

No. 662,505.

Patented Nov. 27, 1900.

A. STEWARD.

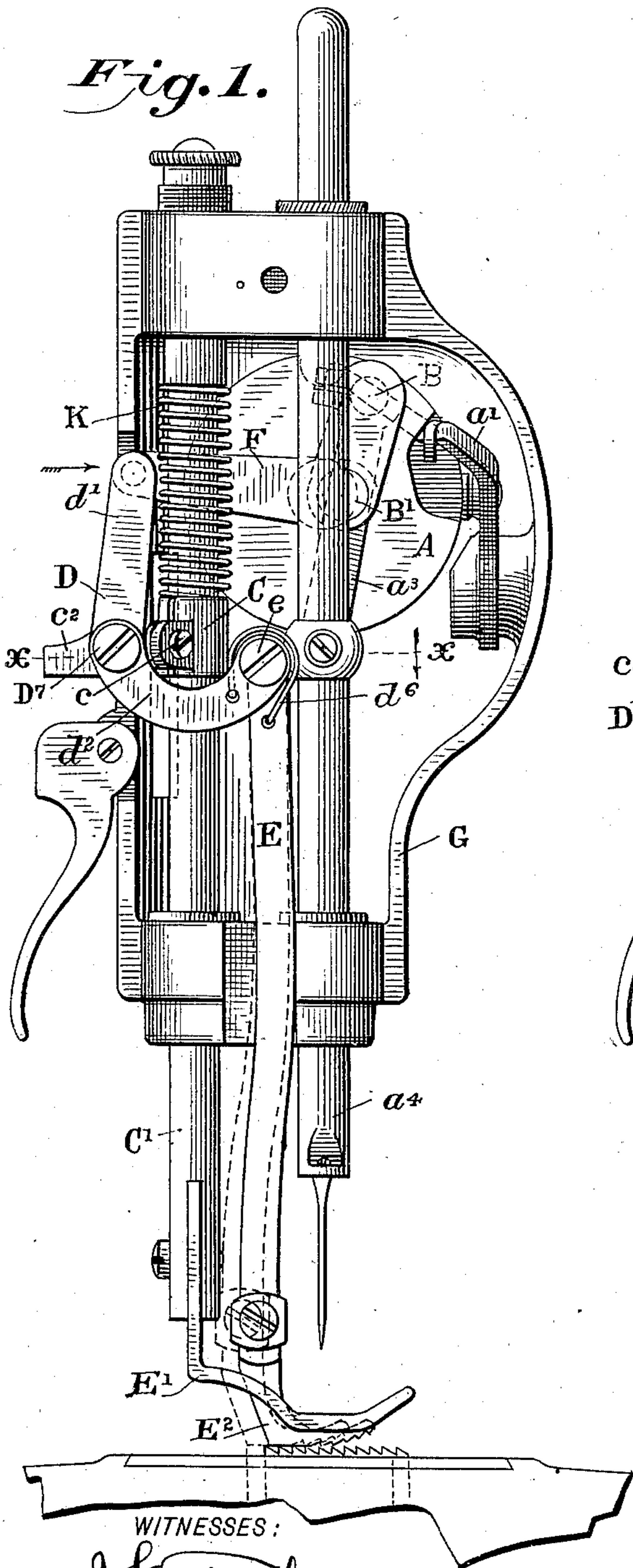
PRESSER FOOT MECHANISM FOR SEWING MACHINES.

(Application filed July 25, 1900.)

(No Model.)

