2 Sheets—Sheet 1.

C. J. APPLETON.

KNITTING-MACHINE.

No. 184,689. Patented Nov. 28, 1876.

Fig. 1.

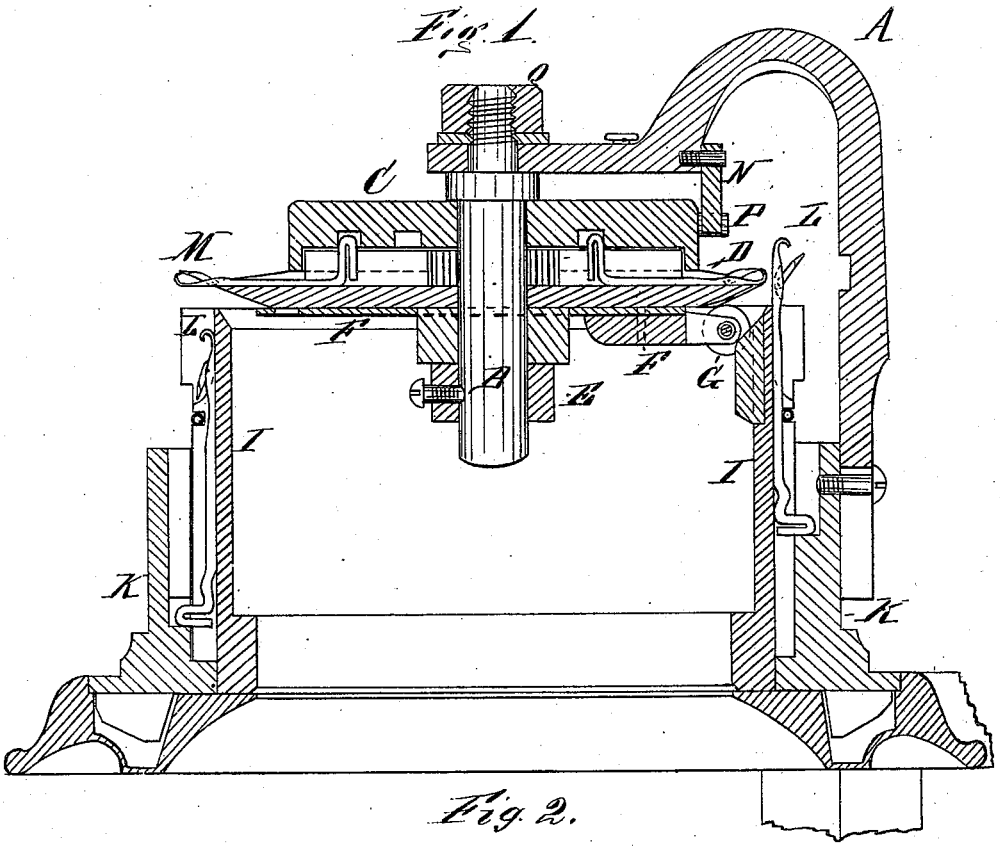


Fig. 2.

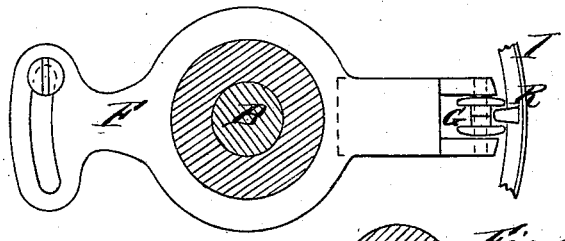
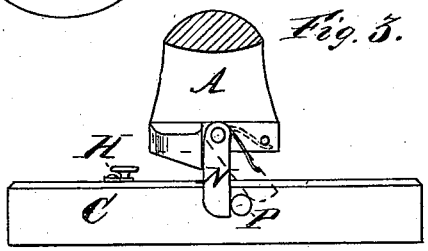


Fig. 3.



Witnesses
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Inventor
Charles J. Appleton

2 Sheets—Sheet 2

C. J. APPLETON.

KNITTING-MACHINE.

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Fig. 4.

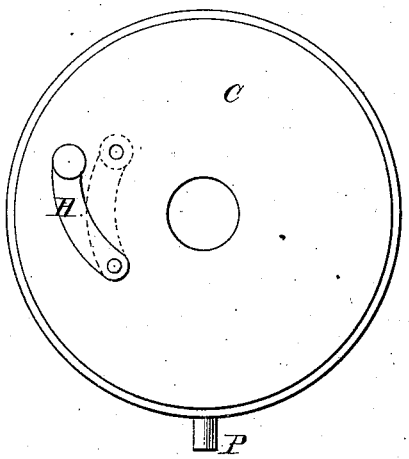
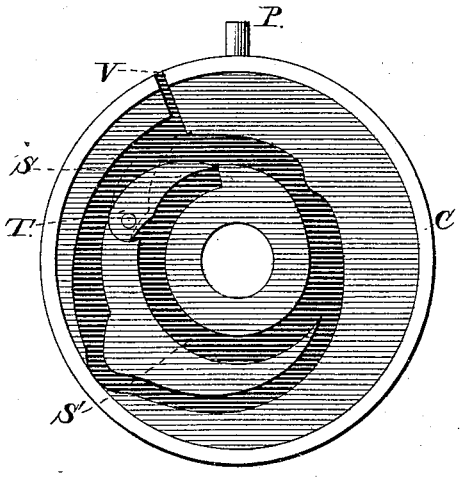


Fig. 5.



