June 6, 1939. S. E. THOMAS 2,161,324

YARN CHANGING MECHANISM FOR CIRCULAR KNITTING MACHINES

Filed Aug. 12, 1938 8 Sheets-Sheet 1

FIG. I.

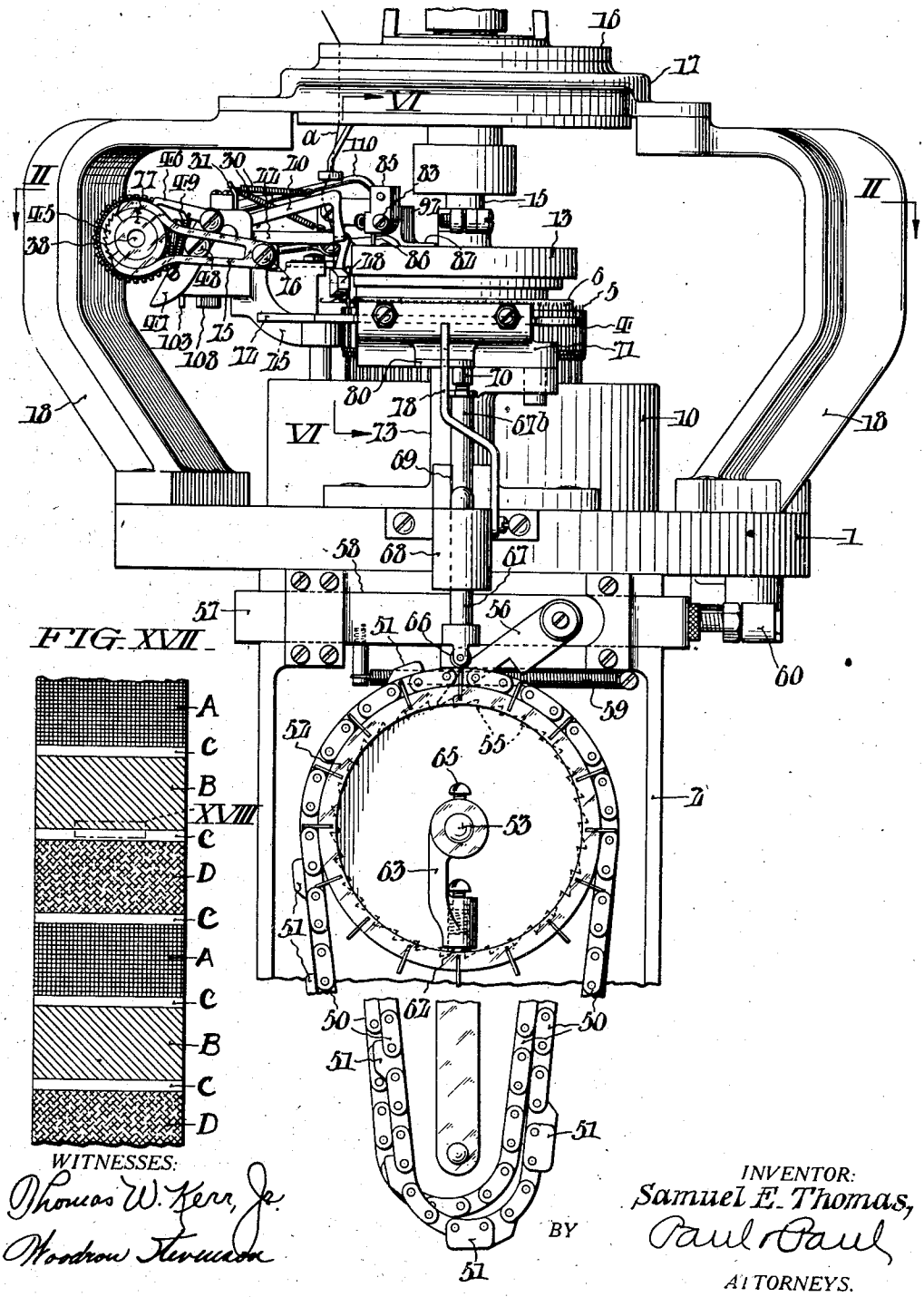


FIG. XVII.

WITNESSES:
Thomas W. Kerr, Jr.
Woodrow Stevenson

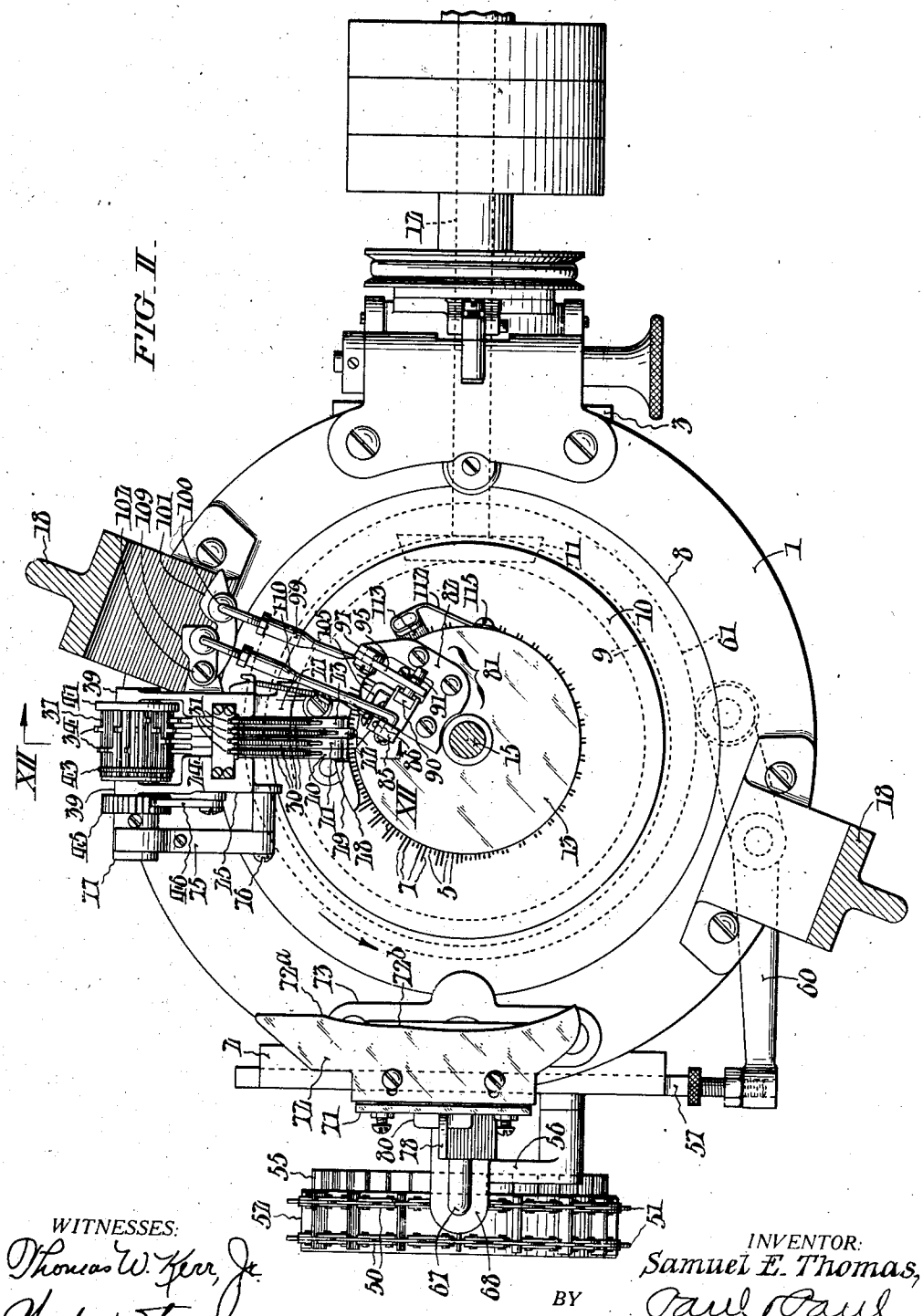
INVENTOR:
Samuel E. Thomas,
BY
Paul & Paul
ATTORNEYS.

