April 4, 1961 R. B. SHEEK 2,977,782

KNITTED FABRIC

Filed April 29, 1959 2 Sheets-Sheet 1

FIG. 1.

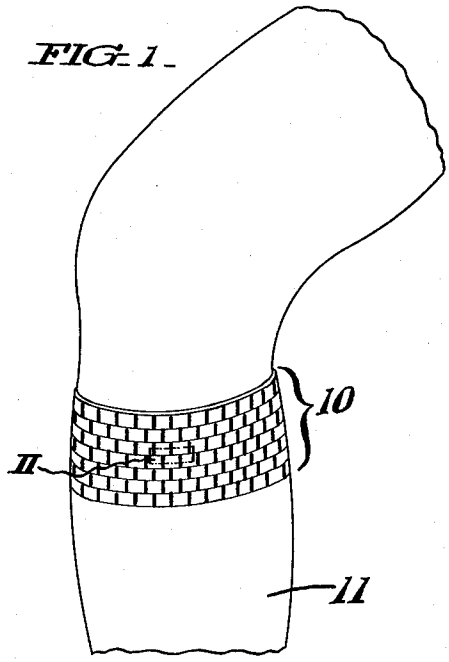


FIG. 3.

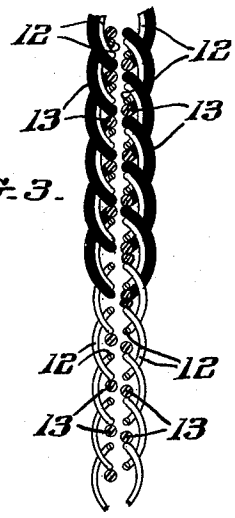
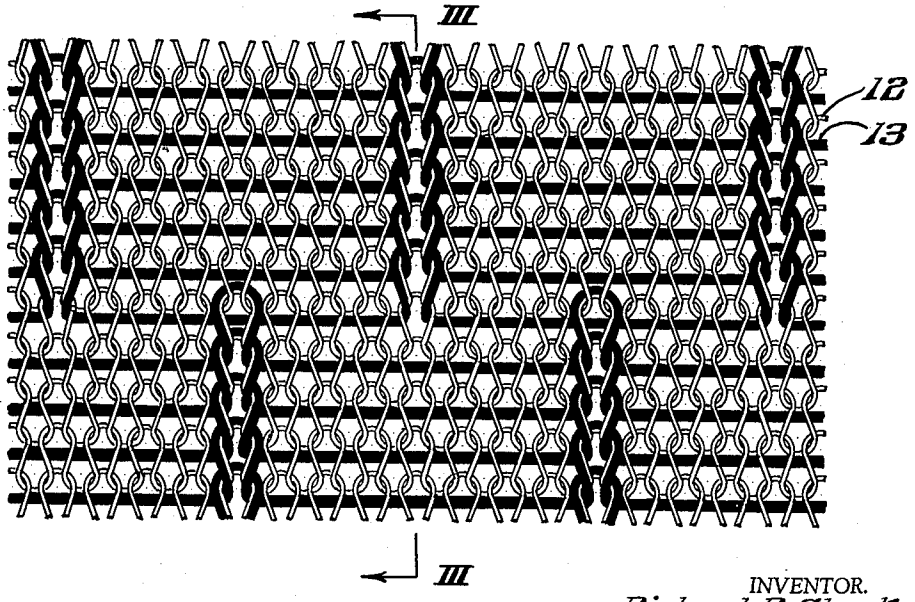


FIG. 2.



INVENTOR.
Richard B. Sheek,
BY Paul & Paul
ATTORNEYS.

