(No Model.) 3 Sheets—Sheet 1.

J. C. EGLY.

CIRCULAR KNITTING MACHINE.

No. 466,093. Patented Dec. 29, 1891.

Fig. 1.

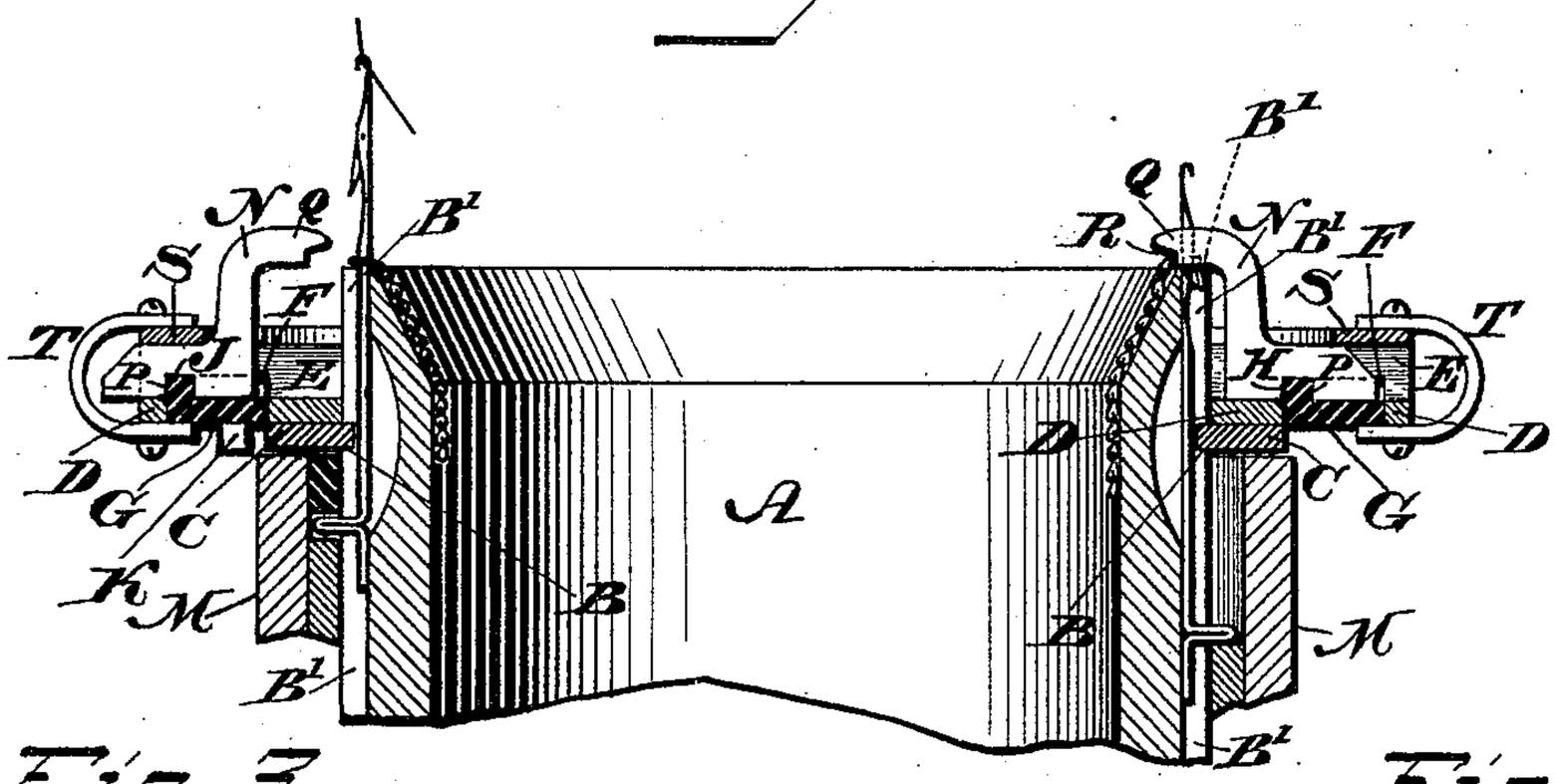


Fig. 3.

