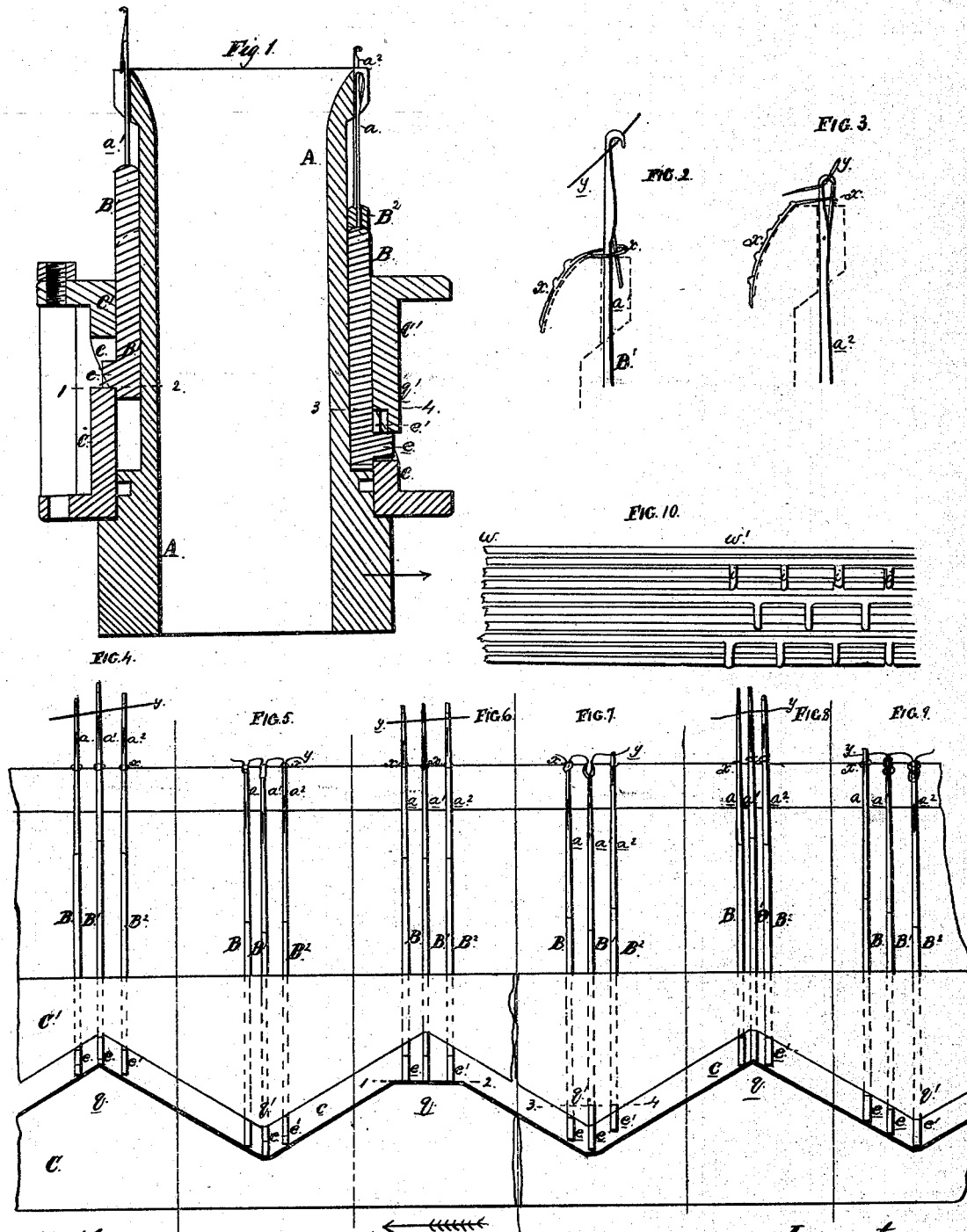


J. Whittle.
Knitting Mach.

No 47, 239.

Patented Apr. 11, 1865.



Witnesses.
Wm. Delany
Wm. Albert Steet

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UNITED STATES PATENT OFFICE.

JOSEPH WHITTLE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. 47,239, dated April 11, 1865.

To all whom it may concern:

Be it known that I, JOSEPH WHITTLE, 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 drawings, and to the letters of reference marked thereon.

