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J. W. METTLER ET AL

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HOSIERY

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Fig. 1.

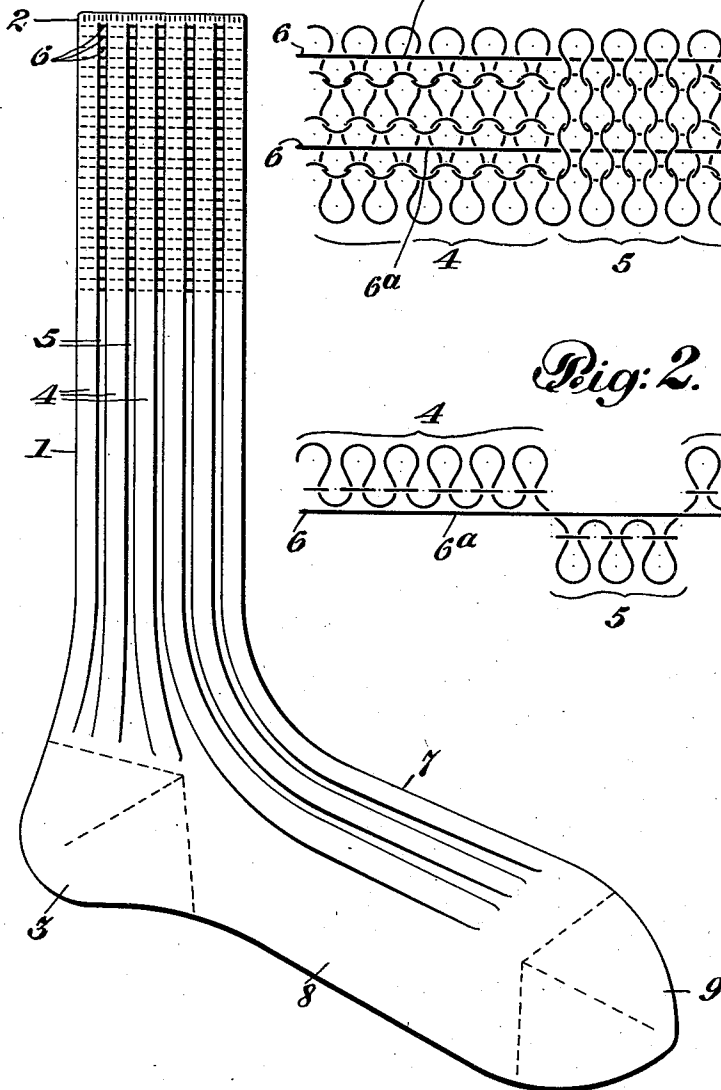


Fig. 3.

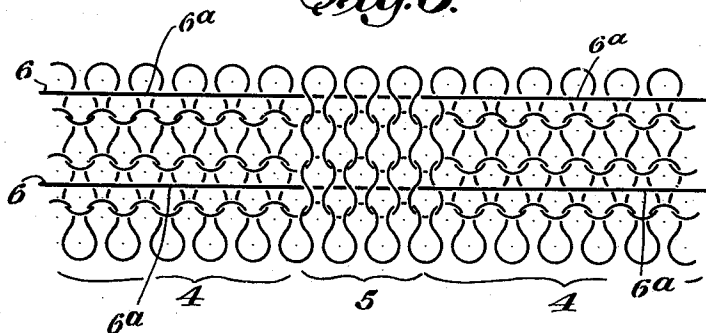
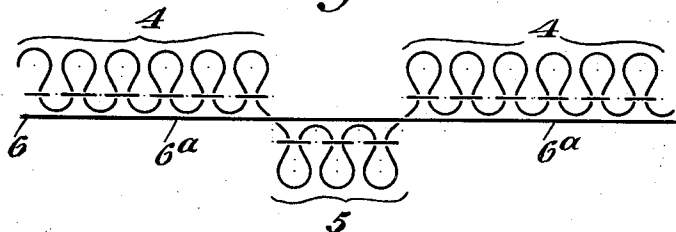


Fig. 2.



