

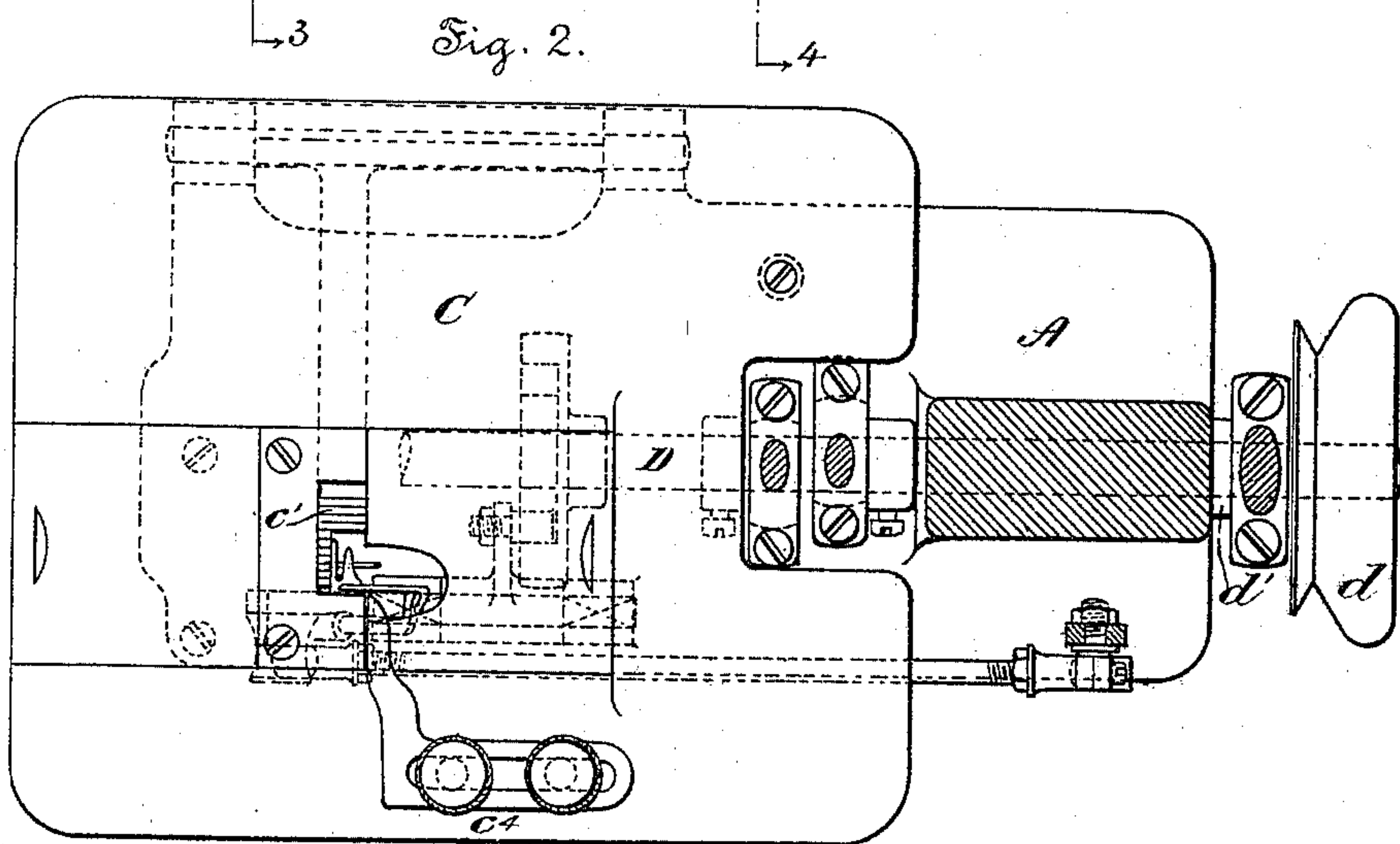
