

# Slider Crank Mechanism Project



Design Brief Template  
PLTW Engineering

## Design Brief Slider Crank

Client	Skippy Dinglechalk Co.
Target Consumer	Make A Wish Foundation
Designer(s)	Gianna A. and Nathan L.
Problem Statement	<b>Create a model of a functioning slider crank that is 3D printed, that also has 2 different slider stop profiles that are different sizes and follow all of the criteria and constraints that generates rotary and linear motion.</b>
Design Statement	Design a model of a slider crank, make a prototype by 3D printing, then presenting to a group of classmates.
Criteria	<ol style="list-style-type: none"> <li>1. 3"x 3" footprint base</li> <li>2. Height cannot exceed .75"</li> <li>3. 2 unique profiles for slider/ one track cannot fit in the other</li> <li>4. One track cannot fit in another</li> <li>5. Contain Slider with Crank</li> </ol>
Constraints	<ol style="list-style-type: none"> <li>1. Must be 3D printed</li> <li>2. Base should not exceed measurements</li> <li>3. Nothing can fall off while inverted</li> <li>4. Cranks must be attached without mechanical fasteners</li> </ol>

*Gianna A.*

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*Gianna Abbate*

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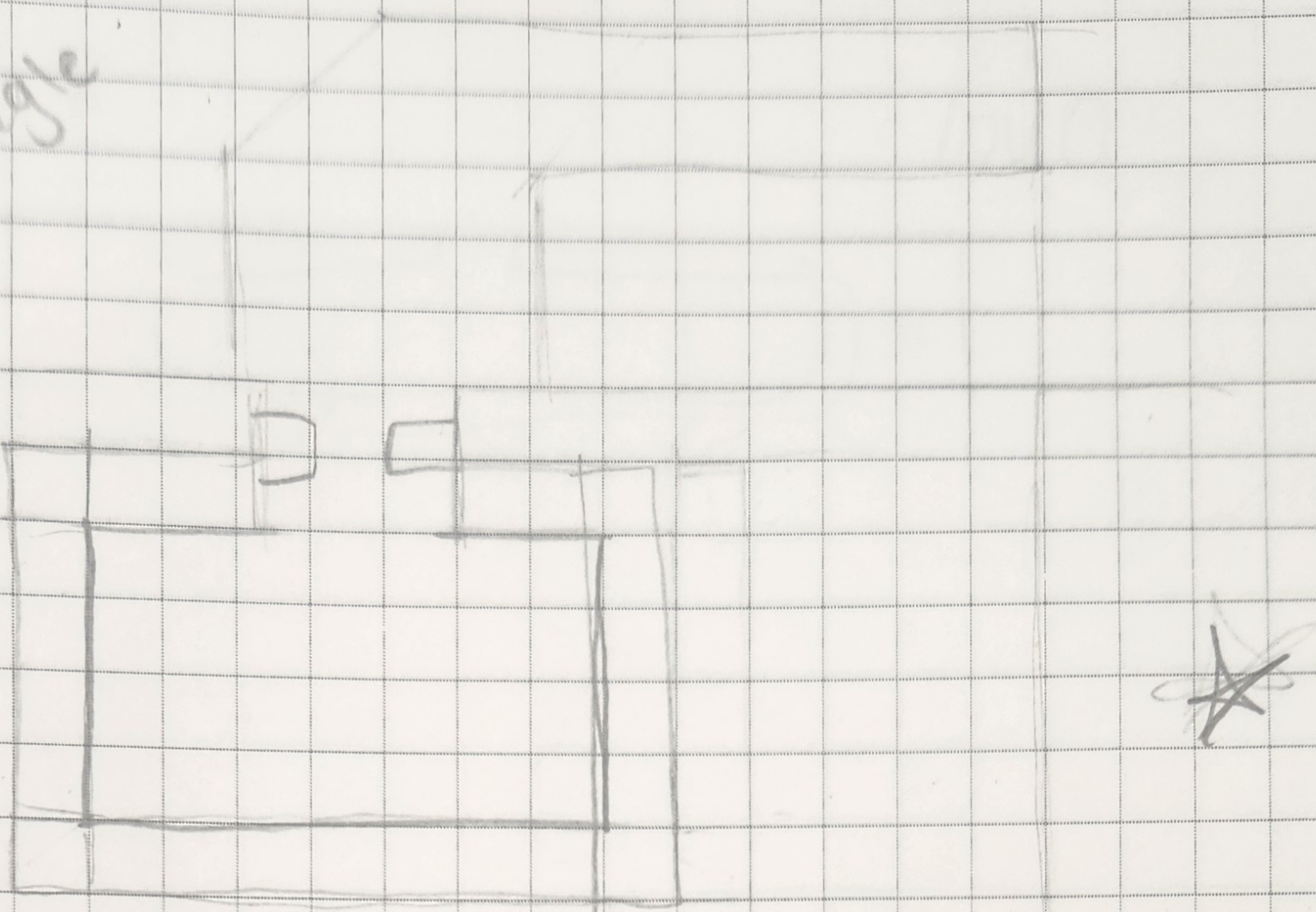
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# Slider Crank Concepts

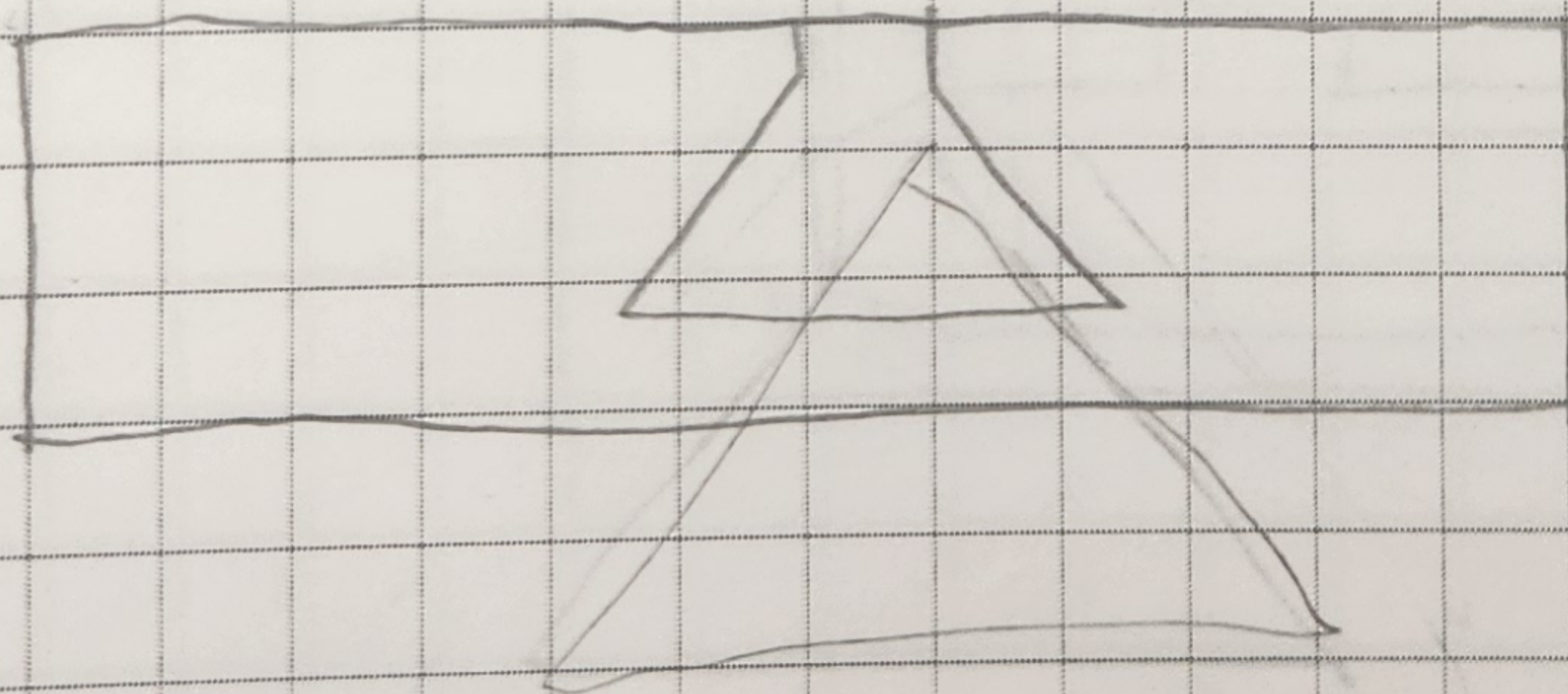
square  
+ rectangle



Design Idea #1

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Triangle



Design Idea #2

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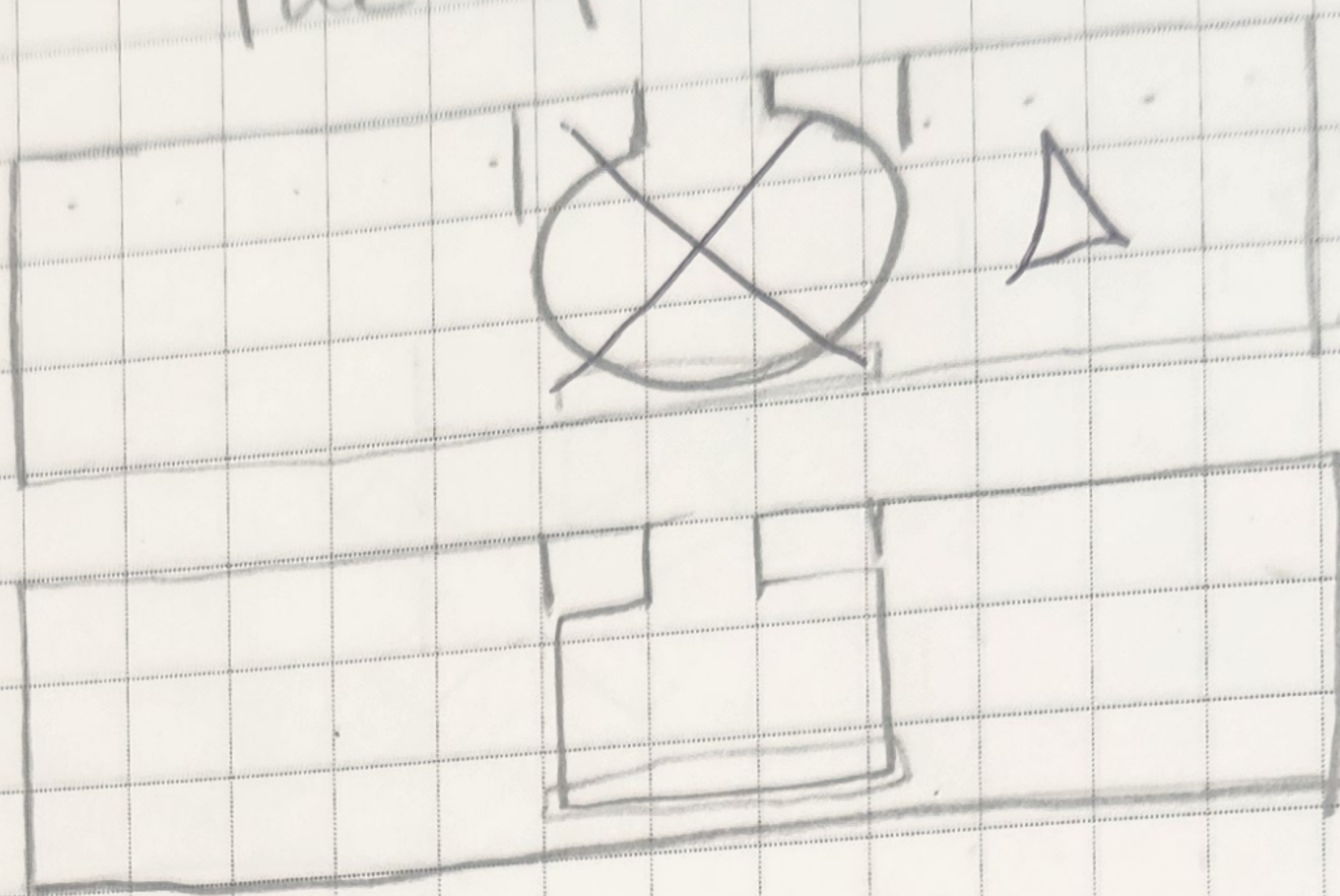
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# Slider Crank Brainstorming The profiles (shapes)

