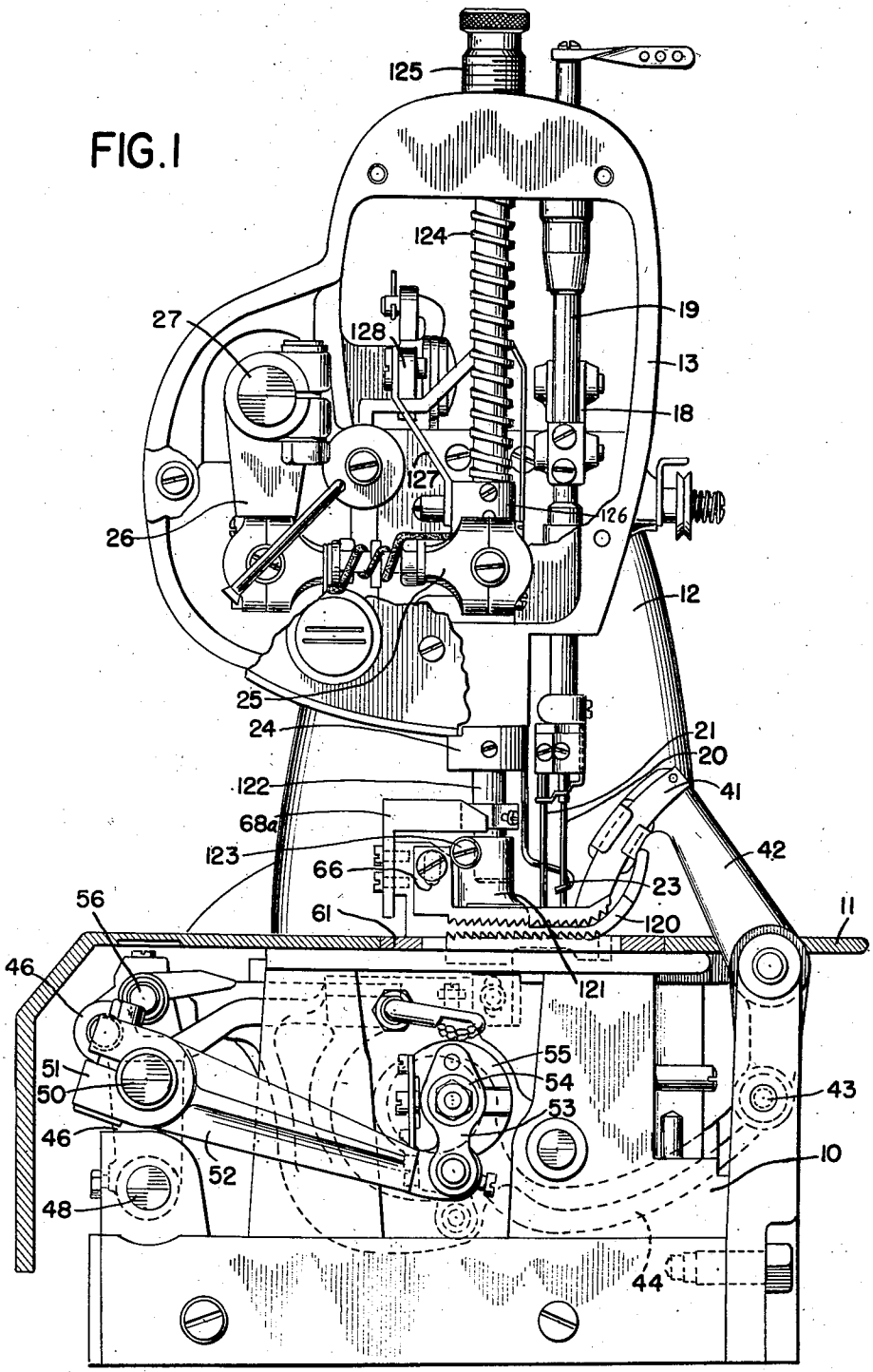
Oct. 29, 1957 R. A. HAYES 2,811,123

WORK FEEDING MECHANISM FOR SEWING MACHINES

Filed Nov. 6, 1953 8 Sheets-Sheet 1

FIG. 1



