

Dec. 19, 1961

A. O. CORMIER

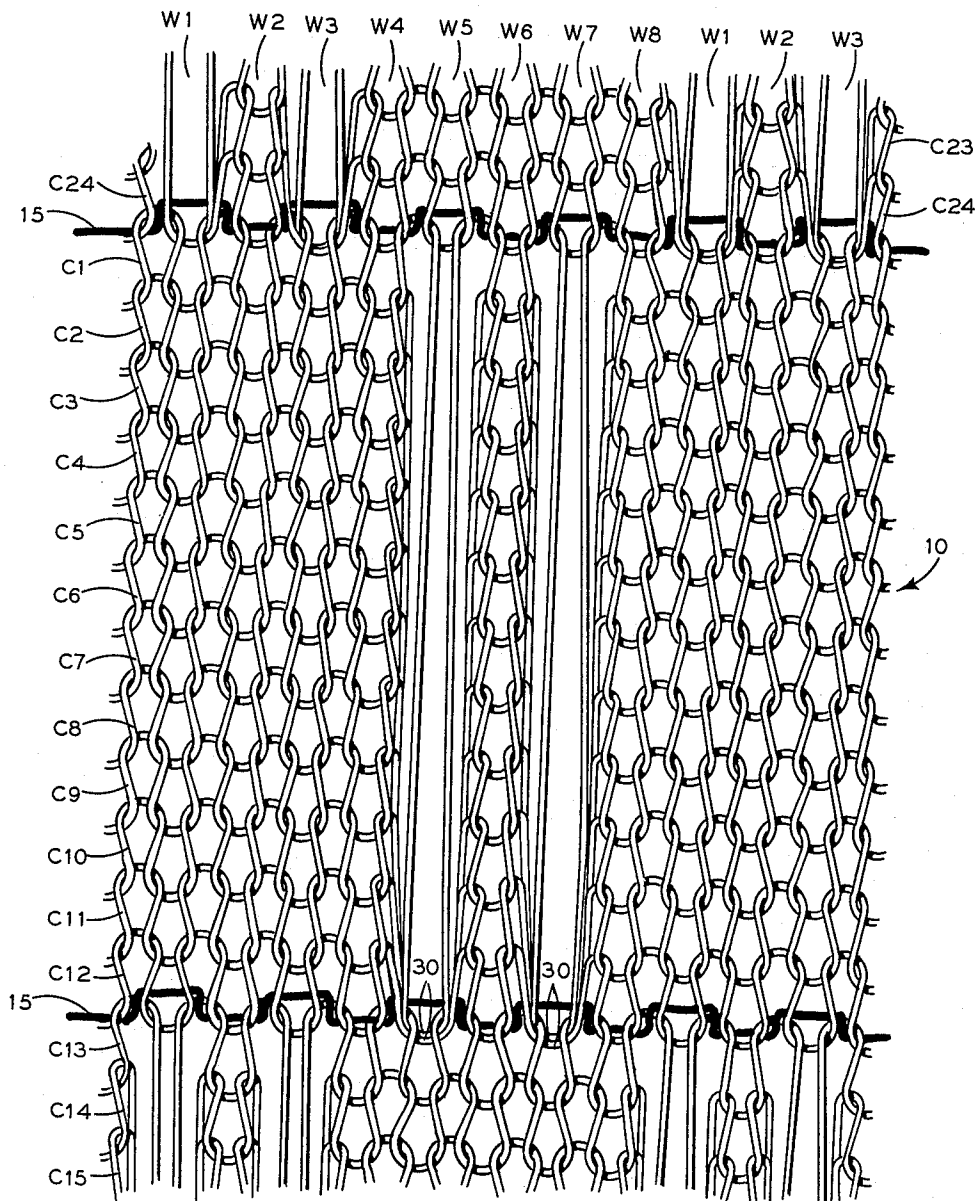
3,013,420

ELASTIC FABRIC FOR A STOCKING TOP

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8 Sheets-Sheet 1

FIG. 1



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FIG. 2