- base = 7
- slider 1 =
- slider 2 =
- crank =
- handle =

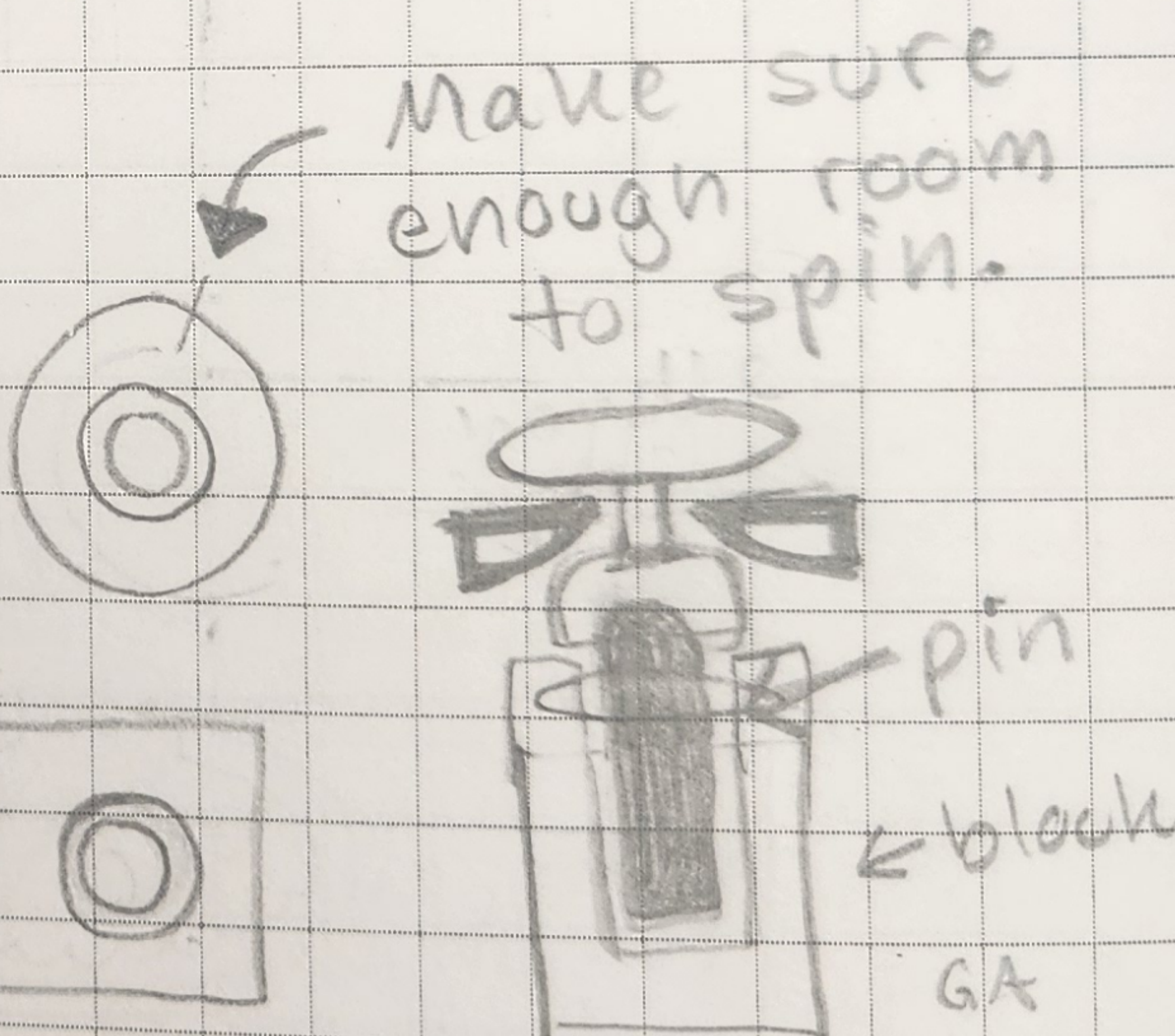
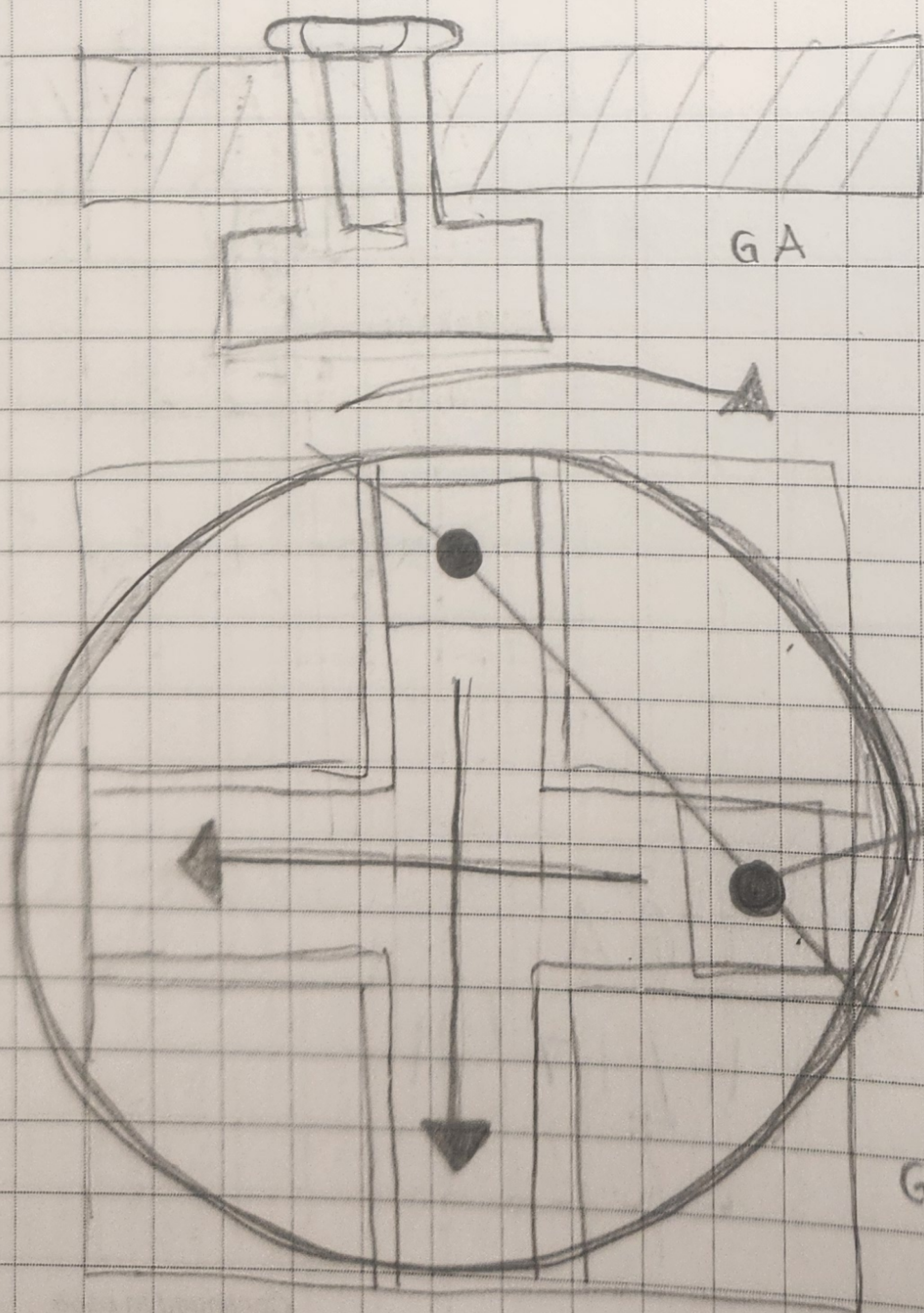


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How would we attach slider to crank?

- Pin that spins freely - Circular



Something that moves in the pin to make it spin while moving.

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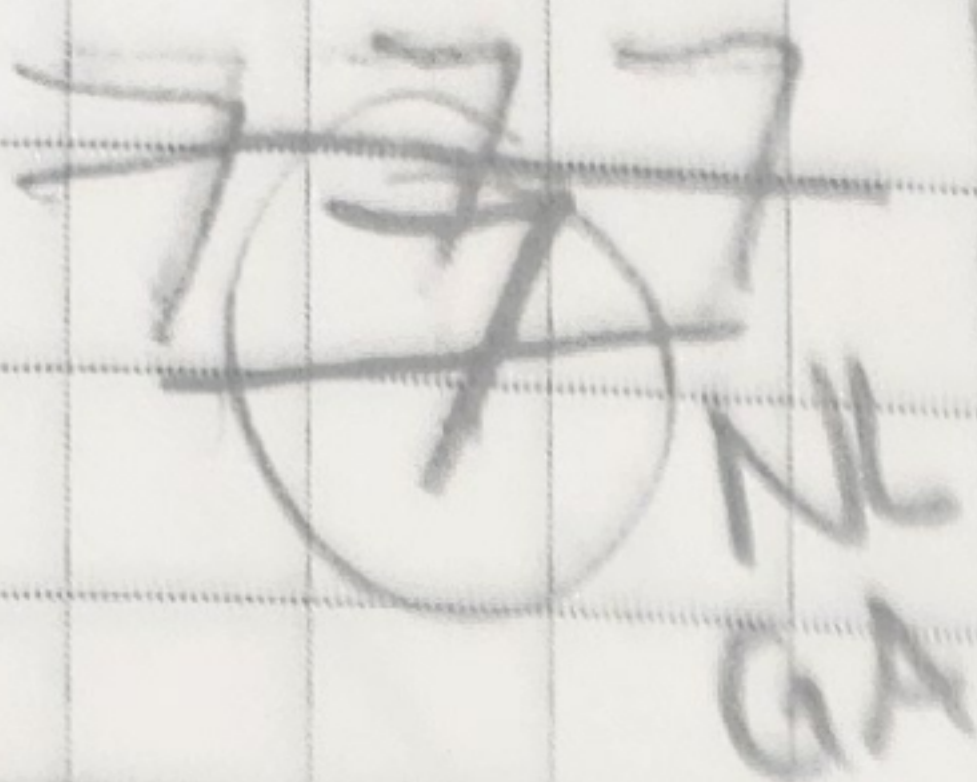
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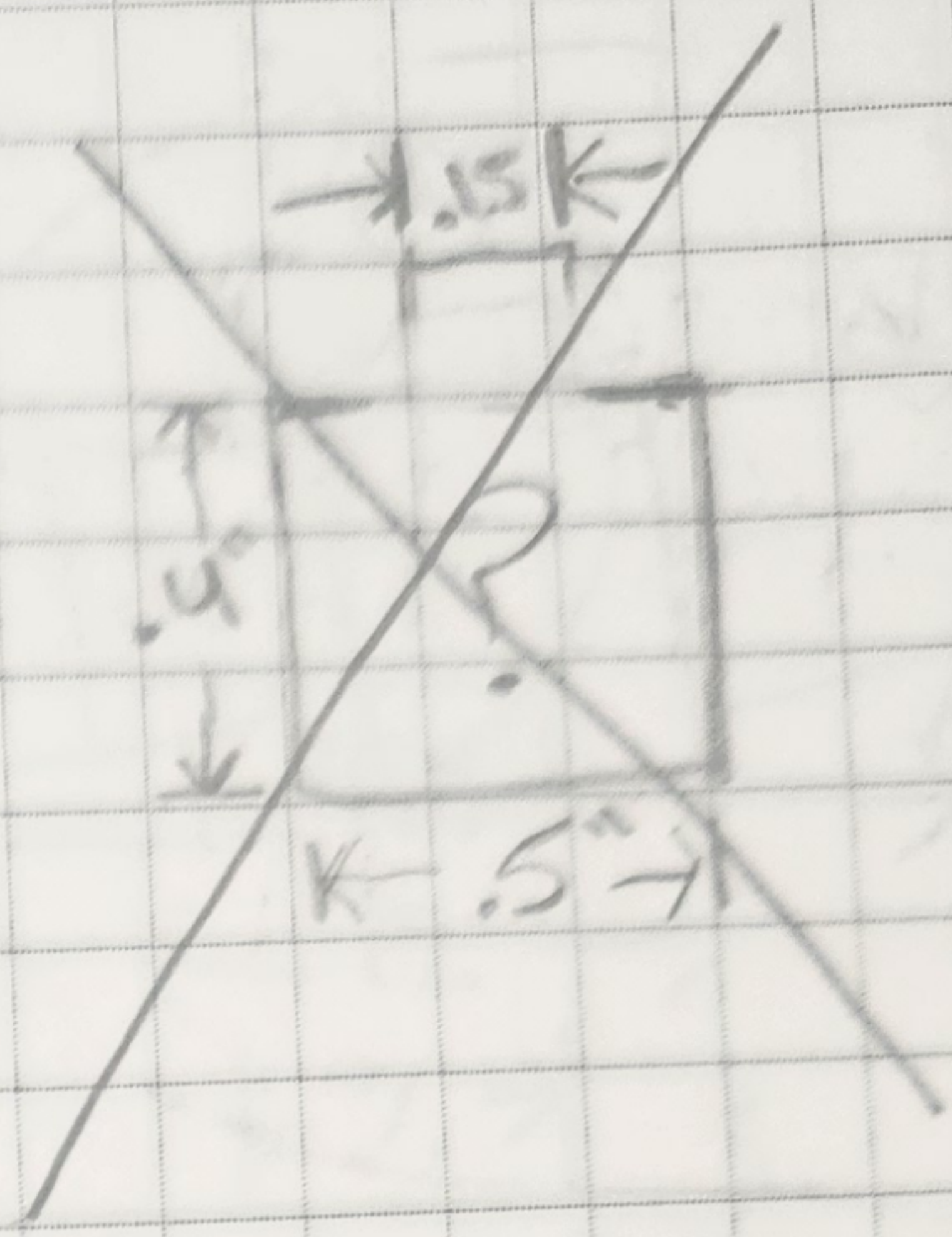
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# Profiles Base