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WORK FEEDING MECHANISM FOR SEWING MACHINES

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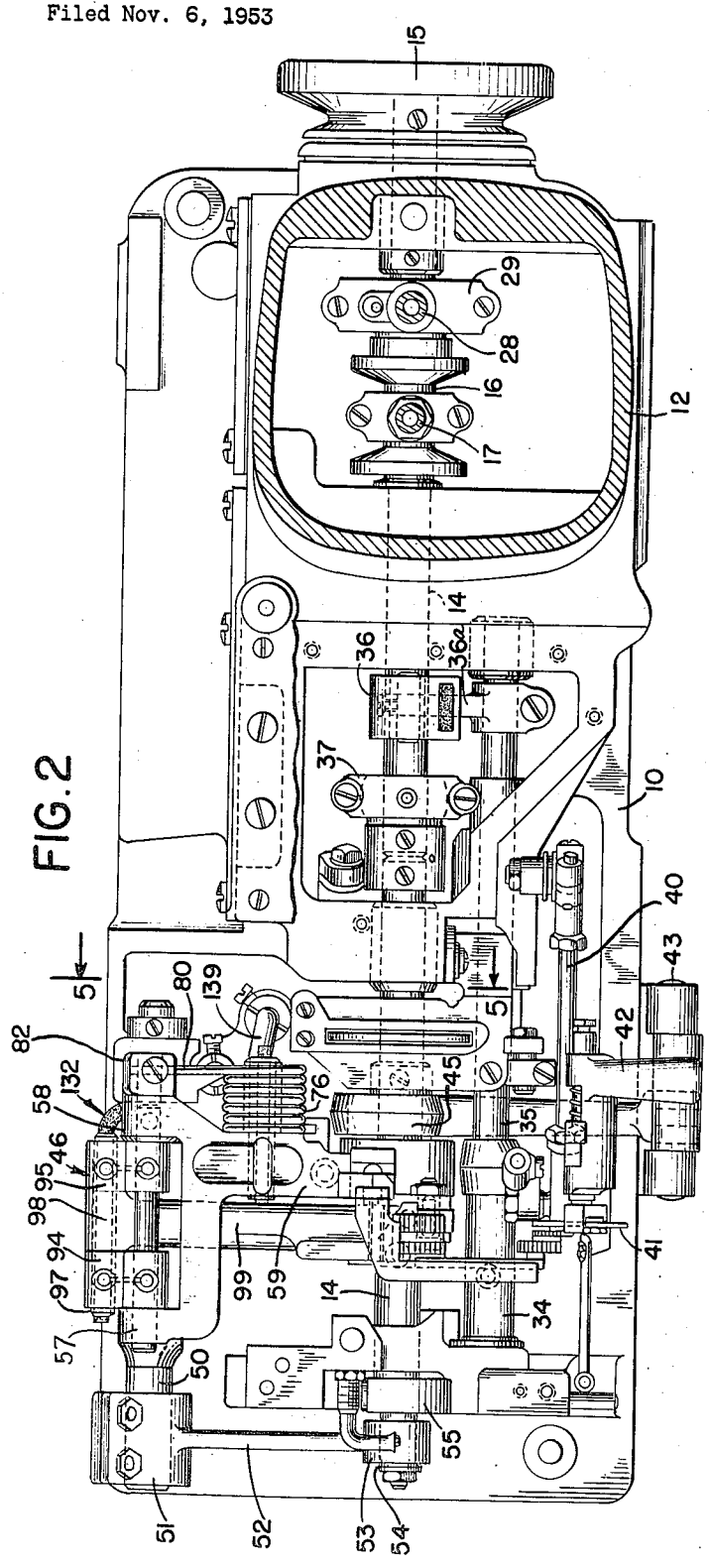
FIG. 2



