

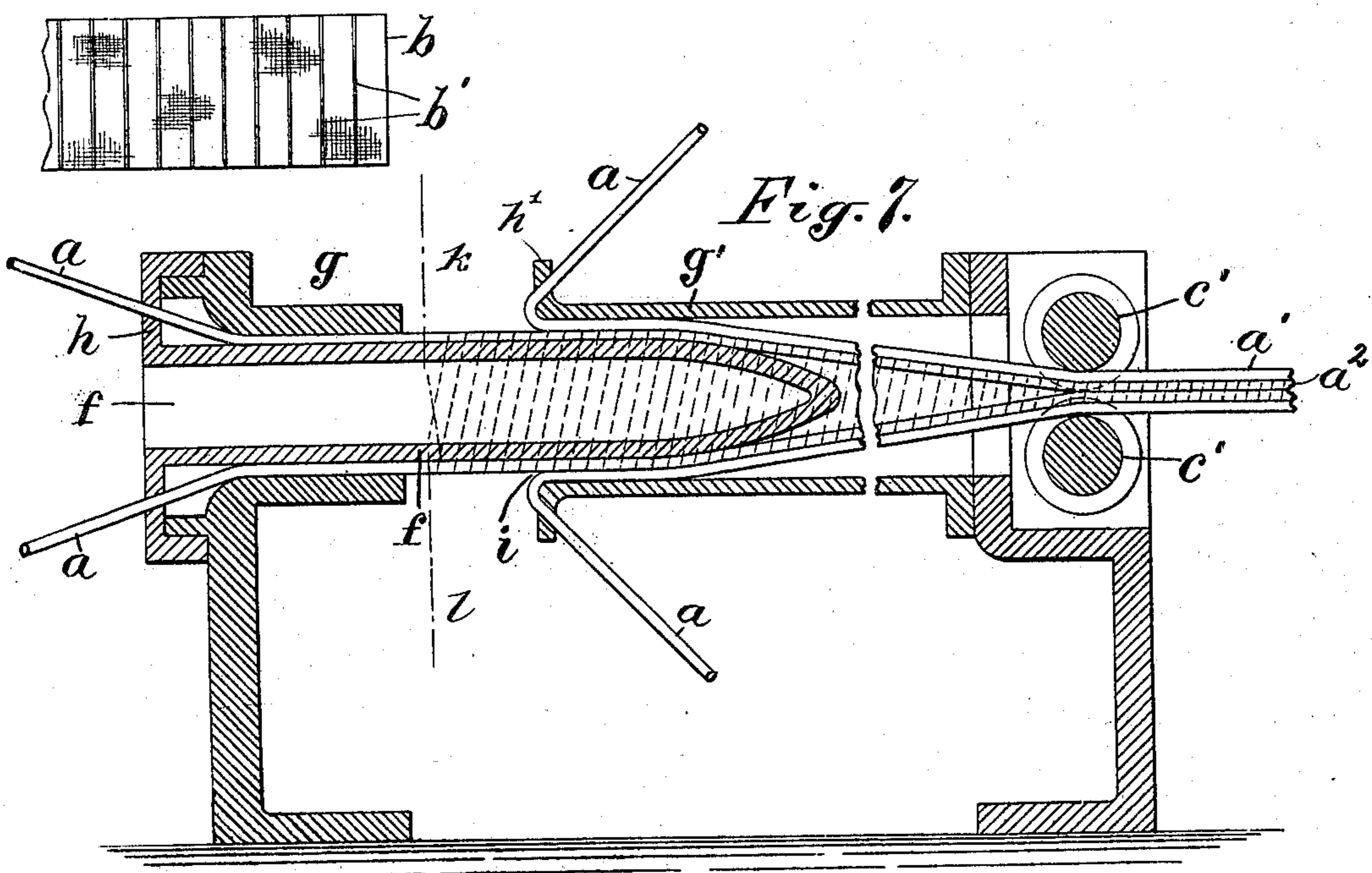
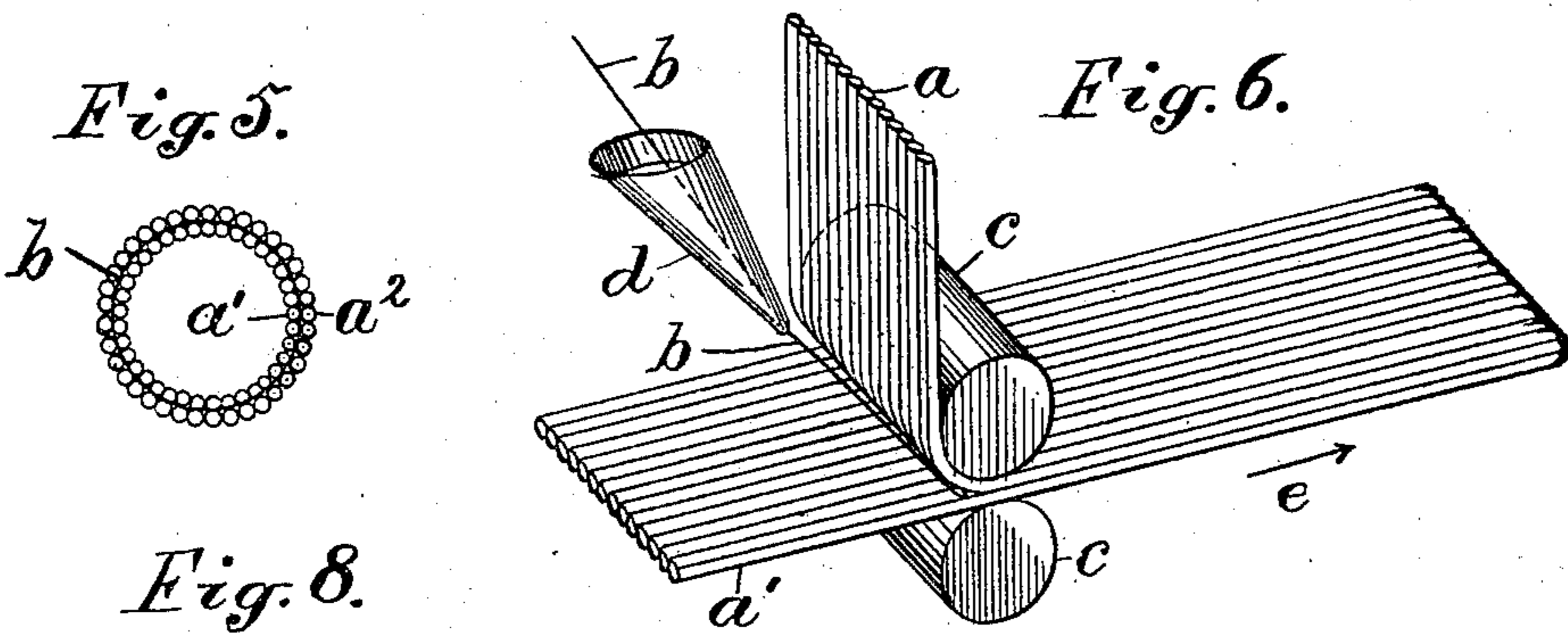
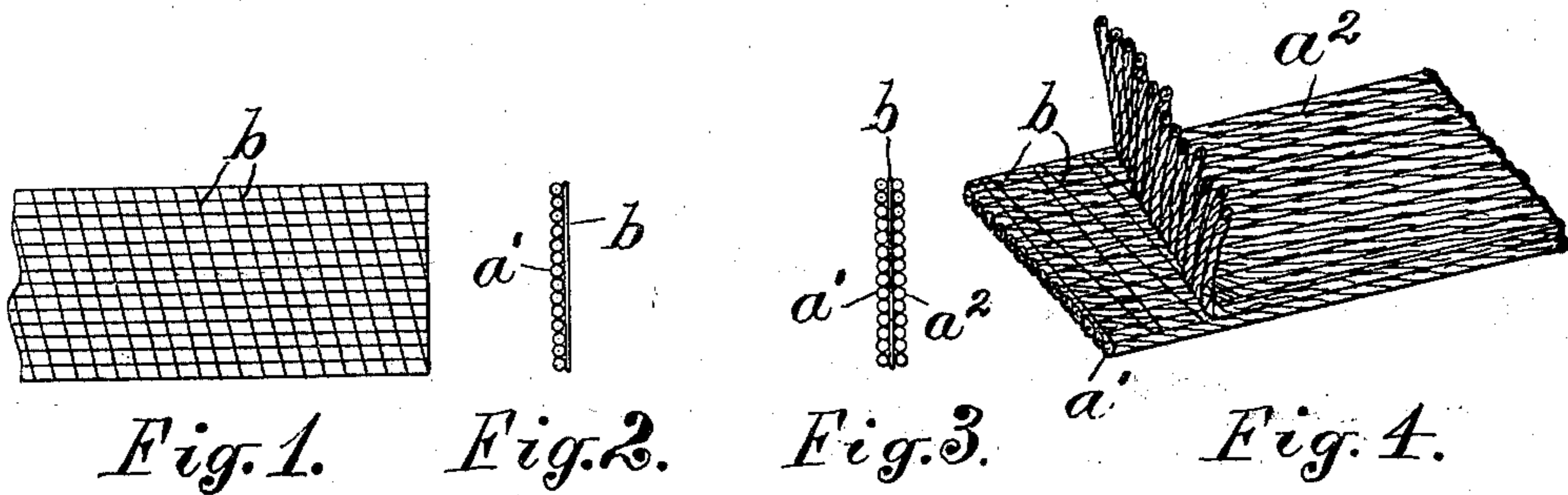
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J. W. HYATT.
LAMP WICK AND METHOD OF MANUFACTURE.

