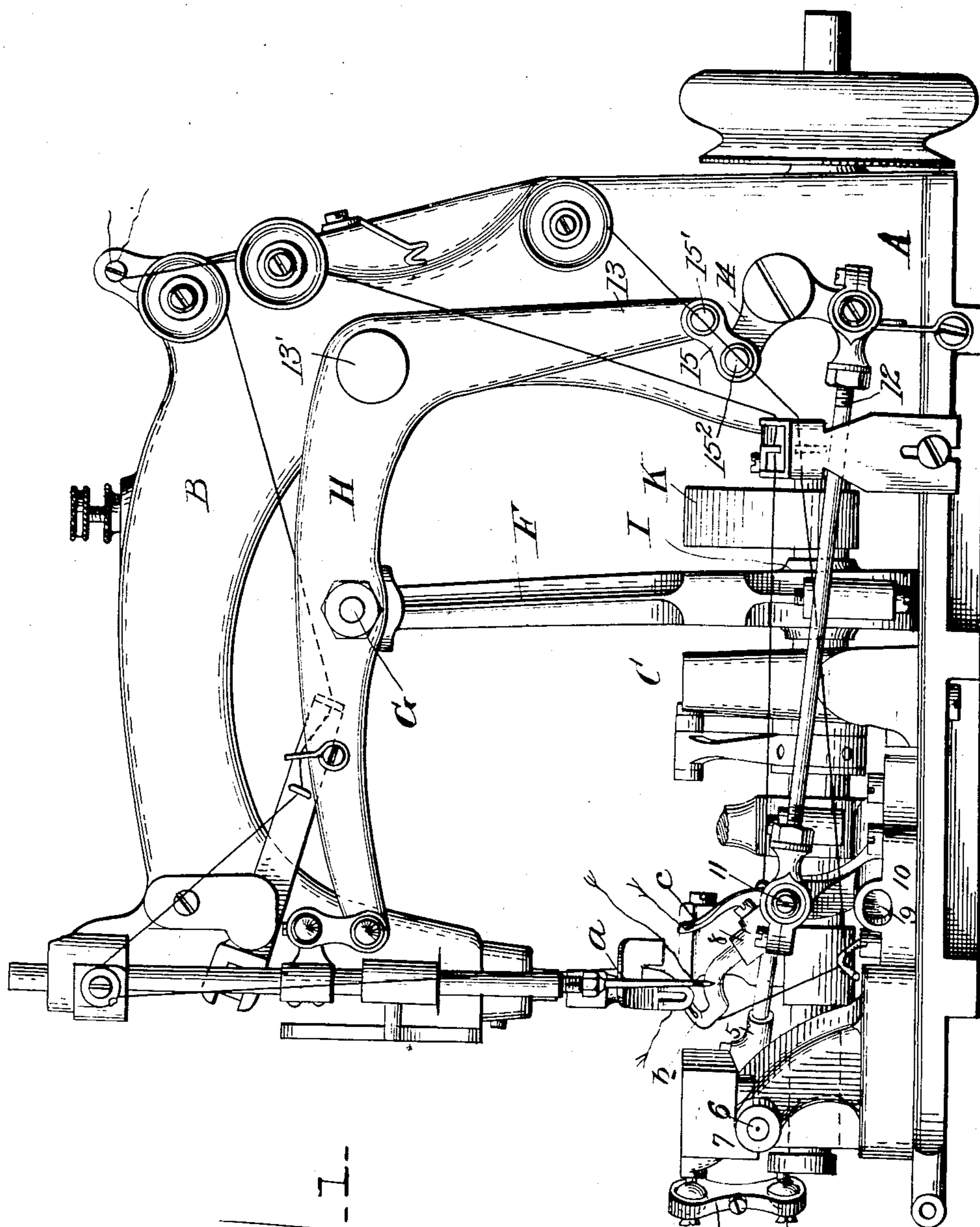


962,974.

L. ONDERDONK.
SEWING MACHINE.
APPLICATION FILED JULY 26, 1904.

Patented June 28, 1910.
13 SHEETS—SHEET 1.



WITNESSES
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L. ONDERDONK.
SEWING MACHINE.

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Patented June 28, 1910.

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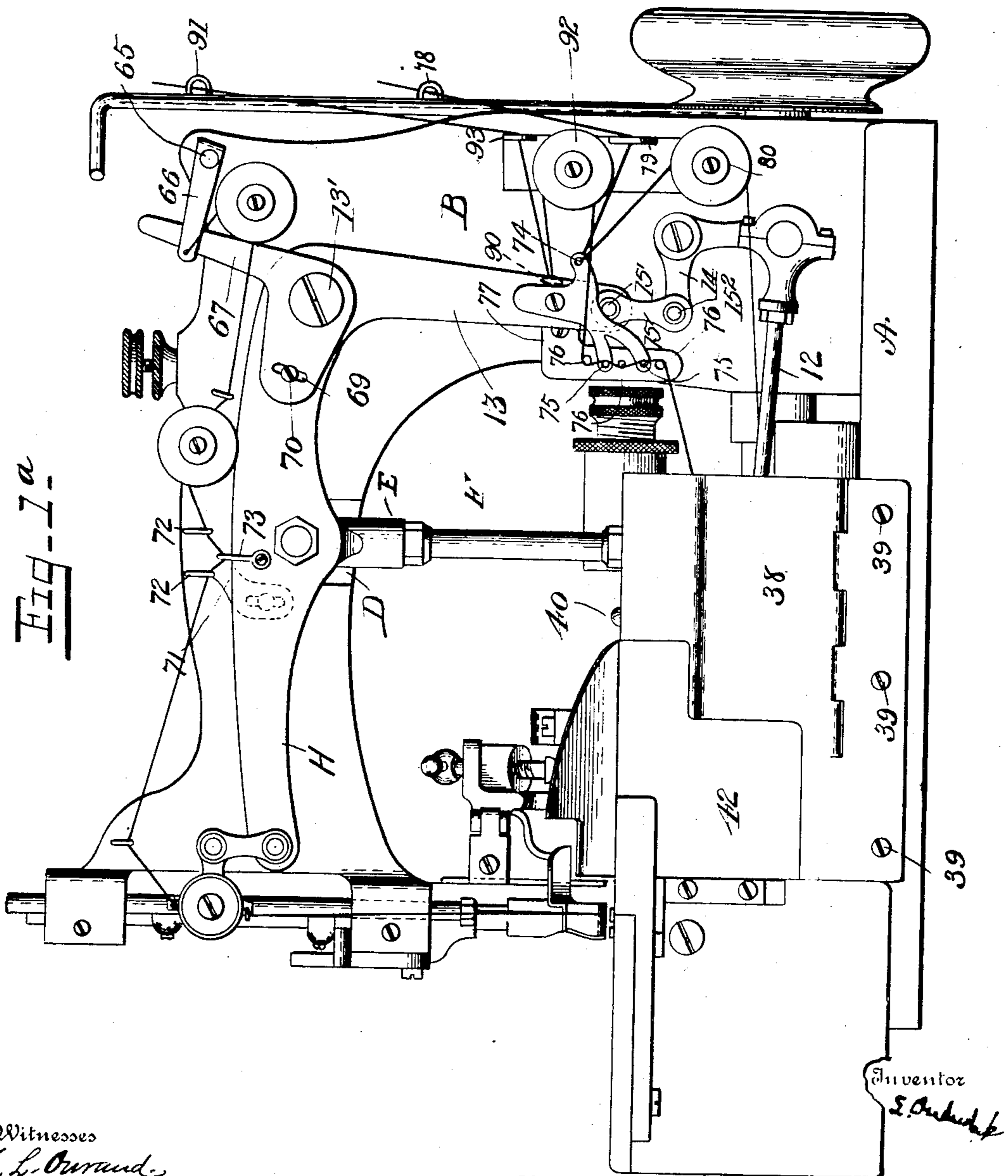


FIG. 1a

Witnesses
F. L. O'Rand.

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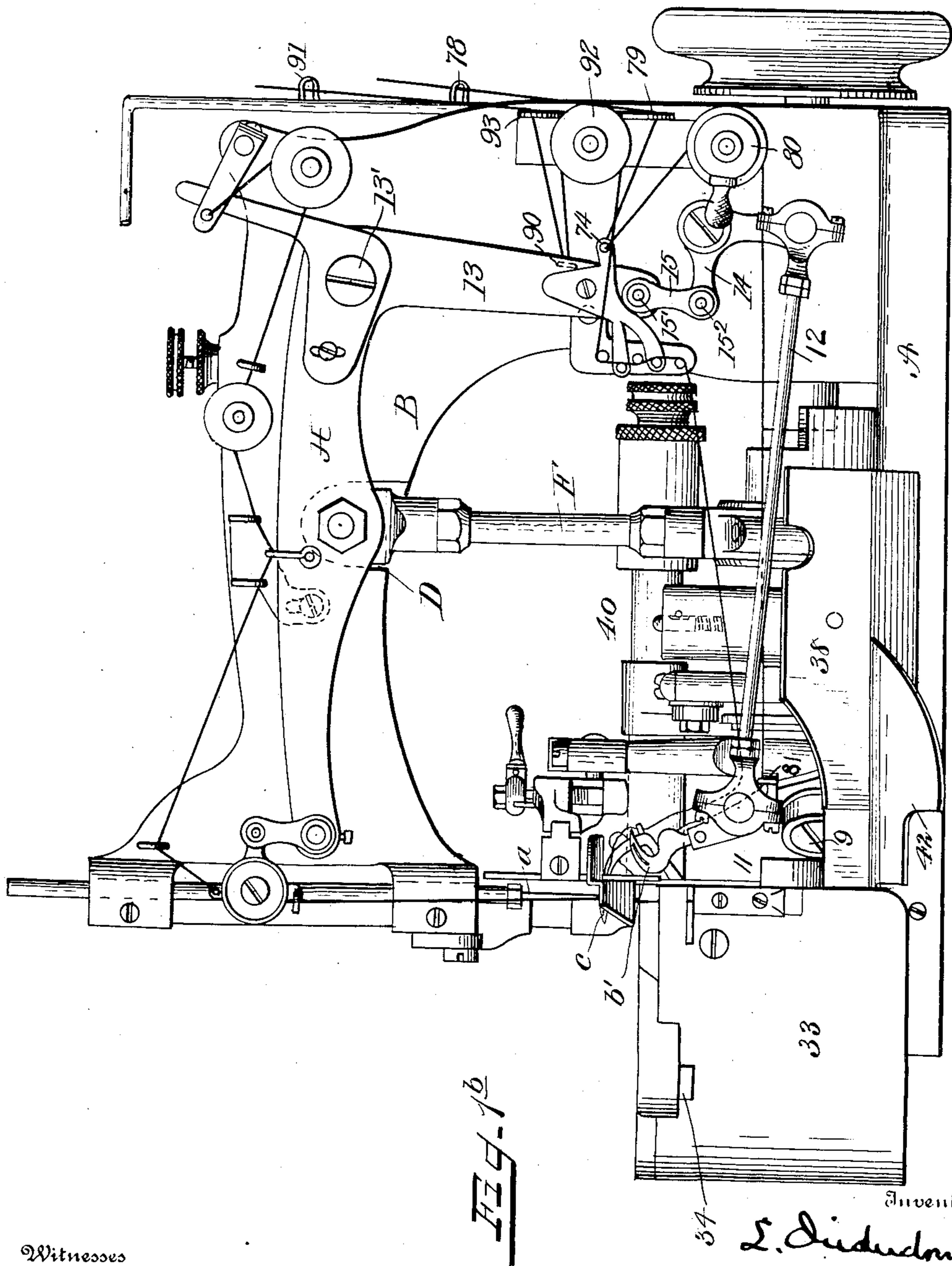
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13 SHEETS—SHEET 3.



Witnesses
F. L. Ourand
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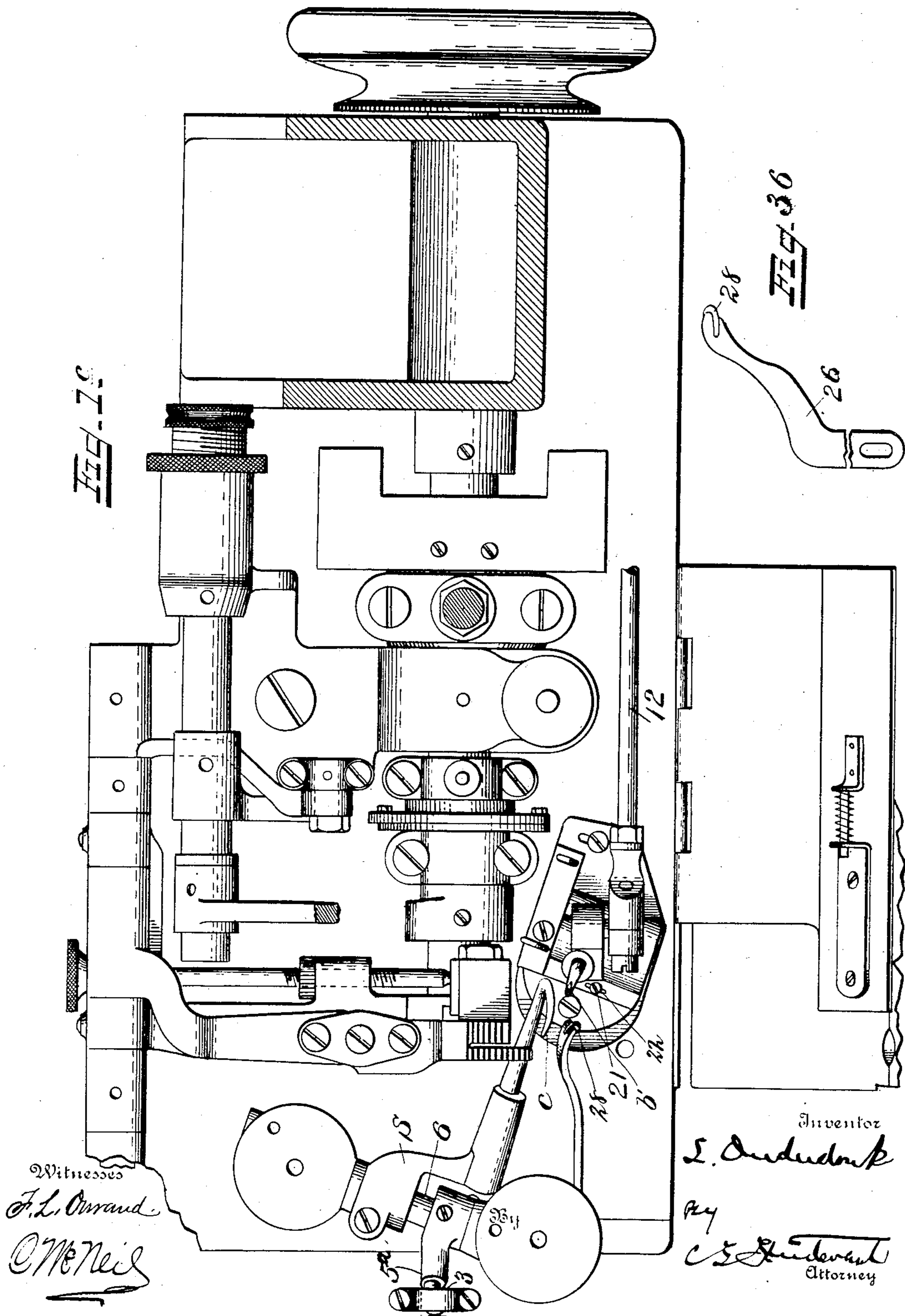
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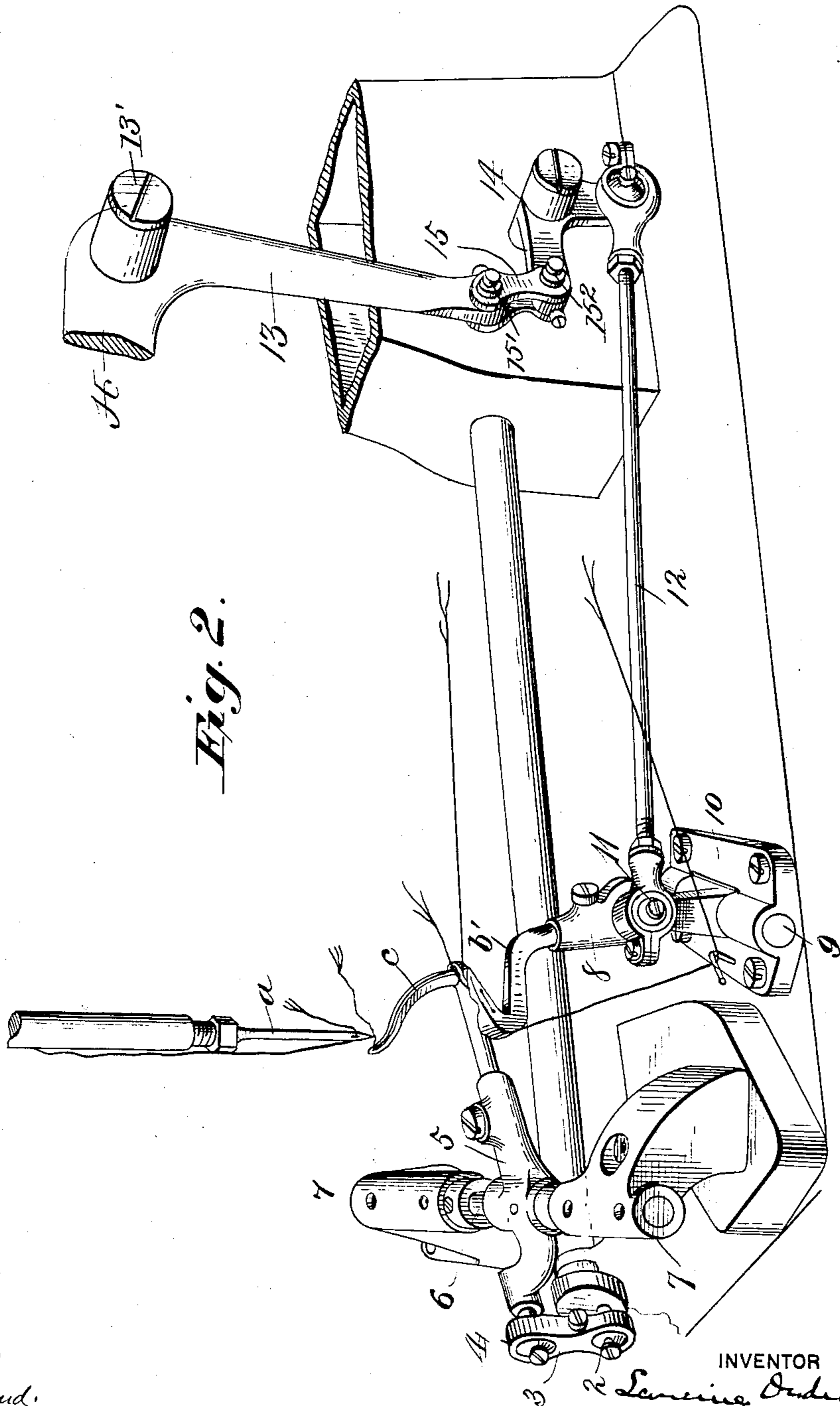


Fig. 2.