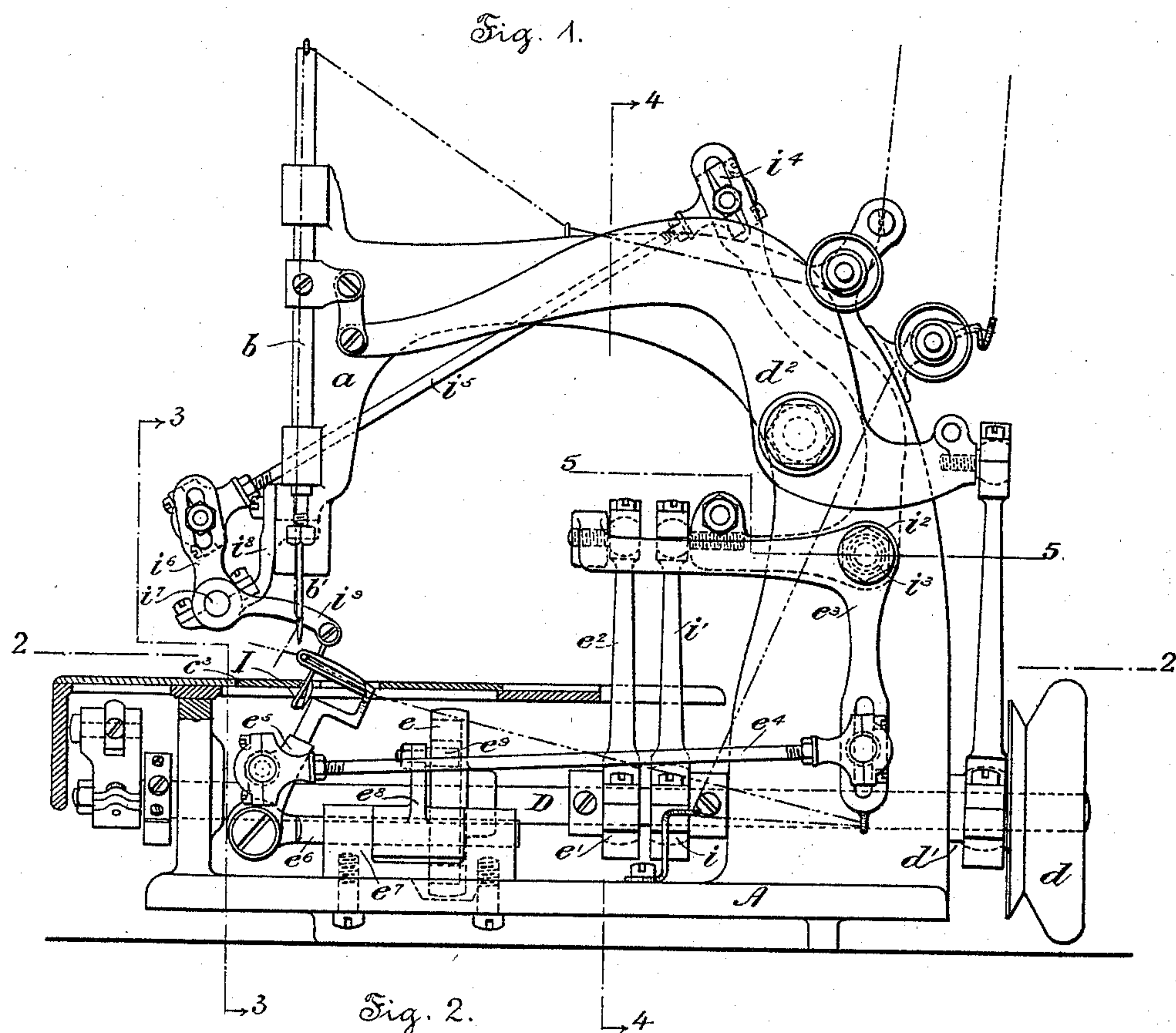
(No Model.)

