

1st Brainstorm  
Session:  
12/14/23

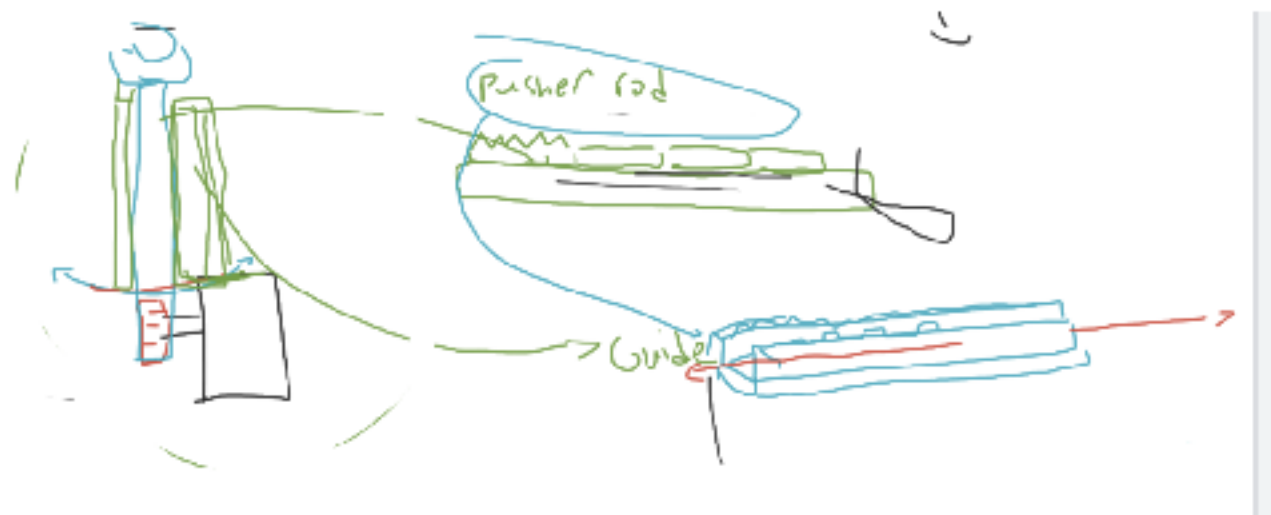
Objectives: think of  
possible  
mechanisms for  
trumpet tuning  
device, decide  
location for device  
on trumpet

Notes: maybe  
use lego for  
gear pieces..?

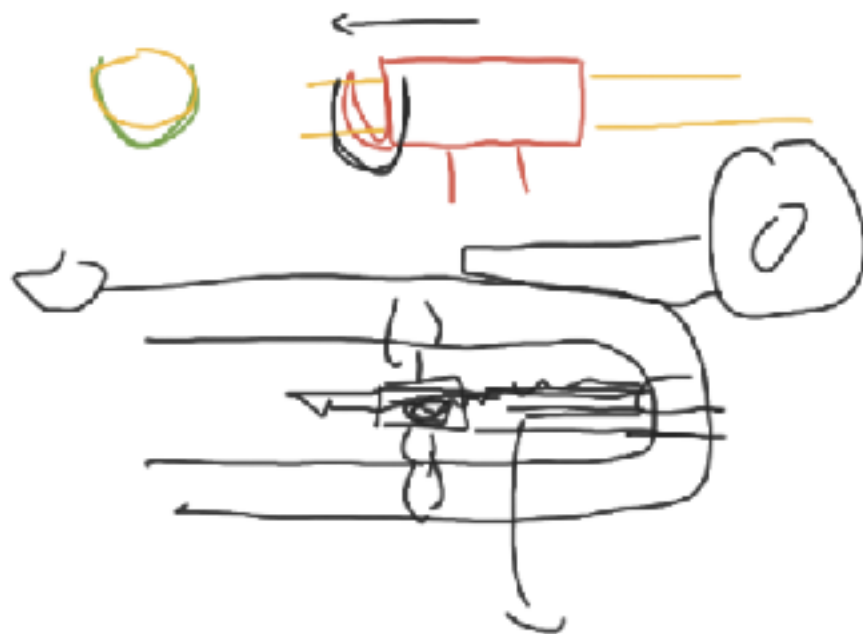
Side view:



Top view:

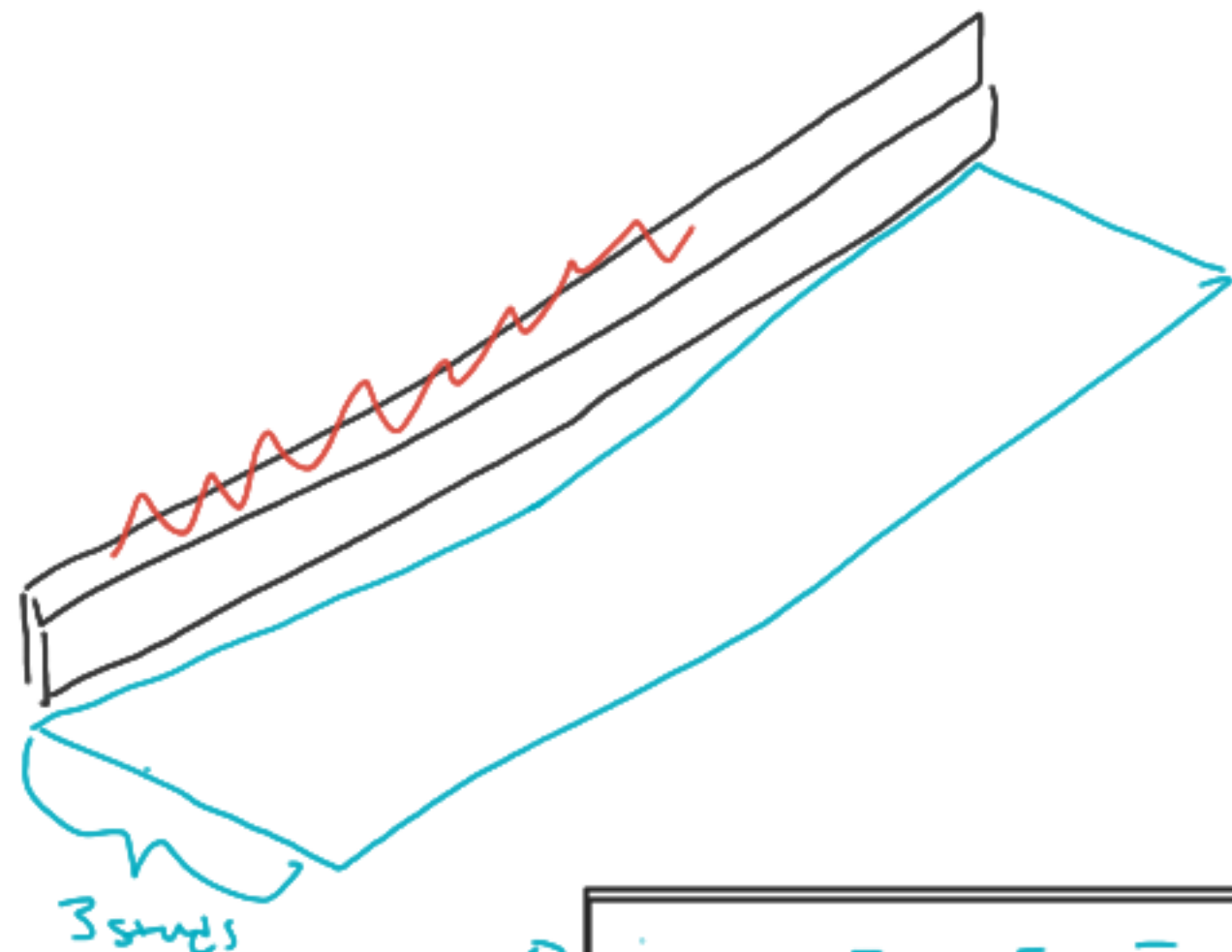


Device overview:



