March 20, 1928. 1,663,488

J. BERGER

OVEREDGE SEWING MACHINE

Filed July 30, 1924 7 Sheets-Sheet 1

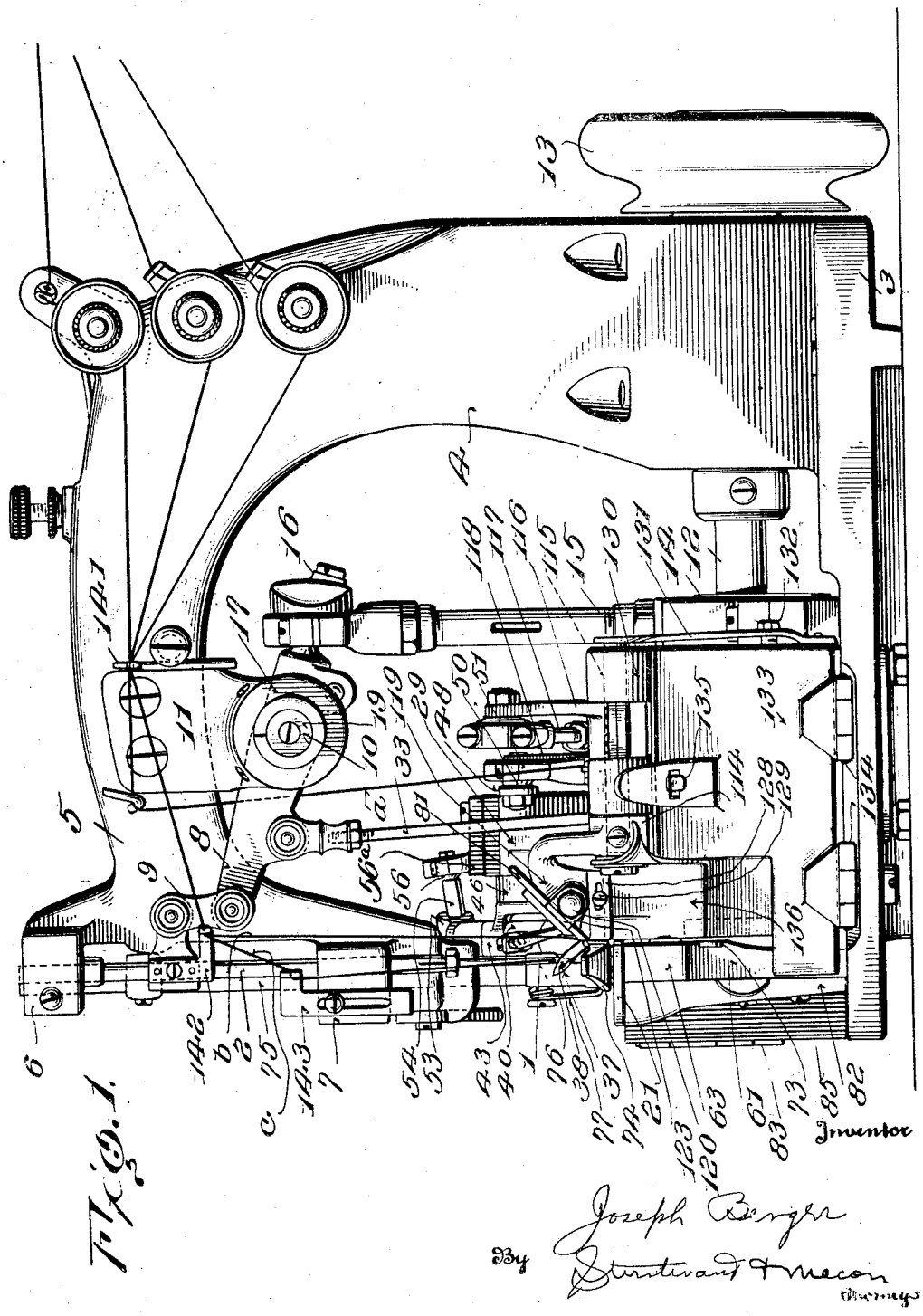


Fig. 1.

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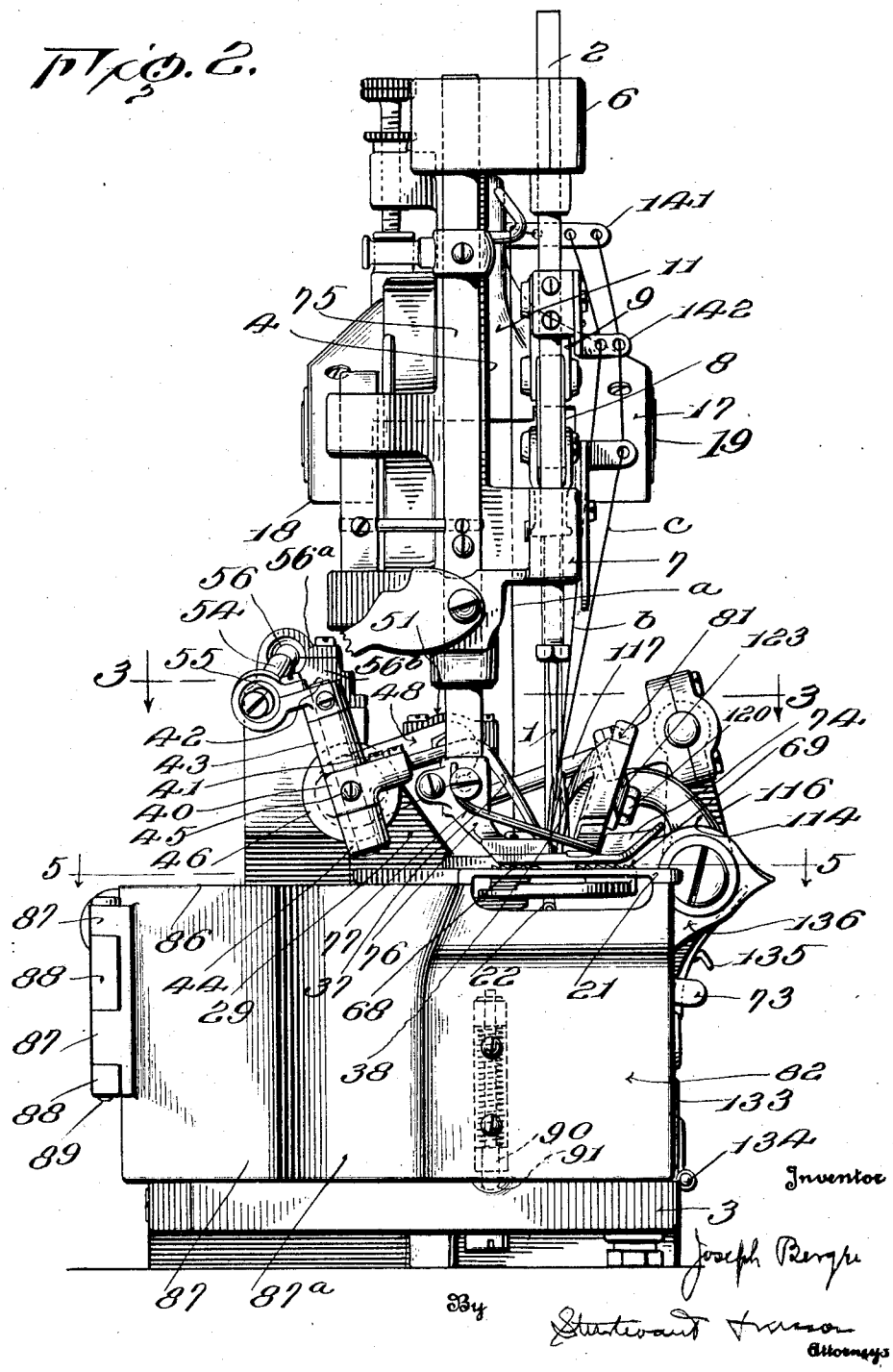
March 20, 1928. 1,663,488

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OVEREDGE SEWING MACHINE

Filed July 30, 1924 7 Sheets-Sheet 2

FIG. 2.



