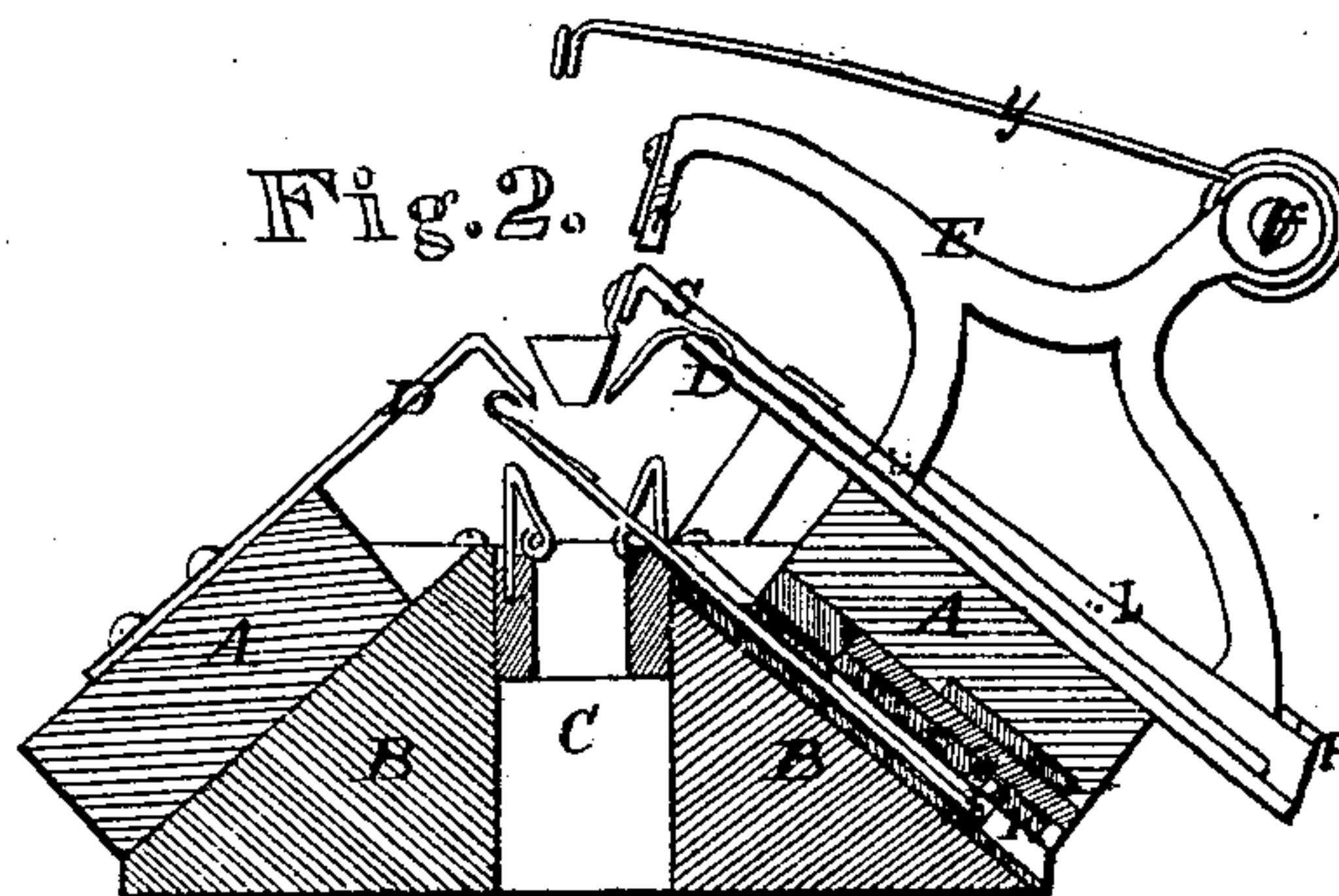
