

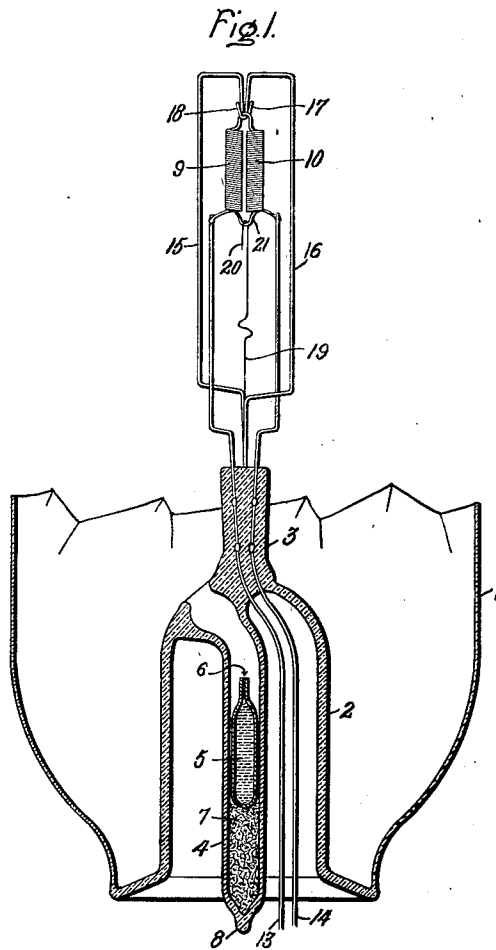
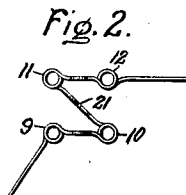
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E. HENKEL ET AL

INCANDESCENT LAMP

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UNITED STATES PATENT OFFICE.

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INCANDESCENT LAMP.

Application filed November 8, 1927, Serial No. 231,987, and in Germany December 7, 1926.

In the copending application of Wolff et al., Serial No. 66,642, filed November 3, 1925, there is disclosed a gas filled lamp with a lighting body which is entirely or for the greater part made of tungsten, the lamp containing besides the usual filling gases, such as neon or argon, which are chemically inert with respect to the incandescent body, hydrogen or gaseous or volatile halogen compounds. It has been indicated in the prior application above noted that the additions made to the inert gas cause, besides other effects, a decrease in the danger of short circuits or undesirable electric discharges in the lamp. It is one of the objects of the present invention to provide a gas filled lamp in which this danger is still further reduced.

In the operation of high candle power, gas filled incandescent lamps in which the lighting body is arranged in a narrow or restricted space as, for example, in projection lamps, the danger of short circuits is very great. We have found however that if such a lamp, containing the usual filling gases, is also provided before being put into operation with a halogen ammonium salt, the danger of short circuits or undesirable electrical discharges is substantially prevented. The introduction of ammonium chloride and ammonium iodide into the lamp interior has been found to be specially advantageous for this purpose.

The novel features which we believe to be characteristic of our invention are set forth with particularity in the appended claims. The invention itself will best be understood from reference to the following specification when considered in connection with the accompanying drawing in which Fig. 1 is a cross sectional view partly broken away of a lamp embodying the features of our invention; while Fig. 2 is a plan view on an enlarged scale of the lamp coils and connections thereto.

Referring more particularly to the drawing, we have indicated at 1 a receptacle having a reentrant stem 2 provided with the usual press 3 and pump outlet 4. A capsule 5 filled with ammonium chloride or ammonium iodide and having a capillary opening 6 is placed in the pump outlet prior to the evacuation of the receptacle 1 and supported on resilient material 7, such as cotton or tungsten wool. After the receptacle has been evacu-

ated and filled to a definite pressure with inert gas the pump outlet is sealed off, as indicated at 8.

The filament comprises four coils 9 to 12 inclusive which are connected as indicated in Fig. 2 and supplied with current from the leading-in wires 13 and 14. The upper ends of the coils are supported from two wires 15 and 16 which are provided at their upper ends with hooks 17 and 18 respectively. Tension is applied to the lower ends of the coils through a spring member 19 provided with a hook 20 which engages the connection between coils 10 and 11 at the point 21.

When placing the lamp into operation the vapor produced by the filament heat disassociates the halogen ammonium salt into ammonia and a halogen compound of hydrogen, the former separating in a great measure into free hydrogen and nitrogen. It is our opinion that in the chemical processes which take place the free electrons issuing from the incandescent body are consumed relatively rapidly and therefore the formation of an electron current is interfered with considerably so that gas ionization and short circuits cannot readily occur.

The halogen ammonium salt may be located at any part in the interior of the lamp. It is desirable, however, to provide for an extremely slow delivery of the halogen vapor. This may be accomplished if the capsule 5 having a capillary opening 6 and containing the halogen ammonium salt is embedded in the pump outlet 4 which is fused to the bottom of the stem as indicated in Fig. 1. The salt in this case is heated just enough by the operation of the lamp to cause an extremely small vapor current to issue into the lamp. The amount of vapor may of course be easily controlled by suitably dimensioning the capillary opening in the capsule.

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

1. An electric lamp comprising a receptacle provided with a lighting body operable at incandescence, said receptacle containing a gaseous filling and in addition containing a halogen ammonium salt.

2. An electric lamp comprising a receptacle provided with a lighting body operable at incandescence, said receptacle containing a gase-

ous filling and in addition ammonium chloride.

3. An electric lamp comprising a receptacle provided with a lighting body operable at incandescence, said receptacle having a gaseous filling, said filling including a gas chemically inert with respect to the lighting body, a halogen acid gas, free nitrogen and free hydrogen.

4. An electric incandescent lamp compris-

ing a receptacle provided with a tungsten lighting body and a gas filling consisting largely of a gas chemically inert with respect to the tungsten, but containing a halogen acid gas, free nitrogen and free hydrogen.

In witness whereof, we have hereunto set our hands this 25th day of October, 1927.

ERICH HENKEL.
HANS WOLFF.