

(No Model.)

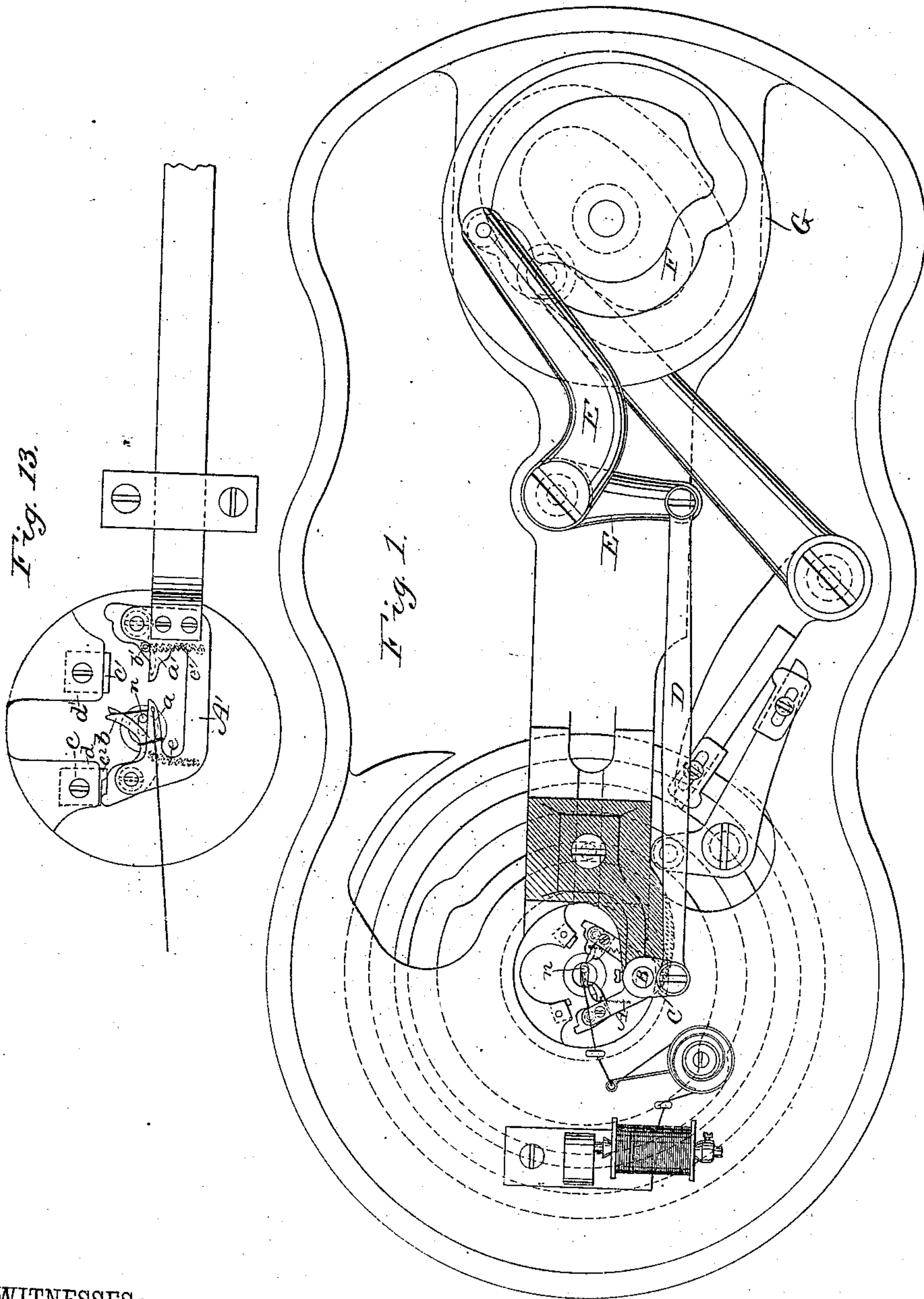
2 Sheets—Sheet 1.

J. G. GREENE.

LOOPING MECHANISM FOR SEWING MACHINES.

