No. 860,749. PATENTED JULY 23, 1907.

N. E. KAHN.

APPAREL CAP AND PROCESS OF MANUFACTURING THE SAME.

APPLICATION FILED NOV. 19, 1906.

2 SHEETS—SHEET 1.

FIG. I.

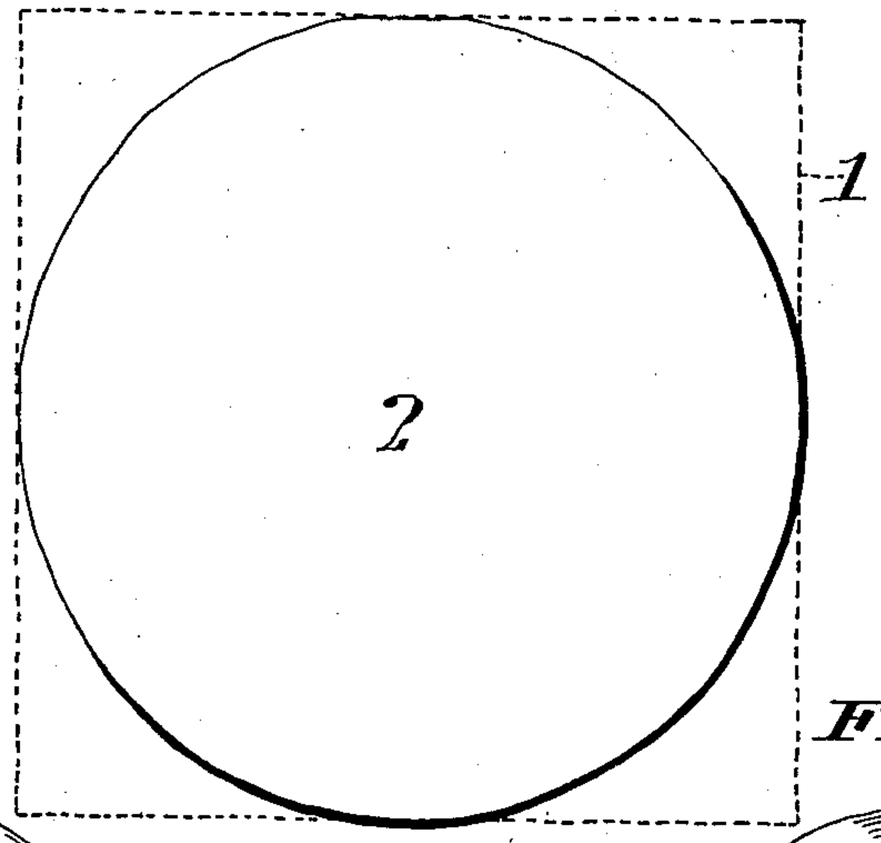

FIG. II.

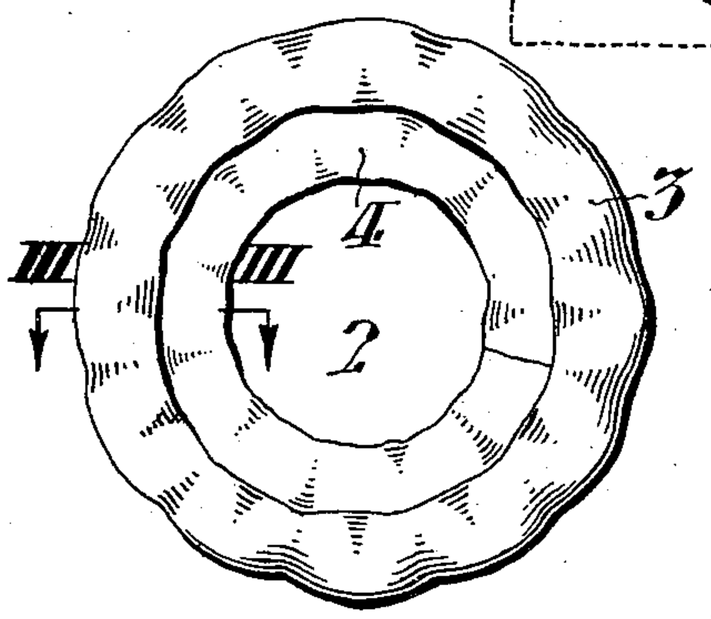

FIG. IV.