0.1" ↓



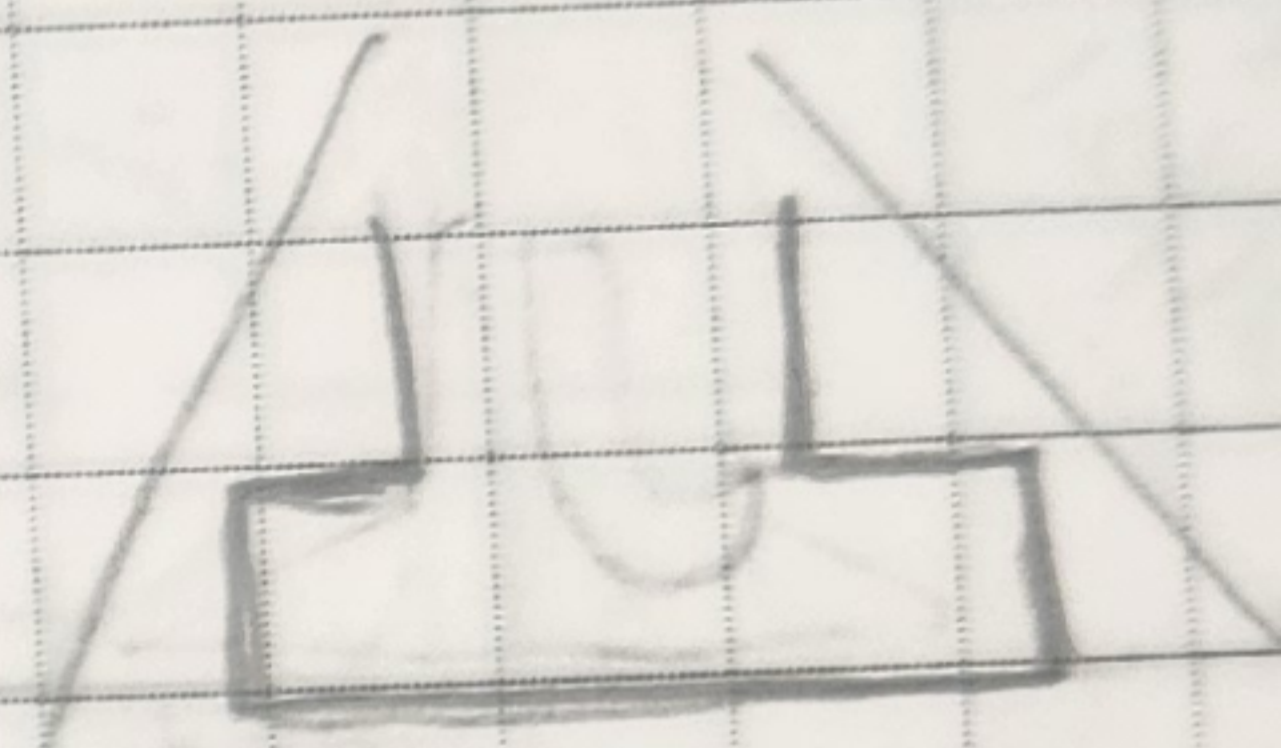
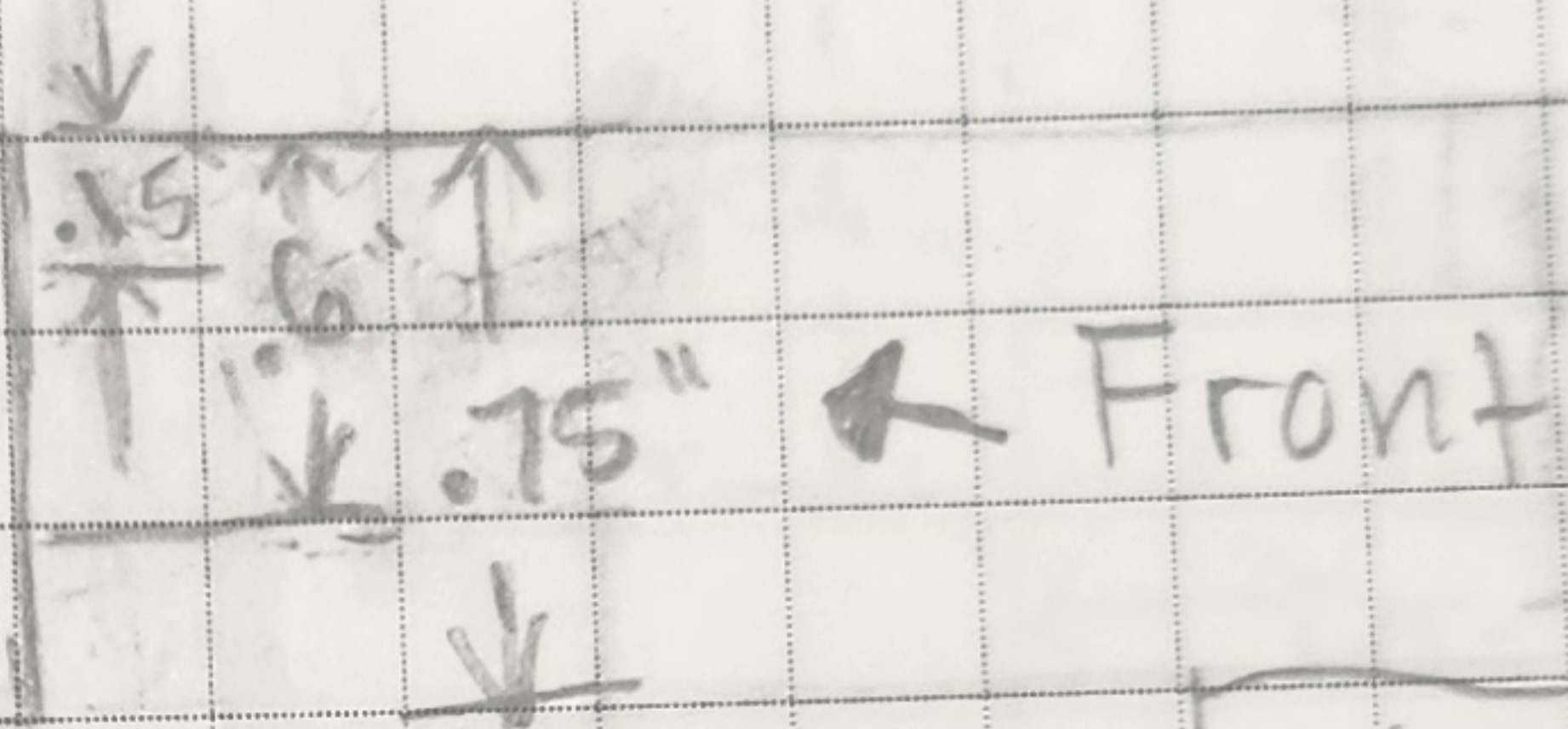
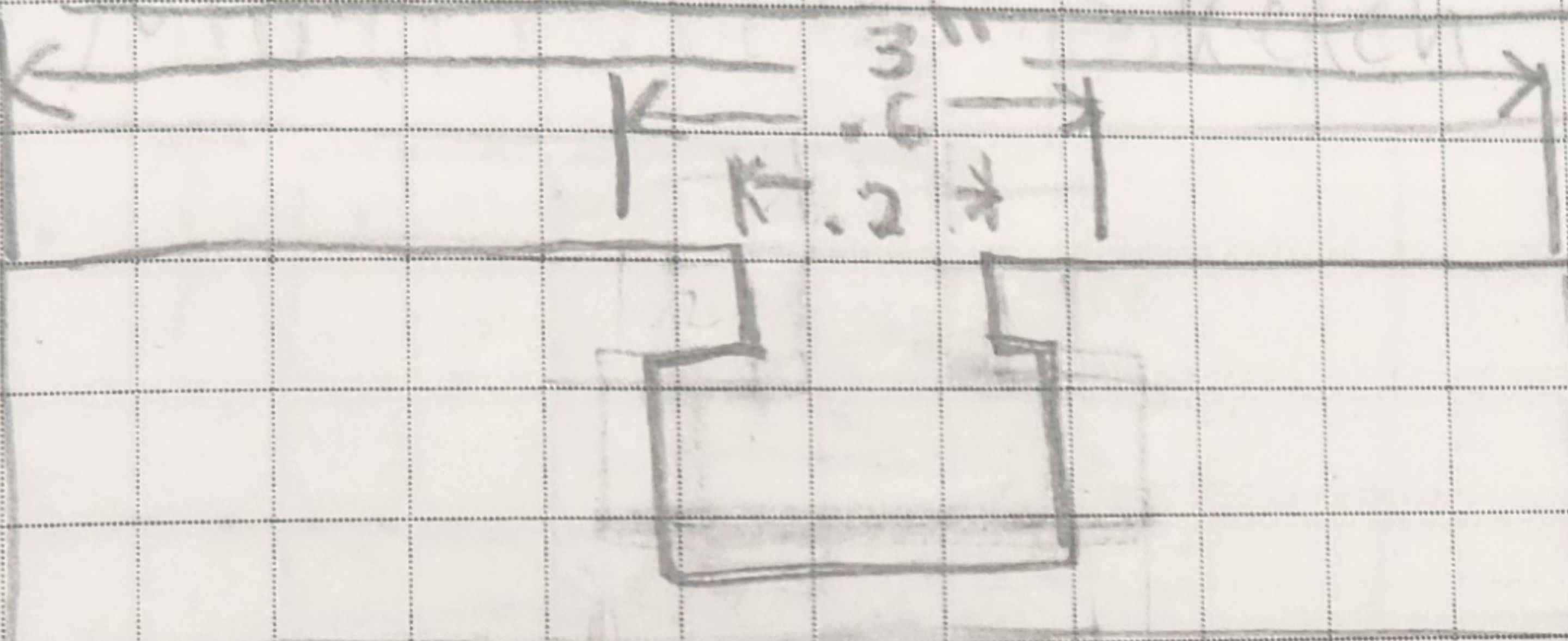
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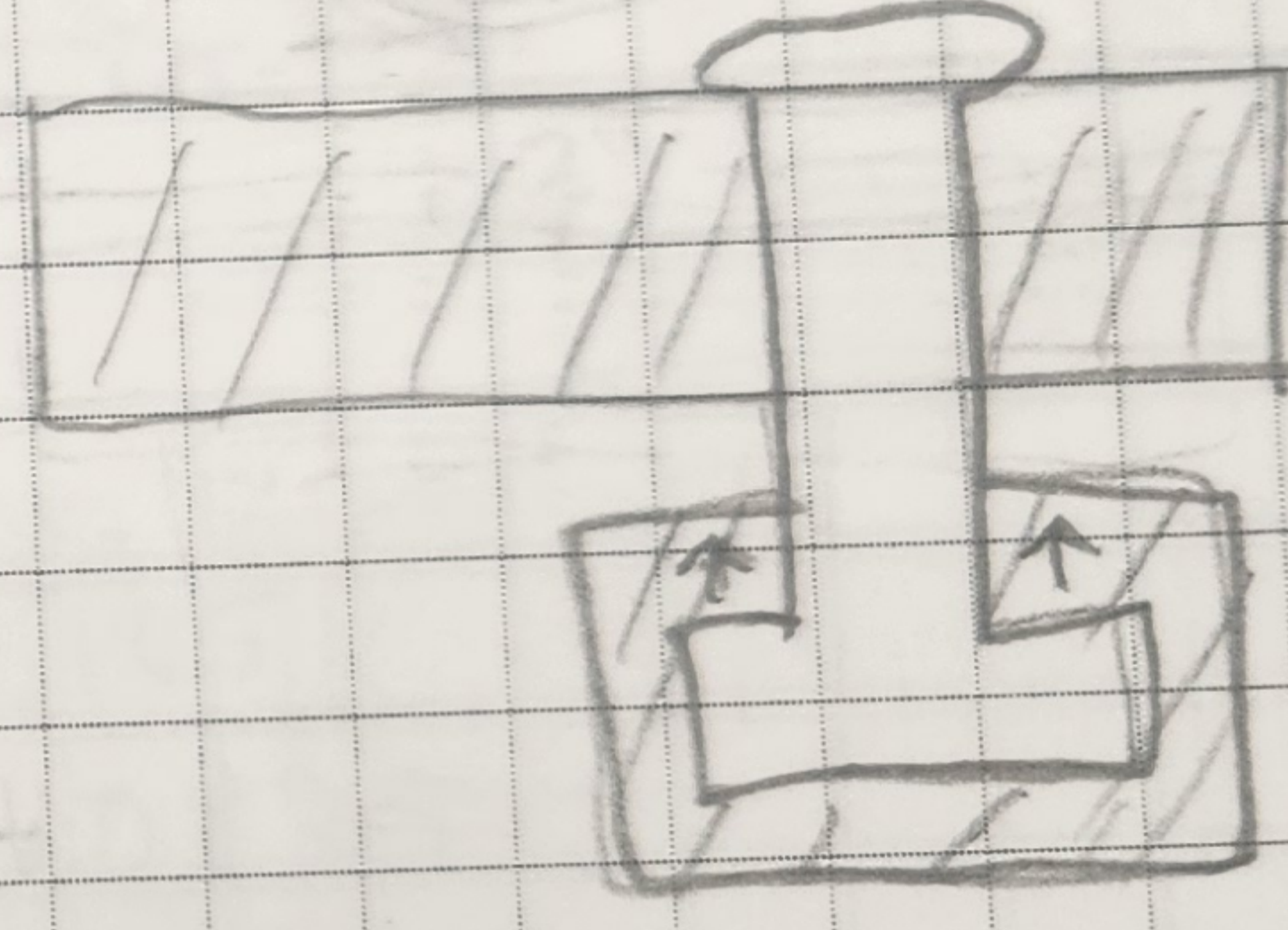
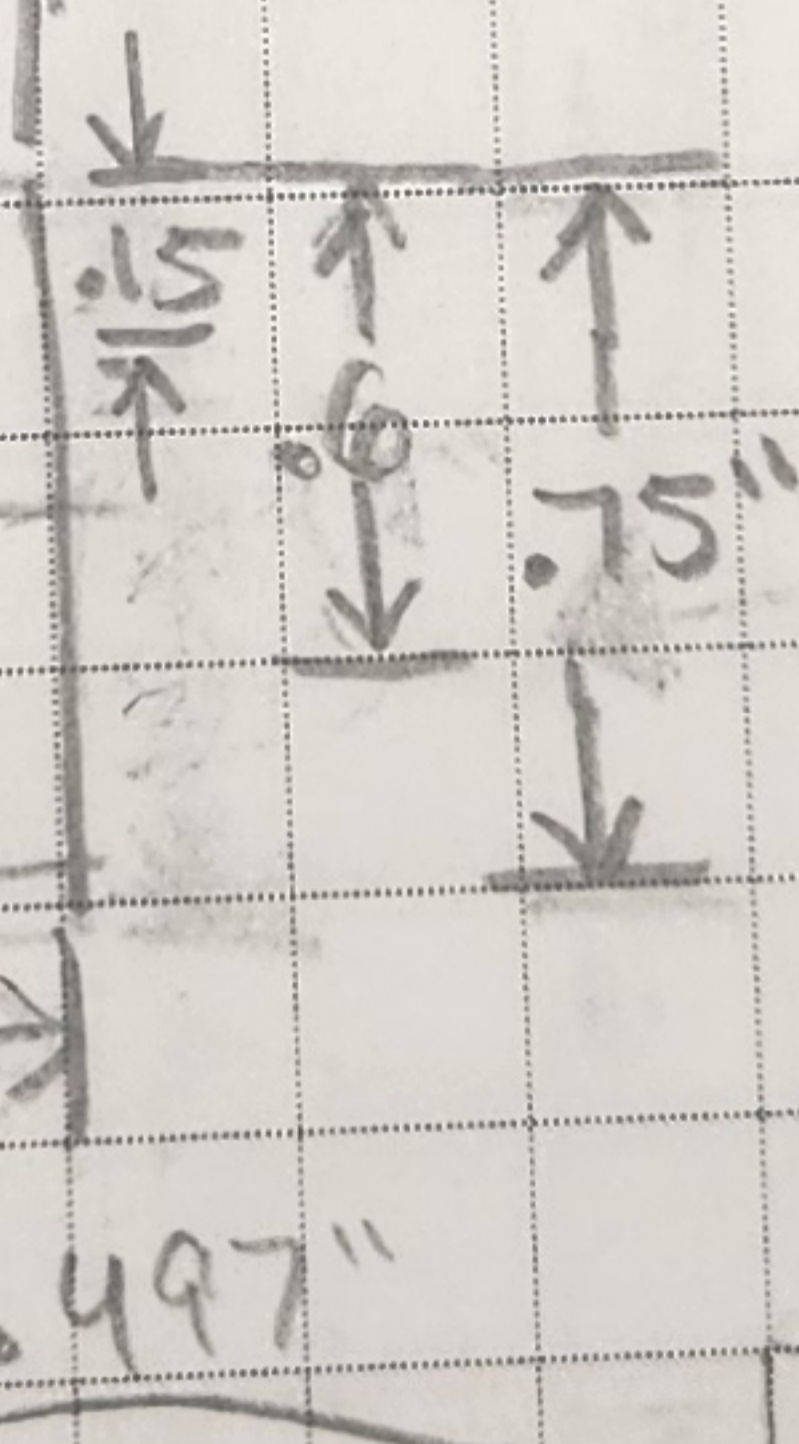
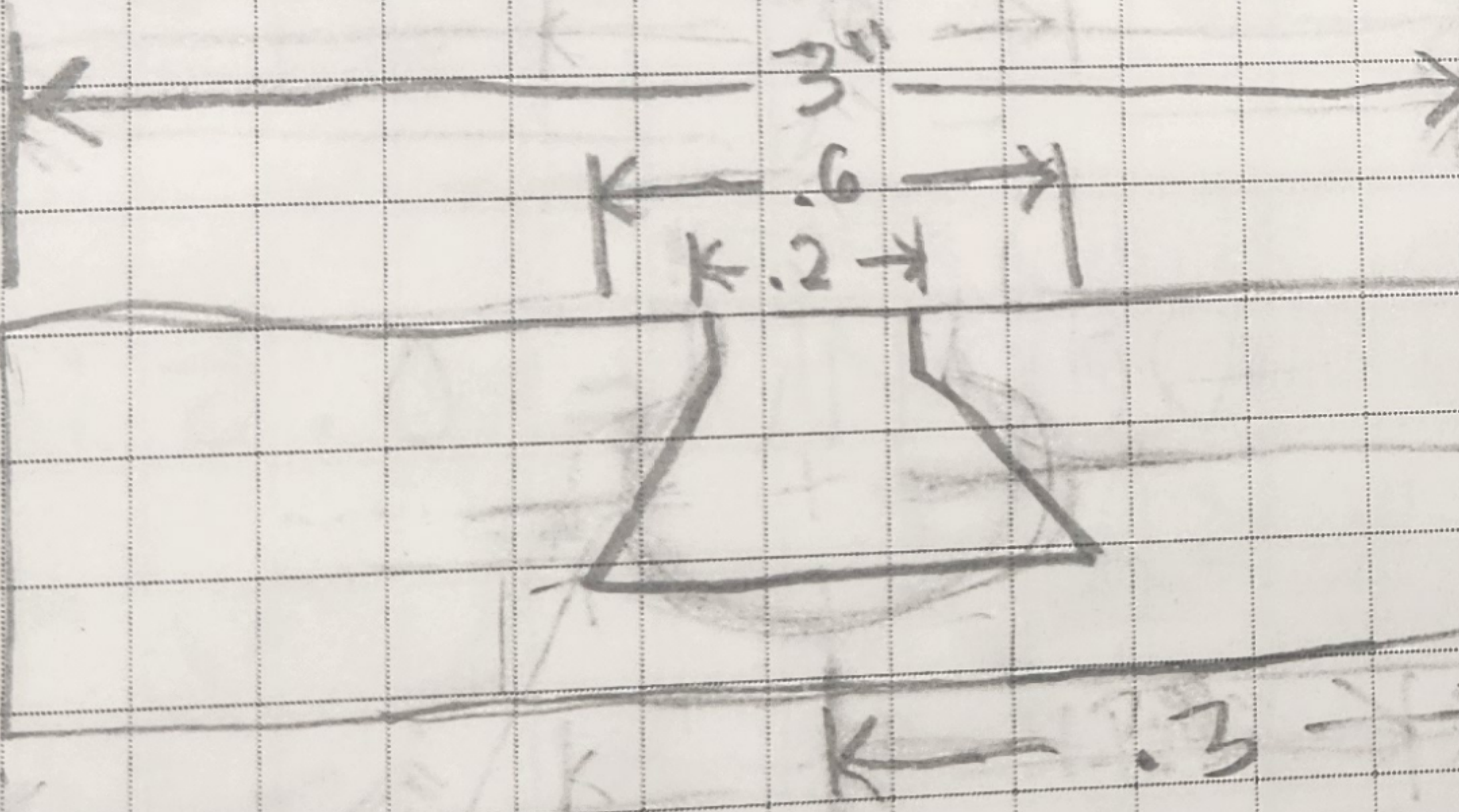
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## inches Multiview Sketch

