

No. 775,014.

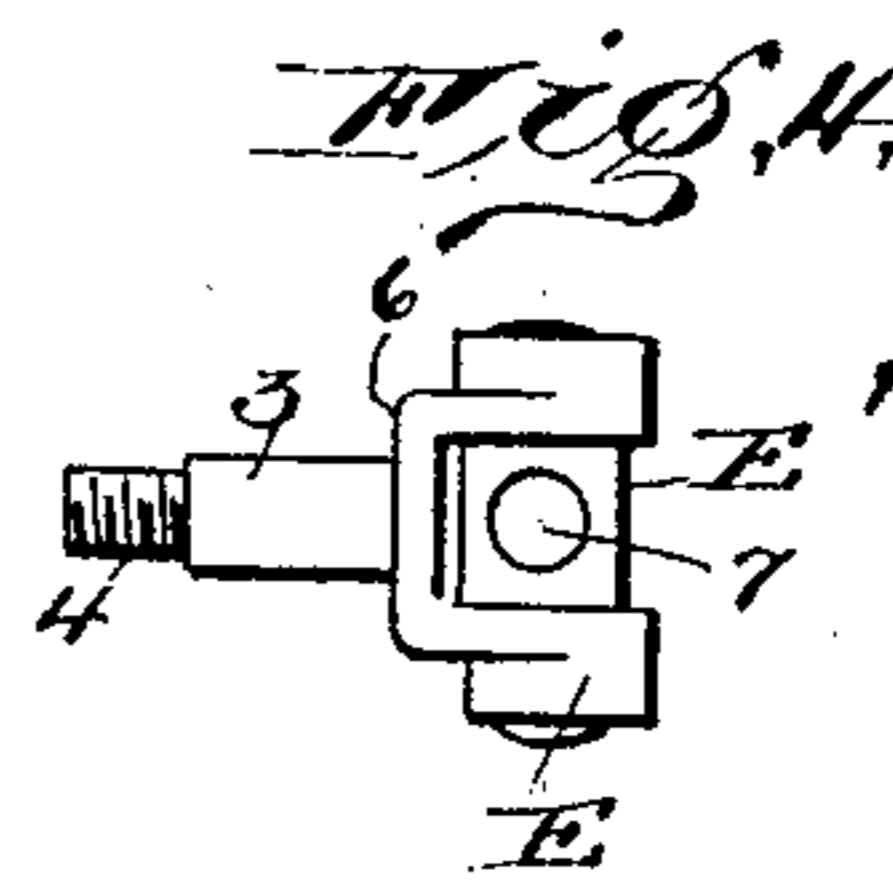