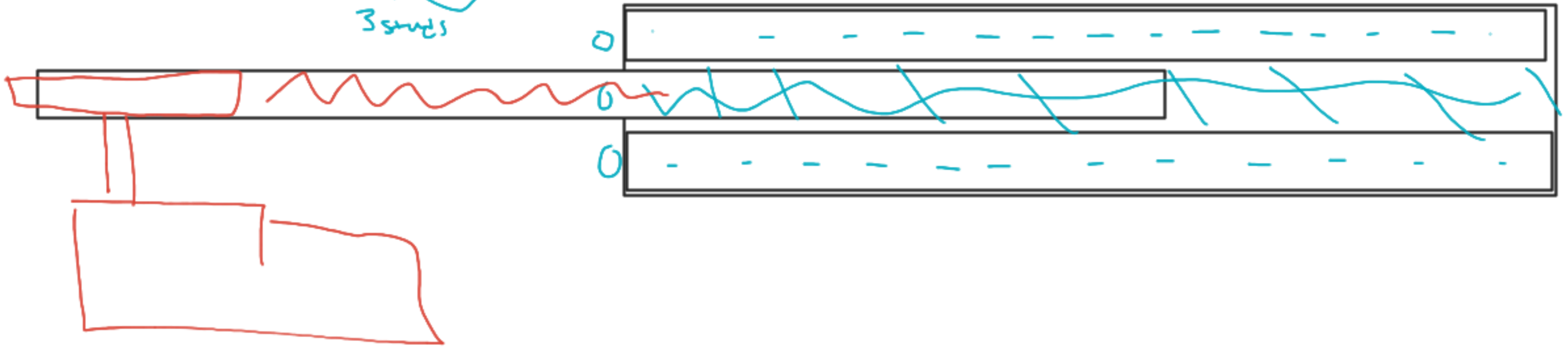
12/16/23  
Lego  
model  
idea

Order  
Soon



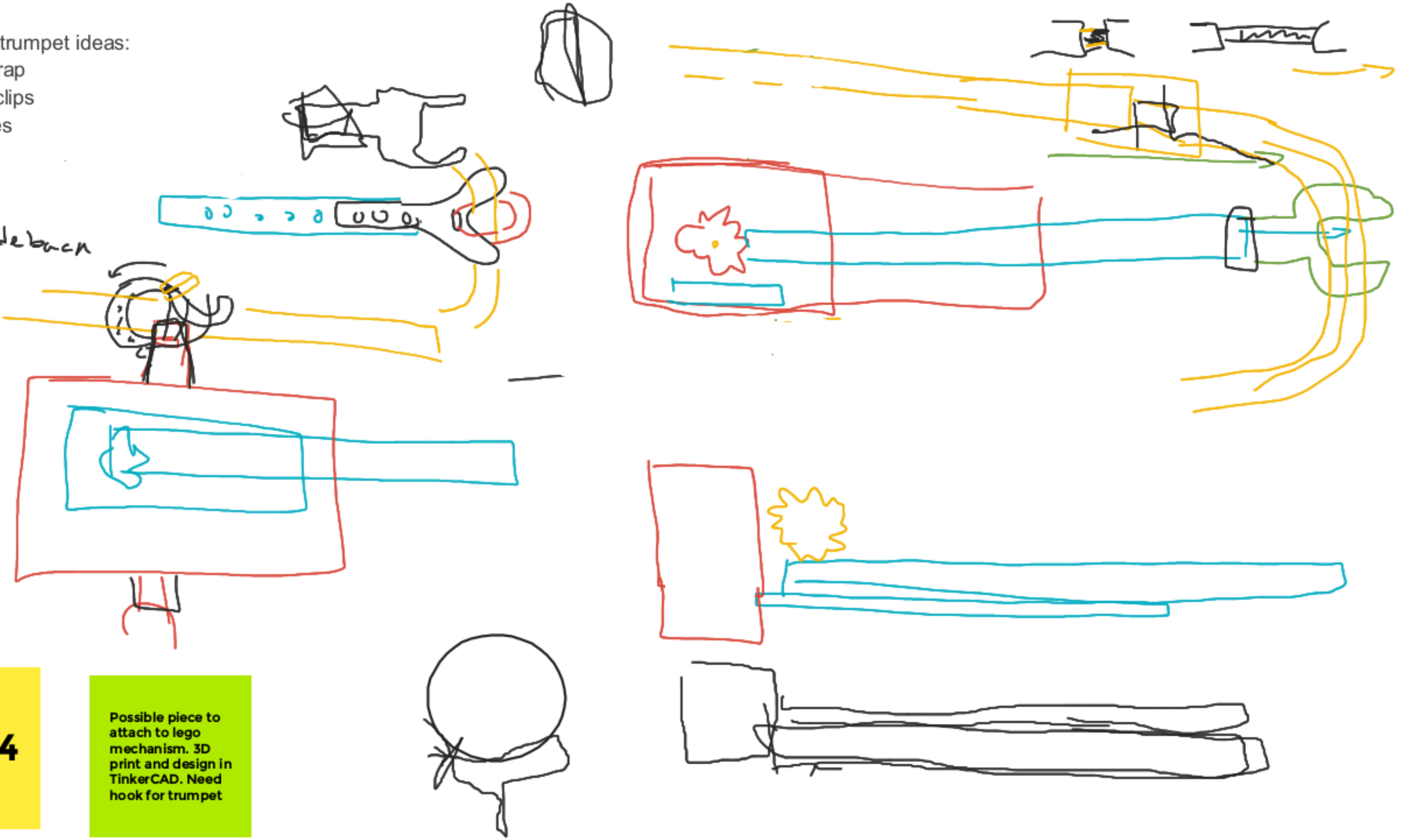
Piece list:

- Lego list
- 3x long skinny
  - 1x 3 stud plate
  - #x - rocks
  - #x - smooth tiles
  - 1x - gear piece



