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F. C. VON HEYDEBRAND.

SELF LIGHTING INCANDESCENT GAS MANTLE.

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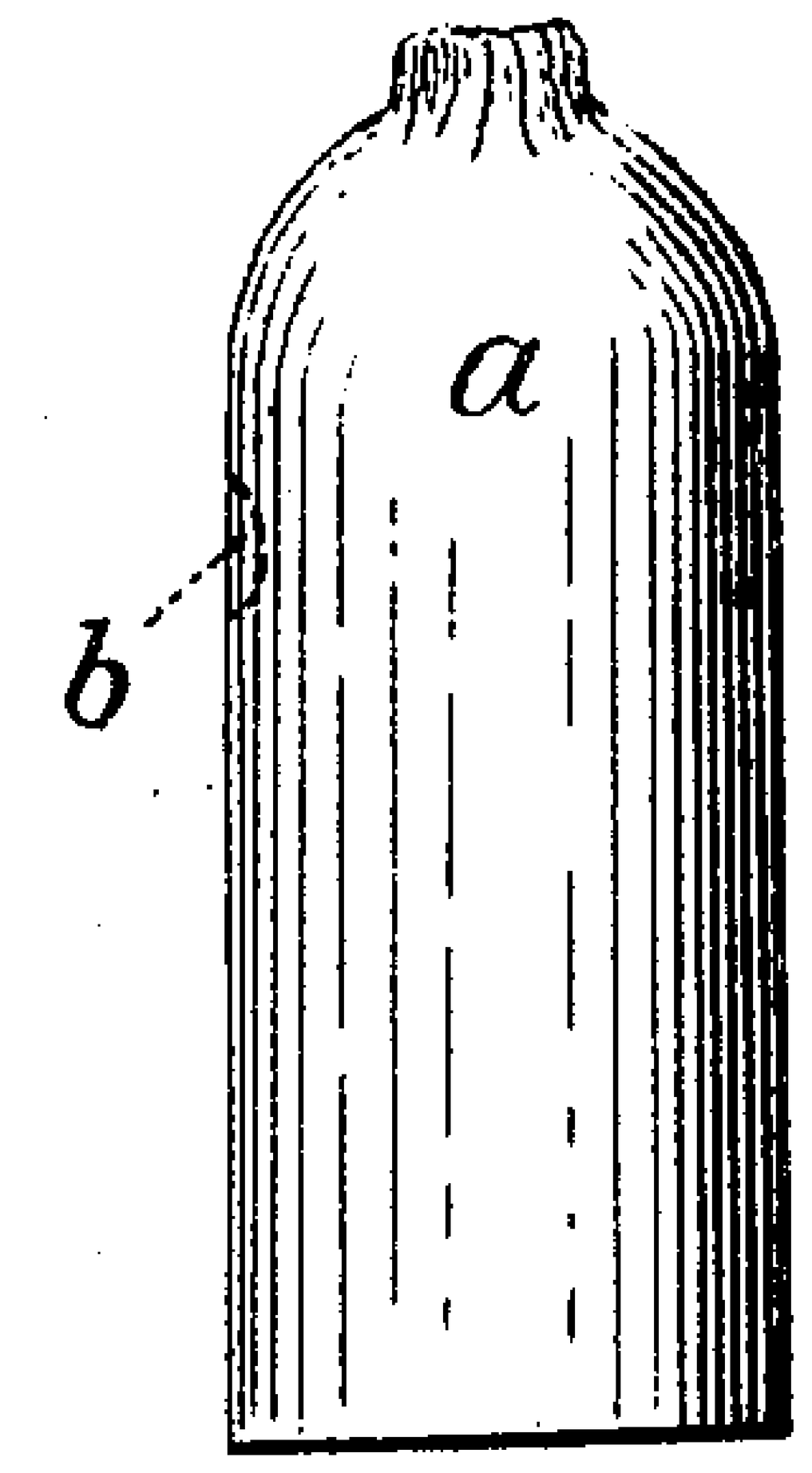

Fig. 1.

