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2,880,601

COMBINED YARN CARRIER AND TENSION DEVICE

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Fig. 4

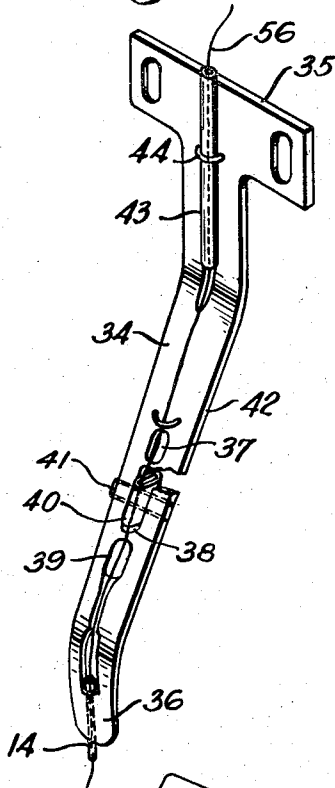


Fig. 5

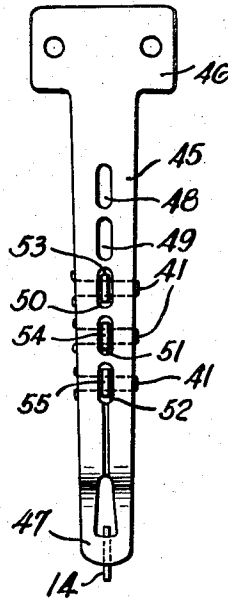


Fig. 6

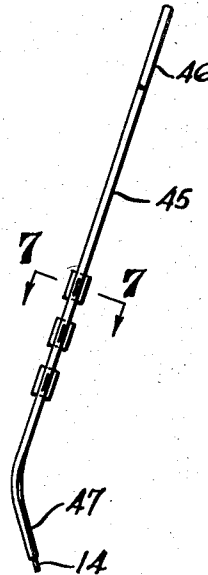


Fig. 2

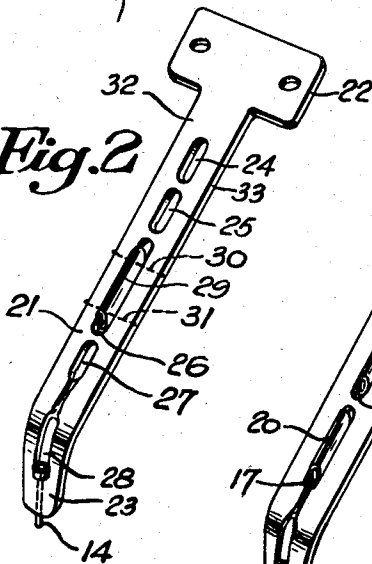


Fig. 1

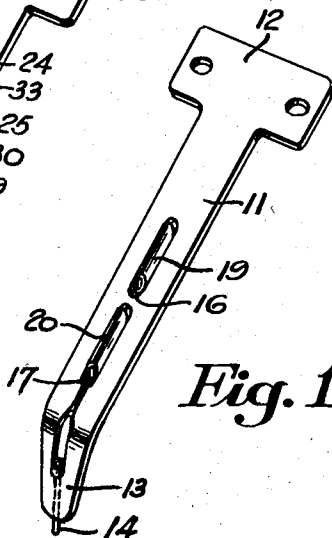


Fig. 7

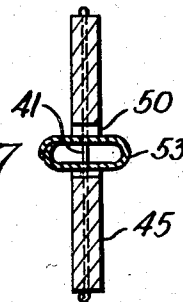
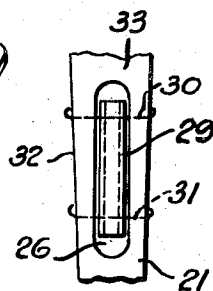


Fig. 3



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COMBINED YARN CARRIER AND TENSION DEVICE

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This invention relates to yarn carriers for full-fashioned hosiery knitting machines and refers more particularly to carrier fingers used to transmit the yarn to the sinkers.

Knitting machines of this type are provided with tension devices and supports for the yarn. The cone of yarn is usually placed in the back of the machine and the yarn follows a rather complicated course having five or six points of contact which enable the yarn to change the direction of its course. The yarn is finally guided into the thread carrier and the tube supported by the carrier finger.

Experience has shown that it is quite difficult to control the amount of tension on the yarn. Since no instruments are available to measure or check the tension, the extent of such tension is usually left to the judgment of the knitter. Due to the fineness of yarns used in present day machines and the speed with which these machines operate, it was found that in many instances the yarn will form a loop at the wall of the tube. While this loop is usually quite small, being about one or two thousandths of an inch in diameter, it often suffices to cause needle breakage or bad selvage or both. In the prior construction, devices which tension the yarn and thus avoid the formation of the loop are usually located three feet or more away from the point of entry of the yarn into the tube so that the take-up or snap gets into action too late.

An object of the present invention is to avoid these drawbacks of prior art constructions and to provide a yarn carrier having means which will effectively eliminate the formation of loops.

Another object of the present invention is the provision of a combined tensioning device and carrier finger by means of which the supply of the yarn to the guiding tube will proceed smoothly and easily and without any danger that loops will be formed.

Other objects of the present invention will become apparent in the course of the following specifications.