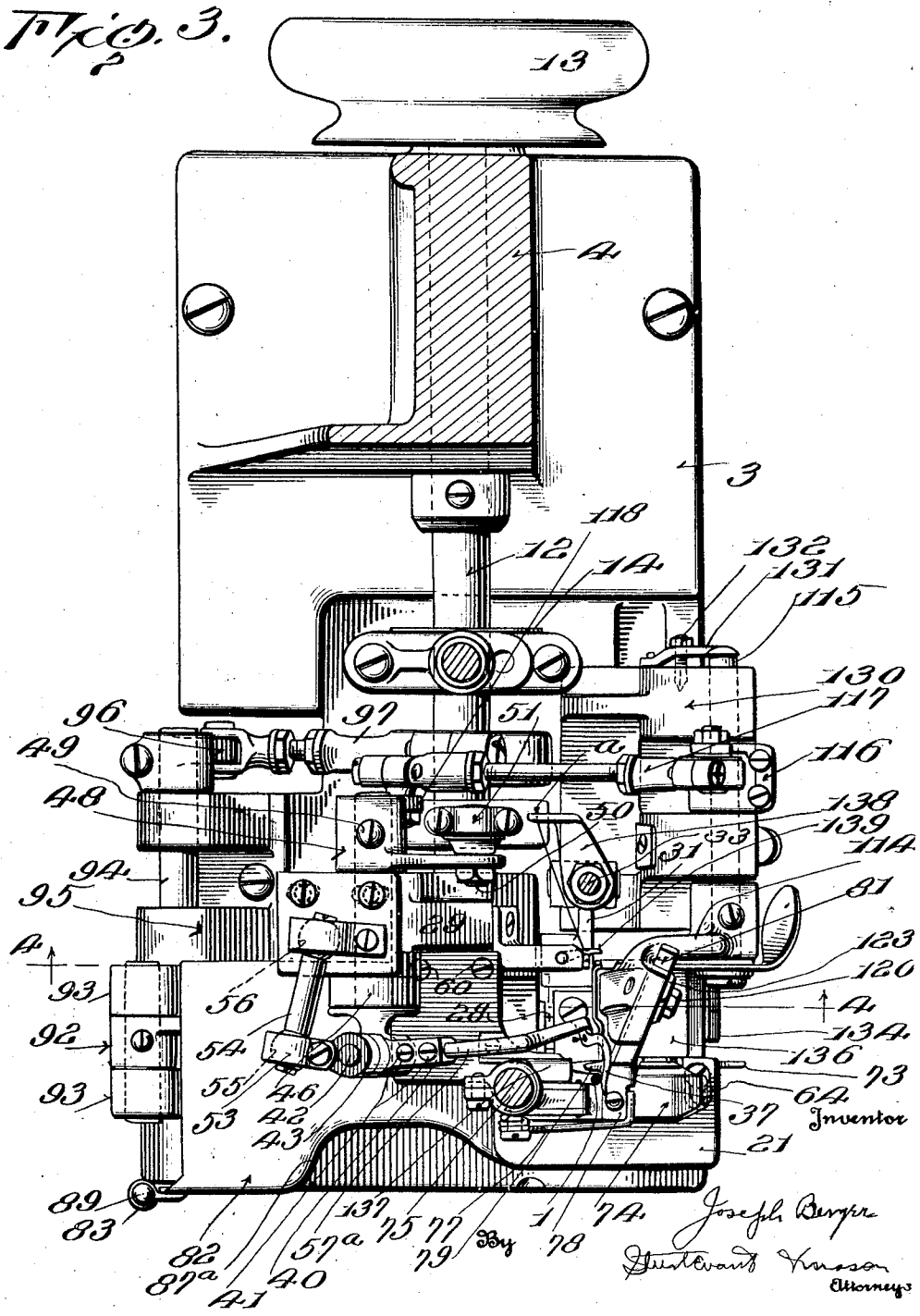
March 20, 1928. 1,663,488

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OVEREDGE SEWING MACHINE

Filed July 30, 1924 7 Sheets-Sheet 3

FIG. 3.



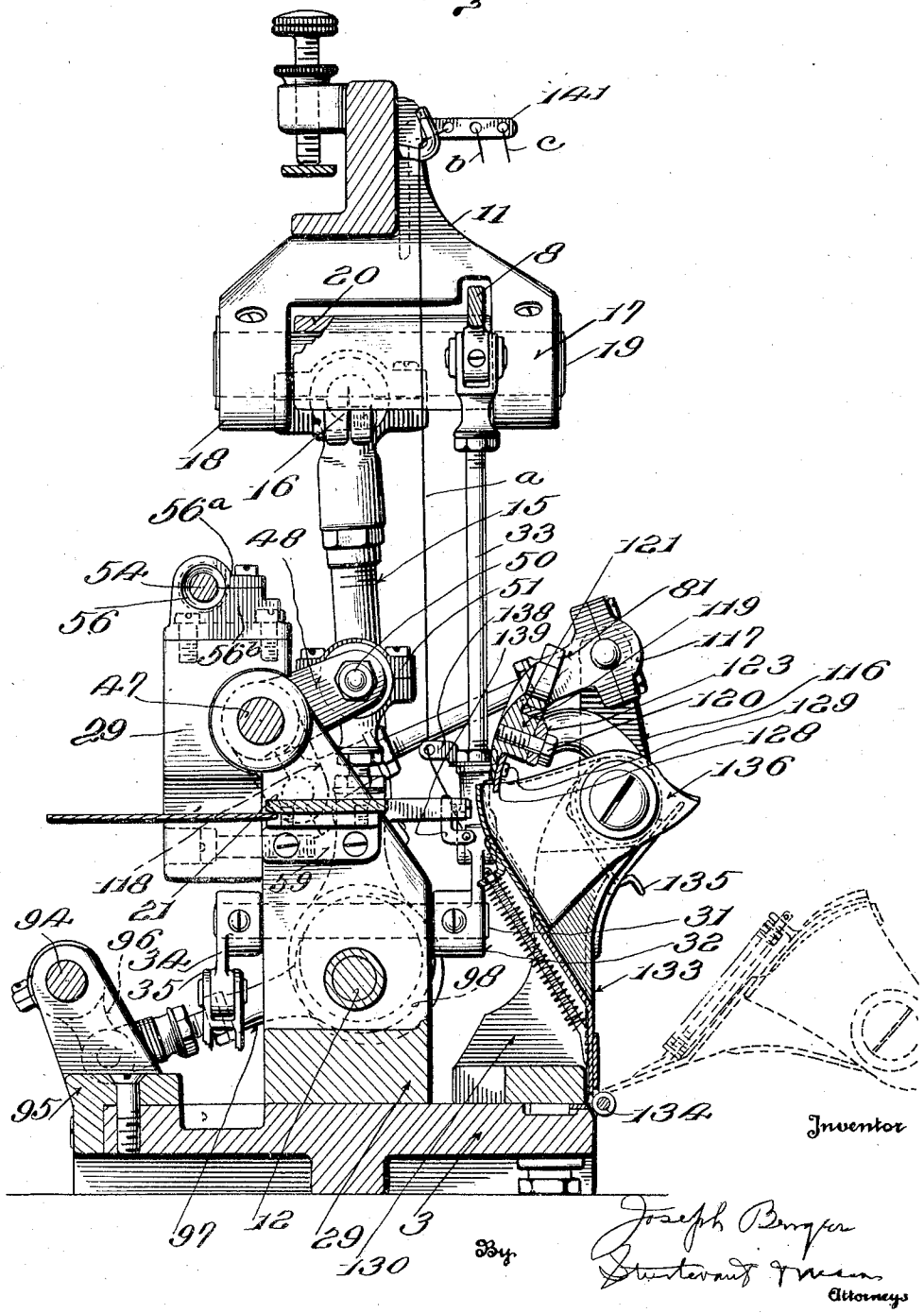
March 20, 1928. 1,663,488

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OVEREDGE SEWING MACHINE

Filed July 30, 1924 7 Sheets-Sheet 4

Fig. 4.



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March 20, 1928. 1,663,488

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OVEREDGE SEWING MACHINE

Filed July 30, 1924 7 Sheets-Sheet 5

FIG. 5.

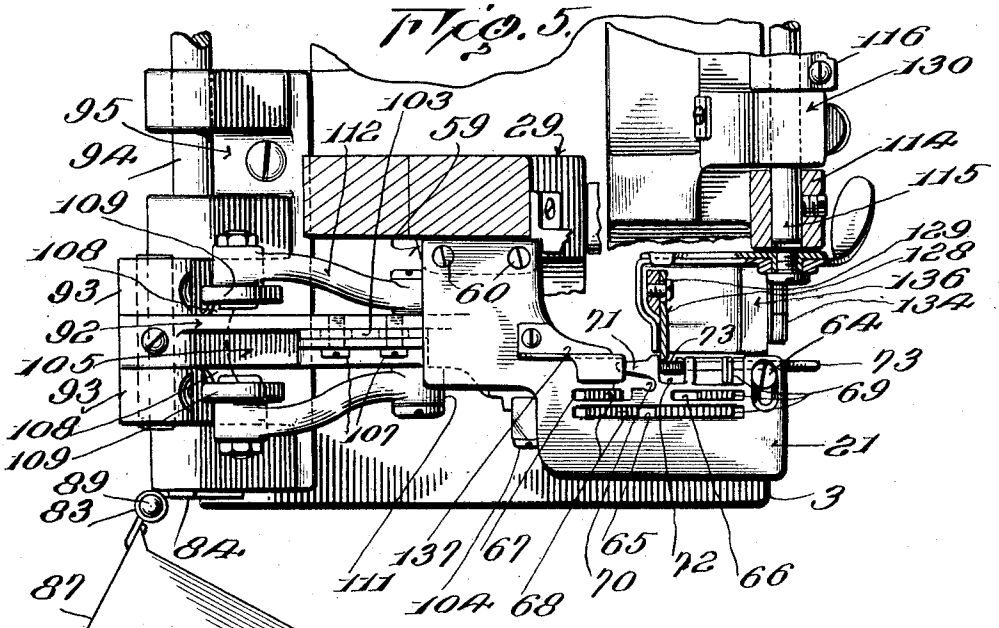
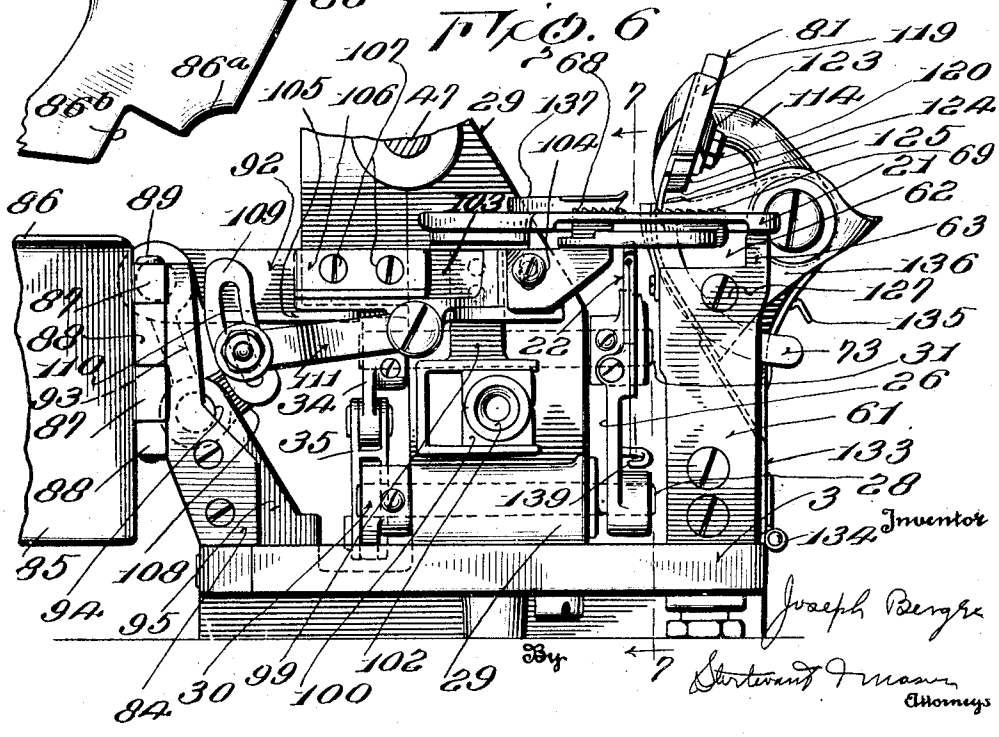


FIG. 6.



