

(No Model.)

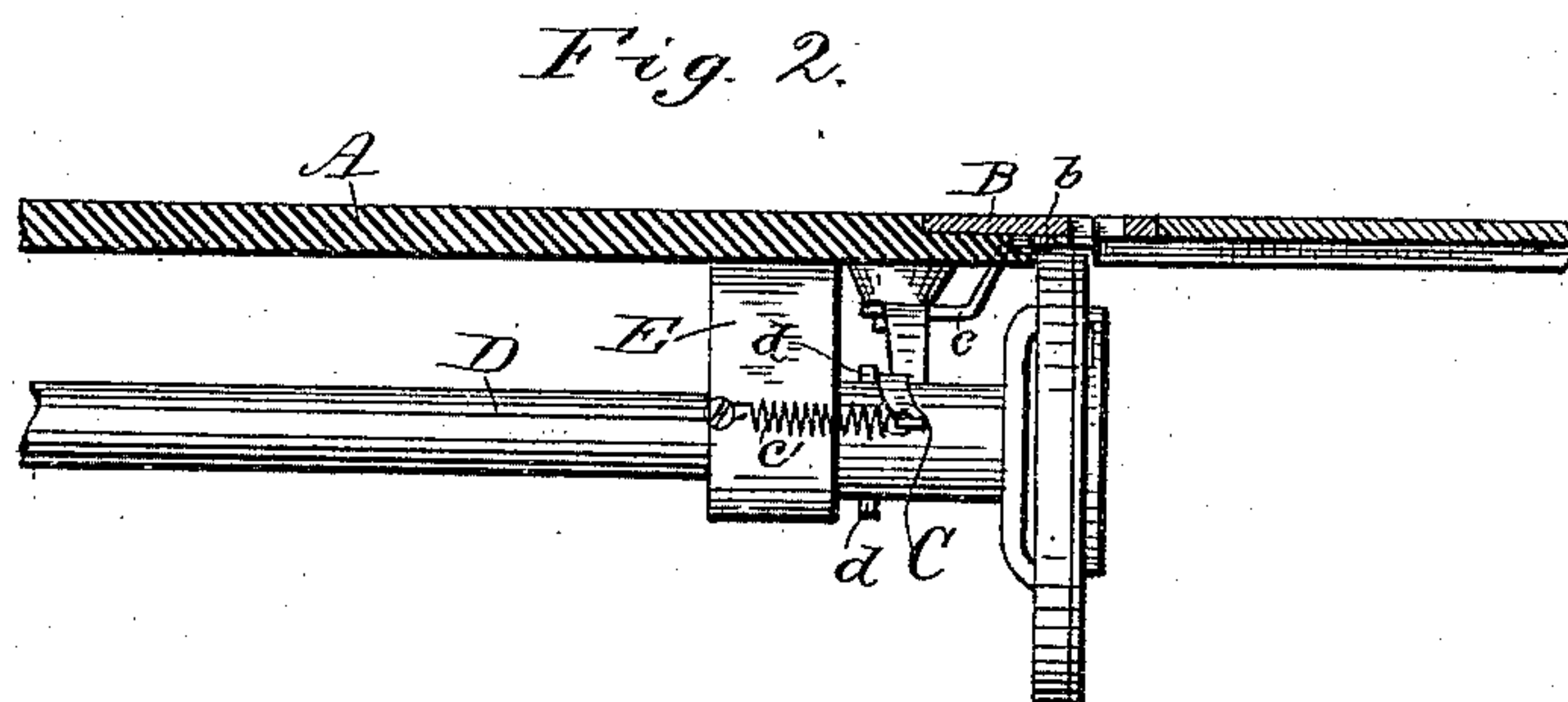