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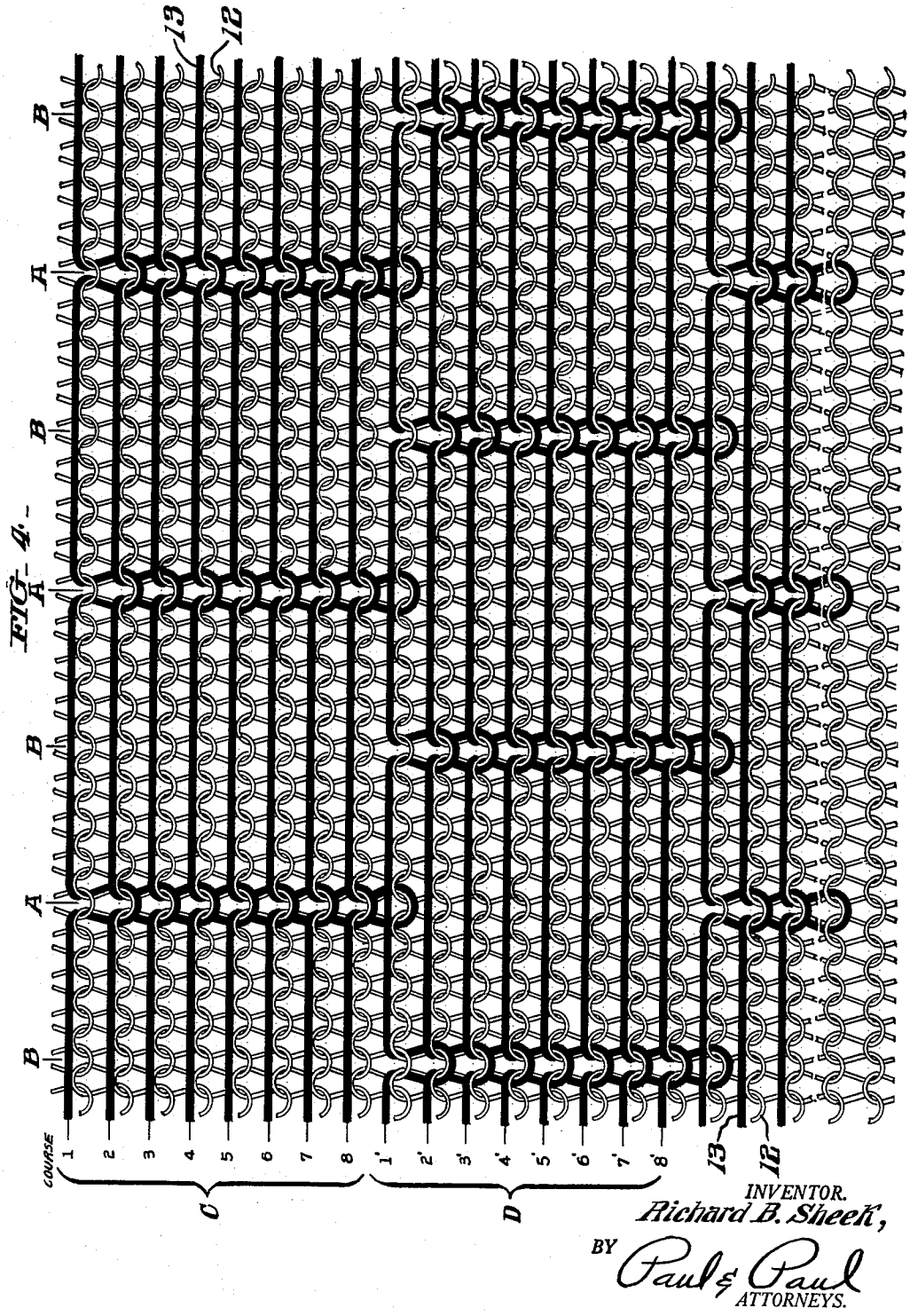


FIG. 4.

INVENTOR.
Richard B. Sheek,
BY Paul & Paul
ATTORNEYS.

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2,977,782

KNITTED FABRIC

Richard B. Sheek, Winston-Salem, N.C., assignor to Hanes Hosiery Mills Company, Winston-Salem, N.C., a corporation of North Carolina

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1 Claim. (Cl. 66—173)

This invention relates to knitted fabrics. More particularly, it relates to knitted elastic fabrics suitable for use as garter welts for hosiery, including particularly anklets, half hose and knee-high and over-the-knee stockings.

Considerable difficulty has been encountered in the past in knitting elastic or garter welts for hosiery made of fine denier yarns, such as nylon and the like, due to the uneven shrinkage occurring during preboarding. Such uneven shrinkage results in internal fabric stresses which cause the finished fabric to develop a tendency to roll inward, a characteristic which is highly unsatisfactory from a commercial standpoint.

The chief aim of this invention is to provide an elastic welt fabric for hosiery which dispenses with the tendency of the fabric to roll as a result of shrinkage during preboarding.

A further object of this invention is to provide an elastic welt fabric for hosiery which incorporates sufficient stretching and gripping ability to maintain the stocking properly on the leg without uncomfortable constrictive effect.

A further object of this invention is to provide an elastic welt fabric which is pleasing and attractive in appearance and which may be readily manufactured on conventional knitting machinery.

Other objects and attendant advantages of this invention will appear from the following detailed description of the attached drawings, wherein:

Fig. 1 is a fragmentary perspective view in elevation of a knee-high stocking having a folded welt incorporating a preferred embodiment of this invention.

Fig. 2 is an enlarged view of that portion of the outer face of the folded welt disposed within the confines of the broken line rectangle II of Fig. 1.

Fig. 3 is a sectional view of the folded welt taken as indicated by the angled arrows III—III of Fig. 2.

