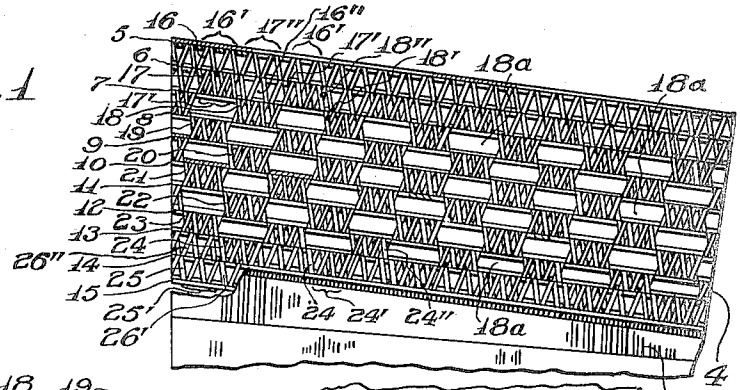
April 7, 1936. P. KRENKEL 2,036,702

HOSIERY

Filed Oct. 7, 1932

Fig. 1



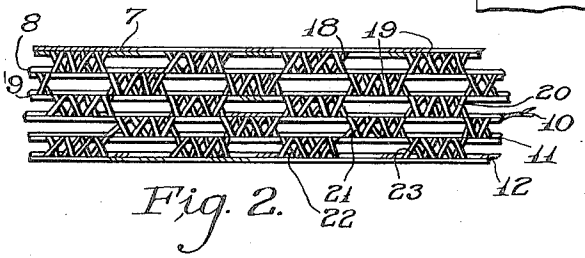


Fig. 2.

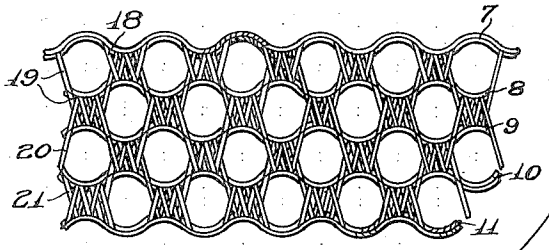


Fig. 3.

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HOSIERY

Paul Krenkel, Burholme, Pa.

Application October 7, 1932, Serial No. 636,733

1 Claim. (Cl. 66—172)

My invention is an improved sock or stocking having a circumferentially expansible upper open work section containing elastic yarn and containing apertures permitting the stretching of the open work portion transversely to its circumference and the protrusion of the flesh of the wearer slightly into such apertures, thereby increasing the frictional engagement between the elastic portion and the leg of the wearer and minimizing the binding or constricting action requisite to firmly hold up the sock or stocking.

In hosiery heretofore having elastic strands interwoven in the stocking web with a view to eliminating the necessity for garters or hose supporters, the frictional effect of such incorporated elastic has been minimized by the slippage of the smooth surface of the knitted stocking web on the smooth surface of the skin, with a consequent tendency of the elastic strands to draw together and form a narrow band or circlet around the leg and of the hosiery to sag and wrinkle, and the constriction effected by the elastic strands is required to be so tight as to cause acute discomfort and impede circulation.

In accordance with my improvements, the objectionable characteristics heretofore prevalent in self-supporting hosiery are obviated, and the sock or stocking is adequately supported by elastic under gentle tension due to the increased frictional engagement between the flesh and the open work material of which the elastic supporting section is fabricated. The apertures moreover permit the elastic section to be expanded laterally, as well as circumferentially, so as to initially embrace an enlarged area and by contracting thereon insure a firm purchase or hold.

In the preferred embodiment of my invention, the upper open work section comprises spaced circumferential courses of elastic, (such as rubber filaments wrapped with fibrous yarn to form an elastic yarn), spaced from one another much further than the diameter of the elastic yarn, and the intermediate elastic thread courses are connected to one another by courses consisting of groups of threads, the groups of each course being spaced from one another and the groups of adjacent courses being staggered relatively to one another, the groups in one course preferably including a strand or strands from an adjacent course. The edge sections of the elastic portion preferably have a course or courses of elastic yarn connected to one another by a continuous row or rows of stitches, so that such edge portions have somewhat less expansibility than the intermediate section between the edges of the elastic portion.

The characteristic features and advantages of my improvements will further appear from the following description and the accompanying drawing in illustration thereof.

In the drawing, Fig. 1 is a fragmentary elevation of a sock or stocking having my improvements applied thereto, the upper portion of the sock being slightly enlarged and stretched; Fig. 2 is an enlarged fragmentary view of an open-work section of the elastic supporting zone stretched circumferentially; and Fig. 3 is a further enlarged fragmentary view of a section of the elastic zone stretched transversely to the circumference thereof.

