July 8, 1952 M. ZIMIC ET AL 2,602,312

YARN FEED MECHANISM FOR KNITTING MACHINES

Filed May 8, 1950 2 SHEETS—SHEET 1

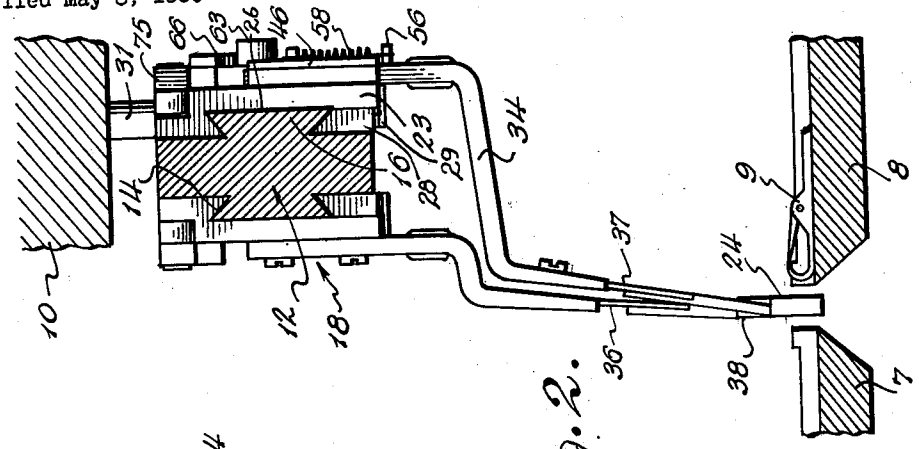


Fig. 2.

