

(No Model.)

L. N. D. WILLIAMS.
KNITTING MACHINE.

No. 503,922.

Patented Aug. 22, 1893.

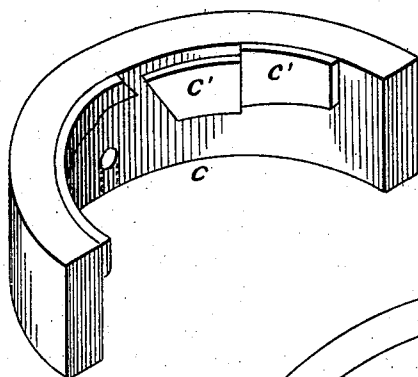
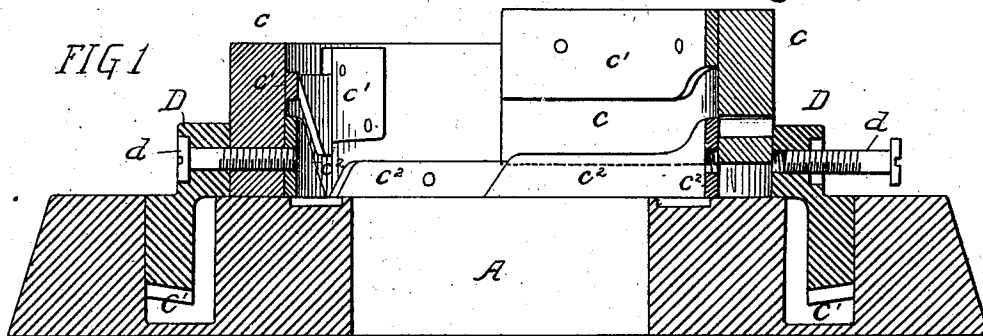
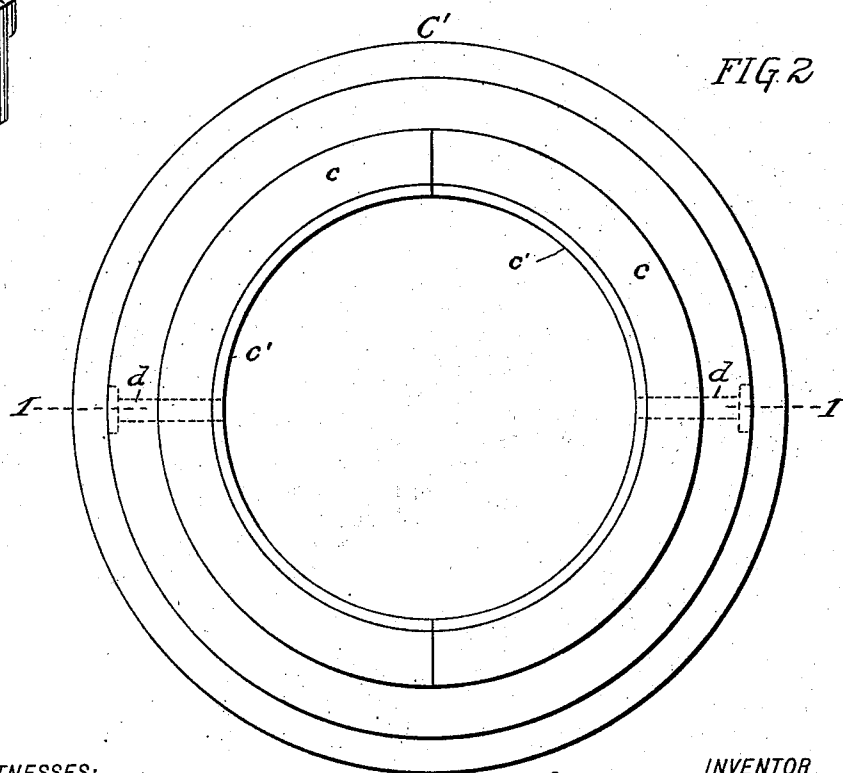


FIG 3



WITNESSES:

A. S. Moore
Hinkade.

INVENTOR

Louis N. D. Williams

BY

Jos. E. Carter

ATTORNEY.

UNITED STATES PATENT OFFICE.

LOUIS N. D. WILLIAMS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO ROBERT W. SCOTT, OF SAME PLACE.

KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 503,922, dated August 22, 1893.

Application filed May 17, 1893. Serial No. 474,522. (No model.)

To all whom it may concern:

Be it known that I, LOUIS N. D. WILLIAMS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to certain improvements in knitting machines in which the cam ring is provided with a removable segment, or where the entire ring is divided into a number of segments, and its object is to so construct the cam ring that the segment or segments may be readily removed when it becomes necessary to gain access to the needles on any portion of the needle cylinder to make examinations or repairs.