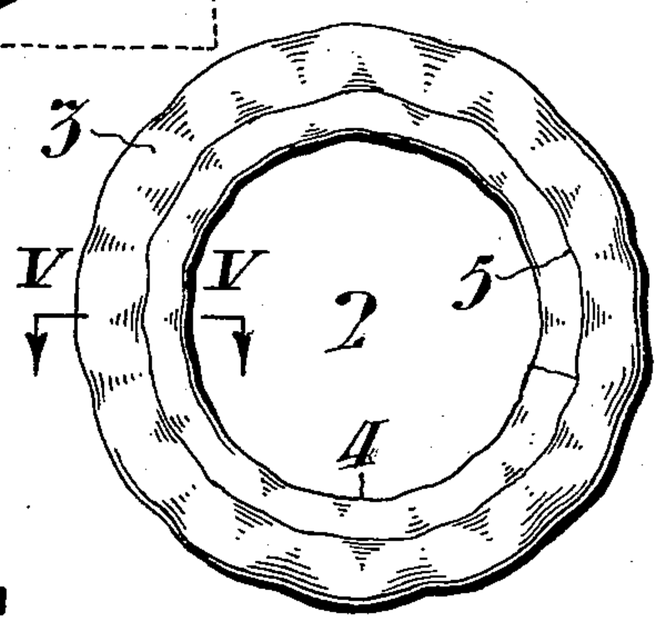

FIG. V.

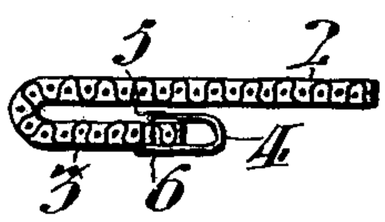

FIG. III.

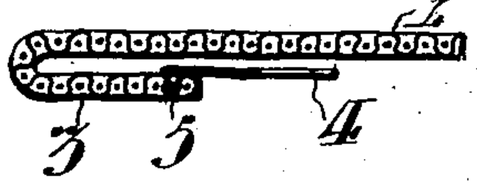

FIG. VI.

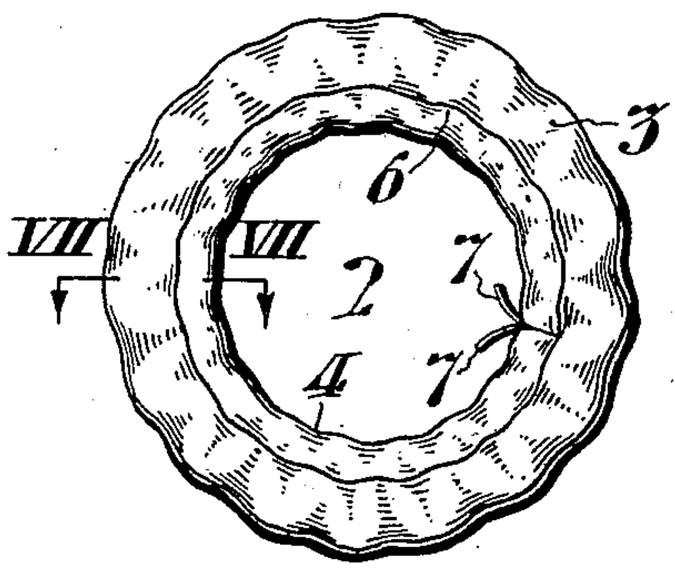

FIG. VII.

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2 SHEETS—SHEET 2.

FIG. VIII.