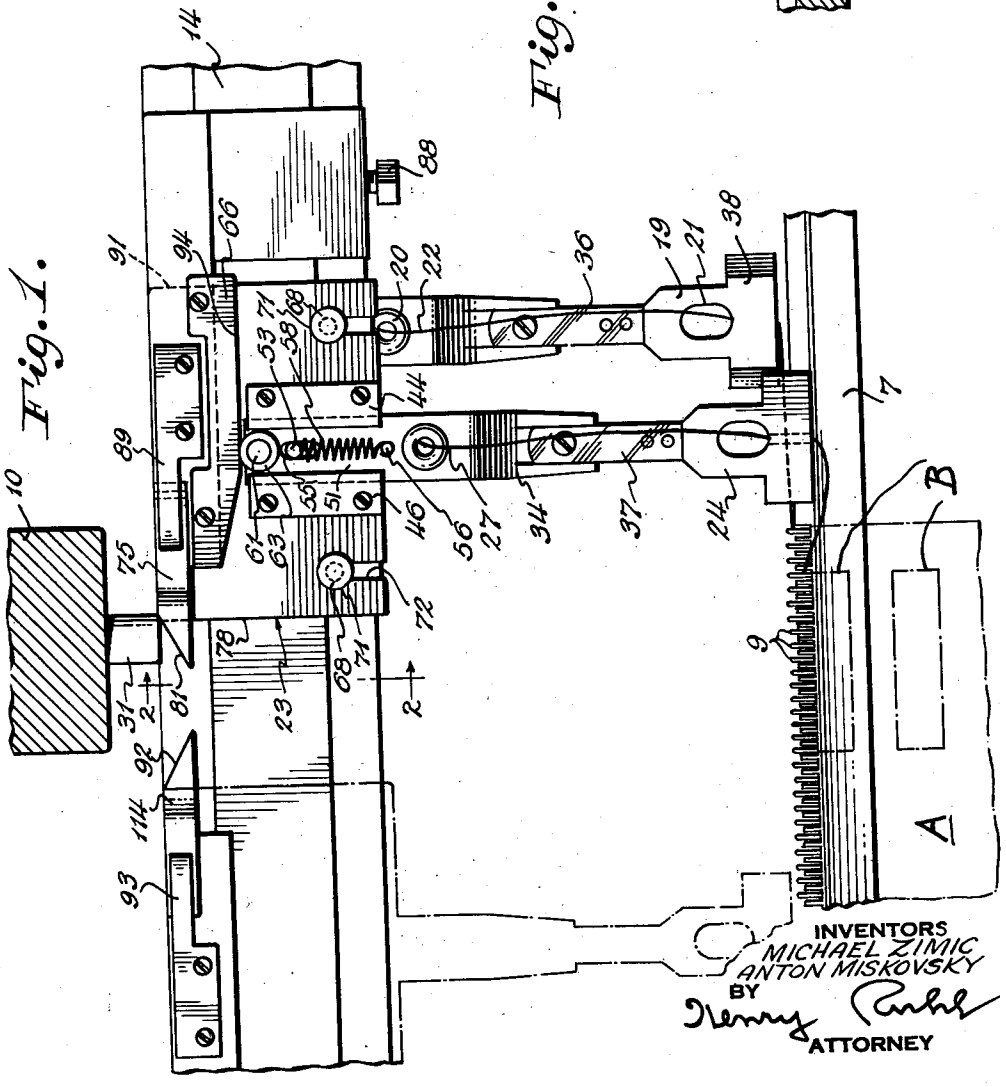


Fig. 1.

INVENTORS
MICHAEL ZIMIC
ANTON MISKOVSKY
BY
ATTORNEY

July 8, 1952 M. ZIMIC ET AL 2,602,312

YARN FEED MECHANISM FOR KNITTING MACHINES

Filed May 8, 1950 2 SHEETS—SHEET 2

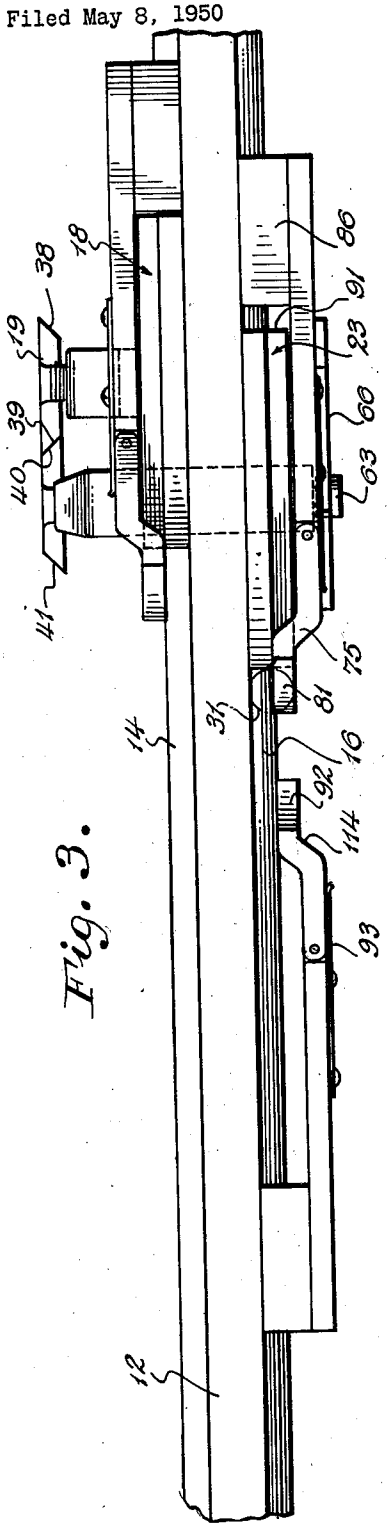


Fig. 3.

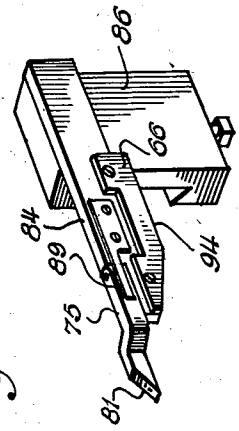


Fig. 5.