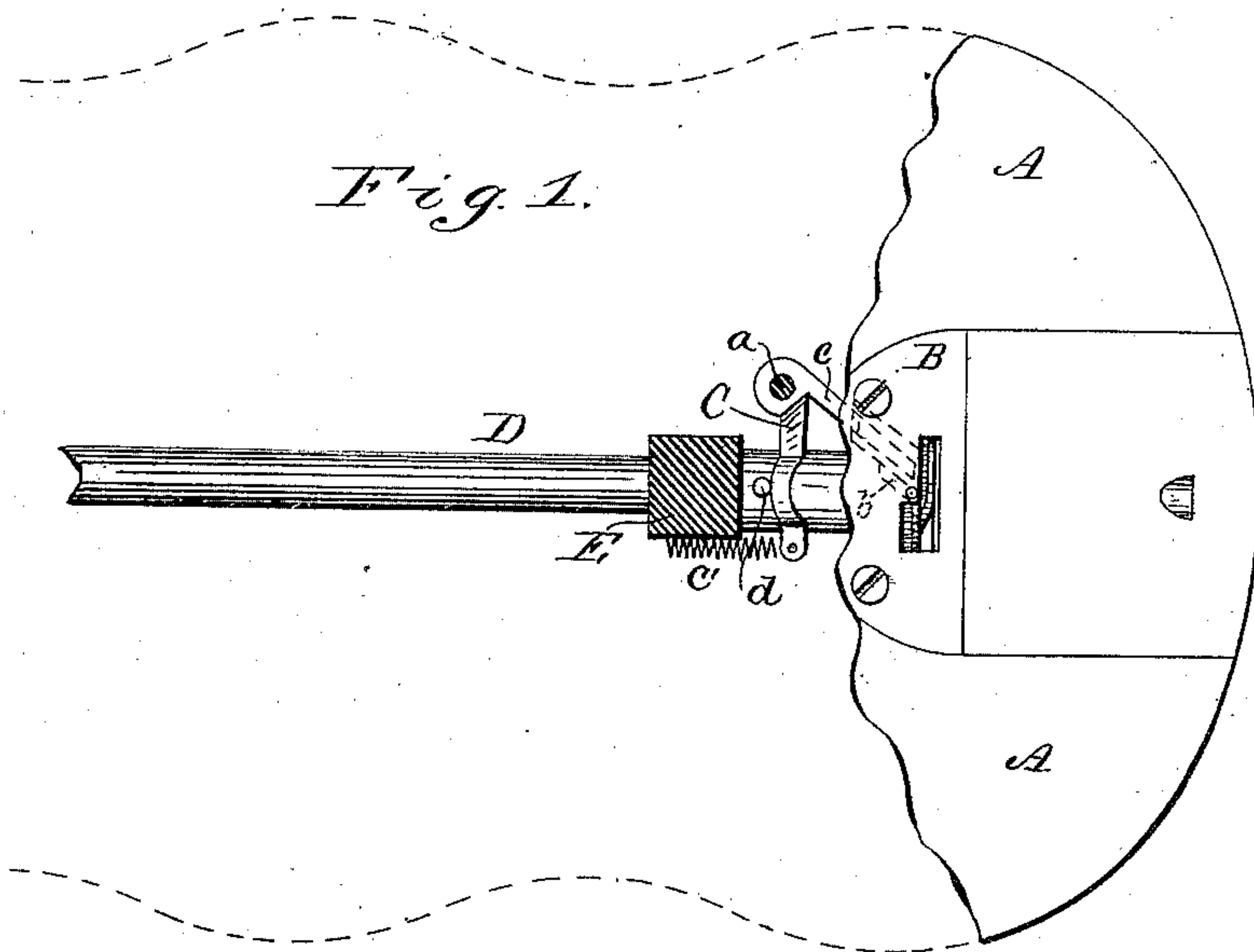
2 Sheets—Sheet 1.