In accomplishing the objects of the present invention it was found desirable to combine the yarn carrier finger and the yarn tension device into a single article which carries out the function of the finger as well as the tension element.

The device of the present invention has the form of the yarn carrier finger and is provided with the usual centrally located apertures. In accordance with the present invention, one or more tubular tension elements are located in this aperture for the purpose of avoiding the formation of loops close to the guiding tube.

The invention will appear more clearly from the following detailed description when, taken in connection with the accompanying drawing showing, by way of example, preferred embodiments of the inventive idea.

In the drawing:

Figure 1 is a perspective view of a combined yarn carrier finger and tension device constructed in accordance with the principles of the present invention.

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Figure 2 is a perspective view of a somewhat differently constructed device.

Figure 3 is a fragmentary top view of the device shown in Figure 2.

5 Figure 4 is a perspective view showing a somewhat different construction.

Figure 5 is a front view of a different construction.

Figure 6 is a longitudinal sectional view of the device shown in Figure 5.

10 Figure 7 is a transverse section along the line 7—7 of Figure 6 and on a somewhat larger scale.

The device shown in Figure 1 has the usual shape of a yarn carrier finger having an elongated body 11 having a top portion 12 and a bent lower portion 13 carrying the usual thread guiding tube 14. The body 11 has centrally located elongated apertures 16 and 17.

In accordance with the principles of the present invention a tubular tension element is located within at least one of these apertures. In the construction shown in Figure 1, a tube tension element 19 is located in the aperture 16 while a similar tubular tension element 20 is located in the aperture 17. The tubular elements 19 and 20 are elliptical in cross-section so that they extend above the surface of the body 11.

25 Various means may be used for maintaining the tubular elements 19 and 20 in their respective apertures. In the construction shown in Figure 1 the tubular elements 19 and 20 have bulging portions embracing the edges of the openings 16 and 17 so that they are held within the openings essentially by friction.

30 Figures 2 and 3 show a yarn carrier finger having a body 21 provided with a top portion 22 and a lower portion 23 carrying the thread guiding tube 14.

35 The body 21 is provided with central openings 24 to 28. In accordance with the present invention a single elongated tubular tension element 29 is located within the opening 26. In this construction the tension element 29 is supported by two wires 30 and 31. The wire 30 extends through the tubular element 29 close to the top thereof while the wire 31 extends through the element 29 close to the bottom of that element. Furthermore, the wires 30 and 31 extend through transverse passages formed in the body 21.

40 Instead of forming passages in the body 21 it is possible to make this body of two super-imposed parts and place wires 30 and 31 between these parts.

45 The ends of the wires 30 and 31 form hooks which fit over the longitudinal edges 32 and 33 of the body 21.

The construction of Figure 4 includes an elongated body 34 having a top portion 35 and a bottom portion 36 carrying a thread guiding tube 14. The central portion of the body 34 has three longitudinal apertures 37, 38, and 39. In accordance with the present invention a tubular tension element 40 is located in the opening 38 and is held therein by two prongs of a wire 41. The two prongs extend through openings formed in the body 34 and their outer ends are pressed against the longitudinal edge 42 of the body 34.

50 In this construction another tubular element 43 is carried by the top portion 35 and is held in place by a wire or brace 44.

The device shown in Figures 5, 6 and 7 includes an elongated body 45 having a top portion 46 and a lower portion 47 carrying the thread guiding tube 14. In this construction the body 45 has five openings 48 to 52. Tubular tension elements 53, 54 and 55 are located in the openings 50, 51 and 52 respectively. Each of the tubular tension elements is held in position by two prongs of a wire 41 which is the same as that shown in Figure 4. The elongated elliptical outline of the tension elements is illustrated in Figures 6 and 7.

70 The operation of these devices is essentially the same.

Yarn 56 is supplied to the top of the finger and extended downwardly along the finger to enter the thread guiding tube 14. Due to the location of the illustrated tubular tension elements close to the thread guiding tube the thread is tensioned to an extent which effectively avoids the formation of loops at the point of entry of the thread into the tube 14.

It is apparent that the examples shown above have been given solely by way of illustration and not by way of limitation and that they are subject to many variations and modifications within the scope of the present invention.

All such variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. In a knitting machine, the combination of a yarn carrier finger comprising an elongated body having a lower tube-carrying portion and transversely curved adjacent said lower portion, said body having at least one elongated aperture formed therein, at least one tubular tension element located in said aperture, and at least one wire extending through said element and engaging said body for supporting said element in said aperture.

2. In a knitting machine, the combination of a yarn carrier finger comprising an elongated body having a upper portion and a lower tube-carrying portion and being transversely curved adjacent said lower portion, said body having formed therein a yarn-guiding groove located upon the transverse curve of the body and at least three elongated apertures located in said upper portion, said groove and said apertures being in alignment and having a longitudinal axis which coincides with the longitudinal axis of said body, a tubular tension element located in one of said apertures and having a longitudinal axis coinciding with that of the apertures, and two wires extending through opposite ends of said tubular element and through transverse holes formed in said body and supporting said element in its apertures.

3. In a knitting machine, the combination of a yarn carrier finger comprising an elongated body having a lower tube-carrying portion and transversely curved adjacent said lower portion, said body having at least one elongated aperture formed therein, at least one tubular tension element located in said aperture and a U-shaped wire having two legs extending through said elements and hook-shaped ends engaging said body for supporting said element in said aperture.

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