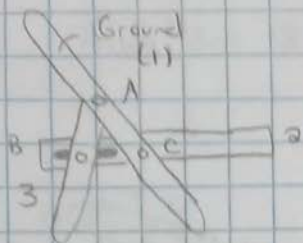


HW Problem 1

MEGG301

Folding Chair #1

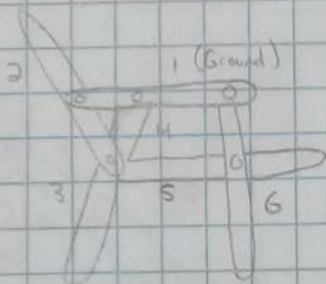


B is a half joint

$$M = 3(3-1) - 2(2) - 1$$

$$M = 1 \text{ DOF}$$

Folding Chair #2



D is a multiple joint (3 joints)

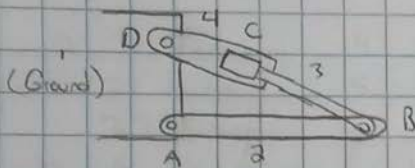
$$M = 3(6-1) - 2(7) - 0$$

$$M = 1 \text{ DOF}$$

HW1 Problem 2

MEEG 301

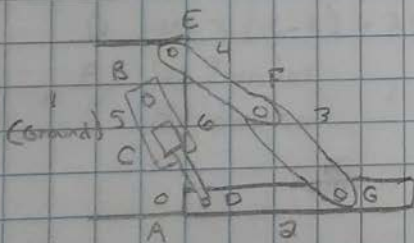
Truck Bed #1



$$M = 3(4-1) - 2(4)$$

$$M = 1 \text{ DOF}$$

Truck Bed #2

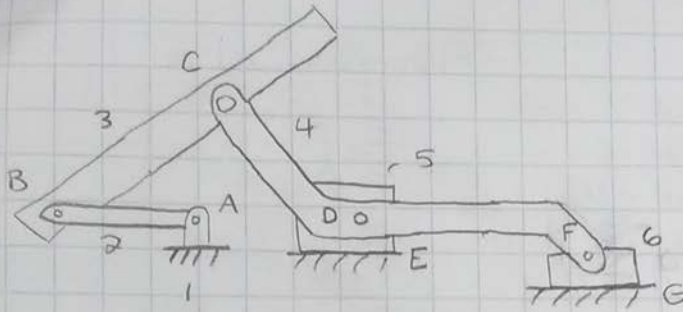


$$M = 3(6-1) - 2(7)$$

$$M = 1 \text{ DOF}$$

HW1 Problem 3

MEEG301



a 1: Ternary 4: Ternary

2: Binary 5: Binary

3: Binary 6: Binary ✓

b A: Not Multiple E: Not Multiple

B: Not Multiple F: Not Multiple

C: Not Multiple G: Not Multiple

D: Not Multiple

c A: Full E: Full ✓

B: Full F: Full

C: Full G: Full

D: Full

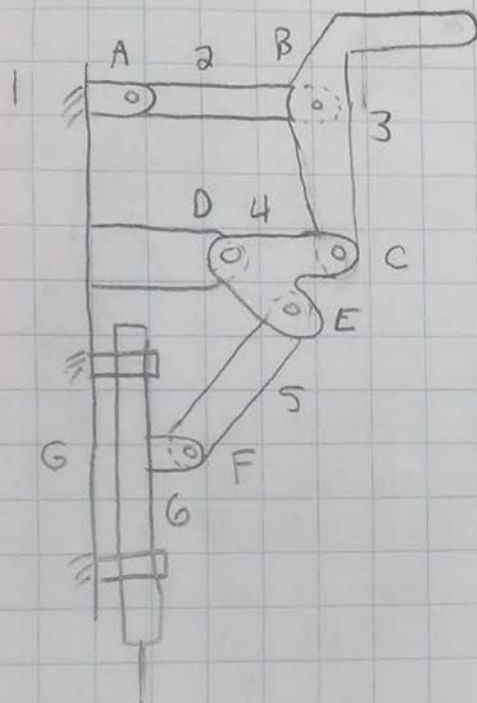
d $M = 3(6-1) - 2(7) \Rightarrow M = 1 \text{ DOF}$