WITNESSES

F. L. Olmstead.
C. M. Neil

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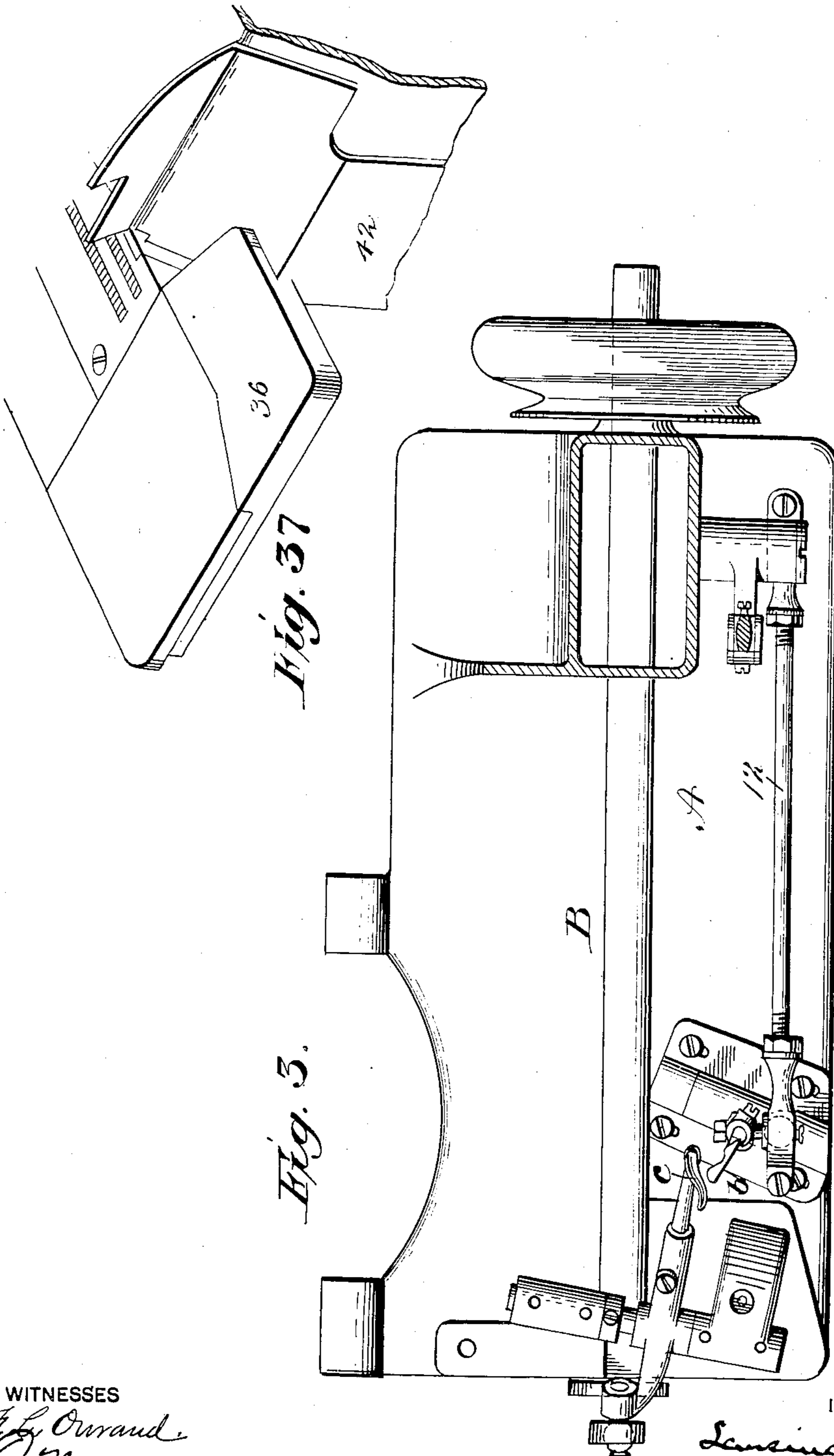
L. Onderdonk
By C. D. Stouten
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Patented June 28, 1910.

13 SHEETS—SHEET 6.



WITNESSES
F. L. Ormand.
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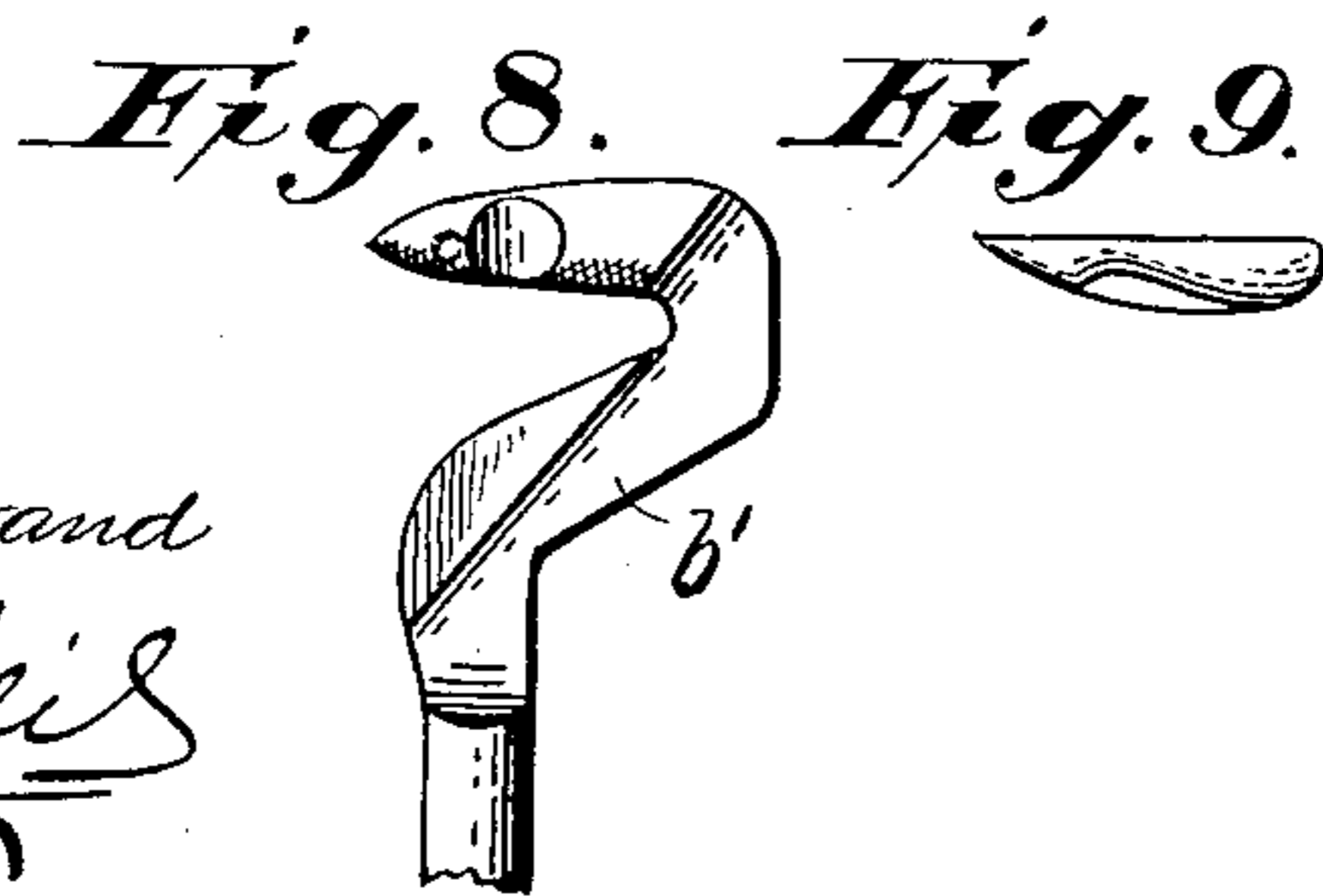
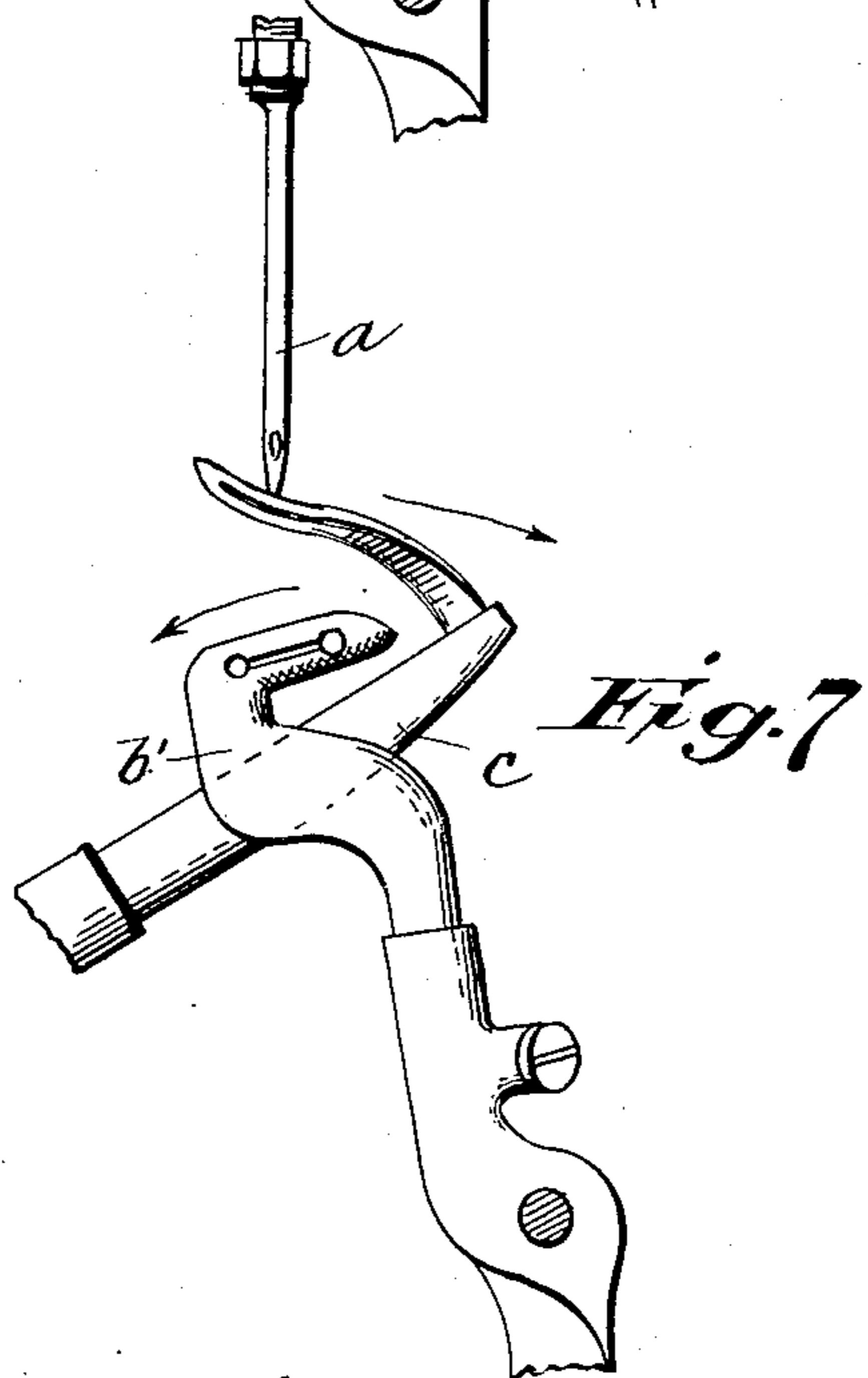
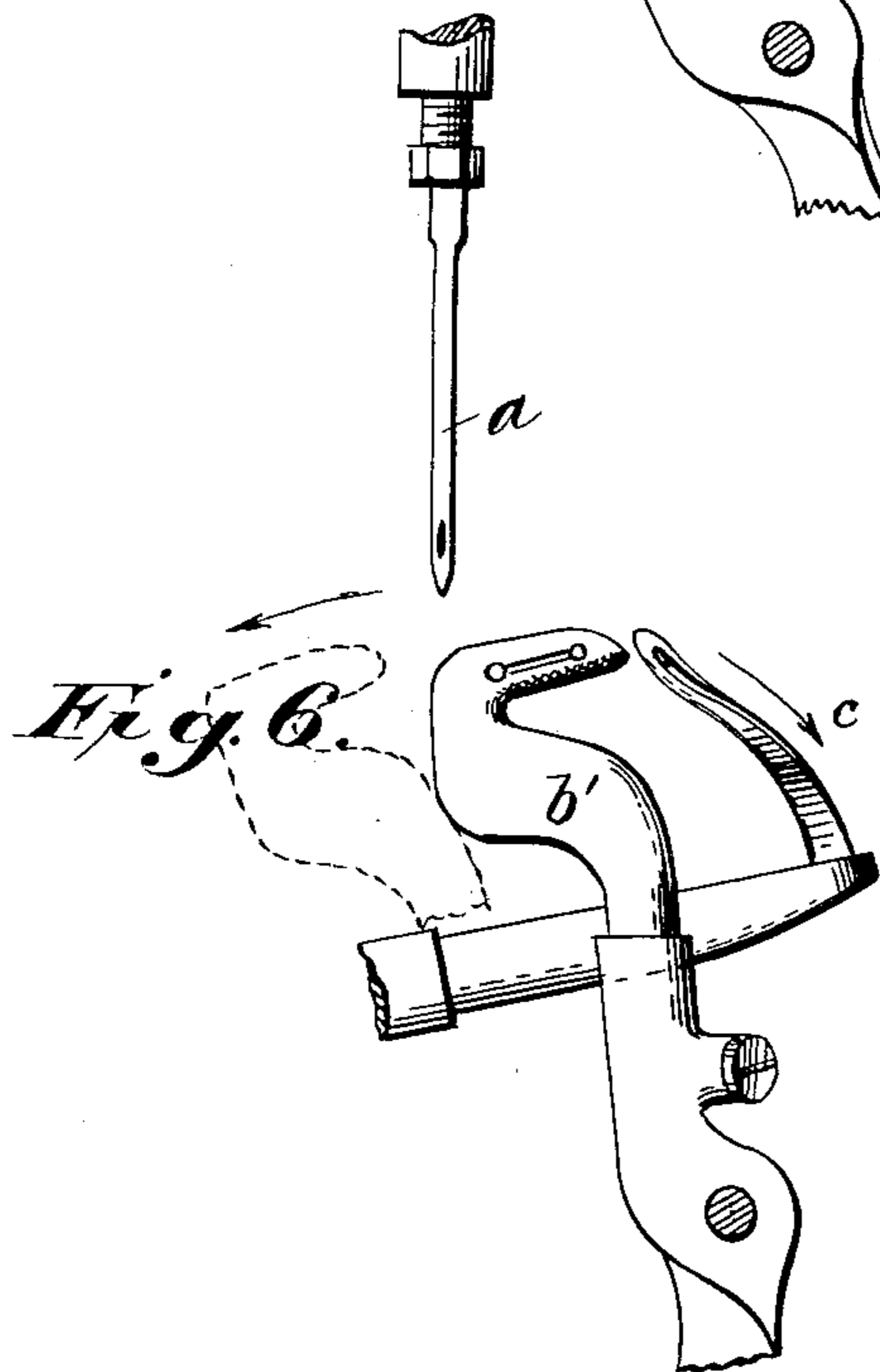
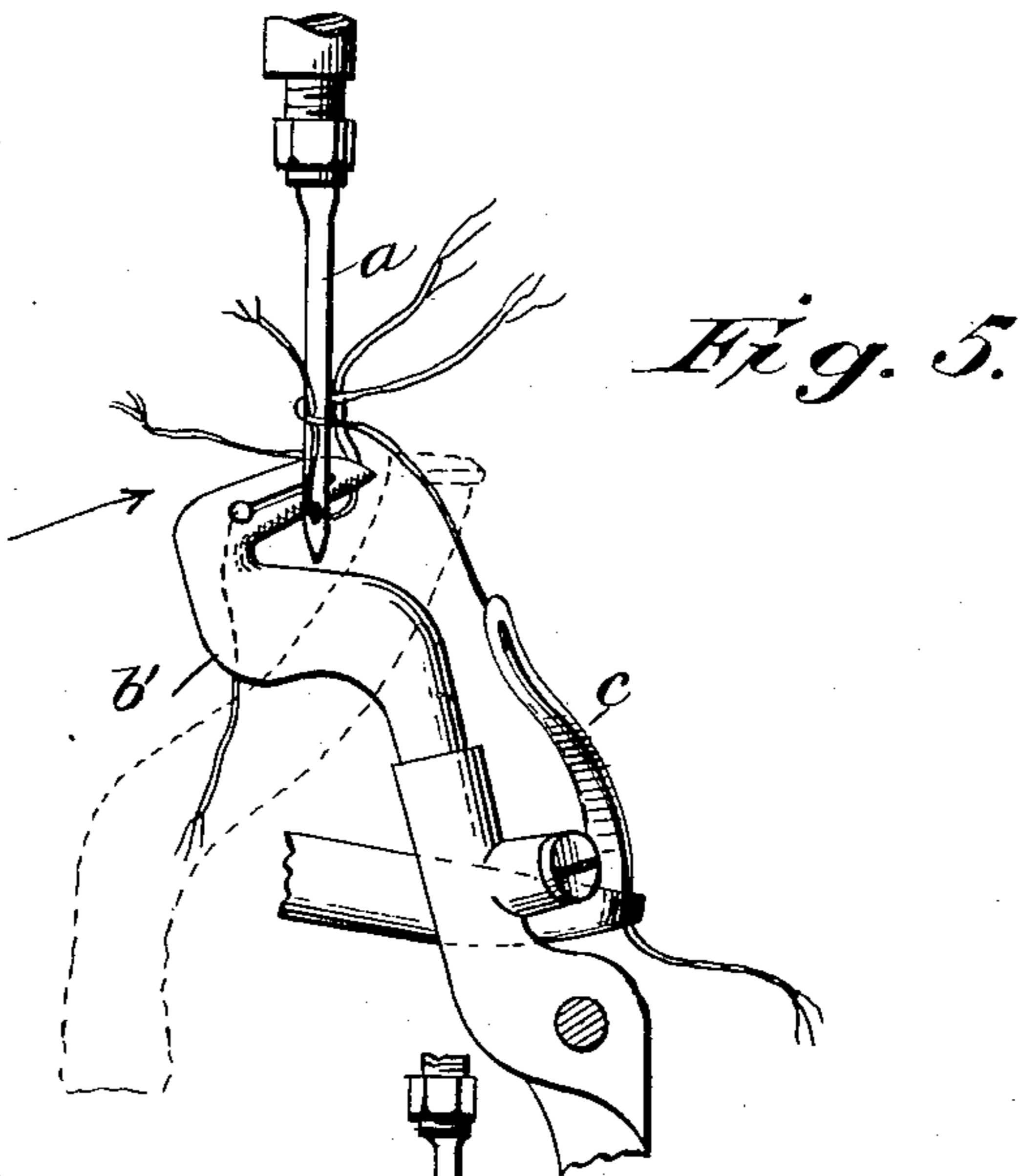
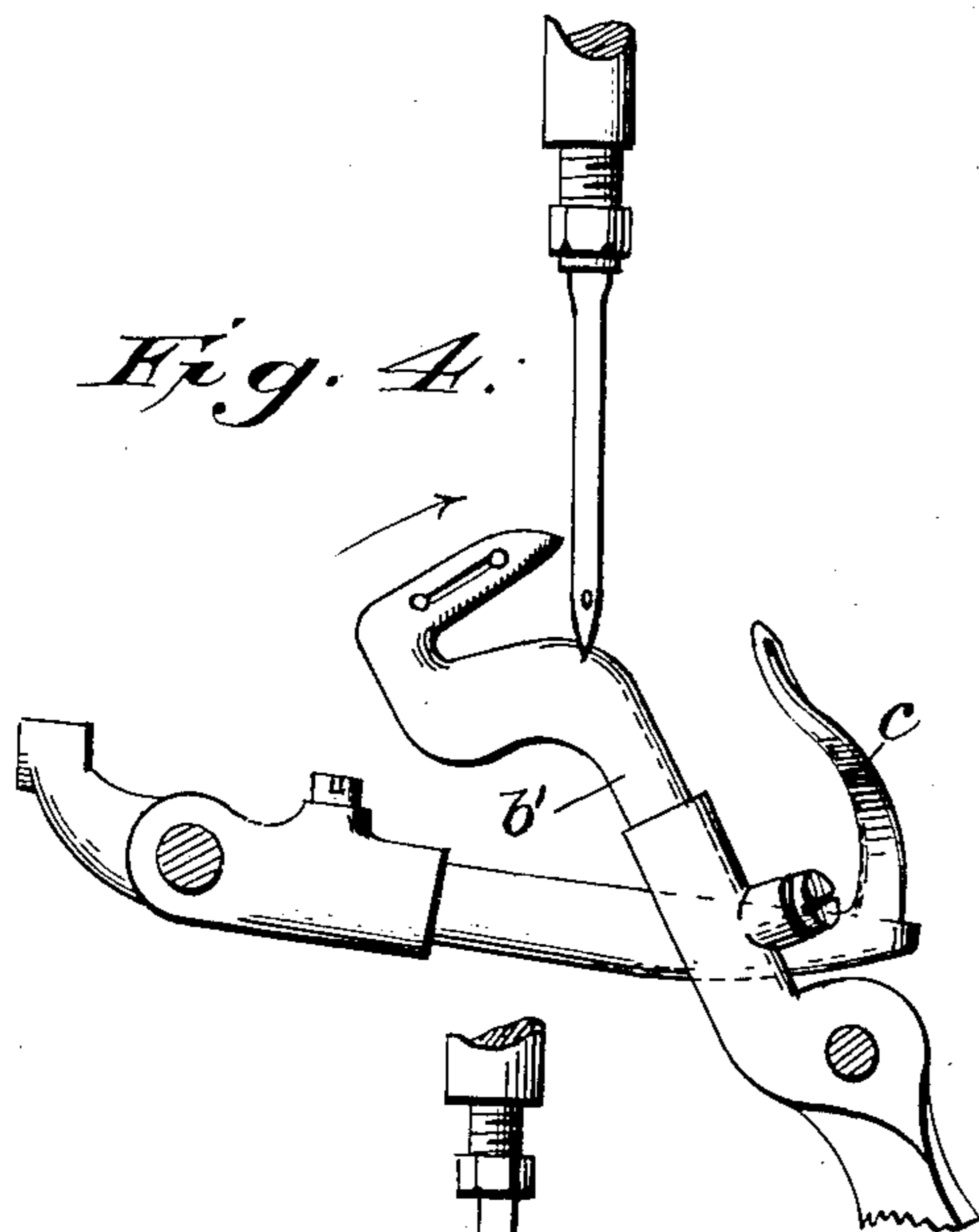
L. ONDERDONK.
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APPLICATION FILED JULY 26, 1904.

