

No. 704,458.

Patented July 8, 1902.

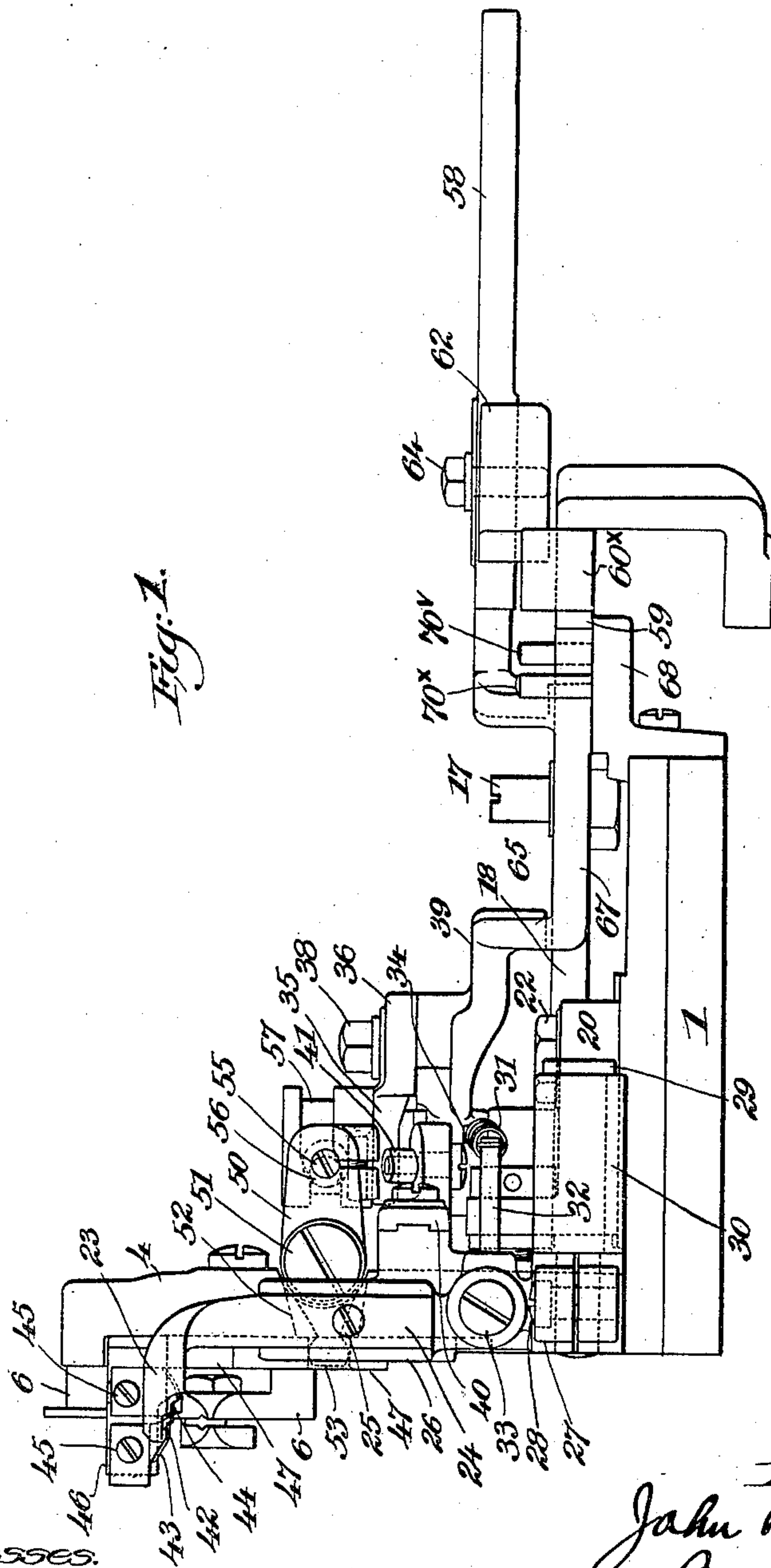
J. B. HADAWAY.

SHOE SEWING AND WELT BEVELING MACHINE.

(Application filed July 8, 1899.)

(No Model.)

