Презентация по английскому языку на тему: «Лампа накаливания»

Выполнил студент

Группы 4ОРТ9-2

Павлов Вячеслав

Definition

An incandescent lamp is an artificial light source in which light is emitted by an incandescent body heated by an electric current to a high temperature. As the incandescent body, a spiral made of a refractory metal (most often — tungsten) or a carbon thread is most often used. To avoid oxidation of the glow body in contact with air, it is placed in a vacuum flask, or a flask filled with inert gases or vapors.

Operating principle

In an incandescent lamp, the effect of heating the incandescent body when an electric current flows through it (the thermal effect of the current) is used. The temperature of the incandescent body increases after the electrical circuit is closed. All bodies whose temperature exceeds the temperature of absolute zero emit electromagnetic thermal radiation in accordance with Planck's law. The spectral density of the radiation power (Planck function) has a maximum, the wavelength of which depends on the temperature on the wavelength scale. The position of the maximum in the radiation spectrum shifts with increasing temperature towards smaller wavelengths (Wien's law of displacement). To obtain visible radiation, it is necessary that the temperature of the emitting body exceeds 570 °C (the temperature of the beginning of the red glow visible to the human eye in the dark). For human vision, the optimal, physiologically most convenient spectral composition of visible light corresponds to the radiation of a completely black body with a surface temperature of the Sun's photosphere of 5770 K. However, there are no known solid substances that can withstand the temperature of the Sun's photosphere without destruction, so the operating temperatures of the filaments of incandescent lamps lie in the range of 2000-2800 °C.

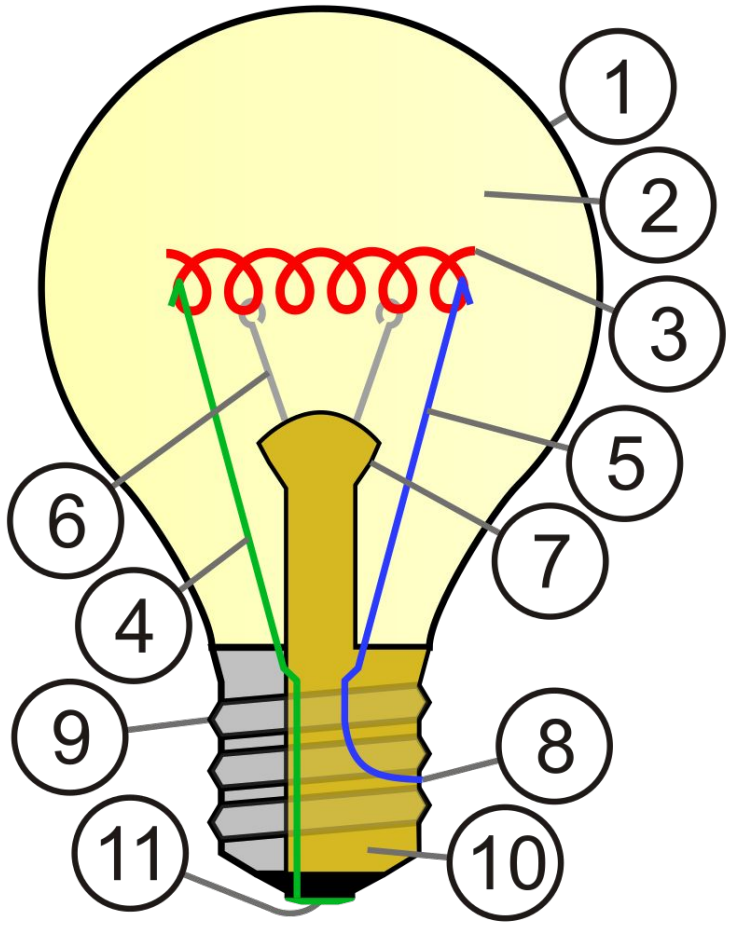
Varieties

Incandescent lamps are divided into (arranged in order of increasing efficiency):

- Vacuum (the simplest)
- Argon (nitrogen-argon)
- KryptoniteXenon-halogen with an IR reflector (since most of the lamp's radiation falls on the IR range, the reflection of IR radiation inside the lamp significantly increases the efficiency, produced for hunting lanterns)

Incandescent lamps with a coating that converts IR radiation into the visible range. The development of lamps with a high-temperature phosphor, which emits the visible spectrum when heated, is underway.

The structure of a modern lamp



The design of a modern incandescent lamp. In the diagram: 1-flask; 2-flask cavity (evacuated or filled with gas); 3-glow body; 4, 5-electrodes (current inputs); 6-hooks - holders of the glow body; 7-lamp leg; 8-external link of the current lead, fuse; 9-cap body; 10-cap insulator (glass); 11-contact of the bottom of the cap.

History of the invention

In 1840, the Englishman Delarue conducted experiments by passing an electric current through a platinum wire placed in a glass cylinder, possibly creating a vacuum in it .

In 1840, the Russian scientist Alexander Milashenko began the development of a coal thread.

In 1841, the Irishman Frederick De Molayne received a patent "for the production of electricity and its applications for illumination and motion" (eng. in 1841, he had obtained a patent for the production of electricity and its applications for illumination and motion) which implied (?) the use of devices with a platinum thread in a vacuum for lighting.

In 1854, the German Heinrich Goebel developed a prototype of a" modern " lamp: a charred bamboo thread placed in a glass cylinder in the upper part of which a vacuum was created by mercury (on the principle of a mercury barometer), the durability of such lamps was several hours. In the next 5 years, he developed what many call the first practical lamp.

On July 11, 1874, Russian engineer Alexander Nikolaevich Lodygin received a patent number 1619 for a filament lamp. As a filament, he used a carbon rod, calcined in a special way without access to oxygen, placed in a vacuum-sealed sealed vessel. The advantage of his lamp over the previous samples was a longer service life, due to the greater uniformity of the carbon rod and the lack of oxygen in the flask, as well as the tightness of the flask itself, which allowed the use of lamps outside of laboratory conditions.