June 6, 1939. S. E. THOMAS 2,161,324

YARN CHANGING MECHANISM FOR CIRCULAR KNITTING MACHINES

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FIG. II.



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YARN CHANGING MECHANISM FOR CIRCULAR KNITTING MACHINES

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FIG. III.

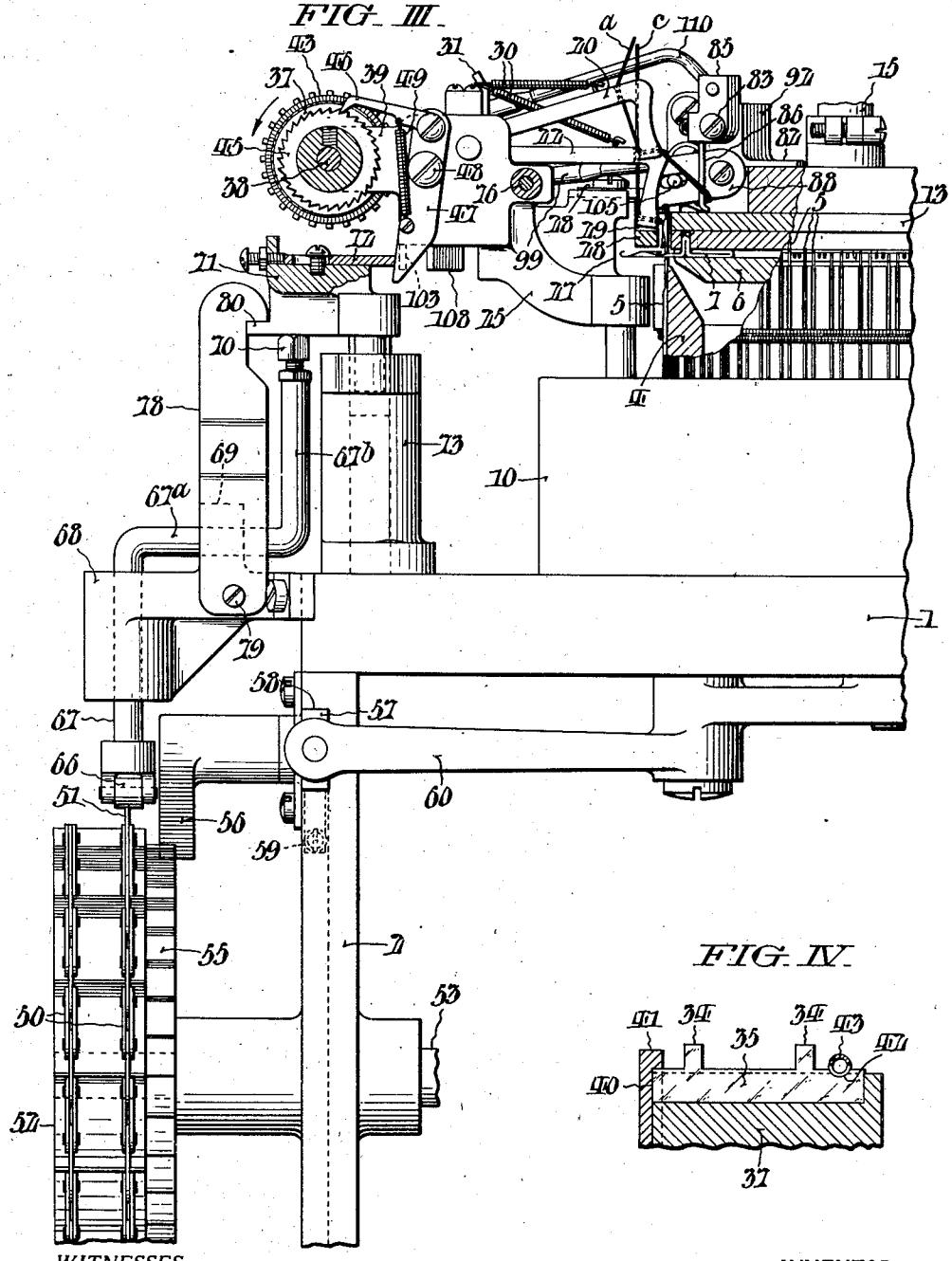


FIG. IV.

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June 6, 1939. S. E. THOMAS 2,161,324

YARN CHANGING MECHANISM FOR CIRCULAR KNITTING MACHINES

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FIG. V.

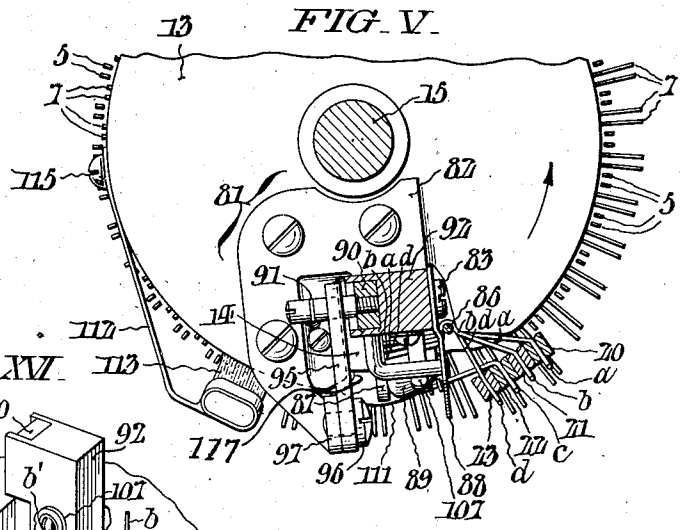


FIG. XVI.

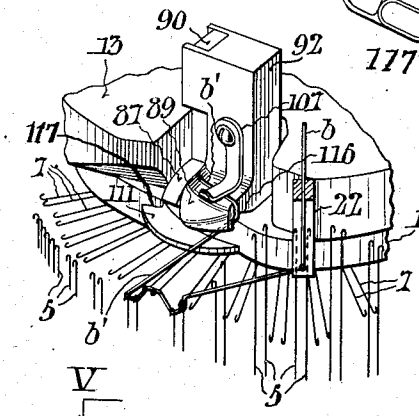


FIG. VI.