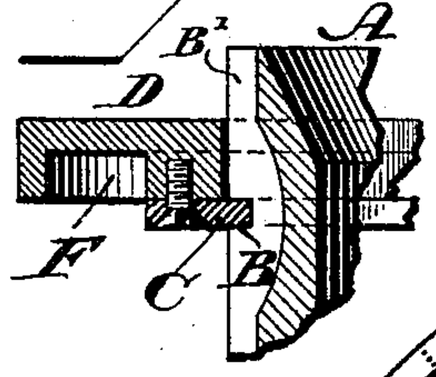


Fig. 2.

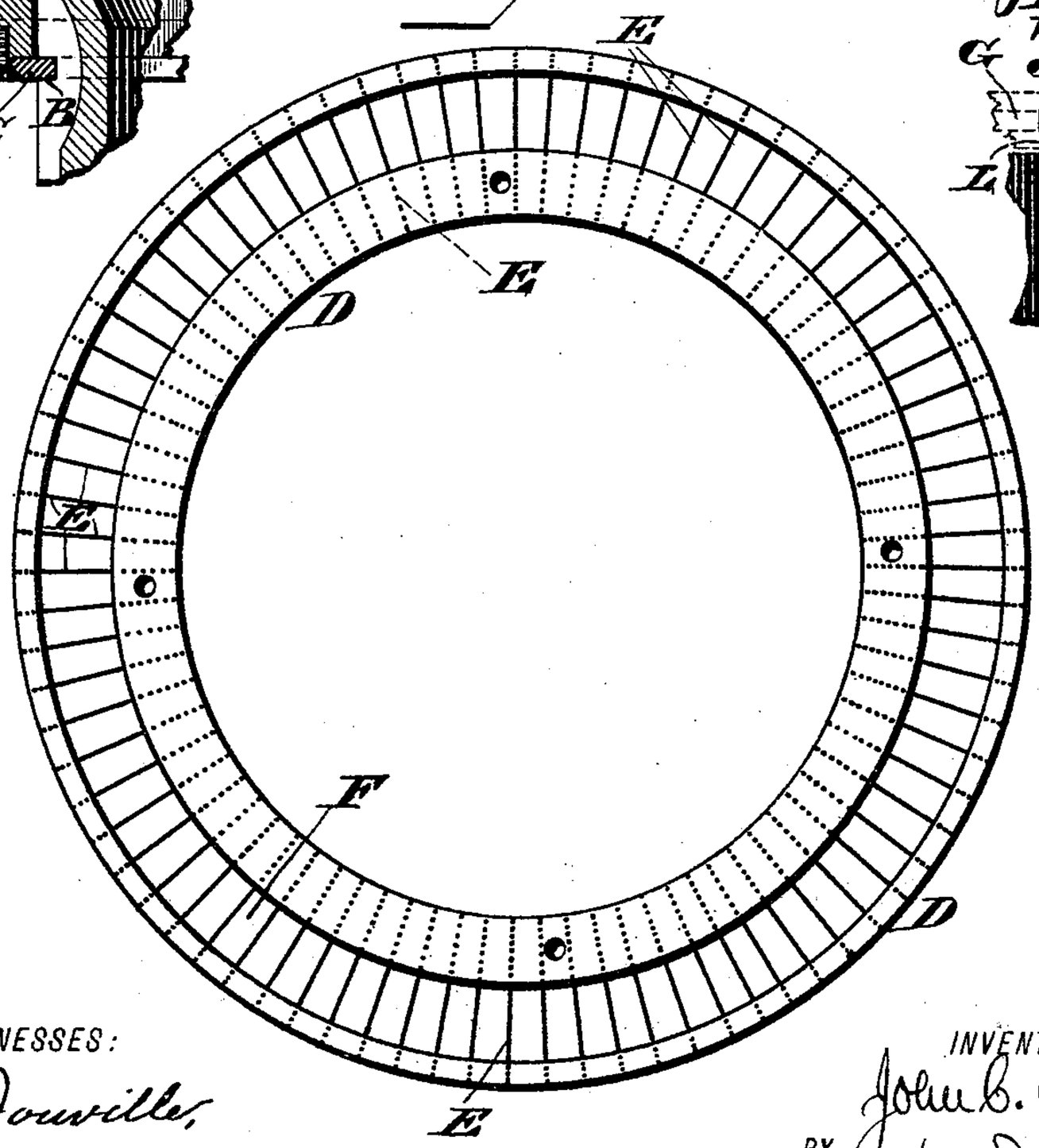
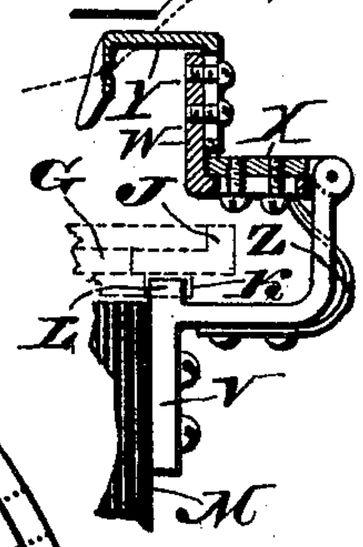


