May 11, 1926. 1,584,099

J. C. KANE

YARN FEED FOR KNITTING MACHINES

Filed May 2, 1923

FIG. I.

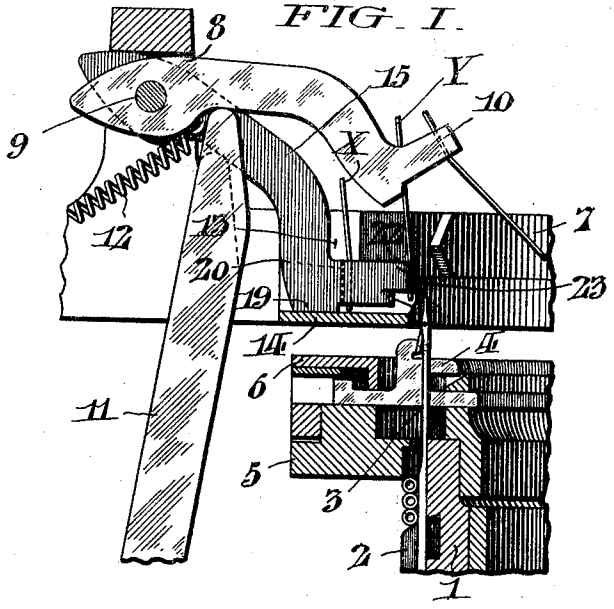


FIG. II.

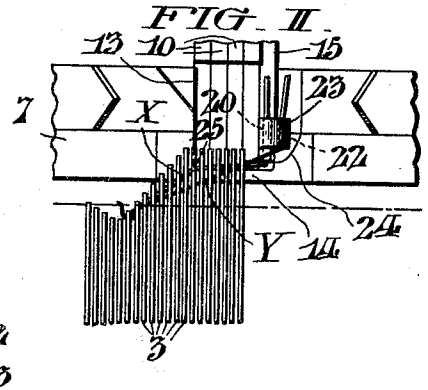


FIG. IV.

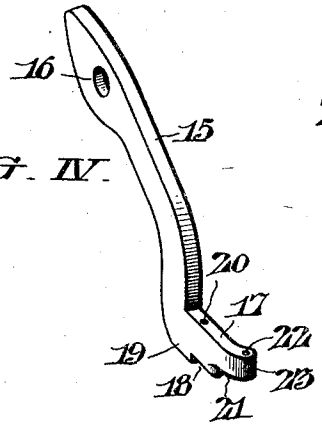
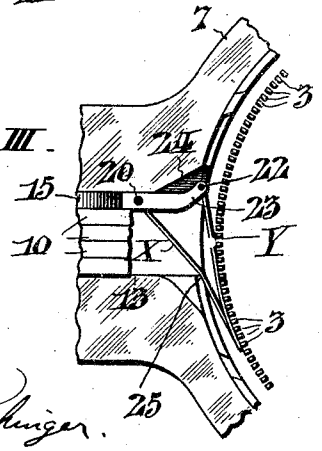


FIG. III.



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UNITED STATES PATENT OFFICE.

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YARN FEED FOR KNITTING MACHINES.

Application filed May 2, 1923. Serial No. 636,039.

My invention relates generally to yarn feeds for knitting machines and, more specifically, is directed to the provision of a feed capable of simultaneously directing a number of different yarns to the needles of a knitting machine in such relation as to predetermine production of what is ordinarily known as plated fabric wherein one of the yarns employed appears at the front of the fabric, while the other appears at the back or reverse side.

A further object of my invention is to provide a yarn feed embodying the above described attributes which may be interchangeably used with other single yarn feeds such as ordinarily found, for example, in modern stocking knitters for supplying yarns of different qualities, weights or colors as the knitting of a stocking proceeds.

Other subsidiary objects, together with their attendant advantages, will be readily understood from the detailed description which follows of a typical embodiment thereof, while the scope of my invention will be readily apparent from the appended claims

In the drawings, Fig. I is a fragmentary sectional view of a standard circular knitting machine conveniently embodying a yarn feed typical of my invention.

Fig. II is a view more or less diagrammatic in character showing the manner in which the yarns are directed to the needles of the knitting machine by my improved feed.

Fig. III is a fragmentary plan view of the parts of the machine comprehended in Fig. I; and

Fig. IV is an isolated prespective of the special feed.