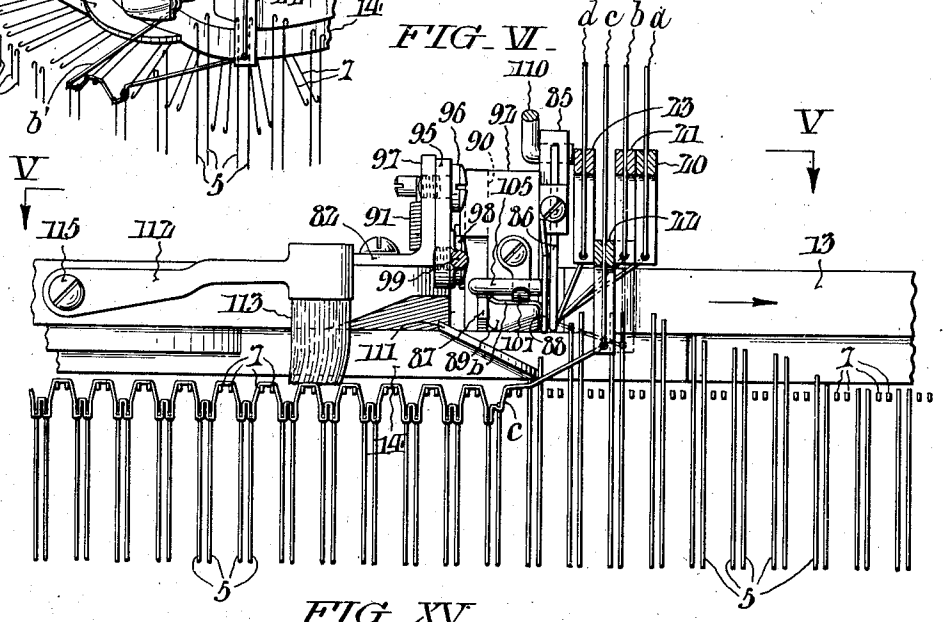
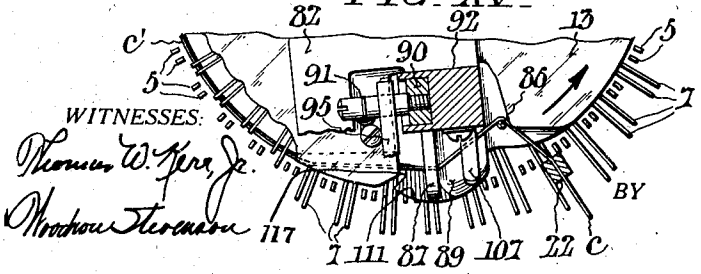


FIG. XV.



WITNESSES:

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YARN CHANGING MECHANISM FOR CIRCULAR KNITTING MACHINES

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FIG. VII

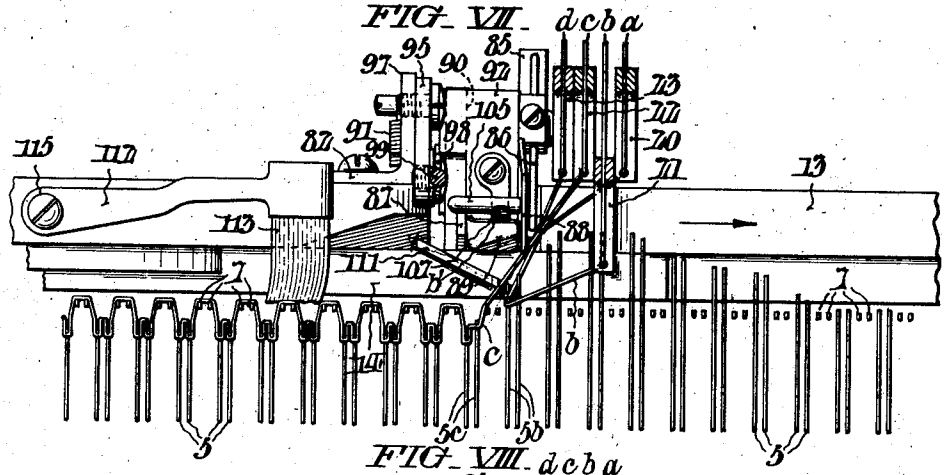


FIG. VIII

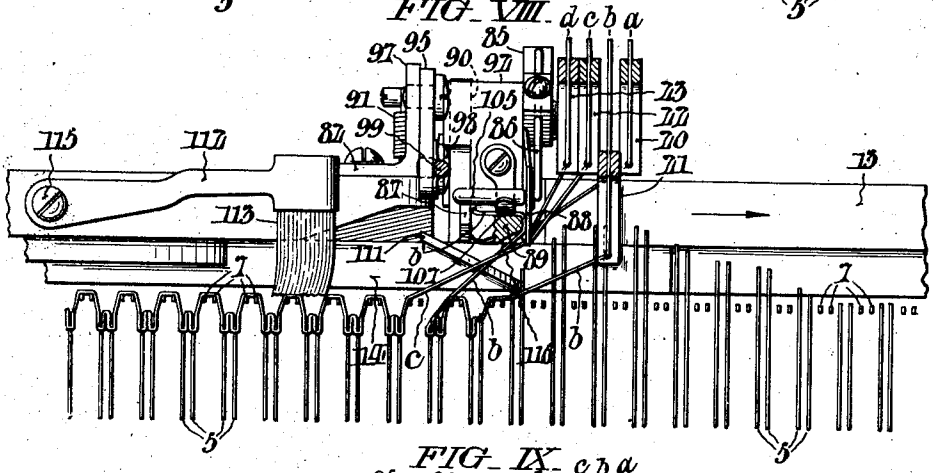
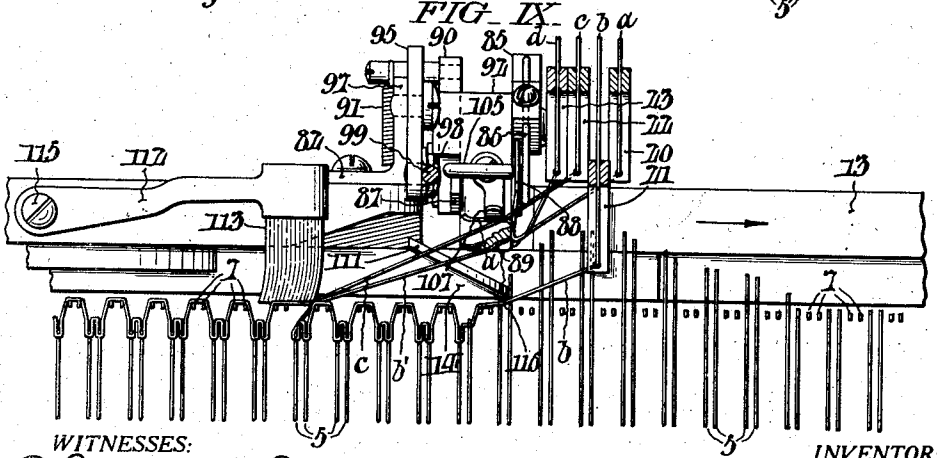


FIG. IX



WITNESSES:

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June 6, 1939. S. E. THOMAS 2,161,324

YARN CHANGING MECHANISM FOR CIRCULAR KNITTING MACHINES

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FIG. X.