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HOSIERY

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Application July 23, 1938, Serial No. 220,958

1 Claim. (Cl. 66—172)

Our invention consists in the novel features hereinafter described, reference being had to the accompanying drawing, which shows one embodiment of our invention, selected by us for purposes of invention, and the said invention is fully disclosed in the following description and claims.

Our invention is a new and improved article of broad rib knit hosiery having elastic thread incorporated therein, for the purpose of making it, or portions of it, self-supporting. Our invention finds its largest utility in rib knit socks or the "tops" or upper portions of the leg portions thereof, and particularly the extremely desirable and popular 6 x 3 rib knit socks, although it may be employed for other purposes.

In the manufacture of rib knit socks it has been proposed to lay in an elastic thread between the face wales, or wales projecting outwardly on the outer face of a rib knit fabric, and the inner wales which project inwardly in the inner face of the fabric. Tops of stockings have heretofore been largely formed of 1 x 1 rib fabric, and such tops with elastic thread laid in, in the manner described, have been placed on the market. It has been found, however, that such elastic thread incorporated rib tops have not been satisfactory for the reason that the elastic thread cannot come into contact with the flesh of the wearer by reason of the fact that it is held away by the inwardly extending wales, which being vertical, act as vertical runners in the direction in which the tops tend to slide or work down the leg, and if by laying in the elastic thread in every course, a practical garter band is formed, the tension on the elastic thread, and in the resulting band, must be greater than that of a normal garter, and causes discomfort. Even with this high tension the tops, or socks, will not ordinarily stay up uniformly unless the leg is made of sufficient length to bring the garter band so formed above the greatest diameter of the calf of the leg.

In the manufacture of rib knit socks having a large number of face or exterior wales, such as the 6 x 3 rib, it is obvious that the rib knit tube so formed does not have as great a form fitting character, that is contraction, as the 1 x 1 rib structure, and it has been customary to provide socks having 6 x 3 rib legs with 1 x 1 rib tops to provide the desired form fitting effect.

We have discovered that if a tubular rib knit fabric having a large number of face wales, such as 6 x 3 for example, is provided with elastic thread laid in between the face wales and inner wales, in courses sufficiently spaced or separated

from each other, long floats of the elastic thread are formed on the inner face of the rib knit fabric, lying behind the face wales and in front of the inner wales, which floats form substantially or nearly continuous horizontal beads, separated from each other sufficiently to directly and independently engage and indent the skin of the wearer, and interlock with contiguous portions of the skin between such indentations, so that with a very slight tension, not perceptible by the wearer, the fabric will be supported firmly without discomfort, and further the broad rib fabric, as 6 x 3, will be rendered as perfectly form fitting as the ordinary 1 x 1 rib.

In accordance with our invention, therefore, we knit the entire leg of the stocking of rib knitting, having a large number of consecutive face wales, and with an inelastic thread, and introduce into the upper portion of the leg corresponding to the top of an ordinary sock, an elastic thread in courses spaced from each other far enough to enable the floats of elastic thread behind the consecutive face wales to independently indent the skin of the leg of the wearer and interlock therewith. The elastic thread is preferably the well known "Lastex," which is a rubber thread covered or wrapped with a fabric thread, or threads, so that it will take the dye in the case of a dyed sock, or may be dyed the same color as the inelastic thread, if such is used, so that any floats of the elastic thread which appear on the outer face of the fabric in front of an inner wale, or wales, will not be appreciably noticeable. By our invention a rib knit sock having a large number of consecutive face wales, as a 6 x 3, may be knit continuously and uniformly from the welt to the heel, without changing the type of rib knitting and without transferring a top knit on a different machine to the machine knitting the remainder of the leg. The elastic thread is fed under a light tension while knitting the courses in which it occurs, preferably sufficient only to enable the coils of elastic thread to contract to the same diameter that courses formed entirely of non-elastic thread will contract, by reason of the inherent character of the rib structure, when removed from the machine.

