

No. 637,929.

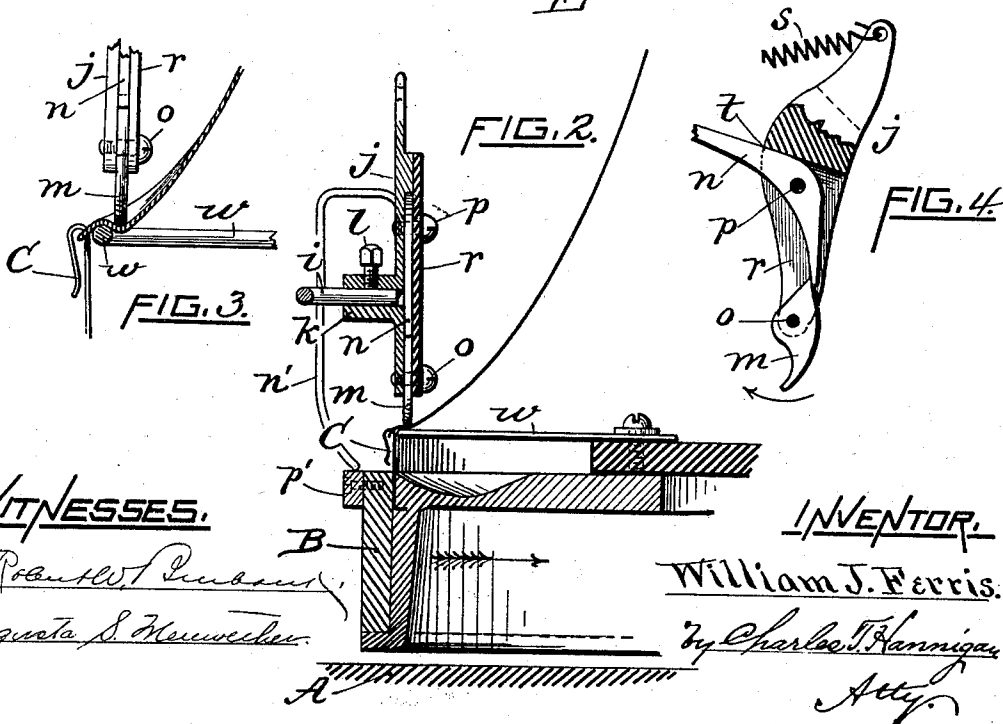
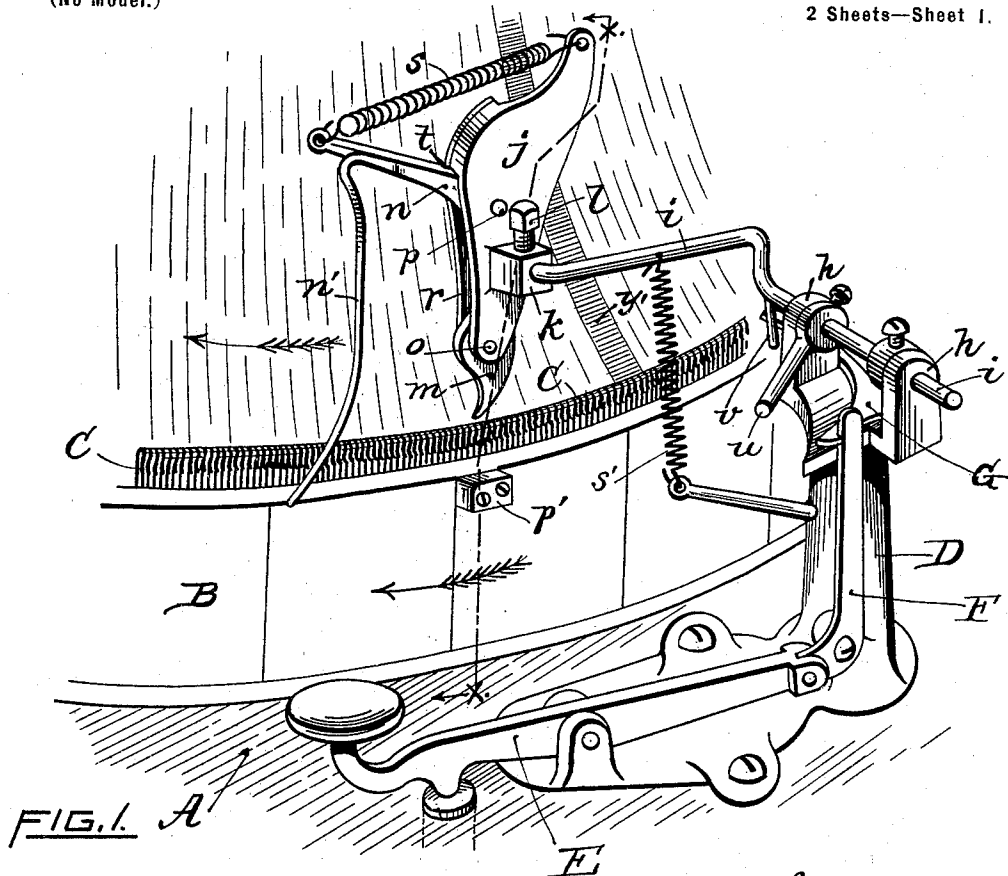
Patented Nov. 28, 1899.

