March 13, 1934. N. N. GROSS 1,950,885

MEANS FOR PREVENTING RAVELING OF GARMENT SEAMS

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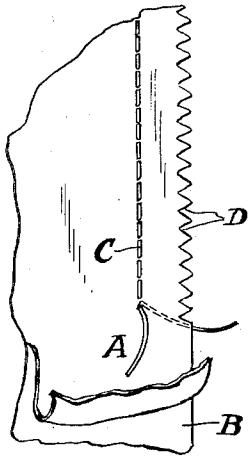


FIG. 1

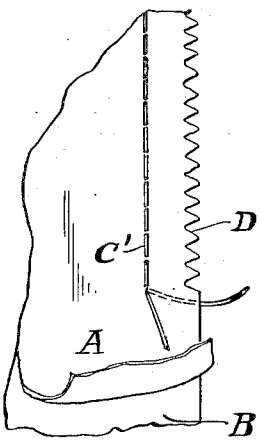


FIG 1a

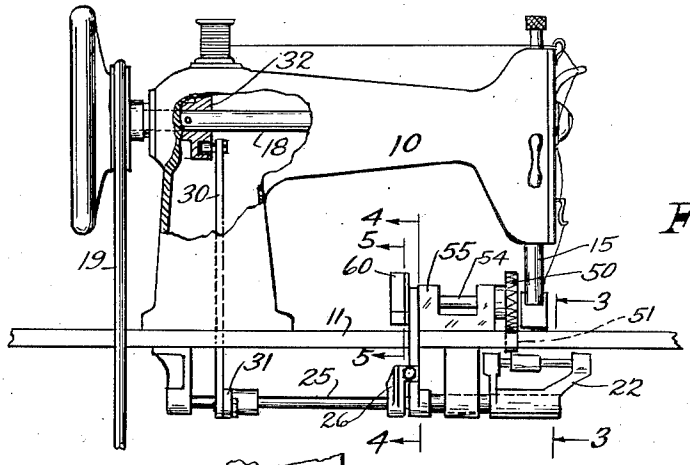


FIG. 2

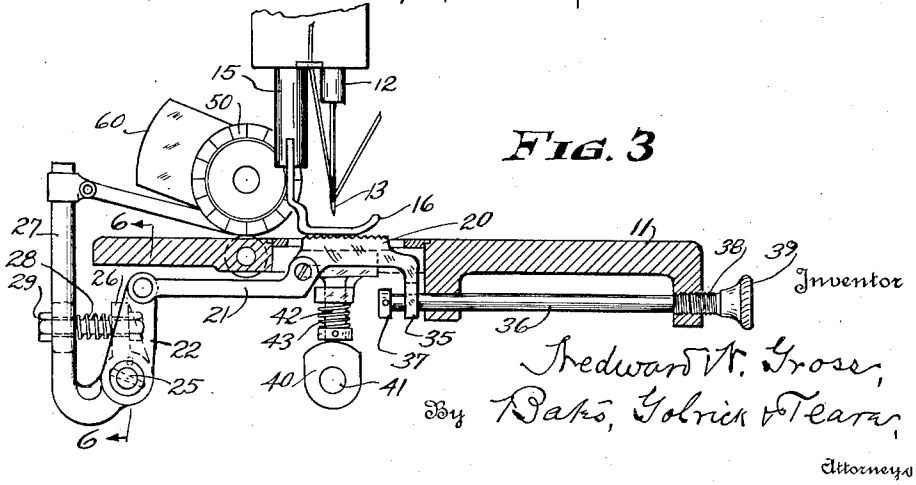


FIG. 3

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MEANS FOR PREVENTING RAVELING OF GARMENT SEAMS

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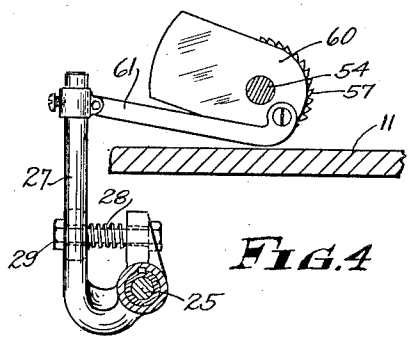


