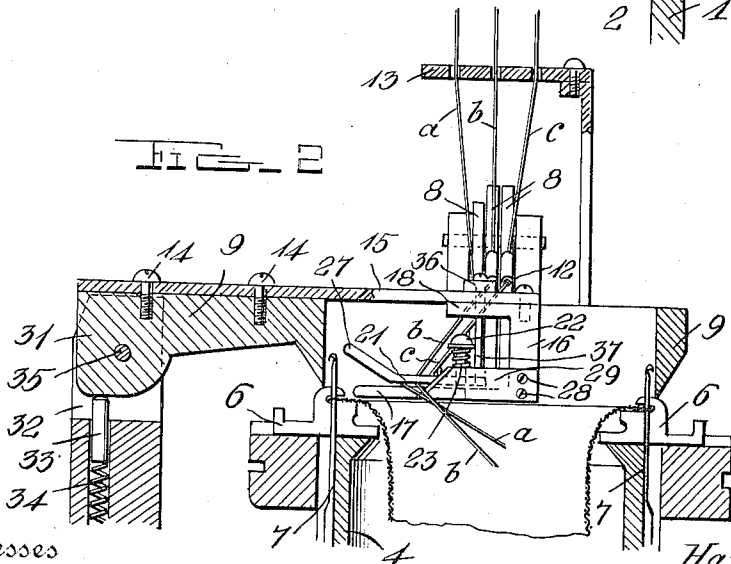
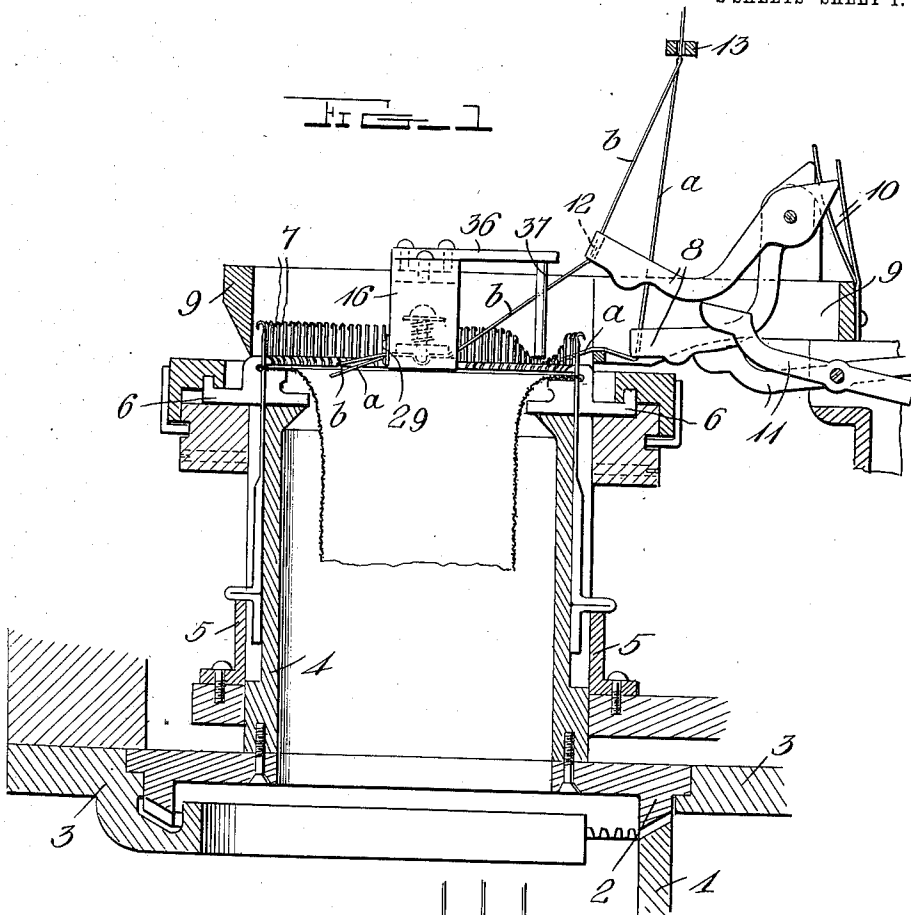


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 YARN CHANGER FOR CIRCULAR KNITTING MACHINES.
 APPLICATION FILED DEC. 21, 1908.

965,351.

Patented July 26, 1910.

