

July 19, 1938.

F. CHATFIELD

2,124,104

KNITTING MACHINE

Filed July 30, 1934

5 Sheets-Sheet 1

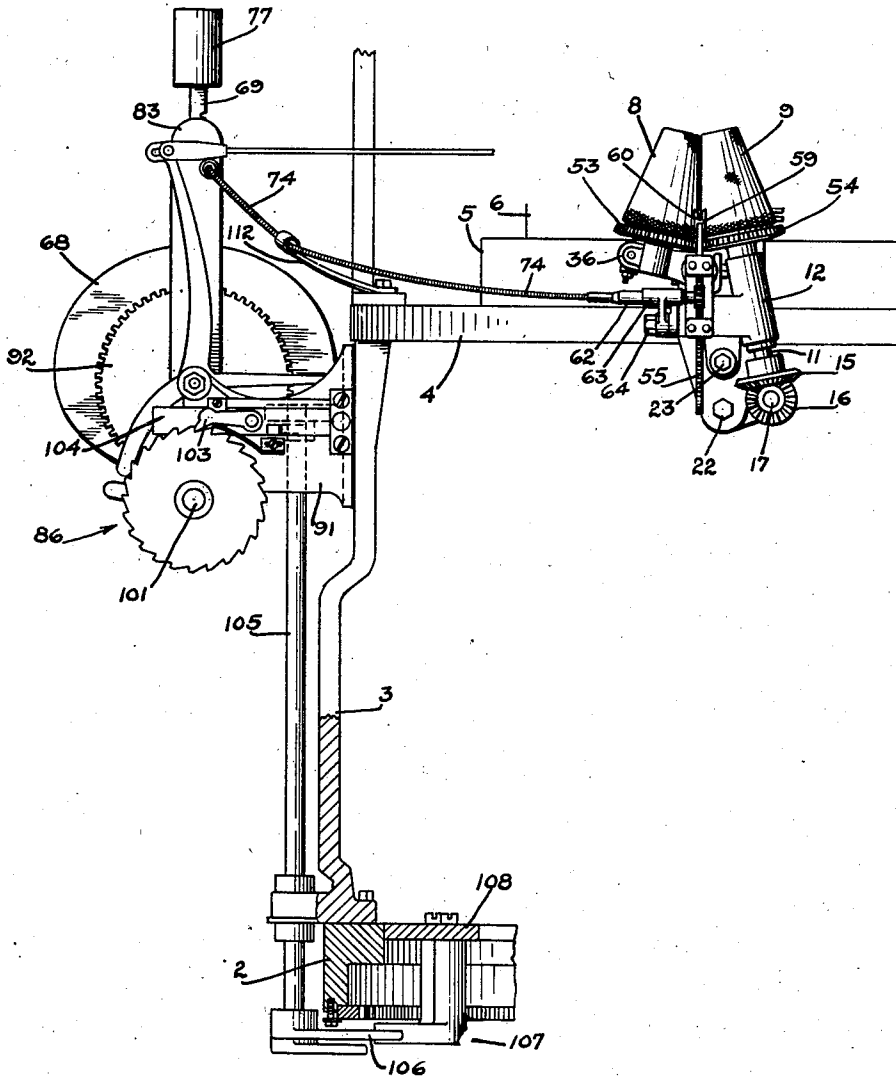


Fig. 1

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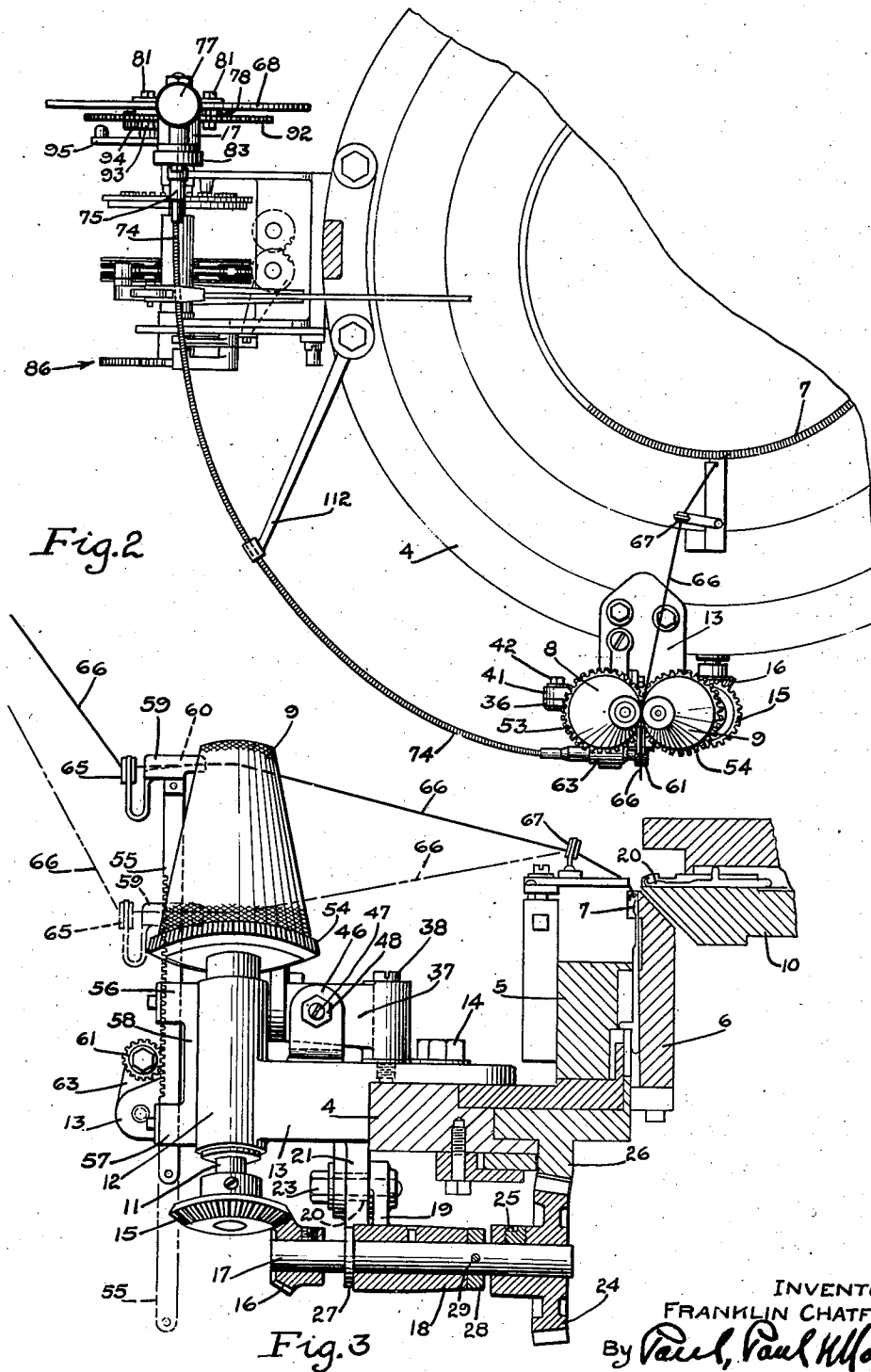
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5 Sheets-Sheet 2



