Aug. 29, 1939. H. McADAMS 2,171,452

SEAMLESS KNITTED STOCKING AND METHOD OF PRODUCING SAME

Original Filed March 23, 1933 2 Sheets-Sheet 1

FIG. 2.

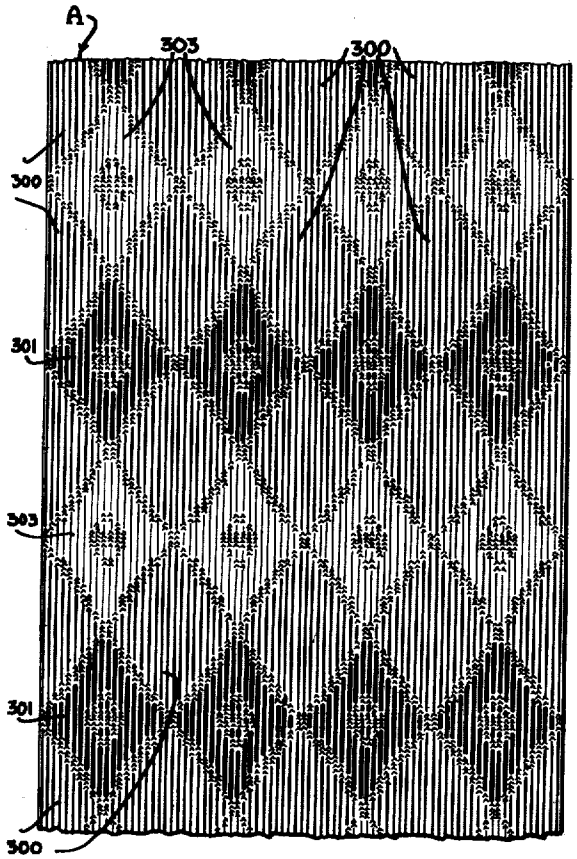


FIG. 1.

INVENTOR.

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BY Lancaster, Allwine and Rommel

