

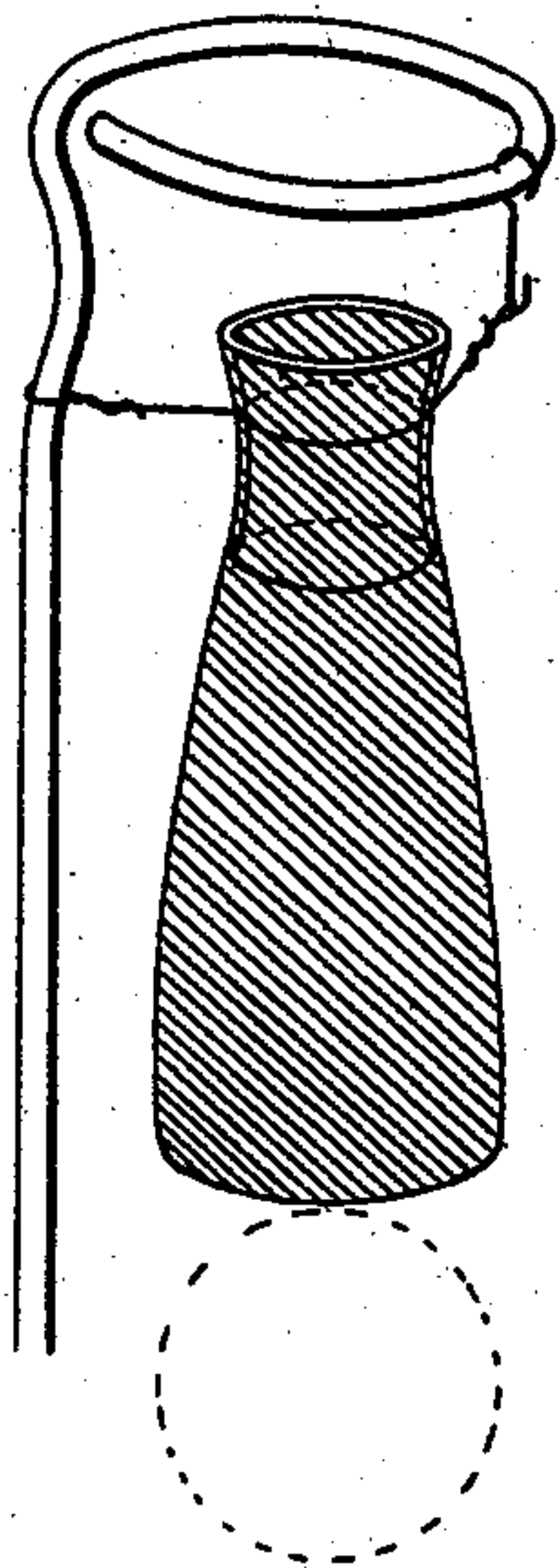
(No Model.)

C. A. VON WELSBACH.

COMPOUND FOR MAKING INCANDESCENT DEVICES.

No. 377,699.

Patented Feb. 7, 1888.



Witnesses.
Robert Emmett.

Derey. B. Stille.

Inventor.

Carl Auer von Welsbach

By

James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

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

COMPOUND FOR MAKING INCANDESCENT DEVICES.

SPECIFICATION forming part of Letters Patent No. 377,699, dated February 7, 1888.

Application filed February 2, 1887. Serial No. 226,313. (No specimens.) Patented in France November 4, 1885, No. 172,064; in Belgium November 4, 1885, No. 70,739, and September 9, 1886, No. 74,502; in England December 12, 1885, No. 15,286, and March 13, 1886, No. 3,592; in Italy February 23, 1886, XXXVIII, 310, and October 13, 1886, XL, 415; in Cape of Good Hope March 4, 1886, No. 6/205; in Victoria March 17, 1886, No. 4,472; in Tasmania March 24, 1886, No. 398/9; in South Australia May 3, 1886, No. 678; in New South Wales May 11, 1886, No. 1,829/2; in New Zealand June 11, 1886, No. 1,863; in Queensland June 28, 1886, No. 106; in Finland July 10, 1886, No. 261; in Spain August 10, 1886, No. 9,031/5,858; in Norway August 25, 1886, No. 88, and in India September 2, 1886, No. 1,145.