e: No Paradox ✓

f: Stephenson

HW1 Problem 4

MEEG 301



a: 1: Ternary

2: Binary

3: Binary

b: A: Not Multiple

B: Not Multiple

C: Not Multiple

D: Not Multiple

c: A: Full

B: Full

C: Full

D: Full

4: Ternary

5: Binary

6: Binary

E: Not Multiple

F: Not Multiple

G: Not Multiple

E: Full

F: Full

G: Full

d: $M = 3(6-1) - 2(7)$

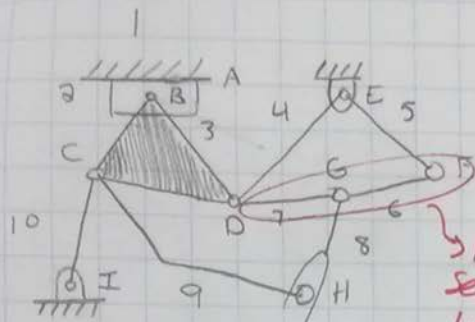
$M = 1 \text{ DOF}$

e: No paradox

f: Watt

HW1 Problem 5

MEEG 301



- a.
- | | |
|------------|------------|
| 1: Ternary | 6: Binary |
| 2: Binary | 7: Binary |
| 3: Ternary | 8: Binary |
| 4: Binary | 9: Binary |
| 5: Binary | 10: Binary |

- b.
- | | |
|-----------------|-----------------|
| A: Not Multiple | F: Not Multiple |
| B: Not Multiple | G: Yes Multiple |
| C: Yes Multiple | H: Not Multiple |
| D: Yes Multiple | I: Not Multiple |
| E: Yes Multiple | |

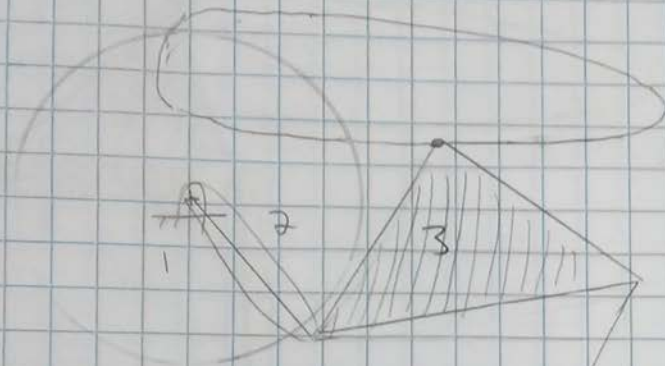
- c.
- | | |
|---------|---------|
| A: Full | F: Full |
| B: Full | G: Full |
| C: Full | H: Half |
| D: Full | I: Full |
| E: Full | |

d. $M = 3(10-1) - 2(17) - 1$
 $M = 2 \text{ DOF}$

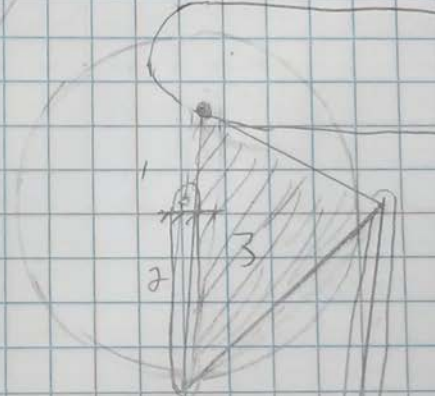
e. Links 4, 5, 6, and 7 form a triangle structure that can't change shape