Hook for trumpet ideas:  
Velcro strap  
3D print clips  
eslatic ties

1) Slideback



1/3/24

Possible piece to attach to lego mechanism. 3D print and design in TinkerCAD. Need hook for trumpet

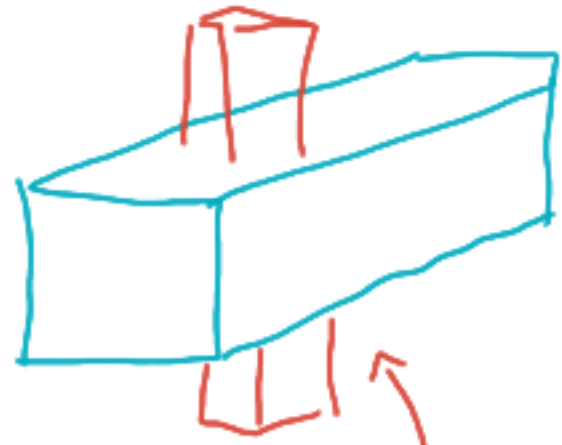
1/22/24 sketch of pieces that need to be 3D printed

Pieces to be modeled

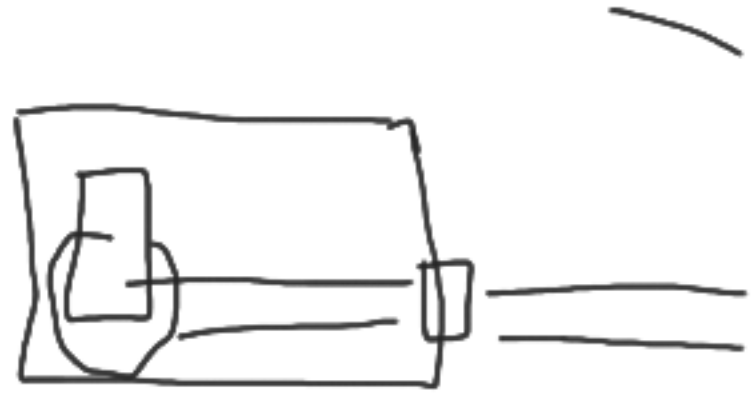
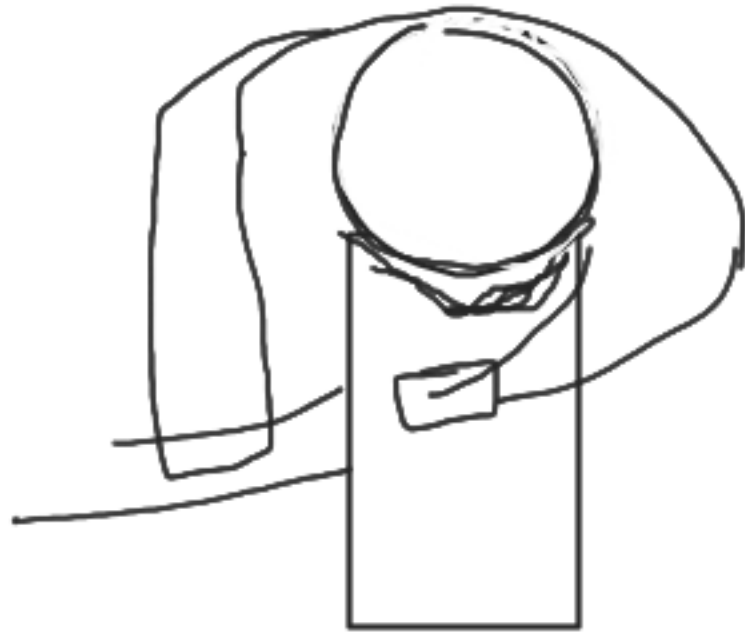
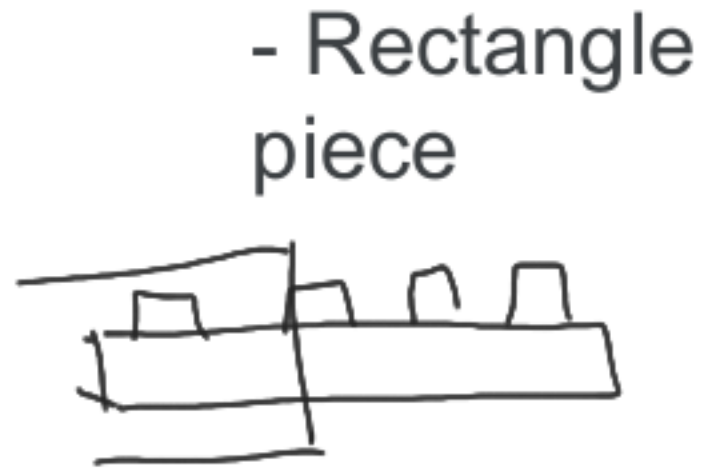
Box For holding lego pieces + motor

velco strap holder/ arm

Pusher arm/ lego piece/ holder



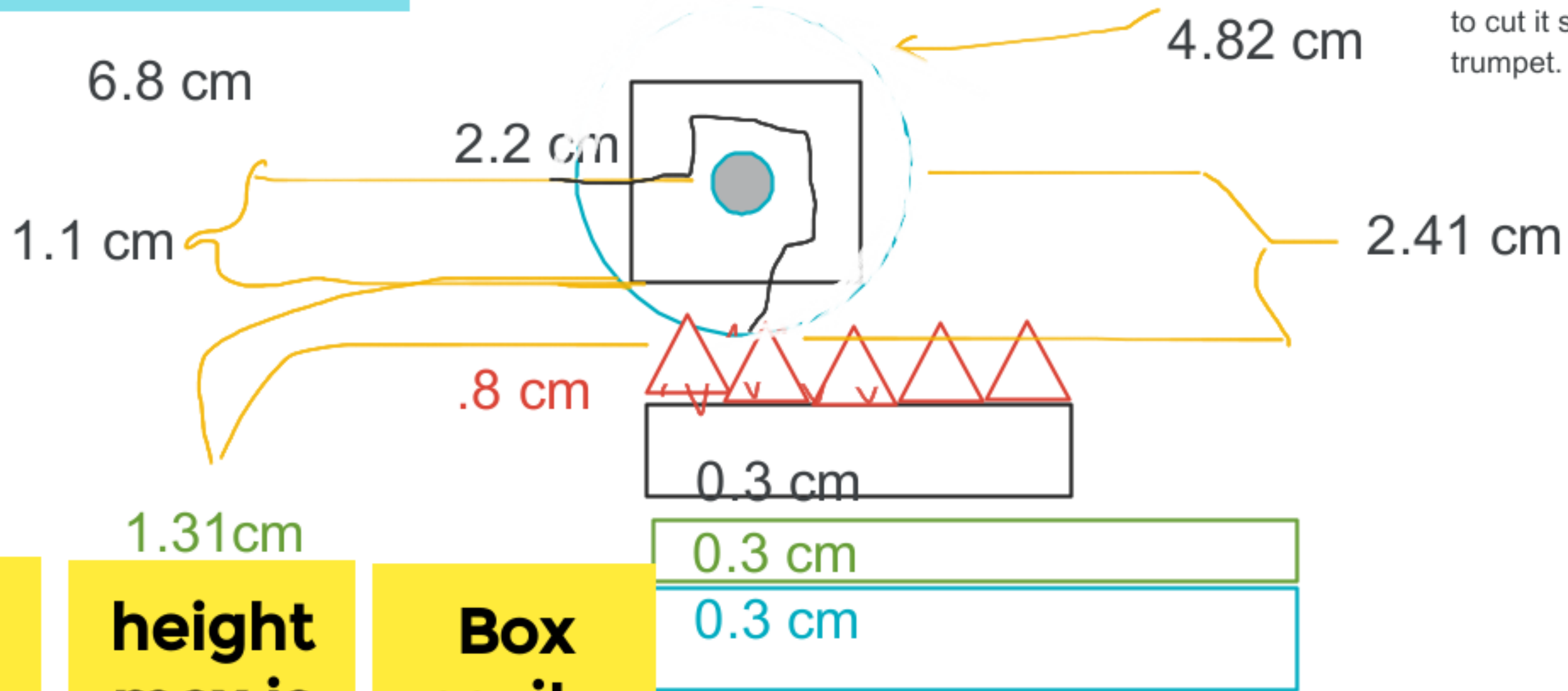
- Make a square
- Pull out
- Rectangle cut out
- Circle cut out up top