No. 360,435.

Patented Apr. 5, 1887.



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(No Model.)

2 Sheets—Sheet 2.

J. G. GREENE.

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Fig 2.

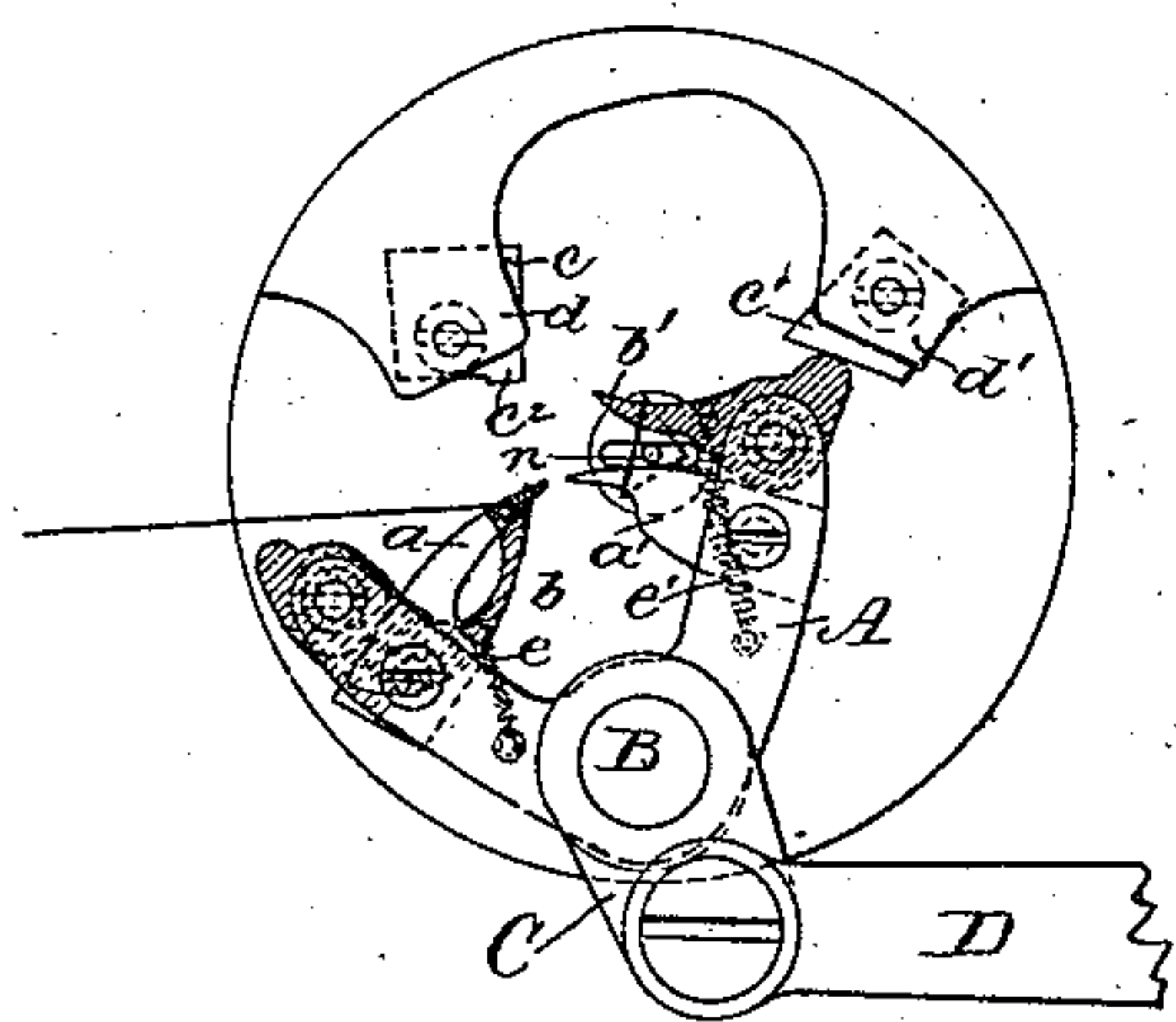


Fig 4.

