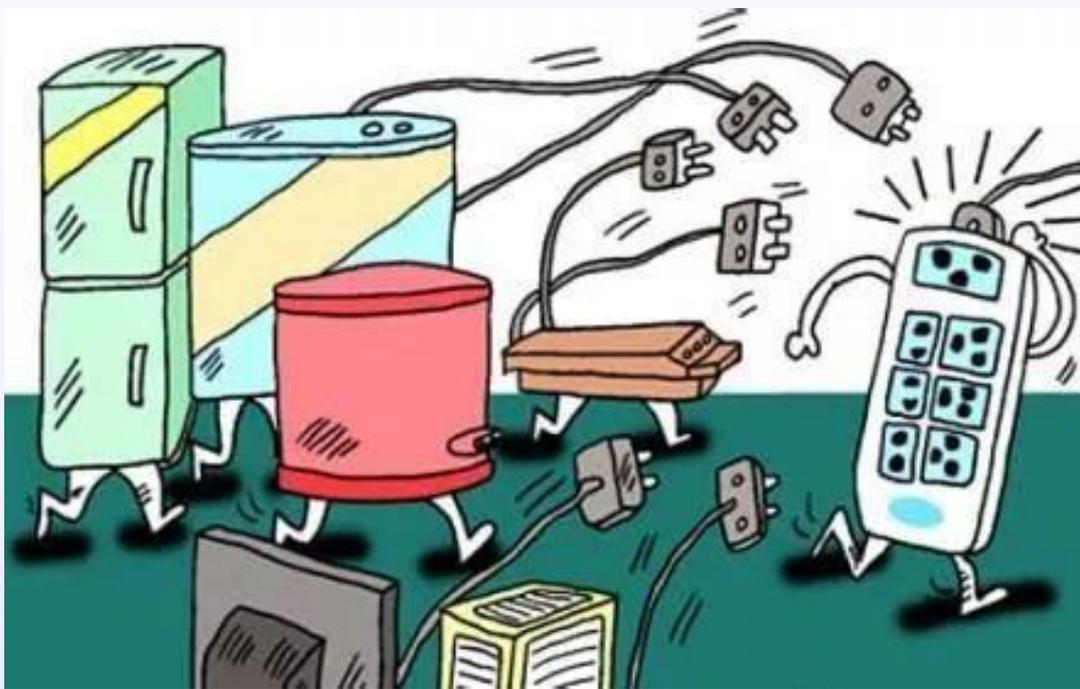


第十九章 生活用电

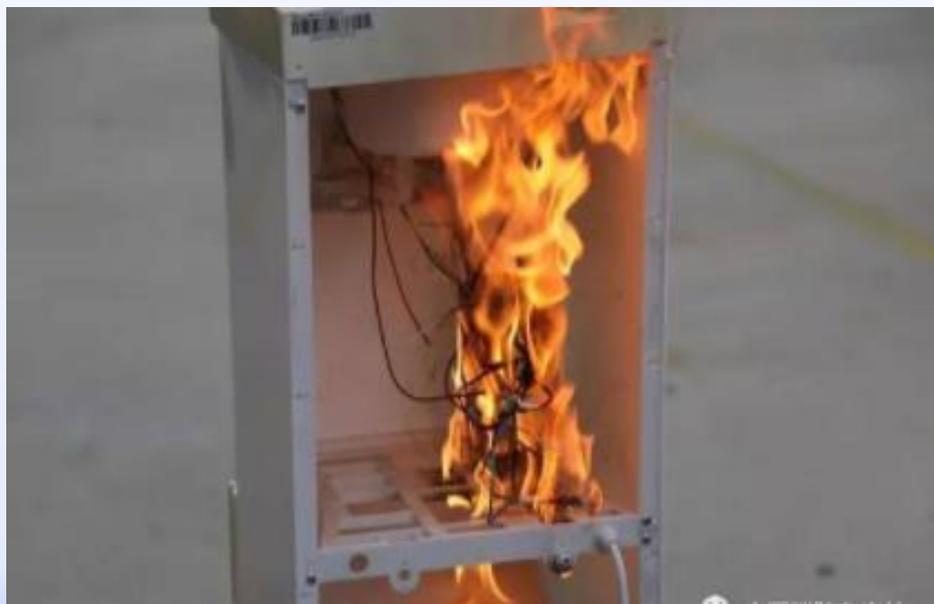
第2节 家庭电路中电流过大的原因

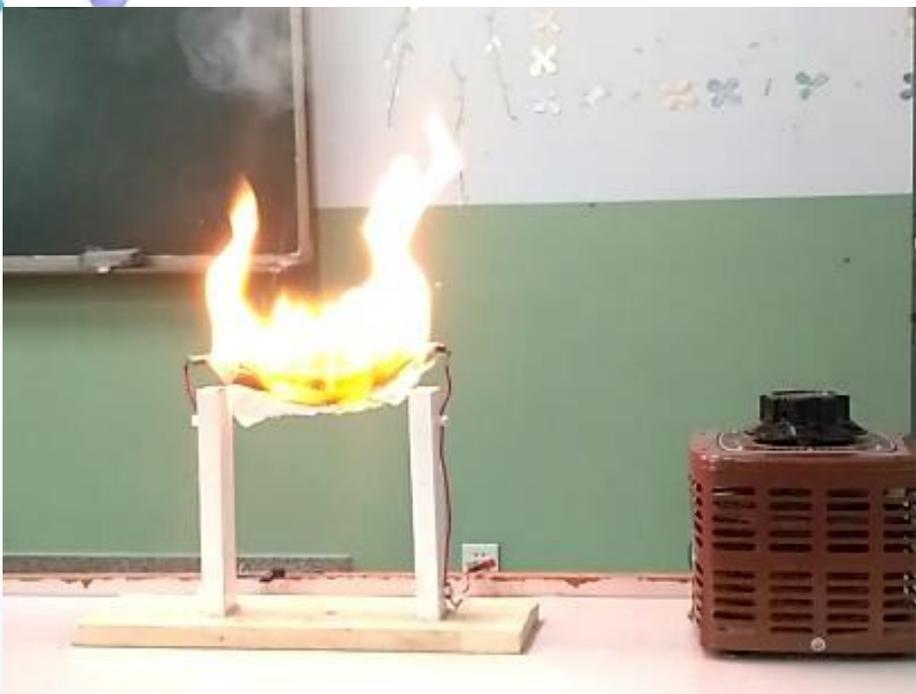


选自人教版物理九年级全一册

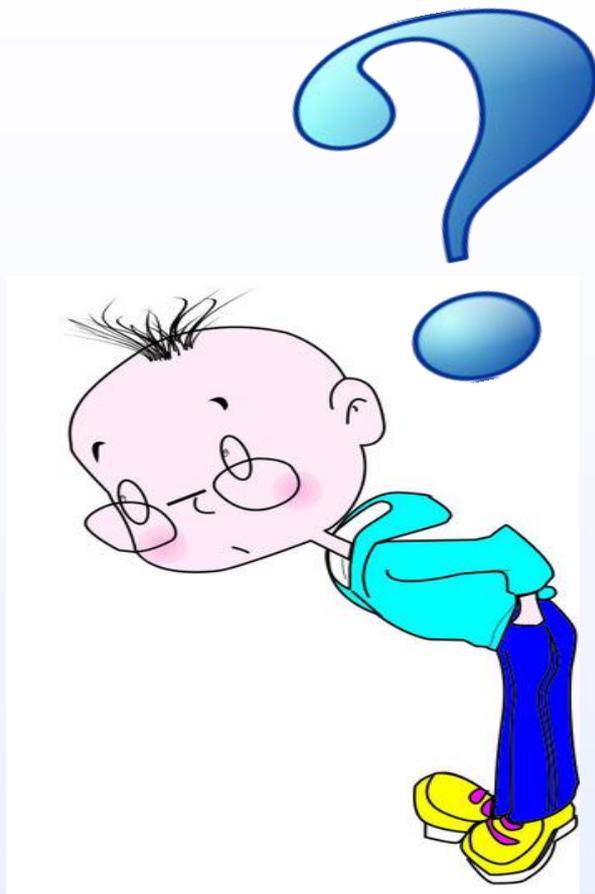


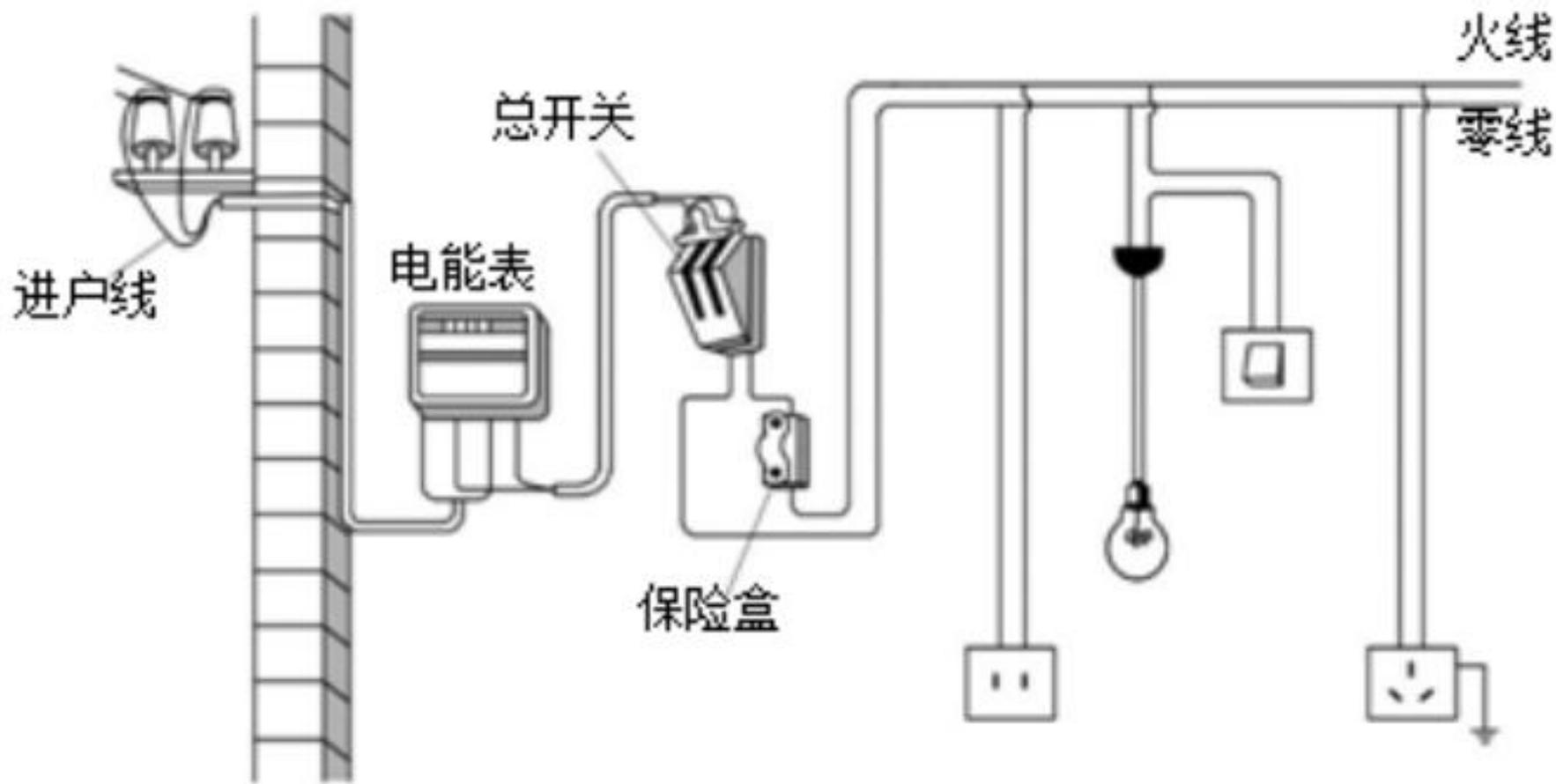
电路起火





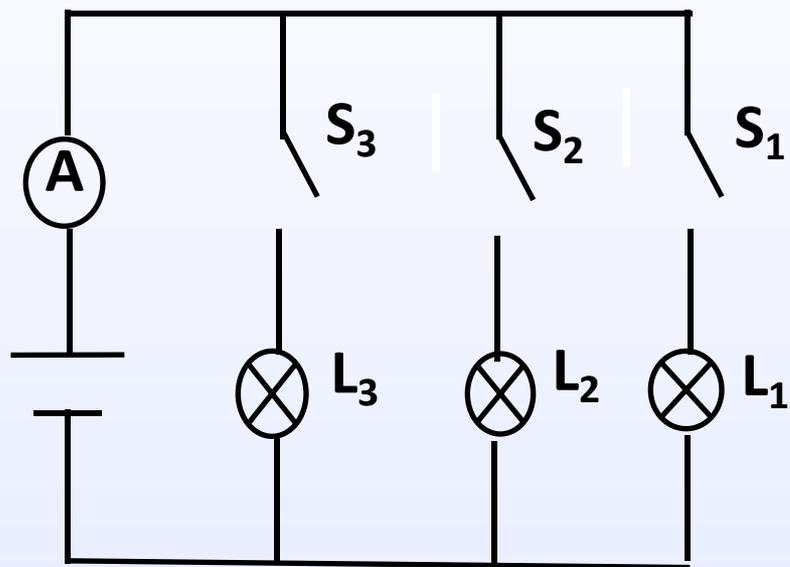
