Sept. 4, 1928. 1,682,870

J. M. VAN HEUSEN

FABRIC HAT AND METHOD OF MAKING THE SAME

Filed Aug. 5, 1922

Fig. 1.

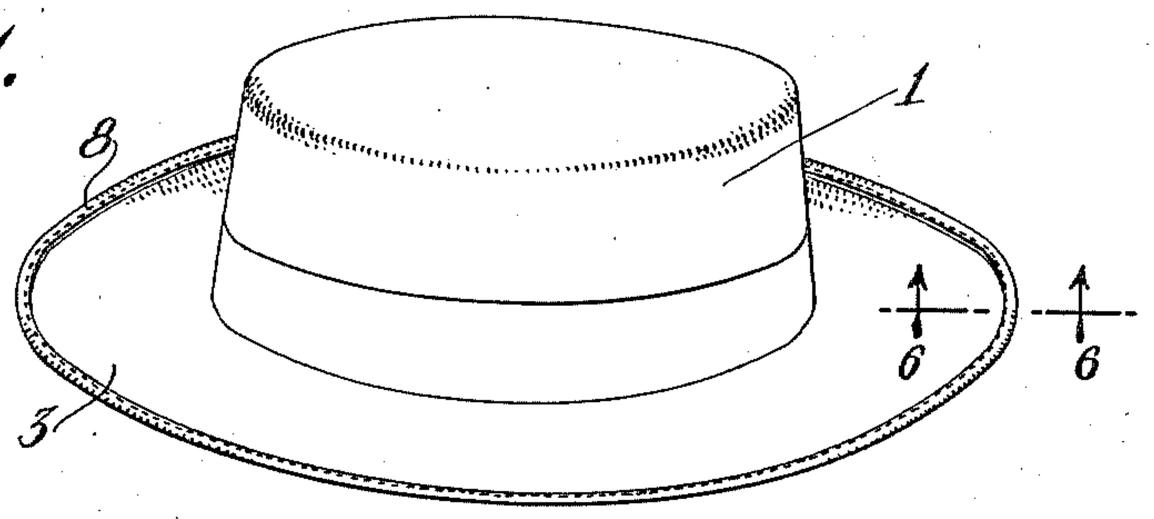


Fig. 2

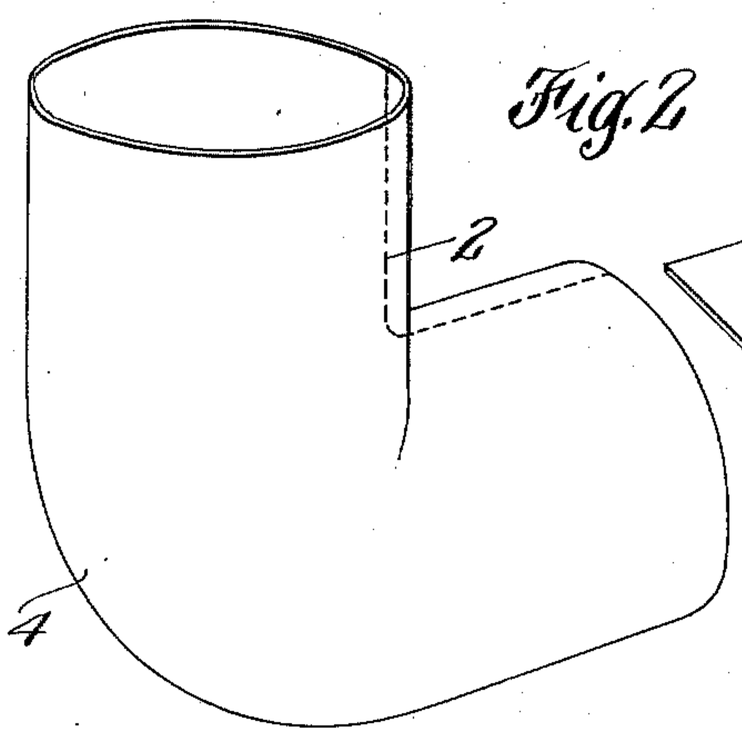


Fig. 3.