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Patented June 28, 1910.

13 SHEETS—SHEET 7.



WITNESSES
F. L. Curran
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13 SHEETS—SHEET 8.

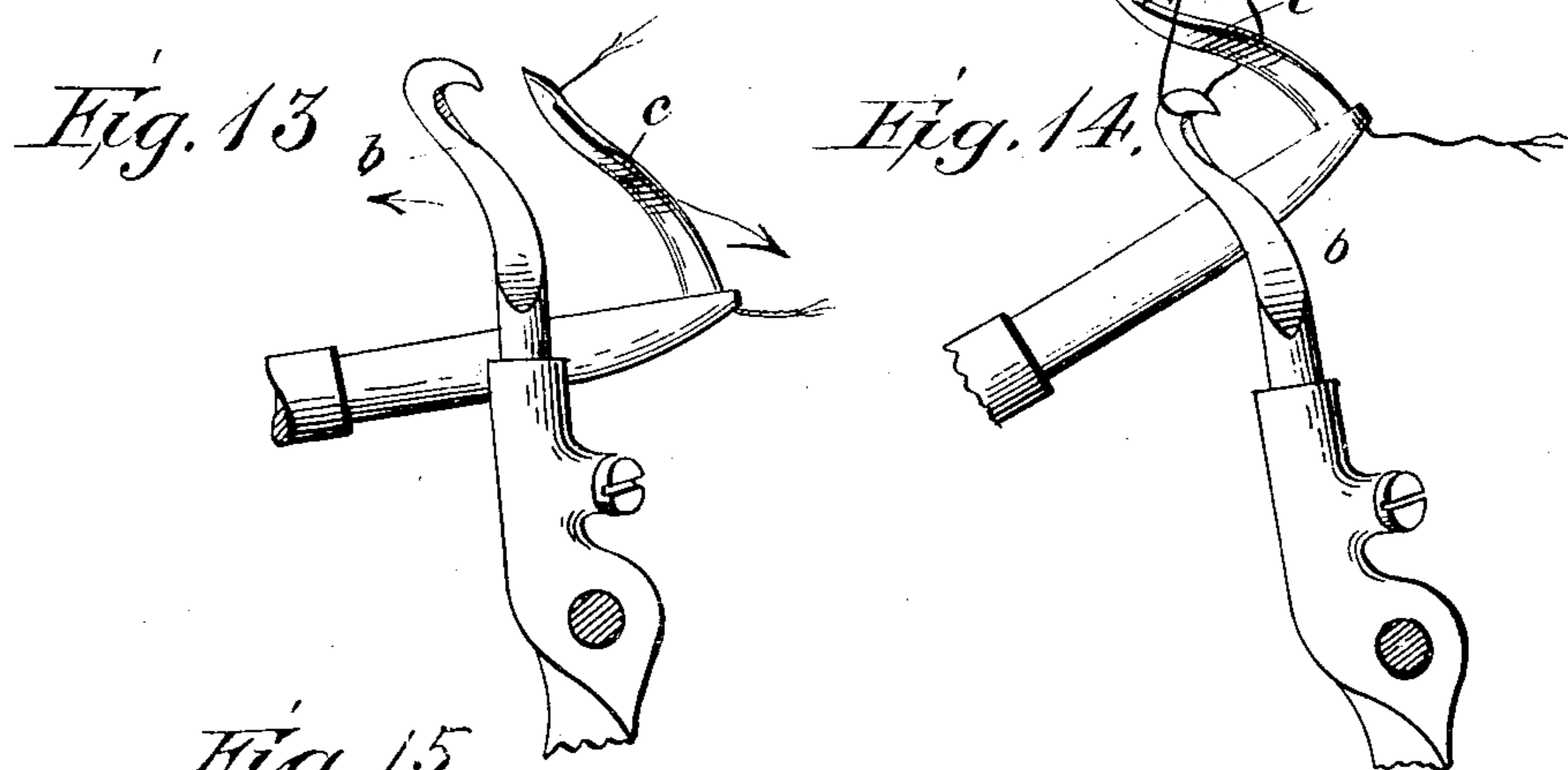
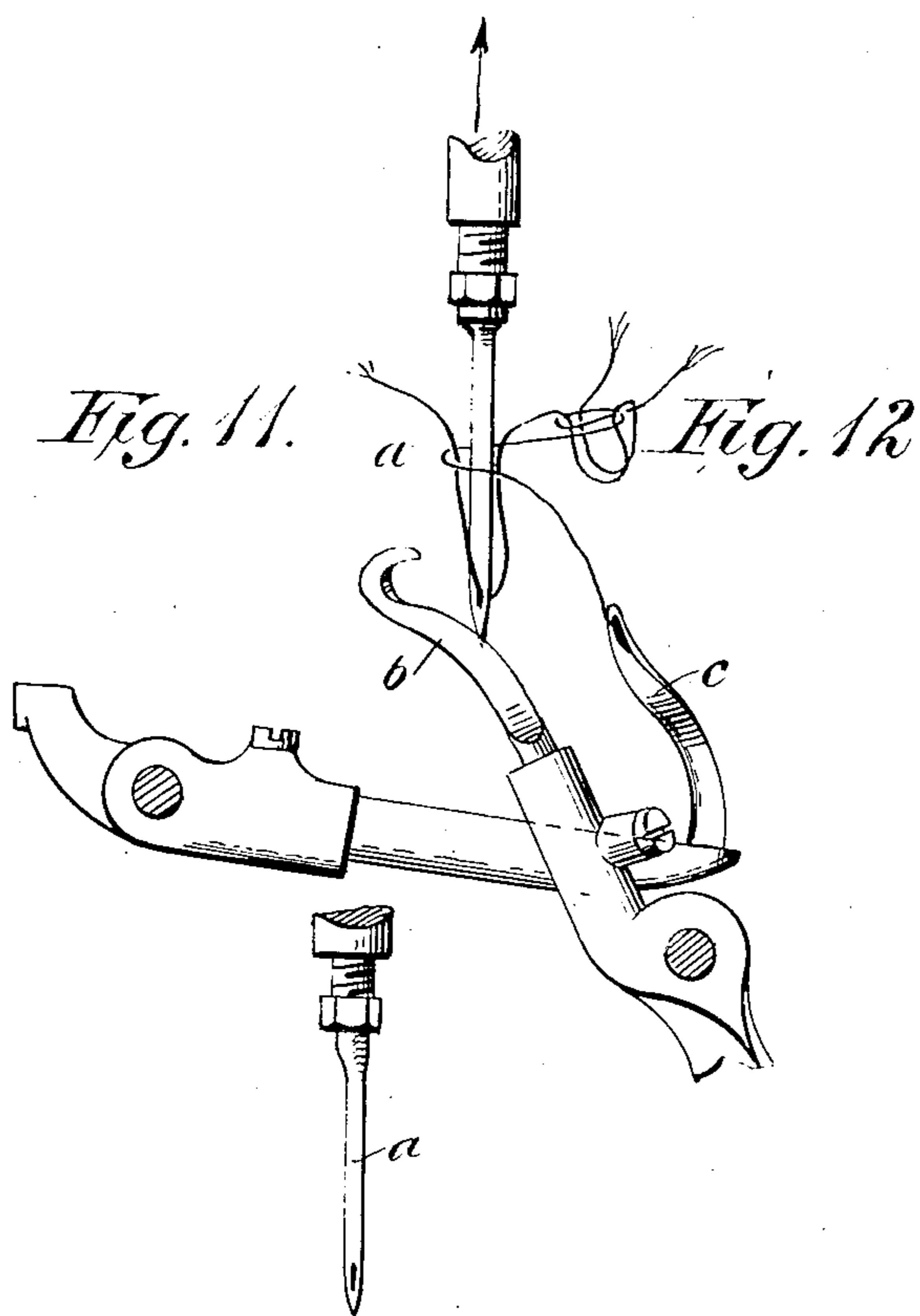
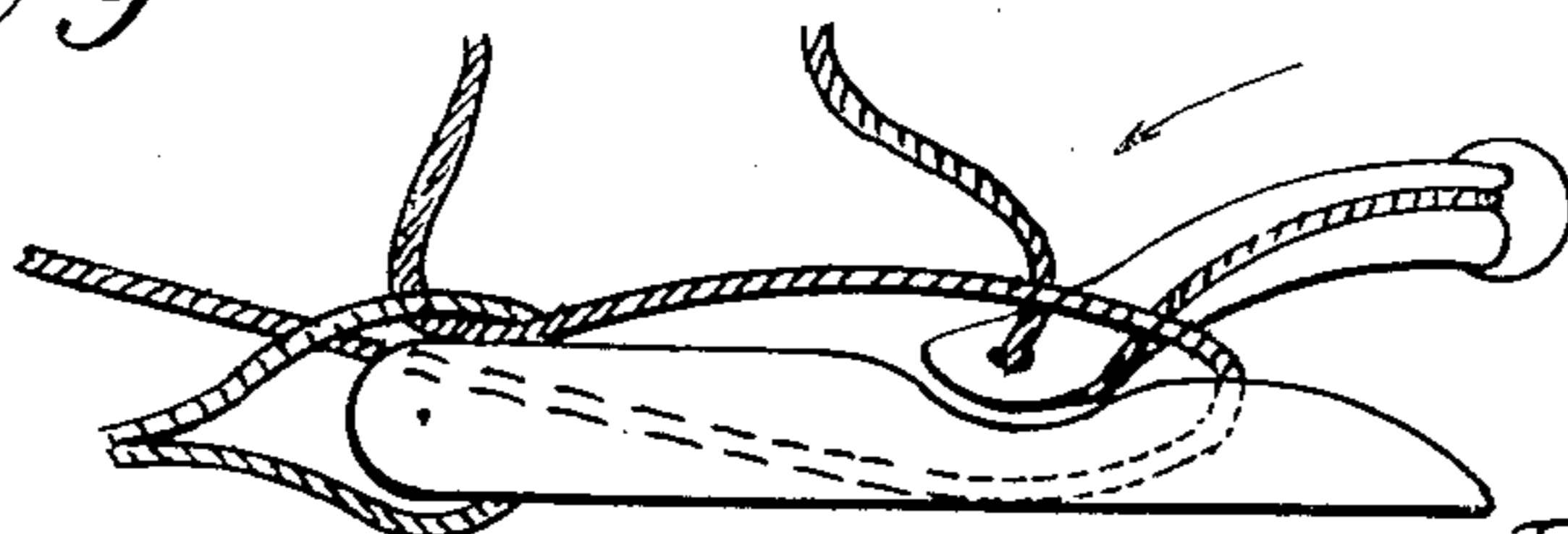


Fig. 15

WITNESSES
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962,974.

L. ONDERDONK.
SEWING MACHINE.
APPLICATION FILED JULY 26, 1904.

Patented June 28, 1910.

13 SHEETS—SHEET 9.

Fig. 19.

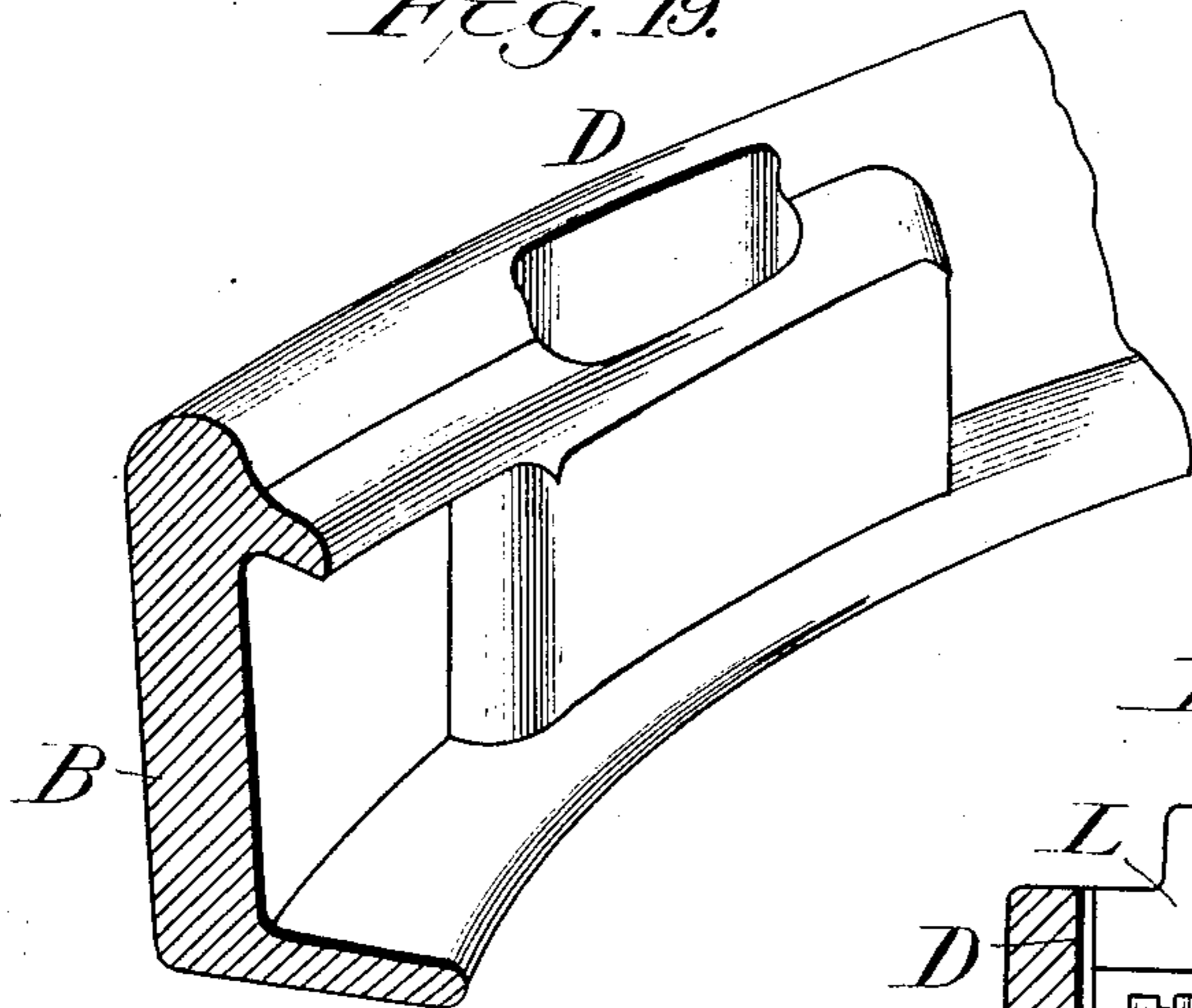


Fig. 20.