In the accompanying drawings:—Figure 1, is a sectional elevation on the line 1—1, Fig. 2 of sufficient of a circular knitting machine to illustrate my invention. Fig. 2, is a plan view of the cam ring and its supporting gear, and Fig. 3, is a detached perspective view of one of the cam segments.

Referring to the drawings, A represents the base of an ordinary form of circular knitting machine, of small diameter, to which is secured the needle cylinder (not shown). The base is provided, as usual, with a circular guideway for a cam ring C, having cams for actuating the needles of the cylinder, and provided with a bevel gear C', which engages a driving pinion for rotating the same.

In the accompanying drawings all unnecessary portions of the machine irrelevant to the invention, have been omitted for the sake of clearness, and for further details of construction, reference is to be had to Letters Patent of the United States, numbered 421,147, granted to Robert W. Scott and Louis N. D. Williams on the 11th day of February, 1890.

The present invention is designed more especially for use in connection with machines

of small diameter, such for instance as those used for knitting stocking tubes, and the cam ring is shown as divided into but two segments although the number may be increased to any desired extent. The invention is also applicable to machines of larger diameter such as those used for the manufacture of shirt bodies, &c., and as described in the above mentioned patent.

The cam ring is divided into any desired number of segments *c*, two in the present instance, which form, when in position, a continuous circular ring. Each section may be removed from its position without disturbing the other section or sections, and each is independently secured to a base ring D, preferably formed integral with the bevel gear C'. Secured to, or formed integral with, these segments are the upper sections *c'*, of the operating cams, that is, that portion of the cam above the groove traversed by the needle bits, and this portion of the cam moves in a vertical direction with the segment of the cam ring to which it is attached when the latter is removed, and the needle bits, being below the section *c'*, of the cam, will not interfere with this upward movement. That section *c''*, of the cams, below the path of the needle bits, is separate from the main cam ring, and when the latter is removed, the section *c''* may be moved out into the space left between the base ring D, and the needle cylinder, or, in some cases it may not be necessary to move it from its normal position. These lower sections of the operating cams are held to the segments *c* by screws *d* which extend through the base ring, the segments, and the said lower sections *c''*, and it is only necessary to employ a single screw for each segment, or, where the lower *c''*, is divided circumferentially, a screw may be used to hold each section in place.

In Fig. 1, I have shown one of the screws *d* removed, and the removable segment it holds, partially raised from its normal position; the further upward movement will bring the lower edge of the segment above the base ring D, and it may then be removed laterally. The lower section *c''*, remains under the needle bits until the segment is entirely removed and a clear space is then left between the base ring

D and the needle cylinder to permit its lateral movement from under the needle bits. In some cases the orifice made for the passage of the screw *d*, through the cam segment may be continued in the form of a slot extending to the lower edge of the segment as shown in dotted lines in Fig. 3, so that to remove the latter it will merely be necessary to loosen the holding screw *d* sufficient to permit the withdrawal of the segment, and afterward the lower section may be drawn into the space between the base ring and the needle cylinder, by means of the screw *d*.

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

1. A cam ring for knitting machines, having a removable segment, operating cams formed in two sections, situated respectively above and below the needle bits and forming a groove in which such needle bits may travel, the lower of such sections being detachably connected to the removable segment, and the upper of such sections being secured to the removable segment, substantially as specified.

2. A cam ring for knitting machines, having a removable segment, operating cams formed in two sections, situated respectively above and below the needle bits and forming a groove in which such needle bits may travel, the lower of such sections being detachably connected to the removable segment, and the upper of such sections being secured to the removable segment, and said cam ring having also a base ring forming a rear supporting

wall for the segment, substantially as specified.

3. A cam ring for knitting machines, having a removable segment, or comprising a series of removable segments, operating cams formed in two sections, situated respectively above and below the needle bits and forming a groove in which such needle bits may travel, the lower of such sections being detachably connected to the removable segment and the upper of such sections being secured to the removable segment, and said cam having also a base ring forming a rear supporting wall for the segment and to which it is secured, substantially as specified.

4. A cam ring having a removable segment, operating cams formed in two sections, situated respectively above and below the needle bits and forming a groove in which such needle bits may travel, the lower of such sections being detachably connected to the removable segment, and the upper of such sections being secured to the removable segment, said cam ring having also a base ring forming a rear support for such segment, and a securing screw extending through such base ring, the segment, and the lower section of the operating cam, substantially as specified.

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

LOUIS N. D. WILLIAMS.

Witnesses:

JNO. E. PARKER,

H. GORDON McCOUCH.