into the basin, the chances of uneven distribution are high, even with evenly distributed holes.

If I ever have, an overwhelming overburden amount of time, I'll try this. ugly handwriting due to cramps.

For ④, I mean ③ weeps, there will be a basin design which causes the condensation. It will have something to keep the area light/closed & cold. →

2) Water cycle tree (?)

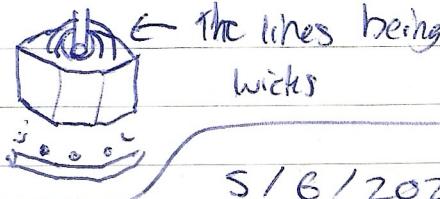
Whilst trying to sleep, hence the late notebook update, I was thinking of how to achieve self-watering. I remembered rain and how it occurs. Sometimes the answer can be right in front of us. Regardless, I was thinking of this:



The tube instead would be surrounded by another tube filled with heating wires/tubes or however appropriately placed. once the moisture sensor detects insufficient moisture level in the soil, the water heats up and evaporates ①, the vapour then rises into the basin ② begins condensing ③ and pours back down into the soil ④.

③ Plantemonium III: Return of the Wicks

Maybe something like this



5/6/2025 1AM

Due to changing to the wicks system, the overall design process should be easier and more manageable. Although upsettingly I do wonder what skills or benefits I gain from this project outside of it being cool as hell. I set my expectations high but will invent this to see what's up.

① Substratum

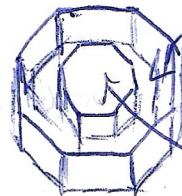


Halbach Array of neodymium magnets



Central area for wickgrove connection.

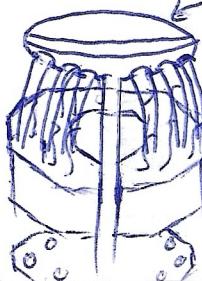
② Receptacle



Soil goes here

wickgrove 'grows' through here

③ Wickgrove (No longer Atomiser) Replace 'man' with wick)

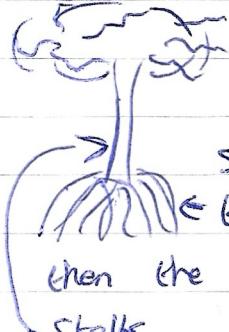


Mangrove-like appearance

* this design needs working on

I realise my 'inventing' process (if it is so) goes by finding the form / shape first then basing the logic off of that.

Mangroves look like



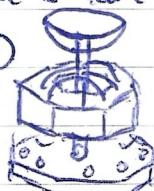
so if the wicks represent
the breathing roots

then the tube can represent the
stems

and basin can look like some
sort of tree leaves etc.

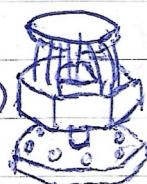
Perhaps

can't believe I have to draw the whole
thing



①

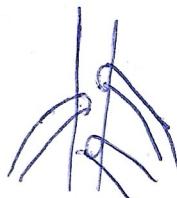
or



②

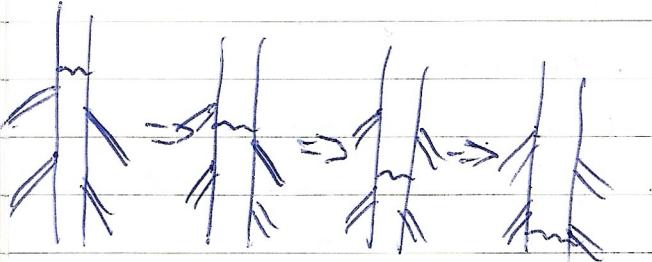
Idea ① will require the tube
to be hollow

Idea ② would be more feasible
practically as the capillary width
is 4mm diameter



There is a problem that water
may leak etc. i don't know I put
etc. there - anyways.

Tight fitted tubing of wicks would
work however this would entail
waiting for all the water to be drained
which would be the volume of the
basin + tube, then the wicks would have
to be replaced. Another con is:



As the Water gets wicked, less Wicks will be effectively used causing unequal moisture distribution for the soil.

It will be harder to visually inspect as its a tube going down from the basin; A transparent tube can work as I originally had in mind however the refilling method is not as easy. ^{can} Need to only change wicks when water is empty, and if wicks need changing but volume of water is prevalent, then the product needs to be disassembled

entirely, emptied (wasting water) and then replaced.

