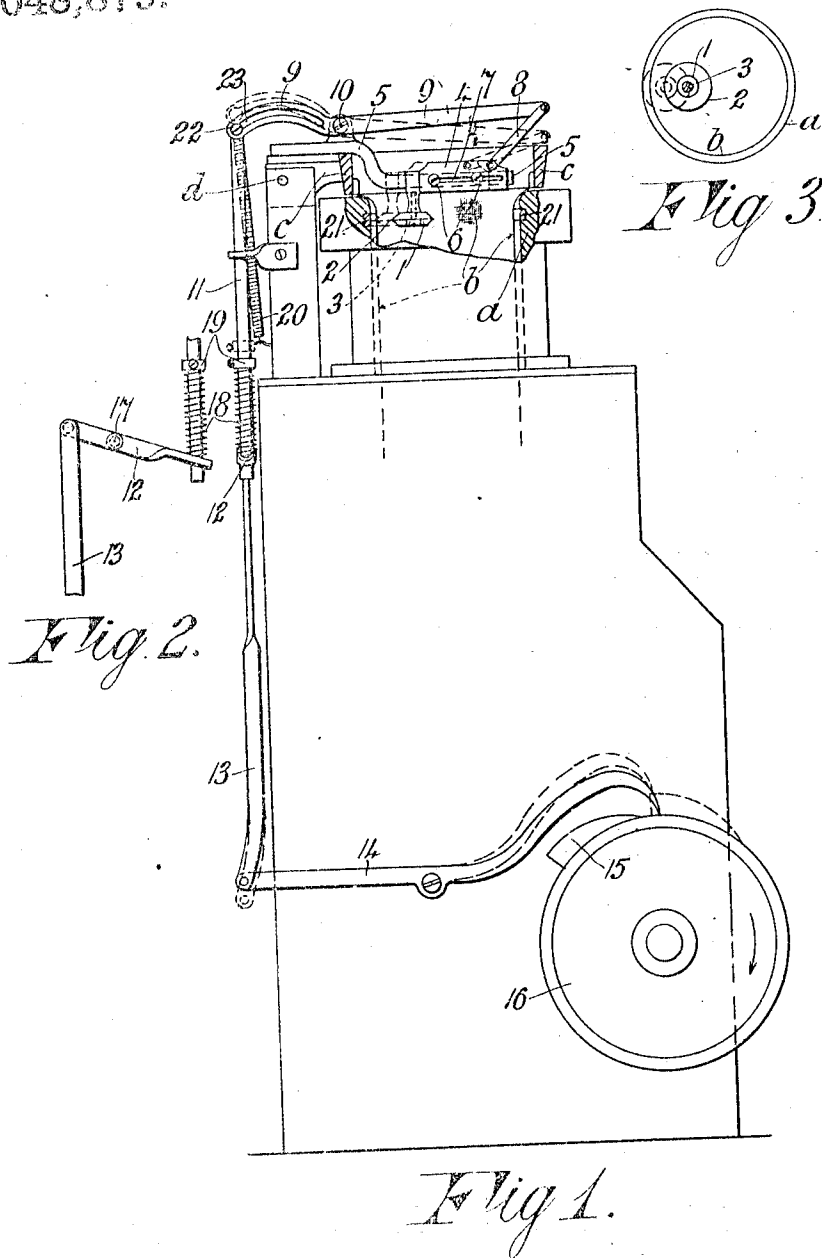


W. RAVEN.
WEB CUTTER FOR CIRCULAR KNITTING MACHINES.
APPLICATION FILED DEC. 16, 1911.

Patented Dec. 31, 1912.

1,048,879.



Witnesses

John C. Sanders

Albert F. Humen

Inventor.

William Raven
BY *W. M. Miller*

ATTY

UNITED STATES PATENT OFFICE.

WILLIAM RAVEN, OF LEICESTER, ENGLAND.

WEB-CUTTER FOR CIRCULAR-KNITTING MACHINES.

1,048,879.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed December 16, 1911. Serial No. 666,256.

