FIGURE 12-12

A dynamic wheel balancer

*†12-6   A wheel and tire assembly has been run at 100 rpm on a dynamic balancing machine as shown in Figure 12-12 (p. 629). The force measured at the left bearing had a peak of 5 lb at a phase angle of 45° with respect to the zero reference angle on the tire. The force measured at the right bearing had a peak of 2 lb at a phase angle of –120° with respect to the reference zero on the tire. The center distance between the two bearings on the machine is 10 in. The left edge of the wheel rim is 4 in from the centerline of the closest bearing. The wheel is 7 in wide at the rim. Calculate the size and location with respect to the tire's zero reference angle, of balance weights needed on each side of the rim to dynamically balance the tire assembly. The wheel rim diameter is 15 in.

*†12-7   Repeat Problem 12-6 for measured forces of 6 lb at a phase angle of –60° with respect to the reference zero on the tire, measured at the left bearing, and 4 lb at a phase angle of 150° with respect to the reference zero on the tire, measured at the right bearing. The wheel diameter is 16 in.

* Answers in Appendix F.

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