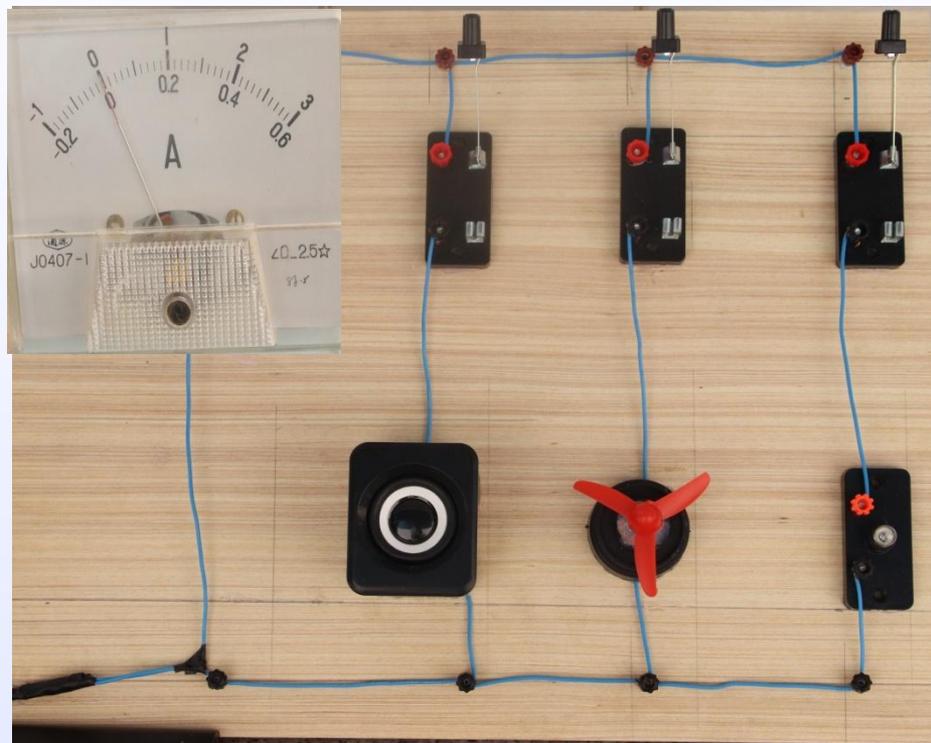
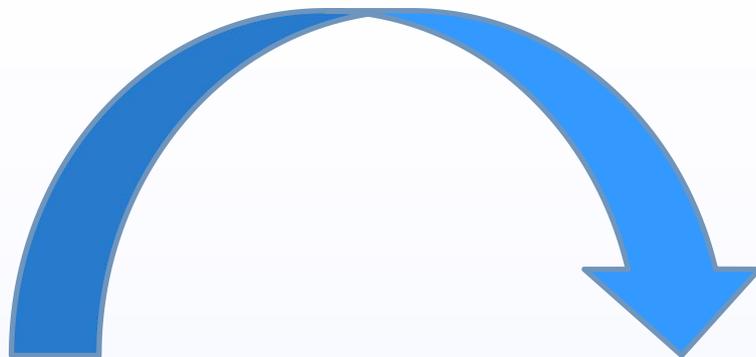
为什么**电路**会起火？





家庭电路的组成

探究实验一：模拟家庭电路





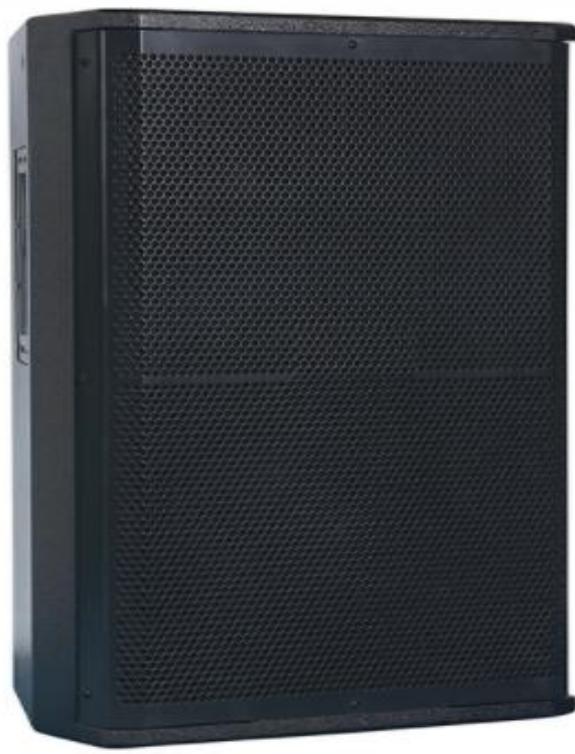
几种用电器的功率



白炽灯
40W



电风扇
69W



音响
150W



并联电路：

$$P_{\text{总}} = P_1 + P_2 + \dots + P_n$$

$$P = UI$$

总功率过大  电流过大

结论：

用电器**总功率过大**是家庭电路**电流过大**的**原因之一**



A cartoon sheep character with orange skin, white wool, and a blue collar with a gold bell. The sheep has a serious expression and is speaking. A large white speech bubble is positioned above its head, containing the text '用电不能超负荷'. The background is dark grey with a faint red fire visible on the right side.

