Jan. 13, 1953 E. M. ZESCH 2,625,025

FABRIC TAKE-UP MECHANISM

Filed April 25, 1950 3 Sheets-Sheet 1

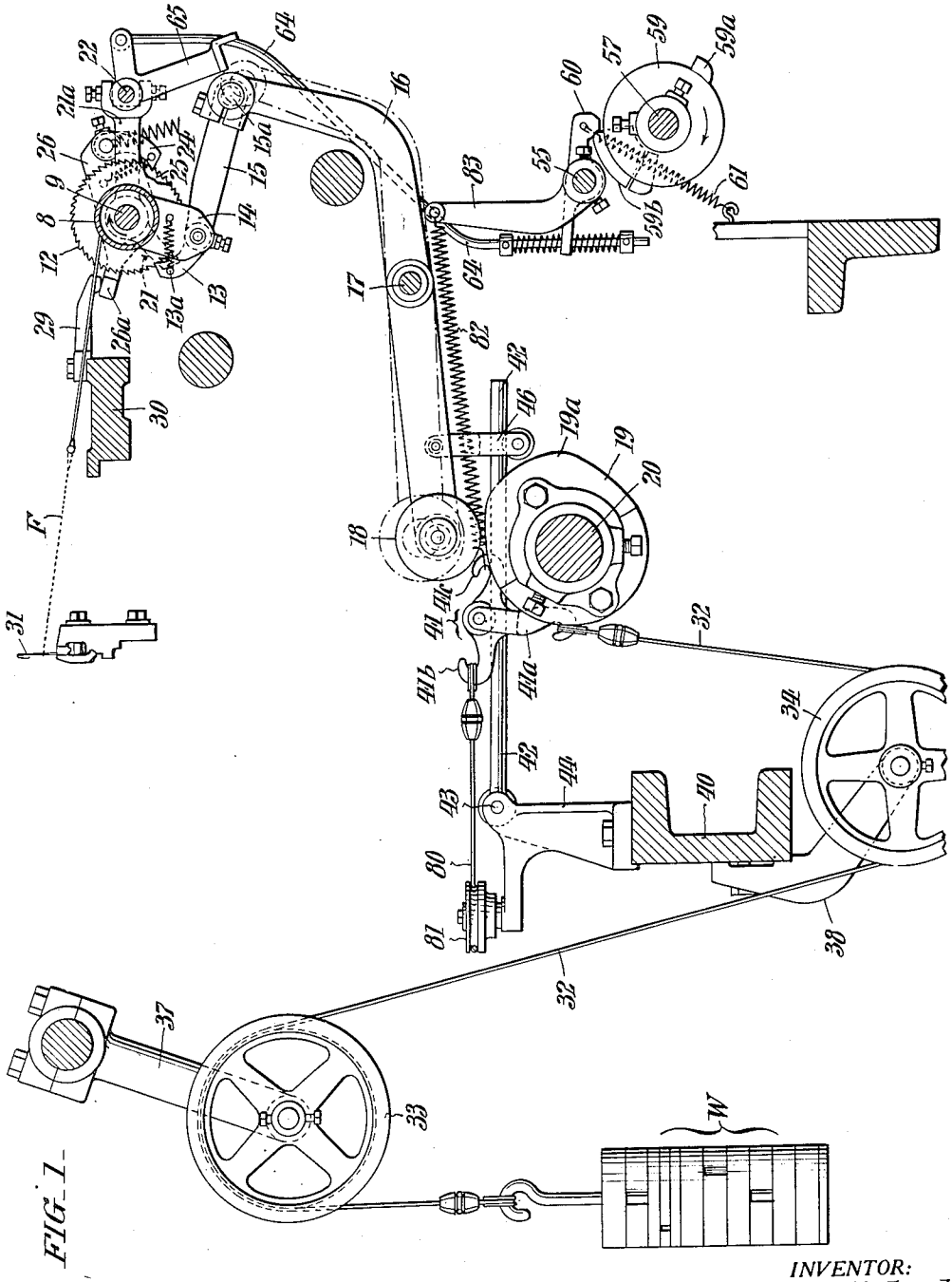


FIG. 1.