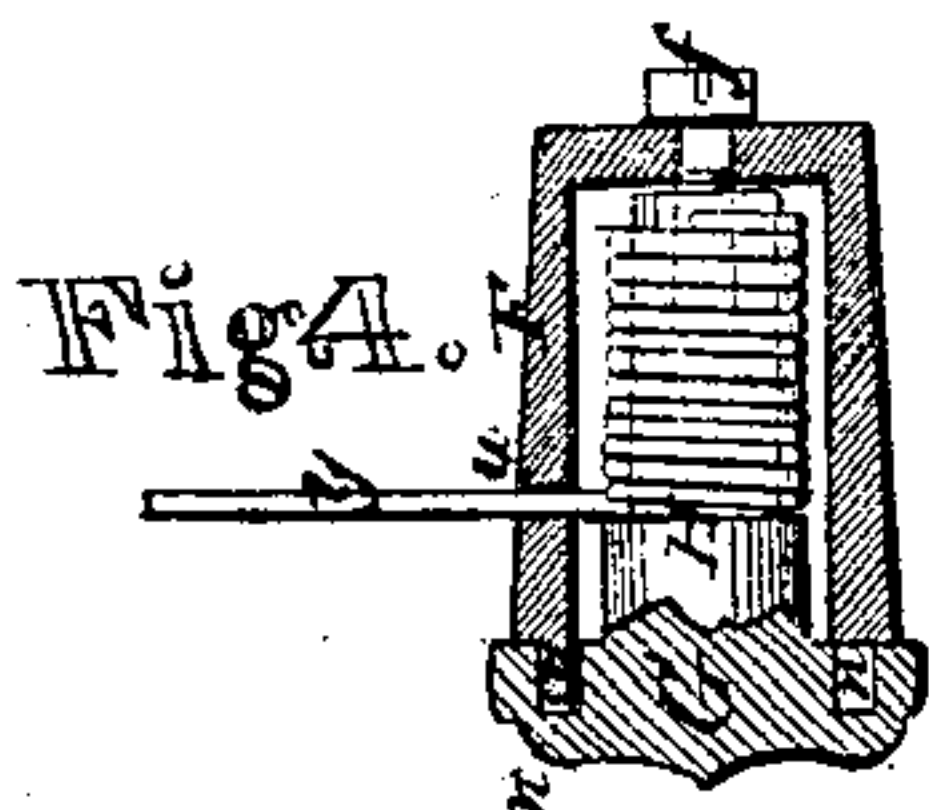
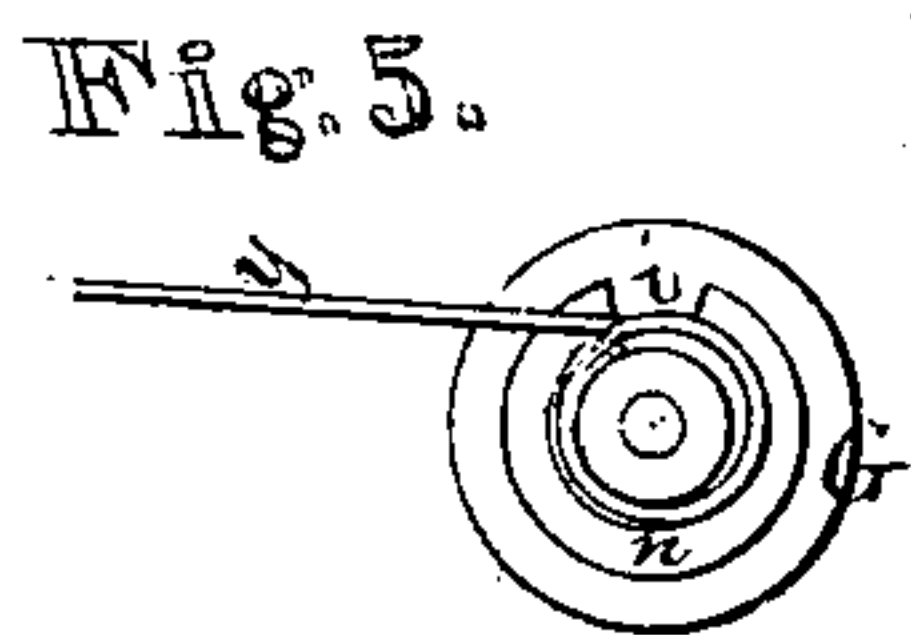