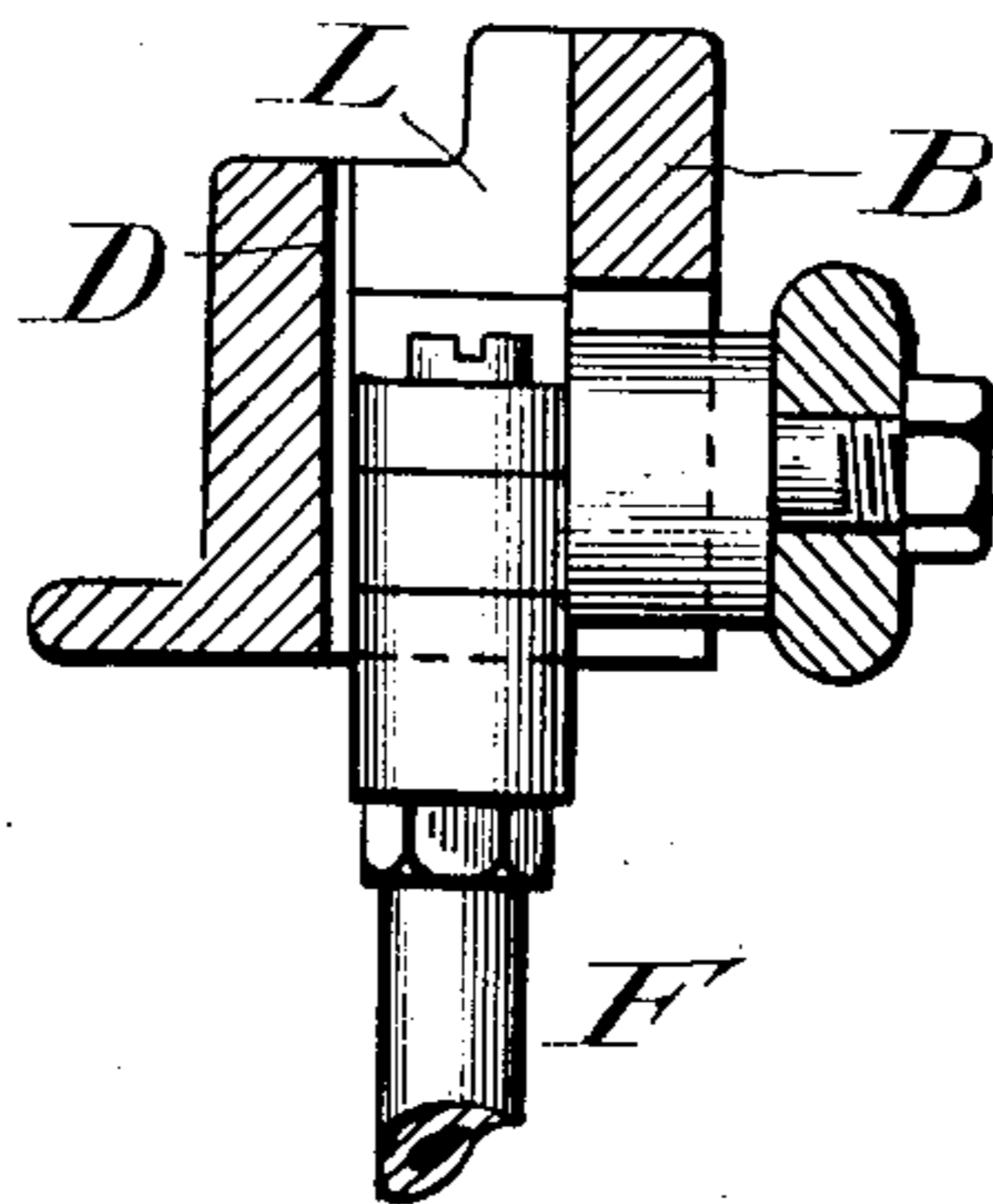


Fig. 16.

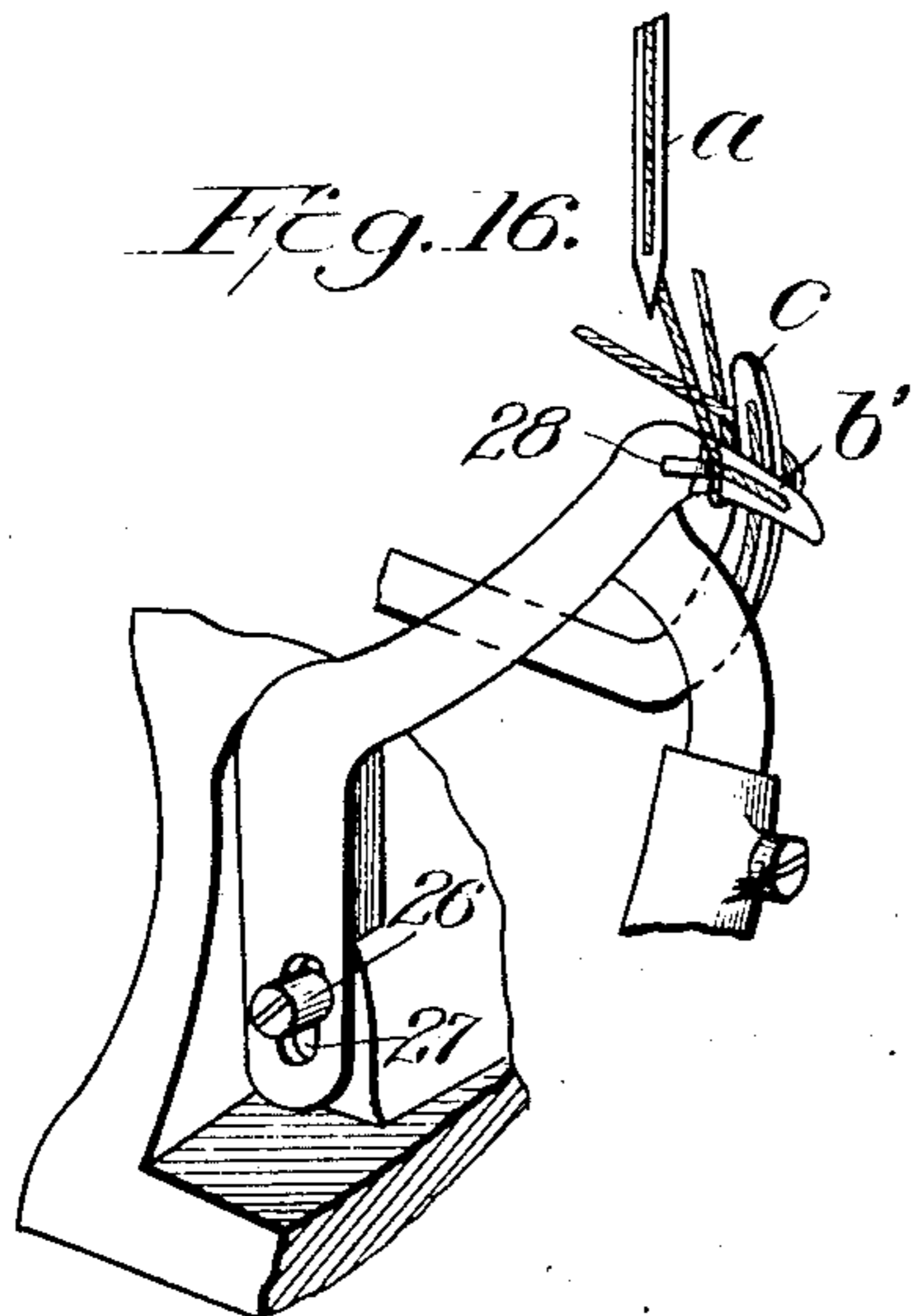


Fig. 18.

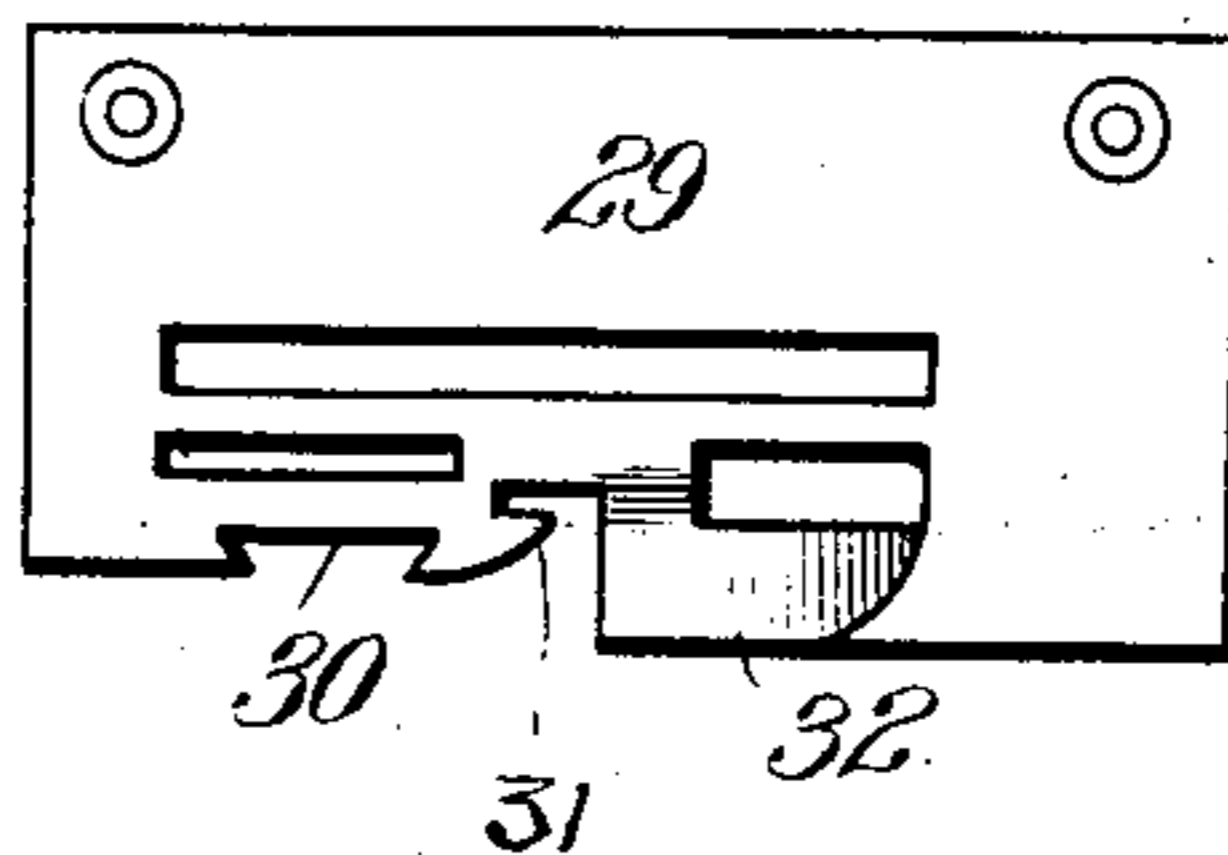
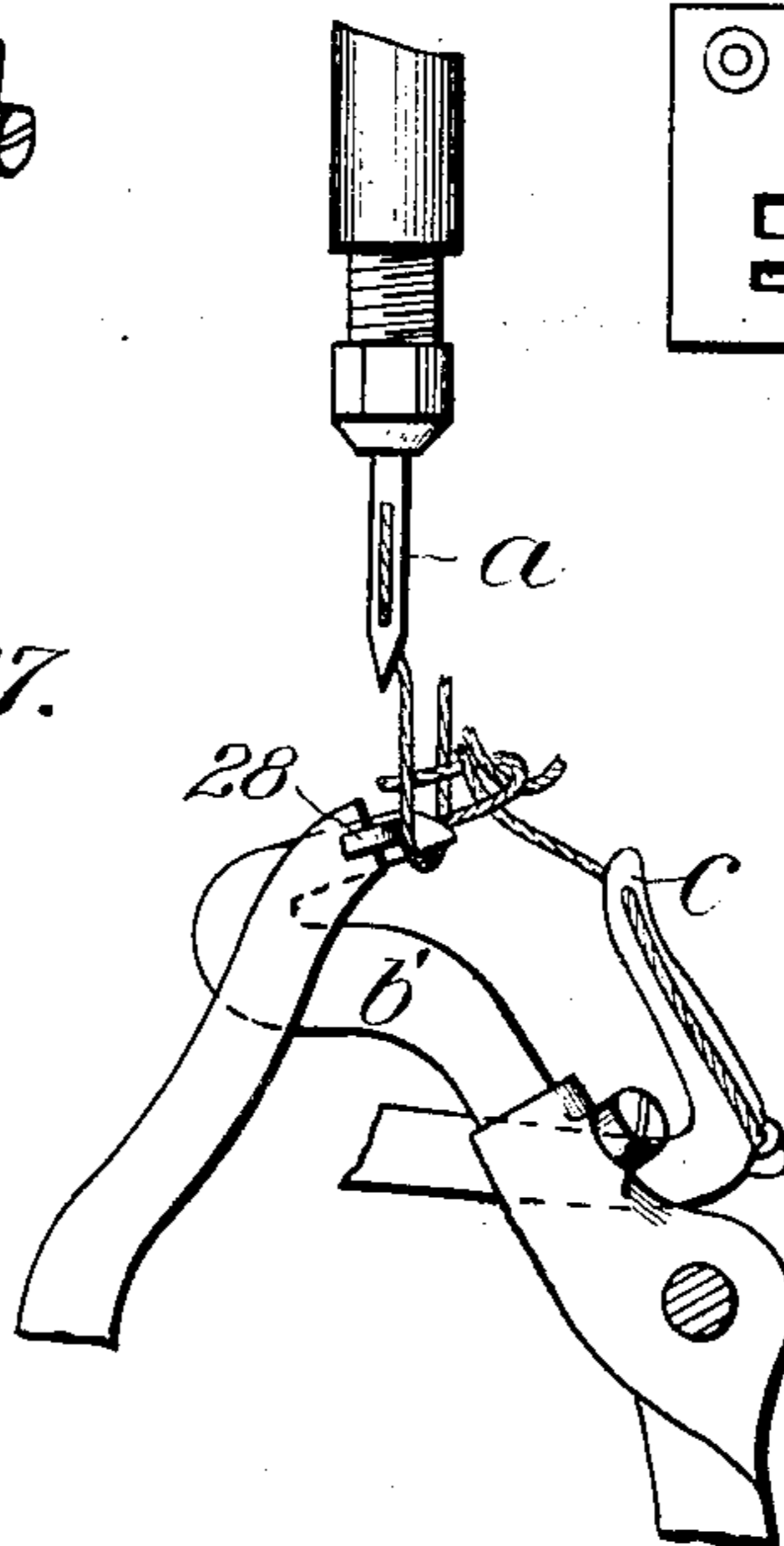


Fig. 17.



Witnesses

E. H. Walker.
E. G. Mason

Inventor

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C. S. Sturtevant

Attorney

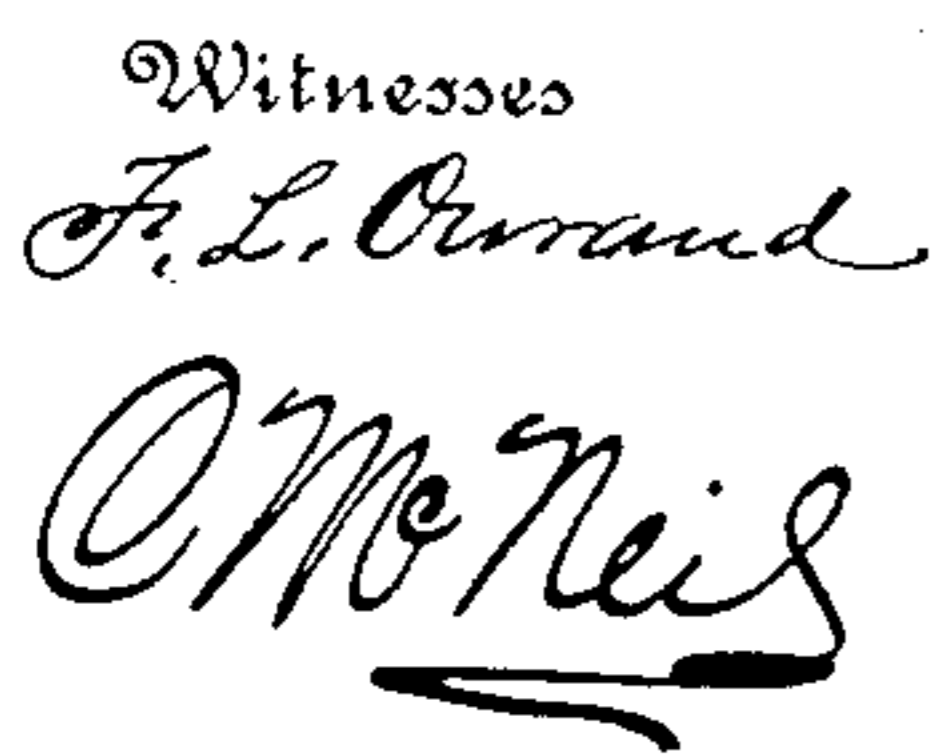
SEWING MACHINE.