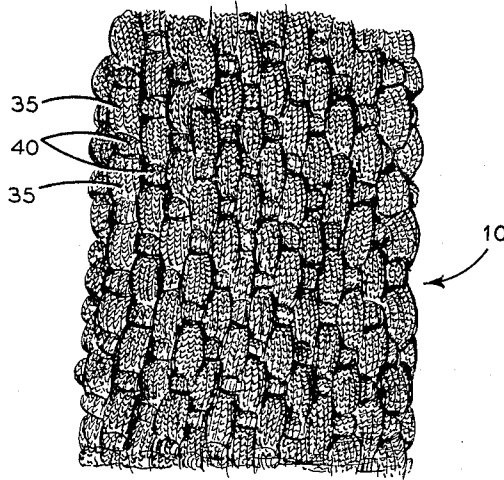
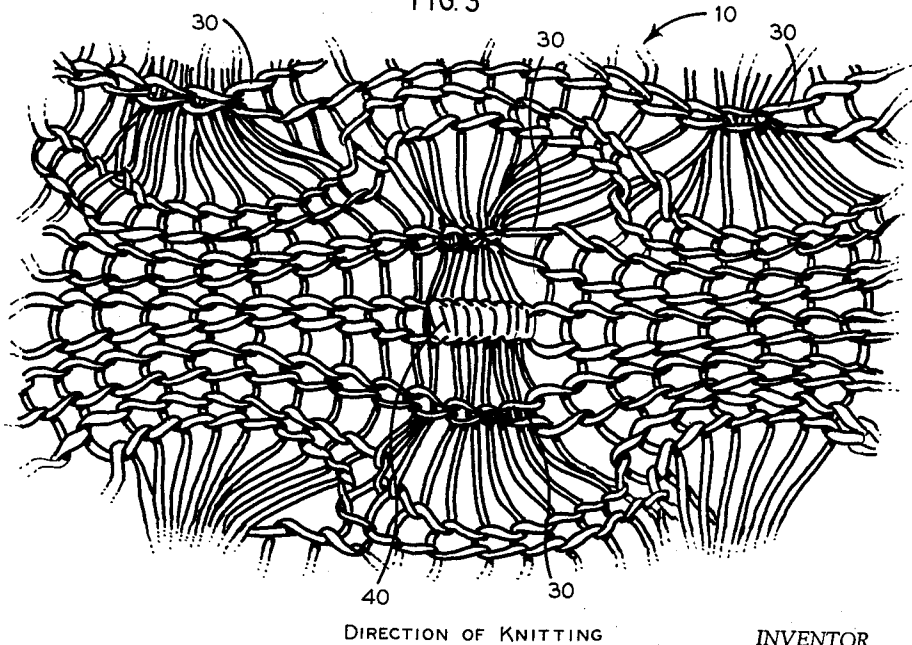


FIG. 3



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FIG. 4

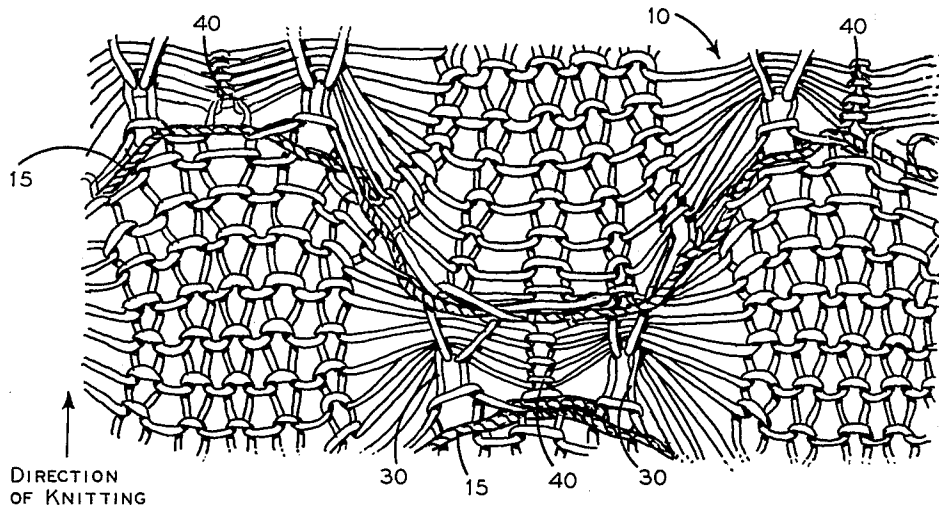
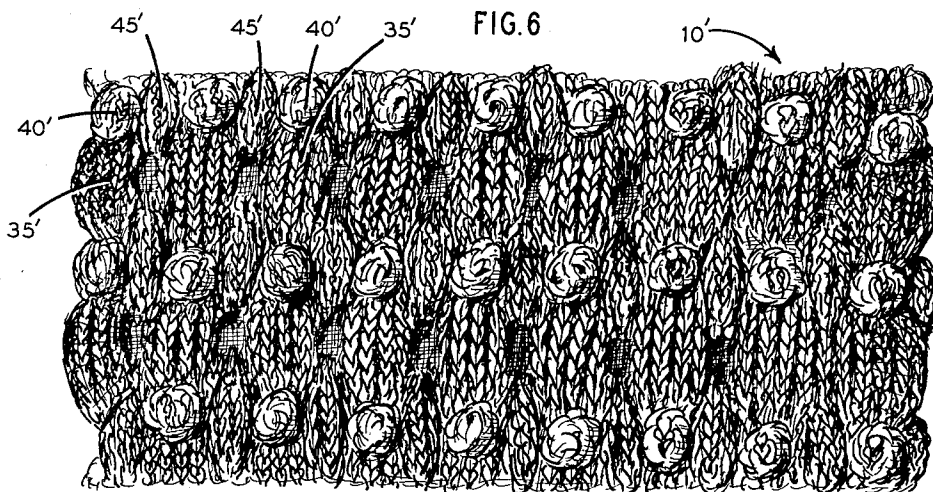


