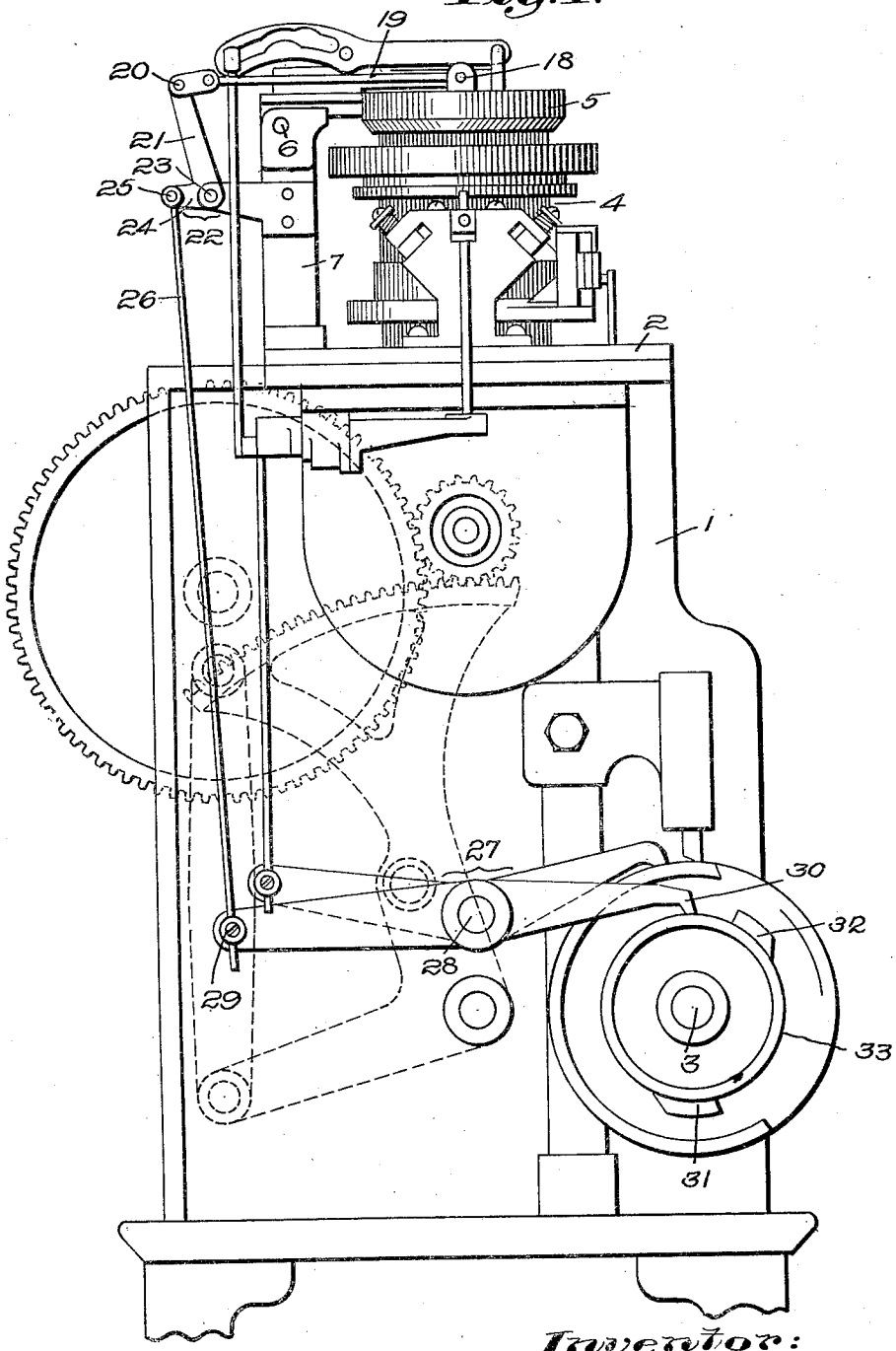
April 5, 1932. A. GAGNÉ 1,852,607

LATCH RING FOR CIRCULAR KNITTING MACHINES

Filed May 2, 1929 2 Sheets-Sheet 1

Fig. 1.