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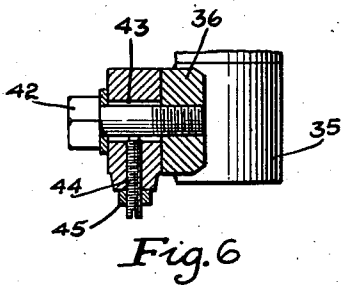
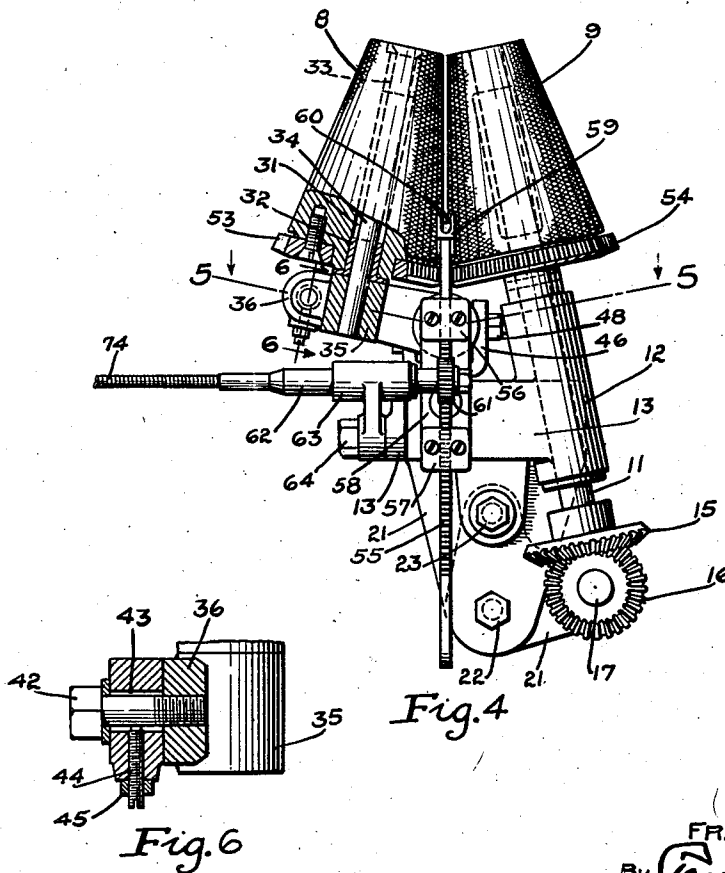
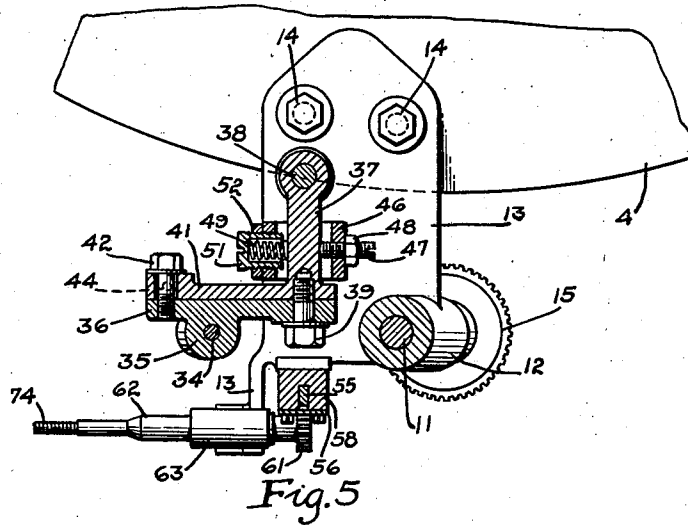
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KNITTING MACHINE