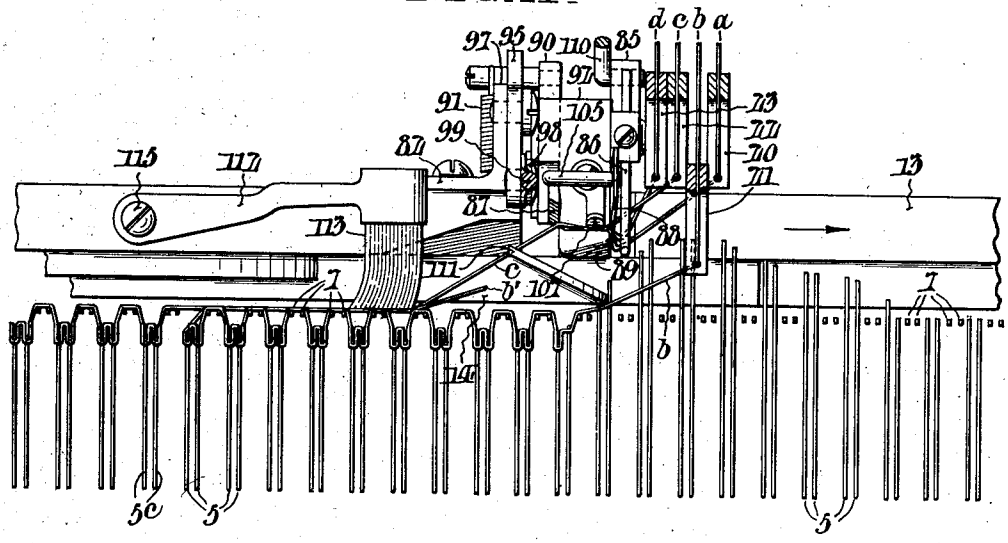
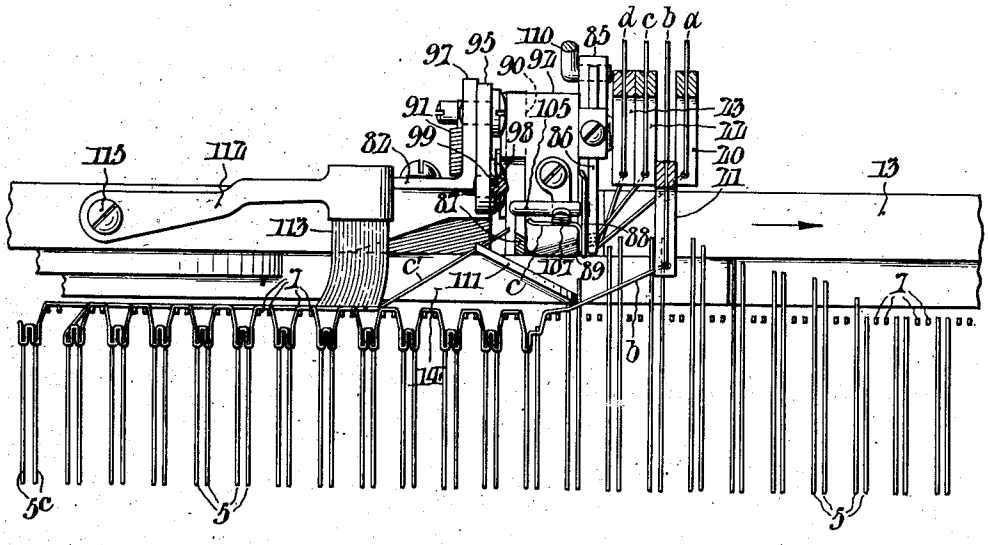


FIG. XI.



WITNESSES:

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June 6, 1939. S. E. THOMAS 2,161,324

YARN CHANGING MECHANISM FOR CIRCULAR KNITTING MACHINES

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FIG. XII.

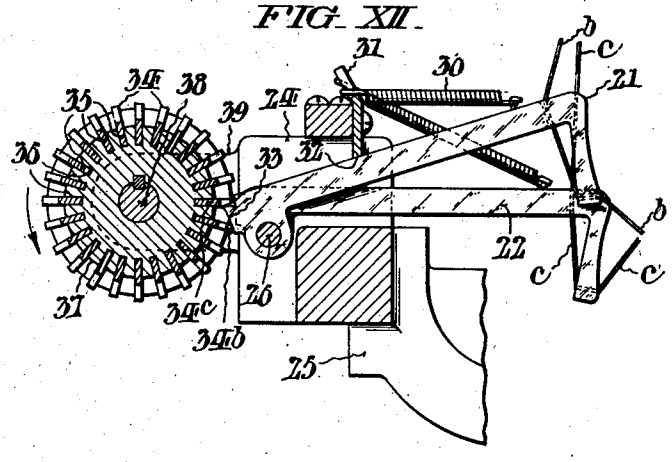


FIG. XIII.

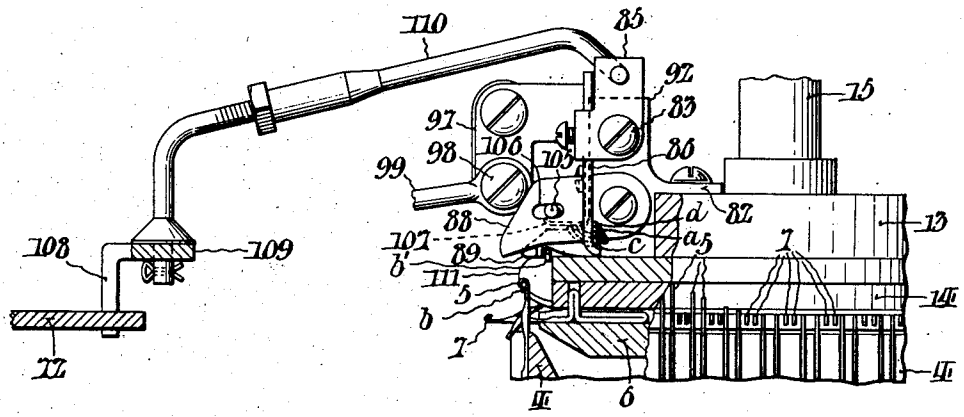
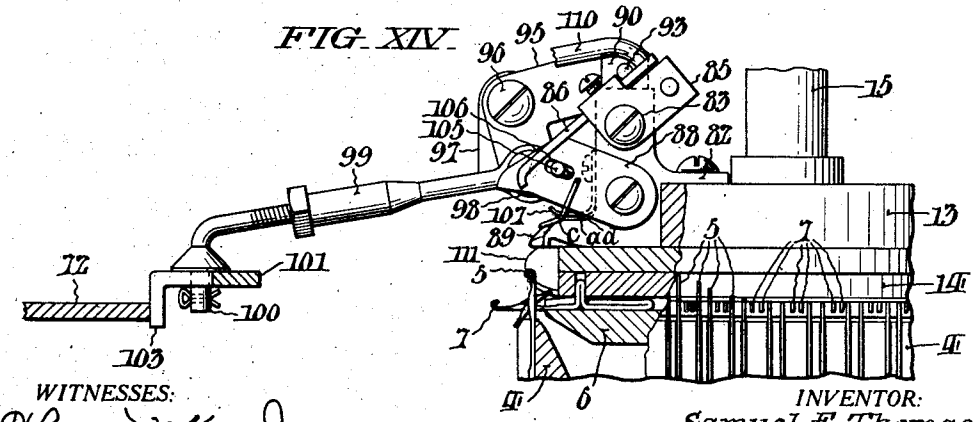


FIG. XIV.



