

(No Model.)

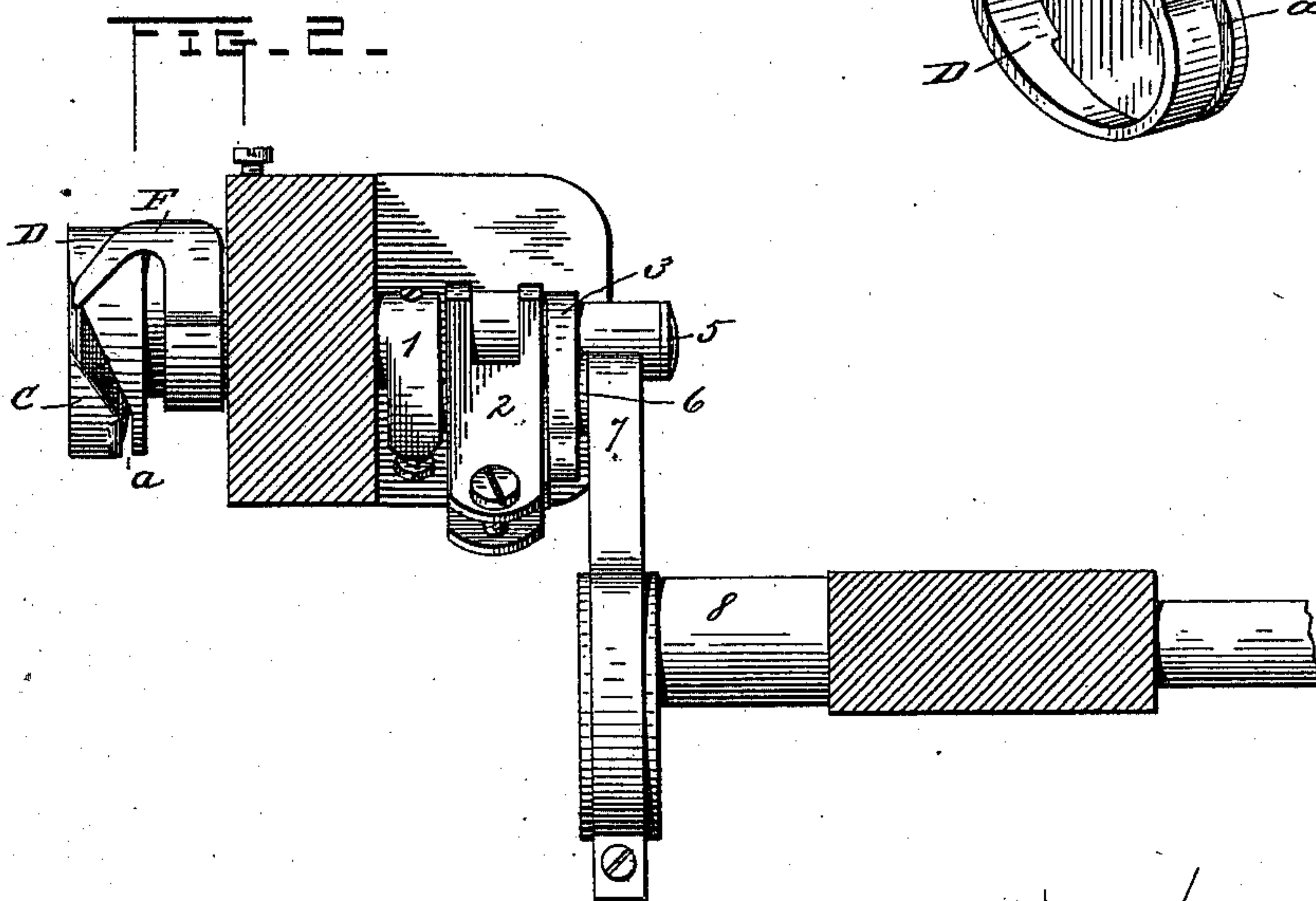