f. Does not have 6 links / 1 DOF ✓

Point 2



Point 3

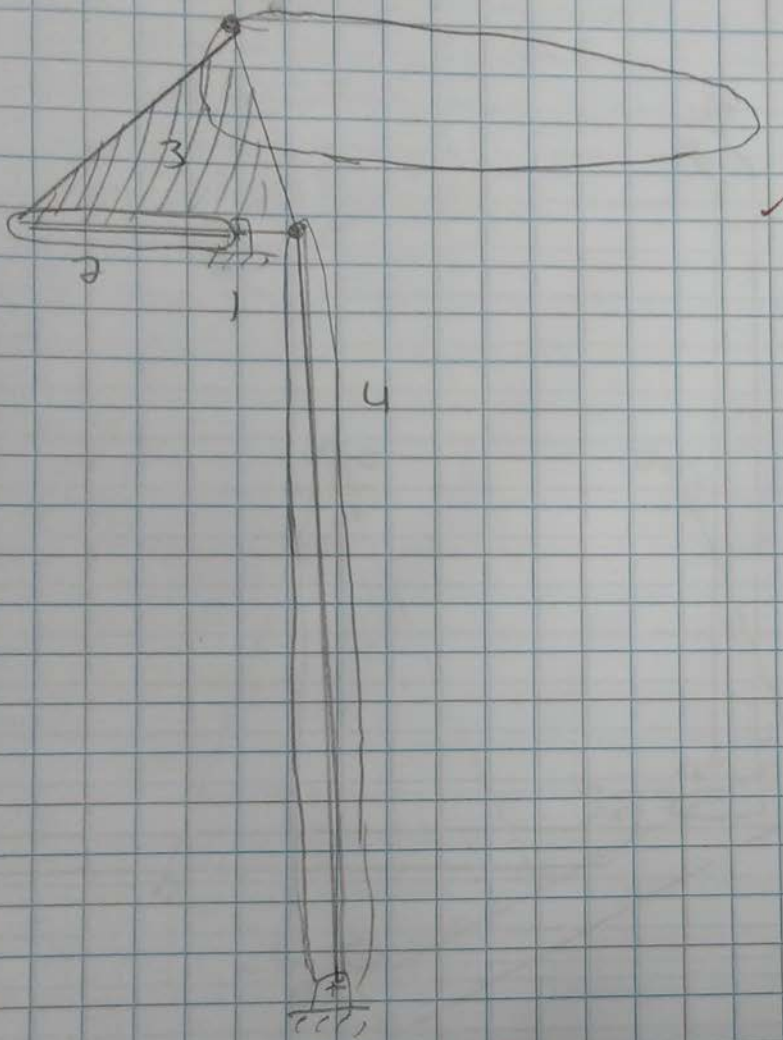


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HW1 Problem 6

MEE 6301

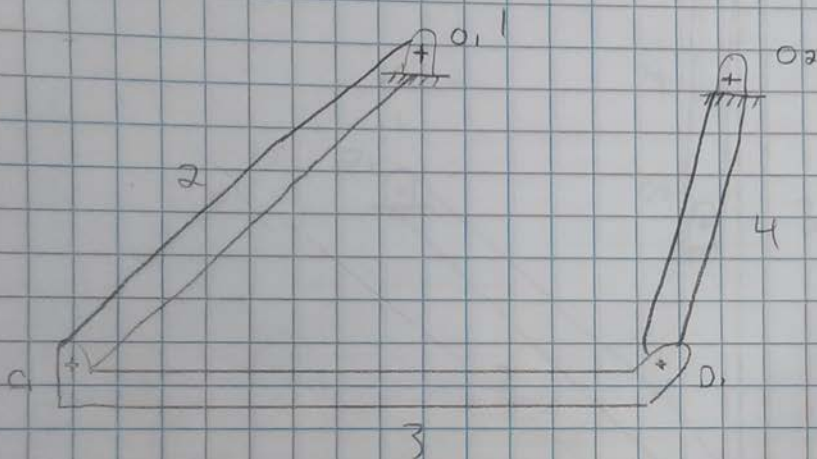
Part 4



HWI Problem 7 (continued)

