

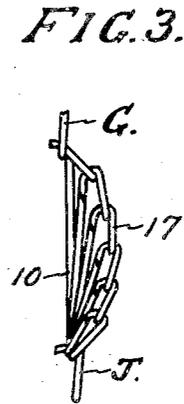
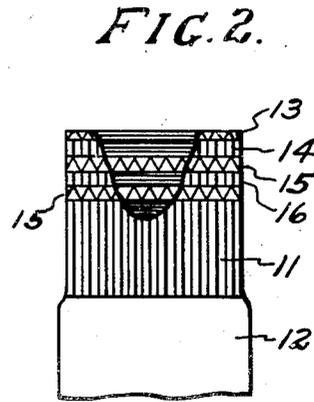
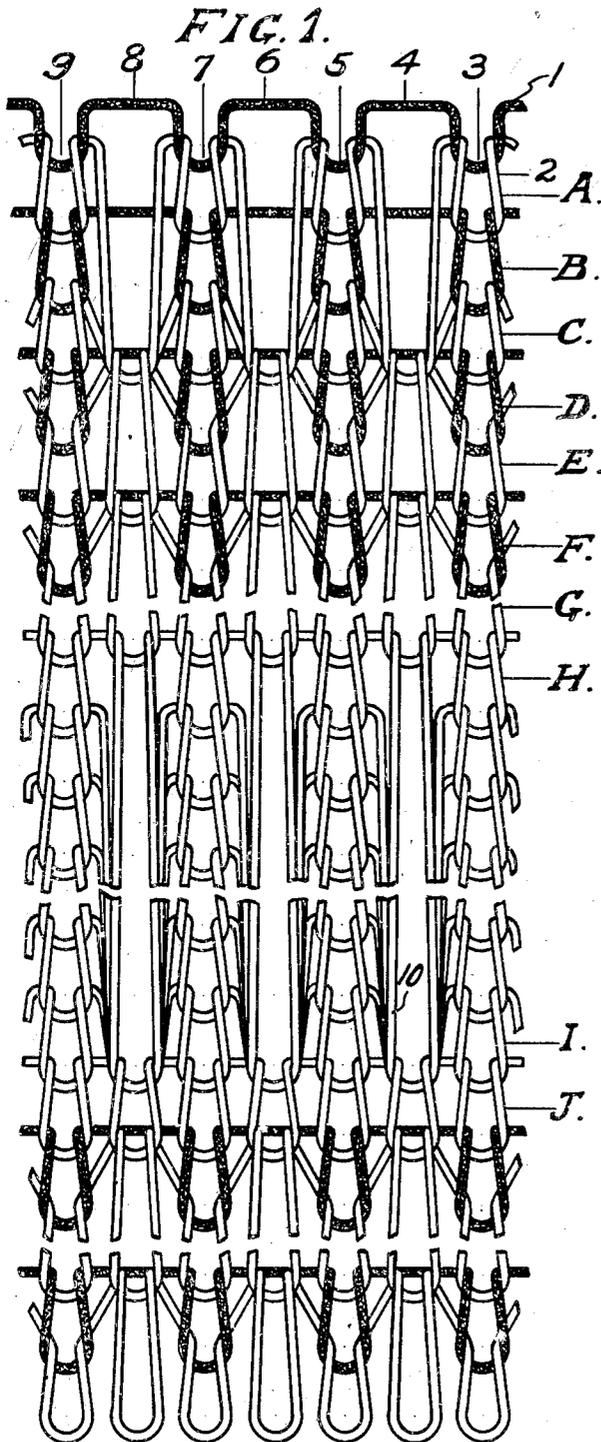
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KNITTED FABRIC AND METHOD

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KNITTED FABRIC AND METHOD

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This application has for its subject matter an invention in knitted fabrics, more especially, an elastic stocking top having a selvage and portion adjacent thereto knitted in a particular manner to render it resistant against curling or rolling.

In the figures of drawing:

Fig. 1 is a conventional illustration of a fabric, greatly enlarged, and showing one embodiment of the invention;

Fig. 2 is a conventional illustration of a stocking top in which the invention has been applied;

Fig. 3 is a section through the fabric and showing one of the tuck portions as it would appear if the fabric were cut longitudinally.