3 Sheets—Sheet 1.

D. C. BELLIS.  
SEWING MACHINE.

No. 537,964.

Patented Apr. 23, 1895.



Witnesses:  
John Bickel  
Carl Greiner

Inventor:  
David C. Bellis.  
By Hermann Bormann  
Att'y.

(No Model.)

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Fig. 3.

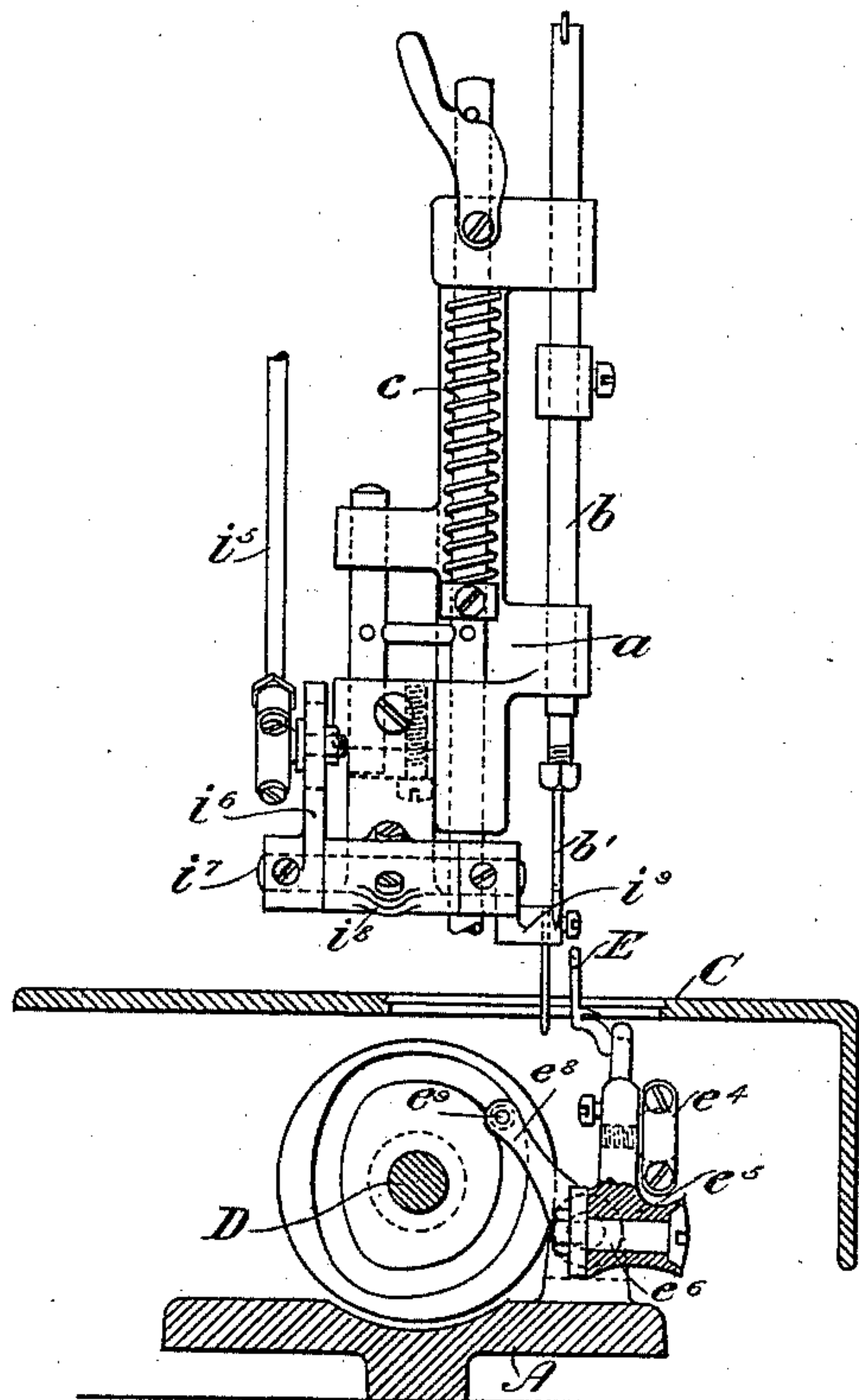


Fig. 4.

