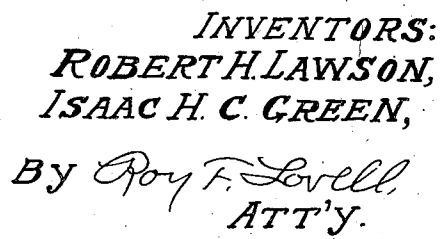


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MECHANISM FOR AND METHOD OF KNITTING WRAP STRIPES

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FIG. 5.

FIG. 7.

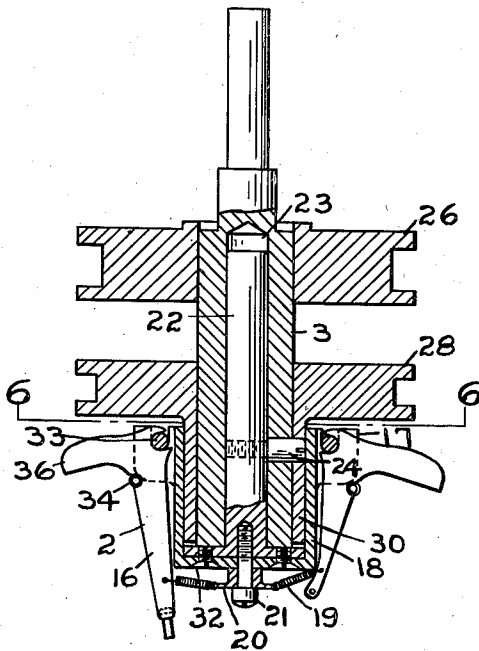


FIG. 6.

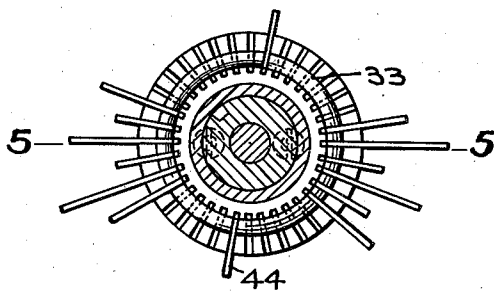
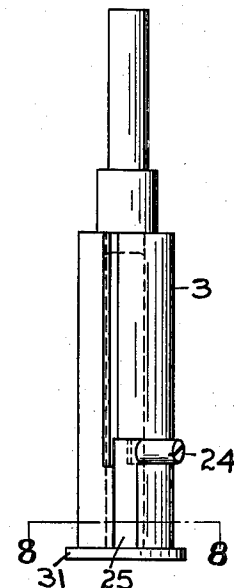


FIG. 8.

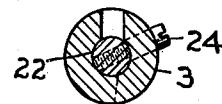
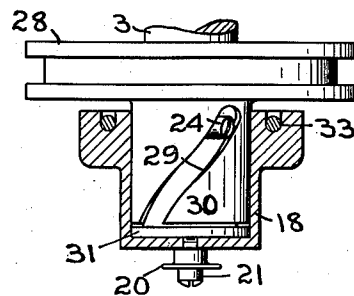


FIG. 9.



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FIG. 10.

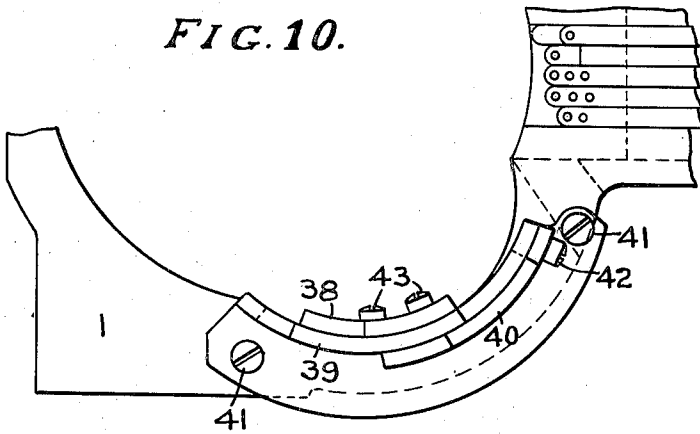


FIG. 11.

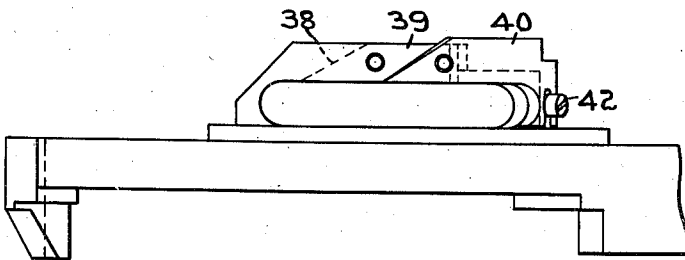
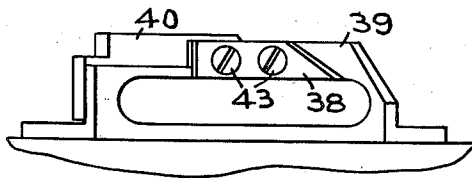


FIG. 12.