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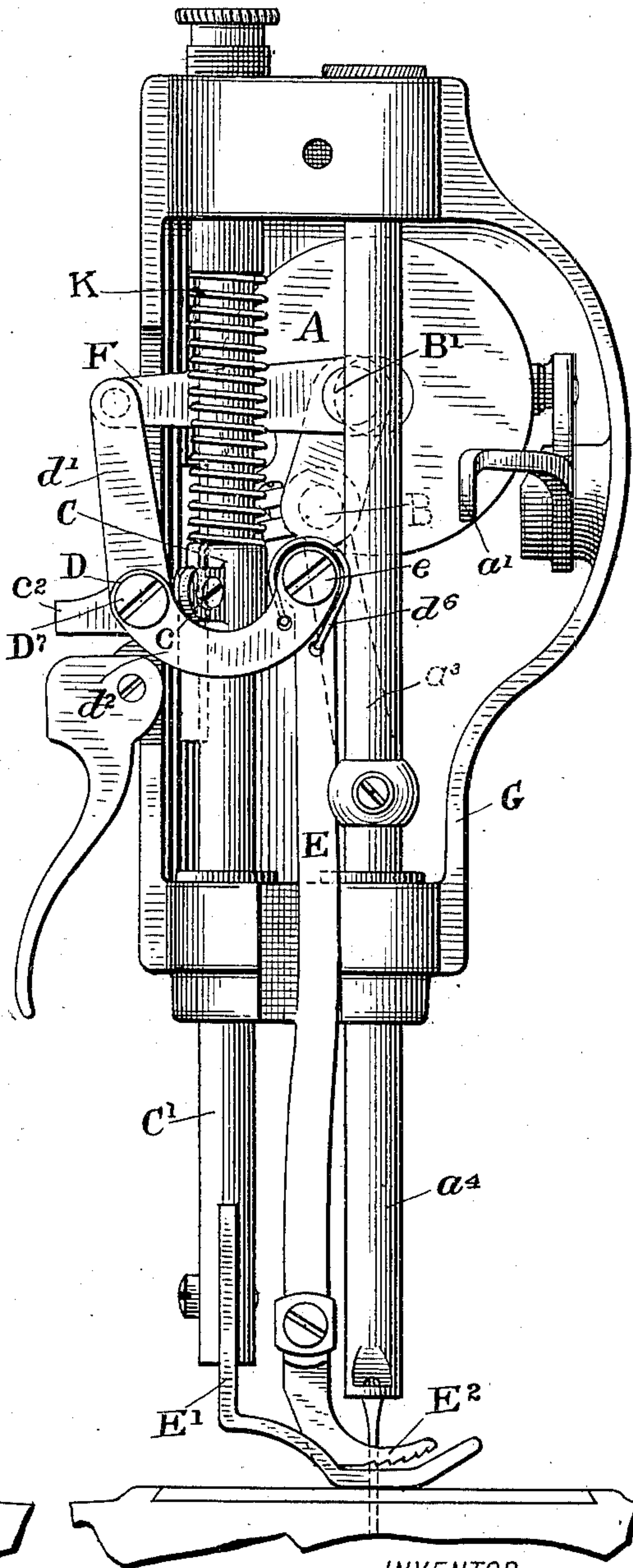
*Fig. 1.*