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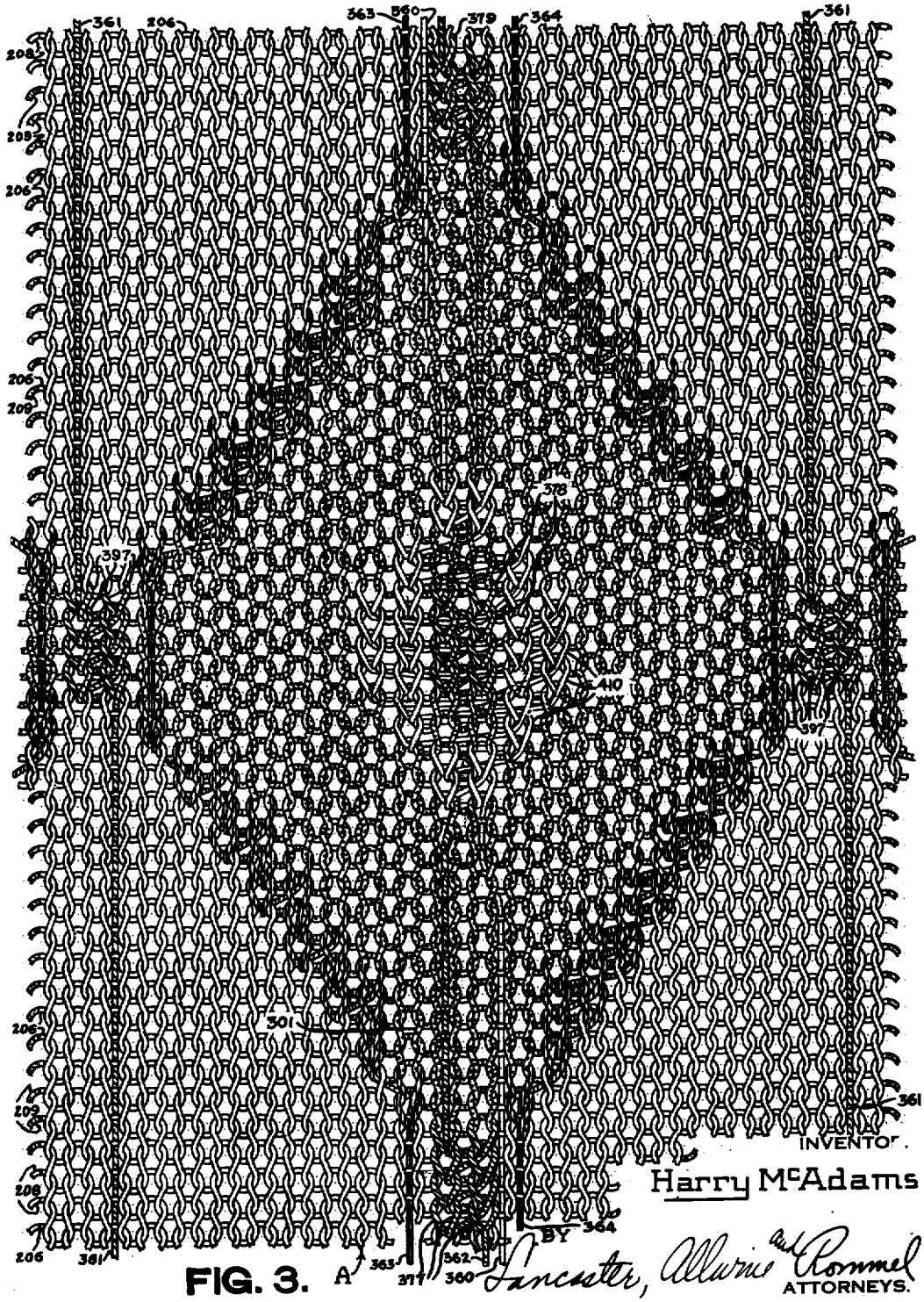


FIG. 3.

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Patented Aug. 29, 1939 2,171,452

UNITED STATES PATENT OFFICE

2,171,452

SEAMLESS KNITTED STOCKING AND METHOD OF PRODUCING SAME

Harry McAdams, Reading, Pa., assignor to Nolde and Horst Company, Reading, Pa., a corporation

Original application March 23, 1933, Serial No. 662,354. Divided and this application February 12, 1934, Serial No. 710,922

11 Claims. (Cl. 66—180)

The present invention relates to an improved seamless knitted fabric, such as a circular knitted stocking and method of knitting the same, wherein the body is formed of a plurality of plating yarns which may vary contrastingly, and wherein reverse plated patterns may be produced in complementary relation with additional yarns or threads which may be knitted into the plated areas in the same or different wales from course to course to produce complementary patterned effects with the reverse plated areas.

The invention furthermore includes a seamless knitted stocking or other fabric of the nature above mentioned, but in which a plurality of yarns in addition to the plating yarns may be knitted into the web fabric of the stocking in the same or different wales from course to course so that one of said yarns may be completely boxed in with a bordering yarn contrasting therewith; the additional yarns being floated on the inside of the fabric from course to course in the same patterned area.

Other objects of the invention will appear hereinafter and also by reference to my co-pending application, Serial No. 662,354, filed March 23, 1933, and from which the present application has been divided.

In the drawings, wherein for the purpose of illustration is shown merely one ornamental illustration of the invention,

Figure 1 is a side elevation of a seamless stocking knitted upon the machine disclosed in my said co-pending application, Serial No. 662,354, showing the body and upper foot portion thereof knitted of a body yarn and contrasting plating yarns which alternate with the body yarn along the stocking; the plated portions of the body and different plating yarns being reverse plated in certain areas in complementary relation with certain striping and needle wrapped patterning yarns.

