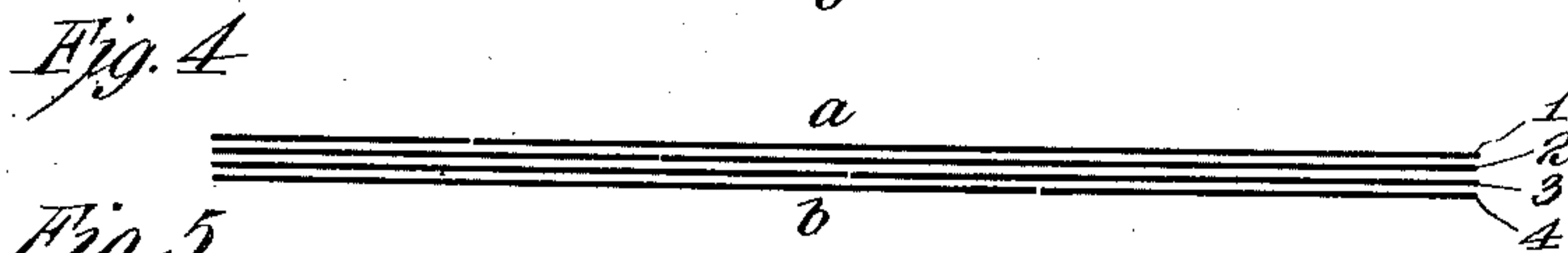
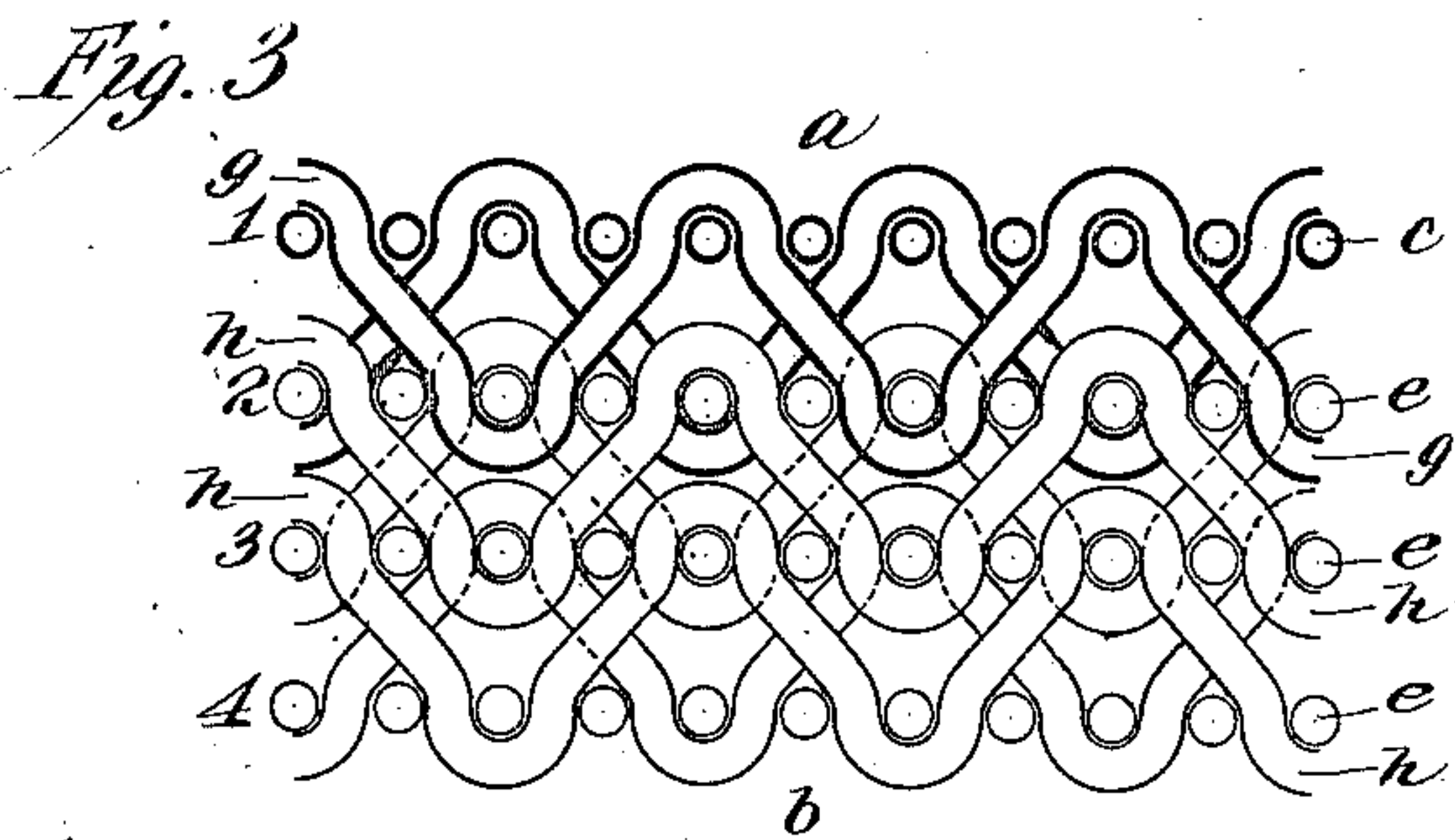