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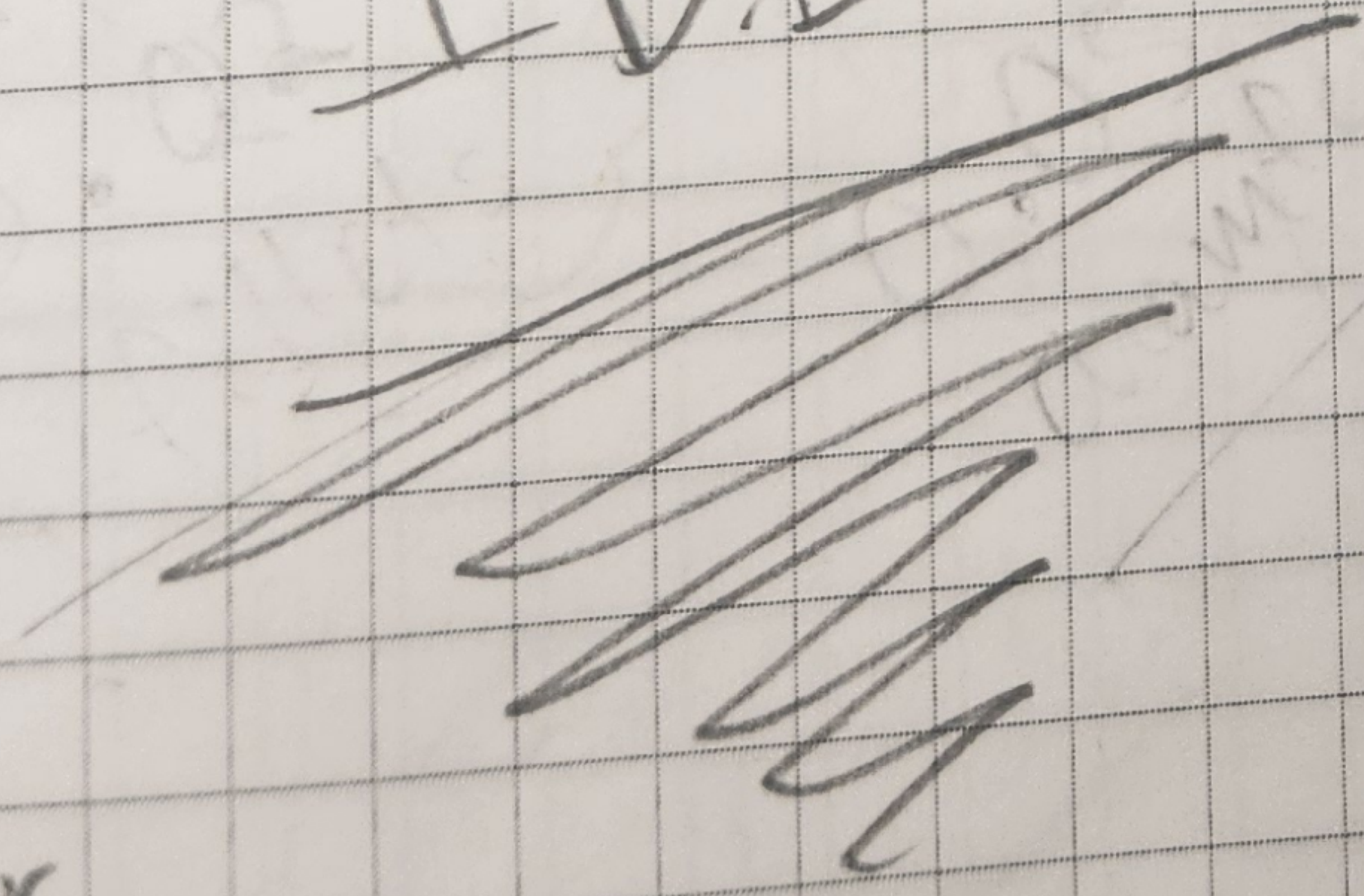


