**PROBLEM 17.100**

A 8-kg wooden panel is suspended from a pin support at $A$ and is initially at rest. A 2-kg metal sphere is released from rest at $B$ and falls into a hemispherical cup $C$ attached to the panel at a point located on its top edge. Assuming that the impact is perfectly plastic, determine the velocity of the mass center $G$ of the panel immediately after the impact.

---

**PROBLEM 17.102**

The gear shown has a radius $R = 150$ mm and a radius of gyration $k = 125$ mm. The gear is rolling without sliding with a velocity $v_1$ of magnitude 3 m/s when it strikes a step of height $h = 75$ mm. Because the edge of the step engages the gear teeth, no slipping occurs between the gear and the step. Assuming perfectly plastic impact, determine the angular velocity of the gear immediately after the impact.

---

**PROBLEM 17.116**

A slender rod of mass $m$ and length $L$ is released from rest in the position shown and hits edge $D$. Assuming perfectly plastic impact at $D$, determine for $b = 0.6L$, (a) the angular velocity of the rod immediately after the impact, (b) the maximum angle through which the rod will rotate after the impact.