Oct. 10, 1939. J. L. GETAZ ET AL 2,175,958

KNITTED FABRIC AND METHOD OF MAKING THE SAME

Original Filed Aug. 3, 1935 3 Sheets-Sheet 1

FIG. 1.

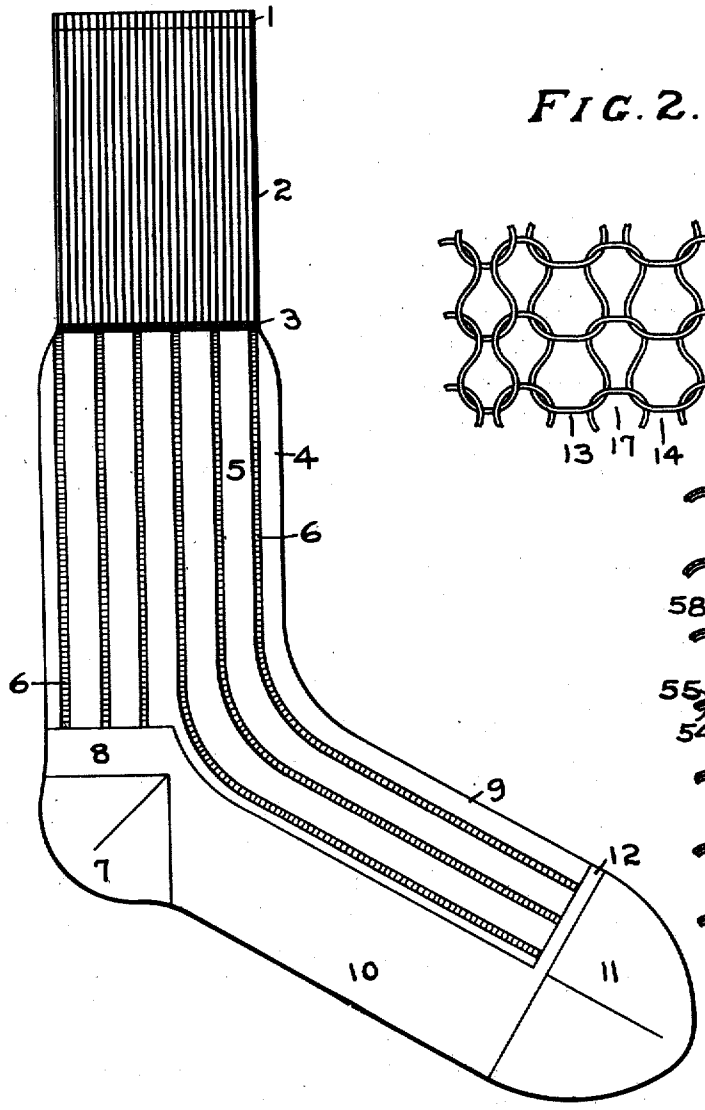
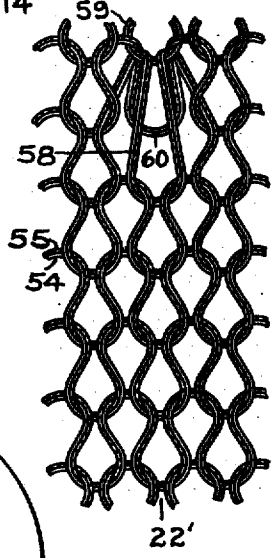



FIG. 2.




FIG. 5.



