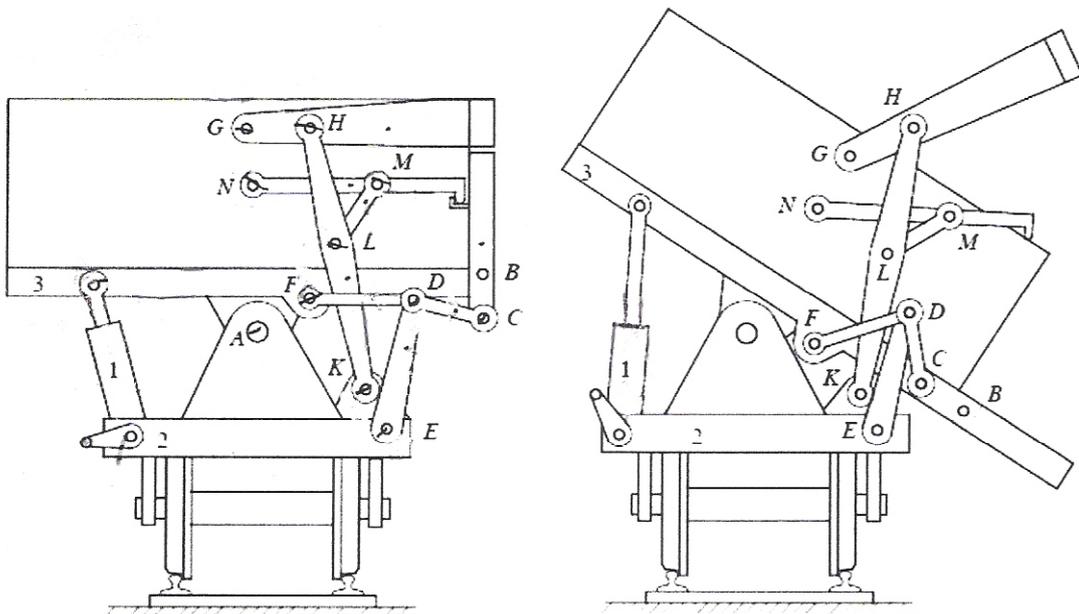


虎尾科技大學博士生資格考題(2008-1129): 機構設計

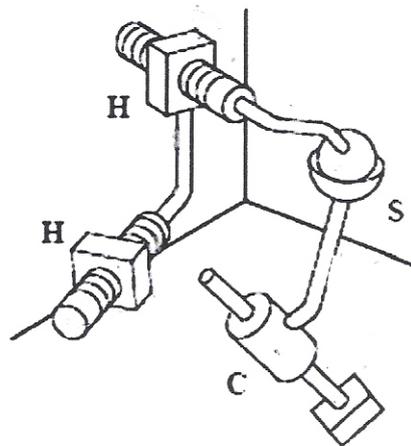
1. Please explain the following terms:

- (a) Transmission angle
- (b) Degree of freedom
- (c) Instant center
- (d) Pressure angle
- (e) Cusp

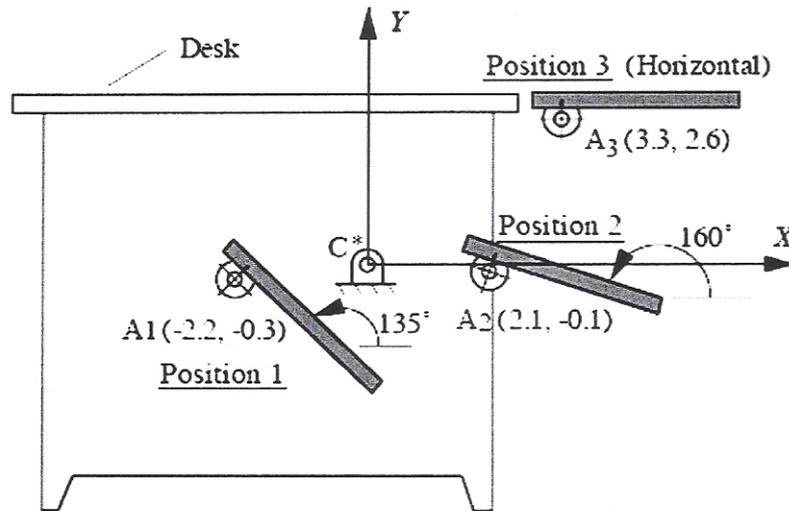
2. Determine the mobility and number of idle degree of freedom for each of the mechanisms shown. Show the equations used to determine your answers.



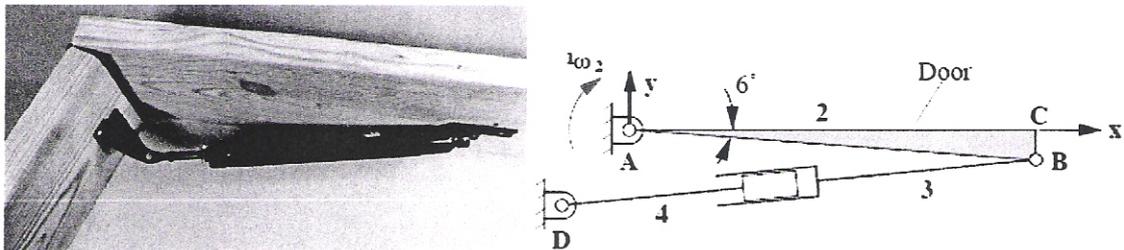
(a)



3. A mechanism must be designed to move a computer terminal from under the desk to top level. The system will be guided by a linkage, and the use of a four-bar linkage will be tried first. As a first attempt at the design, do the following:
- Use C^* as a center point and find the corresponding circle point C in position 1.
 - Use A as a circle point and find the corresponding center point A^* .
 - Draw the linkage in position 1.
 - Determine the type of linkage (crank rocker, double rocker, etc.) resulting.
 - Evaluate the linkage to determine whether you would recommend that it be manufactured



4. The door-closing linkage shown is to be analyzed as a slider-crank linkage. Link 2 is the door, and links 3 and 4 are the two links of the door closer. Assume that the angular velocity of the door (link 2) is a constant at 3.71 radians per second clockwise. Compute the angular velocity of link 4 if the dimensions are as follows: Coordinates of D (-2.5, -3.0), $AB = 17.0$ inches



5. In the polishing machine shown in Fig 5
- Determine the degrees of freedom for this linkage.
 - If we want to redesign the machine, please give all possible structural designs with the same link number for the polishing machine

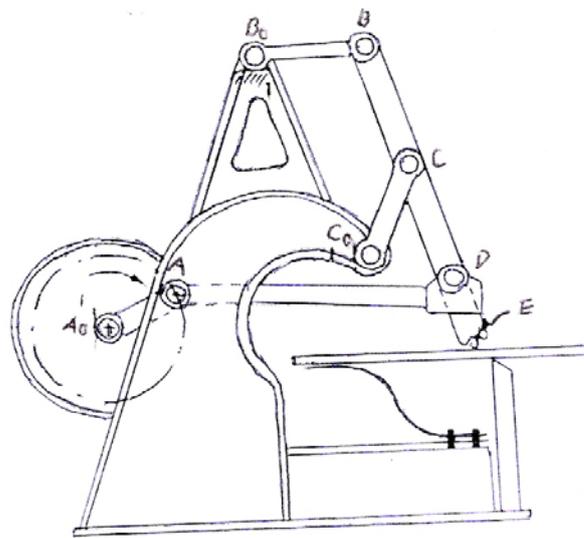


Fig 5