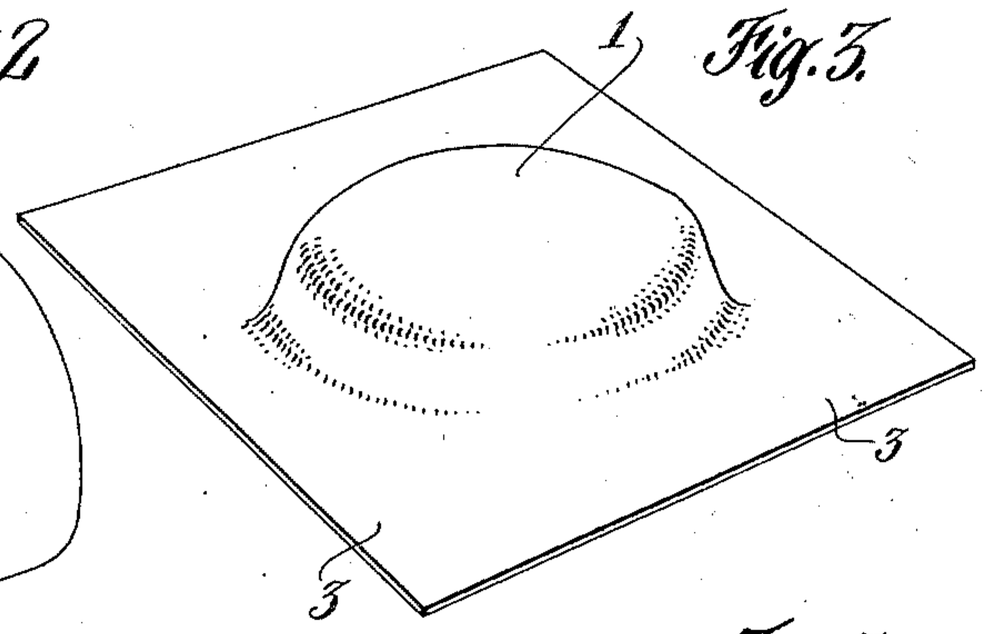


Fig. 5.

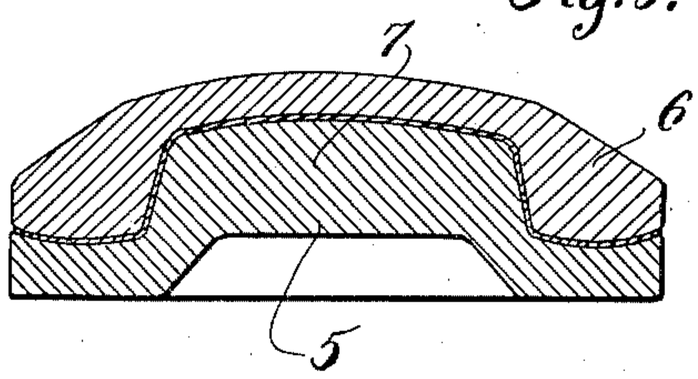


Fig. 4.

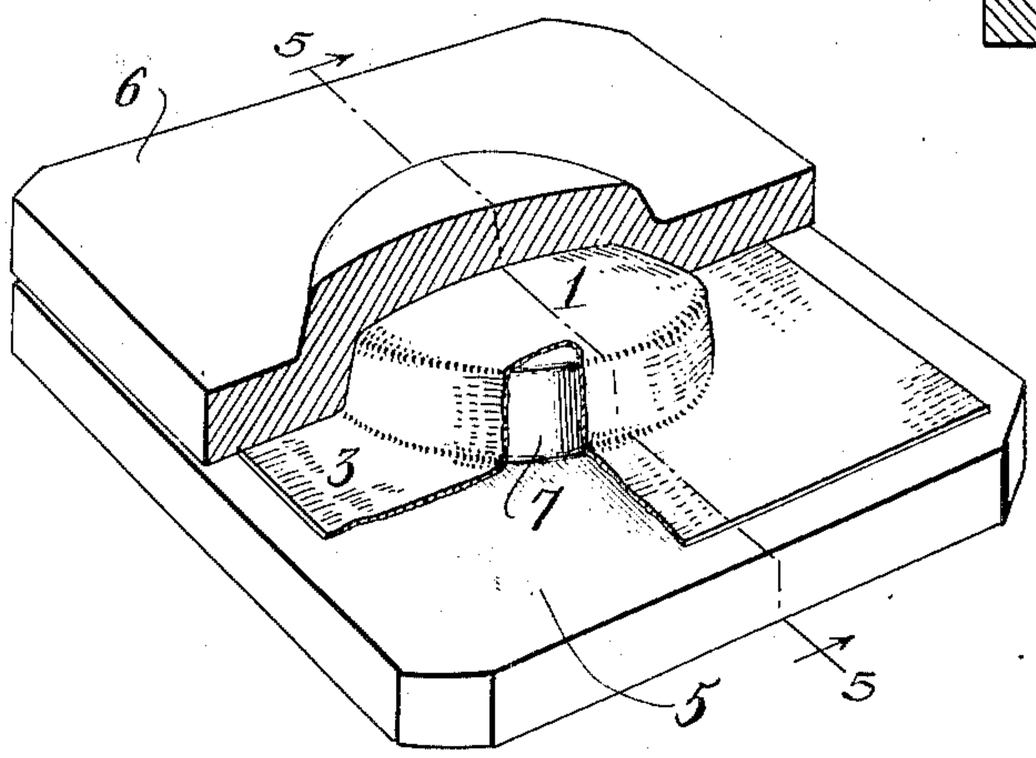
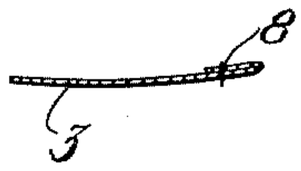