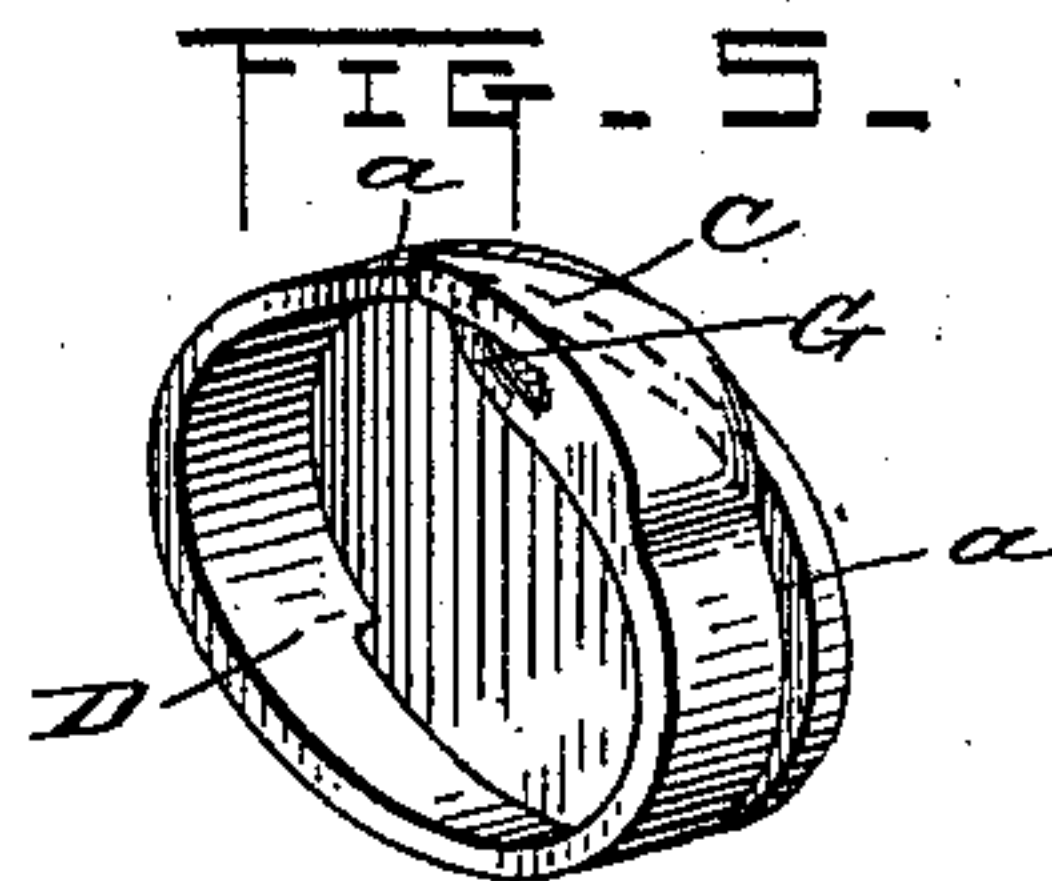
