

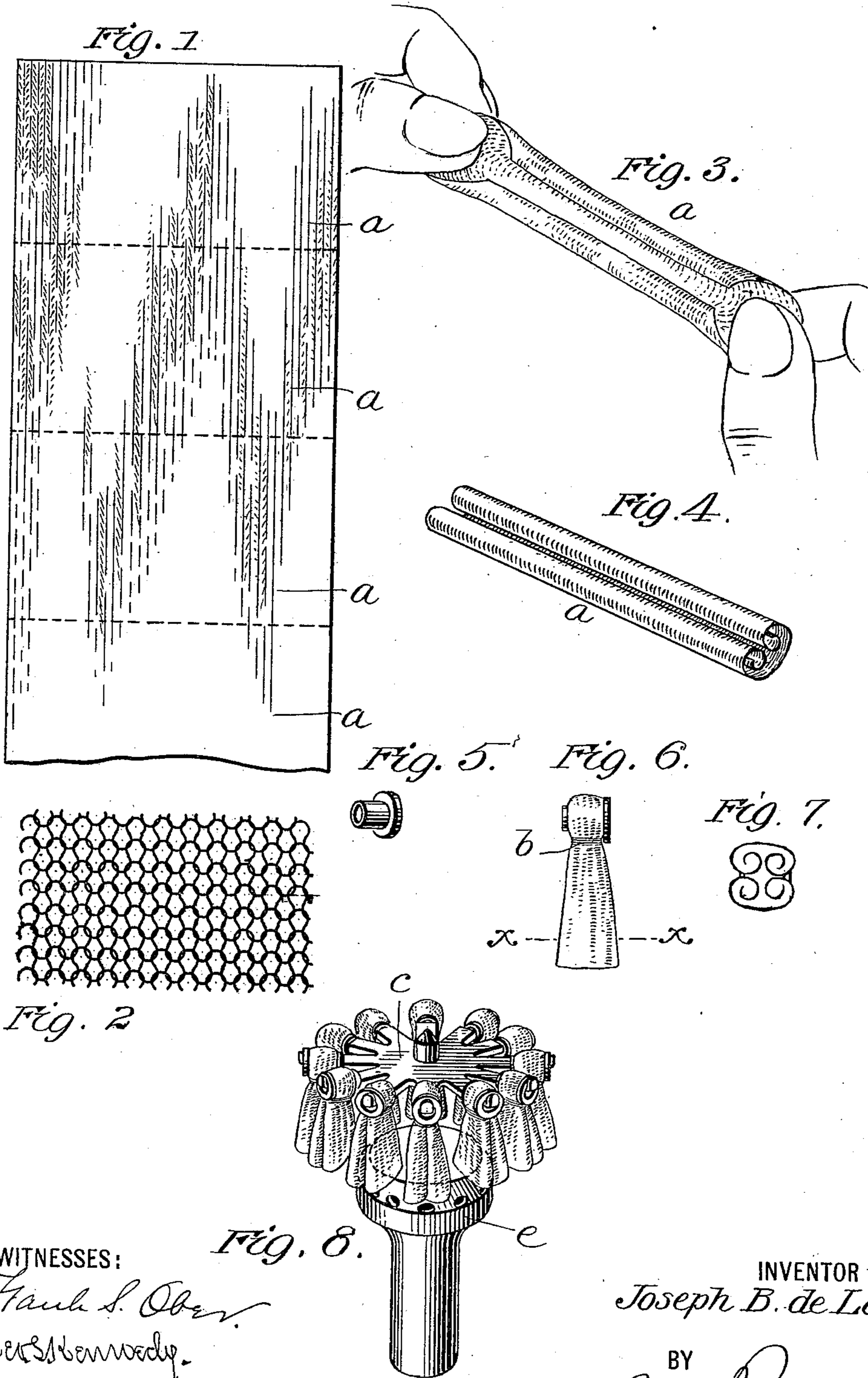
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Patented Mar. 28, 1899.

J. B. DE LÉRY.
INCANDESCENT GAS BURNER.

(Application filed Nov. 2, 1898.)

(No Model.)



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INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 621,927, dated March 28, 1899.

Application filed November 2, 1898. Serial No. 695,321. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH B. DE LÉRY, a citizen of the United States, residing at the city of New York, in the borough of Manhattan and State of New York, have invented certain new and useful Improvements in Incandescent Gas-Burners, of which the following is a full, clear, and exact description.

This invention relates to lighting by incandescence from gas or vapor.

In Letters Patent of the United States No. 597,803, granted to me January 25, 1898, I have described a method of forming the incandescing element of a burner, consisting in folding a rectangular strip of the fabric in such a manner as to produce a bunch of cones adapted to be hung from their joined apexes upon a suitable support, the lower edges being free and open to admit the heat of the gas-flame. The present invention is an improvement on the method of obtaining this plurality of cones in a bunch, whereby the conical form is more pronounced, and, what is more important, the cones once formed will retain their conical shape after the cotton or other vehicle for the incandescing material has been burned out preparatory to the use of the articles for lighting purposes. By my improved method of forming the same general shape is obtained as described in the former patent; but the new method of obtaining this shape results in the advantages stated.

