**FIGURE P3-9**

Problems 3-24 to 3-27



**FIGURE P3-8**

Problem 3-23
Loom laybar drive

3-30   Find the cognates of the Roberts straight-line mechanism in Figure 3-29c (p. 131).

*3-31   Design a Hoeken straight-line linkage to give minimum error in velocity over 22% of the cycle for a 15-cm-long straight-line motion. Specify all linkage parameters.

3-32   Design a Hoeken straight-line linkage to give minimum error in straightness over 39% of the cycle for a 20-cm-long straight-line motion. Specify all linkage parameters.

3-33   Design a linkage that will give a symmetrical "kidney bean" shaped coupler curve as shown in Figure 3-16 (p. 114 and 115). Use the data in Figure 3-21 (p. 120) to determine the required link ratios and generate the coupler curve with program FOURBAR.

3-34   Repeat Problem 3-33 for a "double straight" coupler curve.

3-35   Repeat problem 3-33 for a "scimitar" coupler curve with two distinct cusps. Show that there are (or are not) true cusps on the curve by using program FOURBAR. (Hint: Think about the definition of a cusp and how you can use the program's data to show it.)

*3-36   Find the Grashof condition, inversion, any limit positions, and the extreme values of the transmission angle (to graphical accuracy) of the linkage in Figure P3-10.
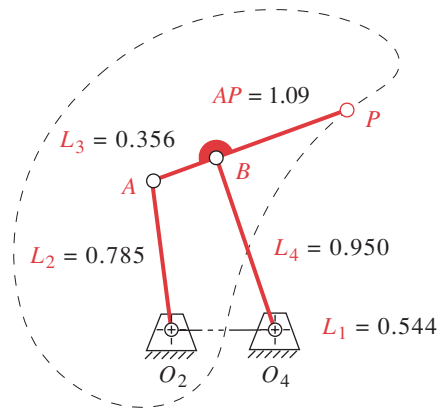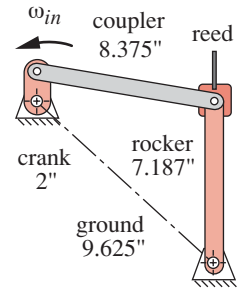


**FIGURE P3-10**

Problems 3-36 to 3-38

* Answers in Appendix F.