Inventor:
Augustin Gagné,
by Every, Booth, Verney & Townsend
Attys.

April 5, 1932. A. GAGNÉ 1,852,607

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Fig. 2.

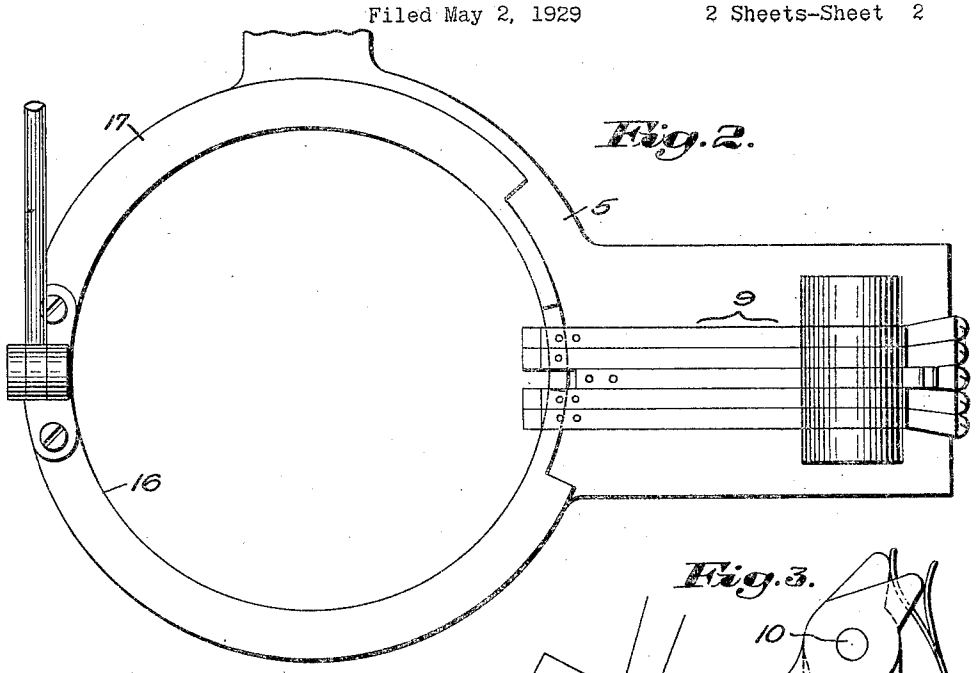


Fig. 3.

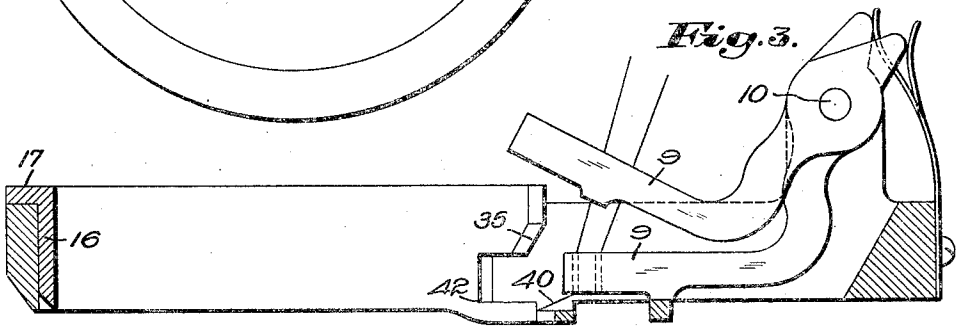


Fig. 4.

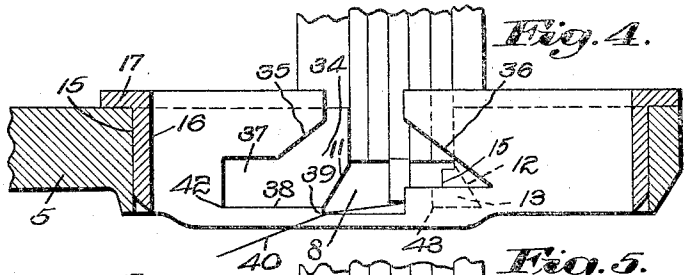
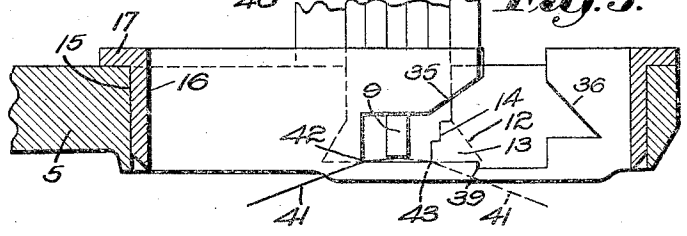


Fig. 5.