2 SHEETS—SHEET 1.



Witnesses

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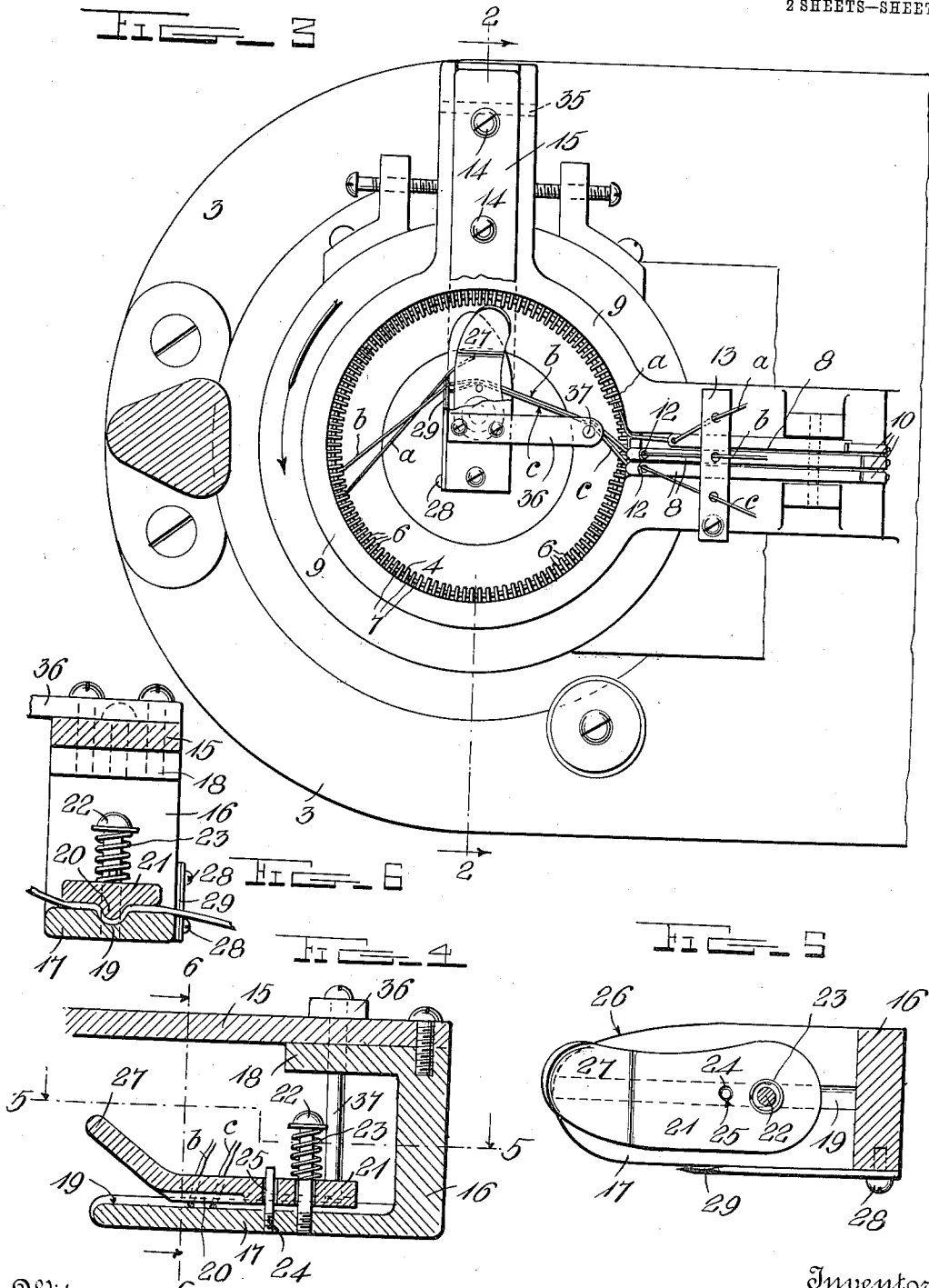
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UNITED STATES PATENT OFFICE.

HARRY H. WEST, OF PLYMOUTH, PENNSYLVANIA.

YARN-CHANGER FOR CIRCULAR-KNITTING MACHINES.

965,351.

Specification of Letters Patent. Patented July 26, 1910.

Application filed December 21, 1908. Serial No. 468,577.

To all whom it may concern:

Be it known that I, HARRY H. WEST, a citizen of the United States, residing at Plymouth, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Yarn-Changers for Circular-Knitting Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to circular knitting machines, and especially to that type employed in knitting stockings, socks, etc., the invention being directed particularly to an attachment for said machines adapted to take care of the idle threads in striped work.