3 Sheets—Sheet 1.



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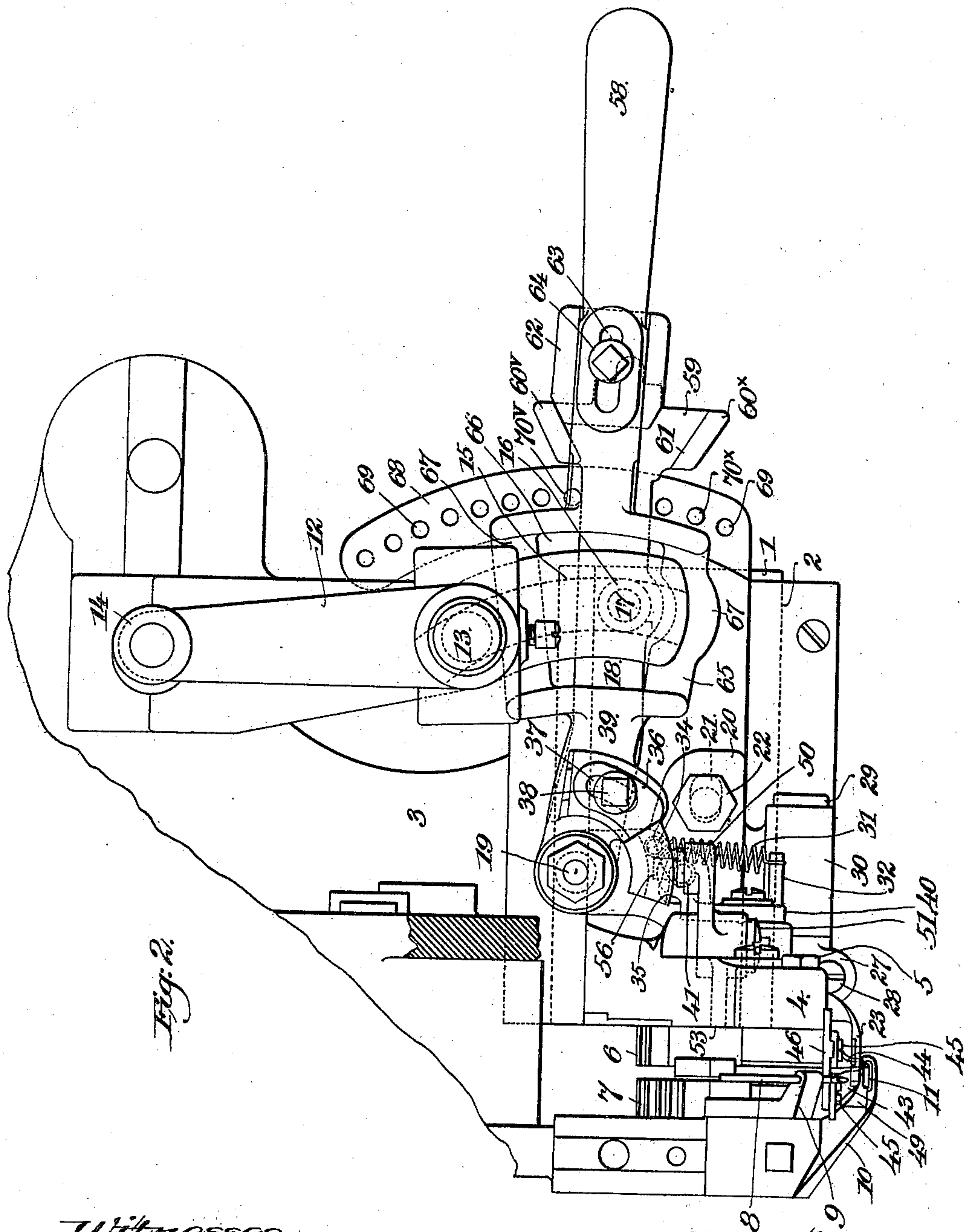


Fig. 2.

