

No. 708,812.

Patented Sept. 9, 1902.

O. KAUFMANN.

MANTLE FOR INCANDESCENT GAS LAMPS.

(Application filed Jan. 4, 1902.)

(No Model.)

Fig. 1.

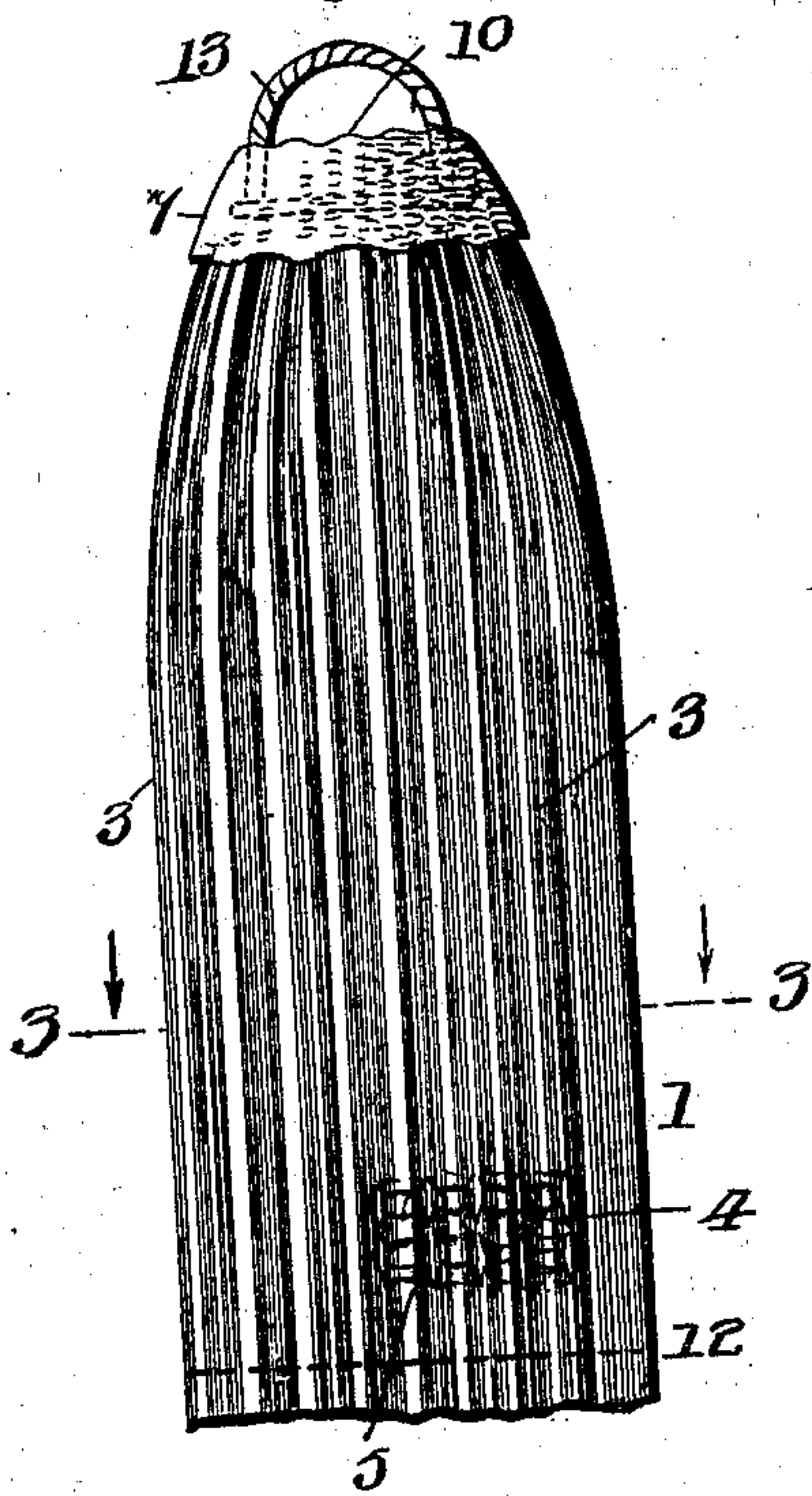


Fig. 2.

