

Dear Beakman,
How does a light bulb work?
Brianna Fickeisen
Canton, Ohio

Beakman or Jax,
P.O. Box 30177
Kansas City, MO
64112

Dear Brianna,

Different kinds of light bulbs work in different ways. The kind of light bulb most of us use is called an incandescent (in-can-DES-ent) bulb. Its light comes from something inside the bulb getting so hot, it glows with light. That's what incandescent means: to get hot and glow.

Light bulbs in flashlights work the same way and they're lots safer to examine. So grab a flashlight and we'll take a look.

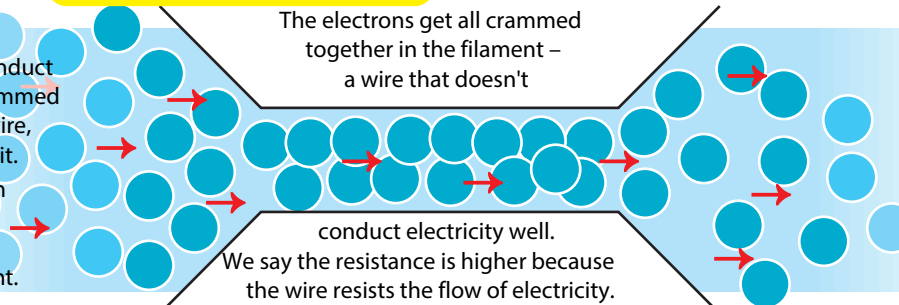
If you go out for trick-or-treat, take a flashlight. It'll help you see and be seen. And now You Can know how it works.

Beakman
Beakman Place

jammed up

Electrons flowing in a loop is what electricity is. When a wire does not conduct electricity well, the electrons get all jammed up. They bang into the atoms of the wire, which get all hot and bothered about it.

The friction of that electrical traffic jam raises the temperature of the wire to 4,500 degrees. When it gets that hot, the wire gives off an intense white light.



Resistance to the flow of electrical energy is something you use in other ways. Your toaster gets all hot because the wires inside it don't conduct electricity very well. Same thing with a hair dryer or an electric heater. They all work because electrons get jammed up together.

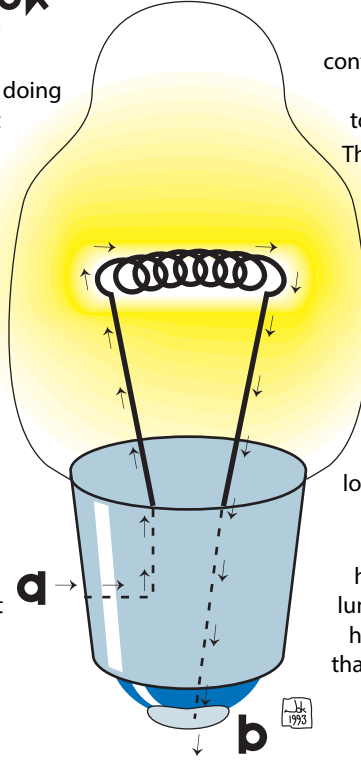
A closer Look

Carefully take apart your flashlight. Be sure to pay attention to what you're doing because you have to put the thing back together.

Remove the light bulb and take a close-up look.

Electrical energy from the battery enters the bulb at the place marked A. It continues up through the filament, which is a wire that doesn't conduct electrical energy very well.

Electrons pushing to get through the filament make the filament get hot and glow with light.



The electrical energy continues to flow through the bulb until it gets to the place marked B.

The power then returns to the battery, so the trip to A can start all over again.

When you turn the switch off, what you're doing is stopping the power from getting back to the battery. You're breaking that loop, and the bulb can't light up.

Many flashlight bulbs have a little blue glass lump inside. It's there to hold the wires apart so that the electricity has to make the full loop.