Fig. 6.



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UNITED STATES PATENT OFFICE.

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FABRIC HAT AND METHOD OF MAKING THE SAME.

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The present invention relates to improvements in hats and method of making the same. More particularly, my invention relates to hats made of knitted or woven fabric.

Heretofore, cloth or fabric hats have been made of a relatively large number of pieces of material which have been cut to the desired shape and stitched together. For example, the ordinary tennis hat made of white duck or similar material is made in this way. The crown of the hat comprises from four to eight separate pieces cut in a semi-triangular form and secured together so that the apex of each triangular piece extends to the top of the crown where a button is usually attached. The brim of the hat is made of one or more additional strips of fabric cut to shape and secured to the lower edge of the crown.

Hats of this variety do not present the smart and pleasing appearance of, for example, a Panama hat, which is commonly made in one piece. One reason, among others, for this lack of smart appearance is that cloth hats of the type referred to have a number of unsightly seams running up the crown where the triangular pieces are joined together.

The present invention contempl. tes the production of a fabric hat, the crown of which in the preferred embodiment is made of a single piece of fabric and having the brim made either of one or more separate pieces of fabric or, if desired, of the same piece as that of which the crown is composed.

According to one embodiment of my invention I utilize a knitted fabric. This fabric is so constructed as to have a raised or bulged portion in the center. The method of producing knitted fabrics which have a curved or irregular contour is well known in the art and, per se, forms no part of my present invention. However, in the interest of clearness I shall now describe briefly one method which is commonly used for knitting such fabrics in the production of hosiery and which may be employed to produce the hat blanks which form a part of my invention.

In the manufacture of stockings, the machine known as the "footer" produces a result similar to that which I desire in the hat material of my present invention. The operation of the "footer" is so arranged that when the heel portion of a stocking is to be formed the needles which serve to form the front portion of the stocking are raised so as to suspend their operation while the needles which serve to form the back portion of the stocking are continued in their operation. Of those needles on the back or heel portion which continue to perform the knitting operation, those which are nearest to the front portion of the stocking are raised progressively and thus thrown out of operation. For example, on a 100 needle footer, having the needles arranged in a circular form, fifty of the needles may be raised and thus thrown out of operation when the heel is started. Then after one stitch has been completed in which the remaining fifty needles all operate, one needle at each end of the fifty which are still in operation is raised. After the next stitch the next needle on each end is raised, and so on until only a few needles (those at the extreme back portion of the heel) are still in operation. The operation is then reversed and the needles which were raised last are lowered and brought back into operation first. This continues until all of the original fifty needles are again in operation. Then the remaining fifty needles which have been idle during the forming of the heel may again be started and all of the needles operated to complete the foot of the stocking.

According to my invention I take a knitted tubular fabric having a bend or curve formed therein similar to the heel of the stocking above described, and produced by the same or, if desired, other means. I then cut the fabric along the front or short side of the tube and open it out flat or as nearly so as possible. I now have a single piece of fabric the edges of which will lie flat on a plane surface and which has a bulged or raised portion in the center. By placing this fabric on a hat form and shrinking it or otherwise so treating it as to cause the fabric to conform to and take on the desired shape, I provide a hat made of one piece of fabric and which has a neat and dressy appearance.