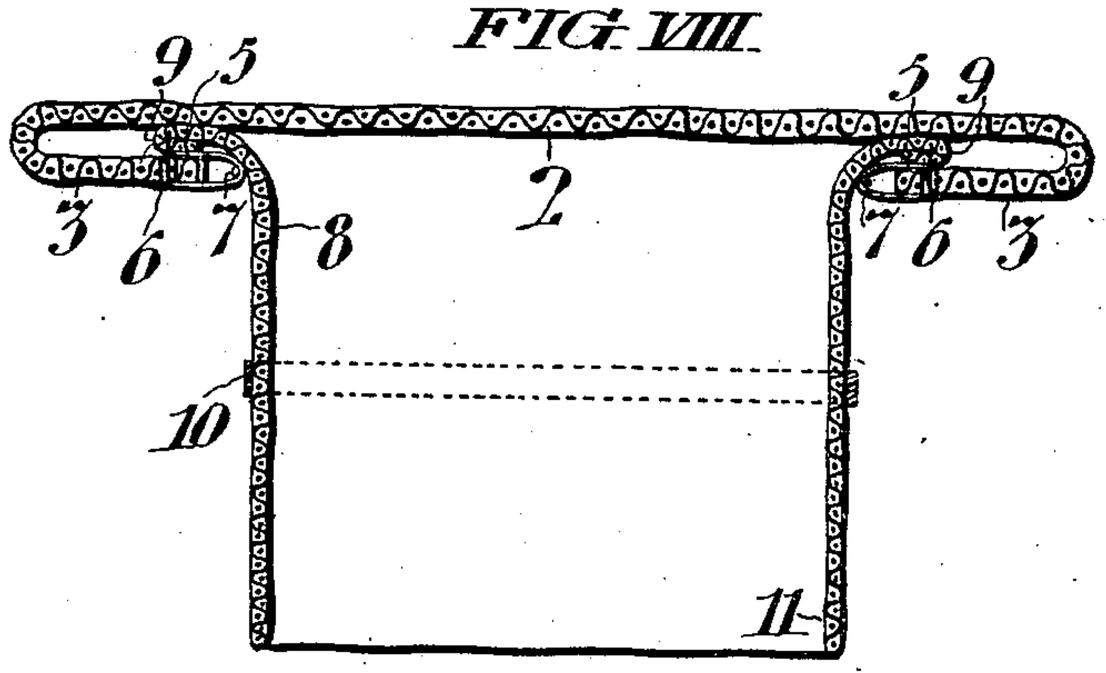

FIG. IX.

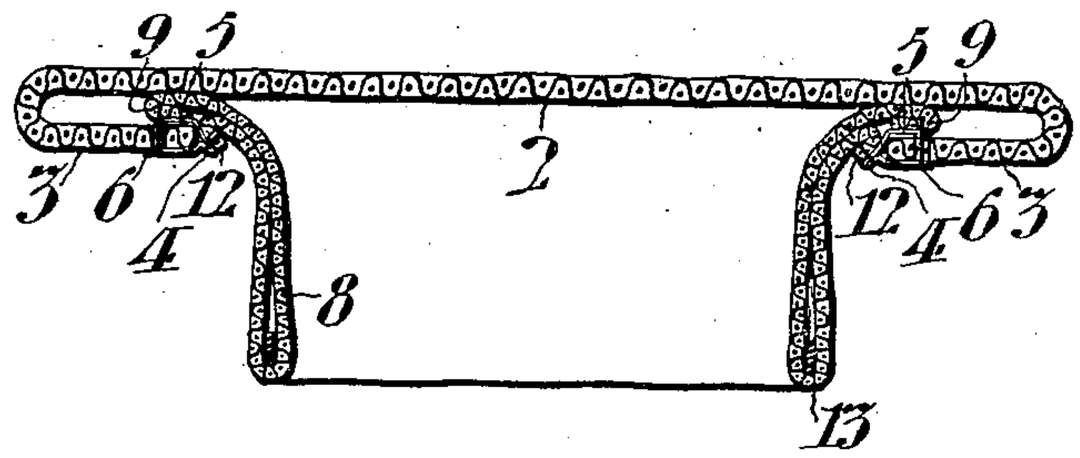

FIG. X.

