12012127 邹佳驹

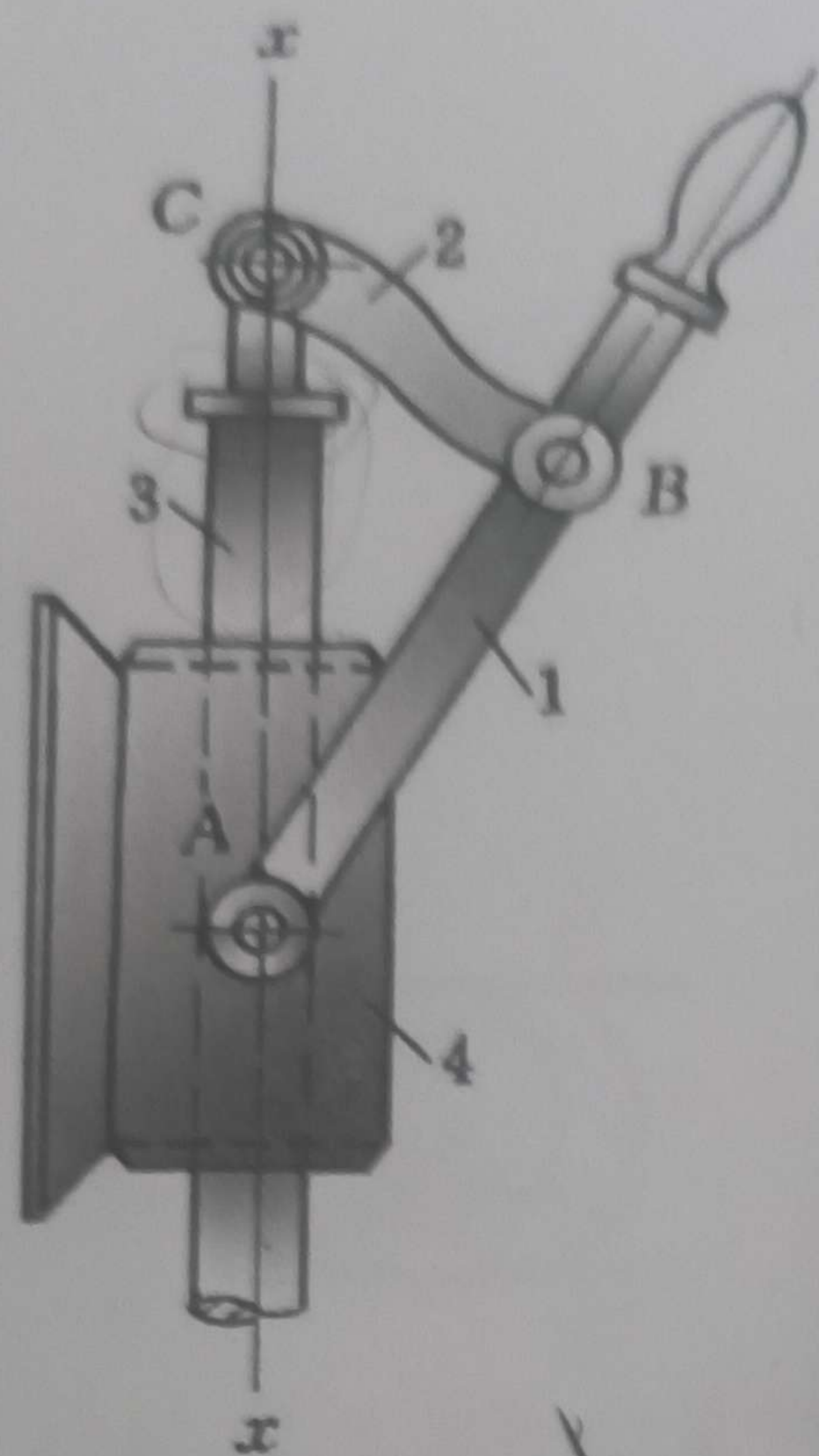