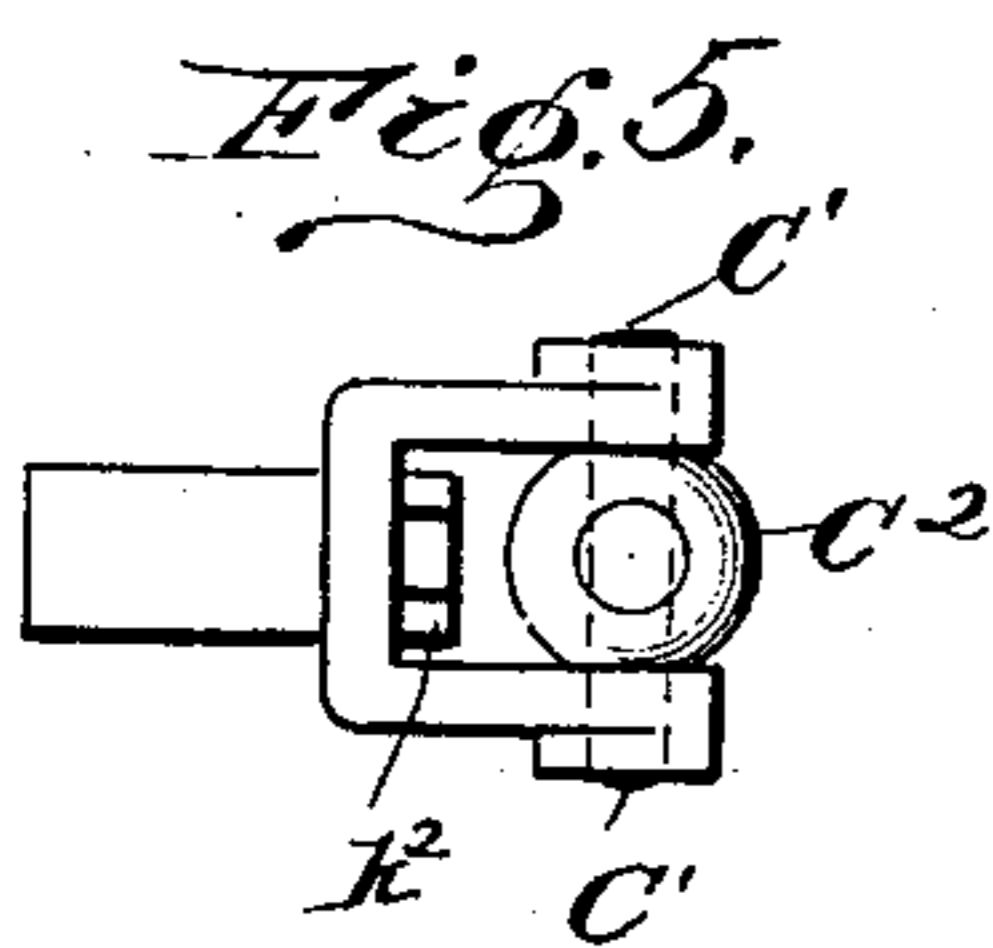
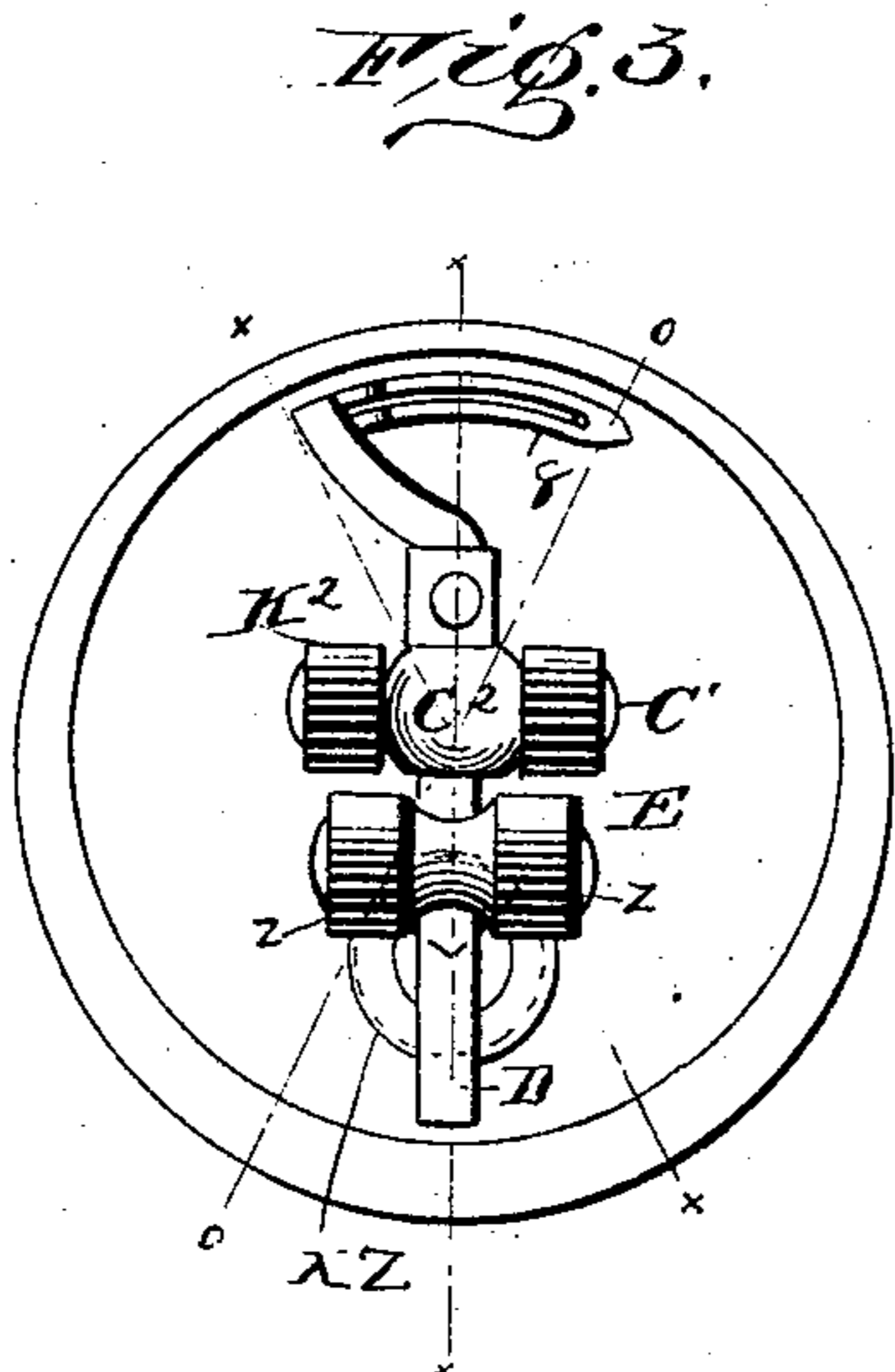