用电不能超负荷

危险，用电不能超负荷

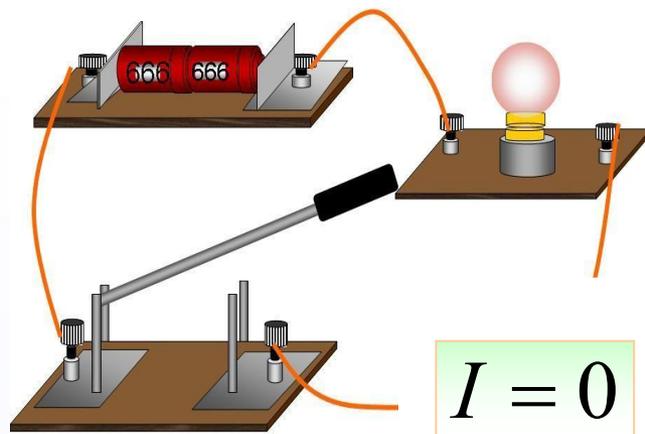


电流过大



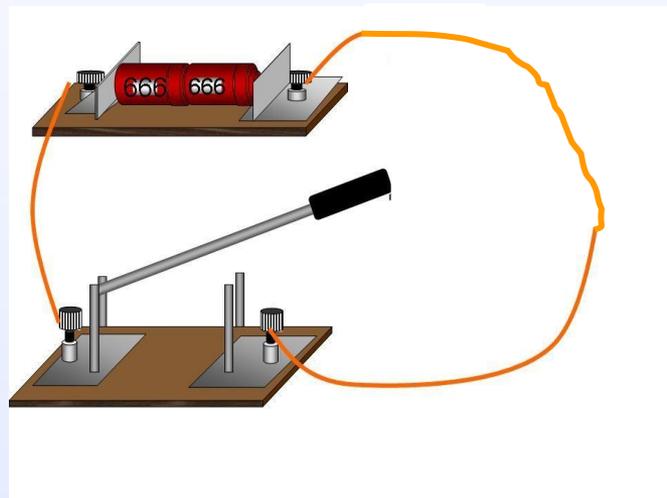
电路异常

断路



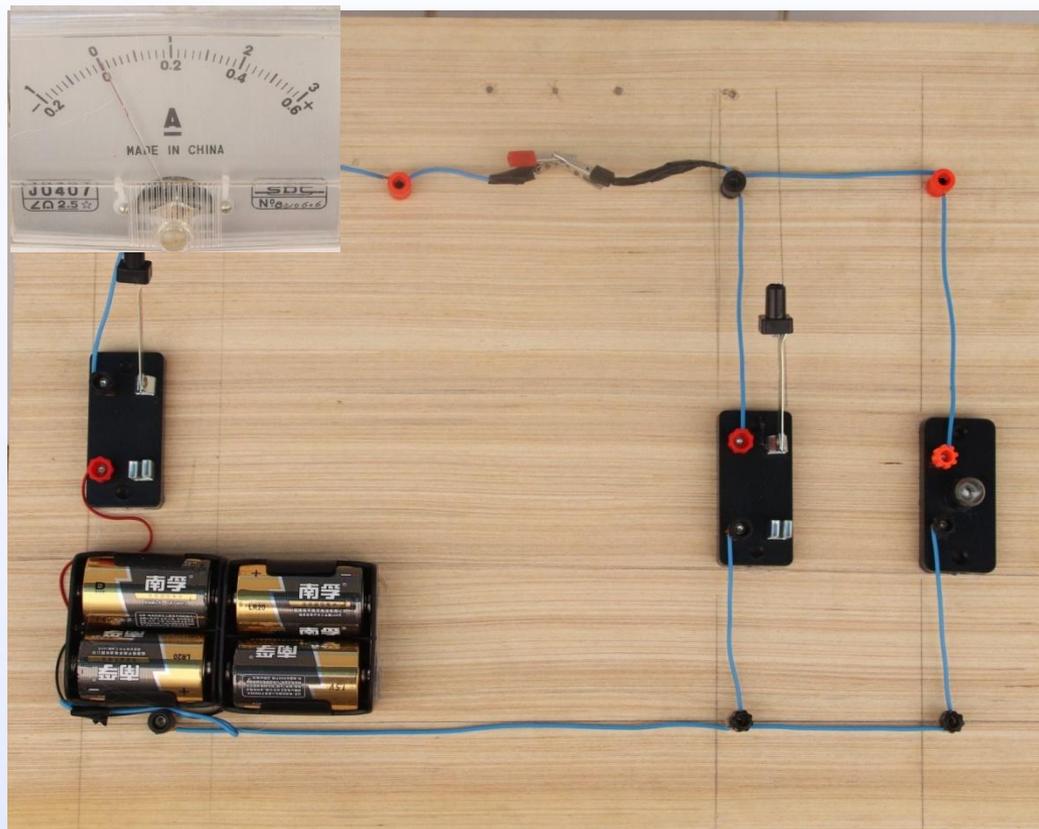
X

短路



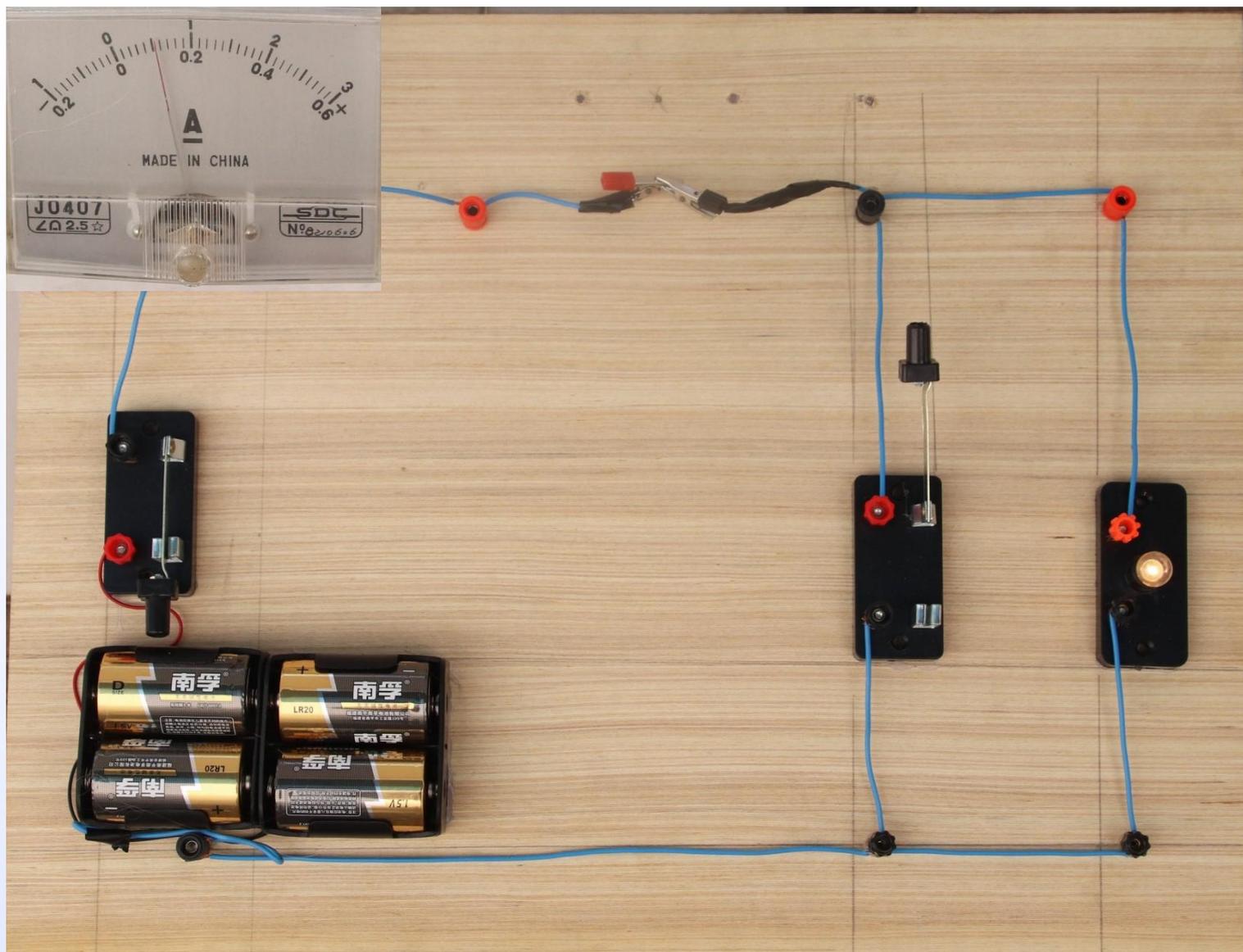
?