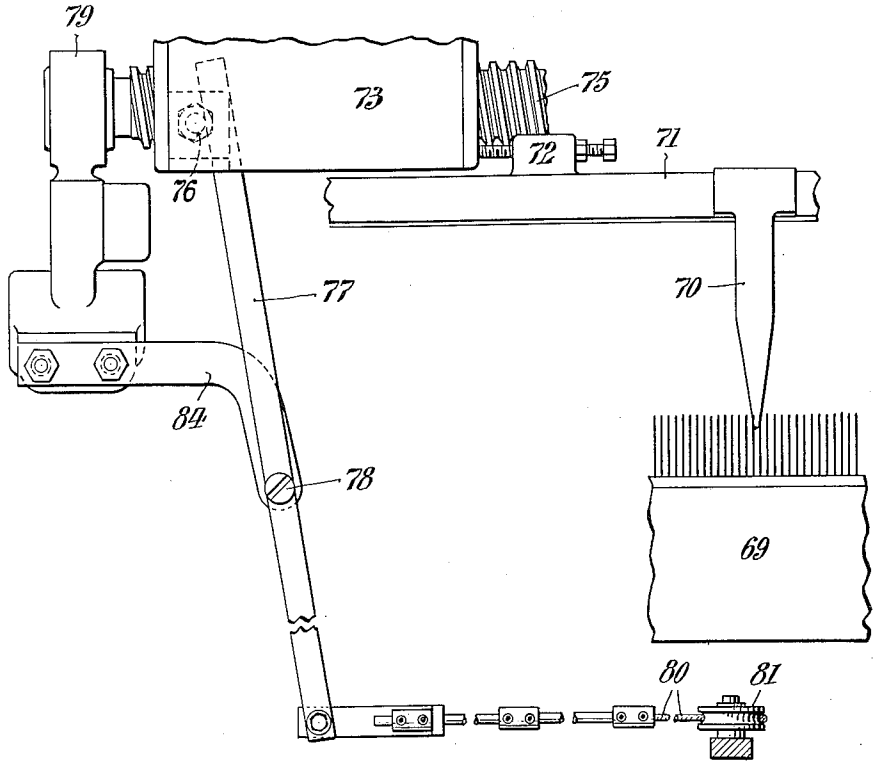
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FIG. 2.