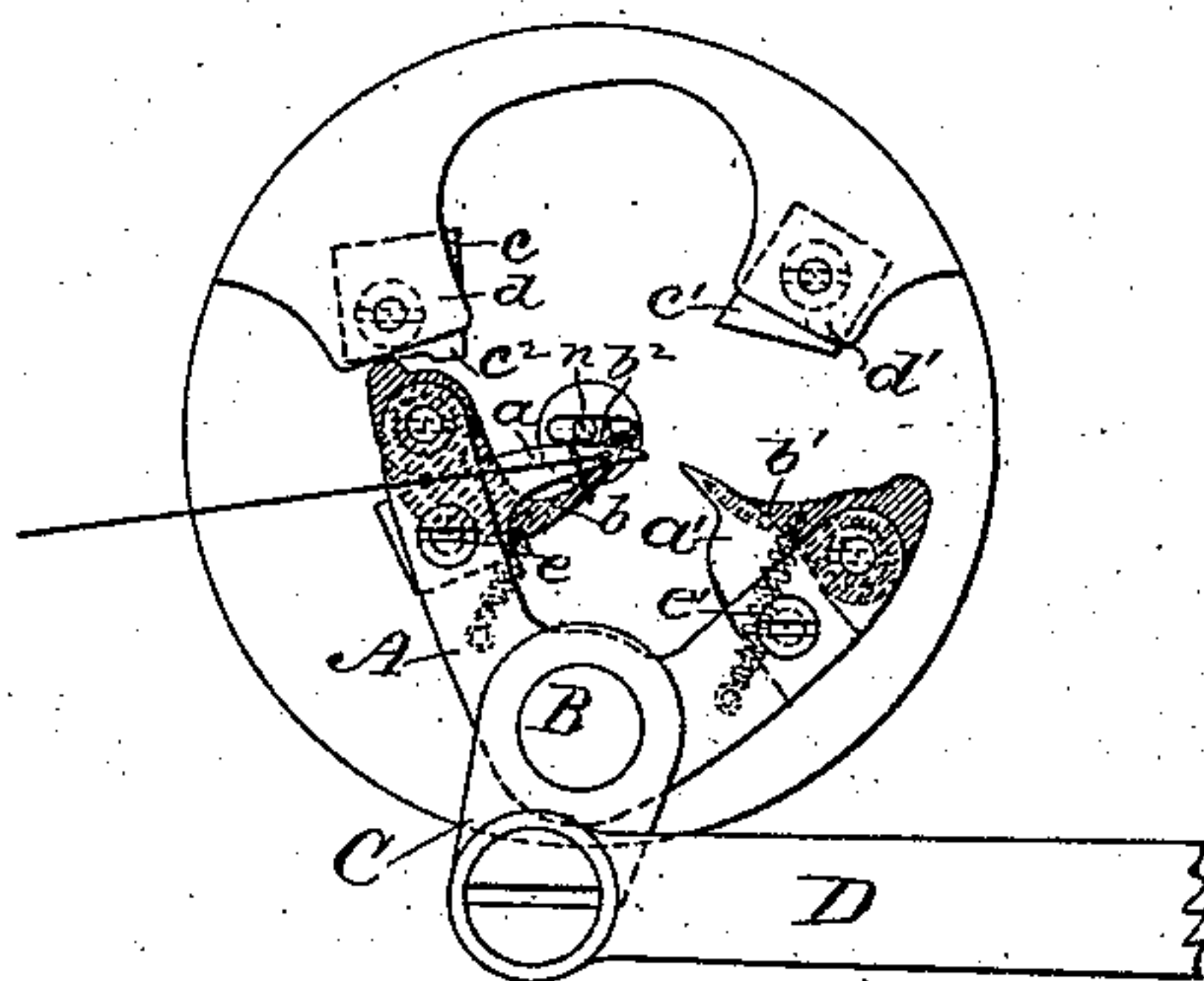


Fig 5.