W. L. HEBERLING.

SEWING MACHINE.

No. 343,992.

Patented June 22, 1886.



Witnesses:
E. D. Smith
G. A. Calver.

Inventor:
W^m L. Heberling
by Henry Caldwell
Att'y.

(No Model.)

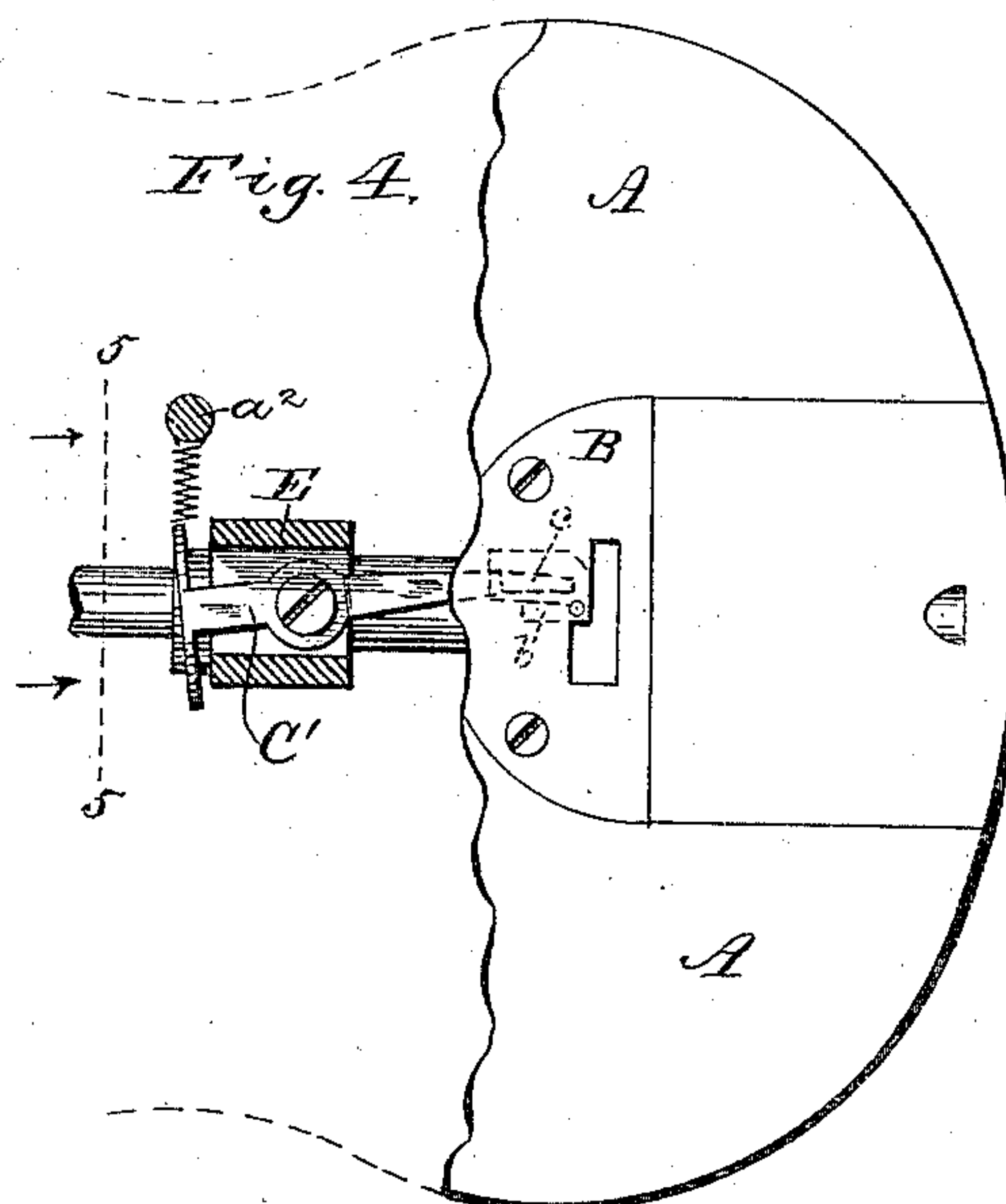
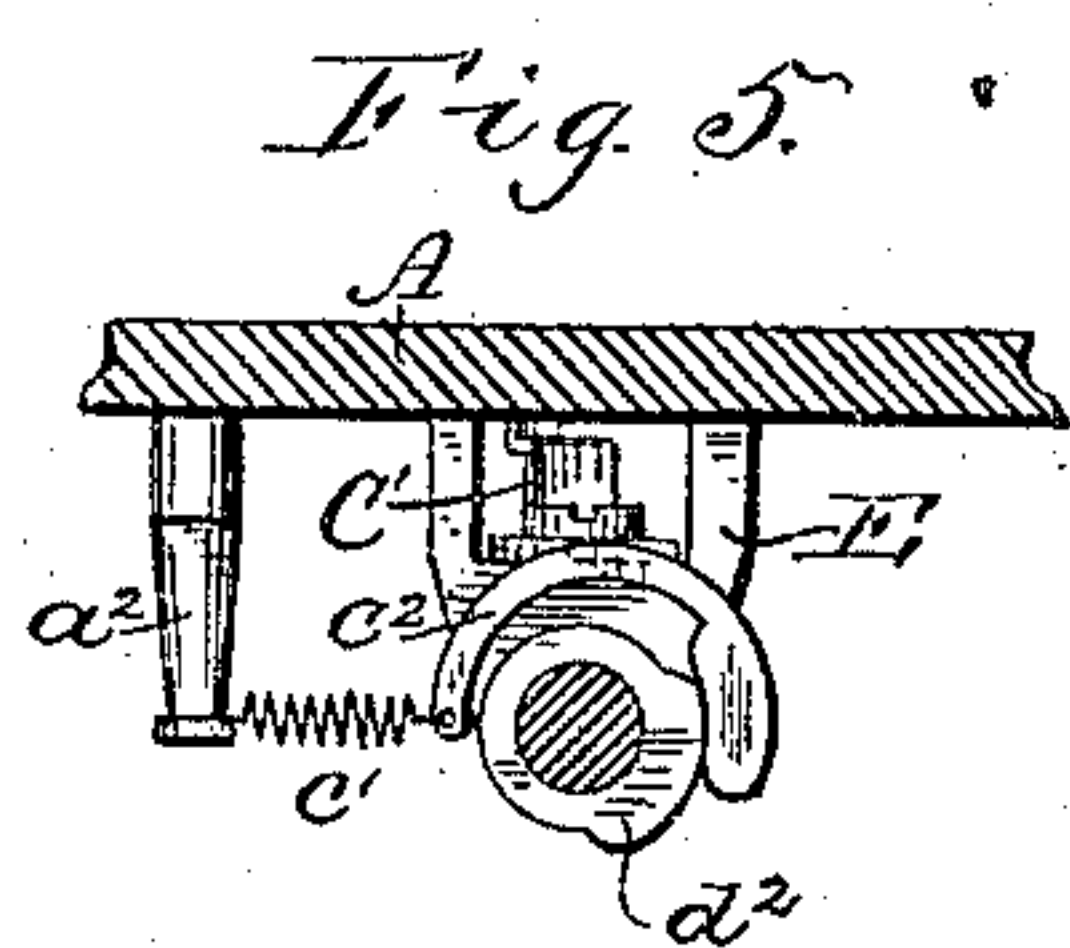
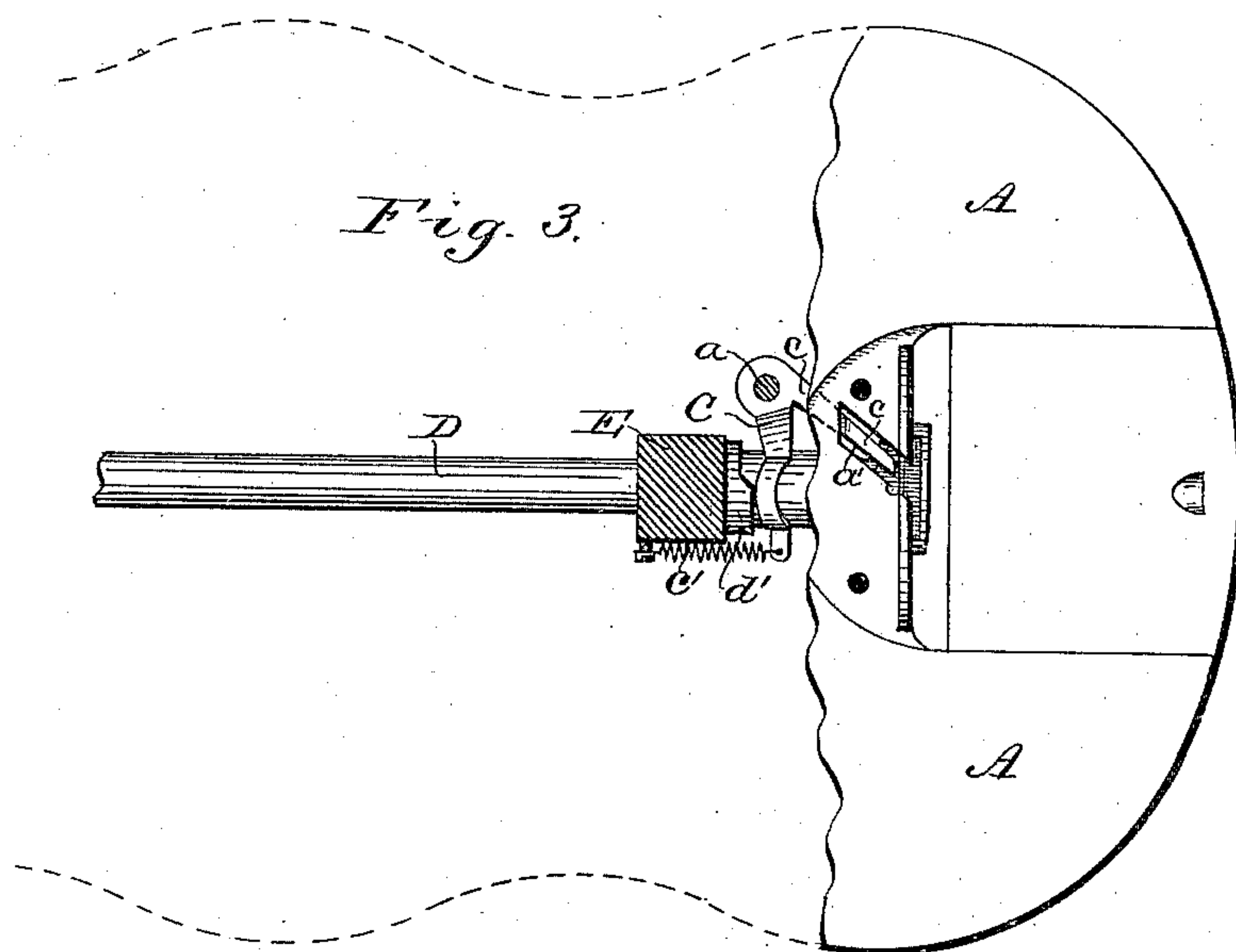
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UNITED STATES PATENT OFFICE.