FIG. 6



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FIG. 7

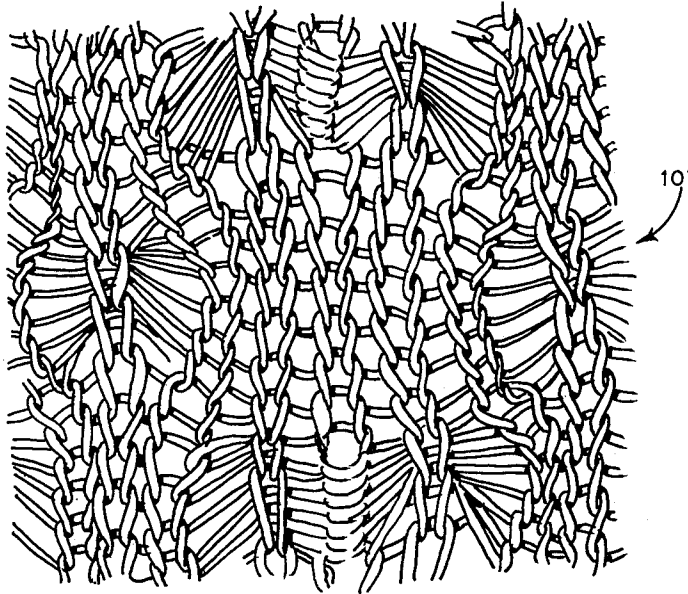
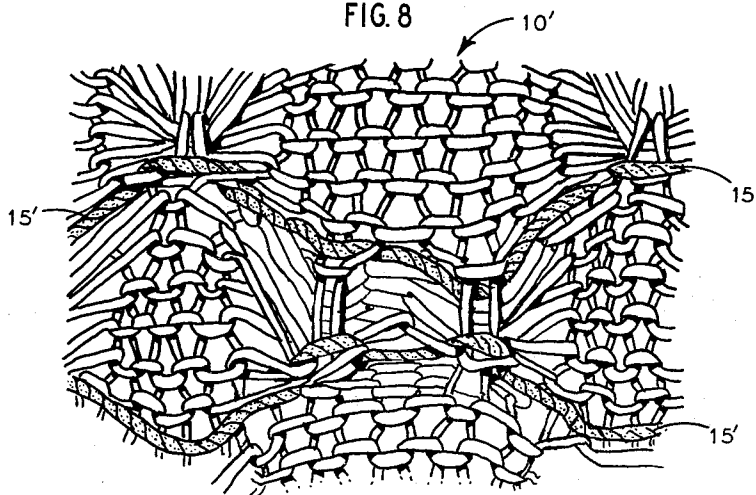