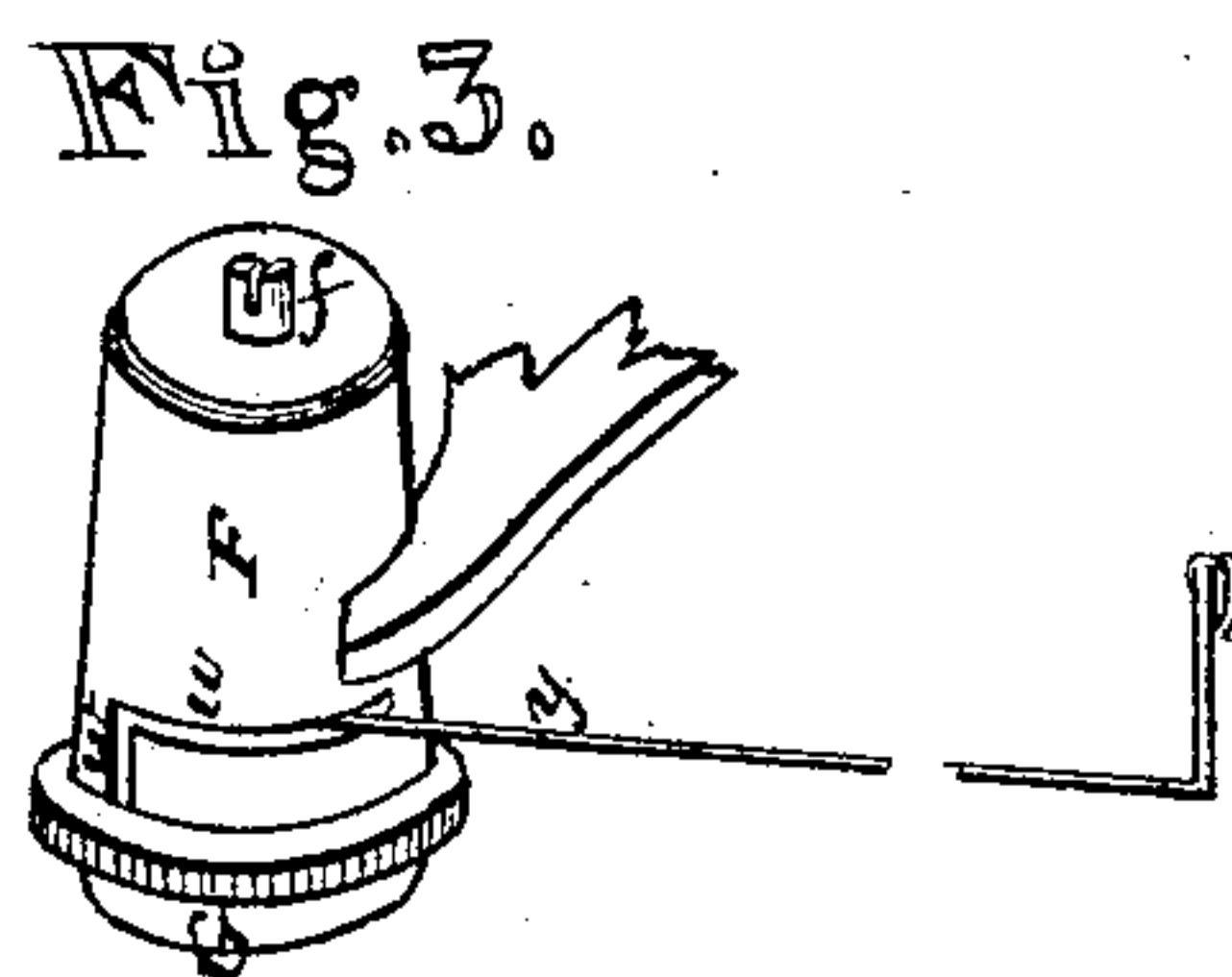