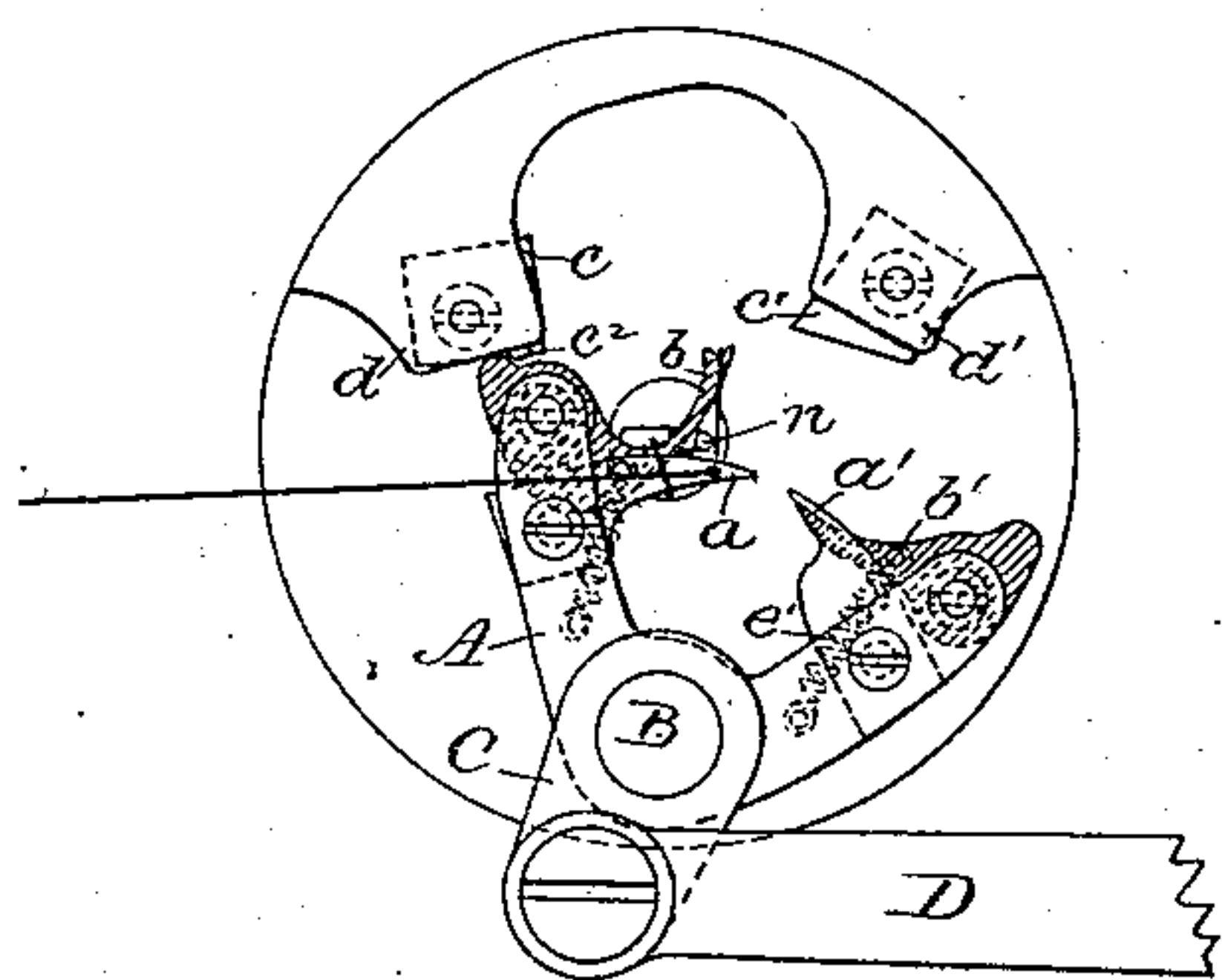


Fig 3.

