Nov. 2, 1926. 1,605,099

S. G. DEBS ET AL

TAKE-UP DEVICE FOR KNITTING MACHINES

Original Filed Jan. 20, 1926 2 Sheets-Sheet 1

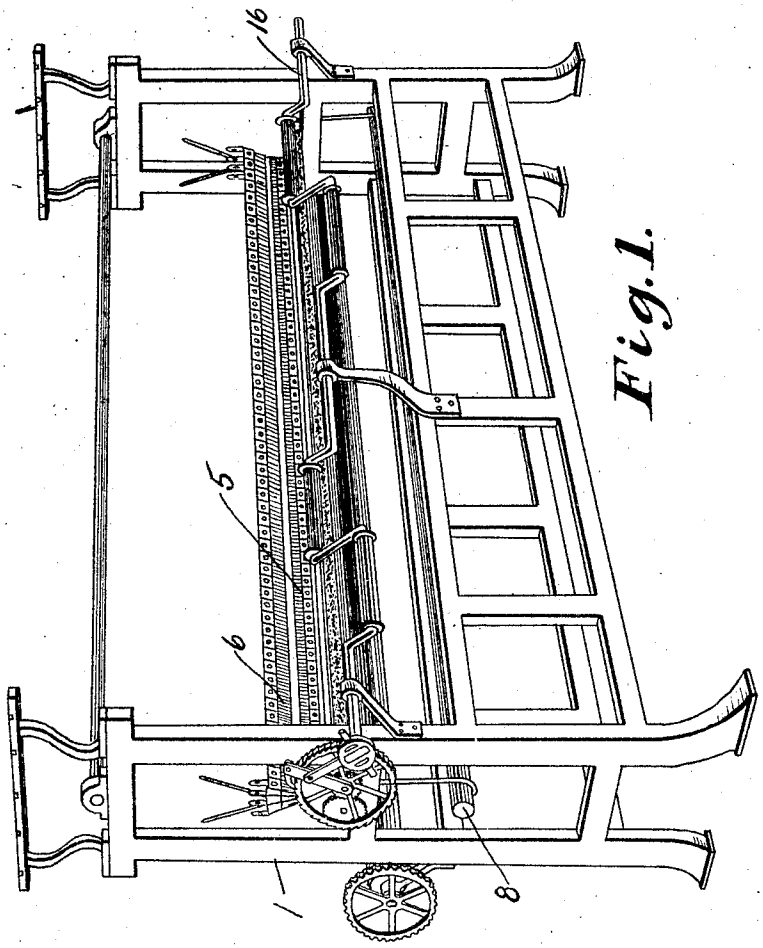


Fig. 1.

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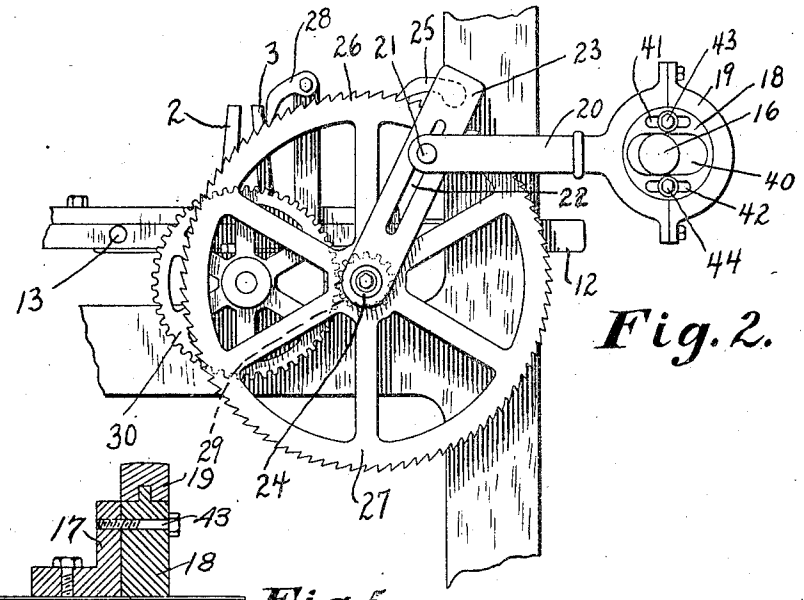


Fig. 2.

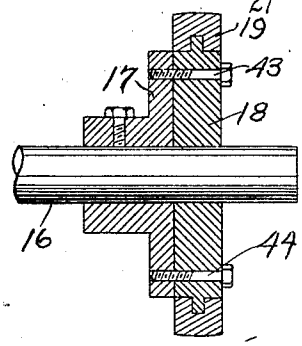


Fig. 5.

