T. Crane
Straight Knitting Mach.

No. 69,776. Patented Oct. 15, 1867.

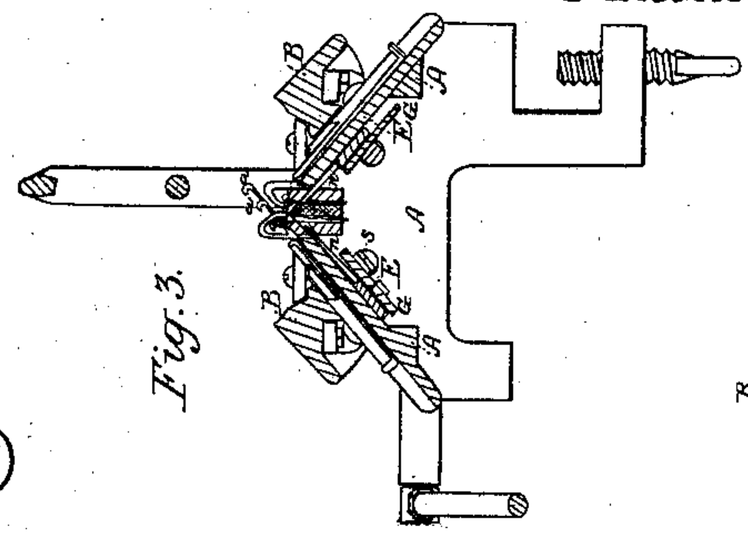

Fig. 3.

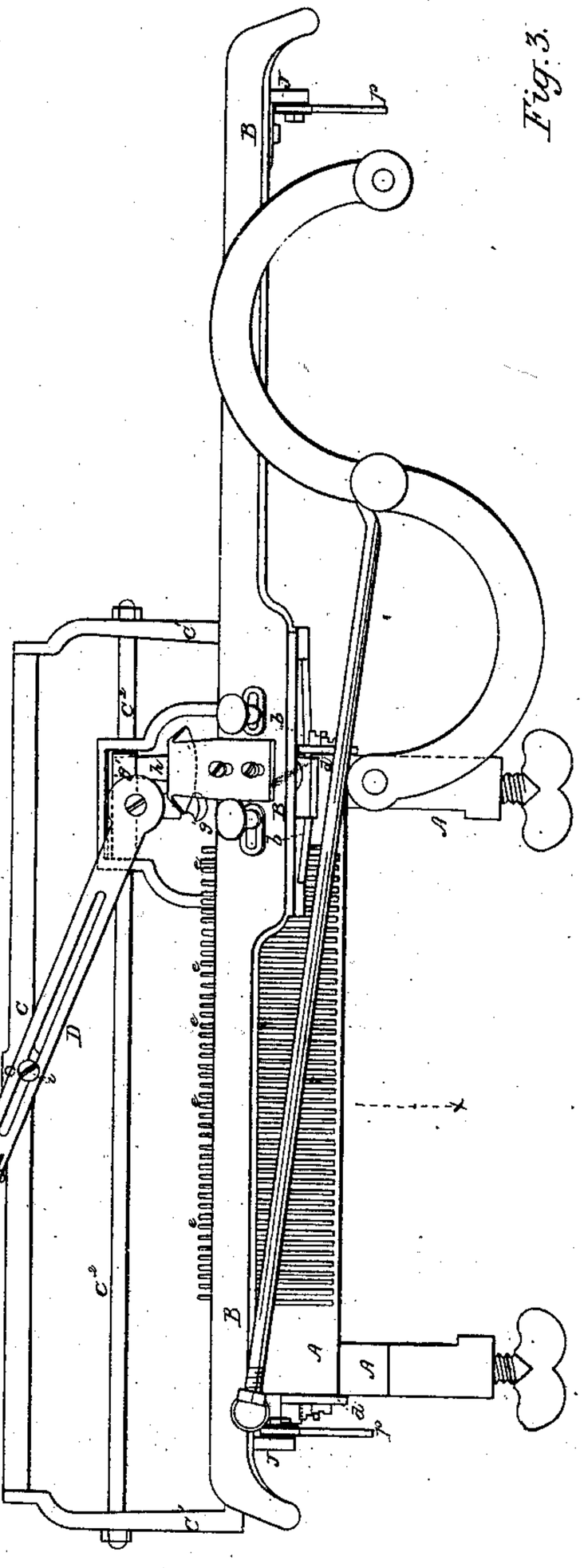

Fig. 1.