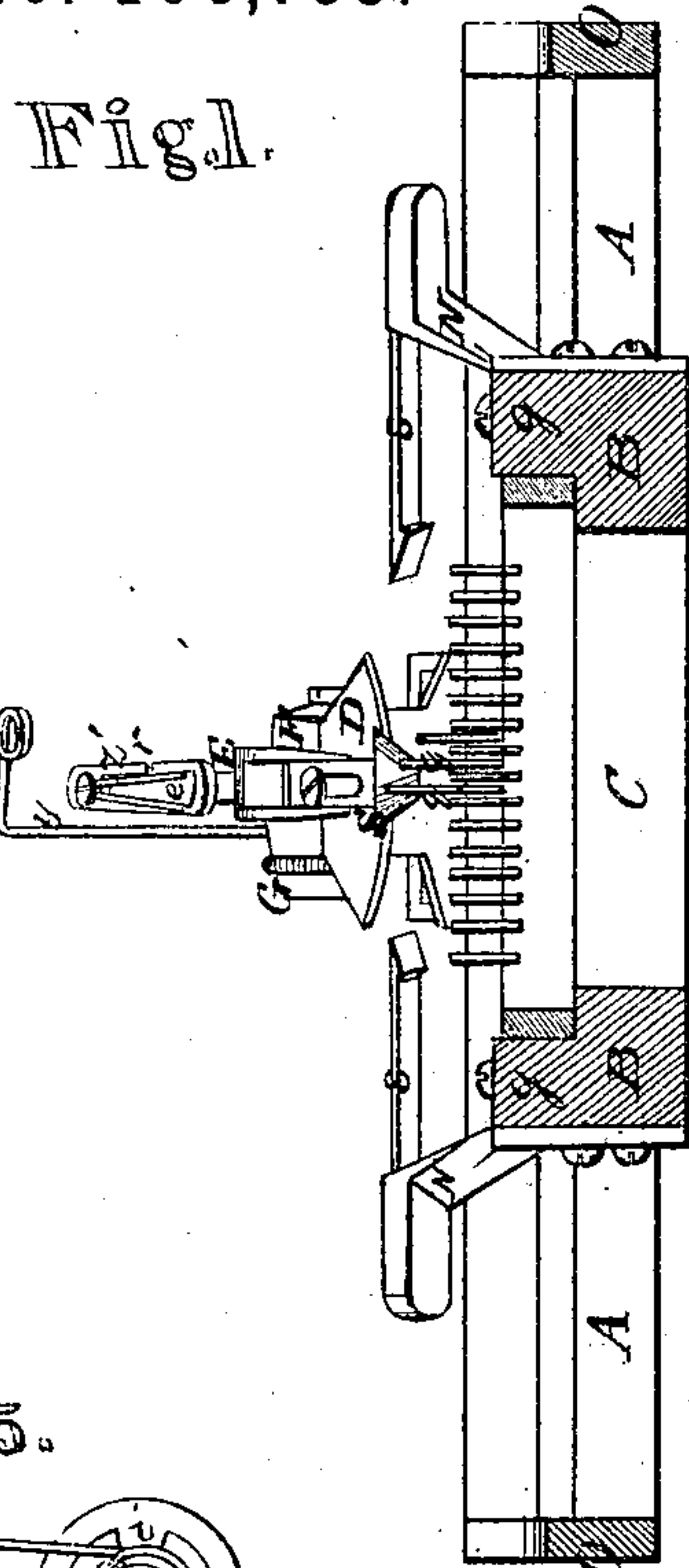