My invention relates to rotary knitting-machines; and it consists in the use of self-acting needles, the latches of some being longer than those of others, so that a "tuck" fabric may be produced, in the manner described hereinafter, by the joint action of the said needles.

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 my improved knitting-machine; Figs. 2 and 3, detached views, drawn to an enlarged scale; Figs. 4, 5, 6, 7, 8, and 9, diagrams illustrating the operation of the machine, and Fig. 10 a diagram illustrating one style of work produced by the machine.

Similar letters refer to similar parts throughout the several views.

A is a hollow cylinder, on the outside of which are grooves adapted for the reception of a series of needle-bars, to which are attached the ordinary self-acting needles. Of the needle-bars there are a series (marked B) having self-acting needles a , a series, B', having self-acting needles a' , and a series (marked B²) having needles a^2 . The different needle-bars are arranged at different intervals throughout the circumference of the cylinder, according to the pattern desired. It should be understood that the latches of the needles a and a^2 are of the ordinary length, while those of the needles a' are longer. Around the cylinder A is a cam-cylinder, C, the upper edge of which is cut of the zigzag form shown in the drawings, and above which is a similar cam-cylinder, C', the space between the two cylinders forming a zigzag groove, c . The upper edge of one of the projections q of the cam C is cut away to the line 1 2, Figs. 1 and 6, and the inner side of one of the projections q' of the upper cam, C', is cut away to the line

3 4, Figs. 1 and 7, for a purpose described hereinafter. From the lower end of each of the needle-bars, B and B' a lug, e , projects into the groove c , and from the lower end of each of the needle-bars B² a lug, e' , projects into the groove, the latter lugs being somewhat shorter than the lugs e of the needle-bars B and B'. As the cylinder A is caused to revolve in the direction of its arrow, Fig. 1, a vertical reciprocating motion will be imparted to the needle-bars and needles by the cam-plates C and C', and the threads x and y will be introduced to the needles in a manner too well known to those versed in this class of machinery to need particular description.

While the needle-bars are operated by the portions q q' of the cams C C', (shown in Figs. 4 and 5,) the ordinary stitch will be formed, each needle, as it descends through the loop x of fabric, carrying with it a loop, y , of thread, the work thus produced being the ordinary fabric, (shown between the points w w' , Fig. 10.) As the cylinder revolves, however, the lugs of the needle-bars will be brought in contact with the straight edge 1 2 of the cam C, Fig. 6, the needle being consequently elevated so short a distance that the long latches of the needles a' are not carried entirely through the loop x of the fabric on these needles, so that when the needles a' again descend they will merely draw down a loop of both the fabric x and the thread y without carrying the latter through the former, Fig. 7. As the needles a' again ascend, both loops remain on the shank, Fig. 8, and a loop of thread, y , is carried through both loops on the descent of the needle, the effect being to produce what is technically termed a "tuck" in the fabric—that is, a projection of one color through one or more rows of a different color beneath it. This is shown in Fig. 10, where the projecting portions of red are "tucked" through two rows of the blue. As the cylinder continues its revolution, the lugs of the needle-bars will be brought against that portion q' of the cam C' shown in Figs. 1 and 7. The long lugs e of the needle-bars B and B' will bear against the edge of the projecting point q' of the cam. The short lugs e' of the needle-bars B², however, will be brought in contact with the straight edges 3 4 of the cam, and the needles a^2 , instead of being depressed to such an extent as to form a new loop, will merely catch

the thread y , so that on the ascent of the needles there will be a loop of thread, y , and a loop of fabric, x , on the shank of each, Fig. 8. When these needles a^2 again descend, however, the thread y will be carried through both loops on the shank, and a tuck will thus be formed, similar to the tuck the formation of which was before described, excepting that the tuck last formed will be midway between two of the tucks previously formed, as shown in Fig. 10.

It will be apparent that by increasing the number of needles a' with long latches, and by cutting away a greater or less number of the projecting portions q and q' of the cams C C' , as described, fabrics of many different varieties of patterns may be produced.

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

1. The self-acting needles a' , with their long latches operating in combination with the self-acting needles a and their short latches, substantially as and for the purpose specified.

2. The cam-cylinder, forming a zigzag groove, one or more of the projections in which are cut away, in the manner and for the purpose described.

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

JOSEPH WHITTLE.

Witnesses:

CHARLES E. FOSTER,
JOHN WHITE.