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WORK FEEDING MECHANISM FOR SEWING MACHINES

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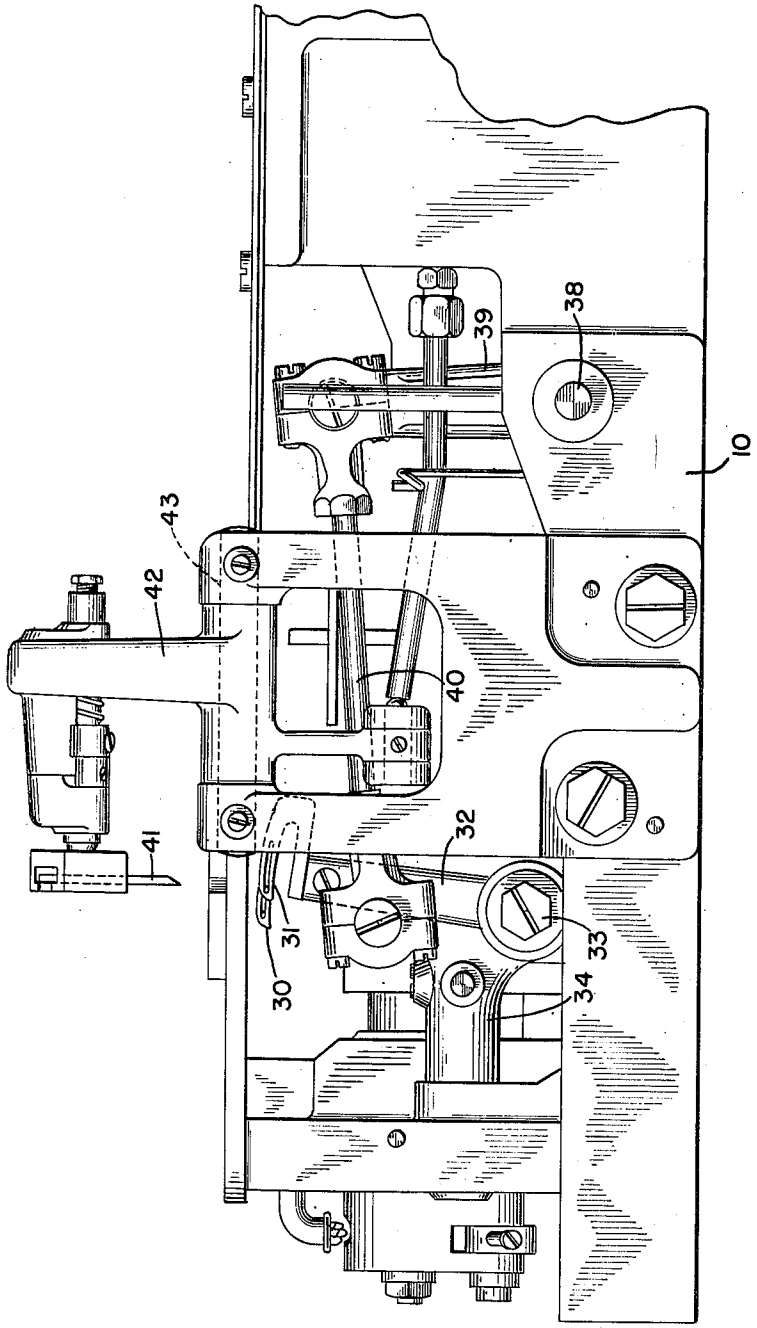

FIG. 3

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WORK FEEDING MECHANISM FOR SEWING MACHINES

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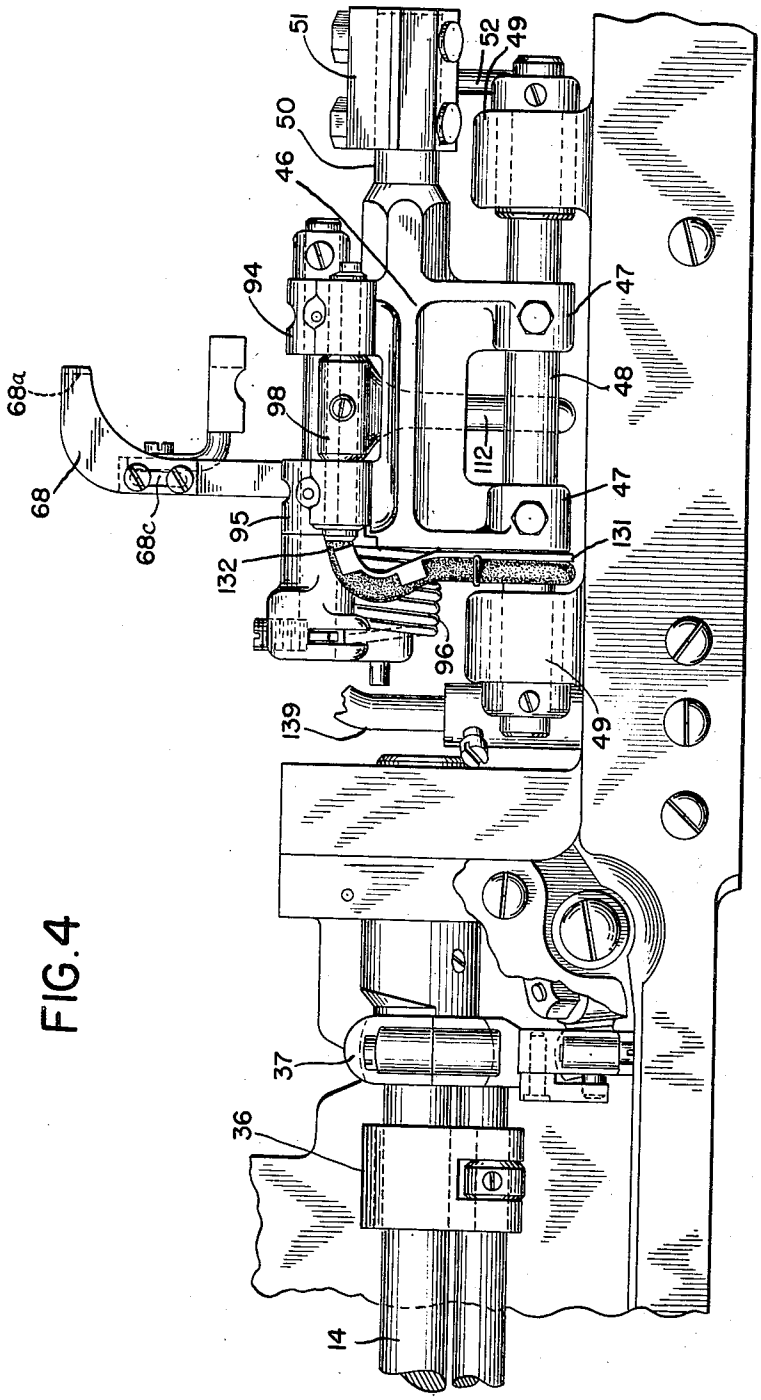