2/23/24

Objective: measure how tall lego mechanism will be so I can determine how tall the motor must sit in the box. Will need to make sure all this fits in trumpet

MAN



Gear is too big. I might need to cut it so it can still fit in trumpet.

Support for motor must be 3.11 cm high

1.31 cm  
**height max is 5.4**

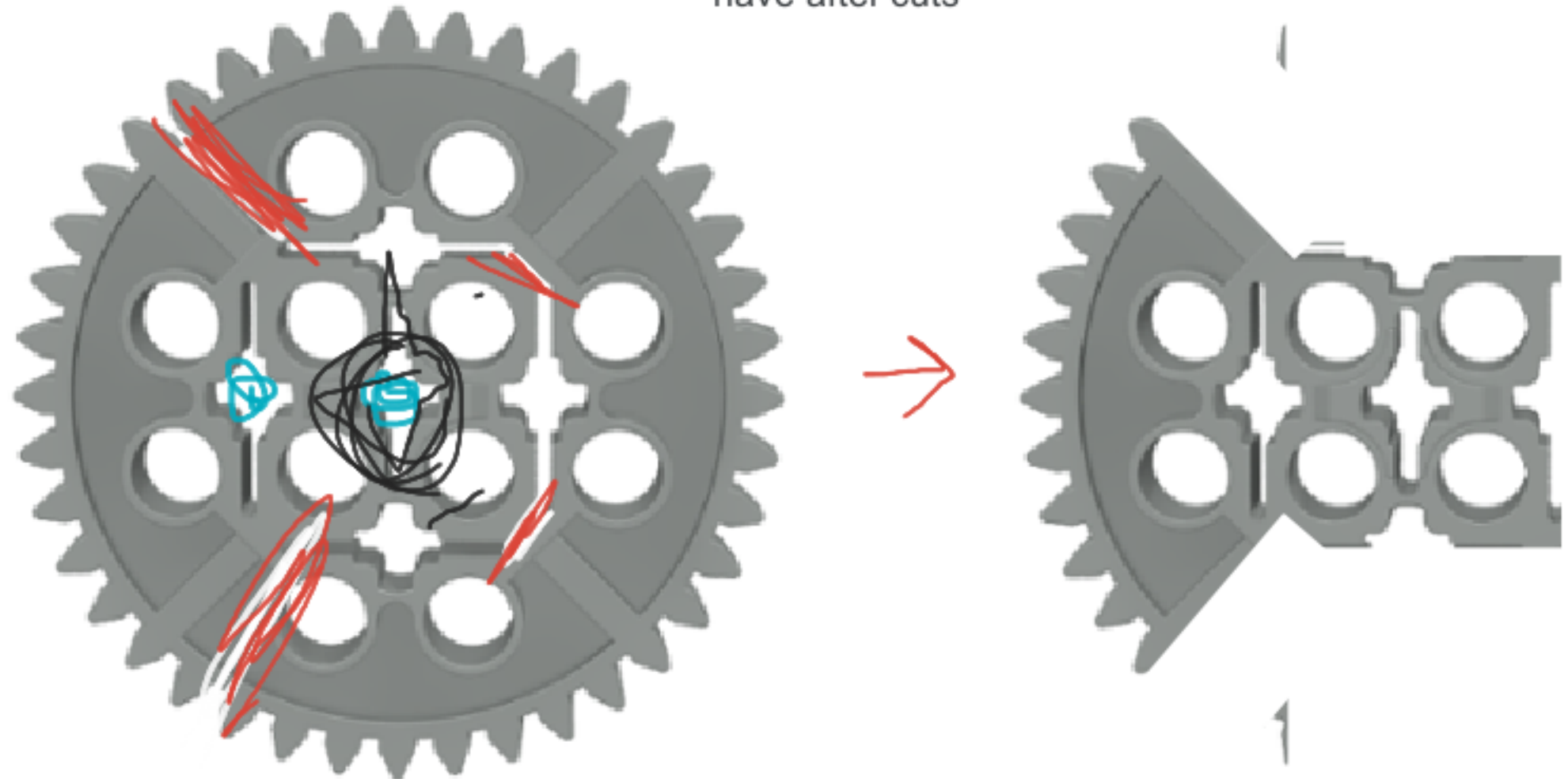
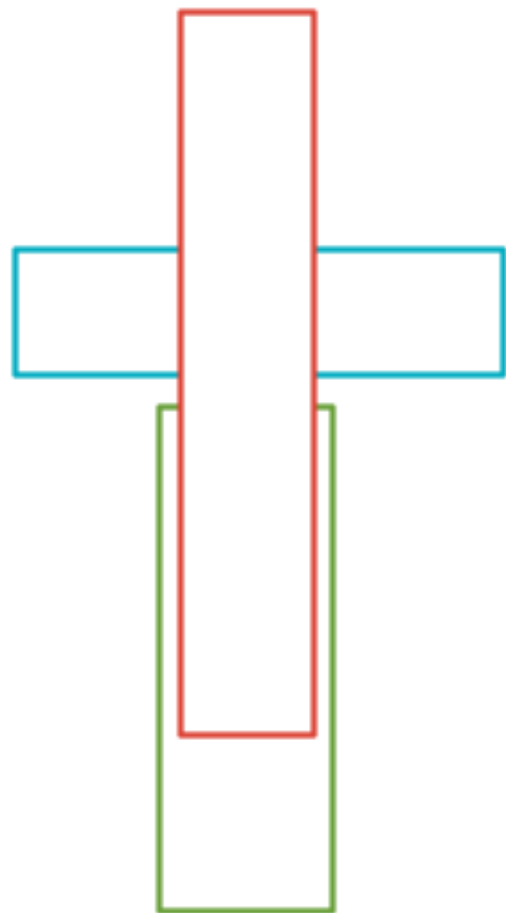
**Box cavity is 5.31**