The elastic yarn has been incorporated in many ways along with a plain knitted base fabric of non-elastic yarn to render a stocking top self-supporting and impart to the same a rib appearance. In circular, independent needle knitting machines such as are commonly used for practicing this type of knitting, the elastic yarn may be, and preferably is, fed at a separate feeding point from the main mouthpiece of the machine at which one or more non-elastic yarns are fed. This elastic yarn may be knitted to be drawn into a stitch with a non-elastic yarn stitch, may be drawn into an independently knitted stitch or may be inlaid, all of these particular systems now being understood by those skilled in the art.

The elastic yarn is knitted under tension sufficient to draw wales of the fabric together and to render the entire top portion of the fabric in which the elastic yarn is incorporated resilient and serviceable for holding the stocking in position. The said elastic yarn may be knitted on spaced needles and may be incorporated in every course or in spaced courses. For example, the elastic yarn may be knitted or inlaid as above mentioned on every other needle floating behind intermediate needles or may be knitted on every third, fourth or needles spaced at greater intervals, and depending upon the amount of elastic desired to be used and other considerations, may be incorporated at every inelastic yarn course or may skip over several courses if desired. In skipping courses the elastic feeding means may be periodically withdrawn from operative feeding position or needles may not be raised to take that yarn, or in still another system, the elastic may be spaced by employing a plurality of feeding means for the inelastic yarn. For example, with two inelastic yarn feeds and one elastic yarn feed, each elastic course will be spaced by a single

course in which no elastic yarn will be present, either knitted in conjunction with that course or inlaid therein.

While by any one of these schemes the stocking top knitted or produced may have a very satisfactory rib like appearance and will serve to hold the stocking in place, some difficulty is experienced in turning of the top edge resulting in a curling or rolling of the same especially when worn. To overcome this objection, a selvage portion of the fabric is first made in which the elastic is knitted or otherwise incorporated as by being inlaid and after a few courses have been made to constitute this initial edge or selvage portion, the elastic yarn is withdrawn from active feeding relation to the needles and several courses of fabric are then produced in which no elastic yarn is present. In these complete inelastic yarn courses, spaced wales are knitted continuously to be formed of plain loops while certain intermediate wales are tucked and since the tuck stitches are tighter or shorter walewise of the fabric than corresponding portions of adjacent wales knitted from plain knitted (non-tuck) loops, the latter will bulge outwardly from the fabric creating a sort of barrier which has been found to be very effective in blocking or resisting the rolling or curling of the initial portion of fabric.

This curling or rolling action is initiated, of course, at the very edge of the fabric and if resistance is offered to that edge beginning to roll or curl, it has been found that under normal conditions this undesirable characteristic of this type of fabric is avoided. The tucked areas not only form barriers against the rolling of the initial edge, but the tucked fabric is more rib-like and does not have the inherent tendency to roll exhibited by the other parts of the fabric which are truly plain knitted and will resemble rib fabric only in appearance due to corrugation of the same when the elastic yarn contracts. Of course, when worn, this corrugation disappears at least to a great extent, since the fabric is extended especially at the edge. The tuck areas still maintain a greater resistance against curling when extended and thus for these and other reasons a tucked area or areas as herein described without any elastic yarn therein offers a maximum of insurance against this undesirable rolling of the fabric when worn. One or more tucked areas may be incorporated adjacent the edge of the fabric and these tucked areas may be of any desired length depending upon the weight of yarn in comparison to the gage of needle being used, those factors determining the number of

tucked loops which may be loaded up within a needle hook before it becomes necessary to knit off that particular needle.

Now referring to Fig. 1, one particular embodiment of the invention is shown, the stitches therein being greatly enlarged and the fabric being shown much more open than it would be in actual practice. The elastic yarn is also illustrated according to the theoretical drawing of the same and it is to be understood that the elastic yarn is normally knitted under a tension which will draw the wales in which it is held laterally together and in so doing, will straighten out thereby losing or practically losing its appearance of having been drawn into a knitted stitch. Of course the same applies whether the elastic yarn is knitted or inlaid. At the start an elastic yarn 1 is fed so as to form a selvage by locking all wales of the first inelastic yarn course A which is drawn from an inelastic yarn 2. This elastic yarn will be fed to alternate needles only and immediately thereafter, the yarn 2 at the main side of the machine will be fed to and taken within the hooks of all the needles. Of course, the elastic yarn will be fed to the alternate needles a plurality of times to accomplish what is generally referred to as "loading up the needle hooks" thereby making a stronger and more bulky edge. Other schemes may be employed so long as the resulting edge is truly a selvage.

