

June 25, 1963

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3,094,761

YARN GUIDING DEVICE

Filed March 28, 1961

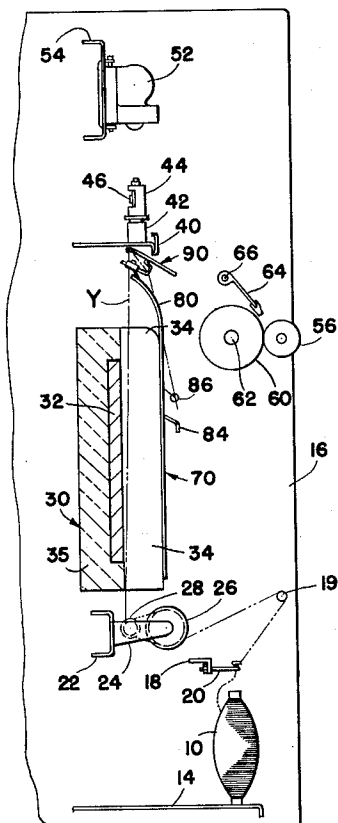


FIG. 2

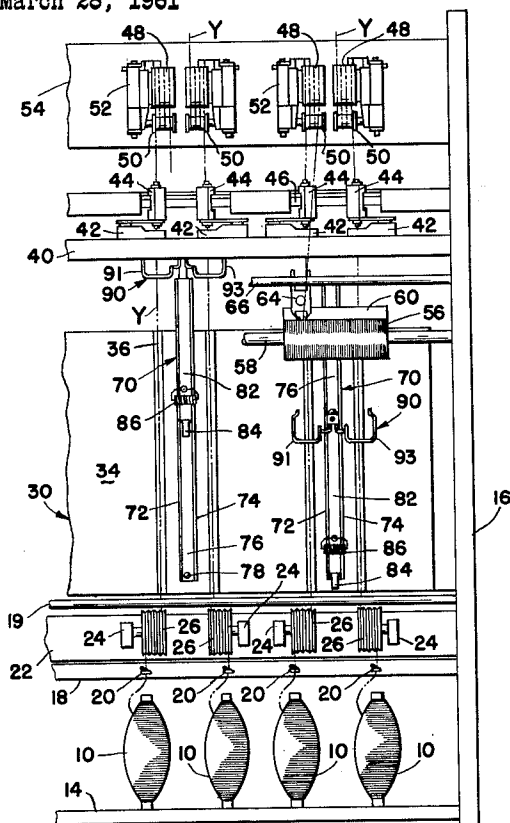


FIG. 1

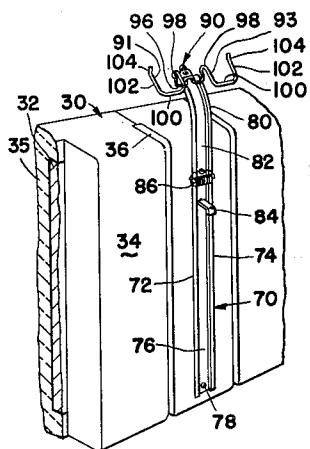


FIG. 3

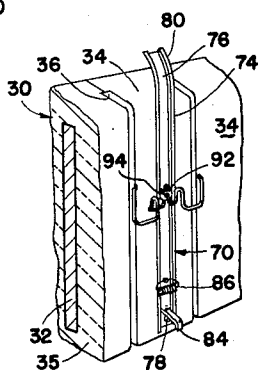


FIG. 4

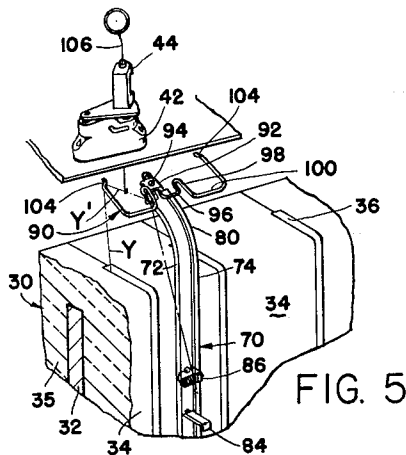


FIG. 5

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YARN GUIDING DEVICE

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Filed Mar. 28, 1961, Ser. No. 98,811

1 Claim. (Cl. 28—62)

The present invention relates to an apparatus for processing a strand of yarn and more particularly relates to such apparatus incorporating means for threading a strand of yarn in a heater unit associated therewith.

In the following specification and claim the term yarn is employed in a general sense to relate to all kinds of strand material either textile or otherwise, and the designation package is intended to mean the product of a winding or twisting machine whatever its form.