Inventor:
Augustin Gagné,
by Emery, Booth, Varney & Townsend
Attys

Patented Apr. 5, 1932

1,852,607

UNITED STATES PATENT OFFICE

AUGUSTIN GAGNÉ, OF CENTRAL FALLS, RHODE ISLAND, ASSIGNOR TO HEMPHILL COMPANY, OF CENTRAL FALLS, RHODE ISLAND, A CORPORATION OF MASSACHUSETTS

LATCH RING FOR CIRCULAR KNITTING MACHINES

Application filed May 2, 1929. Serial No. 359,827.

This invention relates to latch ring for circular knitting machine.

In order that the principle of the invention may be readily understood, I have disclosed a single embodiment thereof in the accompanying drawings, wherein—

Fig. 1 is an end elevation of parts of a circular knitting machine having the latch ring of my invention applied thereto;

Fig. 2 is a plan view of the head of a circular knitting machine having my invention applied thereto;

Fig. 3 is a vertical transverse section of the construction shown in Fig. 2;

Fig. 4 is a transverse section taken through the latch ring and showing the supplementary or auxiliary ring thereof in position for knitting the leg of the stocking;

Fig. 5 is a similar view showing the supplementary or auxiliary ring in position for knitting the heel or the toe of the stocking; and

Fig. 6 is a perspective view, with parts broken away, of a part of the latch ring viewed from the inside, the supplementary or auxiliary ring being omitted.

The invention is applied to any circular knitting machine of the independent latch needle type, as, for example, the well known Banner machine to which it is here represented as applied.

In the drawings, the frame of the machine is represented at 1, the bed plate at 2, the pattern cam shaft at 3, the needle cylinder at 4 and the usual latch ring at 5, the latter having an extension pivoted at 6 to an upright standard 7, so that the latch ring may be turned up out of action. Said latch ring 5, being of usual construction and purpose excepting as hereinafter stated, need not be described in detail. It is provided with an opening or throat 8 into which, or into feeding relation to which, each of the yarn fingers 9 is adapted to be moved in accordance with the pattern control, as indicated in Fig. 3, where one of the yarn fingers 9 is represented as swung downward upon its pivot 10 into feeding position. The said throat 8 is provided with two inclined edges at the lower part thereof, as shown at 11 and 12. Desirably the inclined edge 12 is covered by a formation, either integral therewith or constituting a filling-in piece, as shown at 13, and stepped as represented at 14 to provide a feeding corner for the thread or yarn, as most clearly shown in Fig. 6. Suitably supported within the opening 15 of the latch ring 5 is provided the supplementary ring 16, here shown as having a flange 17 at its upper end, resting upon the upper edge of the latch ring 5 in such manner that it can be turned in partial rotation either manually or automatically as desired.

In the present embodiment of the invention, I have represented means for automatically turning said supplementary ring 16 so that during circular knitting, as, for example, the leg or the foot of the stocking, said supplementary ring will occupy the position shown in Fig. 4, and during the knitting of the heel and toe will occupy the position shown in Fig. 5.

While any suitable operating connections may be provided for turning the ring, I have herein represented the supplementary ring 16 as provided with an upstanding ear 18 having pivotally connected thereto a link 19 itself pivotally connected at 20 to an arm 21 of a bell crank lever 22 pivoted at 23 and having a second arm 24 to the outer end of which is connected at 25 a link 26 extending downwardly to a lever 27 pivoted at 28 on the framing. Said link 26 is pivotally connected to said lever 27 at 29, and said lever 27 is provided with a toe 30 adapted to be acted upon by suitable cams 31, 32 upon a disk or other cam member 33 on the pattern shaft 3. In this or in any other suitable manner the supplementary ring 16 is adapted to be moved at the commencement of the heel and at the commencement of the toe, from the position shown in Fig. 4 to the position shown in Fig. 5.

