June 29, 1937. W. HEINITZ 2,085,656

AUXILIARY PRESSER FOR FLAT KNITTING MACHINES

Filed July 24, 1936

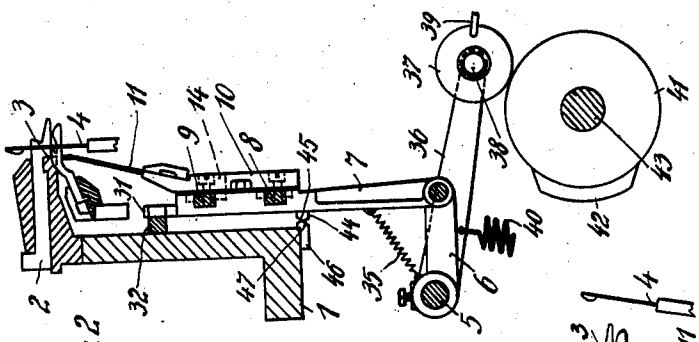


Fig. 2

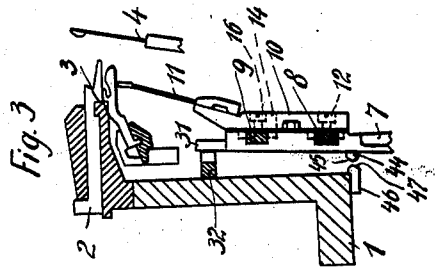


Fig. 3

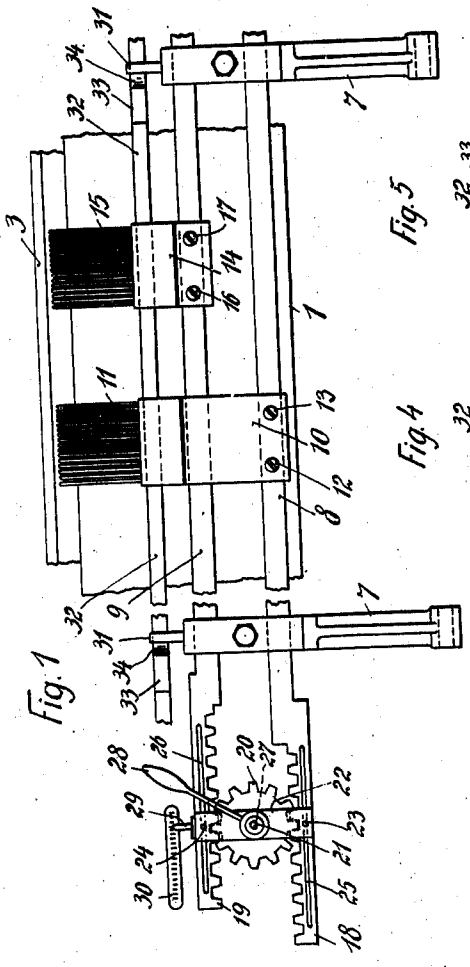


Fig. 1

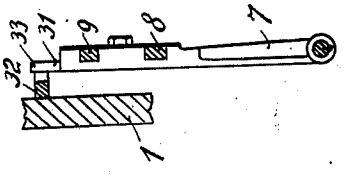


Fig. 5

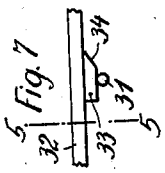


Fig. 7

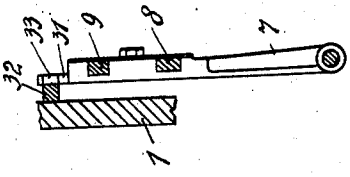


Fig. 4

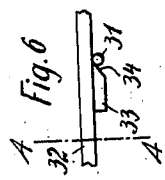


Fig. 6

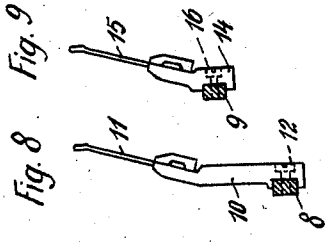


Fig. 9

Fig. 8

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Patented June 29, 1937

2,085,656

UNITED STATES PATENT OFFICE

2,085,656

AUXILIARY PRESSER FOR FLAT KNITTING MACHINES

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Application July 24, 1936, Serial No. 92,446
In Germany November 5, 1935

1 Claim. (Cl. 66—98)

The present invention relates to an auxiliary presser for flat knitting machines.

For the manufacture of stockings in a single operation on flat knitting machines, the latter are provided with auxiliary pressers. These auxiliary pressers consist of two parts each of which has such a width, that in each division of the knitting machine the frame needles, operating during the manufacture of the heel portions, may be actuated by them. The frame needles, serving to produce the instep portion of the stocking, are placed in suspense during the manufacture of the heel portions, so that at this place of the division an auxiliary presser is not required.