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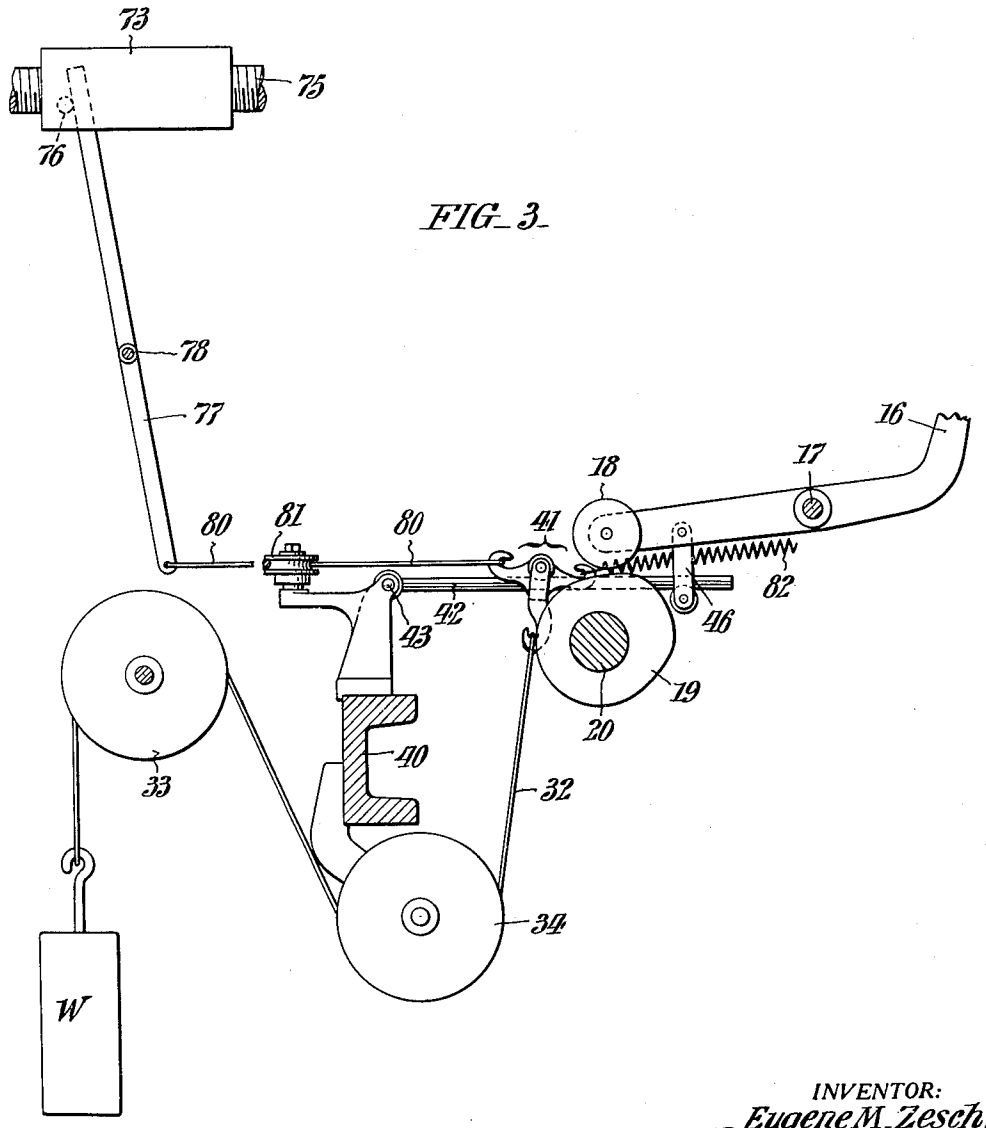


FIG. 3.

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FABRIC TAKE-UP MECHANISM

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5 Claims. (Cl. 66—149)

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This invention relates to fabric take-up mechanism for straight knitting machines such as are ordinarily employed in the commercial production of flat fashioned stocking blanks. The present invention constitutes a modification of a generally similar take-up mechanism disclosed in patent 2,569,394 granted to me on September 25, 1951, wherein the tension to which the fabric is subjected during the knitting is varied by shifting of a weight connection along a horizontally arranged floating lever embodied in the mechanism, the shifting being accomplished through means controlled from a rotary cam on a timing shaft of the knitting machine.

The aim of my present invention is to attain more accurate control of fabric tension variation than possible with the cam means of the previous application. This objective is realized in practice, as hereinafter more fully disclosed, through provision of means actuated from the yarn carrier stop mechanism of the knitting machine, so that the tension is graduated in direct proportion to the decrease in the traverse of the carrier or carriers incident to gradual reduction in the width of the stocking blanks down through the leg and ankle portions.

In the attached drawings,

Fig. 1 is a skeletonized view in cross section, of a straight stocking knitting machine of the "Cotton" type embodying my improved fabric take-up mechanism.

Fig. 2 is a fragmentary view showing a portion of the machine in front elevation; and

Fig. 3 is a diagrammatic view of the take-up mechanism.