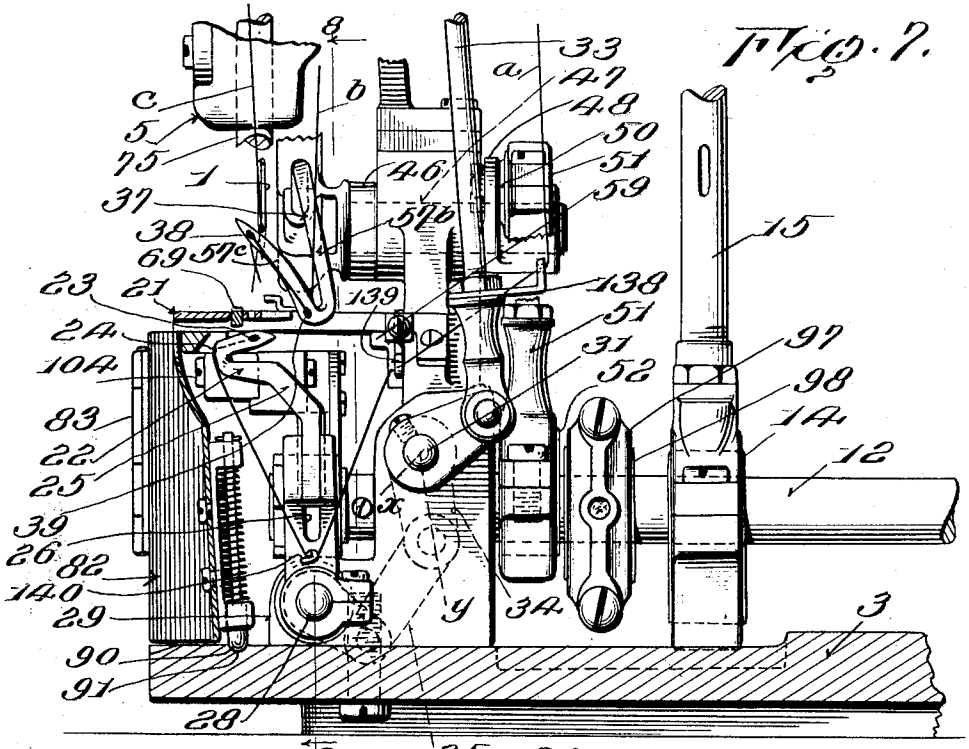
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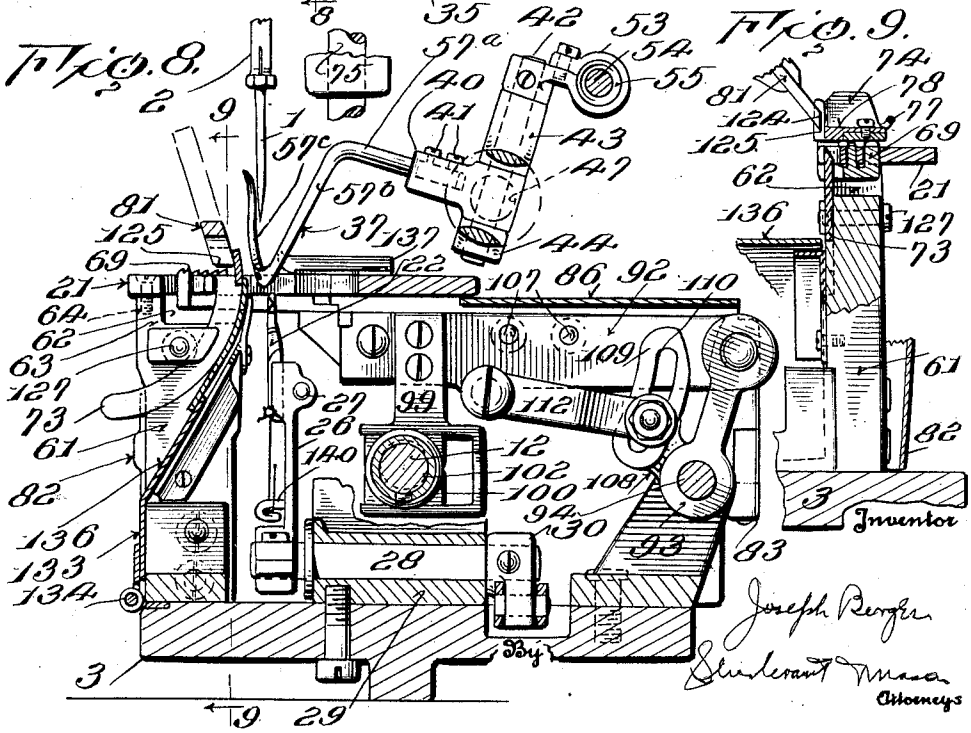
March 20, 1928. 1,663,488

J. BERGER

OVEREDGE SEWING MACHINE

Filed July 30, 1924 7 Sheets-Sheet 6





March 20, 1928. 1,663,488

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OVEREDGE SEWING MACHINE

Filed July 30, 1924 7 Sheets-Sheet 7

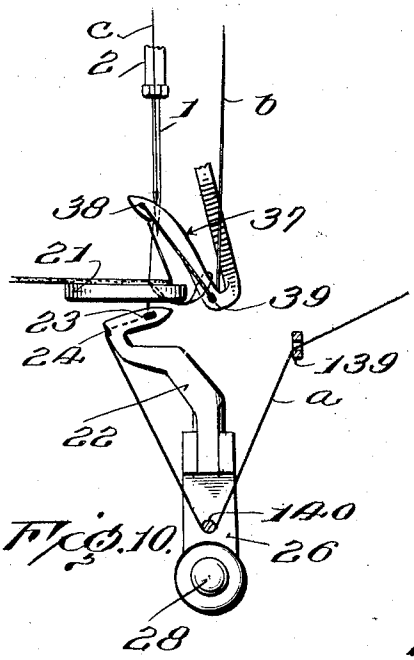


Fig. 10.

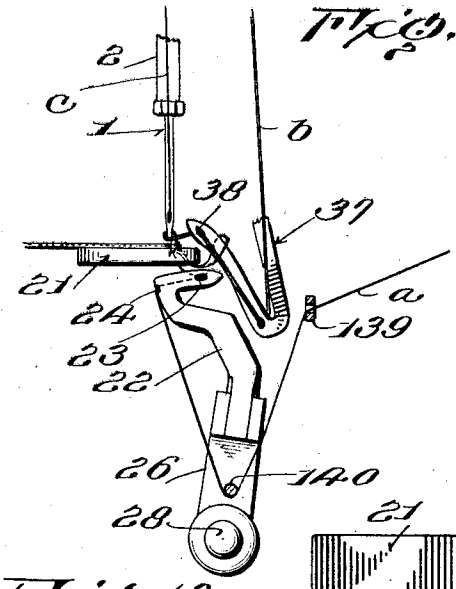


Fig. 11.

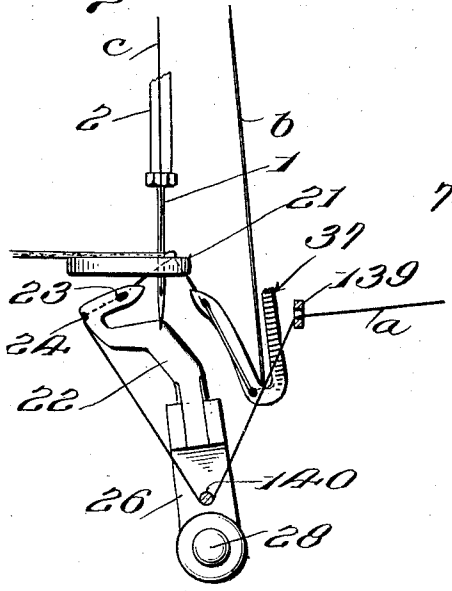


Fig. 12.

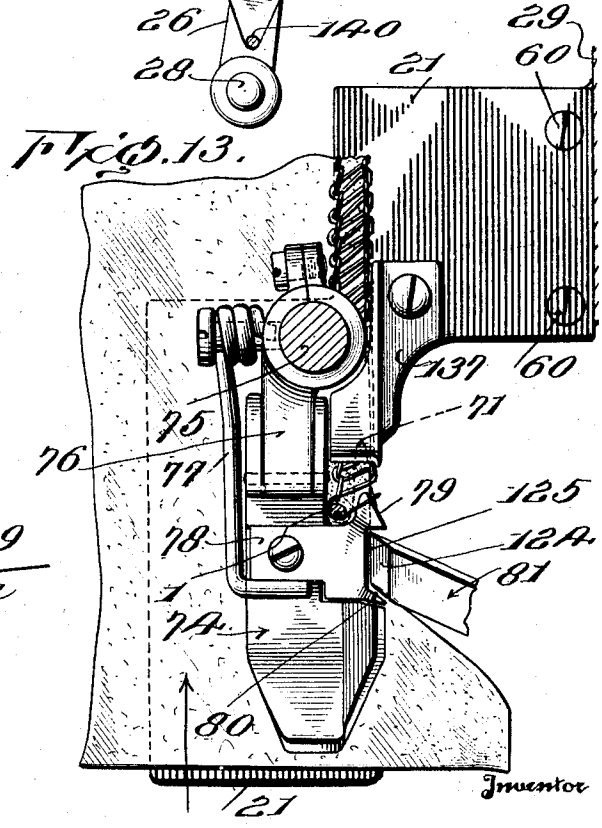


Fig. 13.