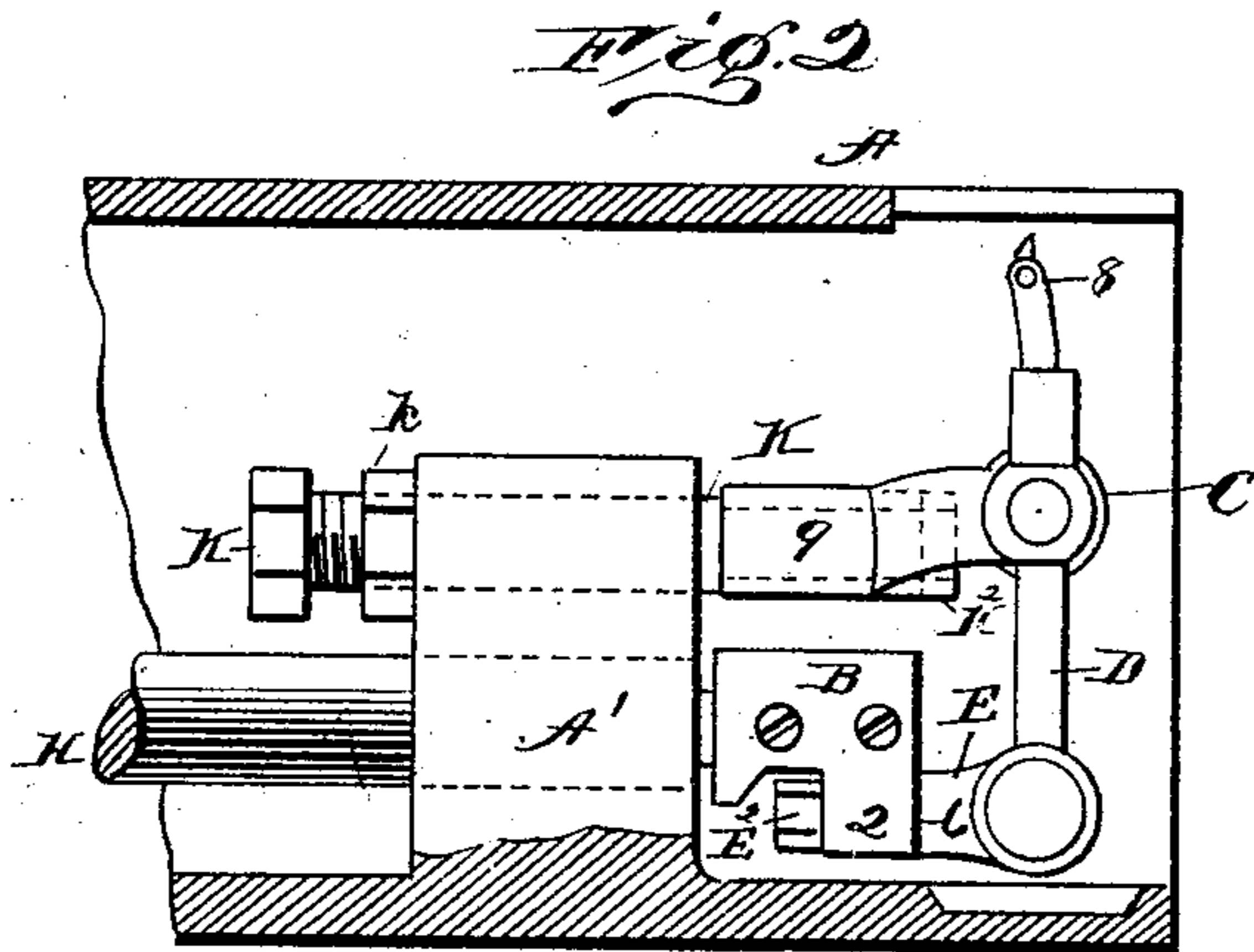
