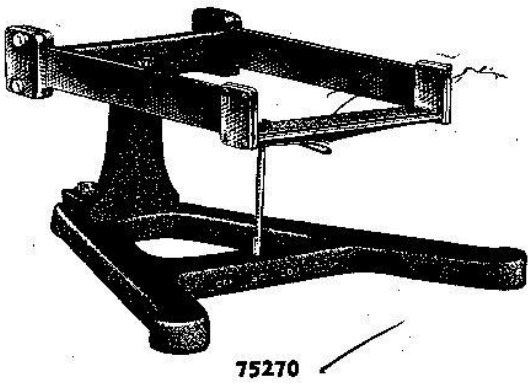
INERTIA
Inertia Balances



75270

75270 **INERTIA BALANCE, Cenco-Schriever,** for determining masses without weighing by observing the oscillation period of a "weight" platform, which, in use, executes translational simple harmonic motion in a horizontal plane. Provides an excellent student experiment for giving a concept of mass as distinguished from weight.

Since the platform is mounted so as to execute translational simple harmonic motion, the period of vibration is independent of the position of the masses placed on it. Furthermore, since the motion takes place in the horizontal plane, the influence of gravity is eliminated.

The apparatus consists of a rectangular platform rigidly attached to the heavy support stand by two steel springs. The large metal base makes possible the use of masses on the platform as great as 1000 grams. The platform, approximately 4½ cm by 18 cm, has a mass of about 600 grams. Force is applied to the platform by the two steel springs. Four knurled adjustment screws on the support make it possible for the elastic constant of the balance to be varied within wide limits by varying the lengths of the steel springs. A rod attached to the base and extending horizontally beneath the platform provides a reference point to facilitate making time measurements from the transit of the index on the lower portion of the platform.

In use the period of the balance is observed for various known masses placed on the platform. A linear relation obtains between the squares of the period of oscillation of the balance and the masses placed on the platform. Having obtained a calibration curve for a given setting of the steel springs, unknown masses may be determined by observing oscillation periods.

Complete with directions, but **without** masses ..... **Each $17.50**

For experiments employing this or similar apparatus, see S. E. P. M64b.

75275 **INERTIA BALANCE, Cenco,** for demonstrating the concept of mass as distinguished from weight and for measuring mass without weighing. This inertia balance is a valuable device for teaching the concepts of mass and inertia, and for quantitative experiments in determining mass.

The apparatus consists of a light aluminum frame designed for holding No. 9604 Slotted Weights at its extremities and for clamping to a steel wire, which is held vertically under tension. When so arranged the framework oscillates as a torsion pendulum, the period of which depends upon the moment of inertia of the system and the torsion constant of the wire. To preserve balance, slotted weights of equal denomination are kept on the pins of the two arms, where they are held at a radius of about 15 cm from the wire. Inasmuch as the radius of gyration remains constant, the masses being of the same diameter, and variation in mass being produced only by increasing the height of the stack of weights, the moment of inertia varies directly as the total mass on the ends of the arms. Consequently, the period of oscillation of this torsion pendulum varies as the square root of the mass. From this law of variation, it is possible to form the simple proportion involving two different masses and corresponding periods. Thus, if one of the masses is known, and the periods are measured, the second mass may be computed. From this experiment the student learns that the determination of mass does not necessarily depend upon gravity, and the fact that standard weights are used in the experiment helps him to differentiate the concepts of mass and weight. A discussion of this question, with reference to an older form of inertia balance, will be found in Lemon's "From Galileo to Cosmic Rays," page 12.

The apparatus is supplied, in addition to the frame for holding the weights and the vertical wire, with two clamps, by means of which the wire may be held under tension on a vertical support rod, 19 mm in diameter and less. A 19 mm rod is recommended because of the stability secured from the use of a large support base drilled for this size of rod.

As described, **without** weights. *(Illustrated on next page)* ..... **Each 12.50**