C. K. HARDING.

INVERTED INCANDESCENT MANTLE.

APPLICATION FILED JAN. 21, 1910.

960,638.

Patented June 7, 1910.

Fig. 1

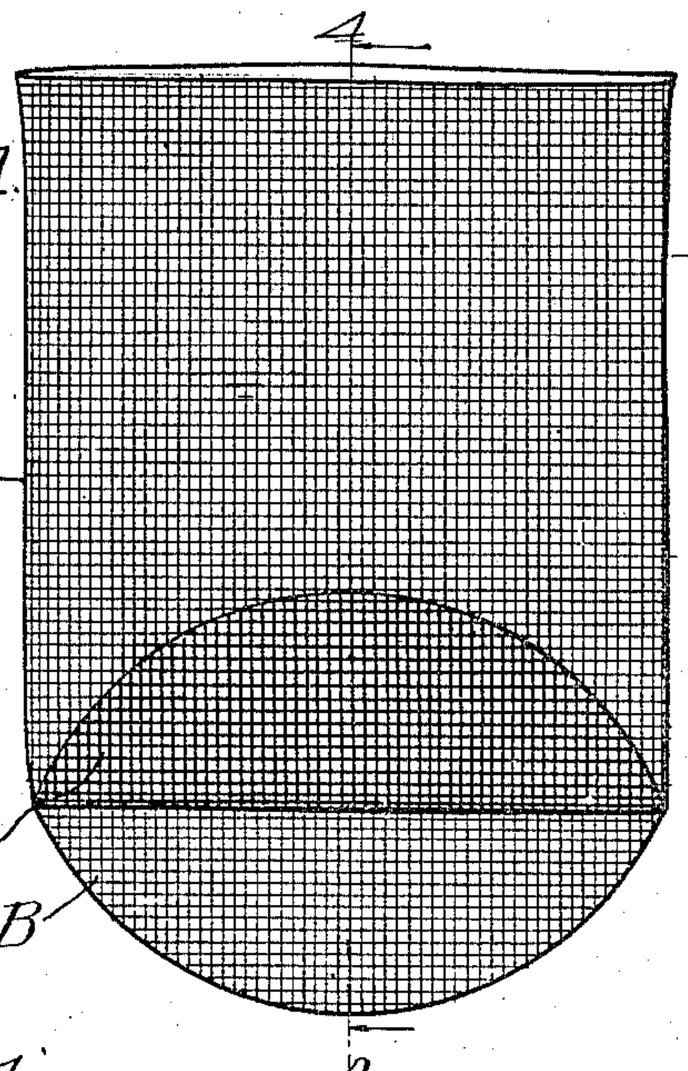


Fig. 3

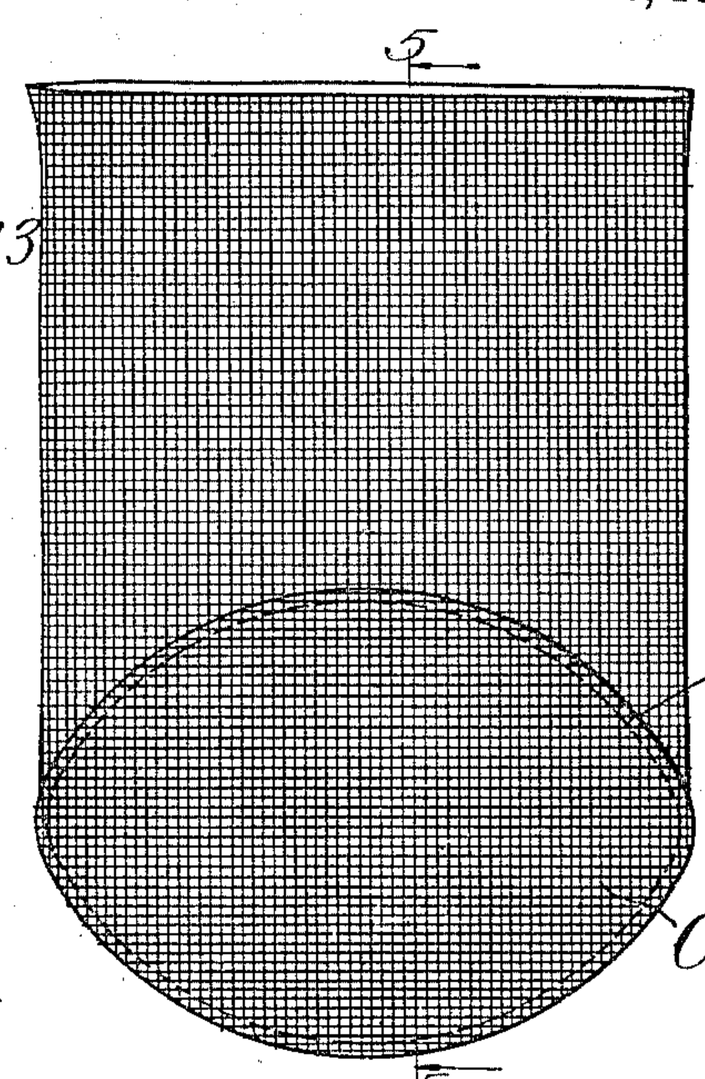


Fig. 2

Fig. 6

Fig. 4

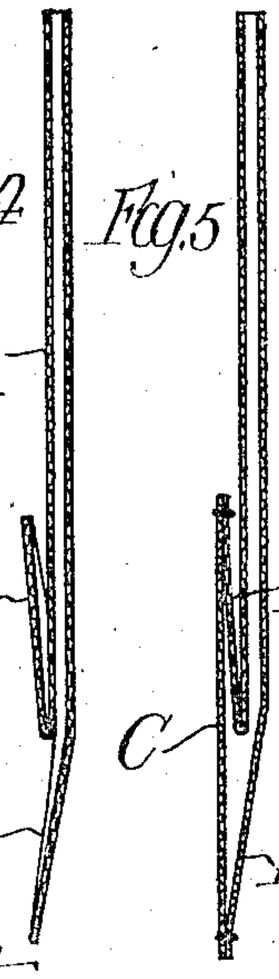


Fig. 5

Fig. 8

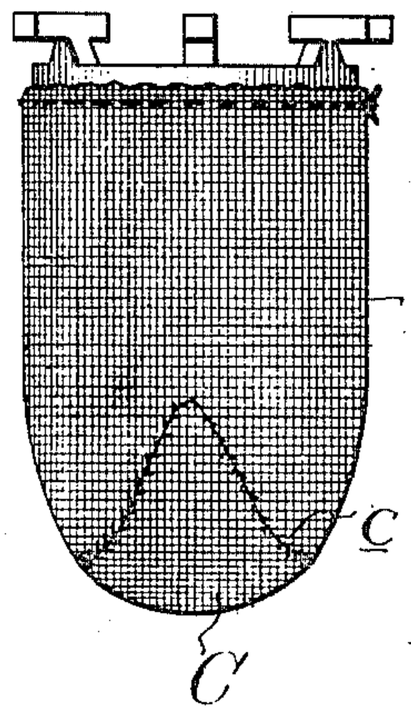
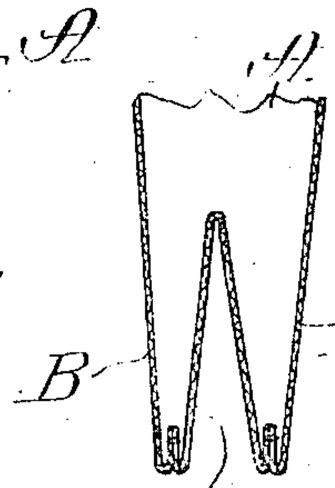


Fig. 7



Witnesses:

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CHARLES KNOX HARDING, OF CHICAGO, ILLINOIS.

INVERTED INCANDESCENT MANTLE.

960,638. Specification of Letters Patent. Patented June 7, 1910.

Application filed January 21, 1910. Serial No. 539,383.

To all whom it may concern:

Be it known that I, CHARLES KNOX HARDING, a citizen of the United States, and a resident of Woodlawn, city of Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Inverted Incandescent Mantles, of which the following is a specification.

The invention relates generally to incandescent structures for lighting made by what is generally known as the Welsbach process, which consists of impregnating a knitted fabric of cotton with solutions of the refractory earths which are to constitute the finished mantle. The dimensions of this impregnated fabric are usually more than 100 per cent. greater than that of the finished product after the cellulose and other volatile matter has been burned out. But this large structure is fashioned and formed approximately to such shape as will produce the desired form of the finished mantle after it has been shrunken.