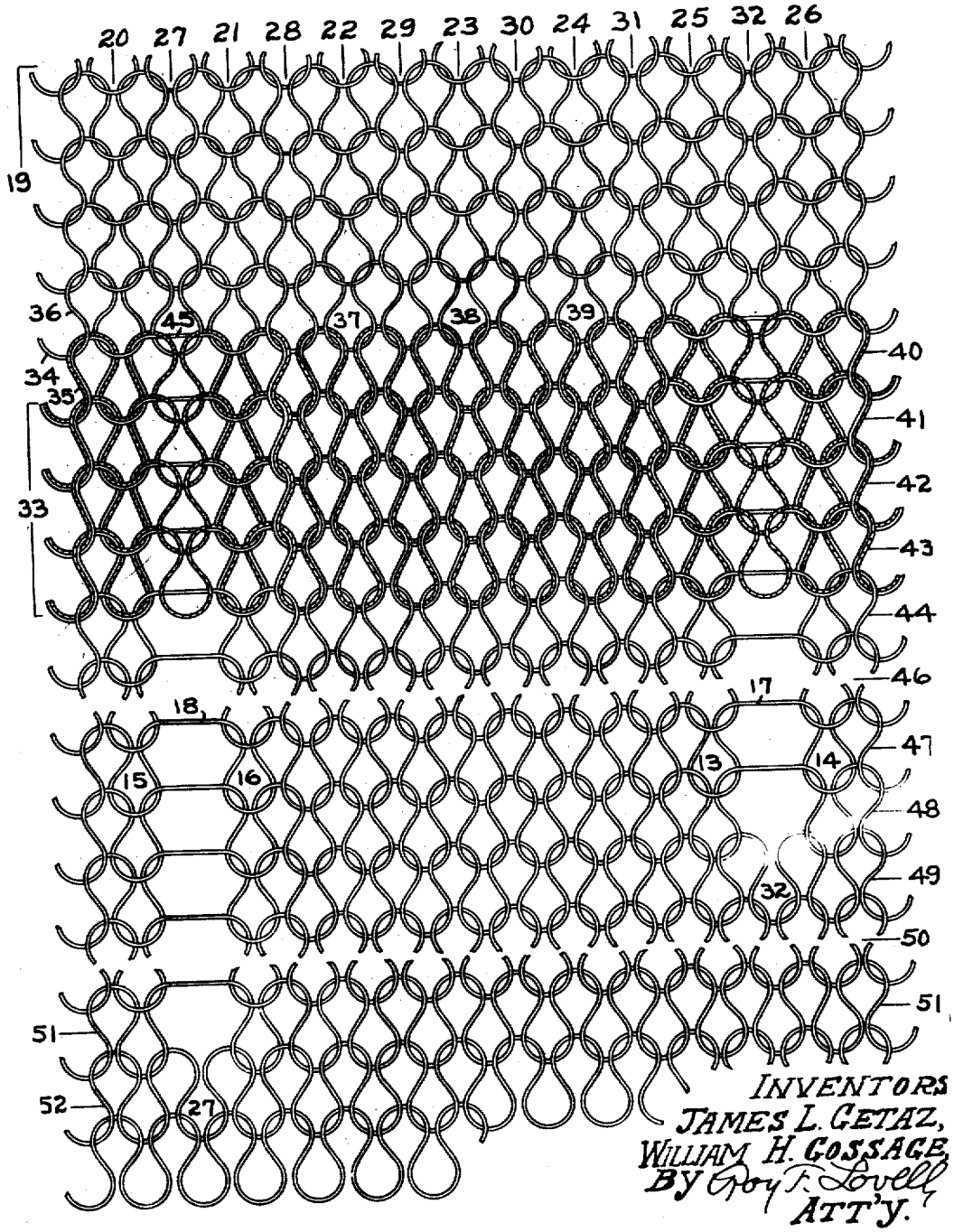

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KNITTED FABRIC AND METHOD OF MAKING THE SAME

Original Filed Aug. 3, 1935 3 Sheets-Sheet 2

FIG. 3.