FIG. 4

WORK FEEDING MECHANISM FOR SEWING MACHINES

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FIG.5

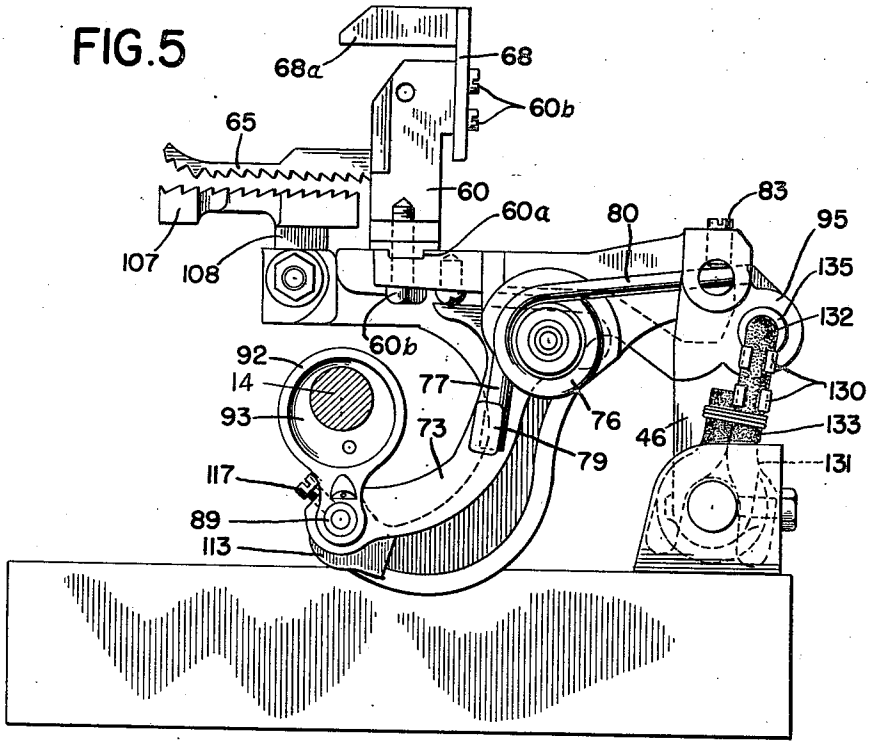


FIG.6

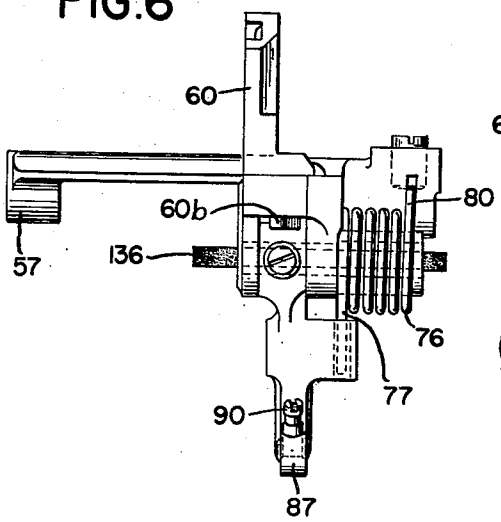
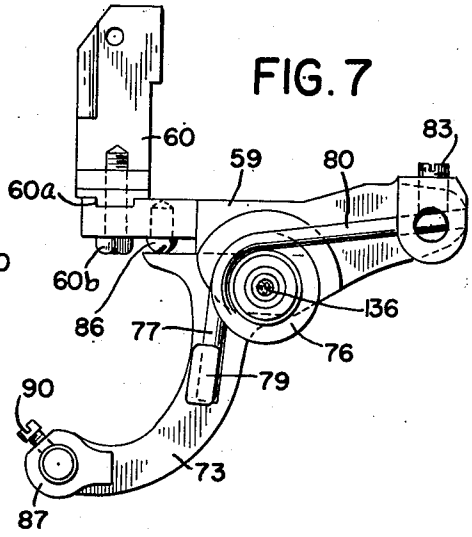