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5 Sheets-Sheet 3



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5 Sheets-Sheet 4

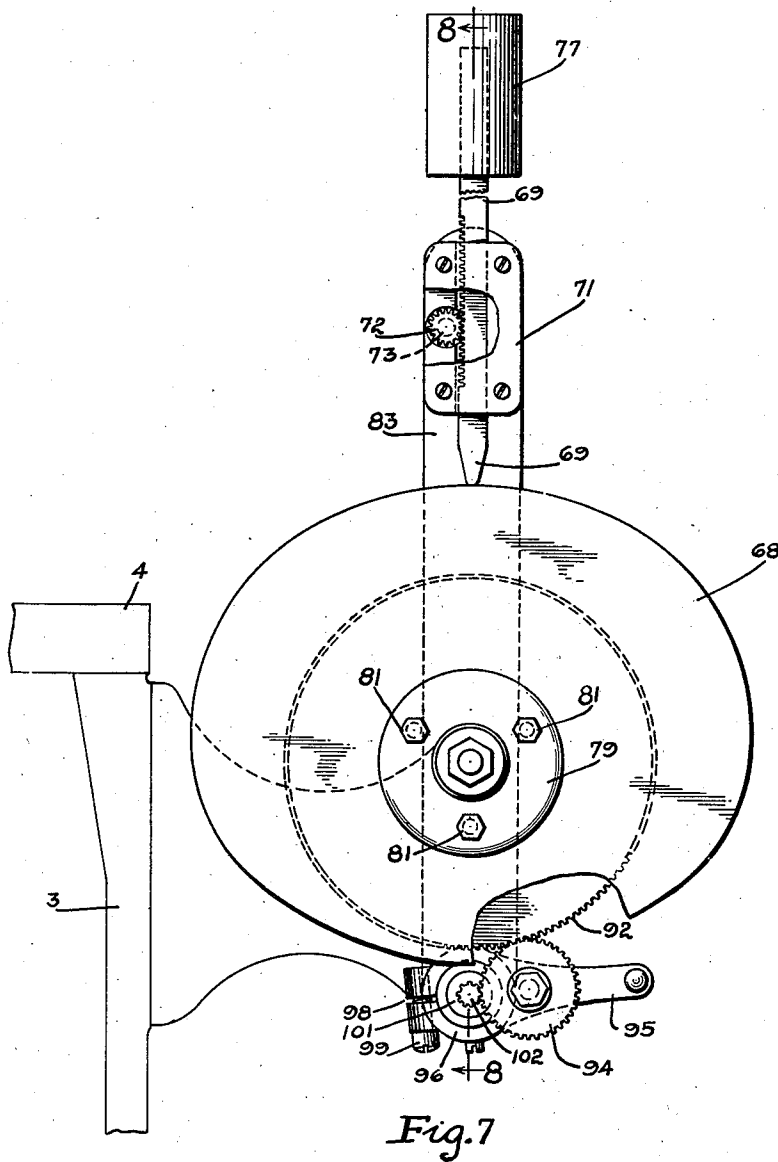


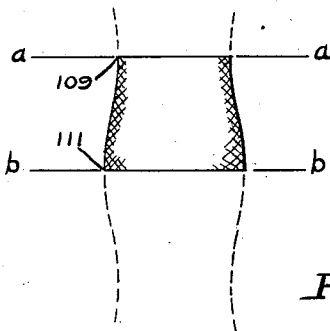
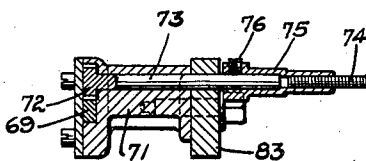
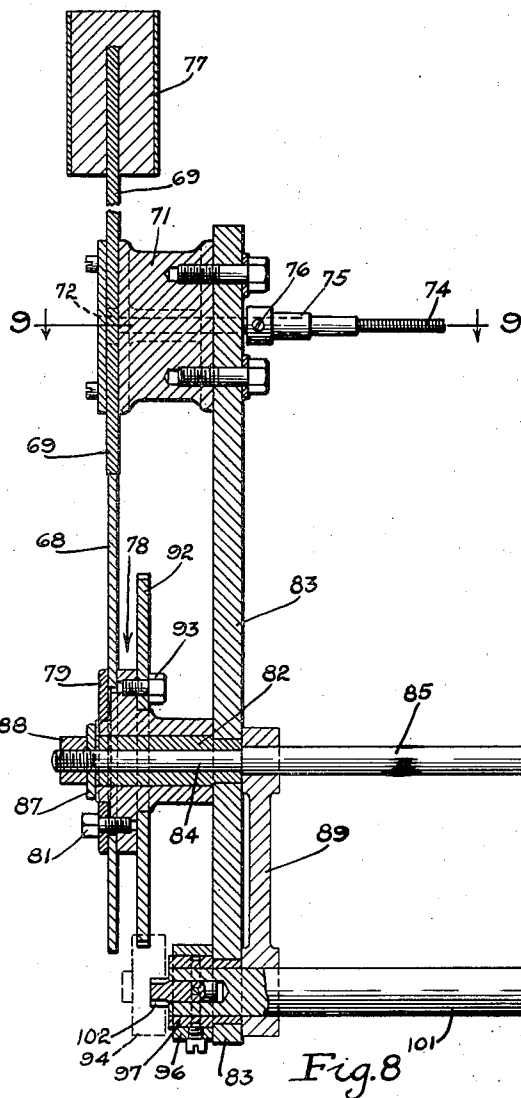
Fig. 7

