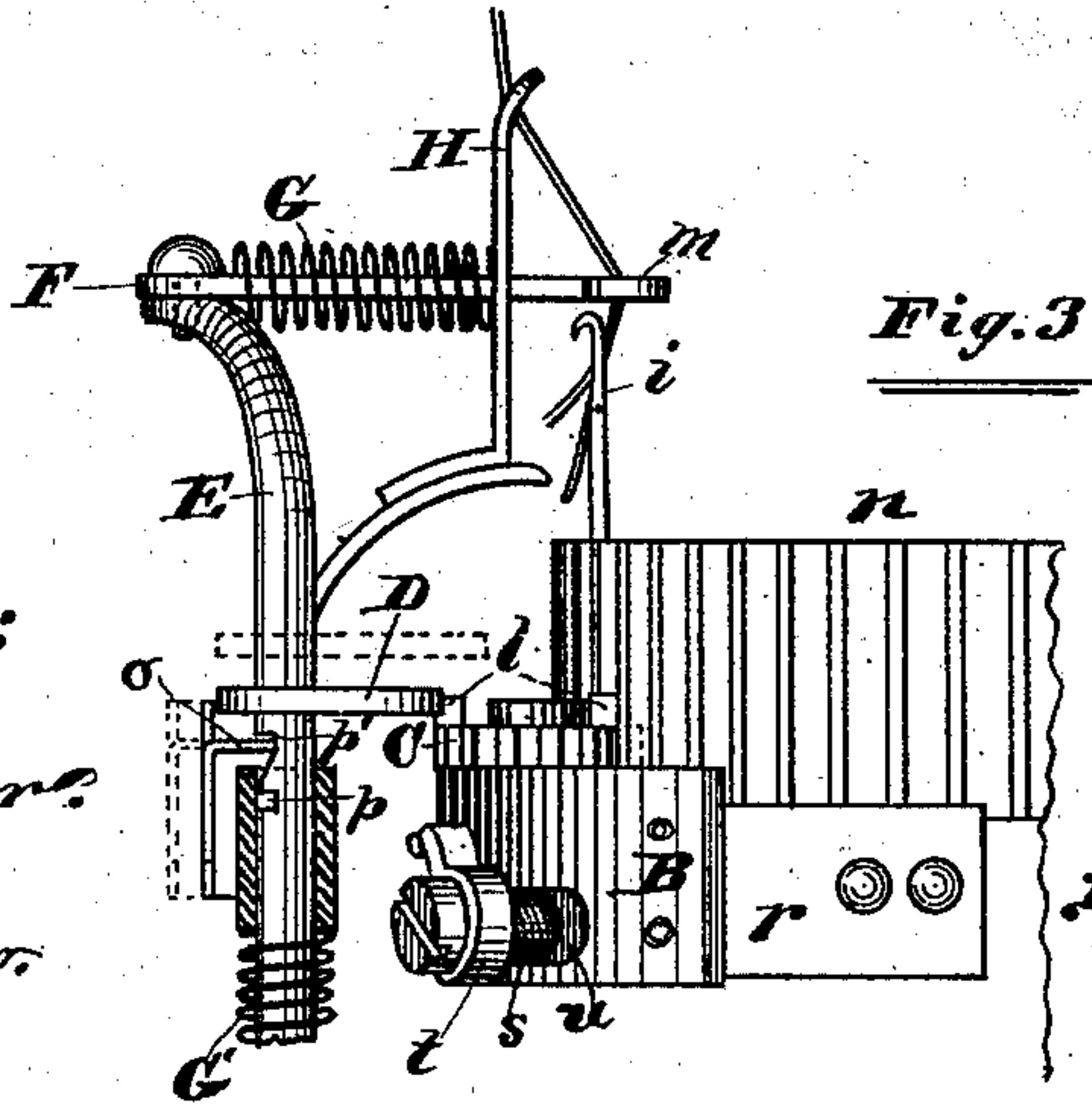
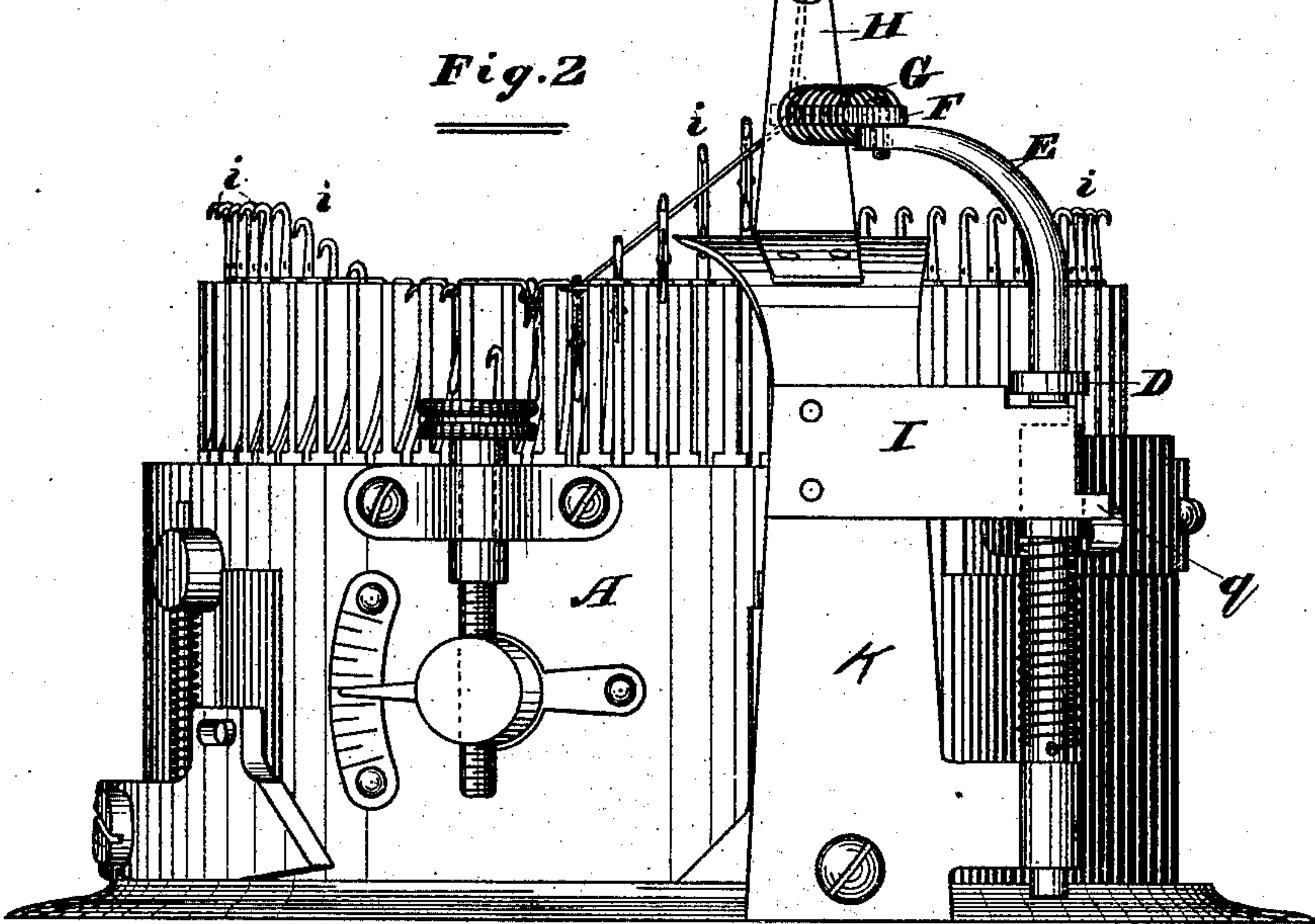