## Ideas for Logo

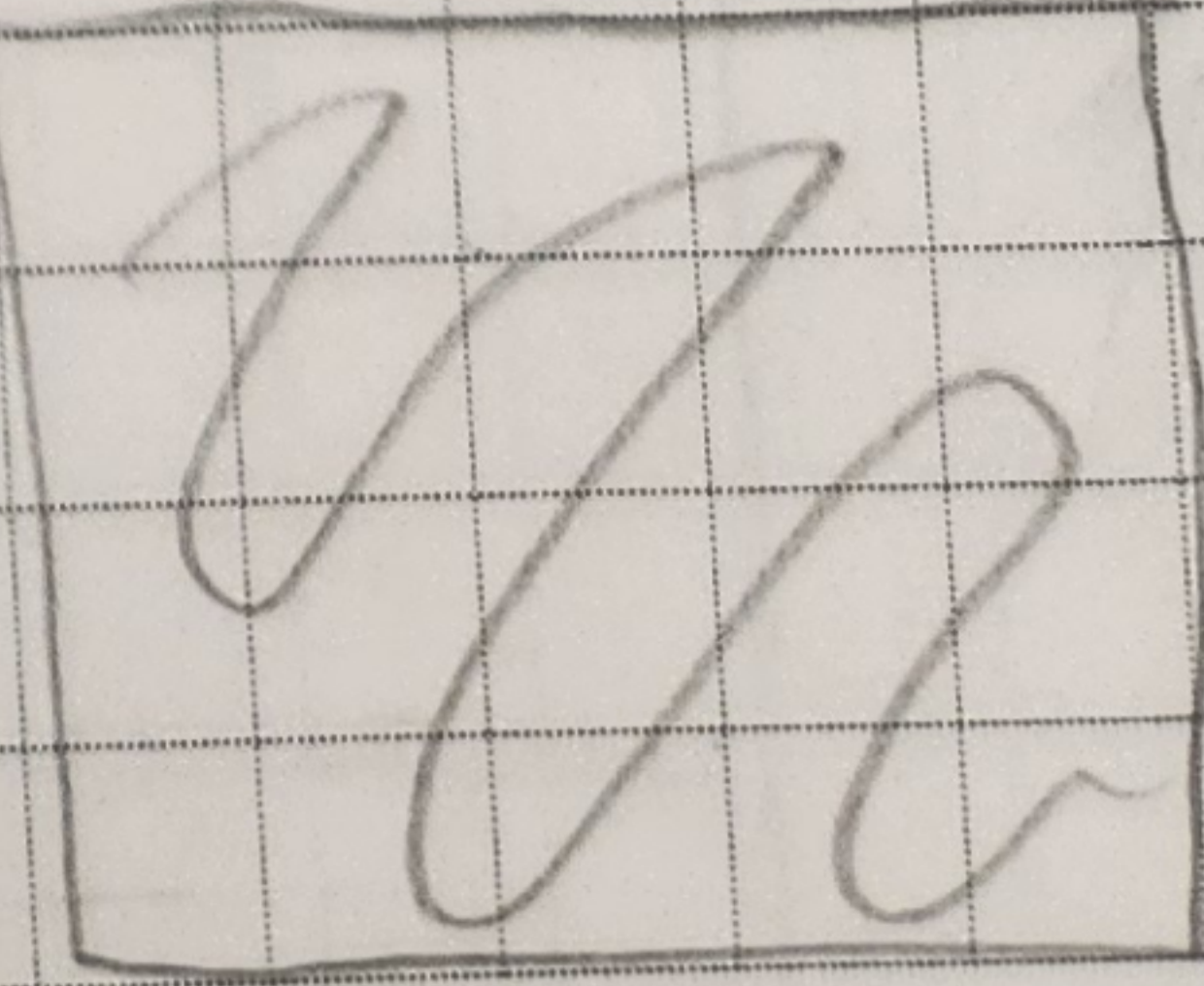
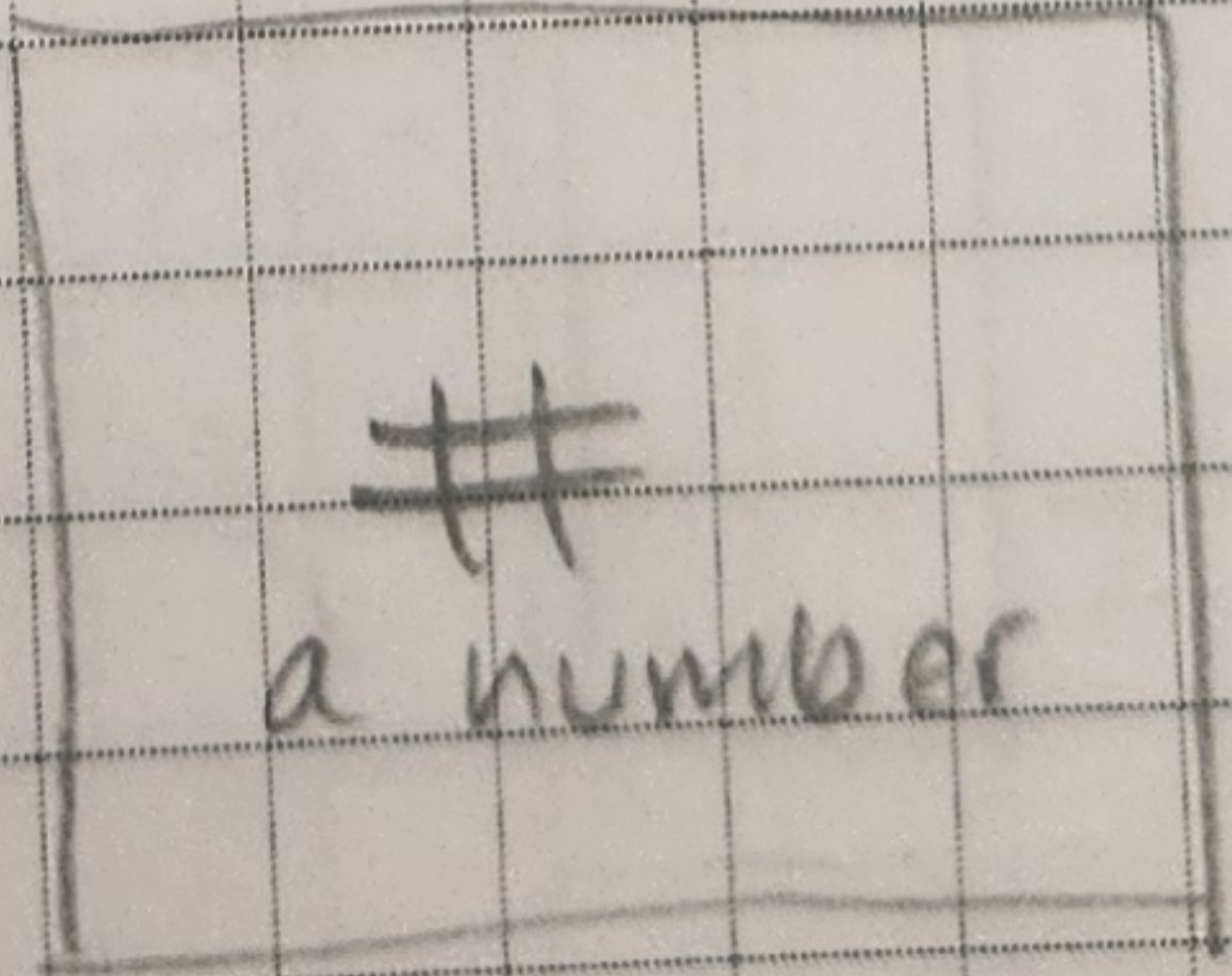
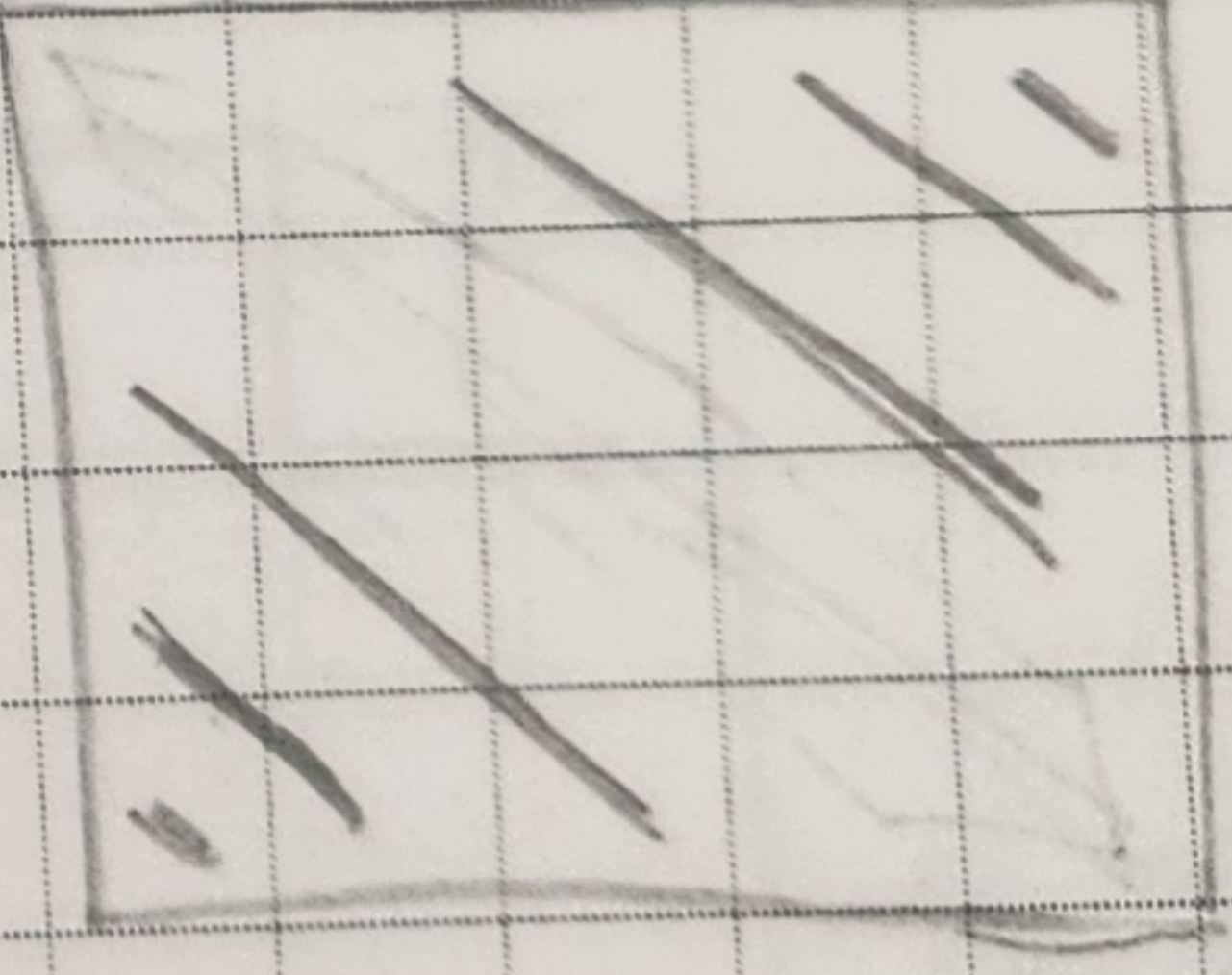
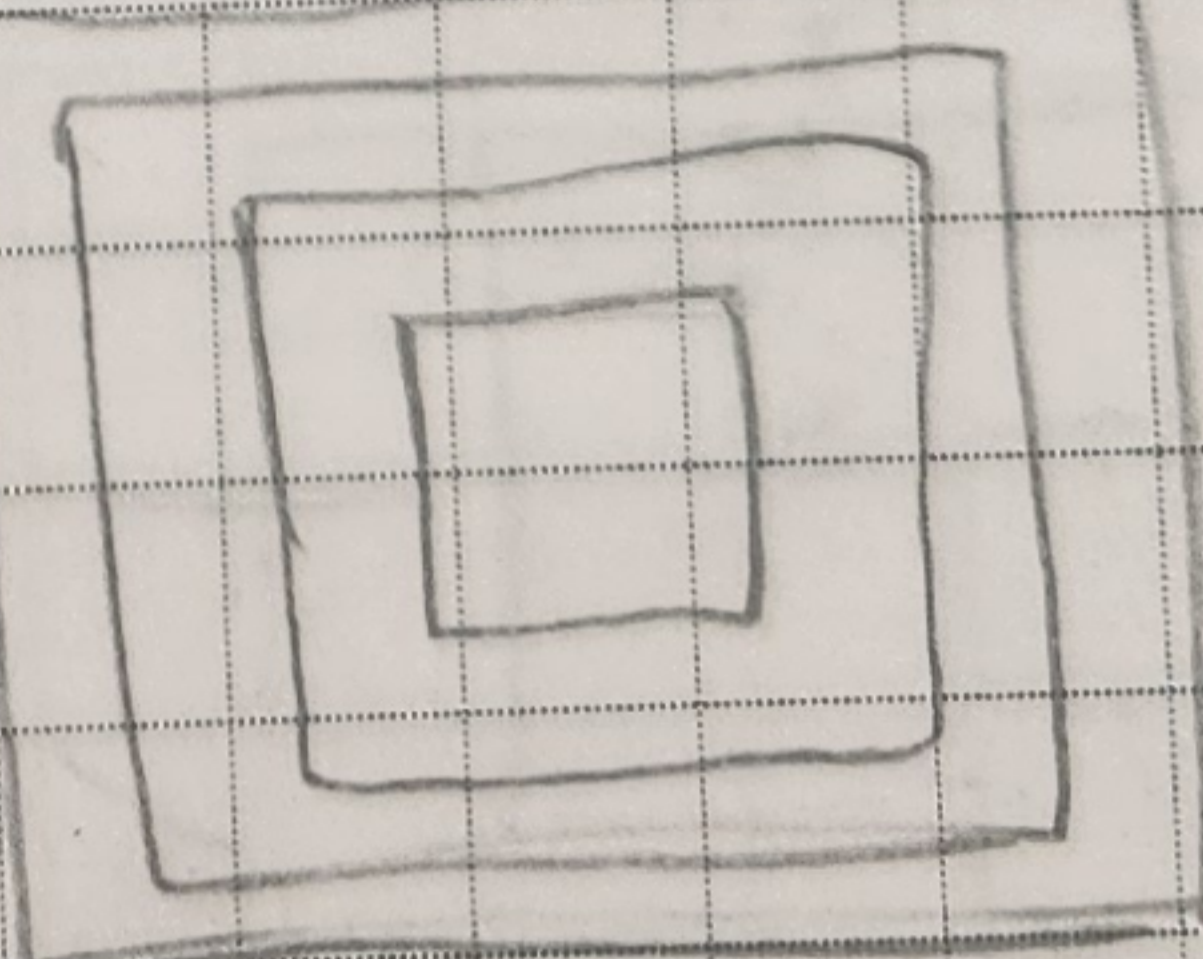
# IDEAS

0.02 fillet

0.05 chamfer