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UNITED STATES PATENT OFFICE

2,124,104

KNITTING MACHINE

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Application July 30, 1934, Serial No. 737,620

7 Claims. (Cl. 66—132)

This invention relates to new and useful improvements in knitting machines and more particularly to an attachment adapted for use in connection with a conventional type cylinder machine, whereby said machine may be used for knitting garments having different and variable diameters along its length, such as are commonly known as foundation garments, or girdles, which are shaped to substantially conform with, or fit the body of the wearer.

Garments which are shaped to conform with the body of the wearer usually have courses of elastic rubber thread inlaid with certain of the yarn courses, and to shape the garment, the tension of this elastic laying-in thread is varied. When the tension of the laying-in thread is increased, the diameter of the resultant garment becomes relatively smaller and, conversely, when the tension of the laying-in thread is decreased, the diameter of the garment becomes relatively larger. This results because when the tension in the laying-in thread is increased, a correspondingly less amount of said thread is fed to the knitting machine needles per revolution of the needle cylinder, than when the tension thereof is decreased, it being understood that the rotative speed of the needles is usually always constant. Thus, the shape of the garment, diametrically, may be controlled entirely by feeding the elastic laying-in thread to the needles under varying tension, or, in other words, in measured quantities.

I am aware that attempts have heretofore been made to provide apparatus for varying the tension in the laying-in thread delivered to the knitting machine needles, but these have been more or less complicated, and have not been positive in operation. The novel thread-feeding mechanism herein disclosed, presents the utmost in simplicity; is positive in operation; and may be quickly attached to an ordinary knitting machine in a comparatively short period of time.

An object of the present invention, therefore, is to provide a thread measuring mechanism adapted to be attached to an ordinary knitting machine, whereby the elastic laying-in thread is automatically fed to the knitting machine needles in constantly varying amounts, to thereby provide a garment having different and varying diameters along its length, whereby it will substantially conform with, or fit the body of the wearer.

A further object of the invention is to provide a feeding mechanism comprising complementary cones cooperating to feed the laying-in thread

to the knitting needles in measured quantities, and which have a guide for directing the thread thereto, which guide is actuated by a pattern mechanism operatively connected to the usual ratchet mechanism of the knitting machine.

A further object is to provide a thread feeding mechanism comprising two units, one including a pair of complementary cones adapted to feed an elastic rubber thread to the knitting needles, and having a movable thread guide for directing the thread thereto at different locations along the length of said cones, whereby the varying diameters thereof will constantly vary the feeding of the thread to the knitting machine needles, and the other unit or mechanism being operatively connected to the usual automatic ratchet mechanism of the knitting machine, and comprising a pattern cam having a driving connection with the movable guide of the cone unit, whereby the movement of said guide may be predetermined, and its operation controlled entirely by the movement of said cam.

Other objects of the invention reside in the simple and inexpensive construction of the apparatus, as a whole; in the novel construction of the cone unit, whereby it may be completely assembled as a unitary structure independently of the pattern mechanism, and driven independently thereof; in the construction of the pattern mechanism which may be readily connected to the usual ratchet mechanism of the knitting machine and driven thereby, and which comprises a plurality of interchangeable cams adapted to operate a device having a driving connection with the movable guide of the cone unit; said pattern mechanism also comprising a plurality of readily changeable gears whereby the rotative speed of the cam may be varied; and the interchangeability of said cams and also said gears making it possible to quickly readjust the knitting machine for different sizes and shapes of garments; and, in the novel construction of the driving connection between said units, which does not necessitate that the units be mounted upon the knitting machine in a certain definite relation, with respect to each other, thereby greatly simplifying the work of mounting the thread feeding or measuring mechanism upon a knitting machine.

Other objects of the invention will appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings, there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be

understood that the invention is not confined to the exact features shown as various changes may be made within the scope of the claims which follow.