FIG. 8



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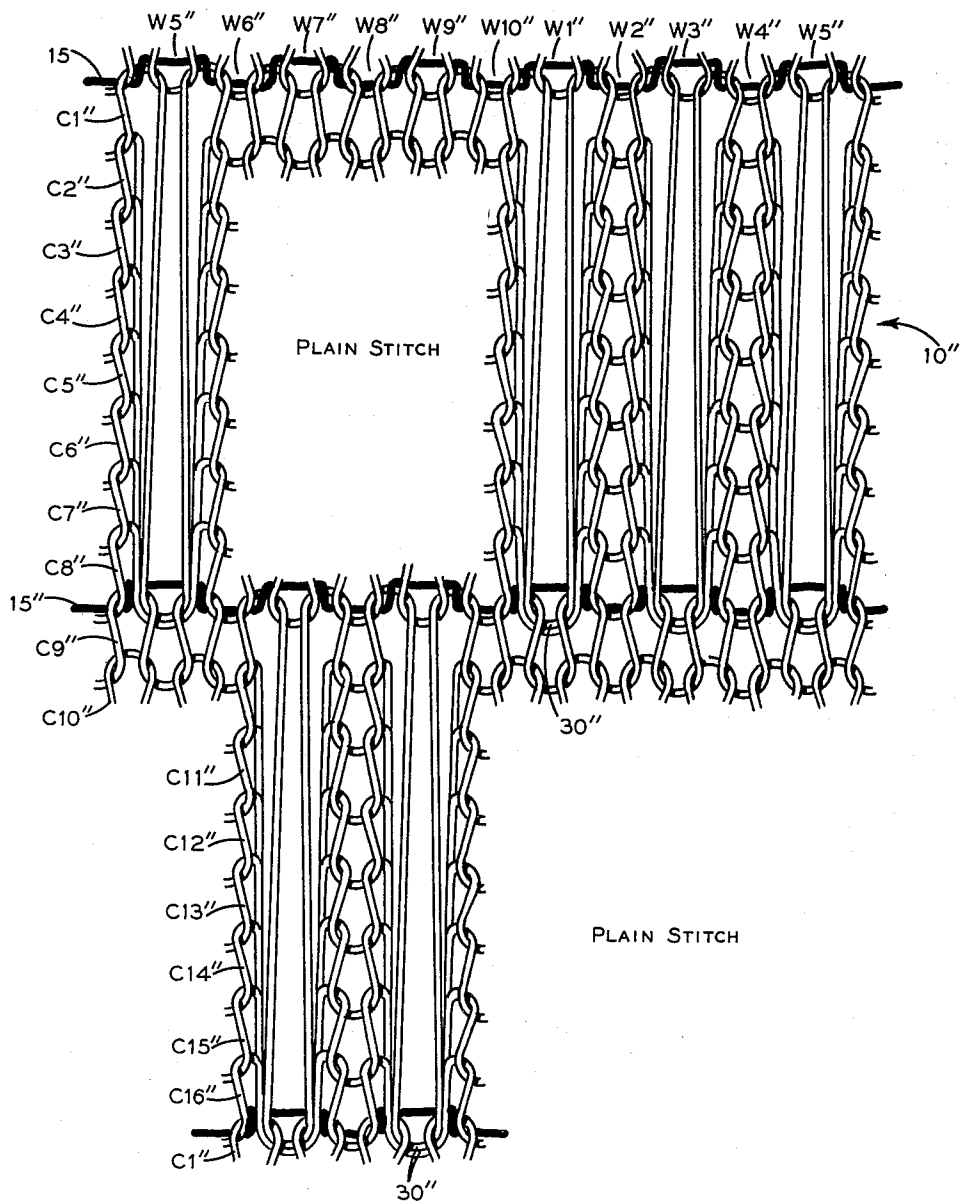
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FIG. 9



