2 Sheets--Sheet 1.

E. P. CURTISS.

Knitting-Machine for Making Bullion-Fringe.

No. 165,311. Patented July 6, 1875.

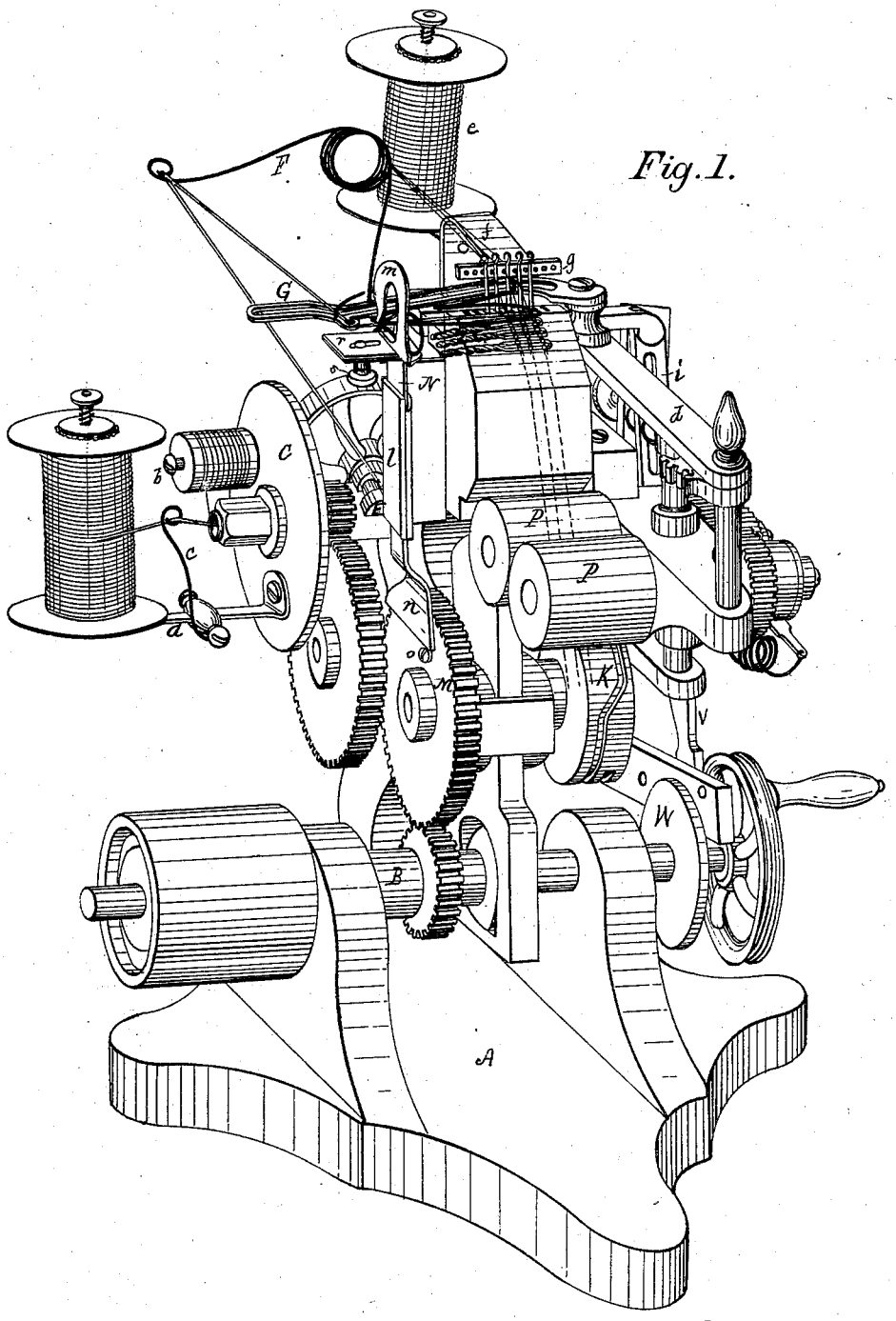

Fig. 1.

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Inventor:
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E. P. CURTISS.

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Fig. 2.

