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(71) Applicant: **Cholmondeley-Smith, Yolanda Octavia**
4, Andrew Street
Geelong West Victoria 3218(US)

(72) Inventor: **Cholmondeley-Smith, Yolanda Octavia**
4, Andrew Street
Geelong West Victoria 3218(US)

(74) Representative: **Skerrett, John Norton Haigh et al,**
H.N. & W.S. SKERRETT Rutland House 148 Edmund
Street
Birmingham B3 2LQ(GB)

(54) **Knitting method and means.**

(57) A graph (11,14) for use in knitting (e.g. hand-knitting) an article, such as an article of clothing, has longitudinal (that is, vertical) lines or graduations (13, 13') and transverse (that is, horizontal) lines or graduations (12, 12'), the spacing of the longitudinal lines being even for substantially the whole length of the graph and the spacing of the transverse lines being even for substantially the whole width of the graph but being different from the spacing of the longitudinal lines so that the graph has a uniform, rectangular, non-square mesh. A method of knitting an article includes marking out a pattern, i.e. outline (21, 22, 23) of the knitted article, and also any ornamental or other fabric design matter (18), on the graph and then, using yarn and appropriate needle diameter corresponding to the line spacings of the graph, knitting the article by hand or otherwise using the graph as a guide.

KNITTING METHOD AND MEANS

This invention relates to means for assisting the making of knitted e.g. hand-knitted articles, specially articles of clothing, and to the method of doing so.

5 In the production of such articles it is sometimes desired to provide ornamental or other matter e.g. pictures, motifs, insignia or wording, in contrasting colour or colours with respect to the knitting material e.g. wool, cotton, silk, linen etc.
10 That can be very difficult to do, especially in hand knitting, particularly if the ornamental matter is irregular, non-repeating or asymmetrical in nature.

It is an object of the invention to provide means whereby the knitting will be made easier and
15 more accurate e.g. for a home-knitter or in educational or other institutions, or in industry or commerce.

It is also an object to provide means to facilitate drafting the pattern of, or matter to be
20 incorporated in, a knitted article, such as an article of clothing.

Another object is to provide means for assisting in the designing of articles of clothing, including any ornamental or other matter to be
25 incorporated therein.

A further object is to provide means whereby the hand-knitting of a garment or other article will be facilitated.

With these and other objects in mind I have devised a chart or graph for use in the knitting (e.g. hand-knitting) of an article, particularly an article incorporating matter such as pictures, motifs
5 insignia and/or wording, such chart or graph having vertical and horizontal lines or graduations according to (a) the thickness or ply of the yarn, wool or other material to be used in the making of the article and/or (b) needle diameter, said horizontal
10 graduations being evenly spaced in the length of the graph and said vertical graduations being evenly spaced across the width of the graph, and wherein the spacing of the horizontal graduations does not equal the spacing of the vertical graduations. That is to
15 say, the graph has a uniform, rectangular, non-square mesh.

The vertical lines or graduations correspond to the stitches in a row of knitting and the horizontal lines or graduations correspond to the rows
20 of knitting.

The invention also provides a method of producing a hand (or otherwise) knitted article including the steps of making on a graph the pattern to be followed in producing the knitted article, said
25 graph having vertical and horizontal graduations spaced apart distances to suit the ply of knitting material and the needles to be used in making the hand-knitted

article, the spacing of the horizontal graduations differing from the spacing for the vertical graduations, such that each stitch will correspond in width to the spacing between successive vertical graduations of the graph and each row of stitches will correspond to the spacing between successive horizontal graduations of the graph, selecting knitting needles and knitting material of diameter and ply respectively in accordance with the graph, and proceeding to knit the article using the graph as a guide.

Further, the invention includes the provisions of graphs as briefly described above and incorporating outlines of shapes to be knitted - such as articles or portions of articles of clothing.

