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E. F. PARNELL
YARN HANDLING APPARATUS

2,883,732

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3 Sheets-Sheet 1

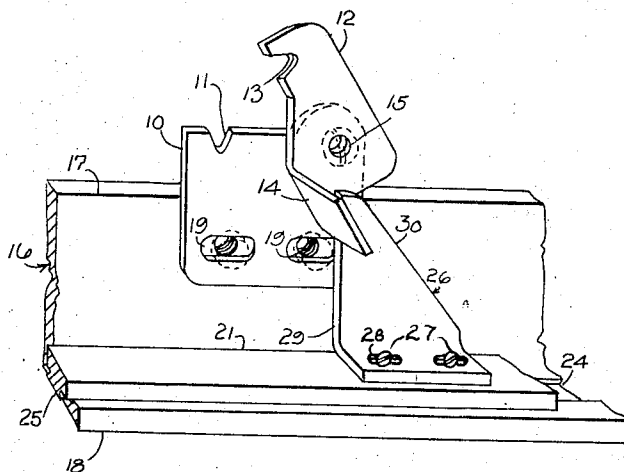


FIG. 1

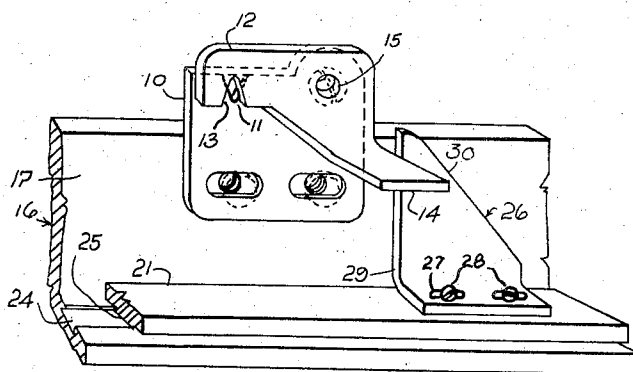


FIG. 2

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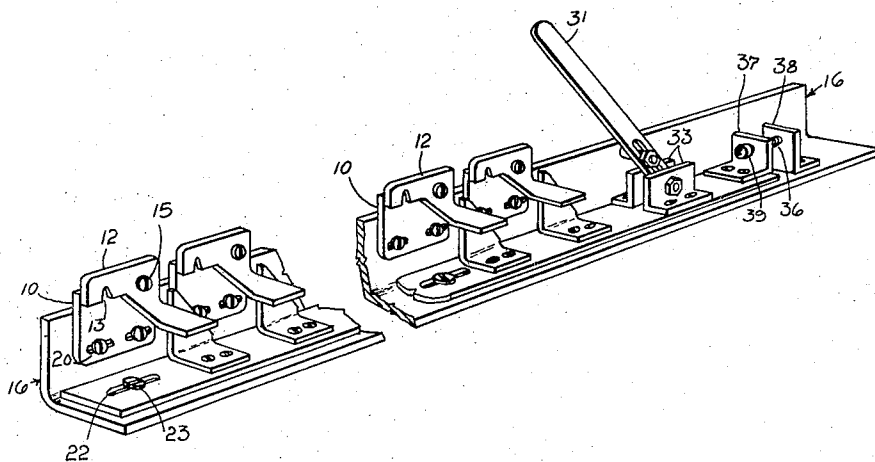