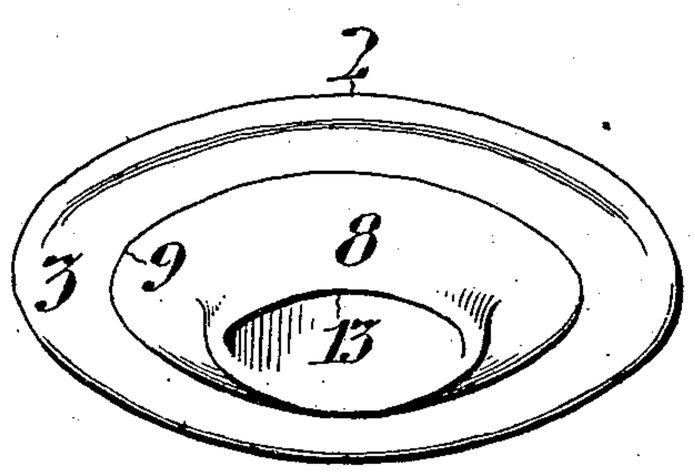

FIG. XI.

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UNITED STATES PATENT OFFICE.

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APPAREL-CAP AND PROCESS OF MANUFACTURING THE SAME.

No. 860,749. Specification of Letters Patent. Patented July 23, 1907.

Application filed November 19, 1906. Serial No. 344,000.

To all whom it may concern:

Be it known that I, NATHAN ELAI KAHN, of Woodbine, in the county of Cape May and State of New Jersey, have invented certain new and useful Improvements in Flat Caps of Elastic Textile Fabric and in the Process of Manufacturing the Same, whereof the following is a specification, reference being had to the accompanying drawings.

Said drawings indicate, partly by plan or perspective, and partly by sectional views, the series of steps characteristic of my process, as preferably carried out, the scale of all the sectional views being enlarged in order to more clearly show certain details.

Figure I, represents a plan view of the piece of fabric which constitutes the blank for the main body of the cap, showing its relation to the initial piece from which it is cut. Fig. II, is a plan view, showing the under side of the article at what may be termed the first step of treatment of the blank. Fig. III, is a partial sectional view on the line III, in Fig. II. Fig. IV, is a plan view of the under side of the article at the second step. Fig. V, being a partial sectional view thereof on the line V. Fig. VI, is a plan view of the under side of the article at the third step. Fig. VII, is a partial section thereof on the line VII, of Fig. VI. Fig. VIII, is a full transverse sectional view of the article at the fourth step. Fig. IX, is a similar sectional view at the fifth step. Fig. X, is a perspective view, and, Fig. XI, is a side elevation of the finished cap.

In order to clearly comprehend the nature of my present invention, it is proper to briefly refer to some of the methods of manufacture, now or heretofore employed for the production of the flat caps, commonly known as tam-o'-shanters, from knit or woven fabric, as distinguished from felted material. Thus, one method has been to cut a disk of approximately the diameter of the finished cap, and a second annular piece whose external diameter was the same as that of the disk, but whose internal diameter was substantially that of the head band. The disk and the annular piece were then sewed together by a line of stitching at the outer periphery and a head band was in some instances, sewed to the inner edge of the annular opening usually at right angles to the plane of the body. The cap was then blocked to regularize its final shape. This method of manufacture is open to several objections, the principal ones being the excessive waste of material due to the necessity of cutting two circular pieces from the initial web and then cutting out the central portion of one of them to form the annular piece. It also necessitated an objectionable seam along the outer margin of the cap itself. Another method of manufacture was to cut the material into gores, or wedge shaped pieces, which were sewed together so as to form a disk and then to apply an annular or gored lower portion to such disk, the shape of the article being finally regularized by blocking. This method is not only wasteful of material but necessitates a relatively large number of objectionable seams in the finished article. Another method was to shape the cap during the knitting operation, by alternately widening and narrowing a circular web, so that substantially the final shape was obtained by the knitting itself, the ultimate regularizing thereof being effected by blocking. This method is necessarily slow and costly and furthermore, the character of the fabric which can be produced is exceedingly limited, since the class of knitting machines upon which tubular webs of this diameter are knit do not permit any very great variation of the pattern.