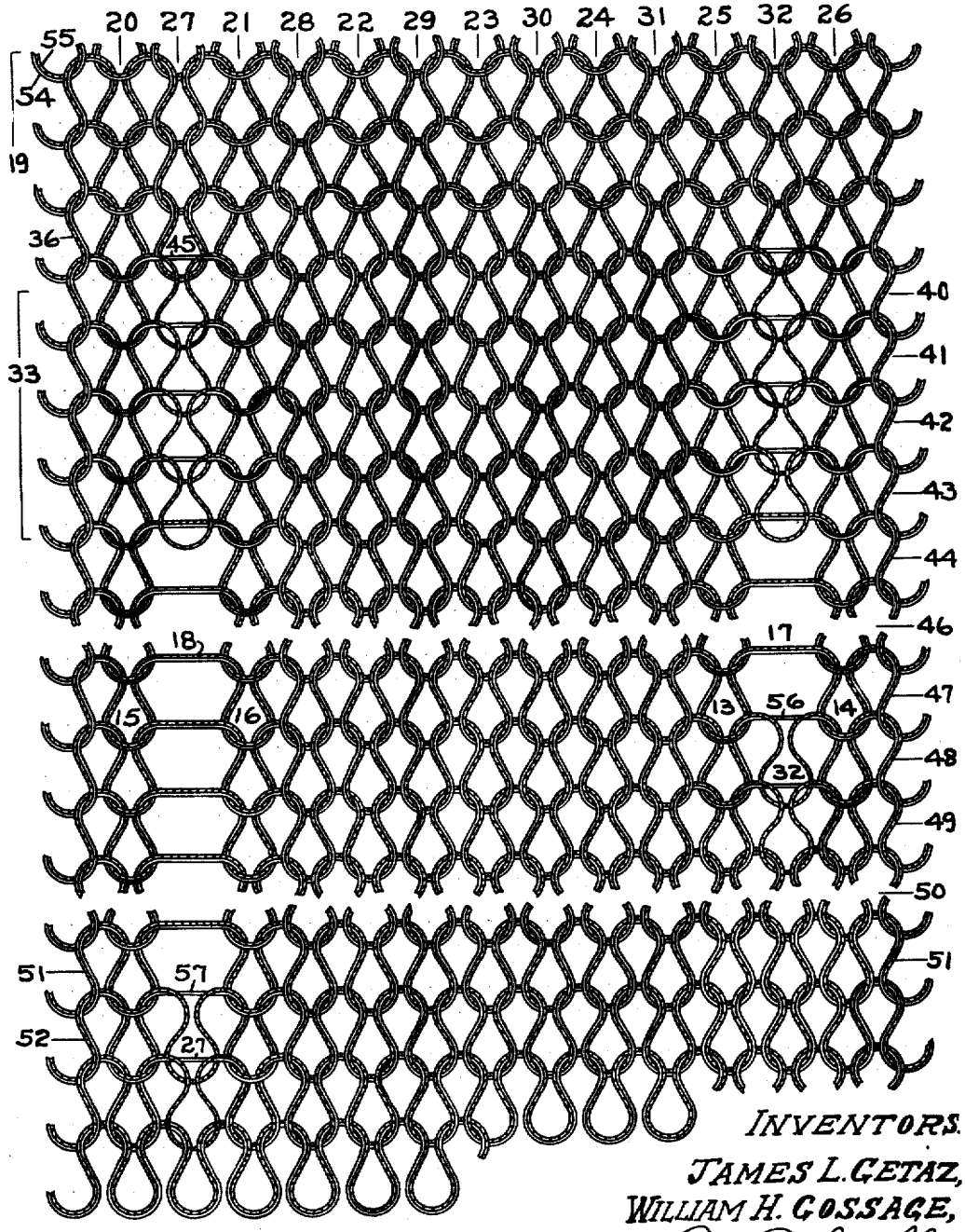

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FIG. 4.




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2,175,958

## KNITTED FABRIC AND METHOD OF MAKING THE SAME

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Application August 3, 1935, Serial No. 34,538
Renewed March 15, 1939

17 Claims. (Cl. 66—172)

This invention relates to knitted fabrics and methods of making the same and more especially to stockings or half-hose having a one and one or other rib top and a so-called wide rib leg and instep.

In the drawings:

Fig. 1 is a more or less diagrammatic view showing a half-hose knitted in accordance with the present invention;

Fig. 2 is a view showing a few wales and courses of the wide rib portion of the fabric there being shown two adjacent rib wales and plain wales on each side thereof, the said rib wales being somewhat wider than the plain wales;

Fig. 3 is a view of the outer face of the fabric showing the transfer from a one and one rib top to a seven and two rib leg and showing the reintroduction of plain wales at the heel and instep sides of the stocking;

Fig. 4 is a view similar to Fig. 3 but showing a modified fabric; and

Fig. 5 is a view showing another form of transfer from rib wales to plain wales.