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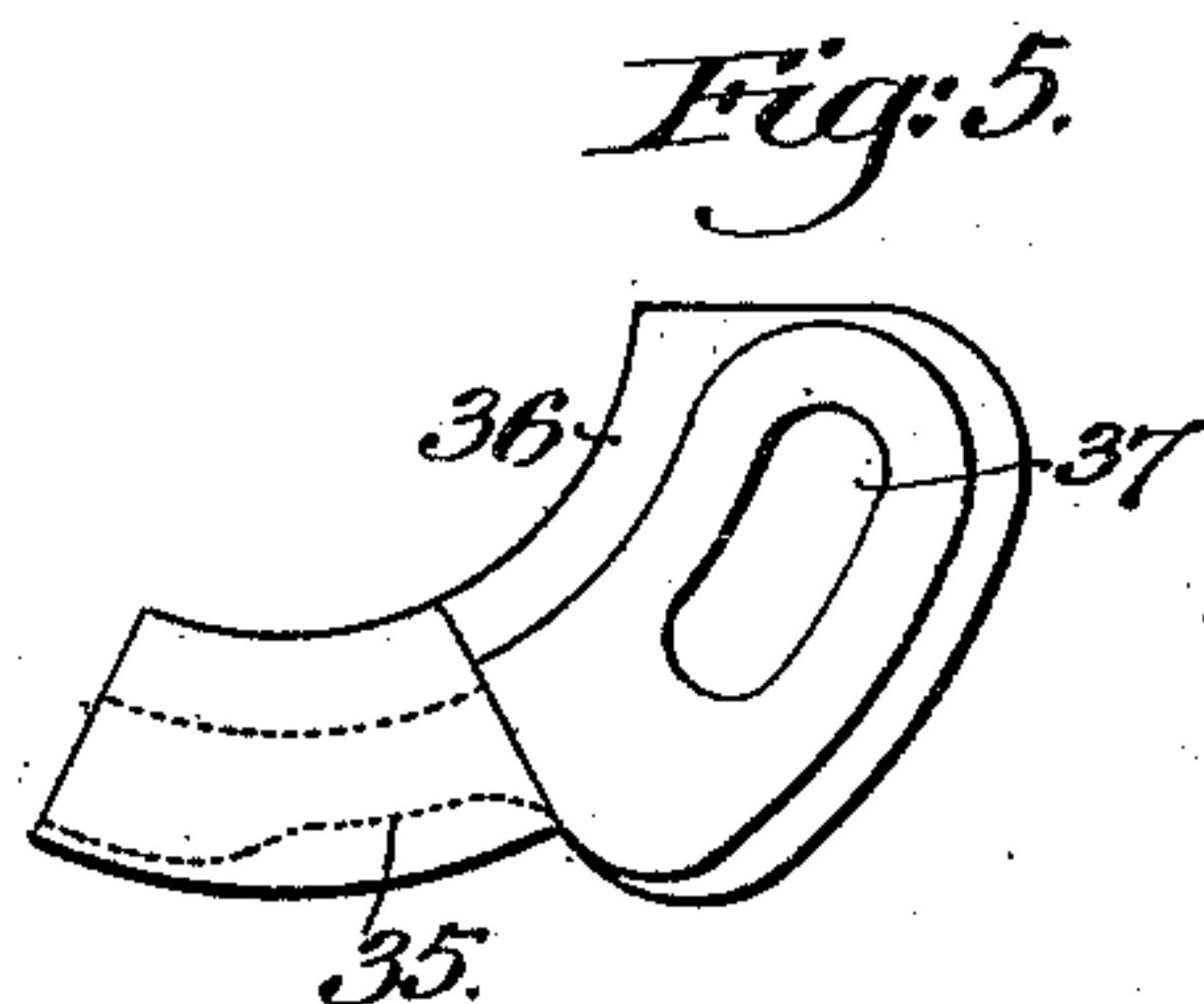
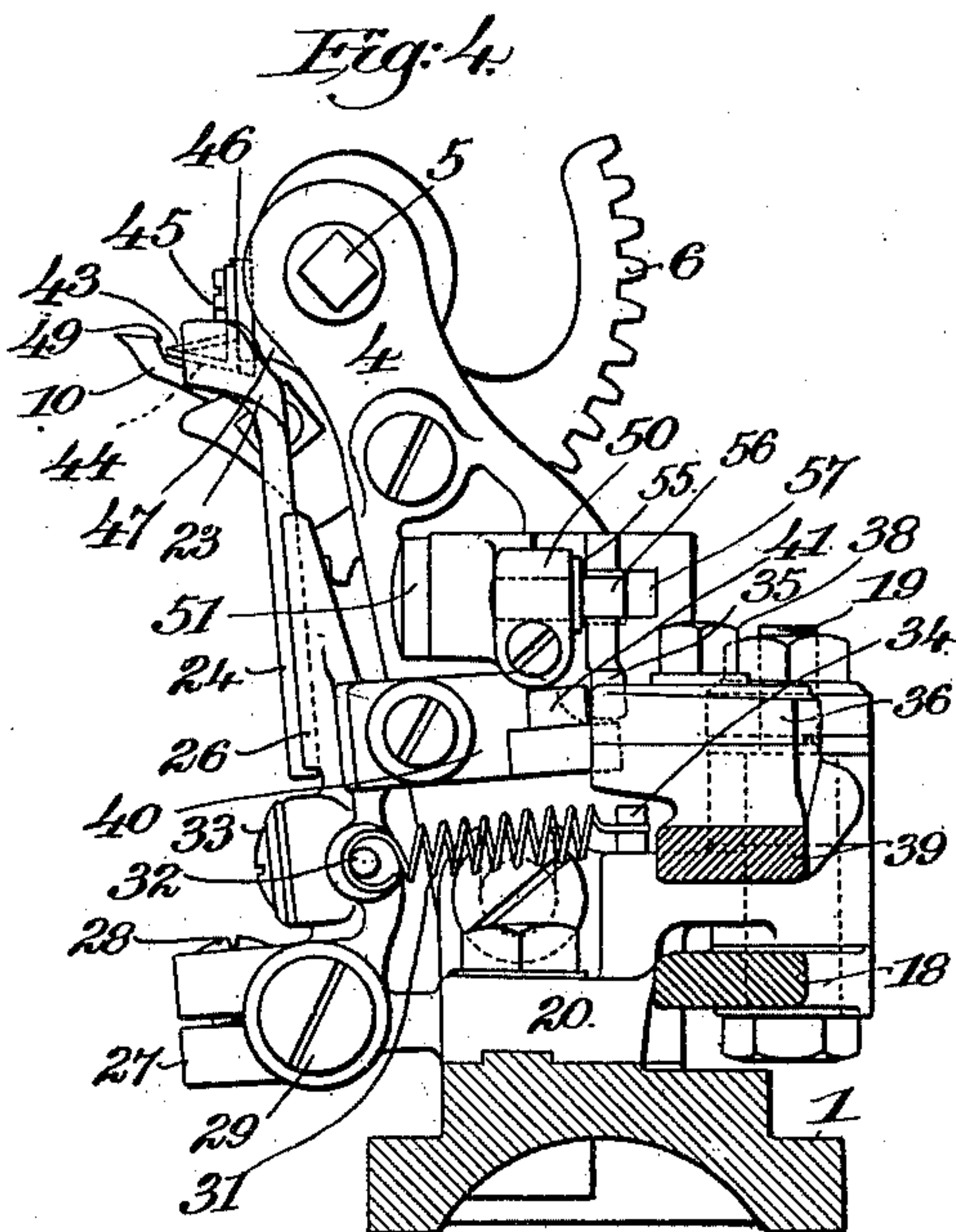