5 In the drawings:

Figure 1 is a view showing a portion of a conventional type knitting machine with my novel thread feeding and measuring mechanism mounted thereon;

10 Figure 2 is a plan view of Figure 1, showing the flexible driving connection between the cone and pattern units;

Figure 3 is an enlarged side elevational view of the cone unit, showing the driving connection between the cones thereof and the usual ring gear of the knitting machine cylinder, and further showing the travel of the movable guide for directing the thread to the tapered cones;

Figure 4 is a front view of the cone unit detached from the knitting machine;

Figure 5 is a sectional plan view on the line 5—5 of Figure 4, showing the yieldable stop for the movable cone and the means provided for relatively adjusting the movable cone with respect to the fixed cone;

Figure 6 is an enlarged detail sectional view on the line 6—6 of Figure 4, showing the micrometer adjustment provided for the movable cone;

Figure 7 is a side elevation of the pattern mechanism showing the device which is operated by the pattern cam to automatically move the thread guide of the cone unit;

Figure 8 is a vertical sectional view on the line 8—8 of Figure 7, showing the general construction of the pattern unit and the preferred manner of connecting it to the usual ratchet mechanism of the knitting machine;

Figure 9 is a detail sectional plan view on the line 9—9 of Figure 8, showing the driving connection between the flexible shaft and the pattern cam; and

Figure 10 is a diagrammatic view showing the outline of the tubular knitted fabric produced by the knitting machine, as a result of the novel attachment herein disclosed.

Knitting machine

In the selected embodiment of the invention here shown, there is illustrated in Figure 1, for purposes of disclosure, a portion of a knitting machine comprising the usual lower base member or ring 2 supported upon suitable legs, not shown in the drawings. Side frame members 3 are shown secured to the base member 2 and support an upper annular member 4, commonly known as the head base. The cam ring 5 is supported upon the head base 4 and within this ring is mounted the usual cylinder 6, in which the vertically disposed knitting needles 7 are mounted, and the dial plate 10 which supports the horizontally disposed needles 20 as partially illustrated in Figure 3.

Cone Unit

The cone unit is shown in Figures 1 to 6, inclusive, and, as best shown in Figure 4, comprises a pair of cones 8 and 9 mounted in angular relation with respect to each other, whereby the gap provided between the peripheries thereof is substantially vertically disposed. The cone 9 is secured to a shaft 11 rotatably supported in a suitable bearing 12 in a bracket 13, having a portion seated upon the head base or annular member 4 of the knitting machine and suitably secured thereto by bolts 14.

The lower end of the shaft 11 has a bevel gear 15, which meshes with a complementary gear 16 secured to a shaft 17 rotatably mounted in a bearing 18, shown provided at one end of a bell crank 19, adjustably secured to a depending extension 21 of the bracket 13 by suitable bolts 22 and 23. The bolt 23 passes through an enlarged aperture 20 in the extension 21, and is received in threaded engagement with the bell crank 19 at the opposite side of said extension 21, whereby when the bolts 22 and 23 are loosened, the bell crank 19 may oscillate about the axis of the bolt 22 within the limits of the clearance provided between the walls of the bolt 23 and the aperture 20, to thereby relatively vertically adjust the position of the shaft 17.

A bevel gear 24 is detachably secured to the opposite end of the shaft 17 by a suitable set screw 25 and meshes with the usual ring gear 26, suitably secured to the knitting machine cylinder 6, as best shown in Figure 3.

As a result of the bell crank 19 being adjustably mounted upon the depending extension 21 of the bracket 13, the bevel pinion 24 may be conveniently adjusted with respect to the ring gear 26 to accurately align it therewith. The pinions 15 and 16, which operatively connect the shaft 17 to the shaft 11, are detachably secured to their respective shafts so that they may readily be removed therefrom and other gears substituted therefor to vary the speed of the cones 8 and 9. To prevent longitudinal movement of the shaft 17, the latter is shown provided with an integral flange 27 adapted to engage one end of the bearing 18, and a collar 28 secured thereto by such means as a pin 29, which engages the opposite end of the bearing 18. By thus supporting the shaft 17 in the bearing 18, the bevel gears 15 and 16 may readily be removed from their respective shafts and other substituted therefor, without disturbing the position of the shaft 17.

The cone 8 is shown provided with an axial bore 31 provided at its ends with suitable bushings 32 and 33, bored to rotatably receive a spindle 34 suitably secured to a hub 35 provided upon an arm 36. The arm 36 is adjustably secured to a complementary arm 37 mounted for pivotal movement upon an upright stud 38 secured to the bracket 13, as best shown in Figure 3. A suitable cap screw 39 secures one end of the arm 36 to the arm 37, and the opposite end of the arm 36 is adjustably secured to a lateral extension 41 of the arm 37 by a suitable cap screw 42. This cap screw, as best shown in Figure 6, passes through an enlarged aperture 43 in the lateral extension 41 of the arm 37, and is received in threaded engagement with the terminal of the arm 36, whereby when the set screw is loosened, the arm 36 may be relatively adjusted with respect to the lateral extension 41, within the limits of the clearance provided between the walls of the aperture 43 and the periphery of the cap screw 42.

It is essential that the gap or contacting portions of the peripheries of the cones 8 and 9 be disposed in parallel relation, as shown in Figure 4, so that the gripping action of the peripheries of said cones upon the thread will be substantially uniform the full lengths of the cones to thereby avoid thread slippage. The peripheries of the cones are preferably knurled or slightly roughened, as indicated in Figure 4 to provide better gripping surfaces for the thread.