APPLICATION FILED JULY 26, 1904.

962,974.

Patented June 28, 1910.

13 SHEETS—SHEET 10.



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962,974.

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13 SHEETS—SHEET 11.

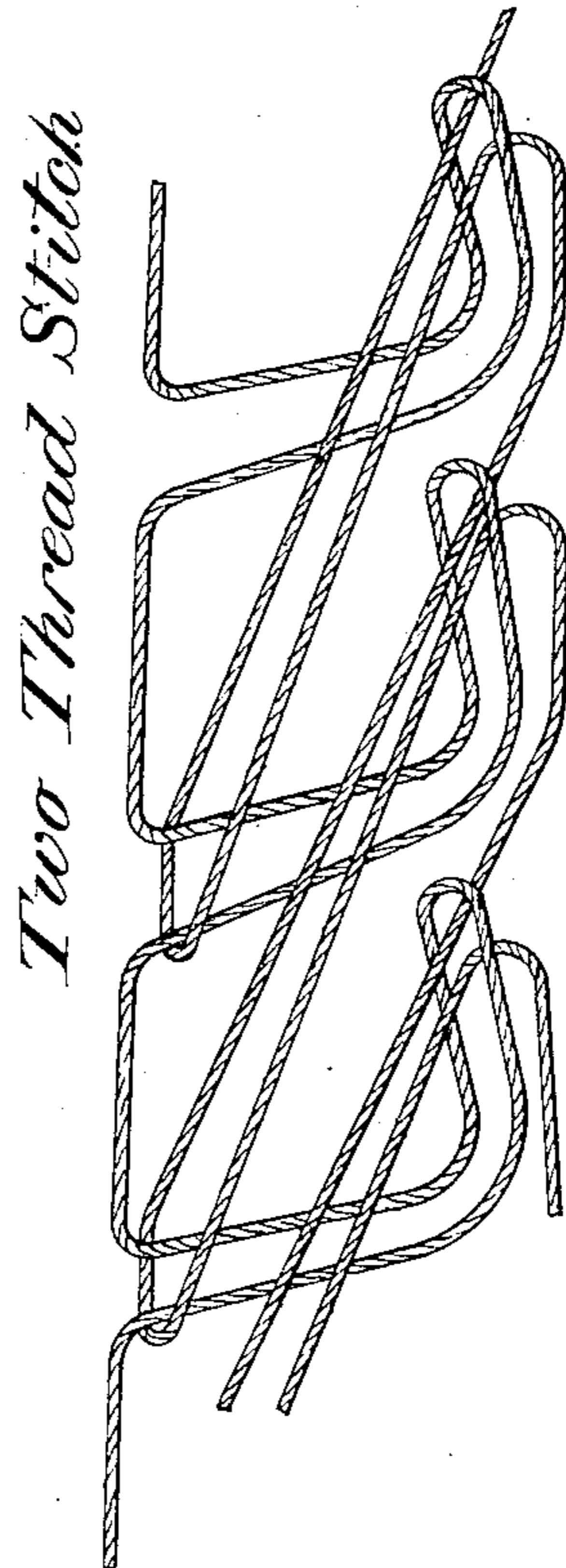
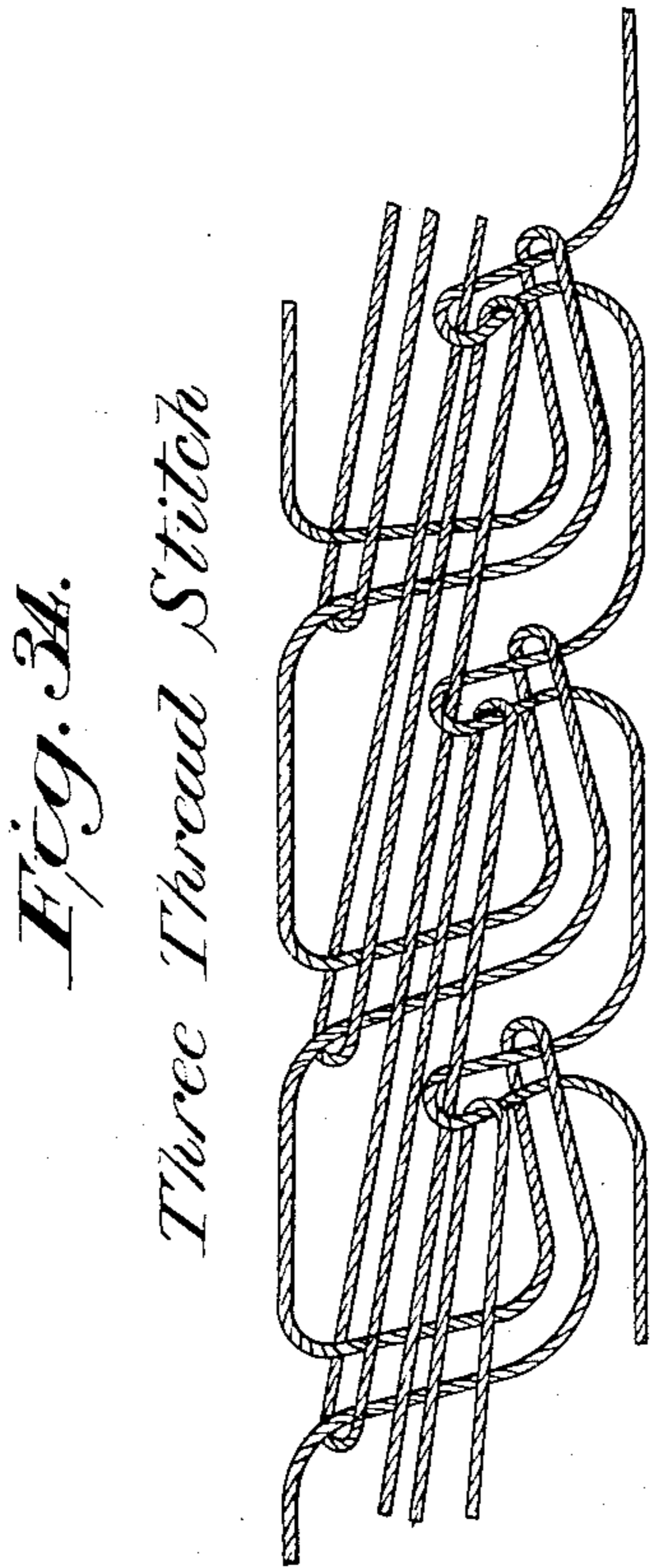
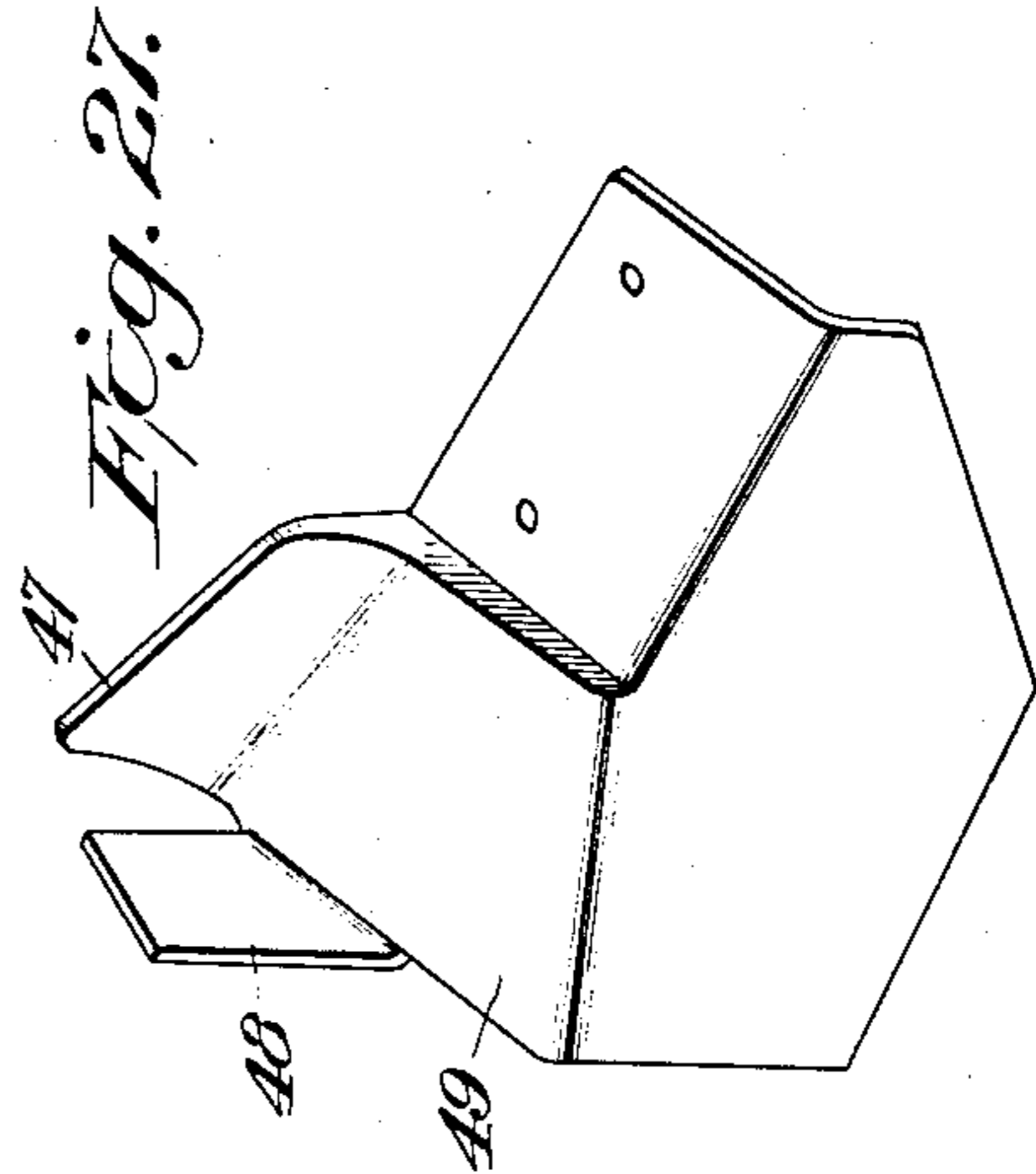
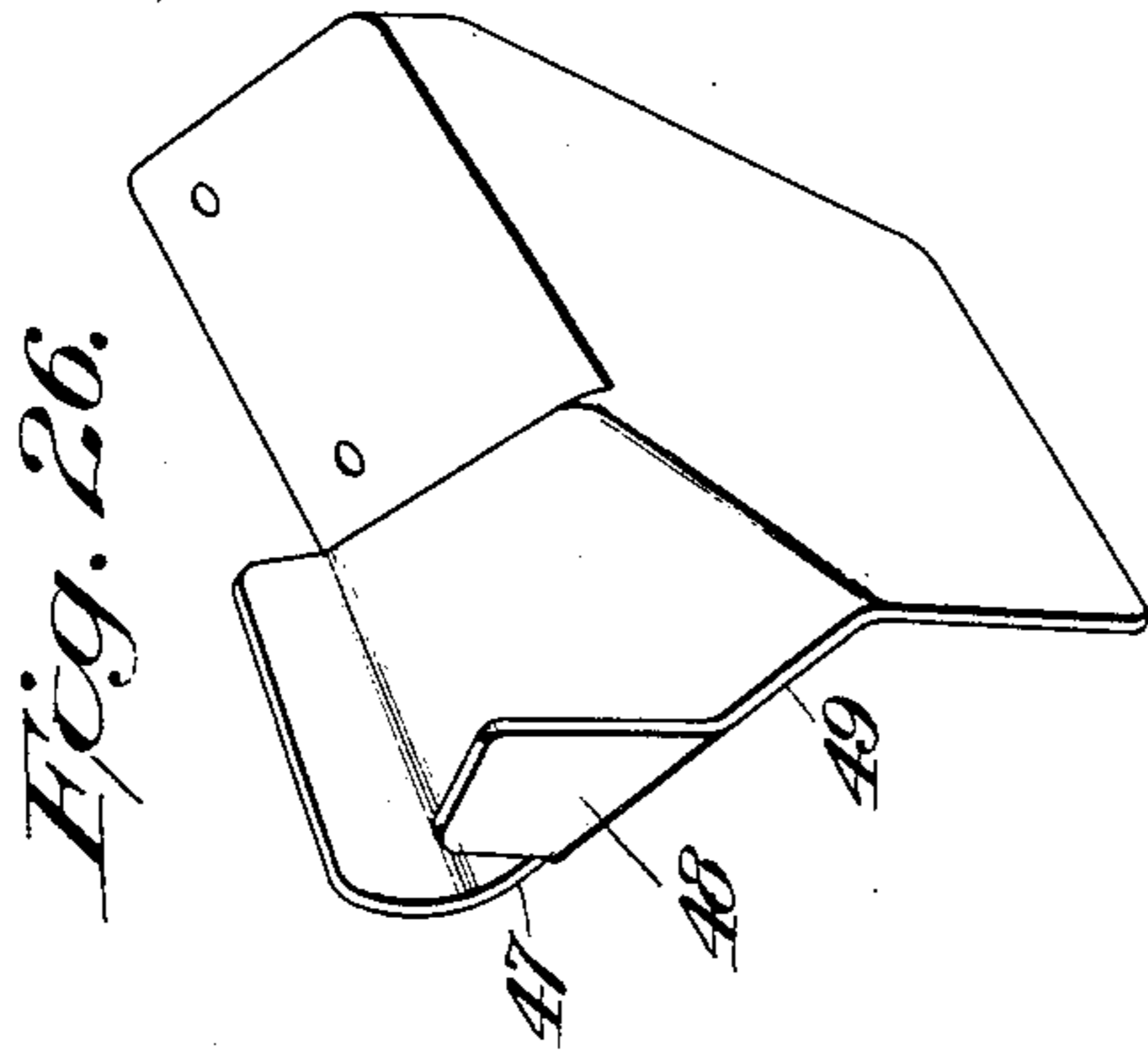


Fig. 35.