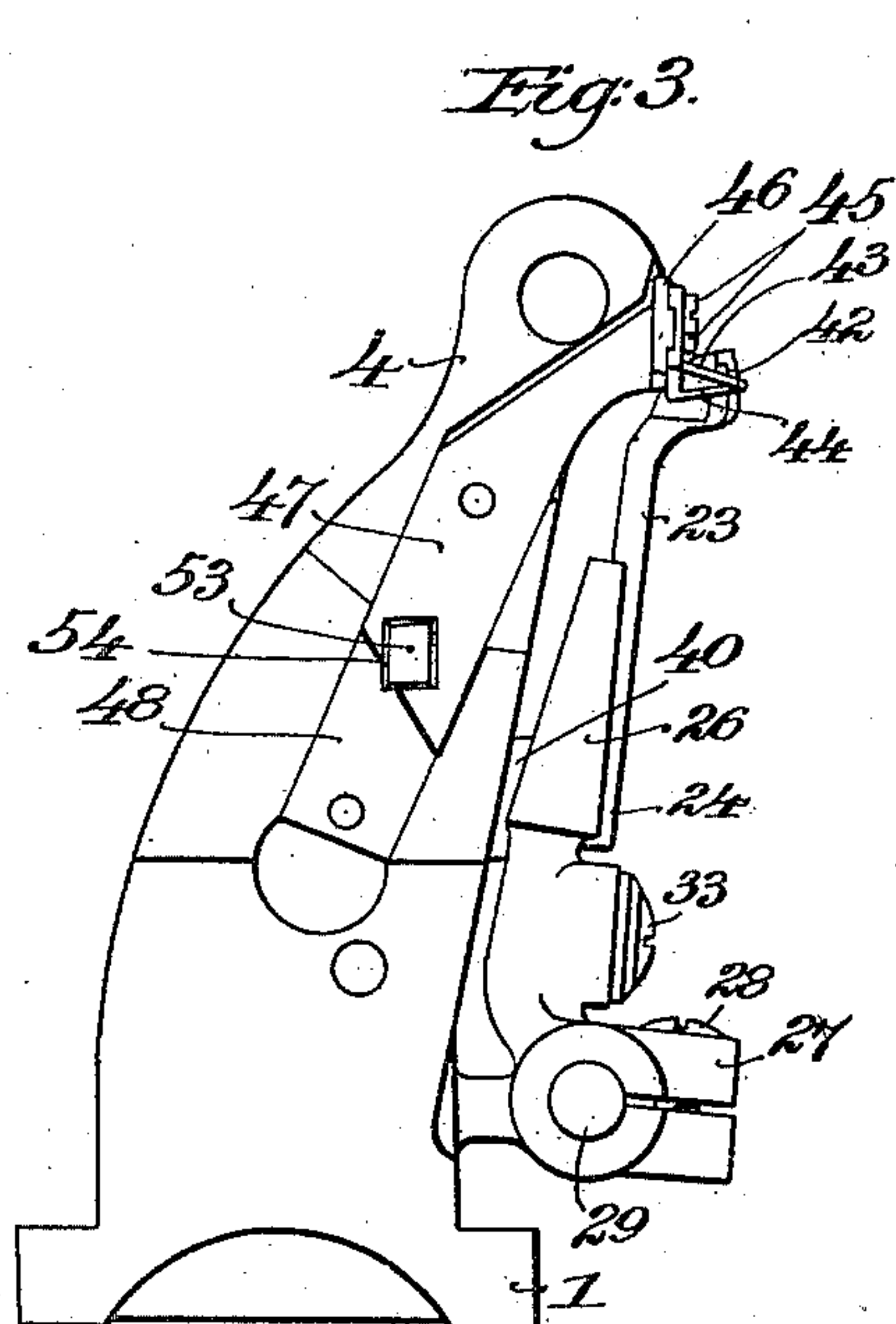
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(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

