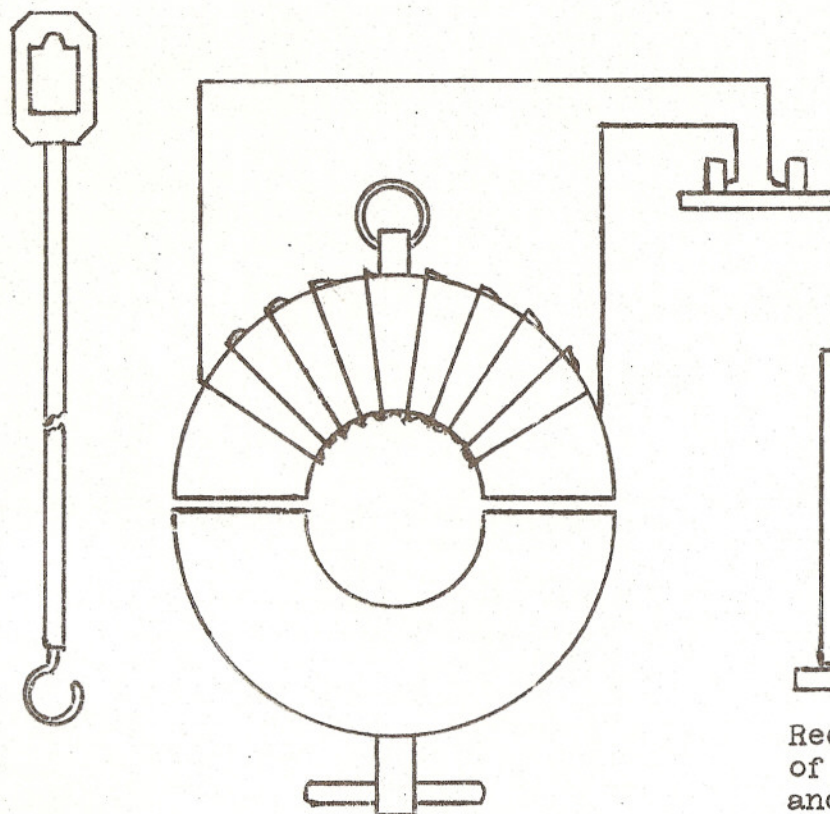
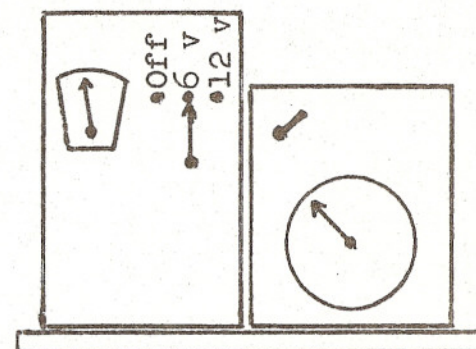


Student Hanging
from Doughnut-
Shaped Magnet

E-3 S-1

1A

Rectifier system consisting
of 40-amp battery charger
and 10-amp Variac

Hang that half of the magnet which has the exciting winding from hook at end of rod support which is hung from the ceiling mount near the right (lecturer's), front corner of the lecture table. With the Variac switch in the off position and the dial set at 0, and with the rectifier switch set at 6 volts, connect 120 VAC to the input of the rectifier, and connect the output of the rectifier (spring clamps) to leads from the electromagnet. With the lower half of the magnet separate from the upper half, turn the Variac switch on and gradually increase the dial setting until a current of 20 amperes flows. (With the rectifier switch set at 6 volts, this will require a dial setting of about 60.) After this adjustment, the current can be turned on or off with the Variac switch.

Show the following: (1) With the exciting current off, the lower half of the magnet is not attracted to the upper half. There is no residual magnetization. (2) With the current off, have a student hold the lower half of the magnet carefully in position against the upper half and, while in this position, turn the current on. Now have a student hang from the magnet. (See WARNINGS.) (3) With the magnet supporting only its lower half, turn the current off. The bottom half remains in position, due to residual magnetization. It can be pulled off rather easily. After it is pulled off, the residual magnetization disappears.

Note: With a current of 20 amperes through the exciting coil, the magnetomotive force is about 700 amp-turns.

WARNINGS: (1) Never attempt to place the lower half of the magnet on the upper half while a current is flowing in the exciting coil; fingers can be badly mashed if this is attempted. (2) Warn the student not to jerk as he hangs from the magnet. Jerking may damage the supporting apparatus or disengage the supporting rod from the ceiling mount. (3) Leave your watch in your office, or at least far from the magnet.