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YARN CHANGING MECHANISM FOR CIRCULAR KNITTING MACHINES

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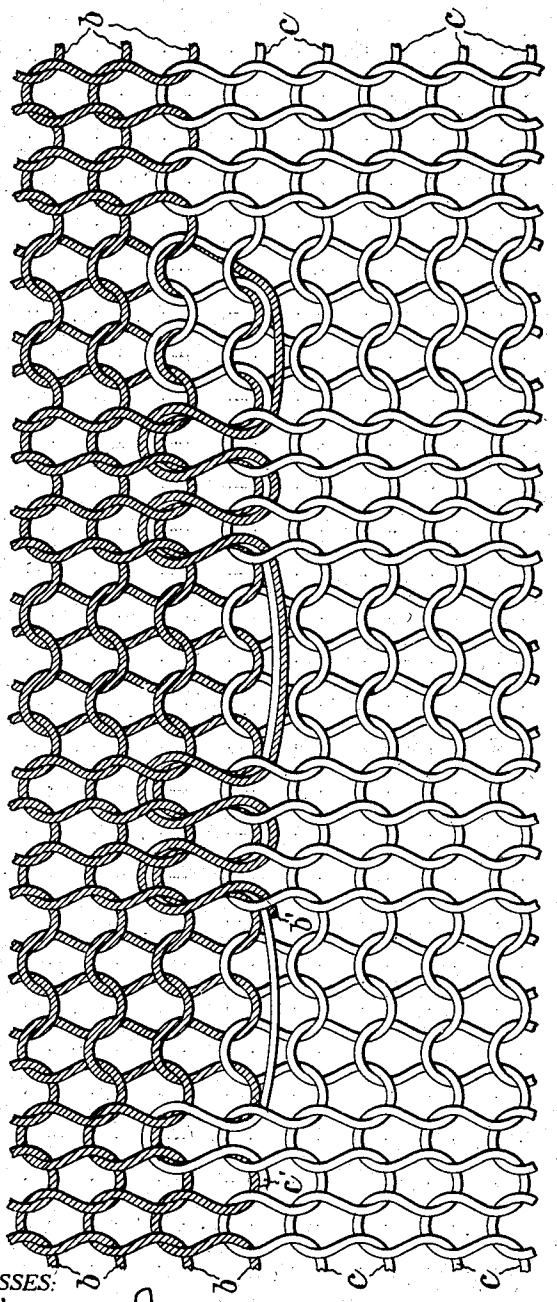


FIG. XVIII

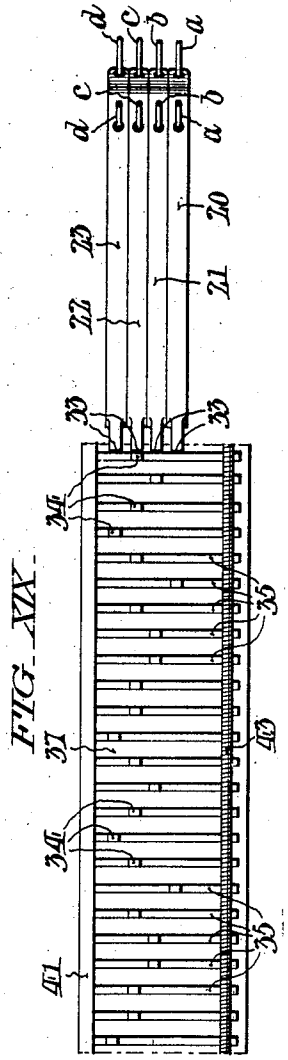


FIG. XIX

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ATTORNEYS.

Patented June 6, 1939

2,161,324

UNITED STATES PATENT OFFICE

2,161,324

YARN CHANGING MECHANISM FOR CIRCULAR KNITTING MACHINES

Samuel E. Thomas, Knoxville, Tenn., assignor to Holston Manufacturing Company, Knoxville, Tenn., a corporation of Tennessee

Application August 12, 1938, Serial No. 224,423

13 Claims. (Cl. 66—140)

This invention relates to yarn changing mechanism for circular knitting machines, and it has reference more particularly to mechanism for changing yarns on circular rib knitting machines to produce horizontal stripe effects in tubular fabrics with yarns of different kinds or colors.

With usual types of yarn changing mechanisms, loose yarn ends (pig tails) are left projecting from the outer side fabric tube at the points where the yarns are introduced into and withdrawn from the knitting. The elimination of these loose ends entails clipping by hand which can be accomplished only upon reversal of the knitted fabric tube subsequent to the knitting, thereby adding very materially to production costs. Moreover, during the knitting, these loose uncontrolled ends are very apt to foul the needles, thereby causing press-offs with serious loss of time and protracted idling of the knitting machines.

The chief aim of my invention is to obviate the above drawbacks, which objective I realize in practice as hereinafter more fully explained, through provision of means whereby the ends of ingoing and outgoing yarns extending from the yarn eyes to a clamp embodied in the yarn changing mechanism are caused to be taken and knitted by one of the two sets of the needles of the machines—preferably by the dial needles so as to be invisible at the front face of the fabric.

In connection with yarn changing mechanism having the above attributes, it is a further aim of my invention to insure, through provision of simple and reliable means such as also fully set forth hereinafter, engagement of the withdrawn yarns by the clamp means after severance; to insure, upon movement of a yarn feed to active position, against concurrent withdrawal of other yarns held by the clamp means; and to ease, as far as possible, ready withdrawal of the yarns from the clamp means with a view toward preventing chafing.

Other objects and attendant advantages will appear from the following detailed description of the attached drawings, wherein Fig. I is a fragmentary view in end elevation of a circular rib knitting machine embodying my improved yarn changing mechanism.

Fig. II is a plan section of the machine taken as indicated by the arrows II—II in Fig. I.

Fig. III is a fragmentary view of the machine partly in front elevation and partly in axial section.

Fig. IV is a fragmentary detail sectional view of the element which directly controls the yarn feeds.

Fig. V is a detail plan sectional view on a larger scale taken as indicated by the arrows V—V in Fig. VI.

