

(No Model.)

2 Sheets—Sheet 1.

A. M. PERKINS.
CIRCULAR KNITTING MACHINE.

No. 466,424.

Patented Jan. 5, 1892.

FIG. 1.

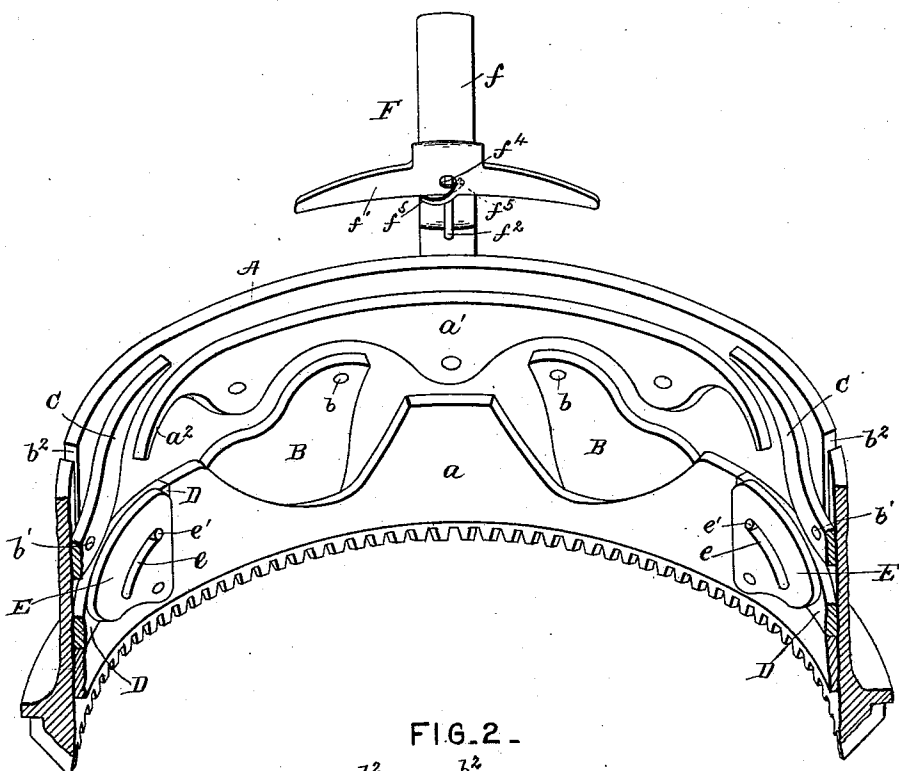
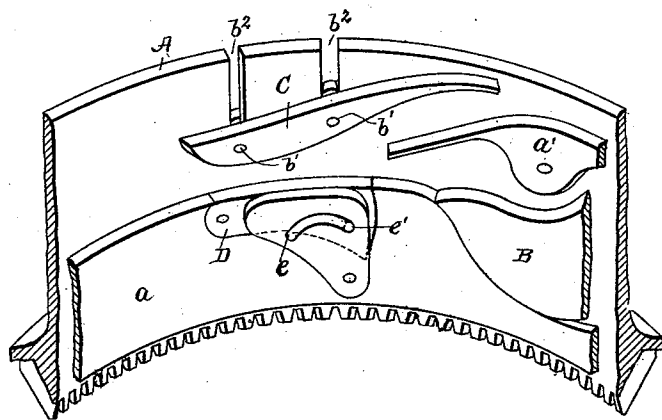


FIG. 2.