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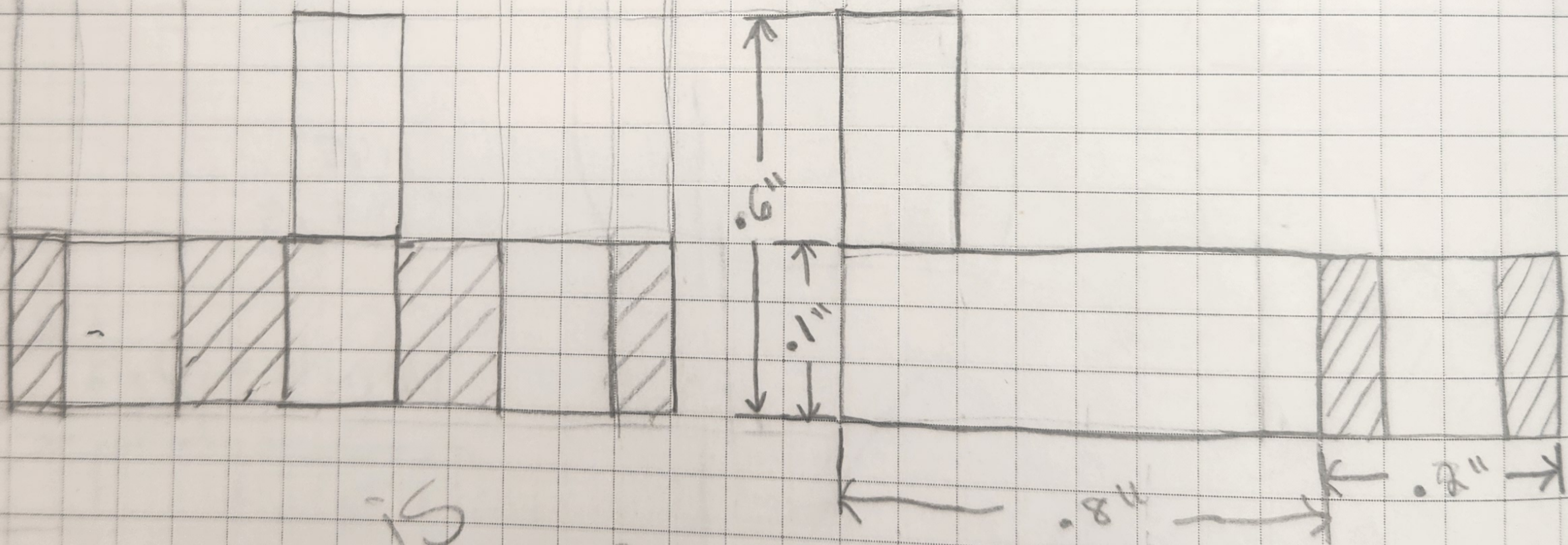
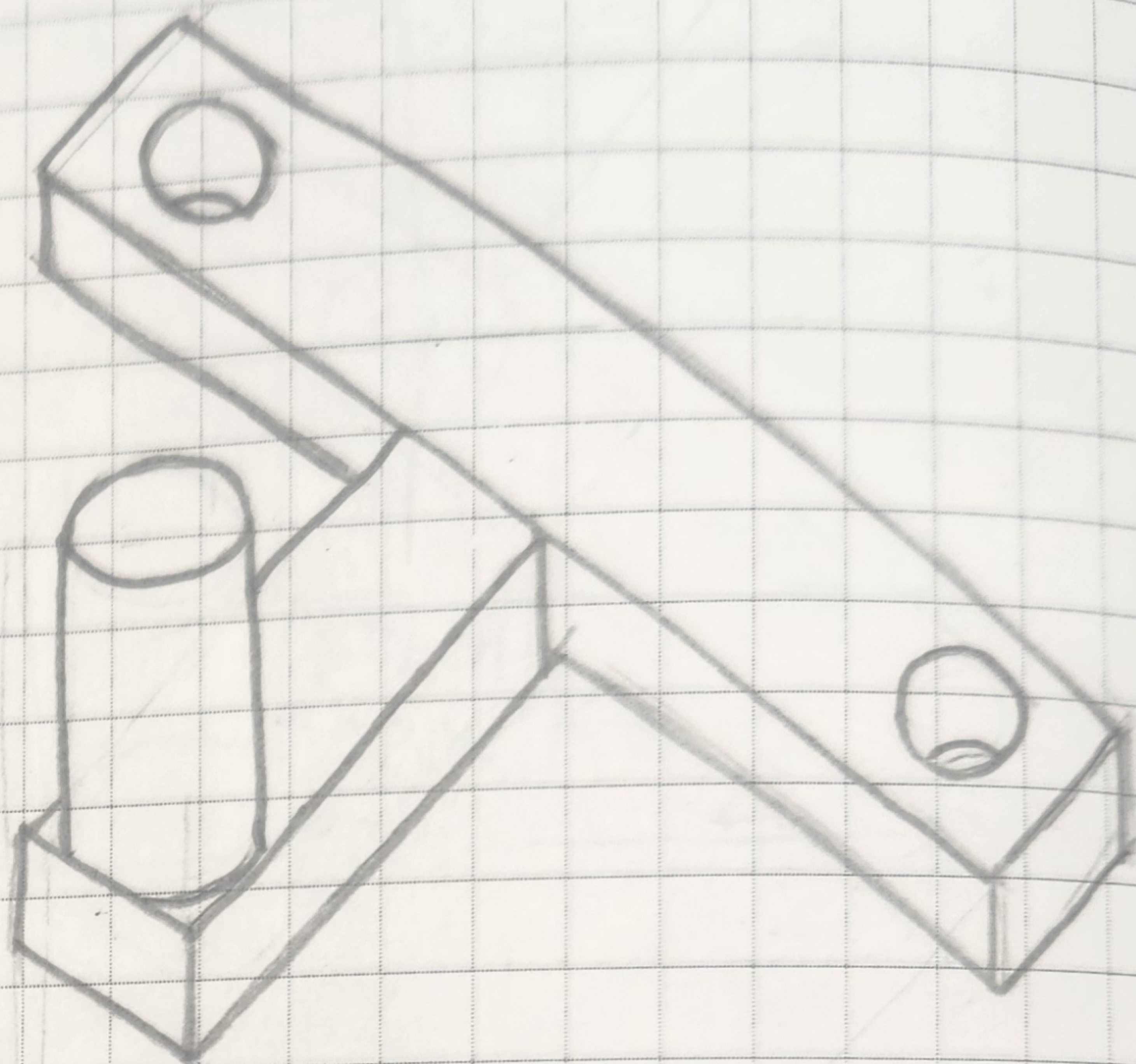
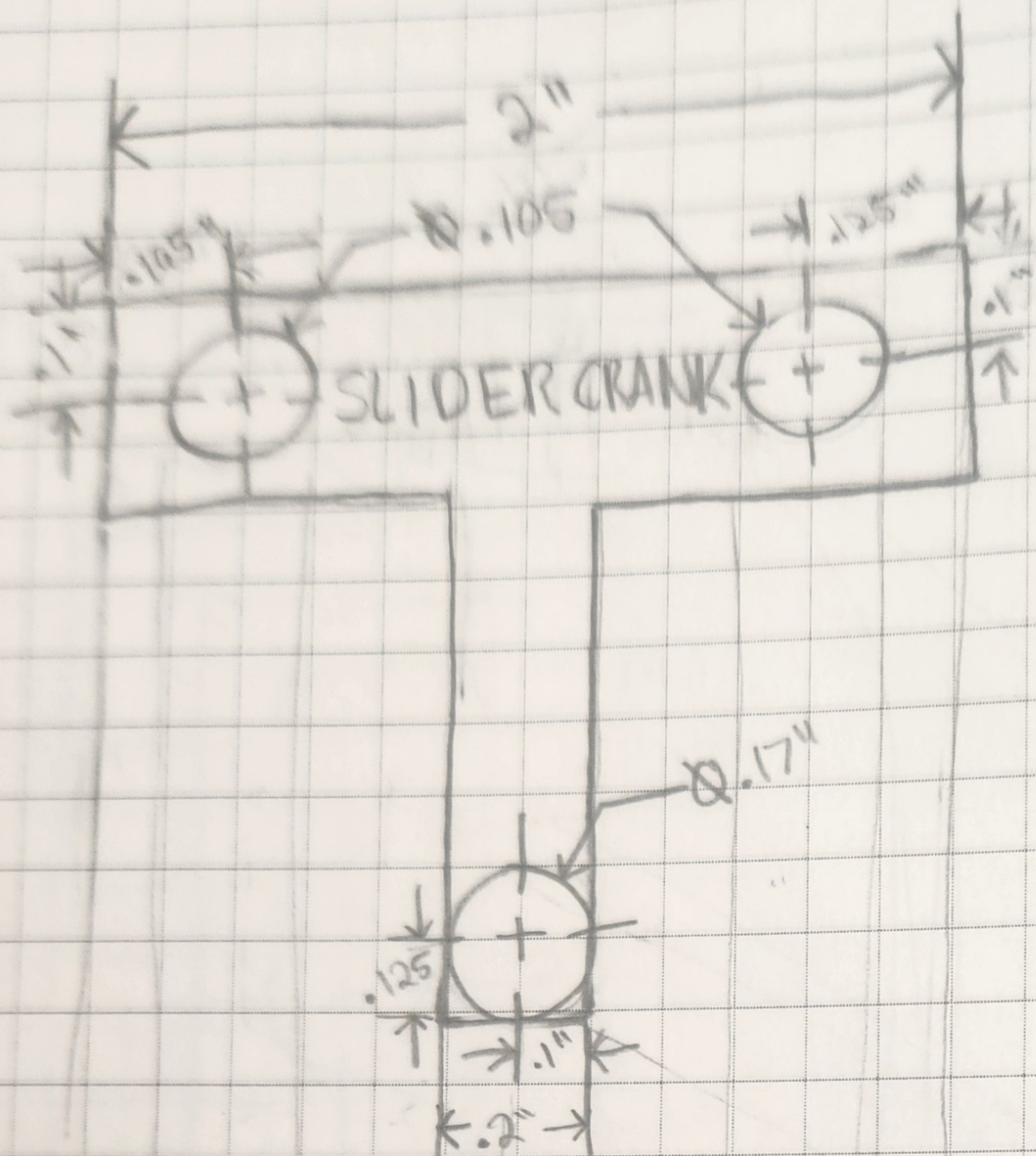
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# Handle / CRANK