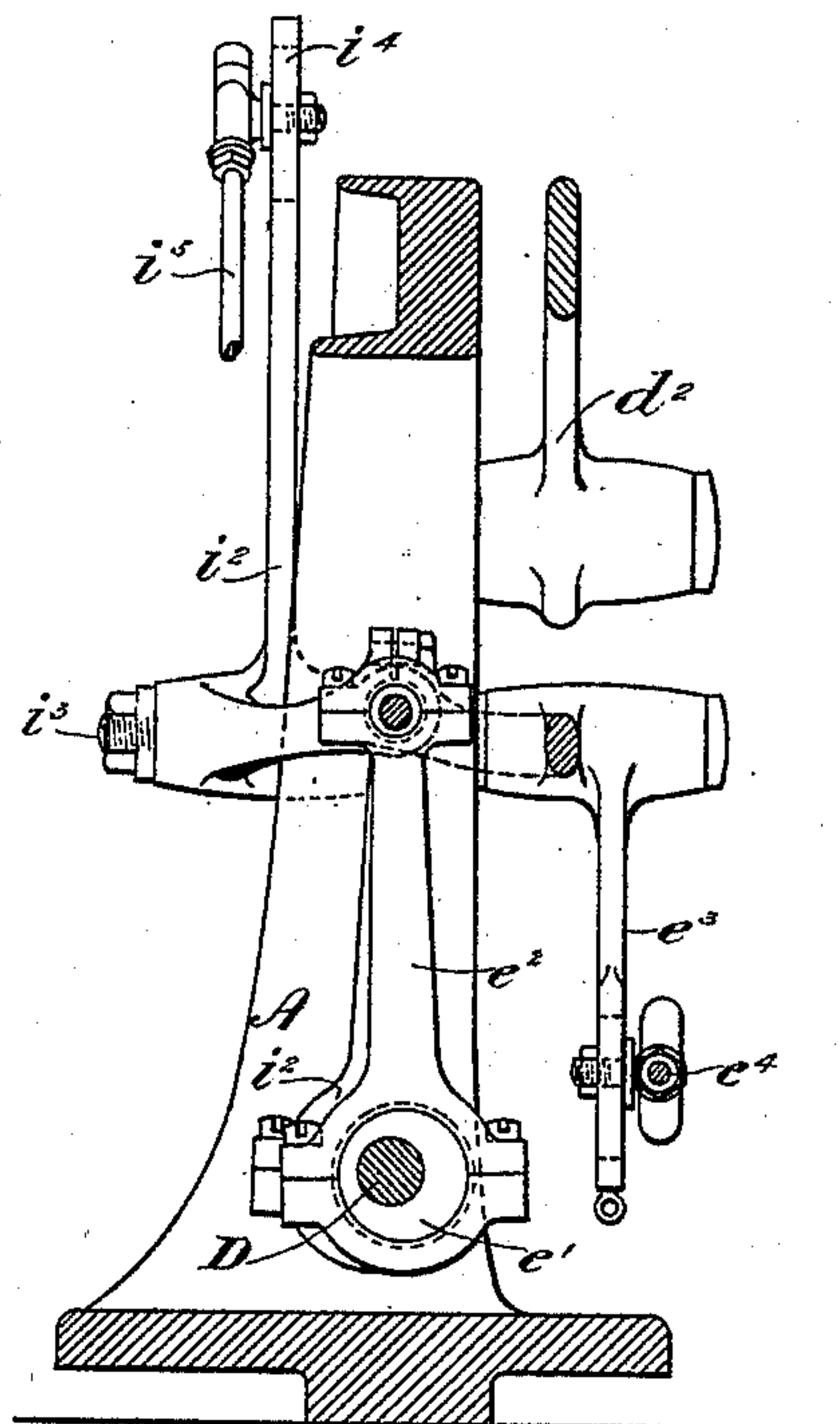
