C. SHIRTCLIFF.

CIRCULAR KNITTING MACHINE.

No. 47,579. Patented May 2, 1865.

Fig. 1.

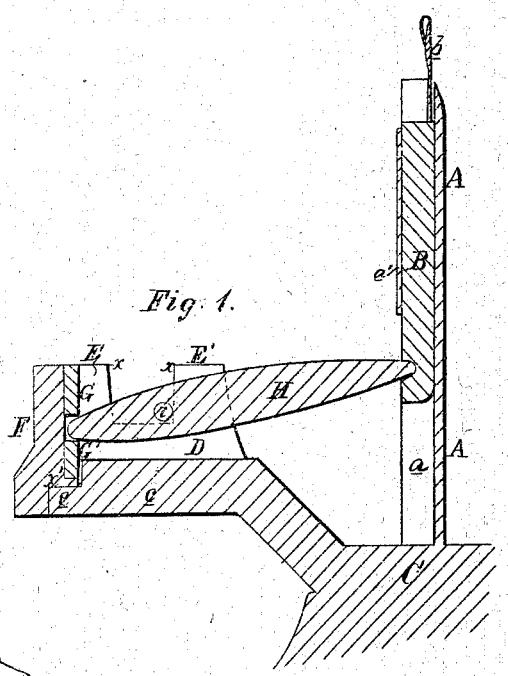


Fig. 2.

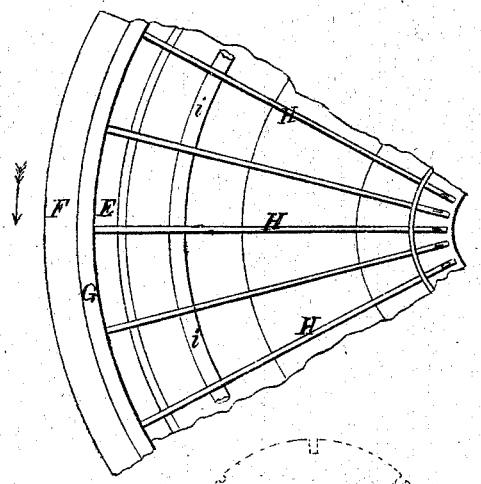
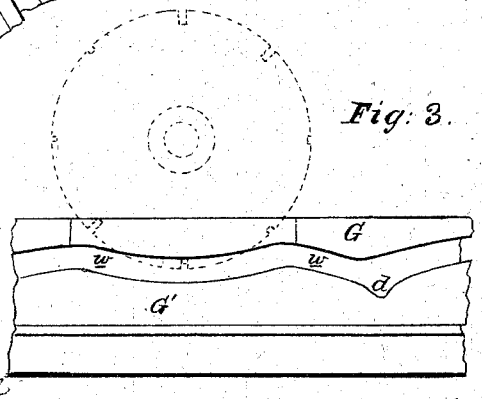


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES SHIRTCLIFF, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CIRCULAR-KNITTING MACHINES.

Specification forming part of Letters Patent No. **47,579**, dated May 2, 1865.

To all whom it may concern:

Be it known that I, CHARLES SHIRTCLIFF, of Philadelphia, Pennsylvania, have invented an Improvement in Knitting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention relates to an improvement in a class of rotary-knitting machines in which are used vibrating levers arranged radially and each having a self-acting needle; and my invention consists in certain plates, constructed and arranged in respect to the levers which operate the needles, substantially as described hereinafter, so that any one of the levers may be raised without disturbing the others when a defective needle has to be removed.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a vertical section of sufficient of a circular-knitting machine to illustrate my improvement; Fig. 2, a plan view of Fig. 1, and Fig. 3 a detached view of part of the machine.

Similar letters refer to similar parts throughout the several views.

A is a portion of a hollow cylinder, such as is used in circular-knitting machines of the ordinary construction, the cylinder having on the outside vertical grooves or slots *a* for the reception of sliding bars B, to the upper end of each of which is attached the ordinary "self-acting" needles *b*. These bars are retained within the grooves by a band, *a'*, which surrounds the cylinder. This cylinder is secured to or forms a part of and is situated concentrically with the circular plate C, on the portion *c* of which is an annular projection, D, the latter between the points *x x* being cut away so as to form two annular ridges, E and E'.

On the outer edge of the plate C is a ledge, *e*, on which rests a shoulder, *x'*, of a ring, F, the latter turning freely round the plate A, and having on its inner face two plates, G and G', the lower edge of the former and the upper edge of the latter being so formed that there shall be between the two a waved or zigzag groove, *w*. At intervals in the plate G' are recesses *d*, for a purpose described hereinafter.

In the projection D of the stationary plate C are cut a series of radial slots for the reception of the levers H, one of the latter being situated in each slot, these levers being hung to a rod, *i*, which extends round the ridge E', and is confined thereto.

The ends of the short arms of the levers H project into the waved groove *w* between the two plates G and G', and the rounded end of the short arm of each lever projects into a recess or indentation formed in the edge of one of the bars B, near the lower edge of the same.

As the ring F revolves in the direction of the arrow, Fig. 2, the outer ends of the levers will be raised and depressed by the action of the plates G and G', and a vertical reciprocating movement will thus be imparted to the bars B and their needles, the action of the latter upon the threads being too well known to those familiar with knitting-machines to need description.

During the operation of the machine the threads sometimes break, and the work becomes so entangled that the needles are either bent or broken, in which case it is desirable to remove them without disturbing the position of those uninjured needles upon which the work remains. In order to effect this removal, the ring F is turned to such a position that one of the recesses *d* in the lower plate, G', shall be immediately below the end of the lever which operates the needle to be removed. The outer end of the lever is then depressed until its inner end is raised from contact with the needle-bar, when the latter can be withdrawn and another substituted in its place.

Should it be desirable to produce a fabric of a variegated pattern, the upper plate, G, may be made in detachable sections, and one of the latter removed and a presser-wheel (shown in dotted lines, Fig. 3) may be hung to a pin on the ring F, so that the ends of certain of the levers shall be depressed while others remain in their elevated position, the action of the needles being thus so varied as to produce the desired variegated fabric.

I therefore claim as my invention and desire to secure by Letters Patent—

The plate G and plate G′ with its depressions *d*, arranged and operating in respect to the levers H of a circular-knitting machine, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

C. SHIRTCLIFF.

Witnesses:
JOHN WHITE,
CHARLES HOWSON.