The supplementary ring 16 is provided with an opening 34, most clearly shown in Figs. 3, 4 and 5, providing inclined edges 35, 36, and at a lower level and to the left of the inclined edge 35, viewing Fig. 4, with a horizontal prolongation 37 in line with which are the yarn finger or fingers that is or are in

operating position during reciprocating knitting, as shown in Fig. 5. The lower edge 38 of the prolongation 37 is shown as horizontal and terminating at one end in a vertical shoulder 39, against which the infeeding yarn (indicated at 40) takes, as represented in Fig. 4. It is not essential that the horizontal edge 38 be continuous or prolonged, but for the purpose of my invention the shoulder 39 should be provided for the purpose stated. Said shoulder 39 functions when the feeding yarn extends to the left to the needles, viewing Fig. 4 (that is to say, when circular knitting occurs). During circular knitting the said supplementary ring 16 occupies the position shown so that the throat opening 34 thereof more or less coincides with the throat opening 8 of the main latch ring 5. When, however, the heel or the toe is to commence, the supplementary ring 16 is turned by the means described into the position shown in Fig. 5, and in one direction of reciprocation of the needle cylinder, the infeeding yarn 41 takes against the corner 42 at the far end of the prolongation 37, as shown in Fig. 5 in full lines, and in the opposite direction of reciprocation the yarn 41 takes against the corner 43, as indicated in dotted lines in said figure.

It will be evident from the foregoing description that I have provided a latch ring which has formations or shoulders for guiding or directing or supporting the infeeding yarn or yarns in each direction of reciprocation of the needle cylinder and that there is also provided a formation or cylinder similarly functioning for the yarn or yarns introduced in circular knitting.

Having thus described one illustrative embodiment of the invention, it is to be understood that although specific terms are employed, they are used in a generic and descriptive sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

Claims:

1. In a circular knitting machine, a latch ring having a supplementary member adapted to be turned relative thereto, said complete ring having a shoulder or formation for guiding or directing the infeeding yarn or thread in circular knitting and other shoulders or formations for guiding or directing the infeeding yarn or thread in each direction of reciprocation.

2. In a circular knitting machine, a main latch ring member having a throat provided with an in-feeding yarn or thread guiding formation and an inner latch ring member adapted to be turned with respect thereto and providing in one position a shoulder or formation for guiding the infeeding yarn in circular knitting, and another shoulder or formation for guiding the yarn in one direction of reciprocating knitting.

3. In a circular knitting machine, a main latch ring member having a throat and an inner latch ring member adapted to be turned with respect thereto and providing in one position a shoulder or formation for guiding the infeeding yarn in circular knitting, and another shoulder or formation for guiding the yarn in one direction of reciprocating knitting, the main member of the latch ring having a shoulder or formation for guiding the yarn in the other direction of reciprocation.

4. In a circular knitting machine, a two-part latch ring composed of a ring member 5 having a throat 8 and an inner ring 16 supported by the ring 5 and having a throat 34 provided with a prolongation 37 presenting a shoulder 39 for guiding the infeeding yarn in circular knitting and a shoulder 42 for guiding the yarn in one direction of reciprocating knitting.

5. In a circular knitting machine, a two-part latch ring composed of a ring member 5 having a throat 8 and an inner ring 16 supported by the ring 5 and having a throat 34 provided with a prolongation 37 presenting a shoulder 39 for guiding the infeeding yarn in circular knitting and a shoulder 42 for guiding the yarn in one direction of reciprocating knitting, said throat 34 having latch opener edges 35, 36.

6. In a circular knitting machine, a main latch ring member having an inner supplementary member adapted to be turned relative thereto, said main member having a shoulder or formation for guiding or directing the in-feeding yarn or thread in one direction of reciprocting knitting, and said supplementary member having two shoulders or formations which respectively guide or direct the in-feeding yarn or thread in circular knitting and in one direction of reciprocating movement.

In testimony whereof, I have signed my name to this specification.

AUGUSTIN GAGNÉ.