Witnesses
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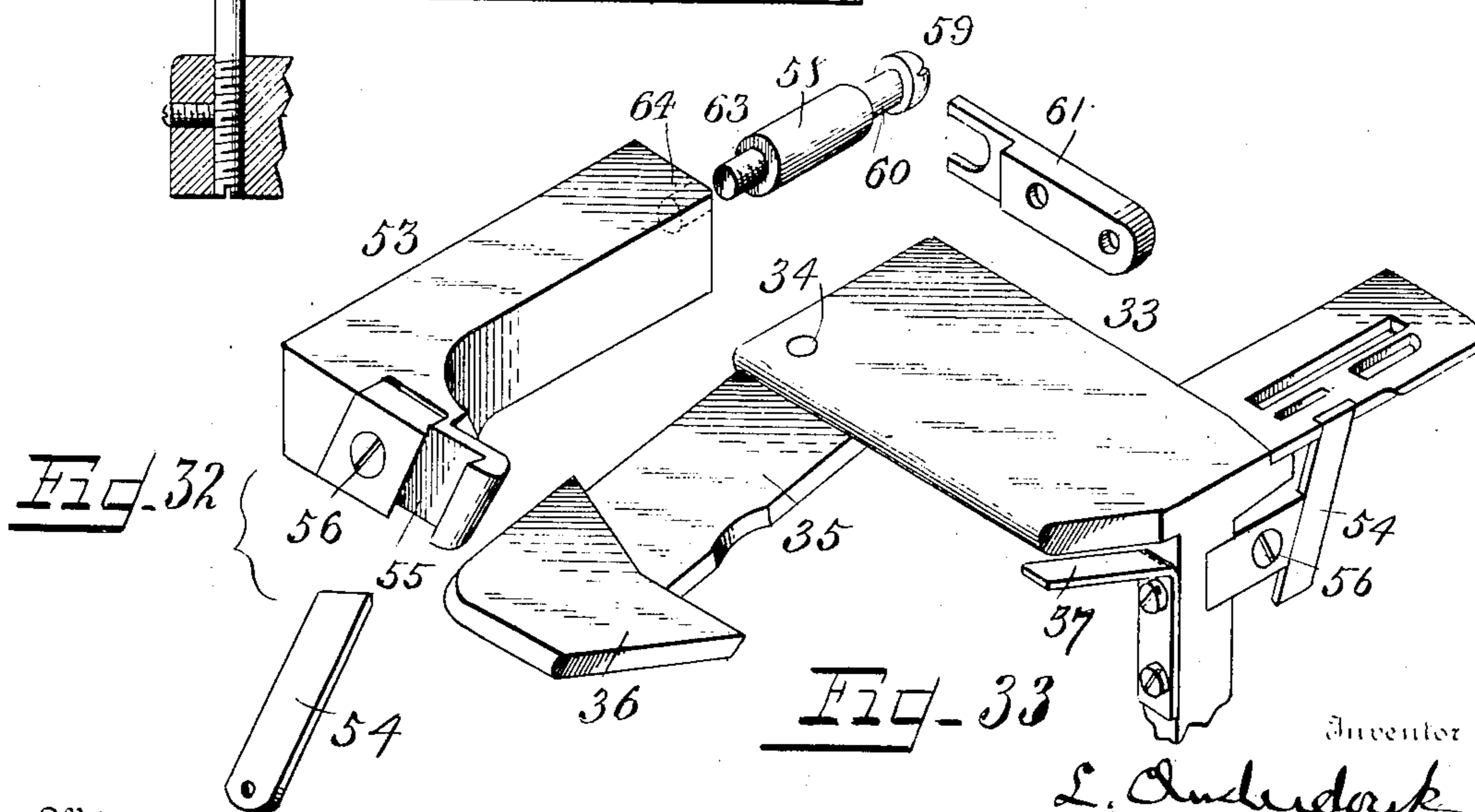
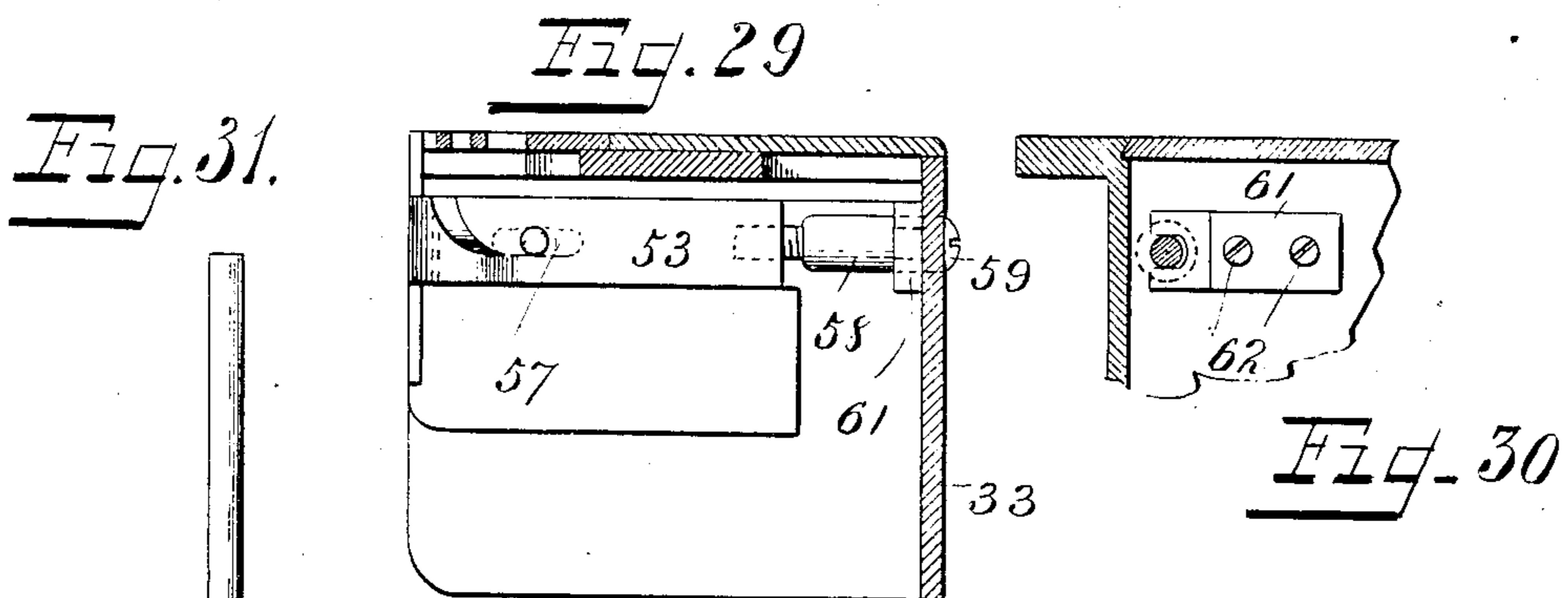
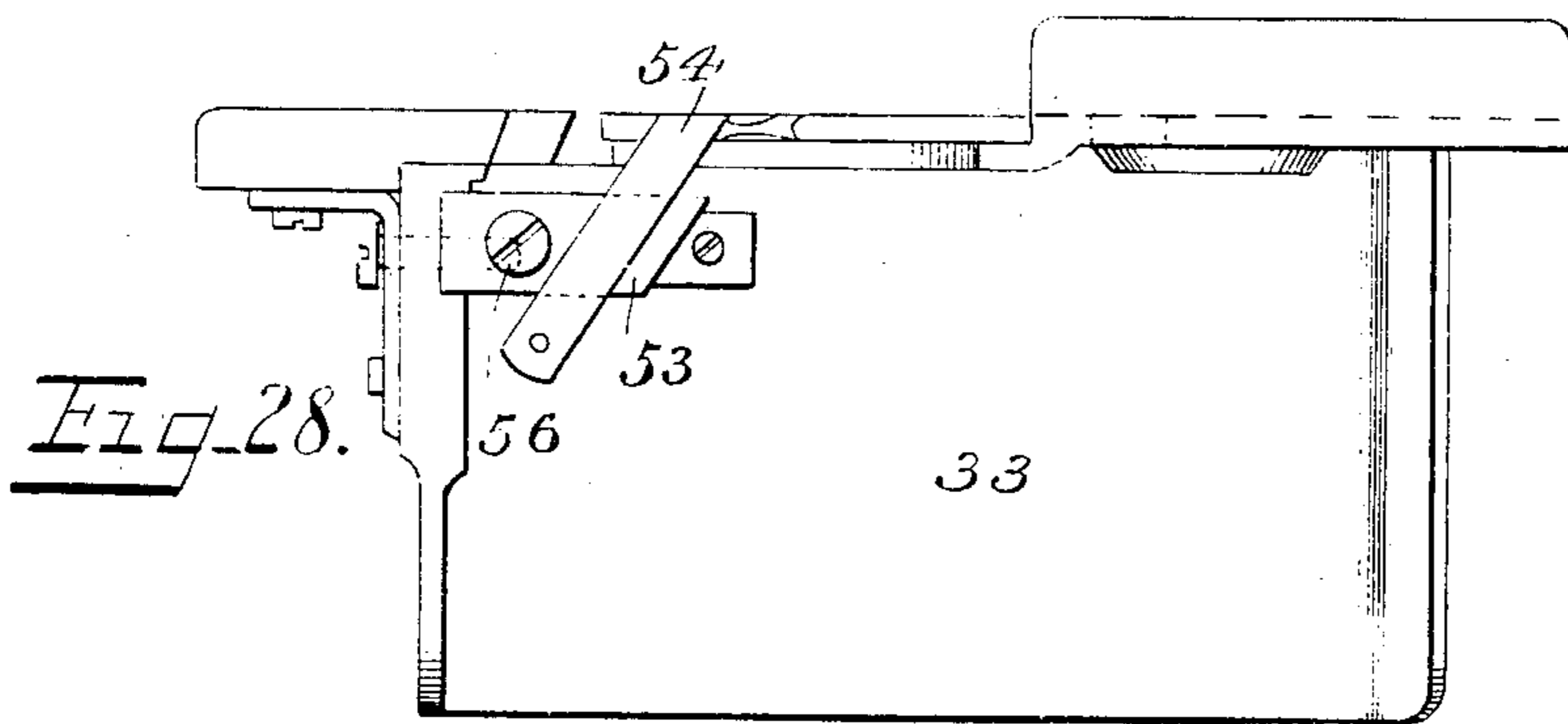
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APPLICATION FILED JULY 26, 1904.

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13 SHEETS—SHEET 12.



Witnesses

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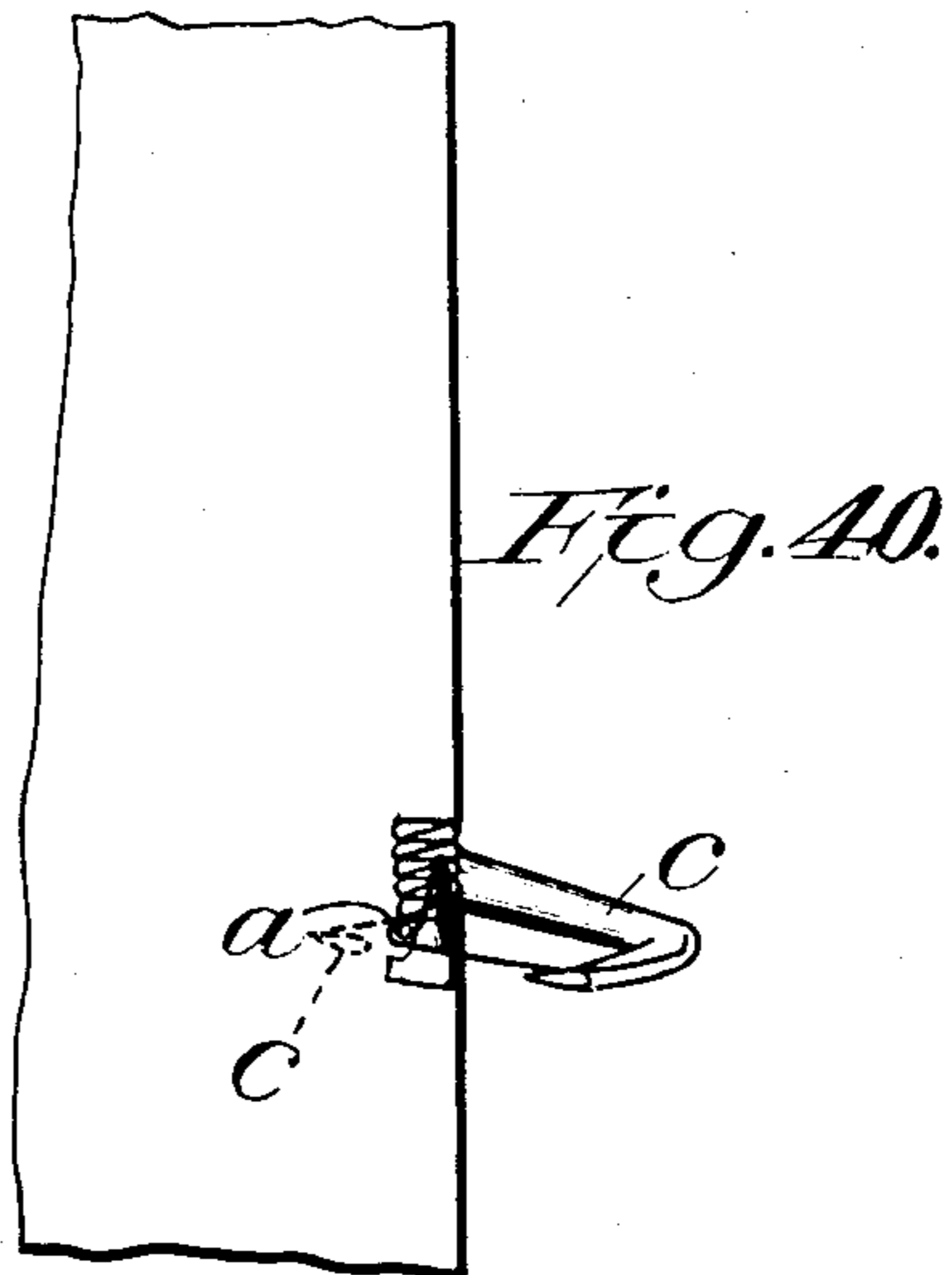
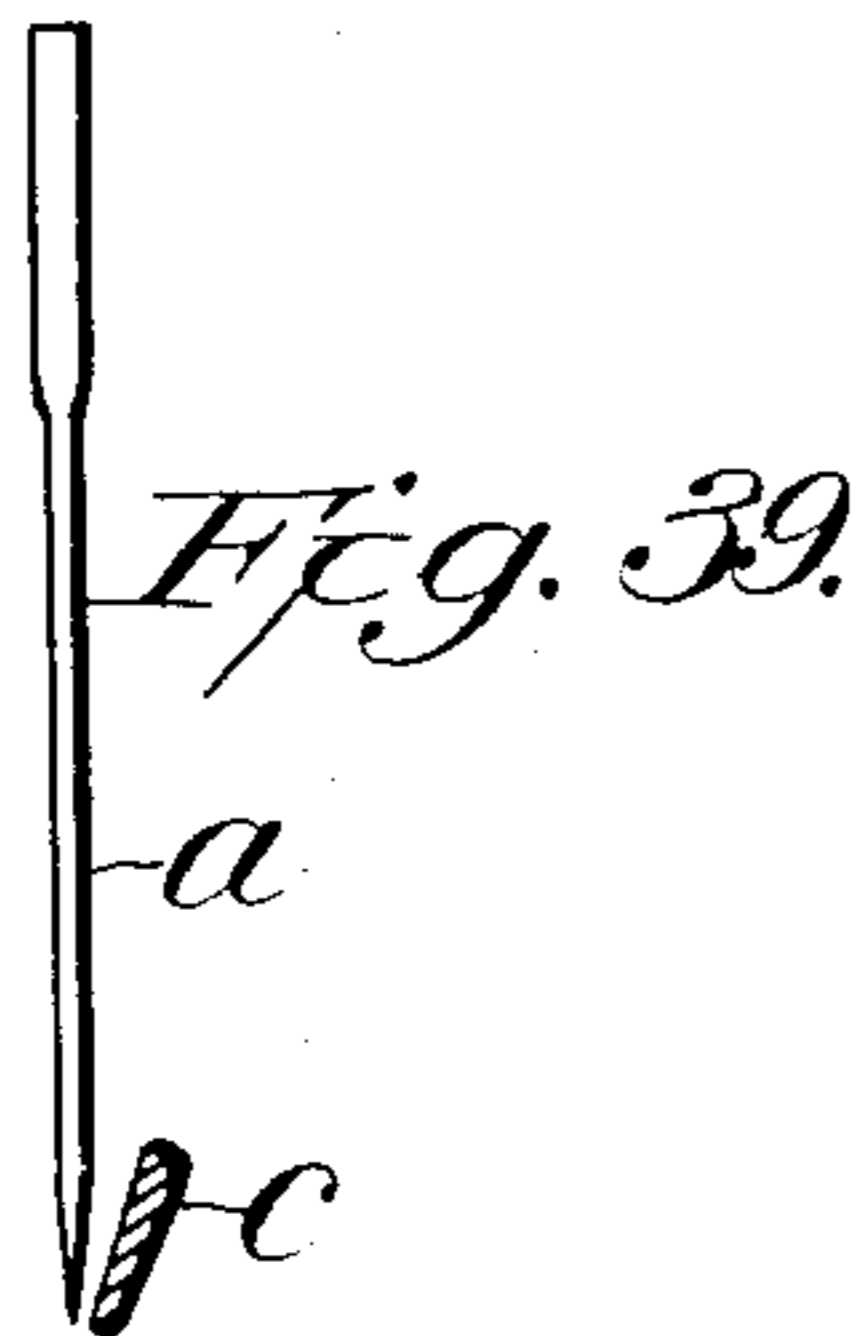
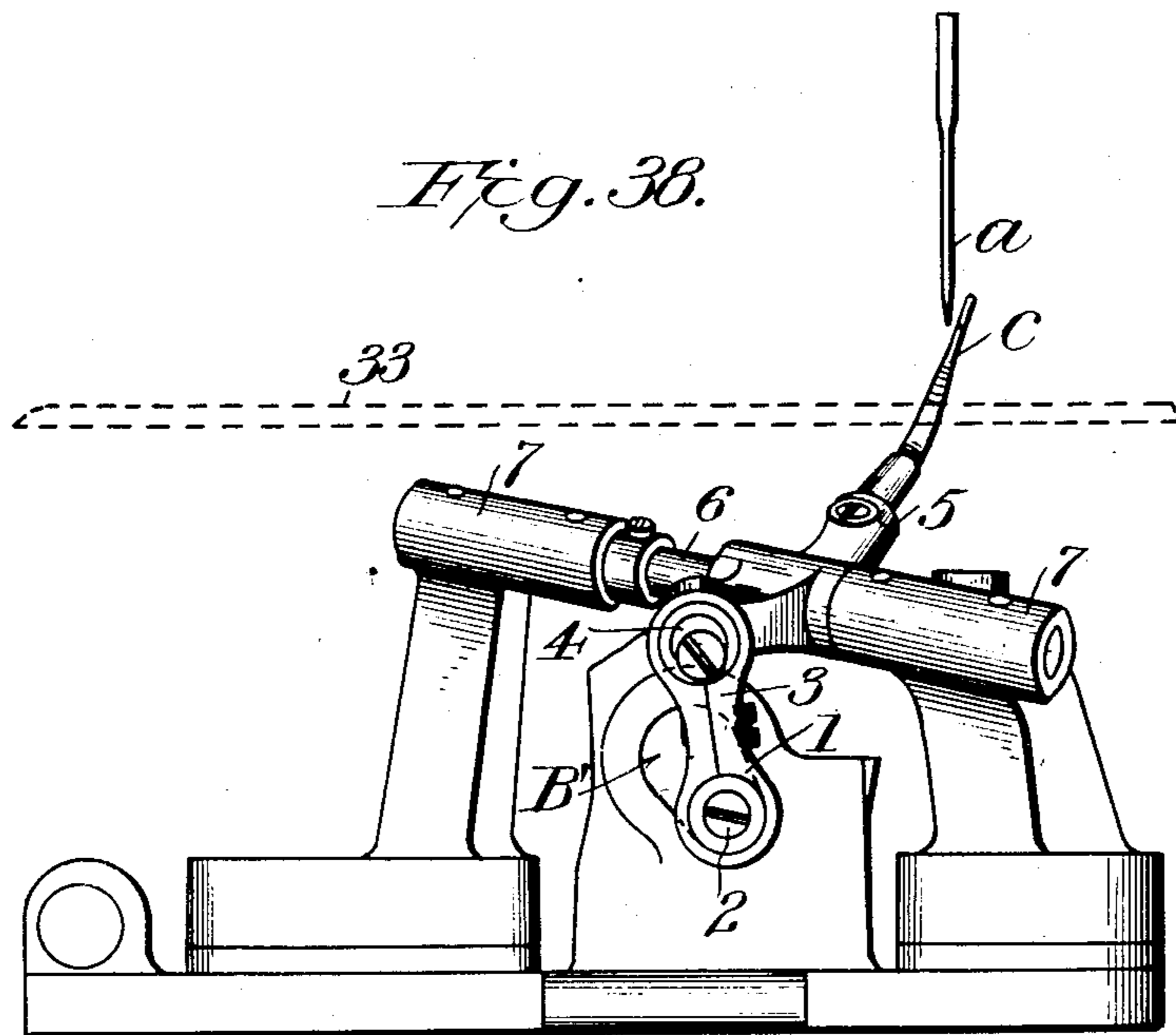
L. ONDERDONK.
SEWING MACHINE.

APPLICATION FILED JULY 26, 1904.

Patented June 28, 1910.

13 SHEETS—SHEET 13.

962,974.



Inventor

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SEWING-MACHINE.

962,974.

Specification of Letters Patent. Patented June 28, 1910.

Application filed July 26, 1904. Serial No. 218,192.

To all whom it may concern:

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

My invention relates to an improvement in sewing machines and particularly to sewing machines for overseaming or finishing the edges of garments, especially knit goods.

Machines for this purpose are not new in the art, many having been devised, but all of them are subject to various defects, some are so complicated as to require skill beyond that of the ordinary mechanic to run them properly; some, while less complicated, are only capable of running at too low speed to render them economical, and others are open to various other objections.

The object of the present invention is to provide an overseaming machine which shall be simple, durable and capable of running at the highest speed with minimum wear and liability to get out of order, which can be easily taken care of by the ordinary operator, which is simple as to the control of the thread and as to the operation of its parts.

