

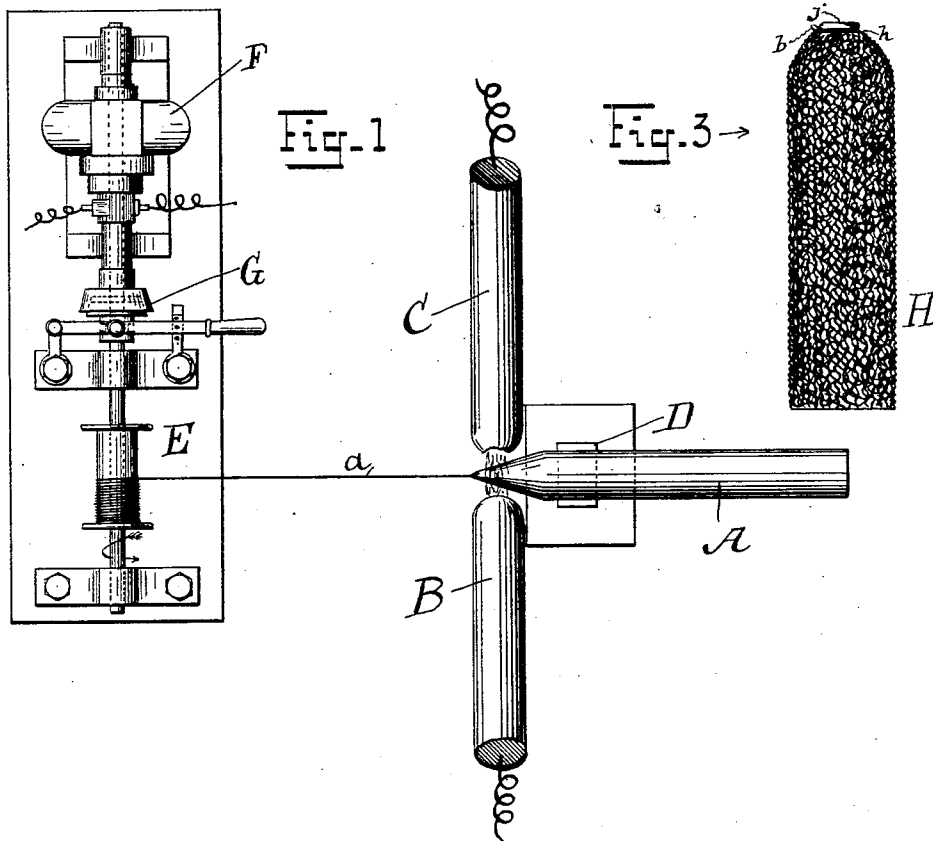
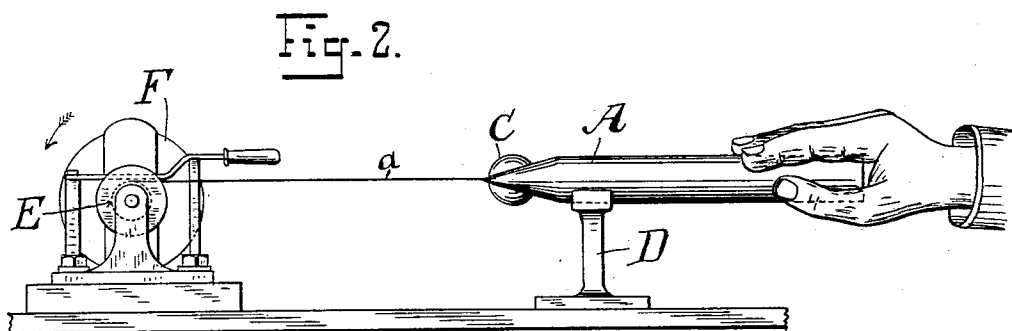
(No Model.)

W. L. VOELKER.

PROCESS OF MAKING FILAMENTS FOR INCANDESCING MANTLES.

No. 588,040.

Patented Aug. 10, 1897.



Witnesses
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UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING FILAMENTS FOR INCANDESCING MANTLES.

SPECIFICATION forming part of Letters Patent No. 588,040, dated August 10, 1897.

Application filed May 19, 1896. Serial No. 592,114. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM L. VOELKER, a citizen of the United States, and a resident of Elizabeth, Union county, State of New Jersey, have invented certain new and useful Improvements in Filaments for Incandescing Mantles and the Process of Making the Same, of which the following is a specification.

This invention relates to improvements in filaments for incandescing mantles and the process of making the same.

