Jan. 29, 1957 D. P. MOORE 2,779,176

PILE FABRIC KNITTING MACHINE

Filed Jan. 4, 1956

Fig. 1.

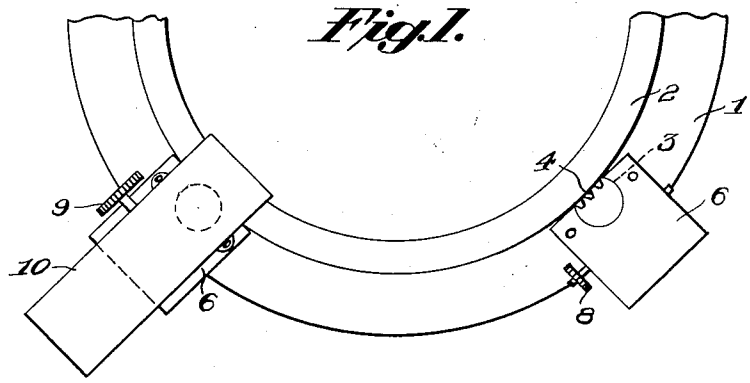


Fig. 3.

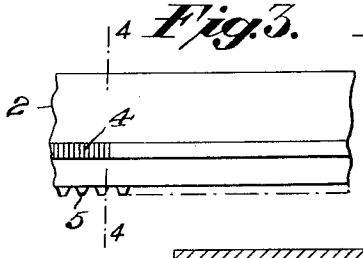


Fig. 4.

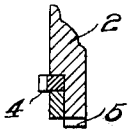


Fig. 2.

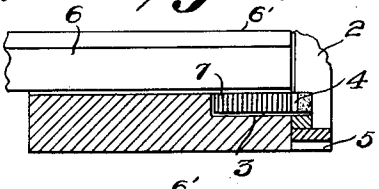


Fig. 5.

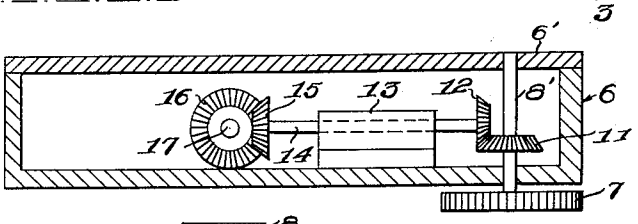


Fig. 7.

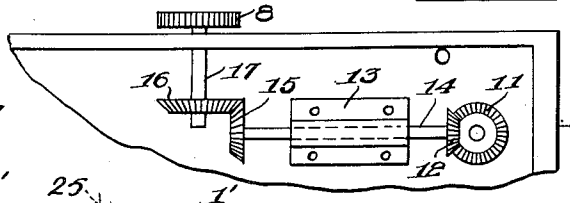
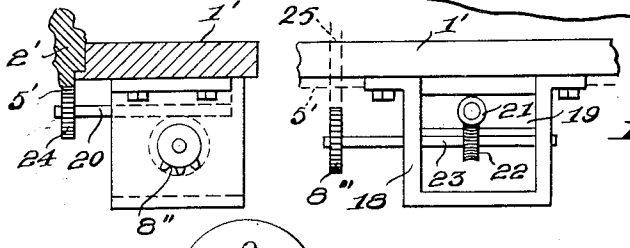


Fig. 6.

Fig. 8.



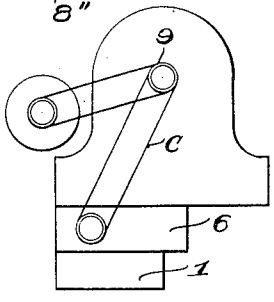


Fig. 1a.

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PILE FABRIC KNITTING MACHINE

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4 Claims. (Cl. 66—9)

This invention relates to improvements in pile fabric knitting machines, one object of the invention being the provision of a practical and useful knitting machine, whereby without changing the cylinder and needles, many weights and types of pile fabric can be made, and many types of fibers can be utilized.

Another object of the present invention is the provision of a machine of this character by means of which the mechanism for feeding fibers to the needles of the rotating cylinder is driven by and in synchrony with the needle cylinder, and which latter is motor or belt driven as desired.

In order that the invention may be understood attention is invited to the accompanying drawings, in which:

Figure 1 is a diagrammatic top view of one half of a rotary cylinder latch needle machine embodying the present invention.

Figure 1ª is a diagrammatic side view of one fiber feeder and the gear mechanism to show the sprocket and chain arrangement.

Figure 2 is a section through the bed plate and needle cylinder of the knitting machine and at the point where the intermediate gear mechanism is attached, and which is shown in full lines.

Figure 3 is a front view of part of the needle cylinder.

Figure 4 is a section on line 4—4 of Fig. 3.

Figure 5 is a longitudinal section of the intermediate fiber feeder drive mechanism.

Figure 6 is a top plan view of one corner thereof with the top removed.