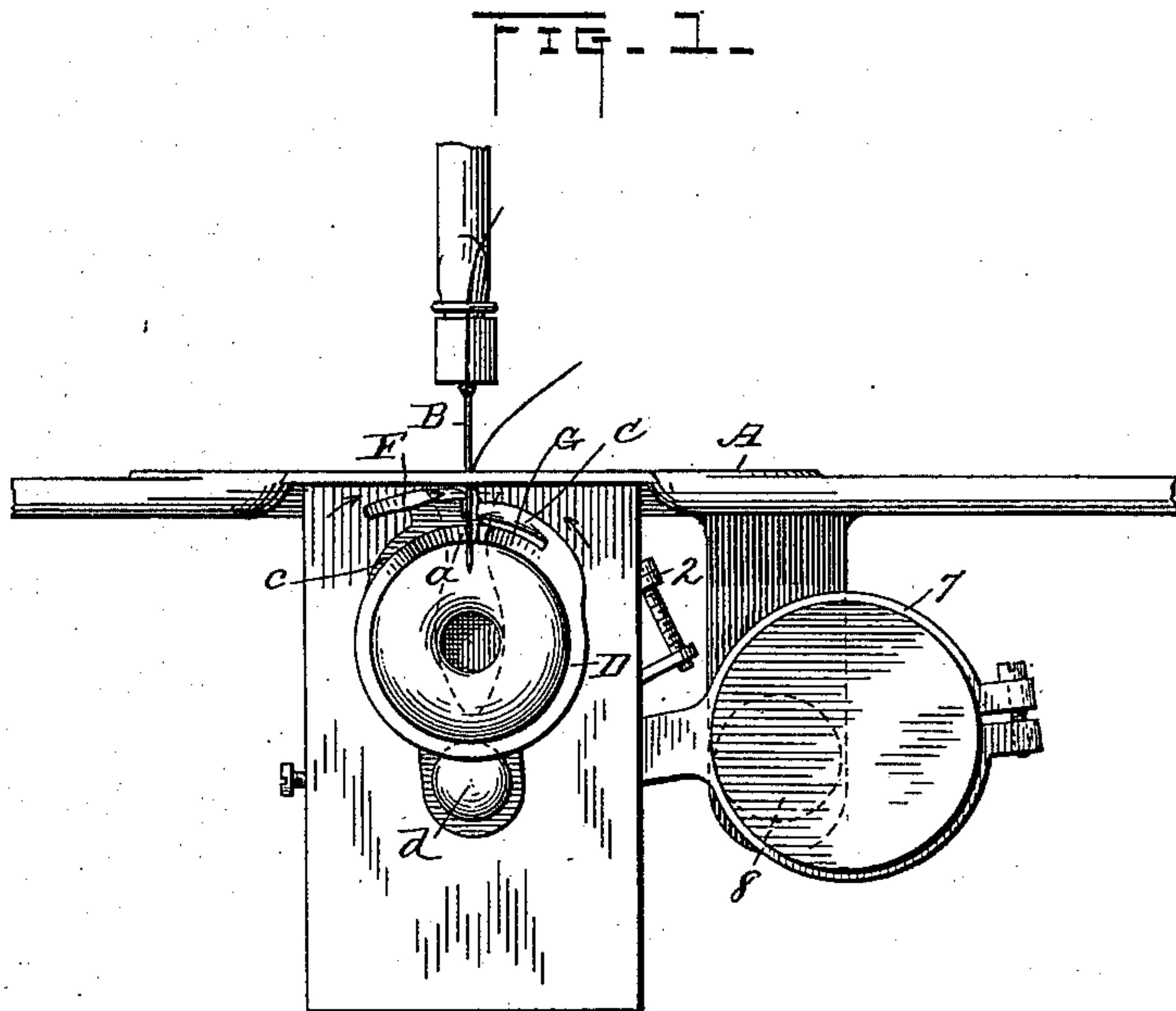
2 Sheets—Sheet 1.

