The present invention generally relates to combination leg and foot blanks for full-fashioned stockings, and the method of making the same. More particularly, the invention pertains to heelless combination leg and foot blanks adapted to be topped onto the points of a special topping stand having pairs of relatively movable topping point sections and, thereafter, deposited onto the needles of a heel machine operable to knit heel tabs onto said blank by knitting the heel tab fabrics as continuations of the last course of the high heel sections of the blank and by transferring the first course of the sole sections of said blank for interknitting with the inner selvages of said heel tab fabrics, as shown and described in co-pending application, Serial No. 110,707, filed November 13, 1936, in the name of Fritz Lambach.

The topping of the blank in the manner described in the co-pending application above identified has been found difficult to accomplish because of the relatively small size of the loops to be topped. Moreover, the difficulty encountered in the proper topping operation is enhanced due to the fact that the paralleling series of relatively small loops to be topped on the topping point sections are different in that the series of loops to be topped on one topping point section extend in one direction longitudinally of the fabric, whereas the series of loops to be topped on the other topping point section extend in the opposite direction longitudinally of the fabric.

The invention, therefore, has for one of its main objects the provision of a combination leg and foot blank of the type mentioned wherein the topping courses at the high heel and sole sections are made of loops constructed to facilitate the engagement with the topping points and simplify the topping operation on the topping point sections.

The transferring of the loops of the first course of the sole sections in the heel knitting machine, as set forth in the co-pending application aforesaid, has also proven a source of difficulty because the transfer of the relatively small loops for interknitting with the inner selvage edges of the heel tab fabrics results in unduly stressing said loops, causing a distortion thereof and, accordingly, producing an unsatisfactory fabric. This detrimental result is particularly noticeable at the heel corners, that is, at the point where the heel tabs are connected to the ankle loops in the combination leg and foot blank.

It is, therefore, another important object of the invention to provide a stocking blank of the character stated wherein the first course of each sole section is formed of loops constructed to permit the easy transfer thereof without the danger of detrimental distortion along the line of connection between the sole sections and heel tabs, as well as at the point of connection between said heel tabs and ankle loops.

Other important objects and advantages of the invention will be in part obvious and in part pointed out hereinafter.

In order that the invention and its mode of operation may be readily understood by those skilled in the art, I have, in the accompanying drawing and in the detailed description based thereupon, set out a possible embodiment of the invention.

In this drawing:
Figure 1 is a diagrammatic representation of a combination leg and foot blank constructed in accordance with the invention;
Figure 2 is an enlarged diagrammatic representation of the loop structure of the portion of the blank shown in Figure 1 at the juncture of the high heel and sole sections;
Figure 3 diagrammatically illustrates the fabric topped on the two series of needles in straight line relationship subsequent to the severing of the fabric;
Figure 4 diagrammatically illustrates the high heel, sole, and heel tab sections of the stocking blank after the knitting of a number of heel courses;
Figure 5 is a diagrammatic representation of a completed foot and leg blank with the heel tabs knitted therein;
Figure 6 is a diagrammatic illustration similar to Figure 2 showing a modified form of the invention.

Referring more particularly to the drawing, wherein like characters of reference will designate corresponding parts throughout, there is diagrammatically shown in Figure 1 a stocking blank 10 comprising a leg fabric 12 having reinforced high heel sections 14, and a foot fabric 15 having reinforced sole sections 16, which are formed by continuous knitting into the combination leg and foot blank.

Between the leg and foot fabrics of the blank, as best shown in Figure 2, a number of courses, preferably two partially non-reinforced courses 20, are provided which serve to form a line of demarcation between those portions of the last course of the high heel sections and the first course of the sole sections into which the heel tabs are subsequently to be knitted. During the
knitting of the partial courses referred to, the knitting with a reinforced yarn is continued on a restricted number of needles so that a reinforced selvedge loop 22 is provided at the inner ends of the partial non-reinforced connecting courses 20 to form the heel corners X of the finished blank (Figure 5). It will be understood that the courses 20 may be knitted with a separate yarn so that when these connecting courses are subsequently removed (as by cutting or pulling out the yarn forming the loops), no yarn forming the body portion of the fabric will have been broken or cut.

