

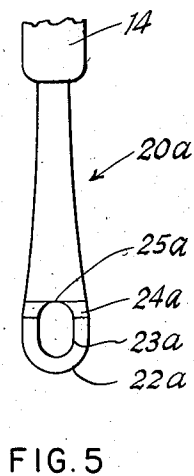
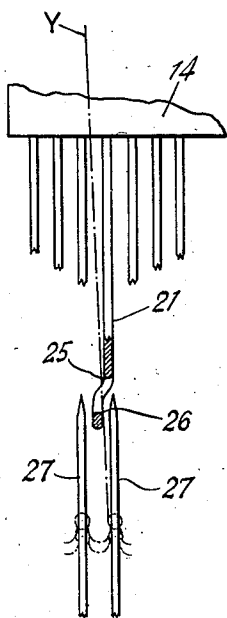
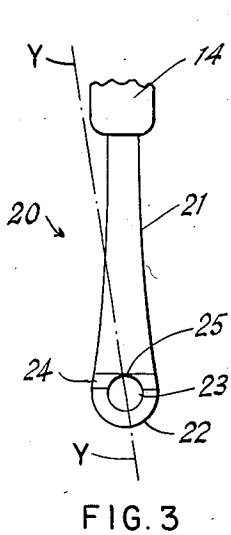
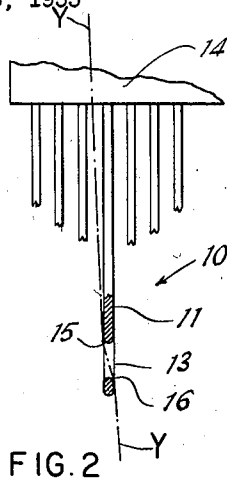
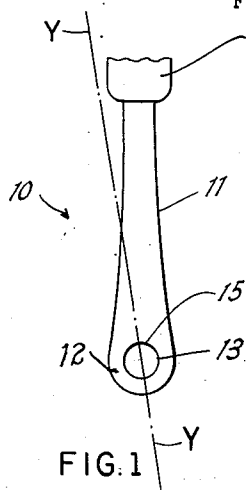
Feb. 11, 1958

P. J. SCHOENSTER

2,822,679

YARN GUIDES

Filed Dec. 6, 1955



INVENTOR.

PETER J. SCHOENSTER

BY

Philip E. Helber
ATTORNEY

1

2,822,679

YARN GUIDES

Peter J. Schoenster, Teaneck, N. J., assignor to Alfred Hofmann & Co., West New York, N. J., a corporation of New Jersey

Application December 6, 1955, Serial No. 551,247

12 Claims. (Cl. 66—86)

This invention relates to yarn guides for knitting machines and a method of guiding yarns in such machines.

Yarn guides are provided in knitting machines adjacent the knitting elements thereof to lead the yarns coming from the yarn supply warp and to lap the same about the beads of the needles, preparatory to the formation of a knitting course; this operation being cyclically repeated in cooperation with the needles, sinkers and press bars of a flat knitting machine.

Such yarn guides take the form of flat, elongated members punched at one end to form the guide openings through which the yarn passes in its movement from the yarn supply to the knitting elements, the yarn path extending adjacent one side of the guide as the same approaches the opening thereof and adjacent the terminal end of the guide on the other side thereof as said yarn continues in its path through the guide opening.

With many of the newer types of yarns being knitted, difficulties have been encountered at the yarn guides, such as excessive wear due to abrasion of the metal at the guide opening; and a tendency to aggravate the effects of fuzzballs or yarn clots in the yarn, which in turn give rise to defects and imperfections in the finished knitted fabric.

Attempts have been made to overcome such difficulties, as by polishing the metal at the guide openings to reduce resistance to yarn flow to a minimum, or by plating the guides with hard metals in an attempt to resist the abrasive action of the yarns as they contact the edges at the guide openings. However, it has been found that such expedients are inadequate and that the yarn guides have a relatively short life.

Furthermore, with increased use of the monofil yarns having no twist, any individually broken filaments therein cause the formation of yarn clots and fuzzballs, which are aggravated by contact at the edges of the guide openings.

Accordingly, an object of this invention is to provide improved yarn guides having structural features which permit the yarns to move in a continuous, rectilinear path from one side of the guide, through the opening therein and thence to the other side thereof, all without kinking the yarn at the edges of the guide opening and thereby avoiding excessive contact of the yarn with the metal, thus substantially eliminating abrasive action and other injurious effects in respect to the moving yarns.

