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CIRCULAR RIB KNITTING MACHINE

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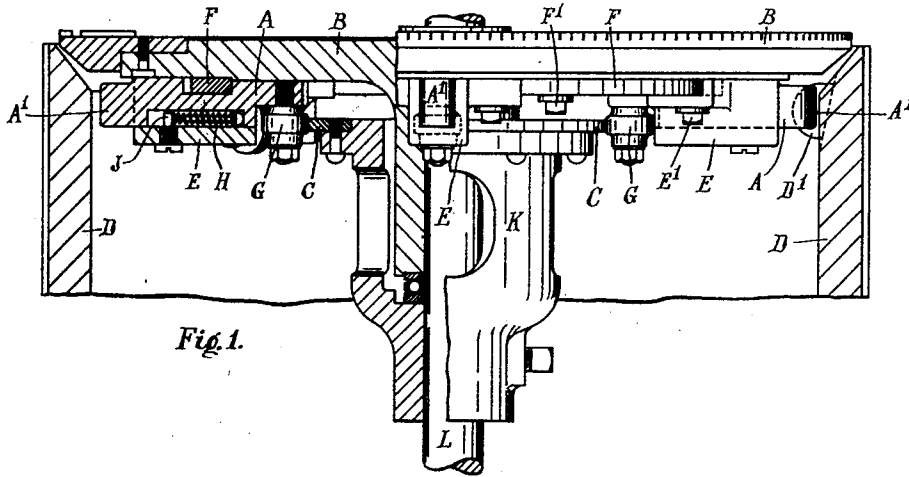


Fig. 1.

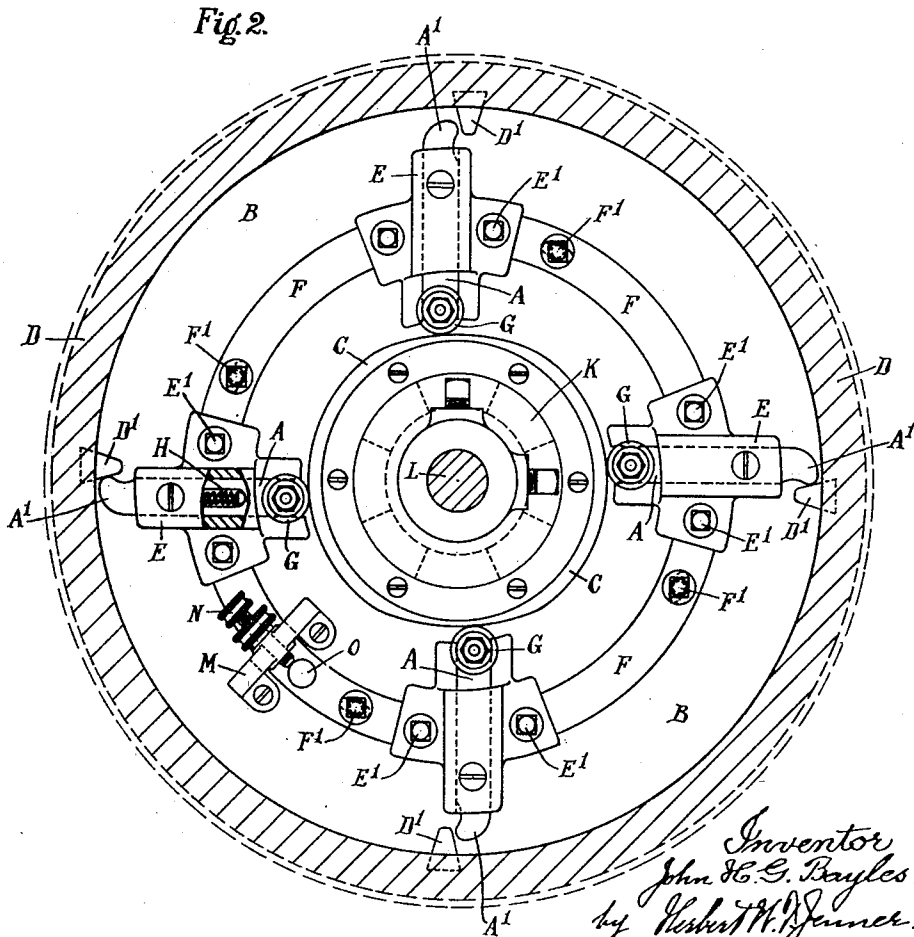


Fig. 2.