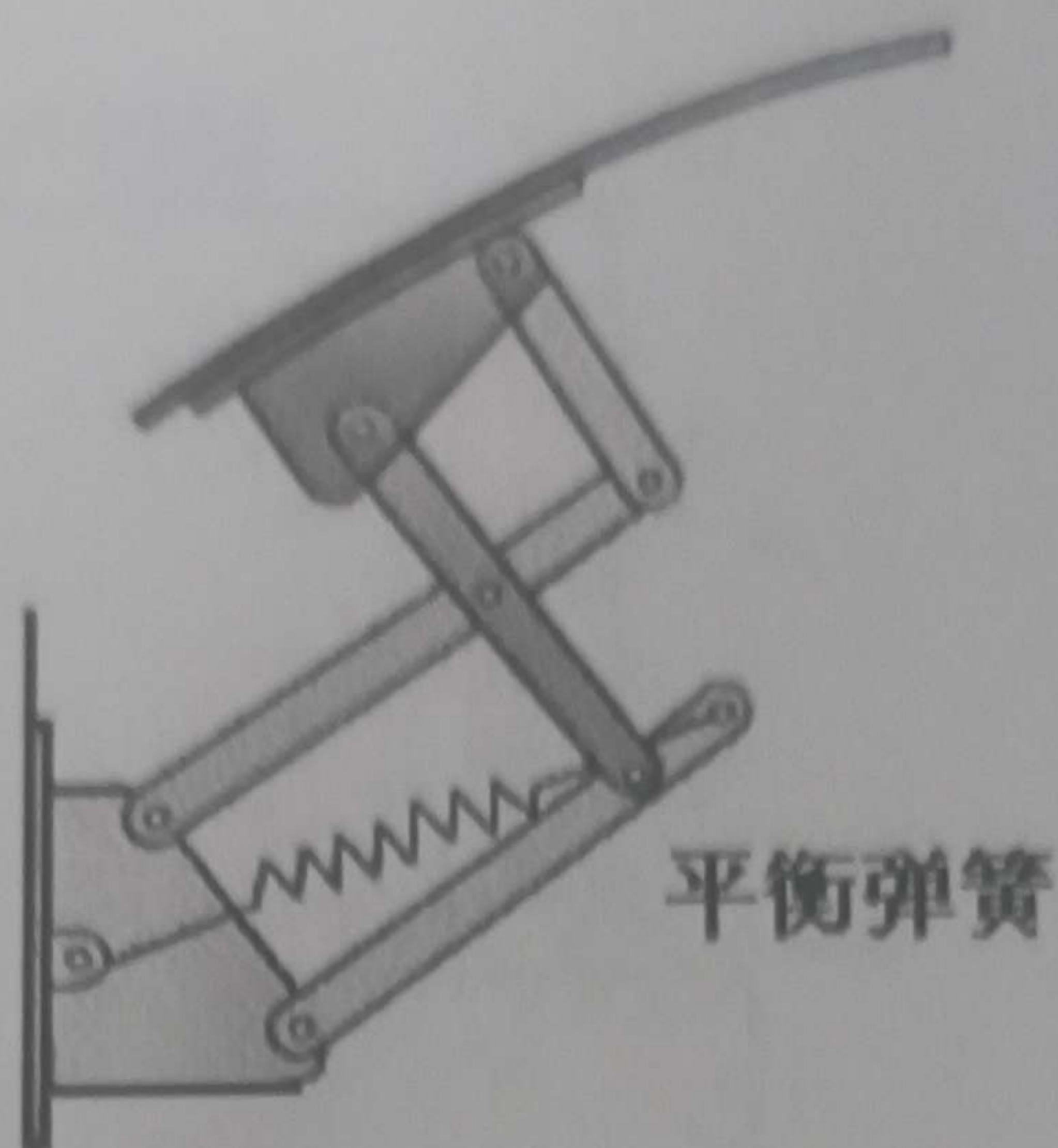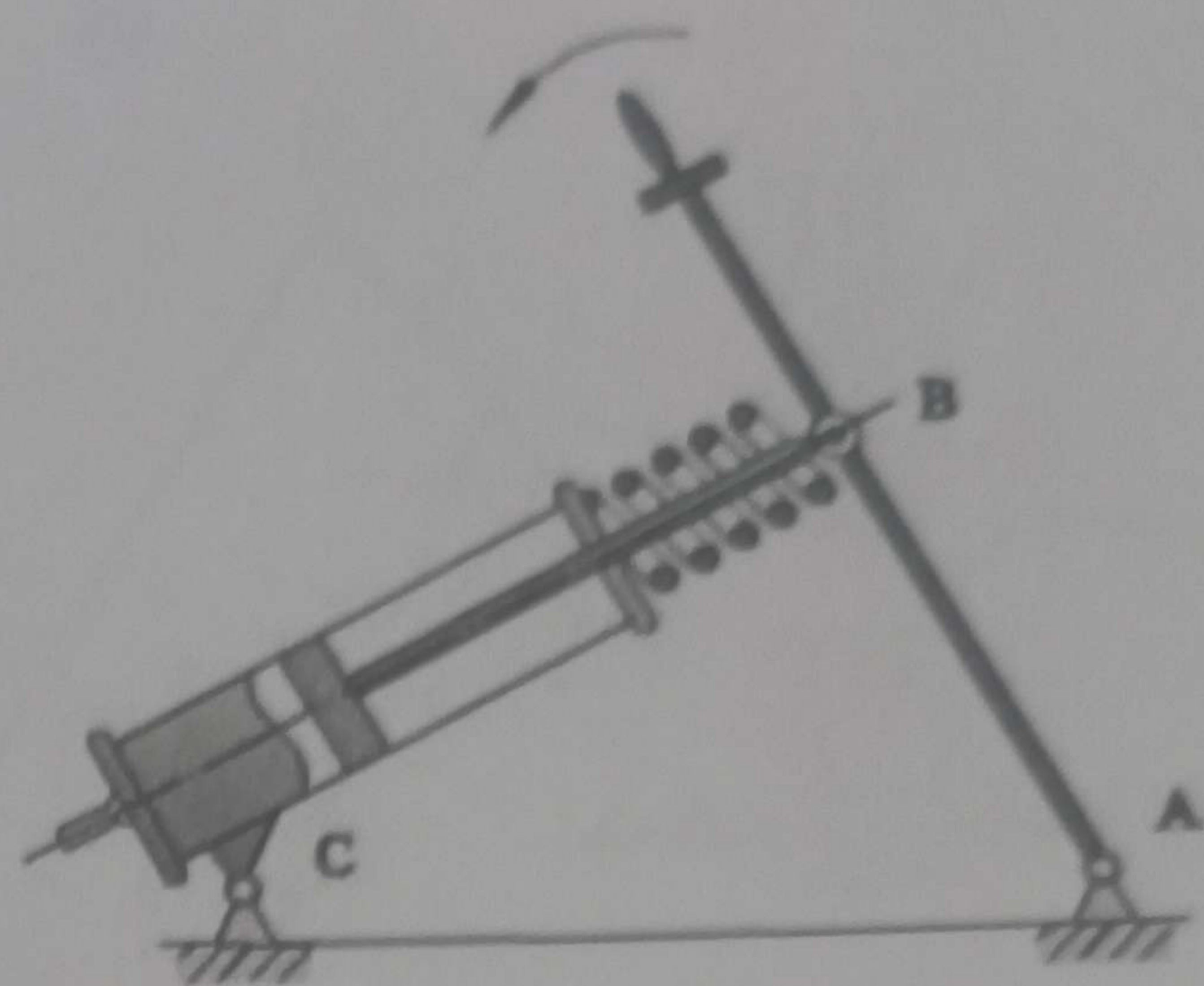# 1. Draw the kinematic diagrams of the following mechanisms.