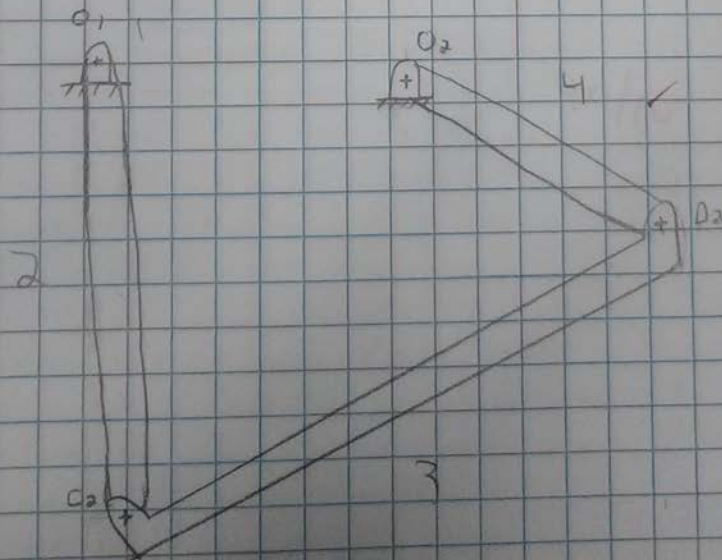
MEEG301

Configuration #1



Transmission
Angle = $\sim 11^\circ - 12^\circ$

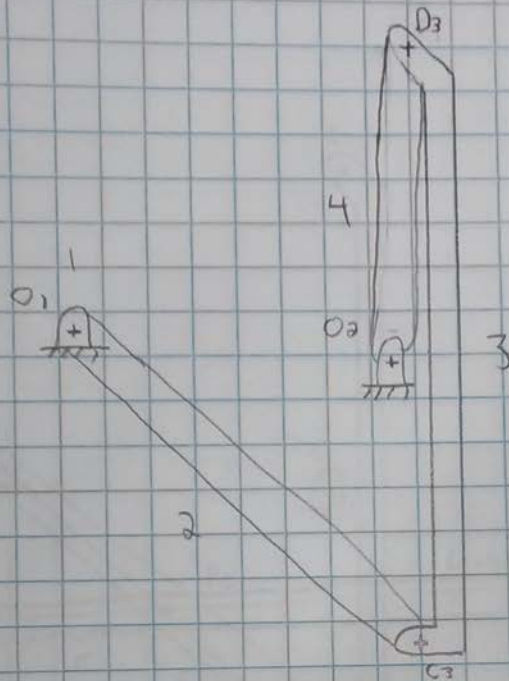
Configuration #2

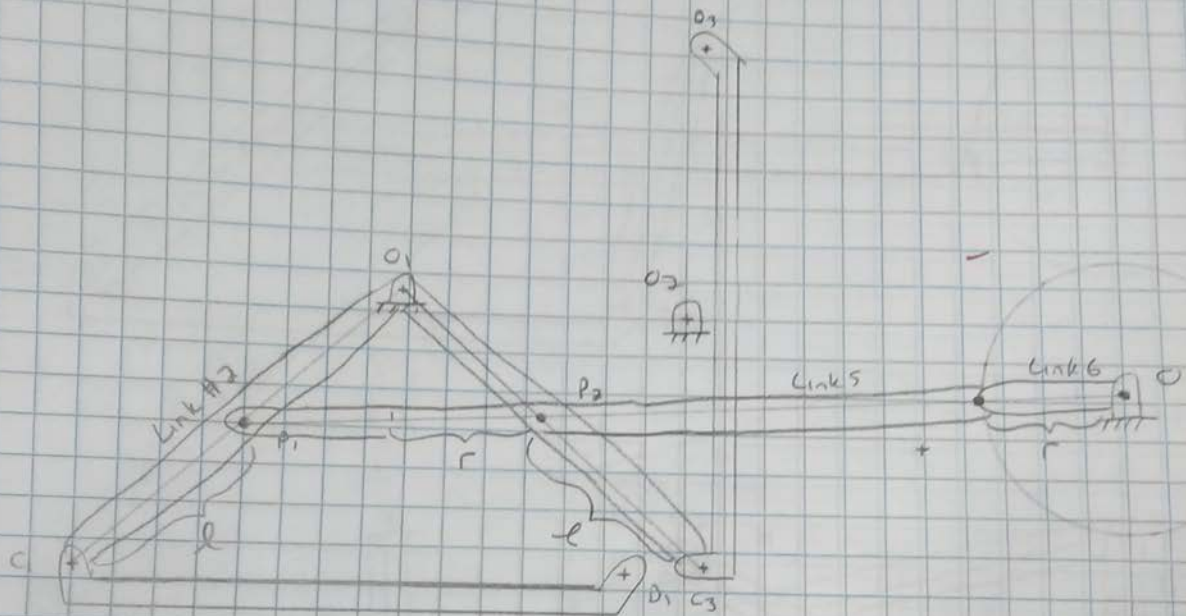


HW Problem 7 (Continued)