JOHN B. HADAWAY, OF BROCKTON, MASSACHUSETTS.

SHOE-SEWING AND WELT-BEVELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 704,458, dated July 8, 1902.

Application filed July 8, 1899. Serial No. 723,216. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. HADAWAY, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Shoe-Sewing and Welt-Beveling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to shoe-sewing machines, and more particularly to that type of shoe-sewing machines known as "stitchers," which are employed to unite the outsole to the welts of welted boots and shoes.

In an application filed by me in the United States Patent Office on the 3d of June, 1898, Serial No. 682,438, I have disclosed a shoe-sewing machine of the type hereinbefore referred to provided with an auxiliary movable work-gage and with welt-beveling mechanism arranged to bevel the edge of the welt and means for actuating the movable gage and the welt-beveling mechanism, together with mechanism for adjusting the length of feed of the machine, and consequently the length of the stitches formed thereby, whereby in the stitching of the outsole to the welt of welted boots and shoes wherein the welt and sole project varying distances beyond the upper, such as the well-known "Baltimore Edge" shoe, the length of stitches along the shank and fore part of the shoe, together with their location relatively to the edge of the sole and also the beveling of the edge of the welt along certain portions, can be readily and accurately controlled.

It is the usual custom in sewing the outsole to the welts of welted boots and shoes to place the stitches along the shank portions close in the crease between the upper and welt, and along such portions the stitches are longer than around the fore part of the shoe, and the edge of the welt is not beveled.

The machine disclosed in the application above referred to comprises a welt-beveling mechanism arranged to be thrown into and out of operation and means for throwing such mechanism into and out of operation so connected to the mechanism which adjusts the feed of the work and the length of the stitch

that as the welt-beveling mechanism is thrown out of operation while sewing along the shank portions of the sole the feed of the work and the stitches formed by the machine along the shank portions will be lengthened. The machine also comprises an auxiliary movable work-gage and mechanism for moving the same and connections between such gage-moving mechanism and the welt-beveling and feed-adjusting mechanisms so arranged that when the welt-beveling mechanism is thrown out of operation and the feed of the work lengthened, as described, while sewing along the shank portion the movable gage will be retracted or moved to its rearmost position in order to permit the shoe to be guided by the fixed gage, and thus place the stitches close to the upper or within the crease between the upper and welt, and whenever the feed of the machine is shortened and the welt-beveling mechanism thrown into operation while sewing around the ball and fore part of the shoe the movable gage will be positioned to locate the stitches with relation to the edge of the upper or last, according to the variation in the width of the projecting edge of the sole. In that machine the feed-adjusting mechanism and the mechanism for throwing the work-beveling mechanism into and out of operation are actuated by a hand-lever, and the movable gage is actuated by another hand-lever, the levers being connected by suitable mechanism whereby the movement of one of said levers will at times impart a movement to the other of said levers, and in said machine the construction was such that in sewing a shoe it is necessary to at times manipulate both levers, as fully set forth in said application. In the machine of the application referred to the movable gage is arranged to engage the upper or the edge of the last in the shoe to position the same, and consequently in order to properly position the line of stitches with relation to the variation in extent of the projection of the sole and welt beyond the upper it was necessary in actuating the said movable gage to move it gradually in and out or toward and from the path of movement of the needle in order to insure the proper gradual extension of the line of stitches at the outer ball portion. This gradual movement of the gage can only be per-

formed by a skilled operator and on his part requires the most careful and constant attention, necessitating that he should hold the shoe in position by one hand only, while with the other hand he manipulates the lever controlling the movement of the auxiliary gage, which renders the operation of stitching the outsoles to the welts in the type of shoe hereinbefore referred to an extremely difficult operation to perform.

It is the object of the present invention to simplify and improve the construction, organization, and operation of the said machine and to so construct the same that a single lever controls the adjustment of the feed, the welt-beveling mechanism, and the movable gage.

Another object of the present invention is to render the machine simple to operate by constructing the movable gage so that it will bear against the edge of the rounded sole when brought into operation, and thus render the gradual moving in and out of such gage toward and away from the path of movement of the needle unnecessary, it requiring simply that when sewing the shank portions such gage will be in its most retracted position, and at this time the shoe will be guided by the fixed gage and work-support, and whenever it is desired to stitch the ball and fore part of the sole a quick movement of the movable gage to its outward position causes the gage to bear against the edge of the rounded sole, and thus the line of stitches at this portion will be placed a uniform distance from the edge of the sole no matter how much variation there might be in the extension of such edge beyond the edge of the upper, all of which will more fully appear in the following specification.

To the above end the present invention consists of the devices and combinations of devices which will be hereinafter particularly described, and pointed out in the claims.

The present invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a front elevation of the feed-slide of a shoe-sewing machine with my invention applied thereto. Fig. 2 shows in broken plan view and partial section the mechanism illustrated in Fig. 1, together with portions of the shoe-sewing machine. Fig. 3 shows an end elevation of the mechanism shown in Fig. 1 looking toward the right with the awl-segment removed. Fig. 4 shows an end elevation and partial section of the mechanism shown in Fig. 1 looking toward the left. Fig. 5 shows a detail of the cam which controls the movements of the welt-beveling mechanism and the movable gage.

In the drawings, 1 represents the feed-slide, which consists of a substantially rectangular plate arranged to be reciprocated along a suitable guideway 2, supported by the fixed frame 3 of the machine. The feed-slide 1 at one end carries the vertically-disposed standard 4, in which is secured a stud 5, upon which is fulcrumed the awl-segment 6, carry-

ing a curved awl of usual construction. (Not shown.) Supported on the fixed frame 3 is a needle-segment 7, carrying the usual curved hook-needle 8.

9 represents a needle-guide, and 10 the work-support, provided with the usual throat or aperture 11.

All of the above parts, together with such other parts of the shoe-sewing mechanism going to make up the shoe-sewing machine which are not shown, are constructed, organized, and arranged to perform their usual function the same as any such machine of the type mentioned and preferably in accordance with the well-known "Goodyear outsole-stitcher," which is familiar to those persons skilled in this art and need not be herein particularly set forth.