FIG. 3

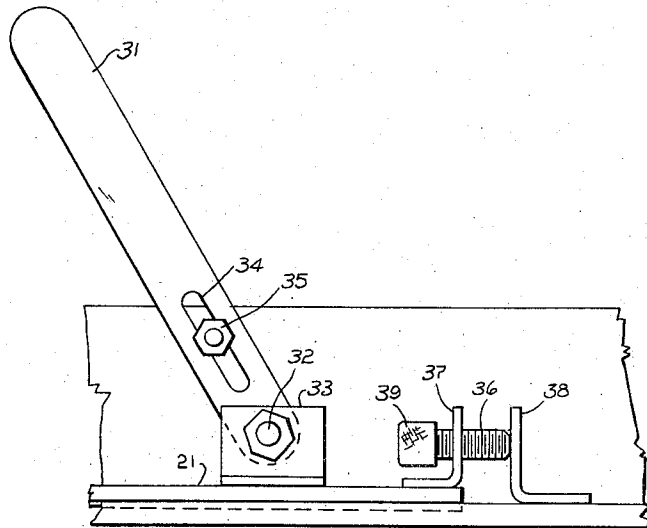


FIG. 4

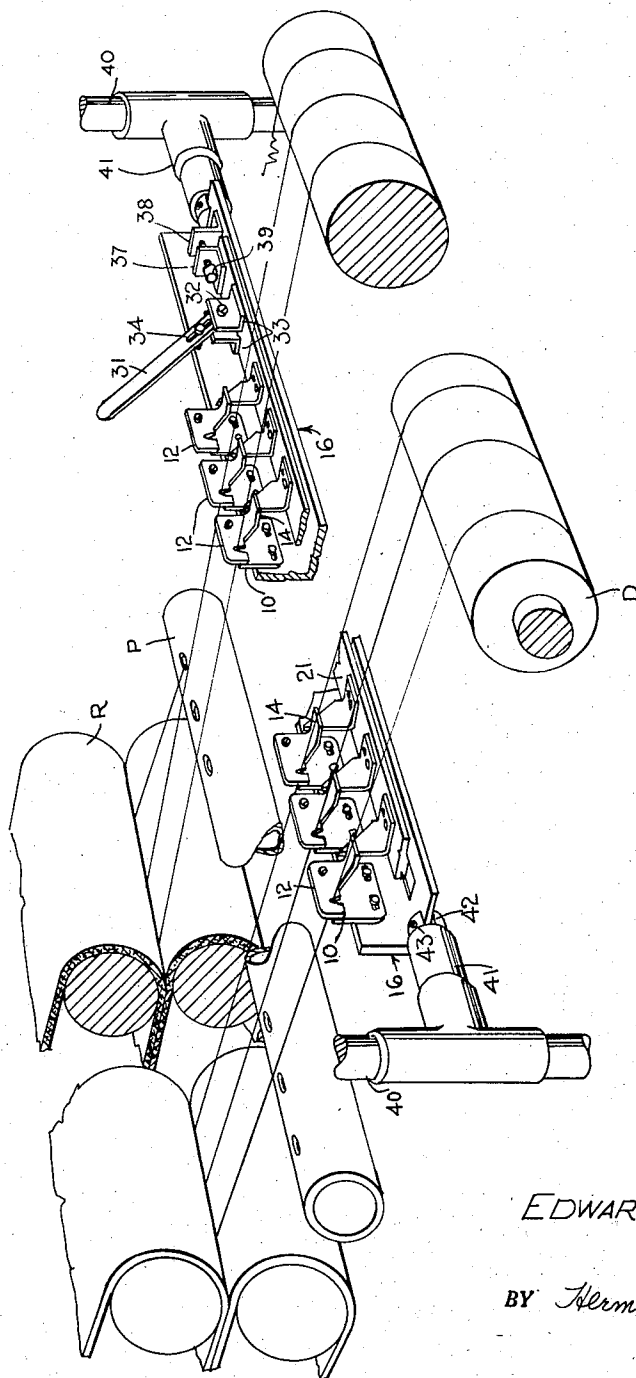
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2,883,732

YARN HANDLING APPARATUS

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3 Claims. (Cl. 28—64)

This invention relates to an improvement in yarn handling apparatus, more particularly to a device for promoting the production of yarn strands of uniform cross-section, whereby the textiles produced from said yarn will have an even surface texture, and be of uniform strength.

In the production of yarns, and in the utilization of these yarns in the formation of various textile fabrics, it is desirable for reasons of appearance and strength to provide some means for insuring that these yarns will have a uniform cross-section. Thus in yarn production, it is found that as the yarns come from the rub aprons where the fibers are twisted together, there is often encountered a situation where due to a bunching of the fibers, a thickened portion, or slub, is formed in the yarn strand. As is apparent this slub serves to interfere with a facile handling of the yarn, since the slub prevents an even winding of the yarn on spools, and snags any other yarns drawn thereagainst. The slub is additionally deleterious in that weak points result at the transition points between the slub and the rest of the yarn strand. When the yarn is woven or knitted into a fabric, the slub interferes with the fabric producing operation by snagging against contacting yarn strands, and the apparatus employed. The fabric produced is also of an inferior quality arising from the aforementioned weak points.

It is with the above problems in mind that the present construction has been evolved, a construction providing a simple, inexpensive, readily maintained, and readily installed apparatus, adapted for installation in conjunction with yarn producing and handling equipment, or with weaving or knitting machinery.

It is accordingly a primary object of this invention to provide an improvement in yarn handling apparatus.

Another object of this invention is to provide an apparatus serving to improve the quality of yarns.