Fig. 4.



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(No Model.) 3 Sheets—Sheet 2.

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CIRCULAR KNITTING MACHINE.

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Fig. 5.

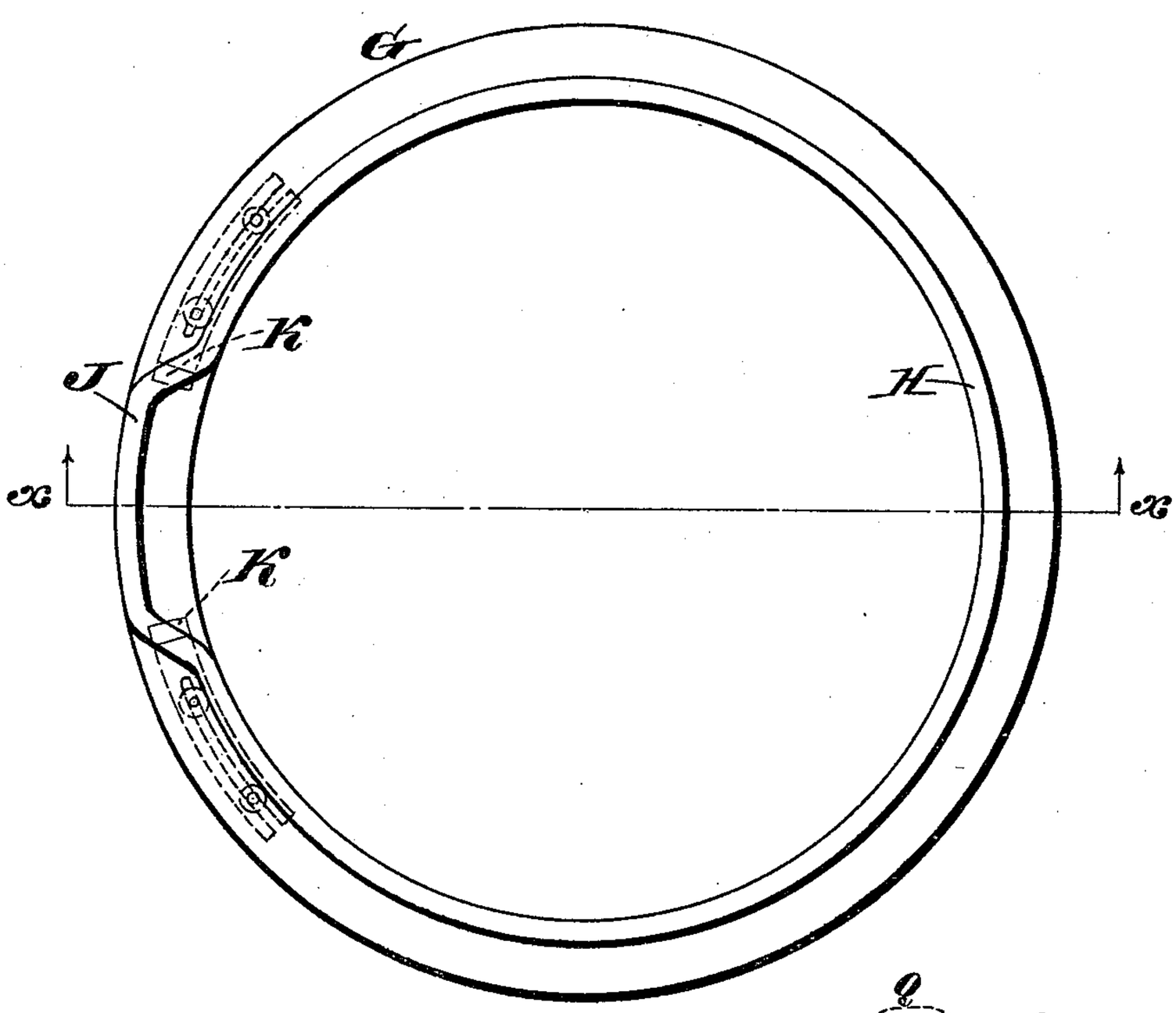


Fig. 6.

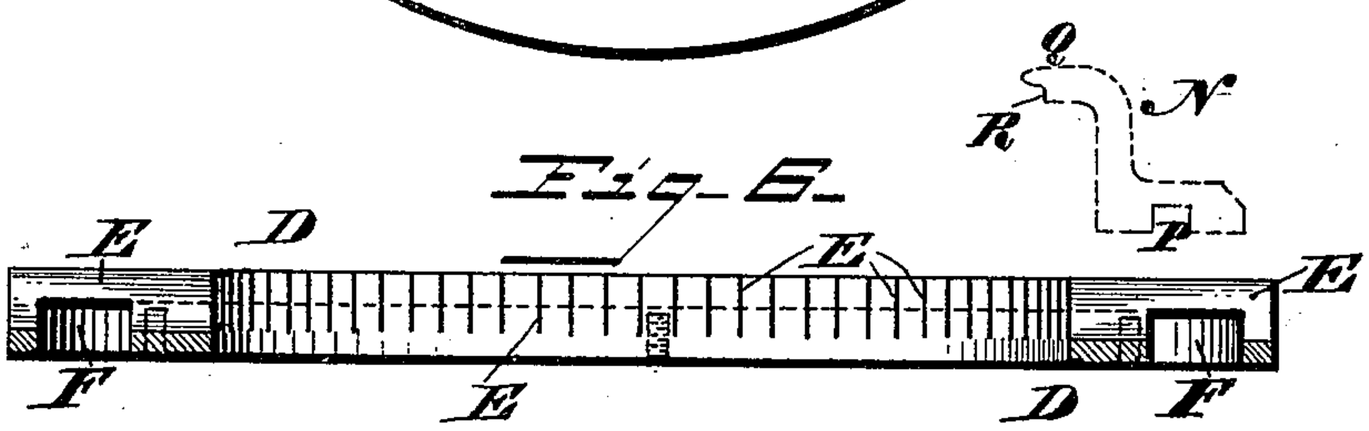
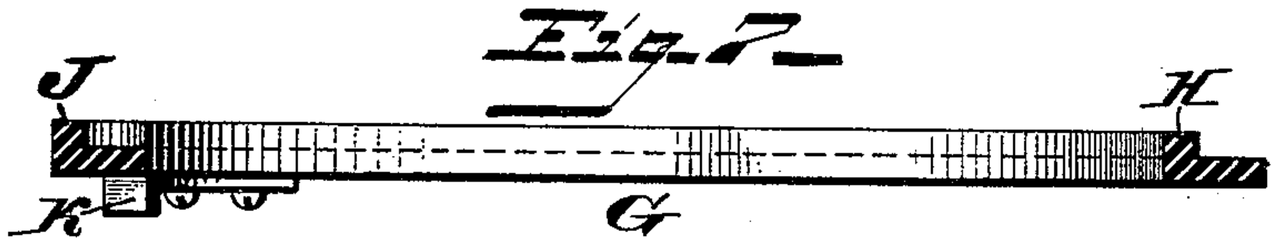