J. L. FOLLETT.

OSCILLATING LOOP TAKER AND SPREADER FOR SEWING MACHINES.

No. 402,429.

Patented Apr. 30, 1889.



Witnesses:
E. D. Smith
Ewell Adick

Inventor:
Joseph L. Follett
by Maurice Bailey
his attorney

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2 Sheets—Sheet 2.

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FIG. 3.

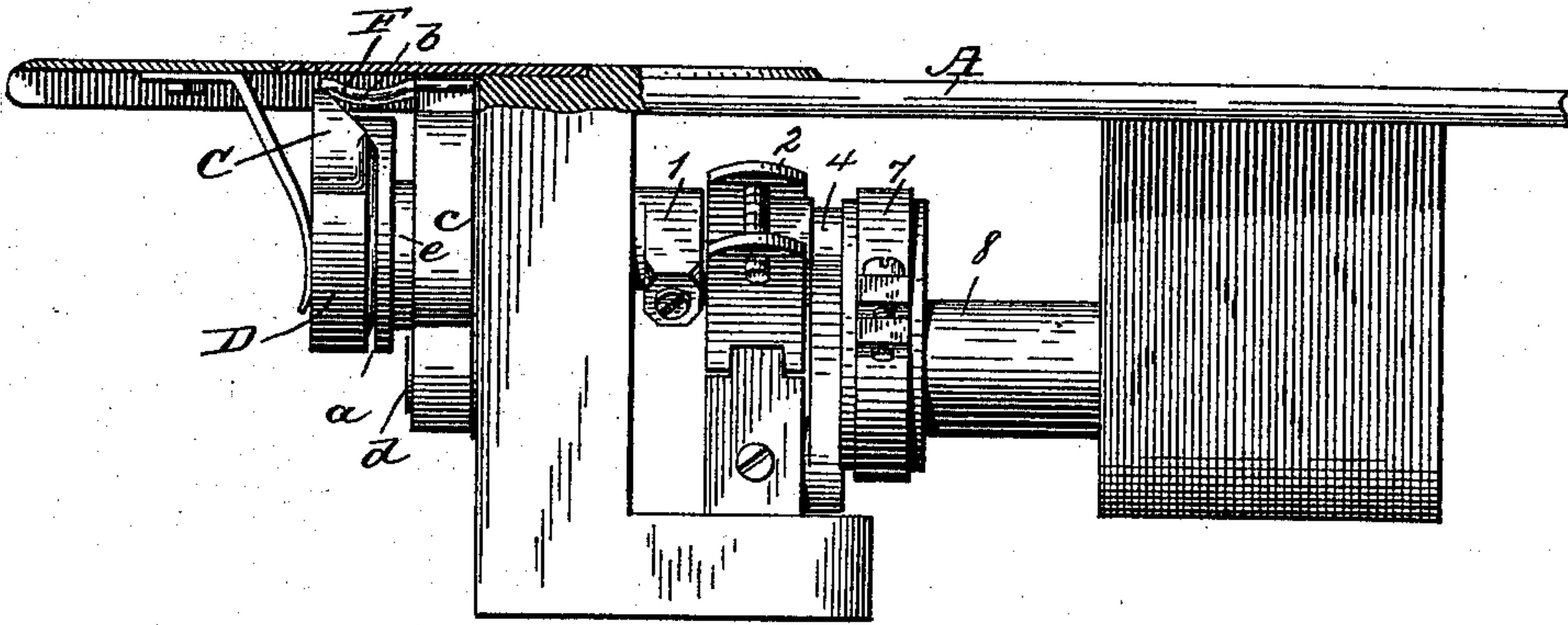


FIG. 4.