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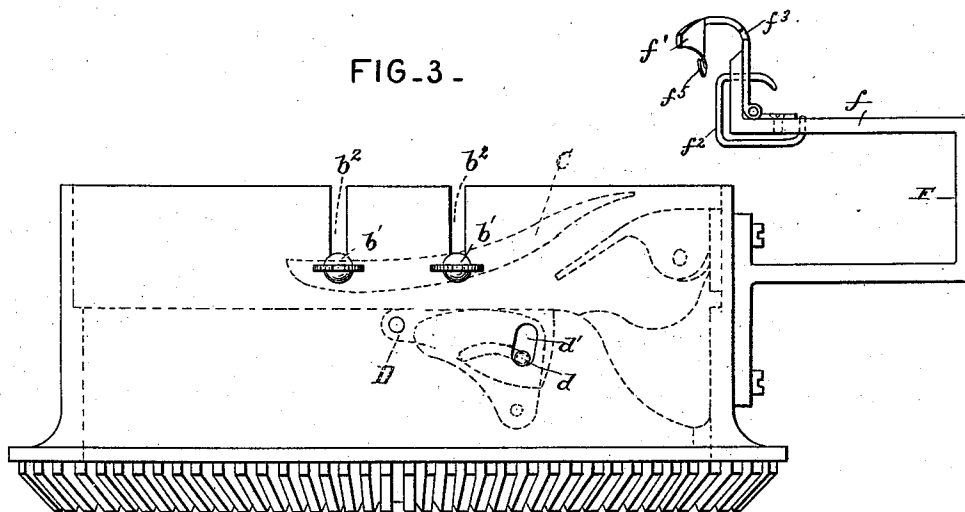


FIG. 4.

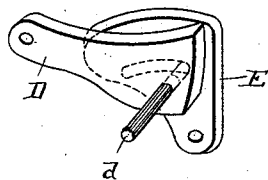


FIG. 5.

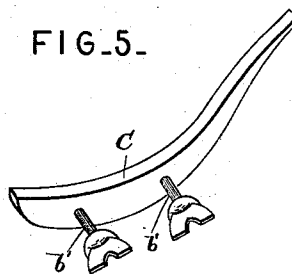
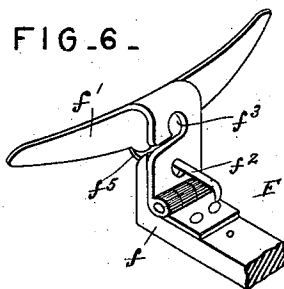


FIG. 6.



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UNITED STATES PATENT OFFICE.

ALICE M. PERKINS, OF LA CROSSE, WISCONSIN.

CIRCULAR-KNITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,424, dated January 5, 1892.

Application filed December 19, 1889. Serial No. 334,286. (No model.)

To all whom it may concern:

Be it known that I, ALICE M. PERKINS, a citizen of the United States, residing at La Crosse, in the county of La Crosse and State of Wisconsin, have invented certain new and useful Improvements in Circular-Knitting Machines; and I do hereby 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention pertains to circular-knitting machines, and has for its object the provision of means whereby a rapid reverse motion may be made without removing the needles from the machine, and change can be made from a tubular web to a flat web of the same number of stitches or less.

The invention comprises a cam-cylinder having two movable switches and two adjustable guides or leaders and cams for holding said switches in place until automatically lowered by the needles coming in contact with said cams under reverse movement.

The invention further comprises the detail construction, combination, and arrangement of parts, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of a portion of a cam-cylinder with my improvements attached thereto. Fig. 2 is a similar view at nearly right angles to the plane of Fig. 1. Fig. 3 is an outside view showing parts in dotted lines. Fig. 4 is a perspective view of one of the switches and its holding-cam. Fig. 5 is a similar view of one of the guides or leaders. Fig. 6 is a detail view of the yarn-carrier.

Referring to the drawings, A designates the cam-cylinder of a circular-knitting machine, (preferably of the Branson type of machine;) α , the bottom or lower stationary cam, and α' the upper or top stationary cam, which according to my invention is provided with extended or inclined ends or fingers α^2 .

B B are the ordinary stitch-cams, which swing loosely at their ends on pins b , secured to cylinder A. The cams α and α' act merely

as guides to convey the needles (not shown) to the stitch-cams B B, which latter swing back or up when the needles pass beneath them to form a stitch.

C C are two guides or leaders curved on their under sides and adjustably secured to the interior of cylinder A by small thumb-screws $b' b'$, projecting therefrom through slots or apertures $b^2 b^2$ in cylinder A. These guides or leaders aid in guiding the needles onto and off from the upper cam α .

D D are switches, which are each pivotally secured at one end, the other end being made to fit snugly against one end of its recess in the lower cam α . These switches have short studs or rods $d d$ projecting therefrom extended through slots or openings d' in the cylinder A, whereby they can be manipulated when it is desired to raise the needles. Adjacent to each of these switches D is pivoted a cam E, having a curved slot e , wherein projects a short lug e' of the switch. These cams E hold the switches elevated and on a line with the projected ends or fingers of the upper cam α' , said cams being so pivoted that they will have passed their central points of gravity when arrested by lugs e' in their slots. The cams E when in this position are extended into the line of travel of the needles when passing from the lower cam α .