In Fig. 1 a French or other welt 1 is shown followed by a one or other rib top 2. At 3 the transfer as from a one and one rib top to a seven and two rib leg is shown. The leg 4 of the stocking is shown as comprising bands 5 knitted by a plurality, say seven, adjacent cylinder needles and between the bands 5 are indicated at 6 two wales knitted by dial needles. The wales 6 at the heel side of the stocking are shown as terminating above the heel 7 to permit the knitting of a high-splice 8; however, this is not essential and the wales 6 may continue to or nearly to the heel. Opposite the rib instep 9 is shown a plain knitted sole 10 which latter may be reinforced if desired. The rib instep is shown as terminating short of the toe 11, a few ring toe courses 12 intervening.

In Figs. 3 and 4 two adjacent rib stitches such as 13, 14 at the heel side of the stocking and two adjacent rib stitches such as 15, 16 at the instep side of the stocking are shown as being smaller than the intervening loops 17 and 18 respectively, although actually in the knitted fabric and as shown in Fig. 2, the said two adjacent dial stitches such as 13 and 14 are larger than the intervening loop 17.

Referring specifically to Fig. 3, a few one and one rib courses 19 are shown, the wales 20, 21, 22, 23, 24, 25, 26 being rib or dial wales and the intermediate wales 27, 28, 29, 30, 31 and 32 being plain or cylinder wales.

At the completion of the knitting of the requisite number of courses 19 to constitute the one and one or other rib top 2 a transfer as to a seven and two rib leg is effected. The transfer is indicated at 33 and may constitute two or more courses, four being shown. In Fig. 3 a single thread 34 is shown as constituting the rib top and a second thread 35 is shown as being incorporated in the transfer courses with the thread 34; however, more than one thread may be knitted into the top 2 and more than two threads may comprise the transfer courses 33.

In changing from a one and one rib top to a wide rib leg as a rib leg knitted with groups of seven plain or cylinder needles alternating with groups of two rib or dial needles, groups of three adjacent dial needles, as those that knit the wales 22, 23 and 24, transfer their stitches to companion cylinder needles; but the dial needles that knit the wales 21, 25, etc., continue to knit uniformly throughout the transfer and rib leg courses, and the cylinder needles that knit the adjacent cylinder wales as 28 and 31 and wales 29, 30 also continue to knit throughout the transfer courses and leg. As hereinbefore stated the dial needles that knit the wales 22, 23 and 24, transfer their stitches to companion cylinder needles and in effecting the transfer the said needles draw loops or bights 37, 38, 39 of the yarn 34 through previous course loops during knitting of the course 36. The loops 37, 38 and 39 are then cast off the dial needles and onto companion cylinder needles after which the said cylinder needles knit courses 40, 41, 42, 43, 44, etc., in the usual manner, the yarn 35 being withdrawn after the knitting of course 43.

To effect the knitting of a wide rib fabric such as seven and two it is essential that the wales such as 27 and 32 be disposed of and such disposal is conveniently effected in the following manner. The cylinder needles that knit wales 27 and 32 knit the yarn 34 in the usual manner during the knitting of the one and one rib top, but during the knitting of transfer courses 40, 41, 42 and 43 the said needles draw loops of yarn 35 through previous course loops but do not knit the yarn 34, the latter appearing as floats which extend across the wales as at 45 as shown and bind the loops of the yarn 35 thus preventing running of the wales 27, 32 etc. The knitting of the wales 27, 32, etc. during the transfer courses 40, 41, 42 and 43 is conveniently effected by feeding the yarn 34 above the tops of the needles knitting the said wales 27 and 32, etc., although other methods of accomplishing the same purpose may be adopted e. g. when latch needles are used the

yarn 34 may be fed below the latches of the needles knitting the said wales 27, 32, etc.