In the embodiment of my invention illustrated in the drawing, the foot 1 and the leg 2 may be knitted in the usual manner on either a full-fashion or circular knitting machine, and the top of the leg may be reenforced for a short distance to provide an embryonic welt 3 between the leg section 2 and the circumferentially expansible open work top section 4.

The top section 4 preferably consists of a plurality of courses of elastic yarn 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15, the elastic yarns preferably consisting of a rubber core sheathed in fibrous yarn wrapped and braided so as not to interfere with the stretching and contraction of the rubber core.

The elastic yarn courses 5, 6 and 7 are connected together by rows of stitches preferably formed by strands 16 and 17. The strand 16 is stitched across between the courses 5 and 6 to form a pair 16′ of inverted V's and the strand 17 is stitched across between the courses 6 and 7 to form a pair of V's 17′ complementary to and immediately below the pair of inverted V's 16′. The strand 16 then passes downward and is stitched across between the elastic yarn courses 6 and 7 to form a pair of V's 16″ alongside the group 17′ while simultaneously the strand 17 passes upward and is stitched across between the elastic yarn courses 5 and 6 to form a pair of inverted V's 17″ along side the first group 16′. The strand 16 then again passes upward to form a second pair of inverted V's 16′ and the strand 17 passes downward to form a second pair of V's 17′ complementary to and below the second pair of inverted V's 16′. The formation of the alternate groups of stitches in the two courses is continued throughout the entire length of the elastic yarn courses.

A strand 18 is stitched across between the

courses 7 and 8 to form pairs of V's 18', and after forming a pair of such V's passes up to form pairs of inverted V's 18'' between the courses 6 and 7, the inverted V's 18'' crossing the V's 17'. The strand 18 again passes downward to form a pair of V's 18' spaced from the first pair of V's 18' so as to leave an aperture 18a. The stitching is continued in the same manner around the entire circumference of the courses 7 and 8.

Strands 19, 20, 21, 22 and 23 are similarly stitched between their respective succeeding courses so as to form a pair of V's in one course and a pair of inverted V's in the next higher course and leaving apertures between the groups of stitches.

A strand 24 is stitched across between the courses 13 and 14 to form pairs of V's 24' between such courses and inverted V's 24'' between the courses 11 and 12.

A strand 25 is stitched across between the courses 14 and 15 to form a pair of V's 25' between the courses 14 and 15. The strand 25 then passes up between the courses 13 and 14 to form inverted V's crossing the V's 24' formed by the strand 24. A second strand 26 is stitched across between the courses 14 and 15 to form a pair of V's 26' filling in the space between the pairs of V's 25' and the strand 26 then passes upward between the courses 13 and 14 to form pairs of inverted V's 26'' which fill in the spaces between the groups of cross threads formed by the V's 24' and the inverted V's 25''.

It will thus be seen that the elastic yarn courses 7 to 13 inclusive are connected with one another by groups of stitches, the groups of one course being spaced from one another and staggered relative to the groups of stitches in an adjacent course so as to form circumferential rows of apertures with the apertures of one row staggered relative to the apertures of the adjacent row. The groups of stitches connecting the courses 7 to 13 inclusive consist, as shown, of cross stitches in each group spaced by apertures. The stitches connecting the courses 6 and 7 and the courses 13 and 14 consist, respectively, of groups of cross stitches indispersed with groups of uncrossed stitches. The stitches connecting the courses 5 and 6 and the courses 14 and 15 consist, respectively, of groups of uncrossed stitches.

In drawing the stocking up over the leg, the elastic section yields both circumferentially, as illustrated in Fig. 2, and longitudinally, as illustrated in Fig. 3. When the pull is released, the section 4 contracts both circumferentially and longitudinally and tends to slightly wrinkle the skin or form minute bulges of flesh protruding into the apertures. The tendency of the section 4 to slip on the skin is thereby minimized so that a light tension is sufficient to hold up the stocking.

Having described my invention I claim:

A stocking having at the top thereof a leg-gripping section including a plurality of normally straight parallel elastic rubber yarns, a thread forming a group of stitches between the first and second of said yarns, then forming a group of stitches between the second and third of said yarns, and then forming a group of stitches between the first and second of said yarns in spaced relation with said first group, and so on circumferentially around said section: a second thread forming a group of stitches between the second and third of said yarns, then forming a group of stitches between the first and second of said yarns, and then forming a group of stitches between the second and third of said yarns, and so on circumferentially around said section, the groups of stitches formed by the second thread being staggered relative to the groups of stitches formed by the first thread; a third thread forming a group of stitches between the second and third of said yarns, then forming a group of stitches between the third and fourth of said yarns, and then forming a group of stitches between the second and third of said yarns, and so on circumferentially around said section, the groups of stitches formed by the third thread between the third and fourth named yarns bounding the sides of apertures between the third and fourth yarns.

PAUL KRENKEL.