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(No Model.)



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UNITED STATES PATENT OFFICE.

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LAMP-WICK AND METHOD OF MANUFACTURE.

SPECIFICATION forming part of Letters Patent No. 638,247, dated December 5, 1899.

Application filed March 20, 1899. Serial No. 709,733. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN W. HYATT, a citizen of the United States, residing at Newark, county of Essex, State of New Jersey, have
5 invented certain new and useful Improvements in Lamp-Wicks and Methods of Manufacture, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.
10 The object of the present invention is primarily to improve the conducting capacity of a lamp-wick made of yarn by securing the yarns together with winding or wrapping the fibers in any manner which would be liable
15 to obstruct the free movement of the oil within its capillary spaces. Where lamp-wicks have been formed by weaving or braiding the yarns together, the yarns are twisted or wrapped one over another, so as to exert considerable compression upon one another at the
20 various points of crossing, and the free flow of the oil in such a lamp-wick is obstructed by the compression of the yarns, while it is also impeded by the numerous bends in each
25 yarn, which increase the distance which the oil is required to travel to reach the top of the wick and compel the oil to move through a tortuous channel. In the present invention I obviate the compression of the yarns
30 and secure a more direct channel for the passage of the oil by disposing the yarns parallel with one another in a layer and securing them together by cement applied at intervals only to one side of the layer. If the yarns were
35 secured to a layer of fibrous material by cement over the whole surface of the latter, the lamp-wick would be greatly stiffened and the fibers of the yarns would be more or less clogged by the mass of cement, and to avoid
40 such result the yarn may be connected by a transverse thread coated with glue and drawn transversely across the layer at intervals, or they may be connected by a layer of thin porous fabric, like cotton cheese-cloth, with narrow strips of glue impressed upon such layer
45 transversely at intervals to engage the contiguous surface of the yarns. I thus avoid the crossing, bending, or compressing of the yarns, and as each makes only a tangential
50 contact with the cement-bearing surface the body of the yarn and most of its interior fibers remain unclogged by the cement, and thus