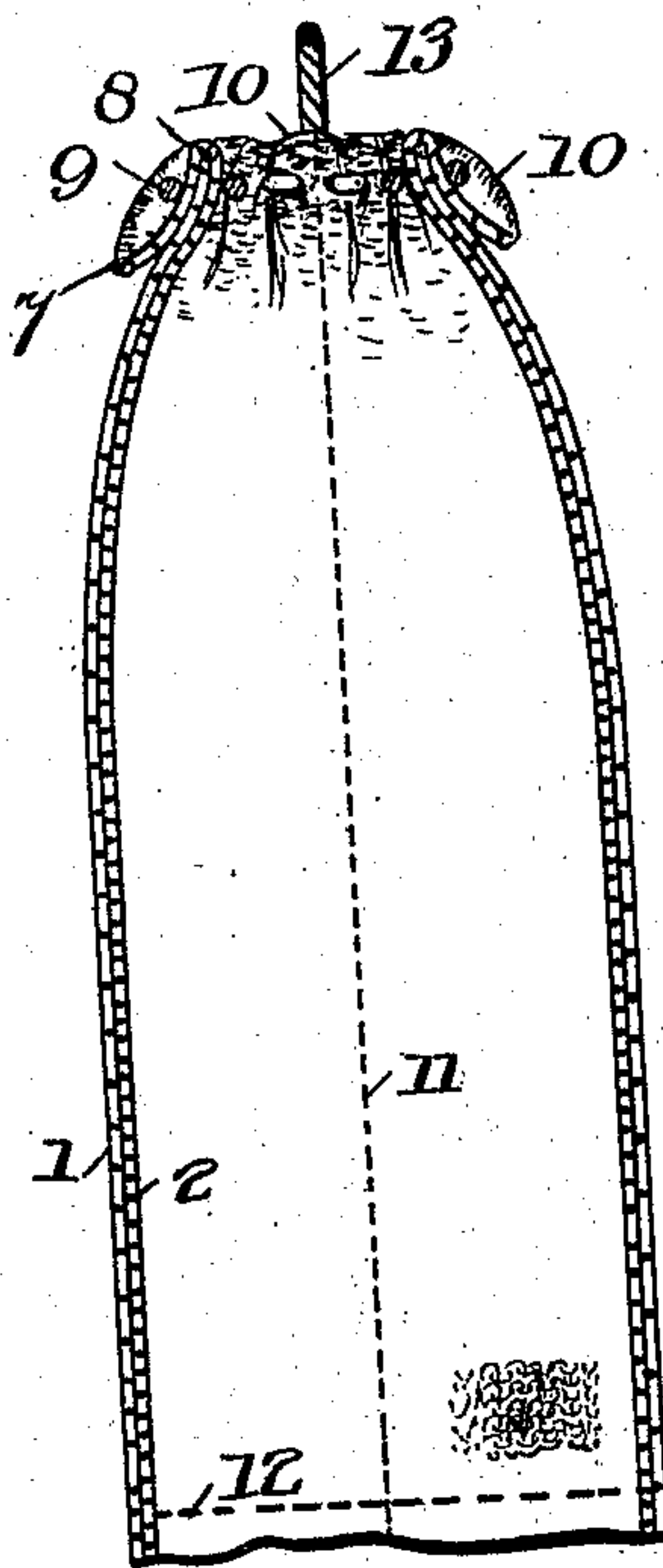


Fig. 3.