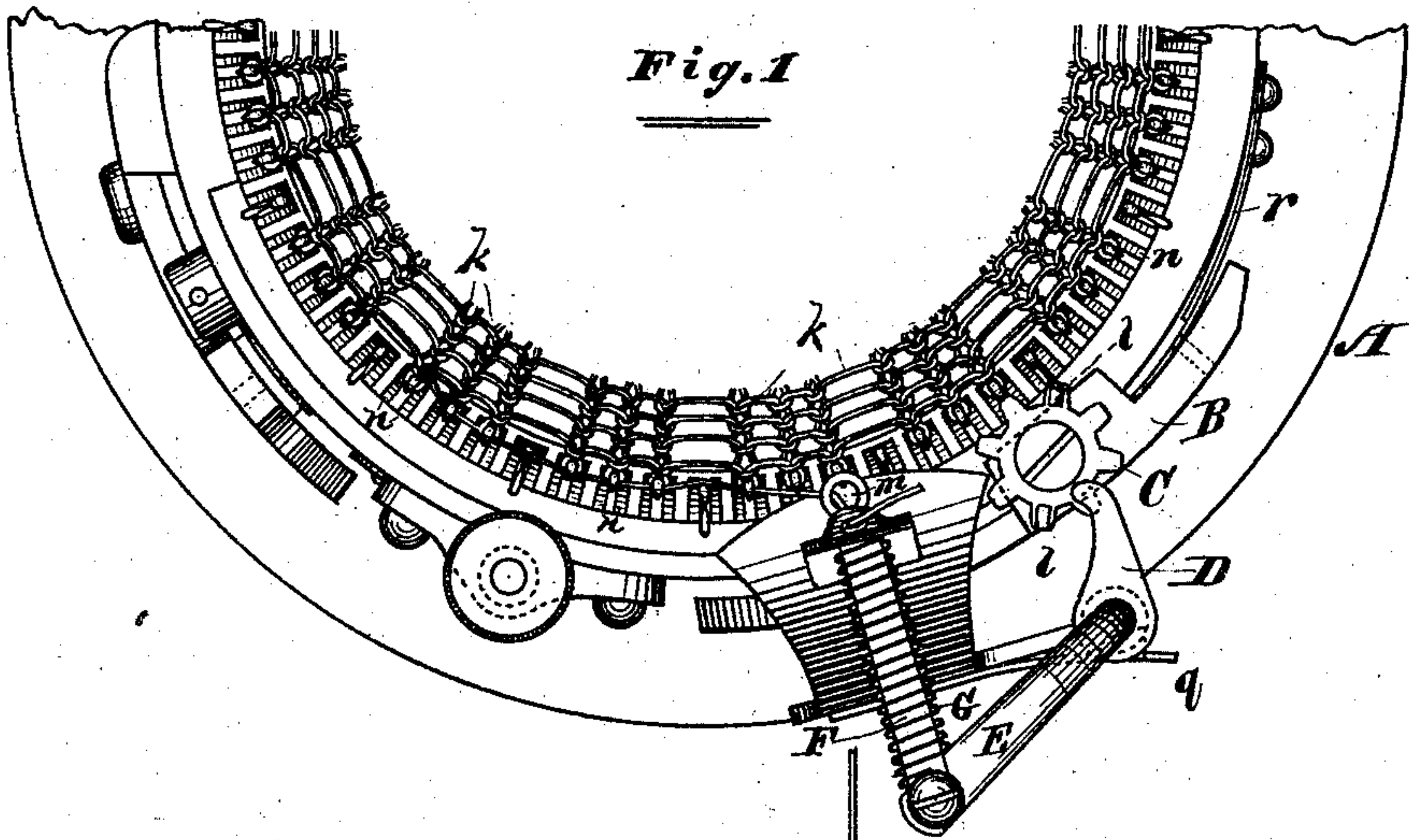