A further object of this invention is to provide an apparatus readily adaptable for installation on any yarn producing, handling or fabricating machinery, functioning to eliminate defects in the yarn passing through said machinery.

An additional object of this invention is to provide an attachment for yarn producing apparatus which aids in the production of uniform thickness yarn strands.

It is also an object of this invention to provide an attachment for weaving or knitting machines which will insure the utilization of uniform thickness yarns in said machines.

A still further object of this invention is to provide apparatus for the elimination of weak points in yarn.

Another object of this invention is to provide a yarn treating apparatus of a simple inexpensive nature, readily maintainable, and subject to minimal wear.

It is also an object of this invention to provide a yarn treating apparatus readily adjustable for different yarns.

These and other objects of the invention which will become more apparent in the following disclosure and claims are achieved by provision of a base member adapted for positioning adjacent the path of travel of a yarn

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strand. A guide piece having a notch through which said yarn passes is secured on said base member, and a notched constraining piece is pivotally secured to said guide piece with the notches of said pieces in alignment whereby the yarn is constrained to pass therethrough. The cross-sectional area between said notches is adjustably variable to accommodate different yarns and it will be observed that any yarns passing therethrough will either have undesirable thick portions removed or will be torn at these points.

The specific constructional features of the novel apparatus will be made most manifest and particularly pointed out in conjunction with the appended drawings, wherein:

Figure 1 represents a fragmentary perspective view of the essential features of the unit components of the device with the constraining piece pivoted out of operative position.

Figure 2 represents a fragmentary perspective view similar to Figure 1 with the parts in operative position.

Figure 3 represents a perspective view of the complete apparatus showing the control means for regulating the apparatus.

Figure 4 is a detail view of the control means showing a preferred arrangement and the adjusting features thereof.

Figure 5 is a perspective view of the apparatus shown mounted in position in conjunction with a wool card.

Referring now more particularly to the drawings, like numerals in the various figures will be taken to designate like parts.

As best seen in Figures 1 and 2 the novel construction here provided comprises a guide piece 10 having a notch 11 formed in an upper surface thereof. Individual yarn strands are guided in said notch 11 and constrained therein by means of constraining piece 12 having notch 13, and offset rocker plate 14. Constraining piece 12 is pivotally mounted on guide piece 10 by any conventional pivot pin such as a rivet, screw, bolt, cotter pin, or the like. Guide piece 10 is mounted on a base member 16 having a right angle cross section with a normally upstanding leg 17 and a normally horizontal leg 18. Slots 19 are provided in guide piece 10, through which machine screws 20, as best seen in Figure 3, extend into tapped engagement with leg 17. These slots 19 function to permit lateral adjustment of guide piece 10 on base member 16.

A lifter rack 21 in the shape of an elongate bar is mounted for sliding motion along normally horizontal leg 18 of base member 16. Lifter rack 21 is slideably attached to base member 16 in any conventional manner. A preferred form of attachment as illustrated in Figure 3, employs a slot 22 positioned at spaced intervals along leg 18. A headed member 23, here illustrated as a machine screw is passed through slot 22 into threaded engagement with leg 18. As is apparent rack 21 may thus slide along leg 18 along a path having a length equal to the length of slot 22.

An alternate mode of sliding attachment is attained by provision of a groove 24, as illustrated in Figures 1 and 2. In this modification the lifter rack is provided with a projection 25 adapted for engagement in groove 24 whereby the only relative motion possible between base member 16 and rack 21 is a sliding motion. Stops at the end of groove 24 limit the permissible relative motion between rack 21 and leg 18.

Upstanding from lifter rack 21 is a lifter bracket 26 adjustably secured thereto by means of screws 27 extending through slot 28 into threaded engagement with rack 21, as best seen in Figures 1 and 2. Lifter bracket 21 is preferably formed of a plate having a vertical lead-

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ing face 29 abutting against rocker plate 14 and an inclined rear face 30 adapted to cam against the rocker plate in the event that the bracket is slid forward too far.

Sliding of the lifter rack and lifter bracket is facilitated by provision of lifter rack handle 31 at one end of rack 21. Handle 31 is pivotally attached at its lower end to rack 21 in any suitable fashion such as by means of bolt 32 extending through plates 33 upwardly extending from rack 21. A sliding pivot connection is provided between lever 31 and leg 17 of base member 16 by means of slot 34 in handle 31, through which a pin or bolt 35 extends into engagement with leg 17.

