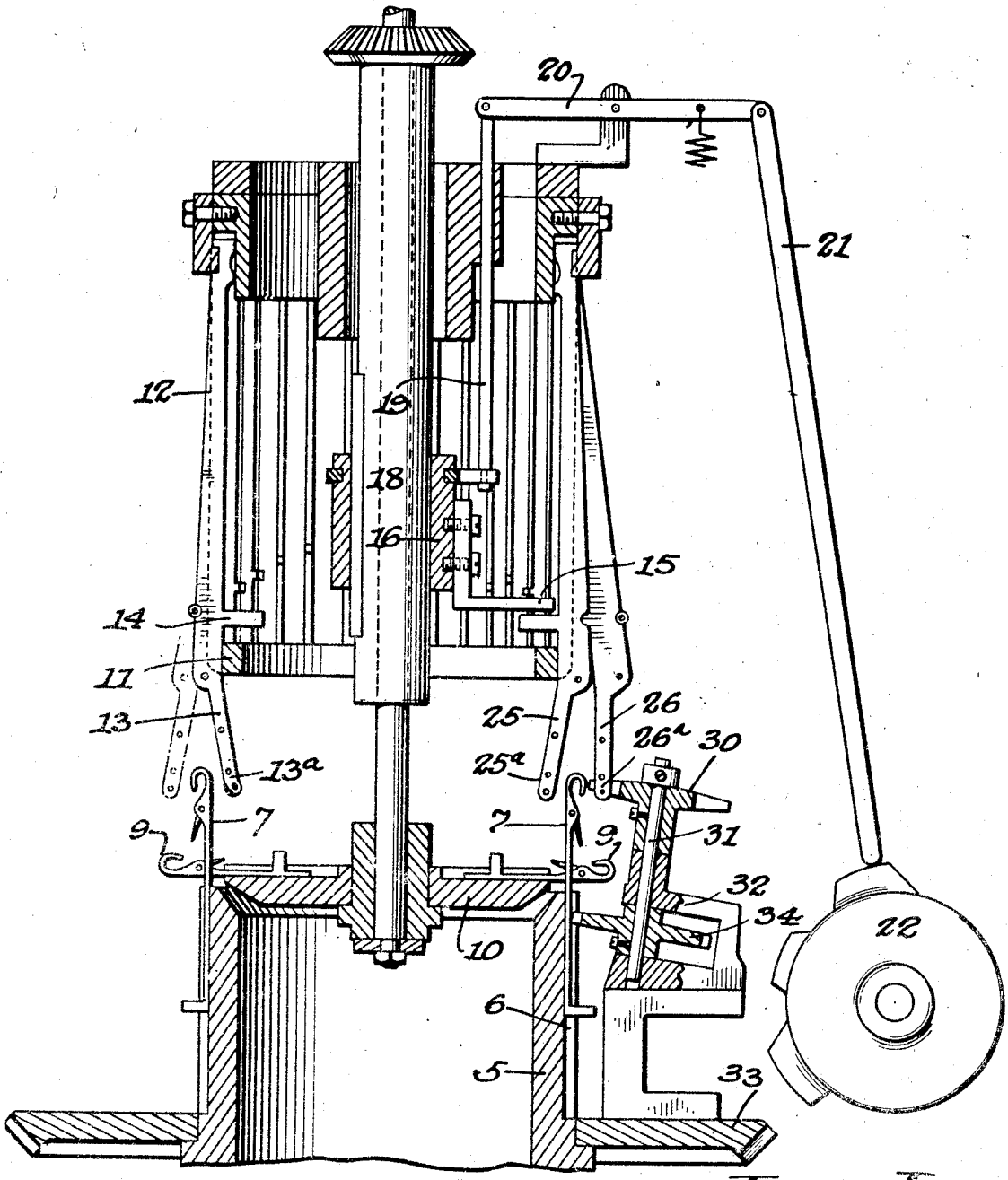
Aug. 30, 1932. W. J. LONGTIN 1,874,769

STRIPING ATTACHMENT FOR KNITTING MACHINES

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Fig. 1.