In order that the invention may be clearly understood and readily put into practical form I shall now describe it with reference to the accompanying illustrative drawings, wherein:

Fig. 1 depicts portions of one graph prepared according to the invention and for use with 8 ply yarn;

Fig. 2 shows a second graph prepared for use with 12 ply yarn;

Fig. 3 illustrates a motif applied to a portion of a graph;

Fig. 3A shows a "squaring-off" of the motif illustrated in Fig. 3; and

Figs. 4A and 4B show patterns for several

different sizes of clothing article, applied to a graph.

The graph 11 shown in Fig. 1 has the horizontal and vertical lines 12,13 of the graph so spaced that in 10 cm horizontally there are 22 vertical lines 13 and in 10 cm vertically there are 30 horizontal lines 12, the spacing of the vertical lines 13 corresponding to the distance occupied by stitches of 8 ply yarn when knitted under correct even tension in the yarn and the spacing of the horizontal lines 12 corresponding to the distance occupied by a row of knitting when produced under such tension, using the appropriate knitting needles to suit 8 ply yarn (4 mm).

The graph 14 shown in Fig. 2 has its horizontal and vertical lines 12', 13' spaced to suit 12 ply yarn, there being 16 of the vertical lines 13' in 10 cm distance horizontally and 20 of the horizontal lines 12' in 10 cm distance vertically, corresponding to 16 stitches of 12 ply yarn in 10 cm horizontally and 20 rows of that yarn in 10 cm vertically, using the appropriate needles for 12 ply yarn (6 mm).

These graphs may be made any desired size. For convenience in marketing they may be printed on paper and put up in pads, with the graphs 20 cm wide and 30 cm long, or any other suitable dimensions.

The graphs of that size may be readily attached together, as by use of adhesive cellulose tape, to make larger sheets. Alternatively, the graphs may be printed on larger sheets such as 60 cm wide X 60 cm long. Also, the lines of the graph may be numbered, as shown in Fig. 3, and/or the graph may have every 10th line, say, in both horizontal and vertical directions marked heavily - as shown in Fig. 4 with such lines referenced 15 and 16, respectively - or in a distinguishing colour so as to make it more convenient for a knitter to count the number of stitches, as represented by the vertical lines 13 and 13', from a starting point and the number of rows, as represented by the horizontal lines 12 and 12', knitted or to be knitted.

Referring, now, to Fig. 3 this shows a simple line or motif 18 drawn on a graph made according to the invention and illustrates a practical application of the invention. There may be drawn or otherwise produced on a graph any design, motif or other matter to be incorporated in a knitted article. If it is desired that the motif be of a colour different from that of the basic article, that colour may be marked on the relevant portion of the graph by use of colouring pencils, or by numbering the different areas - as shown by the numbers 1, 2 and 3 on Fig. 3 - to indicate the different colours (also providing a colour chart with the appropriate numbers associated therewith)

or by fastening a piece of the appropriately coloured yarn to each area. By way of example, the area within the tree design shown in Fig. 3A may be coloured green, or numbered 2, or have a piece of green yarn fastened
5 to it, and the area outside it coloured or marked, to indicate some other colour. Of course, the trunk portion of the tree may be coloured brown, or marked with the numeral 3, or have a piece of brown yarn fastened to it.

10 In knitting the article to incorporate the outline or motif 18, one counts the lines from a starting point to determine when yarn of a different colour is to be used. On curved lines or other lines bisecting areas between the vertical lines it is
15 necessary to "square off" (see Fig. 3A) the knitting to the nearest full stitch, as it is not possible to provide part-stitches. When a colour change of yarn has been made that yarn is used until the appropriate number of stitches to reach the end of that line of the
20 colour have been made, and then the yarn of the next colour is substituted. For example, if the basic colour of the article shown in Fig. 3A is red, the trunk of the tree pattern is brown, and the foliage is green, and the knitter is knitting row 14 the first
25 two stitches corresponding to the graph shown in Fig. 3A would be with red yarn and the next ten stitches would be with green yarn. When knitting the seventh

row the first two stitches would be with the red yarn, then three stitches of green, two stitches of brown, three of green and the last two would be red yarn.

