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H. W. FOLSOM.

FABRIC SLITTING DEVICE FOR KNITTING MACHINES.

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NO MODEL.

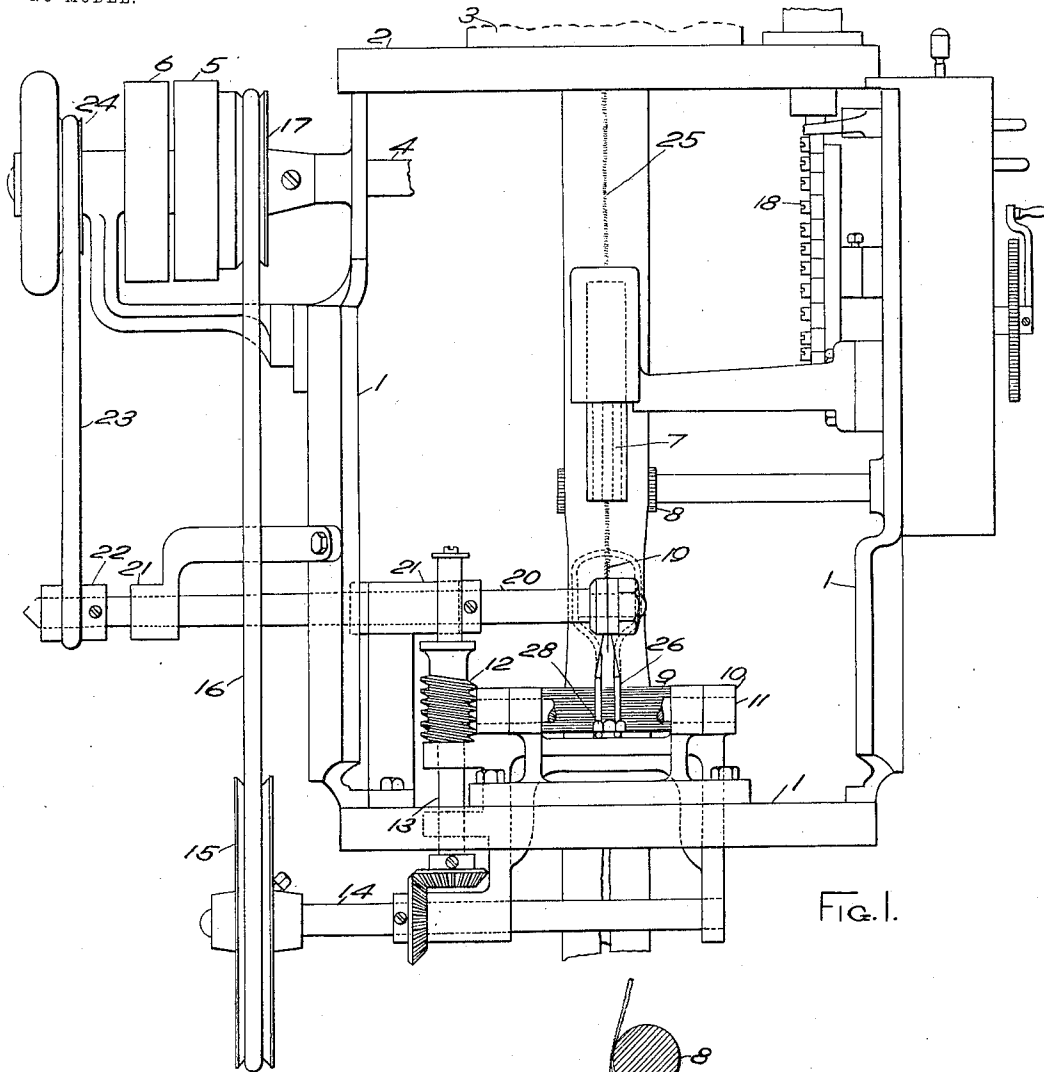


FIG. 1.

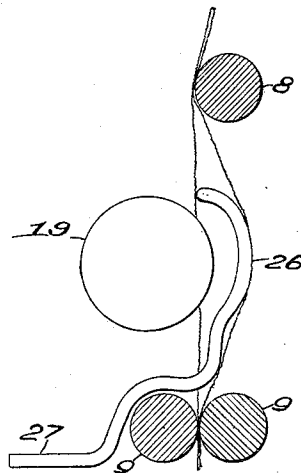


FIG. 2.