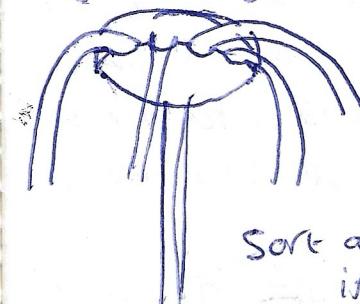
So, unfortunately, the exact Mongrave design is not feasible (as of now) but I can go with the other form.

•

•

•

③ Wick grave



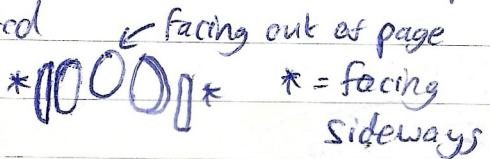
Sort of like a UFO if anything.

Fits the sci-fi vibe with the maglev - so this #works!

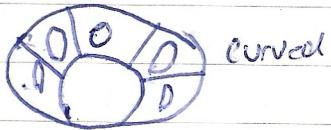
6/6/2025 18:00-ish

Originally circular N52 magnets would have been used; small & cheap.

However, due to Halbach's Array, the magnets would have to be physically rotated



But as one side is either N or S, the 3D printed structures holding them would be:



This poses unnecessary complexity for the design. Cube magnets will be used, however, they are surprisingly hard to come by from the US.

Now the issue is what sort of magnets, and my handwriting - this is God awful. Writing like time is running out.

There is an N52 cube magnet with repel force of 2.15kg this should suffice, as the plant pot itself shouldn't exceed that amount. Plus it's cheap.

UK stores only have them in rectangular shapes! Not good.

I have found a solution. There is a magnet 10mmx10mmx2mm from guysMagnets, shout out them, so I can have one 'block slot' with 5 of these stacked on top creating a 10mm cube block. 8 base, 8 pot. ✓

So if I use 8 magnets for the array. And one block equals 5 mini.magnets.

$5 \times 8 = 40$ minimagnets. oh lord,
it costs £37.

8/6/2025

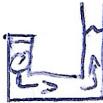
It will be bought
10/6/2025

Wow, such a short difference.
On Saturday i.e 7/6/2025, I met up with a friend, Saphy, and we discussed the project. She had the brilliant idea of a bubble-motion like method at moving water. I told her my two rejected ideas and the desire of creating water pressure. Her idea was:



the o is

a bubble that moves around the  shape. Her idea was that something similar could take place where as the 'bubble' moves around, it pushes the water. Now:

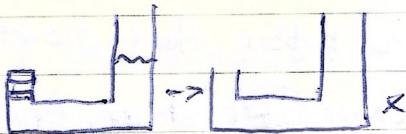


The bubble can be electromagnetically connected to a surface, ejected once moisture levels are insufficient, and end up in a basin where water is then poured into the soil.

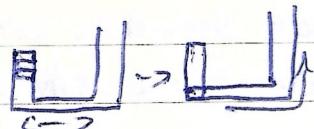
However, as I sat with the idea after meeting up with her, I realised water can move around and up the bubble, essentially nullifying the effect.

 \rightarrow  The effect can be solved by creating a flat top electromagnet.

such as:

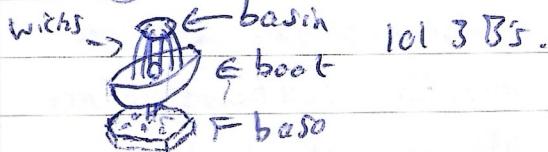


Wait woops,
I meant this



As the flat top is retarded electromagnetically, it pushes water up. It is a nice idea and contributed by Saphia Essop.

She also suggested a 'boat' shape for the plant pot form. Which is cool. I will explore creating that idea later:



The tube and basin could even be designed as masts and sails.

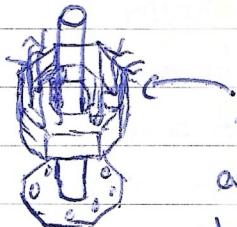
I have also done further research into magnetism and come across a lecture called 'Subduing Earnshaw theorem for permanent magnets in magnetic levitation' by Amal Madhu M ETAKTPE002.

Have fun with this:

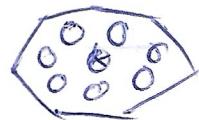
<https://www.slideshare.net/slideshow/subduing-earnshaw-theorem-in-permanent-Magnets/42207745>.