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Patented Mar. 20, 1928. 1,663,488

UNITED STATES PATENT OFFICE.

JOSEPH BERGER, OF UTICA, NEW YORK, ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

OVEREDGE SEWING MACHINE.

Application filed July 30, 1924. Serial No. 729,099.

The invention relates to new and useful improvements in sewing machines, and more particularly a sewing machine which is adapted to form overedge stitches.

An object of the invention is to provide a machine of the above type with a reciprocating needle movable in a fixed path, a cooperating thread carrying element beneath the plane of the work support, and an overedge thread carrying element which cooperates with said under thread carrying element and in rear thereof beneath the plane of the work support, and with the needle, and in front thereof, above the plane of the work support, and wherein the means for operating this thread carrying element is very compactly arranged, of few parts, and positive in their movement, so that the machine may be operated at high speed and quickly stopped or started without producing any material vibrations.

A further object of the invention is to provide a machine of the above type wherein the overedge thread carrying implement or looper derives both its bodly and oscillating movements from the single eccentric on the main shaft which is located beneath the work support.

A still further object of the invention is to provide a machine of the above type wherein the under thread carrying implement is reciprocated twice to each reciprocation of the needle so that said implement can be moved quickly into the needle thread loop and out of the same in time to give the feed a chance to move the material being overedged a stitch length without any drag of the under thread carrying implement on the fabric being overedged.

A still further object of the invention is to provide a machine of the above type wherein the work support is so constructed and the feeding mechanism so arranged that small tubular articles can be readily stitched or overedged on the machine.

Another object of the invention is to provide a trimming mechanism which operates to trim the edge of the fabric which is to be covered by overedge stitches in advance of the placing of the overedge stitches around the edge.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings which show by way of illustration one embodiment of the invention—

Figure 1 is a front view of a machine embodying the improvements;

Fig. 2 is an end view of said machine as viewed from the left in Fig. 1;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a sectional view on the line 4—4 of Fig. 3;

Fig. 5 is a sectional view on the line 5—5 of Fig. 2, with certain of the parts omitted and the cover plate swung so as to expose the parts covered;

Fig. 6 is a detail of the lower portion of the machine as viewed from the left-hand end thereof and with the cover plate swung so as to expose the parts covered thereby;

Fig. 7 is a detail sectional view on the line 7—7 of Fig. 6;

Fig. 8 is a detail sectional view on the line 8—8 of Fig. 7;

Fig. 9 is a detail in section on the line 9—9 of Fig. 8;

Fig. 10 is a view showing the stitch forming elements when the needle on its downward movement is entering the overedge looper thread loop;

Fig. 11 is a view similar to Fig. 10, but showing the needle as having moved down to a point where it is penetrating the edge portion of the fabric, the overedge looper having been retracted to a position where it is about to shed the loop of the under thread carrying looper;

Fig. 12 is a view similar to Fig. 11, but showing the needle as having moved down to a position near the lower end of its stroke, and

Fig. 13 is an enlarged plan view showing the presser foot, the work supporting plate, the trimmer, and the portion of fabric having an edge covering formed thereon.

In carrying out the invention, a sewing machine has been provided which includes an eye-pointed thread carrying needle, an under thread carrying looper, which passes the loop of thread into the needle thread loop for securing the same, and an overedge thread carrying looper which passes a loop of thread through the loop formed in the lower looper thread and positions the loops in its own thread for the needle to enter

above the work or material being stitched. It is not considered that there is anything new in this form of stitch; it is a well known form of overedge stitch.

The purpose of the invention is to provide a novel form of stitch forming mechanism wherein the parts for operating the loopers are few in number and very compactly arranged and positively operated so that the machine may be driven at high speed without skipping stitches or producing undue vibrations in the parts being operated. The eye-pointed thread carrying needle is carried by a needle bar which is reciprocated in a fixed vertical path, and said needle bar is positively reciprocated by an eccentric strap operated by an eccentric on the main shaft, which eccentric strap is connected to a lever which is relatively short and which in turn is connected to the needle bar. Cooperating with this needle beneath the work support is a thread carrying looper which moves back and forth in a single plane. Said thread carrying looper is oscillated twice for each reciprocation of the needle. As soon as the needle starts on its upward movement, a loop of thread is thrown out thereby, and the looper moves forward into the needle thread loop. Inasmuch as this looper moves a good deal faster than the needle, it will get into and out of the needle thread loop in a very short time so that when the work is fed along by the feed dogs, the looper is out of the needle thread loop and allows the feed to move the work without resistance from this under thread looper, and at the same time, the looper, by its quick movement into and out of the needle thread loop, will draw the least amount of needle thread possible, that is, just enough to form a stitch. The second reciprocation of the under thread carrying looper, which occurs while the needle is above the work support, is an idle movement.

Cooperating with this under thread carrying looper and with the needle, is an overedge thread carrying looper. This overedge thread carrying looper is mounted on a shaft which is capable of oscillation so as to move the looper from a point beneath the plane of the work support to a point above the same. The looper is mounted on this supporting shaft so that it may be swung during its oscillation from a point well underneath the edge of the work support and material being stitched to a point well over the same, where the needle may enter its thread loop. Means for supporting this overedge looper is also so disposed that the looper moves from a point in rear of the under thread carrying looper, to a point in front of the needle. This overedge thread carrying looper receives its movements from a single eccentric on the main shaft, but is assisted in its movements by a link which is pivoted at one end to the support for the looper and at its other end to a stationary member so arranged that as the looper is moved bodily, this link will cause the looper to dip underneath the work support or fabric at one end of its stroke and pass over the work support or fabric at the other end of its stroke, and also to pass from a position in rear of the looper beneath the work support to a position in front of the needle above the work support. The cloth plate for supporting the work during stitching terminates both a short distance in front of the needle and a short distance in rear thereof. The feed dogs are supported and operated by devices which have laterally projecting parts extending underneath the portion of the cloth supporting plate in the region of the stitching and the operating parts of the feed and the under thread carrying looper are covered by a cover plate which is shaped so that small tubular articles may be fed on to this cloth supporting plate, overedged, and then off from the cloth supporting plate, and in a downward direction so that this tubular fabric may be brought again to the front of the machine and led up on to the cloth supporting plate. This construction of cloth plate is especially adapted for the hemming of stockings. In order to prepare the edge for the edge covering stitches, a trimming mechanism is provided whitch operates to trim the fabric in advance of the needle.

The present invention is directed particularly to the stitch forming mechanism for forming the overedge stitches. This stitching mechanism, however, is particularly adapted for the hemming of articles such as stockings or the like, and therefore, the stitching mechanism has been illustrated in a machine having a type of work support which permits this character of work to be accomplished. A suitable feeding mechanism has also been illustrated and will be described for handling the material, and a suitable trimming mechanism will likewise be illustrated and described for preparing the edge which is to be covered by the overedge stitches. The feeding mechanism, however, and the trimming mechanism, as will be pointed out later, per se, form the subject-matter of divisional applications.

Needle operating mechanism.

The stitch forming mechanism includes a needle 1 which is an eye-pointed needle. Said needle is carried by a needle bar 2. The sewing machine includes a bed plate 3 which is provided with a supporting standard 4 having an overhanging arm 5, which in turn is provided with spaced bearings 6 and 7 in which the needle bar 2 reciprocates. This needle bar receives its reciprocations from a lever 8 which is connected to the needle bar by a link 9. Said lever 8 is pivoted at

10 to a bracket 11 carried by the overhanging arm 5. Mounted in the lower portion of the standard 4 and in the bearing adjacent the front end of the bed plate 3 is a main operating shaft 12. Said shaft 12 is driven by a belt pulley 13. Mounted on this shaft 12 is an eccentric 14 with which an eccentric strap 15 cooperates. The eccentric strap 15 is connected to a ball member 16 on the inner end of the lever 8. Thus it is that this lever 8 is reciprocated. The bracket 11 carries spaced bearing members 17 and 18 (see Fig. 4) in which is mounted a short shaft 19 which is fixed in these bearings. A sleeve 20 is mounted on this shaft and is connected to and supports the lever 8. Said sleeve also supports the ball member 16 and therefore, becomes in effect, a part of the lever 8. It is to be understood that this specific means for operating the needle bar illustrated in the drawings and briefly described above, is not a part of the present invention, and has been illustrated solely for the purpose of illustrating a complete operating machine. In the commercial form of machine which is to be built, this overhanging arm and operating means for the needle bar will probably be inclosed and may be varied without departing from the spirit of the invention as claimed in this application. As the main shaft rotates, the needle bar will be reciprocated and the needle will penetrate the fabric a short distance back from the edge thereof, as shown more particularly in Fig. 13 of the drawings.

Under thread carrying looper.