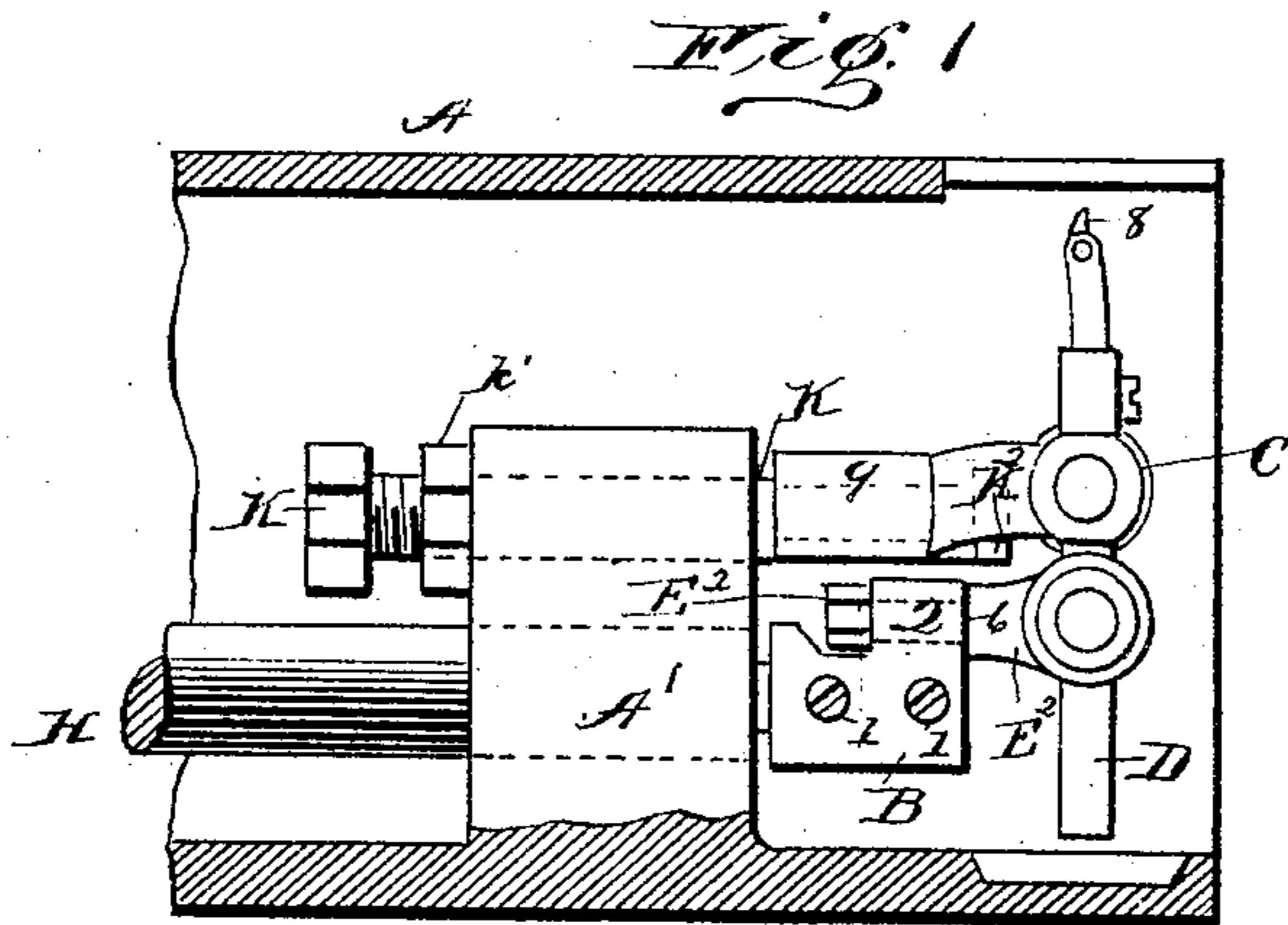
PATENTED NOV. 15, 1904.