5 I have found that if I have to knit a portion only one stitch wide it is generally advisable to draw the line on the graph as two stitches wide, as one stitch or row of colour tends to "disappear" to nearly half its true size when knitted. However, that can
10 be an advantage when one colour is to merge into another.

Reference is now made to Figs. 4A and 4B in which the graph has every tenth line in each of the horizontal and vertical directions accented and has drawn or printed on it three different sizes of the
15 one shape of garment part - the back and front portions of a pullover. The lines denoting the smallest size shown are referenced 21, those for the intermediate size are referenced 22 and those for the largest size are referenced 23. In practical use these lines would
20 be shown in different colours as red for line 21, brown for line 22 and pink for line 23. The band for the rib portion for each is 24, the front neck portion is 25 and the back neck portion is 26. There may be colour indicators 27, 28, 29 marked in the colours of the lines
25 21, 22, 23 respectively and bearing notations as to the sizes of the garment to be knitted - such as size 10, size 12 and size 14, respectively.

In knitting the front portion of the smallest size of garment shown in this Figure - as indicated by the lines 21 - the knitter casts on the number of stitches of the ply of wool as required by the graph, using the appropriate size of needles, to knit the first row of the rib band 24 and then proceeds to knit the required number of rows, according to needle diameter, to complete that band. For the smallest size of garment that band may be 5 cm long, for the next size it may be 6 cm long and for the largest size it may be 7 cm long. Merely by way of example the number of stitches required for a size 10 garment, for each of front and back, using 8 ply yarn and 3 mm needles, may be 100, for a size 12 garment 106, and for a size 14 112 stitches.

Then, the body of the garment is knitted for the number of rows as shown by the graph, (using needles of diameter appropriate to the required tension) up to the region of the sleeve, when it becomes necessary to cast off stitches. For the size 10 garment that may be 6 stitches each side, then knit another row, cast off one and knit another row, cast off one and knit two rows, and so on until the required width for the upper body portion is achieved. For the remainder of the garment stitches are cast off as called for by the graph in order to form the neck portion 25 for the front of the garment and the portion 26 for the back of the garment.

There would also be provided graph marked with the sleeve shape to enable the knitter to knit the sleeves correctly.

It will be appreciated that very many
5 different garment shapes may be marked on the graph,
and the invention is to be deemed to include all such
shapes.

The graph may be made to suit any desired
ply of yarn, and needles of diameter appropriate to
10 the required tension.

It will further be appreciated that the graph
need not necessarily be on paper, but could be produced
on other materials such as computer programming
mediums.

The graph may also form part of a knitting
pattern including printed instructions for use and for
selection of yarn and needles.

CLAIMS

1. A graph for use in the production of a knitted article, including a knitted article incorporating ornamental insignia or other matter, said graph having vertical and horizontal graduations according
5 to (a) the thickness of the yarn and/or (b) the diameter of needles or the like to be used in the making of the article, said horizontal graduations being evenly spaced in the length of the graph and said vertical graduations being evenly spaced across
10 the width of the graph, and wherein the spacing of the horizontal graduations is not the same as the spacing of the vertical graduations.
2. A graph as claimed in Claim 1 wherein the distance between successive horizontal graduations is
15 less than the distance between successive vertical graduations.
3. A method of knitting an article including the steps of marking on a graph the pattern to be followed in producing the knitted article, said graph having
20 vertical and horizontal graduations spaced apart distances to suit the ply of knitting material and needles or the like to be used in making the knitted article, the spacing of the horizontal graduations differing from the spacing for the vertical graduations,
25 such that each stitch will correspond in width to the spacing between successive vertical graduations of the graph and each row of stitches will correspond to the

spacing between successive horizontal graduations of the graph, selecting knitting needles and knitting material of diameter and ply respectively in accordance with the graph, and proceeding to knit

5 the article using the graph as a guide.

