Feb. 15, 1938. E. C. LOCHHEAD 2,108,540

STOCKING AND METHOD OF MAKING THE SAME

Filed May 13, 1936

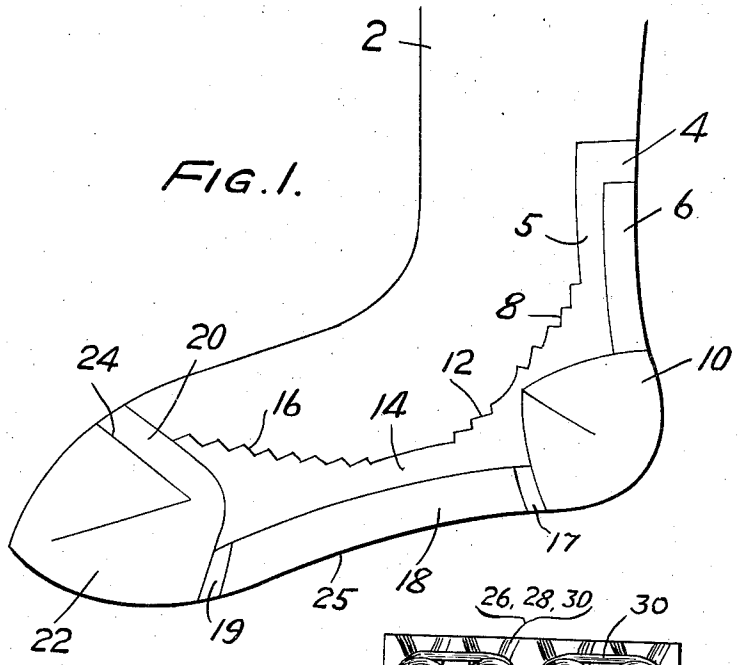


FIG. 1.

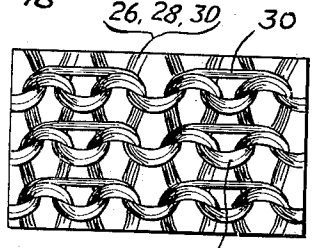


FIG. 2.

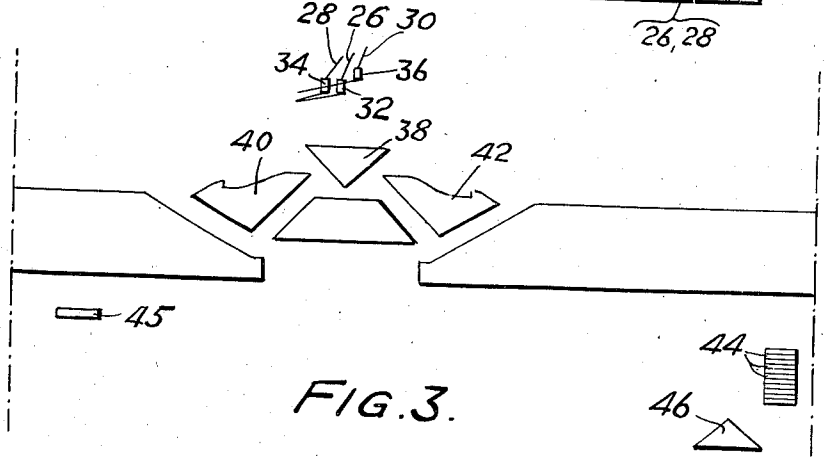


FIG. 3.

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Patented Feb. 15, 1938

2,108,540

UNITED STATES PATENT OFFICE

2,108,540

STOCKING AND METHOD OF MAKING THE SAME

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Application May 13, 1936, Serial No. 79,448

11 Claims. (Cl. 66—182)

This invention relates to a stocking and method of making the same, and particularly to the foot structure of a stocking.

It has been customary to reinforce stockings where wear is primarily likely to occur by the introduction of extra yarns or the substitution of heavier yarns for those used in the major portion of the stocking. Such reinforced portions are, in general, comparatively inelastic and are detrimental to the fit of the stocking.

It is the general object of the present invention to provide a stocking and method of producing the same which has various reinforced portions but which nevertheless is not detrimentally affected thereby from the standpoint of fit but is, in fact, considerably improved from that standpoint.

A further object of the invention is the provision of what is known as a cradle sole in a circular knit stocking. This involves a running of a high splice from above the heel in front of the heel and along the bottom of the sole, and additionally to a high point at the sides of the toe portion of the stocking.