A preferred manner for thermally processing yarns having thermoplastic qualities involves the step whereby heat is applied to the yarn strand during its travel from a supply source to a take-up means. The apparatus for applying heat may take on various forms which serve to apply heat to the running strand to provide it with physical characteristics suitable for subsequent operations. A common type of such heater comprises a heater block which extends the length of the textile machine. The block is normally constructed to have a plurality of transverse parallel grooves, each groove being aligned in a yarn path to receive the yarn as it passes from the supply to the take-up means. In the past it has been found that considerable time was required to align the yarn with the groove and properly thread it therein. This was due in part to the inherent nature of the groove, being narrow in width and elongated in its longitudinal dimension. Moreover, space limitations of the machine frequently have required that the heater unit be located on the machine so as to be relatively inaccessible for manual threading by the operator. Additionally, with the recent introduction of machines capable of processing yarns at greatly increased speeds it has been necessary to lengthen the heater units to adequately heat the yarn. This has only served to increase the difficulty of threading a strand through the heater groove.

It is, therefore, one object of the present invention to provide means for threading a strand of yarn through the groove of a heating unit of a textile machine and presenting the free yarn end for ready retrieval from the heater unit.

Another object of the present invention is to provide means for threading a strand of yarn through the groove of a heating unit of a textile machine which is capable of rapid and accurate use in a limited space.

Another object of the present invention is to provide a means for threading a strand of yarn through the groove of a heating unit of a textile machine which is readily movable between a strand receiving position and a strand delivery position, and where, in either of said positions the threading means is easily accessible for use.

Another object of the present invention is to provide a means for threading a strand of yarn through the groove of a heating unit of a textile machine which is simple in operation and durable and reliable in use.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the construction, combination of elements and arrangement of parts which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claim.

For a fuller understanding of the nature and objects of the present invention, reference should be had to the

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following detailed description taken in connection with the accompanying drawing wherein:

FIG. 1 is a front elevational view of a section of an apparatus embodying the present invention;

FIG. 2 is a side elevational view of the apparatus of FIG. 1;

FIG. 3 is an enlarged perspective view of the heater unit and threading device of FIG. 1 and illustrating the threading means in its raised position;

FIG. 4 is a view corresponding to FIG. 3 but illustrating the threading means in its lowered position; and

FIG. 5 is a fragmentary perspective view of the heater unit and threading device and illustrating the manner of delivery of a yarn strand to the spindle.

While the present invention can be adapted to the various textile machines that are commercially available for thermally processing yarn it is shown, for convenience, in association with an "up-twister" of a type employed in twisting operations. Usually, these up-twisters are arranged in "gang" fashion, having a multiplicity of positions arranged side by side, each adapted to insert twist into an independent strand of yarn. As each of these positions is identical, only one need be described in detail for purposes of illustrating the relationship thereof of the present invention.

Referring now to the drawing wherein a preferred embodiment of the invention is disclosed. The reference numeral 10 is used to designate a supply package which is supported on horizontal member 14 of the frame 16 of the machine. A bar 18 extending lengthwise of the machine parallel to member 14 serves to provide a support for a pigtail yarn guide 20 at each yarn position which projects outwardly to terminate above and coaxially with package 10. A guide bar 19 extends parallel to bar 18, being positioned above and somewhat forwardly of said bar 18. As can best be seen in FIG. 2 a channel-shaped beam 22 mounted fast with frame 16 extends along the length of the machine parallel with member 14 and bar 18 but disposed rearwardly thereof. Beam 22 mounts arms 24 each of which projects forwardly and provides support for a feed roll 26 and a smaller guide roll 28.

Spaced upwardly from beam 22 is a heater unit generally designated by the numeral 30 and comprising a block 32 suitably supported from frame 16 by means not herein illustrated. Block 32 extends the full length of the machine and acts to receive electrical heater elements (not shown) for heating said block. A series of insulating covers 34 are secured on the front of block 32, the covers 34 being so spaced as to afford a channel or groove 36 extending transversely across block 32 at each twisting position, so aligned to be in the path of each yarn strand. Covers 34 thus provide means for thermally isolating the path of travel of the yarn strand over the heater block and acts as guides for the running strand of yarn. Insulating cover 35 is fixed to the back of block 32 of prevent the loss of heat therefrom.

A rail 40 extends longitudinally of the machine upwardly of heater unit 30, said rail 40 being firmly mounted to frame 16. A spindle mount 42 is fixed on rail 40 at each yarn position, said mount, in turn, receiving a spindle 44 which, may be of the twisting-untwisting type driven by spindle driving belt 46, only a portion of which is illustrated.

A second series of feed rolls 48 and guide rolls 50 are supported from brackets 52 fixed to a member 54 which is supported in frame 16 and extends longitudinally the length of machine.

Wind up means comprising drive roll 60 and yarn guide 64 mounted on traverse rod 66 are provided to wind the processed yarn into packages 56.

Up to this point, the description has been confined to components ordinarily provided in a twisting machine.

The foregoing components do not form a part of the present invention except in combination with the improvements which are about to be described.