furnish free channels for the passage of the oil. The fibrous material for carrying the cement may consist of thin woven fabric; but
55 I have found by experiment that a thread cemented transversely at intervals across the layer of parallel yarns is preferable, as it serves to hold them together with sufficient firmness, while it does not impair the flexibility of the wick and does not tend to clog
60 the fibers of the yarn with any considerable amount of cement. A two-ply fabric is readily constructed by leading the yarns for the two layers separately to a meeting-point, drawing a thread with moist cement alternately
65 back and forth transversely across one of the layers at such meeting-point, and progressively feeding the two layers forward with such thread and cement pressed between the
70 layers. A tubular fabric may be formed of two annular layers of parallel yarns having a spirally-disposed thread cemented between their contiguous surfaces, and such a fabric can be made with great rapidity by leading
75 the yarn for such layers separately to an annular meeting-point, winding the thread with cement upon the inner layer adjacent to such meeting-point, and feeding the two layers progressively forward with the thread and cement
80 pressed between them. When the layers are relieved from the pressure which is applied to cement them together, the fibers of each yarn are entirely freed from compression and no obstruction is offered to the free
85 movement of the oil within the wick.

My invention involves a new fabric and method of making the same, and I do not, therefore, limit myself to the use of the product exclusively for the manufacture of lamp-
90 wicks, but find that it can be employed in the manufacture of neckties and analogous articles.

The invention will be understood by reference to the annexed drawings, in which—
95

Figure 1 is a side view of a portion of a one-ply fabric, and Fig. 2 an end view of the same. Fig. 3 is an end view of a two-ply fabric, and Fig. 4 a perspective view of a piece of such fabric with the layers separated at one end to
100 expose the connecting-thread. Fig. 5 is a cross-section of a tubular fabric. Fig. 6 is a diagram representing the method of manufacturing the two-ply fabric, and Fig. 7 is a longi-

tudinal section of an apparatus for manufacturing the tubular fabric. Fig. 8 shows a piece of a binding fabric with transverse strips of glue.

5 a designate the parallel yarns upon one side of the fabric, and a' a^2 designate the layers in which the yarns are disposed.

b designates the fibrous material cemented upon one side of the layer of yarns and which
10 may consist of any material adapted, with the cement, to bind the yarns together.

In Fig. 2 a single layer a' is shown, with the binding material b cemented upon one side of the same, while Fig. 3 shows two layers
15 a' and a^2 attached to opposite sides of the binding material b .

Fig. 4 shows the material b as a thread disposed in zigzag loops transversely between the layers a' and a^2 , and thus operating with the
20 cement to secure the two layers together at intervals. I find that a thread of No. 60 sewing-cotton cemented between the two layers at intervals of one-sixth of an inch serves to hold them together with the utmost firmness,
25 while it does not impair the flexibility of the fabric or impede the movement of the oil through the same.

In Fig. 5 the two layers of yarns are arranged in tubular form with the binding material b cemented between them, and such
30 annular fabric may be used for a tubular wick, or to make a single flat wick by pressing the sides of the tube together, or to make two or more flat wicks by slitting the tube
35 into strips.

Fig. 6 shows in diagrammatic form the method of cementing two flat layers together by leading them from different directions between two rolls c and drawing the thread with
40 moist cement back and forth either in contact with one of the layers or so close to their meeting point or line that the thread may adhere to the adjacent yarns as it is drawn back and forth across the same. The thread b is shown
45 extended through the hopper d , containing liquid glue, and terminated at the bottom with a fine aperture to permit the thread to be drawn therefrom with a suitable charge of glue. Such hopper may be vibrated back
50 and forth to draw the thread across the surface of the lower layer a' , while both layers are fed continuously forward in the direction of the arrow e by the rotation of the rolls c .

In Fig. 7, which shows the means for cementing two annular layers of yarn together,
55 f designates a central mandrel surrounded by a tube g and provided at the rear end with a guide h , having holes to lead the yarns a between the mandrel and the tube. Rolls c' are
60 provided to draw away the finished product pressed flat between the rolls, and a tube g' is supported around the mandrel to press the outer layer of yarns upon the inner layer and to support a guide h' for leading the outer
65 layer of yarns to an annular meeting-point or circle i . Between the tube g and such annular meeting-point a space is left to wrap the