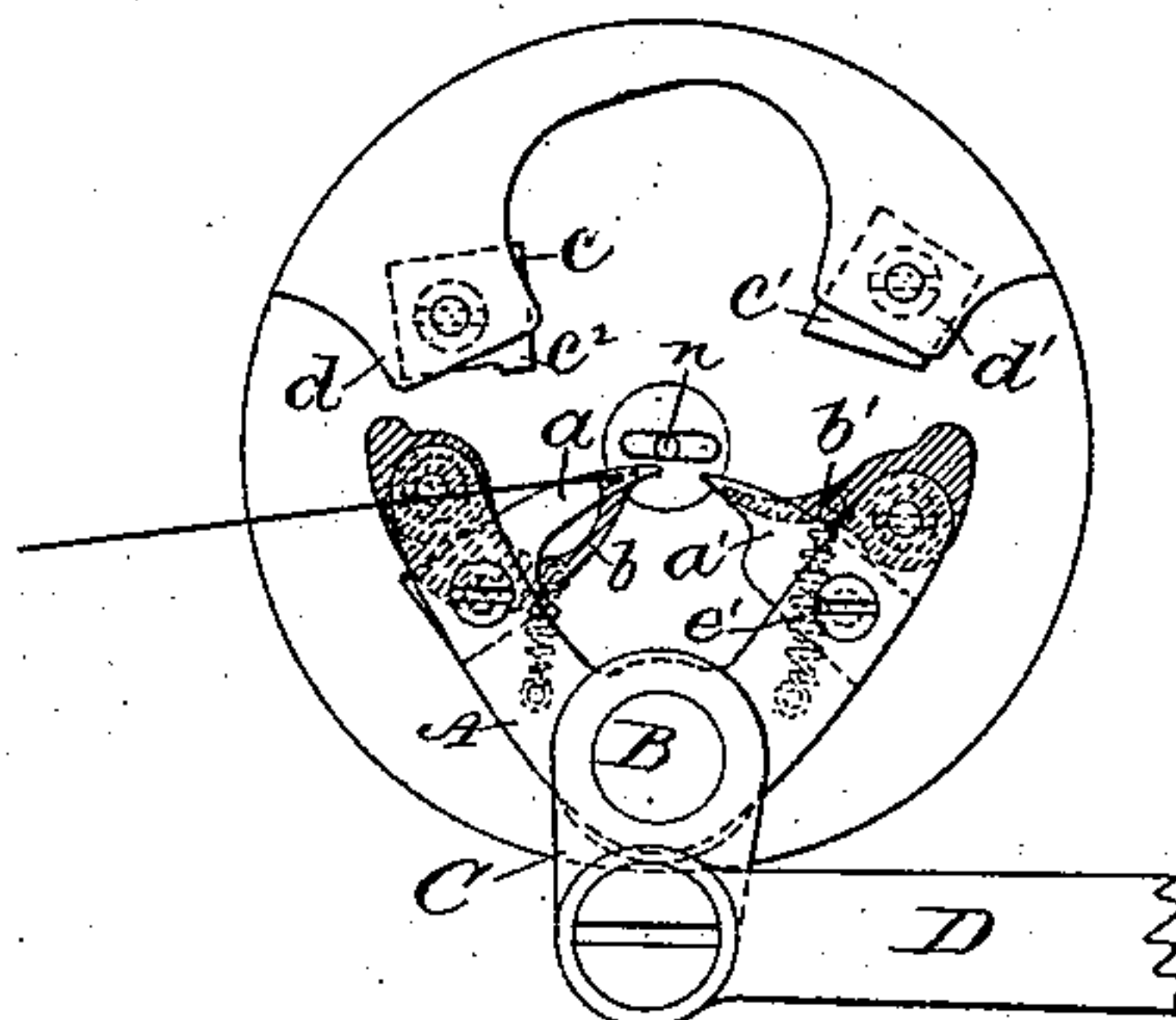


Fig 6.