4. A method of producing a hand-knitted article including the steps of marking on a graph as claimed in Claim 1 the pattern to be followed in producing the knitted article, selecting knitting yarn of a ply
10 corresponding to the spacing of the vertical graduations of the graph and knitting needles corresponding to the ply of the yarn to be knitted, and knitting the article using the graph as a guide.

5. A method of knitting a hand-knitted article
15 as claimed in Claim 4, wherein in the graph, the distance between successive horizontal graduations is less than the distance between successive vertical graduations.

6. A method of knitting a hand-knitted article
20 as claimed in Claim 4, wherein the graph also includes lines marking the outline of the article to be knitted and the method includes using the graph as a guide in the formation of the outline shape of the hand-knitted article.

7. A knitting pattern of a knitted article, comprising a graph as claimed in Claim 1 or 2 upon which is marked an outline of the article to be knitted.
8. A kit of materials for use in the production
5 of a knitted article, said kit comprising a quantity of knitting yarn of preselected ply, a set of knitting needles of a diameter matched to the ply of said yarn, and a graph as hereinbefore defined in either Claim 1 or 2.
- 10 9. A kit of materials for use in the production of a knitted article, said kit comprising a quantity of knitting yarn of preselected ply, a set of knitting needles of a diameter matched to the ply of said yarn, and a knitting pattern of said article which pattern
15 comprises a graph as claimed in Claim 1 or 2 upon which is marked an outline of the article to be knitted.

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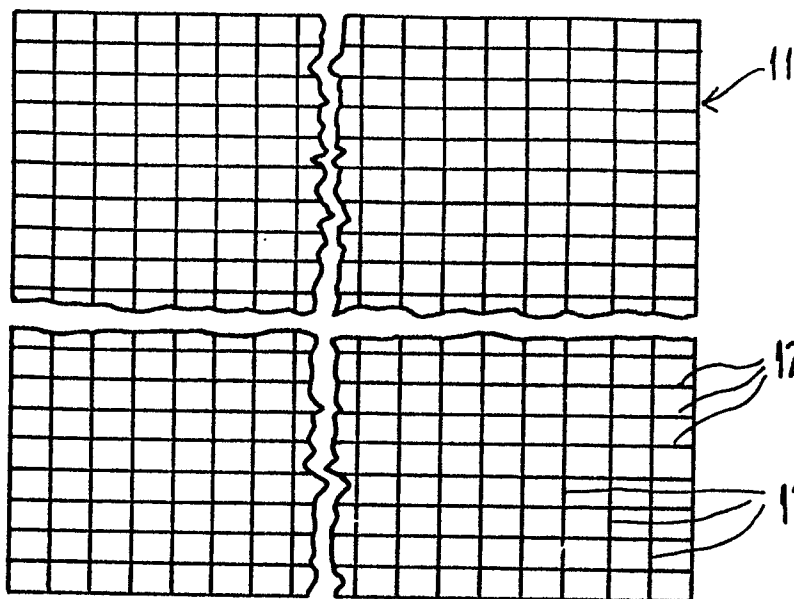


FIG. 1.