L. ONDERDONK.  
LOOPER MECHANISM FOR SEWING MACHINES.

APPLICATION FILED JAN. 9, 1897.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES  
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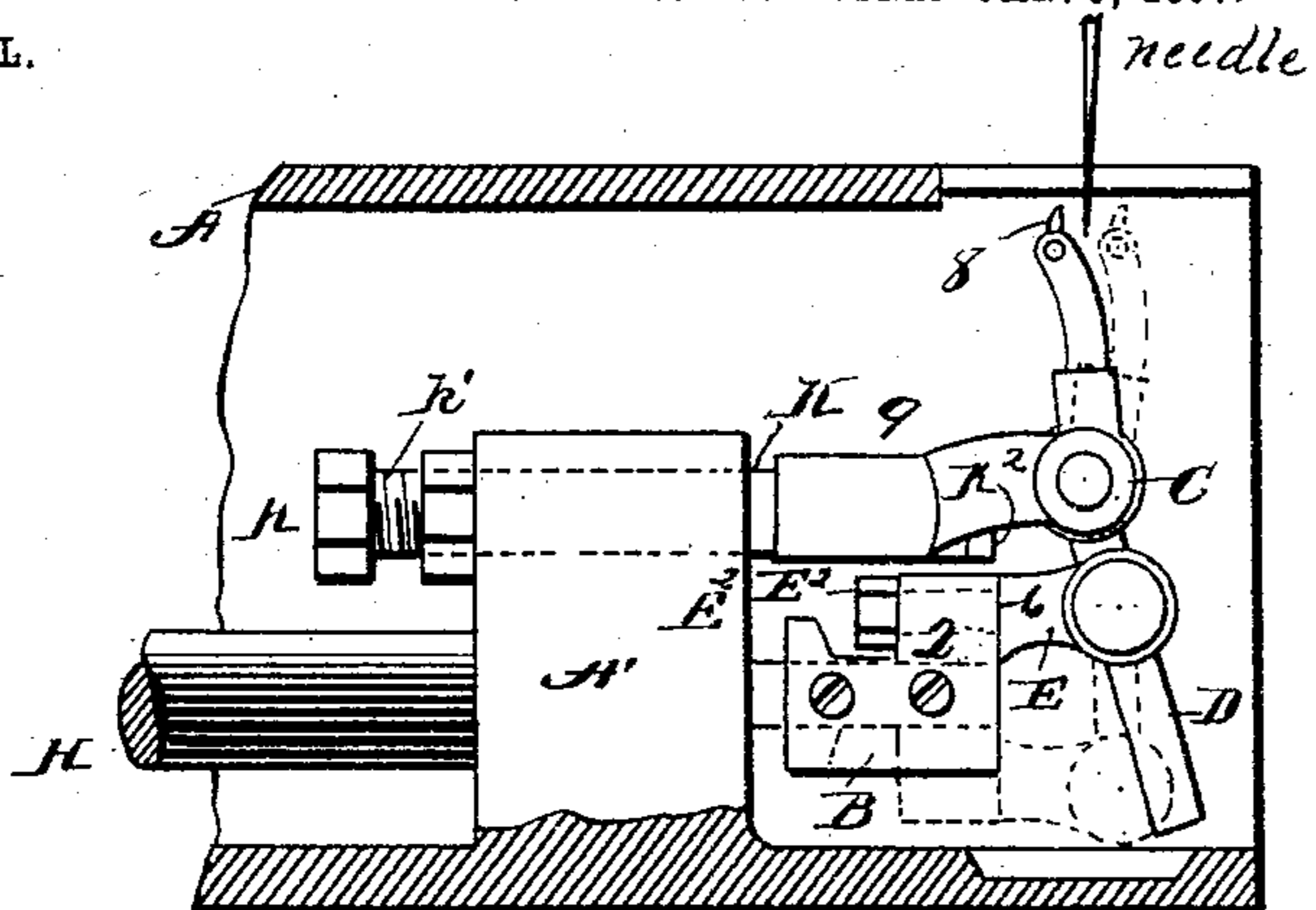