抽水唧筒机构
Shrink pump mechanism
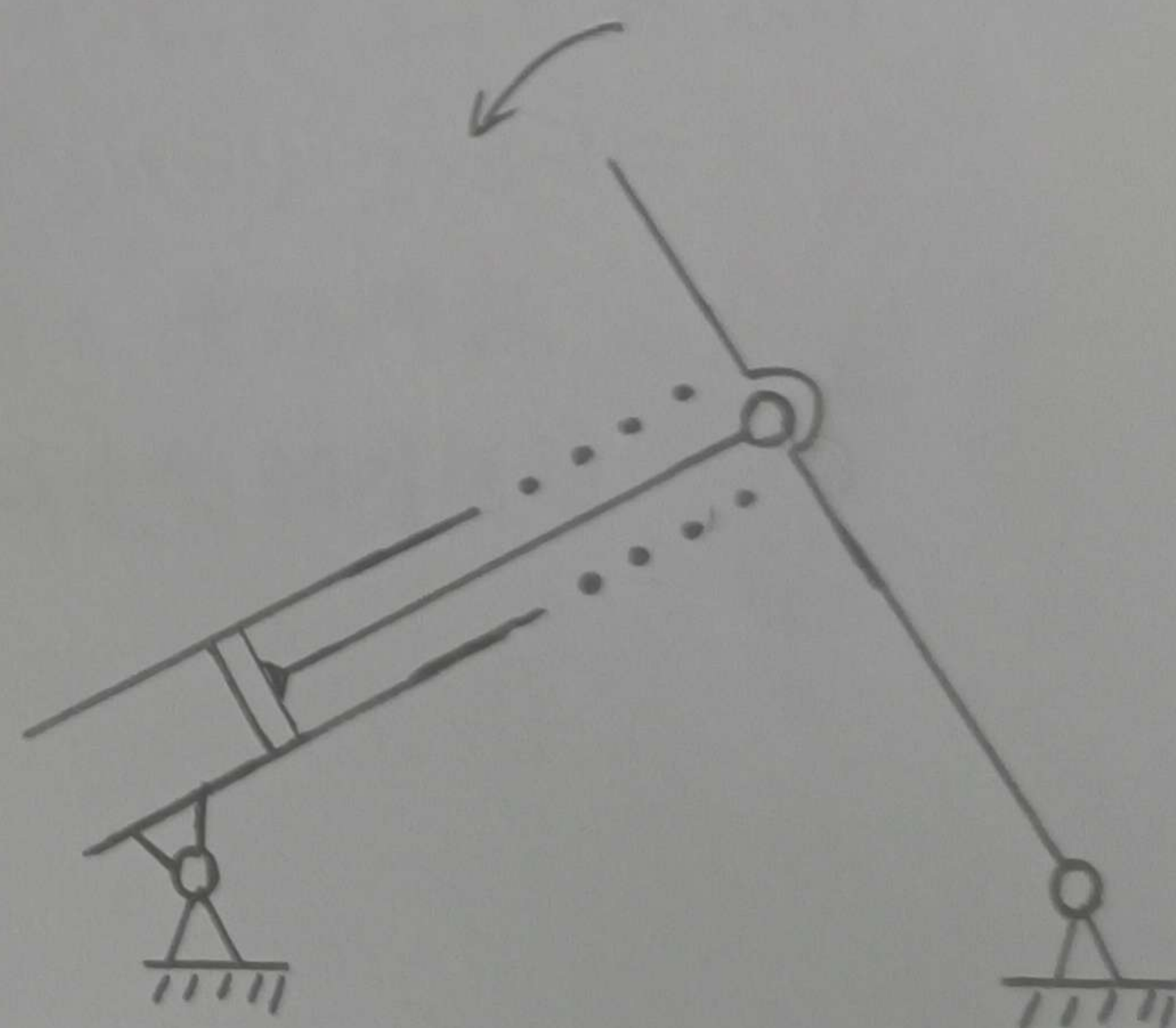