W. J. FERRIS.
STOP MOTION FOR CIRCULAR KNITTING MACHINES.

(Application filed Dec. 28, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

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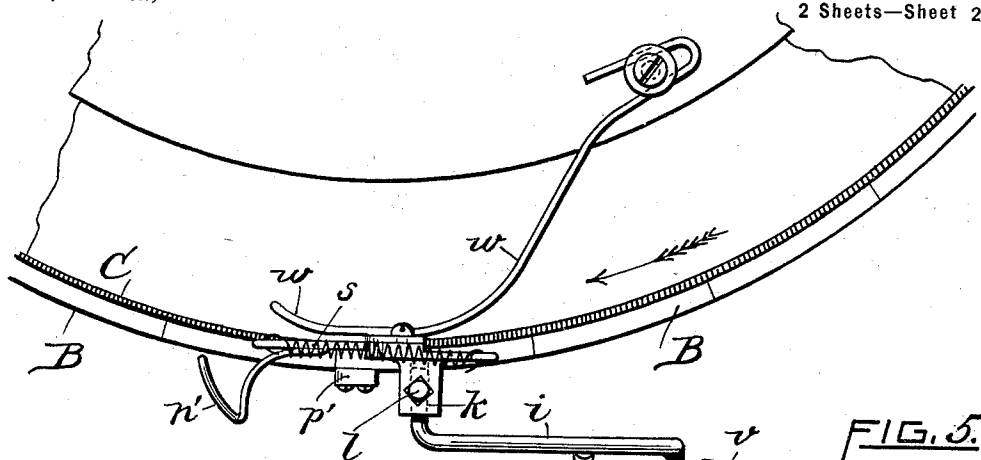


FIG. 5.