The various objects of the invention broadly indicated above and other objects particularly relating to details will be apparent from the following description read in conjunction with the accompanying drawing, in which:

Fig. 1 is a diagrammatic showing of the foot portion of a stocking embodying the features of the invention;

Fig. 2 is a greatly magnified showing of a portion of the reinforced foot; and

Fig. 3 is a diagram showing in developed fashion certain operating elements of a knitting machine arranged to produce the improved stocking.

The invention is particularly adapted to women's chiffon hosiery of light weight, though it is adapted to heavier stockings or socks. Reinforcement, however, is particularly necessary in sheer hosiery to avoid damage due to wear thereon by the shoes.

Referring first to Fig. 1, which shows the component parts of the foot portion of such a stocking, the leg portion indicated at 2 is knit in conventional fashion from light weight yarn and may be produced in any conventional fashion involving either plain knitting or special stitches to avoid runs or give modified appearances, or may involve an alternating knitting of yarns to give rise to a ringless fabric. It will be obvious that these various expedients need not in the least interfere with the formation of the foot portion, as indicated hereafter, and where reference is made to a single yarn which knits the leg portion of the stocking it will be understood that there is contemplated within that term a plurality of main yarns which may be specially knitted for the purpose just indicated. For convenience, however, reference will be made to a single main yarn designated 26.

At the rear of the ankle portion of the stocking a reinforcing yarn designated 30 is introduced to form a high splice indicated at 4. This high splice is preferably additionally reinforced where the heel of a shoe may engage it by the introduction of still another yarn designated 28 to form a special reinforcement indicated at 6, which comprises loops in which all three yarns 26, 28, and 30 are knit. Preferably this special reinforcement is only formed at the extreme rear of the stocking, while the high splice comprising the two yarns 26 and 30 extend to both sides of the reinforcement 6 as indicated at 5. The high splice is carried about the front of the heel 10 by introducing the yarn 30 on an increasing number of needles, the additions of needles being made successively so that the outline of the high splice as it approaches the center of the heel comprises a series of steps indicated at 8. A comparatively large number of such steps is desirable since they provide a pleasing ornamental appearance and, in fact, except upon quite close examination, give the appearance of a continuous curve.

The heel is formed in the usual fashion by narrowing and widening. The main yarn 26 and the high splice yarn 30 are held on inactive needles during such operation.

Following the formation of the heel, the high splice now merges into the cradle sole, the high splice yarn being now removed successively to form a series of continuing steps indicated at 12. As soon as the sole is started following the formation of the heel, the reinforcing yarn 28 is again brought into action on a limited number of needles which form the bottom of the sole of the stocking to form a reinforcement 17 corresponding to the reinforcement 6. Through the portion 17 the yarn 28 is knit on all of the needles between the limits of its entrance and exit.

After the formation of a relatively few courses through the portion 17 of the stocking in which the yarns 28 and 30 are knit on all the needles between their points of entrance and exit, the stitch formation changes for the formation of a special elastic reinforcement indicated at 18. Throughout the portion 18 of the fabric the yarns 26 and 28 are knit on all the needles which form

inwardly to an abnormal extent to cause the formation of extra large loops.

The portion 19 of the stocking is formed the same as 17, as indicated above. The toe is formed in conventional fashion, which need not be described, there being, in general, involved a substitution of yarns as in the case of the heel.

By the above procedure it will be noted that the stocking of Fig. 1 will be produced. This stocking has various special features involving the cradle sole extending upwardly about the sides of the stocking at both the heel and toe, reinforcing the stocking at these locations to avoid damage by the wear of the shoe. Additionally, there are provided the reinforcements 6, 17, 18, and 19 to strengthen the stocking where the wear is greatest.