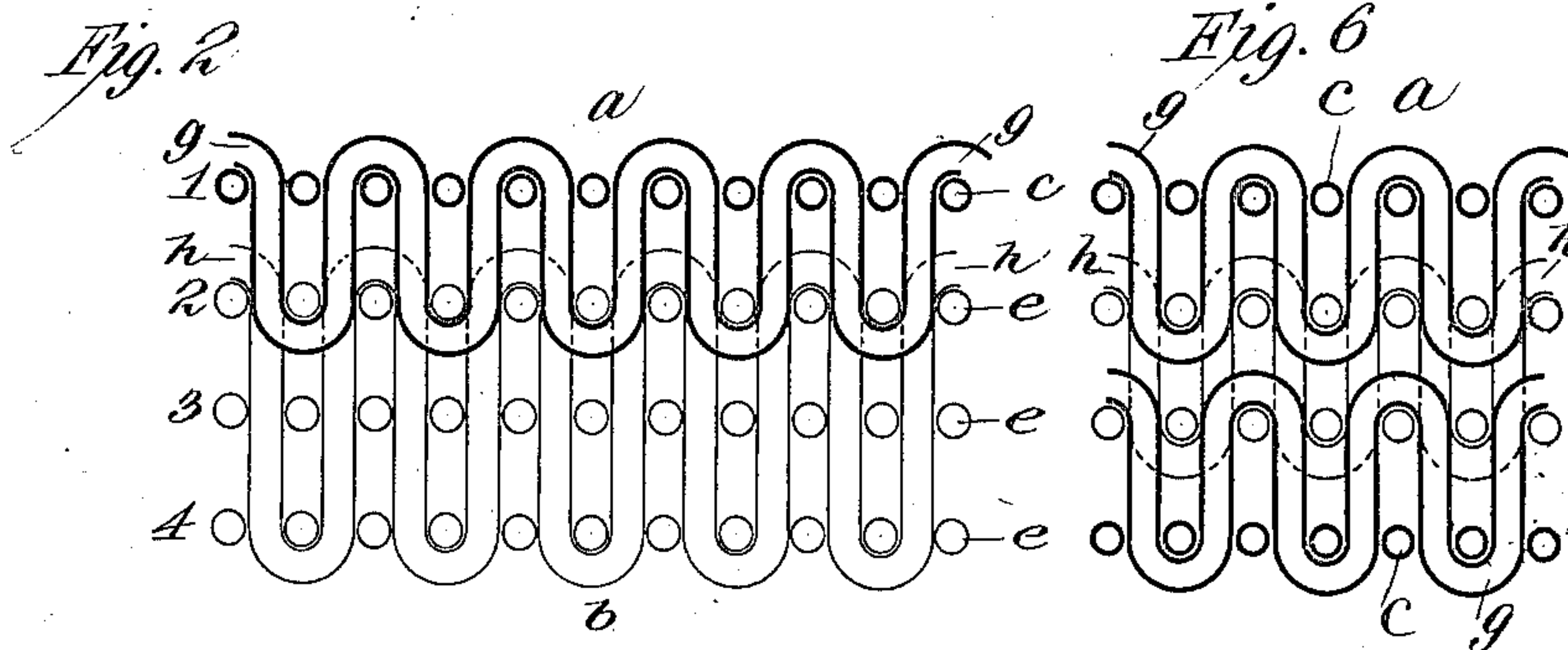
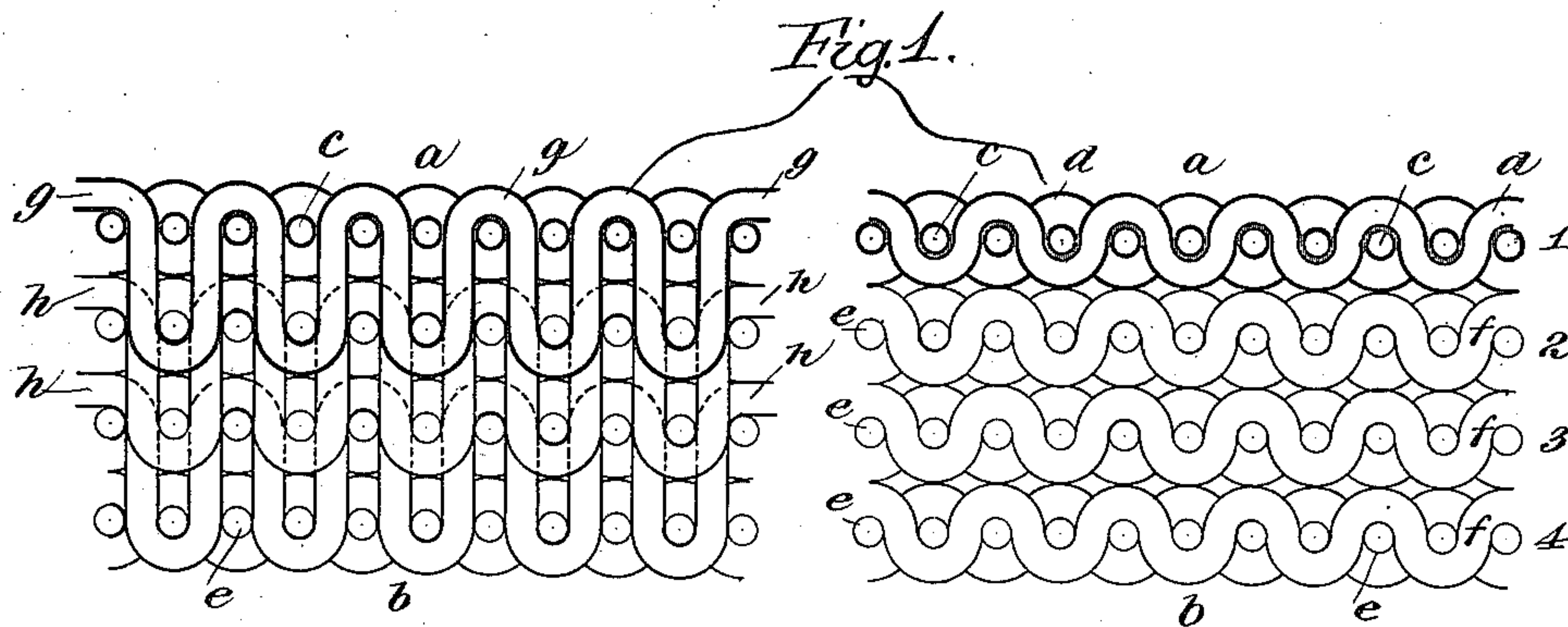


