

(No Model.)

P. P. OLSSON.
KNITTING INDICATOR.

No. 457,166.

Patented Aug. 4, 1891.

Fig. 1.

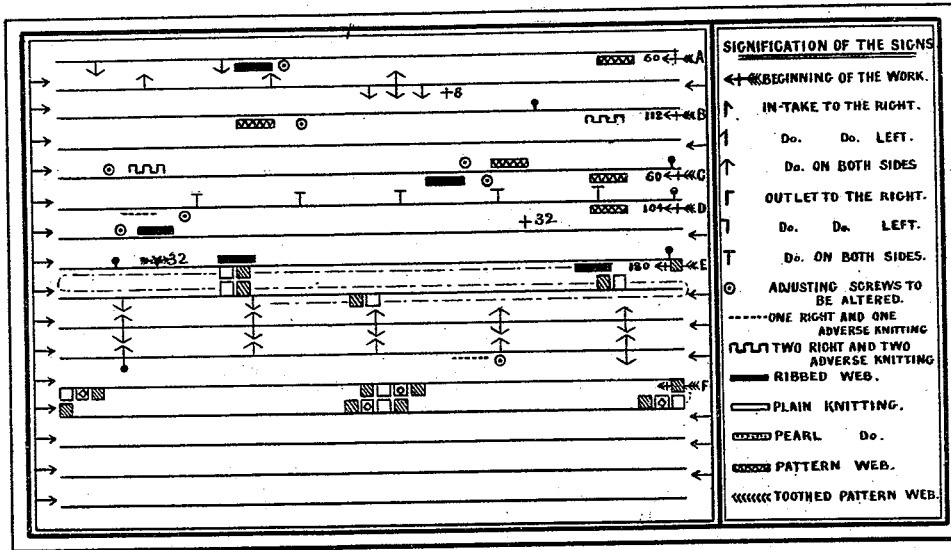


Fig. 3.

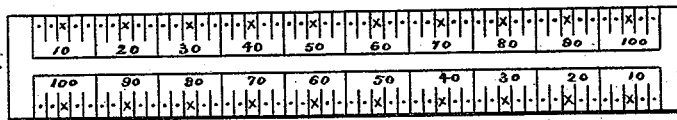
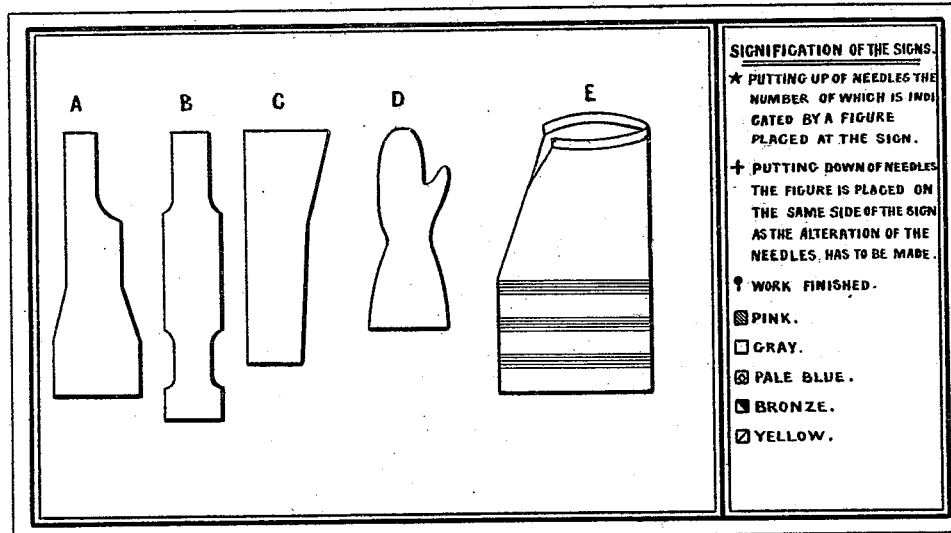


Fig. 2.



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KNITTING-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 457,166, dated August 4, 1891.

Application filed December 15, 1890. Serial No. 374,660. (No model.)

To all whom it may concern:

Be it known that I, PER PERSSON OLSSON, a citizen of the Kingdom of Sweden, residing in Stockholm, Sweden, have invented an Improvement in Knitting-Indicators, of which the following is a specification.

In knitting garments and fabrics of different characters it has heretofore been usual to count the stitches and the rows of stitches and to narrow or widen the fabric and to vary the character of the knitting, so as to produce plain knitting, pearl knitting, ribbed web, &c., and it is only after long practice that the operator becomes sufficiently familiar with the number of stitches and rows to knit numerous fabrics of the same character one after the other.

