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N. A. J. VOORHOEVE
INCANDESCENT ELECTRIC LAMP

1,749,520

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Fig.1.

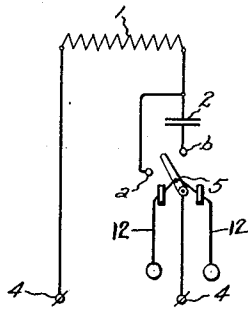


Fig.2.

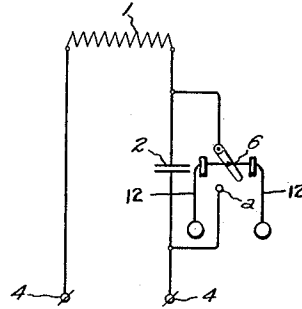


Fig.3.

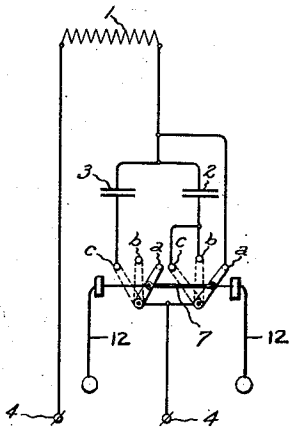
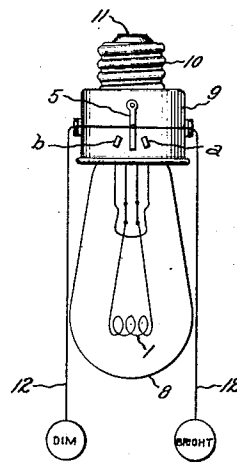


Fig.4.



Inventor:
Nicolaas A.J. Voorhoeve,
by *Alexander S. Luntz*
His Attorney

UNITED STATES PATENT OFFICE

NICOLAAS A. J. VOORHOEVE, OF EINDHOVEN, NETHERLANDS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK

INCANDESCENT ELECTRIC LAMP

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The present invention relates to an electric incandescent lamp provided with a single filament and with means by which the filament may be caused at will to give various degrees of luminosity or candlepower.

For burning incandescent lamps at more than one candlepower or brightness the means heretofore best known has been to provide lamps with a plurality of filaments. This construction involves complications and therefore inconvenience in manufacture of one or both of the filaments. In accordance with the present invention the filament of a lamp may be operated at different candlepowers in a very simple manner by means of one or more condensers, the filament being connected to the supply or lighting circuit either directly or through one or more condensers. Where the minimum amount of light given off by the lamp is small, for instance, for night and emergency exit light, the condenser need to be only of low capacity, and it may then be chosen of such small dimensions that it can be conveniently disposed within the base of the lamp. The base of the lamp may then be provided with terminals or contacts, so that by means of a suitable switch the change from bright or full light to low or dim light can be readily effected.

The preferred arrangement, according to the invention, is to provide a switch mounted on the neck or base of the lamp to connect and disconnect a condenser or condensers disposed within the lamp base in series with the filament, so that the current may flow through the filament, either by way of the condenser or condensers or directly. In the former case, the filament will burn only dully or dimly, with the result that the candlepower will not be more than 0.1 to 1 c. p.; in the other case the current supplied directly from the source or supply flows through the filament to its maximum amount, so that the lamp will burn at its normal brightness and candlepower.

Three different candlepowers may be provided by using two condensers, the filament being connected at will to the supply circuit directly, or through one of the condensers, or

through both of the condensers connected in parallel.

Even if two condensers are provided, the preferable arrangement is to mount both in the base of the lamp, as the dimensions of the base will then be only slightly greater than in the other case, where only one condenser is used. For a lamp containing two condensers a two-pole switch may be attached to the lamp base.

A lamp constructed according to the present invention is eminently suited for illuminating vestibules, passage-ways, etc., where a very small volume of light is required and under such circumstances its consumption of energy is small, while under other circumstances the switch on the base may be moved to cause this novel lamp to furnish a large amount of light.

In the case of sleeping room and bed chamber illumination for which special demands are made, the lamp disclosed in this invention is preferable to lamps which can be burnt at only one candlepower, and therefore, also to those lamps in which a condenser is arranged in the base for the object of burning the lamp connected to the lighting circuit at constant brightness or candlepower.

As already pointed out above, in order to obtain a sufficiently great volume of light, only a very small capacity has to be connected in series with the lamp; for instance, for a 220 volt vacuum lamp furnished with a straight tungsten filament yielding 25 candlepower when directly connected with the supply circuit a condenser with a capacity of 1 mfd. will be sufficient to produce a light sufficient for a bed or sleeping room.

In the accompanying drawing, a number of circuit arrangements of lamps embodying this invention are shown by way of example.

Figure 1 shows diagrammatically a switch arrangement by which a condenser may be connected in series with the filament or cut out of circuit at will; Figure 2 an arrangement by which a condenser in series with the filament can be short circuited at will; Figure 3 an arrangement of two condensers and a double pole switch such that the filament may at will be connected directly to the supply

circuit, or in series with either or both of two condensers, and Figure 4 shows one form of lamp embodying this invention.

In the drawings, the filament 1 of a vacuum lamp, such as a 220 volt lamp of about 25 candlepower, may be connected, as shown diagrammatically in Fig. 1, through a condenser 2 having a terminal *b*, or directly through a by-pass having a terminal *a*, to the supply terminals 4 of the supply circuit by means of a switch blade 5 operable at will and preferably mounted on the base of the lamp. The capacity of the condenser 2 may be so chosen, for example about 1 mfd., that when it is connected in series with the filament 1 the lamp gives a dim light, but sufficient for use as a night light.

In Fig. 2 the condenser 2 is permanently connected in series with the filament and may be at will directly connected to the supply circuit and brought to full brilliancy by closing the short circuiting switch 6.

In Fig. 3 a second condenser 3 is connected in parallel with the condenser 2, and either or both of these condensers may be connected in series with the filament at will by means of a double pole switch 7, movable into three positions. In the first position of this switch the switch blades are on the contacts *a*, and the filament is connected directly to the supply circuit terminals 4; in the second position the switch blades are on contacts *b* and the condenser 2 is in series with the filament; and in the third position, the switch blades are on contacts *c* and both condensers 2 and 3 are in series with the filament, and also in parallel with each other. As a result three different intensities of light can be obtained from a lamp embodying this form of the invention.

One form of lamp embodying the circuit arrangement of Fig. 1 is shown in Fig. 4.

On a glass bulb 8 containing the filament 1 there is mounted a base consisting of a metal shell 9, which is secured to the bulb and contains the condenser 2, and also a threaded shell 10 and center contact 11, both of which constitute the terminals 4 of the supply circuit when the lamp is in the socket. The switch blade 5 is mounted on the shell 9 and by some means, such as pull strings 12, the switch blade 5 may be manipulated at will to make the filament operate either bright or dim.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An incandescent lamp comprising a bulb, a filament in said bulb, a plurality of condensers mounted on said bulb, and switching means on said bulb for at will connecting one of said condensers in series with all of said filament or more than one of said condensers in parallel with each other and all in series with said filament.

2. An incandescent lamp comprising a

bulb, a filament in said bulb, a base on said bulb, two condensers in said base, a switch on said base, and connections whereby said switch can connect said filament to the supply circuit either directly or through one of said condensers, or through both of said condensers connected in parallel.

In witness whereof, I hereunto set my hand this 21st day of October, 1926.

NICOLAAS A. J. VOORHOEVE.