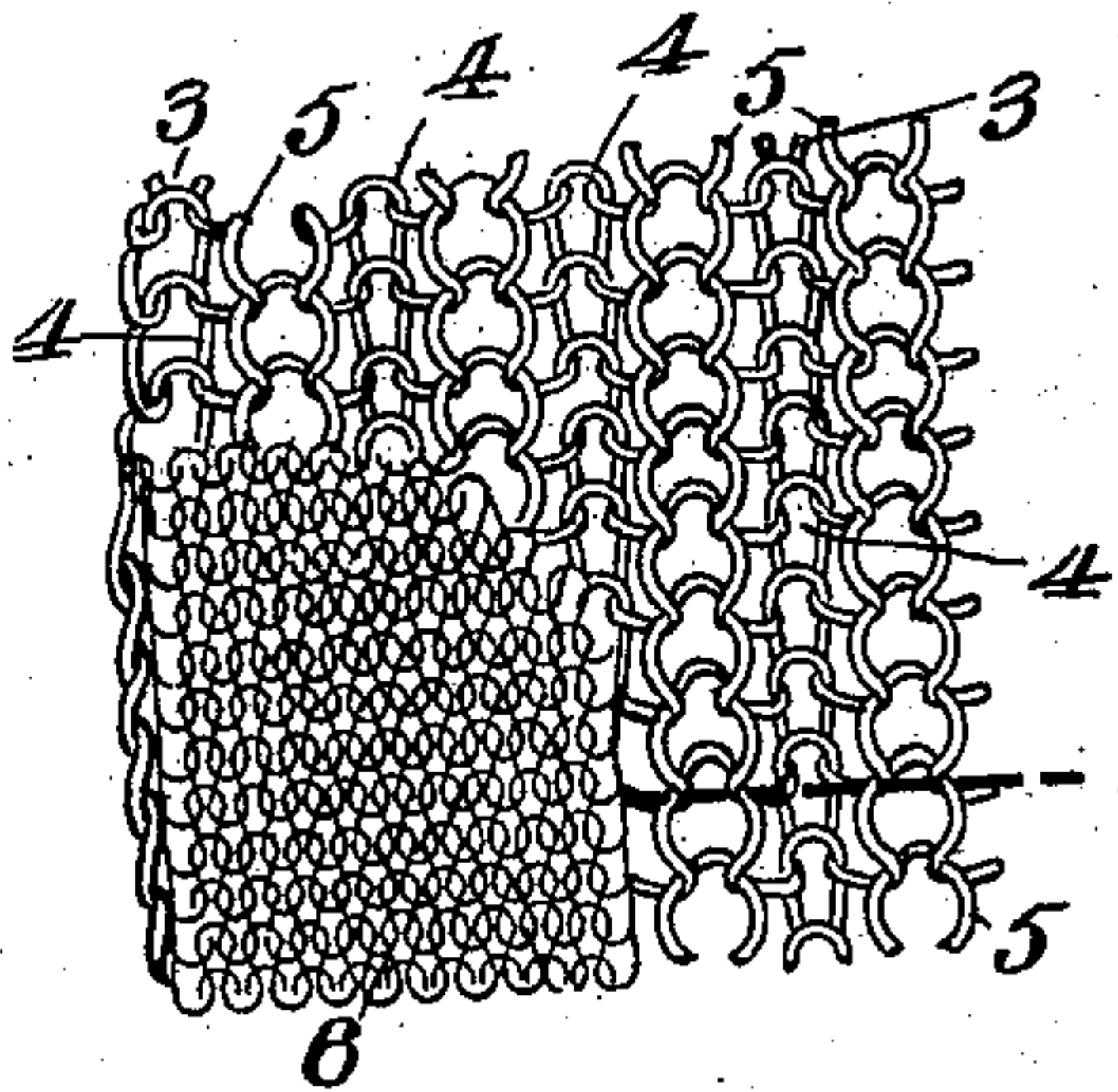