In Letters Patent No. 350,013, granted to me September 28, 1886, a counting apparatus and pattern-card for knitting-machines is represented; and the present invention relates to an improved pattern-card or knitting-indicator that may be made use of with the counting apparatus shown in the aforesaid patent, or it may be used with any other counting apparatus, or it may be employed by a person using a knitting-machine, such as the "Lamb" knitting-machine, in which case the operator simply has to count the number of rows of knitting and the pattern-card or indicator points out of what is to be done in each stage of the knitting when a given number of rows have been knitted.

In the drawings, Figure 1 represents a pattern-card or indicator, and Fig. 2 shows the reverse side of such pattern-card or indicator. Fig. 3 represents a scale-card that may be used with my pattern-card.

The material out of which the pattern-card or indicator is made may be varied; but a convenient form is a square of card-board ruled off in lines and having the characters hereinafter described upon its surface.

Upon my pattern-card I make use of arbitrary signs for certain operations or information necessary to be given to the person that is knitting. I prefer to employ the parallel lines indicated in Fig. 1, and the length of each line is presumed to represent one hundred rows of knitting. In Fig. 3 I have represented the length of the line divided up into one hundred to form a scale, which, when

applied to the surface of a pattern-card, indicates the number of rows from the point of beginning up to the respective signals or signs placed adjoining such line. The arbitrary signs which I find convenient to employ are represented either upon the face or the back of the card, together with the descriptive matter explaining such arbitrary signs. For example, the arrow adjacent to one of the parallel lines indicates the point and direction in which the knitting is to be started for doing a certain kind of work. A vertical line with an inclined mark from the top toward the right indicates that the fabric is to be taken in or made narrow at the right, it being understood that one needle in each bed is to be drawn out of action in narrowing the fabric. A similar line with a mark toward the left indicates that the fabric is to be taken in or narrowed on the left. A vertical line with the marks from the top to the right and to the left indicates that the fabric is to be narrowed upon both edges. A vertical line with a right-angled mark at the top and to the right indicates that additional needles are to be brought into action for widening the fabric to the right. A similar vertical line with a mark to the left indicates that the fabric is to be widened to the left, and a T-shaped mark indicates that the fabric is to be widened upon both edges. It will now be discovered that where a number is placed adjoining the arrow denoting the beginning of the work, such number is to indicate the number of needles required to begin the work, and the signs described and the numbers associated with them indicate what is to be done in introducing or in taking out needles from operation in performing the knitting of the predetermined garment or fabric, and I remark that there may be a pattern-card or indicator allotted to one garment, or the pattern-card or indicator may have upon it the information necessary for making several different garments, and I find it convenient to represent upon the reverse side of the card the different garments to which the information on the other side of the card applies. Thus I have shown at A a representation of the front part of a jacket as knitted flat; at B a flat fabric for a leggin; at C the fabric for a sleeve; at D a mitten,

and at E a lady's skirt, and upon the pattern-card at the reverse side the letters A B C D E give the information necessary for knitting the garments indicated by the pictures.

5 In hand-knitted as well as in machine-knitted garments it is customary to knit the fabric in what is known as "cross-knitting," "double knitting," "ribbed web," "plain web," "pearl knitting," "pattern-web," and "toothed pattern-web," and upon reference to the pattern-
10 card shown in the drawings the arbitrary signs, which I find it convenient to make use of, are represented accompanied with the name to which the sign relates, and it is to
15 be understood that where any arbitrary sign is applied adjoining the line indicating one hundred rows of knitting that when the operator reaches the number of rows adjacent to which the particular sign is placed, the
20 style of knitting is to be changed for producing the desired article.

In connection with the fabric A the 60 adjacent to the arrow indicates the use of sixty needles at the beginning, and the sign indicating that the knitting is what is known as
25 "pattern-web" is adjacent to the 60, and at a distance from the point of beginning corresponding to sixty-two rows of knitting there is a circle with a dot indicating that the adjusting-screws of the machine are to be altered, so
30 as to produce the ribbed web denoted by the adjacent sign. The knitting is then to proceed for ten more rows, and the double arrow-head denoting that the needles are to be taken
35 out of action to narrow the fabric in both directions, and the knitting then proceeds for twenty rows more and the fabric is again narrowed. The arrow at the left adjoining the
40 second parallel line from the top indicates that the counting of the number of rows proceeds from this end, and the arbitrary marks denote what is to be done upon arriving at the position from the end of the line corresponding to a certain number of rows knitted.
45 The fabric A in this case takes three hundred and seventy-six rows of knitting, and the vertical line with a dot on the top denotes that the work is finished.