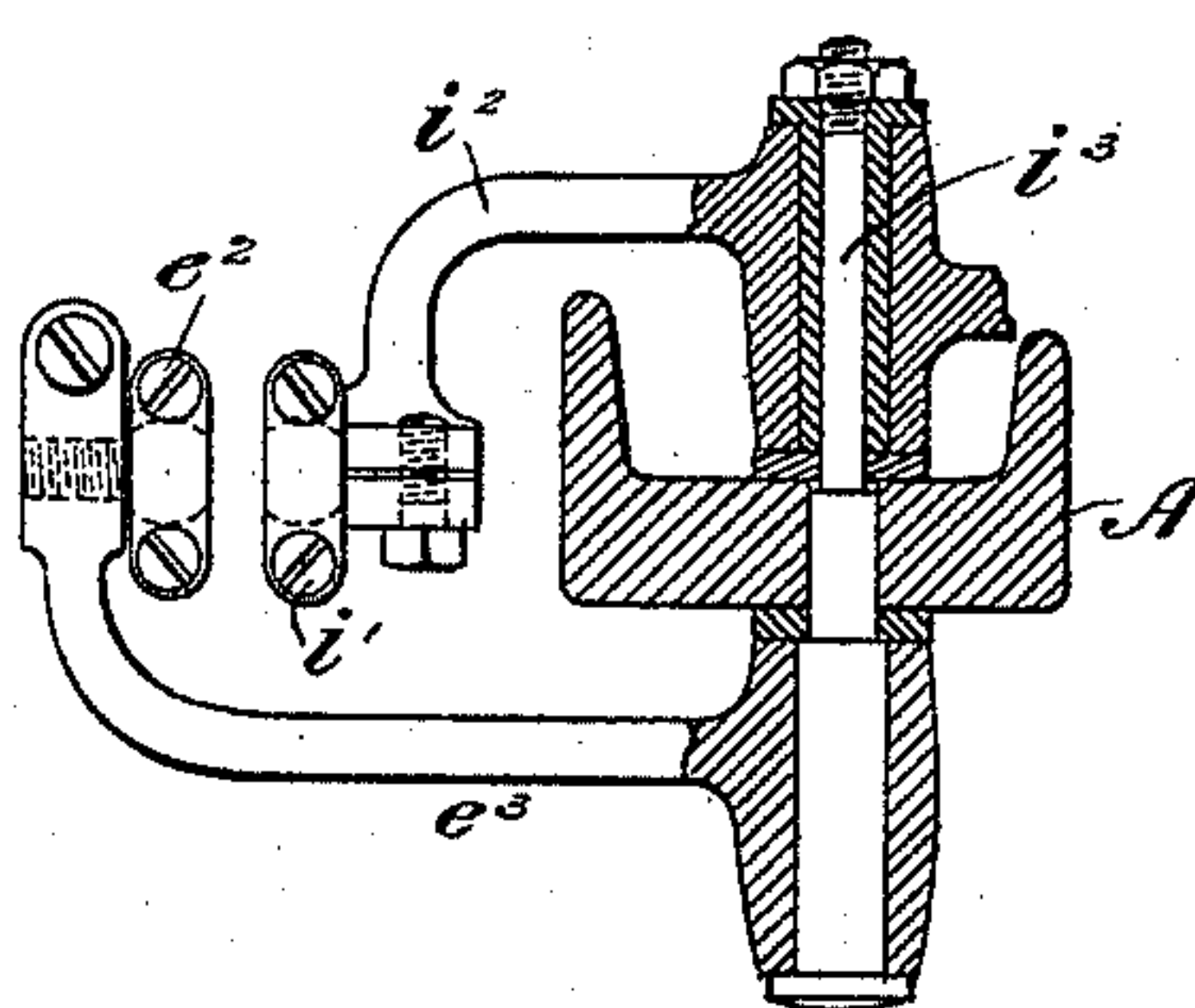