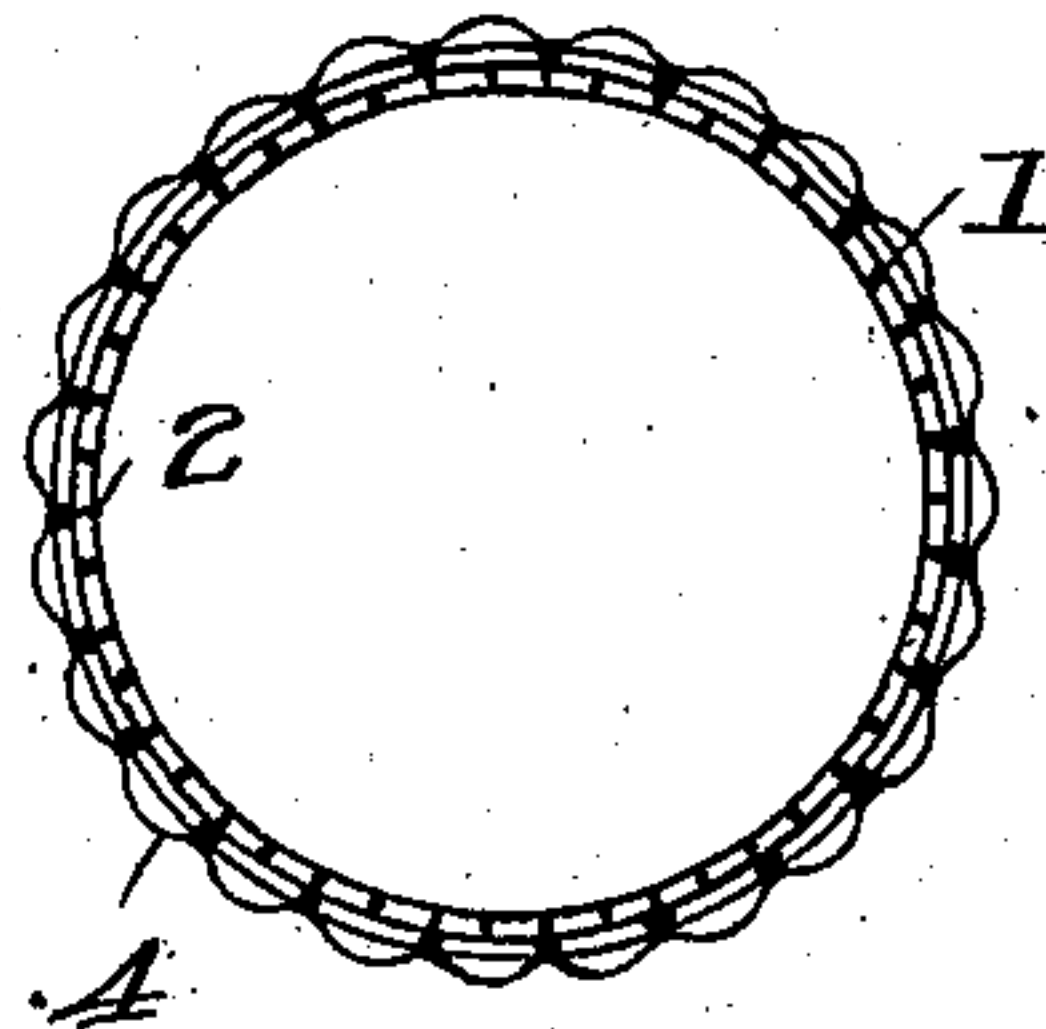