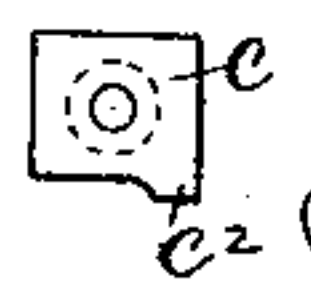


Fig 8.

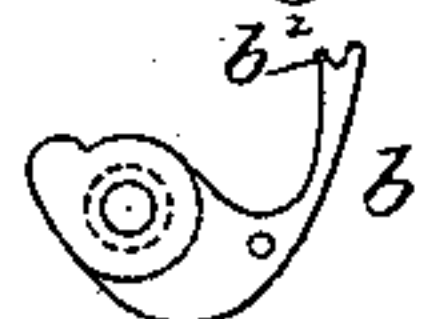


Fig 7.



Fig 9.

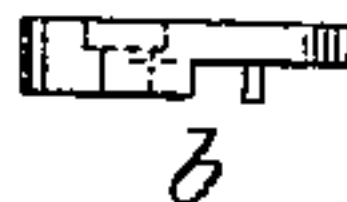


Fig 10.



Fig 11.

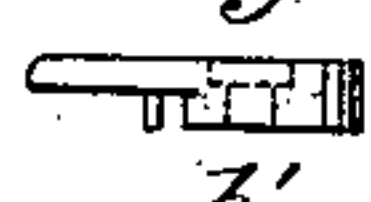
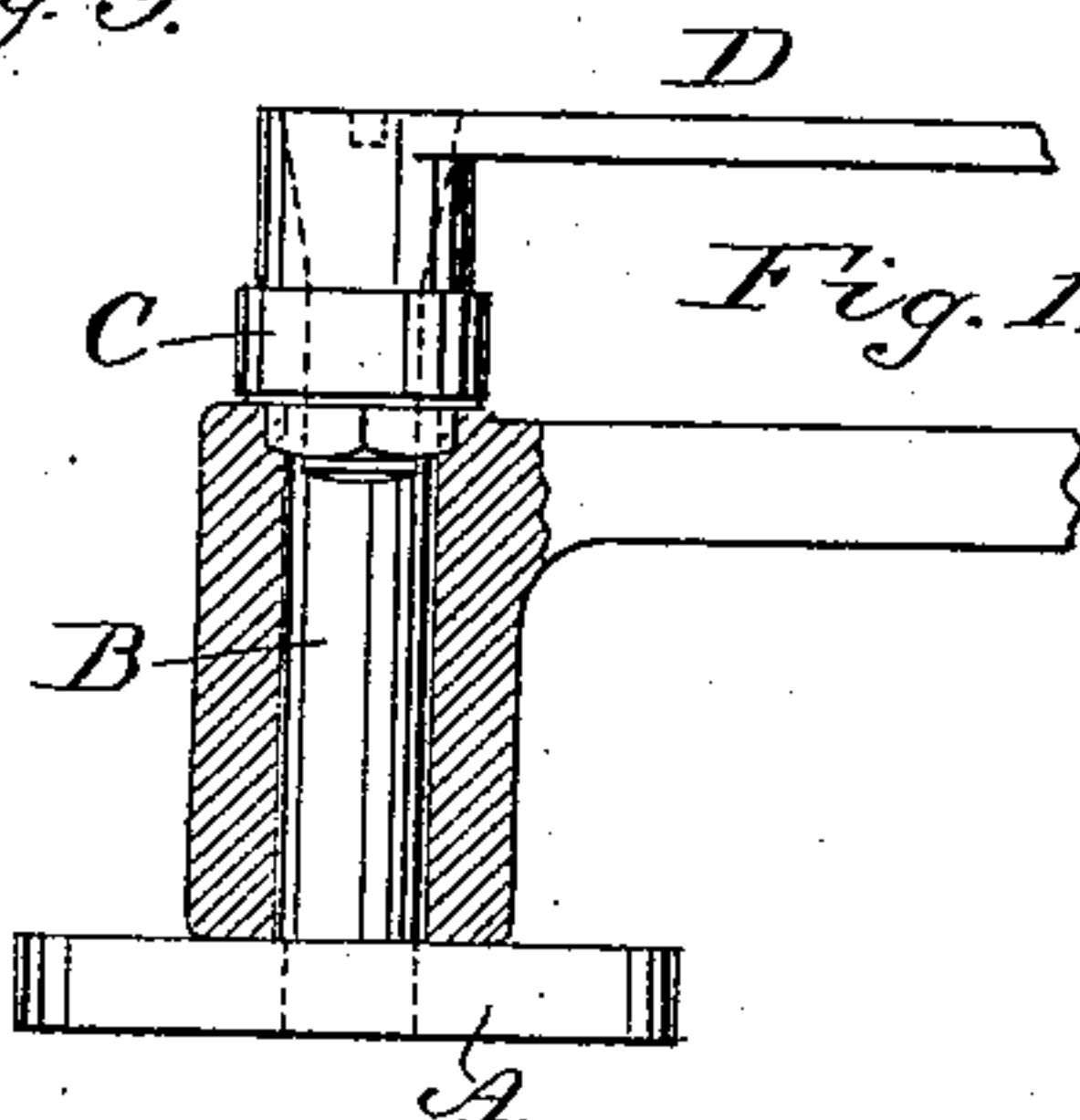