Fig. 6

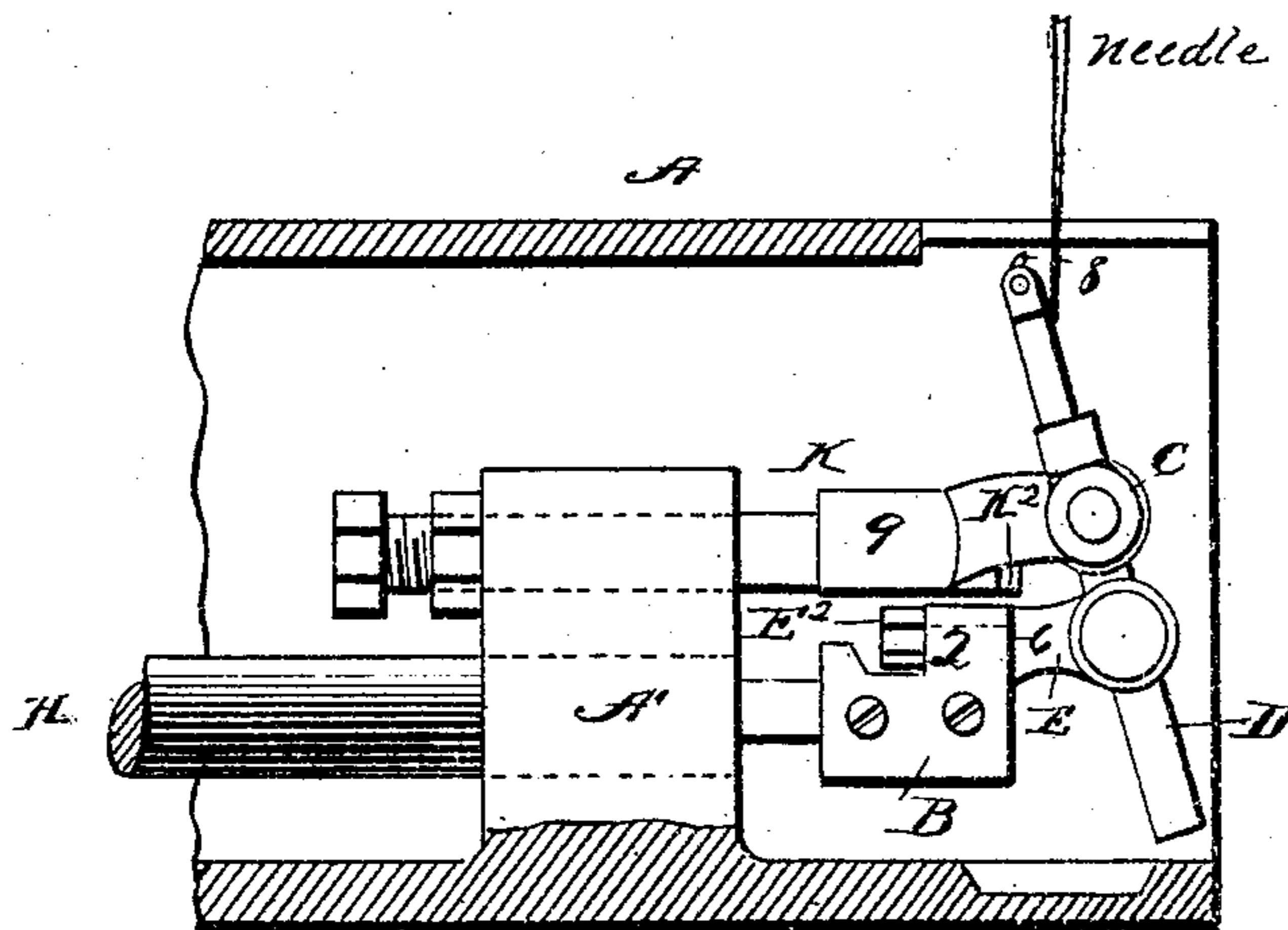


Fig. 7

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# UNITED STATES PATENT OFFICE.

LANSING ONDERDONK, OF WINTHROP, MASSACHUSETTS, ASSIGNOR TO  
THE UNION SPECIAL SEWING MACHINE COMPANY, OF CHICAGO,  
ILLINOIS, A CORPORATION OF ILLINOIS.

## LOOPER MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 775,014, dated November 15, 1904.

Application filed January 9, 1897. Serial No. 618,536. (No model.)

*To all whom it may concern:*

Be it known that I, LANSING ONDERDONK, a citizen of the United States, residing at Winthrop, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Looper Mechanism for Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

The present invention relates to an improvement in sewing-machines, and particularly to mechanism for supporting and operating the under-thread-carrying looper on a double-chain-stitch sewing-machine.

The object of the invention is to provide a simple and novel mechanism for operating the looper and to provide necessary adjustments to vary the amount of throw thereof.

The invention consists in the matters hereinafter described, and referred to in the appended claims.

In the accompanying drawings, which illustrate the invention, Figure 1 is a side elevation of so much of a sewing-machine as is necessary to a complete understanding of the invention, in which figure the centers of oscillation upon which the looper-support is arranged are in a perpendicular line with each other and with the line of movement of the needle, so that there is no sidewise movement of said looper. Fig. 2 is a similar view showing the looper at the other extreme of its movement. Fig. 3 is an end view of Fig. 1. Figs. 4 and 5 are top plan detail views of the crank-pin and yoke which support the looper-supporting post. Fig. 6 is a view similar to Fig. 1, showing a modification in the construction of the looper-supporting post, the center upon which the looper-supporting post swings being arranged in line with the needle, but the center of the point of connection of the crank-pin of said supporting-post being out of perpendicular alinement with said first center. Fig. 7 is another modification showing both said centers out of perpendicular alinement with each other and neither in line with the needle.

