

UNITED STATES PATENT OFFICE.

CARL AUER VON WELSBACH, OF VIENNA, AUSTRIA-HUNGARY, ASSIGNOR TO
THE WELSBACH INCANDESCENT GAS LIGHT COMPANY, OF NEW JERSEY.

GAS-INCANDESCENT.

SPECIFICATION forming part of Letters Patent No. 403,803, dated May 21, 1889.

Application filed March 31, 1888. Serial No. 269,205. (No specimens.) Patented in France November 4, 1885, No. 172,064; in Belgium November 4, 1885, No. 70,739; in England March 13, 1886, No. 3,592; in Sweden April 14, 1886, No. 687; in Germany April 29, 1886, No. 41,945; in Finland July 10, 1886, No. 261; in Norway August 25, 1886, No. 88; in Italy October 13, 1886, XL, 415; in Portugal April 6, 1887, No. 1,127; in Russia December 31, 1887, No. 12,505, and in Austria-Hungary March 28, 1888, No. 44,989 and No. 5,176.

To all whom it may concern:

Be it known that I, CARL AUER VON WELSBACH, a subject of the Emperor of Austria, residing at Vienna, Austria, have invented
5 new and useful Improvements in Gas-Incandescent, (for which I have obtained Letters Patent in Great Britain, dated March 13, 1886, No. 3,592; Sweden, dated April 14, 1886, No. 687; Norway, dated August 25, 1886, No. 88;
10 Finland, dated July 10, 1886, No. 261; France, dated November 4, 1885, No. 172,064; France, Certificate of Addition, dated April 22, 1886, No. 172,064; Belgium, dated November 4, 1885, No. 70,739; Portugal, dated April 6, 1887, No. 1,127; Russia, dated December 31, 1887, No. 12,505; Italy, Patent of Addition, dated October 13, 1886, Vol. XL, No. 415; Germany, dated April 29, 1886, No. 41,945; Austria-Hungary, applied April 9, 1886, granted March
20 28, 1888, No. 44,989 and No. 5,176,) of which the following is a specification.

This invention relates to improvements in the manufacture of gas-incandescent devices of the character described in Letters Patent
25 No. 359,524, granted to me March 15, 1887, which refers to making a skeleton hood, cap, or frame of incandescing material by impregnating a combustible fabric or thread with solutions of the salts of the rarer metals that
30 produce earthy oxides, and subsequently consuming the combustible foundation fabric and leaving a skeleton-like body composed of the earthy oxides resulting from the decomposition of the salts employed for impregnating the fabric. This hood, cap, or frame,
35 composed of earthy oxides alone, when placed over a gas-flame and heated to incandescence, gives out a brilliant light for many hours.

My present invention consists in improved
40 gas-incandescing compounds or bodies, as hereinafter described, for producing a slightly-green-colored light. To this end I mix fifty per cent. of thorium oxide with fifty per cent. or more of the erbium elements in the form
45 of oxide, as erbium oxide, or thulium oxide, or holmium oxide. I prefer a mixture of

thorium oxide and erbium oxide, though the thorium oxide may be partly replaced by zirconium oxide. All the above-named bodies may be mixed together in varying proportions to produce green light of differing
50 shades. A solution is made of the selected elements in the form of a salt—preferably the nitrate or acetate—and with this solution the foundation textile fabric—preferably of tubular form—is thoroughly saturated. After the
55 saturated or impregnated fabric has been dried it is exposed to heat—as that of a gas-flame—so as to consume the said fabric and leave a skeleton hood, cap, or frame composed
60 of the refractory or infusible earthy oxides alone, the acid of the salt being driven off by the heat that burns out the textile fabric or threads.

The qualities and value of thorium oxide as
65 an incandescent body are set forth in an application filed by me of even date herewith, Serial No. 269,198, and according to my present invention erbium, thulium, and holmium oxides are added for the purpose of obtaining a green light. The characteristics of
70 thulium and holmium and their relation to yttrium and erbium are stated in Watt's Dictionary of Chemistry, 1881, Vol. VIII, Part II, third supplement, pages 2154 to 2156.

What I claim as my invention is—

1. An incandescent burner for gas, consisting of a skeleton hood or frame containing oxide of thorium and oxide of erbium, substantially as described. 80

2. An incandescent burner for gas, consisting of a skeleton hood or frame containing oxide of thorium and an erbium element, as oxide of erbium, oxide of thulium, or oxide of holmium, substantially as described. 85

In testimony whereof I affix my signature in presence of two witnesses.

CARL AUER VON WELSBACH.

Witnesses:

FRED. WILLIAMS,
EDMUND JUSSEN.