Figure 2 is an enlarged somewhat diagrammatic illustration of a section of the stocking shown in Figure 1, showing the variety of pattern plating, striping, and needle wrapped patterned effects.

Figure 3 is an enlarged section of the fabric shown in Figures 1 and 2, at the face thereof, showing the knitted stitches of the various body and plating yarn, the reverse plated areas, and complementary selective needle wrapped yarn patterning.

In the drawings, the sample stocking A illustrates but one embodiment of the multitude of plating and patterning effects which may be produced upon the machine set forth in my co-pending application, Serial No. 662,354, of which the present application is a division. Therefore it is to be distinctly understood that the invention of the present application, as claimed, is not to be limited to the specific patterning shown, since the invention is capable of many variations in horizontal, normal, and reverse plating, in combination with complementary stitch pattern variations by means of one or more relatively contrasting additional yarns which may be superposed with the plating yarns in patterned areas wherein said additional yarns are knitted in spaced relation in the same courses and in different wales from course to course. In this connection reference may also be had to my co-pending application, Serial No. 638,619.

In the fabric A the body yarn appears upon the face of the fabric and the different plating yarns used therewith are so knitted that they appear upon the inside of the tubular fabric, although the order may be reversed if it is desired to horizontally stripe the fabric with the plating yarns upon the outside of the fabric. The body yarn may be generally indicated at **206** and merely by way of example may be blue in color. It appears on the outer face of the fabric in diamond-shaped areas **300**. In accordance with the teaching of knitting this type of fabric, as set forth in my co-pending application Serial No. 662,354, the horizontal striping mechanism alternately feeds white and black horizontal striping or plating yarns **208** and **209** in plated relation with the body yarn **206**. Each of these plating yarns **208** and **209** is knitted in with the body yarn **206** in forty consecutive courses of the fabric, although the number of courses knitted with the plating yarns **208** and **209** may vary within wide limits, as I have taught in my above identified co-pending application Serial Number 662,354.

Referring to Figures 2 and 3, the black plating yarn **209** is plated with the body yarn **206** for the desired number of courses and reverse plated in certain areas designated at **301**, that is, the black yarn **209** is brought to the outer face of the fabric and the body yarn **206** is on the inside of the fabric. The change from plating yarn **209** to the white plating yarn **208**, or vice versa, is indicated by the dot and dash lines in Figure 1 of the drawings. In the section of the fabric wherein the white plating yarn **208** is knitted with the body yarn **206**, the white plating yarn is reverse plated in certain diamond-shaped areas **303**. The horizontal striping or plating yarns

208 and 209 are alternated in designated zones along the fabric, and more than two horizontal striping yarns may be thus employed if found advisable.

The reverse plated areas 301 and 303 may vary widely in design, although they are preferably diamond-shape as shown in the drawings. The reversing of the body and plating yarns is accomplished in a manner well understood in the art by variation in yarn tension upon the needles of the knitting machine.

The reverse plated diamond areas 301 and 303 are preferably bounded by diagonal striping formed of contrasting yarns which are knitted in with the plating and body yarns to produce surrounding border effects. These contrasting yarns may also be interspersed in the reverse plated areas, as will be subsequently described, and after the "color within color" knitting of additional contrasting yarns upon the selected independent needles as taught in my co-pending application Serial No. 591,689.

Referring specifically to Figure 3, which shows a section of the fabric formed by the body yarn 206 and the black plating yarn 209, with a reverse plated diamond 301 of the latter yarn, the green knitting yarn 362 along the vertical axis of the diamond 301 is knitted into two wales for four courses to provide stitches 377. This yarn is then floated on the inside of the fabric to the center of the diamond 301 where it is again knitted into the same two wales for four courses to produce the stitch loops 378 at the outer face of the fabric. The green yarn 362 is floated on the inside of the fabric to the other point of the diamond 301 and then knitted with the body and plating yarns the same two wales for four courses to produce the stitches 379. This all takes place during the knitting of the diamond and in cooperative feed with the body and plating and other pattern producing yarns, all of which are under proper control, as will be well understood from the reading of my above identified co-pending application, Serial No. 662,354. Thus along the vertical axis of the diamond 301 the yarn 362 is knitted so as to appear at the top and bottom apices of the diamond and in the center thereof.