A. W. ALLEN.
KNITTING MACHINE AND NEEDLE.

No. 109,793.

Patented Dec. 6, 1870.



Witnesses.
Chas. Kenyon.
Edw. P. Mori.

Inventor.
A. W. Allen
Chipman & Co.
Atty.

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Fig 6.

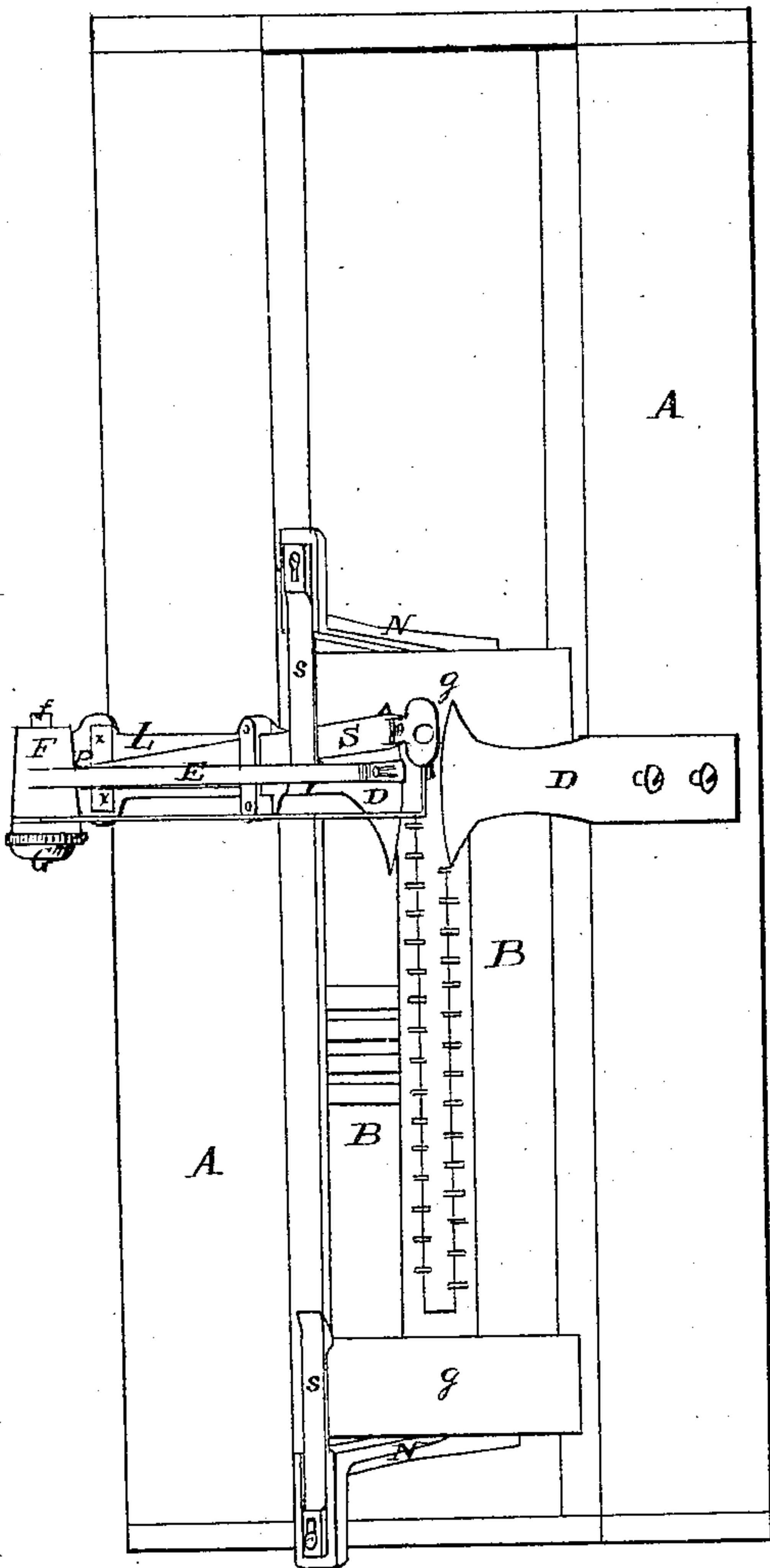


Fig.7.