Referring again to FIG. 1 there is mounted on cover 34 between grooves 36 and parallel thereto, a track or guide 70 which is constituted as a piece of sheet metal or the like having its side edges 72 and 74 folded inwardly to be substantially parallel with central web or rib 76 of the guide. Edges 72 and 74 may be pinched closed at their upper and lowermost margins to provide a suitable stop for means to be later described. Screws 78 serve to fix guide 70 in position on said cover 34. As best shown in FIG. 2 a substantial portion of guide 70 lies flat on cover 34, the lower edge of the guide being generally coterminous with the lower edge of cover 34. However, the upper section 80 of guide 70 extends upwardly above the top surface of cover 34, said section being curved rearwardly over the heater unit to terminate in a position spaced upwardly and away from the top surface of said cover 34. The terminal portion of the upper section 80 is situated at the threadline between heater unit 30 and spindle 44.

A slide 82 constructed of a flexible material is fitted to slide longitudinally of guide 70, being retained in position beneath the folded outer edges 72 and 74 thereof. Slide 82 is provided with an outwardly projecting tab 84 at its lowermost end which serves as a convenient means for manipulation of the slide. A coiled spring 86 is spaced slightly above said tab 84 and is secured to slide 82. A bent wire member or a carrier 90 is formed from wire to provide bisymmetrical U-shaped arms 91 and 93 carried on the uppermost end of slide 82 by means of a clamp 92 and screw 94. From the point on slide 82 where carrier 90 is clamped, said carrier extends laterally and diametrically to form a pair of arms or portions 96 from either side of said clamp 92, whereupon said wire member is bent upwardly, then downwardly to form a reverse bend as at 98. From said reverse bend a portion 100 extends horizontally outward for a distance whereafter the wire is bent upwardly to provide a run 102 which terminates in a notch 104 formed in the extreme upward end of run 102.

The threading device of the present invention operates in the following manner. Preparatory to operating the machine a strand of yarn Y is drawn off from supply package 10 through guide 20 and, thereafter, is led over guide bar 19 and passed around feed roll 26 and guide roll 28 several times whereupon the yarn emerges below and in line with groove 36 of heater unit 30.

To the end that the yarn Y may be threaded through heater groove 36 slide 82 is drawn down to its lowermost position as illustrated in FIG. 4. The yarn strand is thereupon laid in notch 104 after which said strand is drawn between reverse bend 98 and clamp 92 to lay on lateral portion 96. From portion 96 said yarn strand is drawn downwardly to be engaged between the coils of spring 86. At this position it will be understood that a section Y' of the strand of yarn Y has assumed a generally horizontal position tightly drawn between notch 104 and reverse bend 98. With the yarn strand so positioned slide 82 is manually shifted to its uppermost position,

see FIG. 3, by means of tab 84. As slide 82 is urged upwardly carrier 90 will follow an upwardly course parallel to groove 36 and, when substantially even with the top surface of heater unit 30, said carrier 90 will continue in a generally upward course of travel, directed, however, in a somewhat inclined path toward the rearward portion of the heater unit. When the extreme upper edge of slide 82 contacts the pinched upper margin of edges 72 and 74 said carrier 90 will be positioned slightly inside or rearwardly of the threadline as it extends upwardly from heater unit 30, as best shown in FIG. 2. It follows that as said carrier 90 is so shifted, yarn Y therein, will be drawn upwardly, the section of yarn toward the bottom of the heater first entering groove 36 and the remainder being gradually inserted into the groove. As seen in FIG. 5, when the carrier 90 is in its uppermost position as just described, yarn section Y' is lying completely in groove 36 and extending horizontally across carrier 90 slightly below spindle 44. With yarn section Y' so disposed, a slender wire loop 106 may readily be passed through the bore of spindle 44 to draw the yarn upwardly through the spindle (see FIG. 5) whereupon the yarn may be manually guided over rollers 48 and 50 and attached to take-up package 56 by any convenient means. It will be readily apparent from the nature and construction of the present invention that either a single strand may be threaded with the present invention or a pair of adjacent strands can be accommodated at the same time, each strand being guided to a separate side of carrier 90 in the manner just described.

The foregoing device thus provides a simple, yet efficient, means for rapidly threading one or a pair of strands of yarn through grooves of a heater in an accurate manner completely free of components which may be disposed between the heater unit and the operator.

Since certain changes may be made in the above device without departing from the scope of the invention herein involved it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in the limiting sense.

What is claimed is:

In a textile machine including a heater unit having at least one groove therein for receiving a strand of yarn the improvement comprising a guide disposed adjacent said groove, slidable means associated with said guide and movable parallel to said groove, and a U-shaped arm positioned on said slide and adapted to receive said strand of yarn and dispose it in a substantially horizontal plane, said arm aligned with said groove and adapted for co-operative movement with said sliding means to thread said strand of yarn in said groove and position said strand horizontally above said groove.

References Cited in the file of this patent

UNITED STATES PATENTS

2,864,229 Seem et al. Dec. 16, 1958

FOREIGN PATENTS

835,643 France Sept. 26, 1938