WILLIAM L. HEBERLING, OF BATH, ASSIGNOR OF ONE-FOURTH TO WARREN
HEBERLING, OF HAVANA, ILLINOIS.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,992, dated June 22, 1886.

Application filed September 30, 1885. Serial No. 178,666. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. HEBERLING, a citizen of the United States, residing at Bath, in the county of Mason and State of Illinois, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

As is well-known to those familiar with rotary and oscillating-shuttle and revolving-hook sewing-machines, in which a large loop of needle-thread is taken below the work-plate in forming stitches, the operator is frequently annoyed when commencing to sew by having the end of the needle-thread pulled below the work-plate when the first loop is expanded by the shuttle or revolving hook. To obviate this difficulty it is the usual practice to secure the end of the needle-thread by placing it beneath the presser-foot, but even then it sometimes escapes and becomes entangled in the shuttle-race or in the rotary hook, and trouble is thus occasioned.

The object of my invention is to obviate this difficulty by providing an automatic thread-retainer which will securely hold the end of the needle-thread by a proper spring-pressure while the loop is being expanded, so that the thread will draw properly through the eye of the needle, and which will be operated at proper intervals to release the thread when the feed and take-up are to act.

In the drawings, Figure 1 is a plan view, with the work-plate partially broken away, of a part of a Singer oscillating-shuttle sewing-machine with my invention applied thereto. Fig. 2 is a sectional elevation of the same. Fig. 3 illustrates a modification of my invention in connection with a rotary-shuttle machine. Fig. 4 shows another modification, and Fig. 5 is a sectional elevation looking from the left of Fig. 4.

A denotes the work-plate of a sewing-machine, and B the throat-plate thereof.

C c indicate the thread-retainer, which is pivoted by a pin, *a*, to the work-plate A, and is preferably made in the form of an elbow-lever, the thread-pressing arm *c* of which is inclined to extend at an angle of about forty-five degrees to the plane in which the shuttle

or hook rotates, or to a line drawn straight across the work-plate. The arm C of the thread-retaining lever is provided with a cam portion adapted to be engaged by pins *d* on the shuttle-operating shaft D if my invention be applied to an oscillating-shuttle machine, or by a face-cam, *d'*, Fig. 3, if my invention be applied to a rotating-shuttle machine. To the arm C is attached a spring, *c'*, which is connected with some stationary part of the machine, as to the bracket E, in which the shaft D has its front bearing, said spring serving to hold the arm *c* of the thread-retaining lever against a bearing-surface afforded by an inclined projection, *b*, on the under side of the throat-plate B, adjacent to the needle-hole, as in Figs. 1 and 2, or a similar surface at the side of an inclined recess, *a'*, in the work-plate, as in Fig. 3. The outer end of the arm *c* of the retaining-lever extends adjacent to the line in which the needle reciprocates, but does not reach outside of this line.

In the modification shown in Figs. 4 and 5 the shaft D is a rotating shaft, and is provided with a cam, *d*², having its acting portion at its periphery. The thread-retaining lever C' is pivoted in a recess in the bracket E, and is provided at its rear end with a yoke, *c*², embracing the cam *d*², said yoke being connected by the retracting-spring *c'* with a depending pin or post, *a*², on the bed-plate A. The lever C' is straight, excepting for two offset bends to bring its forward end up close to the under side of the throat-plate B, so that said end may work in a recess in the under side of said plate and impinge against the projection *b* to hold the thread at intervals.

