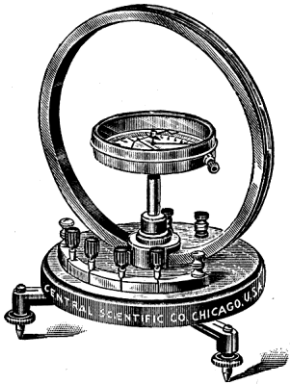
BUILDING A CURRENT METER—The Tangent Galvanometer



For this project you will need to provide:

- A battery
- An incandescent bulb (or multiple bulbs in series or parallel, as you prefer)
- A cheap compass
- Wire
- Board (to mount the circuit on), glue, duct tape, staples, etc.

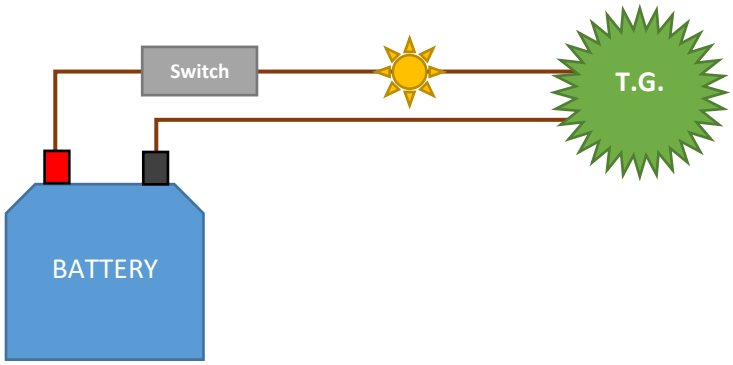
In this class you measure current and voltage all the time. But how do those meters measure electricity, anyway? Magic?

In this project, you will build your own analog current meter, in the form of a simple device called a *tangent galvanometer*, which uses electromagnetism to measure the flow of current. Part of this project is doing a little research to learn how to build one of these devices.

Your galvanometer must be able to register current passing from a battery and through a light bulb (or bulbs—connected in series or parallel if you want a different amount of current than you get with just one bulb). The needle of your meter must deflect noticeably when the current is turned "on" and the light bulb lights. The diagram below illustrates how your galvanometer project is to be constructed, with a battery, a switch to control the current, a bulb, and your tangent galvanometer ("T.G."). Mount these components on a board to hold them all securely.

Include with your project 3 typed paragraphs discussing

- ✓ how well the tangent galvanometer works
- ✓ what problems and successes you encountered while making this project
- ✓ what you learned from the project



This is a pretty simple project, so the minimum grade will be a **B-** (80%) if you create a functioning galvanometer, with higher grades awarded based on your paragraphs and the quality of the project. No grade lower than a **B-** will be given—non-functioning galvanometers that do not work at all or that will not register the current through a bulb will be returned to be completed and turned in for late credit. *Projects that are not built sturdily enough to survive the trip to class, or whose batteries are dead because the project was left on, etc., all count as "non-functioning".*