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FIG. 10

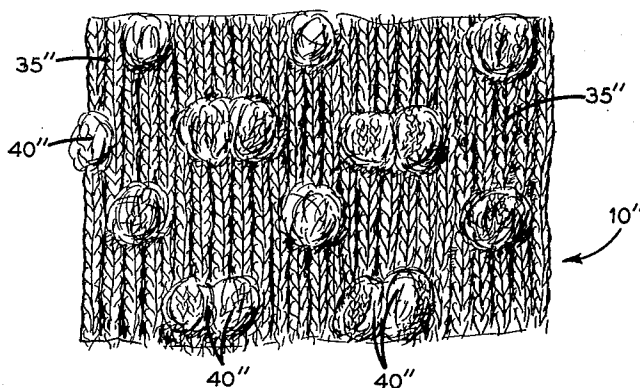
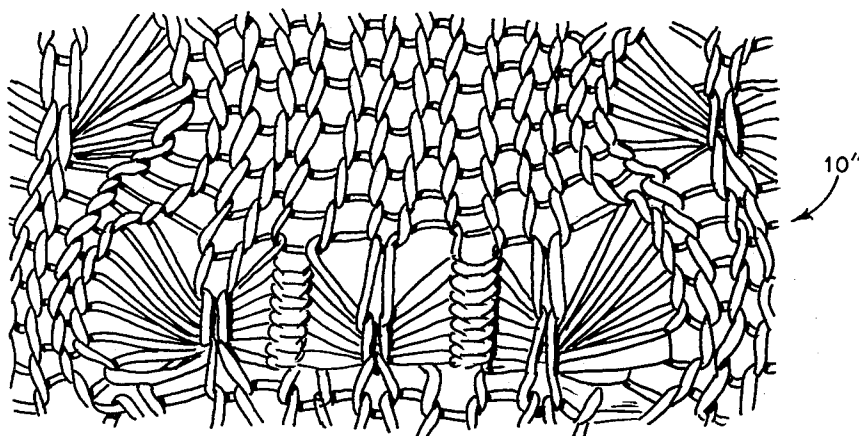


FIG. 11



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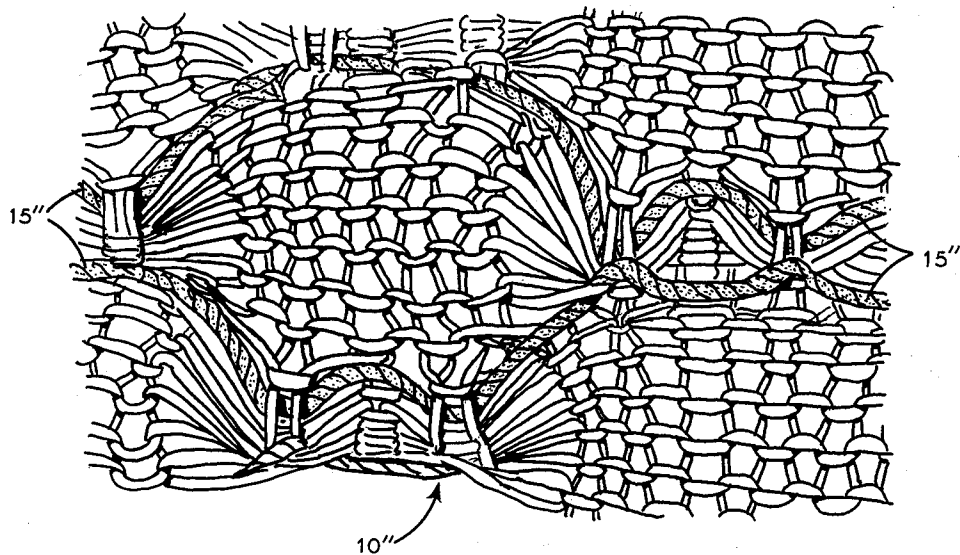


FIG. 12

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ELASTIC FABRIC FOR A STOCKING TOP
Alcide O. Cormier, Laconia, N.H., assignor to Cormier
Hosiery Mills, Inc., Laconia, N.H., a corporation
Filed Dec. 3, 1957, Ser. No. 700,355
6 Claims. (Cl. 66—190)

This invention relates to elastic knit fabrics, such as used in the tops of hosiery, and, more particularly, to a novel knit fabric characterized by longitudinally alternating short and long raised effects or protuberances providing effects or protuberances of substantially differing shapes or forms, with laterally adjacent series of the alternating short and long protuberances being staggered relative to each other, and to a method of making such fabric.