In the accompanying drawing we have illustrated our invention embodied in a 6 x 3 rib sock, but we wish it understood that it is applicable to other broad rib patterns having a sufficiently large number of face wales, to provide floats in rear of the same which will come into contact with and separately indent the skin of the wearer, and interlock with the same, as pre-

vously described. The term "broad rib" is employed to distinguish from narrow rib fabric, such as the 1 x 1 or 2 x 1 rib fabric heretofore used for the top portions of socks, and designates fabric having outwardly facing ribs each composed of not less than four wales and inwardly facing ribs each composed of not more than half as many wales as the outer ribs.

In said drawing,

Fig. 1 represents a side view of a sock embodying our invention.

Fig. 2 is a diagrammatic view illustrating a section of a portion of the elastic thread incorporated rib fabric.

Fig. 3 is a diagrammatic view illustrating the inner face of a series of consecutive courses of the elastic thread incorporated rib fabric.

In Fig. 1 the leg of the sock, indicated at 1, is provided at its upper end with a selvage or welt 2 of any preferred type and is knit, in this instance, continuously from the welt or selvage down to the heel 3, by 6 x 3 rib knitting, with an inelastic thread or threads, the consecutive face wales being indicated at 4 and the inner wales being indicated at 5. In the upper part of the leg portion, corresponding with the top of an ordinary sock, the elastic threads are indicated in this instance in every other course at 6, being shown in full lines where they appear in front of the inner wales, and in dotted lines where they form long floats on the inner face of the fabric, in the manner previously described. The heel 3 is formed in the usual manner by plain knitting and narrowing and widening, after which the foot is knit, the top portion 7 being preferably of the same rib pattern and the sole portion 8 of plain knitting, and the toe pocket 9 formed and united to the top of the foot in the usual way. The elastic thread is preferably fed under sufficient tension to cause the coils thereof to contract to the same extent as the courses of inelastic rib stitches contract when removed from needles of the knitting machine, so that the elastic thread incorporated top portion of the leg is of substantially the same diameter as the other portions of the leg, as shown in Fig. 1, giving the sock a very neat and uniform appearance and carrying the 6 x 3 or other selected rib patterns uniformly throughout the leg portion.

In Fig. 2 it will be noted that the elastic thread 6, one coil of which is shown (and which is continuous throughout the portion of the leg in which it is incorporated) is laid in between the face wales 4 and the inner wales 5, long floats 6a being formed in rear of the consecutive face wales, which, when the leg portion is expanded as it is drawn upon the leg, will be

drawn into direct contact with the skin of the wearer and interlocked therewith, as previously described.

Fig. 3 shows a portion of the inner face of the elastic thread incorporated portion of the leg, showing the elastic thread coils 6 forming the long floats 6a behind the large number of face wales 4, as shown in full, the portions extending on the outside of the inner wale or wales 5 being shown in dotted lines.

We have found that the novel fabric and sock embodying our invention and herein shown and described can be made advantageously on the well known Komet machine, manufactured by The Bentley Engineering Co. of Leicester, England, but it can also be made on other machines capable of producing 6 x 3 rib knitting, by providing an auxiliary thread guide for laying in the rubber or other elastic thread at predetermined spaced courses if the machine is not so provided.

While we have shown the elastic thread laid in in every other course, it will be understood that the courses containing it may be every third, fourth or fifth course, but in any case the elastic thread incorporated courses may be spaced sufficiently to allow the long floats in rear of the large number of face wales to independently indent and interlock with the skin of the wearer. It will be understood that spaced courses containing the elastic thread are separated by one or more courses which do not contain elastic, or in other words, that the elastic thread is incorporated in said spaced courses only.

What we claim and desire to secure by Letters Patent is:

An article of hosiery having a form-fitting and self-supporting top portion knitted as a plurality of courses of broad rib fabric with outwardly facing ribs each composed of not less than four wales and inwardly facing ribs each composed of not more than half as many wales as the outer ribs, and having a continuous elastic thread extending entirely around the leg in spaced courses only of the top and forming on the inner face of the top a plurality of vertically spaced, horizontally extending beads which project inwardly to directly engage and indent the skin of the wearer and interlock with the indentation thus formed, the length of the elastic thread in each course containing it being such as to compensate for the reduction in the form-fitting character of the fabric due to the broad rib structure.

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