The operation of my invention is as follows: When the machine is started to begin to sew, the threaded needle descends, carrying with it a loop of thread, the inner limb of which, when the loop is engaged by the point of the shuttle, is forced laterally between the forward arm of the retaining-lever and the bearing-surface on the side of the projection *b*, or the side of the recess *a* in the work-plate against which said arm is normally held by the spring *c'*.

In the form of my invention shown in Figs. 1 and 2 the pins *d* on the shaft D are so placed that as soon as the inner shorter limb of the thread-loop has been forced by the point of

the shuttle between the arm *c* and its bearing-surface the end of the thread will be caught and held between said arm and bearing-surface while the shuttle passes through the loop, which will be enlarged in the proper manner by drawing the thread through the eye of the needle. The thread will then be released by the action of one or the other of the pins *d* on the arm *C* of the retaining-lever, the action of the pins being to force the lever in the direction opposite to the action of the spring *c'*. Thus the thread will be held against a bearing-surface by spring-pressure when the shuttle first catches the needle-loop, and will be released at intervals to enable the feed and take-up to work properly.

In the forms of my invention shown in Figs. 3, 4, and 5 the cams *d'* and *d''* will operate on the thread-retaining levers to hold their forward ends away from their co-operating bearing-surfaces during about one-third of the revolutions of the shuttle-operating shafts, the parts being so timed that the thread-retainers will catch the thread at the moment the shuttle or rotary hook begins to expand the loop, and will hold it until the loop is entirely expanded, releasing it in time for the take-up and feed to perform their proper functions in the usual manner.

I prefer to form the bearing-surface for my thread-retainers at the sides of recesses in the under sides of the throat-plates, as indicated in Figs. 1, 2, and 4, as this will bring the forward end of the thread-retaining arm quite near to the upper surface of the throat-plate, and thus permit the shuttle or revolving hook to be as high or as near to the needle as possible. I also prefer to arrange the working-arm or bearing portion of the thread-retainer at an inclination to the plane in which the shuttle or hook rotates, as shown in Figs. 1 and 3, as this arrangement of said arm enables it to catch the loop of the needle-thread better or with more certainty than it could if extended at a right angle to the plane of rotation of the shuttle, or as in Fig. 4.

It will of course be understood that my device serves a useful purpose only at the first stitch when beginning to sew with a thread the short end of which is not secured to the work, and that its operation is idle thereafter until a new piece of work is commenced or the needle is again newly threaded; but as the parts are constructed so as to be very light and

easily operated, the continued action thereof will not appreciably increase the power required to run the machine, while the automatic operation of my invention, which is always in readiness to perform its function, will enable the operator to begin to sew at any time without taking the trouble to secure the end of the needle-thread. It will also be apparent that the pins *d* (shown in Figs. 1 and 2) are the equivalents for the cams *d'* and *d''*, (shown in Figs. 3, 4, and 5,) said pins on the oscillating shuttle-shaft performing the same functions as the cams on the rotating shafts.

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

1. In a sewing-machine, the combination, with a vibrating thread-retaining lever, of a throat-plate provided on its under side adjacent to the needle-hole with a bearing-surface, against which one arm of said lever impinges at intervals, substantially as set forth.

2. In a sewing-machine, the combination, with a vibrating thread-retaining lever having an inclined arm, of an inclined bearing-surface adjacent to the vertical line in which the needle reciprocates, against which the outer end of said arm impinges at intervals, substantially as set forth.

3. In a sewing-machine, the combination, with a thread-retaining lever having an inclined arm, of a throat-plate provided on its under side inside of the needle-hole with an inclined bearing-surface, a spring for holding said arm against said bearing-surface, and a shaft having a device for moving said lever in opposition to the action to said spring at intervals, substantially as set forth.

4. In a sewing-machine, the combination, with the work-plate, of a bell-crank or elbow thread-retaining lever pivoted to said work-plate, and having a cam-surface on one of its arms, a co-operating bearing-surface against which the other arm of said lever impinges, a spring for holding the bearing-arm against said surface, and a shaft having a device for moving said lever in opposition to the action of said spring, substantially as set forth.

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

WILLIAM L. HEBERLING.

Witnesses:

HENRY CALVER,
CLARENCE E. DOYLE.