June 14, 1938. W. HEINITZ 2,120,749

KNOCKOVER DEVICE

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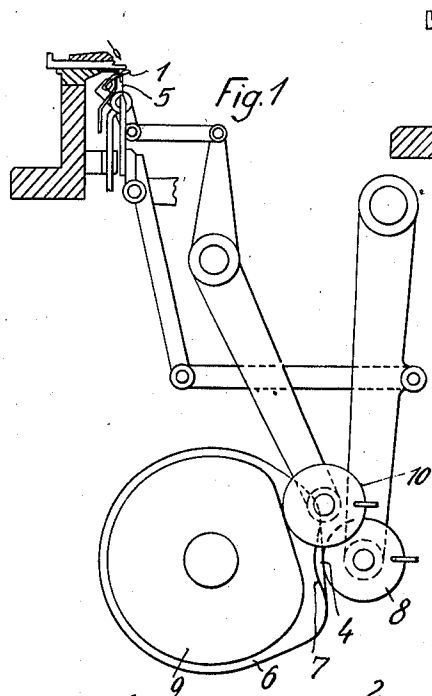


Fig.1

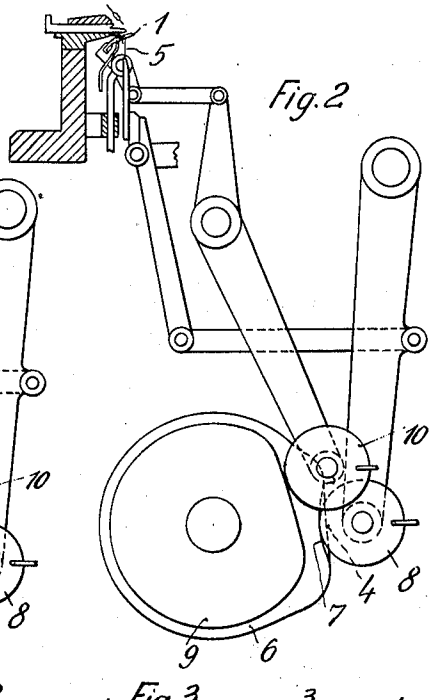


Fig.2

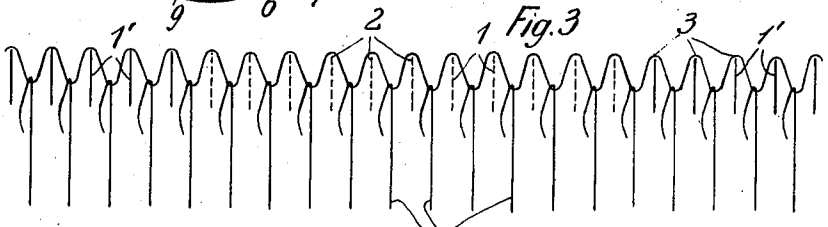


Fig.3

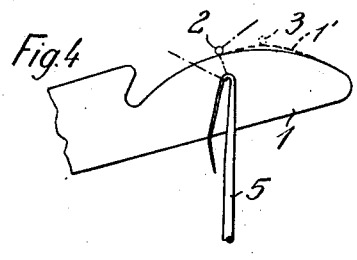


Fig.4

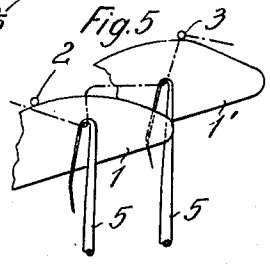


Fig.5

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KNOCKOVER DEVICE

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3 Claims. (Cl. 66—109)

The present invention relates to straight knitting machines for the manufacture of stockings and more particularly refers to a device used in such machines for knocking over the heel loops during the time the loops of the instep portion are placed in suspense.

In the manufacture of stockings in which, during the production of the heel portions, the loops of the instep portion are placed in suspense and the heel portions are not drawn or pulled off, the danger of damaging the loops placed in suspense exists as soon as the knocking over operation is carried out in such a manner, that stronger material used in producing the loops of the heel portions also is safely knocked over without being drawn or pulled off. This danger exists because the loops placed in suspense and hanging on the needles of the instep portion are then more powerfully knocked over and are during the formation of each row of heel loops also more tightly stretched by the knocking over bits.

With known devices, this operation of the loops placed in suspense and the desired proper formation of the heel loops respectively is obtained by the fact, that knocking over is discontinued at the loops placed in suspense, for instance by disconnecting portions of the knockover bar or by imparting additional movements in between wide ranges to these parts. Alternately knockover bits are used which are provided with a second knockover point upon which in the range of the heel loops knocking over is effected during the manufacture of the heel portions by a special movement of the knockover bar.