Fig. 7.



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No. 466,093. Patented Dec. 29, 1891.

Fig. 8.

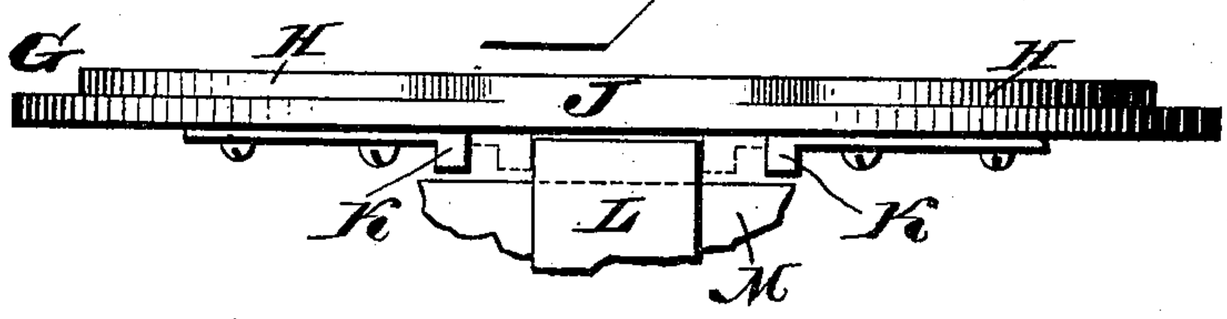
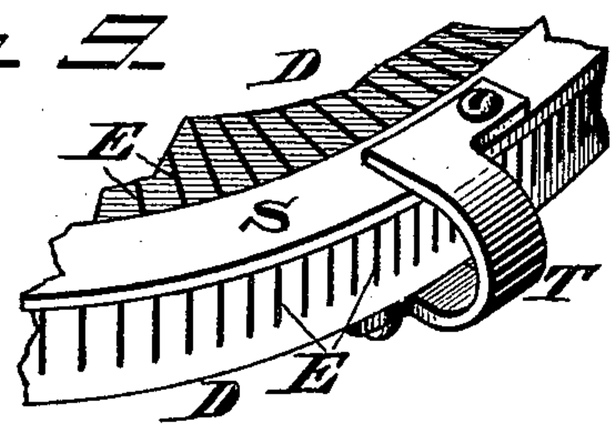


Fig. 9.



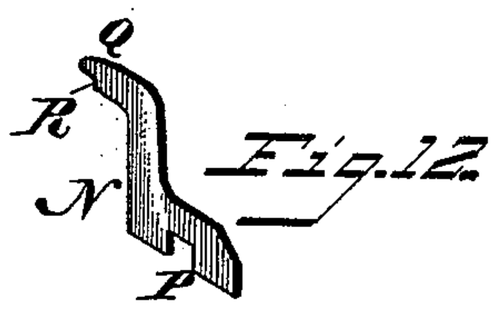


Fig. 12.

Fig. 10.

