

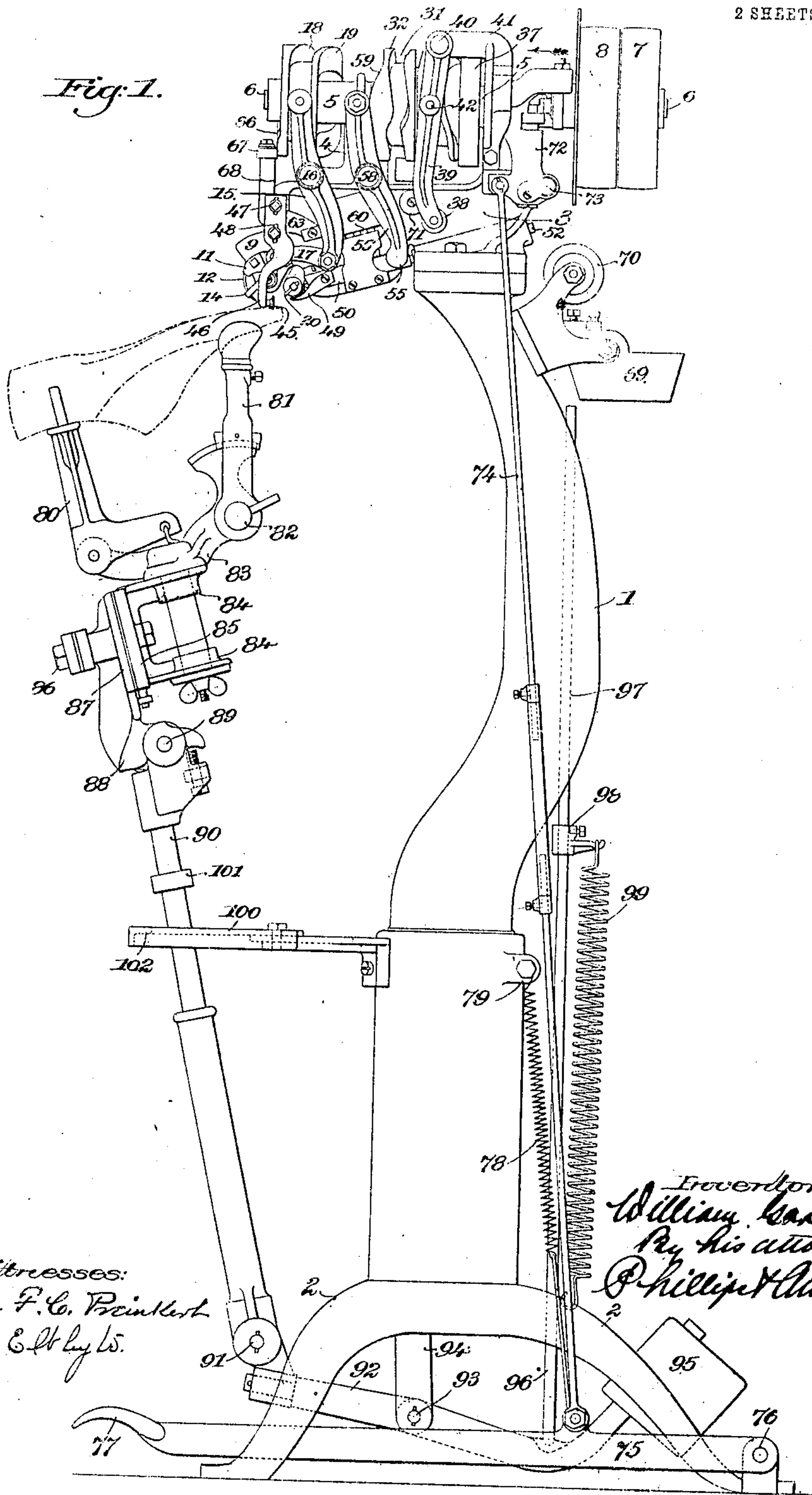
912,668.

