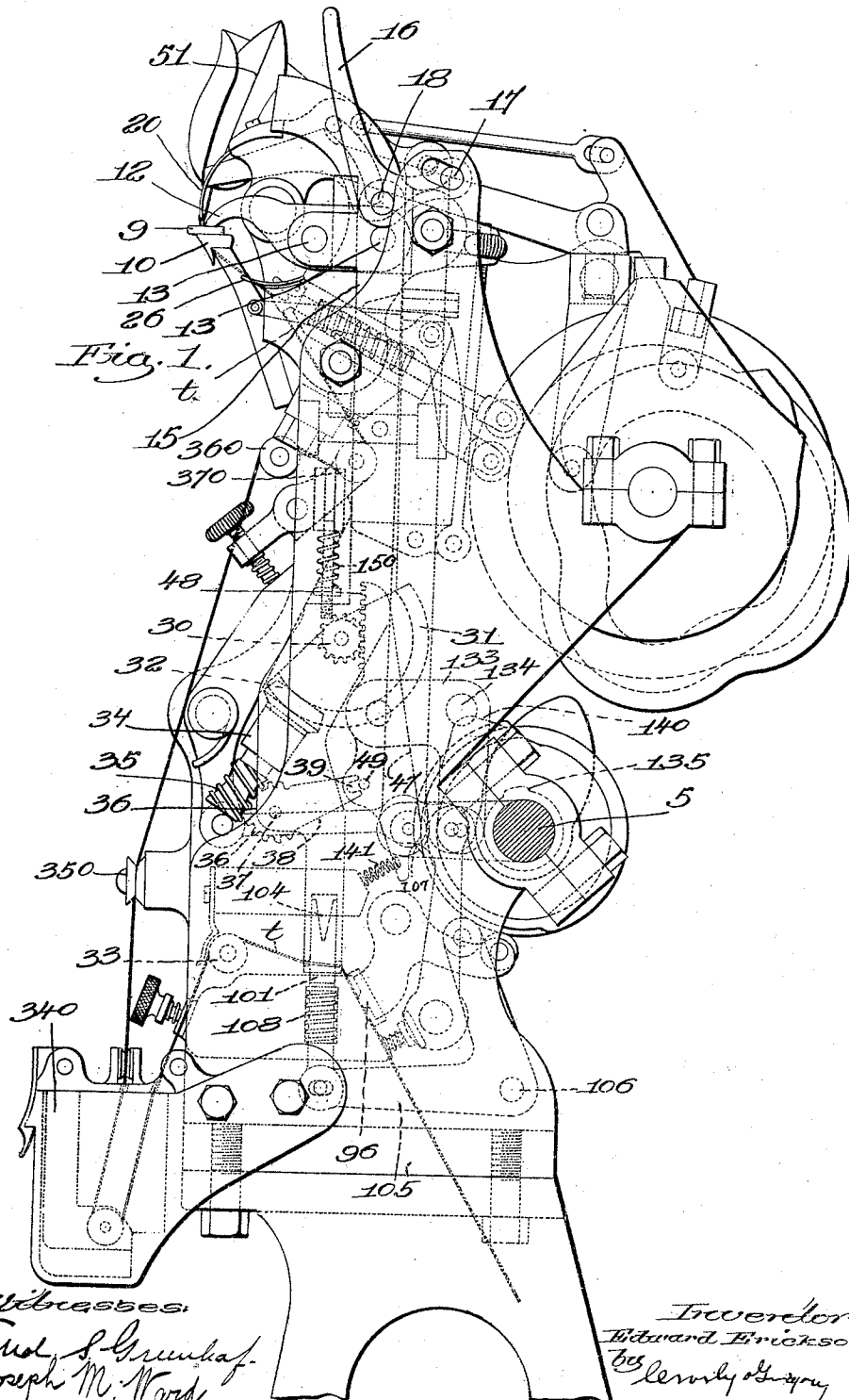


1,003,176.

E. ERICKSON.
SEWING MACHINE.
APPLICATION FILED MAR. 21, 1910.

Patented Sept. 12, 1911.
2 SHEETS—SHEET 1.



Witnesses:

Frederick S. Grunhaft.
Joseph M. Ward.

Inventor,
Edward Erickson,

by Leroy S. Gray atty.

