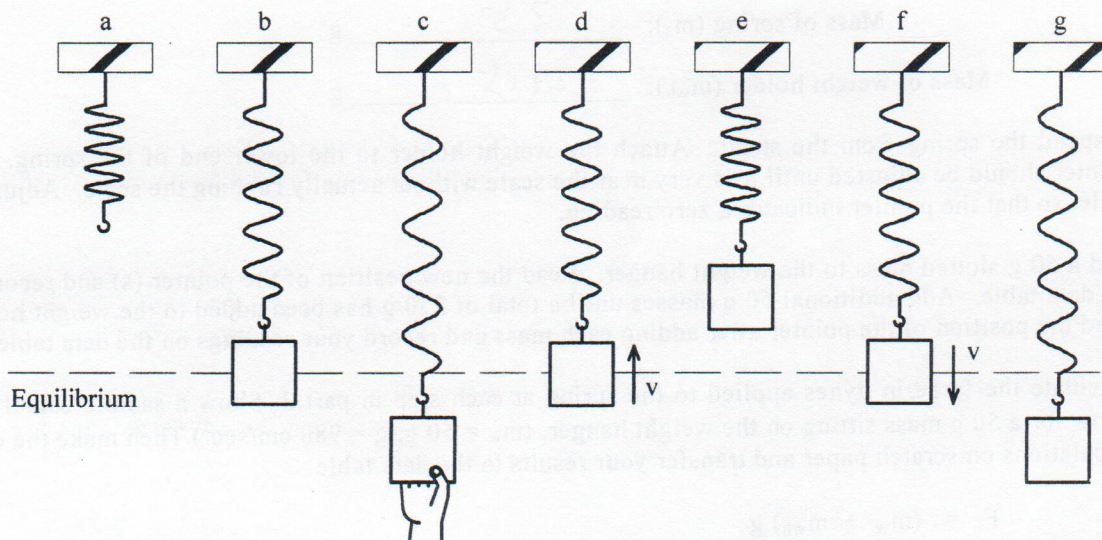


Figure 1

Oscillation of a Mass and Spring



The period of vibration of the mass and spring – that is, the time required for the mass to move from its maximum displacement in one direction, the maximum displacement in the other direction, and back again – may be predicted by the following relationship:

$$T_p = 2\pi\sqrt{\frac{M}{k}} \quad (4)$$

T_p is the predicted period in seconds, k is the spring constant in dynes per centimeter, and M is the mass in grams. Equation (5) gives the correct value of M for this experiment.

$$M = m_w + m_{wh} + \frac{1}{3} m_s \quad (5)$$

where: m_w = the mass of the slotted weights

m_{wh} = the mass of the weight holder

m_s = the mass of the spring

Apparatus

Hooke's law stand and scale

Helical spring

Weight holder

Slotted weights, 50 g (5)

Stopwatch

Triple-beam balance