

2 Sheets—Sheet 1.

CIRCULAR KNITTING MACHINE.

Patented June 22, 1886.

Fig. 1.

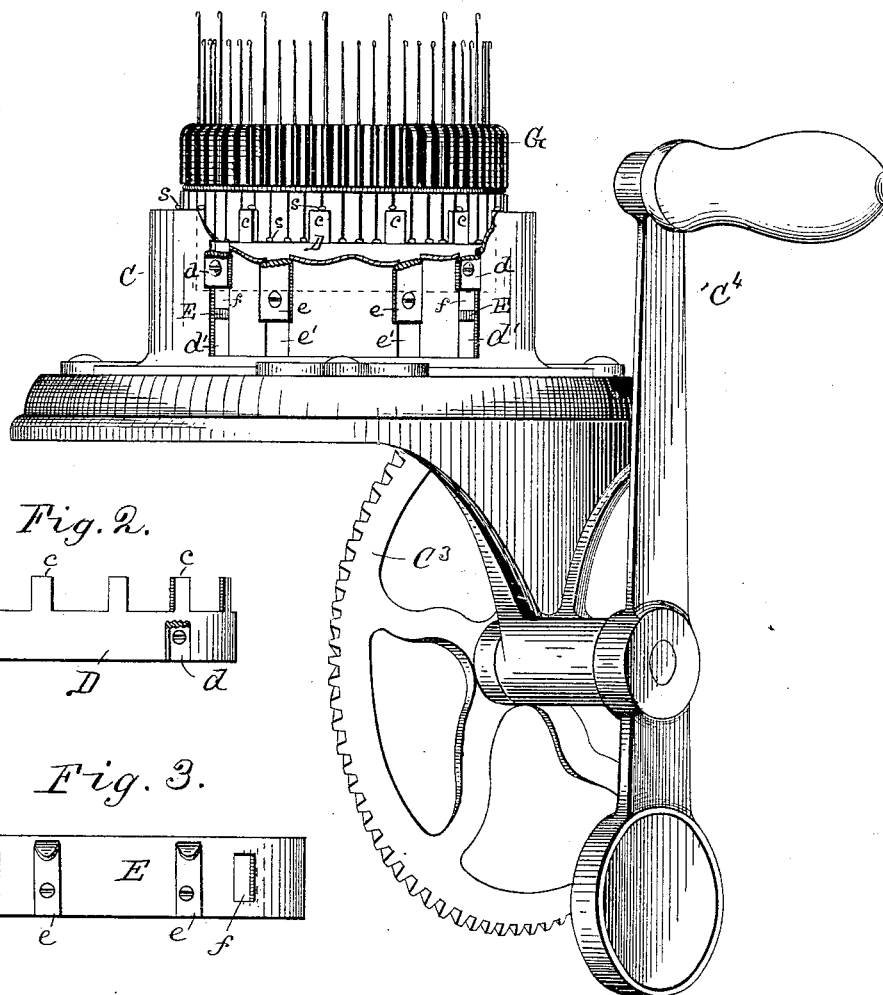


Fig. 2.

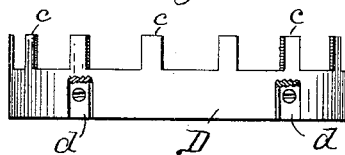


Fig. 3.

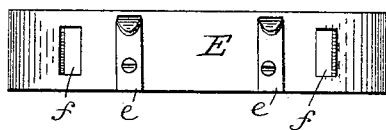
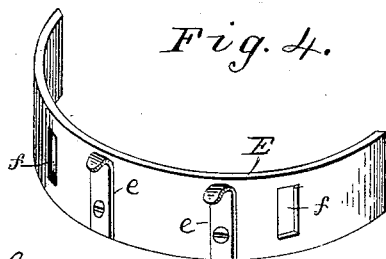


Fig. 4.



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CIRCULAR KNITTING MACHINE.

No. 344,196.

Patented June 22, 1886.

Fig. 5.