Certain features of the invention relate more especially to that type of overseaming machine in which three implements are used coöperating to form overseaming stitches; which implements may be a reciprocating thread carrying eye pointed needle, a thread carrying looper coöperating with the needle above the work support, and a spreader co-operating with the needle beneath the work support and with said looper or in place of said spreader, a thread carrying looper may be used.

Other features of the invention relate solely to that type of overseaming machine wherein two threaded loopers coöperate with the needle in making a three thread overseaming stitch.

In the use of the needle, looper and spreader or looper hook, the latter takes a loop of needle thread below the throat plate and carries it out beyond the edge of the throat plate in such position that the looper may carry its thread through the needle loop in the spreader, into position to be en-

gaged by the needle in its next descent, thus making a two thread overedge seam, suitable for an ornamental edging or for uniting the edges of superposed pieces of material. In case a second thread carrying looper is substituted for the spreader, said second thread carrying looper passes into the needle loop carrying its thread therein.

The present invention consists in the numerous details of construction and various arrangements, and combinations of parts which go to make up a high speed, durable machine, which can handle the thread quickly and effectively, without requiring too much skill on the part of the operator, and to provide on the whole a machine capable of most effective work.

The main features *per se* and in combination, will be hereinafter described and pointed out in the claims.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a front elevation of a sewing machine embodying my invention, the cloth plate being removed to show the operation of the stitch forming elements. Fig. 1^a is a similar view of the entire machine, showing a different style of frame, and various other features differing from those shown in Fig. 1, this Fig. 1^a representing the preferred form of machine; Fig. 1^b is a view similar to Fig. 1^a, showing the cover turned down. Fig. 1^c is a plan view of Fig. 1 with the cloth plate and upper part of the machine removed, part of the standard being shown in section. Fig. 2 is a skeletonized view in perspective illustrating the mechanism for operating the spreader and looper, or the two loopers if a thread carrying looper be substituted for the spreader. Fig. 3 is a plan view of the same; Figs. 4, 5, 6 and 7 represent different positions of the loopers and needle in making the three thread overseaming stitch. Fig. 8 is a side view of one of the loopers detached; Fig. 9 is a top view of the same; Fig. 10 is a detail view of the spreader which is used in place of the looper shown in Fig. 8, if only a two thread stitch is desired to be made; Figs. 11, 12, 13 and 14 represent different positions of the needle, looper and spreader in forming a two thread stitch; Fig. 15 is a top plan view enlarged showing the relation of the two loopers and needle thread in forming the three thread stitch; Figs. 16 and 17 represent different

views of the stitch forming mechanism in forming the three thread stitch, and illustrating the action of the loop retainer on the needle thread; Fig. 18 is a detail plan view of the throat plate; Fig. 19 is a rear perspective of a portion of the goose neck; Fig. 20 is a sectional view of Fig. 19, showing the needle lever connection; Figs. 21 and 22 are respectively top and sectional side views of the spreader supporting stand shown in Fig. 1^c. Fig. 23 is a detail view of the upper trimmer supporting arm; Fig. 24 is a perspective view of the inner side of the cloth plate cover and strip diverting guide; Fig. 25 is a sectional view on line 25 of Fig. 24; Figs. 26 and 27 are detail views of the strip diverting guide with the improved device for preventing the strip from passing beneath the cloth plate of the machine. Fig. 28 is a side view of the cloth plate illustrating the holding device for the lower cutting device. Fig. 29 is a sectional view through the cloth plate showing the means for adjusting the lower trimmer member laterally; Fig. 30 is a detail of the adjusting device; Fig. 31 is a detail of the pin support for the lower blade holder; Fig. 32 is a perspective view of the lower trimmer parts in detail; Fig. 33 is a detail perspective showing the cloth plate extension, throat plate and lower trimmer; Figs. 34 and 35 are detail views illustrating the three and two thread stitches respectively; Fig. 36 is a detail view of the loop retainer; Fig. 37 is a perspective of the cloth plate and diverting guide; Fig. 38 is a view taken from the front of the machine showing the inclination of the looper shaft relative to the cloth plate. Fig. 39 is a detail view showing the looper in section and its position relative to the needle when the needle is passing the same. Fig. 40 is a top plan view showing the fabric and the position of the needle and thread carrying looper cooperating therewith above the work support, when said looper is moving backward and laying its thread over the stitch finger, and in dotted lines, the forward position of the looper.

The frame of the machine is adapted for high speed and to withstand vibration. From the base A rises the goose neck B, which forms at its base one bearing for the driving shaft B'; C is a central bearing for said shaft and the usual front end bearing is provided.

The goose neck B about midway its overhanging arm is cut out forming a recess D to receive the upper end or head E, of the adjustable upright rod F which is connected within the recess to the ball stud G, attached to the needle lever H, which rod F at its lower end embraces the eccentric I on the main shaft adjacent the central bearing. This rod is adjustable as to length, and by such an adjustment the cooperative time of

movement of the needle and the spreader *b* or looper *b'* relative to the movement of the looper *c*, may be varied. This central bearing prevents any spring of the main shaft and takes the thrust of the needle lever connection and the balance weight K on the shaft.

The rear portion of the overhanging arm of the gooseneck has an opening L through it into the recess D to permit the passage of a screw driver to loosen the screws in the top of the needle lever connection to allow the withdrawal of the needle lever connection ball from its socket or ball bearing in the top of the connection, to permit the removal of the needle lever from the machine. The needle lever is pivoted to the gooseneck on the usual needle lever stud and carries the vertically reciprocating eye pointed needle *a*. The stitch forming mechanism of this machine comprises in case a two thread overseam stitch is to be made, a needle *a*, a spreader, *b*, and a looper *c*; but if a three thread overseam stitch is to be made, a looper *b'* is substituted for the spreader. In the formation of the two thread stitch, the loops of needle thread are taken from below the cloth plate by the spreader *b*, operating in a diagonal path across the line of feed to carry the needle loop to the edge of the material, where it is entered by the looper *c*, operating from a point below said needle loop, and carrying a loop of its thread, over the top surface of the material where the looper thread loop is entered by a loop of needle thread, thus making the stitch which is desirable for ornamenting cut edges, or for seaming superposed pieces of material. The three thread stitch is made in very much the same manner except that instead of the spreader *b* to carry the needle loop to the edge of the material the needle loop is entered by the thread carrying looper *b'*, and a loop of thread of the latter is presented to the looper *c* to be entered by the latter on its way around the edge and over the top surface of the material to present its loop for the passage of the needle through it.

The looper *c* is substantially the same, whether a spreader *b* or a looper *b'* is used. The looper *c* is carried by a frame 5, mounted on a shaft 6 which shaft is supported in suitable bearings 7, 7, (see Fig. 38), secured to the bed plate of the machine. The frame 5, as shown in Figs. 1, 2, 3 and 38, comprises two projecting arms. One of said arms is formed with a socket to receive the looper *c*, and the other arm projects laterally so as to lie substantially in a vertical plane passing through the axis of the main shaft B'. This arm is provided with a ball stud, which engages one end of a link 3. The other end of the link 3 engages a ball stud on a crank pin 2, carried by a crank 1 fixed to the end of the main shaft B'.

In order that the looper *c* may be moved in a direction so as to pass over the work support and position its loop for the entrance of the needle, I have extended the arm which is connected to the looper frame to a point which is substantially over the axis of the main shaft. The link 3 which connects the ball on the end of the crank pin, with the ball stud on the looper frame, is, therefore, substantially vertical, and the rotation of the crank pin will produce a vertical thrust in the link 3, which will oscillate the looper frame about an axis which is substantially horizontal, and thus carry the looper from a position below the work support to a position above the work support.

In Fig. 1^c I have shown the looper frame 5 as made in two parts, 5^a and S, separated from each other, but fixed to the shaft 6. By making these parts separate, I am able to adjust the part carrying the looper on the shaft 6, and thus change the working position of the looper *c* relative to the looper *b'* and the needle *a*. The spreader *b* and looper *b'* may either be termed a thread-manipulating device or implement, as both of these elements in coöperating with the needle and looper *c* manipulate a thread. This thread-manipulating device, as shown in Figs. 1, 2 and 3, has its shank fitting in a socket in the upper part of the frame 8. The frame 8 at its lower end is fixed to the shaft 9 journaled in lugs on the stand 10, adjustably secured to the bed plate of the machine. This spreader or looper supporting frame 8 has its journals diagonally arranged so as to give the spreader or looper a diagonal movement below the cloth plate to seize the loop of needle thread and carry it to one side to be engaged by the looper *c*, or to carry its own thread to one side to be entered by the looper *c*. The said frame is provided with a ball stud 11, over which fits one end of the pitman 12 which at its opposite end is connected to the extension 13 of the needle lever H, through the crank 14 and link 15. By this arrangement a differential motion is imparted and thus at the proper position in its movement a dwell is given to the spreader *b* or looper *b'* to give time for the looper *c* to get into the loop of thread on the spreader or looper *b'*. This dwell is accomplished by reason of the position of the pivotal center 13' of the needle lever, the pivot connection 15' and pivot connection 15². These points are so disposed that when the spreader or looper is in its forward position, said points are substantially in line, so that little or no movement will be imparted to the rock arm or crank 14.

The preferred construction of stand for the looper *b'* and spreader *b* is shown in Fig. 1^c and 21 and 22. The base 17 is pivoted on the screw 16, and held in adjusted

position by the set screw 18, this pivotal adjustment of the base of the stand is to adjust the spreader or looper *b* or *b'* to the needle. Dovetailed into this base 17, as at 19 is the plate 20 adjustable by means of the set screws 21 in the slots 22. This plate 20 has the vertical lug 23 supporting the looper rocker stud 24 carrying the support 25 for the spreader *b* or looper *b'*. This is oscillated back and forth by the pitman connection 12 to the needle lever extension in the manner described above. The cross adjustment of the plate 20 is for the same purpose as the cross adjustment of the stand 10 above described, namely to adjust the spreader *b* or looper *b'* to the looper *c*.

The bearing lugs 7, 7, supporting the shaft 6, carrying the looper *c* are so disposed that the shaft 6 is inclined to the line of feed and slightly inclined to the work support or cloth plate 33, as clearly shown in Figs. 2 and 38. This inclining of the looper shaft *c* contributes largely to the successful operation of the machine whether said looper co-operates with a looper *b'* or a spreader *b* below the work support. The inclining of the looper shaft 6 from the rear toward the front of the machine relative to the work support, will incline the looper body from its upper edge to its lower edge toward the path of the needle, as shown in Fig. 39 and this positioning of the looper body is a great advantage in enabling the needle to pass between the looper body and its thread. When the looper *c* moves to the forward end of its stroke, the thread running from the eye thereof to the previous enchaining of the threads is held taut, and in order to make the stitch, the needle must pass between the body of the looper and this taut portion of the looper thread. The inclined face of the looper body allows the needle to be set so that the point thereof runs very close to the lower edge of the looper body and therefore, the needle will with certainty pass between the looper thread and the looper body. If the needle should vibrate slightly under high speed, the inclined face of the looper will serve as a means to deflect the needle back into its proper path and insure the needle passing on the right side of the body of the looper. Then again, where the axis of the looper shaft is inclined as above noted, the looper when retracted will lay its thread well up on the stitch finger and toward the front of the machine as shown in Fig. 40. This enables the laying of the threads forming the over-edge stitch so that the loops of the thread will be substantially at right angles to the edge of the material. The looper may be caused to move still farther toward the front of the machine as it is retracted by reason of the inclination of the looper shaft to the line of feed, as well as to the work support. This inclining of the

5 looper shaft to the line of feed, also carries
 the point of the looper well behind the
 needle at the forward end of its stroke as
 shown in Fig. 40, and thus aids in carrying
 the looper thread between the eye of the
 10 looper and the previous interlocking of the
 threads well to the rear, so that the needle
 will with certainty pass between the looper
 thread and the body of the looper.
 15 The inclining of the looper shaft relative
 to the work support is of especial advantage
 when a looper *b'* is used and a three thread
 overseaming stitch produced. When a
 threaded looper is used coöperating with
 the needle beneath the work support, there
 20 is little or nothing to aid the threaded
 looper in forming a projected loop when
 said looper is at the forward end of its
 stroke, and therefore, the looper *c* when it
 enters the loop of thread formed by the
 looper *b'* must pass between the body of the
 looper *c* and its thread, which hugs quite
 closely to the body of the looper. By in-
 25 clining the shaft of the looper *c*, I am able
 to cause said looper to move up across the
 side face of the looper *b'* and thus enter
 with certainty between the body of the
 looper *b'* and its thread. It is well under-
 stood that in making a three thread over-
 30 seam, it is not only necessary that the looper
c pass in rear of the looper *b'*, but said
 looper *c* must also pass in front of the needle
a above the work support. The inclining of
 the looper shaft will cause the looper *c* to
 35 move not only across the rear face of the
 looper *b'* and close thereto, but also in front
 of the needle *a* and position the loop of
 thread formed by the looper *c* for the en-
 trance of the needle.
 40 In Figs. 4 to 7 and 11 to 13 inclusive, I
 have shown the various steps in the forma-
 tion of a two thread overseam, while in Figs.
 15, 16 and 17, I have shown the various
 steps in the formation of a three thread
 45 overseam. In this character of stitching
 mechanism, the needle loop is loose when
 the looper is being retracted therefrom, and
 sometimes said needle loop, instead of being
 shed from the looper, will be carried back
 50 with said looper, and the needle on its next
 descent will enter its own previously formed
 loop, thus forming imperfect stitches. In
 order that the needle loop may be shed with
 certainty from the looper, as it is retracted,
 55 I have provided a wiper, which is so dis-
 posed relative to the looper as to engage the
 needle loop, and positively push or shed the
 same from the looper. Said wiper, as shown
 in Figs. 16, 17 and in detail in Fig. 36, com-
 60 prises an arm 26, which is secured by a set
 screw 27 to the bed casting, and carries at
 its upper end a piece of leather 28. The
 looper *b'* moves back and forth in a single
 plane, and the leather end 28 of the wiper is
 65 so disposed that as the looper is retracted,

the needle thread which is then on said
 looper will be engaged by the leather wiper
 28, and pushed from said looper, so that said
 needle loop could not by any possibility be
 carried back with the looper into the path of
 the descending needle. 70

The throat plate 29, shown in Fig. 18,
 used in this machine is provided with the
 regular slots for the feed dog, a space 30
 for the lower knife blade of the trimmer 75
 and a stitch finger 31, over which the
 stitches are formed and which serves to sup-
 port the edge of the fabric. The throat
 plate is also provided with a cut out portion
 32 for the passage of the stitched edge of the 80
 material, in order not to stretch or distort
 the edge. The presser foot does not bear on
 the work over the cut out portion of the
 throat-plate, but the delivery end of the
 tongue, carried by said presser foot sheds 85
 its thread directly above the cut out portion.
 The cloth plate 33 is attached to the bed
 casting of the machine in the usual manner,
 being held in position by screws. To its
 front end is pivoted by means of a screw 90
 34 an extension 35 which projects to the
 right of the body portion and forms a rest
 36 for the hand of the operator or to which
 a guide may be conveniently attached. This
 extension 35 is held in operative position by 95
 means of a spring 37 attached to the apron
 or downward extension of the cloth plate.
 When in operative position the extension is
 in the position shown in Fig. 1^a.

To provide convenient means to gain ac- 100
 cess to the looper and spreader for thread-
 ing the looper and oiling the parts, I have
 attached to this machine a hinged cover 38
 attached to the bed casting of the machine
 along its bottom edge by screws 39, and 105
 held in place at the top by a spring pin 40
 inserted in the top of the central bearing
 lug for the main shaft and registering with
 the hole 41 in cover 38. The cover 38 car-
 110 ries on its outer face a guide 42 for diverting
 the strip severed from the body fabric away
 from the feeding mechanism and parts of
 the stitch-forming mechanism located be-
 neath the work support. This diverting
 guide is normally spring pressed forward by 115
 means of the spring 43 pressing against the
 bracket 44 screwed to the inner side of the
 cover 38 by means of the screws 45, which
 pass through slots 46 in said cover. The
 diverting guide is shown in two different 120
 forms, see Figs. 1^a, 26 and 27. The pre-
 ferred form is shown in Figs. 26 and 27 and
 are made with a surface obliquely inclined
 toward the rear of the machine, which con-
 forms to the direction of travel given the 125
 loop spreader, and allows the ready deflect-
 ing of the trimmed off strip away from the
 machine. The upright portion 47 of the
 diverting guide shown in the preferred form,
 Figs. 26 and 27 and in the modified form 130

in Figs. 1^a and 24, is arranged in line with the back edge of the trimmer blades to allow the trimmer blades to completely sever the fabric before the deflection of the cut off strip is commenced. I find this an essential feature, as the partially severed fabric refuses to be readily diverted causing improper feeding of the material. On the operative edge of the strip diverting guide is provided a vertically extending projection 48 which serves to close up the space between the inclined edge 49 of the guide and the parts of the trimmer and machine exposed, to prevent the trimmed off strip from passing into the working parts of the machine. It will be noted by reference to Fig. 37 that a space is provided between the cloth plate extension 35 and the diverting guide 42, for the passage of the strip severed from the body fabric and diverted by the diverting guide 42.

The trimming device used in my machine is very nearly the same as that used in the Union Special interlock machine, shown in an application No. 81,772, filed November 9, 1901, by Russel G. Woodward and myself. To overcome the striking of the machine frame with the upper end of the movable knife, when it was thrown out of operative engagement with its operating means, I have provided a knife 50 formed on an arc of a circle and having its upper end extending away from the frame of the machine. This construction also admits of making the upper knife of greater length, thus admitting of its longer use before being ground away so that it is no longer useful. The holder 51 is provided with a slot 52 conforming with the curvature of the edges of the knife to adjustably hold the knife in position. The stationary part of the trimmer is mounted on the under side of the cloth plate and capable of being adjusted laterally with respect to the line of feed, to vary the width of the seam and the distance from the edge of the material to the line of needle punctures into the material.

The support 53 for the lower stationary blade 54 has its front side adjustably secured in a slot 55, and secured against displacement by a screw 56 passing through a slotted hole 57 in the apron of the work plate and entering into the support 53. The support 53 is adjusted laterally by means of the screw 58 having its head 59 projecting outside of the work plate apron, and having a cut out portion 60 in engagement with a collar 61 secured by screws 62 to the apron of the cloth plate, and its end 63 entering into the threaded hole 64 in the support. Turning the screw 58 from front to back adjusts the support 53 to the right. This construction of trimmer and guide forms the subject matter of my divisional application filed Aug. 10, 1905, Serial No. 273,574. It

will be noted, that as the stationary member of the trimmer is moved laterally the guide for diverting the trimmed off strip is also correspondingly moved, for the reason that the guide 42 is normally spring pressed forward by means of the spring 43 so as to hold the guide 42 against the stationary trimmer.