2/27/24

## Gear cut planning

gear will need to be modified to fit within the box. Only need 10 teeth to push trumpet desired length. Calculated circumference of gear/4 to determine how much pushing distance pusher rod will have after cuts

Lego peice lay out for pusher rod and track



made cuts successfully using saw

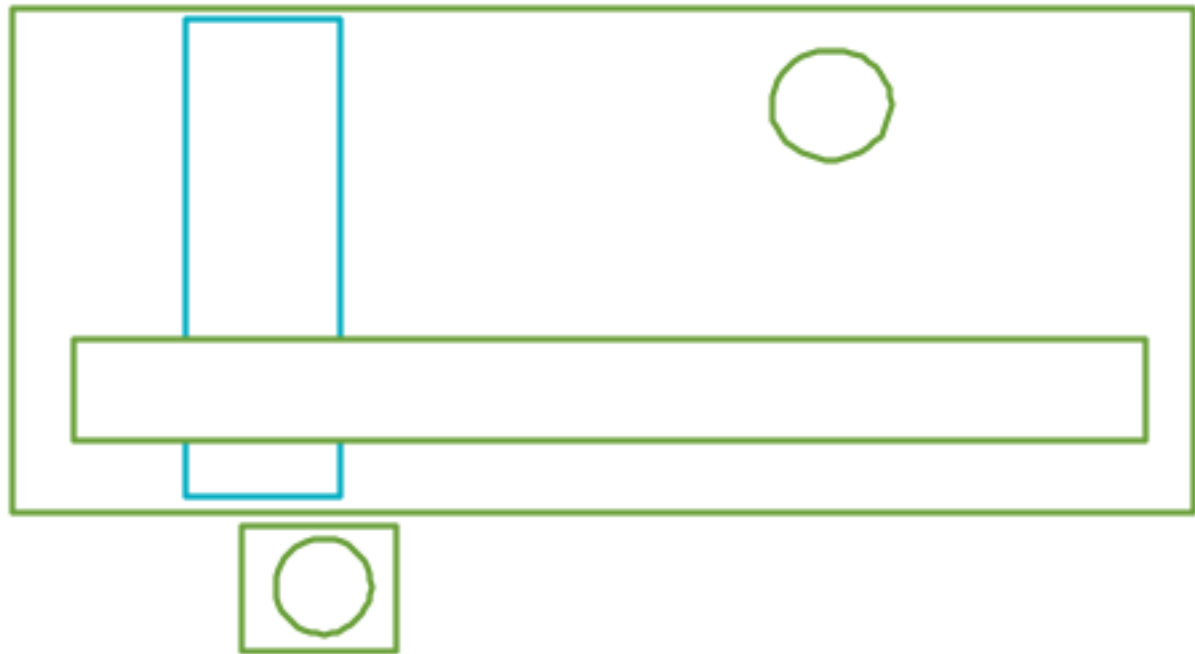
2/17/24 Box design and fit for lego pusher rod and guidepath

side view

.2 cm

I hope .2 cm of plastic is thick enough to hold the mechanism without breaking the box!

.2 cm



Tested velcro straps and do not work with box. Will be too hard to print. Must use elastic ties instead. Box will need holes for the ties.

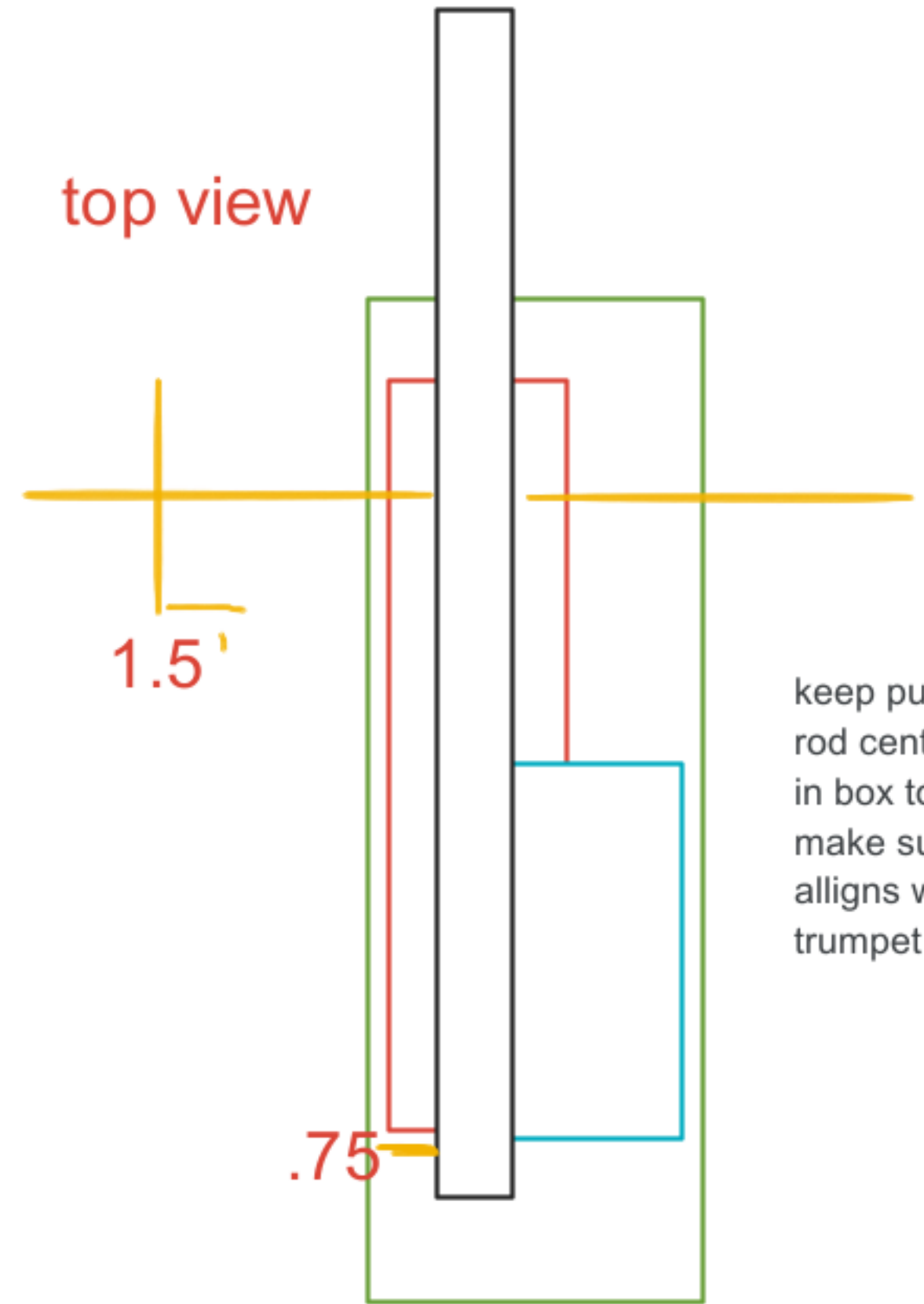
Designing box dimensions to fit in trumpet and still hold mechanism

top view

1.5'