In the particular example herein given by way of illustration, the yarn 2 is actually knitted in alternate wales 3, 5, 7 and 9, while it is to be taken within the hooks of intermediate needles knitting in wales 4, 6 and 8 but will be tucked thereon for two courses. Applicant has chosen to illustrate here independent knitting of the elastic yarn at each revolution of the machine and on alternate needles. This follows the general practice outlined in St. Pierre Patent #2,131,720. Obviously, other incorporation of the elastic as above outlined may be employed, but the invention may be well understood from the example herein given. The elastic yarn is again fed to alternate needles in course B and thereafter course C is drawn from yarn 2. Course D is similar to course B and course E is then drawn from yarn 2 and is knitted on all needles, the accumulated loops of the yarn 2 drawn in intermediate wales 4, 6 and 8 then being knitted off as tuck stitches.

A few courses such as courses A—E are formed at the edge whereupon the elastic yarn 1 after knitting the course F will be thrown out of action and that may be accomplished either by raising or otherwise retiring the elastic yarn feeding finger and floating the elastic yarn or taking it within a binder and cutter. The said elastic yarn may be floated if there are no interfering parts to prevent such handling of yarn, for example, if no wrap mechanism or wrap threads are extending down within the needle cylinder.

Knitting of the yarn 2 or a similar, possibly a heavier, inelastic yarn is then continued after a last course G and tucking begins with the course H. Then several courses from H to I are produced in which the yarn 2 or a substitute yarn will be knitted at each course in the alternate wales 3—9 and will be accumulated and held as tuck stitches generally indicated by numeral 10 at the intermediate wales 4—8. Of course, this method of knitting is continued around the entire needle circle, only a small fragment of the fabric being shown here and including four so-called alternate wales and three intermediate wales.

As above indicated, these tuck stitches 10 may be comprised of as many accumulated loops as may be conveniently held within the needle hooks without overloading them. With ordinary counts of yarn a four to six course tuck will generally be found satisfactory. This number is merely given by way of illustration and there is no intent to be limited thereby. Generally considered, the greater the number of loops retained before knitting off, the more satisfactory will be the tuck area for the intended purpose. After the course I a plain course J is formed to knit off the tuck area and after that course or after a few such courses, another tuck area or zone such as that just described may be knitted and this may be repeated as often as found desirable from a point of view of building up a strong resistant edge and for improving the appearance since these tuck areas have a more or less ornamental effect independently of their structural advantages.

After the one or more tuck areas or zones have been knitted, the remaining portion of the stocking top will be formed, and preferably, will be made in a similar fashion to the type of fabric shown in courses A—G. That is not entirely necessary and the invention is applicable to stocking tops in which different methods of incorporation of the elastic yarn are employed above the tuck areas from that below. Here the continuing fabric after course J is identical with that of St. Pierre Patent #2,131,720.

Now referring to Fig. 2, a stocking top generally indicated by numeral 11 is a part of the stocking 12 and has a beginning edge 13 which would be similar to courses A—C, Fig. 1, then a portion 14 which corresponds to the courses D—G and thereafter a tuck area or zone 15 drawn in a similar fashion to that illustrated with respect to courses H—I. At 16 a course or courses such as J, Fig. 1, are knitted after which a second tuck zone 15 follows. The remainder of the top is knitted as above described.

Now in Fig. 3, course G and the following part of the fabric are shown more as it actually appears. In Fig. 1 the illustration is purely theoretical and since the tuck stitches 10 never can be extended or elongated as much as shown in that figure, the said tuck stitches 10 draw the fabric up so that the course J is really much closer to the course G than would be supposed purely from a theoretical understanding of the fabric. The result is that the stitches in wales 3, 5, 7 and 9 project or bulge forwardly as at 17 and it is this particular characteristic of the fabric which imparts to the same a resistance against the initial courses starting to roll either as the article is worn or as it is displayed for sale.

In Fig. 2 part of the edge has been broken away showing the elastic carrying zones and the tuck or non-elastic carrying zones at the inner face of the fabric. This also assists in placing the article on the leg of the wearer and in holding it firmly in position.

The type of machine employed is preferably a circular, independent needle knitting machine similar to the Banner hosiery knitter well-known in the art, and the mechanism of which is involved for producing this particular fabric includes a main knitting point or station with feeding means for a yarn such as the yarn 2, an elastic yarn feeding means operable in advance thereof and feeding the yarn 1 and pattern control mechanism for moving the said elastic yarn feeding means to and from a feeding position. An

elastic yarn binder and cutter are employed if the elastic yarn is not to be floated.