14

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This is  
not what we  
went with

1.25d

1.128

0.32

1.5  
1.7

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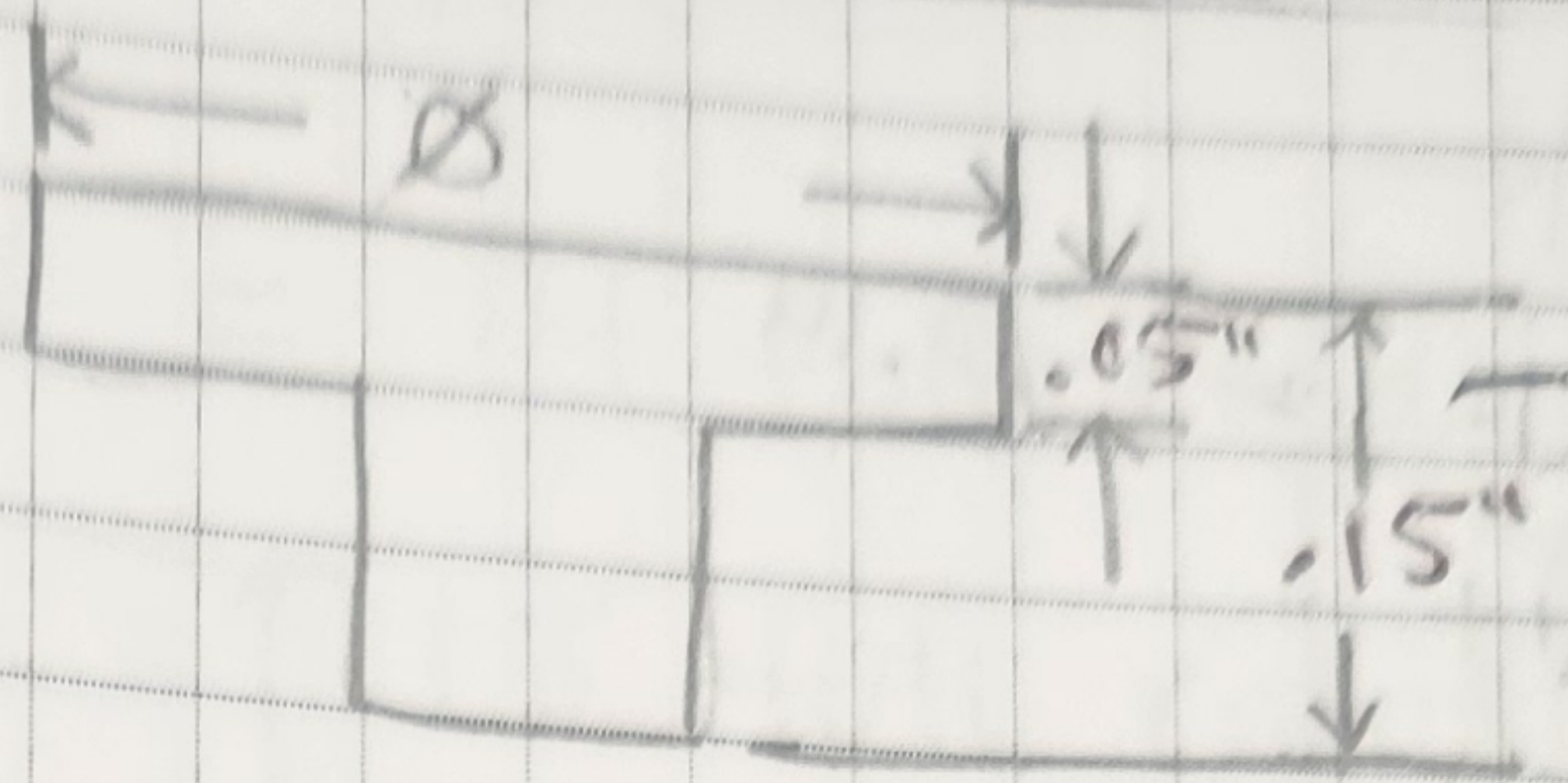
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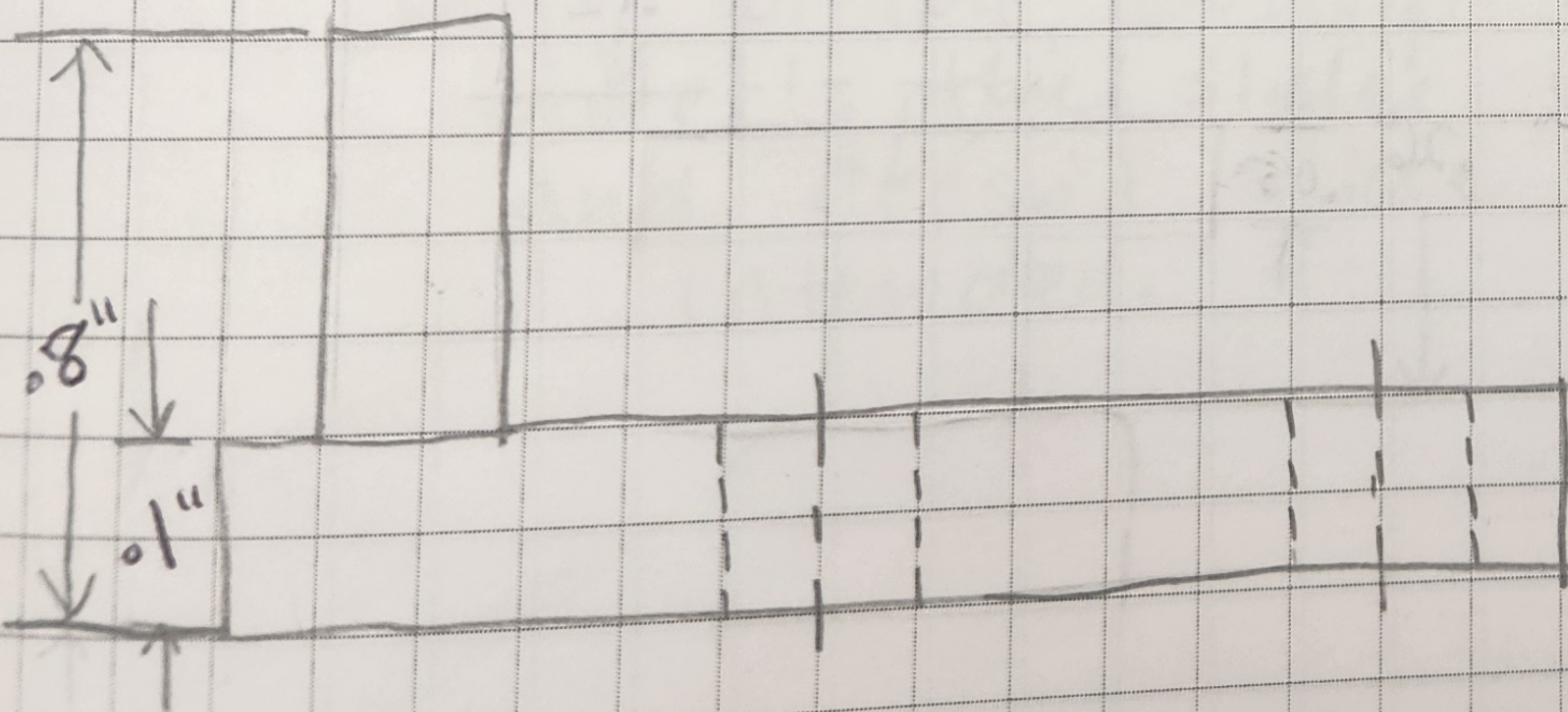
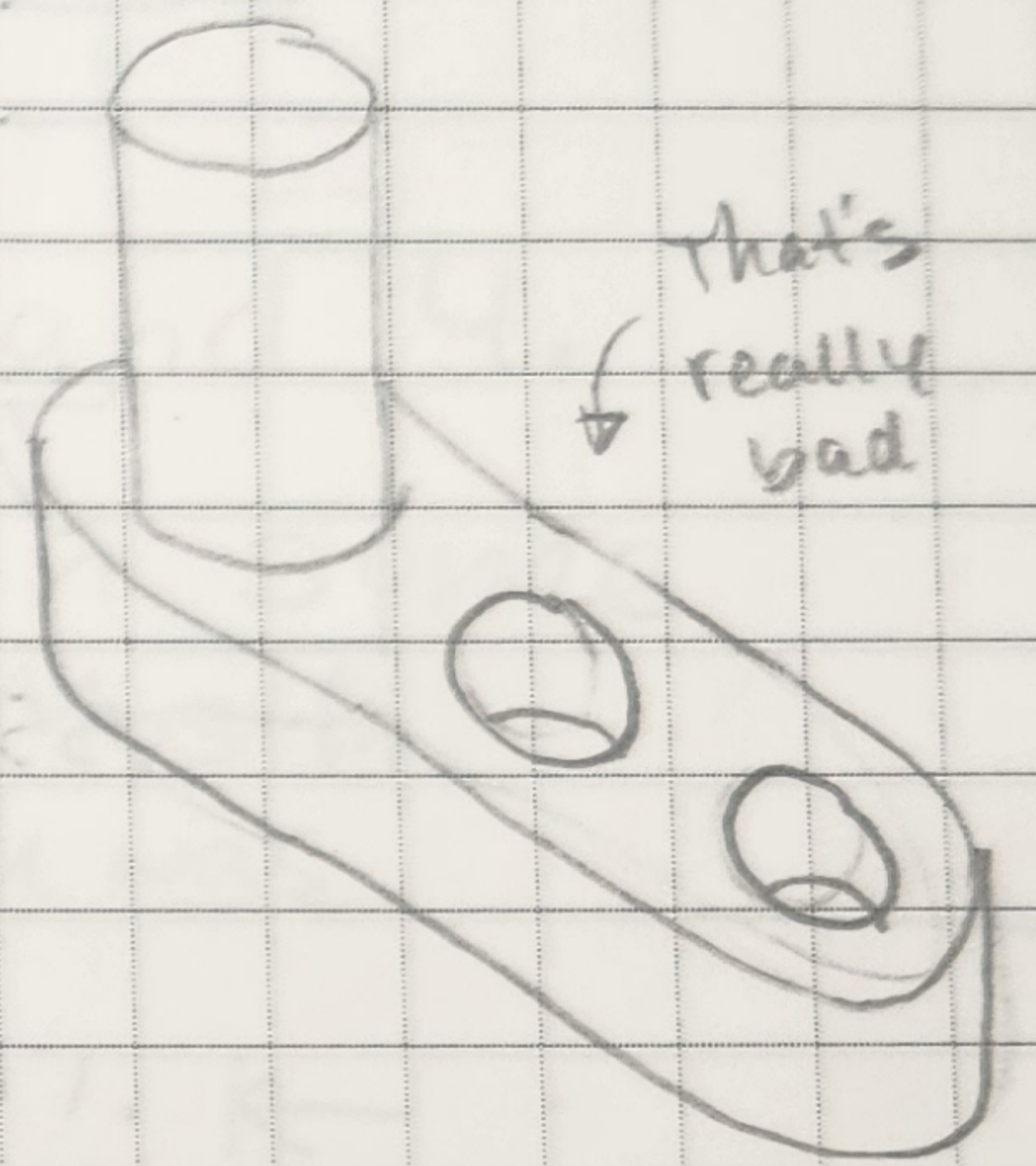
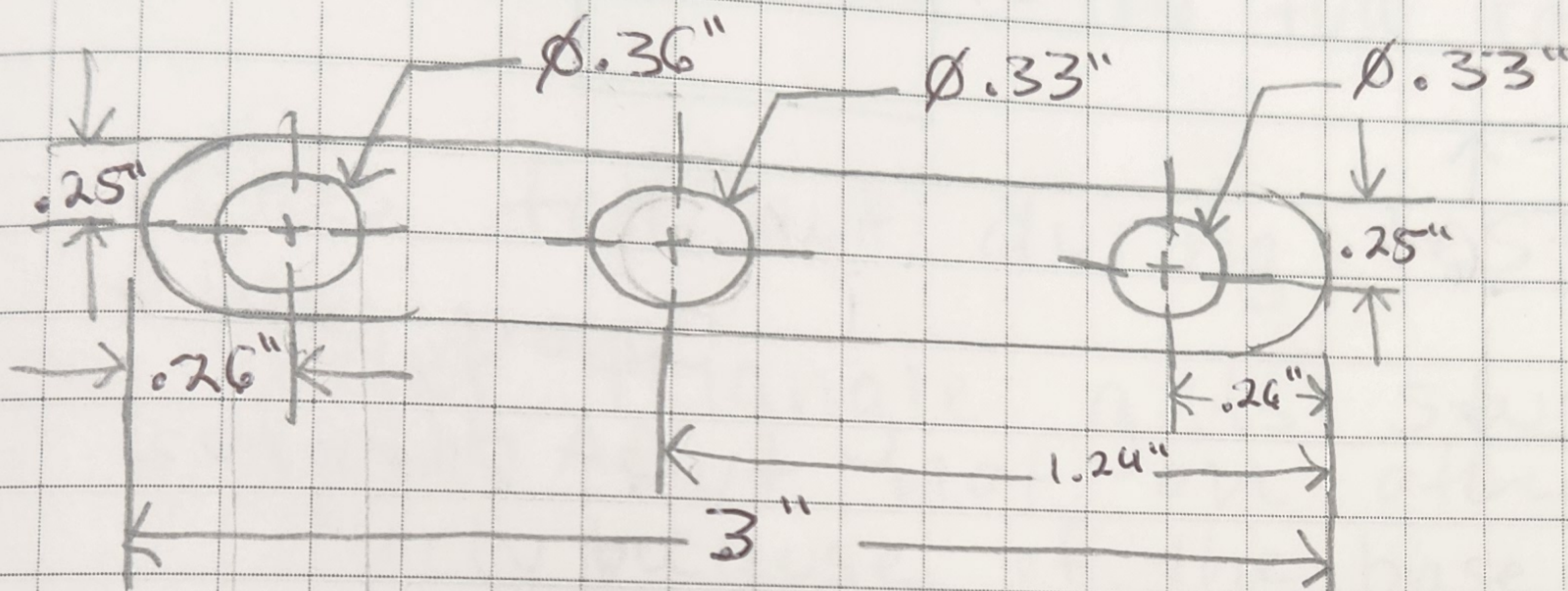
# PINS #1/#2