The material to be stitched is supported by a cloth plate 21 which will be described more in detail later. The under thread carrying looper is illustrated at 22 in the drawings. Said looper has a thread eye 23 adjacent the forward end thereof and also an eye at the heel thereof as indicated at 24. The looper is carried by a shank 25 and this shank 25 is dove-tailed in cross section and engages a similar-shaped recess formed in a supporting arm 26. This supporting arm 26 is split and the two sections thereof are capable of being drawn together by screw 27 and thereby the shank 25 of the looper firmly clamped to the arm. The arm is rigidly secured to a shaft 28 mounted in a bearing bracket 29 secured to the bed plate 3. On the rear end of this shaft 28 is an arm 30 which is rigidly secured to the shaft. This bearing bracket 29 as clearly shown in Figures 4 and 7 of the drawings, also supports the main operating shaft 12, and extends upwardly above the same so as to form a support for the cloth plate 21 (see Fig. 4) and for other operating parts which will be hereinafter referred to. Among these other operating parts is a short shaft 31 which oscillates the under thread carrying looper. The shaft 31 extends clear through the bracket 29 and is provided at one end with an arm 32 which is connected by a link 33 in the present illustrated embodiment of the invention to the lever 8 (see Figures 1 and 4). On the other end of the shaft 31 is a depending arm 34. A link 35 is connected at its lower end to the arm 30 and at its upper end to the arm 34. As the main shaft 12 rotates, it will vibrate the needle lever 8 and this in turn, through the depending link 33 will oscillate the shaft 31 and the shaft 31 will swing the arm 34. The extent of movement of the arm 34 is such that the pivotal connection 36 between said arm and the link 35 swings from the position indicated by the broken line y (Fig. 7) to the position indicated by the broken line x in said figure, and these two positions just referred to are on opposite sides of a line passing through the center of the axis of the shaft 31 and the center of the pivotal connection between the link 35 and the arm 30. In other words, the arm 34 and link 35 together form toggle links which move from one side of a dead center to the other side thereof, and as a result, this arm 30 will receive two oscillations from each oscillation of the arm 34, which actuates the same, and likewise the looper 26 carried by the shaft 28 will be reciprocated twice for each reciprocation of the link 33 which actuates the same. As the link 33 moves in timing with the needle bar, it will be noted that this under thread carrying looper reciprocates twice for each reciprocation of the needle. These reciprocations of the under thread carrying looper are so timed that the looper moves rapidly and quickly forward into the needle thread loop as soon as the needle rises sufficiently to permit the looper to enter the needle thread loop, and said loop is out of the needle thread loop so as to allow the feed to take the work along as soon as the point of the needle is above the work and without any resistance from the needle thread loop being held by the under looper. It is understood, of course, that the under thread looper has a positive movement back and forth with very little or no dwell at either end of its stroke. It also has a very short movement and therefore draws off very little of its own thread. It likewise draws the least amount of needle thread possible, or just enough to form the stitch. The next reciprocation of the looper occurs while the needle is above the work support and is really an idle movement. It will be noted that this under thread carrying looper is positively moved by the eccentric strap 15, and moves back and forth in the same path. As a consequence, there is little or no vibration in the operating parts for this looper, even though the machine be driven at excessively high speed, and as all the connections are positive

connections, there is no chance for any lost motion which is liable to produce the skipping of stitches.

Overedge thread carrying looper.

The overedge thread carrying looper is indicated at 37. In the present embodiment of the invention, said looper has an eye 38 adjacent the point thereof and also an eye 39 adjacent the heel thereof. The looper is mounted in a looper carrier 40 and is secured therein by screws 41, 41 (see Fig. 8). This looper carrier is in turn rigidly secured to a shaft 42. The shaft 42 is mounted in spaced bearings 43, 44 between which the carrier 40 is located, and said carrier 40 is secured to the shaft 42 by means of a set screw 45. The two spaced bearings 43 and 44 are carried by the outer end of a sleeve 46, which sleeve 46 is formed as a part of a shaft 47 mounted in the upper end of the bracket 29. The shaft 47 extends through the bracket 29 and is provided with an arm 48 which is secured to the shaft by means of a set screw 49. This arm 48 in turn carries a ball stud 50 with which the upper end of the eccentric strap 51 is connected. This eccentric strap 51 cooperates with an eccentric 52 on the main shaft 12. On the upper end of the shaft 42 there is a laterally projecting arm 53. A link 54 is provided with a ball head 55 which is engaged by this arm 53. The other end of this link 54 is provided with a ball head 56 which engages a suitable socket formed in a member 56^a carried by a plate 56^b attached to the upper end of the bracket 29. The length of this 54 and the socket for the ball head 56 and also the socket for the ball head 55 are such that when the supporting shaft 47 for this overedge looper is oscillated, it will not only produce an oscillation of the looper carrier in a vertical plane, but through the link 54, it will cause said carrier to oscillate with its supporting shaft 42 so as to move the looper toward and from the needle path. These two movements in the looper are produced by the single eccentric strap on the main shaft. These two movements also cause the looper to move from a position beneath the work support to a position above the work support, and likewise from a position partly beneath the work support at the lower end of its stroke out around the edge of the material and to a position over the work support above the material. The axis of the shaft 47 is well above the work support, and therefore, the oscillations of this shaft will carry the overedge looper from a position in rear of the under thread looper beneath the work support, to a position in front of the needle above the work support.

From the above it will be noted that by a single eccentric and this link, and the positioning of the support for the looper, the looper is given several movements which combine to produce the following path of movement in the point of the looper, that is, the movement into the looper thread loop by the point passing in rear of the lower thread looper, out around the edge of the fabric, and to a position in front of the needle above the fabric so that the needle may enter the looper thread loop formed by this overedge thread carrying looper. It will be noted from the figures shown in the drawings that the overedge thread carrying looper is formed with a straight shank portion 57^a, a portion 57^b extending downwardly at right angles thereto, and a portion 57^c which extends backwardly on the shank portion 57^b and outwardly therefrom, so that the looper while mounted above the work support, has the effect of coming up from beneath the work support as it enters the loop of the lower thread carrying looper, as it passes over the edge of the material, and to a position for the needle to enter its thread loop.

Fabric supporting mechanism.

The fabric or material to be stitched is supported by means of a cloth plate 21. Said cloth plate is supported in part by the bracket 29 which carries a supporting ledge 59 and screws 60, 60 passing through the inner edge of the cloth plate and threaded into said ledge hold the cloth plate firmly on said ledge. It is also supported by means of a post 61 carried by the bed plate 3 and projecting vertically upward therefrom at the front of the bed plate and directly in front of the stitching point. Said post 61 has a cut away portion 62 so as to give room for the feed to act and an upwardly projecting lug 63 to which the cloth plate is secured by means of a screw 64. Said screw 64 passes through a slot in the cloth plate which extends in a direction at right angles to the line of feed and this permits the trimming mechanism to be shifted or adjusted for changing the width of the seam. This cloth plate 21 is provided with feed slots 65, 66 and 67. The main feed dog 68 is provided with feeding sections which project in part through the slot 65 and in part through the slot 67. There is also an auxiliary feed dog 69 with feeding sections which project in part through the slot 65 and in part through the slot 66. This cloth plate also has a needle hole therethrough indicated at 70. Alongside of the needle hole is a stitch finger 71 of the usual character in overedge machines over which the stitches are laid, and as the feed moves the fabric, the stitches will slip off from the end of this stitch finger. There is also a slot 72 in the cloth plate 21 which is directly in front of the stitch finger and the lower blade 73 of the trimming mechanism pro-

jects up through this slot. Said blade 73 is mounted on the supporting post 61. Cooperating with the cloth plate is a presser foot 74 carried by a presser bar 75 of the usual type. This presser foot is hinged to the supporting shank 76 and this shank is in turn secured to the lower end of the bar 75. The forward end of the presser foot is held depressed by means of a spring 77 which is secured to the shank portion and projects forwardly and rests on the presser foot. Said presser foot is provided with a plate 78 which carries a stitch finger 79 located directly above the stitch finger on the cloth plate (see Fig. 13). Said plate 78 bears on the material being stitched. The plate has a cut away portion 80 in which the upper trimming blade 81 operates, and the plate assures that the fabric will be firmly clamped against the cloth plate adjacent the place of operation of the trimming blade 81. Associated with this cloth plate 21 is a cover plate 82 which is hinged at 83 to a bracket 84 carried by the bed plate. Said cover plate has a vertical portion 85 and a horizontal portion 86. The vertical portion is provided with spaced lugs 87, while the bracket 84 has spaced lugs 88, and a hinge pin 89 extending through said lugs support the cover plate and permit it to swing horizontally toward and from the cloth plate 21. The horizontal portion 86 of the cover plate is shaped at 86^a and 86^b so as to fit about the parts of the cloth plate 21. Said horizontal portion swings underneath this cloth plate 21 and the purpose of the cover plate is to cover the operating parts beneath the cloth plate. It is noted that the vertical section 87 of the cover plate is curved inwardly at 87^a and thence outwardly to give ample space for the under looper to operate. The purpose of this curved in section is to permit a tubular article to be passed over the cloth plate 21 and then directed downwardly into this recessed portion of the cover plate 87^a, and thence brought back to the front of the machine where it may be again directed over the cloth plate 21. This enables very small tubular articles to be stitched. The cover plate is held normally in closed position covering the parts beneath the same and behind the same by means of a spring pressed bolt 90, which is mounted on the inner face of this vertical section 87 of the cover plates and engages a rounded recess shown in dotted lines at 91 in Fig. 2. It will readily be seen that this cover plate may be released by a slight pressure of the hand of the operator, so that it can be swung to the position shown in Fig. 5 of the drawings.

Feed operating mechanism.

The main feed dog 68 is carried by a main feed bar 92. Said main feed bar is pivotally supported at the rear end thereof by rocking arms 93. Said rocking arms are freely carried by a shaft 94 mounted in a bracket 95 carried by the bed plate. The shaft 94 is utilized for imparting the back and forward movements to both feed bars and is oscillated for this purpose by means of an eccentric strap 97 which is connected to an arm 96 mounted on the shaft 94 and depending therefrom. Said eccentric strap 97 cooperates with an eccentric 98 on the main shaft. Rigidly mounted on this shaft 94 is a bracket 108. This bracket 108 is provided with two upwardly projecting arms 109, each of which is provided with an arcuate-shaped slot 110. The main feed bar is moved back and forth by a link 112 which is connected to a bolt adjustable in the slot 110 by one of said arms. The main feed bar has the laterally projecting web 105. The auxiliary feed bar 103 is located above this web, and is adapted to slide back and forth thereon, is held from any movement upwardly relative to said main feed bar by the plate 106 secured to said main feed bar by screws 107. The auxiliary feed dog 68 is carried by a shank which is adjustably connected with the auxiliary feed bar by a screw 104. The auxiliary feed bar has a depending lug to which the link 111 is connected. The other end of this link 111 is connected to a bolt which is adjustable in the slot 110 of the arm 109. The oscillating shaft 94 through the bracket 108 carried thereby, the upstanding arms 109 and links 111 and 112 will impart feeding movements to the two feed bars, and the stroke of these feed bars may be varied by shifting the connection of the link with its respective bar. The main feed bar is raised and lowered by means of a depending yoke 99 which is secured to the feed bar and which cooperates with a block 100. This block is made in two pieces and is provided with a cone-shaped recess between the two pieces. A cone-shaped eccentric secured to the end of the main shaft operates between these two pieces and raises and lowers the yoke which in turn raises and lowers the main feed bar. The auxiliary feed bar, as has been stated, moves up and down with the main feed bar. This feeding mechanism is shown, described and claimed in my co-pending application, Serial No. 729,101, filed of even date herewith.