.75'

keep pusher rod centered in box to make sure it aligns with trumpet



3/4/24

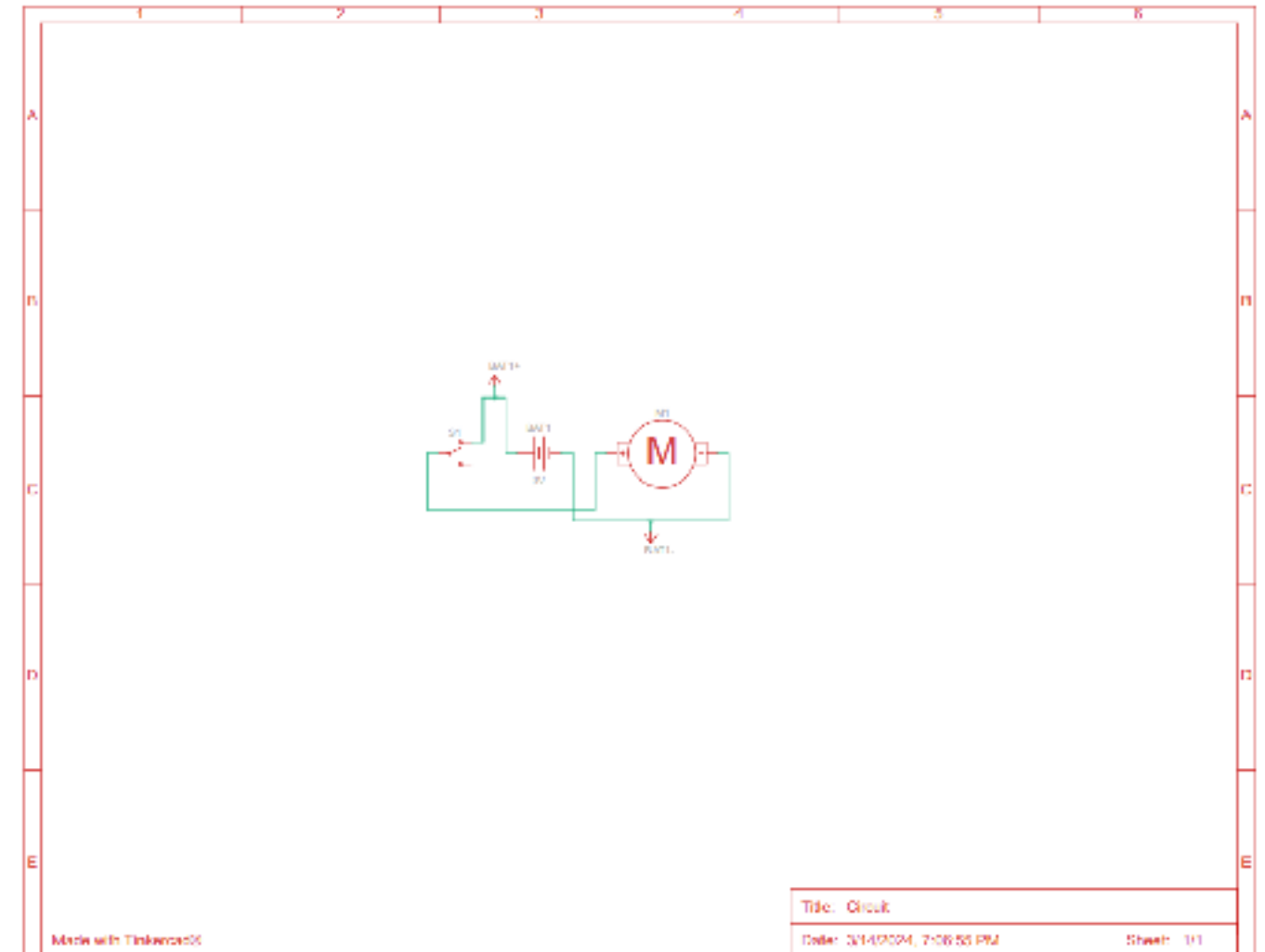
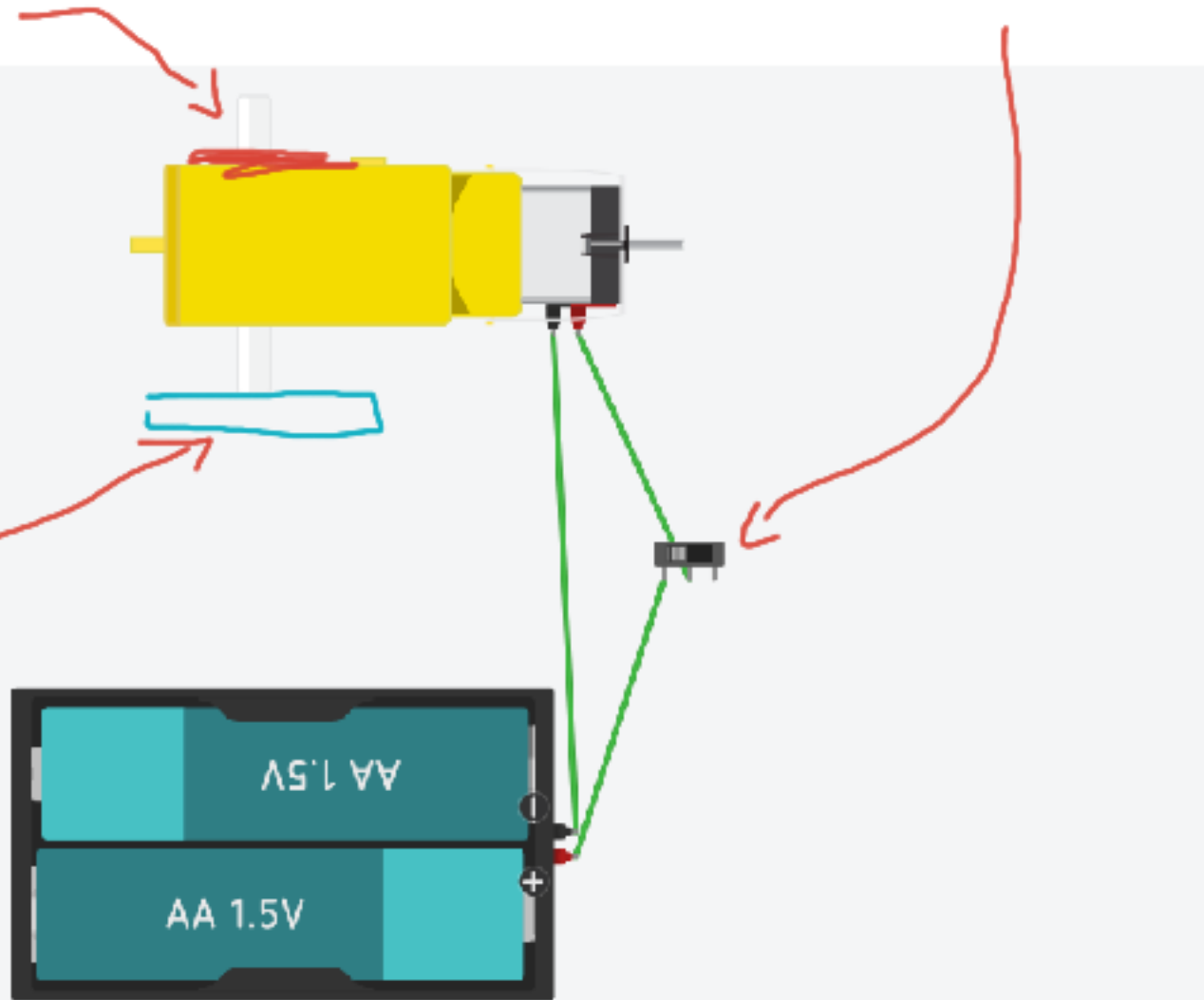
Today I designed the circuit that I will use to push the rod and tune the trumpet. It is small enough for the box