Fig 12.



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UNITED STATES PATENT OFFICE.

JAMES G. GREENE, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY OF NEW JERSEY.

LOOPING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 360,435, dated April 5, 1887.

Application filed July 8, 1886. Serial No. 207,406. (No model.)

To all whom it may concern:

Be it known that I, JAMES G. GREENE, 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 Looping Mechanisms for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide a looping mechanism which is more particularly adapted for use with button-hole or other sewing-machines, in which the needles have horizontal or lateral movements in addition to their vertical movements. My invention may, however, be used in machines in which the needles have no lateral movement.

In carrying my invention into effect I pivot the loop-spreaders to the looper-carrier, so that the said spreaders can be operated by stationary contact-blocks on the bed-plate of the machine, and will therefore not require a special moving operating device. This construction permits of the use of spreaders, which may be made very light, and which will perform their function with less movement than has heretofore been required, so that less thread will be drawn down, and the latter will thus have less liability to twist, the result, particularly in working button-holes, being a much better finish than has heretofore been attained.

In the drawings, Figure 1 is a bottom view of a "Singer" button-hole sewing-machine with my invention applied thereto. Figs. 2, 3, 4, and 5 are detail views of the looping mechanism, illustrating the operation of my invention. Figs. 6 to 11, inclusive, are detail views of the spreaders and contact-blocks. Fig. 12 is a sectional elevation of the looper-carrier and its connections. Fig. 13 illustrates a modification of my invention.

A denotes a two-armed pivoted or swinging looper-carrier, to which the loopers *a* and *a'* are rigidly secured. The looper *a* has an eye near its point, so that it is adapted to carry a lower thread, as is common with this class of devices in making button-hole or double chain stitches.

To the outer ends of the arms of the looper-carrier are pivotally attached the loop-spreaders *b* and *b'*, the former being forked at its end,

so as to be adapted to co-operate with the eyed looper *a*. The pivoted spreaders *b* and *b'* are small two-armed levers, and are operated by the engagement of their shorter arms with stationary contact-blocks *c* and *c'*, secured in the present instance to projections *d* and *d'* on the bed-plate of the machine, or on a plate attached thereto, the return movements of the spreaders being effected by retracting-springs *e* and *e'*. The block *c* has a slight projection, *c''*, on its operating-face to give the proper movements to the spreader *b*, and the operating-face of the block *c'* is preferably made inclined, as shown, when used in connection with a pivoted looper-carrier.

The looper-carrier A, in the form of my invention herein shown, is attached to a small vertical rock-shaft, B, having an arm, C, connected by a pitman, D, to a lever, E, operated from a cam-groove, F, in a disk, G. The construction and arrangement which I have illustrated is especially adapted for button-hole work in connection with a needle, *n*, having horizontal or lateral movements; but my invention is also capable of use in connection with a needle having no horizontal movements. In the latter instance it might, however, be desirable to reciprocate the contact-blocks, to avoid giving too great a throw to the loopers and the spreaders moving therewith, to get the best results.