To all whom it may concern:

Be it known that I, CARL AUER VON WELSBACH, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Empire of Austria-Hungary, have invented new and useful Improvements in Compounds for Making Incandescent Devices, (for which I have obtained patents in France dated November 4, 1885, No. 172,064; in Belgium November 4, 1885, No. 70,739; in Italy February 23, 1886, Vol. XXXVIII, No. 310; in France, Certificate of Addition, April 22, 1886, No. 172,064; in Belgium, Certificate of Addition, September 9, 1886, No. 74,502; in Spain August 10, 1886, No. 9,031/5,858; in Italy, Certificate of Addition, October 13, 1886, Vol. XL, No. 415; in Finland July 10, 1886, No. 261; in Norway August 25, 1886, No. 88; in Victoria March 17, 1886, No. 4,472; in New South Wales May 11, 1886, No. 1,829/2; in Tasmania March 24, 1886, No. 398/9; in Queensland June 28, 1886, No. 106; in New Zealand June 11, 1886, No. 1,863; in Cape of Good Hope March 4, 1886, No. 6/205; in India September 2/9, 1886, No. 40—1886/1,145; in South Australia May 3, 1886, No. 678; in Great Britain December 12, 1885, No. 15,286, and in Great Britain, by application for patent, March 13, 1886, No. 3,592,) of which the following is a specification.

In my application for Letters Patent filed June 8, 1886, Serial No. 204,558, I set forth a method of making incandescents especially adapted for gas-burners by impregnating a fabric or thread with a solution of the salts of the rarer metals which produce earthy oxides and subsequently burning away the combustible fabric or thread, leaving a skeleton hood or frame of the indestructible and infusible products resulting from the decomposition of the salts of the metals—that is, a skeleton frame of the earthy oxides of lanthanum and zirconium—so that when such hood or frame is heated to incandescence a brilliant and intense light is produced. Such a frame is illustrated in the accompanying drawing.

The object of my invention is to provide a novel compound or solution for impregnating the fabric, thread, or other combustible fibrous substance which gives form to the earthy oxides for producing the incandescent device. I have discovered that the combined properties of the oxide of lanthanum and oxide of zirconium, when employed according to my invention, provide an incandescent device that is very valuable as an illuminant when rendered incandescent by the flame from a gas-burner.

My present invention therefore consists in an incandescent composed of the oxides of lanthanum and zirconium in about equal proportions.

The invention also consists in a filament, fabric, or textile frame of combustible material impregnated with the salts of lanthanum and zirconium in aqueous solution in about equal proportions. The combined properties of these oxides formed into an incandescent device according to the method set forth produce the following results: First, if heated by the flame from an ordinary gas-burner, a highly-intense, almost white, light is obtained; second, the substances are incombustible and infusible, and do not volatilize; third, the substances do not produce scale or ash after burning several hundreds of hours, nor do they evince any decrease of power of emittance, but remain altogether perfect, and, fourth, the substances can without any change be exposed for any length of time to the influence of atmospheric air, so long as the latter is in a condition for inhalation.

The proportions of the oxides produced by the decomposition of the salts set forth may be varied; but I have found that equal, or approximately equal, proportions of the two oxides give satisfactory results.

The combined substances may be employed in connection with gas-burners in various ways. For example, the burner may be composed of a tubular skeleton hood or frame, as shown in the accompanying drawing, in which the figure is an elevation of the device sup-

ported by a wire frame adapted to be suspended over the flame of a gas-burner, so as to become heated by such flame to incandescence, causing it to give out great and brilliant light. The hood may be made of light network fabric or threads or other combustible material—such as cotton—impregnated with a solution of the salts of lanthanum and zirconium, and then exposed to the heat of a flame, so that the fabric or threads are soon consumed, leaving a skeleton hood or frame consisting of the incombustible and infusible earthy oxides resulting from the decomposition of the salts of said metals—that is to say, a hood or frame of the oxides of lanthanum and zirconium. This hood or frame, though light and fragile, will remain effective as an illuminant for hundreds of hours.

In preparing the aqueous or other solution different salts of the metals may be employed, such as the nitrates of the metals which are generally soluble. So, also, but to a less degree, are the sulphates, iodides, and bromides.

I do not here claim the method of making this hood or frame, as such constitutes the sub-

ject-matter of my application for patent filed June 8, 1886, Serial No. 204,588.

I am aware that it has been proposed to use zirconia in making incandescent devices, and such I disclaim.

Having thus described my invention, what I claim is—

1. An incandescent composed of a mixture of the oxides of lanthanum and zirconium in about equal proportions, substantially as described.

2. A filament, fabric, or textile frame of combustible material impregnated with the salts of lanthanum and zirconium in aqueous solution in about equal proportions, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 13th day of January, A. D. 1887.

CARL AUER VON WELSBACH.

Witnesses:

EDWARD P. MACLEAN,
JOS. B. BOURNE.