In the drawings, A represents a portion of the bed-plate of a sewing-machine; A', an upright standard secured to the bed of the machine in which the forward end of the driving-shaft H is journaled. This driving-shaft is provided at its outer end forward of its bearing with a collar B, adjustable on said shaft by means of the set-screws 1. This collar B has a projecting lug, as 2, provided with an opening through it, and in this opening is journaled the shank 3 of a yoke E, this shank being screw-threaded at its inner end, as shown at 4, and held in position by means of the nut E<sup>2</sup>. The yoke E in the rotation of the shaft H is therefore permitted to turn in its bearing, the back of said yoke E, as shown at 6, shouldering against the collar B. Journaled in the arms of the yoke E is a short transverse shaft E', having a central opening 7, which embraces the lower portion of the upright supporting post or shaft D, upon the upper end of which the looper 8 is secured.

Passing through the upper portion of the bearing-post A' is a screw-stud K, the forward end of which projects through said bearing-post A'. Upon its outer end and held in position by the nut K<sup>2</sup> is a yoke C, the shank of which forms a sleeve 9, journaled on the forward end of said stud K. Between the arms of this yoke C is fitted a block C<sup>2</sup>, through which said upright looper-supporting post or rod D passes. Through the looper-rod D and the block C<sup>2</sup> passes a transverse pin. (Shown in dotted lines in Fig. 5.) This pin C' forms the fulcrum upon which the looper-holder or carrying-post D rocks sidewise. The block C<sup>2</sup> simply acts to fill in the space between the arms of the yoke and prevents any strain on the rod D at its weakest point—namely, the point at which the pin C' passes through it. The stud K, which will be seen is the fulcrum or pivot-point upon which the looper swings in its loop-taking and loop-leaving movement, while, as above stated, in case a sidewise movement is imparted to the looper the pin C' is the fulcrum or pivot-point upon which it rocks. The yoke C, therefore, as a whole constitutes a universal support for the

5 looper-carrying post D, and the arrangement  
 of the shaft H, collar B, and the yoke-shaped  
 crank-pin E, with the part E', forms a uni-  
 versal driving device for the looper in the  
 revolution of the shaft H. Consequently the  
 10 collar B and the yoke E are always able to  
 conform to the angle at which the looper-sup-  
 porting post D may stand, the part E' in the  
 revolution of the shaft traveling up and down  
 15 the post D the distance equal to the diameter  
 of the circle traveled, said circle being rep-  
 resented by dotted lines, as shown in Fig. 3.  
 In the form shown in Figs. 1, 2, and 3, in  
 which the centers C' and E are in a perpen-  
 20 dicular line with each other, it will be noticed  
 that there will be no sidewise movement of  
 the looper. In the device shown in Fig. 6  
 the center C' is in line with the needle, but  
 the center E is off said line, and the lower  
 25 part of the looper-supporting post D from the  
 center C' to the lower end is on an incline or  
 bent, as shown in Fig. 6. By this arrange-  
 ment a sidewise motion to the looper is given  
 and equal motion on either side of the plane  
 30 of the needle-line.

As a further and special arrangement in a  
 machine of this character I provide means for  
 adjusting the slant of the looper-supporting  
 rod to the corresponding relation of the cen-  
 35 ters one to the other. This adjustment can  
 be effected by loosening up on the check-nut  
 K' and turning the screw-stud K in or out  
 and by loosening up the screws l in the collar  
 B and moving said collar to the right or left,  
 40 according to the adjustment desired.

Referring now to the construction shown in  
 Figs. 1, 2, and 3, and especially with reference  
 to Fig. 3, it will be noticed that the crank-pin  
 is at its highest point. The lines which I have  
 45 marked o and x in Fig. 3 show the right-and-  
 left or needle-loop-taking movement of the  
 looper and the dotted circle x x the circle trav-  
 eled by the crank-pin. It will be noticed that  
 one of the looper movements, either the for-  
 50 ward or backward movement, is much quicker  
 than the other, as will be seen by referring to  
 the point z z on the dotted circle in Fig. 3, this  
 being only about one-fourth of a whole revolu-  
 tion of the driving arrangements. The looper  
 therefore in one of its two movements, or where  
 there is a sidewise motion in two of its four  
 movements, takes about one-fourth of the time  
 that it takes to make the reverse movements.  
 Which of the movements shall be the quick  
 55 one is determined by the direction in which  
 the shaft is run. Thus if it is desired to take  
 the needle-loop quickly the shaft must be  
 run from right to left, or, if the reverse, from  
 left to right. It will be obvious that the shaft  
 60 having an oscillating movement equal to the  
 distance from z to z would give a uniform  
 movement to the looper, and were the shaft  
 H an oscillating shaft with the connections  
 and arrangements shown in Figs. 1, 2, and 3  
 65 all purposes, so far as the underthrow of the

looper is concerned, would be practically car-  
 ried out. The needle-avoiding movement in  
 the constructions here shown comes from the  
 center upon which the looper-post swings—  
 namely, C'—being without the plane of rota- 70  
 tion of the center of the connection between  
 the looper-post D and the yoke E.