Auxiliary pressers are known in the art which at both sides of each division of the knitting machine are provided in a width necessary for the production of the heel portions and which are commonly mounted in a frame or upon a bar. With these constructions, an alteration of the width of the space between the two parts of the auxiliary presser is possible only by shifting the parts of the auxiliary presser by hand. Each division of the machine must in such a case be individually adjusted, and it is obvious, that such an adjustment does not only require a rather long time, but may easily be a source of faults. Furthermore, a selecting device for individually movable press instruments has already become known which also allows an alteration of the width of the instep portion placed in suspense. In this device press instruments are arranged all over the width of each division. The press instruments arranged in the middle portion of each division are lifted in the width in which the frame needles, adapted to knit the instep portion of the stocking, are to be placed in suspense, so that these frame needles are withdrawn from the pressing operation. Owing to the diverse transmissions of movements, the adjustment of the device is rather difficult and complicated and, moreover, the manufacture of this construction requires relatively high costs. The use of this device also does not exclude faults.

All these drawbacks of adjustments, causing loss of time and tending to introduce faults, are obviated by the auxiliary presser forming the subject matter of the invention. Moreover, the novel auxiliary presser has the great advantage, that an alteration of the number of the needles, adapted to produce the instep portion and to be placed in suspense, may, from a single place and in a very simple manner, be effected uniformly and simultaneously at any desired number of divisions.

The auxiliary pressers which in a well known manner are provided in the width of the heel portions at both sides in each division are, during normal operation of the knitting machine, placed below the common presser, so that, in a manner known in the art, all frame needles may be pressed. For the manufacture of the heel portions, the two auxiliary pressers are lifted in a well known manner and brought in front of the presser edge. Simultaneously with this shifting of the auxiliary pressers, the movement of the frame needle bar is changed, so that the frame needles may be pressed by these lifted auxiliary pressers only, whereas the frame needles, lying between the two auxiliary pressers and serving to produce the instep portion of the stocking, are not pressed for want of a suitable pressing basis.

In the accompanying drawing an auxiliary presser according to the invention is shown by way of example.

In this drawing:

Fig. 1 is a broken away front elevation of a division of a knitting machine showing the device for adjusting the two auxiliary pressers,

Fig. 2 shows a side elevation partly in section of the auxiliary presser illustrating also the means for lifting same,

Fig. 3 is a part sectional side elevation similar to Fig. 2 showing the individual parts in another position,

Figs. 4 and 5 illustrate sections on the lines 4—4 in Fig. 6 and 5—5 in Fig. 7 respectively, showing the guide arms of the auxiliary pressers in two different operating positions,

Figs. 6 and 7 are detail plan views, and

Figs. 8 and 9 show detail views of the supports carrying the auxiliary press instruments.

The jack sinker bearing 1, carrying in a well known manner the jack sinkers 2, is provided with the usual presser edge 3 with which the frame needles 4 may cooperate.

Mounted upon a shaft 5, rotatably journalled in the frame of the knitting machine not shown in the drawing, are lever arms 6 which are distributed all over the length of the knitting machine and carry guide arms 7. In these guide arms 7 two bars 8 and 9, also extending all over the length of the knitting machine, are mounted which are adapted to be shifted in the longitudinal direction. In the range of each division of the machine a support 10, carrying press instruments 11, is fixed to the bar 8 by screws 12 and 13 (Fig. 8), while a support 14, carrying press instruments 15 is fixed to the bar 9 by screws 16 and 17. One end of each of the bars

8 and 9 is formed as a toothed rack 18 and 19 respectively and a toothed wheel 20 mounted on a bolt 21 permanently engages with both racks 18 and 19. The ends of the bolt 21 are rotatably mounted in bearing plates 22 provided at both sides of the bars 8 and 9 and one of which only may be seen in Fig. 1, as the other is hidden by same. Both bearing plates 22 are connected together by pins 23 and 24 extending through slots 25 and 26 respectively formed in the bars 8 and 9 respectively. Fixed upon the hub 27 of the toothed wheel 20 is a hand lever 28. The bar 9 carries a pointer 29 adapted to be moved across a scale 30 fixed on the frame of the knitting machine not shown in the drawing.

The upper end of each guide arm 7 is formed as a pin 31. An auxiliary bar 32 which may longitudinally be shifted in the frame of the knitting machine, for instance by the well known patterning device not shown in the drawing, carries projections 33 each provided with an inclined surface 34. In the range of each guide arm 7 a projection 33 is provided at the bar 32. The pins 31 are pressed against the auxiliary bar 32 by means of tension springs 35 the ends of which are connected to the associated guide arm 7 and the hub of the corresponding lever arm 6 respectively.