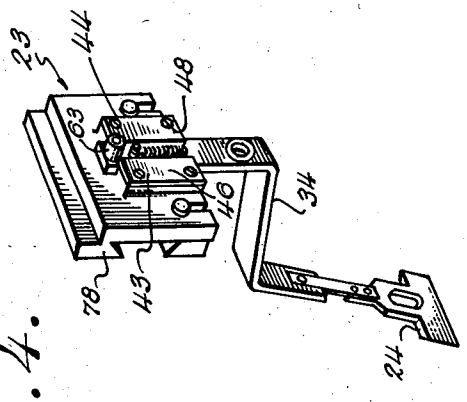


Fig. 4.

INVENTORS
MICHAEL ZIMIC
ANTON MISKOVSKY
BY
ATTORNEY

Patented July 8, 1952 2,602,312

UNITED STATES PATENT OFFICE

2,602,312

YARN FEED MECHANISM FOR KNITTING MACHINES

Michael Zimic, Lake Success, and Anton Miskovsky, Deer Park, N. Y.; said Miskovsky assignor to said Zimic

Application May 8, 1950, Serial No. 160,726

4 Claims. (Cl. 66—128)

1

The present invention relates to means for feeding yarn in knitting machines, and, more particularly, to novel means for controlling the vertical position of a yarn guide or feeder and moving the yarn feeder and its carrying means over a predetermined range of movement to facilitate special knitting operations or special knitting sequences.

In accordance with the invention, a yarn carrier is provided with a vertically movable yarn guide comprising or being joined to a suitable mounting arm having yarn feeding means for bringing a strand of yarn from a supply source to the yarn guide. The carrier is movable along a stationary trackway, or the like, usually provided in a knitting machine of the type generally known as a links and links machine. Vertical movement of the guide with respect to the carrier, as well as movement of the carrier on the trackway, or its equivalent, is provided by the yarn selector mechanism of the knitting machine. Also, in accordance with the invention, the yarn selecting mechanism on the traveling carriage of a links and links knitting machine cooperates substantially without modification with the yarn feeding mechanism of this invention to move the guide vertically with respect to the carrier, and to move the carrier to provide for feeding yarn to the knitting devices, such as latch type needles in the knitting bed or beds of the machine.

The principal object of the present invention is to provide a novel yarn guide which is movable vertically with respect to its normal direction of travel.

Another feature or object of the invention, which is closely related to the object just stated, is to provide novel means for causing movement of the vertically movable yarn guide with respect to its carrier.

A further object of the present invention is to provide novel means for controlling the yarn guide in a knitting machine.

Other objects and advantages of the present invention will, of course, become apparent and immediately suggest themselves to those skilled in the art to which the invention is directed from a reading of the following specification in connection with the accompanying drawings, in which:

Fig. 1 is a view in elevation of a portion of the trackway bar for the yarn carrying mechanism of a knitting machine having an illustrative embodiment of the yarn carrying mechanism of this invention thereon;

2

Fig. 2 is a section taken on line 2—2 of Fig. 1;

Fig. 3 is a view in plan of the mechanism of Fig. 1;

Fig. 4 is a perspective view of the yarn carrying mechanism of this invention; and

Fig. 5 is a view in perspective of an element of the mechanism shown in front elevation in Fig. 1.

The yarn feeding mechanism embodying this invention is to be employed in a knitting machine of the type, for example, known as the links and links machine which includes a needle bed or beds 7 and 8, and a carriage (fragmentarily shown) which reciprocates over these beds. The carriage includes a lock or cam mechanism for actuating the needles 9 in the bed or beds in sequence to form stitches in the yarn which is fed to the needles along with and under control of the carriage. Only a fragment 10 of the carriage appears in the drawing. Inasmuch as knitting machines of this general type are by now well known, the mechanism of the knitting machine has been omitted for the sake of simplicity. The knitting machine usually includes one or more trackway bars 12, one of which appears in the drawing. These trackway bars are supported in any suitable manner so that they lie above the needle beds 7 and 8 of the knitting machine. In the illustrative example, only one trackway bar 12 is shown. However, where a plurality of these bars are employed, they are spaced horizontally and the yarn guides are offset laterally from their carriers to insure that the yarn is fed to the needles in their active position. The trackway bar 12, as shown in Fig. 2, has two projections 14 and 16 which extend longitudinally of the bar. Reference character 18 designates, in its entirety, one carrier for a yarn guide 19 which serves yarn for knitting the background, for example, of a fabric.