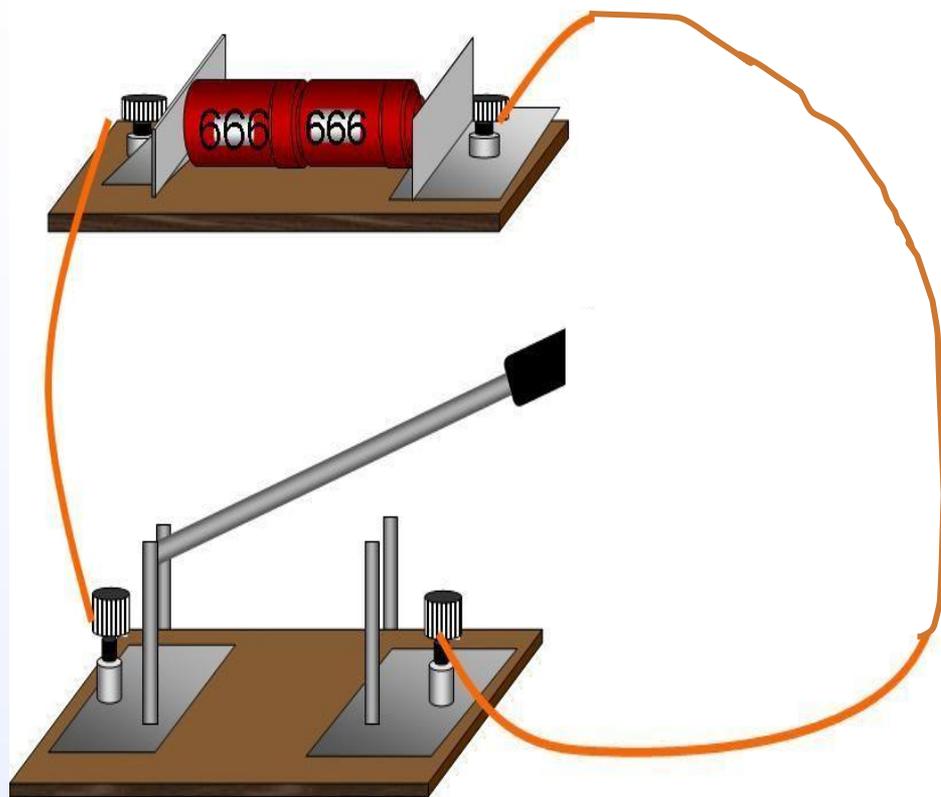
探究实验二：模拟短路





电路正常

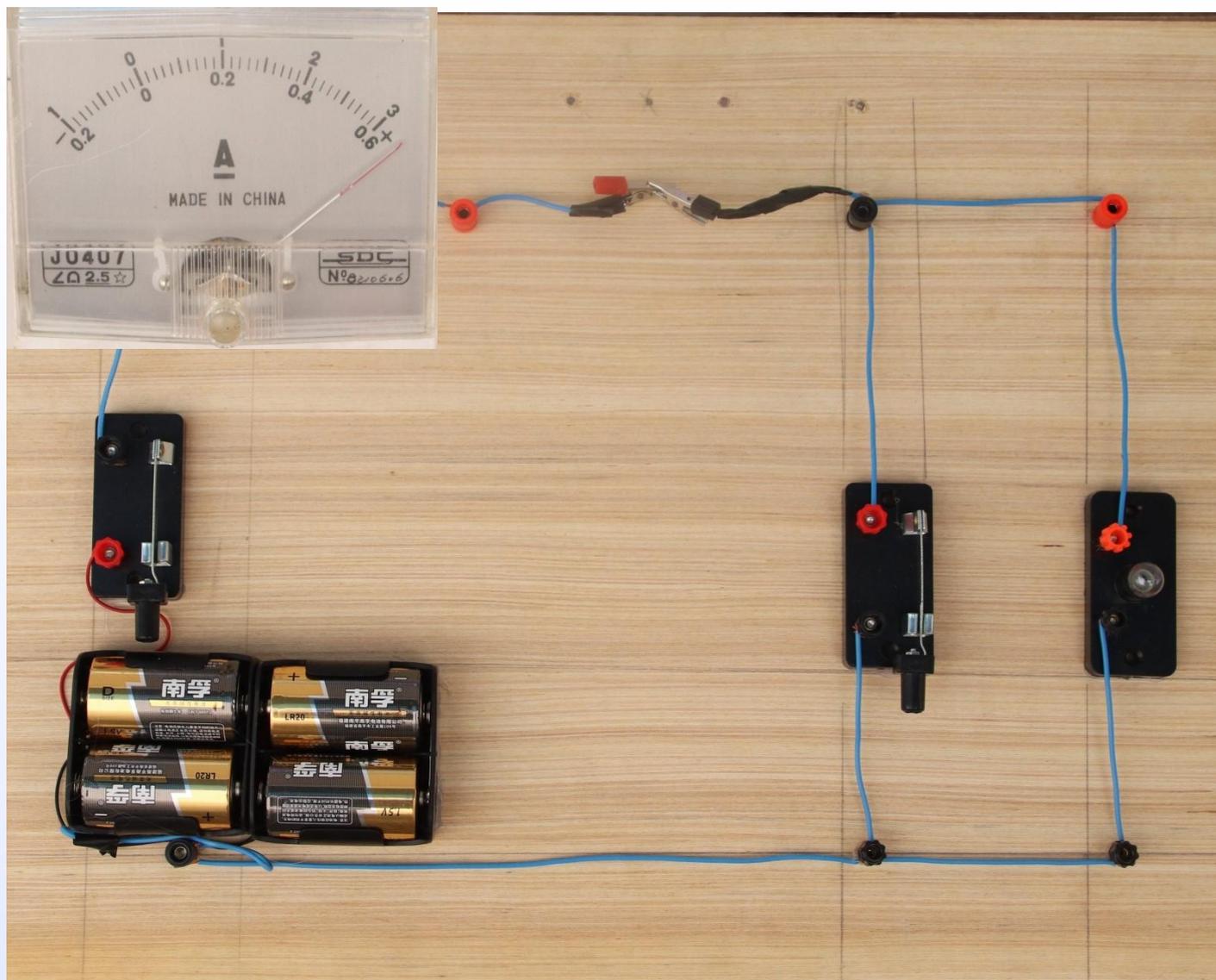




短路



发生短路





欧姆定律：

短路：

$$(大) \quad | \quad = \quad \frac{U}{R} \quad \begin{matrix} (不变) \\ (小) \end{matrix}$$

