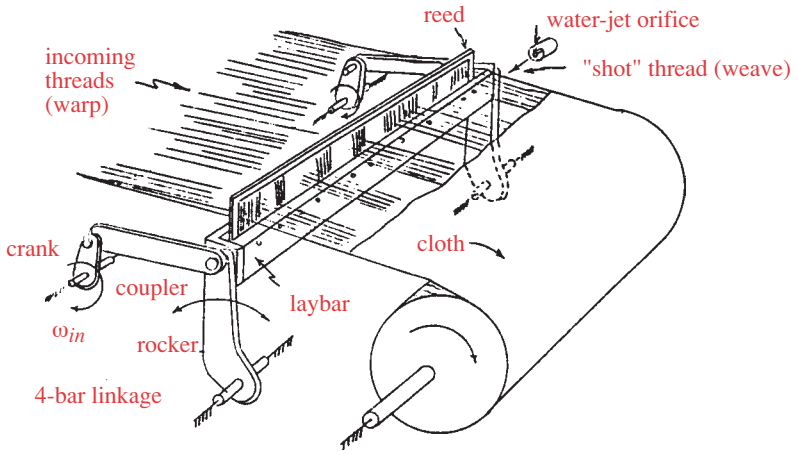
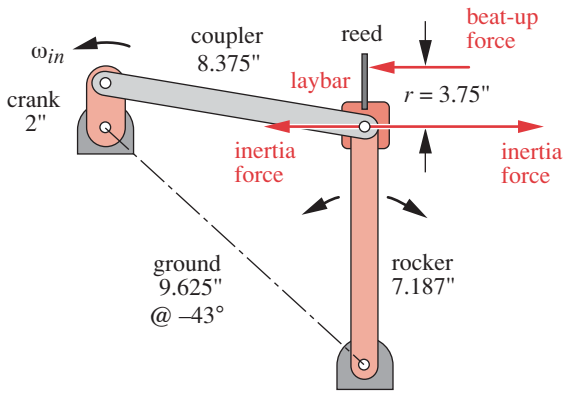
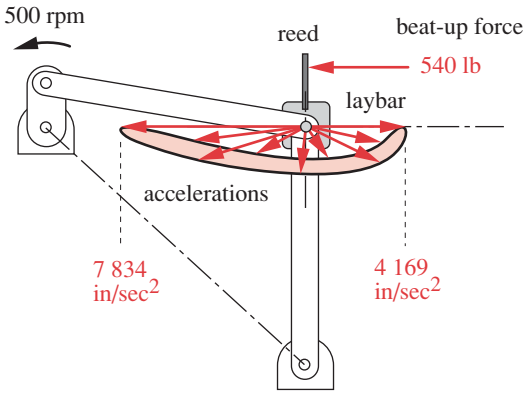


(a) Warp, weave, laybar, reed, and laybar drive for a water-jet loom



(b) Linkage, laybar, reed, and dimensions



(c) Acceleration on laybar and force on reed

FIGURE P11-6

Problem 11-13 - Fourbar linkage for laybar drive, showing forces and accelerations on laybar

†11-13 Figure P11-6 shows a water jet loom laybar drive mechanism driven by a pair of Grashof crank rocker fourbar linkages. The crank rotates at 500 rpm. The laybar is carried between the coupler-rocker joints of the two linkages at their respective instant centers $I_{3,4}$. The combined weight of the reed and laybar is 29 lb. A 540-lb beat-up force from the cloth is applied to the reed as shown. The steel links have a 2 x 1 in uniform cross section. Find the forces on the pins for one revolution of the crank. Find the torque-time function required to drive the system.

† These problems are suited to solution using *Mathcad*, *Matlab*, or *TKSolver* equation solver programs. In most cases, your solution can be checked with program FOURBAR.