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*Fig. 2.*



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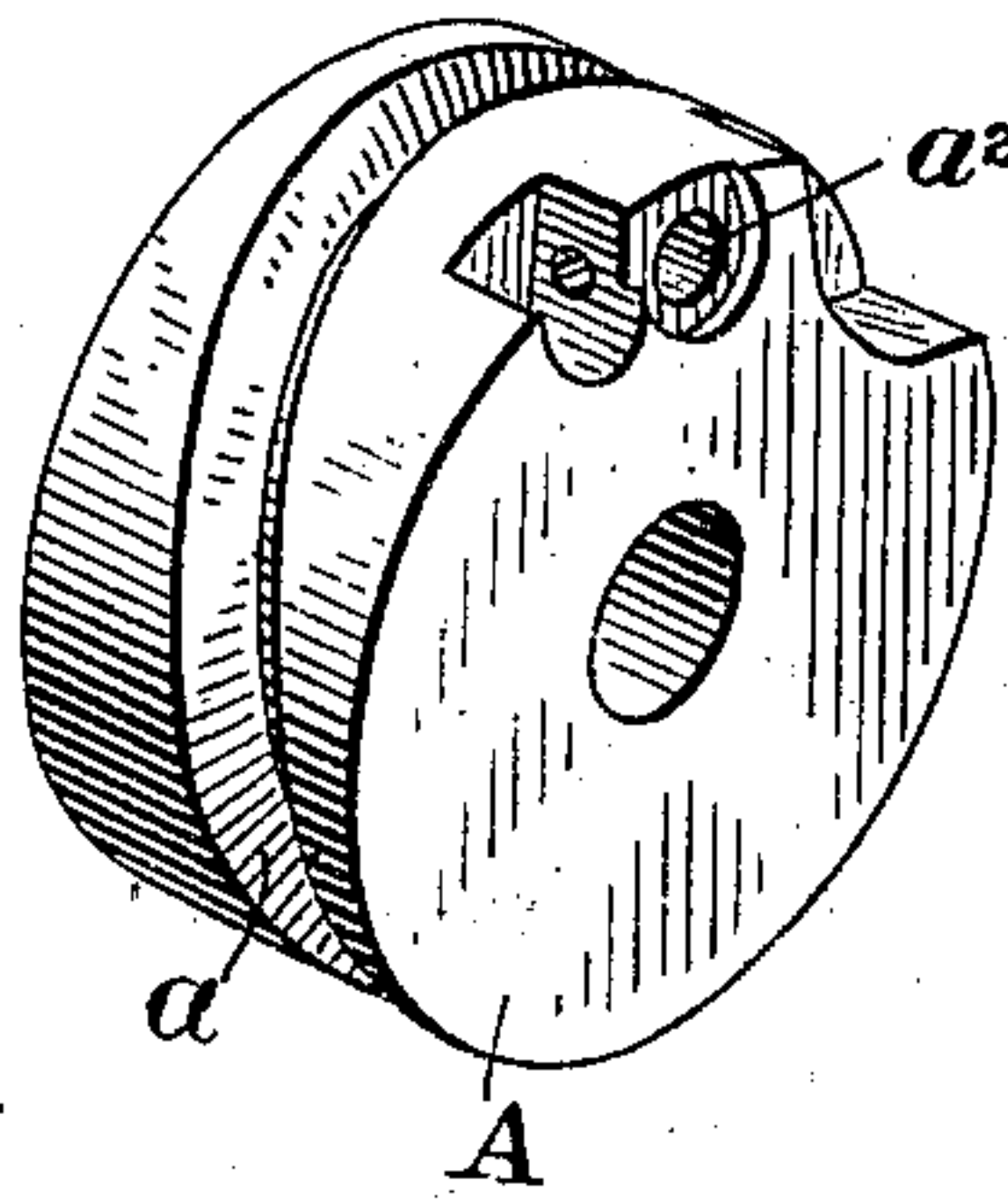


Fig. 4.

