**FIGURE P7-26**

Problem 7-57. A two-groove V-belt drive. *Courtesy of T. B. Wood's Sons Co., Chambersburg, PA*

†7-57   Figure P7-26 shows a V-belt drive. The sheaves have pitch diameters of 150 and 300 mm, respectively. The smaller sheave is driven at a constant 1750 rpm. For a cross-sectional differential element of the belt, write the equations of its acceleration for one complete trip around both sheaves including its travel between the sheaves. Compute and plot the acceleration of the differential element versus time for one circuit around the belt path. What does your analysis tell about the dynamic behavior of the belt? Relate your findings to your personal observation of a belt of this type in operation. (Look in your school's machine shop or under the hood of an automobile—but mind your fingers!)

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