The course 44 is shown as being the first course of the seven and two or other wide rib leg, the fabric being foreshortened as by a cutting line 46 separating course 44 from courses 47, 48, etc., the said course 48 being the last rib course at the heel side of the stocking. The course 49 and the following courses are knitted, at the instep side or front of the stocking as before; but at the heel side of the stocking the plain or cylinder wale 32 and similar wales are reintroduced into the fabric by the needles that knit the said wales again engaging the yarn 34 or another yarn in their hooks and knitting the said yarn in the following courses. The fabric is again foreshortened as by the cutting line 50 after the knitting of the course 49, the following course 51 being the last rib instep course. During the knitting of the next course 52 plain or cylinder wales such as 27 are introduced into the fabric by the needles again engaging the yarn 34 or another yarn. The course 52 and the few following courses are known as ring toe courses being knitted by all the plain or cylinder needles only, the rib or dial needles being all out of action.

For convenience in the following description of Fig. 4 the wales and courses thereof will be designated by the same numerals as used in the description of the fabric shown in Fig. 3.

The modification shown in Fig. 4 is knitted similarly to that form of the fabric shown in Fig. 3, although the courses 19 that constitute the one and one or other rib top 2 are, preferably, knitted with two yarns 54 and 55, the said two yarns being also knitted in the following transfer courses 40, 41, 42 and 43 and throughout the knitting of the following courses of the stocking. The knitting of one of the said yarns, however, may be discontinued during the knitting of the so-called loopers' rounds (not shown).

The only material difference between the fabric shown in Fig. 3 and that shown in Fig. 4 is that whereas in Fig. 3 the wales such as 32 when reintroduced into the fabric during the knitting of course 49 and the corresponding wales such as 27 when reintroduced into the stocking during the course 52, are initially formed by the needles that knit the said wales engaging a yarn such as 34 in their hooks, the corresponding wales 32 and 27 in Fig. 4 are reintroduced into the fabric during the knitting of courses 48 and 52 by the needles that knit the said wales 32 and 27 engaging and drawing loops of the yarn 55 but not engaging the yarn 54 during the knitting of the courses 48, 52 or during the knitting of the immediately following course or courses, a single following course being sufficient in each instance to effect the desired result although an additional course or courses may be knitted in the same manner. When reintroducing the wales 32, 27, etc., as hereinbefore described in connection with Fig. 3 holes show in the fabric at the places where the said wales are reintroduced, whereas by the method used in knitting the fabric shown in Fig. 4 the eyelet holes are effectively closed by the floats 56 and 57.

Preferably, but not necessarily, the yarns 35 and 55 are relatively fine yarns.

The transfer from rib to plain as at the wales 22, 23 and 24, is shown in Figs. 3 and 4 as being a straight transfer of the last knitted dial loops to corresponding cylinder needles, the transfer being effected in a manner similar to that shown in Figs. 31 and 32 of the Scott Patent 834,763 of October 30, 1906. However, in Fig. 5 the transfer is shown as being effected in a manner similar to that shown in Figs. 3 and 4 of the Scott patent and as disclosed in the Scott Patent 1,641,101, August 30, 1927. In other words, in Figs. 3 and 4 the dial loops drawn during the knitting of the last one and one rib course are transferred to companion cylinder needles, whereas in Fig. 5 the first plain or cylinder loop 58 in the wale 22' is shown as being drawn through the next to the last rib loop 59, the last rib loop 60 being shown on the other side of the fabric, Fig. 5. The loop 58 is shown in Fig. 5 as being relatively elongated although ordinarily the loop would be somewhat shorter, relatively, than shown.

In Fig. 5 two yarns, such as 54, 55, are shown as being knitted throughout although the fabric may obviously be knitted in the manner shown in Fig. 3, namely, by knitting two yarns during the knitting of the transfer courses only.

The dropping of the stitches, as in the wales 27 and 32, effects the knitting of simulated rib wales in continuation of the dropped stitches, and in conjunction with the transfer of stitches from the dial needles to the cylinder needles causes the courses 44—51 to have the appearance of 7 and 3 rib fabric, the dropped stitch wales 27 and 32 combining with their adjacent rib wales to give the appearance of three adjacent rib wales.

The method of dropping the cylinder or plain wales such as 27 and 32 may also be adopted to effect a transfer from dial needles to cylinder needles, i. e., without effecting a transfer in the manner disclosed in the Scott Patent 1,641,101 hereinbefore referred to, in which case one of the threads 34 or 35 is floated in the manner shown in Figs. 3 and 4, the other thread being knitted.