W. GORDON.  
SEWING LASTING MACHINE.  
APPLICATION FILED DEC. 27, 1898.

Patented Feb. 16, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



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Inventor:  
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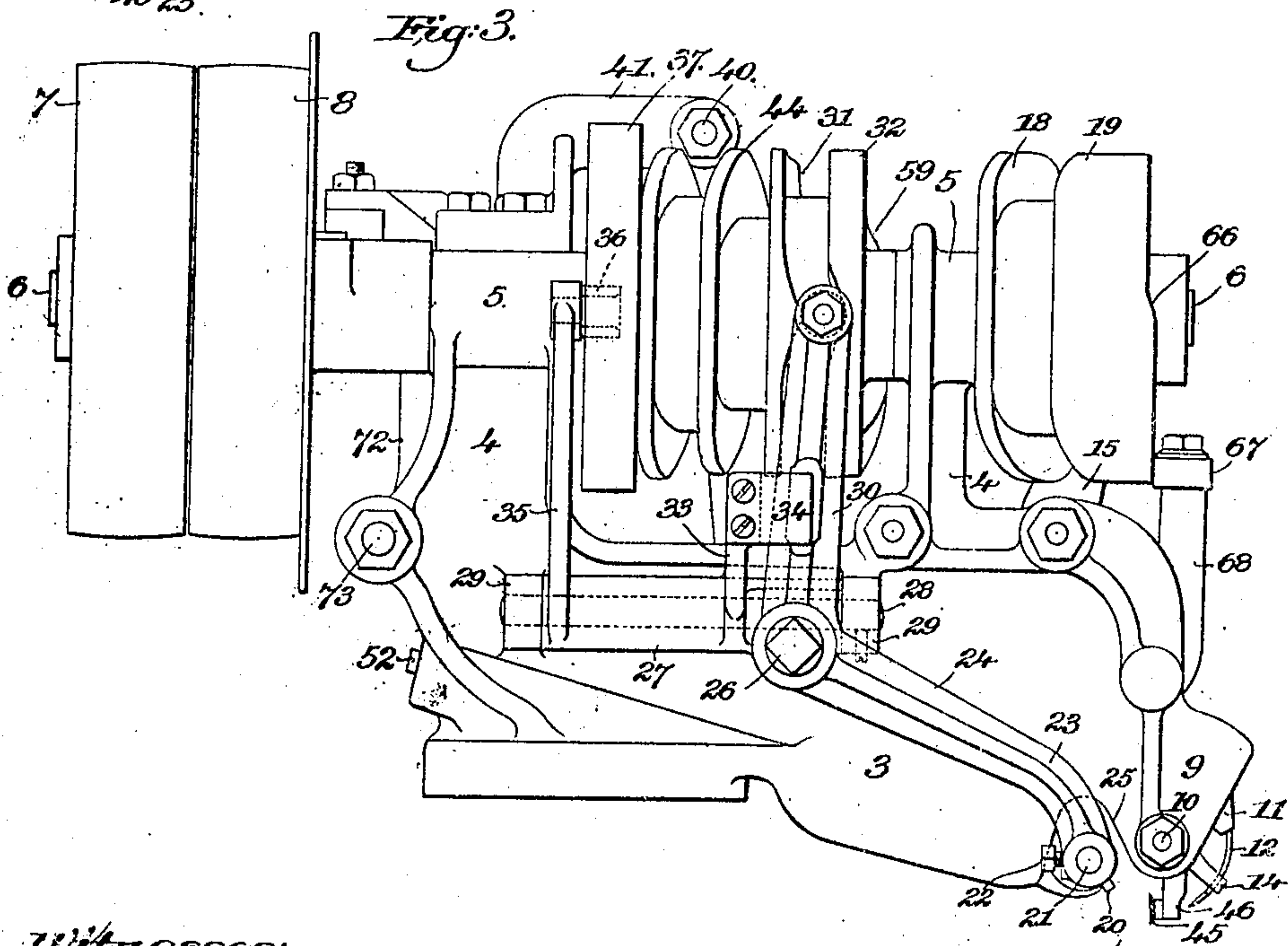
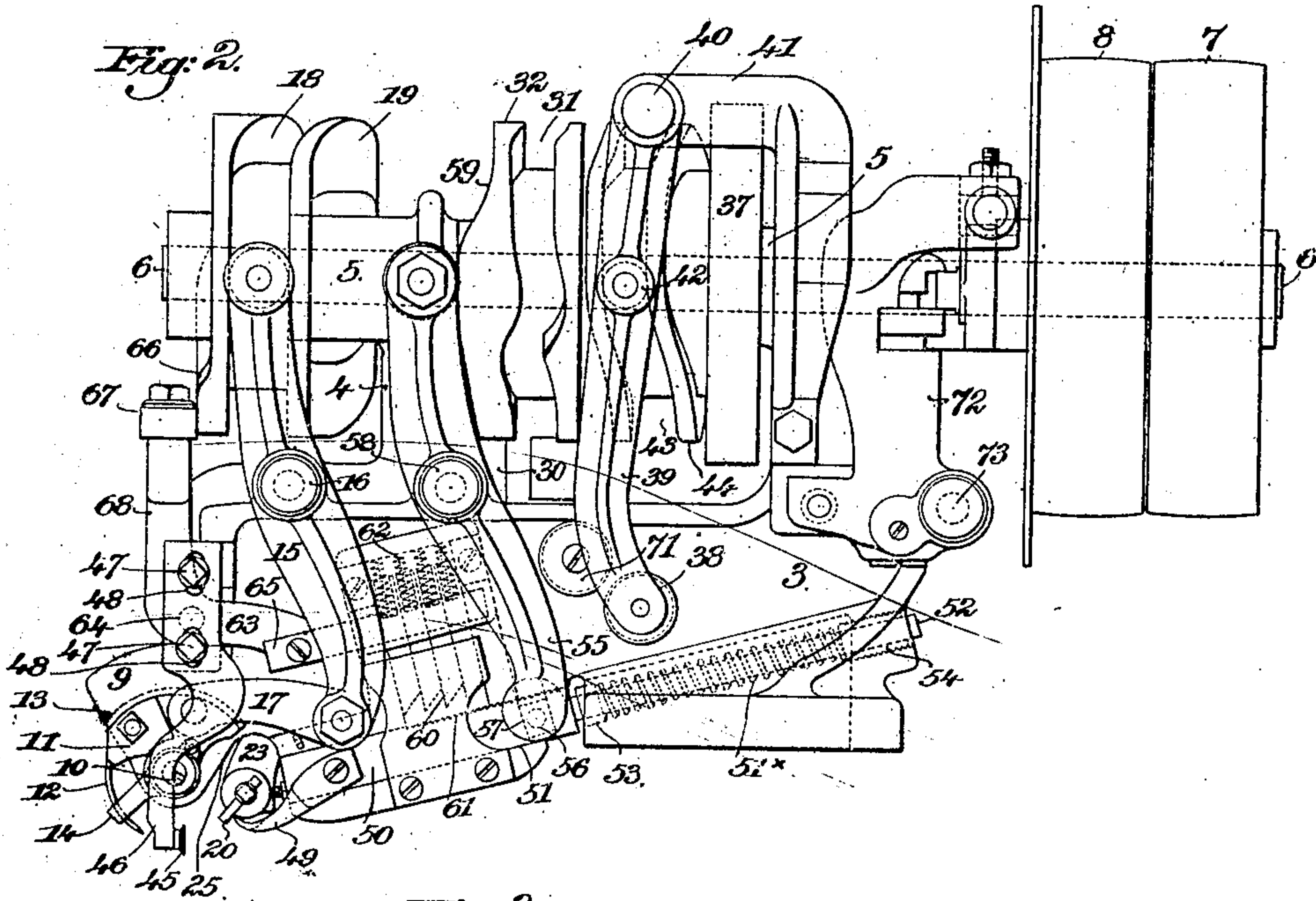
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APPLICATION FILED DEC. 27, 1898.