FIG. 4

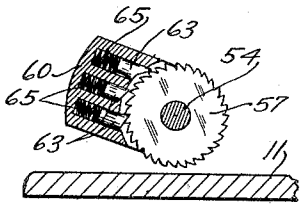


FIG. 5

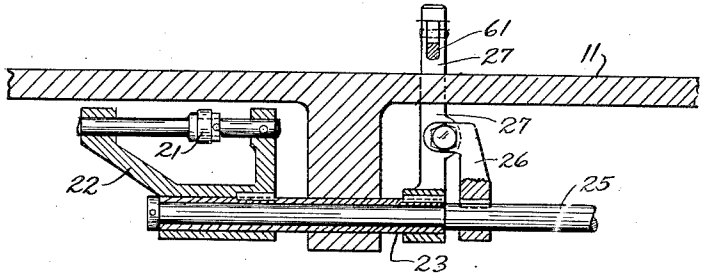


FIG. 6

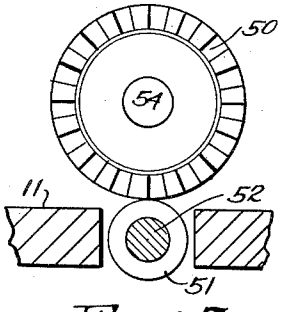


FIG. 7

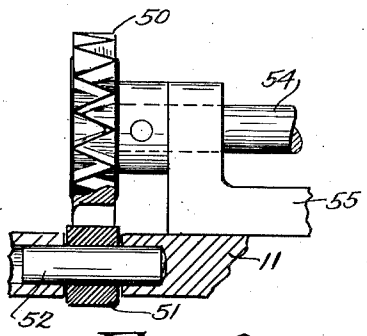


FIG. 8

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MEANS FOR PREVENTING RAVELING OF GARMENT SEAMS

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Application November 10, 1930, Serial No. 494,642

3 Claims. (Cl. 112—124)

It has been customary in the manufacture of garments to serrate or pink the edges of fabrics outside of the seam, to limit the raveling by preventing any long thread being pulled loose from the fabric edge. In effecting this, the usual method has been to first make the seam on a sewing machine and thereafter to pass the fabric adjacent the edge between rapidly revolving rollers, one of which is peripherally formed to cut the desired serrations. This operation has a pronounced disadvantage in that unless great care is taken, the line of pinking may come so close to the seam as to seriously weaken it, in fact, in some instances this line of pinking actually crosses the seam, thereby ruining it. Another disadvantage is the time consumed in effecting such subsequent act of pinking.

It is the object of the present invention to provide means whereby the pinking may be effected simultaneously with the stitching of the machine. This has the double advantage of reducing the two operations to one and of maintaining the serrated edge at a constant distance from the seam.

In accomplishing the result I provide a sewing machine having the usual needle and operating mechanism but now equipped with a pinking roller automatically operated to serrate the edge of the fabric a fixed distance beyond the line of stitching and simultaneously with the stitching. Moreover, to enable the pinking roller to operate for variable length of stitches without unduly advancing or retarding the cloth, I arrange to control the operation of the pinking roller by the four-motion feed of the sewing machine. This is another feature of my invention.

In the drawings, Figs. 1 and 1a are plans of two plies of fabric stitched together and pinked at the edges by the mechanism of this invention, these two views illustrating stitches of different lengths with a constant dimension of pinking; Fig. 2 is a side elevation of a sewing machine embodying the invention; Figs. 3, 4 and 5 are cross sections on the correspondingly numbered lines on Fig. 2; Fig. 6 is a vertical section at right angles to Figs. 2 and 3 in a plane parallel with Fig. 2 looking from the opposite direction of the plan of the section being indicated by the line 6—6 on Fig. 3; Figs. 7 and 8 are details of the pinking mechanism itself.

In Figs. 1 to 6, 10 indicates the stationary frame or arm of the sewing machine and 11 the table thereof. Mounted in the head of the frame is the usual reciprocating needle bar 12 carrying the needle 13, and alongside of this bar is the movable presser bar 15 carrying the presser foot 16. The needle is reciprocated by any well-known connection with a rotary shaft 18, shown as driven by a belt 19.

The material is fed to the rear by a suitable four-motion feed shown as including a feed bar 20, Fig. 3. This bar is shown as connected by a link 21 to a rocking yoke 22 on a sleeve 23 (Fig. 6) which is loose on a rock shaft 25. Rigid on this rock shaft is a rock arm 26 which overlaps a rock arm 27 on the sleeve 23. Between the rock arms 26 and 27 is a compression spring 28 guided by a loose bolt 29. The rock shaft 25 is suitably oscillated, in the operation of the machine. For this purpose, I have shown a link 30 connecting an arm 31 on this shaft with a grooved cam 32 on the main shaft 18.