Fig. 4.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## MANTLE FOR INCANDESCENT GAS-LAMPS.

SPECIFICATION forming part of Letters Patent No. 708,812, dated September 9, 1902.

Application filed January 4, 1902. Serial No. 88,424. (No model.)

*To all whom it may concern:*

Be it known that I, OTTO KAUFMANN, a citizen of the United States, and a resident of Elmhurst, city of New York, borough of Queens, State of New York, (whose post-office address is Third street and Vietor Place, in said Elmhurst,) have invented certain new and useful Improvements in Mantles for Incandescent Gas-Lamps, of which the following is a specification.

My invention has for its object to produce a mantle by means of which increased strength and stability may be obtained to resist the very powerful pressure of gas or gas and air present in incandescent gas-lamps now in use without sacrificing any of the desirable characteristics of the mantle and at the same time to increase its volume of light, economize in gas used, and to considerably increase its life.

My invention therefore resides in the construction and combination of parts hereinafter described, and further pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a front view of the complete mantle made in accordance with my invention. Fig. 2 is a central sectional elevation thereof. Fig. 3 is a transverse section on the line 3 3, Fig. 1; and Fig. 4 is an enlarged view of a portion of the inner and outer hoods, showing the character of the fabric of which the separate hoods are composed.

The embodiment of my invention herein illustrated is constructed as follows:

At 1 is a hood which I term the "outer" hood and 2 the "inner" hood. Each of the hoods may be prepared for final use in the manner well known in the art, (except as hereinafter described and claimed,) which consists substantially in providing a knitted fabric and shaping it to substantially approximate that of the completed mantle and which is then dipped into or impregnated by the desired solution of infusorial earth or other desired material—that is to say, both the inner and outer hoods in my invention are or may be made and completed in the usual or well-known manner. However, in order to obtain the maximum of resistance to gas-pressure

and at the same time secure lightness and economy of construction I prefer that one of the hoods be made of a lighter or looser or more expansive or resilient structure than the other, and the lighter or more expansible hood may form the outer or the inner hood, as desired, although I prefer to employ it as the inner hood.

In preparing the mantle in accordance with the preferred form of my invention I produce by the process of knitting, preferably, a hood, as 1, in which the fabric is composed of longitudinal ribs 3, comprising loops 4 of more tightly drawn or double-looped threads and intermediate courses of single or more loosely drawn threads 5, and which when knitted in the cylindrical or slightly conical form which may be given to it produces a hood of marked strength porous enough to permit of the passage of the gas therefrom and sufficiently dense for the purpose of illumination. I produce also another hood 2 by the process of knitting or in any other desired way in which the threads may be uniformly disposed in single and comparatively loosely-drawn loops, as indicated at 6. This hood is more expansible and elastic than the other more heavily-constructed hood. When the hoods are formed, I turn the upper edge of one or both of said hoods over, the edge of one of said hoods being shown overlapped in Fig. 2, so that one will overlap the other after having inserted one hood within the other, as hereinafter described. In knitting or otherwise producing the hood I prefer that they be made of such a size that they will closely fit one within the other and that the outer surface of the inner hood be either in actual or substantial contact or in close proximity to the inner surface of the outer hood; but since the material of which the hoods are made especially after impregnation and the usual subsequent treatment, which may cause a shrinkage unequally of one over the other, there may be a more or less marked separation of one from the other, so I do not want to have it understood that my invention is limited to a construction in which both hoods are always in actual physical contact with each other at all



parts of their juxtaposed surfaces. I have determined by actual experiment and use that better results are obtained by employing the hood of lighter knitting or web as the interior one, since it is more readily expansible when under the influence of strong pressures and by giving thereto tends to break up or absorb the pressure before the same is brought materially to bear upon the outer hood, which being of a stronger or less elastic fabric, although giving somewhat to the pressure, tends to restrain the expansion of the inner hood to the point where, owing to its fragile nature, it would break. On the other hand, the lighter-webbed hood may be employed as the exterior hood, in which case the heavier hood will break up the pressure and preserve the lighter hood. The two hoods, while acting individually and coöperating conjointly, as before described, materially increases the volume of light given off by presenting a greater mass of refractory material to the incandescing action of the gas, while the weight and thickness are not materially increased, thereby securing advantageous results without materially adding to the cost of the resultant mantle. This construction further enables the mantle to be handled in storage or shipment or use without the usual breakage.