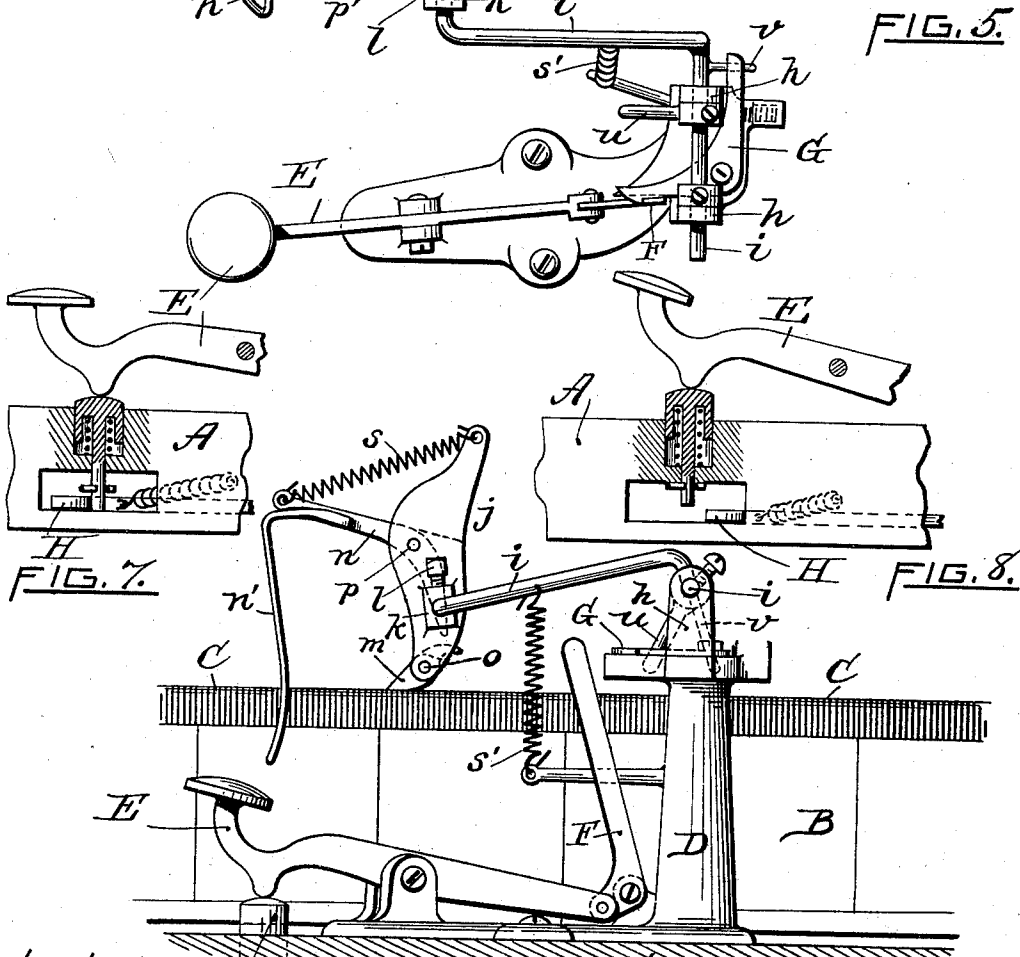


FIG. 7.

FIG. 8.

FIG. 6.

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UNITED STATES PATENT OFFICE.

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STOP-MOTION FOR CIRCULAR-KNITTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 637,929, dated November 28, 1899.

Application filed December 28, 1898. Serial No. 700,547. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. FERRIS, a citizen of the United States of America, and a resident of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Stop-Motions for Circular-Knitting Machines, of which the following is a specification.

My invention relates to a combination of parts adapted to operate in connection with the ordinary stop-motion as used for circular-knitting machines, whereby the machine is instantly stopped when the presser-foot engages with a hole or such imperfection in the fabric during the progress of knitting; and the invention consists in the construction of parts, as hereinafter described and claimed.

Figure 1 represents a perspective view of a portion of a circular-knitting machine, showing the arrangement of parts of my invention as when the machine is running. Fig. 2 is a vertical radial section of the same, taken in line *xx*, Fig. 1, and showing the relative position of my device with the presser-foot bearing upon the knitted fabric. Fig. 3 is an enlarged end view of the presser-foot, showing the form the knitted fabric assumes when passing beneath the same. Fig. 4 is a front view of the guide-box which carries the presser-foot and its trip-lever, said box being partially broken away to show the same. Fig. 5 is a top plan view of Fig. 1 without the knitted fabric and showing the stop-motion with my improvement as when the machine is in operation. Fig. 6 is a front side elevation of the same, showing the position the attachment assumes when the machine is stopped by a broken needle or imperfection in the cloth. Fig. 7 is a portion of the bed of the machine, partially broken away and showing the ordinary construction of spring-plug for holding the shipping-lever while the machine is running. Fig. 8 is a similar view showing the shipping-lever disconnected from the plug and the hand-lever thrown up, as when the machine is stopped.

Like letters of reference correspond to similar parts in the drawings.

A represents the bed of the machine; B, the needle-cylinder; D, the standard, having a base-plate screwed to the top of the bed; E, the hand-lever, pivoted on the base-plate of the standard; F, the vertical latch-arm, piv-

oted on the base-plate of the standard and engaging the end of the hand-lever E; G, the horizontal angle-lever, pivoted to the top plate of the standard and having a latch end to engage on the vertical latch-arm, and H the shipping-lever and its releasing mechanism, as shown in Fig. 7, all these parts being of the ordinary form and arrangement, with which my improvement acts in conjunction.

The top portion of the standard is of a fork-shaped form, having two ears *h h*, in which is journaled the angle-shaft *i*. The extended portion of the shaft *i* turns inwardly for a short distance and radially with the center of the cylinder, and mounted upon this extremity is the guide-box *j*, and, as will be observed by referring to Fig. 2, the box is situated directly over the path of the needles and carries the presser-foot *m*, which bears against the surface of the knitted fabric. Said box is adjustably secured on the shaft by a set-screw *l*, which enters a projecting lug *k*, integral with its outer side. (See Fig. 2.) This guide-box carries two levers, the presser-foot lever *m*, which is pivoted on the stud *o*, and its tripping-lever *n*, pivoted on the stud *p*, respectively. Both levers are in the same plane and inclosed within the box by the cap *r*, through which are inserted the studs, having their ends screw-threaded to fit in the outer side of the box, as illustrated in vertical section in Fig. 2.

The tripping-lever *n* is of a bell-crank form, having one of its arms projecting rearwardly from the box and pulled by the spring *s*, which has its opposite end connected with the top of the box. The movement of said lever is limited by the shoulder *t*. (See Fig. 4.) The inner arm of the lever *n* has its lower extremity overlapping the edge of the presser-foot and holds the same in this position while the machine is knitting the cloth perfect.