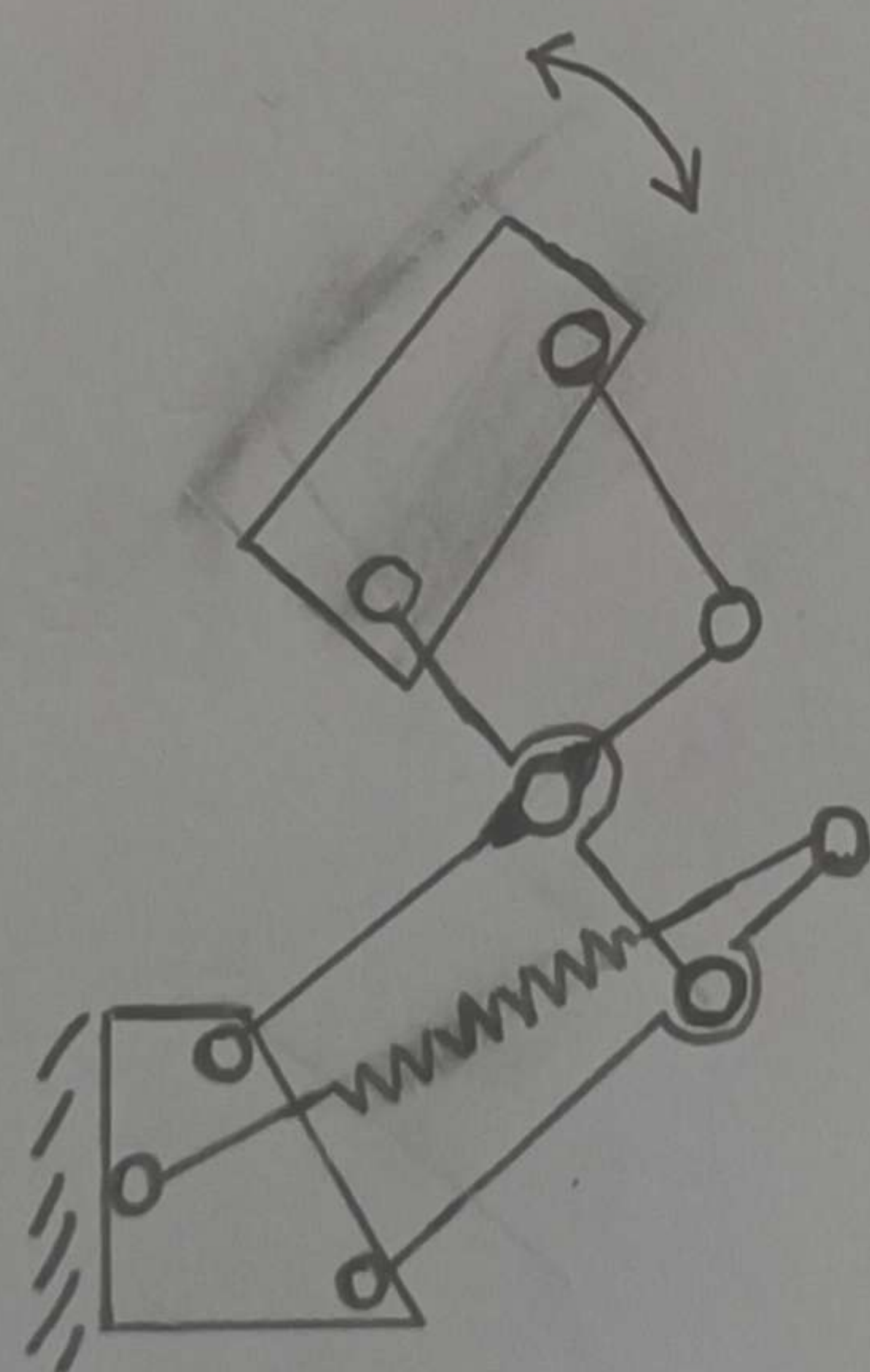