No special precautions need be taken in the case of the reinforcement 6, which involves only the addition of an extra yarn. The fitting at the ankle is insured by the stitching at the back of the stocking and also in the usual fashion by the change of tension of the loops, and there are involved at this point no special problems of elasticity. The formation of the portion 18 of the sole, however, is one of the major features of the invention inasmuch as the foot resulting from the provision of the reinforcement 18 of the character described is greatly improved in the way of fit. The floats 30 act to constrict the portion of the foot about the instep, while at the same time the additional length of the loops serves to prevent such constriction from being too great. At the same time, the fabric becomes highly elastic in a lengthwise direction due to this same structure, and the stocking when off the foot assumes the condition indicated in Fig. 1, with the bottom of the foot curved in a concave fashion. When the stocking is worn, the elasticity of the portion 18 causes the toe to be gently tensioned and by reaction draws the portion of the stocking over the instep downwardly so as to secure a good fit and avoid any tendency toward wrinkling. At the same time, the reinforcement occurs but without having the objectionable features of a reinforcement which is not elastic. However, an extra reinforcement in a cradle sole irrespective of its elasticity or inelasticity is within the scope of the invention and, if desired, though with a sacrifice of desirable properties, the reinforcement may be formed by knitting the reinforcing yarn on all of the needles involved so that it is relatively inelastic.

The sole reinforcement herein described may also be used in the split foot type of stocking in which the sole is formed from a different heavier yarn or yarns than the instep. In such case the sole yarn may be handled in the same fashion as yarn 30 through the added reinforcement.

It will be clear that numerous variations may be made in the embodiment of the invention without departing from its scope as defined in the following claims.

What I claim and desire to protect by Letters Patent is:

1. A circular knit stocking having leg and foot portions comprising one or more main yarns, a heel portion, a high splice at the rear of the stocking above the heel portion, said high splice being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, a reinforcement of the rearmost portion of the high splice formed by the inclusion of an additional yarn, a cradle sole at the bottom of the foot portion forwardly of the heel, said cradle sole being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, the auxiliary yarn of the cradle sole being the same as the auxiliary yarn of the high splice, and being knitted into the stocking to form a continuous reinforcement provided by a merger of the high splice and cradle sole, and a reinforcement of the lowermost portion of the cradle sole formed by the inclusion of an additional yarn, said auxiliary yarn of the cradle sole being knitted in alternate wales only of the last named reinforcement and floated across intermediate wales, the loops forming the last named reinforcement being larger than those forming the other portions of the cradle sole, said auxiliary yarn of the cradle sole being included in more wales adjacent the toe and heel portions of the stocking than at intermediate portions so that the cradle sole extends well up the sides adjacent both the toe and heel portions.

2. A circular knit stocking having leg and foot portions comprising one or more main yarns, a heel portion, a high splice at the rear of the stocking above the heel portion, said high splice being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, a cradle sole at the bottom of the foot portion forwardly of the heel, said cradle sole being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, and a reinforcement of the lowermost portion of the cradle sole formed by the inclusion of an additional yarn, said auxiliary yarn of the cradle sole being knitted in alternate wales only of the last named reinforcement and floated across intermediate wales.

3. A circular knit stocking having leg and foot portions comprising one or more main yarns, a heel portion, a high splice at the rear of the stocking above the heel portion, said high splice being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, a cradle sole at the bottom of the foot portion forwardly of the heel, said cradle sole being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, and a reinforcement of the lowermost portion of the cradle sole formed by the inclusion of an additional yarn, said auxiliary yarn of the cradle sole being knitted in alternate wales only of the last named reinforcement and floated across intermediate wales, the loops forming the last named reinforcement being larger than those forming the other portions of the cradle sole.

4. A stocking having leg and foot portions comprising one or more main yarns, a reinforced sole portion formed by the inclusion of an auxiliary yarn with said main yarn or yarns, and an additionally reinforced part of said reinforced sole portion formed at the bottom thereof by the inclusion of still another yarn with those previously mentioned, said reinforced part being more elastic in the direction of the wales than the adjacent parts of the reinforced sole portion.

5. A stocking having leg and foot portions comprising one or more main yarns, a reinforced sole portion formed by the inclusion of an auxiliary yarn with said main yarn or yarns, and an additionally reinforced part of said reinforced sole portion formed by the inclusion of still another yarn with those previously mentioned, said auxiliary yarn being knitted in alternate loops only of the courses of said reinforced part and floated across intermediate loops thereof.

6. A stocking having leg and foot portions comprising one or more main yarns, a reinforced sole

inwardly to an abnormal extent to cause the formation of extra large loops.

The portion 19 of the stocking is formed the same as 17, as indicated above. The toe is formed in conventional fashion, which need not be described, there being, in general, involved a substitution of yarns as in the case of the heel.