Another object of this invention is to provide improved yarn guides formed at the terminal end thereof to displace at least a portion thereof in a manner to bring opposed edge portions of the guide opening in a displaced relationship which permits a yarn passing through the guide opening and moving in a path only slightly deviated from the longitudinal axis of the guide, to make such path rectilinear and without angular deviations at the opposed edge portions of the guide opening.

A further object of this invention is to provide a method of guiding yarns from a yarn supply to the knitting elements of a flat knitting machine, wherein the yarn moves through a guide opening, yet has a continuous recti-

2

linear path without angular deviations in such path, thereby substantially eliminating excessive wear of the guide means and reducing the formation of fuzzballs or yarn clots in the moving yarn.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

In the drawing, Fig. 1 is a front elevational view of a conventional yarn guide used in a flat knitting machine;

Fig. 2 is an end view thereof, with parts in section;

Fig. 3 is a front elevational view of an improved yarn guide embodying the invention;

Fig. 4 is an end view thereof, with parts in section; and

Fig. 5 is a front elevational view of a yarn guide showing a modified form of the invention.

As shown in Fig. 1, 10 designates a conventional yarn guide for flat knitting machines. Such a device is formed from wire stock which is flattened to provide an elongated shank portion 11 terminating at one end thereof in a transversely enlarged guide portion 12 which is punched to form a guide opening 13 therein. The guide 10 is anchored at the other end thereof in a cast block of metal 14, such as lead alloy or the like; other similar guides being mounted in said block with their flat faces in parallel relation, as indicated in Fig. 2.

As shown in Fig. 2, yarn Y flowing from a yarn supply, not shown, and moving over a tension bar, not shown, passes adjacent one side of guide 10, through opening 13, and adjacent the guide portion 12 on the other side of the guide, at the outer edge of the guide opening 13 therein.

It will be apparent that the yarn Y is kinked or angularly deflected at inner edge portion 15 of the guide opening 13 as the yarn passes into said opening, and again at the outer edge portion 16 when the yarn passes out of the opening. Such kinking of the yarn in contact with the edges of the guide opening, tends to aggravate yarn defects such as clots or fuzzballs, which results in defective fabric. Furthermore, the constant contact of the yarn with the metal of the guide portion 12 results in abrasion, causing rapid and excessive wear of the metal so as to materially reduce the effective life of the guide member.

Accordingly, as shown in Figs. 3 and 4, there is provided improved yarn guide members 20, which may be used with all types of yarns and is particularly effective with untwisted yarns. Guide member 20 is also formed from wire stock, flattened to provide the elongated shank portion 21 terminating a transversely disposed, enlarged guide portion 22 which is punched to form a circular guide opening 23.

The guide member 20 is bent transversely to form an angular portion 24 aligned with the inner edge 25 of the guide opening 23, thus displacing guide portion 22 laterally with respect to shank portion 21 and disposing the same in parallel relation to each other.

Furthermore, the outer edge 26 of the guide opening 23 is now so related to the inner edge 25 thereof as to allow the yarn Y to move in a continuous rectilinear path through guide opening 23, without kinking or deflecting the yarn at edges 25, 26 of said opening. Thus, yarn Y may now move adjacent one side of guide member 20, approach the guide opening 23, pass edge 25 without kinking, continue through the opening and pass to the other side of guide portion 22 of said guide member without deflection at outer edge 26 of the guide opening.

It will be apparent that with the improved yarn guide members 20, which are mounted in a block 14, as previously described, the rectilinear path of the flowing yarn Y is such that substantially no contact occurs between the yarn and the edges 25, 26 of the guide opening 23 therein, and therefore, abrasive action in respect to the metal at said edges, is substantially avoided.

As shown in Fig. 4, the guide portions 22 of the guide members 20 are disposed close to the knitting needles 27, being centered between adjacent needles, while the shank portions 21 thereof are in offset relation to the heads of said needles, as determined by the amount of lateral displacement of guide portions 22.

Since the guide portion 22 of guide members 20 is retained in substantially parallel relation to needles 27, such guide portion can pass between the needles during the lapping portion of the cycle which lays the yarn Y in back of the needle beard, not shown, in a manner known in the art. In normal operation of the knitting machine, the adjustment of the guide members relative to the needles, in connection with the lapping operation, is such that the needles do not rise above the edge 25 of the guide openings 23 therein, thereby avoiding interference between the knitting elements. Furthermore, the yarns Y are positioned in a more favorable relationship to the knitting elements so as to perform a knitting motion best suited for the formation of the successive knitting courses.

Preferably, the yarn guide members embodying the invention, take the form shown in Fig. 5, wherein the guide member 20a is similar to that shown in Figs. 3, 4, except that the guide opening 23a in guide portion 22a is elongated along the axis of the guide member, rather than circular as shown in Fig. 3.