FIG.7



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WORK FEEDING MECHANISM FOR SEWING MACHINES

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FIG. 9

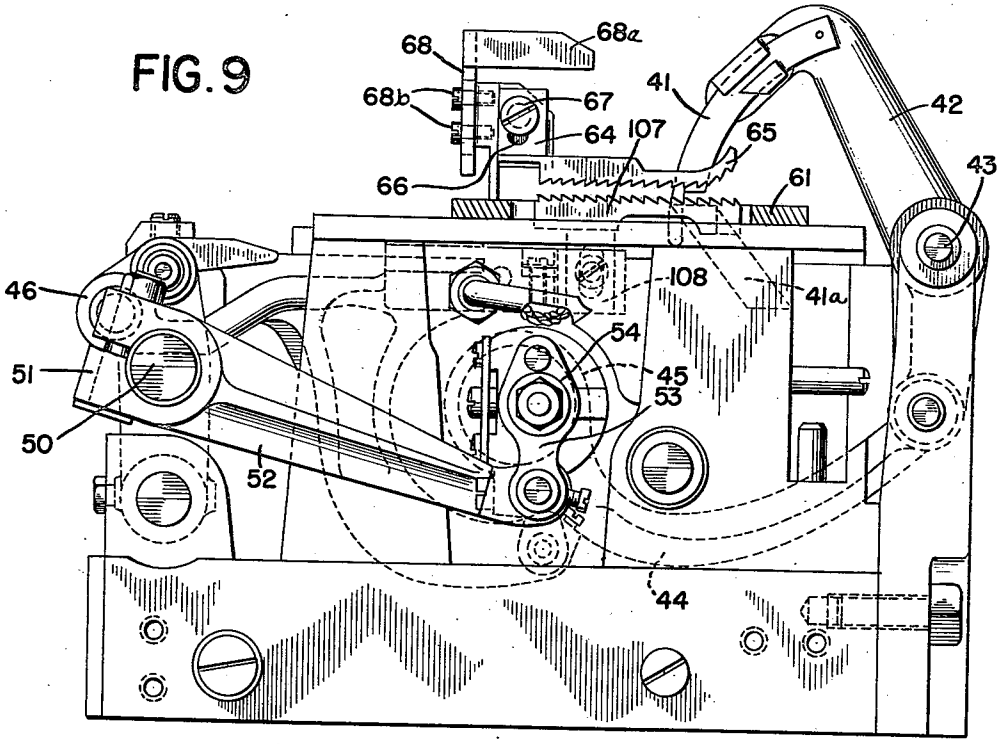
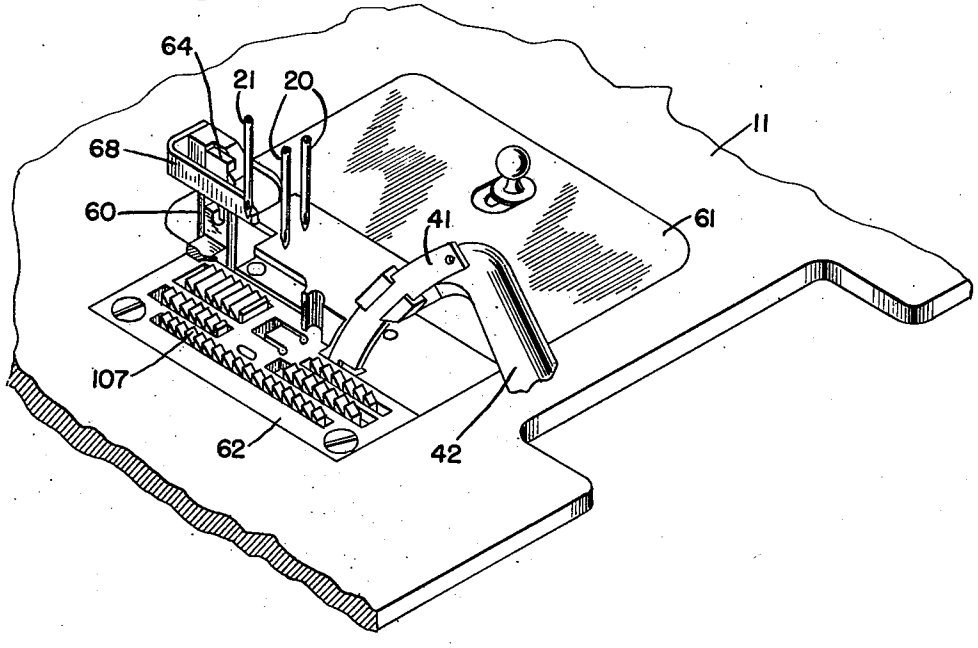