The feeding mechanism *per se* forms no part of the present invention and need not be particularly described. It embodies however the tilting feed dog feature of the Union Special single interlock machine as illustrated in the Woodward Patent No. 802,789, granted October 24th, 1905, and has means for adjusting the said tilting feed dog so that a greater or less amount may come above the cloth plate.

The pull-off and take up for the needle thread is shown in Fig. 1^a. To the front end of a pin 65 passing through the upper right hand end of the goose neck is attached an adjustable pronged piece 66, having eyes in the projecting ends for the passage of the thread. An arm 67 adjustably secured to, and vibrating with the needle lever vibrates between the passage of the piece 66 and in this way draws off thread from the spool, thus delivering the thread for the stitches to the tension, free from irregular strains which with the regular tension in the thread would cause unevenly laid stitches. The vibratory arm 67 is adjusted upon its pivot point by means of the slot and screw 69, 70 in its lower end.

To the center of the gooseneck is attached the plate 71 carrying two thread eyes 72 between which a thread eyelet 73 attached to and vibrating with the needle lever acts. The eyelet in the needle lever has only a limited movement so the plate 71 is adjustable as shown in dotted lines in Fig. 1^a. These parts form the take-up for the needle thread. The take-up for the looper thread is shown in Figs. 1^a and 1^b. The thread is led from the supply through the eyelet 91, and thence through the eyelet 93 to an eyelet 90 on the back side of the needle lever extension. The thread passes then to the tension 92. These parts form a pull-off for this looper thread. To the needle lever extension 13 is attached a plate having a thread guiding eye 74, having take-up pins 75, 75 acting in conjunction with pins 76 on the adjustable plate 77. The thread passes in front of the top, and middle, and back of the bottom pin attached to the adjustable plate 77. The thread passes back onto the right of the pins 75, attached to the needle lever extension, thus allowing the movable pins when moving to the right to act against the thread lying in front of the two upper and behind the lower stationary pin, and take it up. When the needle lever again moves to the left, the thread is given up for

the stitches. By adjusting the plate carrying the three stationary pins the amount of thread taken up can be varied. The plate has a screw hole to give it the adjustability.

5 To increase the take up action on the lower thread the stationary plate is moved to the left, while to decrease it the plate is moved to the right. When a looper *b'* is substituted for the spreader *b*, the thread supplying the same is first passed through the eye 10 78, through the eye 79 on the plate held by the tension post, then through the pull-off eye 74, over the top and around the lowest tension post 80, thence to the looper through 15 guiding eye 81.

Various minor modifications and changes may be made without departing from the spirit of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an overseaming machine, the combination of a driving shaft, a work support, a stitch-forming mechanism, including a 25 needle, a thread-carrying looper cooperating with the needle beneath the work support, a second thread-carrying looper entering the loop of looper thread formed by the first named thread-carrying looper, means for 30 operating said second thread-carrying looper, including a looper-supporting frame mounted on a shaft journaled in bearings carried by the machine frame, said shaft being inclined to the work support, 35 and connections to the driving shaft for oscillating said second thread-carrying looper diagonally across the line of feed from a position below the cloth plate up over the edge thereof, and in a plane in- 40 clined to the path of the needle, whereby said second thread-carrying looper moves up across the side face of the first named looper and into the loop of looper thread formed thereby, and above the work support, to po- 45 sition the loop of looper thread formed by said second named looper for the entrance of the needle.

2. In an overseaming machine, the combination with a driving shaft, of stitch forming mechanism, including a needle, a looper, 50 a third implement cooperating with the needle beneath the work support, and carrying a loop of thread into position to be engaged by the looper, a work support, and means for operating said looper, including a 55 looper supporting frame, mounted on a shaft journaled in bearings on the machine frame, said shaft being inclined to the work support and the line of feed, whereby said 60 looper is oscillated diagonally across the line of feed, from a position below the cloth plate up over the edge thereof to position a loop of looper thread for the entrance of the needle, said looper supporting frame, 65 having an arm the free end of which lies

substantially in a vertical plane passing through the axis of the driving shaft, and means for oscillating said looper frame including a crank pin on the end of the driving shaft, and a link connection between the 70 crank pin and the free end of the arm of the looper supporting frame, said link having a universal connection with the crank pin and said arm, substantially as described.

3. In an overseaming machine, the combination of a driving shaft, a work support, 75 and stitch forming mechanism including a needle, a looper, a third implement cooperating with the needle beneath the work support and carrying a loop of thread into 80 position to be engaged by the looper, means for operating said looper, comprising a looper supporting frame including an arm on which the looper is mounted, a shaft on which said arm is fixed, a second arm also 85 fixed on said last named shaft, and having its free end lying substantially in a vertical plane passing through the axis of the driving shaft, an eccentric member carried by 90 the forward end of said driving shaft, and a link connecting said last named arm and said eccentric member for oscillating said frame, said frame supporting shaft being inclined downwardly from the rear to the 95 front of the machine, whereby the looper carried by said frame moves in a plane inclined to the work support.

4. In a sewing machine, having stitch forming mechanism including a thread manipulating device, and a needle, and means 100 for oscillating said thread manipulating device to cause it to cooperate with the needle, and means for adjusting the thread manipulating device bodily in the arc of a circle, the center of which arc is in line with the 105 needle, and means for giving it a bodily, lateral adjustment; substantially as described.

5. In a sewing machine having stitch forming mechanism including a needle, a 110 looper, and a third implement, means for adjusting said third implement bodily with respect to the needle and separate means for adjusting it bodily with respect to the 115 looper only; substantially as described.

6. In a sewing machine having a stitch forming mechanism including a needle, a looper and a third implement, cooperating therewith, a stand supporting said third im- 120 plement means for adjusting said stand in the arc of a circle, and means for laterally adjusting the same, and means for vibrating the third implement, substantially as described.

7. In a sewing machine having stitch 125 forming mechanism including a thread manipulating implement, a support therefor and means for oscillating it, an adjustable plate upon which said support is pivoted and an adjustable stand upon which said 130

plate is supported; substantially as described.

8. In an overseaming machine having a driving shaft, a work support, stitch forming mechanism including a needle, a thread carrying looper cooperating with the needle beneath the work support, a second thread carrying looper entering the loop of looper thread formed by the first named thread carrying looper and moving above the work support, whereby the needle may enter the loop of thread formed by said second thread carrying looper, means for operating said second thread carrying looper including a looper supporting frame, a shaft on which said looper supporting frame is supported, bearings for supporting said shaft and connections between the driving shaft and the looper supporting frame for oscillating the same, said looper supporting shaft being inclined to the work support and to the line of feed, whereby the looper carried thereby moves diagonally across the line of feed from a point below the cloth plate up over the edge thereof, and in a plane inclined to the work support.

9. In a sewing machine having stitch forming mechanism including a thread manipulating implement, a support therefor, and means for oscillating it, an adjustable plate upon which said support is pivoted and an adjustable, pivoted stand upon which said plate is supported; substantially as described.

10. In a sewing machine having stitch forming mechanism including a thread manipulating implement, a support therefor and means for oscillating it, an adjustable plate upon which said support is pivoted and an adjustable pivoted stand upon which said plate is supported, the pivot point of the stand being in line with the needle bar; substantially as described.

11. In a sewing machine a main shaft, an overhanging arm, stitch forming mechanism including a needle, a lever secured to the outer side of said overhanging arm, for vibrating said needle, a pitman operated from the main shaft at a point underneath the overhanging arm, and connected to said lever on the side thereof adjacent the overhanging arm, said overhanging arm having a recess therein for receiving and housing the upper part of said pitman and the connection between the pitman and said lever.

12. A sewing machine having suitable stitch forming mechanism, a frame having a base and an overhanging arm, a main shaft, a vibrating part, connections between the main shaft and the vibrating part including a vertically arranged screw, said overhanging arm being provided with a recess having a vertical opening whereby the vertically arranged screw can be removed; substantially as described.

13. In a sewing machine, a main shaft, a base plate, an overhanging arm rising therefrom, stitch-forming mechanism including a needle, a lever connected to the front of said overhanging arm, a pitman operated by said main shaft and connected to said lever, said overhanging arm having a recess for housing the upper end of said pitman and connections to said lever, and a bearing for said main shaft near said pitman connections, whereby all spring of the main shaft is eliminated.

14. A sewing machine including in combination, a work support, a needle, a thread carrying implement cooperating with said needle beneath the work support, a looper cooperating with said thread carrying implement and with said needle above the work support, means for adjusting the position of said thread-carrying implement relative to said needle, means for adjusting the position of said thread carrying implement relative to said looper, and means for adjusting the working position of said looper.

15. In a sewing machine, stitch forming mechanism, including a needle, a thread carrying device cooperating therewith and a loop wiper for pushing the needle loop from said looper, as it is retracted.

16. In a sewing machine, stitch forming mechanism, including a needle, a thread carrying device cooperating therewith, a second thread carrying device cooperating with said first named thread carrying device, and also with said needle, and a loop wiper for engaging and pushing the needle loop from the first named thread carrying device.

17. In a sewing machine, stitch forming mechanism, including a needle, a thread carrying looper cooperating therewith, a standard, a loop wiping device carried thereby and so disposed relative to the thread carrying device as to engage the needle loop and push the same from the thread carrying looper.

18. In a sewing machine having stitch forming mechanism including a needle carrying a thread, a plurality of thread carrying devices cooperating therewith and moving in opposite directions through intersecting planes, said needle cooperating with one of said thread carrying devices below the work plate and the other cooperating with the said needle above the work plate, and a stationary loop wiping device for one of the threads.

19. In a sewing machine having stitch forming mechanism including a needle carrying a thread, a plurality of thread carrying devices cooperating therewith and moving in opposite directions through intersecting planes, said needle cooperating with one of said thread carrying devices below the work plate and the other cooperating with the said needle above the work plate and a

loop-wiping device located beneath the work support and adjacent the thread-carrying device cooperating with said needle, whereby the needle loop is pushed from said thread carrying device.

20. The combination of a work support, a needle bar, a needle carried thereby, means for reciprocating said needle bar, a thread-carrying looper cooperating with said needle beneath the work support, a second thread-carrying looper entering the loop of looper thread formed by the first named thread-carrying looper and moving above the work support, whereby the needle may enter the loop of thread formed by said second thread-carrying looper, a shaft mounted beneath the work support and carrying said second thread-carrying looper, said needle bar and said shaft being inclined relative to each other, whereby the path of the needle and the plane of movement of the looper moving above the work support are inclined to each other, and said second thread-carrying looper may move from a point at one side of the first named thread-carrying looper to a point at the other side of said needle.

21. The combination of a work support, a needle, a needle bar, and means for operating said needle bar, a thread-carrying looper operating in a single plane beneath the work support to take a loop of thread from the rear side of the needle, a second thread-carrying looper entering the loop of looper thread formed by the first named thread-carrying looper and moving from a point in rear of said first named thread-carrying looper up over the edge of the work support to a point in front of the needle, whereby the needle may enter the loop of thread formed by said second thread-carrying looper, a shaft located beneath the work support and carrying said second thread-carrying looper, the needle bar and the shaft carrying the looper moving above the work support being inclined relative to each other.

22. The combination of a work support, a main shaft, a needle, means for operating the same, complementary stitch-forming mechanism cooperating with the needle to form an overseam, including a thread-carrying looper moving above the work support so as to position the loop of thread formed thereby for the entrance of the needle, a support for said looper mounted beneath the work support, an arm connected to said support, and having its free end moving in substantially a vertical plane, operative means carried by the forward end of said shaft, and a link having a universal connection with said operating means and with said arm.

23. The combination of a work support, a main shaft, a needle, means for operating the same, complementary stitch-forming mechanism cooperating with the needle to form an

overseam, including a thread-carrying looper moving above the work support so as to position the loop of thread formed thereby for the entrance of the needle, a support for said looper mounted beneath the work support, an arm connected to said support, and having its free end moving in substantially a vertical plane passing through the axis of said main shaft, an eccentric member carried by the forward end of said shaft and a substantially vertical link having a universal connection with said eccentric member and with said arm.

24. The combination of a work support, a main shaft, a needle, means for operating the needle, a thread-carrying looper cooperating with the needle beneath the work support, a second thread-carrying looper cooperating with said first named thread-carrying looper and with said needle above the work support, a support for said second thread-carrying looper, pivoted beneath the work support, an arm connected to said support and having its free end moving substantially in a vertical plane passing through the axis of said main shaft, a crank on the forward end of the main shaft, and a substantially vertical link having a universal connection with said crank and with said arm.

25. The combination of a work support, a needle, a thread-manipulating device cooperating with the needle beneath the work support, a thread-carrying looper entering the loop of thread carried by said thread-manipulating device and cooperating with said needle above the work support, means for oscillating said thread-manipulating device including a lever and a link disposed so as to be substantially in a line when said thread-manipulating device is at the forward end of its stroke whereby an extended dwell is given thereto to allow said looper to enter the loop of thread carried by said manipulating device.

26. The combination of a work support, of a threaded implement operating to pierce the fabric, a second threaded implement adapted to enter the loop formed in the thread of the first threaded implement beneath the work support, and a third threaded implement adapted to enter the loop formed in the thread of said second threaded implement, and position a loop formed in the thread of the third implement for the entrance of the first threaded implement at a point above the work support, and means for operating said threaded implements including a lever carrying one of said threaded implements, a shaft on which said lever is mounted, said shaft being inclined downward relative to the work support from a point adjacent one side of the work support to a point adjacent the other side of the work support.

27. In combination with a work support, a needle, a thread carrying looper cooperating with said needle beneath the work support, a thread carrying looper entering the loop of thread formed by said first named looper, and cooperating with said needle above the work support, and means for oscillating said looper cooperating with the needle beneath the work support, including a lever and a link so disposed as to be substantially in a line when the said looper is at the forward end of its stroke, whereby an extended dwell is given thereto.

28. In combination with a work support, a needle, a thread carrying looper cooperating with said needle beneath the work support, a thread carrying looper entering the loop of thread formed by said first named looper, and cooperating with said needle above the work support, and means for oscillating said looper cooperating with the needle beneath the work support, including a main shaft, a lever oscillated thereby, and connections between said looper beneath the work support and said lever, including a link so disposed relative to said lever as to be substantially in a line with said lever and to give an extended dwell to said looper at the forward part of its stroke.

29. In combination with a work support, a needle, a thread carrying looper, cooperating with said needle beneath the work support, a thread carrying looper entering the loop of thread formed by said first named looper, and cooperating with said needle above the work support, and means for oscillating said looper cooperating with the needle beneath the work support, including a main shaft, a lever, a link connected to said lever and operated by said main shaft, connections between said lever and said looper cooperating with the needle beneath the work support, including a link so disposed relative to said lever as to be substantially in a line with said lever and to give an extended dwell to said looper at the forward part of its stroke.

30. The combination of a work support, an overseaming stitch forming mechanism comprising a needle, a thread-carrying implement cooperating with said needle beneath the work support, and a thread carrying implement cooperating with said first named implement and with the needle above the work support, a main shaft, a lever oscillated thereby, connections between said lever and the thread carrying implement cooperating with the needle beneath the work support, including a link connected to one arm of said lever, said link and said arm of the lever being substantially in a line when the thread carrying implement operated thereby is at the forward part of its stroke.

31. A sewing machine including in combination, a work support, a main shaft, a

needle, means for operating the same, a thread carrying looper cooperating with the needle beneath the work support, a second thread carrying looper entering the loop of looper thread formed by the first thread carrying looper and moving to a point over said work support so as to position its loop for the entrance of the needle, means for supporting said second thread carrying looper, whereby the same moves from a point in rear of said thread manipulating device, to a point in front of said needle, said supporting means including a shaft inclined to the work support, an arm carried thereby, carrying a ball stud and means carried by said main shaft and connected to said ball stud for oscillating said inclined shaft.

32. A sewing machine including in combination, a work support, a needle, means for operating the same, a thread-carrying looper entering the loop of needle thread formed by the needle beneath the work support, a second thread-carrying looper adapted to enter the loop of looper thread formed by the first named thread-carrying looper, means for supporting said second thread-carrying looper, whereby the same moves in a plane inclined to the work support, and from a point in rear of the first named thread-carrying looper up across the side face of said first named thread-carrying looper, and into the loop of looper thread formed thereby and above the work support to a point in front of the needle to position the loop of looper thread formed by said second named looper for the entrance of the needle.

33. The combination with a work support, a needle, means for reciprocating the same, a thread manipulator cooperating with said needle beneath the work support, a thread carrying looper cooperating with said thread manipulator and with said needle above the work support, means for operating said thread manipulator including a rocking member having an outwardly extending arm, a pivoted member to which said thread manipulator is connected, a link connected to said arm and to said pivoted member, said link and arm being substantially in line when said thread manipulator is at one end of its stroke, whereby a dwell is given thereto.

34. The combination with a work support, a needle, a needle bar, means for reciprocating the same, a thread-carrying looper cooperating with the needle beneath the work support, the axis of said thread-carrying looper being horizontal, a second thread-carrying looper entering the loop of looper thread so formed by the first named looper and moving to a position above the work support, where the needle may enter the loop formed by said second thread-carrying looper, a shaft mounted beneath the work

support and carrying said second thread-carrying looper, the axis of the shaft of the thread-carrying looper being inclined to the axis of the needle bar, whereby the second
5 thread-carrying looper moves in a plane from a point in rear of the first named thread-carrying looper beneath the work support to a point in front of the needle above the work support and in a plane which
10 is inclined to the needle path.

35. A sewing machine including in combination, a work support, a main shaft, a needle, means for operating the same, a thread carrying looper cooperating with
15 said needle beneath the work support, a second thread carrying looper adapted to enter the loop of looper thread formed by the first thread carrying looper, and moving to a

point above said work support so as to position its loop for entrance of the needle, 20 means for supporting said thread carrying looper whereby the same moves from a point in rear of the first named thread carrying looper to a point in front of said needle, 25 said supporting means including a shaft, inclined to the work support, an arm carried thereby, and means carried by said main shaft and having a universal connection with said arm for oscillating said inclined shaft. 30

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

LANSING ONDERDONK.

Witnesses:

W. L. SWIFT,
F. H. EMBLER.