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Patented Feb. 16, 1909.

2 SHEETS—SHEET 2.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## SEWING LASTING-MACHINE.

No. 912,668.

Specification of Letters Patent.

Patented Feb. 16, 1909.

Application filed December 27, 1898. Serial No. 700,456.

*To all whom it may concern:*

Be it known that I, WILLIAM GORDON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing Lasting-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.

My invention relates to machines for lasting boots and shoes and more particularly to that type of lasting machines wherein the upper is temporarily secured to the sole by means of stitches.

The object of the present invention is to improve the construction and mode of operation of lasting machines which comprise stitch forming devices and a shoe supporting jack.

To the above end the present invention consists of the devices and combinations of devices which will be hereinafter described and claimed.

The invention is illustrated in the accompanying drawings in which—

Figure 1 shows in side elevation a machine embodying the same. Fig. 2 shows an enlarged side elevation of the head of the machine taken from the same side as that shown in Fig. 1. Fig. 3 shows an enlarged side elevation of the head opposite to that shown in Fig. 2.

Similar reference numerals will be used to designate corresponding parts throughout the specification and drawings.

The machine comprises a suitable standard 1, which as shown in the drawings is supported upon the floor by suitable legs 2 and which is of such a height as to bring the head of the machine at the proper position for the use of the operator while standing in front of the machine. Upon the upper end of the standard 1 is a frame or head 3 which is of suitable size and shape to support the operative parts of the stitch forming mechanism. Rising from the head 3 are suitable vertical standards 4 upon the upper ends of which are bearings 5 in which is mounted to rotate the shaft 6 which extends longitudinally through the machine from the back to the front thereof, and which at its rear end carries suitable fast and loose pulleys 7 and 8 which are driven by a belt from any suitable source

of power to actuate the moving parts of the stitch forming mechanism, and which, as will be hereinafter described, is controlled by a suitable one-revolution clutch mechanism, whereby the rotations of the shaft 6 may be controlled by the operator.

On a downwardly projecting arm 9 of the head 3, there is pivoted at 10, the needle segment 11, which carries a curved hook needle 12, and there is preferably formed in the arm 9 above the needle segment 11 a curved guide-way 13 to coincide with the curved upper edge of the needle segment, and which materially assists the free operations of the needle segment and its maintenance in proper operative position during its oscillations about its axis 10.

14 represents a needle guide which is arranged to oscillate about the pivot 10 of the needle segment, and which may be actuated in the usual manner by any suitable means, whereby it partakes of the oscillations of the needle segment. The needle segment 11 is oscillated by means of a lever 15 which is fulcrumed at 16 to one side of the head 3, and which at its lower end is connected by means of a link 17 to the needle segment, and at its opposite end carries a cam roll which engages a peripheral cam groove 18 formed in a cam 19 at the forward end of the shaft 6.

The looper 20 is carried by a stud 21 adjustably secured by a set-screw 22 in a bearing in the lower end 23 of a bell crank lever 24 and projects through the cutaway portion 25 of the arm 9, in which cutaway portion the looper is arranged to have a movement toward and from the needle and laterally across the path of oscillation of the needle, whereby to pass a loop of thread around the needle. The bell crank lever 24 is fulcrumed at 26 on a sleeve 27 which sleeve is mounted to oscillate about a shaft 28 supported in bearings 29 formed on the head 3. The upper arm 30 of the bell crank lever 24 carries a cam roll which engages a peripheral cam groove 31 formed in a cam 32. Projecting upwardly from the sleeve 27 is an arm 33 which carries a fork 34 embracing the upper arm 30 of the bell crank lever 24. The sleeve 27 carries at its rear end an arm 35 which at its upper end carries a cam roll 36 which engages a cam path formed in the rear face of a cam 37.

The above arrangement is such that a rotation of the shaft 6 will, by means of the



37, rock the sleeve 27 about the shaft 28, and therefore rock the bell crank lever 24 side-wise and impart to the looper a movement across the path of oscillation of the needle, and the cam path 31 in the cam 32 will rock the bell crank lever 24 about its fulcrum 26 and impart to the looper a movement toward and from the needle. It will of course be understood that these movements of the sleeve 27 and bell crank lever 24 are timed with relation to each other so that the forward, and back and sidewise movements of the looper will take place at the proper times, so that when the needle is in its advanced position through the work, the looper will throw a loop of thread around the shank thereof. The yoke 34 of the arm 33 acts as a guide for the upper arm 30 of the bell crank lever 24 when the bell crank is swung about its pivot 26 and insures uniform rocking movements being imparted to the bell crank lever by the sleeve 27.

If desired, the machine may be provided with a suitable thread pulling device 38 carried by a lever 39 which is fulcrumed at 40 to an overhanging arm 41 and which carries a cam roll 42 engaging a cam path 43 in a cam 44, which may be formed if desired integrally with the cam 37, the arrangement being such that a rotation of the cam 44 will impart to the thread pulling device 38 longitudinal movements toward and from the front of the machine.