Want to include switch so that I can turn circuit off when the motor has pushed the rod far enough.

drawings made with TinkerCAD

need to cut off this side of motor so that it will fit in box

gear peice

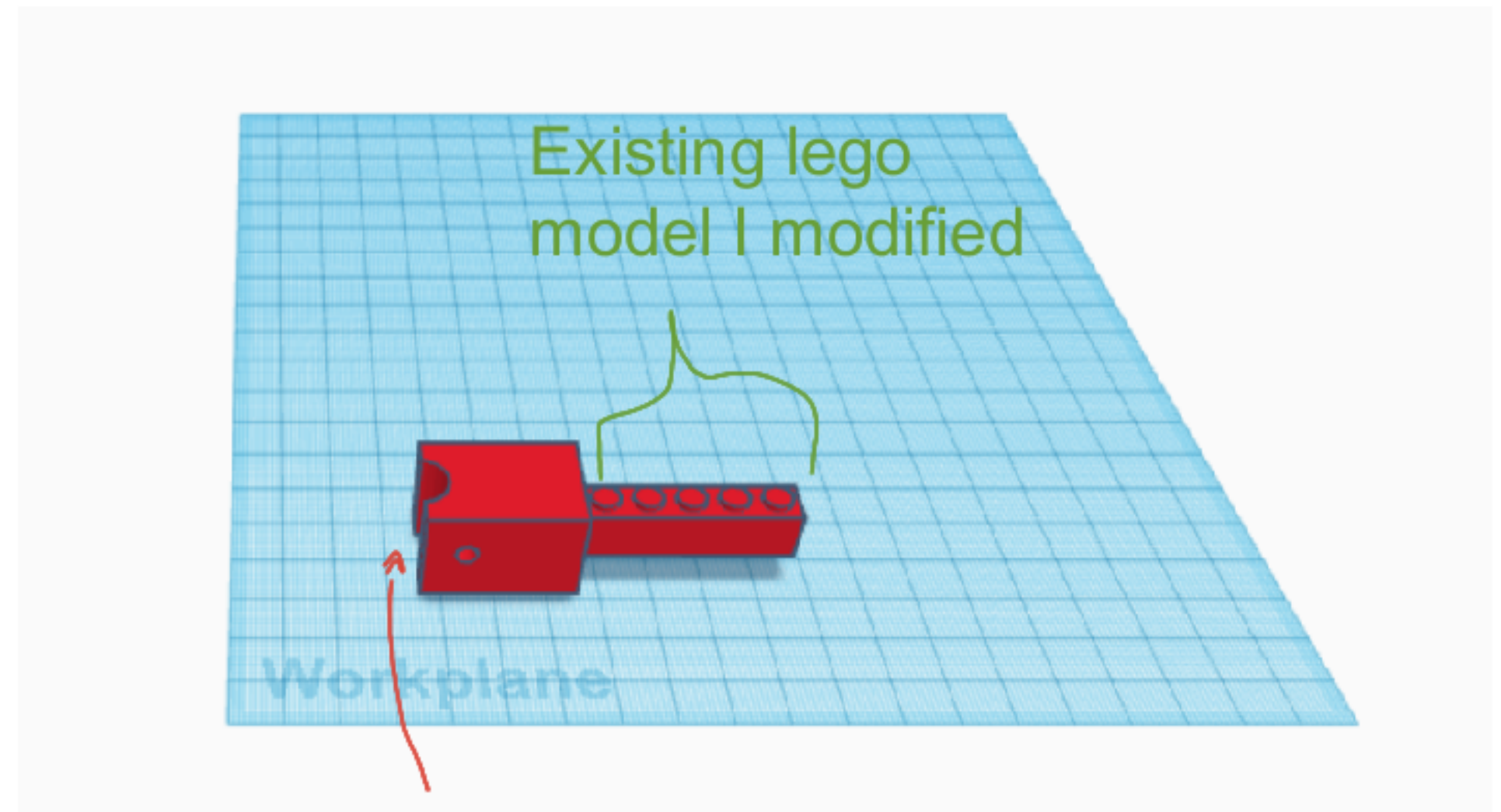




3/6/24

Objective:  
print  
pieces!

I modeled and printed the lego peice that will attach to lego slider and trumpet today. I used a lego peice model that was available for use and modification online. I changed the file so that it had a groove that could fit in the Trumpet and push the tunining mechanism.