There's also a YouTube playlist of Magnetic videos, what an attractive topic.

I came to learn that despite the enhanced repulsion induced by Halbach's array, the product/system could still tilt or sway laterally. The tube erected from the base through the pot should have a few mm clearance to stop this.



The inside surface
of the plant pot
should have $\sim 3\text{mm}$ gap
with the outer surface of the tube.



base will be 15mm high



15/6/2025

I will begin designing the base
and the rest.

The base will have 10mm volumetric
cubes placed 45 degrees from
each other in a specific orientation.

There will be 8.

The base can be shaped as
an octagon or circle but I will
go with the former because it looks
cooler.



length of one side
 $= 20\text{mm}$ if L of cube is 10, extra side
can be 5

There'll be 135° angle difference
between each length of side.

Using 20mm gives a $\sim 48.5 \times 48.5$
mm base. Very small!

Perhaps doubling the distance could
help? but I feel it may reduce
magnetic field strength of the array.



Roughly to

Excellent

Scale

it needs to be larger
anyways!

far too close

I have modelled the plate area
on Solidworks and found out that
40mm L sides give 96mm x 96mm
30mm L sides give 72mm x 72mm
20mm is just impractical.

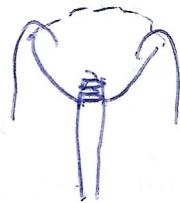
I've decided to go with 40mm L
sides. The base will fit neatly
on my palm. And the magnetic
field should be sufficiently strong.

Now I need to decide on the
pillar that grows from the center.

Does it get screwed at the bottom
or will the basin be screwed at
the top.



or



* This works

better, so the tube will need
to be designed separately

40mm has been selected as
octagonal base side length.
Provides a ~96mm ϕ area which
fits fine on my palm.

I have been aiming for a plant
pot which does fit on one
single hand \rightarrow And it does for me.
Not sure if I documented this prior.
Next is selecting a tube ϕ and creating a
thread.

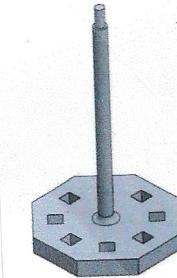
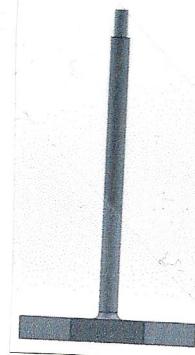
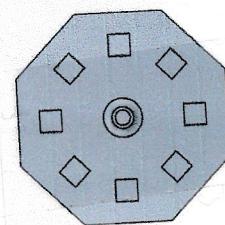
16/6/2025

The substratum has been designed. Hard to get a visual for the book but nevermind, as I write this I've just taken screenshots of the design. They will be collated on the right ->

I decided to include the tube on the design via a fillet. The basin will slip on at the top due to a decrease in tube diameter (shown ->)

I also ran through my idea and asked for any possible problems from AI deepseek. Though my tube will further subdue Earnshaw's theorem by restricting lateral movement, there will be vertical oscillation apparently, from the halbach Arrays. Eddy currents from Lenz's law via tube wrapped in

foil should help dampen that and make the system more stable. To further reiterate, the halbach Arrays do also subdue Earnshaw's theorem.



I could've and should've tapered these a lot better. Inzo.

21/6/2025

To further achieve stable levitation, I am considering placing thin pyrolytic graphite discs directly on top of each individual halbach array NS2 Magnets; on the substratum. There are multiple ways to achieve stabilisation such as:

active stabilisation - requires extreme power

superconductors - requires extreme cold temperatures

Diamagnetic materials & !!!

Over the past few days I come across thin pyrolytic graphite discs which could be used.

I believe, if used, it will further increase stability. I was considering

placing discs on top at the NS2 Magnets (or below technically) at the top halbach array but I feel it will be too much; with increased cost and possibly a slower stabilisation time. It would, or could, be a nice idea to have the system be able to freely spin as a use/entertainment possibility for people with ADHD.

29/6/2025

The magnets have arrived (I chipped one by accident) and boy are they strong. It is not at all an exaggeration that NS2 grades are powerful. I've modified the substratum design such that there is now 1-2mm gap between the surface of the substratum base and the top surface of the magnet.

This is to prevent Earnshaw theorem or any similar attraction to occur while the magnets are locked in place.

Before:



After:



Next is designing the receptacle.