The carrier and guide 18 and 19 are or may be of usual construction having means shown as an eyelet 20 and an opening 21 for feeding a strand of yarn or the like 22. The carriage 10 has the usual means (not shown in detail) for moving the carrier 18. Referring to the dot-dash outline of the fabric show in Fig. 1, the yarn 22 is knitted into the portion A. This operation is well known to those skilled in the art and need not be further described herein.

The carrier 23 and the yarn guide 24 of this invention cooperates in a novel manner with the carrier and guide 18 and 19 and other elements of the knitting mechanism. The yarn guide 24 serves the yarn 27 to knit the portion B of the

fabric. The carrier 23, like the carrier 18, is provided with a recess 26, the top portion of which is a shape in outline to fit over the dovetailed portion of a trackway bar such as the portion 16. A member 28 is slidably mounted on the body of the carrier 23 and it is provided with a surface which presses upwardly against the bottom of the projection 16. A flat spring 29 secured to the body of the carrier 23 presses the member 28 upwardly so that the carrier 23, while it is slidable on the projection 16, is frictionally held in position unless it is moved positively by a yarn selecting instrumentality, a part of which, namely, the finger 31, appears on the drawing. It will be understood that the vertical position of the finger 31 is controllable by suitable mechanism associated with the carriage so that it may be raised or lowered to provide for engagement with the carrier 23.

The yarn guide 24 is carried by a mounting 34 which is in the form of an offset arm. The degree of offset will be determined by the placement of the trackway bar laterally with respect to the active position of the needles. This mounting has a spring connection 37 with the guide 24. A similar spring connection 36 is also provided for the carrier 19. The guides 19 and 24 are beveled as indicated at 39 to 41 to permit the yarn guides to pass each other during the knitting operations.

The carrier 23, as clearly shown in the drawing, and particularly Fig. 4, is provided with bosses 43. Plates 44 and 46 are secured to these bosses by suitable means such as screws 48. The top 51 of the mounting 34 is confined by and slides under the plates 44 and 46. A pin 53 projects from the carrier 23 through a slot 55 in the top 51. A pin 56 projects from the top 51 and is connected to the pin 53 by an extensible spring 58. This arrangement biases the yarn holder 24 upwardly. The top 51 of the mounting 34 is also provided with a pin 61 on which is journaled a roller 63. A cam member 66 cooperates with the roller 63 in a manner to be described.

The member 28 is provided with pins 68 having enlarged heads 71 which slide in guide slots 72 in the principal part of the carrier 23. As described above, the spring 29 urges the member 28 upwardly against the rail projection 16. This provides means for holding the carrier 23 in position. The carriage (fragmentarily shown) of the knitting machine is shown near the right hand end of its range of travel. It is assumed that the carriage has completed a to and fro excursion to knit the part A but omitting the part B. The yarn 22 is "floated" over the part B. That is, it is not knitted at the area B. It is further assumed that the carriage has also completed an additional to and fro excursion so that yarn 27 is knitted in a row over the area B. As the yarn carrier 19 moves to the left to lay in the yarn, that portion of the yarn 27 lying in the path of the needles at and near the extreme right, as shown in Fig. 1, will also be picked up by the needles causing a confused pattern. This is avoided with the present invention by depressing the yarn carrier 24.

The yarn carrier 23 is picked up by the finger 31. Fingers 75 and 114 cause release of the carrier 23. As the carrier moves toward the right, as viewed on the drawing, the finger 31, or an equivalent member, on the carrier engages the edge 78 of the slidable member 23. The member 23 is propelled to the right until the finger 31 engages the upwardly sloping cam surface 81

which is formed on the finger 75. This finger 75 is pivoted on the extension 84 of a block 86 which is clamped to the dovetail 16 by means of a thumb screw or machine bolt 88. As seen in Fig. 1, the finger 75 is urged inwardly toward the bar 12 by means of a flat spring 89. As stated previously, when the finger 31 encounters the cam surface 81, it rides upwardly so that it releases the edge 78.