In accordance with the invention, the last course of the reinforced high heel loops designated at 24, the first course of the reinforced sole loops designated at 26, the partial courses of reinforced loops designated at 28 including the reinforced selvedge loops 22 and the partial non-reinforced courses 20, are loosely knitted so that said loops are somewhat larger in size than those of the remaining portions of the combination leg and foot blank fabric. For this reason, it will be understood that said last course of reinforced high heel loops 24 and first course of reinforced sole loops 26, and reinforced selvedge loop 22 may be easily tapped onto the series of tapping points comprising a stationary point 30 and two additional points sections, designated respectively at 32 and 34, which are arranged in parallel relationship, as shown in diagrammatic Figure 2, that is, in substantially the same position where-in the fabric loops appear in the combination blank.

Attention is called to the fact that the loops of the first course of the sole sections are substantially larger than the loops of the last course of the high heel sections. Because of this feature, the size of the skinner wale loops of the first course of the sole sections, which are to be tapped on, are larger in size than the loops of the first course of the high heel sections which are to be tapped on the series to tapping points 32.

In practice, the loops of the last course of the high heel sections are enlarged, but to a very slight extent, with respect to the loops of the body fabric so that the difference in size is not noticeable in the stocking after the heel tabs have been knitted onto said courses. However, the slight increase in the size of said last course of loops is sufficient to assure their easy engagement with the tapping points. As to the loops of the first course of the sole sections, they are increased to a substantial size, which not only provides for easy tapping operation, but also facilitates their subsequent transfer by operation of the heel knitting machine in effecting the interlooping, interknitting connection between said sole sections and heel tabs. Thus, in actuality, the size of the loops to be transferred is enlarged beyond the size of the loops which are not to be transferred.

Because of the substantial increased size of the loops forming the first course of the sole sections, it will be appreciated that said loops may be moved laterally from one needle onto another without materially distorting the fabric. Moreover, since the transfer of said loops is made later on the selvedge edge of the heel tabs, the substantial increase in size is not detrimental to the appearance of the completed stocking, the enlarged loop openings being effectively closed by the overlapping and interknitting of loops.

Attention is called to the fact that the loose-

ness of the loops 23 in the partial reinforced courses at the ankle is likewise not detrimental to the appearance of the finished stocking because these loops 23, being located at the heel corners X, turn with the fabric to conform to the shape of the foot. Moreover, the looseness of said loops 23 is taken up in the finished stocking by the normal natural pull of the heel, which produces the additional advantage of relieving the heel corners X of undue stresses.

In Figure 6, there has been shown a modification of the invention wherein the enlarged loops of the loosely knitted courses 24a, 26a, and 28a are gradually reduced in size towards the body of the blank. The gradual reduction in the size of the loops in said courses reduces to a minimum the danger of marked differentiation in the finished stocking between the courses of loops of normal size and the courses of loops of enlarged size.

In realizing the invention, the variation in loop sizes may be had by means of the ordinary well known loose course mechanism usually provided on knitting machines now in use, such loose course mechanism acting during the normal operation of the knitting machine, particularly through the pattern chain mechanism thereof, to automatically displace the needles in relation to the ponder edge, thus regulating the length of the loops during the knitting of the fabric blank.

The advantages of a combination leg and foot blank constructed in accordance with the present invention will clearly appear upon reference to Figures 2, 3, 4, and 5. It will be noted from Figure 2 that the tapping operation is carried out prior to the cutting or removal of the partial non-reinforced connecting courses 20, said tapping operation being facilitated due to the increase in the size of the tapping loops, as heretofore stated.