As in the prior patent hereinbefore referred to, my present take-up mechanism includes a horizontally-arranged lever 16 which is fulcrumed intermediate its ends to rock about a fixed axis 17. By means of a link 15, the front end of lever 16 is connected to an arm 14 which is free on the shaft 9 of the fabric take-up roll 8 of the machine. The arm 14 carries a pawl 13 for action upon a ratchet wheel 12 to cause intermittent rotation of the roll 8 and gradual drawing of the fabric F away from the needles 31 as it is formed. A shield or guard 21 cooperates with a stud 13a on pawl 13 in restricting the latter to pick but one tooth of the ratchet wheel at each actuation, said guard being pivoted on the reel shaft 9 and having a laterally extending tail 21a which is forked to straddle a fixed longitudinal rod 22. Reverse rotation of the take-up roll 12 is prevented, also as before, by a detent 24 which acts upon a second ratchet wheel 25 on the roll shaft

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9, the carrier 26 for said detent being maintained normally in the position in which it is shown, with the finger projection 26a thereof in engagement with a stop projection 29 on the front bed rail 30 of the machine. The means herein shown for preventing operation of the take-up incident to hooking up the starting course of a stocking blank or to fashioning of certain types of heels with suspension of the knitting by a central group of instep needles, is identical with that disclosed in the prior application. Briefly described, this means comprises a stop arm 65 which is swingable about the rod 22 into the path of the pivot stud 15a on lever 16 to keep said lever temporarily in the broken line elevated position of Fig. 1, with the pawl 13 retracted by the shield or guard 21 as the rise 19a of cam 19 underpasses the roller 18. The stop arm 65 is controlled by a cam 59 on auxiliary cam shaft 57 (which is intermittently shifted rotatively through a complete rotation during each stocking knitting cycle), said cam having rises 59a and 59b to act upon a finger 60 free on a fixed axis 55, and held to the cam by a spring 61. As the rises of cam 59 underride the finger 60, the movement of the latter is communicated, through a spring-cushioned link rod 64, to the detaining arm 65 to swing it to stop position.

Also as in my prior patent, the lever 16 is coupled, by means of vertical link 46, with a horizontal lever 42 which is fulcrumed at 43 on a bracket 44 affixed to the rear bottom longitudinal frame rail 40 of the machine. Shiftable along the lever 42 is a small roller carriage 41 with a pendent hook 41a whereto is connected one end of a cable 32 which passes under and over guide sheaves 34 and 33 respectively supported by fixed brackets 38 and 37, and from the opposite end of which a weight W is suspended.

Instead of being governed as heretofore from the timing shaft 57 of the machine, shifting of the carriage 41 is controlled, in accordance with my present invention, from the yarn carrier stop mechanism of the machine through the intermediate connections about to be described. In Fig. 2, one of the needle bars of the machine is indicated at 69, and one of the selvage yarn carriers at 70, the latter being supported from a rod 71 which is reciprocated longitudinally of the machine in the usual manner, and which has a lug projection 72 to engage a stop nut 73 on a threaded spindle 75. By suitable means, not illustrated, the spindle 75 is intermittently rotated during the knitting, with attendant shifting of the stop nut 73 for variably limiting the traverse of the carrier as required to shape

the flat stocking blanks produced in the machine. For the purposes of my present invention, the stop nut 73 is provided with a lateral stud 76 to act upon the upper end of a vertically arranged lever 77 which is fulcrumed at 78 on a fixed bracket 84. By means of a cable 80 guided over suitably positioned idler sheaves such as indicated at 81 in Figs. 1 and 2, the lever 77 is connected to a lateral hook 41*b* of the roller carriage 41 on lever 42. A spring 82, by acting on the carriage 41, tensions the cable 80 for maintenance of the upper end of lever 77 in yielding engagement with the stud 76 on yarn carrier stop nut 79. As shown, one end of the spring 82 is connected to another lateral hook 41*c* on the roller carriage 41, and the other end to an anchorage arm 83 secured to the fixed rod 55.