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 ASBESTOS FACED WOVEN FABRIC.
 APPLICATION FILED MAY 11, 1904.

963,013.

Patented June 28, 1910.



Witnesses:

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ASBESTOS-FACED WOVEN FABRIC.

963,013.

Specification of Letters Patent. Patented June 28, 1910.

Application filed May 11, 1904. Serial No. 207,416.

To all whom it may concern:

Be it known that I, GEORGE HILTON SMITH, a subject of the King of Great Britain, residing at Easton, county of Northampton, State of Pennsylvania, United States of America, have invented a certain new and useful Improvement in Asbestos-Faced Woven Fabric, of which the following is a specification.

10 The present invention relates to fabrics having one or more asbestos faces, and such fabrics are especially adapted for the manufacture of belts for cement plants, and similar localities where hot material is carried on the belt.

The invention also has for its object the improved means for tying the plies together, irrespective of the material used.

20 The objects of the invention are to produce a solid fabric having a woven asbestos face woven to a cotton backing.

Another object is to produce a solid fabric formed of a plurality of plies.

25 Still another object is to produce a fabric in which one or both faces will be entirely of asbestos and in which the other plies will be formed entirely of cotton or other material which will withstand strains.

30 Another object is to reduce the amount of asbestos necessary to tie the plies together.

35 Another object is to produce a fabric in which one ply can be divided from the rest without destroying or separating the remainder so that when the asbestos face wears out, it may be removed from the other plies thus leaving a perfect cotton belt.

A further object is to produce a fabric which may be readily spliced so that a perfect even and endless belt may be obtained.

40 The accompanying drawings diagrammatically illustrate sections of fabric which embody my invention, and by means of which I attain these objects.

