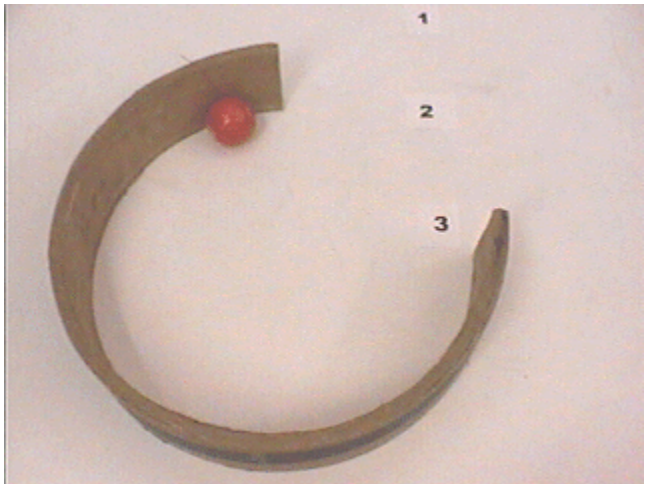
Question #82

In Question #44 we saw that a ball emerging from a spiral tube will move in a line tangent to the direction the tube is pointing as the ball leaves. For this question, we will remove one of the constraints on the ball and investigate what happens.

A ball is pushed clockwise around the inside of the circular barrier shown in the photograph below.



Because the barrier exerts an inward (centripetal) force on the ball, the ball moves around the inside of the barrier in a circular path. When the ball leaves contact with the barrier (at the top of the picture), what will happen? The ball might move radially outward, due to the centrifugal force, passing by point 1. On the other hand, it might maintain its angular velocity by continuing to move in a circular path, passing by point 3. Or perhaps it will move off straight, tangent to the barrier at the point where it loses contact, passing by point 2. Or just maybe it will move in some way heretofore unspecified.

When the ball loses contact with the barrier, it will:

- (a) move radially outward (by point 1).
- (b) continue to move in a circular path (by point 3).
- (c) move straight, tangent to the wall (by point 2).
- (d) other.

Click here for Answer #82 after September 17, 2001.

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For questions and comments regarding the *Question of the Week* contact Dr. Richard E. Berg by e-mail or using phone number or regular mail address given on the Lecture-Demonstration Home Page.