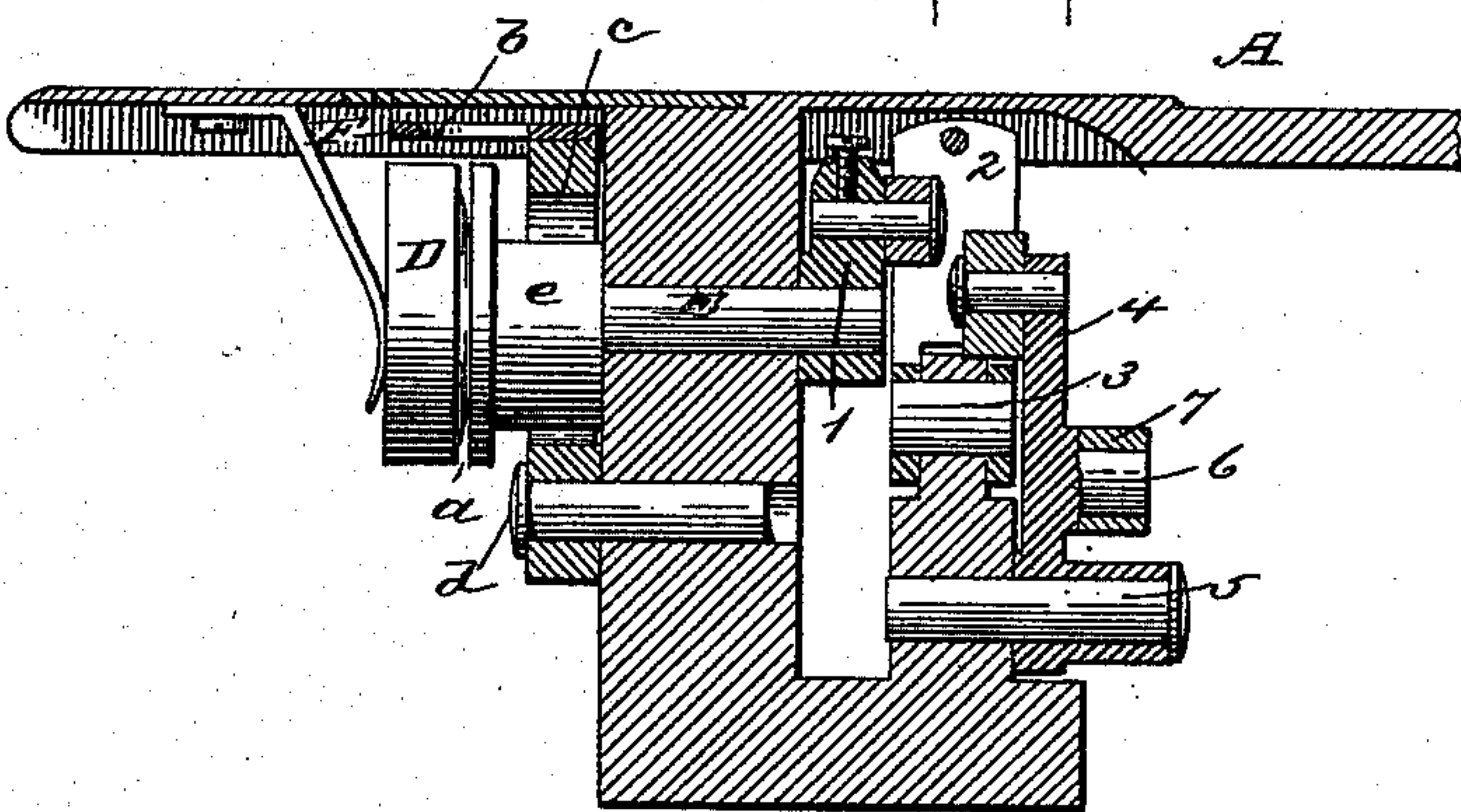