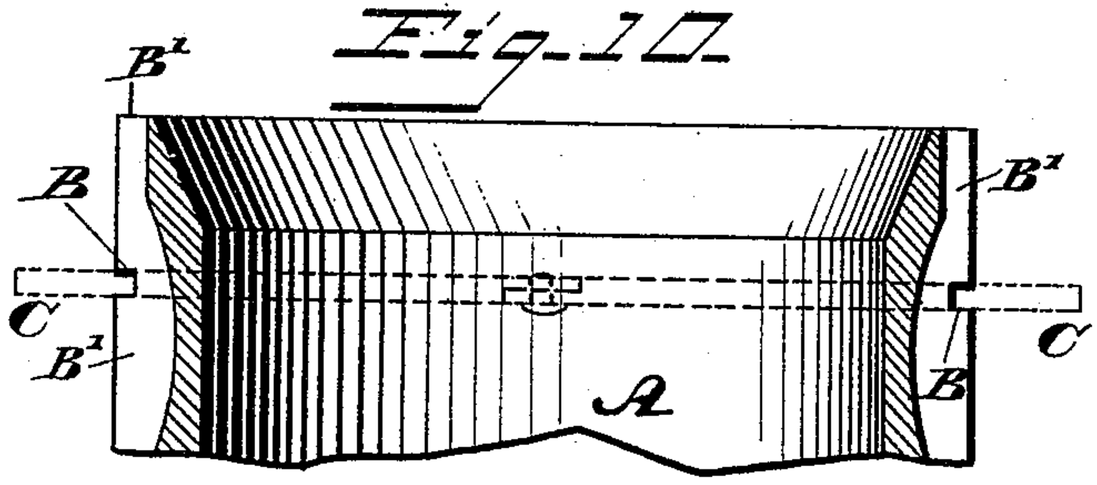
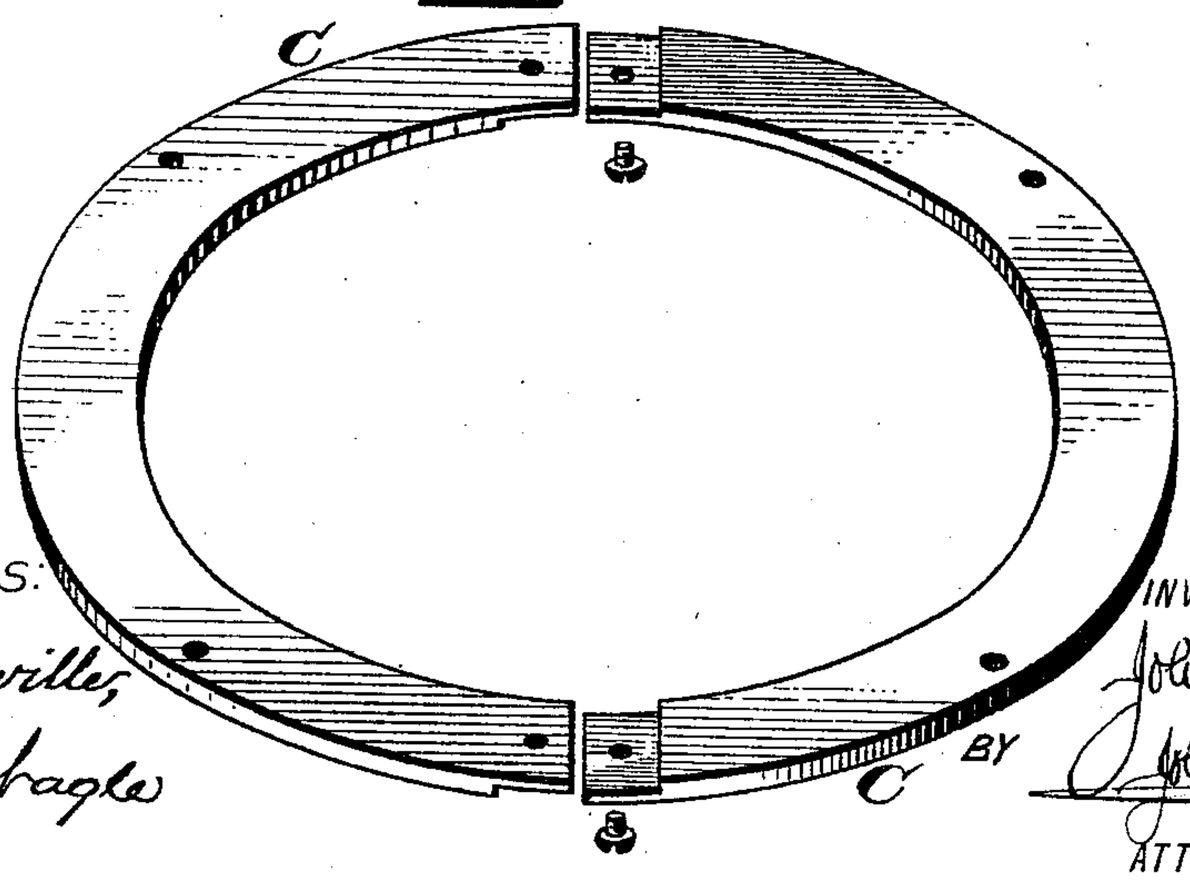