To all whom it may concern:

Be it known that I, WILLIAM RAVEN, a subject of the King of Great Britain, residing at Leicester, in the county of Leicester, England, have invented certain new and useful Improvements in or Relating to Web-Cutters for Circular-Knitting Machines, of which the following is a specification.

This invention relates to circular knitting machines and comprises automatic mechanism for cutting off predetermined lengths of fabric as it is being knitted.

The invention includes a cutter and means interposed between it and a pattern wheel, chain or equivalent for periodically automatically operating the cutter and causing it to sever the fabric. The cutter is located within the needle cylinder and is moved into and out of the cutting position at the desired times. Preferably a circular cutter is employed, carried revolutely upon a spindle mounted on a slide movable to and fro along an arm or bracket so that the cutter may be brought into and out of contact with the fabric in the cylinder. The said slide may be actuated through the medium of links, rods, and levers from the pattern wheel, chain, or equivalent, a spring being preferably combined with the slide or its actuating mechanism to move the cutter to its inoperative position. When moved into the operative position, the cutter severs the fabric by contact therewith, the cutter pressing the fabric against the inside of the cylinder. A ring, preferably of hardened steel, may be let into the interior of the cylinder between which ring and the cutter the fabric may be severed.

In order that the invention may be clearly and readily understood, reference will be made in the following further description to the accompanying drawing, wherein:—

Figure 1 is a partly sectional elevation of a knitting machine furnished with one form and arrangement of fabric severing mechanism according to this invention. Fig. 2 is a side view of part of the actuating mechanism of the cutter. Fig. 3 is a diametrical plan view showing the relation of

the cutter, the fabric and the inside of the needle cylinder:

Referring to the drawing, *a* is the needle cylinder and *b* is the circular fabric passing down through the said needle cylinder.

The form of severing mechanism illustrated in the accompanying drawing, comprises a cutter 1 which is, by preference, in the form of a disk having a sharp peripheral cutting edge 2. The cutter disk is preferably loosely *i. e.* revolutely mounted upon a screw or spindle 3 carried by a slide 4 and the said slide is movably arranged on an arm or bracket 5 (for example by means of screws 6 passed through a slot or slots 7 in the slide 4) attached to a convenient part of the framing of the machine, conveniently to the usual pivoted ring *c*. The slide 4 may be actuated to and fro along the arm or bracket 5 by means of a link 8 pivotally connected to the said slide and to one end of a rock lever 9 fulcrumed at 10 and connected at its opposite end to a slide rod 11. The said slide rod 11 receives actuation from a lever 12 (Fig. 2) connected by a link 13 to a rock lever 14. Movement is imparted to the rock lever 14 by means of a stop or dog 15 on a pattern wheel 16 rotated by any suitable driving means in the knitting machine. The lever 12 is fulcrumed at 17 and this lever transmits movement to the slide rod 11 through the medium of a spring 18 which conveniently may be located around the rod 11 and between a collar 19 thereon and the end of the lever 12. The lever 12 actuates the rod 11 by compressing the spring 18 and thus the cutter 1 is pressed against the inside of the needle cylinder *a* with a yielding pressure. The pressure of the spring 18 may be adjusted by moving the collar 19 in position along the rod 11 to prevent the edge 2 of the cutter 1 pressing with too much force against the inside of the needle cylinder. The slide rod 11 is normally drawn down by means of a spring 20 and thus the cutter 1 is normally held in the inoperative position, which position is represented by the full lines in Figs. 1 and 3.

When in the inoperative position, the peripheral cutting edge 2 of the cutter 1 is clear of the rotating circular fabric *b* in the cylinder *a* but when, during the rotation of the wheel 16, the dog 15 moves under the adjacent end of the rock lever 14, the latter is moved as indicated by the dotted lines and by means of the link 13 rocks the lever 12 and raises the slide rod 11 by means of the spring as aforesaid. This movement of the slide rod 11 rocks the lever 9 which thereby actuates the slide 4 as represented by the dotted lines so that the cutter 1 is moved into contact with the rotating circular fabric *b*, the sharp peripheral edge 2 of the cutter pressing the fabric against the interior of the cylinder *a* and thereby severing said fabric. The operative *i. e.* cutting position of the cutter is represented by dotted lines in Figs. 1 and 3.