Fig. VI is a view looking as indicated by the arrows VI—VI in Fig. I with the parts developed in a flat plane.

Figs. VII, VIII, IX, X and XI are views like Fig. VI showing successive steps of a yarn changing cycle.

Fig. XII is a detail sectional view on a larger scale taken as indicated by the arrows XII—XII in Fig. II.

Fig. XIII is a fragmentary detail view partly in section and partly in elevation showing means for severing and clamping the yarns.

Fig. XIV is a view like Fig. XIII with the clamping and severing means open ready to receive one of the yarns as it is withdrawn from action.

Figs. XV and XVI are fragmentary views respectively in plan and in perspective showing how the outgoing and ingoing yarns enter and leave the clamping means.

Fig. XVII is a diagrammatic view showing the type of horizontal striped tubular work which can be produced in the machine.

Fig. XVIII is a view showing the texture of the fabric within the confines of a dot-and-dash line rectangle XVIII in Fig. XVII.

Fig. XIX is a view in linear development showing the yarn fingers and in juxtaposition to the elements whereby they are directly actuated.

The knitting machine herein illustrated for convenience of exemplifying my invention is generally of well known construction in that it has a circular bed plate 1 which is supported by side frames 2 and 3. Stationarily mounted on the bed plate 1 in coaxial relation thereto is a cylinder 4 with a series of vertical slots in its peripheral surface for retaining and guiding independent needles 5. In turn coaxially arranged above the cylinder 4 is a circular dial 6 with radial grooves containing a series of independent horizontal needles 7 to cooperate with the cylinder needles 5 in producing circular ribbed fabric in the usual way. In the present instance, the cylinder and dial needles are arranged to form a two to two rib effect. This arrangement is however immaterial insofar as my invention is concerned and may be changed or varied as desired. Journaled for rotation in a concentric annular groove 8 in the top of the bed plate 1 is a gear ring 9 to which is secured the carrier

cylinder 10 for the cylinder needle knitting cams, not illustrated. The gear ring 9 is rotated in the direction of the arrow in Fig. II by an intermeshing pinion 11 at the inner end of the drive shaft 12 of the machine, which shaft is suitably journaled in the side frame 3. The dial needles 7 are actuated concurrently with the cylinder needles by suitable cams including a stitch cam 14 on a carrier disk 13 which rotates with the cylinder needle cam carrier 10 and which is superposed axially upon the dial 6. The cam disk 13 is affixed to the lower end of a shaft 15 depending from a plate 16 which is rotatively sustained in a bearing member 17 supported by a pair of side standards 18 from the bed plate 1 of the machine.

The yarn changing mechanism with which the present invention is more especially concerned includes a plurality of guide fingers of which there are four in the present instance, designated 20—23, for directing individual yarns *a*, *b*, *c*, and *d* of different kinds or colors to the needles 5 and 7 of the knitting machine. The yarn fingers 20—23 are arranged side by side within a recess or gap 24 in a bracket 25 secured to the rotating knitting cam carrier 10, and have the capacity for independent up and down pivotal movement about a fulcrum pin 26 extending crosswise of said gap. Secured to an inward extension 27 of said bracket 25 is a needle latch guard 28 having a central recess 29 in which the free ends of the yarn fingers are accommodated when the latter are lowered to active position, see Figs. II and III. Individual helical tension springs 30 connected at opposite ends respectively to the fingers 20—23 and to a fixed anchorage 31 on the bracket 25 tend to urge said fingers upward to idle position against a stop ledge 32 afforded by the spring anchorage, see Fig. XII. Adjacent the common fulcrum 26 the fingers are formed with cam projections such as instanced at 33 in Fig. XII, which lie in the path of lugs 34 on jacks 35 mounted in longitudinal peripheral grooves 36 of a selector drum 37. As shown, the drum 37 is keyed to a shaft 38 whereof the ends are journaled in rearwardly extending bearing arms 39 on the bracket 25. It will be noted that the lugs 34 are diversely positioned on the jacks 35 and that said jacks are arranged on the drum 37 in accordance with the pattern which is to be produced in the work knitted by the machine. In order to make pattern changes possible, the jacks 35 are removably mounted in the drum 37 each with one of its ends engaged in a circumferential recess 40 in the inner face of a flange 41 at one end of said drum, and each with a notch 42 at its opposite end engaged by a spring band 43 which encircles the opposite end of said drum. By intermittent rotative shifts of the drum 37 in the direction of the arrow in Fig. III, it will be seen that in accordance with their location, the lugs 34 of the jacks 35 will coact with the cam ends of the respective guide fingers 20—23 and cause them to be individually lowered to active position. With the jack lugs 34 arranged as described, a previously active yarn finger will be freed to the action of its spring and swung to its idle position as a new finger is lowered to take its place. Intermittent rotative shifts are imparted to the drum 37 through picking of a ratchet wheel 45 on the drum shaft 38 by a pawl 46. The pawl 46 is pivotally connected to an arm 47 fulcrumed at 48 on the bracket 25 and is yieldingly held in engagement with the teeth of the ratchet wheel by a spring 49 having teeth corresponding in number to the jacks in the drum 37. The picking of the drum 37 is governed by means including a pattern chain 50 with special high links 51, said chain being trained about a sprocket wheel 52 rotatively free on a stud 53 projecting horizontally outward from the frame 2 of the machine. Connected to the sprocket wheel 52 is a ratchet wheel 55 which is engaged by a pawl 56. As shown in Figs. I—III the pawl 56 is pivoted to a bar 57 guided for endwise sliding movement in a transverse slot 58 in the frame 2 of the machine in opposition to the pull of a spring 59 (see Fig. I). The bar 57 is actuated through the medium of a roller arm 60, by a cam projection 61 on the gear ring 9 so that the ratchet wheel is picked once for each rotation of the machine. Overrunning of the sprocket wheel is prevented by a friction brake member 62 carried by an arm 63 secured by a set screw 65 to the stud 53. As a consequence of the picking of the ratchet wheel 55, a new link of the chain 50 is presented during each rotation of the machine beneath a roller 66 at the lower end of a bar 67 guided for up and down movement in a bracket 68 attached to the edge of the bed plate 1. As shown in Figs. I—III, the rod 67 is bent horizontally inward as at 67*a* for guidance in a clevis 69 at the top of the bracket 68 and then upward as at 67*b*. At its upper end, the rod 67 carries an adjustable screw stud 70 whereof the head engages the underside of a horizontal supporting member 71 whereto is secured, with capacity for in and out adjustment relative to the axis of the machine, a cam plate 72. The member 71 is confined to vertical movement in a guide bracket 73 bolted to the top of the bed plate 1. Normally, the cam plate 72 is positioned at a level below the bottom end of the pawl lever 47 as shown in Fig. I, but when moved by passage of a high link 51 on the pattern chain 50 beneath the roller 66 on the rod 67, it is elevated to the position shown in Fig. III, so that during a current rotation of the cam shell 10, said pawl lever encounters the cam and is actuated by it, with the result that the jack drum 37 is rotatively shifted to effect an interchange of yarns. Overthrow of the drum 37 is prevented by the action of an adjustable brake 75 (Figs. I and II) which is fulcrumed at 76 to one side of the bracket 25 and which clampingly engages the hub 77 of the ratchet wheel 45 at the corresponding end of the drum shaft 38. A hook member 78 pivoted at 79 on the bracket 68 coacts with a lateral projection 80 of the cam rest 71 to limit the upward movement of the latter.