Fig. 4 is an enlarged fragmentary view of the welt fabric prior to folding.

For the purpose of this invention, the term "elastic yarn" used herein shall include not only yarns such as rubber, covered rubber and elastic polymers of the type disclosed in U.S. Patent No. 2,623,031, but also shall include synthetic stretch yarns such as those sold under the trademarks "Helanca," "Banlon" and "Agilon."

In the drawings, the numeral **10** indicates a stocking welt incorporating a preferred embodiment of this invention and the numeral **11** designates the leg or boot portion of the stocking. If desired, an afterwelt may be disposed between the welt **10** and the boot **11** of the stocking.

Referring specifically to Fig. 4, it will be noted that the fabric of this invention is formed of inelastic yarn **12**, such as nylon, knit in all wales and courses, and elastic yarn **13**, such as nylon covered rubber, knit in spaced wales and selected successive courses. The fabric may be knitted on standard Scott & Williams Model "KN" 400 needle circular knitting machines using the conventional elastic top attachment.

In knitting the stocking, the usual "makeup" courses first are knitted following which any desired number of conventional courses are knit with the inelastic yarn **12**. In practice, satisfactory results have been achieved by knitting approximately 10 courses of inelastic yarn subsequent to the knitting of the "makeup" courses. Thereafter, the elastic yarn **13** is introduced and is interknit with the inelastic yarn **12** in every eighth wale A of the fabric and is floated across the inelastic yarn wales intervening between the wales A. The elastic yarn **13** preferably is knit for a total of eight courses in this manner following which the elastic yarn **13** is knit for a similar number of courses with the inelastic yarn **12** in wales B and floated across the inelastic yarn wales intervening between said wales B. It will be noted that the wales B are disposed midway between the wales A, so that the separate series of elastic stitches are disposed uniformly in staggered relation to each other.

After eight courses have been knit with the inelastic and elastic yarns interlooped in the wales B, the pattern is repeated by forming eight courses of the two yarns with the elastic yarn **13** again knitted in the wales A and floated across the intervening wales. Thus, the welt fabric of this invention is composed of a plurality of alternating zones or bands C and D containing both inelastic and elastic yarns with the elastic yarn in zones C being knit in wales which are in staggered relation to the wales in which the elastic yarn is knit in zones D.

In order to avoid undue constrictive effect when the fabric is worn, it is preferred that the elastic yarn be fed to the needles under relatively light tension.

Needle selection for the interknitting of the elastic and inelastic yarns is achieved in a manner well understood in the art by the conventional pattern mechanism of the knitting machine whereby selected needles are raised above the remaining needles to take and knit both the inelastic yarn **12** and the elastic yarn **13** in the wales A and B. Since the non-selected needles are not thus raised, the elastic yarn **13** slips behind the non-selected needles and thus floats across the inelastic yarn wales formed by those needles.

After the desired number of zones C and D have been knitted, the rubber yarn is withdrawn and a number of conventional courses are knit solely of inelastic yarn **12**. Preferably, the latter courses should equal in number the courses of inelastic yarn intervening between the "makeup" courses and the first course containing elastic yarn. Following the knitting of the second series of inelastic yarn courses, the fabric is folded by the conventional transfer mechanism to form the welt **10**, whereupon conventional knitting of the afterwelt and the remainder of the stocking proceeds. By folding the fabric of Fig. 4 by the transfer mechanism, to form the folded welt **10** shown in Figs. 1 and 3, the tendency of the fabric to roll as a result of shrinkage during preboarding is neutralized and thus eliminated from the finished stocking.

While in the drawings this invention is disclosed as applicable to ladies' knee-high hosiery, it will be readily understood by those skilled in the art that the invention may also be incorporated in anklets, over-the-knee hosiery and half hose. Similarly, while the zones C and D are preferably shown as comprising eight courses each, it is within the purview of this invention to form such zones of any desired number of courses. While the elastic yarn **13** preferably is shown as being knit in every eighth wale in the zones C and D, it is within the scope of this invention to knit the elastic yarn in wales separated by either a greater or lesser number of intervening wales. For best results, it is preferred that the elastic yarn

stitches in zones C and D be spaced at least two wales apart.

While a preferred embodiment of this invention has been described in detail, it will be obvious to one skilled in the art that various modifications may be made without departing from the invention as hereafter claimed.

Having thus described my invention, I claim:

A closed foldover garter welt top for a stocking, said welt top being of fabric plain knitted from an inelastic yarn comprising multiple bands, each band comprising several courses, the alternate bands having an elastic yarn knitted in plating relation with an inelastic yarn in spaced wales, and the intervening bands having the elastic yarn knitted in plating relation with the inelastic yarn in wales substantially halfway between the spaced wales in said alternate bands.

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