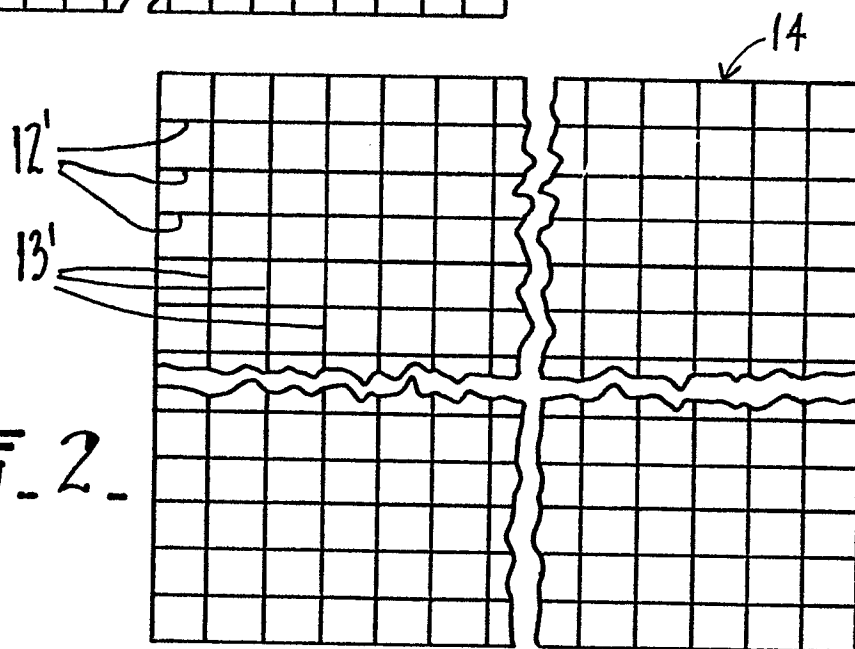


FIG. 2.

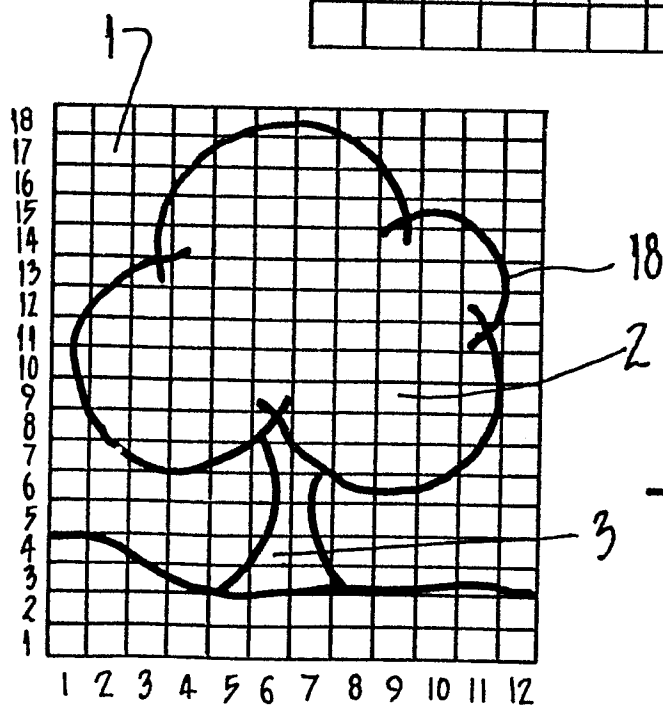
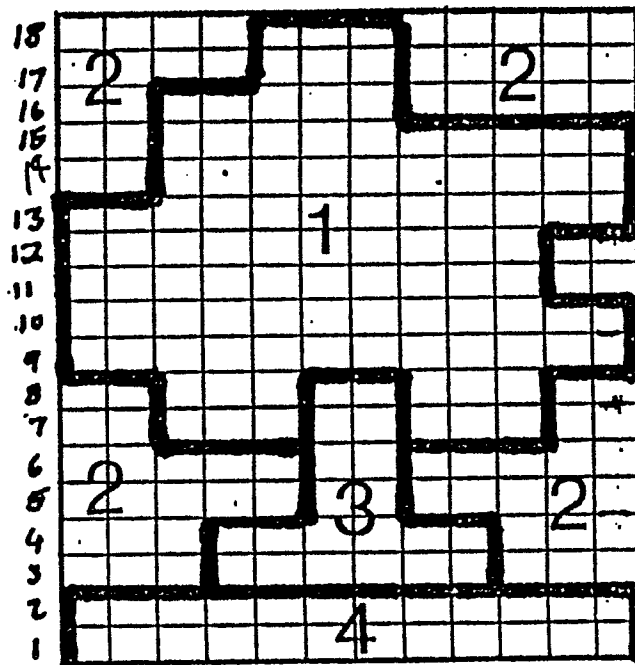


FIG. 3.

*Fig. 3A*

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