In the foregoing description the threads 34 and 54 have been described as floated across wales in courses 40, 41, 42, 43, 48, 49, 52, etc., although obviously either thread may be floated to accomplish the desired result.

Although as hereinbefore described the stocking is preferably knitted from top to toe, it is also the intention to knit from toe to top in which event cylinder needles drop their stitches in going from the ring toe 12 to the instep 9 and from the high splice 8 to the rear portion of the leg. The dropping of the stitches in such a case is effected in the manner shown in Figs. 3 and 4 at the wales 27 and 32 thus avoiding running of the wales.

Although the preferable method of knitting the fabric herein described is to knit on dial and cylinder needles, the fabrics shown in Figs. 3 and 4 may be knitted on other types of knitting machines; and imitation or so-called mock rib stitches may be incorporated in the top 2 or in the leg 4.

In the foregoing description the elements and combinations thereof have been referred to in more or less specific terms; however, it is not the intention thereby to limit the invention otherwise than as required by the specific limitations included in the claims themselves.

We claim:

1. A method of discontinuing a wale without running, said method including the knitting of two yarns at others of the wales during the knitting of one or more courses and simultaneously therewith knitting one only of the said yarns at the wale first mentioned and causing the other yarn to float across the said wale, the loop or loops knitted at the said wale during the knitting of the said one or more courses thus being held

by the float or floats and prevented from running.

2. A knitted fabric having a discontinued wale formed by the dropping of the stitch, the said wale being characterized by a yarn knitted in one or more courses and another yarn knitted with the first yarn in other wales of the fabric and floated across the wale first mentioned, the construction of the fabric being such that the dropped wale is prevented from running.

3. A knitted fabric having one and one rib courses and other rib courses integrally knitted therewith in which there are more plain wales than rib wales, the one and one rib courses and the other rib courses being connected by one or more courses in some of the wales of which two yarns are knitted and in other wales of which courses one only of said two yarns is knitted, the other yarn being floated, the said last mentioned wales not extending through the said other rib courses but being prevented from running by the said knitting of one yarn and the floating of the other at said wales.

4. A knitted fabric having one and one rib courses and other rib courses integrally knitted therewith in which the proportion of rib and plain wales is not as one and one, the one and one rib courses and the other rib courses being connected by one or more courses in some of the wales of which two yarns are knitted and in other wales of which courses one only of said two yarns is knitted, the other yarn being floated, the said last mentioned wales not extending through the said other rib courses but being prevented from running by the said knitting of one yarn and the floating of the other at said wales.

5. A knitted fabric having one and one rib courses and other rib courses integrally knitted therewith in which the proportion of rib and plain wales is not as one and one, some of the rib wales merging into plain wales in the portion of the fabric not having rib and plain wales in the proportion of one and one and some of the plain wales not extending through the said other rib courses but being prevented from running by two yarns being knitted at some of the wales in one or more courses and one only of said two yarns being knitted at other wales in the same courses, the other of the said two yarns floating across the said wales in the said one or more courses.

6. A ribbed knitted fabric some of the courses of which have a certain number of plain wales, and following courses in which are additional plain wales, the addition of the said plain wales being characterized by stitches in at least one course in which two yarns are knitted and other stitches in the same course in which one only of two yarns is knitted the other floating across the said wales, the construction being such that the formation of eyelet holes is prevented.

7. A fabric some of the courses of which have a certain proportion of rib and plain wales and other courses integrally knitted therewith and having a different proportion of rib and plain wales, some of the rib wales merging into plain wales and some of the plain wales being discontinued and not extending through the second mentioned courses, the said plain wales being so knitted as to prevent running thereof and without transfer of the discontinued stitches to other wales.

8. A knitted fabric having rib courses in which there is a certain proportion of rib and plain wales and other courses having a different proportion of rib and plain wales, some of the rib wales in the first portion of the fabric merging into plain wales in the second mentioned portion of the fabric and some of the plain wales in the first portion of the fabric being discontinued and running thereof prevented by the floating of one yarn across the said wales and knitting another yarn at the said wales.

9. A stocking the top whereof is composed of rib courses, the leg portion of the stocking having plain wales which are continuations of plain wales in the top, and other plain wales which are continuations of rib wales in the top, still other wales in the top being discontinued in the leg, the construction being such that the discontinued wales will not run.