Needle dividing or selecting means of any of the well-known types are employed at the elastic yarn feeding point to select alternate or other spaced needles for taking the elastic yarn. The elastic yarn is preferably taken in the hooks, but if desired, may be taken below needle latches for inlaying. The needles taking the elastic yarn will be drawn down by a stitch cam or inlaying cam and all of these elements are well-known in the art at this time and need no further description at this point. Tucking control is preferably accomplished by rendering the front stitch cam at the main feeding station movable or by employing jack selection for raising needles to a clearing position if they are to knit and merely raising intermediate needles to a non-clearing position but to a yarn taking position as they tuck. Both these schemes are well-known and mechanism for doing the same is described in prior patents and is understood by those skilled in the art.

While the invention is especially adapted for use in preventing curling or rolling of elastic containing fabrics, it is nevertheless, advantageously employed in mock rib fabrics knitted of inelastic yarns only. For example, accordion type fabrics or stocking tops may be knitted and after the first few courses, the accordion or yarn for producing the mock rib effect may be withdrawn as the elastic yarn would be, and a plurality of courses knitted of a base yarn only then formed with spaced elongated tuck stitches.

Modifications as by varying the number of courses in each particular area or zone, varying the walewise needle selection and spacing as applied to incorporation of elastic and as applied to tucking and the particular system of incorporating the elastic yarn may be resorted to without departing from the scope of the invention which is defined in the appended claims.

I claim:

1. A knitted stocking top having elastic and inelastic yarns incorporated therein, the elastic yarn being so incorporated under tension as to be held at spaced wales to draw said wales together and further, being incorporated for a few courses at the edge of the fabric, then withdrawn leaving a plurality of courses knitted without elastic and followed by courses in which elastic yarn is again incorporated, and in said plurality of courses, the construction being such that the inelastic yarn is tucked at wales intermediate said spaced wales thereby to create a barrier resistant to curling or rolling of said stocking top.

2. A knitted stocking top formed of elastic and inelastic yarns, the said inelastic yarn being knitted throughout the top and the elastic yarn being incorporated under tension to be held at spaced wales to draw said spaced wales together and cause the fabric to simulate a rib appearance, said elastic yarn being thus incorporated at the edge of the fabric for a few courses, courses then following which are knitted of inelastic yarn only, the elastic yarn thereafter being incorporated throughout the remainder of the fabric, the construction being such that in the plurality of courses knitted without elastic, the inelastic yarn is tucked at intermediate wales.

3. A knitted stocking top formed of elastic and inelastic yarns, the said inelastic yarn being knitted throughout the said top and the elastic yarn being drawn into knitted loops at alternate wales only and being knitted under tension to

draw the said alternate wales of the fabric together, the construction of said top being such that for a few courses at the edge the elastic yarn is incorporated as above described, then for a plurality of courses the inelastic yarn is knitted without any accompanying elastic yarn but with elongated tuck stitches at intermediate wales, the remainder of the fabric in the top then being knitted as in the first few courses above mentioned.

4. A knitted stocking top formed of elastic and inelastic yarns and having the inelastic yarn knitted continuously throughout the top while the elastic yarn is knitted under tension and is drawn into knitted loops independently of the inelastic yarn loops but at spaced wales only, the elastic yarn being thus knitted throughout the major part of the top including a few courses at the edge but not being knitted throughout a plurality of courses forming a section or zone of fabric just below the edge in which intermediate wales are tucked over said plurality of courses thereby projecting the stitches in alternate wales outwardly from the face of the fabric to resist curling or rolling of the edge.

5. A knitted stocking top having courses formed from inelastic yarn, some of those courses adjacent the edge of the top having an elastic yarn incorporated to be held under tension at spaced wales, following courses having no elastic yarn incorporated and having at certain wales intermediate said spaced wales elongated tuck stitches, the number of loops held in each said tuck stitch being great enough so as to draw the fabric together walewise and project alternate wales outwardly from the face of the fabric, following courses being knitted to have an elastic yarn incorporated to be held at spaced wales.

6. A knitted stocking top having courses formed from inelastic yarn, some of those courses adjacent the edge of the top having an elastic yarn incorporated to be held under tension at spaced wales, following courses having no elastic yarn incorporated and having at certain wales intermediate said spaced wales elongated tuck stitches, the number of loops held in each said tuck stitch being great enough so as to draw the fabric together walewise and project alternate wales outwardly from the face of the fabric.