Trimming mechanism.

The trimming mechanism includes a movable trimming blade 81. Said movable trimming blade 81 is carried by a rocking arm 114, which in turn is mounted on a short shaft 115. This shaft 115 also carries an arm 116 and said arm 116 is connected to a link 117 which in turn is connected to a depending arm 118 carried by the shaft 47. The arm 114 is bent at right angles at its forward end and forms a sup-

porting head 119. This head 119 is provided with a recess 121 in which is mounted a movable trimming blade 81. Said movable trimming blade is clamped in the recess 121 by means of a clamping plate 123 which is engaged by the head of a bolt 120. As will clearly appear from Fig. 9 of the drawings, this movable trimming blade 81 is set at an incline to a vertical plane. The extreme inner edge, however, is cut or ground so as to form a vertical face 124. The cutting blade moves up and down in a vertical plane, and the cutting edge 125 of this blade cooperates with a stationary blade 73 secured to the supporting post 61 (see Figures 6 and 9). A clamping bolt 127 secures the trimming blade in adjusted positions. It will be noted that the movable blade as shown in Fig. 9, moves to a position well above the stationary blade 73. In order to insure that the movable blade make proper cutting contact with the stationary blade, I have provided a guiding plate 128 which is mounted on the trimmer supporting head 119, and secured thereto by a bolt 129 which passes through a slot in the guiding member so that said guiding member can be adjusted. This guiding member always maintains contact with the lower stationary blade 73. The shaft 115 is mounted so as to have a limited movement in an endwise direction in a bracket 130 and is spring pressed in a direction toward the stationary blade by means of a spring 131 (see Fig. 3), which bears against the end of the shaft. The tension of this spring may be varied by means of an adjustable bolt 132. This spring pressure insures that the guide plate shall maintain contact with the stationary blade and hold the trimmer supporting head a predetermined distance from said blade, and of course, the movable blade 81 is set in said movable head so as to have a proper shearing cooperation with the stationary blade.

Associated with the trimming mechanism is a hinged cover plate 133 mounted on suitable hinges 134 so that it may be swung toward and from the trimming mechanism (see Fig. 1). This cover plate is held in closed position by means of a suitable latch 135. Associated with the swinging cover plate 133 is a strip deflector 136, which extends in rear of the trimming point and serves to deflect the trimmed off portion toward the front of the machine and away from the parts of the stitching mechanism in rear of the cover plate 133. This deflector is movable so as to permit it being placed at a point so as to engage the strip and moved away from this point of support so that it may swing with the cover plate to uncover the parts in rear thereof. This trimming mechanism and the parts associated therewith just described, form no part of the present invention, but are shown, described and claimed in my co-pending application Serial No. 729,100, filed of even date herewith.

The strip of material to be provided with overedge stitches is fed across the cloth supporting plate 21 by means of the feeding mechanism, and is guided in rear of the stitching mechanism by a guide 137. The trimming mechanism trims the edge prior to the stitching thereof, and the stitching mechanism will form overedge stitches about the trimmed edge of the fabric. The feeding mechanism may be set so as to have a differential movement when operating upon knit goods, so as to prevent the undue stretching of the same, as for example, in the hemming of a stocking. The thread of the under thread carrying looper is indicated at *a*. Very little thread controlling mechanism is required, as this looper has a very short quick movement, inasmuch as it reciprocates twice for each reciprocation of the needle. The thread, however, as it comes from the supply, in the present embodiment of the invention, passes through a movable thread guide 138 and thence through a stationary thread guide 139 to a stationary thread guide 140 near the lower end of the looper carrier, and from this point, the thread passes to the heel of the looper. The thread for the looper moving over the edge of the fabric is indicated at *b*. Said thread passes from the supply through a thread guide 141 and thence to a thread guide 142 carried by the needle bar, and from this thread guide 142 it passes to the heel of the overedge looper. The needle thread is indicated at *c* in the drawings. Said thread passes through the guide 141 and thence through the guide 142 on the needle bar, and from this movable thread guide on the needle bar it passes through an adjustable thread guide 143 and thence to the needle eye. These thread controllers form no part of the present invention, and may be greatly modified without departing from the spirit of the invention, as set forth in the appended claims.

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

1. In a sewing machine, a cloth plate, a reciprocating needle, an under thread carrying looper cooperating with said needle beneath the cloth plate and movable back and forth in a single plane in rear of the needle, an overedge looper, means for oscillating said looper for moving the point thereof from below the plane of the cloth plate over the cloth plate, and means for shifting the plane of oscillation of the overedge looper whereby the point thereof moves from a position in rear of the under thread looper to a point in front of the needle.

2. In a sewing machine, a cloth plate, a

feeding mechanism, a reciprocating needle, an under thread looper cooperating with said needle beneath the cloth plate, an overedge looper cooperating with said under looper beneath the cloth plate, means located above the cloth plate for supporting said overedge looper, means for moving said overedge looper from a point beneath the cloth plate where it cooperates with the under looper around the edge of the cloth plate to a position for the needle to enter the loop formed by said overedge looper, said means for supporting said overedge looper including a carrier for said looper, a shaft on which said carrier is mounted, and means for supporting said shaft whereby the shaft may be moved in a plane substantially parallel with the line of feed for moving the looper from a position below to a position above the cloth plate.

3. In a sewing machine, a cloth plate, feeding mechanism, a reciprocating needle, an under thread looper cooperating with said needle beneath the cloth plate, an overedge looper cooperating with said under looper beneath the cloth plate, means located above the cloth plate for supporting said overedge looper, means for moving said overedge looper from a point beneath the cloth plate where it cooperates with the under looper around the edge of the cloth plate to a position for the needle to enter the loop formed by said overedge looper, said means for supporting said overedge looper including a carrier for said looper, a shaft on which said carrier is mounted, means for supporting said shaft whereby the shaft may be moved in a plane substantially parallel with the line of feed for moving the looper from a position below to a position above the cloth plate, and means for oscillating said shaft about its axis during its bodily movement for moving said looper around the edge of the cloth plate and positioning the same for cooperation with the needle.

4. In a sewing machine, a cloth plate, a reciprocating needle, an under thread looper cooperating with said needle beneath the cloth plate, an overedge looper cooperating with said under looper beneath the cloth plate, means located above the cloth plate for supporting said overedge looper, means for moving said overedge looper from a point beneath the cloth plate where it cooperates with the under looper around the edge of the cloth plate to a position for the needle to enter the loop formed by said overedge looper, said means for supporting said overedge looper including a carrier for said looper, a shaft on which said carrier is mounted, means for supporting said shaft whereby the shaft may be swung for moving the looper from a position below to a position above the cloth plate, said supporting means for the shaft on which the looper carrier is mounted being mounted for oscillation about an axis at right angles to said shaft, a main shaft beneath the plane of the cloth plate, an eccentric thereon, an eccentric strap cooperating with said eccentric and connected to the supporting means for the shaft on which the looper carrier is mounted so that said looper carrier is positively oscillated bodily.

5. In a sewing machine, a cloth plate, a reciprocating needle, an under thread looper cooperating wtih said needle beneath the cloth plate, an overedge looper cooperating with said under looper beneath the cloth plate, means located above the cloth plate for supporting said overedge looper, means for moving said overedge looper from a point beneath the cloth plate where it cooperates with the under looper around the edge of the cloth plate to a position for the needle to enter the loop formed by said overedge looper, said means for supporting said overedge looper including a carrier for said looper, a shaft on which said carrier is mounted, means for supporting said shaft whereby the shaft may be swung for moving the looper from a position below to a position above the cloth plate, means for oscillating said shaft about its axis during its bodily movement for moving said looper around the edge of the cloth plate and positioning the same for cooperation with the needle, said means for oscillating the shaft carrying the looper including a link having a universal connection with the arm attached to said shaft, and a universal connection with a stationary part of the machine, said universal connections being so disposed as to cause said shaft to oscillate about its axis when said shaft is swung.

6. In a sewing machine, a cloth plate, a reciprocating needle, an under thread carrying looper cooperating with the needle beneath the cloth plate and movable back and forth in a single plane in rear of the needle, an overedge looper, means located above the cloth plate for supporting said overedge looper, said overedge looper having a shank which is bent downwardly and substantially back upon itself so as to cause the point of the looper to extend in an upward direction, means for oscillating said looper for moving the point thereof from below the plane of the cloth plate over the cloth plate, and means for shifting the plane of oscillation of said overedge looper whereby the point thereof moves from a position in rear of the under thread looper to a point in front of the needle.

7. In a sewing machine, a cloth plate and overedge stitching mechanism including an overedge looper mounted above the cloth plate, said looper having a shank which is bent downwardly and substantially back

upon itself so as to cause the point of the looper to extend in an upward direction, means for operating said looper whereby the point thereof is caused to move from a position substantially beneath the cloth plate, around the edge of the cloth plate, and to a position where a needle is adapted to enter the loop of thread formed by said overedge looper, said means for operating the looper including a looper carrier in which said overedge looper is mounted, a shaft on which said carrier is fixed, an arm carried by said shaft, means for supporting and swinging said shaft, and means connected with said arm for oscillating the shaft during the swinging thereof.

