T. Hawthorne.

Circular Knitting Mach.

No. 46,848. Patented Mar. 14, 1865.

Fig: 1.

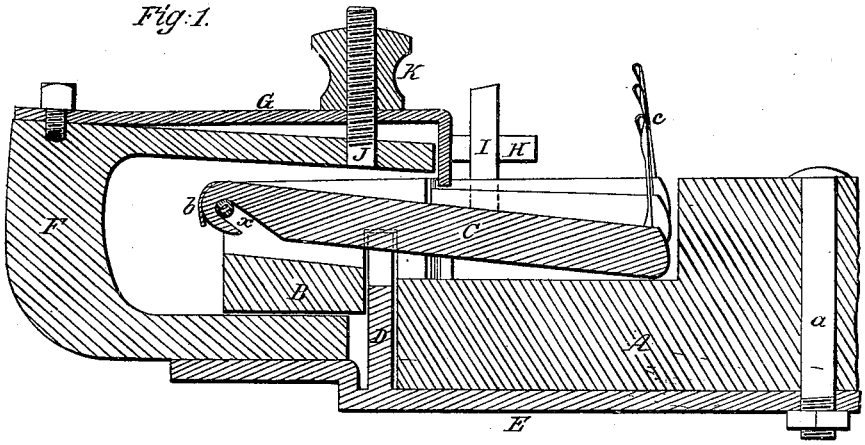


Fig: 2.

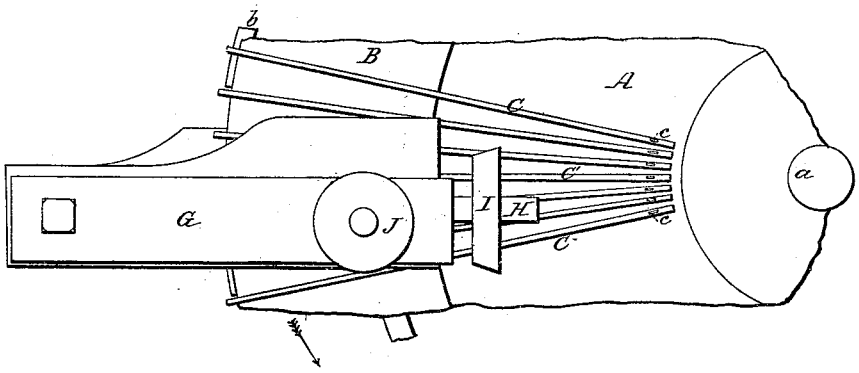


Fig: 3.

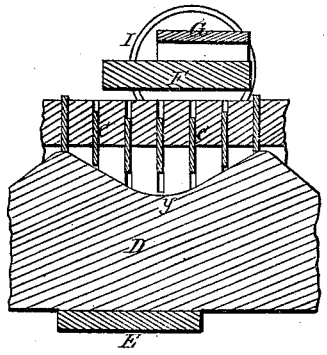
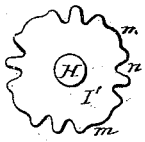


Fig: 4.



WITNESSES

Wm Albert Steel

W. R. Delany

INVENTOR.

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agt for T. Hawthorne

UNITED STATES PATENT OFFICE.

THOMAS HAWTHORNE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO DUDSON, HAWTHORNE & BROTHERS, OF SAME PLACE.

IMPROVEMENT IN CIRCULAR-KNITTING MACHINES.

Specification forming part of Letters Patent No. 46,848, dated March 14, 1865.

To all whom it may concern:

Be it known that I, THOMAS HAWTHORNE, of Philadelphia, Pennsylvania, have invented certain Improvements in Circular-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 drawings, and to the letters of reference marked thereon.

My invention relates to improvements in a class of rotary knitting-machines which have been recently introduced in England, and in which are used vibrating levers radially arranged, and each having a self-acting needle, the said levers permitting a greater number of threads to be used than in ordinary circular-knitting machines.

My invention consists, first, in a device, described hereinafter, for operating the said lever; and, secondly, in the use, in combination with the said levers, of serrated presser-wheels, for producing variegated fabrics.

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 sectional elevation of sufficient of a circular-knitting machine to illustrate my improvements; Fig. 2, a plan view of Fig. 1, and Figs. 3 and 4 detached views of part of the machine.

Similar letters refer to similar parts in all the views.

A is a section of a stationary circular plate, of which the pin *a* is the center, the outer edge of this plate consisting of an annular projection, B, in which are cut a series of radial grooves for the reception of levers C, each of the latter being hung at its outer end to a rod, *e*, which surrounds and is confined to the annular projection B of the stationary plate A. Every lever has a slot, *x*, so formed that each lever can be detached from the rod *e* without removing the latter or disturbing the other needles, and round the projection B extends an elastic band, *b*, or a detachable hoop, which, by bearing against the ends of the levers, prevents the same from becoming detached from the rod *e* during the operation of the machine. At the inner end of each lever is permanently secured an ordinary "self-acting" knitting-needle, *e*. In the under side of the projection B is an annular recess for the reception of the annular plate D, secured to or forming a part of the frame E, which is arranged to revolve on the central pin, *a*. The upper edge of the plate D is of the zigzag form represented in Fig. 3. To the frame E is secured the bracket F, which extends beyond the edge and over the top of the annular projection B, and to the top of this bracket is secured the outer end of a spring-plate, G, the inner end of the said plate being bent at right angles downward in front of the inner face of the projection B, and the bent portion having a pin, H, which carries the presser-wheel I. To the inner end of the bracket F is secured a screw-stud, J, which projects through the spring-plate G, and is provided with a nut, K, the latter bearing on the upper edge of the spring-plate and serving to depress the same.

It should be understood that, although I have shown a small section only of the machine and but one presser-wheel, I, there are in the complete machine as many presser-wheels as there are depressions *y* in the edge of the plate D, Fig. 3, and that there are as many thread-guides as there are presser-wheels, these guides, which may be of the ordinary construction, being carried by the brackets F.

As the annular plate D and the presser-wheel I are carried round with the plate E in the direction of the arrow, Fig. 2, the levers C are alternately raised by the elevated portions of the cam-plate and depressed by the presser-wheels, a reciprocating motion in the arc of a circle being thus imparted to the needles *e*, the latter acting upon the threads and producing a circular-knitted fabric in a manner too well understood by those familiar with knitting-machines of this class to need description.

In order to produce a fabric of a variegated or plaid pattern, I substitute for one or more of the plain presser-wheels I serrated wheels I′, similar to that shown in Fig. 4, the projections *m* of which serve to depress certain of the levers C, while the depressions *n* permit others of the levers to remain in an elevated position, the action of the needles being by this means

so modified that a great variety of plaid and spotted fabrics can be produced, the pattern being rendered more elaborate by the use of threads of different colors and by wheels I with projections differently arranged.

Circular-knitting machines with radial levers, carrying self-acting needles, have been in use in England, the said levers being operated by revolving plates with zigzag edges. Presser-wheels similar to that shown in Fig. 4 have also been used in connection with circular-knitting machines, but have hitherto been employed in conjunction with spring-bearded needles.

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

1. The radially-arranged levers C, to each of which is permanently secured a self-acting needle, *c*, in combination with the annular plate D, its zigzag edge, and the presser-wheels I, the whole being arranged and operating as set forth.

2. The combination of the said vibrating levers and self-acting needles with a serrated presser-wheel and the said annular plate with its zigzag edge, for the purpose specified.

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

THOMAS HAWTHORNE.

Witnesses:
JOHN WHITE,
CHARLES HOWSON.