FIG. 8



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WORK FEEDING MECHANISM FOR SEWING MACHINES

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FIG. 10

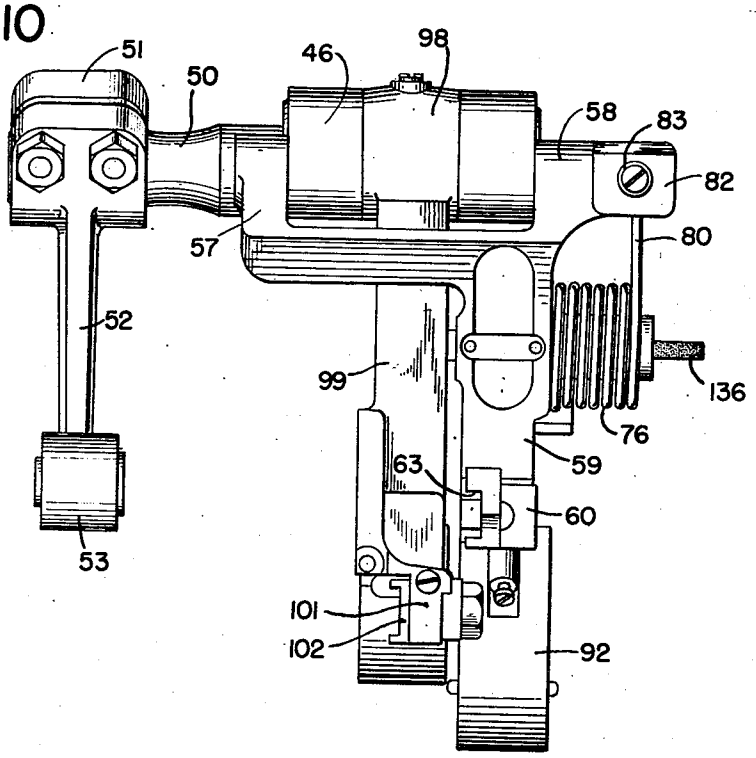
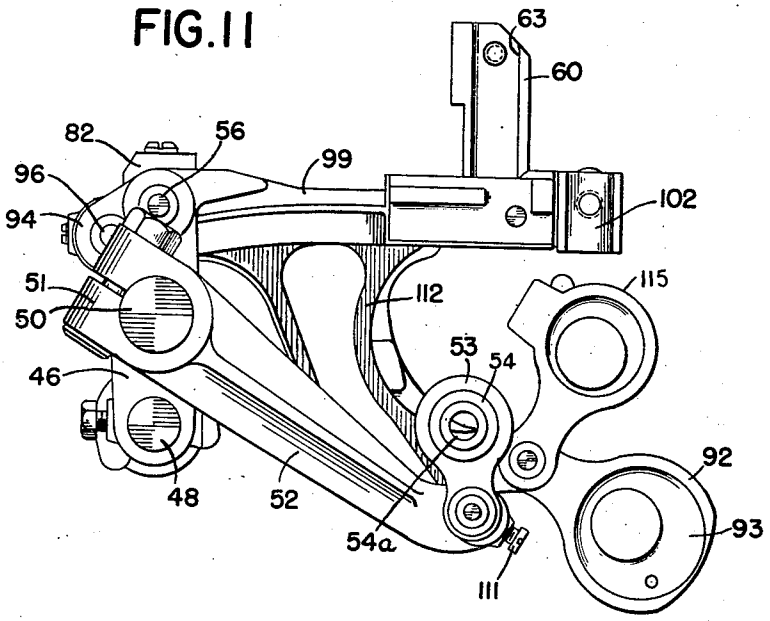