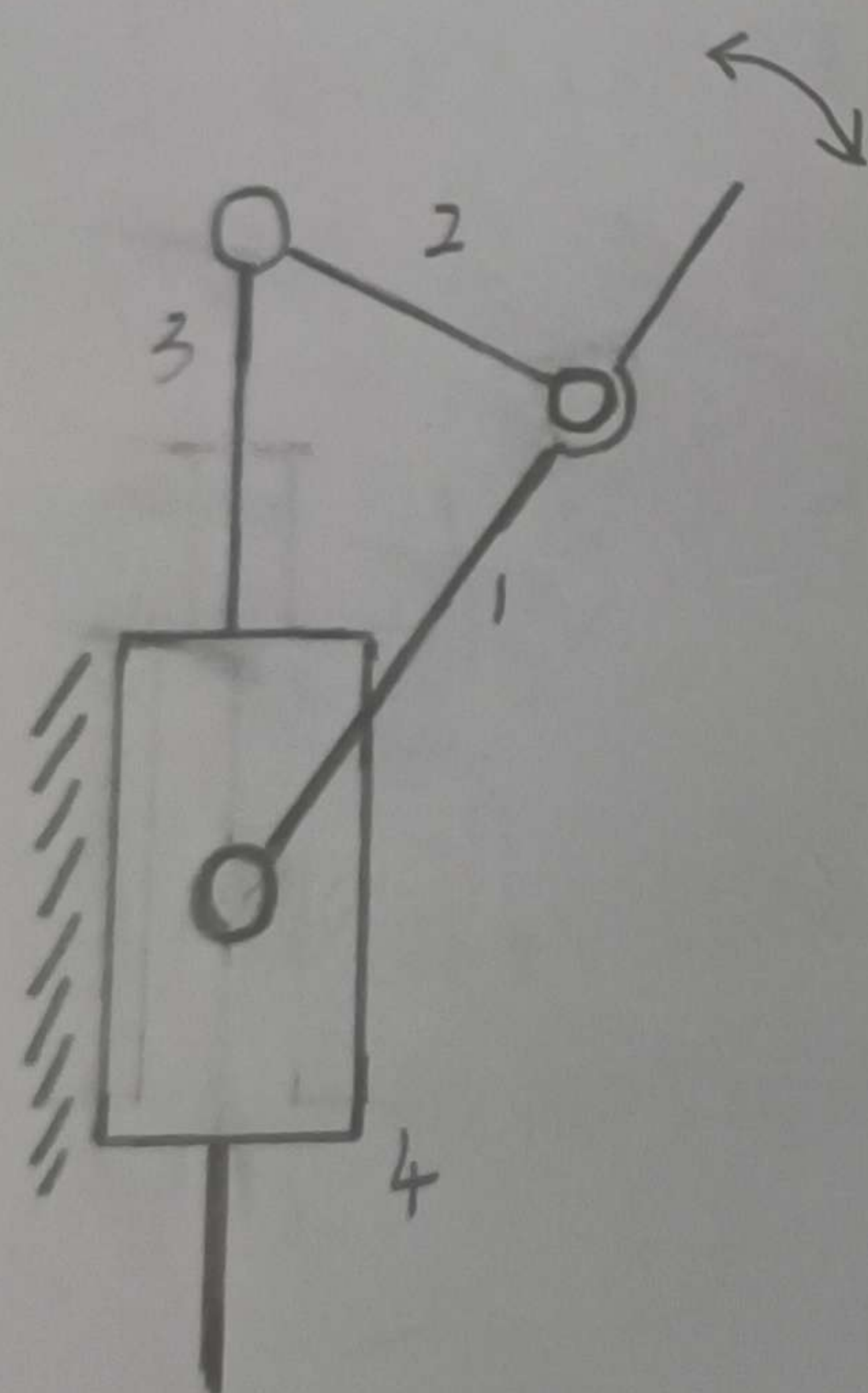