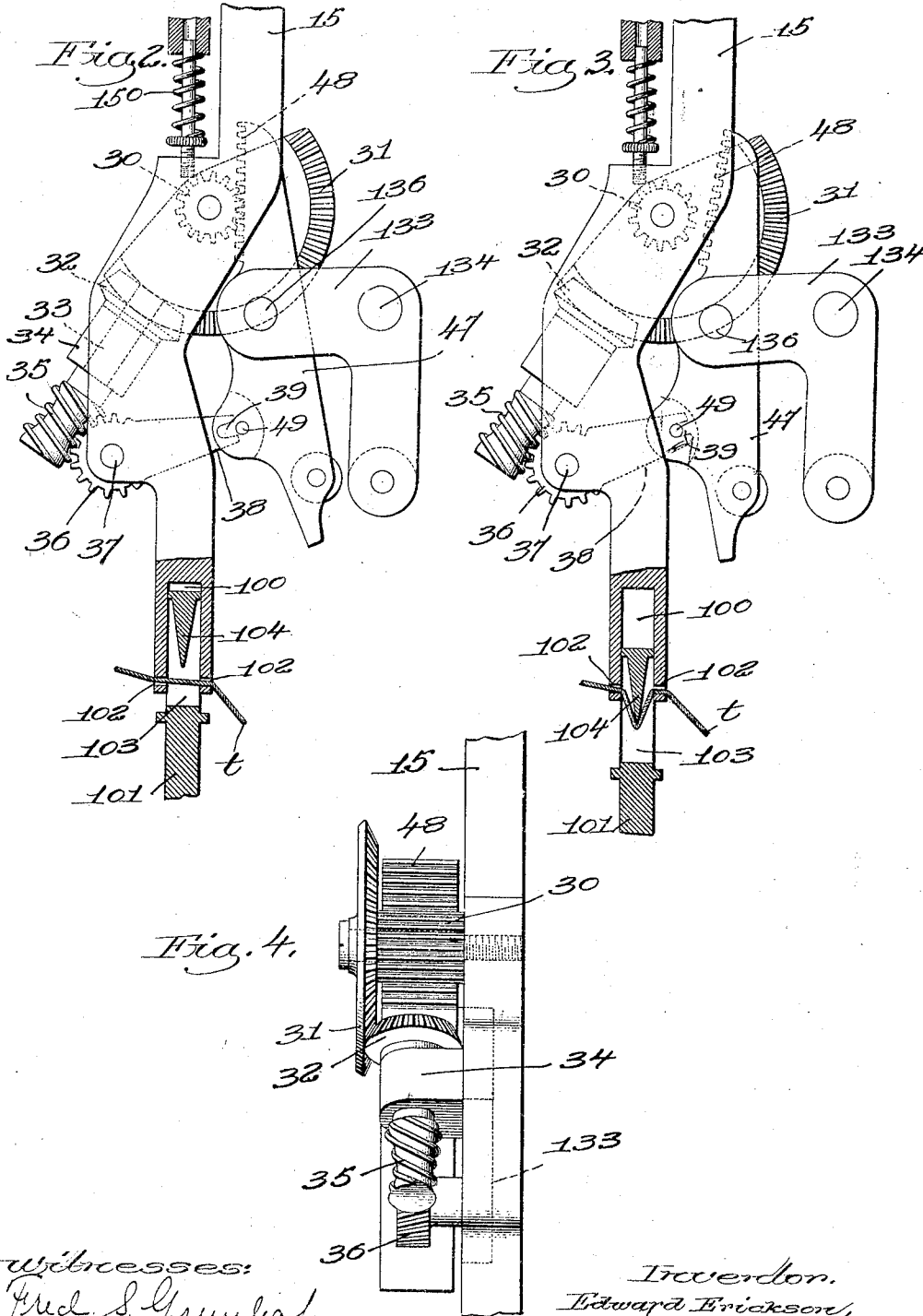
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Fred. S. Grunhauf.
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Inventor.

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UNITED STATES PATENT OFFICE.

EDWARD ERICKSON, OF LYNN, MASSACHUSETTS, ASSIGNOR TO LAWRENCE E. JOHNSON, OF WINTHROP, MASSACHUSETTS.

SEWING-MACHINE.

1,003,176.

Specification of Letters Patent.

Patented Sept. 12, 1911.

Application filed March 21, 1910. Serial No. 550,582.

To all whom it may concern:

Be it known that I, EDWARD ERICKSON, a subject of the King of Sweden, and a resident of Lynn, county of Essex, and State of Massachusetts, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to sewing machines and particularly to a novel mechanism for drawing off from the thread supply a measured quantity of thread of the required length to make the stitch.

The invention is shown as it would be used in connection with a sewing machine of the type illustrated in my co-pending application Se. No. 532,602, filed December 4, 1909.