Fig. 11.



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CIRCULAR-KNITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,093, dated December 29, 1891.

Application filed April 29, 1891. Serial No. 390,883. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. EGLY, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Circular-Knitting Machines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to knitting-machines, and has for its object the automatic removal of the stitch or loop when formed from the needle and holding it out of the way of the same during the knitting of successive loops; and it consists of the combination and arrangement of parts hereinafter set forth.

Figure 1 represents a vertical section of the upper portion of a needle-cylinder having my invention thereon. Fig. 2 represents a bottom view of a portion of the device. Fig. 3 represents a vertical section of a portion of the needle-cylinder, grooved guideway, and attaching-ring. Fig. 4 represents a vertical section of the yarn-carrier. Fig. 5 represents a top view of the cam-plate. Fig. 6 represents a vertical section of the slotted guiding-ring, the dotted figure on the right showing a sinker operated in said slotted ring. Fig. 7 represents a sectional view on line *x x*, Fig. 5. Fig. 8 represents a side view of the cam-plate. Fig. 9 represents a perspective view of a portion of the slotted guiding-ring with upper covering-ring and fastening. Fig. 10 represents a vertical sectional view of the upper part of the needle-cylinder, showing attaching-plate for slotted guiding-ring in dotted lines. Fig. 11 represents a perspective view of the sectional attaching-ring, the sections being separated. Fig. 12 represents a perspective view of a sinker for pushing the stitch from off the needle-cylinder.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a needle-cylinder having a peripheral recess B in the outer face of its vertical bars B′, in which is seated or fitted the inner edge of the attaching plate or ring C, said plate being annular in form, and composed of two sections having overlapping ends secured together by screws or other suitable means.

Supported on and secured to the attaching-plate C is the guiding-ring D, having the radial slots E formed in its upper face and a circular groove F on its under face. Within the groove F is fitted a ring or plate G, having on its upper face a circular flange H, with a cam portion J. The circular portion of the said flange is adjacent to the inner edge of the ring G and in contact with the inner wall of the groove F, and secured to the ring G are the lugs K, adapted to be engaged by an arm L on the cam-cylinder M of the machine, the latter being of any usual and well-known construction.

Movable within the slots E of the guiding-ring are the sinkers N, each consisting of a thin piece of metal or other suitable material, having a body portion with a recess or notch P therein, the walls of which embrace the flange H of the ring G, on which it is seated, and a forwardly-projecting portion Q, formed with a vertical shoulder R, adapted to be inserted between the needles of the needle-cylinder, as hereinafter described.

To prevent the sinkers N from being raised from the plate G during the working of said parts, a covering-plate S is secured to the upper side of the ring E by means of the straps T, which latter may be of any number, having their lower ends secured to the under side of the guiding-ring D and extending under the cam-plate G, so as to form a bearing or support for the latter.