PINS  
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x2

# Handle / Crank



Handle/crank  
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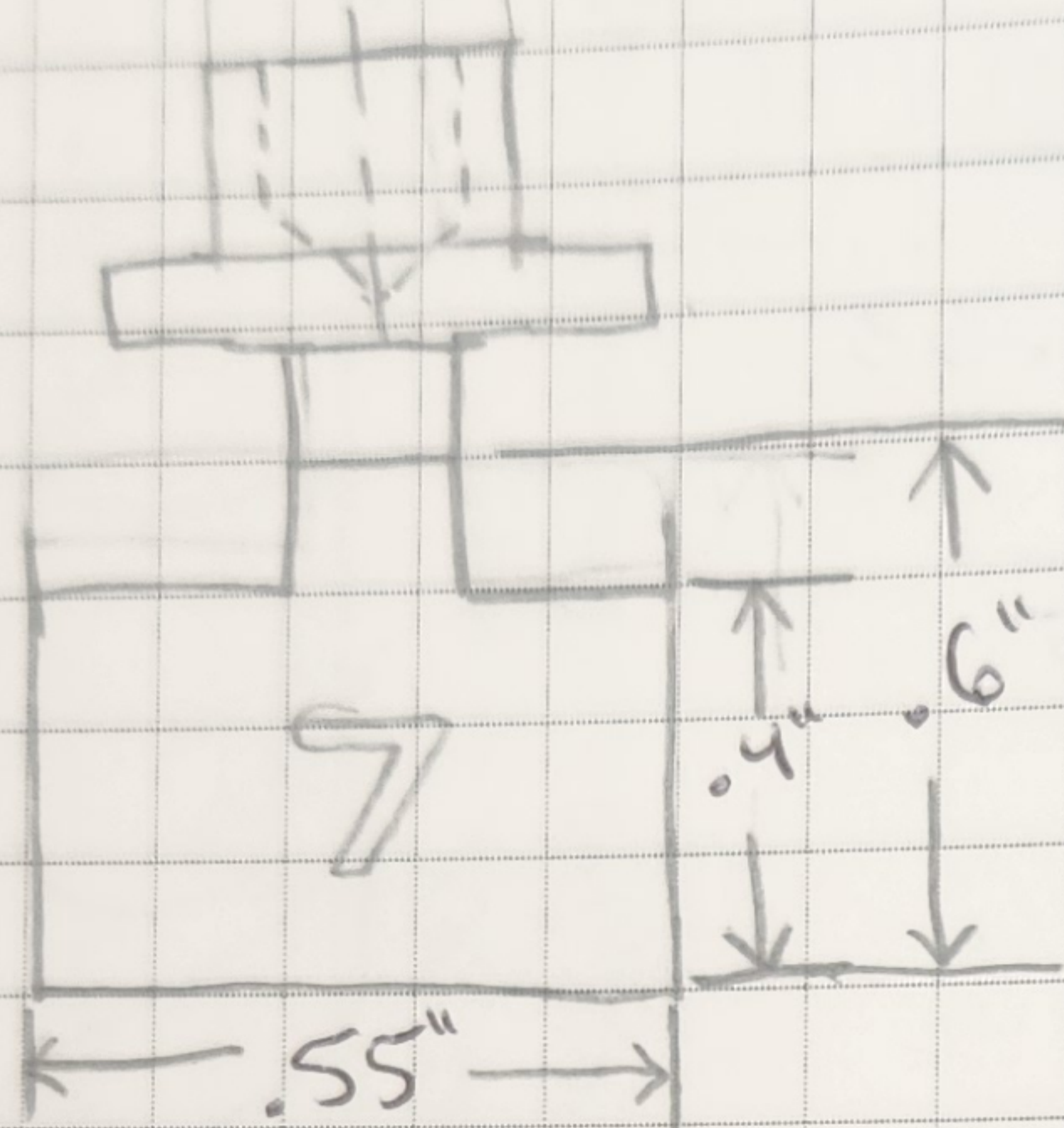
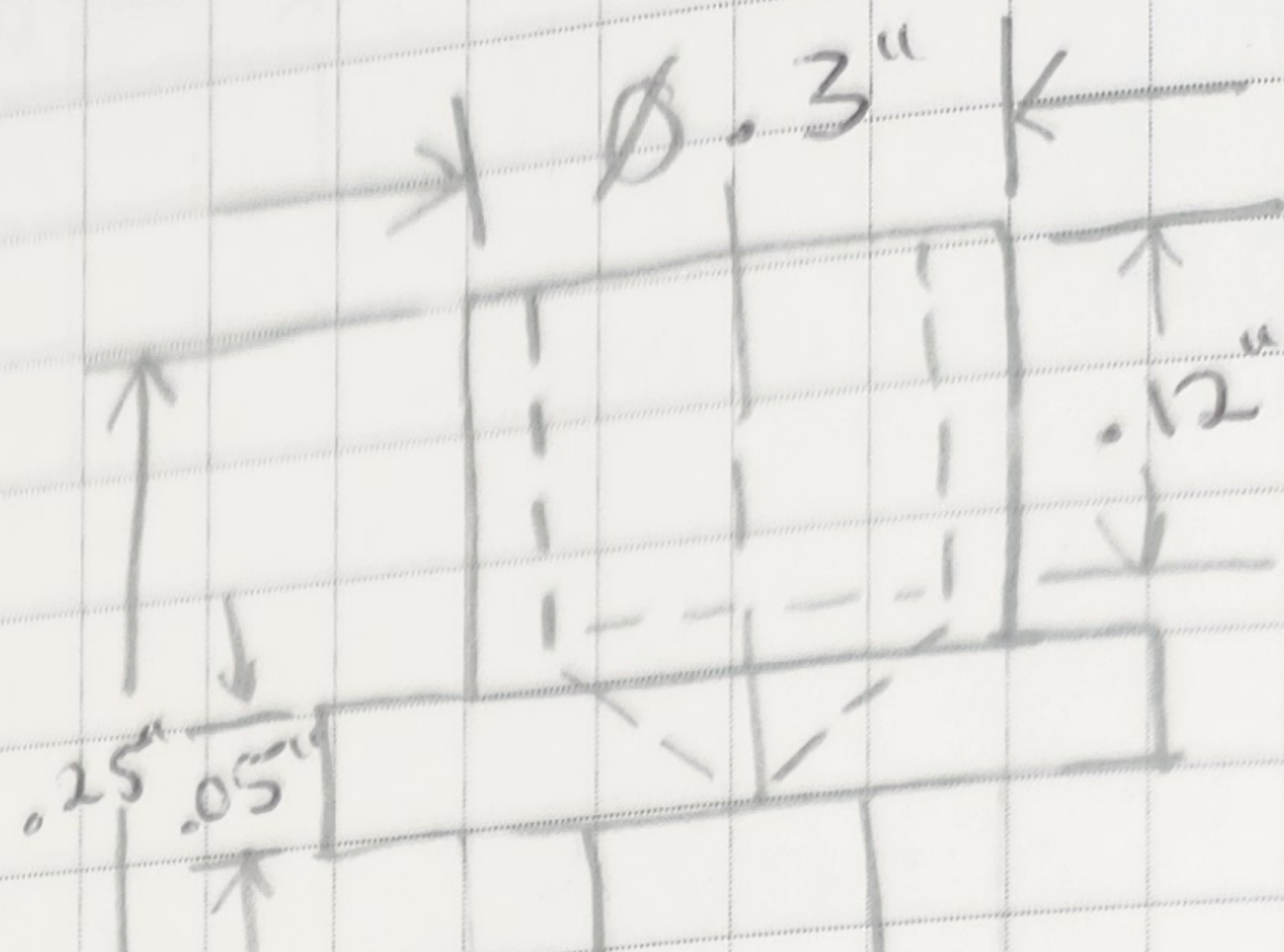
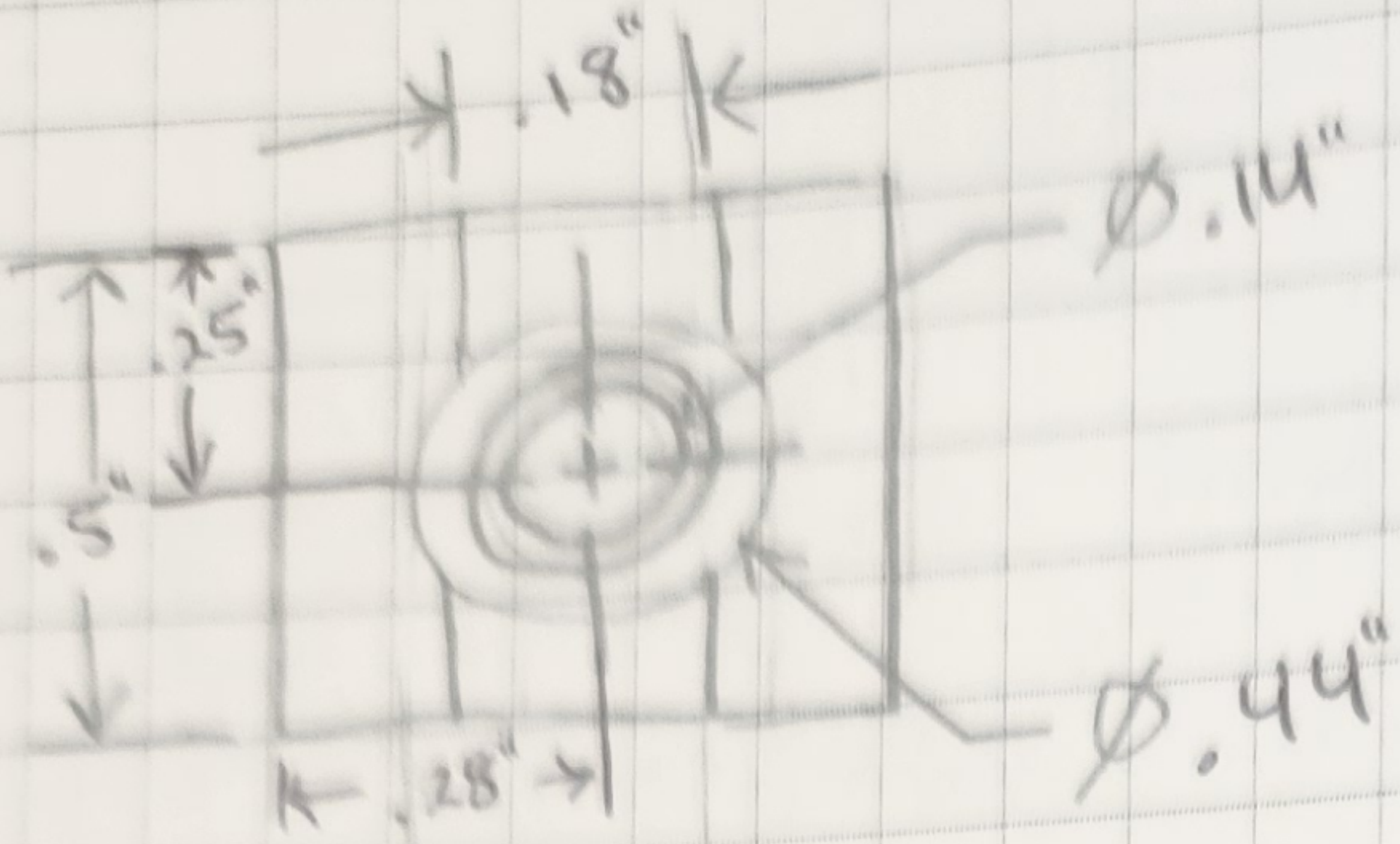
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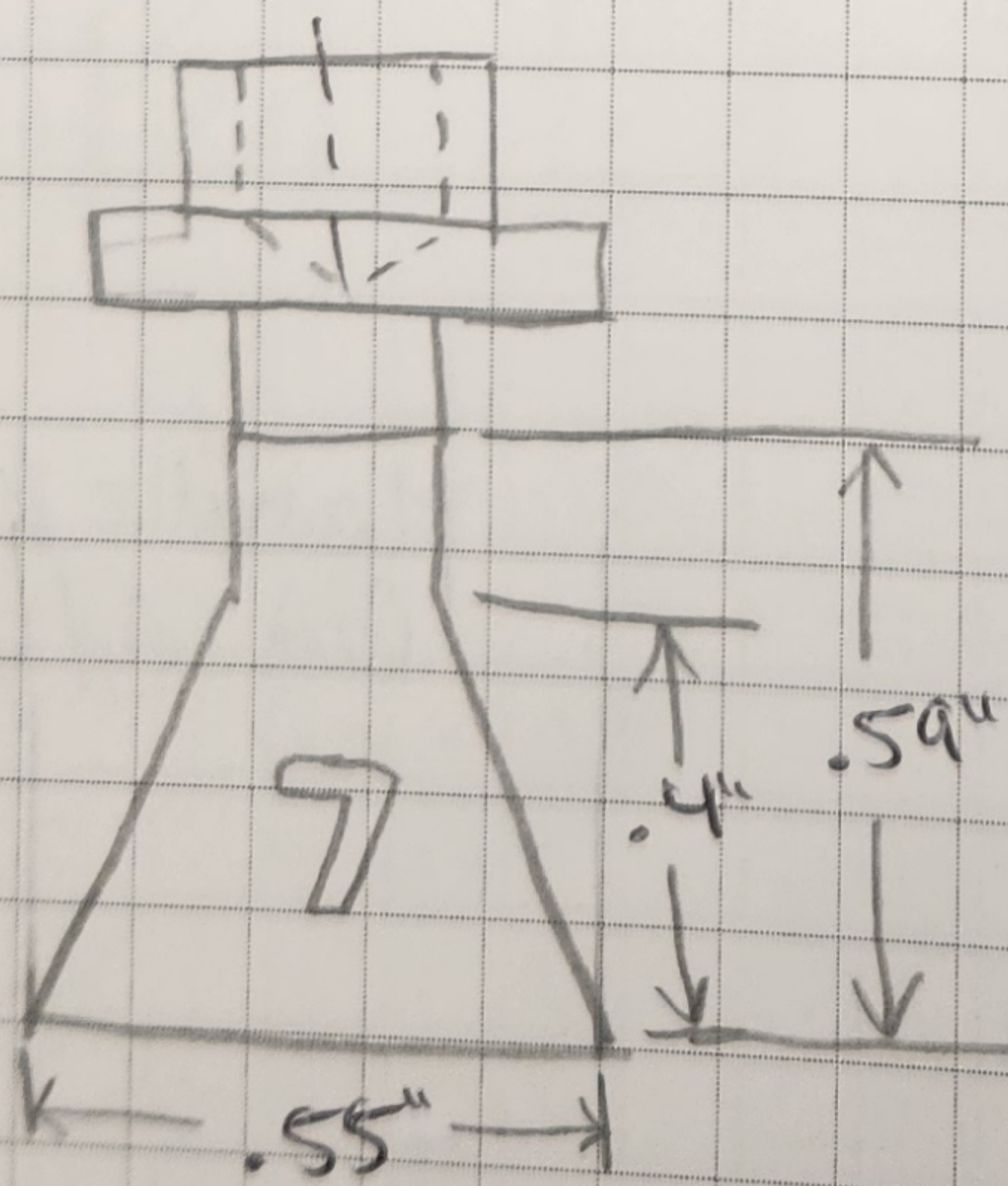
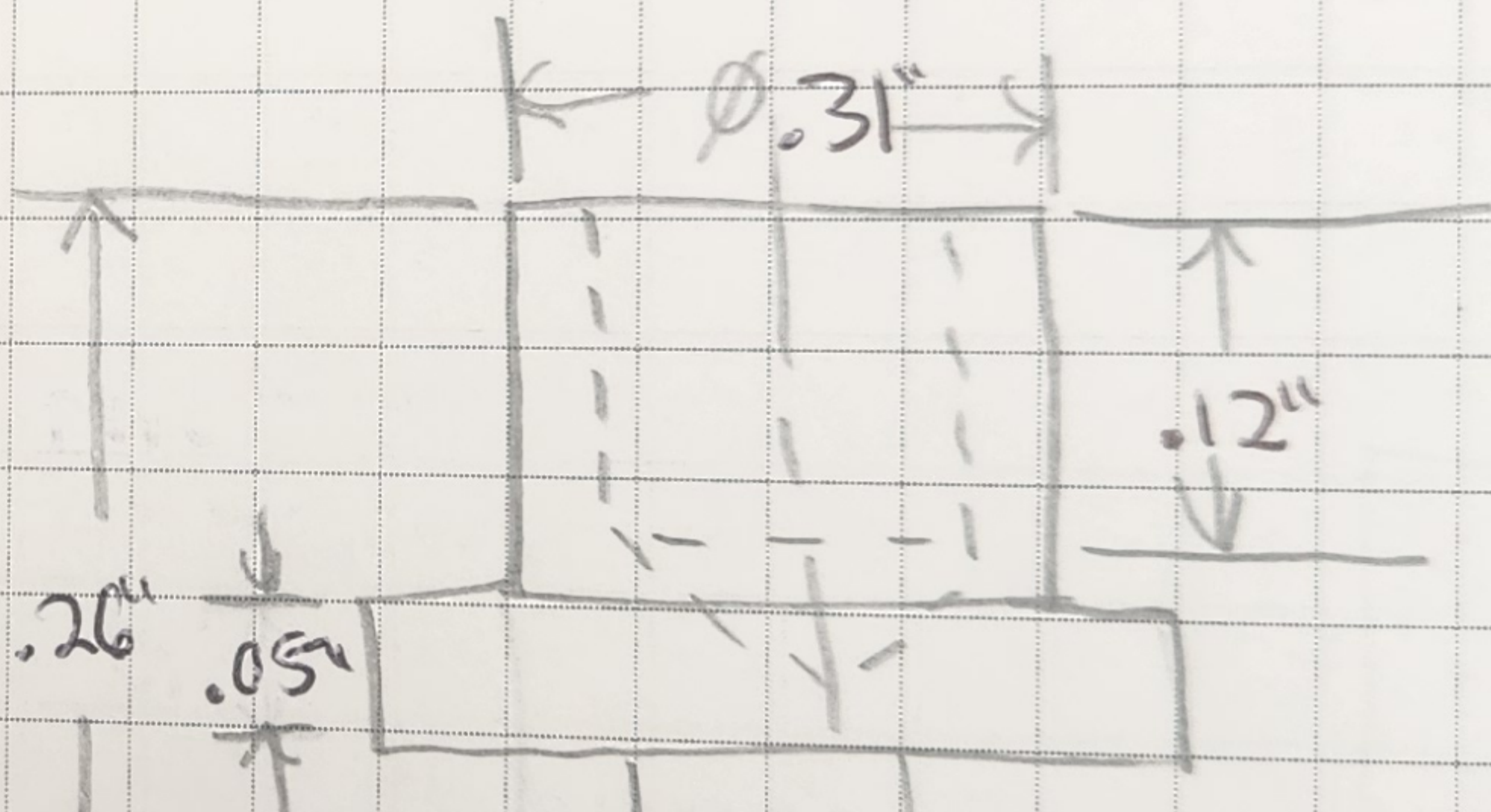
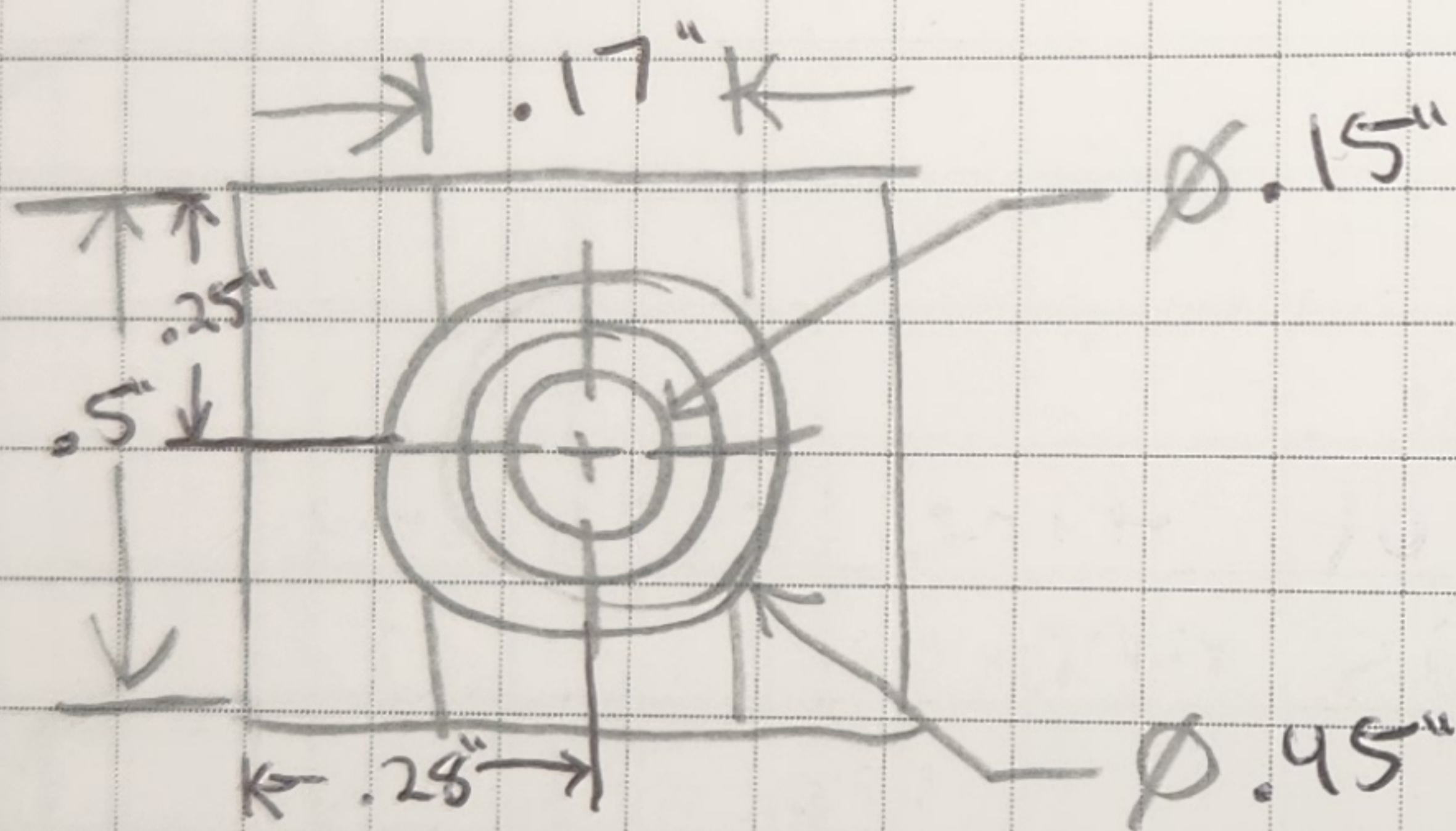
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# Sliders



Square Slider  
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Slider Triangle  
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# Slider Crank Testing

Test 1: 30 seconds = 14 full rotations

Test 2: 30 seconds = 18 full rotations

Test 3: 30 seconds = 21 full rotations

Test 4: 30 seconds = 20 full rotations

Test 5: 30 seconds = 16 full rotations

Pins fell out during test 2 and 4.

Slider triangle gets stuck on some spins but not on others. Most likely because of the base which was printed slanted at the top.

Pretty efficient of getting the job done.

Due to the bottom of the square slider, the slider is pretty loud and doesn't slide as smooth as intended.

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