The operation of my invention as arranged for working button-holes, as herein shown, is as follows: The needle first descends through the fabric back from the button-hole slit, and as said needle rises its loop is caught by the looper *a'*, which moves toward the left, this movement bringing the short arm of the spreader *b'* against the contact-block *c'*, so that the loop is spread around the path of the needle when the latter next descends, as in Fig. 2, through the button-hole slit. As the needle continues its descent, the looper-carrier swings toward the right, slipping the loop through which the needle has descended off from the looper *a'* and spreader *b'*, thus leaving the said loop around the needle. The loop thus left around the needle is immediately drawn up to the under side of the work by the take-up, the parts being at this moment in the positions shown in Fig. 3. As the needle rises,

it throws out another loop of upper thread, and as the looper-carrier continues its movement to the right the looper *a* and spreader *b* enter the said loop and carry the lower thread through the same. The short arm of the spreader *b* at this moment strikes the straight portion of the contact-block *c*, forcing the forked end of the said spreader slightly inward to the position shown in Fig. 4, the inner fork, *b*², of the said spreader projecting inward beyond the looper *a*, thus forming a stop to prevent the loop of needle-thread from slipping off the same. The looper-carrier still continues its motion toward the right, thus bringing the short arm of the spreader *b* into contact with the inner side of the projection *c*² on the block *c*, thereby throwing the long arm of the said spreader inward to the position shown in Fig. 5, to spread the loop of lower thread around the path of the needle as the latter next descends through the fabric back from the button-hole slit. The looper-carrier next swings toward the left, releasing the spreader *b* from the contact-block and causing the looper *a* to back out of the loop of needle-thread, the operation of disengaging the said loop from the looper being assisted by the curved arm of the spreader as the latter is retracted to its normal position by its spring *e*. At this moment the parts (excepting the needle) are again in the position shown in Fig. 3, and the loop of under thread, which is around the needle, is disengaged therefrom when the needle rises at its next ascent. In the meantime the looper-carrier swings toward the left, and the looper *a*' seizes the loop thrown out by the needle, the said loop being spread by the looper *b*', as above described, and thus the operation continues.

The operation of the modification shown in Fig. 13, in which the looper-carrier *A*' reciprocates in a straight path, is essentially the same as that above described in connection with my pivoted or oscillating looper-carrier *A*, the loopers and the spreaders moving bodily therewith taking alternate loops from the needle in a well-known manner.

It will be understood that any well-known or suitable mechanism may be employed for oscillating the looper-carrier *A*, or for reciprocating the looper-carrier *A*', and I do not therefore wish to confine my invention to the special operating mechanism nor to the details of construction herein shown, as variations within the province of mechanical skill may be made without departing from the essential features of my invention.

I may also use a part of my invention without other parts thereof, as by employing one horizontally-moving looper and a two-armed spreader moving bodily therewith and operated by a contact-block and spring in connection with a needle having no horizontal movement, for making chain or double chain stitches, es, if desired.

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

1. The combination, with a horizontally-movable looper-carrier and a looper rigidly secured thereto, of a two-armed loop-spreader pivoted to said carrier and a contact-block and retracting-spring for operating said spreader, substantially as set forth.

2. The combination, with a movable looper-carrier, two loopers fixed thereto, and two pivoted spreaders moving with said loopers, of means, as contact-blocks and retracting-springs, for operating said spreaders, substantially as set forth.

3. The combination, with the pivoted or swinging two-armed looper-carrier *A*, of the loopers *a* and *a*', secured thereto, the pivoted spreaders *b* and *b*', attached to the arms of said carrier near the ends thereof, the fixed contact-blocks *c* and *c*', and the retracting-springs *e* and *e*', substantially as set forth.

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

JAMES G. GREENE.

Witnesses:

HENRY CALVER,
VINTON COOMBS.