My invention will be further described in connection with the accompanying drawings, in which

Fig. 1 is a perspective view of a fabric hat embodying my invention,

Fig. 2 is a perspective view of a tubular knitted fabric from which the hat may be made.

Fig. 3 is a perspective view of the tubular fabric of Fig. 2 after being cut along the dotted line (see Fig. 2) and opened out.

Fig. 4 shows in perspective a partial section of one suitable type of hat form in which the hat is shaped and stiffened.

Fig. 5 is a section taken along the line 5—5 of Fig. 4.

Fig. 6 is a sectional view taken along the line 6—6 of Fig. 1.

The fabric of which the hat of my present invention is made is preferably a knitted fabric. The texture and weight of the fabric may vary widely and I do not intend to limit myself to any particular type of knitted fabric. On the contrary, I consider my invention to be broadly new and I intend to include hats made of any knitted fabric whatsoever. Also woven fabrics which are so made either by varying the tension on the warp threads or by other means as to be provided with a raised or bulged portion therein may be utilized in practicing my invention and are included within the scope thereof.

According to the preferred embodiment of my invention I use a heavy closely knitted fabric made of relatively coarse thread and comprising one or more (preferably two) thicknesses or plies of material. A fabric of this sort has a considerable degree of body and thickness, and when stretched does not present an openwork or porous appearance to such a degree as appears in a stretched loosely knitted fabric of single thickness. This fabric is provided with a bulged or raised portion 1 of Fig. 3. The fabric may be knitted in tubular form as illustrated in Fig. 2. A machine similar in construction to the "footer" above referred to may be used, the machine being, of course, large enough to knit a tube of the size required for hat construction.

The tubular fabric of Fig. 2 is cut along the dotted line 2 and opened out as shown in Fig. 3. It will be noted that the edges 3 of the fabric lie flat while the central portion 1 bulges upward so that the top or bulged portion is a considerable distance above the plane of the edges. It will be obvious that the bulge 1 of Fig. 3 corresponds to the outer side 4 of the bent or curved tube shown in Fig. 2.

I now desire to give the fabric of Fig. 3 the exact shape of a hat. I have found that by treating the fabric with a powerful shrinking agent and then placing the fabric over a hat form, the fabric will shrink and take on the exact contour of the hat form. Various means of shrinking fabrics are commonly known and used in the art, such, for example, as wetting the fabric with water and then drying it, or treating the fabric with a solution of caustic soda. However, I desire not only to shrink the fabric to the required shape, but also to stiffen and strengthen the fabric so that it will retain its original shape and set and still be free from undue rigidity. In order to accomplish this dual purpose I subject the fabric to the action of sulphuric acid. The strength of the acid solution may be varied, depending in part on the kind of yarn used and the tightness of the knit, but I have found that a considerable degree of stiffness is given to the fabric and sufficient shrinking is produced by using sulphuric acid of a strength of from 70 to 80 per cent by weight and preferably from 73 to 75 per cent. The fabric may be treated by dipping it in the acid or by forcing the acid through the fabric or by any other means. The method of treating the fabric will depend somewhat on the number of plies in the fabric and the closeness of the knit.

After the fabric has been treated with the acid I allow the acid to remain in the fabric for about one minute. I then immerse the fabric in a water bath and remove all traces of an acid reaction. Immediately on removing the fabric from the bath I place it in a hat form. The hat form may be of any desired shape or construction. Figs. 4 and 5 illustrate one satisfactory type of hat form in which 5 is the lower member and 6 is the upper member. The fabric is first placed over the crown portion 7 of the lower member 5 so that the bulge 1 of the fabric is over the crown portion 7. The edge portion 3 is laid out flat and then the upper member 6 of the hat form is placed over the fabric and lower member 5. As illustrated in Fig. 5 the upper member forces the fabric to take on the exact shape of the lower member. The edges of the fabric which will form the brim of the completed hat may be flat or slightly curved as shown in Fig. 5.

When the fabric has been firmly pressed to the desired shape in the hat form, I then place the hat form and the fabric in an oven or similar heating device. The purpose of this heating process is to dry out the fabric and cause it to shrink to the exact shape of the hat form. When the fabric is placed in the hat form there will be wrinkles and puckers in the fabric due to the fact that the knitted fabric does not conform exactly to the shape of the hat form. During the drying process all the said wrinkles and puckers are taken up by the shrinkage.

