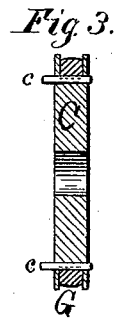
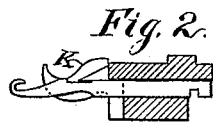
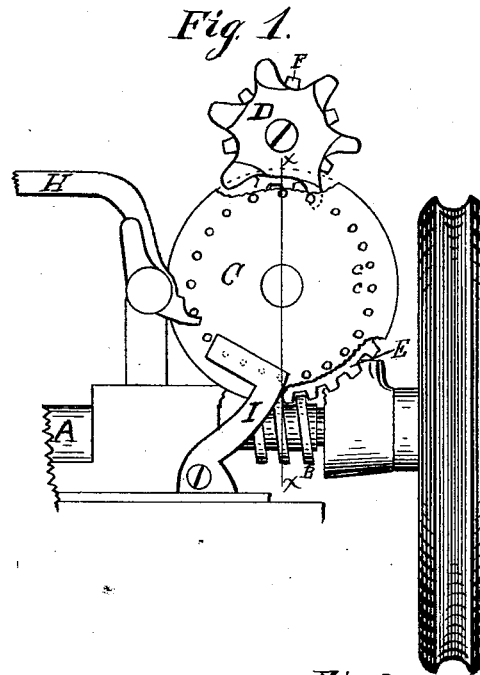


E. P. CURTISS.
Knitting-Machine.

No. 159,750.

Patented Feb. 16, 1875.



Witnesses.
W. B. Strong
W. A. Grod

Inventor:
Edward P. Curtiss

UNITED STATES PATENT OFFICE.

EDWARD P. CURTISS, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO THEODORE C. FOOTE.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. 159,750, dated February 16, 1875; application filed July 27, 1874.

To all whom it may concern:

Be it known that I, EDWARD P. CURTISS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain Improvements on a Knitting-Machine patented April 28, 1874, and numbered 150,228, of which the following is a specification:

This invention relates to certain improvements in knitting-machines, the objects of which are to produce a variety of fancy knitted fabrics; and consists of a cam for tripping the reversing-lever, having adjustable stops, and an automatic stop-adjuster, operated by a worm-screw on the driving-shaft; also, of a guard placed between the needles, to press the fabric down and keep the stitches on the needles.

To enable others to fully understand my improvements, I will proceed to describe the same in detail by the aid of the accompanying drawing, in which—

Figure 1 is a front elevation of the said cam and automatic adjuster, showing its relation with the driving-shaft. Fig. 2 is a sectional view of the needle-ring, showing the guard. Fig. 3 is a vertical section of the cam-wheel in line *xx* of Fig. 1, showing the method of securing the stops.

A is the driving-shaft of the machine, on which is a worm-screw, B. On a standard attached to the frame of the machine, above the said worm-screw, are arranged the cam-wheel C and stop-adjuster D. The wheel C has a groove in its periphery, (seen in section, Fig. 3,) and is pierced with a row of holes transversely through it at the base of said groove. The said holes are for the reception of the adjustable stops *c c*, and the groove is for the reception of a rubber ring, G, which, being sprung in, serves to retain the stops in position. By the side of the cam-wheel C is a cog-wheel, E, revolving on the same stud with and carrying the cam C, and meshes with the worm-screw B. Above the cog-wheel E, on an

adjustable standard, is a pinion, F, operated by the cog-wheel E, and carrying with it a toothed wheel, D, which I call an "adjuster." It is for adjusting the stops *c c*, and has its teeth beveled off on one side, so as to push certain stops through the cam-wheel C. The said stops, as they are adjusted, are for the purpose of tripping the reversing-lever H. To the side of the frame of the machine is fixed a piece, I, which stands up beside the cam C, and has an arm lying in line with the row of stops *c*, and is intended for pushing all the stops back again.

By removing the adjuster D and substituting in its place one of greater dimensions—say, of five hundred cogs—the capacity of the cam-wheel C is increased, admitting of the production of a variety of fabrics having raised work of figures, flowers, &c., and, by using fine thread, a variety of lace.

In Fig. 2 the letter K represents a hook-shaped guard or finger, fixed between the needles onto the needle-frame. These guards are made of thin pieces of metal, curved as shown, and are arranged alternately with the needles. The thread being drawn tightly under these guards, the work is prevented from drawing up, and also from flying off the needles; and if a stitch should be dropped, the needle is caused to form a new one, the thread being presented to it by its adjacent guard.

Having described my improvement, I claim—

1. In a knitting-machine, the combination of a cam, C, having adjustable stops, with an automatic adjuster, D, and arm I, substantially as described, for the purpose of actuating the reversing-lever.

2. In a knitting-machine, guards K, in combination with the needles, substantially as and for the purpose specified.

EDWARD P. CURTISS.

Witnesses:

J. C. WAGNER,
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