8. In a sewing machine, a cloth plate and overedge stitching mechanism including an overedge looper mounted above the cloth plate, said looper having a shank which is bent downwardly and substantially back upon itself so as to cause the point of the looper to extend in an upward direction, means for operating said looper whereby the point thereof is caused to move from a position substantially beneath the cloth plate, around the edge of the cloth plate, and to a position where a needle is adapted to enter the loop of thread formed by said overedge looper, said means for operating the overedge looper including a carrier for the looper, a shaft on which said carrier is fixed, spaced bearings supporting said shaft, a head carrying said spaced bearings and mounted to oscillate about an axis at right angles to the axis of the shaft, means for oscillating said head, an arm mounted on said shaft and rigidly attached thereto, a link having a universal connection with said arm and a universal connection with a stationary part of the machine, said link being so disposed as to cause the shaft on which the looper carrier is mounted to oscillate during the oscillations of said head.

9. In a sewing machine, a cloth plate, a main shaft located beneath the plane of the cloth plate, an overedge looper including a looper carrier, a shank rigidly attached to said carrier, said shank being bent downwardly and thence upwardly so as to point in an upward direction, a shaft on which said carrier is fixed, an eccentric on the main shaft, and means operated thereby for swinging said shaft on which the looper carrier is mounted about an axis parallel with the axis of the main shaft, and for oscillating said shaft about its own axis during the swinging movements thereof.

10. In a sewing machine, a cloth plate, a reciprocating needle, an under looper cooperating with said needle beneath the cloth plate, an overedge looper cooperating with said under looper beneath the cloth plate and with the needle above the cloth plate, and means for oscillating said under looper whereby the same is caused to move into and out of the needle thread loop while the needle is on its upstroke, said means for oscillating the looper including toggle levers movable from one side of a dead center line to the other side thereof.

11. In a sewing machine, a cloth plate, a reciprocating needle, an under thread carrying implement, movable back and forth in a single plane in rear of the needle, an overedge thread carrying implement, a main shaft, an eccentric mounted on said shaft, and devices actuated by said eccentric for oscillating the overedge thread carrying implement for moving the point thereof from below the plane of the cloth plate over the cloth plate and for shifting the plane of oscillation of said implement whereby the point thereof moves from a position in rear of the under thread carrying implement to a position in front of the needle.

12. In a sewing machine, a cloth plate, an overhanging arm, a needle, a needle lever for reciprocating said needle, an under thread carrying looper, a shaft on which said under looper is mounted, an arm rigid with said shaft, a rock shaft beneath the cloth plate, a link connecting said rock shaft with the needle lever whereby said shaft is oscillated with the needle lever, said rock shaft having a depending arm, a link connecting said depending arm with the arm on the looper supporting shaft, said link and the arm on said rock shaft being so disposed as to move from one side of a dead center line to the other side thereof for oscillating said looper twice for each reciprocation of the needle bar.

13. In a sewing machine, a cloth plate, an overhanging arm, a needle, a needle lever for reciprocating said needle, an under thread carrying looper, a shaft on which said under looper is mounted, an arm rigid with said shaft, a rock shaft beneath the cloth plate, a link connecting said rock shaft with the needle lever whereby said shaft is oscillated with the needle lever, said rock shaft having a depending arm, a link connecting said depending arm with the arm of the looper supporting shaft, said link and the arm on said rock shaft being so disposed as to move from one side of a dead center line to the other side thereof for oscillating said looper twice for each reciprocation of the needle bar, and for causing said under thread carrying looper to move into and out of the needle thread loop on the upstroke of the needle.

14. In a sewing machine, the combination of a cloth plate, a feeding mechanism for feeding the cloth across the cloth plate, an overhanging arm, a needle lever mounted thereon, a needle bar reciprocated by said needle lever, a needle carried by said needle bar, an under thread carrying looper, a shaft

on which said under looper is mounted, said shaft being disposed substantially in a plane parallel to the line of the feed, an arm carried by said shaft, and means connected to said arm for oscillating said shaft for moving the looper back and forth in a single plane and for causing said looper to enter and leave the needle thread loop before the cloth is moved on its feeding stroke.

15. In a sewing machine, the combination of a cloth plate, a feeding mechanism for feeding the cloth across the cloth plate, an overhanging arm, a needle lever mounted thereon, a needle bar reciprocated by said needle lever, a needle carried by said needle bar, an under thread carrying looper, a shaft on which said under looper is mounted, said shaft being disposed substantially in a plane parallel to the line of feed, an arm carried by said shaft, and means connected to said arm for oscillating said shaft for moving the looper back and forth in a single plane and for causing said looper to enter and leave the needle thread loop before the cloth is moved on its feeding stroke, said means connected to said arm for oscillating said shaft including toggle links movable across a dead center whereby said shaft is oscillated twice for each feeding movement.

16. In a sewing machine, the combination of a cloth plate, a feeding mechanism for feeding the cloth across the cloth plate, an overhanging arm, a needle lever mounted thereon, a needle bar reciprocated by said needle lever, a needle carried by said needle bar, an under thread carrying looper, a shaft on which said under looper is mounted, said shaft being disposed substantially in the plane of the feed, an arm carried by said shaft, means connected to said arm for oscillating said shaft for moving the looper back and forth in a single plane and for causing said looper to enter and leave the needle thread loop before the cloth is moved on its feeding stroke, and an overedge looper cooperating with said under looper beneath the plane of the cloth plate and with said needle above the plane of the cloth plate.

17. In a sewing machine, a bed plate, a bracket mounted on said bed plate and projecting upwardly therefrom, a cloth plate supported by said bracket, a reciprocating needle, an under thread carrying looper cooperating with said needle beneath the cloth plate, a shaft mounted in said bracket and located above the plane of the cloth plate and having an arm at one end thereof, an eccentric strap cooperating with an eccentric on the main shaft and connected to said arm for positively oscillating said shaft, spaced bearing sleeves carried by said shaft and oscillating therewith, a short shaft mounted in said bearing sleeves and extending at right angles to the axis of said first-named shaft, a looper carrier mounted on said short shaft between said bearing sleeves, an overedge looper mounted in said carrier and having its shank bent downwardly and thence upwardly so that the point of the looper will move in an upward direction when the first-named shaft is oscillated to raise the looper, and means for oscillating the shaft on which the looper carrier is mounted in order to carry the looper around the edge of the cloth plate during the oscillations of the first-named shaft.

18. In a sewing machine, a bed plate, a bracket mounted on said bed plate and projecting upwardly therefrom, a cloth plate supported by said bracket, a reciprocating needle, an under thread carrying looper cooperating with said needle beneath the cloth plate, a shaft mounted in said bracket and located above the plane of the cloth plate and having an arm at one end thereof, an eccentric strap cooperating with an eccentric on the main shaft and connected to said arm for positively oscillating said shaft, spaced bearing sleeves carried by said shaft and oscillating therewith, a short shaft mounted in said bearing sleeves and extending at right angles to the axis of said first-named shaft, a looper carrier mounted on said short shaft between said bearing sleeves, an overedge looper mounted in said carrier and having its shank bent downwardly and thence upwardly so that the point of the looper will move in an upward direction when the first-named shaft is oscillated to raise the looper, means for oscillating the shaft on which the looper carrier is mounted in order to carry the looper around the edge of the cloth plate during the oscillations of the first-named shaft, said last-named means including an arm rigidly connected to said shaft on which the looper carrier is mounted and having a ball socket, said bracket having a ball socket at the upper end thereof, and a link having ball heads at both ends, one of which engages the ball socket on the arm and the other of which engages the ball socket in the bracket, said ball sockets being so disposed and said link being of such length relative to the distance of the shaft carrying the looper from the bracket that said shaft will be oscillated during the oscillations of the first-named shaft.

19. In a sewing machine, a bed plate, a bracket mounted on said bed plate and projecting upwardly therefrom, a cloth plate supported by said bracket, a reciprocating needle, an under thread carrying looper cooperating with said needle beneath the cloth plate, a shaft mounted in said bracket and located above the plane of the cloth plate and having an arm at one end thereof, an eccentric strap cooperating with an eccentric on the main shaft and connected to said arm for positively oscillating said shaft,

spaced bearing sleeves carried by said shaft and oscillating therewith, a short shaft mounted in said bearing sleeves and extending at right angles to the axis of said first-named shaft, a looper carrier mounted on said short shaft between said bearing sleeves, an overedge looper mounted in said carrier and having its shank bent downwardly and thence upwardly so that the point of the looper will move in an upward direction when the first-named shaft is oscillated to raise the looper, means for oscillating the shaft on which the looper carrier is mounted in order to carry the looper around the edge of the cloth plate during the oscillations of the first-named shaft, said last-named means including an arm rigidly connected to said shaft on which the looper carrier is mounted and having a ball socket, said bracket having a ball socket at the upper end thereof, and a link having ball heads at both ends, one of which engages the ball socket on the arm and the other of which engages the ball socket in the bracket, said ball sockets being so disposed and said link being of such length relative to the distance of the shaft carrying the looper from the bracket that said shaft will be oscillated during the oscillations of the first-named shaft, said first-named shaft being disposed at such distance above the plane of the cloth plate that the overedge looper will move from a point in rear of the under looper to a point in front of the needle above the cloth plate.

20. In a sewing machine, a feeding mechanism, a bed plate, a bracket mounted thereon and extending upwardly from the bed plate, a cloth plate carried by the bracket, a needle, means for reciprocating said needle, an under looper, a shaft on which said under looper is mounted, a bearing sleeve attached to said bed plate and carrying said shaft, said shaft being located in a plane parallel with the line of feed, a second shaft mounted in the bracket and parallel with the shaft carrying the looper, means for oscillating said second shaft, an arm depending from said shaft, an arm on the end of the looper supporting shaft, and a link connecting said arms, said arms being so disposed as to oscillate said looper back and forth twice for each reciprocation of the needle.