The traverse of rack 21 is made adjustable with respect to base member 16 by means of screw piece 36 which extends through tapped plate 37 on rack 21, into abutment against plate 38 on base member 16. A thumb wheel 39 permits turning of screw piece 36 to change the position of rack 21 on the base member 16. The forward and rearward movement of rack 21 is thus seen to be limited by the dimension of slot 22 (or groove 24) and screw 36.

Figure 5 illustrates the novel slub catcher positioned to conjunction with a wool card. Uprights 40 provided at the lateral extremities of the wool card are provided with T pieces 41, slotted at 42, and provided with set screws 43 to receive and support base member 16 and the lifter rack, guide pieces, and constraining pieces supported thereon. In Figure 5, the novel device is shown positioned to receive the yarn ropings or ends T as they come from the rub aprons R to the spool drum D. A pneumatic flute P of the Pneumafil type is shown positioned to receive any broken ropings.

Operation

When in any textile fabrication operation, whether in the formation of the yarn, in processing, or its utilizing the yarn in a weaving or knitting operation, it is desired to eliminate slubs and insure the presence only of yarn of uniform thickness, it is merely necessary to provide a device of the type here disclosed. Positioning of this device on the yarn handling apparatus so that each strand of yarn passes between a guide piece and a constraining piece serves to eliminate any undesired slubs. As is apparent each type of installation will require a specifically designed device made up with a base member 16 of a length sufficient to extend across the machine to which applied and provided with the requisite number of guide pieces 10. One guide piece is provided for each strand of yarn being handled by the machine to which the device is applied.

The yarn strands are then trained through the notches 11, of their respective guide pieces 10. Constraining pieces 12 tend by virtue of their weight to clamp down on the yarn strands in each notch and are held back by means of lifter brackets 26. Lifter rack handle 31 is manipulated to cause rack 21 to be positioned at a point where the brackets 26 maintain the constraining pieces 12 at a point where yarn of a desired thickness may freely pass through notches 11 of guide piece 10. The rack 21 is maintained in position by virtue of frictional engagement with base member 16. If this is found insufficient it is obvious that auxiliary fastening means such as a set screw between rack 21 and base member 14 may be provided.

Screw piece 39 functions to change the limiting positions through which rack 21 may be moved by rack handle 31 so as to accommodate yarns of various sizes.

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Where a slub in the yarn is encountered by guide piece 10, it is either shaved off or the yarn breaks. In the illustration shown in Figure 5, the broken strand is picked up by the pneumatic flute. In other installations the operator will have to catch this, at which time the defective yarn portion is removed and the yarn strand mended. Removal of the defect in the yarn strand is facilitated by the fact that individual constraining pieces may be lifted without upsetting the adjustment of the other constraining pieces.

It is thus seen that a yarn handling device has been provided which may be applied to any textile machinery whether used in yarn formation or in the fabrication of yarns into textiles, to insure the presence of yarn strands of uniform cross-section.

The above disclosure has been given by way of illustration and elucidation and not by way of limitation and it is desired to protect all embodiments of the hereindisclosed inventive concept within the scope of the appended claims.

What is claimed is:

1. A yarn handling apparatus for insuring the passage therethrough of yarn of uniform thickness, said apparatus comprising a base member; a guide piece on said base member, said guide piece having an aperture through which said yarn passes; a constraining piece pivotally mounted on said guide piece; a rack slideably mounted on said base member; and a lifter member mounted on said rack to pivot said constraining piece on said guide piece to vary the cross-sectional area of said aperture whereby the clearance between said pieces may be controlled from a remote point, and the thickness of yarn permitted to pass is regulated.

2. A yarn handling apparatus for insuring the passage therethrough of yarn of uniform thickness, said apparatus comprising a base member; a guide piece on said base member, said guide piece having a notch through which said yarn passes; a constraining piece pivotally mounted on said guide piece to slide over said notch; a rack slideably mounted on said base member; and a lifter member on said rack and engaging said constraining piece to permit adjustment of said constraining piece with respect to the guide piece from a remote point, whereby the cross sectional area of the yarn passing notch is varied to regulate the thickness of yarn permitted to pass.

3. A yarn handling apparatus for insuring the passage therethrough of yarn of uniform thickness, said apparatus comprising a base member; a guide piece on said base member, said guide piece having a notch through which said yarn passes; a constraining piece pivotally mounted on said guide piece and biased into a position overlapping the notch of said guide piece; a rack slideably mounted on said base member; and a lifter member on said rack engaging said constraining piece to overcome said biasing to permit adjustment of said constraining piece with respect to the guide piece from a remote point, whereby the cross-sectional area of the yarn passing notch is varied to regulate the thickness of yarn permitted to pass.

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