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MECHANISM FOR AND METHOD OF KNITTING WRAP STRIPES

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Application November 25, 1933, Serial No. 699,714

4 Claims. (Cl. 66—135)

This invention relates to knitting machines and especially to knitting machines such as disclosed in the patent to Robert H. Lawson 1,702,608, February 19, 1929.

5 In the drawings:

Fig. 1 is a plan view showing a latch ring of a knitting machine and in combination therewith a rotatable head for effecting the knitting of wrap stripes;

10 Fig. 2 is a fragmentary view partly in section and showing the wrapping mechanism in elevation;

Fig. 3 is a fragmentary detail view showing the thread wrapping elements;

15 Fig. 4 is a view showing the wrapping of adjacent needles with different threads;

Fig. 5 is a view in vertical section of the wrapping mechanism per se, the view being taken along the line 5—5, Fig. 6;

20 Fig. 6 is a sectional view taken along the line 6—6, Fig. 5;

Fig. 7 is a detail view of the shaft upon which the various parts of the wrapping mechanism are mounted;

25 Fig. 8 is a sectional view taken along the line 8—8, Fig. 7;

Fig. 9 is a fragmentary elevational view, partly in section, showing the connections for changing the circumferential relation of the thread guides with respect to the needles to be wrapped;

30 Fig. 10 is a fragmentary plan view showing a portion of the latch ring and cams for selectively determining the operative and inoperative positions of the wrap thread guides;

35 Fig. 11 is a fragmentary view in elevation of the latch ring and cams shown in Fig. 10; and

Fig. 12 is a view similar to Fig. 11 but showing the cams as viewed from the inside of the needle cylinder.

40 Associated with the latch ring 1 is a thread wrapping mechanism 2 the shaft 3 of which may be supported and rotated in a manner similar to that disclosed in the Lawson patent. Needles 4 are mounted in the needle cylinder (not shown)

45 which causes the said needles to rotate past the mouthpiece 5 of the latch ring within which are a series of yarn levers 6, 7, 8, 9 and 10 each of which is pivotally mounted on a pin 11 supported between ears 12 upstanding from an extension

50 of the latch ring adjacent to the mouthpiece thereof. Yarns are adapted to be fed to the needles in a manner similar to that disclosed in the Lawson patent. In addition to the main yarns, wrap threads such as 13 and 14 may be

55 wrapped around selectively raised needles 4 by

means of guides 15 and 16 respectively which are pivotally mounted in slots provided in a flange 17 carried by and forming part of a cup-shaped guide carrier 18. Adjacent to the lower ends of the guides 15 and 16 springs 19 are connected 5 said springs at their other ends being connected to a disc-like element 20. A screw 21 passes through the disc-like element 20 and through the cup-shaped member 18 and into threaded engagement with a stud 22 thereby rigidly connecting the disc 20 and member 18 to the stud 10 22. The stud 22 is received within an axial recess 23 in the lower portion of the shaft 3, being connected thereto as by means of a pin 24 passing through a bayonet slot 25 in the hollow portion of the shaft 3, the pin 24 when received 15 within the horizontally disposed portion of the bayonet slot as shown in Fig. 7 preventing the said stud 22 moving axially of the shaft 3. Fast to the shaft 3 is a disc 26 in which are disposed 20 porcelain or other eyelets 27 through which pass the threads such as 13 and 14. Immediately below the disc 26 is a second disc 28 also having disposed therein eyelets for the passage there- 25 through of threads such as 13 and 14, the said disc 28 being splined to the shaft 3 so as to turn therewith and slide axially thereof. The axial movements of the disc 28 are translated into circular movements of the thread guides 15 and 16 by reason of a diagonal slot 29 provided in a 30 hub 30 integral with and depending from the disc 28.

A flange 31 is provided on the lower end of the stud 22 and screws such as 32 pass through the said flange and adjacent portion of the thread 35 guide carrier 18 thus more securely fastening the two parts together so that rotary movements imparted to the stud 22 by shaft 3 are transmitted to the thread carrier 18.

As hereinbefore stated the thread guides 15 40 and 16 are pivotally mounted within slots provided in the flange 17. Seated within an annular recess in the said flange 17 is a ring 33 which provides a pivotal mounting for each of the guides 15 and 16, the latter being provided with recessed 45 portions partially surrounding the ring 33. Below the ring 33 the guides 15 and 16 are notched and within the said notches is disposed a coil spring 34 which retains the guides in position within the slots of the flange 17. Substantially 50 opposite their pivotal connections, the levers 15 and 16 are provided with arms 35 and 36, 37 respectively, the arm 35 being the longest arm and the arm 37 being the shortest.