Fig. 5.



Witnesses:  
John Bickel  
Carl Greiner

Inventor:  
David C. Bellis  
By Hermann Bormann  
Att'y.

(No Model.)

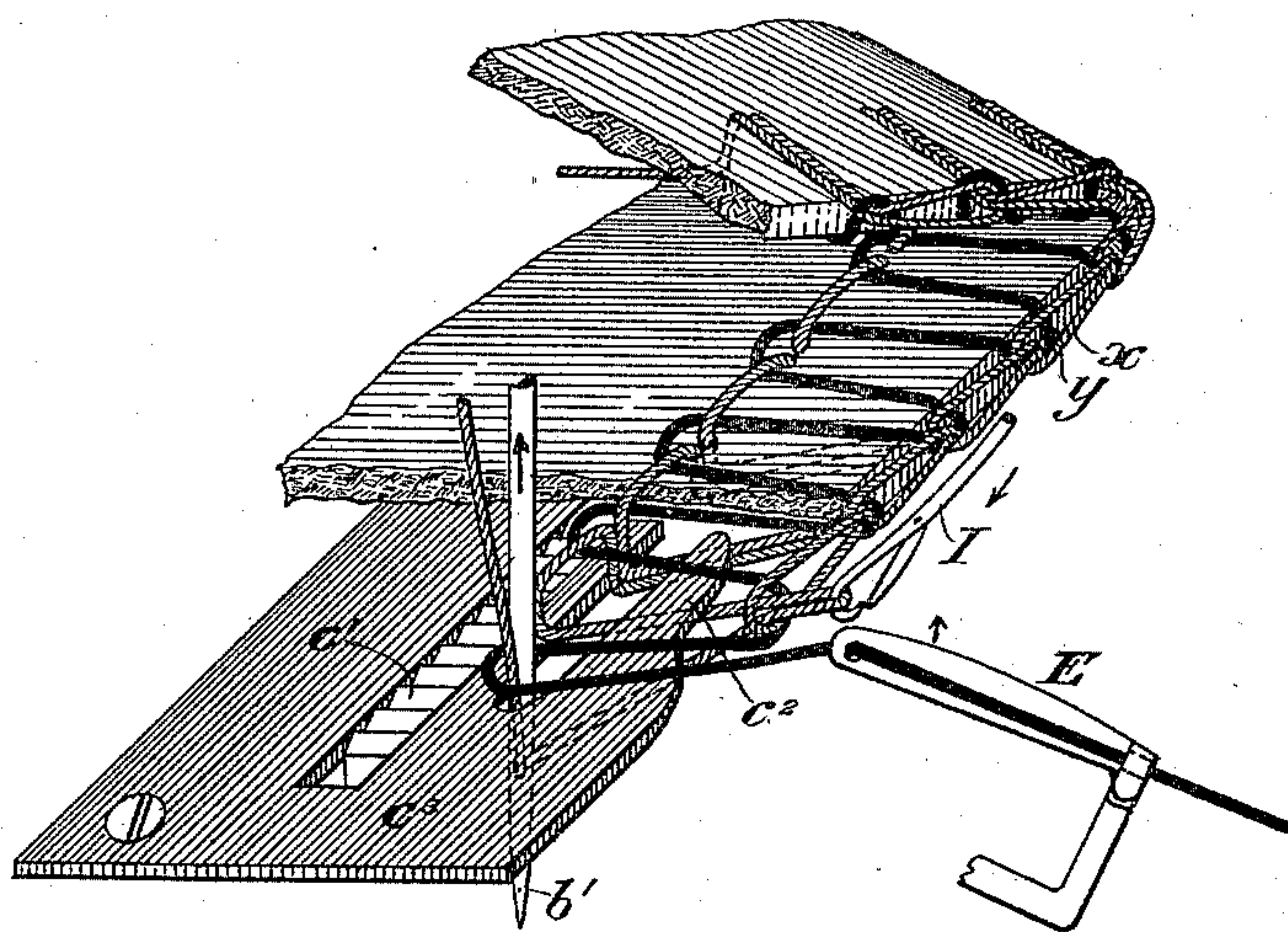
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Fig. 6.