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CIRCULAR RIB KNITTING MACHINE

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This invention relates to circular rib knitting machines, and it refers to improvements in the means which are employed for connecting the ribber-dial in such machines, to the needle-cylinder, in order to retain the former in the correct relation to the latter.

The arrangement generally adopted is to provide the interior of the needle-cylinder with abutments, and the underside of the ribber-dial with dogs to engage with the said abutments.

As the work must pass down between these cylinder-abutments and ribber-dial dogs, on its way to the take-up roller, its passage is facilitated by employing movable ribber-dial dogs actuated by a central cam or eccentric, which is adapted to move one half of the ribber-dial dogs up to their needle-cylinder abutments, alternately with the remainder, the change taking place two or more times each revolution.

In one arrangement, the ribber-dial dogs are pivoted, and their outer ends, which engage with the needle-cylinder abutments, are moved circumferentially by a central cam.

In an earlier arrangement, a slide carried diametrically across the underside of the ribber-dial was employed, and its ends formed dogs to engage with abutments in the interior of the needle-cylinder. This slide was actuated by an eccentric arranged to give it a longitudinal movement, and thus move first one end of the slide and then the other up to a needle-cylinder abutment.

Both arrangements described present considerable difficulty in making the adjustments which are necessary when a change is effected in the quality of the work produced.

It will be understood that when working up yarns made of different materials and of different thicknesses, that the fabrics produced in the machine from time to time will vary in thickness, and that it is necessary to adjust the ribber-dial dogs or the needle-cylinder abutments to compensate for the

different thicknesses of fabric, and thus maintain the correct relation between the cylinder and ribber-dial needles. In existing machines the ribber-dial dogs or the needle-cylinder abutments, are each adapted to be independently adjusted for this particular purpose, and it takes up some time. The present arrangement provides means for adjusting all the ribber-dial dogs simultaneously for the purpose described, and saves considerable time in making the necessary adjustment.

According to the present invention, independent radially or approximately radially sliding dogs, preferably four in number, are disposed on the underside of the ribber dial, these dogs are carried on a concentric member which is attached to but is angularly adjustable relatively to the dial, so that all the dogs can be angularly adjusted to the same extent at one operation. The whole of the dogs are actuated by a central cam which acts upon all the four dogs, but it must be understood that in machines of reduced diameter, the number of ribber-dial dogs employed may be reduced to three, owing to the reduced space available.

The invention is more particularly hereinafter described with reference to the accompanying drawings in which—

Fig. 1 is an elevation partly in section, and

Fig. 2 an inverted plan of my improved arrangement for connecting the ribber-dial of a rib knitting machine to the needle cylinder, the essential parts only of the machine being shown.

Like letters indicate like parts throughout the drawings.

In carrying out this invention, independent ribber-dial dogs A adapted to slide radially or approximately radially are disposed on the underside of the ribber-dial B, the number employed is preferably four as

shown in the drawings, they are carried by a concentric member F which is angularly adjustable relatively to the said dial B, and all the said dogs are actuated by means of a central cam C, which rotates if the needle cylinder D is stationary, and is on the other hand stationary if the latter rotates.

The sliding dogs A described are mounted in guide-boxes E, and are formed with rounded outer ends or noses A¹ to engage with the side faces of abutments D¹ fixed in the interior of the needle cylinder D. The side faces of the abutments D¹ are not disposed in radial planes, but are inclined to such planes, so that the radial or approximately radial movements of the dogs A cause their noses A¹, to approach and recede from the said inclined faces of the abutments D¹. The noses of the sliding dogs, and the side faces of the abutments, may however be formed, shaped and proportioned in any other approved way in carrying out this invention.

