

(No Model.)

J. W. HYATT.
WATER PROOF COLLAR OR CUFF.

No. 419,257.

Patented Jan. 14, 1890.

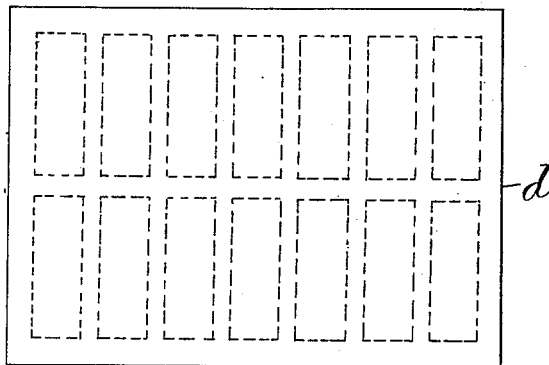


Fig. 1.

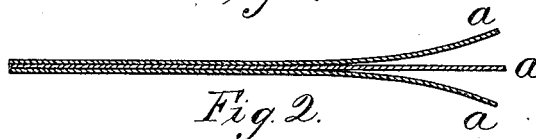


Fig. 2.

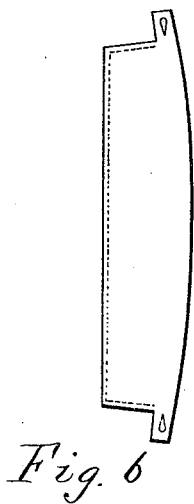


Fig. 6.

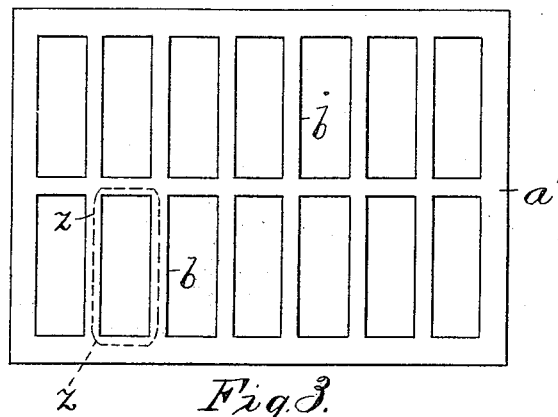


Fig. 3.



Fig. 7.

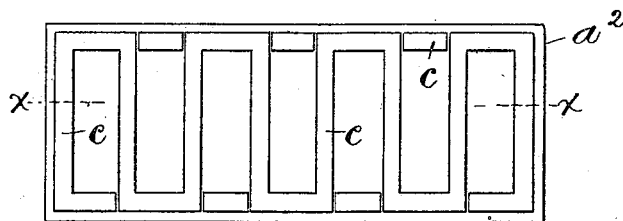


Fig. 4.



Fig. 5.

Attest:
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UNITED STATES PATENT OFFICE.

JOHN W. HYATT, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE CELLULOID MANUFACTURING COMPANY, OF NEW YORK, N. Y.

WATER-PROOF COLLAR OR CUFF.

SPECIFICATION forming part of Letters Patent No. 419,257, dated January 14, 1890.

Application filed April 13, 1888. Serial No. 270,546. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. HYATT, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Collars and Cuffs, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of my invention is to make collars, cuffs, and similar articles of apparel from a material which, while it has the necessary strength, body, flexibility, stiffness, and color to imitate the qualities and appearance of starched linen, shall also have the capacity of being readily cleansed by the application of a wet sponge or brush, and shall also be made of such materials that the fabric can be cheaply produced. It is of course well known that this class of articles has heretofore been made of paper and of paper and muslin pasted together in two or more layers with and without having their surfaces waterproofed. While such fabrics could be very cheaply made, yet they were not sufficiently strong to last for any considerable length of time, and they could not be washed without impairing their usefulness and appearance, the intention being that they should be worn for a short length of time and then thrown away, which was made possible by the cheapness with which collars and cuffs could be produced from them. It is also well known that very useful collars and cuffs and similar articles have been made of sheets of pyroxyline compounds—such as celluloid combined with paper or muslin—and while these latter fabrics imitated the qualities and appearance of starched linen and had the additional advantage of being water-proof, so that the same could be readily cleansed without injury, yet their cost is considerable. By my invention I have been able to produce these articles of a fabric which has the qualities and appearance of starched linen, and which can be readily and repeatedly cleansed, as above stated, and is much cheaper to make than the pyroxyline fabric spoken of.