By performing the tapping operation prior to the cutting or removing of said connecting courses 20, all of the disengaged fabric loops are supported by the tapping points to prevent any possibility of dropping of loops when the blank sections are separated. Following the tapping operation, the loops forming the partial courses are preferably severed by means of knives X to permit the separation of the two tapping sections, and the loops supported thereon, which are moved outwardly so that all the tapping points become spaced to register with the quills of an ordinary transfer bar, which is utilized to deposit the tapped loops onto the needles of a heel knitting machine, the loops of the last course of the high heel sections 24 being deposited on a set of knitting needles N and the loops of the first course of the sole sections 18 being deposited on a set of non-knitting needles N1, as represented in Figure 3.

In the knitting of the heel tabs 43, yarn is fed to the knitting needles N in the usual manner, particularly as set forth in the co-pending application hereinafter identified, so as to knit the courses 44 (Figure 4) of the heel tabs 42. During the knitting of said heel tabs 42, the loops 45 of the first courses of the sole sections are gradually transferred to the loops of the knitting engagement with the heel tabs in the manner also set forth in said co-pending application, the transfer of the loops, however, being facilitated due to the enlarged size of the transferred loops.

From the foregoing description, it will be ap-
precipated that the present invention, in providing particular types of loops in specific portions of a combination leg and foot stocking blank, not only facilitates the handling of said blank for the topping and loop transfer operations, but also results in the provision of a materially improved article in preventing undue distortion and trailing of loops, especially in the region of the heel corners, where said distortion in ordinary stockings destroys the smooth, uniform surface appearance of the fabric and subjects the same to breaking stresses.

Although the specific embodiments of the invention have been shown and described herein, it is to be understood that certain modifications may be made without departing from the gist of the invention. Therefore, any modifications coming within the scope of the subjoined claims are to be considered within the spirit of the invention.

What I claim is:

1. A heelless combination leg fabric and foot fabric blank comprising: adjoining knitted sections, one of said sections having a course of loops adapted to have heel tab courses knitted thereonto and the other of said sections having a course of loops adapted to be transferred for interknitted connection with loops of the heel tab courses, the loops in the mentioned courses of said sections having a size larger than the other loops thereof, and the loops in the mentioned course of the section to be transferred having a size larger than the size of the loops in the mentioned course in the section to have heel tab courses knitted thereonto.

2. A flat knitted heelless combination leg fabric and foot fabric blank comprising: adjoining knitted sections, one of said sections having a course of loops adapted to have heel tab courses knitted thereonto and the other of said sections having a course of loops adapted to be transferred for interknitted connection with loops of the heel tab courses, the loops in the mentioned courses of said sections having a size larger than the other loops thereof, and the loops in the mentioned course of the section to be transferred having a size larger than the size of the loops in the mentioned course in the section to have heel tab courses knitted thereonto.

3. A stocking blank comprising: a knitted leg fabric, a knitted foot fabric, and a knitted heel fabric, said leg fabric and foot fabric each having a course of loops of a size larger than the size of the other loops therein, the loops of the mentioned course of the foot fabric having a size larger than the size of the loops in the mentioned course of the leg fabric, and said heel fabric having loops knitted contiguously with the loops in the mentioned course of the leg fabric and loops interknitted in overlapping relationship with the loops in the mentioned course of the foot fabric.

4. A flat knitted stocking blank comprising: a knitted leg fabric, a knitted foot fabric, and a knitted heel fabric, said leg fabric and foot fabric each having a course of loops of a size larger than the size of the other loops therein, the loops of the mentioned course of the foot fabric having a size larger than the size of the loops in the mentioned course of the leg fabric, and the respective loops in each of the mentioned courses gradually increasing in size from the body of the blank towards the selvedges thereof, and said heel fabric having loops contiguously knitted in overlapping relationship with the loops in the mentioned course of the foot fabric.