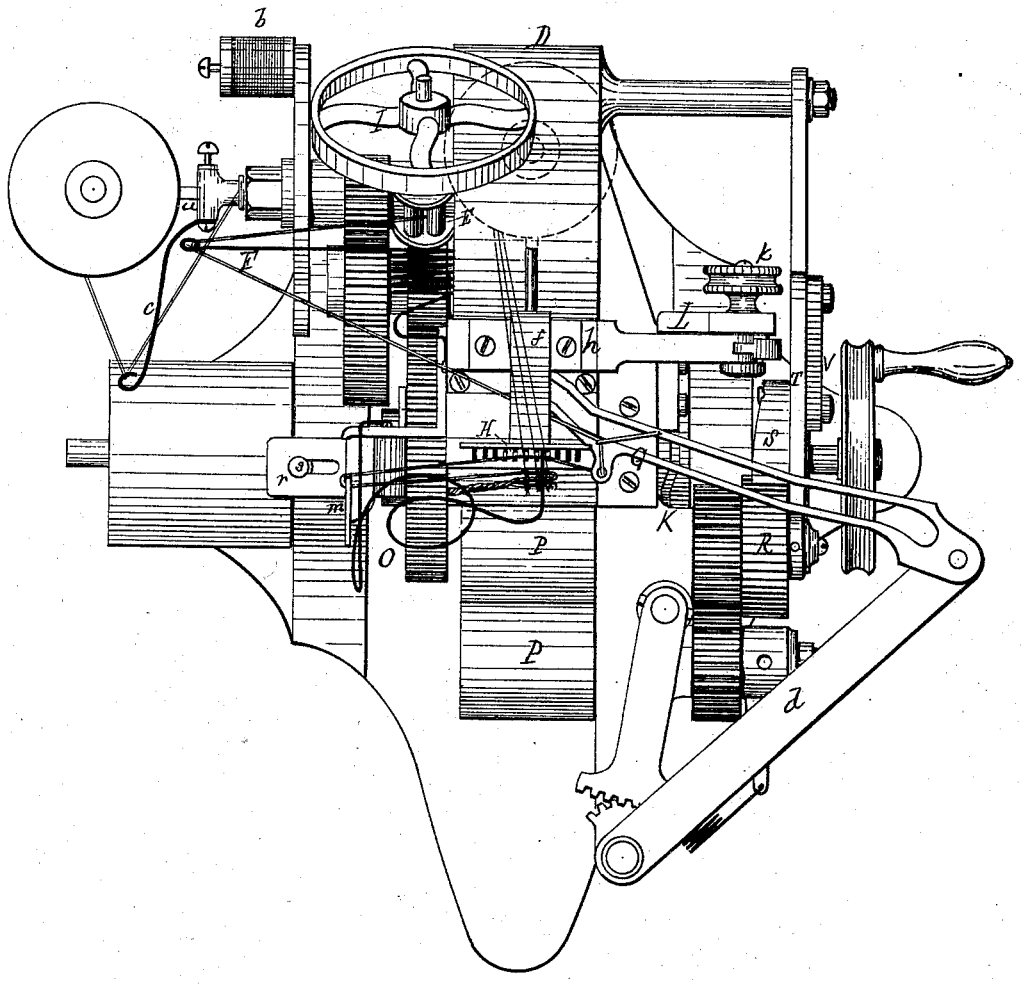
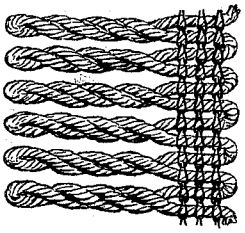


Fig. 3.



Attest:
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Inventor:
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UNITED STATES PATENT OFFICE.

EDWARD P. CURTISS, OF NORWALK, OHIO.

IMPROVEMENT IN KNITTING-MACHINES FOR MAKING BULLION-FRINGE.

Specification forming part of Letters Patent No. **165,311**, dated July 6, 1875; application filed June 7, 1875.

To all whom it may concern:

Be it known that I, EDWARD P. CURTISS, of Norwalk, in the county of Huron and State of Ohio, have invented certain new and useful Improvements in Knitting-Machines, whereof the following is a specification:

The invention relates to a machine designed more particularly for knitting bullion and other fringe, gimps, and the like; and the invention consists in a rotating bobbin-carrier for twisting the roving; a horizontally-reciprocating roving-carrier, combined with a vertically-reciprocating hook for forming the fringe-loops; and needles for knitting warp-threads into said loops, so as to bind them together, the several parts being constructed and combined for co-operation substantially as hereinafter specified.