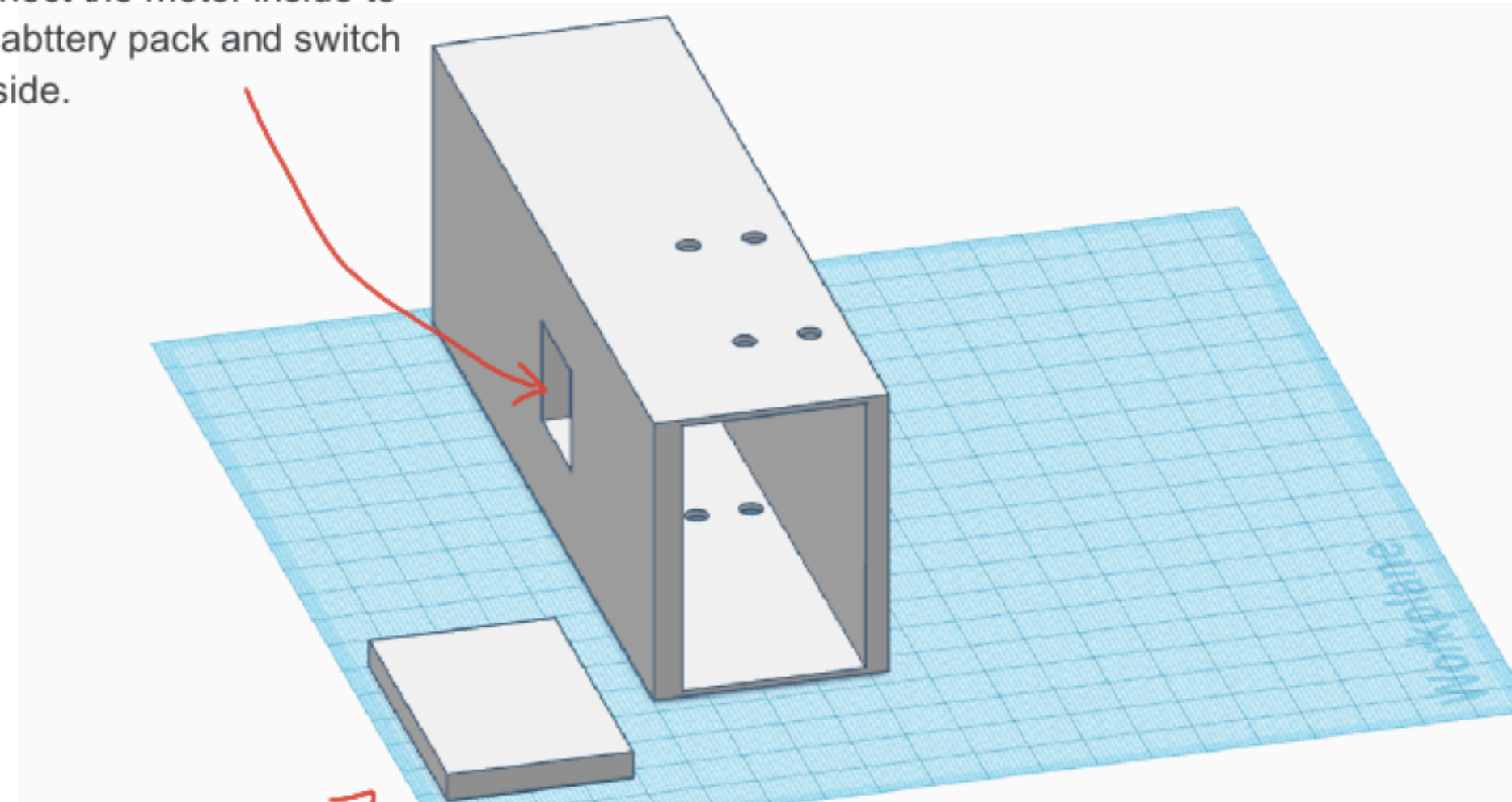
Circumference of  
lego peice matches  
trumpet

**3/8/24**

**Objective:  
print  
pieces!**

I modeled and printed the box in TinkerCad today. I was able to use the measurements that I had calculated on the earlier pages to make sure it had the right dimensions. I also made sure to include holes in the box at the right places so it could fit in the Trumpet and be attached in a stable way.

Hole in side of box for wires to come out from. Will connect the motor inside to the abttery pack and switch outside.

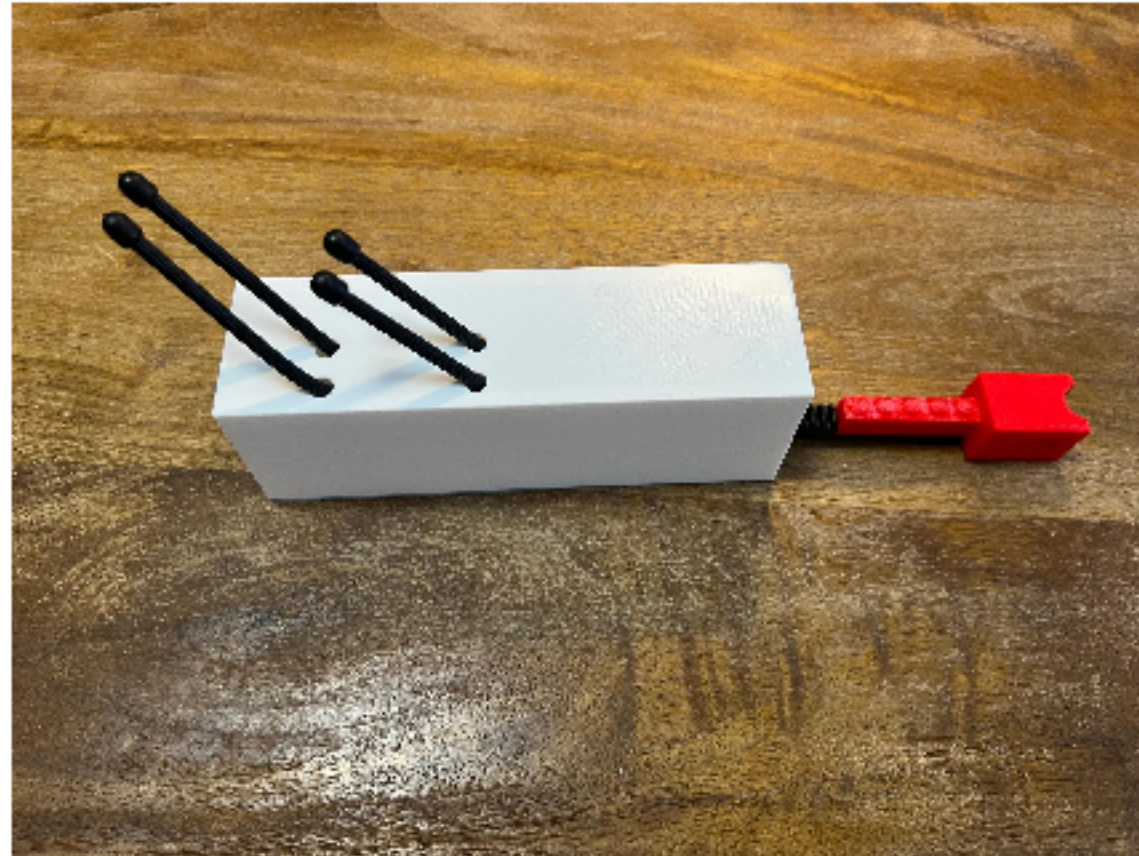


Shelf for the motor to be correct height in the box

**3/14/24**

**Objective:  
Testing**

Today I assembled the Trumpet tuner. Everything fit as I had planned. I also wired the motor and switch and battery together and installed them in the box. Using superglue I attached the switch and battery pack to the outside of the box so I could easily access it. Below is a picture:



I also tested the trumpet tuner and it worked as I had planned. I will try to use it in band class tomorrow!