When the fabric is thoroughly dried I remove the hat form from the oven and take out the hat fabric. The fabric now possesses a considerable degree of stiffness, and the fabric retains the shape taken on in the hat form. The edges of the fabric may now be trimmed so as to provide an

oval brim on the hat. The cut edges may be turned and stitched down with stitches 8 against the upper side of the brim as illustrated in Fig. 6. The acid treatment hereinbefore described renders cut edges of the fabric non-fraying, and it is therefore unnecessary, when the said acid treatment is used, to provide any additional binding on the cut edges of the fabric.

The hat may, if desired, be provided with a hat band as shown in Fig. 1. Also it may be desirable to provide a band on the inside of the hat in order to prevent stretching and to resist any tendency of perspiration to pass through the fabric and stain the outer surface thereof.

The hat of my invention may be made of unbleached fabric, in which case it will have the natural color, or the fabric may be given any desired color by dyeing or other means. If a plain white bleached fabric is desired, the yarn of which the fabric is made may be bleached previous to the knitting of the fabric or the hat may be bleached after it has been shrunk on the hat form. If the latter method is employed it may be found desirable again to shape the hat by placing it in the hat form after the bleaching operation.

In the foregoing specification and in the appended claims, I have used the terms "cloth" and "fabric" in describing my invention. I wish it to be understood that in using those terms, or either of them, I intend to include woven or knitted fabrics in general, that is, materials which are formed by the interlocking or interweaving of threads in a definite order or system. I do not include other materials such, for example, as felt, which by well known processes can be moulded or shaped to any desired form. One piece felt hats have, of course, long been known in the art, and my invention is not directed to these. But so far as I am aware, my method of producing a hat made of woven or knitted fabric is broadly new.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions of excluding any equivalents of the features shown and described, or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

What I claim is:

1. That improvement in the art of making cloth hats which consists in providing a fabric blank having a raised or bulged portion therein, treating the said blank with a shrinking agent, fitting the treated blank, while wet, to a hat form and drying it thereon.

2. That improvement in the art of making one piece cloth hats which consists in providing a blank made of one piece of knitted fabric having a raised or bulged portion therein, treating the said blank with a shrinking agent, fitting the treated blank, while wet, to a hat form and drying it thereon; then cutting and finishing the edge of the fabric to provide the hat brim.

3. That improvement in the art of making cloth hats which consists in providing a fabric blank having a raised or bulged portion therein, treating the said blank with a shrinking and stiffening agent, fitting the treated blank, while wet, to a hat form and drying it thereon.

4. That improvement in the art of making one piece cloth hats which consists in providing a blank made of one piece of knitted fabric having a raised or bulged portion therein, treating the said blank with a shrinking and stiffening agent, fitting the treated blank, while wet, to a hat form and drying it thereon; then cutting and finishing the edge of the fabric to provide the hat brim.

5. That improvement in the art of making cloth hats which consists in providing a fabric blank having a raised or bulged portion therein, treating the said blank with sulphuric acid, washing out the acid and fitting the blank, while wet, to a hat form and drying it thereon.

6. That improvement in the art of making one piece cloth hats which consists in providing a blank made of one piece of knitted fabric having a raised or bulged portion therein, treating the said blank with sulphuric acid, washing out the acid and fitting the blank, while wet, to a hat form and drying it thereon; then cutting and finishing the edge of the fabric to provide the hat brim.

7. That improvement in the art of making cloth hats which consists in providing a fabric blank having a raised or bulged portion therein, treating the said blank with sulphuric acid of 70 to 80% by weight concentration, completely removing the acid and fitting the blank, while wet, to a hat form and drying it thereon.

8. That improvement in the art of making one piece cloth hats which consists in providing a blank made of one piece of knitted fabric having a raised or bulged portion therein, treating the said blank with sulphuric acid of 70 to 80% by weight concentration, completely removing the acid and fitting the blank, while wet, to a hat form and drying it thereon; then cutting and finishing the edge of the fabric to provide the hat brim.

9. That improvement in the art of making cloth hats which consists in providing a knitted tubular cloth having a bend or curve therein, cutting the cloth so as to form a

blank, the edges of which lie flat and the central portion of which is raised or bulged, treating the said blank with a shrinking agent, fitting the treated blank while wet to a form of the desired shape and drying it thereon.

10. A hat blank consisting of a single piece of fabric, the edges of which are adapted to lie flat in a horizontal plane and the central portion of which possesses an inherently, and before said blank has been blocked or shaped, an upward bulge.

JOHN M. VAN HEUSEN.