Witnesses:  
John Bickel  
Carl Greiner

Inventor:  
David C. Bellis.  
By Hermann Bornmann  
att'y.



# UNITED STATES PATENT OFFICE.

DAVID C. BELLIS, OF ELIZABETH, NEW JERSEY.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 537,964, dated April 23, 1895.

Application filed February 13, 1894. Serial No. 500,010. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID C. BELLIS, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to that class of sewing machines, which produce edgings on knit or other fabric, and the object thereof is to provide a machine, having a main shaft running from two thousand to three thousand revolutions per minute, to produce a very elastic and therefore soft over-seam edging on knit goods.

The majority of over-seam edgings on knit goods heretofore produced were objectionable because they were not elastic enough in proportion to the elasticity of the knit goods itself, rendering such means or edges uncomfortable to the wearer of the knit goods.

With the improved looping and stitch forming mechanism hereinafter described an edging or over seam is produced on knit goods which is soft and very easy to the wearer of knit underwear, and which will yield with the knit goods.

My invention consists of improved stitch and looping mechanism for sewing machines, hereinafter more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation partly in section of a sewing machine embodying my improvements. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3 is a side elevation partly in section taken on the line 3—3 of Fig. 1. Fig. 4 is a section on the line 4—4 of Fig. 1. Fig. 5 is a horizontal section on the line 5—5 of Fig. 1. Fig. 6 is a perspective and diagrammatic view of the stitch and looping mechanism, the cloth plate and a piece of knit fabric showing the improved edging applied thereto.

Referring now to the drawings for a further description of my invention, A is the frame of the machine.

a is the head of the machine in which ways are provided for the stitch needle bar b and presser foot bar c.

C is the cloth plate provided with adjustable guide c<sup>4</sup> to limit the width of the edging.

D is the main shaft journaled in the frame A

of the machine on which are mounted the driving pulley d and a ball eccentric d' to oscillate the stitch needle arm d<sup>2</sup> whereby the needle bar b is reciprocated.

c' is the feed operated in any ordinary or preferred manner and co-operates with the presser foot of any desired shape attached to the presser foot bar c.

E is a thread guide oscillating in front of the stitch needle b' and moving toward the back of the machine or in the rear of the stitch needle at each complete oscillation to either side. The movements of this thread guide are facilitated by a cam e and a ball eccentric e' on the main shaft D. The oscillating of the guide in front of the stitch needle b' is accomplished by the following devices: Connected with the ball eccentric e' is the strap e<sup>2</sup> encircling a ball joint of the bent lever e<sup>3</sup> which at its depending member carries an adjustable ball joint for a link e<sup>4</sup> connecting this member with the stock e<sup>5</sup> of the guide E by another ball joint. The lower end of this stock e<sup>5</sup> is hinged to a shaft e<sup>6</sup> held in bearings e<sup>7</sup> against longitudinal movement by the hub of an arm e<sup>8</sup>, so that when the shaft D rotates the guide E is oscillated in front of the stitch needle b'. To move the guide to the rear of the needle b' the arm e<sup>8</sup> fastened to the shaft e<sup>6</sup> is provided with a roller e<sup>9</sup> and engages the grooved cam e, which causes the shaft e<sup>6</sup> to rock in its bearings and bring the guide E beyond the line of the stitch needle b' at every complete oscillation thereof, for a purpose to be hereinafter described.

I is a latch needle operated from above the cloth plate, to draw the thread from the stitch needle b' when the eye thereof is below the cloth plate C, and to form in conjunction with a tongue c<sup>2</sup> on the needle and throat plate c a loop around the edge of the material, as will be hereinafter more fully described. To operate this latch needle I, a ball eccentric i is attached to the main shaft D of the machine and actuates by a strap i' and a ball joint, a right angular lever i<sup>2</sup> about the stud i<sup>3</sup>, which is common to the bent lever e<sup>3</sup> for the thread guide E. At the upper end of the vertical member of this lever i<sup>2</sup> is attached by means of a slotted connection i<sup>4</sup> a link i<sup>5</sup>, and the other end of the link is adjustably fastened to an arm i<sup>6</sup> of a rock shaft i<sup>7</sup>, which is jour-