Mounted on the dial needle cam carrier 13 in contiguous relation to the yarn changing mechanism is a yarn severing and clamping means comprehensively designated in the drawings by the numeral 81. As shown, this yarn severing and clamping means 81 includes a bracket 82 whereto is pivoted at 83 a carrier block 85 for a booster finger 86 which, as later on more fully explained, engages the individual yarns as they are withdrawn from action and pushes them inwardly between movable severing and clamping members 87, 88 and an outwardly-extending portion 89 of the bracket 82 which affords complemental fixed severing and clamping edges. The movable severing blade 87 is attached to a slide 90 which is subject to the downward pull of a spring 91 confined to vertical movement in an upstanding guide projection 92 on the bracket 82. At its upper end, the slide 90 has a pivotal connection 93 with the horizontal arm of a bell crank lever 95 fulcrumed at 96 to another pro-

jection 97 on the bracket 82. The pendant arm of the bell crank lever 95 on the other hand is pivotally connected at 98 to one end of a lengthwise adjustable link 99 which, in turn, is pivotally connected at 100 to a horizontal arm 101 fulcrumed at 102 to the jack drum bracket 25, see Fig. II. As shown in Fig. XIV, the arm 101 has a pendant end portion 103 adapted to engage the inner end of the vertically shiftable cam plate 72 hereinbefore referred to. Projecting laterally from the slide 90 is a stud 105 which engages a slot 106 (Figs. VI, XIII, XIV) in the moving clamping member 88 so that the latter is actuated concurrently with said severing blade 87. The clamping means also includes a fixed clamp element in the form of a spring 107 with an outwardly-extending upwardly rounded end which overreaches the downwardly rounded top surface of the projection 89 of the bracket 82 with attendant formation of a pinch interval to receive the threads pushed into it by the booster 86. The thread booster 86 is also actuated from the vertically-shiftable cam plate 72 whereof the inner edge is encountered by the pendant projection 108 of another finger 109 which is coaxially fulcrumed on the bracket 82 with the cam arm 101 and which, by means of another longitudinally-adjustable link 110, is coupled with the carrier 85 for said finger. Projecting laterally from the edge of the dial needle stitch cam 14 on the carrier plate 13 is an inclined yarn-engaging fin 111; and somewhat further around said plate is an arm 112 which supports a brush 113 whereof the bristles normally bear down upon the dial needles 7. The pressure of the brush 113 may be regulated by adjusting the arm 112 about the screw 115 by which it is secured to the edge of the cam plate 13. In order to better control the outgoing and ingoing yarns incident to an interchange, the projection 89 of the bracket 82 is formed at one side with a smoothly-rounded guide groove as shown at 116 in Figs. VIII, IX and XVI, and the fin at one end with a guide notch as shown at 117 in Fig. XVI.

The operation of my improved yarn changing mechanism is as follows:

Let it be assumed that the yarn finger 22 is in its lowered active position, and still feeding its yarn *c* to the needles 5 and 7 as shown in Fig. VI for the last course of the horizontal stripe C in Fig. XVII, and that the yarn finger 21 is about to be lowered to take its place. The interchange of these fingers is effected through elevation of the cam plate 72 into the path of the pawl arm 47 with attendant shifting of the control drum 37 in the direction indicated by the arrow in Fig. XII, so that the jack lug 34*c* is moved out of engagement with the cam projection 33 on the yarn finger 22 to allow lifting of the latter to idle position by its spring 30, while the lug 34*b* is moved into engagement with the cam projection 33 of the yarn finger 21 to lower said finger into active position against the pull of its spring 30—all as shown in Fig. VII. As a consequence of the interchange, the yarn *b* fed by the finger 21 is caught by a pair of cylinder needles 5*b* (Fig. VII), and the yarn *c* lifted about a pair of cylinder needles 5*c* immediately rearward of the needles 5*b* as considered with regard to the direction of machine rotation. Due to encounter of the fingers 101 and 102 with the cam plate 72 during interchange of the feeds 21, 22, the yarn booster 86 is lifted and the movable knife blade 87 and clamp member 88 moved to open position as in Fig. XIV in readiness to receive the withdrawn yarn *c*. As the finger 102, which is in advance of the finger 101 in the direction of machine rotation, passes beyond the cam plate 72, the yarn booster 86 is moved inward from the position of Fig. XIV to the position of Fig. XIII, and pushes the withdrawn yarn *c* into the interval between the spring clamp 107 and the projection as shown in Fig. X, and at the same time places said yarn in position to be cut and engaged respectively by the movable severing blade 87 and the movable clamp member 88 as the latter snap downward from the position of Fig. XIV to that of Fig. XIII upon subsequent passage of the finger 101 beyond the cam plate 72 as illustrated in Fig. XI. The length or end *c'* of the yarn *c* extending from the last fed cylinder needles 5*c* to the severing blade 87 (Fig. XI) is caught by the brush 113 and thereby caused to be taken and knitted into the fabric by the dial needles. At the same time, the leading length or end *b'* of the newly introduced yarn *b* extending from the first engaging cylinder needles 5*b* to the severing blade 87 is gradually withdrawn from beneath the spring clamp 107 as shown in Figs. VII—X and likewise pressed downward by the brush 113 so as to be caught and knitted into the fabric by the dial needles 7 together with the end *c'* of the yarn *c*. As a result of this, it will be seen from Fig. XVIII, that the ends *c'* and *b'* of the yarns *c* and *b* are relegated to the back face of the fabric and do not therefore mar the appearance of the front face of the latter. By so controlling the yarn ends and causing them to be knitted into the fabric, I moreover effectively preclude the possibility of press-offs and the disadvantages resulting therefrom. During withdrawal of the end *b'* of the newly introduced yarn *b* from beneath the fixed spring clamp 107, the closed movable clamp member 88 operates as an auxiliary clamp to restrain the other yarns against being pulled with said newly introduced yarn from said spring clamp. While the interchange of yarns is rapid, there is an interval during which the old feed 22 is maintained in lowered position with the newly introduced feed to determine a definite amount of overlap of the yarns *c* and *b* during the knitting. This results from the extent and shaping of the curved edge portion of the cam plate 72 extending between the points 72*a*, 72*b*. The amount of overlap may be increased by prolonging the extent of this curved portion of the cam edge, or decreased by shortening it. In being withdrawn from the knitting, the yarn *c* rides up the fin 111 and finally enters the notch 117 in the latter (Fig. XV) with the result that it is restrained against the possibility of being dragged back into the knitting by the needles. The rounded notch 116 in the projection 89 of the bracket 82 on the other hand controls the end *b'*, see Fig. XVI, in such manner that it is pulled out straight from beneath the spring clamp 107 with imposition thereupon of minimum restraint to the avoidance of injury through rupture or chafing. All other interchanges of yarns are effected in precisely the same manner as above explained, and as each new yarn is introduced, the curved edge of the fin 111 acts to press the yarn inward toward the cylinder needles 5 to insure its being taken by said needles. By proper arrangement of the jack lugs in the drum, as shown in Fig. XIX, and allocation of the high links 50 on the chain 51 as shown in Fig. I, it is possible to predetermine with yarns *a*, *b*, *c*, *d*, of different kinds or colors, in the tubular fabric produced by the machine patterns such as exemplified in

Fig. XVII characterized by horizontal stripes A, B, C, and D of varying depth.