With the elongated guide opening 23a, the diametral extent of such opening is at least equivalent to the diameter of opening 13 in the conventional guide member 10 shown in Fig. 1, despite the foreshortening effect of the angular offsetting portion 24a. Thus, the needles 27 may move freely without interference with the guide members, and the rectilinear path of yarn Y is maintained without angular deviation or kinking, as previously described. Additionally, with the elongated guide opening 23a, the yarns Y may be brought into a lower and more effective relationship to the needles 27, to facilitate the knitting operations for many special types of knitted fabric.

It will thus be seen that there has been provided improved yarn guide members and a method of using the same, whereby the several objects of the invention are achieved, and which are well adapted for practical use.

As various changes might be made in the embodiments of the invention herein shown without departing from the spirit thereof, it is understood that all matter herein shown or described shall be deemed illustrative and not by way of limitation except as set forth in the appended claims.

Having thus disclosed my invention, I claim as new and desire to protect by Letters Patent:

1. A yarn guide comprising an elongated member having an elongated shank portion and a guide portion extending from one end of said shank portion, said guide portion being formed with an opening for passing a yarn therethrough, said guide portion on one side thereof at the distal end thereof having a yarn contacting surface substantially coplanar with a yarn contacting surface on the other side of the shank portion at the distal end thereof defining the proximal end of said guide opening to provide a continuously rectilinear path for passing said yarn from said other side of said shank portion, through said guide opening to the one side of said guide portion.

2. A yarn guide comprising an elongated member including a shank portion terminating in a guide portion formed with a single guide opening, the distal end of said guide portion defining a major portion of said guide opening being laterally offset with respect to said shank portion.

3. A yarn comprising an elongated shank portion terminating in a guide portion formed with a single guide opening, the distal end of said guide portion being laterally offset with respect to said shank portion adjacent the juncture of said portions.

4. A yarn guide comprising a flat elongated member including a shank portion and an enlarged guide portion at

one end thereof, said guide portion being formed with a guide opening, and said guide portion being in a plane laterally offset relative to the plane of said shank portion to bring the proximal end of said guide portion into angular relation with said shank portion and the distal end of said guide portion.

5. A yarn guide comprising a flat elongated member including a shank portion and a guide portion at one end thereof, said guide portion being formed with a guide opening, a major portion of said guide portion at the distal end thereof being laterally offset relative to said shank portion and a minor portion of said guide portion at the proximate edge thereof being angularly related to said shank portion, whereby a yarn moving adjacent one side of said shank portion may pass through said guide opening and continue its movement adjacent the outer end of said guide portion, all in a continuous rectilinear path.

6. A yarn guide comprising a flat elongated member including a shank portion and a guide portion at one end thereof, said member being transversely bent at the juncture of said portions to locate said guide portion in a plane laterally offset relative to the plane of said shank portion, said guide portion being formed with a guide opening, the inner edge of said opening being aligned with the bent portion of said member.

7. A yarn guide comprising a flat elongated member including a shank portion and a guide portion at one end thereof formed with a guide opening, the distal end of said guide portion defining a major portion of said opening being laterally offset relative to said shank portion and in a plane substantially parallel to the plane of said shank portion.

8. A yarn guide as in claim 7 wherein said opening is elongated and longitudinally related to said shank portion.

9. A yarn guide comprising an elongated shank portion terminating in a guide portion formed with a guide opening, said guide portion being in a plane laterally offset relative to the plane of said shank portion, a minor portion of said opening at the inner edge thereof being defined by a portion of said guide portion which is angularly related to said shank portion and the remainder of said guide portion.

10. A yarn guide as in claim 9 wherein said guide opening is elongated along the longitudinal axis of said guide to compensate for the diametral foreshortening due to the offset of said guide portion relative to said shank portion.

11. The method of guiding yarns to the needles of a knitting machine from a yarn supply, comprising moving said yarns through the guide opening of guide members adjacent said needles, in a continuous rectilinear path extending adjacent one side of said guide members, through said opening and adjacent the other side of said guide members.

12. The method of guiding yarns to adjacent needles of a knitting machine from a yarn supply, comprising moving said yarns through the guide openings of the guide portions of guide members, said guide portions being disposed between adjacent needles, the shank portions of said guide members being laterally offset relative to the guide portions whereby said guide openings are defined in part by relatively displaced portions of said guide portions, and moving said yarns in a continuously rectilinear path disposed in a plane passing through said guide openings at a small angle relative to the shank portions of said guide members.

References Cited in the file of this patent

UNITED STATES PATENTS

464,995	Roberts	Dec. 15, 1891
2,480,175	Young	Aug. 30, 1949
2,759,344	Clark et al.	Aug. 21, 1956