Figure 7 is a section through the knitting machine bed plate with a modified construction of fiber feeder drive.

Figure 8 is a front view thereof.

Referring to Figs. 1–6, of the drawings, the numeral 1 designates a bed plate of a rotary cylinder latch needle knitting machine, in which 2 designates a needle cylinder carried thereby and rotated within the same. Formed in the upper face of the bed plate at selected intervals is a circular recess 3 and through which is presented a portion of the annular gear 4 of the cylinder. A drive gear 5, as usual is carried by the cylinder, and through the cylinder is driven.

An intermediate gear mechanism 6 is secured to the bed plate so that its spur gear 7 enters the recess 3, and engages the gear 4, so that the gear 7 as the cylinder 2 is rotated, it is rotated also. This gear 7 is secured to the lower extended end of the shaft 8', mounted within the receptacle, which has a removable top plate 6'. Rotated by and with the shaft 8', is a bevel gear 11, which in turn meshes with its mate gear 12, to rotate a shaft 14, journaled in a journal 13. At the end of the shaft 14, remote from the gear 12, is a bevel gear 15, which in turn meshes with its mating gear 16, carried by a short shaft 17, and carrying upon its outer end external of the casing 6, a sprocket 8, which through a chain, C drives a sprocket 9, of the fiber feeder 10.

This fiber feeder is firmly, yet, removably attached to

and rests upon its intermediate gear box 6, so that as the needle cylinder is rotated, the fiber feeder is operated in synchrony with the needle cylinder, to feed fibers of different and selected types to the needles during the knitting operation.

The speed at which the fiber feeder is operated can be regulated by merely using a smaller or larger sprocket 8 or 9.

In Figs. 7 and 8, a different type of intermediate drive mechanism is shown and in which, there is hung to the under side of the bed plate 1', adjacent to where a fiber feeder is to be mounted, a bracket 18, having a cross plate 19. A shaft 20 is journaled in the cross plates, and carries a spur gear 24, which meshes with and is driven by a needle cylinder gear 5', of a needle cylinder 2'. Within the bracket 18, a worm gear 21 fast to the shaft 20, meshes with its mating gear 22, fast to a cross shaft 23, while upon the outer end of this shaft is carried a sprocket 8'', which by means of a chain 25, drives a fiber feeder through its sprocket 9.

It will be noted that in either arrangement of intermediate drive, that the mere changing of the sprockets 8, 8'' or 9, will permit the change of speed in the operation of the fiber feeder, and thus regulate the weight of fabric without changing the grain weight of the roving. That is with a 145 grain to the yard roving, a fabric can be made on this machine, weighing from 21 ozs. to the yard to 33 ozs. to the yard. Also by this arrangement, the ratio per inch of peripheral speed of the doffer brush of the fiber feeder with relation to the speed of the needle cylinder per inch can be regulated, as for instance, the ideal speeds of 5 up to 8 inches of the periphery of the doffer brush to 1 inch of the cylinder.

What is claimed is:

1. A pile fabric knitting machine including a bed plate, a rotatable needle cylinder mounted therein, a fiber feeder mounted upon the bed plate, and an intermediate gear mechanism between the needle cylinder and the fiber feeder, and an adjustable sprocket and chain drive interposed between the gear mechanism and the fiber feeder, whereby the fiber feeder is driven from the needle cylinder.

2. A pile fabric knitting machine as claimed in claim 1, wherein the bed plate is provided with a circular recess therein, and the needle cylinder is provided with a ring gear that has some of its teeth exposed in said recess, and wherein the intermediate gear mechanism has a spur gear to enter said recess and mesh with the teeth of the ring gear.

3. A pile fabric knitting machine as claimed in claim 1, wherein the needle cylinder is provided with a drive gear, and the intermediate gear mechanism includes a supporting frame attached to the under side of the bed plate, a shaft mounted therein, a gear on one end engaging the gear of the cylinder, a second shaft at right angles to the first shaft and journaled in the frame, companion worm gears carried by both shafts within the frame, and operative means connecting the second shaft to the fiber feeder, whereby rotation is transmitted from the needle cylinder to the fiber feeder.

4. A pile fabric knitting machine including a bed plate provided with a circular recess in the upper face thereof, a rotatable needle cylinder mounted in the bed plate, a ring gear carried annularly of the needle cylinder and having a portion of the teeth thereof projecting into said recess, a rectangular receptacle mounted upon the bed plate and having a portion thereof above the recess, a short shaft vertically mounted in the receptacle and extending exteriorly of the bottom of the receptacle and into said recess, a spur gear carried upon the extended end of said shaft and in gear with the ring gear of the needle cylinder, a second shaft journaled in the receptacle

and exposed through one side of such receptacle, a gear train mounted in the receptacle and operatively connecting the two shafts, a fiber feeder mounted upon the receptacle for feeding fibers to the needles of the needle cylinder, and drive means between the second shaft and the fiber feeder, whereby the needle cylinder operates the fiber feeder.

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