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Fig. 2.

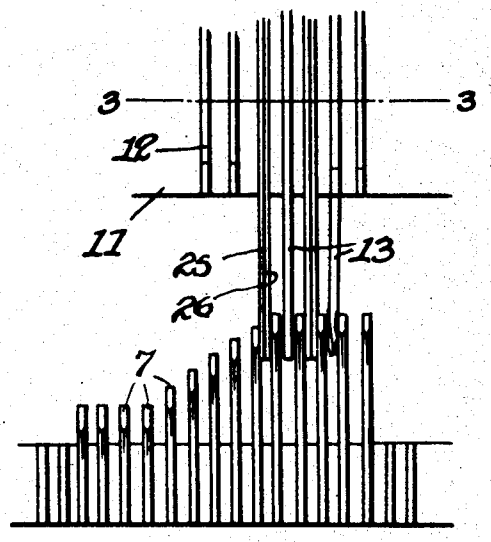


Fig. 4.

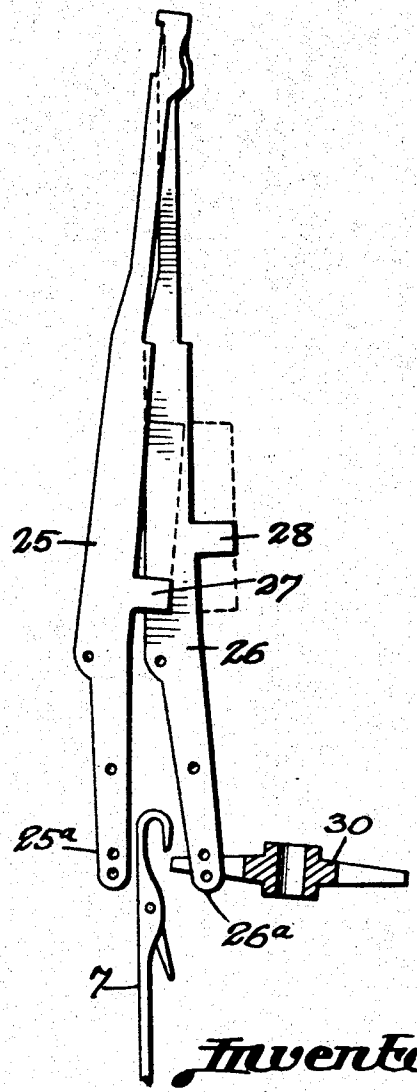
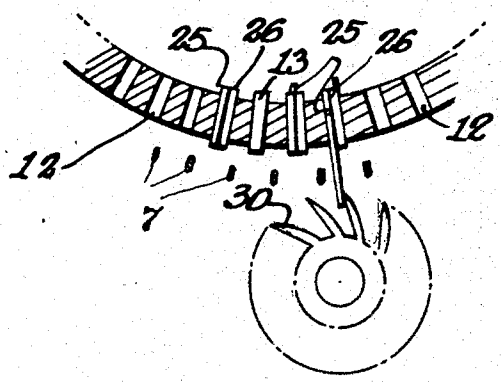


Fig. 3.



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UNITED STATES PATENT OFFICE

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STRIPING ATTACHMENT FOR KNITTING MACHINES

Application filed October 8, 1930. Serial No. 487,174.

My invention relates to circular knitting machines and more specifically to those having a vertical striping attachment feeding extra threads to certain needles to produce ornamental plaited stripes; my present object being to provide for a selective automatic changing of such threads whereby color or other thread changes may be introduced into said stripes as desired.

With this main object in view, my invention consists in improvements in the construction, arrangement and operation of the guide fingers supplying such plaiting thread to the needles, as will now be more fully described in connection with the accompanying drawings, the novel features thereof being set forth in the appended claims.

Referring to the drawings:

Fig. 1 is a diagrammatic vertical section of a portion of a well known rib-knitting machine sufficient to fully disclose a preferred embodiment of my invention applied thereto.

Fig. 2 is a fragmentary side elevation showing the knitting needles and the relation of the plaiting thread guide fingers thereto.