In the present machine there is provided a down-hold which is arranged accurately in position with relation to the path of oscillation of the needle, so that when the bottom of the sole of the shoe is in contact with the down-hold, the needle will enter and emerge from the work to the desired depth, or in lasting turn or welted shoes, the down-hold will so position the surface of the work with reference to the path of movement of the needle that the needle will properly enter and emerge from the lip or between substance. The down-hold which is illustrated in the drawing consists of a serrated roller 45 which is mounted to rotate freely on a stud, carried in the lower end of an arm 46 adjustably secured by means of bolts 47 and slots 48 to the head of the machine to one side of the needle and preferably in alinement with the axis of oscillation of the needle.

The machine comprises a suitable back-gage 49 which is carried by the forward end of a slide 50 arranged to reciprocate in a suitable guideway 51. The back-gage is moved forward towards the down-hold by means of a spiral spring 51\* which surrounds a rod 52 secured to the rear end of the slide 50, which spring bears at one end against a head 53 secured to said rod, and at its opposite end against a fixed bearing 54 through which the rod 52 slides. In order to retract the back-gage against the tension of the spring 51\* at

the time the machine is stopped, I have provided a lever 55 which at its lower end carries a block 56 which engages a recess 57 of the slide 50, the lever 55 being fulcrumed at 58 to the frame 3, and having at its upper end a cam roll which engages a face cam 59 formed on the front face of the cam 32. It is desirable to lock the back-gage in its advanced position at the time the needle enters the work, and to secure this result there are provided locking pawls or dogs 60, the lower ends of which are arranged to engage with teeth 61 formed on the upper edge of the slide 50. The pawls or dogs are forced down to engage the teeth 61 by means of springs 62. In order to raise the pawls 60 to permit the lever 55 to retract the back-gage 49, there is provided a lever 63 which is fulcrumed at 64, and which carries a bar 65 arranged to engage the pawls 60 and raise them against the tension of the springs 62. The lever 63 is rocked by means of a face cam 66 formed on the front face of the cam 19, which engages a cam roll 67 carried by the upper arm 68 of the lever 63.

69 represents a suitable thread waxing device from which the thread leads over a roller 70, thence under the thread pulling device 38 and over a thread guiding truck 71 to the looper. As before explained the rotations of the shaft 6 are controlled by suitable fast and loose pulleys 7 and 8 and these fast and loose pulleys are provided with complementary clutch faces, arranged to be connected and disconnected, which may be formed in any manner suitable in such devices, to form a one-revolution clutch.

The opening and closing of the clutch is controlled by an arm 72 which is fulcrumed at 73 to the rear of the head 3 and said arm is provided with suitable connections with the clutch controlling devices, whereby as the arm 72 is rocked about its fulcrum 73, it will throw the clutch faces in contact to impart rotary motion to the shaft 6 and when the arm 72 is released and returned to its normal position, it will be in a position to engage the clutch controlling devices after the machine has completed one cycle of movement to disconnect the clutch faces and stop the rotation of the shaft 6 and the operation of the machine, with all the parts of the machine in position to begin another stitch-forming operation.

I have not deemed it necessary to describe in detail the start and stop mechanism which comprises the one revolution clutch, and the controlling devices, as in and of themselves they form no part of the present invention, and any suitable one-revolution clutch mechanism may be employed.

For the purpose of rocking the arm 72 about its fulcrum 73 to connect the clutch faces and impart rotation to the shaft 6, the arm 72 is connected to one side of its fulcrum



73 with a rod 74, which rod at its lower end is connected to a foot treadle 75 fulcrumed at 76 and provided at its forward end with a foot piece 77. A depression of the treadle 75 will rock the arm 72 in the direction of the arrow shown in Fig. 1, and thus connect the clutch faces to start the operation of the machine. It is designed that as soon as the rotation of the shaft 6 commences, the arm 72 will be returned to its normal position in order to stop the operation of the machine after it has completed one cycle of movement, and for this purpose the treadle 75 is connected with a spring 78, the opposite end of which is connected to the standard 1 at 79, whereby after the operator has depressed the treadle 75 against the tension of the spring 78, and has removed his foot from the foot piece 77, the spring 78 will immediately raise the treadle 75 and therefore the rod 74 and return the arm 72 to its normal position.