Mounted upon the shaft 5 is a lever 36 the free end of which is forked and carries a roller 37 adapted to be shifted on its bolt 38 by means of a fork 39 one prong of which only is diagrammatically shown in Fig. 2. A tension spring 40, connected to the lever 36 and a fixed portion of the machine frame, permanently tends to draw the roller 37 against a circular disc 41 or a cam 42 fixed on the cam shaft 43, depending on the position of the fork 39. Each guide arm 7 carries a projection 44 having an inclined surface 45. Corresponding counter-projections 46 provided with an inclined surface 47 are fixed to the jack sinker bearing 1.

The operation of the new device is as follows:

During the manufacture of ordinary rows of loops the roller 37 carried by the lever 36 runs on the circular disc 41 fixed upon the cam shaft 43 at one side of the cam 42. During this operation, the press instruments 11, 15 occupy the position shown in Fig. 2, that is to say, they lie below the presser edge 3 of the jack sinker bearing 1. The inclined surfaces 45 of the projections 44 bear against the inclined surfaces 47 of the counter-projections 46. The frame needles 4 are pressed directly at the presser edge 3.

An alteration of the position of the supports 10 and 14 carrying the auxiliary press instruments 11 and 15 is effected in the following manner:

If the auxiliary bar 32 is shifted to the right in Fig. 1, the inclined surfaces 34 of the projections 33 are passed along the pins 31 of the guide arms 7 (Fig. 6) which thereby come into engagement with the projections 33 as shown in Fig. 7. The guide arms 7 together with the bars 8, 9 and the supports 10 and 14 for the press instruments 11 and 15 respectively are oscillated. Hereby the press instruments 11 and 15 are moved out of the range of the knocking over comb 48, so that a lateral displacement of the instruments 11 and 15 may be effected.

By oscillating the lever 28 the bars 8 and 9 carrying the supports 10 and 14 for the auxiliary press instruments 11 and 15 respectively may be adjusted by means of the toothed wheel 20 engaging the racks 18 and 19 at the ends of the bars 8 and 9 respectively. Hereby an alteration of the width of the instep portion, lying between the two auxiliary pressers, is effected. The pointer 29 indicates upon the scale 30 the adjustment made, so that the adjustment may be made in such a manner, that the number of frame needles 4, required to knit the instep portion, may be placed in suspense.

After adjustment by the lever 28, the auxiliary bar 32 is returned again, so that the auxiliary pressers, under the action of the springs 35, occupy again their original position shown in Fig. 2. By shifting the roller 37 into the path of the cam 42, the auxiliary pressers may be lifted in a manner known in the art. By the cooperation of the inclined surfaces 45 and 47, the guide arms 7 are moved away from the jack sinker bearing 1, so that the heads of the auxiliary press instruments 11 and 15 are placed in front of the presser edge 3 and, therefore, the frame needles are pressed by the auxiliary pressers.

As auxiliary pressers for any desired number of divisions of a knitting machine are carried by the bars 8 and 9, all auxiliary pressers may be so adjusted, that the same number of frame needles 4, adapted to knit the instep portion of a stocking, is uniformly and simultaneously placed in suspense at all divisions.

What I claim is:

An auxiliary presser for flat knitting machines, comprising in combination a jack sinker bearing, a cam shaft arranged below said bearing, a circular disc and a cam fixed on said cam shaft, a shaft also arranged below said bearing and extending in parallel to said cam shaft, a spring actuated lever fixed on said shaft, a roller adjustably carried by said spring actuated lever, a slidably arranged fork engaging said roller and adapted to bring said roller in the path of said circular disc and said cam respectively, a plurality of levers also fixed on said shaft, guide arms pivoted to the free ends of said levers, tension springs urging said guide arms towards said shaft, a projection having an inclined surface at each of said guide arms, counter-projections having an inclined surface provided at said jack sinker bearing, one opposite each of said projections on said guide arms, an auxiliary bar shiftably arranged in front of said jack sinker bearing, a projection having an inclined surface provided at said auxiliary bar opposite each of said guide arms, a pin-like member formed at the free end of each guide arm, said pin-like members bearing against said auxiliary bar and adapted to be shifted by the inclined surfaces of said projections on said auxiliary bar, two bars shiftably mounted in said guide arms, a rack formed at one end of each of said bars, a toothed wheel engaging both racks at said bars, a frame carrying said toothed wheel, pins fixed to said frame and extending through elongated slots in said racks, a hand lever fixed to the hub of said toothed wheel, a pointer fixed to one of said racks and cooperating with a scale to indicate the position of said bars, supports fixed to said bars, one on each bar in each division, and auxiliary press instruments carried by said supports.

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