WITNESSES
Edwin H. Samuels
Farnum F. Dorsey.

INVENTOR
Henry W. Folsom
by his Attorneys
Phillips Van Rensselaer Fish.

UNITED STATES PATENT OFFICE.

HENRY W. FOLSOM, OF LOWELL, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO McMICHAEL & WILDMAN MANUFACTURING COMPANY, OF NORRISTOWN, PENNSYLVANIA.

FABRIC-SLITTING DEVICE FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 770,633, dated September 20, 1904.

Application filed December 15, 1902. Serial No. 135,223. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. FOLSOM, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Knitting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in fabric-slitting devices for knitting-machines, and more particularly to an attachment for such machines for cutting or slitting the fabric longitudinally.

Knitted fabric is now commonly slitted longitudinally by hand in cutting it up for use in making articles therefrom, one needle being frequently omitted for the purpose of forming a weakened portion to guide the operator in cutting. This is especially important in cutting up tubular fabric for use in the manufacture of undergarments. The cutting, however, has been dependent upon the skill of the operator and more or less waste and injury to the fabric has been occasioned by the deviations of the line of cut from the correct line.

The object of the present invention is to provide a knitting-machine with a cutter, so that as the fabric is knit it is cut along a longitudinal line.

To the above end the present invention consists in the devices and combinations herein-after described and claimed.

In the accompanying drawings, illustrating the preferred form of the invention, Figure 1 is a rear elevation of so much of the machine as is necessary for an explanation of the invention; and Fig. 2 is a sectional side elevation showing the coöperative relation of the tube-distender, cutter, and take-up rolls.

The knitting-machine of the drawings comprises a frame 1, mounted upon the usual legs (not shown) and carrying the plate 2, which supports the knitting means 3, being in this case the usual needles and needle-cams and

their operating mechanisms, the main shaft 4 carrying the usual fast pulley 5 and loose pulley 6, the porcupine-roll 7, the coöperating guide-roll 8 for holding the fabric in engagement with the porcupine-roll, and the take-up mechanism consisting of the take-up rolls 9, which are mounted in bearings in the take-up frame 10, pivoted at 11 to supports from the frame 1, said rolls being actuated by means of a worm-wheel mounted on the shaft of one of the rolls, which meshes with the worm 12 on the vertical shaft 13, carried by said take-up frame 10, said shaft being actuated by bevel-gears from the shaft 14, which carries the pulley 15, driven by the belt 16 from the pulley 17 on the main shaft 4 of the machine. The machine is provided with the usual pattern-controlling mechanism 18.

The machine as thus far described is the well-known McMichael and Wildman rib-cuff machine for knitting a tube of cuffs for undergarments. To this machine has been applied a rotary cutter 19, secured upon the shaft 20, mounted in suitable bearings 21, projected from the frame of the machine and carrying the pulley 22, by which it is driven through the means of the belt 23, running to the pulley 24 on the main shaft 4 of the machine. The cutter 19 engages the tube of fabric between the knitting means and the take-up being positioned to engage the middle of one side of the flat tube as said tube approaches the take-up rolls. The tube is preferably weakened along the longitudinal line 25, which is engaged by the cutter, by the omission of a needle from the needle-cylinder. The cutter lying in the path of movement of the fabric is constantly in engagement therewith, so as the fabric passes it is divided along a longitudinal line.

It is within the purview of the present invention to have the cutter sever the fabric into two strips; but it is preferred to employ a tube-distender 26, which is located in the tube in such position as to distend the side thereof opposite the cutter and hold it out of engage-

ment therewith. The tube-distender is provided with a shank 27, consisting of two pieces of wire which pass downward from the distender out through the slit made by the knife and which are secured to the take-up frame 10 by means of the bolt 28.

The tube as it is knit by the knitting means passes down past the porcupine-roller and the cooperating guide-roller 8 and is then opened or distended by the tube-distender and slitted or cut longitudinally along the weakened portion—i. e., along the line indicated by the omission of the needle from the needle-cylinder and thence between the take-up rolls 9, which discharge it from the machine.

While the present invention has been described in connection with a rib-cuff machine for knitting a tube of cuffs, it is to be understood that its use is not limited to such machine, as the invention may be embodied in other types of circular and flat machines without departure therefrom.