As before stated, the shoe to be lasted is supported on a suitable jack, which jack is arranged to be freely shifted and moved by the operator during the lasting operation, to position the shoe with relation to the stitch forming mechanism, and locate the stitches at any desired point along the shoe and, if desired, varying their number and distance from each other according as the work being done requires more or less stitches at any given section of the shoe being lasted. The jack shown in the drawing comprises a pivoted heel support 80 and a toe support 81 fulcrumed at 82 for the purpose of being adjusted toward and from the heel support 80 to accommodate lasts of varying length. The heel support 80 and toe support 81 are mounted on a carriage 83 which is arranged to be turned by the operator in suitable bearings 84 projected from a base 85. The base 85 is connected by means of a bolt 86 to a sleeve 87 of a support 88 pivotally secured at 89 to a stem 90. The stem 90 at its lower end is pivotally supported at 91 at the forward end of a lever 92 which lever is fulcrumed at 93 to a depending arm 94, and which at its rear end is provided with a weight 95.

Secured to the rear end of the lever 92 is a vertical rod 96 which passes up through a bearing 97 of the standard 1 and which supports an adjustable arm 98 which is secured to one end of a spring 99, the opposite end of the spring being secured to one of the legs 2 of the standard 1.

The above arrangement is such that at a last being properly mounted on the heel and toe supports of the jack, the carriage 83 turning in its bearings 84 provides for bringing all parts of the irregular contour of the sides of the shoe beneath the action of the stitch forming devices. The turning of the head 85 about its fulcrum 86 permits a sidewise shifting of the jack to accommodate for the

varying inclinations of the bottom of the last, so that all parts of the shoe may be properly brought under the action of the stitch forming devices. By means of the weight 95 and the spring 99, the jack and its standard is forced upward until the bottom of the last contacts with the serrated roller 45, forming the down-hold of the machine and which positions the bottom of the last with reference to the path of oscillation of the needle. By adjusting the arm 98 along the rod 96, the tension of the spring 99 may be adjusted so as to augment the counterbalancing effect of the weight 95 and render the jack which is quite heavy, easily manipulated by the operator. It is desirable at times to maintain the jack in a depressed position against the tendency of the spring 99 and the weight 95, to raise the same, and for this purpose I have provided a yoke 100 which is secured to the front of the machine and which embraces the standard 90 of the jack, and to the standard 90 is affixed a stop 101, which when the jack is depressed may be projected beneath a flange 102 formed on the inner surface of the yoke 100, and thus retain the jack in its depressed position against the tendency of the spring 99 and the weight 95 to raise the same.

It will be noted that the lasting machine which has been described comprises no means for automatically or otherwise moving the shoe along, for the purpose of bringing the parts thereof under the action of the stitch forming devices, but that the movements of the last and shoe are entirely controllable by the operator, and that by means of the foot treadle and clutch connections, hereinbefore referred to, the operator, after having presented the shoe to the stitch forming devices and positioned the shoe so as to insert a stitch in the upper and insole at the desired point, the machine at this time being at rest and with the parts in position to begin the stitch forming operation, places his foot upon the treadle and causes the machine to be operated to form a stitch at the desired point in the work, and after such operation, the clutch devices stop the rotation of the shaft 6 with the parts in position to begin the formation of another stitch. The operator may then draw up the upper of the shoe around the last taking the stretch out and conforming the upper to the last at any point around the shoe thereon which he desires, and shift the jack along to place the shoe in position with relation to the path of movement of the needle, for another stitch. It will be understood, of course, that as the operator moves the work along from point to point, such movement of the work will act to draw the thread through the looper and from the source of supply laying said thread along the surface of the work from stitch to stitch. It is thought that the operation of the



machine has been sufficiently described in connection with the foregoing description of its construction and organization, and therefore a further description thereof is deemed unnecessary.

Having thus described my invention I claim as new and desire to secure by Letters Patent of the United States:

10 A lasting machine, having, in combination, a fixed frame; stitch-forming mechanism mounted therein and operating automatically when thrown into operation to form a stitch at a predetermined point fixed with relation to said frame, means under the control of the operator for throwing the stitch-forming mechanism into operation and for automatically throwing the stitch forming

mechanism out of operation after the formation of a stitch, and a shoe supporting jack arranged to allow the upper to be stretched over the last while the stitch forming mechanism is out of operation and to be freely moved by the operator with relation to the stitch-forming mechanism to locate the stitches at such points and at such distances apart around the shoe as the operator may desire, substantially as described. 20 25

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

WILLIAM GORDON.

Witnesses:

T. HART ANDERSON,  
A. E. WHYTE.