Fig. 3 is a diagrammatic transverse cross-sectional view on the lines 3—3 of Fig. 2, indicating the lateral shifting action of the guide wheel on the ends of the radially swung guide fingers.

Fig. 4 is a diagrammatic side elevation of a pair of guide fingers and with a radially swung one engaging the guide wheel which shifts it laterally of its particular needle.

The drawings indicate a knitting machine having a vertical striping attachment of generally similar structure to that shown and described in U. S. Patent to Walter Larkin, No. 1,666,780 of April 17, 1928, as reference thereto will more fully disclose; and while a machine having dial needles for rib-knitting is shown, my improvements are equally applicable to a usual plain knitting machine, as the striping attachment shown feeds only to the cylinder needles and supplies individual ones of the latter with added thread to produce plaited vertical stripes in well known manner.

My present invention relates to improvements in such striping attachment by providing for a plurality of guide fingers in place of a single finger, each having its separate plaiting thread, and each operated by pattern mechanism to selectively feed a determined needle or needles by a positively controlled needle-wrapping encircling swing.

In the known mechanism shown in the drawings, 5 indicates a usual stationary needle cylinder, and 6 the series of slots in the latter in which the movable needles 7 are mounted; the particular machine shown employing dial needles 9, radially movable in a dial plate 10, but, as stated, these are not essential to my improvements.

In the known striping attachment shown, 11 indicates the cylindrical guide carrier coaxially mounted in spaced relation above the non-rotated needle cylinder 5 and is provided with guide slot ways 12 for a series of thread guides 13 as heretofore, such slots 12 preferably corresponding in number with and overhanging the needle slots 6 so as to provide an individual guide 13 for each needle 7 when desired. And in known manner suitable cams radially swing said guides 13 across the circle of needles 7, the angularly bent end 13^a insuring return of said finger end on the opposite side of its needle to wrap the thread about the latter. Selective operation of such guides 13 has also been provided heretofore by butts 14 projecting through the slotted wall of cylinder 11 for determined action of cam 15 on a rotated vertically shiftable sleeve 16. The sleeve 16 is keyed on a rotatably driven depending sleeve shaft 18 and is moved vertically thereon by means of link bar 19, lever 20 and push bar 21, the latter overhanging suitable lugs on a pattern drum 22, and link 19 having a ring engaging sleeve 16.

The above briefly set forth known mechanism is adapted to feed a series of added threads to selected individual needles to form continuous or irregular plaited pattern stripes, but does not provide for desirable selective change of such threads for novel color combinations or the like.

To provide for such thread changes, I employ a plurality of guides in all or selected slots 12 each carrying a separate thread,

and determinedly singly operating them depending on the particular thread desired.

The drawings show two such thread guides 25 and 26 jointly mounted for individual operation in a carrier slot way 12, the general shape of each guide being as heretofore and each provided with a butt 27 and 28 respectively extending inwardly in different horizontal planes, as shown, for selective operation by suitably placed cam 15 of shifted rotary sleeve 16. In order to accommodate two guides in a single slot way, said guide way must be enlarged, or each guide must necessarily be made of lighter material to reduce as much as possible interfering rubbing friction when singly swung, and such friction or lighter material reduces their lateral stiffness and renders unreliable the heretofore springy angled guide ends effecting a needle wrapping movement when radially swung across the needle cylinder.

The butts 27 and 28 as stated, are spacedly located in different horizontal planes for suitable action of cam 15 to selectively swing either guide 25 or 26 radially as heretofore, and to insure their ends 25^a and 26^a encircling the same needle when thus moved, I employ a deep-toothed wheel 30 at one end of a shaft 31 rotatably mounted in fixed bearing 32 carried on the rotated cam plate 33 and having a drive gear 34 at the other end, driven by tooth engagement with the needle slot cylinder 5. Gear 34 is shown as meshing with slots 6 of the cylinder, but obviously may engage instead with the needle shanks, or be otherwise driven by said cylinder.