21. In a sewing machine, a cloth plate, a needle mounted to reciprocate in a line passing through the cloth plate adjacent the edge thereof, an under looper cooperating with the needle beneath the cloth plate, a supporting shaft for said under looper, means at the right of said shaft as viewed from the front of the machine for oscillating the same, an overedge looper cooperating with the under looper beneath the plane of the cloth plate and with the needle above the plane of the cloth plate, means for operating said overedge looper including devices located wholly at the right of the needle as viewed from the front of the machine, a feeding mechanism including feed dogs for feeding the material across said cloth plate, feed bars at the right of the needle as viewed from the front of the machine for supporting and operating said feed dogs, a cover plate including a horizontal portion and a vertical portion for covering the operating mechanism for the loopers and feed underneath the cloth plate and in rear thereof, said horizontal and vertical portions of the cover plate being shaped so as to provide a clearance space for the fabric being stitched as it passes off the rear end of the cloth plate so as to permit small tubular articles to be stitched.

22. In a sewing machine, a cloth plate, a needle mounted to reciprocate in a line passing through the cloth plate adjacent the edge thereof, an under looper cooperating with the needle beneath the cloth plate, a supporting shaft for said under looper, means at the right of said shaft as viewed from the front of the machine for oscillating the same, an overedge looper cooperating with the under looper beneath the plane of the cloth plate and with the needle above the plane of the cloth plate, means for operating said overedge looper including devices located wholly at the right of the needle as viewed from the front of the machine, a feeding mechanism including feed dogs for feeding the material across said cloth plate, feed bars at the right of the needle as viewed from the front of the machine for supporting and operating said feed dogs, a cover plate including a horizontal portion and a vertical portion for covering the operating mechanism for the loopers and feed underneath the cloth plate and in rear thereof, said horizontal and vertical portions of the cover plate being shaped so as to provide a clearance space for the fabric being stitched as it passes off the rear end of the cloth plate so as to permit small tubuluar articles to be stitched, said cover plate being mounted so that it may be swung away from the parts covered thereby to give access thereto.

23. In a sewing machine, a cloth plate, a needle mounted to reciprocate in a line passing through the cloth plate adjacent the edge thereof, an under looper cooperating with the needle beneath the cloth plate, a supporting shaft for said under looper, means at the right of said shaft as viewed from the front of the machine for oscillating the same, an overedge looper cooperating with the under looper beneath the plane of the cloth plate and with the needle above the plane of the cloth plate, means for operating said overedge looper including devices located wholly at the right of the needle as viewed from the front of the machine, a

feeding mechanism including feed dogs for feeding the material across said cloth plate, feed bars at the right of the needle as viewed from the front of the machine for supporting and operating said feed dogs, a cover plate including a horizontal portion and a vertical portion for covering the operating mechanism for the loopers and feed underneath the cloth plate and in rear thereof, said horizontal and vertical portions of the cover plate being shaped so as to provide a clearance space for the fabric being stitched as it passes off the rear end of the cloth plate so as to permit small tubular articles to be stitched, said cover plate being mounted so that it may be swung away from the parts covered thereby to give access thereto, a trimming mechanism including a movable trimming blade, and means for supporting and operating said movable trimming blade located at the right of the needle as viewed from the front of the machine.

24. In a sewing machine, a cloth plate, a needle mounted to reciprocate in a line passing through the cloth plate adjacent the edge thereof, an under looper cooperating with the needle beneath the cloth plate, a supporting shaft for said under looper, means at the right of said shaft as viewed from the front of the machine for oscillating the same, an overedge looper cooperating with the under looper beneath the plane of the cloth plate and with the needle above the plane of the cloth plate, means for operating said overedge looper including devices located wholly at the right of the needle as viewed from the front of the machine, a feeding mechanism including feed dogs for feeding the material across said cloth plate, feed bars at the right of the needle as viewed from the front of the machine for supporting and operating said feed dogs, a cover plate including a horizontal portion and a vertical portion for covering the operating mechanism for the loopers and feed underneath the cloth plate and in rear thereof, said horizontal and vertical portions of the cover plate being shaped so as to provide a clearance space for the fabric being stitched as it passes off the rear end of the cloth plate so as to permit small tubular articles to be stitched, said cover plate being mounted so that it may be swung away from the parts covered thereby to give access thereto, a trimming mechanism including a movable trimming blade, means for supporting and operating said movable trimming blade located at the right of the needle as viewed from the front of the machine, a cover plate at the front of the machine, and a strip guide carried by said cover plate.

25. In a sewing machine, a cloth plate, overedge stitch forming mechanism, a trimmer for trimming the edge of the cloth in advance of the stitch forming mechanism, a feeding mechanism including feed dogs operating through feed slots in the cloth plate, a presser foot cooperating with said feed dogs, a main feed bar having a laterally offset portion on which one of said feed dogs is mounted, an auxiliary feed bar having a laterally offset portion on which the other feed dog is mounted, means for supporting said auxiliary feed bar from the main feed bar, means for moving said feed bars for imparting back and forth movements to the feed dogs, means located beneath said feed bars for raising and lowering the same, a cover plate having a horizontal portion and a vertical portion for covering the operating parts beneath the cloth plate, said vertical portion and said horizontal portion being shaped so as to provide a clearance space in rear of the cloth plate for the cloth being stitched, whereby said cloth may be led downwardly and thence forwardly to the front of the machine and directed again over the cloth plate, thereby trimming small tubular articles to be stitched.

26. In a sewing machine, a work supporting plate, a rotating shaft, a reciprocating needle, a looper cooperating with said needle beneath the work supporting plate, a second looper alternately cooperating with said first named looper beneath the plane of said work supporting plate and with said needle above said work supporting plate, means for actuating said needle and said second looper from said main shaft, the means for actuating said second looper including a plurality of oscillating shafts arranged at substantially right angles to each other, one of said shafts supporting said looper and being mounted upon another of said shafts, and a single eccentric on said rotating shaft for actuating both of said oscillating shafts, the shaft supporting the looper deriving its movements from the shaft on which it is mounted.

27. In a sewing machine, the combination of a work supporting plate, a main rotating shaft, a reciprocating needle, a thread carrying implement cooperating with said needle beneath the work support, an overedge thread carrying implement cooperating with said underthread carrying implement beneath the plane of the work support and with the needle above the plane of the work support, and means for mounting and actuating said overedge thread carrying implement including a shaft mounted for oscillation on a stationary part of the machine, means for oscillating said shaft, a second shaft mounted for oscillation on the first named oscillating shaft, the longitudinal axis of said oscillating shafts being non-parallel, said second oscillating shaft deriving its oscillations from a link connected thereto and with a stationary part of the machine.

28. In a sewing machine, the combination of a work supporting plate, a main rotating shaft, a reciprocating needle, a looper cooperating with said needle beneath the work supporting plate and movable back and forth in a single plane substantially at right angles to the line of feed, an overedge carrying looper cooperating with said first named looper beneath the plane of the work supporting plate, and with the needle above the plane of the work supporting plate, means for mounting and actuating said overedge looper comprising a shaft mounted for oscillation on a stationary part of the machine, a second shaft mounted for oscillation on the first named shaft, the longitudinal axis of said oscillating shafts being substantially at right angles to each other, a single actuating member for oscillating said first named shaft, and devices whereby the oscillations of the first named shaft impart oscillations to the second named shaft, said overedge looper being carried by said second named oscillating shaft and moving from a point in rear of the looper cooperating with the needle beneath the work support to a point in front of the needle above the work support.

29. In a sewing machine the combination of a work supporting plate, a main rotating shaft, a reciprocating needle actuated by said main rotating shaft, a looper cooperating with said needle beneath the work support and movable back and forth in a single plane substantially at right angles to the line of feed, means operated by said main rotating shaft for actuating said looper, an overedge looper cooperating with said first named looper beneath the plane of the work support and with the needle above the plane of the work support, a shaft mounted to oscillate in a stationary part of the machine about an axis parallel with the axis of said main rotating shaft, a second oscillating shaft supporting said overedge looper and mounted on the first-named shaft to oscillate about an axis at right angles to said first named oscillating shaft, means actuated by said main shaft for oscillating said first named oscillating shaft and means whereby the oscillations of said shaft impart oscillations to the shaft carrying said looper.

30. In a sewing machine the combination of a work support plate, a main rotating shaft, a reciprocating needle actuated by said main rotating shaft, a looper cooperating with said needle beneath the work support and movable back and forth in a single plane substantially at right angles to the line of feed, means operated by said main rotating shaft for actuating said looper, an overedge looper cooperating with said first named looper beneath the plane of the work support and with the needle above the plane of the work support, a shaft mounted to oscillate in a stationary part of the machine about an axis parallel with the axis of said main rotating shaft, a second oscillating shaft supporting said overedge looper and mounted on the first named shaft to oscillate about an axis at right angles to said first named oscillating shaft, means actuated by said main shaft for oscillating said first named oscillating shaft, means whereby the oscillations of said shaft impart oscillations to the shaft carrying said looper, said oscillating shaft supporting the looper being located above the plane of the cloth plate.

31. In a sewing machine, the combination of a work supporting plate, a main rotating shaft, a reciprocating needle, a looper cooperating with said needle beneath the work supporting plate, an overedge looper cooperating with the first named looper beneath the plane of the work supporting plate and with the needle above the plane of the work supporting plate, and means for actuating said overedge looper whereby said looper is caused to move about axes at right angles to each other, whereby said looper is moved from a point in rear of the first named looper over the work plate to a point in front of the needle, and a single eccentric for imparting the actuating movements to said overedge looper.

32. A sewing machine comprising a rotating shaft, a reciprocating needle bar, a needle carried thereby, an underthread carrying looper cooperating with said needle, means cooperating with said underthread carrying looper beneath the cloth plate and with the needle above the cloth plate, a main shaft, an eccentrically located member carried thereby and devices actuated by said eccentrically located member for reciprocating said needle and for oscillating said underthread carrying looper, said devices including means for giving said underthread carrying looper two reciprocations to each reciprocation of the needle.

In testimony whereof, I affix my signature.

JOSEPH BERGER.