To accurately adjust the cone 8 with respect to the cone 9, a small adjusting screw 44 is received in threaded engagement with the outer

end of the lateral extension 41 of the arm 37 and has its inner terminal engaging the set screw 42, as best shown in Figure 6. The outer end of the adjusting screw 44 may be slotted, as shown, to receive a suitable instrument for rotating it, and said screw is normally locked in adjusted position by a suitable lock nut 45. The adjusting screw 44 provides, in effect, a micrometer adjustment for the cone 8, whereby when the cap screws 39 and 42 are slightly loosened, the angular position of the cone 8 with respect to the cone 9 may be accurately adjusted by rotation of the adjusting screw 44, as will readily be understood by reference to Figures 4, 5, and 6.

Means is provided for varying the gap between the peripheries of the cones 8 and 9 to suit the diameter of the thread to be fed by said cones and, as best shown in Figures 3 and 5, may consist of a U-shaped bracket 46 suitably secured to the supporting bracket 13 and having its spaced legs positioned at opposite sides of the arm 37. An abutment screw 47 is adjustably secured in one leg of the U-shaped bracket 46 and has its terminal engaging the arm 37 to thereby limit movement thereof in a direction towards the cone 9. A suitable lock nut 48 secures the abutment screw 47 in adjusted position.

The arm 37 is yieldably held against the abutment screw 47 by a suitable compression spring 49 having one end engaging the arm 37 and its opposite end seated in the bottom of a socket received in an adjusting screw 51, provided in a U-shaped bracket 46. A suitable lock nut 52 secures the spring-retaining screw 49 in position in the bracket 46. By thus supporting the arm 37, the cone 8 is normally retained in a definite fixed relation with respect to the driving cone 9, whereby the thread-receiving gap between said cones is maintained substantially constant. Should the thread being fed between the cones, however, contain a knot, slug, or some other defect, whereby it might be slightly larger in diameter, then when such defect engages the peripheries of the cones 8 and 9, the cone 8 will yield against the compression of the spring 49, and thus permit the defective portion of the thread to pass between the cones 8 and 9 without danger of the thread being broken by the feeding action thereof.

The cone 9, as hereinbefore stated, is fixedly secured to the shaft 11 and is positively driven thereby when the knitting machine is operating. The yieldable cone 8 is driven from the cone 9 by suitable gears 53 and 54, suitably secured to the cones 8 and 9, respectively, as shown in Figure 4. The teeth of the gears 53 and 54 are of a suitable depth to permit relative movement of the cone 8 towards or away from the cone 9, without interfering with the driving connection between said gears.

The means for guiding or directing the thread between the cones 8 and 9 is best shown in Figures 3 and 4, and comprises a rack bar 55 mounted in suitable guides 56 and 57 provided in a small bracket 58 suitably secured to the main supporting bracket 13. The rack 55 is provided at its upper end with a head 59 having a groove 60 therein adapted to receive the thread, as clearly illustrated in Figure 3.

The rack bar 55 meshes with a pinion 61 provided at one end of a stub shaft 62 rotatably mounted in a bearing 63, adjustably secured to the main supporting bracket 13 by a suitable cap screw 64. The cap screw 64 provides means whereby the bearing bracket 63 may be relatively

adjusted to properly position the pinion 61 with respect to the rack 55, as clearly illustrated in Figures 3 and 4. A suitable guide 65 may be secured to the head 59, as shown in Figure 3, to guide the thread 66 into the groove 60 in the head 59. A suitable guide 67 is also provided upon the cam ring adjacent to the knitting machine needles to guide the thread from the cones to the needles, as best shown in Figure 2.

Pattern unit

The pattern unit is shown in Figures 1, 2, 7, 8, and 9, and, as best shown in Figures 7 and 8, comprises a pattern cam 68 whose periphery is engaged by the lower end of a rack bar 69, slidably supported in a head 71 and meshing with a pinion 72 provided at one end of a short shaft 73. One end of a flexible shaft 74 is connected to the shaft 73 by means of a suitable fitting 75, shown provided with a set screw 76 for securing it to said shaft.

Means is provided for constantly holding the lower end of the rack bar 69 in operative engagement with the periphery of the cam 68 and, as shown in Figures 7 and 8, may consist of a suitable weight 77, removably supported upon the upper end of the rack bar, whereby the latter is constantly urged in a downward direction into engagement with the cam 68. It is to be understood, of course, that other means, such as a spring may be used for holding the rack bar in engagement with the cam. A weight, however, has been found preferable, for the reason that the downward force then exerted upon the rack bar is always maintained constant, regardless of the position of the rack bar in the head 71.

The cam 68 is shown mounted upon a hub, generally indicated by the numeral 78, and is detachably secured thereto by a clamping plate 79 secured to the hub by a plurality of cap screws 81. The hub 78 is rotatably supported upon a fixed sleeve 82 secured to a standard or bar 83 which is supported upon the reduced terminal 84 of a rod 85, which rod constitutes a portion of the usual ratchet mechanism of the knitting machine, generally indicated by the numeral 86 in Figure 1. The hub 78 is retained on the sleeve 82 by a washer 87 and a nut 88 received in threaded engagement with the threaded terminal of the reduced extension 84 of the rod 85. The rod 85 is supported in the brackets 89 and 91 of the ratchet mechanism 86, which brackets are secured to one of the side frame members 3 of the knitting machine, in the usual manner, as best shown in Figure 1.