Various minor modifications and changes in  
 the construction of the various parts of the  
 apparatus may be made without departing 75  
 from the spirit of my invention.

Having thus described my invention, I de-  
 sire to claim and secure by Letters Patent the  
 following:

1. In a sewing-machine a universally-pivot- 80  
 ed looper-supporting rod, a driving-shaft, a  
 crank-pin journaled in the forward end of said  
 driving-shaft, and embracing said looper-sup-  
 porting rod, whereby in the movement of  
 said shaft, the crank-pin turns on its bearing 85  
 and slides up and down on the looper-support-  
 ing rod, substantially as described.

2. In a sewing-machine a universally-pivot- 90  
 ed looper-supporting rod, a driving-shaft, a  
 crank-pin journaled in said driving-shaft and  
 having a yoke-shaped outer end, a transverse  
 shaft supported between the arms of said yoke  
 and having an opening through which the  
 looper-supporting rod passes, whereby said  
 yoke slides up and down on the looper-sup- 95  
 porting rod, in the rotation of the crank-pin,  
 substantially as described.

3. In a sewing-machine, a looper-support  
 pivoted to have forward and backward move-  
 ment, a driving-shaft, a collar on the forward 100  
 end of said shaft, a crank-pin eccentrically  
 journaled in said collar, said crank-pin hav-  
 ing a sliding connection with the looper-sup-  
 port, whereby said crank-pin rotates on its  
 bearing and reciprocates longitudinally of the 105  
 looper-support, substantially as described.

4. In a sewing-machine, a universally-piv-  
 oted looper-support, a driving-shaft, a collar  
 on the forward end of said shaft, a crank-pin  
 eccentrically journaled in said collar, said 110  
 crank-pin being provided with a pivoted block  
 or shaft having a sliding engagement with  
 the looper-support, whereby said crank-pin  
 rotates on its bearing and reciprocates longi-  
 tudinally of the looper-support, substantially 115  
 as described.

5. In a sewing-machine, a universally-piv-  
 oted looper-support, a driving-shaft, a collar  
 on the forward end of said shaft, a crank-pin  
 eccentrically journaled in said collar, said 120  
 crank-pin being provided with a pivoted block  
 or shaft having a sliding engagement with  
 the looper-support, whereby said crank-pin  
 rotates on its bearing and reciprocates longi-  
 tudinally of the looper-support, and means 125  
 for adjusting said collar, substantially as de-  
 scribed.

6. In a sewing-machine, a looper-support-  
 ing rod hung on a universal pivot carrying a  
 looper at one end and being free at its oppo- 130

site end, a driving-shaft, and a revolving crank-pin having a pivoted block embracing the looper-supporting rod, substantially as described.

5 7. In a sewing-machine an actuating-shaft, a universally-pivoted looper-supporting rod, having its lower portion inclined relatively to the axis of the actuating-shaft, and a rotating crank-pin driven by the actuating-shaft and having a vertically-sliding engagement with said inclined portion of the looper; substantially as described.

15 8. In a sewing-machine, a driving-shaft, a looper-supporting rod, a pivoted yoke, to which the looper-supporting rod, is pivotally connected, and a rotating crank having a part through which the looper-supporting rod passes and which slides up and down thereupon; substantially as described.

20 9. In a sewing-machine, in combination with an actuating-shaft, a rotary crank driven thereby, a looper-supporting rod to which that

crank is operatively connected, a pivoted yoke upon which the looper-supporting rod is pivoted on an axis transverse to the pivoted axis 25 of the yoke and means for adjusting the crank and the yoke, substantially as described.

10. In a sewing-machine, a universally-pivoted looper-supporting rod, having its lower end at an inclination to the upper portion, a 30 looper on said rod, a driving-shaft, a crank journaled upon the forward end of said driving-shaft and having a vertically-sliding engagement with the inclined lower end of the looper-supporting rod, whereby the looper is 35 swung in the direction of its length and also bodily sidewise, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LANSING ONDERDONK.

Witnesses:

CHAS. L. STURTEVANT,  
F. S. FAWCETT.