Referring first to Figs. I, II and III, the needle cylinder of the knitting machine is indicated at 1, the same having the usual longitudinal grooves 2 for accommodation and guidance of the needles 3. The sinkers 4 are supported for horizontal reciprocation in a head 5 attached to the top of the needle cylinder 1, and are actuated to cooperate with the needles 3 in forming fabric stitches, by means of cams comprised in a cap ring 6 which is mounted for relative movement upon said head. Immediately above the needle cylinder 1, I have shown a portion of the usual annular latch guard 7. This guard 7 has spaced, upstanding lugs 8 between which extends a pin 9 adapted to serve as a common pivot or fulcrum for the ordinary yarn feeds whereof several are indicated in the drawings by the numeral 10. These feeds 10 are swung into and out of feeding position through the actuation of thrust bars 11 designed to be longitudinally shifted under control of a cam drum (not shown) such as customarily provided for this purpose in standard types of knitting machines. The action of the thrust bars 11 is opposed by springs 12 which tend to urge the feeds 10 downward into the gap or throat 13 of the annular latch guard 7. When in the lowered or active position, the feeds 10 rest upon a supporting ledge 14, which extends across and forms the bottom of the gap or throat 13.

Coming now to the special feed which forms the subject of this application, I have designated the same comprehensively in the drawings by the numeral 15. It will be noted, more especially from Fig. IV, that the feed 15 resembles in contour generally, those which have already been described and further in that it is pierced as at 16 for mounting upon the common pivot rod 9 previously referred to. Its foot 17 is however quite different from that of the others in so far as the details which are about to be described are concerned. Attention is directed to the fact that the foot 17 of the special feed is stepped as at 18 to afford a heel 19 adapted to come to rest upon the stop ledge 14, and at the same time, a clearance for passage of yarn fed through a guide eye 20. This feed 15 is again stepped as at 21 to determine delivery of a yarn fed from an eye 22 at its extremity 23, at a higher level than the yarn from the eye 20. It is furthermore to be noted that the extremity or toe 23 is bent or off-set laterally to one side of the general plane of the feed for a purpose which will be presently elucidated. To accommodate such offsetting of the feed end 23, the side wall of the throat in the latch guard ring 7 is cut away as indicated at 24 in Fig. III.

In the use of my improved feed 15, the yarn which is to appear at the back of the fabric and identified by the letter "X" in the drawings, is fed through the eye 20 and will hereinafter be referred to as the body yarn, while the yarn which is to appear on the face of the fabric is fed through the

outer eye 22 of the foot 17 is designated by the letter "Y" and termed the plating yarn. Following the course of these yarns in Figs. II and III, it will be observed that the body yarn X, after leaving the eye 20 of the feed 15, is, under the pull of the needles 3, drawn diagonally across the bottom plate of the throat 13 and encounters the opposite corner 25 of said throat as it approaches the needles. This condition obviously determines a definite feeding angle of the yarn, which, as best seen in Fig. II, closely approximates the slope of downward descent of the needles 3 as the latter recede toward the stitch point to form stitches. The plating yarn "Y" is however fed in a direct or unbroken line to the needles from the eye 22 of the feed 15. As a consequence, the angle at which this yarn approaches the stitch point is not quite as sharp or abrupt as that of the yarn "X", (the lateral offsetting of the extremity of the feed 15 and its consequent remoteness from said stitch point serving to enhance this distinction) so that the yarn "Y" occupies a position along the shanks of the needles 3 below that of the yarn "X" and therefore is the last of the two to enter beneath the needle hooks. The maintenance of this definite relation of feeding, by reason of the different levels of the guide eyes 20, 22 and their different remoteness from the stitch point, it will be at once apparent to those skilled in the knitting arts, will predetermine a plated product of the machine. If plain work is desired, one of the other or companion feeds 10 may be substituted for the special feed 15 by proper actuation of the thrust bars 11 in a manner already perfectly understood.

Having thus described my invention, I claim:

1. A unitary yarn feed having a multi-stepped foot and laterally-offset toe designed for pivotal mounting so that it can be swung into and out of active position with respect to the needles of a knitting machine, and adapted to simultaneously direct a plurality of different yarns with distinctive angles of approach to said needles in such a manner as to predetermine production of plated fabric.

2. As a new article of manufacture a unitary yarn feed for knitting machines having a multi-stepped foot portion with the toe laterally-offset, and eyes piercing the toe and heel portions to afford yarn guidance at different levels and distinctive angles of feed approach.

3. As a new article of manufacture a unitary yarn feed for knitting machines having a multi-stepped foot portion with the toe laterally-offset, an eye piercing the heel portion for guidance of one yarn at a sharp angle of approach and a second eye piercing the toe portion for feeding another yarn in advance thereof at a higher level and closer angle of approach relative to the machine knitting needles.

In testimony whereof, I have hereunto signed my name at Easton, Pennsylvania, this 26th day of April, 1923.

JESSE C. KANE.