My invention is based upon the discovery that if two or more sheets of woven vegetable fabrics be united together by a solvent of cellulose the resulting fabric will have the

requisite stiffness to imitate starched goods, the united surfaces being converted into vegetable parchment without injuring the natural appearance of a fine woven fabric upon the exterior surfaces. If, however, the entire substance of the two sheets be converted into vegetable parchment, the exterior would be readily penetrated by water in cleansing the article, and would be wrinkled when the article again dried. Such a parchment surface would not only be susceptible to moisture, but is not adapted to cohere with a water-proof varnish if applied to a surface to protect the same.

My invention therefore involves the conversion of the vegetable fabrics into parchment in part only—namely, upon the adjacent sides where they are joined together, the outer side of each layer (including the whole exterior of the article) retaining its porous and fibrous character, and thus adapting it in the highest degree to absorb and retain a water-proof varnish of any character. By applying suitable water-proof varnish to such a porous exterior I secure an article having the elasticity of vegetable parchment and the resistance to moisture of a water-proof collar or cuff, and thus secure an article possessing the desired qualities at a very low cost.

In order to obtain a sheet of vegetable parchment having the exterior appearance of linen, I have found it impossible to use a single sheet of woven material, because if such sheet be thick enough to use as a substitute for the several plies of linen employed in starched articles of apparel it would present too rough and coarse an appearance upon its surface, while a single sheet, if thin enough to have a fine texture, is too thin; but by combining two or more layers of woven fabric into a single sheet in the manner described I secure all the requisites in the desired material and produce a fabric of sufficient thickness, which presents a fine texture upon its surface, similar to the texture of ordinary starched linen goods and adapted to receive and retain a water-proof coating.

I am aware that it is common in making thick and elastic fabrics to combine two or more layers together by the conversion of their entire substance into vegetable parchment, and I do not, therefore, claim a mere

compound fabric made of vegetable parchment, but an article in which the layers are stiffened by partial conversion into such parchment, but wholly unconverted upon the exterior and saturated with a water-proof substance.

My improvement will be understood by reference to the annexed drawings, in which—

Figure 1 represents a sheet of vegetable parchment thickened at intervals, as described herein. Fig. 2 represents in longitudinal section a sheet of vegetable parchment formed in three layers, the layers at one end being separated to distinguish them clearly from one another. Fig. 3 represents a single perforated sheet of fabric adapted to form the intermediate layer in a sheet of parchment, such as is shown in Fig. 1. Fig. 4 represents a sheet of fabric with braid stitched upon the same at intervals to form a thickening of the same at intervals; and Fig. 5 represents a section on line *xx* in Fig. 4, with the addition of a plain upper layer adapted to form with the layer to which the braid is stitched a sheet of vegetable parchment thickened at intervals, as in Fig. 1. Figs. 6 and 7 represent severally a collar and a cuff.

The accompanying drawings represent the material composed of three layers or sheets *a a* united together, although it will be understood that two sheets or more may be used, as desired. I take the separate sheets of woven material and brush or otherwise spread upon those sides of the separate sheets which will be contiguous when joined together sulphuric acid, chloride of zinc, or other solvent of cellulose of such strength that the solvent will partially dissolve the inner sides of the sheets, and I then press the separate sheets together. While the surfaces are thus softened by a solvent of cellulose, the layers adhere in the most perfect manner, and when the solvent is washed from the material its exterior surface presents the fine grain and porous texture of the original woven fabric and is adapted to absorb any suitable water-proofing material. Such material may consist in dammar varnish mixed with any white earth or white celluloid varnish or paraffine, and when the material is thus treated and passed between polished plates, or otherwise finished, it is ready for use in the form of collars and cuffs.