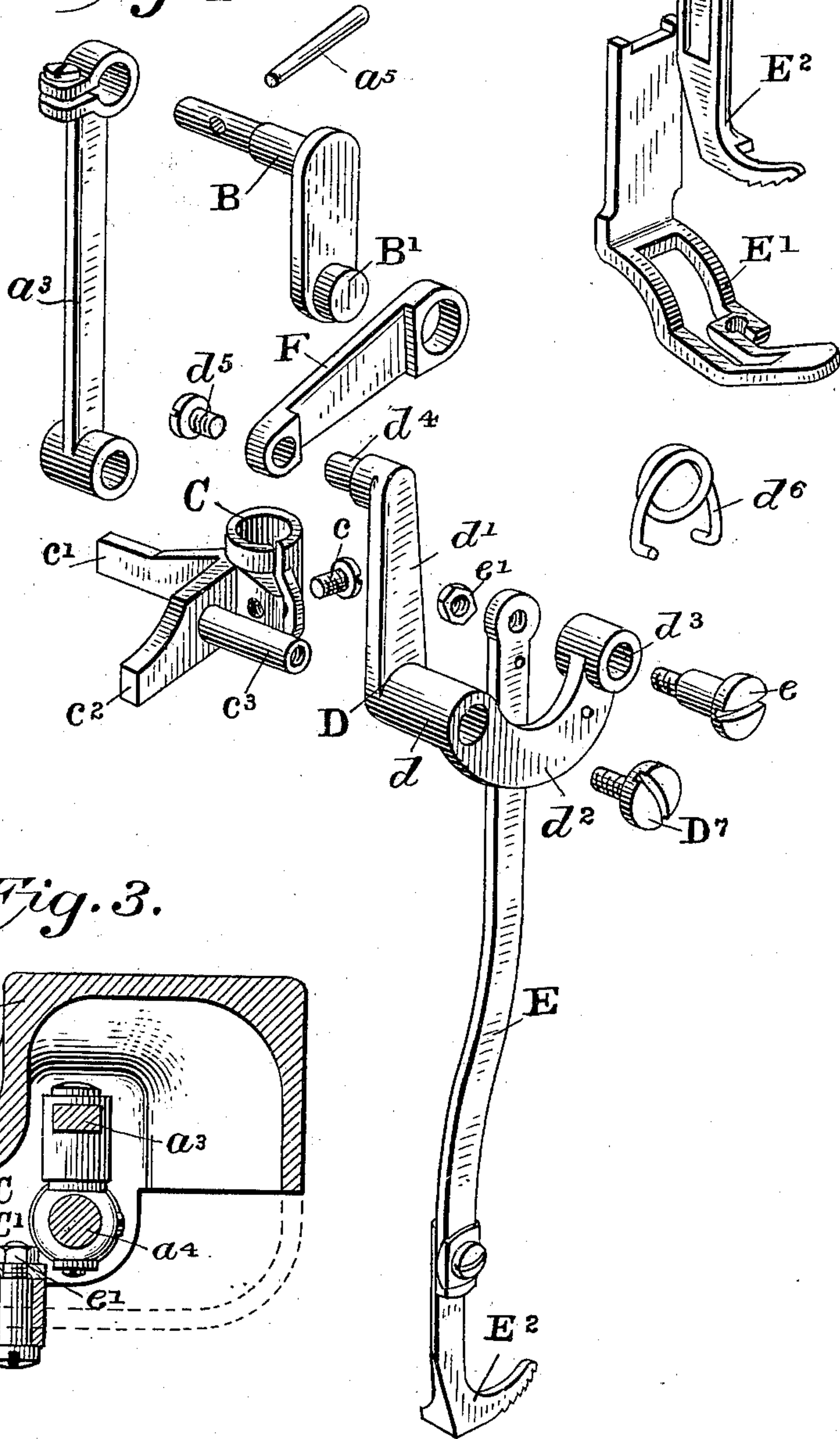


Fig. 5.