Between the ears *h h* of the standard is a stop-arm *u*, which is adjustably secured on the shaft *i* by a set-screw. Another arm *v*, integral with the shaft and situated on the inner side of the standard, is made to engage with the horizontal angle-lever G, pivoted to the top plate of the standard.

s' is the pull-spring, which keeps the presser-foot in contact with the cloth, its upper end connecting with the extended portion of the shaft and its lower end connected to a projecting stud screwed to the side of the standard.

In referring to Fig. 5, *w* represents a wire guide adjustably secured to the top of the inside stationary plate of the machine, said wire having its outer portion curving closely with and to the inner side of the needles and on a level with the same. As the cylinder revolves this wire guides the knitted fabric and is held down upon the same by the presser-foot in the form as shown in vertical section in Fig. 3.

The operation of the above-described mechanism is as follows: Assuming the attachment to be in the position as illustrated in Fig. 1 and the cylinder revolving in the arrow direction, if from any cause a needle should break or a hole should be made in the fabric during the progress of knitting, by the time the cloth with such imperfection passes upon the guide-wire *w* the edge of the presser-foot will strike against the edge of the hole in the cloth, and the movement of the cloth as it revolves with the cylinder will tilt the presser-foot around from engagement with the spring-controlled trip-lever *n*, and the guide-box will be brought downward by the action of the pull-spring *s'* to the position as indicated in Fig. 6, which movement is limited by the adjustable stop-arm *u*, set-screwed to the shaft and which strikes against the top plate of the standard, and by the time this movement takes place the inner arm *v* of the said shaft will have swung rearwardly the horizontal latch-lever *G* from engagement with the vertical latch-arm *F*, and finally the action of the spring-plug situated in the bed-plate (see Fig. 8) will have released the shipping-lever *H*, and thus stop the machine.

p' is a block screwed to the outer side of one of the plates of the cylinder, adapted to pass under the end of the suspended wire *n'*, said block supporting the same until the seam *y'* of the cloth has passed the presser-foot.

To set my improvement for operating, the guide-box is lifted up from the cylinder and the angle-lever *n* is pressed downward with sufficient movement to allow the presser-foot to swing around by gravity to a vertical position, after which the lever *n* is released and its bottom edge overlaps the top edge of the presser-foot and holds the same in its normal position, as shown in Fig. 4. The shipping-lever *H* is then brought forward and held in place by the spring-plug in the bed of the machine. (See Fig. 7.) Said plug is pressed downward by the hand-lever *E*, which movement carries the vertical bell-crank lever to engage upon the latch end of the horizontal lever *G*. The inner arm of the said horizontal lever bears against the fixed arm *v* of the shaft and constitutes the arrangement of parts forming the stop-motion, when the machine is knitting, as represented in Fig. 1.

It will be perceived that in my improved device the presser-foot is located and operative in a vertical plane and parallel to the contiguous needles.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a stop-motion for circular-knitting machines having a shipping-lever an oscillating angle-shaft, and means intermediate said lever and shaft whereby the latter is enabled to control the operation of the former, the combination therewith of a guide-box mounted upon the inner end of said angle-shaft and consisting of two parallel plates one of which has an internal shoulder, a presser-foot centrally pivoted at the lower end of the guide-box between said plates and extending downward therefrom, a bell-crank lever centrally pivoted in said guide-box between said plates and having its lower end engageable with the upper end of said presser-foot, and a spring extending from the upper end of said bell-crank lever to the top of the guide-box and acting normally to hold the upper arm of said lever in contact with said shoulder, substantially as and for the purpose specified.

2. In a stop mechanism for circular-knitting machines having a shipping-lever, and an oscillating shaft, with means intermediate said lever and shaft, whereby the latter is enabled to control the operation of the former, the combination therewith of a guide-box mounted upon the end of said shaft, in which box are pivotally mounted a presser-foot and bell-crank lever engaging each other at their contiguous ends, and a spring from the top of said box to the upper end of said bell-crank lever, substantially as described.

3. In a stop-motion for circular-knitting machines having a shipping-lever, an oscillating shaft, and means whereby the latter is enabled to control the former, a guide-box secured to said shaft, a presser-foot centrally pivoted at the lower end of the guide-box in a vertical plane thereof, a bell-crank lever pivotally mounted in said box and having its lower end engageable with the upper end of the presser-foot, a spring extending from the upper arm of said bell-crank lever to the upper end of said box, a wire having one end fastened to the upper arm of said bell-crank lever and extending downward to a point below the top of the needles, a block or lug secured to one of the plates of the cylinder movable therewith, adapted to support said wire to prevent the presser-foot from being tripped while the seam in the fabric passes the same, with the wire guard *w'* supported at one end within the machine, its outer end curved to lie against the inner sides of the needles between said presser-foot, beneath the knitted fabric, as shown and described.

Signed by me this 27th day of December, 1898.

WILLIAM J. FERRIS.

Witnesses:

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