A gear wheel 92 is detachably secured to the hub 78 by bolts 93, and is shown meshing with an intermediate or idler gear 94 carried by an arm 95 having a hub 96 adjustably secured to a sleeve 97, fixedly mounted in the lower end of the bar 83. The hub 96 of the arm 95 is preferably split, as indicated at 98 in Figure 7, and has a lock screw 99 for securing the hub in adjusted position upon the sleeve 97.

The gear 92 on the hub 78 is driven from the usual shaft 101 of the ratchet mechanism 86, by means of a pinion 102 secured to the terminal thereof and meshing with the intermediate gear 94, as best shown in Figure 7. Thus, when the shaft 101 is rotated, rotary motion is imparted to the cam 68 which, in turn, will actuate the rack bar 69 and thereby cause the guide 59 of the cone unit to move vertically with respect to the cones 8 and 9.

The shaft 101, which also is a part of the

usual ratchet mechanism 86 of the knitting machine, is driven by a pawl 103 secured to a bar 104 mounted for reciprocal movement in suitable guides provided upon the bracket 91, and actuated by a rock shaft 105, having at its lower end, an arm 106 adapted to be actuated by a cam member 107 secured to the rotatable plate 108 of the lower portion of the knitting machine, as best shown in Figure 1. The above described mechanism constitutes a part of the usual ratchet mechanism 86 of the knitting machine, and it is therefore thought unnecessary to describe the same in detail, any more than to show the operative connection between the rotatable plate 108 of the knitting machine and the shaft 101.

Operation

The novel mechanism herein disclosed is particularly adapted for feeding an elastic thread, commonly known as the laying-in thread, to the knitting machine needles. The thread is received from the usual source of supply, such as a bobbin, not shown, suitably placed adjacent to the machine, from whence it may pass directly to the guide 65, and through the groove 60 in the head 59 of the cone unit, as shown in full lines in Figure 3. From the groove 60, the thread passes between the cones 8 and 9 and through the eye or guide 67 to the knitting needles 7. The cones 8 and 9 function to measure the thread delivered to the knitting needles, by constantly varying the tension therein, whereby the knitted tube is constantly varying in diameter along its length, as shown in Figure 10. The narrower portions shown at 109 provide the waist line of the garment, and the relatively wider portion shown at 111 provides the hip portion of the garment.

The tube is severed transversely along the lines a-a and b-b, whereby each severed portion will provide a garment, it being understood that the severed edge portions thereof are suitably finished to prevent the material from raveling.

The size and shape of the garment is controlled by the shape of the pattern cam 68, and also by the speed of the cones 8 and 9. The length of the garment between the lines a-a and b-b may be varied by changing the size of the gear 92, shown in Figures 7 and 8. This gear is readily detachable whereby a larger or a smaller gear may be substituted therefor, depending upon the size of the garment. The cones 8 and 9 rotate continually, when the cylinder of the knitting machine operates, because of being directly connected therewith, as shown in Figure 3. The pattern cam 68 operates intermittently, as a result of the ratchet mechanism 86, shown in Figure 1.

When the high point of the cam is engaged with the rack bar 69, the guide 65 of the cones will be in the dotted line position, shown in Figure 3, whereby the thread is fed between the cones at their larger diameters, resulting in more thread being fed to the knitting needles per revolution of the knitting machine cylinder. When more thread is thus fed to the knitting needles for each revolution of the cylinder, there is less tension in the laying-in thread, which results in the relatively larger diameter of the knitted tube, as shown at 111 in Figure 10.

As the cam 68 rotates, and the low point of the periphery of the cam approaches the rack bar 69, the guide 65 of the cones will gradually move upwardly until the lowermost point of the cam engages the rack 69, at which time the guide

60 will be in the full line position, shown in Figure 3, whereby less thread is fed to the knitting machine needles. By thus retarding the feeding of the laying-in thread to the needles, said thread is delivered to the needles under tension, whereby the knitted tube is contracted, as shown at 109 in Figure 10. It will thus be seen that the shape of the garment is controlled entirely by varying the tension in the laying-in thread, as it is delivered to the knitting machine needles, as will readily be understood from the above.

The thread measuring mechanism herein disclosed, is very simple and inexpensive in construction, and may readily be attached to a conventional knitting machine of the cylinder type, without materially altering the construction thereof. The mechanism, as hereinbefore stated, comprises two individual units or mechanisms, which are operatively connected together by the flexible shaft 74, best shown in Figure 2. By thus constructing the two units, they may be completely assembled, independently of each other, and mounted upon the knitting machine, as shown in Figure 2. A suitable guide 112, is preferably provided to support the flexible shaft 74, provided between the two units, as shown in Figure 2.

In the drawings I have shown a mechanism capable of producing a garment shaped to substantially fit the lower portion of the wearer's body, such as the hips and waist line, but it is to be understood that by varying the shape of the cam 68 and changing the gear ratios of the mechanism, that a garment may be produced which will substantially fit the contour of the entire length of the wearer's body, including the breast, waist line and hips.

