F. W. ROBINSON.

PLATING MECHANISM FOR CIRCULAR KNITTING MACHINES.

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1,200,140.

Patented Oct. 3, 1916.

Fig. 1.

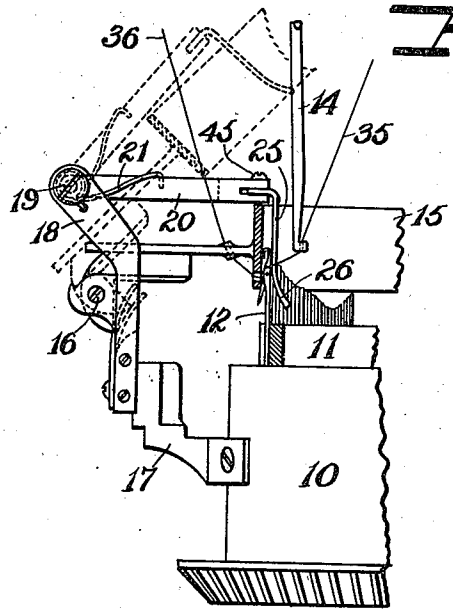
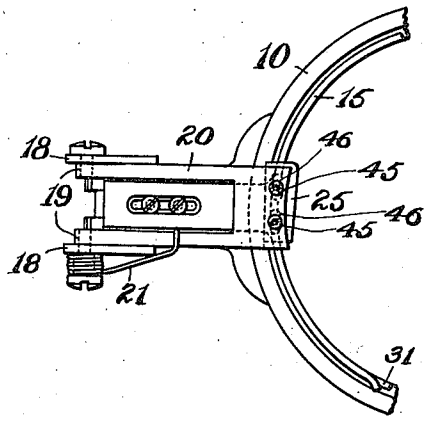


Fig. 2.



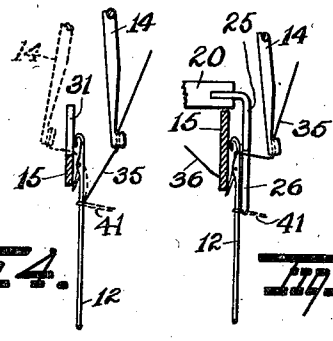


Fig. 4.

Fig. 5.

Fig. 3.

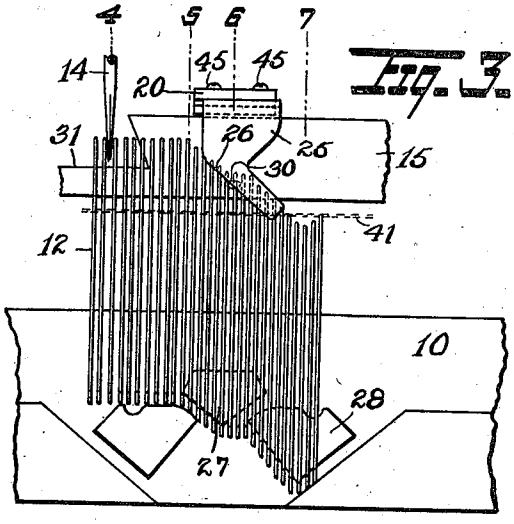


Fig. 6.

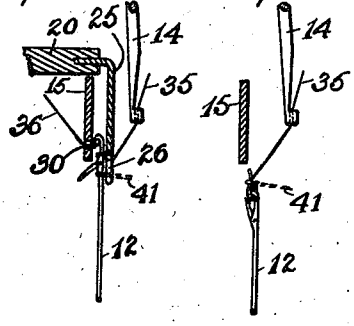


Fig. 7.

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UNITED STATES PATENT OFFICE.

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PLATING MECHANISM FOR CIRCULAR-KNITTING MACHINES.

1,200,140. Specification of Letters Patent. Patented Oct. 3, 1916.

Application filed September 20, 1915. Serial No. 51,577.

To all whom it may concern:

Be it known that I, FRANK W. ROBINSON, a citizen of the United States, residing at Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Plating Mechanisms for Circular-Knitting Machines, of which the following is a specification.

My invention relates to circular knitting machines provided with mechanism for forming vertical stripes or clocking upon one face of the fabric by introducing a plating thread to certain needles during the knitting of the courses; and it consists in providing means, as hereinafter fully set forth for accurately positioning the plating thread relative to the knitting thread so as to secure perfectly uniform effects.

In the accompanying drawings illustrating my invention in preferred form, Figure 1 is a side elevation of a portion of a knitting machine, the thread carrier and needle cylinder being shown in section. Fig. 2 is a partial plan view of the same. Fig. 3 is a diagrammatic view showing the relation of my plating-thread guide to the knitting cams. And Figs. 4, 5, 6 and 7 are sectional views on the lines 4, 5, 6 and 7 respectively of Fig. 3, showing different stages of the knitting operation.

Circular knitting machines adapted to produce stockings with vertical stripes or clocking are well known, and they commonly employ special thread carriers operated to wrap an additional thread upon determined needles, to be knit in with the main thread forming the body of the stocking and appear on the outer surface as an ornamental stripe or clock. To insure uniformity in appearance of this ornamental stripe or clock it is essential that the plating thread be positively positioned in determined relation to the main knitting thread.