In accordance with the invention, a novel fabric of this type is knit by forming equal number groups of tuck stitches at longitudinally aligned locations in each of two or more successive courses, the tuck stitches within each group being separated by at least one non-tucked wale and the groups of tuck stitches being separated along the courses by a number of wales greater than the number of tuck stitch separating wales within each group. This sequence is repeated in the same locations around further courses after a pre-set number of immediately succeeding courses are knit with tuck stitches formed at locations corresponding to the group-separating wales of the initial sequence. This provides an alternating tuck stitch effect.

An elastic thread is interlaced into either plain courses separating and bounding the groups of courses containing alternating groups of tuck stitches or into the beginning or ending courses in which the alternating groups of tuck stitches are formed. Clearing courses may be used or not, as desired.

For an understanding of the invention principles, reference is made to the following descriptions of typical embodiments thereof as illustrated in the accompanying drawings. In the drawings:

FIG. 1 is a diagram illustrating the stitch formation looking at the face of a first fabric embodying the invention;

FIG. 2 is a reproduction of an enlarged photograph of the unstretched face of such first fabric;

FIGS. 3 and 4 are similar reproductions illustrating, respectively, the stretched front and back faces of such first fabric;

FIG. 5 is a diagram, similar to FIG. 1, of a second fabric embodying the invention;

FIGS. 6, 7 and 8 are views, corresponding, respectively, to FIGS. 2, 3 and 4, of such second fabric;

FIG. 9 is a diagram, similar to FIG. 1, of a third fabric embodying the invention; and

FIGS. 10, 11 and 12 are views, corresponding, respectively, to FIGS. 2, 3 and 4, of such third fabric.

In U.S. Patent No. 2,765,643 issued Oct. 9, 1956 to R. G. Marquis, there is described a fabric having staggered raised effects provided by tucking at alternate needles for a pre-set number of course, clearing at a boundary course, tucking at intermediate needles for a pre-set number of courses, and again clearing at a boundary course, with an elastic yarn being interlaced into the boundary courses between groups of tuck stitches.

In making the fabric of the present invention, a somewhat related technique is used, but the elastic yarn or thread either is interlaced into plain knit courses separating and bounding the courses containing tuck stitches, or it is interlaced into one of the beginning or ending courses including those in which tuck stitches are formed. The clearing courses may be retained or not, as desired. The result is a fabric having novel raised effects of quite dif-

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ferent shapes or forms due to the knitting sequence and contraction of the elastic yarn.

Referring first to FIGS. 1 through 4, the fabric 10 there-in illustrated is shown as comprising, in each sequence, wales W1 through W8 and courses C1 through C24. In knitting this fabric, course C1 is a clearing course and, starting in course C2, the stitches in a pair of alternate wales, for example wales W5 and W7, are tucked through and including course C12. Complete stitches are formed in wales W1 to W4, W6 and W8 in each of courses C2 through C12. In course C13, the held loops of all the previous courses are cleared, or cast off.

Next, starting in course C14, the stitches in wales W1 and W3 are tucked through and including course C24, while complete stitches are formed in wales W2 and W4 through W8. In course C1, following course C24, the held loops of the previous courses are cast off, or cleared.

An elastic yarn or thread 15 is illustrated as interlaced between the stitches forming courses C23 and C24 and between those forming courses C11 and C12. This interlacing may be effected by the known technique of feeding elastic yarn to the hooks of alternate uncleared needles (such as to the needles forming wales W2, W4, W6 and W8), lowering these to bring elastic yarn 15 into the sinker throats with the sinkers withdrawn for this purpose, projecting the sinkers inwardly while the heads of the needles are below the sinker ledges to assure the elastic yarn getting to the back of the intermediate needles, raising all needles to the clear level, and knitting.

If elastic yarn 15 is thus fed to alternate needles while the loops of course C24 or C12 are around the shanks of the needles, the yarn 15 will join the inelastic or regular yarn of course C24 or C12 below the latches of such alternate needles as the regular yarn forming course C1 or C13 is drawn through the loops of course 24 or course 12. Elastic yarn 15 in back of the intermediate needles (such as those forming wales W1, W3, W5, W7) will be associated with the stitches of course C23 or course C11. This technique is described in Page Patent No. 2,117,208.

The clearing courses may be omitted since the tucked stitches are staggered. Tests show that, if elastic yarn 15 is interlaced into the first or last tuck stitch containing courses, a fabric having protuberances will be formed. It is only when elastic yarn is interlaced into the intermediate tuck stitch containing courses that the fabric becomes substantially flat and loses its protuberances.

