

I. Crane. Knitting Machine.

N^o 69,775.

Patented Oct. 15, 1867.

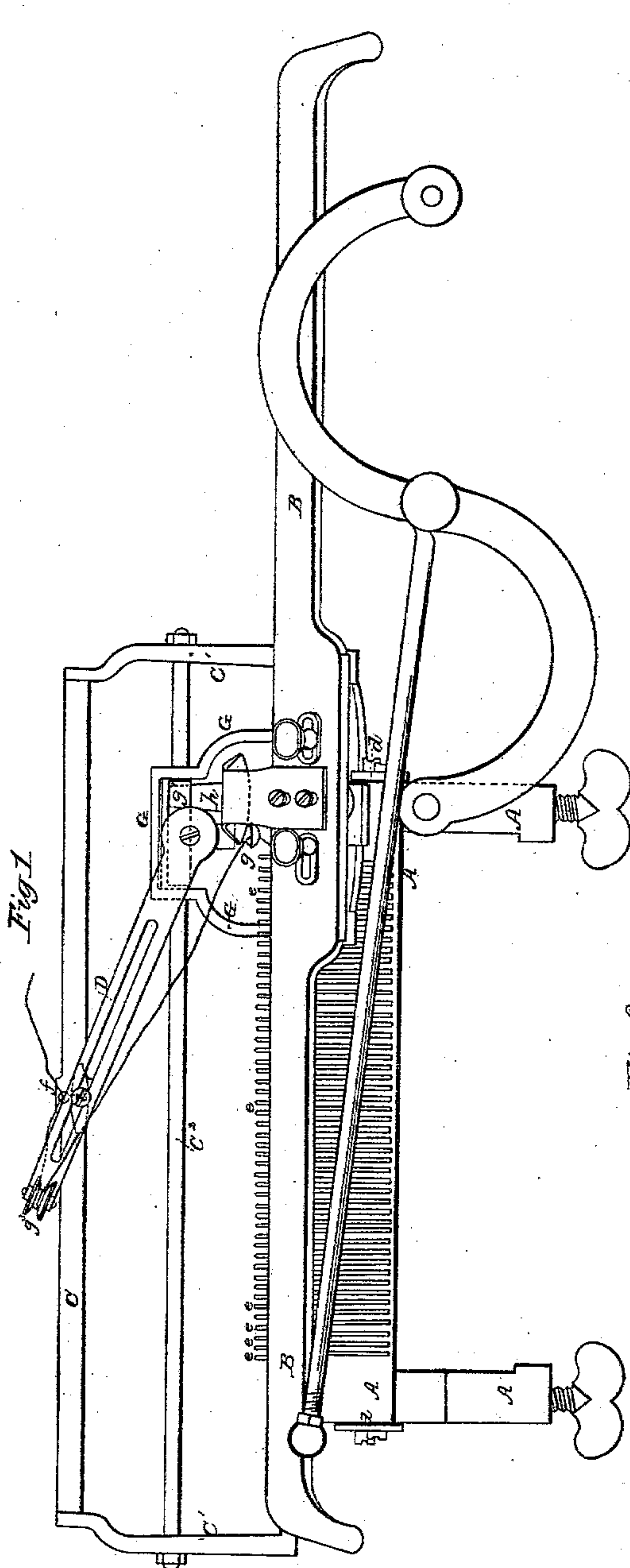
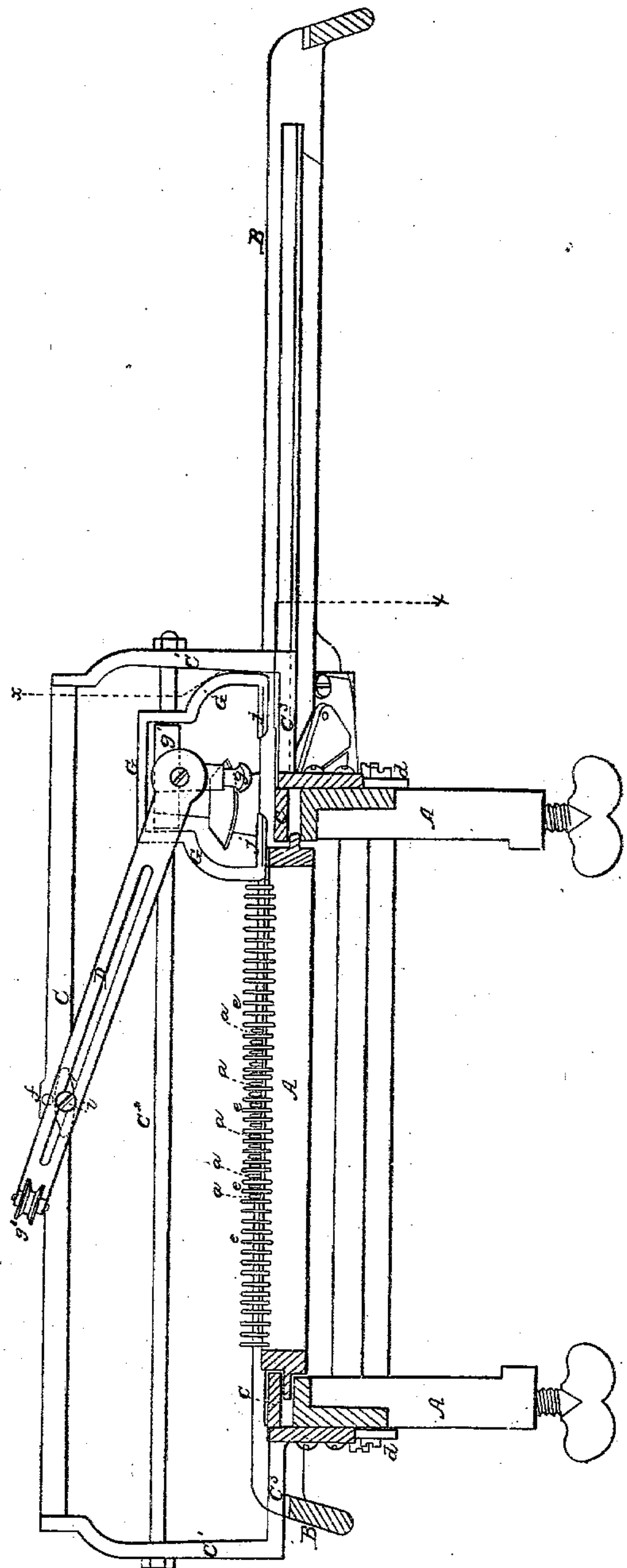