It is designed especially as an improvement on the structure shown on my Patent No. 926,629. In machines of this character, heretofore, it has been common to permit the idle threads to travel with the fabric and sever them afterward, in order to obtain a smooth interior for the sock or stocking. Again, the float yarn loops have been held in a suitable manner and prevented from twisting by attachments which act to engage each loop as it is formed and throw it off when completed. In all of these constructions there is a considerable waste of yarn, and in the former manner of knitting the yarn frequently became entangled and drew the fabric up in the needle cylinder so far as to injure the action of the needles and possibly cause rupture thereof and of the sinkers. Not only is this method dangerous to the machine but it also entails additional expense in the manufacture of the sock or stocking in that these loops which are twisted and entangled have to be cut by hand.

It is the object of my invention to avoid these difficulties, and particularly speaking, the invention consists in means for automatically cutting the threads of each loop as it is formed by the rise and fall of the thread feed arms.

In order to enable persons versed in the art to clearly understand the connection of the attachment with the type of machine upon which it is employed, I have illustrated in the accompanying drawings a considerable portion of that part of the machine which is adjacent the needle cylinder and which co-acts with the attachment in the carrying out of my invention.

In the drawings, Figure 1 is a vertical

longitudinal section of a portion of a circular knitting machine with my attachment shown applied thereto; Fig. 2 is a similar section of the upper part of the needle cylinder taken on line 2—2 of Fig. 3; Fig. 3 is a top plan view; Fig. 4 is a vertical sectional view of the attachment; Fig. 5 is a horizontal section view on line 5—5 of Fig. 4; Fig. 6 is a vertical transverse section on line 6—6 of Fig. 4.

In order to connect up the attachment with the co-acting parts of the machine, I shall first describe the mechanism which forms the operating connections with the attachment. I have shown a gear 1, which may be connected in any suitable manner to a source of power and which is shown as meshing with the needle cylinder gear 2, journaled to rotate upon the frame of the machine 3 and having connected to it the usual needle cylinder 4, preferably of the type used in machines of this character. The needle cylinder in this instance is surrounded by the stationary cam cylinder 5 connected to the frame in any suitable manner, not shown, and carrying at its upper end the customary sinkers 6, and in its grooved sides the needles 7.

Suitably disposed, as regards their relation with the needle cylinder and the other co-acting mechanism, are the thread guiding arms 8 which are carried by the pivoted supporting plate or latch guard 9 and are held in their respective feeding positions by the springs 10. These arms are manipulated in this instance by levers 11 which are controlled by a pattern wheel or any other suitable mechanism, not shown herein as it forms no part of the present invention. As is usual, these arms receive the thread through eyes 12 formed in their outer ends, from the guide plate 13 which receives the thread from suitable bobbins. Normally, when a different colored thread is thrown into action to be engaged by the needles and operated upon either in a rotating needle cylinder machine or a rotating cam cylinder machine, the thread attached to the fabric is allowed to form a loop and where the stripes or changes of color in the yarn are far apart the idle threads or those out of work become so entangled in twisting caused by the rotation of the parts, that it is impossible to weight the sock sufficiently to prevent it from drawing up in the cylinder unless sufficient weight is put upon the same

to possibly break the threads, which break may occur at any point and may be at such a point as to cause a defect in the fabric. In order to obviate these difficulties, I provide an attachment which is secured by the screws 14 to the upper part of the plate 9, and constitutes a supporting arm or bracket 15 having depending therefrom at its forward end a foot-piece 16, which is approximately U-shaped in cross-section with its lower leg 17 extending beyond the upper leg 18, and provided with a longitudinal groove 19 adapted to receive the rib 20 of the presser foot 21. This latter member is secured to the leg 17 by a screw 22 which has surrounding its upper end a tension spring 23 adapted to bear against the upper face of the foot and hold it yieldingly in engagement with the rib 20 in the groove 19. Intermediate the tension screw and the forward end of the foot there is a hardened pin 24 screwed into the leg 17 and passing through an aperture 25 in the plate. This pin is adapted to prevent excessive binding of the threads, as will be hereinafter described. The forward end of the leg 17 is rounded off on its end and at one side, as at 26, and the forward end of the presser foot is raised at approximately a 45° angle, as shown at 27, and is made free of the rib 20. It is also slightly offset with regard to the longitudinal line thereof, so as to readily engage the thread as it passes from the thread guiding arm 8 when raised.

Extending along the side of the foot-piece 16 and secured thereto by the screw 28 is a knife 29, having the sharpened and beveled edge which covers the space in between the presser foot 21 and the leg 17, so as to engage the threads extending from the fabric to the lifting arm and to the clamp respectively, leaving short ends, only, of both the yarn which has been taken out of work and the new yarn attached to the fabric.