In Letters Patent of the United States #669,011, dated February 26th, 1901, I have described a process of my own invention for the manufacture of flat knit caps, the essential principle of which is the formation initially of a tubular or globular bag of knit fabric and the forcible distention of said bag whereby it is converted into a flat cap. This method resulted in a great economy of both labor and material, but its limitations are that the tubular bag must either be made from an initial tubular web or formed from a flat web by sewing two of the edges together, so as to make either a tubular or globular bag. In the former case the pattern of the web is subject to the limitations of a circular knitting machine adapted to produce a web of this size, and in the latter case the presence of a seam in the top of the cap itself is necessary. Where a pattern of elaborate character is to be employed it is of course desirable that the top should be free from any seam, and my present invention, in one of its aspects is peculiarly adapted for the production of flat knit caps from a web of ornamental character. Furthermore, as compared with the methods above referred to, wherein the cap is wholly shaped by cutting or by knitting, as distinguished from the forcible distention characteristic of my said patented process, the present invention affords great economy of material.

I will now proceed to describe the several steps of my method as preferably carried out, by reference to the drawings:—

In Fig. I, the approximately square figure 1 shown by the dotted lines indicates the dimensions of a piece of elastic textile fabric, preferably a flat knit web, from which the approximately disk shaped blank 2, is cut; at this point it will be noted that the only waste of material is that comprised within the angular pieces

at the four corners of the square. In the present instance, it will be assumed that the finished cap is to have a diameter of twelve inches. Under these circumstances, the diameter of the blank 2, should be substantially fourteen inches.

Referring now to Figs. II, and III, the nature of the first step of treatment of the blank is shown. Here it will be seen that the margin 3, of the blank 2, is turned over and inwards and gathered or puckered. One edge 5, of a strip 4, of relatively inelastic fabric such as muslin, is sewed to the inturned edge simultaneously with the gathering thereof. The total length of the strip should be in this instance, approximately twenty-seven inches. For the next step, which is indicated in Fig. IV, and V, I fold over the other edge 6, of the strip of muslin 4, and sew it to the other side of the inturned edge 3, the width of the strip being such as to leave an open tubular space within this fold, as shown in the sectional view of Fig. V. At this stage, the article is a shallow bag, the circumference of whose opening is substantially equal to the length of the muslin strip, viz: twenty-seven inches, the original circumference of the outer edge of the blank, say forty-four inches, being reduced by gathering at the inturned margin to twenty-seven inches.

The next step, preferably employed, is shown in Figs. VI, and VII. By means of a bodkin or otherwise, a cord 7, is introduced into the tubular space within the fold of the strip 4, and by means of said cord the bound edge is drawn together inwardly, so as to reduce the diameter of the opening and produce a somewhat more puckered and deeper bag shaped article. For the other dimensions above given, the length of this cord should be approximately twenty inches, so that its protruding ends marked 7, 7, in Fig. VI, may be tied together after drawing the opening down to a total circumference of say about eighteen inches.

The next step, indicated in Fig. VIII, relates to the attachment of the selvage edge or head band of the cap to the body. For this purpose, I take a cylindrical piece 8, preferably of ribbed knit material of the kind known as cuff stitch, which has great elasticity. This piece may be initially knit in tubular form, or may be made by sewing together the edges of a flat web, since by reason of its location the seam is not objectionable. I sew one edge 9, of the cylindrical piece 8, to the bag shaped article or body, which has theretofore been formed, the line of stitching being preferably located in the knit fabric of the inturned margin 3, just beyond the edge 5, of the muslin strip 4. The circumference of the edge 9, of the tube thus applied may be substantially equal to the circumference of the puckered opening, at the region where it is to be sewed but I prefer to employ a tube of somewhat smaller circumference, say sixteen or seventeen inches, and to stretch it slightly at the region 9, during the sewing operation. After one edge of the tube has been thus secured in place, the cord 7, is cut and withdrawn, thus permitting the opening of the bag with the tube 8, attached thereto, to be expanded to the full circumference corresponding substantially with the original length of the muslin strip. As it is frequently desirable that there should be a rubber ring within the head band, I now apply said ring around the downwardly depending tube 8, its position being indicated at 10, in Fig. VIII.