Attest:
W. T. Newman
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Inventor:
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UNITED STATES PATENT OFFICE.

CHARLES J. APPLETON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. **184,689**, dated November 28, 1876; application filed July 30, 1875.

To all whom it may concern:

Be it known that I, CHARLES JAMES APPLETON, of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Knitting-Machines; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and the letters of reference marked thereon, in which the same letter represents the same thing in each figure.

Figure 1 is a vertical cross-section of a knitting-machine with my improvements attached. Fig. 2 is a bottom view of dial-holder and needle-regulator. Fig. 3 is a side view of cap, with dog and pin. Figs. 4 and 5 are, respectively, plan and under-side views of the cam-cap for operating the needles.

A is the arm; B, the stud; C, the cap; D, the dial; E, the collar; F, the needle-regulator and dial-holder; G, the catch; H, the cam-lever; I, the needle-cylinder; K, the cam-cylinder; L L, the plain needles; M M, the ribbing-needles; N, the dog; P, the cap-pin; Q, the nut; R, the catch-key; S, the operating cam-groove; S′, the idle cam-groove; T, the adjustable cam; V, the groove for removing and inserting the dial-needles.

The object of my improvement is to produce ribbed or plain knitting at pleasure on a family knitting-machine without displacing either set of needles—as, for example, in making a stocking, to knit the heel and toe plain and the leg and foot ribbed without taking the dial out of the cylinder. This is done by suspending in the center of cylinder I of an ordinary family plain-knitting machine a cap, C, and dial D, loose on stud B, which is fastened to arm A by nut Q, arm A being fastened to cam-cylinder K, and revolving with it.

The operation is this: The work being set up, with the ribbing-needles M M out of operation, if the cam-lever H be moved outward, the ribbing-needles will be thrown into action by the cam T within cap C, closing the end of idle groove S′, and causing the needles to pass around on the operating-groove S, and the two sets of needles (ribbing and plain) are thereby caused to knit together, forming ordinary circular ribbed knitting the desired length of the stocking-leg. When the heel is reached, by moving the cam-lever H inward the cam T will be moved outward across the operating cam-groove S, causing the needles to move within the idle groove S′, thereby drawing the ribbing-needles out of action, and a half, more or less, of the stitches on the ribbing-needles are removed and placed on the plain or cylinder needles L L by hand. The machine is then reversed half-way. As dog N recedes from pin P cap C does not move. The plain needles, with the ribbing-stitches thereon, continue to knit plain work only until the heel is formed and it is desired to knit ribbed work again, when the cam-lever H is again moved outward, throwing ribbing-needles M M into the outer grooves of cap C and between plain needles L L. Then, by turning the machine until dog N strikes pin P, cap C will again revolve, and both sets of needles resume knitting.

At the completion of the toe formed in the same way another stocking may be commenced without breaking the thread by making a welt in the manner described in my Patents Nos. 107,749 and 107,750, granted September 27, 1870.

Dial-holder F is made adjustable by a slot and pin at its rear, and catch-key R in needle-cylinder I acts between the two plates of catch G, so that it retains the dial in place whichever way the machine is moved. This part F acts also as a needle-regulator, being arranged so as to allow the grooves of dial D to be placed either between or in line with the grooves of the cylinder I, and securely clamped in either position by a set-screw, as shown in Fig. 2, so as to produce different kinds of ribbed work.

What I claim, and desire to secure by Letters Patent, is—

1. In a circular-knitting machine, the combination, with a dial-plate and series of needles carried thereby, of a cam-plate provided on its under side with a cam-groove, together with an adjustable cam arranged in proper relation to said cam-groove, and a lever for operating the said cam, whereby the needles may be brought into action or withdrawn therefrom, substantially as and for the purpose described.

2. In combination with the needle and cam

cylinders of a knitting-machine, and a dial adapted to carry a series of needles, together with a cam-plate for operating said needles, a support or standard and connecting mechanism, whereby the said needles are operated when the machine is run in one direction, but remain stationary when the machine is run in the opposite direction, substantially as and for the purpose described.

3. The combination of loose-mounted cap C, dial D, dial-holder F, arm A, needle-cylinder I, and cam-cylinder K, acting together substantially as and for the purpose described.

4. The combination of adjustable dial-holder F, dial D, catch G, and needle-cylinder I, provided with the catch-key R, operating together substantially as and for the purpose described.

CHARLES J. APPLETON.

Witnesses:
JOHN W. RIPLEY,
S. J. GORDON.