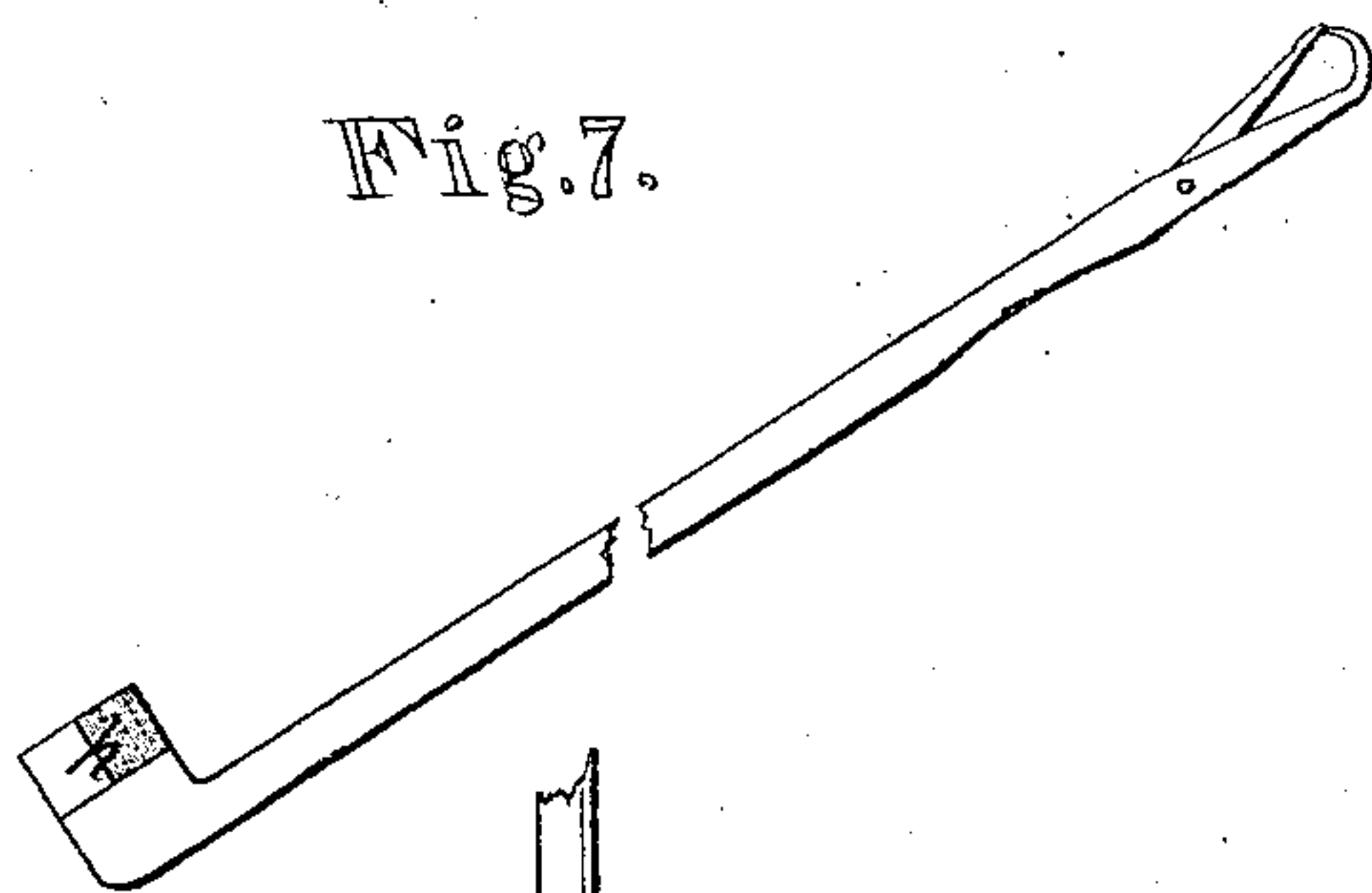


Fig.8.



Fig.9.



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United States Patent Office.

AUSTIN W. ALLEN, OF INDIANAPOLIS, INDIANA.

Letters Patent No. 109,793, dated December 6, 1870.

IMPROVEMENT IN KNITTING-MACHINES AND NEEDLES.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, AUSTIN W. ALLEN, of Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Knitting-Machines; and I do hereby declare that the following is full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification and to the letters and figures of reference marked thereon.

Figure 1 is a representation of a central vertical longitudinal section of the machine.

Figure 2 is a vertical transverse section of the same.

Figure 3 is a side view of the devices for regulating the attachment and adjustment of the take-up wire.

Figure 4 is a central longitudinal section of these devices.

Figure 5 is a view of the drum, with its grooved cap or thumb-nut.

Figure 6 is a top view of my invention.

Figures 7, 8, and 9 are views of the needle detached.

My invention has relation to knitting-machines of the "Lamb" pattern; and

It consists in certain improvements, whereby the movement of the yarn-carrier is regulated and the take-up wire properly attached and adjusted. Also, in an improvement in the needles.