Referring to the drawings, Figure 1 is a side view of a machine similar to that shown in my above-mentioned co-pending application; Figs. 2 and 3 are detail views of the presser-foot-lifting mechanism and thread-measuring device showing the parts in different positions; Fig. 4 is an end view of the construction shown in Figs. 2 and 3.

Since the machine herein illustrated is similar to that shown and described fully in my co-pending application, I do not regard it as necessary to describe the machine in detail. It will suffice to say that the work 9 to be sewed is sustained by a work rest 10 and is held in position by a presser-foot 12 which is mounted for lateral movement on two pins 13 that are carried by a rising and falling bar 15 by which the presser-foot is lifted at appropriate times by the mechanism hereinafter described. The needle is shown at 20 and the awl at 26. The sewing machine is of that type wherein the loop of thread is removed from the needle after it has been drawn through the work and is carried over a stationary shuttle 51, thereby to form the lock stitch. The stitching mechanism for accomplishing this object is fully described in my co-pending application Se. No. 532,602 and as the present invention is not concerned with it, I do not deem it necessary to further illustrate or describe it herein. For further particulars as to the operation of these parts, reference may be had to said co-pending application. The thread leading from the source of supply

passes under a thread clamp 96, thence through the thread-measuring device, which will be more fully hereinafter described, around a direction roll 33 and into the wax pot 340, and from the latter around a tension device 350 and over a direction roll 360 to a take-up roll 370, from whence it passes to the looper mechanism, all as described in said application.

In the operation of the stitching mechanism, the work is fed by the awl when the latter is therein, and for this purpose the awl has a lateral movement as well as its movement toward and from the work. The presser-foot 12 has a lateral movement with the awl and during the time that the awl moves to feed the work, said presser-foot is in engagement with the work, but after the awl has been retracted and the needle has entered the work, then the presser-foot is elevated and is returned to its initial position. As stated above, the lateral movement of the presser-foot while the work is being fed is permitted by reason of the fact that the presser-foot is slidably mounted on the pins 13 that are carried by the upper end of the bar 15. The vertical movement of the presser foot may be secured by any suitable mechanism. As herein shown said bar 15 has pivoted thereon a pinion 30 which has rigid therewith a segmental beveled gear 31. This gear 31 meshes with a beveled pinion 32 that is fast on a shaft 33 that is journaled in bearings 34 carried by the bar 15. Said shaft 33 has thereon a worm 35 which meshes with a worm-gear 36 journaled on a stud 37 carried by the bar and provided with an arm 38 which has a slot or notch 39 in one end.

133 designates an elbow-lever which is pivoted to the frame at 134 and which carries at one end a roll adapted to be engaged by a cam 135 on a cam shaft 5. Pivoted to the other arm of said lever 133 at 136 is a lever 47 which is provided with rack teeth 48 that are adapted to mesh with the pinion 30. Said lever 47 is also provided with a pin or projection 49 that is adapted to enter the slot or notch 39. The lever 47 is acted on by a suitable spring 141 which tends to keep it in the position shown in Figs. 1 and 2, and a cam 140 situated on the cam shaft 5 is adapted to engage said lever at the proper time and throw it into the position shown in Fig 3.

The bar 15 has pivoted to its upper end as at 18 a lever 16 which is also pivoted to the frame at 17 so that by pressing said lever backwardly, the presser foot may be raised.

8 When the parts are in the position shown in Figs. 1 and 2, the presser-foot may be freely raised by the hand lever to permit a piece of work 9 or shoe sole of any desired thickness to be placed in the machine. During the rising movement of the presser-foot and bar 15 the pinion 30 will roll over the rack 48, thus turning the gear wheel 31, and the latter will through the gear 32 rotate the worm 35 and thus turn the worm-gear 36 and the lever 38. Since the lever 133 is pivoted to the frame, it will be understood that the rack 48 has no vertical movement. The parts are so designed that as the bar 15 rises or falls, the gear 36 and arm 38 will be turned so as to always keep the notch 39 in alinement with the pin 49. At the appropriate time in the cycle of the stitching operation, the presser-foot has to be lifted, and at such time the cam 140 first engages the lever 47 and throws it into the position shown in Fig. 3 with the pin 49 in the notch 39 and the rack 48 out of engagement with the pinion 30, and while the lever is held in this position the cam 135 engages the lever 133 and throws the vertical arm of the same laterally so as to elevate the horizontal arm. This movement of the horizontal arm of the lever lifts the bar 15 by reason of the fact that said lever is locked to the bar through the pin 49 and slot 39. After the cams have passed out from engagement with said levers, the presser-foot is allowed to descend either by its own weight or by suitable spring mechanism as desired. It will thus be seen that while the presser-foot is normally free to be raised or lowered to suit the thickness of the work being operated on, yet at the appropriate time in the cycle of operations, the mechanism for operating the presser-foot comes into play and lifts it. The presser-foot is normally held against the work by a spring 150.