As an additional feature of the method of constructing my improved mantle, although not essential thereto, I prefer that before impregnating the hoods and after one is inserted within the other and their upper edges drawn down and overlapped to secure the same together in one or more of the several ways illustrated herein, in which the edge of the inner hood is lapped over, as at 7, the edge of the outer hood. The upper overlap 7 and the edge 8 of the hoods are drawn together by the threads 9, which may pass through both hoods, thereby drawing the overlapping end of the outer hood into folds 10, tightly encompassing the upper edge of the outer hood. Also one or more threads or stitching may be longitudinally employed, as at 11, Fig. 2, to hold the hood together longitudinally, and a further transverse line of stitching may be employed, as at 12, to hold the hoods together near their lower ends or edges. All of these threads are impregnated preferably simultaneously with the impregnation of the twoply mantle. The suspending-thread 13 may be applied in any desired manner. The stitching 11 12 not only prevents movement of one hood relatively to the other, but substantially unites both hoods into substantially one component mass, comprising a layer of light or loosely-knitted or elastic fabric and another layer of more densely or tightly knitted fabric, thereby practically producing a mantle in which these characteristics of construction are present substantially united into a homogeneous mass.

Having described my invention, I claim—

1. A mantle for incandescent gas-lamps, comprising a plurality of hoods joined together and inserted one within the other, said hoods being composed one of finely-knitted fabric treated with a mineral and refractory substance, the other of more coarsely-knitted fabric likewise treated, as and for the purposes set forth.
2. An article of manufacture comprising a plurality of hoods joined together and inserted one within the other, the exterior hood comprising a relatively coarse and heavy knit fabric, and the interior hood a finely and loosely knit fabric, and a thread passing through folds formed in the upper ends of said hoods securing the same together.
3. An article of the class described, comprising a plurality of hoods inserted one within the other, the edge of the outer hood being overlapped upon the upper edge of the inner hood, and a thread passing through said overlapped portion and the upper edge of the inner hood, securing said hoods together.
4. An article of the class described, comprising a plurality of hoods one inserted within the other, one of said hoods comprising a knitted fabric having rows of thickened ribs and intervening rows of larger loops, the other hood being composed of a knitted fabric comprising smaller loops of thinner thread.
5. An article of the class described, comprising a plurality of hoods inserted one within the other, one of their upper edges overlapping the other, and both edges being drawn together by a securing-thread passing through both mantles.
6. An article of the class described, comprising a plurality of hoods inserted one within the other, the upper edge of the inner hood being lapped over the upper edge of the outer hood, both hoods being secured together by passing a thread through said overlap of the outer hood.
7. An article of the class described, comprising a plurality of hoods inserted one within the other, the upper edge of the interior hood overlapping the upper edge of the exterior hood, and securing-thread passed through folds or crimps in said upper edges by drawing said thread tightly.
8. An article of the class described, comprising a plurality of hoods inserted one within the other, and secured at their upper edges, and additional means for securing the hoods together in the direction of their length.
9. An article of the class described, comprising a plurality of hoods inserted one within the other and secured together at their upper edges, and a thread running longitudinally of the hood and securing them together.
10. An article of the class described, comprising a plurality of hoods inserted one within the other, and secured together at their upper edges, means for securing said hoods together in the direction of their length, and means

for securing them together adjacent their lower edges.

11. An article of the class described, comprising a plurality of hoods inserted one within the other, and secured together at their upper edges, means for securing said hoods together in the direction of their length, and a thread disposed concentrically with the hoods adja-

cent their lower edges and securing the hoods together.

Signed at the city, county, and State of New York this 2d day of January, 1902.

OTTO KAUFMANN.

Witnesses:

CHAS. G. HENSLEY,  
SOPHIE SEKOSKY.