FIG. 11



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WORK FEEDING MECHANISM FOR SEWING MACHINES

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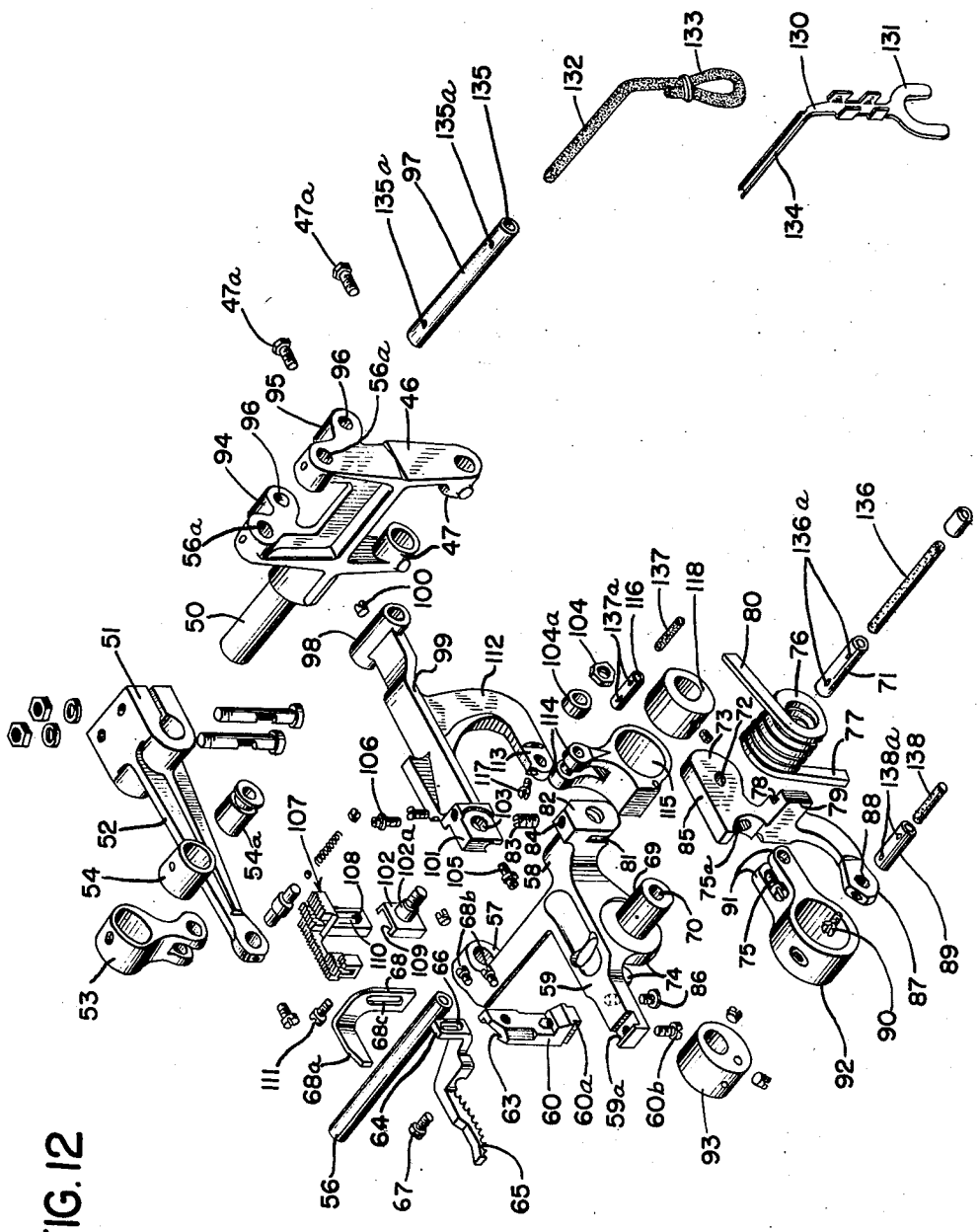

FIG. 12

United States Patent Office 2,811,123
Patented Oct. 29, 1957

2,811,123

WORK FEEDING MECHANISM FOR SEWING MACHINES

Robert A. Hayes, Franklin Park, Ill., assignor to Union Special Machine Company, Chicago, Ill., a corporation of Illinois

Application November 6, 1953, Serial No. 390,509

3 Claims. (Cl. 112—207)

This invention relates to work feeding mechanism for sewing machines, and more particularly to mechanism of this character adapted to impart feeding movements to both the top and bottom surfaces of the work in the region of stitch formation.

In certain seaming operations in which multiple plies of work must be advanced past the stitching point, it is desirable to impart a feeding action to both the top and bottom faces of the work to advance it properly over the work supporting surface against which it is urged by a presser foot. Moreover, due to the retarding action of the presser foot on the top ply of the work, it has been found desirable to impart a slightly greater feeding movement to the top feed member than to the lower feed member, in order to obtain a uniform feeding action. The invention is particularly applicable to machines intended for seaming various portions of trousers, dresses, pockets, seat covers, upholstery and the like.

A primary object of the present invention has been to provide a simple and effective arrangement by which four-motion feed dogs above and below the work may be given the desired differential feed action to insure uniform advance of the several plies of the work. Toward this end, the invention involves the provision of a single feed rocker to which is pivotally connected a pair of feed bars for carrying the top and lower feed dogs. Moreover, the arrangement is such that a somewhat greater feed movement is imparted to the top feed bar than to the lower feed bar.