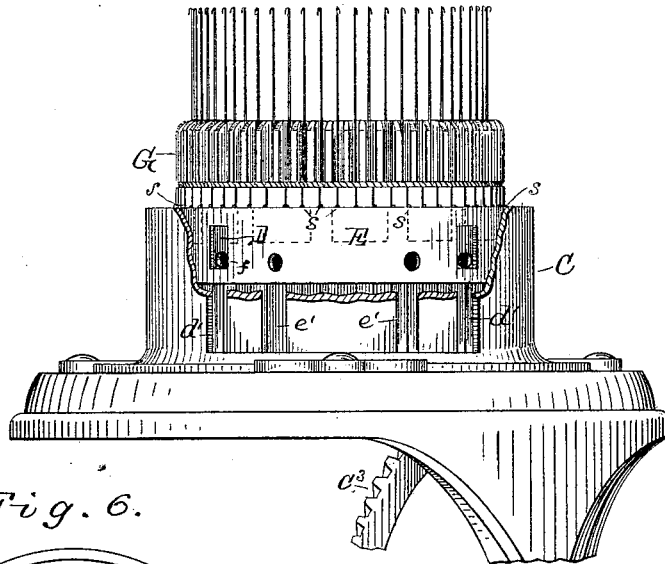


Fig. 6.

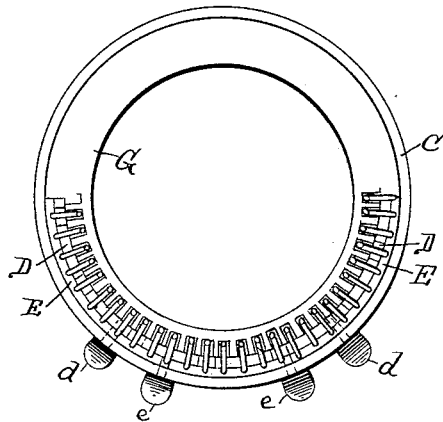


Fig. 9.

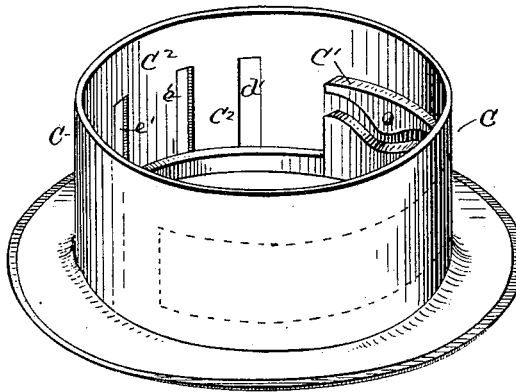
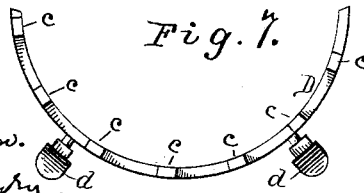


Fig. 8.



Fig. 7.



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UNITED STATES PATENT OFFICE.

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CIRCULAR-KNITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 344,196, dated June 22, 1886.

Application filed November 2, 1885. Serial No. 181,550. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM PEARSON, WILLIAM R. BROWN, and HERBERT PRICE, of Salt Lake City, in the county of Salt Lake, Utah Territory, have invented a new and useful Improvement in Circular-Knitting Machines, of which the following is a description.

This invention relates to that class of knitting-machines which are composed of a circular tube or cylinder in which needles perpendicularly set work up and down, being propelled by means of a horizontally-rotating cam-ring operated by cog-wheels and a crank.

The object of our invention is to render it unnecessary (when preparing for "ribbing" the stocking) to raise the needles by means of a hook inserted in the curves of the needles, as is now done. This we accomplish by means of a semicircular bar, of brass or other metal, inserted in the inner portion of the tube, and so constructed with notches that it will raise the proper number of needles at one and the same time, it being moved from the outside by means of handles or hooks. The bar catches the needles by the shoulders, instead of the curves, and thus saves dulling or breaking the curves, and also lifts them simultaneously by one simple movement instead of each needle singly, as at present with the common hook.