I find it an advantage to cut the collars or cuffs from the sheet of material before coating them with the water-proof material, that the edges of the articles may be coated at the same time, and when desired an additional coating of such varnish may be applied around the edges of the article after the first coating has dried, so as to form a thickening of the border to correspond with a hem. The thickening of the border may also be effected by interposing strips of woven fabric between two exterior layers, in which case the intermediate material may be applied upon the

desired lines in any convenient manner, as by perforating a layer *a'* of the woven material, as shown in Fig. 3, to form intermediate strips *b* upon the desired lines, or by stitching braid *c* of similar texture upon one of the layers *a'* at intervals, as shown in Fig. 4. In Fig. 5 the layer *a'*, having such braid stitched thereto, is shown, with an additional layer *a* of woven material laid upon the top of the braid ready for treatment with the solvent and pressure to consolidate it into a single sheet *d* of vegetable parchment, as shown in Fig. 1.

The product when thickened upon certain lines is represented in Fig. 1, and the separate cuffs which the sheet is adapted to form would be stamped therefrom by suitable cutters operating upon lines *zz*, which are shown dotted through the thickened portion in a parallelogram representing one cuff in Fig. 3. Such cuff detached from the sheet is shown upon a larger scale in Fig. 7, with the thickened portion extending around its margin, (indicated by dotted lines,) and in Fig. 6 a collar is represented with a similar construction, which would be in practice readily produced by forming the apertures *b* in the intermediate sheet *a'* of suitable size and shape, or disposing the braid *c* upon the sheet *a'* upon the required lines.

The layers *a'* and *a''* are shown with border wider than the intermediate strips *b* or *c*, for the purpose of handling the layer before its incorporation in the sheet of vegetable parchment and to furnish a border by which the same may be applied in succession to a suitable cutter operating in a fixed position, as is common.

My material differs essentially from any substance heretofore used in the manufacture of cuffs and collars by reason of the unconverted vegetable fibers upon its surface, which impart to it a certain degree of opacity, as is desirable in such articles, and also the ability to absorb a varnish upon its surface to prevent the penetration of water.

To increase the stiffness and elasticity of the collar or cuff, a layer of vegetable fabric may be inserted between the two outer layers, which are essential to practice my invention.

It is obvious that other vegetable fibrous materials—such as paper—may be used as the inner sheet of my compound fabric, if more than two be used, without departing from my invention, because it is not necessary that such inner sheet should be of woven material, as it is completely hidden by the two outer sheets of woven material, while it will act, when treated by the solvent of cellulose, in the same way as a sheet of vegetable woven material.

I hereby disclaim the mere formation of a composite fabric by converting vegetable layers wholly into vegetable parchment and simultaneously joining them together.

I am aware of United States Patents Nos.

147,588, 217,937, 353,642, 289,242, and 137,451, and wholly disclaim the same, as I do not claim any construction except that herein set forth.

5 I am aware that it is not new to secure two or more fabrics together by parchmentizing, nor is it new to waterproof a fabric by applying suitable water-proofing material, and I disclaim such construction, broadly; but I
10 am not aware that any person has ever been successful in applying a water-proof coating to a parchmented fabric heretofore, thus forming a durable and merchantable article.

Having thus set forth the nature of my invention, what I claim is—

1. An article of wearing-apparel, as a collar or cuff, composed of two or more sheets of woven vegetable fabric having their inner surfaces converted into vegetable parchment
20 and united together by a solvent of cellulose, and having the exterior surface unconverted and provided with a water-proof coating, as and for the purpose set forth.

2. An article of wearing-apparel, as a collar

or cuff, composed of two or more sheets of
25 woven vegetable fabric having their inner surfaces converted into vegetable parchment and united together by a solvent of cellulose, and having the exterior surface unconverted and coated with a pyroxyline composition, as
30 and for the purpose set forth.

3. An article of wearing-apparel, as a collar or cuff, composed of two or more sheets of woven vegetable fabric having their inner surfaces converted into vegetable parchment
35 and united together by a solvent of cellulose and thickened upon given lines, and having the exterior surface unconverted and coated with a pyroxyline composition, as and for the purpose set forth.

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

JNO. W. HYATT.

Witnesses:

THOS. S. CRANE,
HENRY J. MILLER.