结论：

电路发生**短路**是家庭电路电流过大的**原因之二**



实验结论

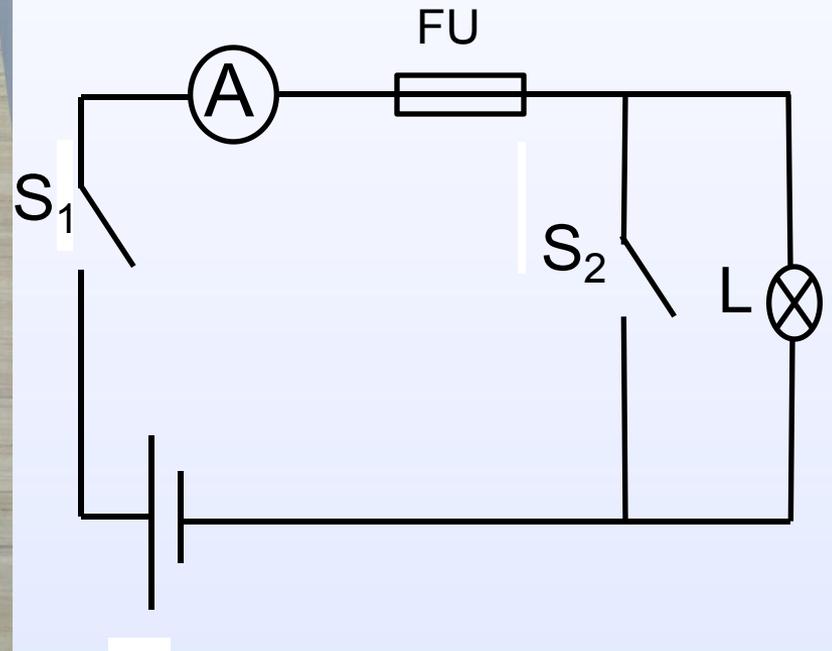
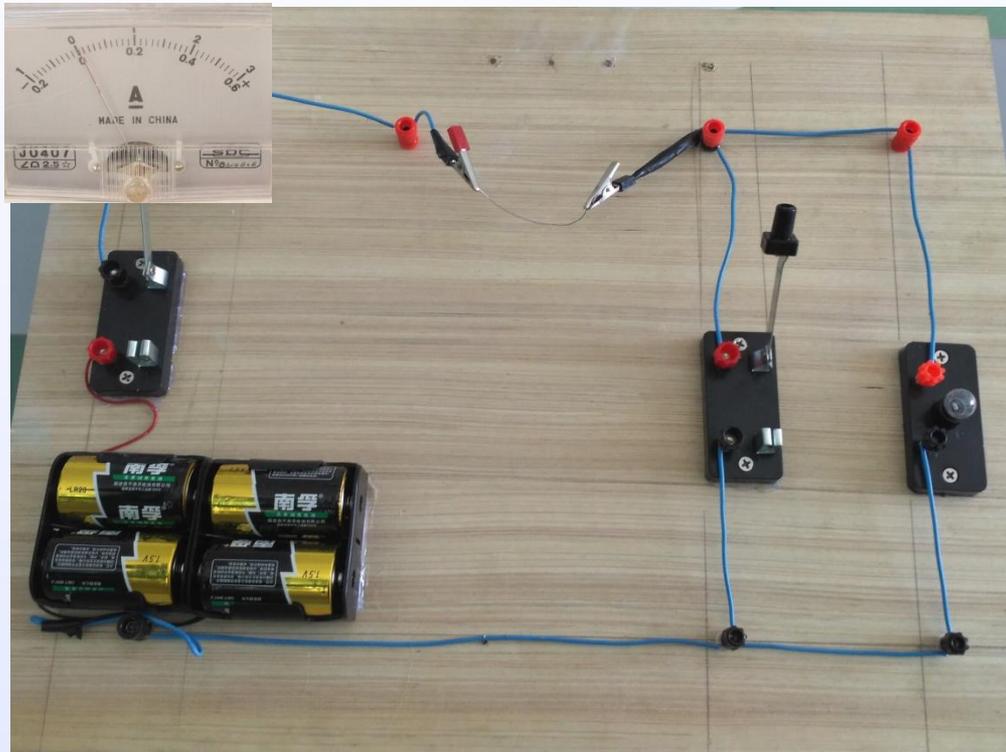
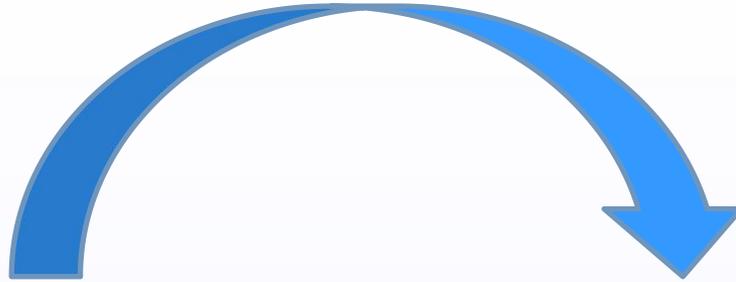
家庭电路中电流过大的**原因**