It needs an area in the centre for the tube to fit through; should give it a name, I'll call it the erection. lol.

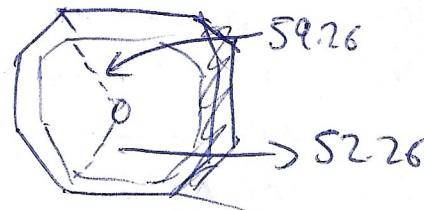
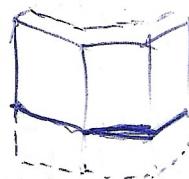
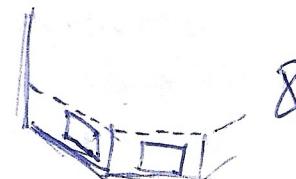
It also needs to accommodate magnets at the bottom with things to hold them from falling and also a thin lid on top of the magnets, to create a barrier with the soil. The height should be the 'length' at the substrate base, minimum.

So 600mm. With a 25mm gap left top and bottom of the receptacle.

Wall thickness around 7mm.

thin barrier will be made separately. Having thickness of 2mm unless alternative is found.

Divided into 2 sections



23:43 \rightarrow some day.

The receptacle has been modelled along with its lid.

Last will be the atomiser.

Along with this, I calculated that the volume available for the soil is roughly 64cm^3 . The peperomia could work; had to ask GPT for some quick plant suggestions.

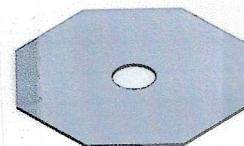
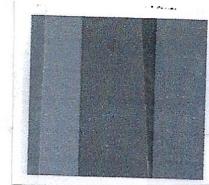
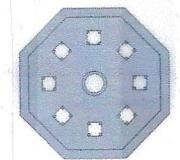
The impracticality of the project is shining; may work nice as a work of art - which it too also is.

Pictures shall be printed and stuck on the page \rightarrow here.

Certainly was a challenge modelling this part, and the hardest section is next...: the Atomiser Name change is also on the table.

30/6/2025

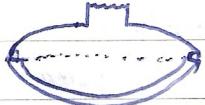
forgot about the pins; will do later.
Needed to update the atomiser name to tributary, as if the basin is the river Water and the wicks are its stream where it leads to the roots of the soil.
little squares to stop magnets from falling down



thin plate to concentrate magnets from Soil

2/7/2025

time to design the tributary.



cross section

bottom section:



plug hole for erection
to go into. Call it
the vulva. $\phi 7\text{mm}$
 $R=3.5\text{mm}$

top part:



Holes for wires

to go into the
basin for. Must be
detached or bit from the basin
to allow for rotating movement.

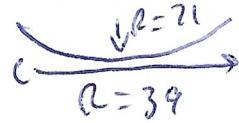
Top part should also be
clipped on somehow to bottom
part of basin. ∵ top part
should be relatively 'small'
compared to bottom part of basin.

Diameter should be $\approx 80\%$ of the
base. Height will be
Height will have to be
~~40mm~~ 42mm.

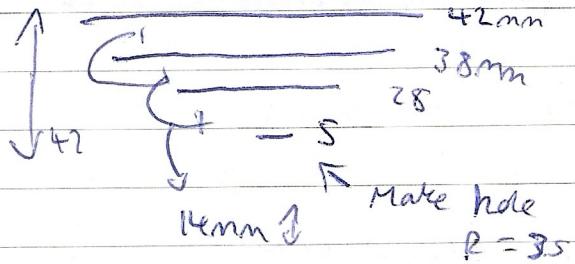
So



Make it elliptical so



3/7/2025



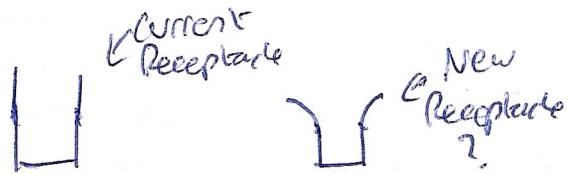
changed all values

Now need to design the
valve. 15mm high, 7 Ømm.

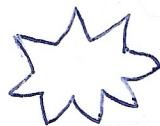
finished part 1 of the
tributary, apply named tributary
base. Will do the top
tomorrow and include all the
images.