thread b around the inner layer of yarns, as indicated by the dotted lines k l , which are
70 extended from opposite sides of the mandrel f to indicate two threads wound simultaneously upon the forwardly-moving yarns, which cements the threads in parallel spirals at equal distances apart around the inner layer and
75 serves effectually to secure the outer layer to the inner layer where both are passed through the tube g' . The tube is flattened by the rolls c' , which feed it forwardly, and the pressure of the rolls serves still further to bring the yarns
80 into close contact with the cement-bearing thread b . The apparatus represented in Fig. 7 would be made of sufficient length and kept at such a temperature as to partly dry the cement upon the binding-thread before the fabric was compressed by the rolls c' or brought
85 in contact with other substances, and the tube g' is represented broken on the drawings, as well as the newly-made fabric, for want of room to express the required length. Such
90 tubular wick may be used in circular form for Argand burners or may be slit longitudinally into any desired number of flat wicks, in which case the cemented threads are cut at each edge of the wick, as shown in Fig. 1. It is obvious
95 that the inner layer of yarns in contact with the mandrel f may be wound with the cemented thread and the cement dried thereon without applying the outer layer of yarns. Such construction would form a single-ply
100 wick like that represented in Figs. 1 and 2, where a' designates the single layer of yarns, and b the parallel threads disposed spirally across the breadth of the fabric and cut at the edges of the same to form the flat layer
105 shown in Fig. 2. A great advantage is gained by securing yarns together by cement at intervals only, as it produces a much more flexible fabric and one in which the fibers are not perceptibly clogged with the cement, and these advantages may be attained by cement-
110 ing a layer of thin fibrous material, like cotton cheese-cloth, to one side of the yarns by narrow strips of cement disposed at intervals across the fabric. In Fig. 8, b designates such
115 a piece of material, and b' the narrow strips of cement impressed upon the material at intervals to engage the layer of yarns.

For the manufacture of lamp-wicks a loosely-twisted cotton yarn is employed; but in the manufacture of neckties or other arti-
120 cles cords of silk, linen, or any other required material may be employed and serve when secured together by cement upon their inner sides only to present an entirely novel appearance of disconnected cords, which cannot be produced by any other mode of manu-
125 facture.

I have found by experiment that a lamp-wick made by the present invention will feed the oil to the flame with great freedom and
130 is not so liable to be "caked" at the top or clogged internally as a woven or braided wick. As a result of the free movement of the oil through the wick the flame from such

a wick when employed in the same kind of lamp and with the same amount and kind of oil is larger and capable of giving correspondingly more light than that produced by a braided or woven wick.

Whether the cemented thread be exposed in an oblique manner, as shown in Fig. 1, a zigzag manner, as shown in Fig. 4, or a spiral manner as shown in Fig. 7, a continuous series of transverse threads is attached to the yarns at regular intervals, thus securing the yarns together laterally, while they remain entirely disconnected between the transverse threads. This mode of connection is particularly suitable for a lamp-wick whose fabric is not subjected to friction, wear, or tensile strain to any material extent and enables the fabric to serve the purposes of a lamp-wick in a very perfect manner, as the yarns are not sensibly clogged with cement or compressed by weaving or braiding.

Having thus set forth the nature of the invention, what is claimed herein is—

1. As a new article of manufacture, a fabric, for lamp-wicks, composed of a layer of parallel yarns having a continuous series of threads cemented at intervals to the yarns

across one side of the layer, whereby the yarns are connected laterally at regular intervals and are wholly disconnected between the transverse threads.

2. As a new article of manufacture, a fabric, for lamp-wicks, composed of a layer of parallel yarns having a continuous series of parallel threads cemented obliquely at intervals across one side of the layer, substantially as herein set forth.

3. As a new article of manufacture, a fabric composed of two layers of parallel yarns having their adjacent sides connected by an endless thread with cement thereon, disposed zigzag across the breadth of the fabric.

4. A tubular fabric for lamp-wicks and analogous articles, comprising two layers of parallel yarns having a spirally-disposed thread cemented to their contiguous surfaces.

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

JOHN W. HYATT.

Witnesses:

L. LEE,

THOMAS S. CRANE.