In the operation of the machine the awl-segment is oscillated about its fulcrum 5 to puncture the work for the reception of the needle, and while still in the work the feed-slide 1 is moved toward the left, as the machine is shown in Figs. 1 and 2, to bring the awl-puncture in the path of oscillation of the needle, after which the awl is withdrawn from the work and the feed-slide moved to the right in position to again puncture the work preparatory to feeding it the length of another stitch. The reciprocation of the feed-slide 1 in the machine of the drawings is secured by means of a lever 12, which is fulcrumed upon a post 13, the rear arm of the lever carrying a cam-roll 14, engaging a cam-path in a cam. (Not shown.) The forward arm of the lever 12 is provided on its under face with a curved groove 15, (see dotted lines, Fig. 2,) in which is received a roll 16, carried by a stud 17, fixedly secured to the upper surface of a link or lever 18, which link or lever is pivotally connected at 19 to the feed-slide 1 or to a rearwardly-projecting arm of a bracket 20, adjustably secured by a slot 21 and set-screw 22 to the upper surface of said feed-slide.

From the foregoing it will be noted that the oscillations of the lever 12 will impart horizontal reciprocations to the feed-slide 1, which feed-slide, as hereinbefore set forth, carries the standard 4, upon which the awl-segment is mounted, and that by shifting the link or lever 18 about its fulcrum 19 the stud 17 may be moved toward or from the fulcrum 13 of the lever 12, and thus adjust the length of movement of the feed-slide, and consequently the length of feed of the work.

In the so-called "Baltimore-edge" shoe, hereinbefore referred to, the edge of the sole and the welt along the shank portions thereof is trimmed quite close to the upper or the edge of the last in the shoe, and along the outer ball portion the edge of the sole and welt extend quite a distance beyond the edge of the upper or last, the distance being greatest at or about the middle of the outer ball portion, from which point it gradually narrows until a point is reached about at the beginning of

the outer toe portion, and around the toe portion and inner ball portion of the shoe the edge of the sole and welt projects a uniform distance considerably less than the projection at the outer ball portion.

It is customary in the manufacture of welted shoes to secure the outsole to the welt and lasted insole of the shoe temporarily by cement or otherwise before the sewing takes place, and the edge of the sole and welt is trimmed or "rounded," as it is called, to approximate the shape which it will have in the finished shoe. In the operation of stitching the sole to the welt by the present invention the work is positioned while the sewing progresses along the shank portions by the work-gaging face of the combined fixed work-support and the gage 10, the forward end of which fits into the crease between the upper and welt, bearing against the upper of the shoe, and while sewing along the ball and toe portions of the shoe the work is positioned in relation to the path of movement of the needle by means of the auxiliary gage, which is advanced or retracted, as desired, and bearing against the edge of the sole moves the work out or permits it to be moved in, away from, or toward the work-gaging face of the fixed gage 10 and the path of oscillation of the needle and awl, so as to cause the stitches to be placed near the edge of the sole at such parts.

In the machine of the drawings the movable gage 23 comprises a laterally-extended arm arranged to project over the upper surface of the fixed work support and gage 10, and it is provided with a shank 24, secured by means of a set-screw 25 to the upper end of a lever 26, which lever at its lower end is secured by means of a pinch-collar 27 and screw 28 to the end of a shaft or stud 29, arranged to turn in a tubular bearing 30, carried by a block 20, secured to the feed-slide 1. The shaft or stud 29 is free to rock in its bearing 30 to permit the lever 26 and the movable gage 23 to be moved in and out over the upper surface of the fixed gage 10 toward and away from the path of oscillation of the needle and awl. Any suitable means may be provided for rocking the lever 26, and thus moving the movable gage 23; but in the machine of the drawings the inward rocking of the lever 26 is secured by means of a spring 31, one end of which is secured to a post or arm 32, projected laterally from the lever 26 and preferably formed separate therefrom and secured in a suitable bearing formed in said lever by means of a set-screw 33. The opposite end of the spring 31 is secured to a pin 34, projecting forwardly from the block 20. The outward movement of the lever 26 and the movable gage is secured by means of cam 35, carried by a bracket 36, adjustably secured by means of a slot 37 and set-screw 38 to a lever 39, fulcrumed on the post 19, which will be hereinafter de-

scribed. Upon the rearwardly-projecting arm 40 of the lever 26 is a pin or stud carrying a cam-roll 41, which is held by means of the spring 31 against the cam 35 of the bracket 36. The spring 31 holds the cam-roll 41 against the cam 35, and this cam is so formed that a rocking of the lever 39 about its fulcrum forwardly permits the spring 31 to draw back the lever 26 and the movable gage 23 carried thereby, and the rocking of the lever 39 about its fulcrum in the opposite direction or rearwardly causes the cam 35 to move forward the lever 26 and the movable gage 23 against the force exerted by the spring 31. The gage 23 is cut out at its forward end at its under side, as shown at 42, in order to permit the rise and fall of the welt-beveling mechanism, as will be hereinafter described.

The welt-beveling mechanism of the machine of the drawings is substantially the same as the corresponding mechanism of the application hereinbefore referred to and comprises a welt-beveling cutter 43 and a guard 44, the cutter and guard being secured by screws 45 to the front face of a laterally-projecting arm 46, carried by a slide 47, arranged to have a vertical movement in a guideway 48, formed in the left-hand face of the standard 4. The movement of the slide 47 along its guideway 48 causes the welt-beveling cutter 43 and guard 44 to be raised or lowered toward and from the upper surface of the fixed work-support 10, according as the slide 47 may be moved up or down.