5/7/2025

Okay I'll add the pics abit
later. New design idea.
Make it more flower like
while also increasing volume for
soil and space for the plant to
grow

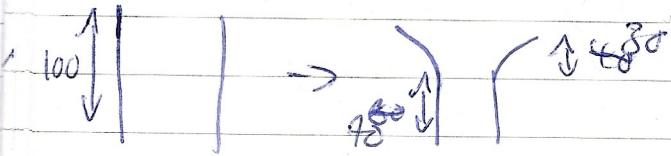


Top view



So in order for this
to happen, I need
to do then
extrude cut some tricaster
and boom
NEW RECEPTACLE

6/17/2025



Yesh this is gonna be hard.

like everything else... pretend

it's on octagon

So I'll create the base
then 70mm above the

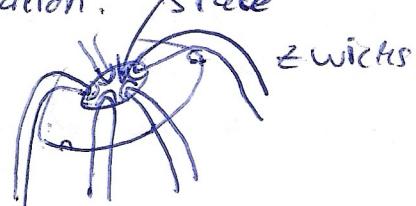
base front plane the ~~shape~~ ^{my} shape
shape will be made, I will

finish the tributary
Wort. top tomorrow and order their ^{3D print}
I realized it won't

hold sufficient soil. bsh

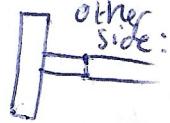
(now I did practice more
cad so that's a bonus i guess)

tributary top. Needs to be
circular with cavities to clip on to
tributary bottom. Needs to have
space at the top for wicks to go
into. Space must allow for
rotation. space



Wicks are 4mm Ø

Some shape is needed for
the wicks and it needs:
on the side:



Something that allows the
wicks to go into and rotate around in case

The receptacle is spun

7/7/2025

Sometimes the simplest answer
is often the best answer.

I will just create a $16\varnothing$ hole
for the $4\varnothing$ wires to go through
because $4^2 = 16$, so I imagine quite
a few $4\varnothing$ can fit in a $16\varnothing$.

My bad. $R=16$ per- $\varnothing=16$

—

CAD has finished, I will add
pictures (for real now) in the pages
following.

Will update further, going to
be rest. Will be ordering
the 3D print models soon.

30/7/2025

Again, I'll add pictures soon lol.

The parts have arrived and 2
things must be mentioned.

1) The slots for the magnets
have been printed a bit too
small so I'll need to remove
some material via a chisel, knife,
drill or other means. Remodelling
and reprinting is a bit too costly
and will take another 2 weeks
which I don't want.

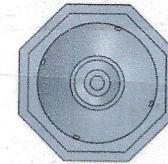
2) I was frustrated by the
redundancy at the tributary top as
the tributary could have been made
simpler as one part, so I looked
back to understand why 2 parts
were modelled instead.

I believe it was split into 2 as an adaptive way to achieve the design because I didn't have the direct technical skill to model the part as originally intended.

Also considering planning to program and design a portfolio website for this project as I may as well play all my technical cards to enhance my CV because # jobs are important h. Gotta balance freedom to explore creativity and innovation with what is... what's established and practical. Temperance if you will.

5/8/2025

Reordered substratum, receptacle and its lid as I modelled some dimensions wrong.



Not done

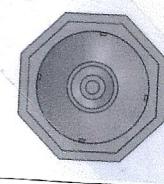
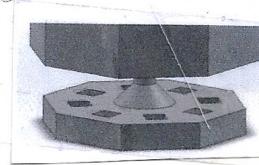
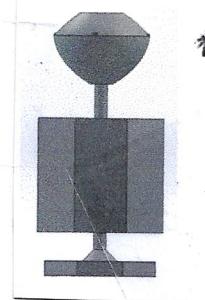
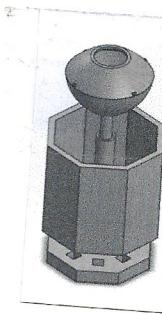
26/8/2025

I should've done this before signing off
Final Update: in the previous page

I'm on the third iteration of the design, so fingers crossed that third time truly is the charm.

Multiple minor tweaks occurred but one which should be explained fully is the base of the erection. The previous designs exhibited fragility, so I made the base connect as a chamfer rather than directly as a cube. It came off as the structure used in the eiffel tower and transmission power towers i.e. A but swept around. Pictures of the final design are on the right showcasing this.

*What I was referring to is the leg this part. Where it offers more stability while operating. Ignoring the part where during printing it did snap but it can be super glued.



(should now be)
FINISHED

!!!



NO LEGS

for real this time



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