7. A method of knitting a stocking top including the steps of feeding and drawing knitted loops of an inelastic yarn at each course in the fabric, incorporating an elastic yarn under tension to be held at spaced wales only and at a few courses at the edge thereof, then withdrawing said elastic yarn and knitting a plurality of courses in which at alternate wales, the inelastic yarn is knitted at each course, but is drawn into elongated tuck stitches over said plurality of courses in which no elastic yarn is incorporated, and thereafter, continuing the knitting of the top by knitting the inelastic yarn at all wales and courses and the elastic yarn to be held at spaced wales and at least some of the courses.

8. A method of knitting a stocking top including the steps of feeding and knitting an inelastic yarn and incorporating an elastic yarn under tension and so as to be held at spaced wales in certain of the courses of inelastic yarn, and incorporating said elastic yarn at the selvage course and for a few courses thereafter, then withdrawing said elastic yarn and knitting a plurality of courses from the inelastic yarn only by knitting it at each course in alternate wales and tucking over the said plurality of courses at intermediate

wales, and then continuing the knitting of said top by knitting the inelastic yarn continuously at all wales and courses and incorporating the elastic yarn under tension to be held at spaced wales and in at least some of the courses throughout the remainder of the top.

9. A method of knitting a stocking top including the steps of feeding and knitting an inelastic yarn and incorporating an elastic yarn under tension so as to complete a selvage and to draw together wales in which the said yarn is incorporated to be held, then withdrawing said elastic yarn and knitting a plurality of courses from the inelastic yarn only and tucking said yarn over said plurality of courses at wales intermediate the said spaced wales, and thereafter, continuing the knitting of the remainder of the top by knitting said inelastic yarn continuously and incorporating the elastic yarn under tension to be held at spaced wales in some of the courses.

10. A method of knitting a stocking top including the steps of feeding and knitting an inelastic yarn and incorporating an elastic yarn under tension so it will be held at spaced intervals in certain of the courses of inelastic yarn, and incorporating said elastic yarn at the selvage course and for a few courses following, then withdrawing said elastic yarn and knitting groups of courses each group containing a plurality of courses and formed of inelastic yarn only, and in each group, tucking the inelastic yarn at spaced wales for the said plurality of courses, and thereafter, continuing the knitting of said top by knitting the inelastic yarn at every course and incorporating the elastic yarn to be held at spaced wales and under tension in some of said courses.

11. A knitted stocking top formed from a plurality of yarns and having a base yarn knitted in all wales and in all courses and another yarn for imparting a rib appearance knitted in spaced wales only and in some at least of the courses, the construction being such that for a few courses adjacent the edge of the fabric both yarns are knitted, then for a plurality of courses, the

yarn for imparting the rib appearance is withdrawn while the base yarn knitted at all wales and courses is accumulated into elongated tuck stitches at spaced wales and thereafter, continuing fabric is knitted of both the base and the rib effect producing yarn.

12. A method of knitting at the edge of an elastic fabric and forming a barrier against rolling or curling which includes the steps of knitting a selvage, courses adjacent the selvage in which elastic and inelastic yarns are combined in such a manner as to simulate a ribbed appearance and draw the fabric together laterally, then withdrawing the elastic yarn and continuing the knitting for a plurality of courses adjacent the edge following the said course of elastic and inelastic yarns, and knitting inelastic yarn only at non-adjacent wales and tucking the said yarn at intermediate wales so as to draw those wales together along their length and project non-tucked wales outwardly from the face of the fabric.

13. A method of knitting at the edge of a mock rib type stocking top and forming a barrier against rolling or curling which includes the steps of knitting mock rib fabric from a base yarn and a mock rib producing yarn for a few courses adjacent the edge following a selvage and then withdrawing the mock rib yarn and knitting a plurality of courses from the base yarn only and tucking said yarn at spaced wales so as to draw those wales together and project non-tucked wales outwardly from the face of the fabric.

14. A stocking top of the so-called mock rib type having a selvage and adjacent that selvage a plurality of courses of mock rib fabric knitted from a base yarn and a mock rib producing yarn and following courses knitted to form a barrier against rolling or curling in which the base yarn is drawn into a knitted loop at each of spaced wales only at each course of a plurality of courses, and is tucked to form elongated tuck stitches in wales intermediate the said spaced wales.

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