A red thread or yarn 364 is knitted in together with the body and plating yarns entirely along two sides of the diamond 301 to one side of the axis of the diamond, and a second red yarn 363 is similarly border knitted along the other two sides of the diamond. This diagonal striping wherein the additional yarns 363 and 364 are knitted in with the body and plating yarns in different wales from course to course is accomplished in a manner set forth in my above identified co-pending application Serial Number 662,354.

The green yarns 361 are knitted in loop stitches 397 in two wales for four courses each at each of the side apices of the diamond 301.

A lavender colored yarn or thread 360 is knitted into the diamond 301 directly within the reverse plated area thereof, at the center of the reverse plated diamond, that is, inside of the red yarn bordering stitches, and in border-surrounding relation with the stitches 378. The stitches 410 formed by the lavender yarn 360 are indicated in blank in Figure 3, within the reverse plated diamond area. The reverse plated stitches formed by the blank plating yarn 209 are dotted; the green yarn stitches are cross-sectioned at an angle 45°, and the red yarn stitches are vertically sectioned in Figure 3, to avoid confusion. The blue yarn stitches formed by the body yarn are left in blank in Figure 3 of the drawings, to avoid confusion. It is of course understood that the stitches formed by the additional or lap and striping yarns may overlap from the normal plating into the reverse plating area if desired.

It will be apparent from the foregoing that the yarns 360 to 364 inclusive are floated on the inside of the fabric from course to course within which the stitches thereof respectively appear. Each of the black and white reverse plated areas 301 and 303 are similarly patterned with the additional striping and pattern producing yarns 360 to 364, and the said yarns are floated on the inside of the stocking vertically from one patterned area to the other.

It is the broad purpose of the invention to provide a seamless knitted article, such as a stocking, wherein a body yarn is knitted in normal and reverse plating with one or more horizontal striping yarns, and in cooperative relation therewith selectively knitting striping or other yarns in certain predetermined wales and in certain predetermined courses which may vary widely in spacing, yet which patterning is in complementary relation to either the normal or reverse plated areas, or both. It is possible to widely vary the pattern from the sample illustrated in the drawings, since the knitting machine of my co-pending application, Serial No. 662,354 upon which the stocking of the present application can be produced, is capable of knitting plated fabrics having practically any patterning of normal and reverse plating; horizontal striping and yarn variation, together with selected patterning, striping and spotting with lap or needle wrapped yarns of substantially unlimited contrasting coloring and yarn variation.

Various changes in the number of normal and reverse plated effects, horizontal striping variation and other striping and additional yarn pattern incorporation may be produced and provided, without being limited to the specific illustration and description herein set forth, and without departing from the scope of the claims.

I claim:

1. In a seamless knitted stocking the combination of a web knitted of relatively contrasting plating yarns having a plurality of relatively contrasting reverse plated areas thereon and having wrap interknitted with the stitches thereof a plurality of relatively contrasting additional yarns which contrast in color with the plating yarns in complementary patterned relation with the reverse plated areas thereof, some of the last mentioned additional yarns being wrap interknitted with the plated web in bordering relation surrounding the reverse plated areas and other of the said additional yarns being wrap interknitted with the plated web within the reverse plated areas, said additional yarns being floated on the inside of the fabric between the respective successive knitted stitches thereof from course to course and from wale to wale and from one reverse plated area lengthwise of the stocking to another reverse plated area.

2. A seamless knitted fabric consisting of a plurality of yarns knitted in plated relation and knitted in designated areas in reversely plated diamond patterns, and one or more additional patterning yarns wrap knitted in the stitches of the fabric made by said first mentioned yarns in diagonally striped complementary bordering

relation with the reversely plated diamond patterns.