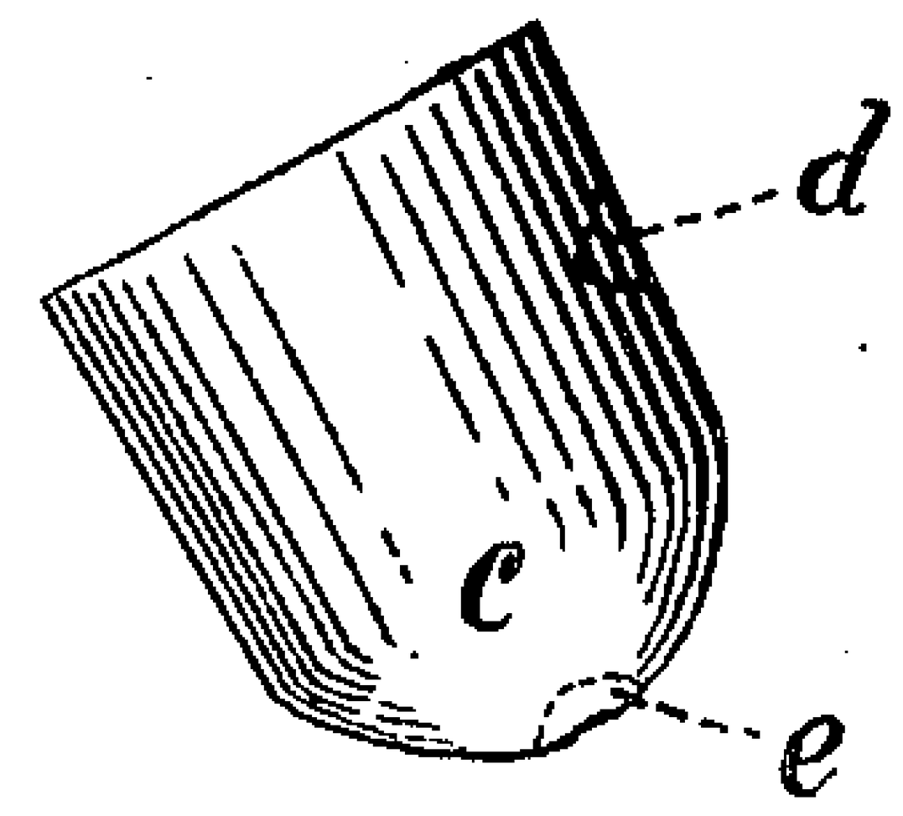

Fig. 2.

Witnesses
Curt von Grueber
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UNITED STATES PATENT OFFICE.

FERDINAND C. VON HEYDEBRAND, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO FLASH SELF-LIGHTING MANTLE COMPANY, A CORPORATION OF MAINE.

SELF-LIGHTING INCANDESCENT GAS-MANTLE.

No. 798,282. Specification of Letters Patent. Patented Aug. 29, 1905.

Application filed April 5, 1905. Serial No. 253,984.

To all whom it may concern:

Be it known that I, FERDINAND C. VON HEYDEBRAND, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Self-Lighting Incandescent Gas-Mantles, which improvements are described in the following specification with reference to the accompanying drawings and more particularly defined in the annexed claims.

My invention relates to such kind of incandescent gas-mantles which are automatically lighted by a chemical reaction produced by the escaping gas.

It has been known for a long time that platinum-black and similar compounds glow under the influence of illuminating-gas to such extent as to produce an ignition. This fact has lead to various arrangements for self-lighting incandescent mantles. Experiments in this direction have shown that a thorough contact between gas and lighting medium is imperative to insure a certain and quick ignition and that the lighting medium is extremely sensitive with regard to the surrounding atmosphere. Furthermore, great difficulties were encountered in firmly securing the lighting medium to the textile fabric of the mantle, so as to make it immune against vibrations of the mantle caused by the shock of the explosion or otherwise or against the influence of the rapidly-changing temperature.