The operation of the present take-up, insofar as the torsioning of the draw-off reel 8 and the intermittent rotation of the reel through the racking means by occasional engagement of cam 19 with the roller 18 are concerned, is exactly the same as set forth in my prior patent supra, and repetitive description here is therefore deemed to be unnecessary. However, instead of control of shifting of the carriage 41 along the lever 42 by a rotary cam on auxiliary cam shaft 57, this control is now accomplished from the yarn carrier traverse limiting mechanism of the knitting machine. Thus, as the nut 73 is intermittently shifted to the right in Figs. 2 and 3 to reduce the traverse of the yarn carrier 70, the carriage 41 is moved toward the fulcrum 43 of floating lever 42, with consequent change in the influence of the weight W upon said lever. The torsional effect induced in the draw-off reel 8 is gradually reduced accordingly, and the tension on the fabric correspondingly eased as the stocking blanks are narrowed down through the leg and ankle.

Having thus described my invention, I claim:

1. Fabric take-up mechanism for a straight knitting machine having a series of needles, a traversing carrier for supplying yarn to the needles, and means for variantly limiting the traverse of the carrier to shape the fabric during the knitting, said mechanism comprising an incrementally-rotated take-up reel for gradually drawing the fabric away from the needles as it is formed; means including a weight for torsioning the reel to maintain the fabric under tension; and means actuated from the carrier traverse limiting means for changing the effect of the weight of the torsioning means so that the tension on the fabric is varied compensatively with changes in the traverse of the carrier.

2. In fabric take-up mechanism for a straight knitting machine having a reciprocating yarn carrier and means by which the traverse of the yarn carrier is varied during the knitting, said mechanism comprising a fabric draw-off reel and racking means for turning it; means to prevent reverse rotation of the reel; a floatingly-supported member and interposed means connecting it with the racking means; weight means influential upon the member and effective, through the racking means, to normally torsion the reel for maintenance of the fabric under tension; means for periodically actuating the member for communication, through the racking means, of incremental rotary shifts to the reel to take up the fabric; and means operated from the yarn carrier traverse varying means for controlling the action of the weight means upon the member to correspondingly vary the tension on the fabric during its formation.

3. In a fabric take-up mechanism for a straight knitting machine having an intermittently-rotated spindle with a stop nut thereon for varyingly limiting the traverse of the reciprocating selvage yarn carrier, said mechanism comprising a fabric draw-off reel and racking means for turning it; means to prevent reverse rotation of the reel; a floatingly-supported horizontal lever and interposed means connecting it with the racking means; weight means influential upon the lever and effective through the racking means, to normally torsion the reel for maintenance of the fabric under tension; means for periodically actuating the lever for communication, through the racking means, of incremental rotary shifts to the reel to take up the fabric; and means operated from the yarn carrier stop nut aforesaid for controlling the action of the weight means upon the lever to vary the tension on the fabric during its formation.

4. In fabric take-up mechanism for straight knitting machines having an intermittently-rotated spindle with a stop nut thereon for varyingly limiting the traverse of a reciprocating selvage yarn carrier, a draw-off reel; racking means for turning the reel; means to prevent reverse rotation of the reel; a horizontally-arranged floatingly-supported lever connected to the reel racking means; a second floatingly-supported horizontally-arranged lever with its distal end coupled with the first lever; weight means connected to the second lever to influence the first lever for maintenance, through the racking means, of yielding torsion on the reel to hold the fabric under tension; means for periodically actuating the first lever for communication, through the racking means, of incremental rotary shifts to the reel to take up the fabric; and means actuated from the yarn carrier stop nut aforesaid and operative to shift the weight connection along the second lever for the purpose of varying the tension on the fabric during its formation.

5. The invention according to claim 4, wherein the weight shifting means includes an arm in engagement with the yarn carrier stop nut, a cable extending from the arm to the weight connection on the second lever, and spring means influential upon the cable to maintain the arm in engagement with the stop nut.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,004,219	Richter	June 11, 1935
2,185,963	Lambach	Jan. 2, 1940
2,248,507	Miller	July 8, 1941
2,249,422	Fradenburgh	July 15, 1941
2,584,136	Lambach	Feb. 5, 1952