In the accompanying drawings, Figure 1 is a perspective view of my machine. Fig. 2 is a top-plan view, and Fig. 3 a view showing the fringe.

The letter A represents a bed plate, in bearings on which is secured a shaft, B, which carries the driving-wheel. From this shaft motion is communicated to the several parts of the machine by means of suitable gearing. C is a disk rotated on a fixed shaft in the rear portion of the standard or frame D, and having a bobbin-holder, *a*, spool-holder *b*, and a guide-wire, *c*, which constitute a twister, or device for twisting the roving as it leaves its bobbin. The roving passes from its bobbin through the hollow shaft of disk C, and between drawing-rolls E, thence through a slack take-up, F, and finally to the carrier G, by which it is passed back and forth before the needles H. The drawing-rolls E receive motion from a friction-wheel, I, adjustable on its shaft, and operated by disk C at different speed, according to its adjustment. The slack take-up F may be simply an L-shaped wire coiled at the bend, and secured to the frame, with an eye in its free end through which the roving passes. The carrier G consists of a slotted arm, pivoted to a reciprocating arm, *d*, that may receive its motion from segmental gearing operated from a crank. This carrier is reciprocated over the needles, and is held in position by a set-screw fixed in the frame, whereby the path of its travel is regulated. *e* is the warp-thread bobbin, secured to an arm, *f*, on the front of which is a thread-guide, *g*. The arm *f* is attached to a sliding plate, *h*, which is reciprocated on its bed in rear of the needles by means of a lever, *i*, operated from the cam K. The lever *i* has its fulcrum on a screw, *k*, that is adjustable in slots in a bracket, L, and in the lever, so that the throw of said lever may be lengthened or shortened at pleasure by changing the position of said screw in the slots. *l* is a slideway extending from the frame, in which is fitted a plate, N, that is vertically reciprocated by means of a stud, *o*, on the gear-wheel M and a retracting-spring. The upper end of this plate is provided with a slotted plate, *r*, from which rises a hook, *m*, and said plate is adjustably attached to an extension of frame *l* by a set-screw, *s*, whereby the length of the fringe is regulated. The point of the hook *m* should be somewhat in front of the needles. A bent wire, O, is arranged parallel with the side of the hook *m*, and acts as a hook-stripper; it extends thence to the needles, and its end passes between the two outer threads, so as to prevent the tension of the roving drawing the thread away from the needles. P P are drawing-rollers, geared together and operated by means of a pawl, S, and ratchet R, which receive a changeable intermittent motion from levers T V, adjustably connected to a face-cam, W.

The operation is as follows: The needles, which may be the ordinary latch-needles secured in a vertically-reciprocating bed, are set up with loops of warp-thread, and motion being given to the machine the roving is twisted by the rotation of disk C, and drawn through by the rollers E, and passed back and forth over in front of the needles by the carrier G, and under the hook *m*, where each loop is held until the next is formed and knit together by the action of the needles with the warp-threads. As soon as each loop of fringe is freed from hook *m* it twists itself in the manner indicated in Fig. 3.

If it is desired to produce silk or other covered fringe, gimp, or the like, a spool of the covering material is placed on the holder *b*, and an end secured to the twisted roving, so that as the twister revolves the silk, &c., is wound around such roving.

In making plain gimps the hook is not used,

but some gimps which have loops will require the use of a hook or similar device in their production.

Where the twisting of the roving is not required, the twister may be thrown out of gear. In making fringes, gimps, and the like of several colors, a compound twister is used, whereby the several colored threads are properly twisted and separately passed in.

What I claim as my invention is—

1. The combination of a carrier, G, take-up F, and adjustable hook *m*, with the needles and thread-guides of a warp-knitting machine for the manufacture of fringes and gimps, substantially as described.

2. The combination of a twisting device, carrier, adjustable hook, and take-up with the needles and thread-guides of a warp-knitting machine for the manufacture of bullion-fringes and gimps, substantially as described.

3. The combination of the twister, carrier, take-up, adjustable hook, and drawing-rolls E, with the needles and thread-guides of a warp-knitting machine, for making fringes, gimps, and the like, substantially as described.

4. In a machine of the character herein described, for making fringes, gimps, and the like, the combination of a twisting and covering device, constructed and arranged as shown and described.

5. A bullion-fringe, having a knit heading, substantially as shown and described.

E. P. CURTISS.

Witnesses:

A. C. BRADLEY,

WM. H. FINCKEL.