It will be observed that the welt-beveling mechanism is supported upon the feed-slide 1 and that the cut made by such mechanism along the edge of the welt will be imparted by the reciprocating movement of such feed-slide, and the cutting edge of the knife 43 is arranged so that it will make its cut as the feed-slide is retracted toward the right preparatory to positioning the awl to engage the work for another feed movement, or it may be stated that the cutting action of the knife is performed on the back stroke of the feed-slide. As clearly shown in the drawings, the upper surface of the fixed work-support for some distance along its throat 11 is cut away, forming a recess 49, which recess is of such a length as to permit the lateral reciprocations of the cutter 43 and guard 44, and also of such a depth that when the slide 47 is in its depressed position the cutter 43 will be permitted to assume a position below the upper surface of the work-support 10, upon which the projecting edge of the welt and sole is supported, and when thus depressed the cutter 43 cannot come in contact with the edge of the welt, and when in this position the welt-beveling mechanism, although still partaking of the lateral reciprocation of the feed-slide, may be said to be out of operation. Whenever it is desired to place the welt-beveling mechanism in operation, the slide 47 will be raised to bring the cutting edge of the welt-

beveling cutter 43 at such a distance above the work-support that its cutting edge may operate on the outer edge of the surface of the welt resting upon the work-support 10.

5 For the purpose of raising and lowering the slide 47 there is provided a lever 50, which is pivoted to a stud 51, mounted in the side of the standard 4, one end of the lever 50 passing through an aperture 52, formed in the

10 standard 4 and provided with a head 53, engaging an aperture 54 in the slide 47. The opposite end of the lever 50 is provided with an eccentric stud 55, carrying a cam-roll 56, engaging a cam 57, carried by the bracket 36,

15 which is secured to the lever 39.

In the machine of the drawings, as in the application hereinbefore referred to, the adjustment of the feed mechanism and the movements of the auxiliary gage, together with the

20 controlling of the operation of the welt-beveling mechanism, are secured by mechanism so connected and arranged that they will be simultaneously controlled, and in the present invention this simultaneous control of these

25 mechanisms is secured by the manipulation of a single hand-lever and connecting mechanism, which will now be described. This lever is the lever 39, which is fulcrumed on the post 19 and which at its outer end is pro-

30 vided with a suitable handle 58, whereby the said lever may be turned about its fulcrum, and thus move the bracket 36, carrying the cams 35 and 57, to simultaneously actuate the

35 movable gage and throw into and out of operation the welt-beveling mechanism, the cams being so formed that a rearward movement of the lever 39 will simultaneously advance the movable gage and raise the welt-beveling cutter into operative position and

40 the forward movement or outward movement of the lever 39 will simultaneously permit the spring 31 to return the movable gage to its retracted position and will lower the welt-beveling mechanism or place it out of opera-

45 tive position. As hereinbefore stated, it is the practice in uniting the insoles to the welts of boots and shoes to increase the feed of the work while sewing the shank portions and to place the stitches of such portions close into

50 the crease between the upper and welt, and while sewing along the ball and fore part of the shoe-sole the feed of the work is shortened, and consequently shorter stitches are formed.

For the purpose of enabling the feed of the

55 work to be properly adjusted at the proper time with the positioning of the movable gage and the welt-beveling mechanism by the movement of a single hand-lever I have extended the link or lever 18 beyond the pin 17

60 and have formed on the end thereof a head 59, which at opposite ends carries the upwardly-projecting stops 60^x and 60^y, which, as clearly shown, are set at an angle to the longitudinal medial line of the lever 18, forming the substantially V-shaped recess 61, the

65 stops being arranged to be engaged by the

forward tapering end of a block 62, adjustably fitted to the lever 39 by means of a slot 63 and set-screw 64, whereby the block 62 may be moved longitudinally of the lever 39

70 for a purpose to be hereinafter set forth. As clearly shown in Figs. 1 and 2 of the drawings, the lever 39 is formed intermediate of its ends with a depression 65, in which is formed an opening 66 for the purpose of per-

75 mitting the forward end of the lever 12 to engage the stud and cam-roll 16 and 17 of the lever 18, the connecting-bars 67 of the lever 39 being substantially in the same plane as the lever 18, but sufficiently far apart so as

80 to permit the free movement of the lever 39 without said bars coming into contact with the lever 18. The feed-slide 1 is provided with the usual curved gage-plate 68, in which are formed holes 69, arranged to receive stop-

85 pins 70^x and 70^y, which limit the movement of the lever 18 in each direction. By adjusting the block 62 along the lever 39 it may be caused to extend farther within the recess 61,

90 and thus engage the stops sooner or later in its movement, or the block 62 may be so far advanced along the lever 39 as to cause its forward tapering end to engage closely with-

95 in the forward end of the recess 61, contacting with both stops, thus locking the levers 18 and 39 together for simultaneous movement, or the block 62 may be so far moved backward along the lever 39 as to have no

100 effect on the lever 18, in which case the feed of the machine will not be affected by the adjustment of the movable work-gage and the welt-beveling mechanism; but, as hereinbefore stated, it is common practice in the use

105 of these machines to vary the length of the feed while sewing along different parts of the shoe.