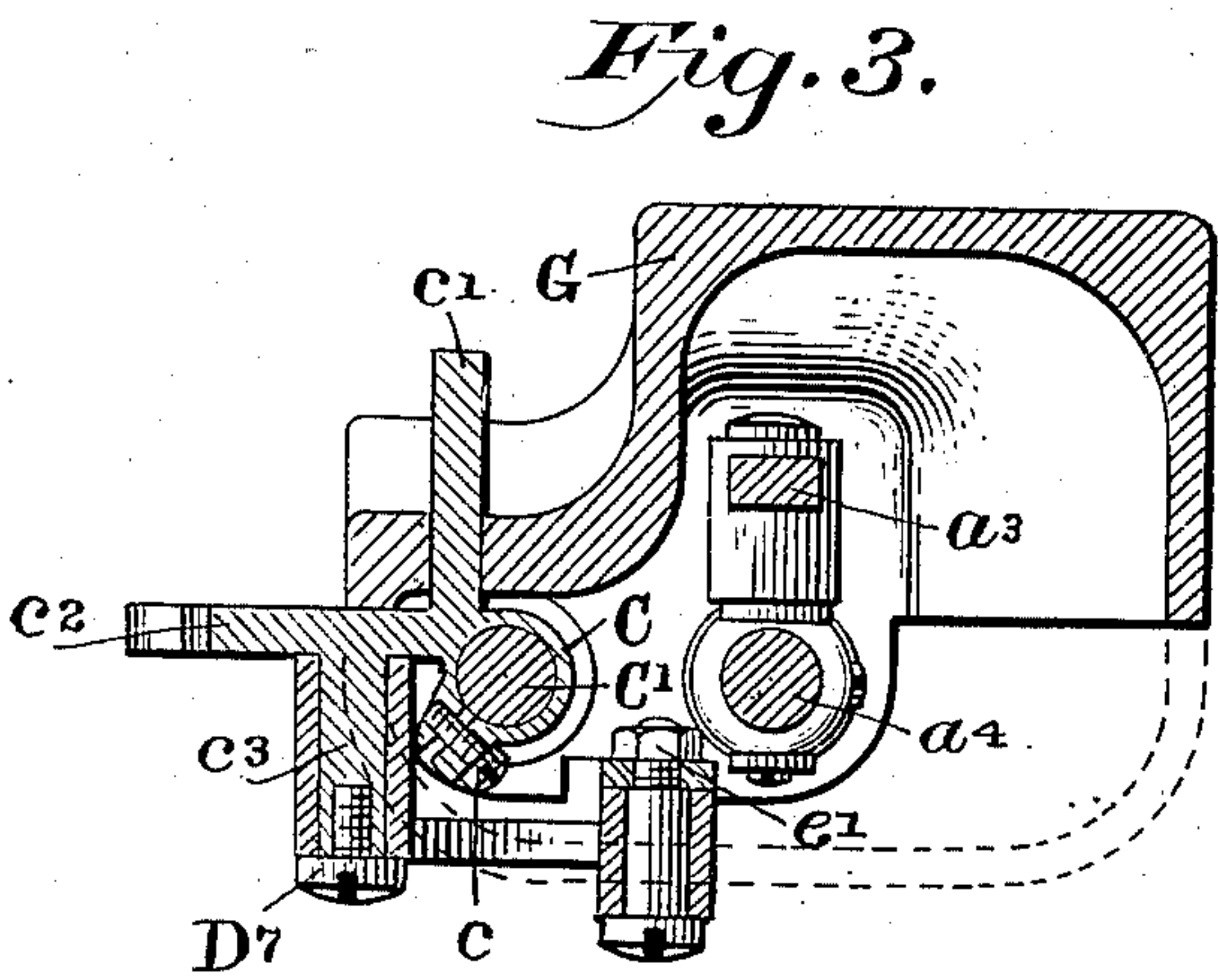


Fig. 3.

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# UNITED STATES PATENT OFFICE.

AURELIUS STEWARD, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE  
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## PRESSER-FOOT MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 662,505, dated November 27, 1900.

Application filed July 25, 1900. Serial No. 24,806. (No model.)

*To all whom it may concern:*

Be it known that I, AURELIUS STEWARD, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Vibrating Presser-Foots for Sewing-Machines, of which the following is a specification.

My invention relates to that class of sewing-machines in which two presser-feet are used which alternately rise and fall, and pertains especially to the actuating mechanism employed to operate such presser-feet. The object of such movement is that one foot, which has perpendicular action only, may hold the fabric while the stitch is being formed, but rise to release the same upon the descent of its companion foot, which having horizontal as well as perpendicular vibratory action is free to advance with the fabric and on being lifted in its turn to return to first position, thereby avoiding all sliding and displacing of the plies of fabric, as is liable when a stationary presser-foot is used. Such movements are common in sewing-machines, as illustrated in United States patent to G. H. Dimond, issued December 29, 1891, No. 466,273; but my object is to produce actuating mechanism therefor which is more simple in construction and especially lighter and capable of running at a higher speed than any heretofore constructed.

In the accompanying drawings, which form a part of this specification, Figure 1 is a front end elevation of the arm of a sewing-machine with face-plate removed and showing the vibrating presser-foot in elevated position; Fig. 2, a view in same direction of same parts, but showing walking-foot in elevated position; Fig. 3, a horizontal section of front end of said arm, taken on a line  $xx$  of Fig. 1. Fig. 4 is a detail perspective view of the parts of my improvement preparatory to assembling, and Fig. 5 a perspective view of the vibrating foot and the walking-foot detached.

The parts embraced in my improvement are all included in Fig. 4 and are so constructed as to be adaptable to machines in common use with but slight modifications of the latter.

The part A in Fig. 4 represents the "take-

up cam," so called, of an ordinary sewing-machine, as also shown in Figs. 1 and 2, the groove  $a$  thereof serving to actuate the take-up  $a'$ , while a crank-pin inserted in hole  $a^2$  and through connecting-link  $a^3$  serves to operate the needle-bar  $a^4$ , all as in ordinary use. In place of said crank-pin, however, I insert a substitute having integral therewith a driving-crank, as shown at B, the shank of which is so secured into the cam by taper-pin  $a^5$  that the crank B' will stand eccentric with the cam, as shown in Fig. 2.

The presser-bar collar C is made to surround the vibrating presser-bar C' and is clamped thereto by means of pinch-screw  $c$ , while the arm  $c'$  enters a guideway in the arm of the sewing-machine, as shown in Fig. 3, to secure the round bar against turning in its bearings. The arm  $c^2$  of the presser-bar collar has inserted or made integral with it a stud  $c^3$  for purposes hereinafter explained.

The operating or bell-crank lever D consists of a hollow or tubular rocking shaft  $d$ , which is provided with two arms  $d'$  and  $d^2$ , which stand practically at right angles upon the shaft  $d^2$ , being curved to render the pinch-screw  $c$  accessible and having a hole  $d^3$  made longitudinally through its extremity, while the member  $d'$  terminates with a right-angled extension, (shown at  $d^4$ .)