- ◆ 用电器**总功率过大**
- ◆ 电路**发生短路**

保险丝起到什么作用？ 具有什么特点？

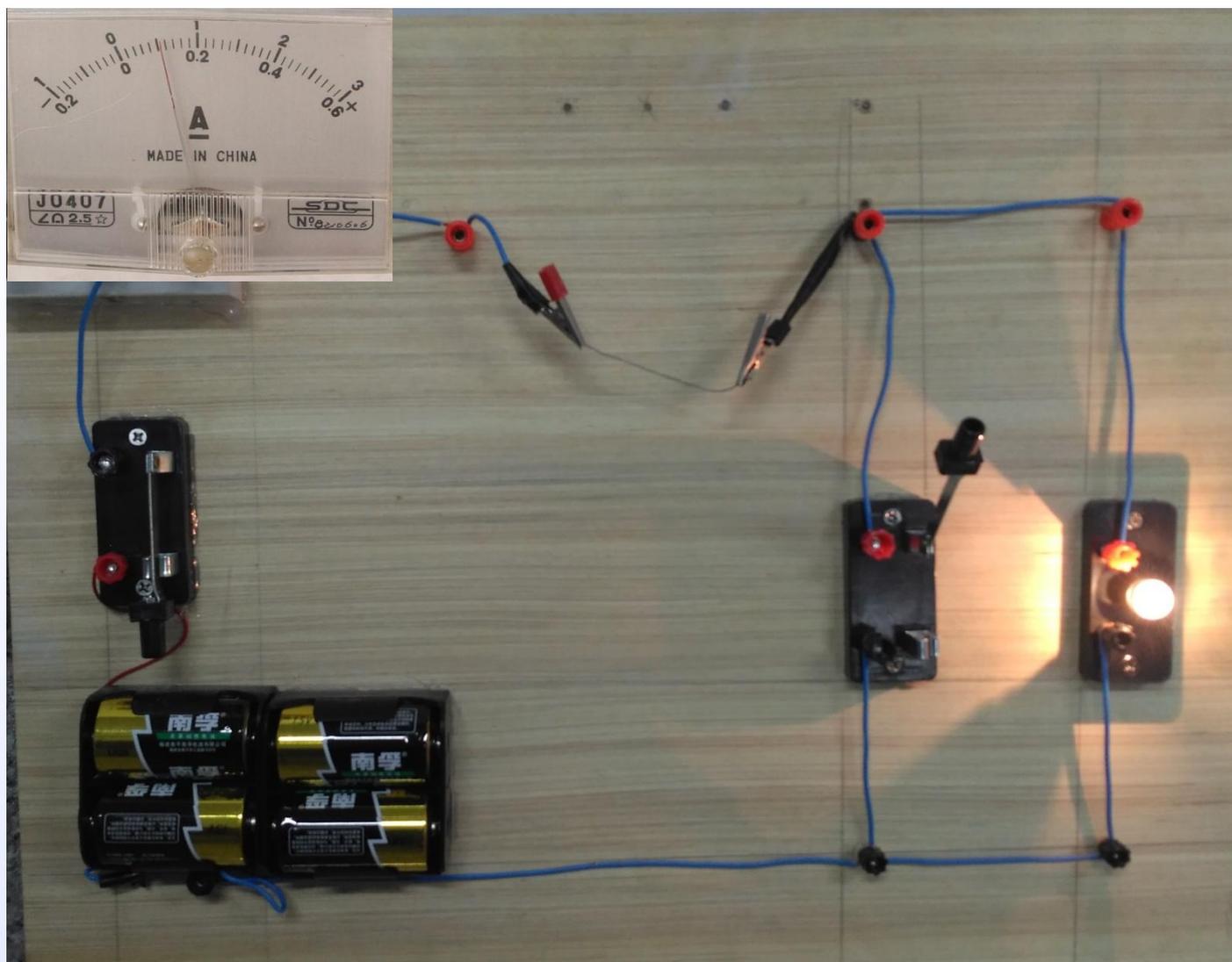


演示实验：保险丝工作



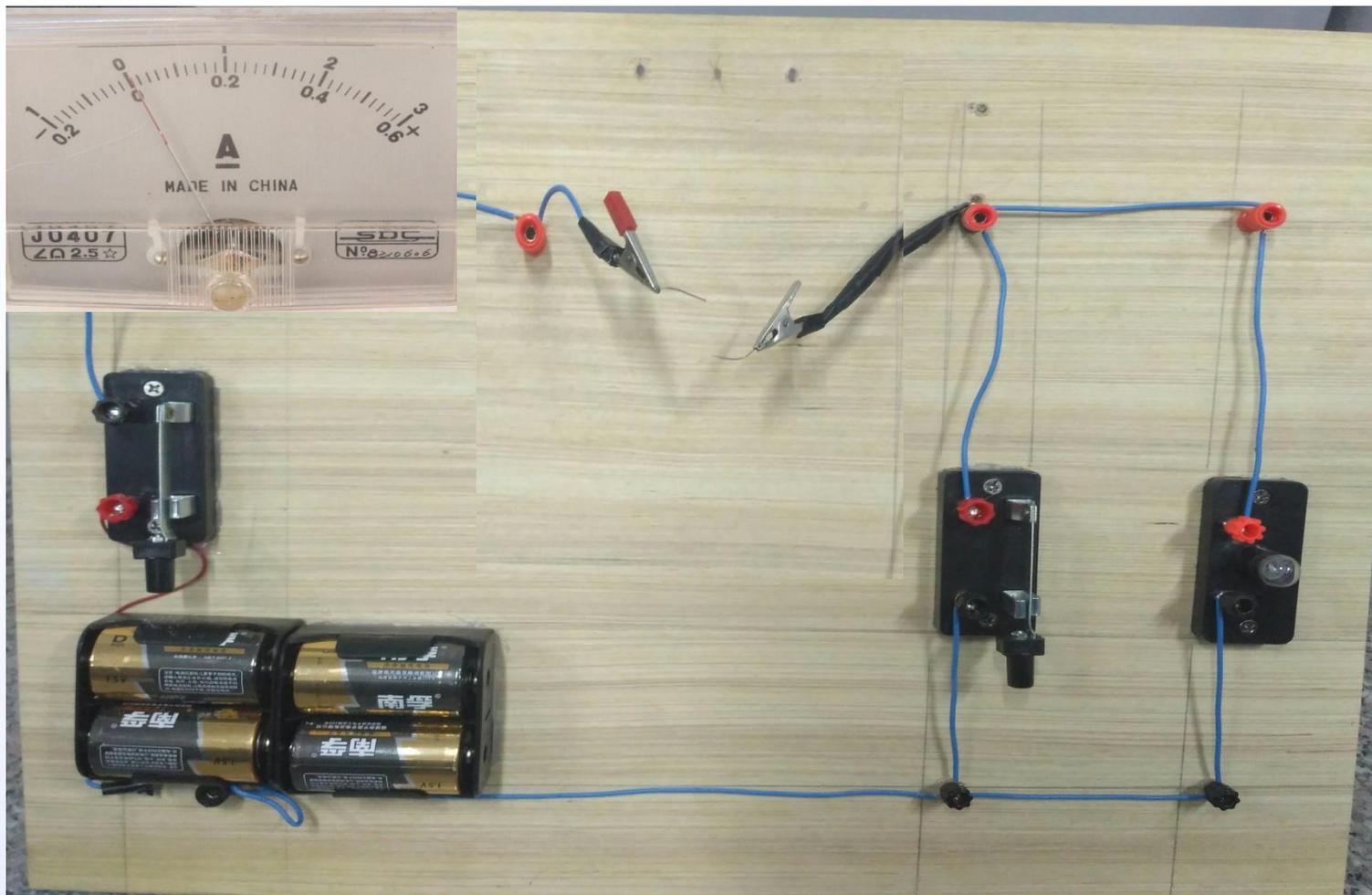


电路正常



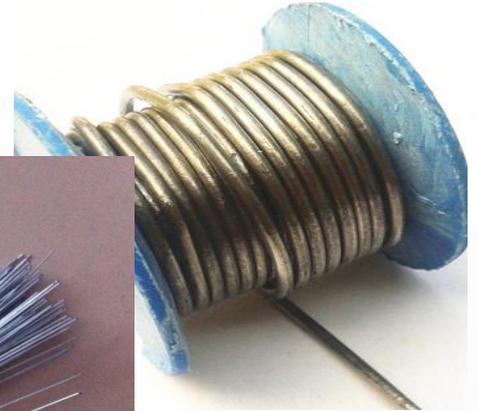


电路发生短路



保险丝的作用：