10. A stocking the top whereof is composed of rib courses, and in which stocking the leg portion has plain wales that are a continuation of rib wales in the top, others of the rib wales in the top being discontinued in the leg, a heel portion knitted as a continuation of the leg and in which heel portion the said discontinued wales are again knitted into the stocking.

11. A stocking the top whereof is composed of rib courses, other courses being knitted as a continuation of the top and in which other courses certain of the wales are discontinued, and following and non-rib courses in which the discontinued wales are again knitted into the stocking, the construction being such that the discontinued wales will not run.

12. A stocking the top whereof is composed of rib courses, other courses being knitted as a continuation of the top and in which other courses certain of the wales are discontinued, and following and non-rib courses in which the discontinued wales are again knitted into the stocking, the construction being such that the discontinued wales will not run and eyelet holes attendant upon again knitting the discontinued wales are effectively closed.

13. A stocking the top whereof is composed of rib courses and the leg of which has plain wales in continuation of rib wales in the top, certain of the other wales in the top being discontinued in the leg, some, at least, of the said discontinued wales being again knitted into the stocking, a foot portion knitted as a continuation of the leg and heel, the wales again knitted into the stocking at the heel side of the stocking extending into the sole of the foot portion, the wales discontinued in the instep side of the leg not being knitted in the instep.

14. A stocking the top whereof is composed of rib courses, the leg portion of the stocking having plain wales knitted as continuations of rib wales in the top, certain other wales in the top being discontinued in the leg, some, at least, of the discontinued wales being again knitted into the stocking, the sole of the foot portion containing wales again knitted into the stocking, the wales which were discontinued in knitting the instep side of the leg not being knitted in the instep, the last mentioned discontinued wales being again knitted in the stocking prior to the knitting of the toe of the stocking.

15. A stocking the top whereof is composed of rib courses, other courses being knitted as a continuation of the top and in which other courses certain of the wales are discontinued, the transition being characterized by incorporation of two yarns in one or more courses, one only of said yarns being knitted at the discontinuous wales, the other yarn floating across said wales, and

following courses in which the discontinued wales are again knitted into the stocking.

16. A stocking the top whereof is composed of rib courses, other courses being knitted as a continuation of the top and in which other courses certain of the wales are discontinued, and following courses in which the discontinued wales are again knitted into the stocking, the transactions being characterized by incorporation of two yarns in one or more courses, one only of said yarns being knitted at the discontinuous wales, the other yarn floating across said wales, the two yarns cooperating at the said wales in a manner to prevent running of the discontinued wales and preventing the formation of holes in the course in the fabric where the discontinued wales are again knitted.

17. A stocking knit from top to toe the top whereof is composed of rib courses, other courses being knitted as a continuation of the top and in which other courses certain of the wales are discontinued in the direction of knitting, the transition being characterized by incorporation of two yarns in one or more courses, one only of said yarns being knitted at the discontinuous wales, the other yarn floating across said wales.

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W. H. GOSSAGE.

CERTIFICATE OF CORRECTION.

Patent No. 2,175,958. October 10, 1939.

JAMES L. GETAZ, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 24, after the word "one" insert and one; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of November, A. D. 1939.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)

following courses in which the discontinued wales are again knitted into the stocking.

16. A stocking the top whereof is composed of rib courses, other courses being knitted as a continuation of the top and in which other courses certain of the wales are discontinued, and following courses in which the discontinued wales are again knitted into the stocking, the transactions being characterized by incorporation of two yarns in one or more courses, one only of said yarns being knitted at the discontinuous wales, the other yarn floating across said wales, the two yarns cooperating at the said wales in a manner to prevent running of the discontinued wales and preventing the formation of holes in the course in the fabric where the discontinued wales are again knitted.

17. A stocking knit from top to toe the top whereof is composed of rib courses, other courses being knitted as a continuation of the top and in which other courses certain of the wales are discontinued in the direction of knitting, the transition being characterized by incorporation of two yarns in one or more courses, one only of said yarns being knitted at the discontinuous wales, the other yarn floating across said wales.

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