To effect the desired action on the guides the lineal speed of the wheel 30 may be different from the lineal speed of the needle cylinder, but I prefer as shown, to rotate this wheel 30 so that its lineal speed will be the same as that of the cylinder 5, and to form it with deep teeth adapted to engage the ends 25^a or 26^a of each radially swung guide. These teeth are shown as preferably inclined with relation to radial lines and curved to engage and move a guide end, 25^a or 26^a, laterally with relation to their respective needle so that the inward swing of either will be made past the opposite side of the needle from that of their outward swing, thus insuring the thread being positively wrapped about said needle.

It is the curvature of the guide wheel teeth when travelling at equal lineal speed with that of the circle of needles, that effects this lateral needle wrapping movement, and it will be understood that both guides, 25 and 26, are set to swing outwardly past the same side of the particular needle they changeably feed and are returned by action of said wheel on the opposite side of such needle.

My plurality of guides, 25 and 26, may be employed in each carrier slot way 12, or only in certain of the latter, with old guides 13 in part or all the remaining slot ways. And while wheel 30 is essential only to effect needle wrapping movement of guides 25 and 26, its action on guides 13 will merely insure their lateral swing, or said guides 13 may be made straight, if desired, and depend on said wheel for their required lateral movement.

With my improved guides 25 and 26, changes of thread may be had where desired to produce different color effects in a given vertical stripe and such changes determinedly provided for by action of the pattern drum 22 during continuous machine operation.

From the foregoing description it is believed the nature of my improvements and their operation in feeding changes of thread to specific needles, will be readily understood. The number of guides in a given slot-way may be changed and their arrangement around the cylindrical carrier varied as desired for particular patterns; and in place of the preferred guide actuating curved teeth shown on wheel 30, said teeth may be radial and laterally shift the guide ends by a difference in the lineal speeds of said wheel and needle cylinder. Other modifications may be made within the spirit of my invention as defined in the following claims.

What I claim is:

1. In combination with a circular knitting machine, a thread-change plating attachment adapted to selectively supply threads to the same needle, comprising a plurality of guide fingers, pattern-controlled means for imparting a radial swinging movement across the circle of needles to a selected one of said fingers, and a finger-end engaging wheel adapted to laterally shift said radially swinging end to impart thereto a needle-encircling movement.

2. In combination with a circular knitting machine, a thread-change plating attachment adapted to selectively supply threads to the same needle, comprising a carrier having a vertical guide slot overhanging a cylinder slot of a determined needle, a plurality of guide fingers in said carrier slot, pattern-controlled means for imparting a radial swinging movement across the circle of needles to a selected one of said fingers, and means actuated by cylinder-slot for imparting a needle-encircling movement to said radially swinging finger.

3. In combination with a circular knitting machine, a thread-change plating attachment adapted to selectively supply threads to the same needle, comprising a carrier having a vertical guide slot overhanging a cylinder slot of a determined needle, a plurality of guide fingers in said carrier slot, pattern-controlled means for imparting a radial swinging movement across the circle of needles to a selected one of said fingers, and a cylinder-actuated finger-end engaging wheel adapted to laterally shift said radially swing-

ing end to impart thereto a needle-encircling movement.

4. In combination with a circular knitting machine comprising a needle cylinder having a vertical series of guide slots, and a corresponding series of needles reciprocally movable in said slots, of a change-thread plating attachment therefor comprising a cylinder having guide-carrier slot-ways overhanging the slots of said needle cylinder and mounted coaxially with the latter, a plurality of radially reciprocable plating-thread guide-fingers jointly mounted in one of said carrier slot ways, pattern-controlled cams adapted to selectively swing one of said guide fingers outwardly across the circle of needles adjacent one side of a determined needle, a gear wheel driven by said needle cylinder and a guide-wheel driven by said gear wheel and adapted to engage the end of either radially swung guide finger to laterally shift said end to the other side of said needle preliminary to its return swing inwardly across said circle of needles, whereby the thread of said selected guide finger is wrapped about said determined needle.

In testimony whereof I affix my signature.

WILLIAM J. LONGTIN.