In some kinds of knitting-work a number
50 of needles are put up or put down at one time, and I employ a star to indicate that needles are to be put up and a cross to indicate that needles are to be put down, and I use numbers to denote how many needles are to be put up
55 or down and place the figure on the side of the sign where the alteration of the needles is to be made.

By the foregoing explanations it will be understood that the pattern-card or knitting-indicator herein described contains in a small
60 compass the information necessary to be furnished to the operator from time to time, and when this pattern-card is used with a counting apparatus, such as used in my aforesaid
65 patent, the indicator is driven along the line of signs the extent of its length during the knitting of one hundred rows and indicates

automatically by the sign adjacent to such line what is to be done when the indicator arrives opposite to such sign, and the trouble
70 heretofore experienced in keeping count of stitches and rows of knitting and the taking in or widening the fabric at particular places is done by inspection rather than by counting.

It is often advantageous in knitting a number of similar garments to denote the places
75 where the color of the yarn is to be changed, and I make use of arbitrary signs placed adjacent to the parallel lines for denoting the change of color. These arbitrary signs are
80 preferably inclosed in a small square, and I have indicated some of these arbitrary signs. For instance, a square-border line may represent gray; a square border-line with diagonal
85 cross-lines, pink. A square border-line with diagonally-placed lozenge indicates pale blue. A square border-line divided diagonally and one side darkened represents a bronze. A square border-line with a diagonal line represents yellow, and so on. These arbitrary
90 signs for colors may be varied to suit the convenience of the operator, and when placed adjacent to the parallel lines representing the mode of knitting they show at which row of
95 knitting the change is to be made, in connection with the knitting of the fabric E upon the pattern-card shown in the drawings. The indications illustrate that one hundred and eighty
100 needles are to be made use of, that the yarn is pink; that the fabric is to be a ribbed web; that seventy-two rows of knitting are to be made, and then the yarn is to be changed to gray, and this is to be run for the balance of one hundred rows and for twenty-eight rows
105 on the return movement, making fifty-six rows of gray. Then the pink is to be introduced for sixty rows, and the gray is to be again introduced for seventy-four rows, and then the pink is to be introduced for the remainder of
110 the fabric, there being in all six hundred and ninety rows of knitting in producing the skirt shown by the diagram E, and when six hundred and thirty rows have been knitted the screws are to be adjusted to change the knitting to the cross-knitting.
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The mode of using this card or knitting-indicator is very easily learned and mistakes in the knitted fabric are either entirely avoided or reduced to a minimum.

In machines where a circular dial and hand
120 are made use of for counting the rows of knitting the signs heretofore set forth may be upon the dial in one row or in two or more concentric rows. It is not always necessary to have an actual line upon the card or indicator, as
125 the signs or characters in lines or rows alone may be employed, and the card or indicator aforesaid may remain flat or be rolled up into a cylindrical form, as most convenient.

I claim as my invention—

1. A pattern-card or indicator for knitting, containing parallel lines, each line corresponding to one hundred or other number of rows of knitting and arbitrary signs, one to indi-
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- cate the direction in which the counting is to be done, other signs for taking in the knitted fabric and for widening the knitted fabric, such signs being placed in the position to indicate the number of rows of knitting before such widening or narrowing of the fabric, and a sign to indicate the number of rows at which the fabric is finished, substantially as set forth.
- 10 2. A knitting-indicator or card containing arbitrary signs in rows or parallel lines to indicate the direction in which the counting is to be done, the character of stitch or knitting to be made, numbers indicating the number of needles required, and arbitrary signs to denote the widening and the narrowing of the fabric, or both, and the total number of rows of knitting in such fabric, substantially as set forth.
- 15 3. A pattern-card or knitting-indicator containing parallel lines or rows of arbitrary marks or signs to denote the character of the knitting, the place where the knitting requires to be changed in its character, and the place where the fabric is to be widened or narrowed

after knitting a number of rows, as indicated by the position of the sign in the parallel lines, substantially as set forth.

4. The pattern-card or indicator having arbitrary signs in parallel lines indicating the number of rows of knitting and the changes of color in the yarn after the knitting of the number of rows indicated by the position of such arbitrary signs, substantially as set forth.

5. A pattern-card or indicator for a knitting-machine, having a series of parallel lines, each corresponding to one hundred or other number of rows of knitting and adapted to receive arbitrary signs, and also having on another portion of the same card a series or arbitrary signs and explanations thereof, whereby the card can be made to indicate the various manipulations in knitting, substantially as specified.

Signed by me this 9th day of December, 1890.

PER PERSSON OLSSON.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.