Fig 2



Witnesses
Edw. Schaefer
Henry Glorstein

Inventor:
Thos. Crane
by
Mason, Perwin & Co. Attorneys

T. Crane. Knitting Machine.

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Fig. 3.

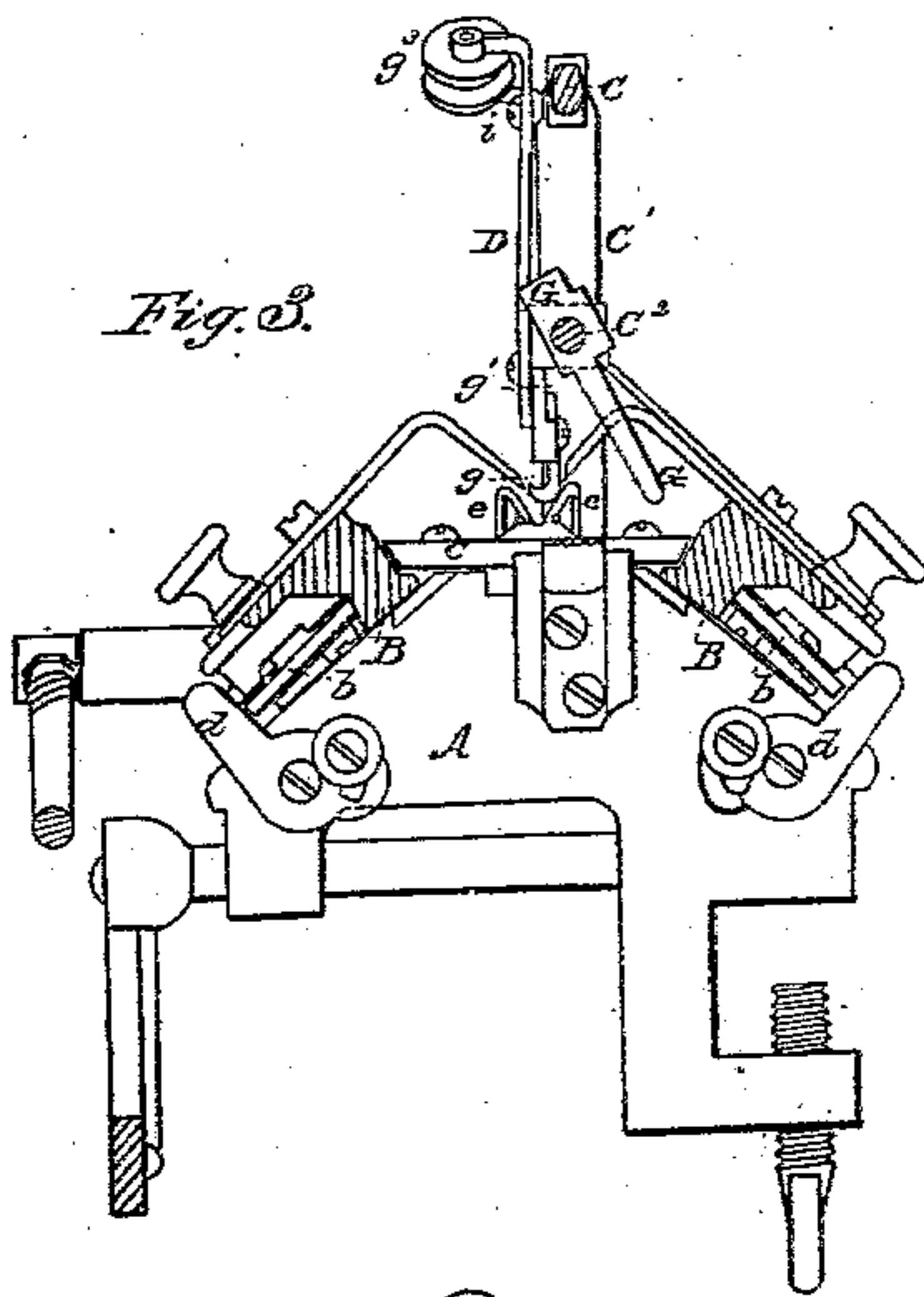
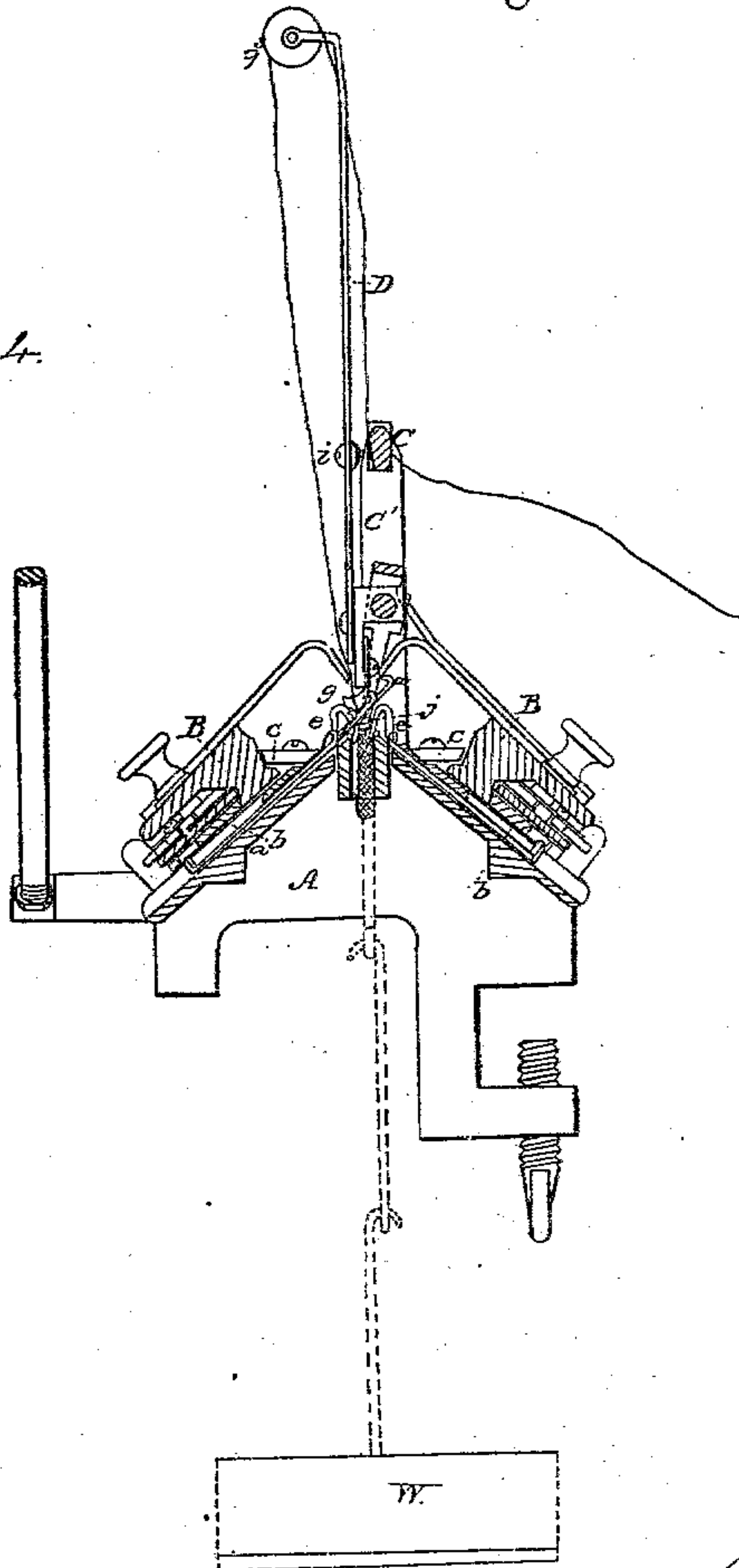