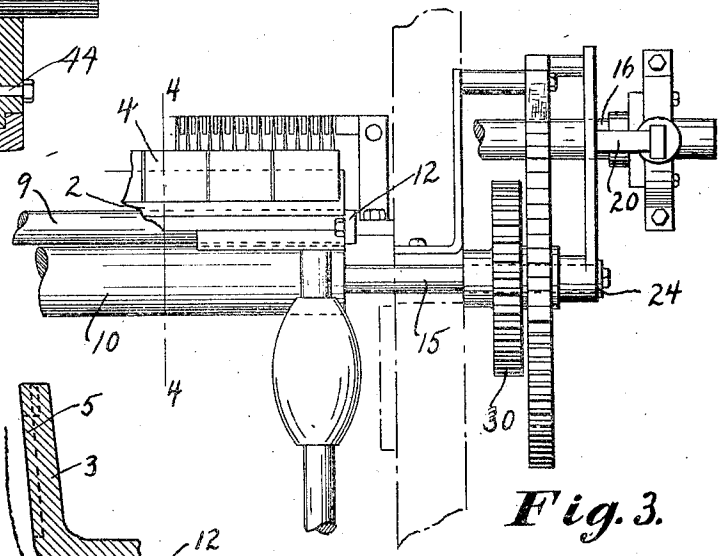


Fig. 3.

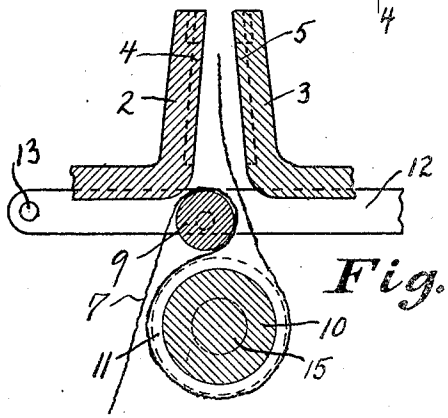


Fig. 4.

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UNITED STATES PATENT OFFICE.

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TAKE-UP DEVICE FOR KNITTING MACHINES.

Application filed January 20, 1926, Serial No. 82,510. Renewed September 22, 1926.

Our invention relates to knitting machines and has for its object to provide a take-up device in connection wtih a straight knitting machine which will grip the finished fabric close to the point at which it leaves the needles so as to draw the finished fabric away from the needles with practically no opportunity for stretching. Where, as is usual in knitting machine, the finished fabric is drawn away from the needles by a weight or by feed rolls at a substantial distance from the point at which the finished fabric leaves the needles, opportunity is afforded for more or less stretching of the fabric and as, where the knitted fabric is of considerable width, the quality of the threads may vary slightly, one part may stretch more than another with resulting unevenness of the fabric.

By gripping the fabric close to the point at which it leaves the needles, evenness of the fabric throughout its width is assured and the dropping of stitches is avoided, and by varying the rate of rotation of the feed rollers a variation in the character of the fabric may be effected.

While the invention is particularly adapted for use with straight knitting machines of the Raschel type, it may be used in connection with any straight knitting machine.

With the objects above indicated in view, our invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawings:—

Figure 1 is a perspective view of a straight knitting machine equipped with the fabric feeding device of our invention.

Figure 2 is an end view showing the operating mechanisms.

Figure 3 is a side view partly broken away of the operating mechanism.

Figure 4 is a cross sectional view enlarged on line 4—4 of Figure 3, and Figure 5 is a longitudinal, sectional view of the eccentric.

In the drawings, Figure 1 indicates the frame of a straight knitting machine of the Raschel type having the parallel, longitudinal, stationary bars 2, 3, on the inner faces of which the needle carrying bars 4, 5, are vertically reciprocated in the usual manner, the threads being supplied from guides 6, above the needle bars arranged to have the longitudinally, reciprocating and laterally swinging movements characteristic of this type of straight knitting machine. These bars, 2 and 3 are slightly inclined towards each other so that they are somewhat wider apart at their lower edges than at their upper edges, and at their extreme lower edges have their inner faces curved outward. In the ordinary operation of the machine the knitted fabric, 7, passes down between bars 2 and 3, and is drawn downward as completed by weight, 8.

