FIGURE P2-20

A "Rube Goldberg" light switch actuating mechanism *(Courtesy of Robert Taylor, WPI)*

2-44   Figure P2-20 shows a "Rube Goldberg" mechanism that turns a light switch on when a room door is opened and off when the door is closed. The pivot at O_2 goes through the wall. There are two spring-loaded piston-in cylinder devices in the assembly. An arrangement of ropes and pulleys inside the room (not shown) transfers the door swing into a rotation of link 2. Door opening rotates link 2 CW, pushing the switch up as shown in the figure, and door closing rotates link 2 CCW, pulling the switch down. Consider the spring-loaded cylinder at the switch to be effectively a single variable-length binary link. Find the mobility of the linkage.