When the carriage moves to the left from its extreme right-hand position to knit a course or row of the area B, the pin 31 is lowered by mechanism (not shown) and engages the edge 91 of the member 23. The pin 31 is released at the left hand edge of the area B by the finger 114 having the sloping cam end 92. A spring 93 urges the finger 114 inwardly.

The extension 84 has the cam member 66 secured thereon. This cam member has a cam edge 94 which engages the roller 63. This lowers the yarn guide 24 when the member 23 is in or near the position shown.

The operation of the device described above is as follows:

The yarn carrier 19 has been moved to the left and then right by the carriage to form one round of background leaving a float at the design portion B. Yarn carrier 24 was then picked up and moved to the left and is shown finishing the movement to the right. Although the carriage must always move the full distance of the machine the yarn carrier 24 is only moved for that portion necessary to lay in the design.

The next movement of the carriage will move carrier 19 left then right. This is when the yarn 27 will be caught in the needles at the right if the yarn carrier 24 was not depressed. The cam 66 is adapted to engage the cam roller 63 mounted on the slidable yarn carrier part 34. The spring 58 serves to return the carrier to its normal position above the needles. The slot shown at 55 limits the movement of the carrier 23.

It will be noted that the carrier 23 is in that portion or end of the needle bed which is blank.

Having now described the invention, what is claimed is:

1. In a knitting machine, a yarn feeding mechanism comprising a yarn guide, a stationary track for said yarn guide, means slidable on said track for supporting said yarn guide, said yarn guide being movable vertically from an active to an inactive position on said slidable means, and cam means supported on said stationary track for moving said guide vertically between the active and the inactive positions.

2. In a knitting machine, a yarn feeding mechanism comprising a yarn guide, a stationary track for said yarn guide, a carrier slidable on said track for supporting said yarn guide, said yarn guide being movable vertically from an active to an inactive position on said slidable means, and a stationary cam member on said track for moving said guide vertically between the active and the inactive positions.

3. In a knitting machine of the type having a needle bed and a series of needles along said bed with means comprising a carriage and lock mechanism to operate said needles; a yarn guide, means to feed yarn to said guide, a carrier for said guide, a trackway for said carrier, said carrier being mounted to execute a to and fro excursion on said trackway, a second carrier on said trackway, means on said carriage for imparting movement to said second carrier, a cam member secured to said trackway to cause move-

ment of said second carrier to cease adjacent to an end of said series of needles, a second yarn guide structure mounted for vertical movement on said second carrier, means to bias said second yarn guide to the level of said first yarn guide, a projection on said second yarn guide structure, and a member having a camming portion to move said second yarn guide structure downwardly upon engagement therewith, said member having said camming portion being mounted on said cam member secured to said trackway.

4. In a knitting machine of the type having a needle bed and a series of needles along said bed with means comprising a carraige and lock mechanism to operate said needles; a trackway, a carrier on said trackway, means on said carriage for imparting movement to said carrier, a cam member secured to said trackway to cause movement of said carrier to cease adjacent to an end of said series of needles, a yarn guide structure mounted for vertical movement on said carrier, means to bias said yarn guide upwardly, a projection on said yarn guide structure, and a member having a camming portion to move said yarn guide structure downwardly upon engagement therewith.

MICHAEL ZIMIC.
ANTON MISKOVSKY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
280,886	Ward	July 10, 1883
507,929	Pringle	Oct. 31, 1893
1,543,011	Klein	June 23, 1925
1,857,737	Nebich	May 10, 1932
2,139,790	Zimic	Dec. 13, 1938
2,509,032	Buchanan	May 23, 1950
2,528,389	Saunders	Oct. 31, 1950