

No. 606,719.

Patented July 5, 1898.

H. HILL.

THREAD FOUNDATION FOR INCANDESCENT MANTLES.

(Application filed Jan. 28, 1897.)

(No Model.)

Fig. 1.

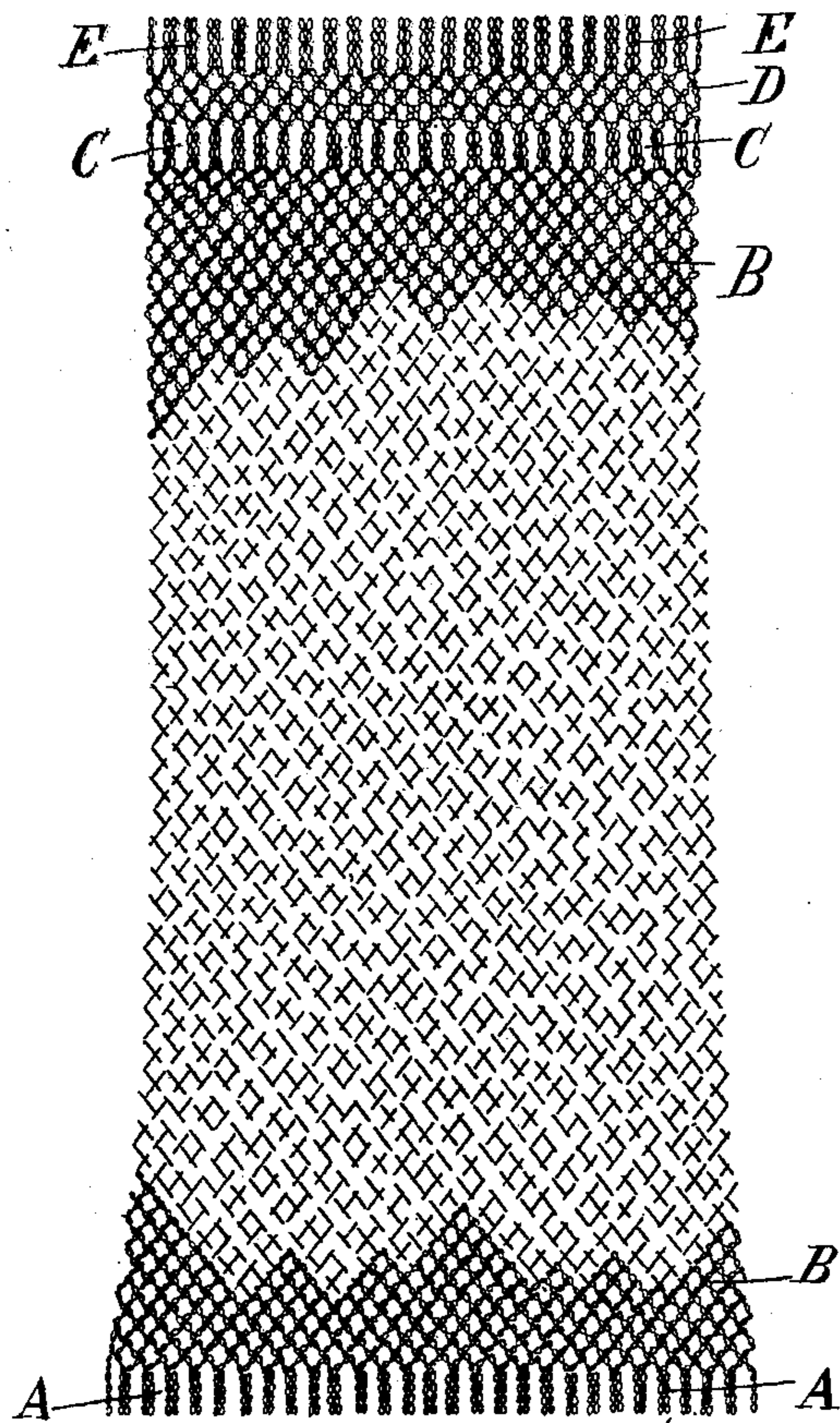
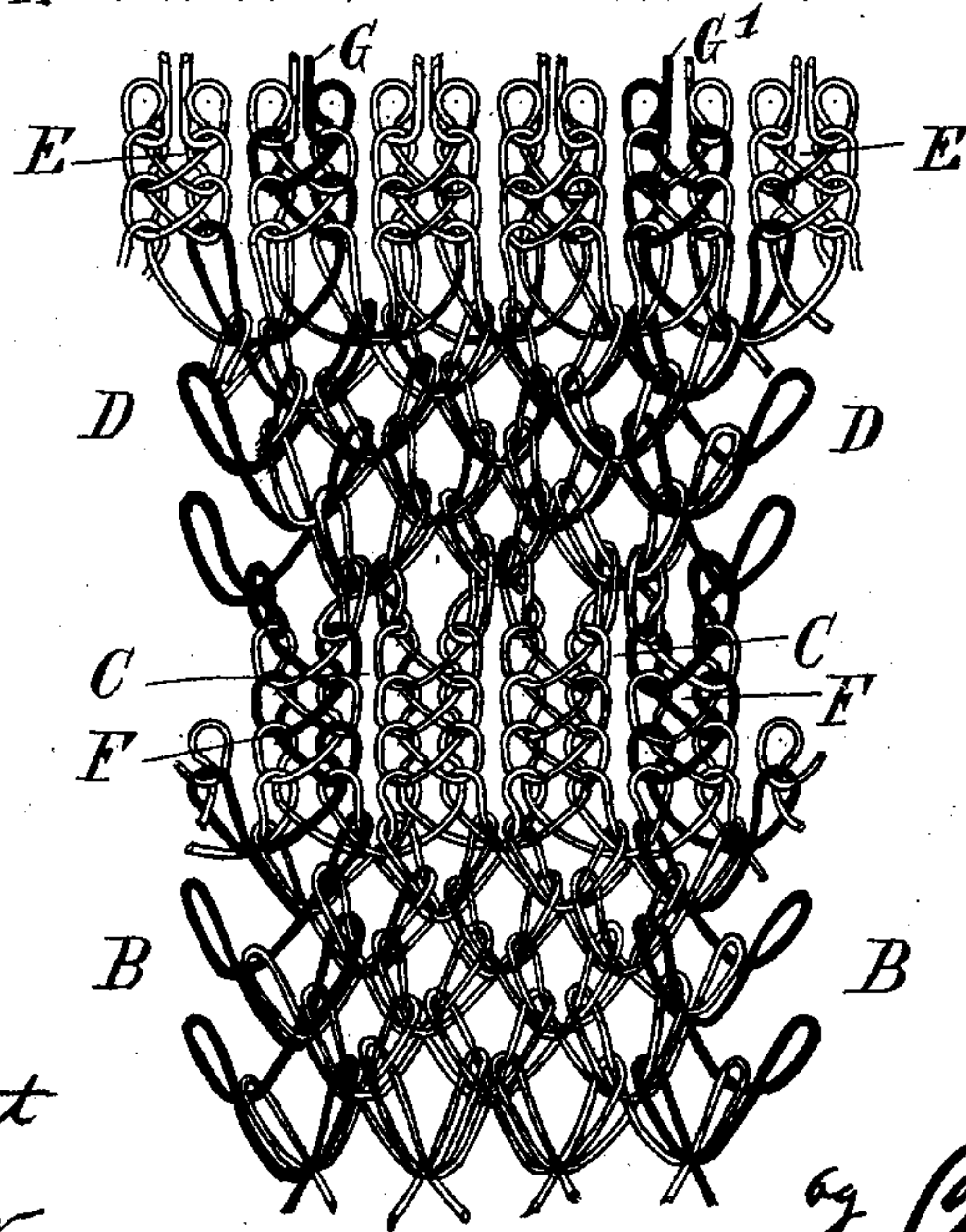