In the operation of the present invention while sewing along the shank portion of the shoe the welt-beveling mechanism will be

110 thrown out of operation, with the movable gage moved to its retracted position, and if the block 62 has been adjusted to affect the feed and the feeding mechanism adjusted to make as long a stitch as it is desired to make

115 in the particular shoe undergoing manufacture, at which time the shoe will be guided by the fixed gage—that is, looking at Fig. 2 of the drawings—the lever 39 will be drawn forward until the block 62 contacts

120 with the stop 60^x, when the further movement of the lever 39 will cause the lever 18 to be moved in the same direction, which movement will continue until the lever 18

125 contacts with the stop 70^x. This movement of the lever 39 has drawn down the slide 47 and the welt-beveling cutter carried thereby to place the cutting edge of such cutter below the upper surface of the work-support 10,

130 also has permitted the spring 31 to rock the lever 26 and retract the movable gage. With the parts in this position the sewing commences at the rear shank portion on one side

of the shoe and proceeds to the forward end of the shank portion on such side. When the sewing reaches the commencement of the fore part of the sole at the forward end of the shank, the operator, grasping the handle 58, quickly moves the lever 39 to the position shown in Fig. 2, such movement acting to raise the welt-beveling cutter and advance the movable gage, which, contacting with the edge of the sole, moves the shoe outward away from the work-gaging face of the fixed gage, and the block 62, coming in contact with the stop 60^v, moves the lever 18 backward until it contacts with the stop 70^v, as clearly shown in Fig. 2, thus moving the stud 17 toward the fulcrum 13 of the lever 12 and shortening the feed. The sewing now proceeds around the ball and toe portions of the shoe on both sides, with the parts in the position shown in Fig. 2, and the shoe guided by the contact of the edge of its sole against the movable gage. As the beginning of the shank on the opposite side of the shoe is reached the operator moves quickly outward the lever 39, thus throwing out of operation the beveling mechanism, retracting the movable gage and permitting the shoe to be guided by the work-gaging face of the fixed gage, and lengthening the feed of the work, as hereinbefore described, and the shank portion of the shoe on this side is stitched with the parts in the same position they were in when the sewing commenced.

It is to be observed that the extent of movement of the movable gage may be adjusted by adjusting the block 36, carrying the cam 35 of the lever 39, and that the extent of movement of the welt-beveling mechanism may be adjusted by adjusting the eccentric screw 55 in its bearing.

Having described the construction and mode of operation of my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. In a sole-sewing machine, the combination with stitch-forming mechanism, feeding means and feed-regulating means, of a welt-beveling cutter, a movable edge-gage, and means for throwing the welt-beveling cutter into and out of operation and operating the movable edge-gage and the feed-regulating means, substantially as described.

2. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter, a movable gage, and means for throwing the welt-beveling cutter and the movable gage into and out of operation comprising a cam and a lever, substantially as described.

3. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter, a movable gage, and means for throwing the welt-beveling cutter and the movable gage into and out of operation comprising a cam and a lever, said cam having

two cam-faces for operating the cutter and gage respectively, substantially as described.

4. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter, a movable gage, and means for throwing the welt-beveling cutter and movable gage into and out of operation comprising a cam and a lever, feed mechanism including a feed-adjusting lever and cooperating stops and projections on the two levers, substantially as described.

5. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter and a lever for throwing it into and out of operation, feed mechanism including a feed-adjusting lever, the two levers having cooperating stops and projections, substantially as described.

6. In a sole-sewing machine, the combination with stitch-forming mechanism, of a movable gage, welt-beveling mechanism arranged to be thrown into and out of operation, work-feeding mechanism, a lever for adjusting the stroke of the work-feeding mechanism, a lever for simultaneously advancing or retracting the movable gage and throwing the welt-beveling mechanism into and out of operation, and an adjustable block carried by said lever arranged to engage the lever of the feed-adjusting mechanism, substantially as described.

7. In a sole-sewing machine, the combination with stitch-forming mechanism, of a movable gage, a lever for actuating said gage, work-feeding mechanism and a lever for adjusting the stroke of said work-feeding mechanism, diverging stops carried by said lever and an adjustable block carried by the gage-actuating lever, arranged to engage the said stops, substantially as described.

8. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter, a gage, and means for moving the gage forward and back in the direction of the feed simultaneously with the forward and back feed movements, substantially as described.

9. In a sole-sewing machine, the combination, with stitch-forming mechanism, and feed mechanism, of a welt-beveling cutter, a gage, said welt-beveling cutter and gage being mounted upon a part of the feed mechanism and partaking of its movements, substantially as described.

10. In a sole-sewing machine, the combination with stitch-forming mechanism and feed mechanism, of a gage, said gage being mounted upon a part of the feed mechanism and partaking of its movements, substantially as described.

11. In a sole-sewing machine, the combination with stitch-forming mechanism, and a feed-slide, of a welt-beveling cutter and a gage mounted upon said slide, substantially as described.

12. In a sole-sewing machine, the combina-

tion with stitch-forming mechanism and a feed-slide, of a welt-beveling cutter, a movable gage, and means for throwing the welt-beveling cutter and movable gage into and
5 out of operation, said cutter, gage and throwing means being mounted upon said feed-slide, substantially as described.

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

JOHN B. HADAWAY.

Witnesses:

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A. E. WHYTE.