In the present invention the bar 15 not only acts as a means for elevating the presser-foot, but also constitutes part of the thread-measuring device. In machines of this character, it is customary to provide means whereby a fresh quantity of thread sufficient for the next stitch is drawn off from the source of supply immediately after the previously-formed stitch has been set, and in the present embodiment this thread-measuring device is associated with the bar 15. As herein shown, the lower end of the bar is formed with a recess 100 in which is received one end of a thread measurer 101. Said bar 15 is provided with eyes or passageways 102 through which the thread passes and the upper end of the thread measurer is

provided with a slot 103 through which the thread also passes. This thread measurer is formed with the thread-measuring finger 104 which occupies said slot 103. The normal position of the thread measurer 101 is shown in Fig. 2 in which position the finger 104 is above the thread so that the thread will pass straight through the slot 103. The thread measurer and bar 15 have a vertical movement relative to each other so that when they move away from each other or into the position shown in Fig. 3, the finger 104 will engage the thread and will draw off from the source of supply or measure a length of thread sufficient for the next stitch, it being understood, of course, that during this operation of measuring the thread the thread clamp 96 will be released. The amount of thread which is drawn off or measured will obviously depend on the amount of relative movement between the thread measurer 101 and the bar 15. The thread measurer 101 is connected to an elbow-lever 105 pivoted to the frame at 106 and operated by a suitable cam 107 on the cam shaft. A spring 108 surrounding the lower end of the thread measurer serves to keep the lever 105 in engagement with the cam. The thread measurer will thus at the appropriate time have a definite downward movement. The amount of thread which is drawn off during such movement will depend upon the position of the bar 15 when the thread measurer is in its lowest position, and this, of course, will depend upon the thickness of the work. If a very thick piece of work is being sewed, the bar will, of course, be situated at a higher point relative to the thread measurer than when a thin piece of work is being sewed and therefore the amount of thread which is drawn off at each movement of the thread measurer will have a direct relation to the thickness of the work being sewed.

The means for lifting the presser foot is not claimed herein as this has been made the subject of another application. Se. No. 566,301, filed June 11, 1910.

While I have illustrated the preferred embodiments of my invention, I do not wish to be confined to the constructional details shown.

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

1. In a sewing machine, the combination with a presser foot and a bar carrying the same and provided with a recess in its end and two thread-receiving eyes either side of the recess and means acting on the bar to elevate the presser foot, of means situated within and guided by said recess and co-operating with said bar to measure a length of thread for the next succeeding stitch.

2. In a sewing machine, the combination

with a presser foot and a bar depending therefrom, of means for intermittently elevating said bar, which means permit the presser foot to be raised independently thereof at a certain point in the cycle of operations, said bar having a recess in its end and eyes for the thread either side of the recess, a thread-measuring device situated within the recess, and means to move the thread-measuring device relative to the bar thereby to cause it to measure off a length of thread for the next stitch.

3. In a sewing machine, the combination with a presser foot and a bar depending therefrom, of means for intermittently elevating said bar, which means permits the presser foot to be raised independently thereof at a certain point in the cycle of operations, said bar having a recess in its end and eyes for the thread either side of the recess, a thread-measuring device situated within the recess, and means to give the thread-measuring device a uniform reciprocating movement whereby more or less thread will be measured depending on the position of the bar.

4. In a sewing machine, the combination with a presser foot, of a bar connected thereto and movable therewith, said bar having a recess in its end, a thread-measurer in the recess and guided thereby, and means to reciprocate the thread-measurer.

5. In a sewing machine, the combination with a presser foot, of a bar connected thereto and movable therewith and having a recess extending longitudinally thereof and also provided with thread-receiving eyes either side of the recess, a thread-measurer located within the recess and provided with a slot through which the thread passes and also having a thread-measuring finger occupying said slot, and means to reciprocate the thread-measurer in the recess to cause the finger to engage the thread between the thread-receiving eyes.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD ERICKSON.

Witnesses:

LOUIS C. SMITH,
THOMAS J. DRUMMOND.