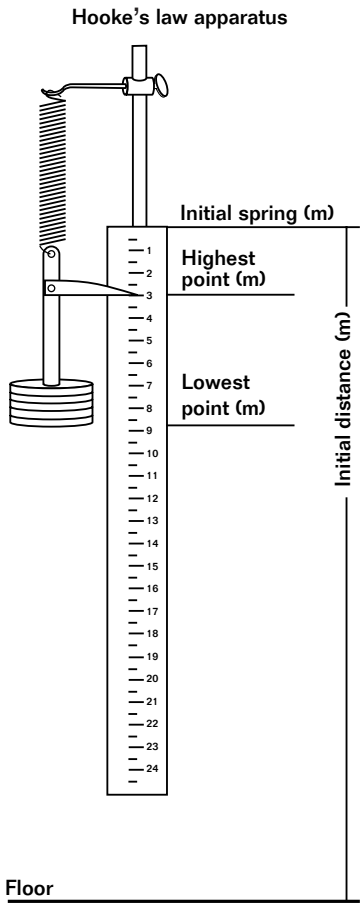

Figure 2

11. Raise the pan until the pointer is at the zero position, the position where you measured the *Initial Spring* measurement.

12. Gently release the pan to let the pan drop. Watch closely to identify the high and low points of the oscillation.

13. Use a rubber band to mark the lowest position to which the pan falls, as indicated by the pointer. This point is the lowest point of the oscillation. Record the values as *Highest Point* and *Lowest Point* in your data table.

14. Perform several more trials, using a different mass for each trial. Record all data in your data table.

15. Clean up your work area. Put equipment away safely so that it is ready to be used again.

ANALYSIS

1. **Organizing Data** Use your data from the first data table to calculate the elongation of the spring. Use the equation *elongation = stretched spring – initial spring.*

2. **Organizing Data** For each trial, convert the masses used to measure the spring constant to their force equivalents. Use the equation $F_g = ma_g$.

3. **Organizing Data** For each trial, calculate the spring constant using the equation $k = \frac{force}{elongation}$. Take the average of all trials, and use this value as the spring constant.

4. **Organizing Data** Using your data from the second data table, calculate the elongation of the spring at the highest point of each trial. Use the equation *elongation = highest point – initial spring.* Refer to **Figure 2.**

5. **Organizing Data** Calculate the elongation of the spring at the lowest point of each trial. Use the equation *elongation = lowest point – initial spring.* Refer to **Figure 2.**

6. **Organizing Data** For each trial, calculate the elastic potential energy, $PE_{elastic} = \frac{1}{2}kx^2$, at the highest point of the oscillation.

7. **Organizing Data** For each trial, calculate the elastic potential energy at the lowest point of the oscillation.

8. **Analyzing Results** Based on your calculations in items 6 and 7, where is the elastic potential energy greatest? Where is it the least? Explain these results in terms of the energy stored in the spring.

9. **Organizing Data** Calculate the height of the mass at the highest point of each trial. Use the equation *highest = initial distance – elongation.*