

**FIGURE P6-17****Problem 6-54**

- †6-54 Figure P6-17 shows a paper roll off-loading mechanism driven by an air cylinder. In the position shown,  $AO_2 = 1.1$  m at  $178^\circ$  and  $O_4A$  is  $0.3$  m at  $226^\circ$ .  $O_2O_4 = 0.93$  m at  $163^\circ$ . The V-links are rigidly attached to  $O_4A$ . The air cylinder is retracted at a constant velocity of  $0.2$  m/sec. Draw a kinematic diagram of the mechanism, write the necessary equations, and calculate and plot the angular velocity of the paper roll and the linear velocity of its center as it rotates through  $90^\circ$  CCW from the position shown.

† These problems are suited to solution using *Mathcad*, *Matlab*, or *TKSolver* equation solver programs.