In practice to effect the raising of the needles the operator raises one of the rods d , throwing the switch D thereof into alignment with the end of the upper stationary cam α' , the switch being held raised by its cam E. The needles will then pass up onto the cam α' . During this movement stitch-cams B B are lowered, and hence when a reverse motion is imparted the needles not raised will knit when the cams reach them, and passing over the first stitch-cam B will, after raising the adjacent pivoted stitch-cam B to knit, come in contact with the raised cam E and immediately effect the lowering thereof, together with the switch, to the position for knitting.

To produce a flat web utilizing all the needles, the operation is as follows: The edges of the fabric will be formed on two adjacent needles. The cam-cylinder is to be rotated—say from right to left in Fig. 1—until the point of the left-hand switch D is under the needle on which are formed the loops at one

edge of the fabric, the other needles meanwhile passing the cams and being operated thereby in the usual manner. The cam E of the said switch now is turned into position to
 5 raise the switch, and thereafter during the continued movement of the cam-cylinder in the same direction the said edge needle and a number of those following it are deflected upward by the switch onto the top of cam a' ,
 10 passing above the knitting-cams, so as not to be actuated to effect knitting, the other needles to the right of the edge needle referred to, including the other edge needle, being engaged by the knitting-cams and knitting in
 15 the usual manner until the said other edge needle has been passed by the cams, when the direction of movement of the cam-cylinder may be reversed. The movement of the cam-cylinder is arrested before the top cam a' has
 20 passed beyond any of the needles which have been directed onto the top of the same. In the reverse movement of the cam-cylinder the raised needles are guided downward into their normal working position by the left-hand guide
 25 or leader, while the needles which last were engaged by the cams again are actuated by the latter, and all the needles in succession are operated to knit until the edge needle which before was not raised has passed onto and to the
 30 point of the right-hand switch D, when the said cam is raised to guide the said edge needle and those following it onto the top cam a' , the needles preceding the raised ones being engaged by the cams and actuated to knit.
 35 The movement of the cam-cylinder now is again reversed. After each reversal the lifted switch-cam remains up until the leading or edge needle in operation, after being passed by the knitting-cams, is struck by the cam E
 40 and causes the latter to move and to depress the switch-cam.

F designates the yarn-carrier, which is composed of a stationary arm f and a pivoted arm f' , which is held firmly in position by a spring
 45 f^2 bearing thereon, secured to arm f . In the pivoted arm is formed an elongated slot f^3 ,

coincident with which in the front curved portion is an eye f^4 and two overlapping curved arms f^5 . By this construction the thread is readily applied to the carrier and
 50 the same greatly aids in threading the machine.

I claim as my invention—

1. In a knitting-machine, the upper stationary cam having projecting ends or fingers, the
 55 pivoted switches adapted for being brought into alignment with said ends or fingers, and the means for raising and automatically lowering said switches, substantially as set forth.

2. In a knitting-machine, the upper stationary cam, the pivoted switches, and the cams
 60 connected to said switches for holding the same elevated, said cams when raised being extended into the line of travel of the needles, so as to be automatically lowered there-
 65 by, substantially as set forth.

3. In a circular-knitting machine, the upper stationary cam having projecting ends or fingers, the pivoted switches having short projecting
 70 rods, and the cams connected to said switches for holding the same elevated and effecting the lowering thereof, substantially as set forth.

4. In a circular-knitting machine, the upper stationary cam having projecting ends or fingers,
 75 the pivoted switches, the cams connected thereto for holding the same elevated and effecting the lowering thereof, and the upper guides or leaders, substantially as set forth.

5. In a circular-knitting machine, the combination, with the cam-cylinder having slots
 80 therein, of the upper stationary cam having projecting ends or fingers, the pivoted switches, the upper guides or leaders, and the thumb-screws secured thereto projecting
 85 through said slots, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALICE M. PERKINS.

Witnesses:

M. P. WING,

C. E. SERVIS.