At the next step, shown in Fig. IX, I fold over the other edge 11, of the tube 8, shown, and sew it at 12, to the projecting fold of the muslin strip 4, the rubber ring 10, being thus enveloped within the fold 13, which is to constitute the selvage or head band of the finished article. During this treatment the cap has been inside out. It is not turned right side out, and blocked, the distention in this instance, being a forcible one which expands the bag shaped object from a diameter of approximately nine and one-half inches to a diameter of twelve inches. The expanding is effected by any of the well known blocking devices adapted to distend the material in a flat and relatively thin disk shape, and the article is steamed and dried under distention, so as to fix the shape. Under these circumstances, it will be found that the puckering or gathering, which attended the reduction of the full circumference of the initial blank to the circumference of the inturned margin of the bag, will have almost wholly disappeared, and that the selvage band will have stretched sufficiently to lie smoothly around the seam, without any tendency to draw in or pucker the under side of the cap.

Having thus described my invention by indicating what I believe to be the most complete and best method of procedure, I call attention to certain features which will aid in an understanding of the claims hereinafter made. It will be noted that an important feature of my invention is that a bag shaped article (which may be termed the body of the cap), is formed by turning the margin of the blank inwards and gathering it so as to reduce the circumference of the inturned edge, and that another element (which is preferably comprised in a single piece and which may be termed the selvage band), is to be so secured to the inturned margin as to permit proper distention of the body for the production of a symmetrical and attractive cap, by eliminating gathers. In this aspect the invention depends upon the introduction, as a permanent element of the structure, of a relatively non-elastic supporting piece at or near the region of the inturned margin of the body, so that when the cap is expanded to its final shape, the stretching of the web shall be localized to the desired extent. In the absence of the support at this region, the forcible stretching of the body would tend to unduly stretch the selvage band without properly modifying the gathered portion of the body, but by my invention said gathered portion is subjected to a very substantial stretching by reason of the fact that it intervenes directly between the relatively non-elastic support and the region of greatest distention. It will therefore be perceived that although I deem it preferable to attach this non-elastic support directly to the edge of the body blank and simultaneously with the gathering, and also prefer to still further pucker or draw in the edges at this region before applying the selvage band, the peculiar result due to the presence of the non-elastic support does not depend upon these details of procedure, nor to the order in which the so-called steps are taken. It will also be noted that while the selvage band itself is described as preferably consisting of a single piece, either knit in tubular form or formed into a tube by sewing, it might be constructed of a plurality of pieces, and that although it has been described as composed

of a different type of knit web from that which constitutes the body of the cap, this feature is also immaterial. I have noted the above points as indicating certain possible departures from the exact method described, in order to more clearly illustrate the general character of variations which would not be inconsistent with my broad claim, but I do not thereby mean to imply that these are the only permissible variations, since others might readily occur to those skilled in the art.

In using the expression "elastic textile fabric", I mean that in its initial condition, the fabric is capable of substantial stretching without impairment of its integrity, since it is obvious that after the distention and setting of the cap, the region of greatest distention may have to a great extent lost its elasticity.

I claim:—

1. The hereinbefore described process of manufacturing flat caps from elastic textile fabric, which consists in forming an initial blank, turning up and gathering the edges of said blank, applying a support of relatively non-elastic fabric near the region of the gathered edge, attaching a selvage band to the body, distending the cap and setting it in its distended form, substantially as set forth.

2. The hereinbefore described process of manufacturing flat caps from elastic textile fabric; which consists in forming an initial blank, turning up and gathering the edges of said blank, applying around the gathered edge a support of relatively non-elastic fabric; temporarily drawing together still further the gathered edge, attaching a selvage band around the region of the opening, distending the cap and setting it in its distended form, substantially as set forth.

3. As a new article of manufacture a flat cap of elastic textile fabric, comprising a distended and set body portion with an inturned margin having a permanently applied support of relatively non-elastic fabric around the region of said inturned portion and a selvage band attached around said region.

In testimony whereof, I have hereunto signed my name, at Philadelphia in the State of Pennsylvania this sixteenth day of November 1906.

NATHAN E. KAHN.

Witnesses:
JAMES H. BELL,
E. L. FULLERTON.