Another object of our invention is to raise the needles of one side or semi-circumference for making the heel, which has hitherto been done by the same method of the hook before referred to. Our invention provides the means of accomplishing this by another semicircular bar working beside the other, and so arranged as to catch the shoulders of all the needles in its circuit and raise them, which is done by means of a handle or hook working the bar from the outside like the other, but separate entirely from it.

In the drawings, Figure 1 is a side view of the machine with semicircular bars, showing the needles up for ribbing the stocking or for striping, with parts of the machine broken away. Fig. 2 is a side view of the ribbing-bar, showing the notches for raising the desired number of needles. Fig. 3 is a side view of the outer or heel bar for raising all the needles when needed, such as for heeling and toeing. Fig. 4 is a perspective view of the heel-bar,

showing the length of the semicircle. Fig. 5 is a side view, partly broken away, of the machine with all needles raised, showing lift-bars in position. Fig. 6 is a ground plan of the cylinder, with lift-bars D and E in position, also catches or handles *d d* and *e e*, for raising same. Fig. 7 is a plan of lift-bar D, showing position of the catches *d d* and the teeth *e e*, for raising the needles. Fig. 8 is a perspective view of one of the catches or handles, for raising the bar. Fig. 9 represents in perspective view the revolving cylinder, which carries the cam-ring and lifting-bars.

In Fig. 9 the cylinder C is provided with gear-teeth (not shown) on its under side, as usual, which engage with and are driven by a bevel gear-wheel, C', provided with crank C'. This revolving cylinder C has one-half of its cam-ring C' cut away, and the remaining portion suffices for engaging with the shoulders of the needles, for working them up and down in the bed-frame G during the operation of the machine.

On the opposite side of the revolving cylinder from the cam C', and in the cut-away space at C', Fig. 9, are inserted the two semicircular lift-bars, D and E, D being on the inside and E between D and the cylinder. The hooks or catches *d d* of bar D work vertically through slots *f f* of bar E, and the hooks *d d* of bar D and *e e* of bar E work vertically through the slots *d' e' d'* of the cylinder, Fig. 9, and the top edge of the bars D and E usually rest below the groove of the cam-ring C', and in position beneath the shoulders of the needles. Now, as these two lift-bars have an independent motion, when D is raised by lifting hooks *d d* its teeth *e* raise the needles for ribbing, as shown in Fig. 1.

For raising all the needles of the semi-circumference, bar E is raised by raising hooks *e*, and the plain edge of said bar lifts against all the shoulders of the needles of that semi-circumference and raises them all. To raise the needles of the other semi-circumference, the cylinder is rotated by a turn of the crank.

Having thus described our invention, what we claim as new, is—

1. The combination of the circular series of needles having projecting shoulders, the bed-frame carrying said needles, a revolving

cylinder arranged outside the row of needles, and having a cam for operating them, and a vertically-adjustable semicircular lift-bar arranged between the ends of the cam-section
5 and between the cylinder and the row of needles, and beneath the shoulders of said needles, for the purpose of lifting simultaneously a number of the needles, substantially as described.
10 2. The combination of the circular series of needles having projecting shoulders, the bed-frame carrying said needles, a revolving cylinder arranged outside the row of needles, and having a cam for operating them, and two
15 vertically-adjustable semicircular lift-bars arranged between the ends of the cam and between the cylinder and needles, and beneath the shoulders of the latter, one of said bars having a notched or toothed upper edge and
20 the other being plain, substantially as and for the purpose described.

3. The combination of the circular series of needles having projecting shoulders, the bed-frame carrying said needles, a revolving cylinder arranged outside the row of needles, 25 formed with vertical slots *d' d' e'*, a cam arranged on the inside of said cylinder, and two vertically-adjustable semicircular lift-bars arranged between the ends of the cam inside the cylinder and below the shoulders of the needles, and having hooks *d d* and *e* extending 30 through the slots of the cylinder, as and for the purpose described.

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Witnesses:

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