5. The method of manufacturing a knitted heelless combination leg fabric and foot fabric blank with adjoining sections adapted to be separated so that a course of loops in one of said sections may have heel tab courses knitted thereonto and a course of loops in the other of said sections may be transferred for interknitting connection with loops of such heel tab courses during the knitting thereof, comprising: knitting the loops in the mentioned courses of said sections of a size larger than the other loops therein, and the loops in the mentioned course of the section intended to be transferred of a size larger than the loops in the mentioned course of the section intended to have heel tab courses knitted thereonto.

6. The method of manufacturing a flat knitted heelless combination leg fabric and foot fabric blank with adjoining sections adapted to be separated so that a course of loops in one of said sections may have heel tab courses knitted thereonto and a course of loops in the other of said sections may be transferred for interknitting connection with loops of such heel tab courses during the knitting thereof, comprising: knitting the loops in the mentioned courses of said sections of a size larger than the other loops therein, and the loops in the mentioned course of the section intended to be transferred of a size larger than the loops in the mentioned course of the section intended to have heel tab courses knitted thereonto.

7. The method of manufacturing a knitted stocking blank comprising: so knitting a combination leg fabric and foot fabric blank as to provide each of said leg and foot fabrics with a course of loops of a size larger than the other loops therein, and with the loops in the mentioned course of the foot fabric of a size larger than the size of the loops in the mentioned course of the leg fabric; knitting heel tab courses as a continuation of the loops in the mentioned course of the leg fabric; and, during the knitting of such heel tab courses, transferring the loops in the mentioned course of the foot fabric for interknitting connection with said heel tab courses.

8. The method of manufacturing a flat knitted stocking blank comprising: so knitting a combination leg fabric and foot fabric blank as to provide each of said leg and foot fabrics with a course of loops of a size larger than the other loops therein, the respective loops in the mentioned course of each of said fabrics gradually increasing in size from the body of the blank towards the selvedges thereof, and with the loops in the mentioned course of the foot fabric of a size larger than the size of the loops in the mentioned course of the leg fabric; knitting heel tab courses as a continuation of the loops in the mentioned course of the leg fabric; and, during the knitting of such heel tab courses, transferring the loops in the mentioned course of the foot fabric for interknitting connection with said heel tab courses.

9. In the method of manufacturing a knitted heelless combination leg fabric and foot fabric blank provided with adjoining sections each having a course of loops intended to be topped for
engagement with needles of a knitting machine so that the loops in the mentioned course of one of said sections may have heel tab courses knitted thereonto, and the loops in the mentioned course of the other of said sections may be transferred laterally on the needles for overlapping engagement and interknitted connection with loops of such heel tab courses: the step of enlarging the loops in the mentioned courses of said sections beyond the size of the remaining loops therein whereby to facilitate the topping of said loops and enlarging the loops of that course to be topped and transferred beyond the size of the loops of the other course to be topped and to have heel tab courses knitted thereonto, whereby to prevent distortion due to such transfer.

10. The method of knitting a stocking which comprises: knitting leg sections and foot sections of a stocking blank as a continuous unitary fabric with series of loops in the last course of the leg sections and series of loops in the first course of the foot sections enlarged beyond normal size and the loops of the series in the mentioned course of the foot sections enlarged beyond the size of the loops of the series in the mentioned course of the leg sections; separately supporting said series of loops; knitting heel tab courses into said series of loops in the leg sections and, during the knitting of the following heel tab courses, successively knitting the loops of said series in the foot sections into the inner selvedges of the heel tab courses.

11. The method of knitting a stocking which comprises: knitting leg sections and foot sections of a stocking blank as a continuous unitary fabric with series of loops in the last course of the leg sections and series of loops in the first course of the foot sections enlarged beyond normal size and the loops of the series in the mentioned course of the foot sections enlarged beyond the size of the loops of the series in the mentioned course of the leg sections; separately supporting said series of loops; knitting heel tab courses into said series of loops in the leg sections and, during the knitting of the following heel tab courses, successively knitting the loops of said series in the foot sections into the inner selvedges of the heel tab courses.

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