Fig. 4.



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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. 69,775, 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 certain novel Improvements 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, Sheet 1, is an elevation of the front side of a knitting-machine having my improvements applied to it. Fig. 2 is a longitudinal section taken in a vertical plane through the bed-plate and sliding frame between the two rows of needles. Fig. 3, Sheet 2, is a section taken vertically through one end of the machine in the course indicated by red line *x*, Fig. 2. Fig. 4 is a transverse vertical section through the machine, showing the pressure-bar on one side of the yarn-carrier holding down the loops while the needles rise to receive the yarn.

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

This invention relates to certain novel improvements 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 cams or inclined planes applied to a rectilinear reciprocating frame that also moves the yarn-carrier.

The object of my invention is to hold the work down in place upon the needles during their ascent to receive the yarn by means of a device which will press directly upon the loops which were last formed, and thus allow the loops to be cast off from the needles with certainty, as will be hereinafter described.

Another object of my invention is to extend the bridge-frame which supports the yarn-carrier and the device for holding down the work beyond the ends of the jack-frame in such manner as to admit of the said device being adjusted out of the way of the needles when not required, as will be hereinafter described.

Previous to my invention the weight which is attached to the work was the only thing used for holding the work down upon the jacks and allowing the needles to cast off the loops. It has been found that this weight will not al-

ways hold the loops down in their proper place upon the jacks, and that the loops are sometimes carried up during the ascent of the needles without slipping off the latches on these needles, and hence imperfect work is made; besides which the operator is required to move the machine slow, that he may see if a needle fails to cast off a loop.

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

In the accompanying drawings I have represented my improvements 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 "latch-needles," and 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 ends. 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 well-known manner. The yarn is conducted from the bobbin through an eye which is made transversely through a bridge-bar, C, which is supported upon the jack-frame A above the needles by means of standards *C' C'* at the ends of said frame. The yarn is conducted from the eye *f* over a grooved pulley, *g*³, upon the upper end of 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 is also connected to the bridge-bar C by means of a pin, *i*, which passes freely through a long slot in arm D, as shown in Figs. 1 and 2. This mode of taking up the slack and keeping the yarn under proper tension during the movement of the carriage has

been fully described by me in a former application, and is only referred to now in order that I may more fully describe the invention which is the subject of this application.

My invention consists in having pressure-bars *jj* arranged so as to press directly upon the work between the two rows of needles *aa*, and to hold the work down in position during the ascent of the needles. These bars *jj* are shown clearly in Figs. 2 and 4. Their lower surfaces may be rounded and their upper surfaces beveled, as shown in cross-section, Fig. 4. Their inner ends curve upward, as shown in Fig. 2, so as to pass freely back and forth over the work without liability of catching the yarn. These two bars *jj* move in a horizontal plane between the jacks, and are sufficiently depressed to allow the needles *aa* of both rows to pass freely over them as these needles rise to receive the yarn. The outer ends of the pressure-bars are connected to the forked frame *G*, which is applied to the horizontal bar *C*², so as to slide freely thereon. This frame *G* receives its movements from the projecting tongue *h*, which moves the slide *g*¹, so that the yarn carrier or hanger *g* and the pressure-bars *jj* move together.

I do not desire to confine this part of my invention to the mode herein described for feeding the yarn to the needles and keeping it under tension, as various other modes for effecting this object may be adopted and employed in conjunction with the pressure bar or bars *j*. Nor do I confine my invention to the precise means herein described for moving said pressure-bars, as they may be connected in various ways to the carriage *B*, or its equivalent, and moved thereby.

Another part of my invention consists in providing for adjusting the pressure-bars *j* out of the space between the jacks, as shown in Figs. 2 and 3, when it is not desired to use them. This is done by extending the jack-frame by means of the horizontal portions *C*³

*C*³, applied at the ends of said frame, to the outer ends of which the standards *C*¹ *C*¹ are connected. This will allow of sufficient spaces at the ends of the frame *A* to receive the frame *G*, and admit of this frame being set to one side of the line of the jacks, in which position it may be held in any suitable manner.

I do not propose to dispense with the weight *W*, (shown in red in Fig. 4,) for this weight will keep the work under proper tension during the knitting operation, and prevent any liability of the pressure-bars becoming entangled with the yarn or knit fabric.

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

1. The application of pressure to the work at a point which is directly beneath each needle, for the purpose of holding down the loops last formed during the ascent of the needles, thus maintaining such a condition of the loops as will insure their being cast off from the needles with certainty, substantially as described.
2. The pressure-bars *j*, applied to a sliding frame, *G*, or its equivalent, which moves in concert with the yarn-carrier *g*, substantially as described.
3. Providing for moving the device which holds down the work to one side of the jacks, when not required to work between the jacks, substantially as described.
4. The combination of one or more pressure-bars, *j*, or their equivalent, with one or two straight rows of needles, substantially as described.
5. Extending the ends of the jack-frame beyond the ends of the rows of jacks, so as to admit of the removal of bars *j* longitudinally from between the jacks, substantially as described.

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Witnesses:

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