F. KITTELL.

Ribbing Attachment for Knitting Machines.
No. 235,882. Patented Dec. 28, 1880.



Attest:

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FRANK KITTELL, OF CHICAGO, ILLINOIS.

RIBBING ATTACHMENT FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 235,882, dated December 28, 1880.

Application filed June 27, 1879.

To all whom it may concern:

Be it known that I, FRANK KITTELL, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Ribbing Attachment for Knitting-Machines; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, of which—

10 Figure 1 is a partial plan view of a knitting-machine provided with my attachment; Fig. 2, a side elevation of the same, and Fig. 3 a detail view.

My invention relates to a simple attachment 15 for knitting-machines adapted to produce ribs in the fabric when desired, but capable of being thrown out of gear when ribs are not desired, permitting the machine to produce the ordinary plain fabric.

20 It comprises a thread-guide extending above the needles, and mechanism, as hereinafter described, operated by the movement of the machine, for imparting to the said thread-guide a laterally-reciprocating motion across the needles, thereby carrying the thread at regular 25 predetermined intervals around the rear of a needle, whereby such needle fails to catch the thread and a stitch is missed; and also mechanism whereby the attachment may at will be 30 thrown into gear and become operative, or out of gear and become inoperative.

Referring to the drawings, A is the revolving cam-cylinder of an ordinary knitting-machine, and *i i* the needles, which operate as 35 usual in the needle-cylinder *a'*. To form a rib or tuck stitch such as is represented by the threads *k* in Fig. 1, it is necessary that needles be missed at regular intervals, as before stated. This I effect by means of the attachment comprising the plate B, carrying the pinion-wheel C, and the elbow-lever D E F, which 40 serves to guide the thread, and which is operated by projections *l* on the pinion-wheel C acting in opposition to the helical spring G. The shaft E is journaled in an upright position to the cylinder A, and curves to the left near its upper end. Pivoted to the upper extremity is the arm F, which passes horizontally inward through an opening in the guide-plate H, and terminates with an eye, *m*, through 45 which the thread is passed. The helical spring

G surrounds the arm F, abutting at one end against the shaft E and at the other against the guide-plate H. The arm D is rigidly attached to the shaft E and projects inward just 55 over the pinion-wheel C, the latter being provided with vertical projections *l*, as aforesaid, at equal distances apart.