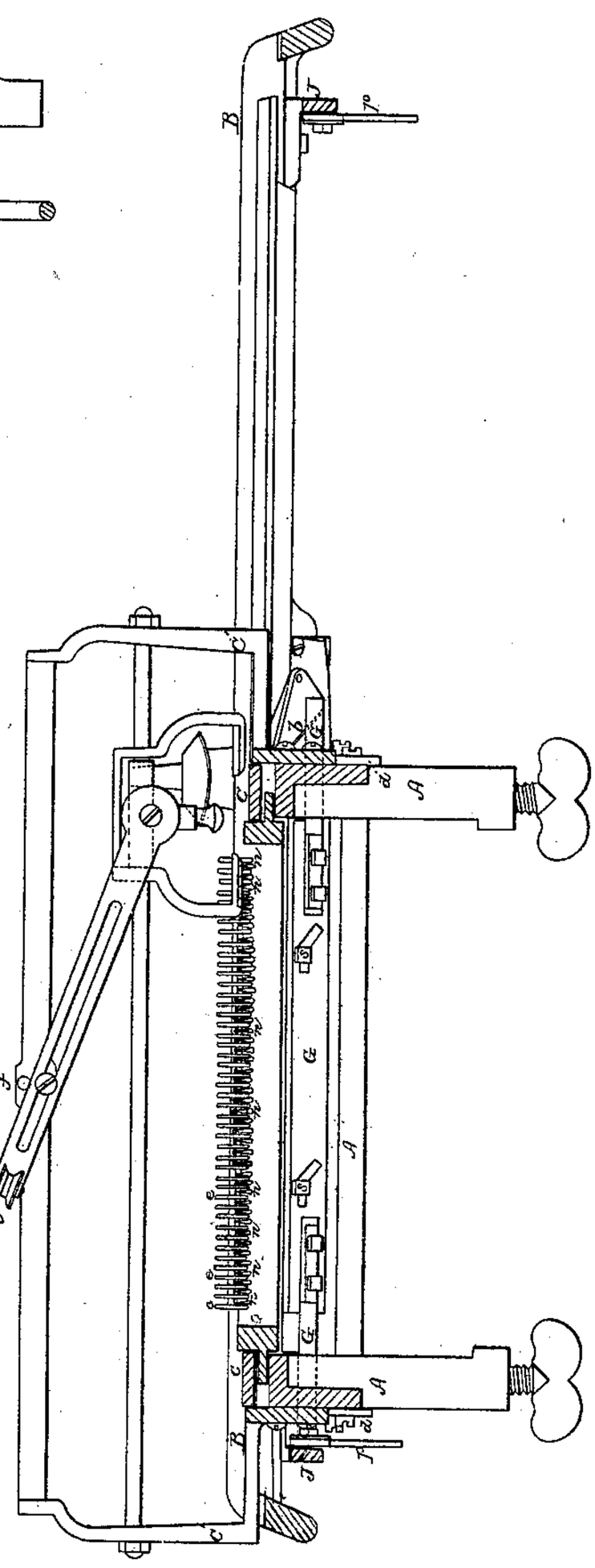

Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS CRANE, OF FORT ATKINSON, WISCONSIN.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. **69,776,** dated October 15, 1867.

To all whom it may concern:

Be it known that I, THOMAS CRANE, of Fort Atkinson, in the county of Jefferson and State of Wisconsin, have invented an Improvement in Knitting Machinery; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of one side of a knitting-machine having my improvement applied to it. Fig. 2 is a longitudinal section through the machine, taken in a vertical plane. Fig. 3 is a transverse section taken in a vertical plane indicated by red line *x x*.

Similar letters of reference indicate corresponding parts in the three figures.

This invention relates to an improvement on that class of knitting machinery wherein two parallel rows of needles are used, which are arranged to reciprocate in grooves that are formed in the surfaces of inclined plates, said needles being operated by means of sliding cam-plates applied to a rectilinear reciprocating carriage that moves the yarn-carrier.

