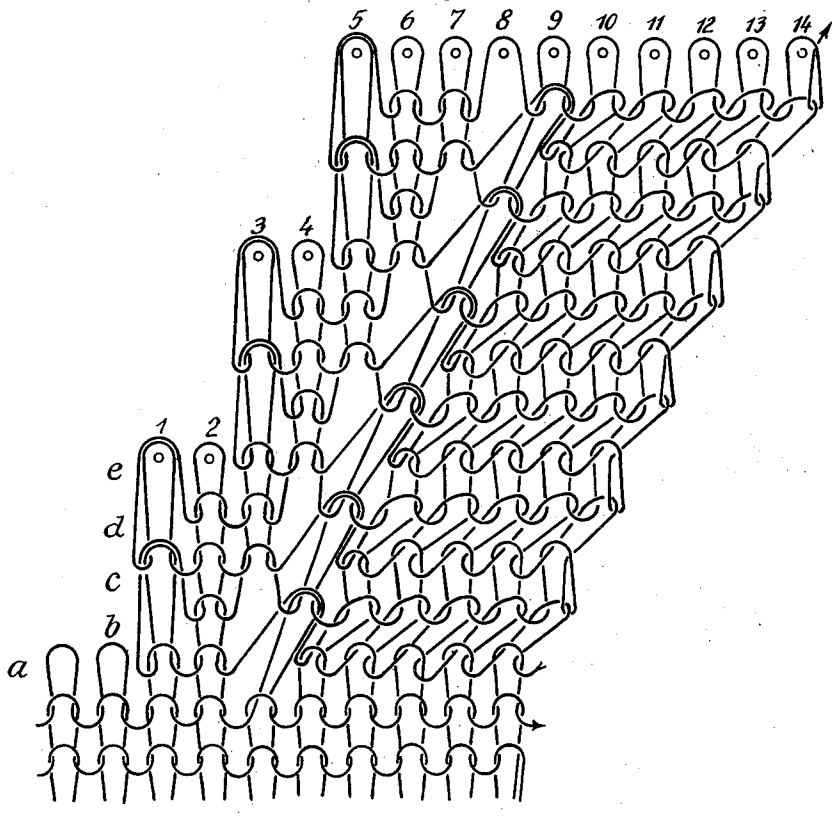
Sept. 2, 1941. K. RÖDER 2,255,014

PRODUCING STOCKINGS IN A SINGLE OPERATION

Filed Nov. 29, 1940



Inventor:
Kurt Roder.
By William C. Linton
Atty.

Patented Sept. 2, 1941

2,255,014

UNITED STATES PATENT OFFICE

2,255,014

PRODUCING STOCKINGS IN A SINGLE OPERATION

Kurt Röder, Chemnitz, Germany

Application November 29, 1940, Serial No. 367,804
In Germany December 8, 1939

1 Claim. (Cl. 66—187)

The present invention relates to a method for the manufacture of a stocking in a single operation upon a flat knitting machine and more particularly comprises a method according to which with the loops of the middle part placed in suspense the heel parts are directly produced upon the machine by transferring outwardly and connections between the loops of the heel parts and the loops of the sole part are effected at right angles with respect to one another and without seams.

A method for the manufacture of a stocking in such a manner is described in the U. S. application Ser. No. 270,669 of applicant filed April 28, 1939 and entitled "A method of making stockings."

The main feature of this earlier application consists in this that for the manufacture of the heel parts the loops of each second row of heel loops are alternately transferred outwardly for one needle except the loops hanging on the innermost two or three needles and that the inner limit of the path or stroke of the heel thread carriers, is, each time after four rows of loops have been formed, reduced for the distance of two needles from one another which needles are placed in an inoperative position.

For closing openings produced by transferring outwardly according to one modification the loop of the not transferred second row of loops of each group of heel loops, consisting of four rows of loops and hanging on the innermost needle in the following row of loops to be transferred outwardly, is not pressed in the following row and on transfer of the third row loops is transferred as double loop together with the noose formed on this needle.