The present invention will be described with reference to the accompanying drawings, in which—

Figure 1 represents a strip of the cotton or other fabric used as a base or vehicle for the incandescing material and from which sections of uniform size are cut to form each group of cones or tassels. Fig. 2 is an illustration, on an enlarged scale, of threads knitted together and illustrating the construction of the strip shown in Fig. 1. Fig. 3 illustrates the first and most important step in the new process of forming the tassel or cone group. Fig. 4 shows the appearance of the material after undergoing the operation illustrated in Fig. 3. Fig. 5 is a view of the spool over which the material is saddled after it has been given the form shown in Fig. 4. Fig. 6 is a side view of the complete tassel attached to the spool. Fig. 7 is a section of

the tassel on line *xx* of Fig. 6. Fig. 8 is a view of the complete burner, showing a number of the tassels in place and merely illustrating one method of using the tassels.

The fabric constituting the base of the incandescing mantle is usually made of cotton threads by the knitting process, and in all knit fabrics the threads, in the form of a series of loops, extend crosswise or transversely of the direction in which the web is fabricated. The appearance of the threads in a knit fabric is shown clearly in Fig. 2. In forming my tassels I prefer to use this knitted fabric, and to this end I obtain the knitted fabric in strips, substantially as shown in Fig. 1. It may be remarked that the strip before being made up into tassels by my process is treated or saturated with the rare earth or other incandescing material. Having obtained the strip, as shown in Fig. 1, it is next cut up into uniform pieces, (indicated by the dotted lines in Fig. 1,) each piece being sufficient to make one tassel. These pieces, which are lettered *a*, are oblong in shape. To form the tassel, one of the pieces *a* is grasped between the thumb and finger at the middle of each end and gently stretched. Since the threads in the fabric run in the direction of the stretching, the tendency of the stretching will be to straighten them out, thus drawing the long sides of the piece inward and curling up the long edges toward each other, forming two parallel tubes which when laid out freely assume the form illustrated in Fig. 4. Next a metal spool similar to that shown in Fig. 5 is placed crosswise of the curled piece at its middle point and the two halves bent around it and secured by a few windings of thread, (indicated by *b*.) This finishes the tassel. Its cross-section on the line *xx* has the appearance of four tubes bunched together. These gradually converge until they join at the point where the winding of thread occurs. A tassel thus formed may be used on any kind of a burner suitable for the purpose; but it is my practice to use it on the burner illustrated in Fig. 8, wherein a star-shaped frame *c* is shown, on each point of which one of the tassels is hung, the spool being slipped over the point, and thus being easily removable at will. Arranged below the frame is an air and gas mixing chamber *e*, having outlets from which

the gas-jets project and by which they are directed against the lower edges of the tassels, the heat thereof raising the tassels to a high state of incandescence. It is to be understood, of course, that the first burning of the tassels (which does not, in fact, occur until they are adjusted to the star-shaped frame) results in burning off the cotton of the fabric and leaving the tassels of incandescing material undisturbed and in a position for immediate illumination. In this connection it is pertinent to observe that in all processes of manufacturing mantles for incandescent lighting it is the practice to burn out the cotton or other material of which the fabric is made at the factory before shipment. This is necessary for various reasons, but particularly because the mantle must be given its conical or hood-like shape while undergoing this process of burning out the cotton. The shaping operation consists in "forming" or working upon the mantle while the cotton is being burned out. After this burning and shaping the mantle must be dipped into collodion or other similar material to give it sufficient stability to withstand the shocks it is likely to be subjected to in transportation. All this process of shaping and subsequent treating with collodion is avoided by using my improved tassels constructed in the manner herein described. An essential feature necessary to obtain a high state of incandescence and even heat of the surface of the incandescing body is the conical or tubular shape, and by the act of stretching the material, as described, the threads are "set" and the material, which is thereby formed into the shape of tubes, retains its shape even against the warping action of the heat when the cotton base is burned out. The other advantage arising from this stretching process is the simplicity and speed imparted to the manufacture, whereas in the old process, described in the patent referred to, it is necessary to fold first one side and then the other and then hold the folds in position while the fabric is being bent over the spool. In the present instance the mere act of pulling the ends of the fabric curls the two sides together at once, where they will remain indefinitely without being held.

I do not wish to limit my invention to the use of a knitted fabric, since it is quite probable that a woven, crocheted, or other simi-

lar stitch may be made to serve the purpose. My invention therefore embraces the use of any material that will curl up at its edges when stretched. A knitted fabric will not curl when stretched in a direction perpendicular to its threads; but a fabric constructed in some other way might curl when so stretched. Hence I do not limit myself to the stretching of a piece of material either in the direction of its length or in the direction of its threads.

Again, since it is possible to curl one edge of the piece of fabric over until it meets the other by simply stretching said other edge my invention is not limited to the grasping of the piece of material at the middle of its ends. The tassel produced by stretching the pieces along one edge will consist of only two tubes or cones, which will serve satisfactorily.

It is also pointed out that the stretching operation is not necessarily a manual one, since a machine could be easily devised for performing it.

Having described my invention, I claim—

1. The method of making incandescing elements for gas-burners, consisting in first impregnating the threads of the fabric of which the element is composed with the rare earth or other incandescing material, then giving the fabric a definite shape and then stretching it to "set" its threads and curl its edges into tubes, substantially as described.

2. The method of making incandescing elements for gas-burners, consisting in first impregnating the threads of a knitted fabric of which the element is composed, with the rare earth or other incandescing material, then giving the fabric a definite shape and then stretching it in the direction of its threads to "set" the threads and curl the edges of the fabric into tubes, substantially as described.

3. The method of making incandescing elements for gas-burners, consisting in first impregnating the threads of the fabric of which the element is composed, with the rare earth or other incandescing material, then putting the threads of the fabric under tension and finally burning the fabric to remove the threads, substantially as described.

In witness whereof I subscribe my signature in presence of two witnesses.

JOSEPH B. DE LÉRY.

Witnesses:

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