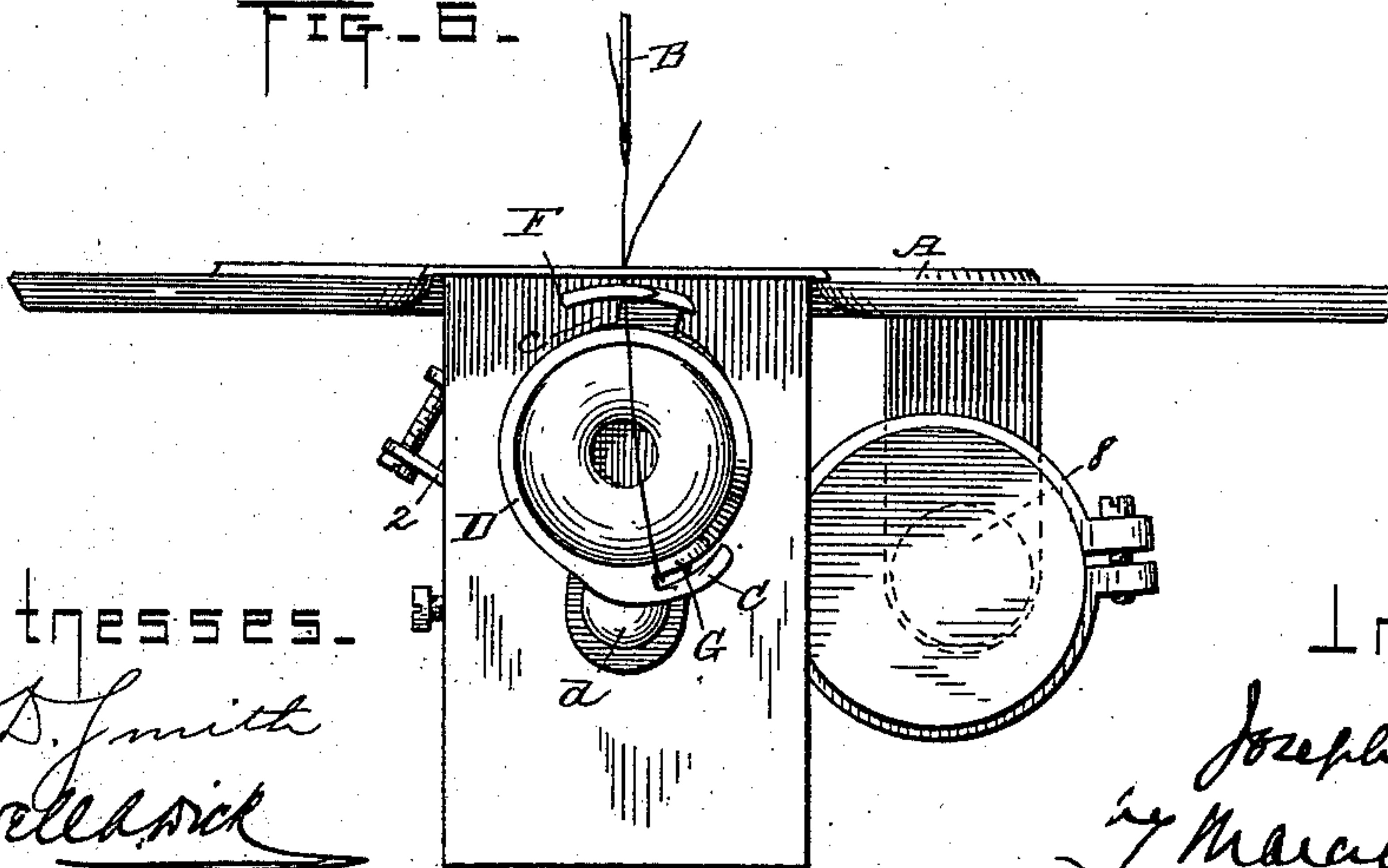