The ring 9 which supports the bobbin guide, thread guiding arms and the attachment, is preferably pivoted to a part of the frame 3, as shown in Fig. 2, the pivotal lug 31 of the ring being entered in a recess 32 in the frame and having a right-angular end formed with a rounded corner and adapted to be engaged by a spring pressed pin 33 carried in a socket 34 in the frame. This pin when engaged with the under side of the lug is in the rear of the pivoted bolt 35, and therefore, holds the forward end of the ring and the attachment in proper working position with respect to the needle cylinder and its accompanying parts. When raised, the weight of the ring and its parts is sufficient to maintain the structure in up-right position against the tension of the spring. When the attachment is in normal working position over the needle cylinder, the leg 17 constitutes a guard which prevents the

fabric from rising in the cylinder above the point at which the fabric is formed. Secured to the top of the arm 15 and projecting laterally therefrom is a finger 36, having projecting downwardly therefrom in parallelism with the side of the member 16, a pin 37 which is adapted to be engaged by the threads as they pass from the guiding arms to the needles. This structure properly guides the yarn and insures the proper placing of the threads upon the needles so that the splicing will be in a vertical line in the rear of the sock or stocking whereby the product is improved considerably. Without this guiding finger and pin the threads enter the needles or are engaged by the needles at different places, thus making the splicing irregular and not in a vertical line.

In operation, when a thread is thrown down into working position by one of the arms 8 it is picked up by the needles and carried around and around, as the cylinder moves, underneath the leg 17, until this thread is thrown out for the insertion of another different colored thread by the pattern wheel. When this occurs the thread which was first put into use in passing around with its end attached to the fabric, is engaged by the underneath side of the angular extension 27 of the presser foot 21 so as to guide it into the tension groove 19 where it will be held taut against any feeding action and will be pulled against the knife edge 30 and severed. This end of the loop is now free and travels with the fabric. The opposite end which is held between the presser foot and the leg 17 is maintained in this position until this thread is again thrown into action by the pattern wheel upon its second introduction into the fabric. As a working thread it is, of course, picked up by the needles as is usual, at a point adjacent the feeding arm which carries it, the loose end still being held between the presser foot and the leg 17 until it is dragged around the rounded edge 26 of the leg and pulled out of its engagement with the attachment. When this thread is again thrown out it is cut off as before. For instance, I have illustrated blue, pink and red threads, *a*, *b* and *c*, respectively, upon Fig. 3, with the pink thread *b* running directly to the fabric and in idle position and with the thread *c* in idle position and shown severed at its end. The pink thread is about to be severed by the knife and the blue thread is being operated upon by the needles, as shown, and has its free formerly separated end held between the presser foot and the leg. Upon a still further revolution of the needle cylinder the blue thread will have its free end withdrawn from the attachment and the pink thread will be entirely severed and have that side of its loop also free.

From the foregoing description, taken in 130

connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

5 Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the ap-
10 pended claims.

Having thus described and ascertained the nature of my invention, what I claim as new and desire to secure by Letters-Patent, is—

1. An attachment for knitting machines
15 comprising a supporting bracket, an approximately U-shaped foot member having one leg thereof secured to one end of said bracket, the other leg depending therefrom,
20 said depending leg being longer than said attached leg and having a longitudinal groove in its inner face, a presser foot yieldably connected with the inner face of said long leg and having a longitudinally extending rib for engaging the groove in said leg,
25 said presser foot having its free end bent upwardly, and means for preventing said presser foot from excessively binding the threads passed under it.

2. An attachment for knitting machines comprising a supporting bracket, an ap- 30
proximately U-shaped foot member having one leg thereof secured to the end of said bracket, and the other leg depending there-
from, said depending leg being longer than said attached leg and having a longitudinal 35
groove on its inner face, an apertured presser foot having a longitudinal rib on its lower face for engaging the groove in said leg, a screw bolt extending loosely through
said presser foot and engaged with said leg, 40
a spring coiled on said bolt between the head thereof and said presser foot to yieldably hold the latter in engagement with said leg,
and a pin extending upwardly from said leg
in advance of said bolt and passing loosely 45
through said presser foot to prevent excessive binding of the foot on the threads passed thereunder.

In testimony whereof I have hereunto set my hand in presence of two subscribing wit- 50
nesses.

HARRY H. WEST.

Witnesses:

W. A. ROBERTS,
ROBT. F. ROBERTS.