I claim as my invention:

1. The combination with a knitting machine comprising a frame, a rotary needle cylinder provided with a ring gear having a driving connection with a source of power, and an automatic ratchet mechanism, of a thread feeding unit for feeding an elastic thread to the cylinder in measured quantities, said unit comprising complementary cones tapered in the same direction and suitably geared together for positive operation in opposite directions, a gear drive for the unit, including a pinion meshing with the cylinder ring gear, a guide for directing the thread to the cones, a pattern mechanism remote from said cones and operatively connected to said ratchet mechanism, and a flexible member connecting said pattern mechanism to the thread guide, whereby operation of the pattern mechanism will relatively move said guide to thereby feed the thread between said cones at different locations along their length, whereby the thread is delivered to the cylinder in measured quantities, and said thread guide having a rack engaging a pinion on said flexible member, whereby a positive movement is imparted to the guide.

2. The combination with a knitting machine comprising a frame, a rotatable needle cylinder, and an automatic ratchet mechanism, of an apparatus for feeding an elastic thread to the cylinder in measured quantities, said mechanism comprising a cone unit secured to said frame and having a pair of similarly tapered cones suitably geared together for simultaneous rotation in opposite directions, means for positively driving said cones, a rack bar mounted for movement lengthwise of the cones and having a thread guide secured thereto for directing the thread

to the cones, a pattern mechanism remote from said cones and having an operative connection with said ratchet mechanism, and a flexible shaft connecting said pattern mechanism to said thread guide, whereby operation of said pattern mechanism will relatively move said guide to thereby deliver the thread between said cones at different locations along their length, whereby the thread is delivered to the cylinder in measured quantities.

3. The combination with a knitting machine comprising a frame, a rotary needle cylinder, and an automatic ratchet mechanism, of an apparatus for feeding an elastic thread to the cylinder in measured quantities, said mechanism comprising a unit secured to the machine frame and having cooperating cones for feeding the thread to the cylinder, means for positively driving said cones, a guide for directing the thread to the cones, a detachable pattern cam connected to and driven by said ratchet mechanism, a rack bar having one end engaging the periphery of said cam and meshing with a pinion, and a flexible shaft connecting said pinion to said guide, whereby when the cam is rotated, said shaft will be operated to actuate said guide and thereby deliver the thread to said cones at different locations along their length, whereby the thread is delivered to the cylinder at varying speeds.

4. In a thread feeding mechanism for a knitting machine, a pair of tapered cones having a driving connection with the knitting machine, a guide movable lengthwise of said cones to direct the thread therebetween, a rack bar for said guide, a pattern mechanism comprising a cam suitably driven from the knitting machine, a rack bar mounted for longitudinal movement and having one end engaging the periphery of said cam, and a driving connection between said rack bars, whereby when the cam is rotated, said guide will be moved with respect to the cones to thereby deliver the thread therebetween along their varying diameters.

5. In a thread feeding mechanism for a knitting machine, a pair of cones having a positive driving connection with the knitting machine, a guide for directing the thread between said cones, a rack bar for supporting said guide, a pinion meshing therewith, a pattern mechanism for controlling the operation of the guide comprising a rotary cam driven in timed relation to the knitting machine, a rack bar engaging the periphery of said cam and movable thereby, a pinion meshing with said rack bar, and a flexible shaft connecting together said pinions, whereby operation of said pattern mechanism will control the movement of said guide with respect to the cones.

6. A mechanism for feeding an elastic thread

to a knitting machine in measured quantities, said mechanism comprising a thread feeding unit adapted to be completely assembled before attachment to the knitting machine and comprising cooperating thread feeding cones geared together for positive and simultaneous operation and having a drive for operatively connecting them to the usual ring gear of the knitting machine cylinder, and a guide for feeding the thread between said cones along the length thereof, and a second unit for operating said guide, said second unit being mounted on the knitting machine independently of said first mentioned unit and comprising a cam having a driving connection with the knitting machine, and a rack bar having one end engaging the periphery of the cam, and a pinion meshing with said rack and having a driving connection with the guide on the thread feeding unit, whereby when the rack bar is actuated by said cam, said guide will be moved along said cones, thereby to control the feeding of the thread thereto, and the driving connection between said units being such that the units may be mounted remotely from one another on the knitting machine frame, and at varying angles with respect to one another without interfering with the operation of said driving connection.

7. A mechanism for feeding an elastic thread to a knitting machine in measured quantities, said mechanism comprising a thread feeding unit adapted to be completely assembled before attachment to the knitting machine and comprising cooperating thread feeding cones geared together for positive and simultaneous operation and having a drive for operatively connecting them to the usual ring gear of the knitting machine cylinder, and a guide for feeding the thread between said cones along the length thereof comprising a rack and pinion, and a second unit for operating said guide, said second unit being mounted on the knitting machine independently of said first mentioned unit and comprising a cam having a driving connection with the knitting machine, and a rack bar having one end engaging the periphery of the cam, a pinion meshing with said rack, and a flexible driving member operatively connecting together the pinions on said units, whereby when the rack bar on the second unit is actuated by said cam, said guide will be moved along said cones, thereby to control the feeding of the thread thereto, and the flexible driving member between said units permitting the units to be mounted remotely from one another on the knitting machine frame and at varying angles with respect to one another without interfering with the operation of said driving member.

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