ME 361

Configuration #3





Steps: +

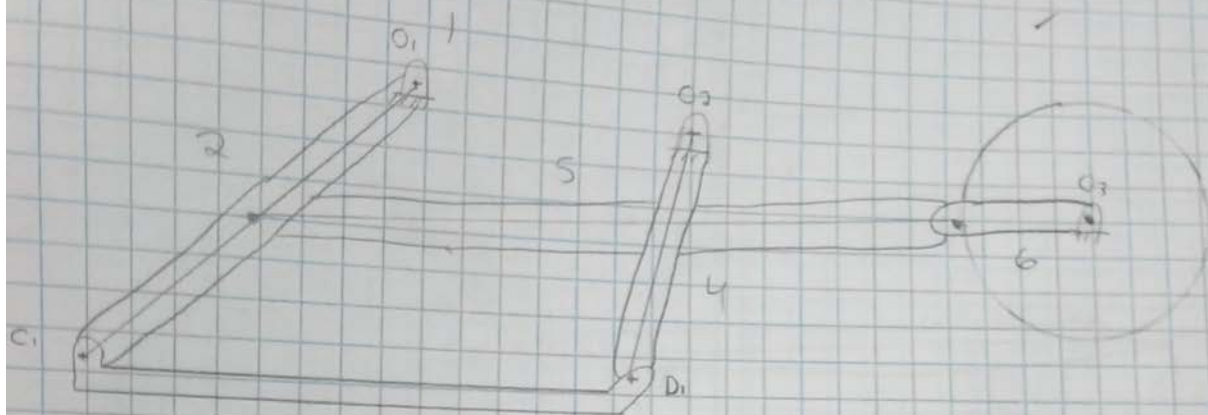
1. Draw Mechanism with Link 2 in the beginning and ending stages of its motion
2. Choose a point P_1 on link 2, a distance l from joint C_1 . Then make point P_2 on link 2, the same distance l from joint C_3 .
3. Draw a line from P_1 to P_2 and onward (a decent distance from them in order to satisfy Grashof condition). Where you land is O_3 .
4. Measure half the distance from P_1 to P_2 (r).
5. Draw a circle of radius r around O_3 . Link 5 will go from any point P to somewhere on this circle (depending on position of link 2). Link 6 goes from Link 5 to O_3 .

This is a Watt Mechanism

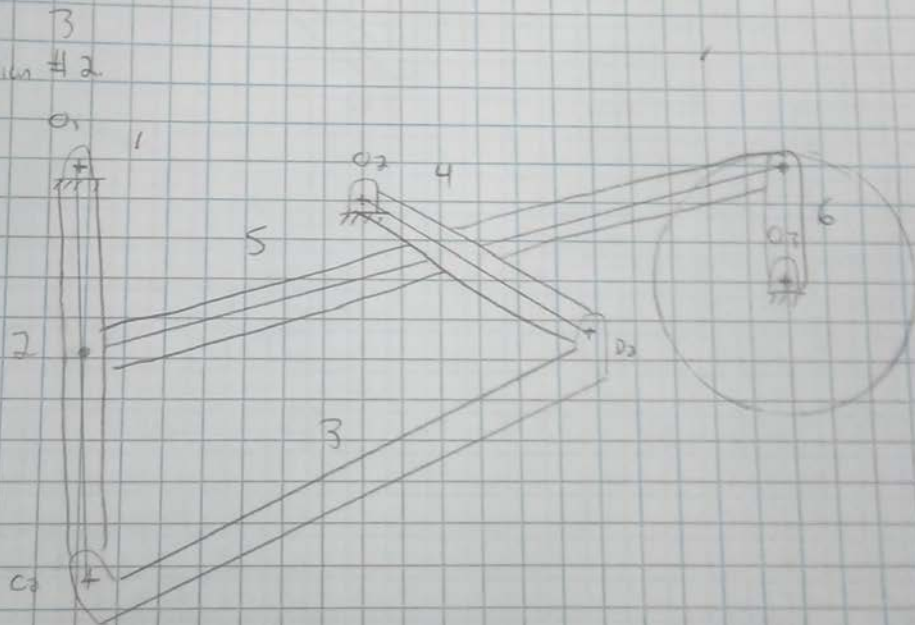
HW1 Problem 8 (Continued)

MEEG 301

Configuration #1



Configuration #2



HW1 Problem 8 (continued)

MEEG 360