FIG. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH L. FOLLETT, OF BROOKLYN, NEW YORK.

OSCILLATING LOOP TAKER AND SPREADER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 402,429, dated April 30, 1889.

Application filed October 4, 1888. Serial No. 287,238. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. FOLLETT, of Brooklyn, in the county of Kings, State of New York, have invented a new and useful
5 Improvement in Sewing-Machines, of which the following is a specification.

My invention relates to that class of sewing-machines in which an oscillating hook is employed to carry the loops of needle-thread
10 around the bobbin or spool which carries the under or locking thread, and it is characterized mainly by the combination, with the oscillating hook, of an oscillating or reciprocating spreader which moves in a direction contrary to that of the oscillating hook and acts,
15 when the hook takes the loop, to enter and engage said loop in such manner as to spread it and carry it by positive motion over the back of the bobbin or spool. With these devices I combine, also, a loop-retainer, which moves with
20 the hook and serves to hold the loop until it has been carried beyond the vertical axis of the spool or bobbin and is ready to be cast off.

It is important in sewing by machinery at
25 a high rate of speed that there should be as little friction as possible upon the thread, and that the same should be handled in the most perfect and positive manner. When we consider the number of bearings through and
30 over which the needle-thread must pass, including the tension, take-up, eye of the needle, cloth-plate, hook, and bobbin or bobbin-case, and that the full length of the loop virtually must pass twice through or over these
35 bearings for every stitch, the wear upon the thread and the friction generally becomes a matter of great importance. The shorter the loop the less the friction. In fact, the length of loop used in sewing by machinery affects
40 the entire construction of a sewing-machine, inasmuch as it necessarily determines the stroke of the take-up and the action of the needle-bar and limits the speed of the machine generally.

45 The same length of loop as that which is now generally in use can be handled under my improvement with less friction than has hitherto been the case, owing to the fact that the loop is spread and carried positively
50 around the bobbin or bobbin-case instead of being drawn over the bobbin or bobbin-case, following the conformation of said bobbin or

bobbin-case, and depending for its course upon slipping over the surface of the same, as has been customary heretofore; but my
55 improvement also renders it feasible to materially shorten the length of the loop itself, and I am thus enabled to still further reduce the friction upon the needle-thread. In other words, by my improvement I am enabled to
60 reduce to a minimum the length of loop to be carried over a given quantity of under thread and to carry the loop over the said under thread positively and without dragging it over surfaces which are depended on
65 for spreading it. The result is that the friction on the needle-thread is greatly reduced, the machine can run at much higher speed, a greater quantity of under thread for a given
70 size of loop can be carried, and the loop can be taken from the needle so near to the cloth-plate that the length of the needle may be materially reduced, thus rendering it stiff,
less liable to break or bend, and better fitted to be forced through heavy goods. 75

In the accompanying drawings I have represented so much of a sewing-machine as is needed to explain my invention.

Figure 1 is a front elevation of the same with the parts in the position they occupy
80 when the hook is about to enter the loop. Fig. 2 is a plan view of the hook, spreader, bobbin, and hook-operating mechanism with the cloth-plate broken away. Fig. 3 is a side elevation of the part last named. Fig. 4 is a
85 vertical axial section of said parts. Fig. 5 is a perspective view of the hook and bobbin case or receptacle. Fig. 6 is a front elevation representing the hook in the position it occupies when the needle-loop is about to
90 be cast off.

A is the usual cloth-plate.

B is the needle. I have not deemed it necessary to further represent the parts of the
95 stitch forming and regulating mechanism above the cloth-plate. They may be of any known and approved kind.

C is the oscillating hook. For convenience sake it is mounted on the bobbin case or holder D, which is fixed to the shaft E, supported in suitable bearings below the cloth-
100 plate of the machine.

F is the reciprocating or oscillating spreader. G is the retainer.

From the outer edge of the bobbin-case a slot, *a*, extends slantwise through the annular wall of the case, beginning just in front of the point of the hook, back to the junction of that wall with the rear of the case, and thence extends around the case on this line for a half-circle or little more. This is the thread-slot through which the rear portion of the needle-loop is conducted over the back of the bobbin for the under thread. The hook C is above the periphery of the bobbin-case and is made with a corresponding curve. Its rear edge is over and slants considerably with the adjoining edge of the slanting portion of the thread-slot *a*. Its front edge is about in line with the front of the bobbin-case.

The retainer G is shorter than the hook C, the point of the latter extending beyond that of the retainer. Both edges of the retainer are slanting, so that the point of the latter will be to the rear of the outer annular edge of the bobbin-case, and there is a space between the retainer and the hook to permit the passage of the bight of the loop taken by the hook. The object of this construction of the retainer is to prevent it from accidentally entering the loop at the time the latter is taken by the hook, and also to facilitate the casting off of the loop after it has been carried far enough around the bobbin.

The spreader F is of hook form. Its nose is so placed that it will readily enter the loop taken by the hook, and from its nose it slants in a direction opposed to that of the slanting portion of slot *a*, as seen at *b*, so that when the spreader moves (as it does) in a direction opposite to that of the advancing hook it may positively spread the loop, so as to carry the rear leg of the loop back over the bobbin and (in conjunction with the hook and retainer) past the center of the bobbin-case. The spreader obtains its oscillatory or reciprocatory movement from a yoke, *c*, to which it is fastened. This yoke is pivoted at *d* to the frame of the machine and straddles a cam or eccentric, *e*, fixed to the oscillatory shaft E. It is this eccentric which causes and governs the throw of the yoke, and consequently of the spreader.