My invention relates particularly to an improved construction of inverted mantles which have a cylindrical body portion and a semispherical closed end portion which is usually the lower end, and an open end through which the flame is applied. Prior to my invention, inverted mantles have generally been made from tubular knitted fabric and the closed end most commonly formed by the methods known as gathering and goring. In the former case the lower end is formed by gathering the lower edge of the tube and drawing it to the center. This resulted in a thickening or bunching of the goods at and around the center of the lower portion of the mantle. This is objectionable considering that the central zone of the lower portion of an inverted mantle is a particularly valuable area and should not be prevented from reaching its highest efficiency by any obstructions or thickening at that point. To obviate this, especially for heavier mantles made of coarser thread, goring has been employed; that is, from two to six curved seams have been sewn through two adjacent layers of fabric from a point above the bottom where the diameter was to be retained to a point in the central axis at the bottom. These gores permit a quantity of the stock to be cut out, but the seams themselves interfere with the incandescence at the central point, which is the most abundantly supplied with gas from its most favorable location in the center of the flame.

Among the objects of my invention is to produce an inverted mantle of more symmetrical shape and having a large area around the central section of its lower portion consisting of a uniform thickness of fabric without seams whereby this most useful portion of an inverted mantle can be uniformly and entirely raised to the highest incandescence.

To attain this and other ends I employ the features of construction, the arrangement and configuration of the several parts, as will appear hereinafter more fully described and claimed and shown in the accompanying drawings, which illustrate forms of mantles embodying my invention and in which—

Figure 1 shows a front elevation of a short length of tubular fabric severed on a curved line and forming the segment shaped projections B—B depending at its lower end. Fig. 2 is a plan view illustrating a double segment shaped piece of single thickness fabric which is to form a considerable part of the semispherical end portion of the completed mantle. Fig. 3 shows the upper tubular portion A— and the single thickness section C, united at its edges with the lower depending edges of the tubular fabric A, by a seam *c*. Fig. 4 is a section taken on line 4—4 of Fig. 1. Fig. 5 is a section taken on line 5—5 of Fig. 3. Fig. 6 is a perspective view of a finished fabric mantle, made in accordance with my invention and folded in a way that may be employed where it is intended to be placed in a flat envelop for the market. Fig. 7 is a section taken on line 7—7 of Fig. 6. Fig. 8 shows a side elevation of a finished burned off mantle attached to a carrying ring and indicates one view of the portion formed from the section C and illustrates the position of the seam *c*.

I do not wish to confine my invention to the precise shapes or relative size of what I have shown in the drawings.

The section referred to as the double segment shaped section may closely approximate the outline of an ellipse and in general a variety of oval shapes might be employed and referred to as ovals or ellipses, but it is necessary to produce the best results in the finished mantle as well as to facilitate their manufacture to have the respective edges which are to be united by the seam of as

nearly the same length and configuration as possible.

As illustrated in the drawings, the segment shaped projections B—B, left attached to the tubular portion, correspond in size, shape and linear dimensions of its curved edge to one of the segment shaped halves of the section C. In this precise construction the section C would constitute a portion of the semispherical closed end of the mantle approximating a quarter of a sphere, but to make proper allowance for the difference in the amount of shrinkage of knitted fabrics in a lineal and transverse direction, the shape of the section C—as well as the configuration of the depending segments B—B—may be varied in such a way that the three when seamed together, will constitute an approximately semispherical bottom portion in the finished burned out mantle, while in the fabric mantle it may be desirable to provide somewhat greater lineal dimensions in the direction of the greatest shrinkage.

Having now described one embodiment of my invention, what I claim is:

1. An inverted fabric mantle consisting of an open topped body portion of tubular fabric having two segment shaped projections from its lower end, said mantle having a semispherical closed bottom portion consisting of a double segment shaped section of fabric united to the aforesaid segment shaped projections by a seam extending around the circumference of the double segment shaped section.

2. An inverted mantle having its upper cylindrical body portion constructed of a tubular fabric having two curved segments depending from its lower end and a double segment shaped section of a single thickness of fabric having its circumference attached to the two curved edges of the depending segments whereby a semispherical shaped closed lower end of the mantle is formed by said double segment shaped section and said two depending segments.

3. An inverted mantle consisting of an open topped body portion of tubular knitted fabric and having two segment shaped projections from its lower end, said lower end being closed by a double segment shaped section of a single thickness of mantle fabric having its circumference attached to the lower end of said body portion by a seam whereby said seam does not interfere with the lower central portion of the semispherical closed end.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 18th day of January, 1910.

CHARLES KNOX HARDING.

Witnesses:

NANETTA L. MCCALL,

LEONORE FRANKENSTEIN.