In the improved construction of our invention we arrange feed rollers, positively rotated, as near as possible to the point at which the finished fabric leaves the needles so as to maintain an even, regulated feed of the fabric. For this purpose we arrange a steel feed roller, 9, of relatively small diameter with its axes slightly below the lower edges of the bars 2, 3, and to one side of the median line between these bars, the periphery of this roller on one side being nearly in contact with the outwardly curved lower edges of bar 2. Below roller 9, with its axes in the verticle plane of the median line between bars 2 and 3, is a roller, 10, of a larger diameter than roller, 9, and having its periphery provided with a sandpaper or roughened surface, 11, the rollers, 9 and 10 being so arranged as to grip the fabric, 7, between them. In order to provide for the vertical movement of roller, 9, necessary to maintain proper tension on the fabric, this roller is journalled at its ends in levers, 12, (only one of which is shown), pivoted at 13 to the frame members, on which the bars 2 and 3 are carried. Roller, 10, is carried on shaft, 15, in stationary bearings in the frame.

The roller, 9, is thus free to rotate and bears by its own weight and that of the levers, 12, upon the fabric, 7, to hold it against the sand paper or roughened periphery of roller, 10. Rotation of roller, 10, will cause the fabric to be drawn downward between it and roller, 9.

For rotating roller 10 to thus effect the feed of the finished fabric we provide between the driven shaft, 16, and shaft, 15, mechanism by which the shaft, 15, and roller, 10, may be driven at such regulated speed as may be desired.

The mechanism for this purpose comprises a disc, 17, secured on shaft, 16, and an ec-

centric disc, 18, adjustably secured to the face of disc, 17, and an eccentric band, 19, within which disc. 18, rotates. This eccentric band, 19, carries an arm, 20, provided at its free end with a pin, 21, which is adjustable in a slot, 22, in an arm, 23. Arm, 23, is pivoted at its lower end on a stub shaft, 24. and carries at its free end a pawl, 25, which engages teeth, 26, of a rachet wheel, 27, rotatable on this stub shaft. As the power shaft, 16, rotates, the disc. 17, will rotate with it, rotating eccentric disc. 18, and through the eccentric band, 19, and its arm, 20, will swing arm, 23, causing its point, 25, to act upon ratchet wheel, 27. Pawl, 28, pivoted on the frame of the machine engages the teeth of rachet wheel, 27, to prevent it from moving backward. To rachet wheel, 27, is secured a pinion 29, the teeth of which mesh with the gear, 30, which is fast on shaft, 15. Each rotation of power shaft 16, will thus effect rotation of roller, 10.

The eccentric disc, 18, is provided with a slot, 40, fitting over the shaft, 16, and slots, 41 and 42, one above and the other below slot, 40, and through these slots bolts, 43 and 44, extend into disc 17. The eccentric disc may thus be adjusted to increase or diminish the degree of movement given to arm, 20, and the degree of movement given to arm, 23, may be adjusted by shifting the pin, 21, in slot, 22.

By lifting the free end of levers, 12, the roller, 9, may be separated from roller, 10, sufficiently to permit the fabric, 7, to be inserted.

Weight, 8, is preferably secured to the fabric below roller, 10, but need not be used.

Having thus described my invention, what I claim is:—

1. In a straight knitting machine in which the knitted fabric passes between two parallel, needle carrying bars, a take-up roller of a diameter less than the distance between the inner faces of the needle-carrying bars at their lower edges arranged immediately below the space between said needle carrying bars with its periphery extending into said space and a second take-up roller below it so located as to grip the finished fabric between its periphery and the periphery of the first mentioned roller, and means for rotating the second take-up roller.

2. In a straight knitting machine in which the knitted fabric passes downward between two parallel, needle carrying bars, a take-up roller having a smooth periphery surface of a diameter less than the distance between the inner faces of the needle carrying bars at their lower edges, arranged immediately below the space between said needle carrying bars, with its periphery extending into said space and a second take-up roller having a rough periphery surface below it so placed as to grip the finished fabric between its periphery and the periphery of the first mentioned roller and means for rotating the second take-up roller.

3. In a straight knitting machine in which the knitted fabric passes downward between two parallel, needle carrying bars, a take-up roller of a diameter less than the distance between the inner faces of the needle carrying bars at their lower edges arranged immediately below the space between said needle carrying bars with its periphery extending into said space, mounted to rotate freely in vertically movable bearings, and a second take-up roller below it so located as to grip the finished fabric between its periphery and the periphery of the first-mentioned roller and means for rotating the second take-up roller.

4. In a straight knitting machine in which the knitted fabric passes downward between two parallel, needle carrying bars, a take-up roller of a diameter less than the distance between the inner faces of the needle carrying bars at their lower edges, arranged immediately below the space between said needle carrying bars, with its periphery extending into said space, and a second take-up roller below it so located as to grip the finished fabric between its periphery and the periphery of the first mentioned roller, and means for rotating the second take-up roller comprising a ratchet wheel, a slotted arm carrying a pawl engaging the ratchet wheel, and an operating arm adjustable in said slot.

In testimony whereof, we hereunto affix our signatures.

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