My invention consists essentially in providing means for exerting a pressing-down action upon the plating thread after it is wound upon the needles so as to properly position the same relative to the main thread during the descent of the needles in the knitting movement, notwithstanding the upward pull on the plating thread extending to the carrier.

In the accompanying drawing I have indicated only such portions of a well known type of knitting machine as are necessary to illustrate my invention; 10 representing the cam cylinder, 11 the needle cylinder, 12 the needles vertically movable in the latter, 14 the plating thread carrier adapted to be moved around one or more needles to wrap about them the striping or clocking thread, and 15 the knitting thread carrier segment or latch ring. The knitting thread carrier 15 is pivotally mounted at 16 as usual, to a bracket 17 secured to the cam cylinder 10, so that it may be swung upward out of the way as indicated in dotted lines Fig. 1. To the bracket extensions 18 is pivoted, at 19, a member 20 as shown extending over the thread carrier 15 and normally held at rest upon the latter by spring 21. At the outer end of this member is adjustably secured a thread guide 25, which extends into the thread carrier ring 15 and is spaced apart from the latter as shown so as to permit passage of the knitting needles between said guide and the ring. When the carrier ring 15 is raised at desired times, as well known, the carrier fingers 14 being first lifted out of the way, the member 20 resting on the ring will be carried with it, swinging on its pivot 19, and the guide 25 will be moved away from the carrier ring 15. This pivotal mounting of the guide 25 permits of its being set close to the ring 15 when in lowered position and allows of raising it with the ring without injuring the needles.

The guide 25, extending inside the circle of needles 12, has an edge 26, inclined as shown in Fig. 3 in the direction of incline of the knitting cams 27 and 28; which latter are of the usual type and mounted inside the cam cylinder 10 to actuate the needles 12. This inclined edge 26 is located above the knitting cams and crosses the main knitting thread guide aperture 30 in the ring 15.

I provide, as indicated, for keeping the striping thread below the main thread on the needle during the drawing down movement of the latter by the knitting cams, notwithstanding that the striping thread is wound upon the needle when the latter is in raised position above the thread aperture 30 and before it has been lowered across said opening to engage the main thread. In Figs. 4, 5, 6 and 7, in connection with Fig. 3, I have indicated how my plating guide 24 effects this desired result. Fig. 4 shows the striping thread carrier 14 in position to wrap a loop about a needle in well known

manner, the ring 15 being cut away at 31 as shown so that the carrier may pass through the needle and around the same. Fig. 5 shows the needle still in raised position and with the striping thread 35 extending to the needle in a horizontal line above the main thread opening 30, said thread just coming into contact with the inclined edge 26 of the plating guide 25. Fig. 6 shows the needle partially lowered and about to engage the main thread 36 feeding through the thread aperture 30, the plating thread 35 extending to the carrier 14 across the inclined edge 26 of the plate 25 and being pressed down by the latter to locate its loop, wound on the needle, below the opening 30, so that the main thread 36 will enter the hook of the needle above said loop. Fig. 7 shows the needle fully lowered and drawn through the last loop of the previously knitted fabric 41 the plating thread loop 35 being thus located outside the knitting thread loop, so that it will appear sharply and distinctly on the outer surface of the fabric. Each time the carrier 14, with its loop wound around the needle, passes the plating guide 25 the same operation occurs insuring a uniformity in appearance of the stripe; where a number of carriers 14 are used the same operation is effected as each carrier passes the plate 25. This plate may be set as found most effective in operation, and, where properly adjusted by means of the screws 45 engaged in slots 46 in the plate 25, will exert a uniform action on all the striping or clocking threads employed so as to insure a uniform appearance in the finished product.

The device is simple and readily applied to any well known type of knitting machine substantially as particularly shown and described.

What I claim is:

1. In a knitting machine having a circular series of knitting needles and a knitting-thread carrier located on one side thereof; a vertical-plating thread finger having a needle-engaging swing, and a plating-thread guide plate located on the other side of said series of needles and provided with a thread-contacting edge whereby the plating-thread is uniformly positioned relative to the knitting thread.

2. In combination with a circular knitting machine having a knitting-thread carrier, a vertical-plating thread finger and means for imparting needle-engaging movement to the latter; a plating thread guide spaced apart from said carrier to provide a passage-way for the needles and having a thread-guiding edge inclined to correspond with the knitting cam.

3. In combination with a circular knitting machine having a pivotally mounted knitting-thread carrier, a vertical-plating thread finger, and means for imparting needle-engaging movement to the latter; an independently pivoted plating-thread guide normally positioned with respect to said carrier so as to provide a needle passage-way between them and adapted to uniformly position the needle-engaged plating thread relative to the knitting thread.

4. In a knitting machine having a circular series of knitting needles and a vertical-plating thread finger having a needle-engaging swing; a knitting-thread carrier and a plating-thread guide both pivotally mounted so as to swing into operative positions respectively on the outside and inside of said series of needles; said guide being adapted to position the plating-thread relative to the knitting thread.

5. In a knitting machine having a circular series of knitting needles and a vertical-plating thread finger having a needle-engaging swing; a pivotally mounted knitting-thread carrier arranged to swing into operative position on one side of said series of needles, and an independently pivoted plating-thread guide arranged to swing into operative position on the other side of said series of needles; said guide being normally supported upon said carrier and adapted to position the plating-thread relative to the knitting thread.

In testimony whereof I affix my signature.

FRANK W. ROBINSON.