The guide-boxes E, are not directly secured to the ribber dial B, but are mounted on a concentric member which as shown is a ring F located on the underside of the ribber dial B. This ring F is mounted on a seat provided for it on the underside of the ribber-dial B, and is secured thereto by means hereinafter described, which permit of its being angularly adjusted to a certain limited extent relatively to the dial.

The ribber-dial dogs A are adapted to slide in the guide boxes E, the latter are arranged equal distances apart on the ring F, and the central cam C is adapted to positively move the dogs A outwards, whilst their return movements are effected by means of springs H, which are as shown located in recesses in the lower faces of the dogs and react upon studs J fixed in the guide-boxes E.

The guide-boxes E are secured to the ring F by means of screws E¹, and the holes in the boxes through which these screws pass may be slotted, so as to permit of each guide box E being independently adjusted in the first place, after which no subsequent independent adjustment of the said boxes is necessitated by variations in the thickness of the fabric produced.

In the preferred construction, the inner ends of the sliding dogs A are provided with anti-friction rollers G, which are retained in contact with the central cam C by means of the springs H, previously described.

When four dogs A are provided as shown, the central cam C is adapted to move every other dog up to its abutment, D¹ in the needle cylinder, alternately with the remainder, the change being effected two or more times each revolution, according to the shape of the cam C. When only three dogs A are provided, they may be retracted one

at a time in regular order of succession.

The central cam C is as shown carried by a casing K which is secured on the central shaft L, whilst the ribber dial B is mounted loosely on the said shaft.

The whole of the dogs A are in the present case adjusted simultaneously, by adjusting the ring F on which they are carried, and to conveniently effect this result, the ring F is secured to the ribber dial B by means of screws F¹, the holes in the ring through which these screws are carried are slotted, and the ring can be angularly adjusted to a limited extent by releasing these screws.

In order to assist this operation, a bracket M which is secured to the ribber dial B, straddles the ring F and is provided with a set screw N which acts upon a stud O on the ring F. The set screw N is adapted to positively move the ring in one direction, and if desired, a duplicate of the arrangement described may be provided which is adapted to move the ring F in the reverse direction.

The arrangement entirely obviates the necessity for independently adjusting each of the ribber-dial dogs, and saves considerable time whenever a change is made in the class of work produced in the machine.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a circular rib knitting machine, the combination of the ribber dial, a series of mechanically actuated dogs which are employed for connecting the ribber-dial to the needle-cylinder, means for actuating said dogs, a member on the ribber-dial on which all the dogs are carried said member being angularly adjustable relatively to the dial so that all the said dogs can be angularly adjusted to the same extent at one operation, substantially as described.

2. In a circular rib knitting machine, the combination with the ribber-dial, of an angularly adjustable member on its underside, a series of dogs carried thereby which are adapted to slide radially or approximately radially, a central cam for actuating the said sliding dogs, and abutments on the needle cylinder for the outer ends of the dogs to engage with, substantially as described.

3. A circular rib knitting machine according to the preceding claim 1, in which the sliding dogs are carried in guide-boxes secured on the angularly adjustable member on the dial, substantially as described.

4. A circular rib knitting machine according to the preceding claim 1, in which the sliding dogs are formed with rounded outer ends or noses and the faces of the cylinder abutments associated therewith are inclined to radial planes, substantially as described.

5. A circular rib knitting machine accord-

ing to the preceding claim 2, in which the inner ends of the sliding dogs are provided with anti-friction rollers which are held in contact with the surface of the central cam by means of springs located in recesses
5 in the dogs, substantially as described.

6. A circular rib knitting machine according to the preceding claim 1, in which screws are provided for adjusting the dog carrying member angularly on the ribber-dial, sub-
10 stantially as described.

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