3. The method of knitting a seamless fabric which consists in knitting a main yarn with a plating yarn with the main yarn appearing on the face of the fabric in normal plating and the plating yarn being reverse plated in designated pattern areas, knitting the said main yarn with another plating yarn and at a different location in the fabric, contrasting with respect to the first mentioned plating yarn with the main yarn on the outer face of the fabric in normal plating and the said second plating yarn being reversely pattern plated in designated areas, and during the knitting of the main and plating yarns wrap interknitting with the stitches thereof additional wrap within wrap yarns in wale and course varied relation in the fabric superposed thereon in complementary patterned relation directly within the reverse plated areas of said fabric at the face thereof.

4. A knitted seamless fabric composed of a body and plating yarn knitted in normal plated relation and reversely pattern plated in certain areas thereof, and additional contrasting yarns wrap knitted in with the stitches of said plated yarns respectively along opposite sides of the reverse plated areas, each of said additional yarns being varied in different wales between designated numbers of successive courses and respectively floating at the inside of the fabric from course to course without crossing the reverse plated area.

5. A knitted seamless fabric composed of a body and plating yarn knitted in normal plated relation and reversely plated in certain areas thereof, additional contrasting yarns wrap knitted in with the stitches of said plated yarns respectively along opposite sides of the reverse plated area, each of said additional yarns being varied in different wales between designated numbers of successive courses and respectively floated at the inside of the fabric from course to course without crossing the reverse plated area, and other additional yarns wrap interknitted with the stitches of said main and plated yarns in superposed relation on the face of the fabric within the reverse plated area.

6. A seamless knitted stocking having a knitted leg web provided with main and plating yarns knitted in normal plating with the main yarn at the base of the stocking and reversely plated with the plating yarn at the face of the fabric in reverse plated pattern areas, and a plurality of relatively contrasting additional yarns wrap interknitted in different stitches of the reverse plated pattern areas and coursewise and lengthwise floated at the inside of the stocking between successively knitted stitches from course to course with the float portions of one of said additional yarns as it extends from one course to the next respective course in which said yarn is knitted crossing over and binding the coursewise float portion of the other additional yarn.

7. The method of knitting a circular seamless stocking or like tubular article which comprises knitting a seamless web portion out of a plurality of plating yarns, varying and contrasting the plating yarns throughout the length of the article being knitted, and during the knitting of said plating yarns providing reversely plated patterned areas thereof along the length of the article being knitted and which patterned areas contrastingly vary in the areas of different plating yarn changes, wrap interknitting with the web during the knitting thereof a plurality of contrasting wrap yarns in the different contrasting reverse plated areas along the length of the article being knitted, one of which wrap yarns is interknitted with relatively spaced nonadjacent stitches in the same course or courses and floated coursewise at the inside of the fabric directly between successively knitted stitches thereof and floated from course to course wherein the same appears, and interknitting the other of said contrasting wrap yarns in the web stitches of said reverse plated areas in at least some of the same courses wherein the first wrap yarn is knitted at the location where the first wrap yarn is floated and between successive stitches in said course or courses formed by the said first wrap yarn, to produce upon the exterior of the article a contrasting effect of said wrap yarns in the same course or courses and with said wrap yarns floated at the inside of the article from one reverse plated area to the other lengthwise of the article.