The most economical way of securing the lighting medium to the incandescent mantle was found to consist in its application directly to the outside of the coated mantle in the form of a pellet, but its adhesive and chemical qualities have always proved to be of little resistance against vibrations of the mantle or atmospheric influences. I have found in securing this pellet, as usually, directly upon the outside of the mantle that in case the gas-pressure at the outlet of the burner is insufficient the chemical action upon the pellet will not be such as to cause it to glow so that the gas ignites, the latter passing upward without availing itself of all of the space afforded by the meshes of the textile network, and thus without coming into thorough contact with the lighting medium. This is especially the case in the so-called "inverted" mantles, where the mantle projects downwardly from the burner, and all experiments with such mantles have resulted in failure owing to a large extent to the gas-pressure at the outlet of the burner being insufficient to successfully overcome the tendency of the gas to rise by its lighter specific gravity in comparison with the surrounding atmosphere. After various experiments I have found that all these difficulties may be obviated by placing the pellet not upon the outside of the incandescent mantle, but inside upon same, and by further insuring its adhering to the textile network of the mantle by means of a modified way of applying it thereto.

If the pellet is secured to the inside of the mantle and the pressure of the gas should not be sufficient to cause the gas to flow rapidly through all of the meshes of the mantle, and thus—if the pellet was outside—over the latter, it will always suffice to entirely fill the interior of the mantle, and thus produce the intimate contact necessary for the chemical reaction upon the lighting medium and for the ignition of the gas. I have furthermore found that the pellet secured to the inner side of the textile fabric of the mantle obtains a much firmer hold on same, and therefore is enabled to withstand all possible vibrations.

In the accompanying drawings I have shown in—

Figure 1 an upright mantle *a* of the ordinary form in which the lighting medium is secured to the inside, as indicated in dotted lines at *b*, and in Fig. 2 an inverted mantle *c*, to the inside of which the lighting medium may be secured either as indicated at *d* or *e*, it being understood that in any mantle the lighting medium may be applied at one or more places as may be deemed advisable to insure a certain and quick ignition.

The reasons for the difficulties encountered in securing the pellet to the outside of the mantle apparently have never been entirely explored, and only after a careful consideration of the materials employed in manufacturing mantles and the lighting medium I have come to the following conclusion, which shows the cause of the exceedingly good results obtained in securing the pellet to the inside of the mantle.

As the pellet is secured after the mantle is provided with its coating for preservation, I

first carefully examined this coating and found that it covered the outside of the mantle in a thin but practically continuous layer, thus giving the pellet, which is generally applied in the form of a heavy paste, little chance to effect an intimate connection or engagement with the textile structure of the mantle, and therefore resulting ofttimes in a loosening and falling off of the pellet by the vibration and influence of the rapidly-changing temperatures to which the mantle is submitted. However, this coating is only of the aforesaid nature on the outside of the mantle, while at the inside of same the threads of the textile fabric although saturated with the coating material are not covered, but exposed above or projecting from said coating. Therefore the pellet can effect a much more intimate engagement with these threads, so that a later separation is practically impossible.

It is a well-known fact that the lighting medium is greatly affected by atmospheric influences and also by dust or other foreign substances which may settle on it while the burner is not in operation. I obtain, therefore, an important advantage in placing the pellet on the inside of the mantle, as this practically excludes this factor which heretofore ofttimes was the cause that the lighting was delayed or entirely prevented. I have furthermore discovered that the application of the pellet in the form of a heavy paste is not always suitable to effect the intimate connection between lighting medium and mantle required for a permanent securing of the pellet, and I have found that by first providing the place to which the pellet is to be attached by a somewhat-diluted mixture of the lighting medium that the subsequently-applied paste obtains a much better hold upon the textile structure. It should be also considered that the pellet secured to the inside of the mantle is never lost and in case of an accidental dropping off will either fall upon the wire-netting below or in an inverted mantle will be confined therein. In both instances, however, its lighting capacity will not be impaired, and it will still serve its original purpose.

Having thus described my invention, what I claim is—

1. An incandescent gas-mantle provided with a self-lighting medium applied solely to the inside of the textile structure of the mantle, substantially as described.

2. An incandescent gas-mantle provided with a self-lighting medium entirely within the mantle and in contact with the inside of textile structure of the mantle, substantially as described.

3. An incandescent gas-mantle provided with a self-lighting medium in diluted form applied to the inside of the textile structure of the mantle, and a pellet of a self-lighting medium in the form of a heavy paste applied to said diluted medium within the mantle, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FERDINAND C. VON HEYDEBRAND.

Witnesses:
CURT VON GRUEBER,
GEORGE GUSTY.