It is preferred to employ a rotary cutter driven from a suitable source of power; but the invention, viewed in its broader aspect, contemplates the employment of any suitable form of cutter. It is also preferred to locate the cutter in a fixed position with relation to the knitting means—that is, so that it is maintained fixed with relation to the needles—as under these conditions the cutter divides the fabric along a wale thereof without liability of accidental or occasional variations therefrom.

While it is considered to be desirable and essential to the best embodiment of the invention that the cutter should operate upon the tube while it is stretched taut between the knitting means and the take-up, because under such conditions the cutter will be more efficient and certain in operation, it is not desired to limit the invention, except where otherwise specifically so stated in the claims, to such specific form thereof.

It is to be noted that the tube-distender being mounted upon the take-up frame in the illustrated embodiment of the invention partakes of the vertical motions thereof and therefore that it is necessary that it should be so shaped and located with relation to the rotating cutter as not to come in contact therewith during such motions and also that such tube-distender may be supported from any other convenient portion of the machine.

Having thus described the invention, what is claimed is—

1. A knitting-machine, having, in combination, knitting means, and a cutter located in a fixed position with relation to the knitting means for cutting the fabric longitudinally, substantially as described.

2. A knitting-machine, having, in combination, knitting means, a take-up and a cutter between the knitting means and the take-up located in a fixed position with relation to the

knitting means for cutting the fabric longitudinally, substantially as described.

3. A knitting-machine, having, in combination, means for knitting the fabric having a longitudinally-weakened portion, a take-up, and a cutter between the knitting means and the take-up located in fixed position to engage such weakened portion for cutting the fabric, substantially as described.

4. A knitting-machine, having, in combination, tube-knitting means, and tube-cutting means located in a fixed position with relation to the knitting means for cutting the tube longitudinally, substantially as described.

5. A knitting-machine, having, in combination, means for knitting a tube of fabric, having a longitudinally-weakened portion, and a cutter located in a fixed position to engage such weakened portion for cutting the tube, substantially as described.

6. A knitting-machine, having, in combination, tube-knitting means, a take-up and tube-cutting means between the knitting means and the take-up located in a fixed position with relation to the knitting means for cutting the tube longitudinally, substantially as described.

7. A knitting-machine, having, in combination, tube-knitting means, a tube-distender, a tube-cutter operating on one side of the tube to cut the tube longitudinally, substantially as described.

8. A knitting-machine, having, in combination, tube-knitting means, and a rotary cutter for cutting the tube longitudinally, substantially as described.

9. A knitting-machine, having, in combination, tube-knitting means, a take-up, a rotary cutter between the knitting means and the take-up acting to cut the tube longitudinally, substantially as described.

10. A knitting-machine, having, in combination, tube-knitting means, a take-up, a tube-distender, and rotary cutter, said distender and cutter being located between the knitting means and the take-up and operating upon the stretched tube, substantially as described.

11. The combination with means for stretching a tube of knit fabric, of a cutter located in fixed position with relation to the stretching means for cutting the stretched tube longitudinally, substantially as described.

12. The combination, with means for stretching a tube of knit fabric, of a tube-distender and a cutter for cutting the stretched tube longitudinally, substantially as described.

13. A knitting-machine, having, in combination, means for knitting the tube of fabric, having a longitudinally-weakened portion, a take-up, and a cutter between the knitting means and the take-up located in a fixed position to engage such weakened portion for cutting the tube, substantially as described.

14. The combination, with means for stretching a tube of knit fabric, of a tube-distender and a cutter located in fixed position with re-

lation to the stretching means for cutting the stretched tube longitudinally, substantially as described.

15. A knitting-machine, having, in combination, knitting means and a cutter for cutting the fabric longitudinally located and supported in the path of movement of the fabric away from the knitting means, substantially as described.

16. A knitting-machine, having, in combination, tube-knitting means and a cutter for cutting the fabric longitudinally located and supported in constant engagement with the fabric as it passes away from the knitting means, substantially as described.

17. A knitting-machine, having, in combination, tube-knitting means, a tube-cutter,

and a tube-distender for holding one side of the fabric away from the cutter, substantially as described.

18. A knitting-machine, having, in combination, tube-knitting means, a tube-cutter, means for presenting the tube in flat form to the cutter and means for holding one flat side of the fabric away from the cutter, the said cutter operating at right angles to the other flat side of the tube, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY W. FOLSOM.

Witnesses:

F. A. WILCOX,
HORACE VAN EVEREN.