

T. LANGHAM.
 ROTARY KNITTING-MACHINE.

No. 178,167.

Patented May 30, 1876.

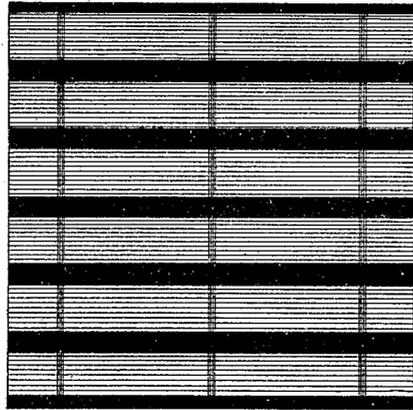


Fig. 1.

Fig. 2.

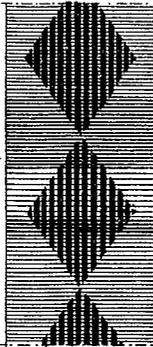


Fig. 3.

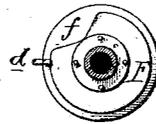
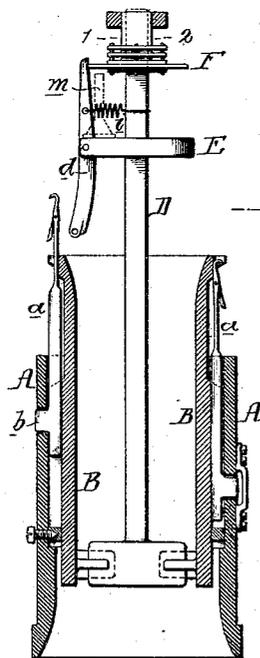


Fig. 4.

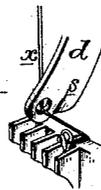


Fig. 5.

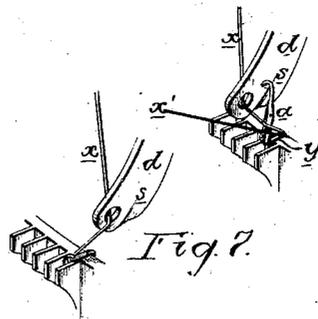


Fig. 6.

Fig. 7.

Witnesses
 Harry Hopper Jr
 Harry Smith

Thomas Langham
 by his Attorneys
 Howson & Son

UNITED STATES PATENT OFFICE.

THOMAS LANGHAM, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ROTARY-KNITTING MACHINES.

Specification forming part of Letters Patent No. 178,167, dated May 30, 1876; application filed February 19, 1876.

To all whom it may concern :

Be it known that I, THOMAS LANGHAM, of Philadelphia, Pennsylvania, have invented an Improved Rotary-Knitting Machine, of which the following is a specification :

The object of my invention is to produce a tubular fabric with vertical stripes, and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figures 1 and 2 illustrate strips of my improved fabric; Fig. 3, a vertical sectional view of a machine on which it may be produced; Fig. 4, a sectional plan on the line 1 2; and Figs. 5, 6, and 7, perspective views, showing the manner of forming the stitch for the stripe.

A represents the exterior cylinder, and B the interior cylinder, of an ordinary circular-knitting machine, the latter having grooves for the reception and guidance of a series of latch-needles, *a*, on which are projections *b*, adapted to cam-grooves in the outer cylinder. As these parts are constructed and operated in the usual manner they will not require further description.

A central spindle, D, is carried by, and rotates with, the inner cylinder B, and on this spindle is a disk or other attachment, E, for carrying any desired number of levers, *d*, forming thread-guides. On this disk E or on another disk turning in unison therewith are a number of spools, one for each thread-guide.

In the present instance I have shown but one lever, *d*, and one spool, *m*, and it is the thread from this spool which I introduce into the fabric, so as to form a vertical stripe. It should be understood, however, that the loops of this thread, although incorporated in the fabric, are additions to the latter, or, in other words, the fabric is entire without the loops of the supplementary thread, which are added at those points only where the stripe occurs, the body of the fabric being formed by the machine in the usual manner.

Above the disk E is a stationary plate, F, secured to some fixed portion of the machine, and in the edge of this plate in the present instance is a single recess, *f*, into which the upper end of the lever *d* is caused to enter, when opposite, by a spring, *i*. The effect of this movement is to throw the lower end of the lever, and the thread which it carries, to the front of the needles *a*, and on its return to

wrap the thread around the needle adjacent to which the lever moves.

Thus, as shown in Fig. 5, the guide is thrown to the front just before the needle *a* commences to rise, and as it rises its head bears against a sunken portion, *s*, of the guide, so as to allow the thread *x* to be laid close against the needle. When in the position shown in Fig. 6 the body-thread *x'* is laid across the face of the needle, as usual, and when the latter descends both threads *x* and *x'* are caught by the ascending loop *y'*, and thus secured to the fabric.

In producing a fabric with a single uninterrupted stripe one lever, *d*, only need be used, the plate F being so recessed that the lower end of the lever is thrown to the front on each rise of the needle in connection with which it works.

When it is not desired to have the stripe appear upon the face of the fabric the lower end of the lever is not moved to the front of needles, and the thread is simply laid in a straight line on the back of the fabric.

By increasing the number of levers *d* and plates F any desired number of stripes may be made, and by using for the stripes threads of colors different from those of the body of the fabric, very attractive effects may be produced.

The stripes may be so arranged also as to produce different figures. Thus, in Fig. 2 diamond-shaped figures are formed by means of a series of stripes of different lengths arranged side by side.

I claim as my invention—

In a circular-knitting machine, the combination, with the usual needles for producing a tubular fabric, of a thread guide or guides adapted to rotate with the needle-cylinder, and mechanism for imparting to the said guide or guides a vibrating motion, whereby the loop or loops of another thread or threads are carried by said guide or guides at intervals into the hooks of the said needles, substantially as and for the purpose set forth.

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

THOMAS LANGHAM.

Witnesses:

HARRY HOWSON, Jr.,
HARRY SMITH.