Under the arrangement shown it is requisite in order to carry the loop past the center of the bobbin and to bring it to a position in which it can readily be cast off and taken up that the hook should revolve or oscillate over a half a revolution and return. In the specific instance illustrated in the drawings the hook, in fact, in its oscillations travels nearly two-thirds of a revolution in each direction. To impart this movement to the hook from a shaft continuously revolving in the same direction, I avail myself of the system of levers and cranks represented in the drawings. In this system 1 is a crank on the rear end of the oscillatory shaft E, engaging by a wrist-pin a longitudinal slot in lever 2, pivoted at 3 to the frame of the machine. Another longitudinal slot on the opposite side of lever 2 is

engaged by the wrist-pin of a lever, 4, pivoted at 5 to the frame of the machine. Lever 4 at a point between its ends is pivoted to the arm 6 of a strap, 7, which encircles an eccentric on the shaft 8, which is rotated continuously in one direction by some suitable prime mover. The centers 3 and 5 are in the same vertical plane with the axis of the oscillatory shaft E. By this arrangement with an eccentric of comparatively slight throw I am enabled to give the required extent of oscillation to the hook. The particular mechanism for imparting this oscillatory movement from a shaft continuously revolving in one direction is not here claimed by me. I have made it the subject of a separate application for Letters Patent filed November 10, 1888, Serial No. 290,413.

The operation of my improved mechanism is as follows: When the needle descends into position for its loop to be taken by the hook, the parts are in the position as shown in Fig. 1. As the needle reaches this position the hook moves in the direction indicated by its arrow in Fig. 1, taking the loop, while at the same time the spreader (as indicated by arrows in the same figure) approaches from the direction in which the hook is traveling and enters the loop. As these parts continue their motion the spreader by positive motion carries the loop over the back of the hook and the bobbin, while the hook carries the loop around with it until the parts reach the position shown in Fig. 6, the retainer operating after the hook passes below the bobbin and beyond its center to retain the loop until the latter is carried past the center and is brought to a position in which it is ready to be cast off. The loop is pulled away by the customary take-up above the cloth-plate, the retainer operating to throw the same still farther past the center and to keep it from catching or dragging on the bobbin or bobbin-case. The parts then return to the position shown in Fig. 1, and so on.

By the use of the spreader I am enabled to bring the hook close up under the cloth-plate, as shown, thus permitting the loop to be of minimum length. At the same time the spreader, by its positive action in carrying the loop over the back of the hook and bobbin or bobbin-case, prevents the friction which would otherwise be brought upon the thread.

Having described my improvement and the best way known to me of carrying the same into effect, what I claim, and desire to secure by Letters Patent, is as follows:

1. The combination of the oscillatory hook and the oscillating spreader pointed and moving in a direction opposite to that in which the hook is pointed and moves, substantially as and for the purposes hereinbefore set forth.
2. The combination of the oscillating hook, the retainer moving in unison with the hook, and the oscillating spreader pointed and moving in a direction opposite to that in which

the hook is pointed and moves, substantially as and for the purposes hereinbefore set forth.

3. The combination of the bobbin case or holder for the under thread, the oscillating hook, the retainer moving in unison with the hook, and the oscillating spreader pointed and moving in a direction opposite to that in which the hook is pointed and moves, substantially as and for the purposes hereinbefore set forth.

4. The combination of the cloth-plate, the needle, the oscillating hook, and the oscillat-

ing spreader pointed and moving in a direction opposite to that in which the hook is pointed and moves and interposed between the hook and the cloth-plate, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 27th day of September, 1888.

J. L. FOLLETT.

Witnesses:

W. O. JACQUETTE,
H. T. FINDLAY.