It is of course to be understood that my invention is not restricted to the use of four thread feeds, since the number of such feeds may be increased or decreased by decreasing or increasing the thickness of the fingers 20—23 for accommodation within the gap 24 in the bracket 25. It is also to be understood that the number of selector drums 37 may have more or less peripheral grooves, and the ratchet wheel 45 more or less teeth than shown in the drawings. The number of grooves in the drum may moreover be different from that of the teeth on the ratchet wheel. Preferably, however, I employ a drum and a ratchet wheel in which the grooves and the teeth correspond in number as exemplified in the drawings. For the purposes of economy and convenience, I preferably make all the drum jacks 35 initially with eight lug projections separated by slits or saw cuts, and break out such lugs as are not needed according to the stripe pattern which is to be produced.

Having thus described my invention, I claim:

1. In a circular knitting machine having two sets of opposing needles and means to actuate them; yarn changing mechanism comprising a multiplicity of independently-movable yarn feeds, actuating means for selectively interchanging the feeds with predetermination of a definite overlap in the knitting of the threads, means for severing and clamping the yarns as they are withdrawn from action, and means operative to cause the leading and trailing ends respectively of the ingoing and outgoing yarns extending from the clamp means to the interchanged feeds to be knitted into the fabric by one set of the needles.

2. In a circular knitting machine having two sets of opposing needles and means to actuate them; yarn changing mechanism comprising a multiplicity of independently-movable yarn feeds, actuating means for selectively interchanging the feeds with predetermination of a definite overlap in the knitting of the threads, means for severing and clamping the yarns as they are withdrawn from action, means operative to cause the leading and trailing ends respectively of the ingoing and outgoing yarns extending from the clamp means to the interchanged feeds to be knitted into the fabric by one set of the needles, and means to prevent withdrawal of the yarns from the clamp except for the yarn of the substituted feed.

3. In a circular knitting machine having opposing cylinder and dial needles and means to actuate them; yarn changing mechanism comprising a multiplicity of independently movable yarn feeds, means for selectively interchanging the feeds with predetermination of a definite overlap in the knitting of the threads, means for severing and clamping the yarns as they are withdrawn from action, and means operative to cause the leading and trailing ends respectively of the ingoing and outgoing yarns extending from the clamp means to the interchanged feeds to be knitted into the fabric by the dial needles.

4. Yarn changing mechanism according to claim 1, in which the feeds are pivoted side by side on a common axis, and in which the actuating means includes a drum having variantly arranged circumferential lug projections to cooperate with cam projections on the feeds, and means for intermittently rotating the drum.

5. Yarn changing mechanism according to claim 1, in which the feeds are pivoted side by side on a common axis, and in which the actuating means includes a drum having a series of longitudinal slots in its circumference, jacks removably engaged in the slots and having outward lug projections variantly arranged along their lengths to coact with cam projections on the feeds, and means for intermittently rotating the drum.

6. Yarn changing mechanism according to claim 1, in which the feeds are pivoted side by side on a common axis, and in which the actuating means includes a drum having variantly arranged circumferential projections to cooperate with cam projections on the feeds, a ratchet wheel connected to the drum, a pawl to cooperate with the ratchet, a pawl arm, and pattern control means for actuating the pawl arm at predetermined intervals to cause intermittent rotative shifts of the drum.

7. In a circular knitting machine having a stationary needle cylinder, a coaxial stationary needle dial, and knitting cam carrier means rotative about the axis of the cylinder and dial, yarn changing mechanism supported by said carrier means and comprising a multiplicity of independently movable yarn feeds, means supported by the carrier means for selectively interchanging the yarn feeds with predetermination of a definite overlap in the knitting of the threads, means also carried by the carrier for severing and clamping the yarns as they are withdrawn from action; and means operative to cause the leading and trailing ends respectively of the ingoing and outgoing yarns extending from the clamp means to the interchanged feeds to be knitted into the fabric by the dial needles.

8. Yarn changing mechanism according to claim 7, in which the feeds are pivoted side by side on a common horizontal axis, and in which the actuating means includes a horizontal drum with variantly arranged circumferential projections to cooperate with cam projections on the feeds, a ratchet wheel attached to the drum, a pawl to cooperate with the ratchet, a pivoted arm carrying the pawl, a cam plate normally out of the range of the pawl arm, a pattern chain with interchangeable high links adapted to cause shifting of the cam plate into the path of the pawl arm and thereby effect rocking of the drum, and means for intermittently rotating a sprocket about which the chain is trained.

9. In a circular knitting machine having a stationary needle cylinder, a coaxial stationary needle dial, and knitting cam carrier means rotative about the axis of the cylinder and dial; yarn changing means supported by said carrier means and including a multiplicity of independently-movable feeds, control means supported by the carrier means for selectively interchanging the yarn feeds with predetermination of a definite overlap in the knitting of the threads, yarn severing and clamping means mounted on the carrier means and including stationary and movable shearing members, a fixed yielding spring clamp, an auxiliary clamp with a movable clamp member, a pivoted actuating finger connected to the movable shearing member and the movable member of the auxiliary clamp and operative to move said members to open position to receive the withdrawn yarn, means to afterwards close said movable members to sever and hold the withdrawn yarn, a booster for placing the withdrawn yarn into the spring clamp during the interval of opening of the severing means and the auxiliary clamp, a pivoted finger for actuating the booster, and a cam plate normally out of the path of the two fingers; and means for moving

the cam plate into the path of said fingers to effect actuation of the severing and clamping means and the booster as aforesaid when a yarn change is to be made.

10. Yarn changing mechanism according to claim 9 wherein the control means for the yarn fingers is also actuated from the cam plate.

11. Yarn changing mechanism according to claim 9, wherein the fixed clamp member has a guide groove for controlling the end of the newly introduced yarn to insure withdrawal of its trailing end in a straight line from the spring clamp.

12. Yarn changing mechanism according to claim 9, wherein the needle cam carrier means provides an outwardly-extending inclined fin operative to urge the ingoing yarns toward the cylinder needles.

13. Yarn changing mechanism according to claim 9, wherein the needle cam carrier means provides an outwardly-extending inclined fin operative to urge the ingoing yarns toward the cylinder needles, and wherein said fin is provided with a notch at its upper end for receiving and controlling the yarns incident to their withdrawal from the knitting.

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