The forward end of the feed bar 20 is provided with a downwardly extending fork 35 which straddles a rod 36 in front of a head 37 thereon. This rod is threaded in lugs carried by the table 11, as shown at 38, and is provided with a knurled head 39 by which it may be rotated to adjust the position of the stop head 37. The vertical position of the feed bar 20 is controlled by a cam 40 on a suitable rotary shaft 41 acting against a plunger 42 depending from the feed bar.

It results from the feed mechanism just explained that the oscillation of the shaft 25 tends to move the feed bar toward the rear (that is in its feeding direction) for the maximum stroke and then return it. The stroke however, is limited by the head 37, for as soon as the fork 35 engages this head, the feed bar can move no further and the rest of the oscillation of the arm 26 simply compresses the spring 28. During this feeding movement, the cam 40 maintains the feed bar in active position. At the end of the stroke however, the cam clears the plunger 42 which depends from the feed bar, and a spring 43 depresses it, so that, on the return movement, the feed bar is on a lower level and idle. Then, just before the next feed stroke begins, the cam 40 re-engages the plunger and raises the bar to active position. The feed bar thus has the desired four-way motion, the length of the feed, and hence the length of the stitch, being controlled by the rod 36.

The mechanism so far described is an ordinary one in sewing machines and is shown merely by way of illustration. In my invention, I provide a pinking device controlled by the feed mechanism. As shown, I have provided a pinking roller 50 having its periphery in the form of a zig-zag knife, this roller cooperating with a platen roller 51. The platen roller is mounted freely on a short shaft 52 suitably carried by the table 11. The

pinking roller 50 is mounted on a shaft 54 journalled in a suitable bracket 55 on the upper side of the table. This shaft carries at its other end a ratchet wheel 57 and with this cooperates a pawl device 60 connected by a link 61 with the arm 27, which is extended upwardly for this purpose, as shown in Figs. 3 and 6.

The pawl device 60 may carry one or more pawls to coact with the ratchet teeth. I have shown three pawls 63 each spaced a third of a tooth from the others and each pressed toward the ratchet by a spring 65. This gives the same result as one pawl with a ratchet having teeth three times as fine, and insures a practically instantaneous beginning of the rotation of the pinking roller shaft 54 with the active oscillation of the shaft 25.

It will be seen that the pinking device is so mounted that the pass between the rollers is practically coincident with the top of the table 11, and this pass is located a slight distance at one side of the line of stitches made by the needle, but preferably slightly at the rear thereof.

A sewing machine equipped with my mechanism is operated in the usual manner. In making the seam the operator starts the seam at such distance from the edge of the fabric that such edge passes in line with the bight of the pinking rollers so that the fabric is fed between them; then, as the operation proceeds, the fabric is pinked through both plies continuously with the seaming operation, and at a definite distance beyond the seam, and immediately after the conclusion of the seam, the pinking operation is completed.

It will be seen that the pinking is constant irrespective of the length of the stitches and depends on the formation of the knife 50. Thus in Figs. 1 and 1*a*, A and B represent the two plies of fabric; C and C1 indicate the stitching in the two views, and D the pinking at the edge. The stitches C1 are materially longer than the stitches C, while the pinking D is constant.

My pinking device is equally suitable for a lock stitch machine employing a bobbin and for a chain stitch machine, which has only a single thread; hence no bobbin mechanism is illustrated in the drawings, but it may be used, as will be readily understood.

I claim:

1. The combination of a reciprocating needle and mechanism for operating it, of a feed bar, an oscillatory shaft, a rocking member connected with the feed bar and a yielding connection between the shaft and rocking member, an adjustable stop limiting the stroke of the feed bar, a pinking roller, and driving mechanism therefor connected with the rocking member.

2. The combination with a sewing machine having a reciprocating needle and a feed bar, of an oscillating shaft tending to give a maximum stroke to the feed bar, an adjustable device for limiting the stroke, a take-up spring between the oscillating shaft and the feed bar, a pinking roller having a zig-zag knife in its periphery, and operating mechanism connecting the pinking roller with the feed bar mechanism between the take-up spring and the feed bar proper.

3. The combination of a reciprocating needle, a feed bar, a pair of rollers one above the other mounted adjacent the needle and feed bar but at one side of the line of stitching, one of said rollers being cylindrical and the other having on its periphery a zig-zag knife, a ratchet mechanism for rotating the knife roller, and an oscillatory operating shaft connected with both the feed bar and the ratchet mechanism.

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