M. LANDENBERGER, Jr.

KNITTING-MACHINE.

No. 185,764. Patented Dec. 26, 1876.

Fig. 2.

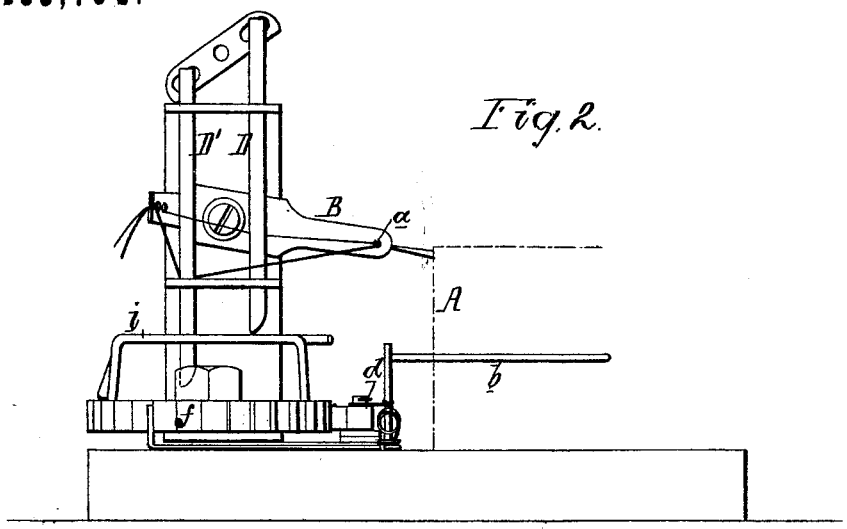


Fig. 3

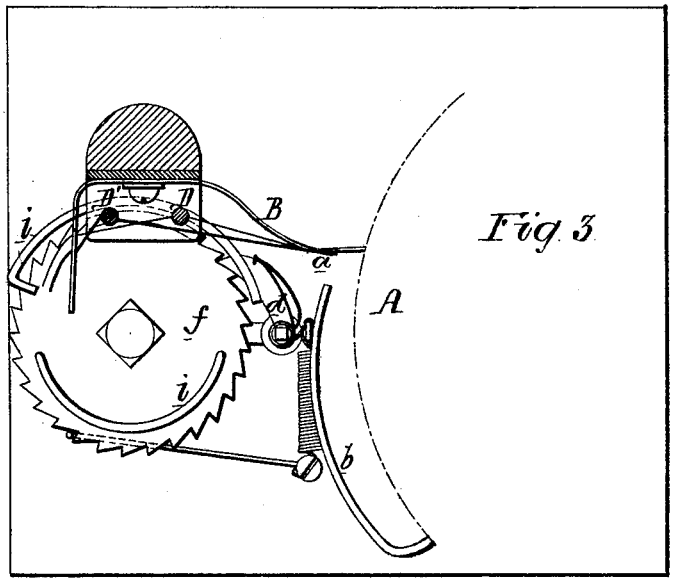
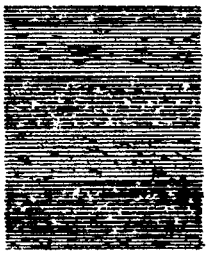


Fig. 1



Witnesses.
Harry Howson Jr
Harry Smith

Martin Landenberger Jr.
by his Attorneys
Howson and Sons.

UNITED STATES PATENT OFFICE.

MARTIN LANDENBERGER, JR., OF PHILADELPHIA, PA., ASSIGNOR TO JOHN LANDENBERGER AND GEORGE W. LANDENBERGER, OF SAME PLACE.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. **185,764**, dated December 26, 1876; application filed March 25, 1876.

To all whom it may concern:

Be it known that I, MARTIN LANDENBERGER, Jr., of Philadelphia, Pennsylvania, have invented certain Improvements in Knitting-Machines, of which the following is a specification:

My invention relates to certain improvements in the manufacture of what are known as "mixed hose;" and the object of my invention is to make a stocking of this class with parallel horizontal stripes of different shades, without breaking and piecing the threads when a change in the shade of the stripe is desired. This object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a view of a portion of a stocking of the character which it is the aim of my invention to produce; Fig. 2, a front view of the machine which I prefer to use in carrying out my invention; and Fig. 3, a sectional plan on the line 1 2, Fig. 2.

Ordinary mixed stockings have a general mottled appearance over their whole surface, owing to the difference in the shades or colors of the threads of which they are composed. These stockings are ordinarily made upon a machine the essential parts of which are a cylinder, A, carrying barbed needles, devices for feeding the thread to the needles, and a guide, B, for delivering the thread to the feeders. The threads, after passing through the eye *a* of this guide B, pass through other guides before reaching the bobbins.

The color or shade of the outside of the tube of fabric that is being made on the machine depends upon the color or shade of the thread which passes through the top of the eye *a*. Thus, if the top thread is light, the shade on the face will be light, and that on the inside dark; but if the dark thread passed through the top of the eye, the shade on the face would be dark, and on the rear light.

Hitherto these threads of different shades have been allowed to pass through the eye *a* without being controlled, so that they are alternately on top and bottom, and consequently produce the mottled appearance of the fabric before alluded to.

When it is desired to produce a stripe on the fabric of a color differing from that of the body, it has been usual to break the threads at a point between the bobbins and the first guides, and then to splice the broken ends to a thread or threads of the color desired for the stripe.

To avoid the breaking and splicing of the thread, I construct the machine as shown in the drawing—that is to say, instead of carrying the threads from the eye *a* of the guide B to other fixed guides, I pass the threads through openings or eyes on two vertically-adjustable bars, D D′, adapted to suitable guides.

By raising the guide D and leaving the guide D′ depressed, the thread carried by the former will pass through the top of the eye *a* of the guide B, and will consequently give color to the face of the tube of fabric, while by raising the guide D′ and depressing the guide D, the relation of the threads and the color of the face of the tube of fabric will be changed, and the effect of a stripe will be produced.

More than two threads and two bars, D D′, may be used, if desired, and various modes of raising and lowering the bars D D′ may be adopted. I have shown in the drawing one mode which has been found to be effective in practice.

On the needle-carrying cylinder A is a cam, *b*, which, as the cylinder revolves, strikes a bar attached to a spring-pawl, *d*, and moves the same, so that it imparts a movement to the extent of one or more teeth to the ratchet-wheel *f*, with which it engages. This ratchet-wheel is centered out of line with respect to the two bars D D′, and carries two cams, *i i*, which, as the wheel revolves, alternately raise the bars D D′ and permit them to fall.

I claim as my invention—

1. The combination of the needle-cylinder A of a circular-knitting machine, and the thread-guide B, having the eye *a*, with the vertically-adjustable bars D D′, whereby the relative positions of the threads fed to the nee-

dles may be altered, as and for the purpose set forth.

2. The combination of the vertically-adjustable guide-bars D D′ with the ratchet-wheel *f* and its cams *i i*, and suitable mechanism by which said wheel may be rotated, as set forth.

3. The combination of the ratchet-wheel *f* and pawl *d* with the cam *b* on the cylinder A.

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

MARTIN LANDENBERGER, JR.

Witnesses:
HARRY HOWSON, Jr.,
HARRY SMITH.