The operation of the device is as follows: As the cam-cylinder of the machine is rotated the arm L thereof, which is between the lugs K of the ring G, comes in contact with one of the same, thereby rotating the ring G, with the flange H thereon, so that the sinkers in contact with the cam portion J of said flange are moved in the grooves E of the guiding-ring D, the parts of the machine being so timed that the projecting portion of a sinker is first removed from between the needles as the needles adjacent thereto rise to receive the yarn or thread, so as to be out of the way of the same, and then is advanced as the said needles are lowered, so as to enter between the same and engage with its shoulder R the stitch then formed, which is on a bar B′ of the needle-cylinder, it being understood that said bars B′ extend to the top of the cylinder and push the same inward away from the nee-

dle and the top of the bar, the shoulder R of the sinker remaining in contact with the stitch while the sinker is on the circular portion of the flange and until it comes again in contact with the cam portion, whereby the knitted fabric is held away from the needles at all points, except where the stitch is being formed, without the employment of a weight within the needle-cylinder or below the same. In work requiring the oscillation of the cam-cylinder, as in knitting the heel and toe portions of a stocking, the arm L comes in contact alternately with the lugs K, so that the cam-plate G is oscillated and the sinkers are operated to correspond with the movements of the needles of the needle-cylinder.

In Fig. 4 is shown the adjustable thread or yarn carrier, the same consisting of a bracket or arm V, adapted to be secured to the cam-cylinder M, an angular arm W, having a slotted limb which is fastened by screws to a pivoted arm X of the bracket V, and a thread-guiding arm Y, with a slotted limb adapted to be secured to the arm W. A tension-spring Z, secured to the bracket V, has its end bearing against the under side of the arm W, thereby sustaining the arm X. It will be seen that the arm Y can be adjusted both vertically and horizontally by means of its connections with the bracket V.

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

1. The combination of a needle-cylinder having an annular recess in its outer wall and vertical bars extending to its top edge, needles movable between said vertical bars, an attaching-plate secured in said recess, a guiding-plate secured to said attaching-plate and having radial grooves on its upper face and a circular groove on its under side, a cam plate or ring in said circular groove, sinkers having the shoulders R and movable in said radial grooves and supported on said cam-plate, and means for operating said cam-plate, so as to impart reciprocating motion to said sinkers, the said shoulder R of the sinkers being adapted to push the stitch from the top of the bars of the needle-cylinder, substantially as described.

2. The combination of a needle-cylinder, a guiding-plate secured to said cylinder, having radial grooves in its upper face and a circular groove in its under side, a cam-plate in said circular groove, sinkers movable in said radial grooves and supported on said cam-plate, a covering-plate for said sinkers on said guide-plate, straps secured to said covering-plate and guide-plate, the lower ends of said straps forming supports for said cam-plate, and means for operating said cam-plate, so as to impart reciprocating motion to said sinkers, substantially as described.

3. The combination of a needle-cylinder having the vertical bars B′ extending to the top edge thereof, a sinker-guiding plate secured thereto, having a circular groove in its under side, sinkers movable in said plate, a plate fitted in said circular plate and having a circular flange with a cam portion, said sinkers being seated on said flange and having a nose or projecting portion formed with a shoulder R, lugs on said cam-plate, and a rotatable cam-cylinder with an arm adapted to engage said lug, the said shoulder R of the sinkers being adapted to push the stitch from the top of the bars of the needle-cylinder, substantially as described.

4. The combination of a guiding-plate with a groove on its under side, a rotatable cam-plate working in said groove, sinkers movable in said guiding-plate and resting on the cam-plate, a covering-plate, and straps connecting said covering and guiding plates, having their lower ends forming supports or bearings for the cam-plate, substantially as described.

5. A needle-cylinder having its bars extending to the top thereof, a guiding-ring, a sectional ring for securing said guiding-ring to the said cylinder, sinkers traveling on said guiding-plate and having projecting portions formed with shoulders adapted to enter between the needles of the cylinder and remove from the top of the said bars the stitch or loop when formed, and reciprocating mechanism for said sinkers, said parts being combined substantially as described.

JOHN C. EGLY.

Witnesses:
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