When the attachment is in gear for operation the pinion-wheel engages with the vertical bars *n*, within which the needles work, the 60 teeth working in the spaces between these bars. From the fact that the cylinder A revolves and the bars *n* remain stationary, it is evident that when the machine is in operation a rotary motion is communicated to the 65 pinion-wheel C. This causes the projections *l* to operate with a cam-like action upon the arm D, each contact serving to press out the said arm, thus turning the shaft E and pressing 70 the arm F inward beyond the needles. As soon as the arm D is released the spring G sends the whole back to its normal position. Each impulse serves to carry the thread around the rear of a needle, as indicated in Fig. 3. 75 In the device shown there are two projections only on the pinion-wheel. This, as will readily be seen, causes the thread to pass to the rear of every fourth needle. I do not limit myself to this arrangement, however, for, if 80 desired, only a single projection may be used, or one may be formed on every third tooth, or even on every other tooth, without in the least departing from my invention.

The shaft E is made vertically adjustable, 85 so that the arm D may be caused to engage with the projections *l* when it is desired to form a rib or tuck stitch, and be raised above the said projections when a rib-stitch is not wanted. This is done by giving the shaft a 90 slight vertical play in the journals and surrounding it with a helical spring, G', which is compressed when the shaft is raised. A flat horizontal spring, I, is secured at one end to the vertical plate K, which sustains the thread- 95 guide H, and from which, also, the journals within which the shaft E works project, and this plate is, in turn, secured to the cylinder A. The free end of the spring I lies against the shaft E, and when the said shaft is raised 100 a flange, *o*, formed upon the spring enters a notch, *p*, thus sustaining the shaft. To bring

the arm D into position to engage with the projections *l*, the spring I is pressed outward by means of the thumb-piece *q* free of the notch *p*, when the force of the spring G' carries the shaft down again and the flange *o* enters the upper notch, *p'*. The lower side of this latter notch is beveled, so that by simply raising the shaft E the flange *o* will be caused to slide out of the said notch and be transferred to the one below.

The pinion-wheel C likewise is made capable of being thrown into or out of gear with the bars *n*. This is done by having the plate B riveted at its end farthest from the wheel C to a flat arched spring, *r*, which latter, in turn, is riveted at its end farthest from the wheel C in a horizontal position to the cylinder A, all as shown. The spring must be arched sufficiently to hold the pinion free from the bars *n* when permitted to do so. A pin, *s*, terminating with a button, *t*, capable of revolving, projects from the cylinder A and passes through a slot, *u*, in the plate B and spring *r*, and to bring the pinion-wheel C into gear the plate B is pressed inward against the cylinder and secured there by turning the button crosswise of the slot.

From the foregoing description it will be seen that by throwing the pinion-wheel C out of gear with the bars *n* and raising the shaft E the machine works precisely as though no attachment existed. The effect is substantially the same if the pinion is allowed to remain in gear with the bars, but with the shaft E raised, for then, though the pinion-wheel revolves, the projections *l* do not engage the arm D.

The operation of raising and lowering the

shaft E is almost instantaneous, and the complete change for the whole machine may be effected in less time than it takes to remove or replace a single needle.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the needle and cam cylinders, of the horizontal pinion-wheels C, attached to the cylinder A and engaging with the bars *n*, and having the projections *l*, arm D, shaft E, plate H, and arm F, terminating with an eye for the passage of the thread, and passing through an opening in the plate H and spring G, substantially as described, and for the purpose set forth.

2. The combination, with the needle and cam cylinders, of the notched shaft E, working in journals upon the cylinder A, and having a vertical play in the said journals, as described, spring I, and spring G', whereby the arm D is caused to engage with the projections *l* on the wheel C or not, according to requirement, as and for the purpose set forth.

3. The combination, with the needle and cam cylinders, of the plate B, carrying the pinion-wheel C, spring *r*, to which said plate is riveted, and which, in turn, is riveted to the cylinder A, and the pin *s*, projecting from the cylinder A, passing through a slot, *u*, in the said plate B and spring *r*, and terminating with a button, *t*, capable of being turned, substantially as described, and for the purpose set forth.

FRANK KITTELL.

In presence of—

P. C. DYRENFORTH,
EDWARD D. WINSLOW.