Circumferentially or longitudinally adjustable 55

cams 38, 39, 40 are mounted upon the upper surface of the latch ring 1 in advance of the mouth-piece thereof for the purpose of engaging and rocking the arms 35, 36 and 37 of the guides 15 and 16 in a manner selectively to control the operative positions of the said guides 15 and 16. The cam 39 is provided with a horizontally disposed flange through which pass screws 41 attaching said cam 39 to the latch ring 1. The cam 40 is connected to the cam 39 as by means of a screw 42 while the cam 38 is connected to the cam 39 by means of screws 43, the cam connections being such as to permit adjustment of the cams with respect to each other and with respect to the latch ring 1. The outer cam 40 acts upon the longest arms 35 only; the cam 39 acts upon the intermediate length arm 36 as well as the long arm 35; and the inner cam 38 acts upon the shortest arm 37 only. Obviously the lengths of the upper portion of the cams 38, 39 and 40 determine how long the several thread fingers 15 and 16 shall be in a position forward of the needles; in other words, the length of such cams determines the number of needles that may be wrapped with the same thread, the actual number of needles wrapped depending upon needle selection. In this connection, the needles may be selectively raised in any desired manner, such for example as disclosed in the Lawson patent.

If simple clocking is desired, the cam 40 and the short thread levers 15 need not be used; however, if so-called color within color work is desired, the cam 40 is utilized in conjunction with the cam 38 and/or the cam 39.

The thread guide carrier 18 may be provided with notches to receive the inner portions of the thread levers to steady the same and to prevent their sidewise displacement which if not avoided might result in damage to the needles or to other parts of the machine.

As will be apparent from inspection of Fig. 3, the thread feeding ends of the arms 15 are positioned above the eyelets provided in the arms 16. Such a construction permits the wrapping of one needle with one thread and the immediately adjacent needle with another thread during a course of knitting and this is effected by cams selectively elevating needles in any suitable manner in which case the highest needle shown in Fig. 4 receives the thread 13 in its hook whereas the thread 14 is partially wrapped around the shank of said needle and below the latch thereof. The hooks of the needles, Fig. 4, which are at an intermediate height, engage the thread 14 only. Thereafter when the needles are depressed by the knitting cam the thread 13 is knitted by the elevated needle and the thread 14 is cast off by the said elevated needle without appearing in the fabric as a wrap stitch.

At 44 are shown short fingers which merely act as spacers and maintain the spring 34 under uniform tension.

In the forepart of this description it was stated that the thread levers 15 and 16 are mounted in a head 2 which could be rotated in any desired manner such as disclosed in the Lawson Patent 1,702,608. In the event that it be desirable so to control the thread levers as to permit adjacent

levers to wrap their threads around certain selected needles whereby during the knitting of one course one or two threads may be wrapped around selected needles of a group of needles and during the knitting of the immediately following course needles of the same group may be wrapped with another thread, the mechanism disclosed in Figs. 5-9 is employed. Movement of the disc 28 from the position shown in Fig. 5 to a position adjacent to the disc 26 causes the thread carrier 18 to rotate to the left, Fig. 5, thereby causing a lever 15 or 16 to occupy the position theretofore occupied by another such lever; the result being that during the knitting of one course one thread shall be wrapped around selected needles of a certain group, while during the next course or some other following course some other thread shall be wrapped around selected needles of the same group. Likewise the movement of the disc 28 from a position adjacent to the disc 26 to the position shown in Fig. 5 causes the thread carrier 18 to rotate to the right in which event also different threads are wrapped around selected needles of the same group of needles.

Although in the foregoing description specific terms have been used to designate certain of the parts and combinations thereof it is not the intention thereby to limit the invention otherwise than by the express limitations in the claims themselves.

We claim:

1. A method of knitting wrap stripes with latch needles consisting in feeding two threads in separated relation to the needles and controlling the movements of two adjacent needles so that one such needle engages one of said threads within its hook but not the other thread and so that the other needle engages the second thread in its hook but not the first thread, the first thread being fed below the latch of the needle last mentioned.

2. A latch ring for a knitting machine having cams mounted thereon, and in combination therewith a rotary thread wrapping mechanism associated with which are thread guides movable from a non-feeding position to a feeding position, the cams being of different lengths and acting selectively upon the said thread guides for moving them to their thread feeding positions.

3. A latch ring for a knitting machine having cams fixedly mounted thereon, and in combination therewith a rotary thread wrapping mechanism associated with which are thread guides movable from a non-feeding position to a feeding position, the cams acting selectively upon the said thread guides for moving them to their thread feeding positions.

4. A latch ring for a knitting machine having cams mounted thereon and in combination therewith a rotary thread wrapping mechanism associated with which are thread guides movable from a non-feeding position to a feeding position, the cams being longitudinally adjustable and acting selectively upon the said thread guides for moving them to their thread feeding positions.

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