8. The method of knitting a circular seamless stocking or like tubular article which comprises knitting a seamless web portion out of a plurality of plating yarns, varying and contrasting the plating yarns throughout the length of the article being knitted, and during the knitting of said plating yarns providing reversely plated patterned areas thereof along the length of the article being knitted and which patterned areas contrastingly vary in the areas of different plating yarn changes, wrap interknitting with the web during the knitting thereof a plurality of contrasting wrap yarns in the different contrasting reverse plated areas along the length of the article being knitted, one of which wrap yarns is interknitted with relatively spaced nonadjacent stitches in the same course or courses and floated coursewise at the inside of the fabric directly between successively knitted stitches thereof and floated from course to course wherein the same appears, and interknitting the other of said contrasting wrap yarns in the web stitches of said reverse plated areas in at least some of the same courses wherein the first wrap yarn is knitted at the location where the first wrap yarn is floated and between successive stitches in said course or courses formed by the said first wrap yarn, to produce upon the exterior of the article a contrasting effect of said wrap yarns in the same course or courses and with said wrap yarns floated at the inside of the article from one reverse plated area to the other lengthwise of the article, and wrap interknitting other contrasting yarns in diagonal striped boundary providing relation with the different reverse plated areas.

9. A knitted fabric composed of a main yarn knitted in plated relation with different and relatively contrasting plating yarns in plated relation therewith at different locations along the length of the fabric, said main yarn being reversely pattern plated at predetermined areas with each of said contrasting plating yarns, said reverse plated pattern areas having a design area therein formed by a plurality of contrasting wrap yarns, one of which is interknitted with relatively spaced nonadjacent stitches in the same course or courses and floated coursewise at the inside of the fabric directly between successively knitted stitches thereof and floated from course to course wherein the same appears, the other of said contrasting wrap yarns being knitted in the web stitches in at least some of the same courses wherein the first wrap yarn is knitted but at a location where the first wrap yarn is floated and

between successive stitches in said course or courses formed by the first wrap yarn.

10. The method of knitting a circular seamless stocking or like tubular article which comprises knitting a seamless web portion out of a knitting yarn or yarns, and during the knitting of said web portion wrap interknitting with the stitches of the web a plurality of other yarns in right and left complementary diagonally striped relation with respect to each other and with respect to the length of the stocking, and also during the knitting of the web wrap interknitting in the areas provided between the diagonal lines other contrasting "wrap within wrap" patterning yarns.

11. The method of knitting a circular seamless stocking or like tubular article which comprises knitting a seamless web portion out of a knitting yarn or yarns, and during the knitting of the web portion wrap interknitting with the stitches of the web a plurality of other yarns in right and left complementary diagonally striped relation with respect to each other and with respect to the length of the stocking, and also during the knitting of the web wrap interknitting in the areas between the diagonal lines other contrasting "wrap within wrap" patterning yarns, one of which "wrap within wrap" yarns is interknitted with relatively spaced non-adjacent stitches in the same course or courses and floated coursewise at the inside of the fabric directly between successively knitted stitches thereof and floated from course to course wherein the same appears, and interknitting the other of said contrasting "wrap within wrap" yarns in the web stitches in at least some of the same courses wherein the first wrap yarn is knitted but at a location where the first wrap yarn is floated and between successive stitches in said course or courses formed by the first of said "wrap within wrap" yarns to produce upon the exterior of the article a contrasting effect of said wrap yarns in the same course or courses.

HARRY McADAMS.

CERTIFICATE OF CORRECTION.

Patent No. 2,171,452. August 29, 1939.

HARRY McADAMS.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, lines 9 and 10, claim 3, strike out the words and comma "and at a different location in the fabric," and insert the same after "yarn" first occurrence, line 11, same claim; line 20, same claim 3, before "areas" insert pattern; line 47, claim 5, for "plated" read plating; and second column, line 54-55, claim 8, for "diagonal" read diagonally; 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 17th day of October, A. D. 1939.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)

between successive stitches in said course or courses formed by the first wrap yarn.

10. The method of knitting a circular seamless stocking or like tubular article which comprises knitting a seamless web portion out of a knitting yarn or yarns, and during the knitting of said web portion wrap interknitting with the stitches of the web a plurality of other yarns in right and left complementary diagonally striped relation with respect to each other and with respect to the length of the stocking, and also during the knitting of the web wrap interknitting in the areas provided between the diagonal lines other contrasting "wrap within wrap" patterning yarns.

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