Fig. 2.



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UNITED STATES PATENT OFFICE.

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THREAD FOUNDATION FOR INCANDESCENT MANTLES.

SPECIFICATION forming part of Letters Patent No. 606,719, dated July 5, 1898.

Application filed January 28, 1897. Serial No. 621,101. (No model.) Patented in Austria December 16, 1896, No. 46/5,022.

To all whom it may concern:

Be it known that I, HENRY HILL, a subject of the Queen of England, residing at Nottingham, England, have invented certain new and useful Improvements in the Manufacture of Thread Foundations or Caps for Incandescent Mantles, (for which I have obtained Letters Patent in Austria, No. 46/5,022, granted December 16, 1896,) of which the following is a specification.

This invention relates to improvements in the manufacture of cotton or other thread foundations or caps employed in the manufacture of incandescent mantles; and it has for its object the production of a thread foundation or cap that will be both easier of manipulation and less liable to injury in the process through which it is subsequently passed and also produce improved and more durable and effective mantles than those produced from foundations such as are now employed.

Heretofore such thread foundations or caps have been principally formed from tubular knitted fabrics, in which the whole of the loops in each course are formed by one continuous thread; but owing to the great elasticity of such fabrics and the excessive liability of the thread to become unlooped they are very difficult to manipulate and excessively fragile when finished as mantles. By the process of manufacture hereinafter described I am enabled to change the mesh at any point in the length of a foundation, and thus strengthen or stiffen it at any required point. I am also enabled to form the holes to receive the draw or suspensory threads in the process of manufacture. I can also make the foundation conoidal, so that they will assume and retain the proper form required to give the best illuminating results.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a view of a seamless tubular foundation as it is manufactured according to my invention. Fig. 2 is an enlarged view of part of the upper portion of a foundation, showing the disposition of or path of each thread in each of its different structural features.

The seamless tubular foundation or cap shown at Fig. 1 is manufactured of what is known as "warp-lace fabric" and formed with a suitable mesh or net. This fabric is produced by what is known as a "warp-lace machine," such as shown and described in my application filed December 31, 1897, Serial No. 664,586, which consists, essentially, of a needle-bar and a pillar or guide bar or bars. The needles are similar to those used in hosiery-machines, while the pillar-bar consists of a number of thread-guides, each adapted to supply its thread to a single needle each course. The fabric is produced from a warp consisting of a suitable number of threads without the aid of weft or other threads. Each of the said threads comprising the warp is knitted or formed into a loop at each course by a needle, and this loop is drawn through the loop previously formed on the same needle or one to the right or left of it.

By altering the traverse of the pillar or guide bars—that is, the direction in which they are moved—and the frequency of the movement different meshes or nets are produced, and I am thus enabled to produce a foundation with a suitable mesh and also strengthen it or alter the character of it, where required, by changing the mesh at the parts where more or less strength is required.

During the manufacture of each length of fabric suitable for a mantle the tension on the threads may also be varied, so that each foundation may be of a conoidal form, having the upper part of smaller diameter and stiffer character than the lower part. This does not necessarily involve a structural change; but the loops are made shorter, and the diameter of the foundation is thus reduced.

In order to produce a tubular seamless foundation, I manufacture a number of lengths of fabric on a straight-bar warp-lace machine with two needle-bars and two sets of pillar or guide bars or on a circular warp-lace machine. In the former case one side or half of the fabric is formed by one needle-bar and the other side or half by the other needle-bar and the edges of the two parts or halves connected by a thread or threads, which are alternately lapped on the side needles of both bars. In a circular machine the needles and the thread-

guides, which perform the same office as pillar-bars in the straight machines, are arranged in a circle of the required diameter, and the requisite movements are imparted to both the needles and the thread-guides to produce the fabric.

In manufacturing a foundation I preferably commence at the bottom (see Fig. 1) and make a few courses of single or double needle pillaring, so as to lessen any risk of the threads unraveling. I then proceed with the net or mesh B, which is to form the body of the foundation, until this is of sufficient length, and I may stiffen the work as it proceeds in order to reduce the diameter of the fabric, as previously described. When the foundation is of sufficient length, I form holes C to receive the draw-threads, and then after working a few courses of plain parts D, I return to single or double pillarings to finish off the top of the foundation. After working several courses of single or double pillaring I commence the lower end of another foundation and repeat the process for as many lengths as may be desired, the fabric being afterward divided at the required points into separate lengths each for a foundation. If desired, the points of division may be indicated by a slack course.

What is referred to as "single pillaring" is when each thread is formed into a chain similar to an ordinary chain or tambour stitch.

What is termed "double pillaring" is when two contiguous threads are each worked into a chain and the one incorporated with the other, as shown at E in Fig. 2.

The holes C for the suspensory threads may also be formed by making a few courses of double pillarings F, as shown.

It will be understood that the mesh of the plain part D may be varied to a considerable extent from that shown, although the dispo-

sition of the threads will always be of the nature shown in Fig. 2.

The course the threads take is best shown by the threads G G', the thread G representing the course of one half of the threads and G' the course of the other half. The mesh may be altered by traversing the said thread more or less to the right or left and altering the frequency of such movements.

Foundations, caps, or skeletons manufactured in the manner described will not readily unravel, and they are thus more easily manipulated and better adapted for the purpose to which they are to be applied than those manufactured heretofore.

By the process of manufacture the mesh in the body of the foundation may also be specially formed to give the best results, while the top and bottom may be strengthened to give additional support required at those parts.

Having thus described my invention, what I claim is—

1. A thread foundation for an incandescent mantle formed of warp-lace fabric without a seam and of parallel or conoidal form with pillarings A and E at its ends substantially as described.

2. A thread foundation for an incandescent mantle formed of warp-lace fabric without a seam and of parallel or conoidal form with pillarings A and E at its ends and with holes C for the reception of the draw or suspensory threads substantially as described.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

HENRY HILL.

Witnesses:

HAROLD WADE,
HARRY S. BRIDGE.