The walking-foot lever (clearly shown at E) is made attachable at its lower end to the walking-foot E<sup>2</sup> and has at its upper end a threaded hole to receive the screw  $e$ , which by being passed through hole  $d^3$  and secured by check-nut  $e'$  is jointed to the bell-crank lever D.

As a means of connecting the driving-crank B with the bell-crank lever D, I employ the link F, (seen best in Fig. 4,) the hole in the larger end of which is fitted to receive the operating end B' of the driving-crank B and whose small end engages the extension  $d^4$  of the bell-crank lever D and is held therein by the headed screw  $d^5$ .

The bell-crank lever D carries at the extremity of its arm  $d^2$  a coiled spring, as at  $d^6$ , Fig. 4, one end of which enters a hole in said lever  $d^2$  and the other end a hole in the upper end of the walking-foot lever E, and by force of which the lever E is returned to first po-



sition after advancing with the fabric, as hereinafter explained.

When parts are in operative position, the vibrating presser-bar C' is clasped within the presser-bar collar C, which is held against turning by the guideways in the arm G, the sleeve of the bell-crank lever embraces the stud c<sup>3</sup> of the presser-bar collar and is held thereon by the screw D<sup>7</sup>, which enters a threaded hole in the stud for that purpose, and the bell-crank lever is connected with the driving-crank B by means of the link F in the manner described, as may be readily understood by reference to Figs. 1, 2, and 3. When so assembled it will be seen that as the driving-crank B imparts vibratory movement through link F to the operating-lever D the latter will be caused to oscillate upon the fulcrum c<sup>3</sup> of the vibratory presser-bar collar C, and by such action the vibrating presser-foot E' and walking-foot E<sup>2</sup> will alternately rise and fall upon the cloth-plate or the underlying fabric. By such movement it will be seen that as the upper end of the bell-crank lever D is moved in direction indicated by the arrow, (see Fig. 1,) having advanced until the walking-foot has descended and its progress been arrested by contact with the feed-dog, with which it is timed to cooperate, a continuation of the movement of the lever in that direction will cause the vibrating presser-foot to be lifted against the resistance of the usual presser-bar spring K, which normally holds it down, thereby releasing any interposed fabric, which, together with the walking-foot, is then free to advance with the feed-dog the proper distance for a stitch, whereupon the continued movement of the crank B reverses the motion of the bell-crank lever D, allowing vibrating presser E' to fall upon the fabric and walking-foot E<sup>2</sup> to be lifted and by the action of the spring d<sup>6</sup> to be returned to first position.

By the action described it will be seen that the fabric is clamped between stationary members while the stitch is being formed and between members both of which advance with it while progressing from stitch to stitch,

thereby avoiding displacement of the plies of fabric, though of the smoothest texture, and owing to the small number and lightness of the parts which participate in the vibratory movement, as described, a higher speed is possible than with mechanism heretofore employed to effect this purpose.

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

1. In a sewing-machine the combination of a spring-actuated vibrating presser bar and foot, a collar rigidly secured on said presser-bar, a bell-crank lever pivotally attached to said collar, a spring-actuated walking-foot pivotally attached to the horizontally-disposed arm of said bell-crank lever, and a link one end of which is pivoted to the vertically-disposed arm of said bell-crank lever and the other end of said link pivotally connected with a crank rigid with the needle-driving shaft whereby said vibrating foot and walking-foot are actuated, substantially in the manner and for the purposes set forth.

2. In a sewing-machine, the combination of a spring-actuated vibrating presser bar and foot, a collar rigidly secured on said presser-bar and provided with an arm C' adapted to enter a stationary guideway, whereby said presser-bar is restrained against turning, with a bell-crank lever pivoted around a pin rigid on said collar, a spring-actuated walking-foot pivotally connected to the horizontally-disposed arm of said bell-crank and a link one end of which is pivotally connected to the vertically-disposed arm of said bell-crank lever while the other end of said link is pivoted around a crank-pin rigid with the needle-driving shaft, whereby said walking-foot and vibrating foot are actuated, substantially as set forth.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 11th day of July, A. D. 1900.

AURELIUS STEWARD.

Witnesses:

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C. N. WORTHEN.