45 Figure 1 illustrates a section of a four ply fabric formed with three binders, which engage with every weft, a portion of the figure showing the binders omitted. Fig. 2 is a similar view of a four ply fabric showing two binders. Fig. 3 is a view of a four ply fabric showing three binders which engage with every alternate weft. Fig. 4 is a schematic section of a four ply belt showing the plies split and cut in making a splice. Fig.

5 is a top view of the same. Fig. 6 is a section of a four ply fabric formed with three 55 binders and with both faces of asbestos.

In Figs. 2 and 3 the warp threads are omitted to prevent confusion.

In all of the several views like parts are designated by the same numerals and letters 60 of reference.

In Fig. 1, *a* is the asbestos faced side of a belt and *b* the side which engages with the pulleys or other supporting means. This fabric is shown as formed of four plies, 1, 65 2, 3, and 4. The ply 1 is formed of asbestos; the other three plies being formed of cotton or other material and all of the plies are of plain weave. The upper ply 1 is formed of the wefts *c*, and warps *d* all of asbestos. 70 The three lower plies 2, 3 and 4 are formed of wefts *e*, *e*, *e*, and warps *f*, *f*, *f*, of cotton or other suitable material. All of the plies are tied together by the asbestos binders *g* and the cotton binders *h*, *h*, which prefer- 75 ably are inserted during the weaving operation. The asbestos binders *g* tie the plies 1 and 2 together. The cotton binders *h*, *h*, tie the plies 2 and 3, and the plies 3 and 4 together, thus forming a fabric in which all 80 of the plies are firmly tied one to another and all together.

It will be noticed that the upper set of binders, warps and wefts all being made of asbestos, will form the upper face *c* and upper ply 1 entirely of asbestos. It will also be noticed that the asbestos binders do not extend below the ply 3, therefore, the lower face of the fabric is formed entirely of cotton or whatever material is used in connection with the asbestos. It will also be noted that a very much smaller quantity of asbestos is necessary than if a single binder were used to bind all of the plies together, and that the three lower plies being bound 95 together by a cotton binder the structure will form a complete fabric even when the asbestos face is removed.

It will be noticed that the binder yarns must be considerably longer than the warp 100 yarns, for the reason that they go from ply to ply while the warps are confined to one ply only. For this reason means is necessary to be provided for supplying longer binder yarns than warps. A separate beam for the 105 binder yarns is therefore required. If the

binder yarns and warp yarns should be of the same length, upon the fabric being put under tension, for instance, if used as a belt to drive machinery, or to convey materials, 5 the binder yarns would be broken.

It is obvious that the improved means for the weaving the plies and tying the plies together, may be utilized in connection with other materials than those described. For 10 instance, the fabric may be made entirely of cotton, if such is desired.

The invention may be modified in many particulars as to the number of plies, the particular weave, or the number and disposition of the binders, without departing 15 from the spirit of the invention.

Several modifications are illustrated: In Fig. 2 but two binders are used, the binder *g* of asbestos connecting the plies 1 and 2; the 20 binder *h* of cotton connecting the plies 2, 3 and 4, and therefore passing entirely through the ply 3. In Fig. 3 the binders *g* and *h* engage with every alternate pick instead of with adjacent picks as shown in the other 25 two views.

The fabric made in accordance with this invention may be spliced with great facility. As shown in Figs. 4 and 5, the different plies may be split or separated and cut diagonally 30 and arranged so as to break joint, at *i, i*, the binders being removed or cut at the point covered by the splice. The plies may be then secured together in the usual manner, preferably by asbestos or cotton stitching or

binding, so that the face *a* will be entirely of 35 asbestos and the face *b* entirely of cotton.

In Fig. 6 a fabric has both faces of asbestos as illustrated. In this view the two asbestos binders are indicated by the characters *g, g*, and the cotton binders by the character *h*. 40

Having now described my invention, what I claim and desire to secure by Letters Patent, is:—

1. An asbestos faced belt comprising a 45 plurality of plies, one of said plies being formed of asbestos and the others of cotton or other suitable material, the several plies being connected together by a plurality of binders, one of said binders being of asbestos 50 and the other or others of cotton, the asbestos binder connecting the asbestos ply to the cotton plies, and the cotton binder or binders tying the cotton plies together.

2. An improved textile fabric, comprising 55 a plurality of woven plies, one at least of said plies being of asbestos and the other or others of cotton or suitable material, the said plies being joined together in weaving in such a manner that the asbestos ply or plies 60 may be removed without destroying the other plies.

This specification signed and witnessed this 7 day of May, 1904.

GEORGE HILTON SMITH.

Witnesses:

LUKE SMITH,
JOHN BRUNNER.