By the above procedure it will be noted that the stocking of Fig. 1 will be produced. This stocking has various special features involving the cradle sole extending upwardly about the sides of the stocking at both the heel and toe, reinforcing the stocking at these locations to avoid damage by the wear of the shoe. Additionally, there are provided the reinforcements 6, 17, 18, and 19 to strengthen the stocking where the wear is greatest.

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The sole reinforcement herein described may also be used in the split foot type of stocking in which the sole is formed from a different heavier yarn or yarns than the instep. In such case the sole yarn may be handled in the same fashion as yarn 30 through the added reinforcement.

It will be clear that numerous variations may be made in the embodiment of the invention without departing from its scope as defined in the following claims.

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2. A circular knit stocking having leg and foot portions comprising one or more main yarns, a heel portion, a high splice at the rear of the stocking above the heel portion, said high splice being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, a cradle sole at the bottom of the foot portion forwardly of the heel, said cradle sole being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, and a reinforcement of the lowermost portion of the cradle sole formed by the inclusion of an additional yarn, said auxiliary yarn of the cradle sole being knitted in alternate wales only of the last named reinforcement and floated across intermediate wales.

3. A circular knit stocking having leg and foot portions comprising one or more main yarns, a heel portion, a high splice at the rear of the stocking above the heel portion, said high splice being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, a cradle sole at the bottom of the foot portion forwardly of the heel, said cradle sole being formed by the inclusion therein of an auxiliary yarn with said main yarn or yarns, and a reinforcement of the lowermost portion of the cradle sole formed by the inclusion of an additional yarn, said auxiliary yarn of the cradle sole being knitted in alternate wales only of the last named reinforcement and floated across intermediate wales, the loops forming the last named reinforcement being larger than those forming the other portions of the cradle sole.

4. A stocking having leg and foot portions comprising one or more main yarns, a reinforced sole portion formed by the inclusion of an auxiliary yarn with said main yarn or yarns, and an additionally reinforced part of said reinforced sole portion formed at the bottom thereof by the inclusion of still another yarn with those previously mentioned, said reinforced part being more elastic in the direction of the wales than the adjacent parts of the reinforced sole portion.

5. A stocking having leg and foot portions comprising one or more main yarns, a reinforced sole portion formed by the inclusion of an auxiliary yarn with said main yarn or yarns, and an additionally reinforced part of said reinforced sole portion formed by the inclusion of still another yarn with those previously mentioned, said auxiliary yarn being knitted in alternate loops only of the courses of said reinforced part and floated across intermediate loops thereof.

6. A stocking having leg and foot portions comprising one or more main yarns, a reinforced sole

portion formed by the inclusion of an auxiliary yarn with said main yarn or yarns, and an additionally reinforced part of said reinforced sole portion formed at the bottom thereof by the inclusion of still another yarn with those previously mentioned, the loops forming said part being larger than those forming the adjacent parts of the reinforced sole portion.

7. A stocking having leg and foot portions comprising one or more main yarns, a reinforced sole portion formed by the inclusion of an auxiliary yarn with said main yarn or yarns, and an additionally reinforced part of said reinforced sole portion formed by the inclusion of still another yarn with those previously mentioned, said auxiliary yarns being knitted in alternate loops only of the courses of said reinforced part and floated across intermediate loops thereof, the loops forming said part being larger than those forming the adjacent parts of the reinforced sole portion.

8. A stocking having a reinforced sole portion and an additionally reinforced part of said reinforced sole portion formed at the bottom thereof by the inclusion of another yarn, said reinforced part being more elastic in the direction of the wales than the adjacent parts of the reinforced sole portion.

9. A stocking having a reinforced sole portion and an additionally reinforced part of said reinforced sole portion formed by the inclusion of another yarn, at least one of the yarns of the reinforced sole portion being knitted in alternate loops only of the courses of said reinforced part and floated across intermediate loops thereof.

10. The method of forming the foot portion of a stocking comprising knitting throughout the courses of the foot portion one or more main yarns, including within portions only of said courses an auxiliary yarn, and including within parts only of said portions still another yarn, and knitting the auxiliary yarn in alternate loops only of the last named parts of courses.

11. The method of forming the foot portion of a stocking comprising knitting throughout the courses of the foot portion one or more main yarns, including within portions only of said courses an auxiliary yarn, and including within parts only of said portions still another yarn, and knitting the auxiliary yarn in alternate loops only of the last named parts of the courses, the loops of the last named parts being drawn larger than the loops of adjacent parts of said portions.

ELMER C. LOCHHEAD.