In another application which is now pending in the United States Patent Office I have described a process for manufacturing an incandescible material from the more common mineral oxids, such as oxids of magnesium and calcium. The subject of this present application is particularly the process of forming filaments from such incandescible material and more generally from any other incandescible material which is capable of being worked into rods or masses that can be readily melted or fused as a step in the process of drawing the filament.

Until the present time incandescing mantles or hoods of any commercial value have been made, first, by combining the incandescible mineral oxids with some sticky material and then forming filaments by forcing the mass through the fine holes of a die, then winding the still sticky filaments on forms, so that the windings cross each other at about a right angle, and cementing the filaments together at their points of crossing. These mantles resemble bird-cages when finished, and I term them "plastic" hoods or mantles; second, salts of the incandescible metals are oxidized on or in the skeleton structure of a knitted cotton fabric and the carbonaceous material of the fabric burned out, leaving a skeleton mineral framework. This kind of mantles I term "dipped" mantles. All other commercial varieties of mantles come under one or the other of the above kinds and all have to pass through a variety of operations before the finished mantle will give light and endure for a reasonable length of time.

It is well known to all skilled in the art that some of the mineral oxids become incandescent at much lower temperatures than others and that their durability also varies

greatly, so that from these causes the life of the mantles is shortened; also, the experimenters have all fixed on the rarer and more costly mineral oxids as the field of their investigation, and therefore the cost of the mantles is high. I have, however, discovered that the more common and abundant mineral oxids, such as lime, magnesia, and strontia, can be so treated that their light-giving capacity and endurance can be increased to a degree heretofore unknown.

The incandescible mass may be prepared in any known manner, as by mixing the combined oxids of magnesium and calcium (which have been brought together by fusing them at a high temperature) with a suitable viscous binding material, such as a solution of guncotton in oil of cassia. The various steps for producing the combined oxids of magnesium and calcium and working them up with the viscous binding material have been described in detail in United States Letters Patent No. 568,184, dated September 22, 1896. Then having produced the incandescible mass the procedure for forming the filament is as follows, referring for illustration to the accompanying drawings, whereof—

Figure 1 is a plan, and Fig. 2 a side elevation, of an apparatus to aid in operating the process. Fig. 3 is an elevation of a mantle.

Said incandescible mass is preferably formed into pencils resembling in size and shape the carbons of an arc-lamp by running the mass when melted to a fluid condition into suitable molds that are formed of pure magnesia, lime, or carbon. A rod or pencil A of said incandescible material is fused at the end, as by advancing the said rod slowly between the carbons B C (which should be chemically pure) of an electric arc. The pencil A can be fed forward by any suitable mechanical device, such as clockwork-feed similar to that used in feeding the carbons of electric-arc lamps, or by hand, as indicated in the drawings, where D is a standard to support the pencil A. Preferably the pencil A should be fed horizontally, not vertically. When the point of said pencil A is softened by the arc, it is united or welded to the end of a platinum wire, which may be provided with a hook for the purpose. The other end

of the wire is fastened to the reel E, which is then revolved at a high velocity by the electric motor F, thereby drawing out a filament *a* of incandescible material from the pencil A and winding the said filament on the reel E.

In order to control the reel E, a friction-clutch G may be interposed between the motor F and said reel in any usual manner, and the reel may slide on its shaft. The fineness of the filament *a* is governed by the speed of the reel E, and the distance of said reel from the electric arc is sufficient to allow the filament *a* to cool and harden somewhat before it is wound on the reel. Said filament *a* is sufficiently tough to spin several of them together to form the final filament, and this can be knitted into a cylinder or hose on any usual knitting-machine. Pieces of such hose of proper length are cut off, one end drawn together, Fig. 3, and tied around with pieces *b* of the same filament. The tied end forms the top of the mantle H, and, if desired, the neck *h* can be melted into a button *j*, as shown, which will rest on the top of the usual infusible standard. The mantle is then ready for use over a gas-flame.

Now, having described my improvements, I claim as my invention—

1. The process of forming filaments for incandescent gas-lights hereinbefore described, consisting in subjecting a mass of incandescible material to heat to near the point of fusion, and then drawing out the softened mass into a filament. 30

2. The process of forming filaments for incandescing gas-lights hereinbefore described, consisting in subjecting a mass of incandescible material to heat to near the point of fusion, then drawing out the softened mass to threads of extreme fineness, and then spinning several of such threads together into the filament. 35 40

3. A material for mantles of incandescing gas-lights consisting of a filament drawn out of the softened end of a mass of incandescible material and hardened, substantially as described. 45

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 8th day of May, 1896. 50

WILLIAM L. VOELKER.

Witnesses:

BERNARD J. ISECKE,
DAVID WALTER BROWN.