Now, it has been proved that this method of closing openings caused by outwardly transferring is not satisfactory in so far as the double loops have larger distance from each other, whereby, due to the different noose formations, an irregular and undesired loop diagram results.

To prevent this drawback, the loop of each not transferred row of heel loops which hangs on the innermost needle of the following row of loops to be transferred outwardly is not pressed in the following row of loops and on transfer outwardly of this row of loops is transferred as double loop together with the noose formed on this needle.

Hereby a continued trace of double loops as well as a uniform noose formation results for closing openings caused by transferring outwardly. A further feature of the present invention consists in this that, for the purpose of obtaining outwardly transferred double loops extending as far as into the corner of the heel, the corresponding loop of the last complete row of loops of the leg is not pressed in the following row of heel loops.

For the purpose of the invention it is of no importance whatever in which manner the needle, forming the inner limit of the path or stroke of the heel parts, is treated, i. e. in which manner this needle is pressed or not pressed.

In the accompanying drawing a loop diagram formed by one mode of carrying out the operation according to the invention is shown by way of example.

According to the example shown, the loop hanging on the needle 3 of the last row *a* of the leg is not pressed in the following row. In the row following manufacture of the heel parts in which the first row *b* of heel loops is formed on the needles 8—1 only the loops, with the exception of the loops hanging on the two innermost needles 1 and 2, are outwardly transferred for the distance of one needle. Hereby the loop of the row *a* hanging on the needle 3 is outwardly transferred to the needle 4 together with the noose of the first row *b* of heel loops formed upon the needle 3 so that now loops hang on the needles 1, 2 and 4—9.

In the following second row *c* of heel loops which is not transferred the heel thread carrier performs, starting from the same inner limit of the stroke or path (needle 1), a stroke or path which is larger about the distance of two needles. Due to the fact that the last added marginal loop does not find a counter-loop to which it could be connected this marginal loop disappears again by being pressed off.

In the following third row *d* of heel loops in which the loop hanging on the needle 4 of the row *c* is not pressed and in which the heel thread carrier performs the same path or stroke as in the row of loops *c* the loops are again transferred outwardly about the distance of one needle. In this row also the marginal loop disappears because it is pressed off without finding a counter-loop to which it could be connected. In contradistinction to the row *b*, however, in this case the three loops hanging on the innermost needles 1—3 are not transferred outwardly.

On transferring outwardly the row *d*, the loop 4 of the row *c* and the noose of the third row *d* of the heel loops formed upon the needle 4 together are outwardly transferred as double loop from the needle 4 to the needle 5, so that now loops hang on the needles 1—3 and 5—10.

The marginal loop of the following fourth row *e* of heel loops which again is not transferred and in which the heel thread carrier performs the same path or stroke as in the rows *c* and *d* of the loops, now is connected to the transferred marginal loops of the row *d*. In the next row the loop hanging on the needle 5 is not pressed. The outer limit in each heel part is increased by the distance of two needles.

In the following row of loops the inner limit of the path or stroke of the heel thread carrier is displaced outwardly about the distance of two needles. The following rows are produced in the same manner as the rows *b*—*e* of the heel loops.

According to the example shown, the needle 1, forming the inner limit of the path or stroke of the heel parts, is not pressed in the rows *c* and *e*. Of course, the needle 1 could also be pressed in each row or be not pressed in the rows *d* and *e* only, or be treated in any desired other manner. Moreover, the outward transfer of the double loops could also be started in the row *d*.

What I claim is:

A method for the manufacture of a stocking in a single operation on a flat knitting machine in which the heel parts are formed while the loops of the middle portion are placed in suspense with outer groups of loops in said heel parts being transferred outwardly in alternate courses only, which comprises retaining in intervening courses the loops on the innermost needles of the groups of needles from which loops are to be transferred in said alternate courses to form tuck or double loops whereby the innermost loop in each group of transferred loops is a double loop.

KURT RÖDER.