Referring to FIGS. 3 and 4, it will be noted that the held loops 30 are relatively short, causing the courses to curve instead of lying in a straight line as diagrammatically shown in FIG. 1. The resulting strain on elastic yarn 15 not only causes the fabric to narrow but also to shorten to make the relatively long protuberances 35 of FIG. 2. The excess of stitches in wales W2 and W6 between the held stitches bulge outwardly to form the short and differently formed protuberances shown at 40 in FIG. 2.

From the foregoing, it will be clear that a relatively complicated novel pattern is obtained by rearranging the tucking needles so that, instead of being staggered after a pre-set number of tucks, they are arranged in pairs or groups around the stocking top. The number of courses over which the tuck stitches are held determines the height as well as the length of the raised protuberances.

The tucking needles may be grouped in various ways to produce different effects. Thus, in the fabric 10' of FIGS. 5 to 8, tuck stitches are formed at wales W1', W3' and W5'. The tuck loops of wales W1' and W3' extend over courses C1' through C8', and the tuck loops of wale W5' extend over courses C9' through C16'. The alternating long and short protuberances 35' and 40' will occur in wales W1', W2', W3', while in wales W4', W5' and W6' there will be only substantially uniform length

protuberances 45'. The appearance of the unstretched fabric 10' is shown in FIG. 6, while FIGS. 7 and 8 show the stretched fabric.

Another variation of the fabric is shown in FIGS. 9-12. In these figures, fabric 10' comprises tuck stitches in wales W1'', W3'', W5'' extending over courses C1'' through C8''. The tuck stitch wales are separated, within each group, by plain stitches in wales W2'' and W4'', and the groups are separated by wales W6'' through W10''. In the next sequence, tuck stitches are formed in wales W7'' and W9'' and extended over courses C9'' through C16''. These tuck stitches are separated, within each group, by plain stitches in wale W8'', and between groups by plain stitches in wales W10'' and W1'' through W6''.

As shown in FIG. 10, this produces a fabric 10'' in which, in one group of wales, long protuberances 35'' alternate with laterally adjacent pairs of short protuberances 40''. In the intervening groups of wales, long protuberances 35'' alternate with single short protuberances 40'', these protuberances being staggered relative to those in the first group of wales.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the invention principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. An elastic knit fabric for use in hosiery comprising laterally spaced groups of at least two multi-course neighboring tuck stitches, the tuck stitches within each group being separated laterally by at least one wale of plain stitches, and the groups being separated laterally by a number of plain stitch wales greater than the number of plain stitch wales within each group; followed, in staggered relation, by multi-course tuck stitches in the wales formed of plain stitches separating such groups; and an elastic yarn interlaced in the bordering courses between the staggered multi-course groups of tuck stitches; the fabric being characterized by raised protuberances of differing lengths in staggered relation.

2. An elastic knit fabric, for use in hosiery, comprising bands of several contiguous inelastic courses separated by at least one interlaced elastic course, alternate of said bands of inelastic courses containing groups of single wale tucks involving sequentially the courses between the interlaced elastic courses, the tuck wales having plain wales therebetween; and intervening bands of inelastic courses containing groups of single wale tucks involving sequentially the courses between the interlaced elastic courses, the tuck wales in the intervening bands being in substantial staggered relationship to the tuck wales in the alternate bands of courses; whereby staggered protuberances of different forms are made.

3. An inelastic knit fabric as claimed in claim 2, wherein the elastic is interlaced into the last of the contiguous courses containing the tucks.

4. An elastic knit fabric as claimed in claim 2, wherein certain of the single wale tucks are separated by a single plain wale, thus to form a group of tucks; there being plural plain wales between the groups of tucks.

5. An elastic knit fabric as claimed in claim 2, having groups of tucks in alternate bands of contiguous inelastic courses in staggered relation to group of tucks in intervening bands of contiguous inelastic courses.

6. An elastic knit fabric as claimed in claim 2, wherein the groups of tucks in alternate bands of the contiguous inelastic courses contain a number of single wale tucks differing from the number thereof in the staggered groups in the intervening bands of contiguous elastic courses.

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