By means of the device according to the present invention any subdividing of the knockover bar is prevented and also any special movement of said bar or of parts of same. The object of the invention is to provide a device by means of which a perfectly faultless formation of the heel loops is produced without drawing or pulling off and simultaneously also the highest possible protection of the row of loops is obtained which hangs on the frame needles of the instep portion from the beginning of the manufacture of the heel portions to the end of this operation.

The object aimed at is obtained in the most simple manner by the fact, that the knockover bits cooperating with the needles used to produce the heel loops are provided with a second knockover point arranged with regard to the first knockover point in front of same and in an elevated position. With this arrangement during the formation of the rows of loops of the heel portions knockover on the second knockover point is automatically effected on the wales in consideration by the already altered amplitude of the oscillation of the frame needles due to the use of auxiliary presser combs.

During knitting in the full width of the division, for instance during the production of the leg portion of a stocking, all the loops are, as hitherto, knocked over on the normal knockover point. However, if during the manufacture of the heel portions the loops of the instep portion are placed in suspense knocking over is automatically effected on the second knockover point in the range of the heel loops due to the fact, that the amplitude of the oscillations of the frame needles is different at this time.

In the accompanying drawing, one construction according to the present invention is shown by way of example.

In this drawing:

Fig. 1 is an elevation of the frame needle and the knockover bit in the normal knockover position,

Fig. 2 shows an elevation similar to that of Fig. 1 but illustrating the frame needle and the knockover bit in the knockover position during the manufacture of the heel portions,

Fig. 3 is a diagrammatic view illustrating the mode of operation carried out with the individual parts of the machine occupying the position shown in Fig. 2,

Fig. 4 shows the front portion of a knockover bit on an enlarged scale and illustrates the different knockover points, and

Fig. 5 is a view on an enlarged scale of the position of the thread and the knockover position during the manufacture of the heel portions.

In the range of the instep portion the knockover bits 1 have the form shown in full lines in Fig. 4 and are provided with the second knockover point 2. The knockover bits 1' used in the production of the heel loops are, as indicated in broken lines in Fig. 4, provided with an elevation by which the second knockover point 3 lying in a higher level is obtained.

By means of the presser cam 4 the frame needles 5 are moved in the well known manner, thereby bringing the loops upon the knockover point 2. Besides the presser cam 4 a second or additional presser cam 6 is arranged upon the cam shaft having an additional curve 7. If in a well known manner the roller 8 is shifted laterally so as to come in the path of the additional presser cam 6, as shown in Fig. 2, the amplitude of the oscillations of the frame needles 5 is changed by the additional curve 7, so that

the frame needles 5 bring the loops upon the elevated knockover point 3 of the knockover bits 1' used in the production of the heel loops (right hand bit Fig. 5).

The loops in the range of the instep portion are not influenced by the knockover bits 1 as in this range the knockover bits are not provided with the elevated second knockover point (left hand bit Fig. 5).

The roller 8 may, of course, be shifted by hand or automatically.

The spirit of the invention is in no way altered if the additional movement is imparted to the knockover bits instead of to the frame needles 5.

Besides the knockover cam 9, an auxiliary knockover cam would then have to be provided having an additional curve corresponding to the additional curve 7. If the roller 10 would be shifted into the path of the auxiliary knockover cam, the elevated knockover points 3 of the knockover bits would be brought below the loops of the needles moved in the normal manner.

What I claim is:

1. In a device used in straight knitting machines for knocking over the heel loops of stockings during the time the loops of the instep portion of the stocking are placed in suspense, comprising frame needles, knockover bits having a single knockover point cooperating with said frame needles knitting the instep portion, other knockover bits provided with two knockover points associated with said frame needles which knit the heel tabs and means for altering the amplitude of oscillations of said frame needles to effect knocking over the loops hanging on same at the one or other knockover point.

2. In a device used in straight knitting machines for knocking over the heel loops of stockings during the time the loops of the instep portion of the stocking are placed in suspense, comprising frame needles, knockover bits having a single knockover point cooperating with said frame needles knitting the instep portion, other knockover bits provided with two knockover points associated with said frame needles which knit the heel tabs, said knockover bits provided with two knockover points having the second knockover point in front of the first knockover point and at a higher level, and means for altering the amplitude of oscillations of said frame needles to effect knocking over of the loops hanging on same at the one or other knockover point.

3. In a device used in straight knitting machines for knocking over the heel loops of stockings during the time the loops of the instep portion of the stocking are placed in suspense, comprising frame needles, knockover bits having a single knockover point cooperating with said frame needles knitting the instep portion, other knockover bits provided with two knockover points associated with said frame needles which knit the heel tabs and means for altering the amplitude of oscillations of said frame needles to effect knocking over of the loops hanging on same at the one or other knockover point comprising an auxiliary presser cam provided with an additional curve.

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