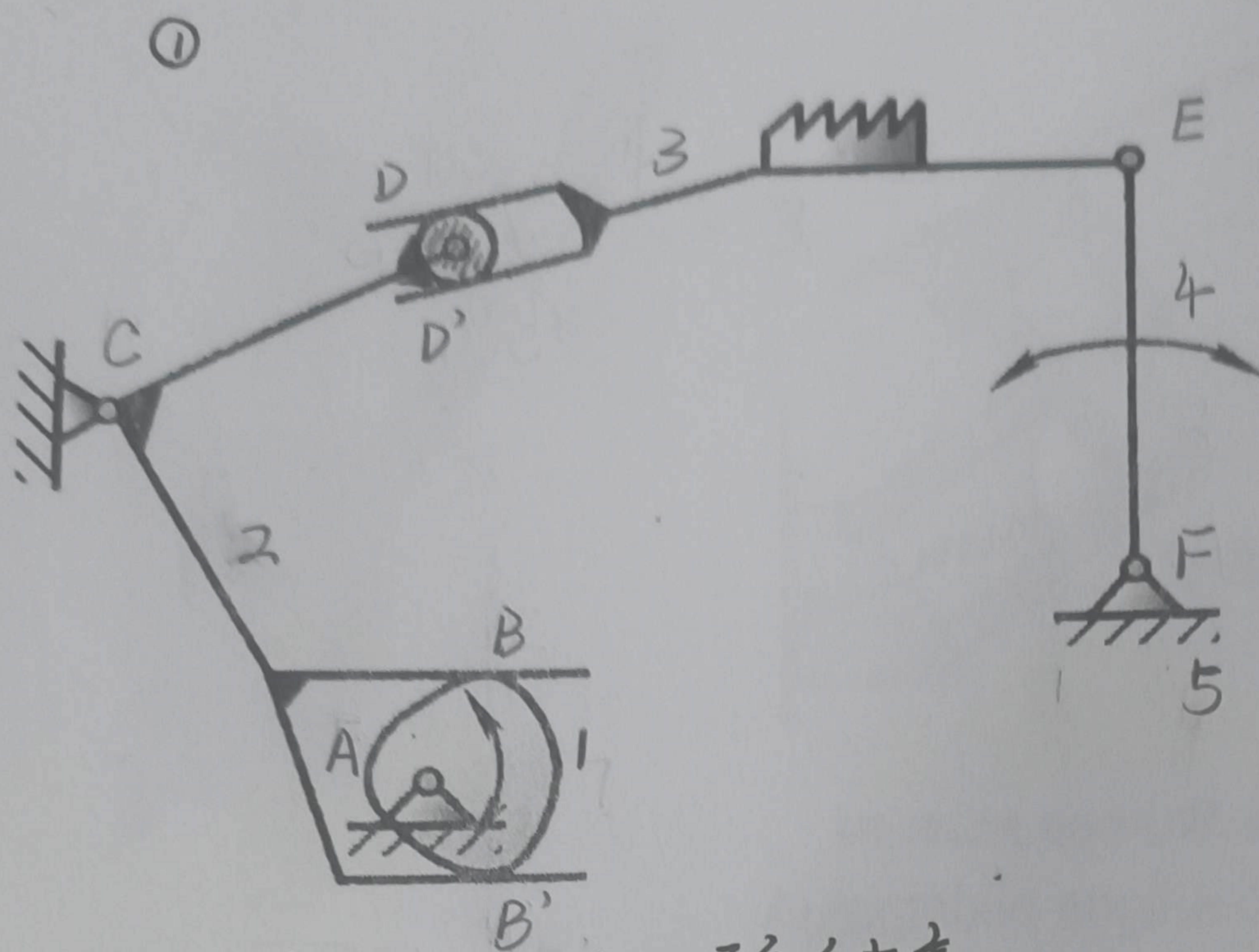
汽车发动机罩壳
Automobile engine cover