When the stop or dog 15 moves from under the end of the lever 14, the spring 20 returns the mechanism to its normal position thereby withdrawing the cutter 1 until the dog 15 again actuates the mechanism. The cutter 1 being loose on its screw or spindle 3 will be rotatably moved on its axis at each contact with the rotating fabric *b* and thus the wear, engendered by cutting through the fabric, will be distributed approximately equally around the whole of its circumferential cutting edge 2.

For the purpose of receiving the thrust of the cutting edge 2 of the cutter 1, a ring 21, preferably of hardened steel, may be let into the interior wall of the needle cylinder *a*. When the cutter is moved into the operative position its cutting edge 2 will press the fabric *b* into contact with and sever it against the said ring 21.

The frequency with which the cutter 1 is moved into position to sever the fabric depends upon the purpose of the latter, but whether it is at the termination of each stocking leg or toe, or at each length of fabric sufficient for a sleeve or other article, it is determined by the arrangement and number of stops 15 on the pattern wheel 16 or its equivalent. The pin 22 which connects the slide rod 11 and the rock lever 9, preferably passes through a curved slot 23 in the latter, this allowing the ring *c*, carrying with it the arm 5, cutter 1, and lever 9, to be turned upward on its pivot *d* and raised from the needle cylinder *a* in the customary manner.

What I claim then is:—

1. For a circular knitting machine, mechanism for cutting off predetermined lengths of fabric, consisting of a cutter located within the needle cylinder, and means for automatically moving the cutter into and out of the cutting position.

2. For a circular knitting machine, auto-

matic mechanism for cutting off predetermined lengths of fabric, comprising a cutter located within the needle cylinder, a driven pattern member, and connections between said cutter and the pattern member whereby the cutter is brought into and out of the operative position to sever the fabric at the times required.

3. For a circular knitting machine, fabric severing mechanism consisting of a circular rotary cutter disk having a sharp peripheral cutting edge, means to movably support the cutter disk within the cylinder, and means to automatically move the cutter bodily into and out of the cutting position and cause it to press the fabric against the interior wall of the cylinder to sever said fabric.

4. For a circular knitting machine, fabric severing mechanism comprising a circular cutter disk having a sharp peripheral cutting edge, means to move said cutter bodily and bring its cutting edge into and out of contact with the interior wall of the needle cylinder so that it severs the fabric thereagainst, and means to loosely support said cutter so that it is rotatably driven by contact with the rotating fabric and needle cylinder when severing the fabric whereby the wear is distributed around the whole of the circumferential cutting edge of the cutter.

5. For a circular knitting machine, fabric severing mechanism comprising a circular disk cutter located within the needle cylinder, means to movably support said cutter so that it may be moved into and out of contact with the interior wall of the said cylinder, an actuating device for the cutter, and adjustable yielding connecting means between said actuating device and the cutter whereby the pressure of the latter against the wall of the cylinder during the severance of the fabric may be varied for the purpose described.

6. For a circular knitting machine, fabric severing mechanism consisting of a circular disk cutter, a slide, a pin by which the cutter is rotatably mounted upon the said slide, a fixed arm on which the slide is movable to bring the cutter into and out of the operative position on the interior of the needle cylinder, a rock lever, a pivoted link connecting the slide with the rock lever so that the latter may actuate the slide in the manner aforesaid, a slide rod to actuate the rock lever, a lever to actuate said slide rod in one direction, a spring to actuate said slide rod in the opposite direction, a spring adjustably arranged and forming the operable connection between the slide rod and its actuating lever, a link to operate the latter, a pivoted rock lever to actuate said link, and a pattern wheel adapted to actuate said rock lever at the time or times re-

quired, substantially as and for the purpose described.

7. A circular knitting machine having fabric severing mechanism consisting of a cutter, means to move said cutter into and out of contact with the inner wall of the needle cylinder so that it presses the fabric thereagainst to sever the same, and a steel ring let into the inner wall of the needle

cylinder to receive the thrust of the cutting edge of the cutter during the severance of the fabric, substantially as described.

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

WILLIAM RAVEN.

Witnesses:

E. N. LEWIS,
GEORGE LESTER.