电流过大时会自动熔断，切断电路，起到保护作用。



几种生活中常见的金属材料熔点和电阻率对比图

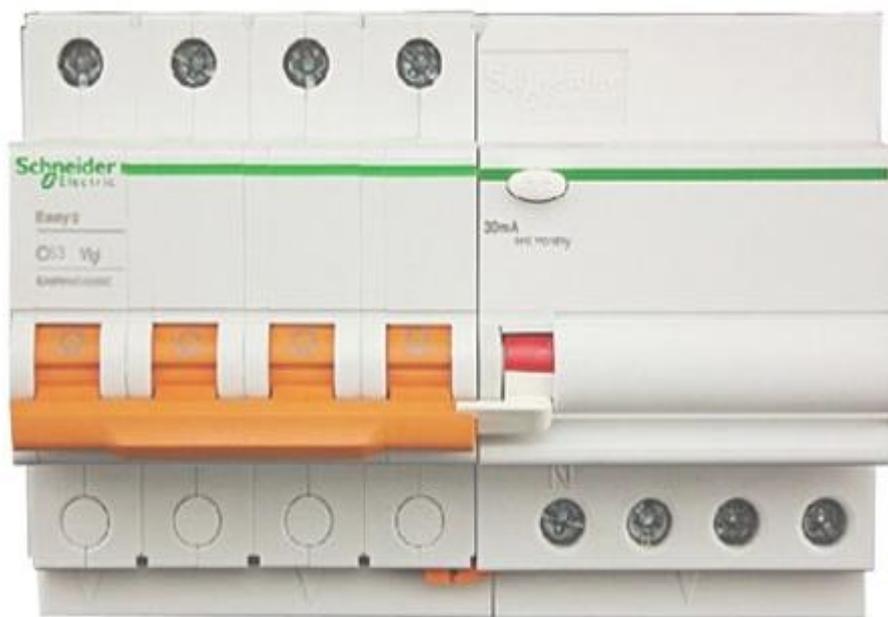
材料	金	银	铜	铅锑合金（保险丝）
熔点/ $^{\circ}\text{C}$	1064.63	961.93	1083.4	246
电阻率 $\times 10^{-8}$	2.4	1.65	1.75	2.83

保险丝的**特点**：

熔点较低、电阻率较大。



空气开关





谢谢！