The object of my invention is to hold the work down in place during the ascent of the needles to receive the yarn by means of a comb of spurs arranged beneath the needle-beds, and operated so as to pass through the knit fabric at points which are near the loops upon the needles, thereby securing or maintaining such a condition of the loops as will insure their being cast off from the needles with certainty, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawing I have represented my improvement applied to a well-known knitting-machine, of that class which employs straight rows of needles *a a*, applied to the inclined plates of a frame, A. The needles are of the kind known as the "latch-needles," and they receive a reciprocating motion from cams or inclined planes *b b*, that are applied to the lower surfaces of an open reciprocating carriage, B. This carriage B is supported upon the inclined surfaces of the jack-frame A, and held down in place by means of transverse plates *c c*, which are secured to said frame near its extremities.

The cam-plates *b b* are shifted at the termination of the forward and backward strokes of the carriage B by means of short arms *d d*, two of which are pivoted at each vertical end of the jack-frame, and so applied to this frame that they can be adjusted out of the way when it is not desired to shift the said cam-plates. The needles work between the jacks *e e*, receive the yarn, and cast off the loops in the usual manner. The yarn is conducted from the bobbin through an eye which is made transversely through a bridge-bar, C, which latter is supported upon the jack-frame A some distance above the needles by means of standards C^1 C^1 at the ends of said frame.

The yarn is conducted from the eye *f* over a grooved pulley, g^3, upon the upper end ot an arm, D, and thence carried down and passed through the eye of a sliding hanger, *g*, to the needles. The arm D is pivoted at its lower end to the slide g^1, which receives a reciprocating movement on the rod C^2 from a projection, *h*, on the carriage B. This arm D is also connected to the bridge-bar C by means of a pin, *i*, which passes freely through a long slot in this arm, as shown in Figs. 1 and 2.

Having now given a general description of one form of knitting-machine, I will proceed to describe my improvement for allowing the needles to cast off the loops freely.

On the bottom side of each inclined needle-bed of frame A is a longitudinal bar, E, having suitably secured to its upper edge a row of spurs, *n*, of suitable length and strength. The plates or bars E are held in guides in such manner that they can be moved up and down in a direction with the length of the needles or spurs *n*. For the purpose of moving these combs E, I employ the longitudinally-reciprocating plates G G, the ends of which project through holes that are made through the vertical ends of the frame A, as shown in Fig. 2, to be acted upon by plates or levers *p p* on the carriage B. To these plates or bars G the comb-bars E are connected by means of studs *s s*, which pass through oblique slots in the plates G, as shown in Fig. 2. The length of these oblique slots should be such as will allow the plates G to move the comb-spurs through the two thicknesses of knit fabric, so that the points of the spurs will nearly, if not quite, touch the inner edges of the jacks when these spurs are thrust upward.

When the comb-spurs are depressed their

points will be free from the fabric. The levers *p p* are pivoted to transverse plates J J near the ends of the carriage B, which plates have notches cut in their lower edges, in lines coinciding with the ends of the slotted plates or bars G, so that when the levers *p p* are thrown down out of the way of the ends of bars G G these bars will remain stationary when the carriage B is moved. When levers *p p* are raised so as to cover the notches in their respective plates J, they will then strike the ends of the bars G when the carriage B is moved, and alternately thrust up the comb-spurs.

In Figs. 1 and 2 I have shown another device for holding down the work, and which moves with the yarn-carrier, and which is so constructed and arranged that it may be employed in conjunction with the comb-spurs; but as the same forms the subject of another application by me for a patent I will not here describe it.

It is not desired to employ two different devices at the same time for effecting the object herein set forth, as this object can be effected by the employment of the comb-spurs alone.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The employment of spurs or combs, arranged and operating substantially as described, for the purpose of holding the work in proper position during the ascent of the needles.

2. The notched plates J J, in combination with levers *p p*, or other equivalent means for moving the slotted bars G G and the comb-spurs, substantially as described.

3. In combination with a knitting-machine having one or two straight rows of needles, I claim holding the work down in place during the ascent of the needles by a device or devices arranged beneath the needle-beds, substantially as described.

THOMAS CRANE.

Witnesses:
D. WHITAKER,
S. BAURNER.