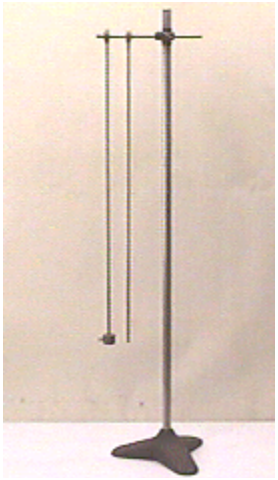
Question #39

We have seen in the previous question and answer that the rod with an extra weight on the end is a slower pendulum than just a simple uniform rod. The question this week has to do with one of the details surrounding this question, and is perhaps a bit more mathematical than many of the others. Alternatively, this question can be worked out using a simple experiment.



The weight on the pendulum at the left in the above photograph can be moved along the rod and clamped at any desired position. What might the position of the weight be such that the two pendula will fall at the same rate, so when they are released at rest simultaneously from a horizontal position they will reach the vertical (equilibrium) position simultaneously? You may not want to assume that such a position exists, because any amount of weight increases the moment of inertia of the rod.

In order for the race to end in a tie, the weight must be positioned:

- (a) at a distance of L/4 from the top of the rod.
- (b) at a distance of L/2 from the top of the rod.
- (c) at a distance of 2L/3 from the top of the rod.
- (d) There is no position for the mass at which the race will be a tie.

Click here for Answer #39 after November 20, 2000.

Question of the Week

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For questions and comments regarding the *Question of the Week* contact

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