A A represent the outer bars of the sliding frame carrying the mechanism for feeding and regulating the tension of the yarn.

B B is the needle-bed or central stationary portion of the machine.

The knitting-needles *q q* work in grooves therein in the same manner as in the Lamb machine.

C represents the vertical opening in the part B B, through which the knit-work descends.

The ends of the bars A A are connected by the pieces O O. They rest upon B B, and slide under the gibbs *g g*.

The sliding frame has a horizontal reciprocating motion, just as in the Lamb machine.

The mechanism for feeding and regulating the tension of the yarn is attached to the plate L L, which is fastened on the back bar A.

In feeding, the yarn passes through the hole *e* in the front end of the tension-stand E, as in the Lamb machine, except that in this case an opening, *r*, is made at the side of the hole *e*, so that the yarn can be passed into the hole sideways without passing the end of the yarn through *e*.

This gives a quicker and more convenient way of threading the machine.

In this machine the yarn-carrier S is pivoted in

rear at P, while its front end has a lateral movement in the slot *u*.

The object of this lateral play is to admit of holding back the front end of the yarn-carrier when the motion of the sliding bars A A is reversed, so as to give the needles time to rise before the yarn-carrier reaches them.

In this machine the mechanism for holding back the front end of the yarn-carrier I consider more simple, better, and less liable to derangement, than that used in the Lamb machine.

It is constructed as follows, namely: on the tops of the supports N N, which are fastened to the ends of the needle-bed, two springs, *s s*, are fastened. When the machine is in operation, the free ends of these springs are first forced upward by the passage of the yarn-carrier S under them, and then they descend, clasping the yarn-carrier and holding it back as long as the slot *u* will allow, when the motion of the sliding frame is reversed. The projections under the ends of the springs *s s* are provided with inclined faces underneath, in the manner shown.

The yarn-carrier S is also kept from changing its position, except when actuated by the springs *s s*, by the friction-spring *x x*, which spring is placed in a bed in the plate L L, under the yarn-carrier S, with its convex side uppermost, and in contact therewith.

Again, an improvement is made in this machine, in the mechanism for the attachment and adjustment of the take-up wire *y*.

The rear end of this wire is wrapped around the drum H of the thumb-nut or cap G, and, when the drum is placed in the thimble F, the wire *y* passes into the right-angled slot *w w*.

The friction-screw *f* holds G and its drum H in place.

In the inside of the top of the thumb-nut is a groove, *n n*, in which the projection *v* from the thimble F fits, so that the drum H is always kept truly centered in the thimble F, and the wire *y*, having free play in the vertical part of the slot *w w*, is never thrown out of position.

The fixed solid block *i* in the groove *n n* prevents the thumb-nut G from being turned too far forward or back by its striking against the projection *v*.

A view of the side of the thimble F, with its slot *w w*, is given in fig. 3.

The reciprocating motion is given to the knitting-needles in the same manner as in the Lamb machine, the needle being raised and lowered by traveling in the groove *m*, between the center cam K and the wing cams *c c*.

An improved shape for the heel of the shank of the knitting-needle is given in this machine.

The heel of the shank, which is bent at right angles to the needle, is provided with an expansion of a

diamond or square shape. This is designed to reduce the amount of wear and friction, and to prevent the point of the center cam from striking against and breaking the needles or needle-bed.

The yarn is kept in the eye by means of the wire *z'*, which acts in the nature of a spring to close the opening *r*.

This wire also serves as a check to hold the yarn when the slack is taken up in feeding the same.

What I claim as my invention, and desire to secure by Letters Patent, is

1. The combination, with the reciprocating sliding frame and pivoted yarn-carrier, of the slotted adjustable springs *s s*, to hold the yarn-carrier back when

the motion of the sliding frame is reversed, substantially as specified.

2. In combination with the thimble *F*, having an angular slot, *w w*, and projection *v*, the thumb-nut *G*, having the groove *n* and stop *i*, and arranged to close tightly on the edge of the thimble, substantially as specified.

3. Knitting-machine needles, having the heels of the shanks square or diamond-shaped to correspond with the inclination of the cam-slots, as specified.

AUSTIN W. ALLEN.

Witnesses:

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A. M. ROBISON.