平衡弹簧

手摇打气筒
Hand pump

解：

2. Calculate the DOFs of the following two mechanisms and explain whether they have determined motion .

①

②

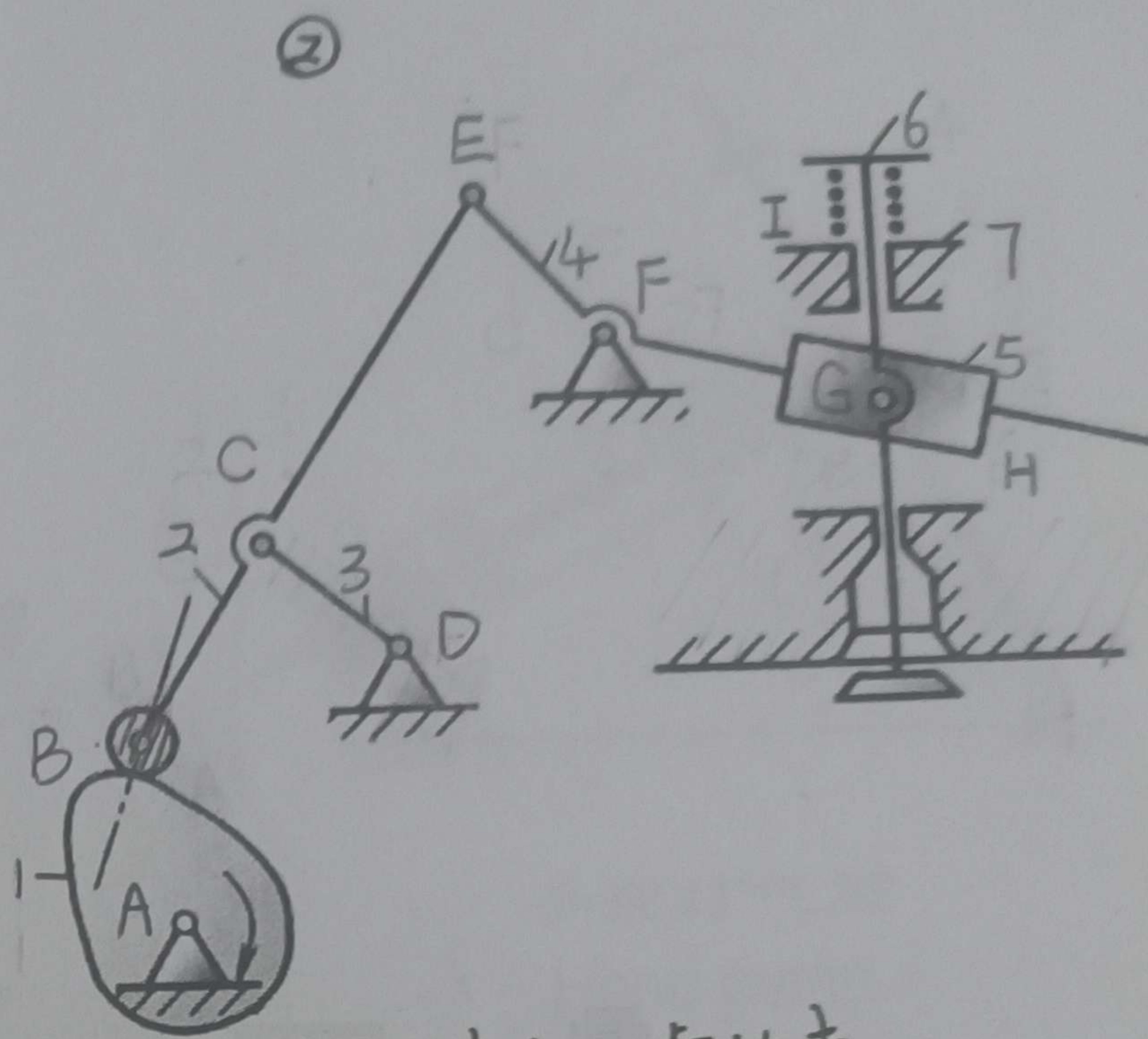解: ① 图中滚子的转动是一个局部自由度

links: 5

D与D'视为一个高副, B与B'同理.

高副: B(B'), D(D')

低副: A, C, E, F

$DOF = 3 \times (5-1) - 2 \times 4 - 1 \times 2$

$= 2$

∵ DOF = 原动件数

∴ 有确定的相对运动

② 存在一局部自由度和一虚约束

links: 7

高副: B

低副: A, C. D, E, F, G, I, H

$DOF = 3 \times (7-1) - 2 \times 8 - 1 = 1$

∵ DOF = 原动件数

∴ 有确定的相对运动