naled in the bearing  $i^8$  attached to the head  $a$  of the machine frame A, and to this shaft  $i^7$  is secured another arm  $i^9$  which holds at its free end the latch needle I, so that when the rock shaft  $i^7$  is actuated by the means just described the latch needle I reciprocates and moves in a circle the radius of which is determined by the length of the arm  $i^9$ . The latch needle I occupies a position and moves in the rear of the stitch needle  $b'$  and parallel with the axis of the shaft D.

The operation of these devices for forming an elastic over-seam edging is as follows: The stitch needle  $b'$  is reciprocated by the arm  $d^2$  once at every revolution of the shaft D, and when the needle moves upward from its lowest position the thread carried by said needle forms a loop which is held and drawn upward by the hook of the latch needle I laying the said loop underneath the tongue  $c^2$  of the throat plate  $c^3$  as shown in Fig. 6. The guide E then moves in front of the fabric and in the rear of the latch needle I, so that by the descent of the latch needle, the thread carried by the guide E is held behind the latch needle I. The guide E then moves toward the front, above the edge of the fabric and behind the stitch needle  $b'$  so that when the latter again penetrates the fabric it binds to the face thereof the thread carried by the guide E, while the loops  $x$  from the stitch needle  $b'$  are tied at the under side and edge of the goods by the loops  $y$  formed by the latch needle I and hook or guide E, as will be understood by those skilled in the art. The great elasticity of this edging is due to the peculiar arrangement of the two sets of loops, which are held in place by one series of stitches, so that should any strain be exerted upon the elastic fabric, the loops will simply be shortened and regain their former appearance, when such strain is removed.

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

1. In a sewing machine in combination with the main shaft, the cloth plate and the vertically reciprocating stitch needle, a latch needle secured in the end of an arm attached to a rock-shaft journaled in a bracket secured to the head of the machine frame, an arm on the opposite end of this rock-shaft, connections between this arm and the main shaft to oscillate the said latch needle in the rear of the stitch needle and parallel to the main shaft, a thread guide hinged to a rock-shaft

and oscillated in a vertical plane in front of the stitch needle by suitable connections with the main shaft, and means for actuating the said rock-shaft to move the thread guide toward the rear of the stitch needle at every completion of an oscillation of said guide, substantially as and for the purposes set forth.

2. In a sewing machine in combination with the main shaft, the cloth plate and vertically reciprocating stitch needle, a latch needle secured in the end of an arm attached to one end of a rock-shaft journaled in a bracket secured to the head of the machine frame, an arm on the opposite end of the rock-shaft, a right angular lever studded to the machine frame, a ball eccentric on the main shaft, an eccentric strap between the ball eccentric and one member of the right angular lever and a link between the arm of the said rock-shaft and the other member of the right angular lever, a thread guide pivotally attached to a rock-shaft located below the cloth plate, a ball eccentric on the main shaft, a right angular lever studded to the machine frame, a strap between the said ball eccentric and one member of the right angular lever, a link between the other member of the right angular lever and the thread guide, a cam on the main shaft and an arm on the last mentioned rock-shaft to cause the movement of the thread guide toward the rear of the stitch needle, substantially as and for the purposes set forth.

3. In a sewing machine in combination with the main shaft and a vertically reciprocating stitch needle a latch needle fastened to an oscillating arm journaled above the cloth plate on the machine arm, a thread guide hinged to a rock shaft held in bearings on the machine frame, a cam on said main shaft and an arm attached to the rock-shaft, a ball eccentric on the said main shaft, a right angular lever studded to the machine frame, a strap between one member of the right angular lever and the said ball eccentric, and an adjustable link attached to the other member of the lever by a slotted connection and to the thread guide by a ball joint, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

DAVID C. BELLIS.

Witnesses:

ANTOINETTE H. BRUSH,  
LOUIS H. NOE.