A further feature of the invention is in the provision of improved connections from the main operating shaft to the top feed bar for imparting lifting and lowering movements to the latter. This arrangement is such that an eccentric may be employed as the operating means while provision is made for imparting a yielding downward movement to the top feed dog.

Other objects, features and advantages of the invention will appear from the detailed description of an illustrative embodiment of the same which will now be given in conjunction with the accompanying drawings, in which:

Fig. 1 is an end elevational view of the needle head end of the illustrative machine with parts broken away and other parts shown in section;

Fig. 2 is a plan view of the work supporting base portion of the machine, with the work support removed, and shows also, in horizontal section, a portion of the vertical standard;

Fig. 3 is an elevational view taken from the front of the machine showing a portion of the work supporting base;

Fig. 4 is an elevational view of a portion of the base of the machine as seen from the rear;

Fig. 5 is a vertical sectional view, taken along the line 5—5 of Fig. 2, with certain parts omitted to show the work feeding devices;

Fig. 6 is a detail view, in front elevation, showing certain parts of the top feed mechanism;

Fig. 7 is a side elevational view of the parts shown in Fig. 6, as seen from the right;

Fig. 8 is a perspective view of a portion of the work support and shows the relationship of various operating devices which pass through the same;

Fig. 9 is an end elevational view of the lower portion of the machine with the throat plate shown in section and with certain parts removed;

Fig. 10 is a plan view of a work feeding assembly embodied in the machine, certain of the parts of the assembly being shifted out of their normal operative positions for clarity of illustration;

Fig. 11 is an elevational view of the parts shown in Fig. 10, as seen from the left; and

Fig. 12 is an exploded perspective view of the various parts of the work feeding assembly shown in Figs. 10 and 11.

Referring now to the drawings, the invention has been illustrated as applied to a flat bed machine of the general type disclosed in the patent to Peterson et al., No. 2,598,426, granted on May 27, 1952. The illustrated machine, however, is provided with three needles, two cooperating loopers, and a cover thread laying finger for the production of a six thread safety stitch involving one line of 401 type stitches and one line of 602 type stitches of the character shown in the patent to Moffatt, No. 1,528,499, granted March 3, 1925.

The machine comprises a frame having a work supporting base **10** provided with a work supporting top **11**, and having a vertical standard **12** rising from one end of the base. An overhanging arm projects from the top of the vertical standard over the base and terminates in a needle head **13**. As best shown in Fig. 2, the base of the machine has a longitudinally disposed rotary drive shaft **14** mounted in suitable bearings. This shaft projects outwardly through the right end wall of the base and carries a combined handwheel and pulley **15** by means of which power may be supplied to the machine for driving the same. A crank **16**, formed on or carried by the shaft **14** beneath the vertical standard, serves to drive a pitman **17** which extends upwardly through the standard and is connected at its upper end with a needle bar actuating lever (not shown) of the type illustrated in said Peterson et al. patent. At the needle head end of said lever there is pivotally connected a link **18** which is, in turn, also pivotally connected with a block secured to a needle bar **19** mounted for vertical reciprocation in the needle head. At its lower end the needle bar carries a pair of needles **20** and a third needle **21**. The needles **20** are disposed in the same plane extending transversely of the line of stitch formation, while the needle **21** is in rear of and toward the left of the needles **20**, as viewed from the front of the machine. Cooperating with the needles **20** is a cover thread laying finger **23** carried by a collar **24** secured to a sleeve mounted for oscillation in a bearing in the bottom portion of the needle head. A link **25** is connected at one end by a ball pin and strap connection with the upper end of the sleeve and at its other end by a ball pin and strap connection with the lower end of an arm **26** secured to a shaft **27** extending longitudinally of the rear wall of the overhanging arm. At its opposite end the shaft **27** carries an arm (not shown), which is connected with a pitman **28** (Fig. 2) having a strap **29** cooperating with an eccentric or crank provided on the drive shaft **14**. The arrangement is such that the cover thread laying finger **23** will be oscillated by the connections described in the manner more fully explained in said Peterson et al. patent.

Cooperating with the needles beneath the work support, in the formation of stitches, are two loopers **30** and **31**. The looper **30** cooperates with needle **21** to form a 401

type stitch while the looper 31 cooperates with both of the needles 20 to form a 602 type stitch. Both loopers are carried by the upper end of an arm 32 pivoted upon a bolt 33 extending laterally from a sleeve 34 (Fig. 3) mounted on a rock shaft 35 (Fig. 2). The shaft 35 carries an arm 36*a* which is pivotally connected with a pitman member 36 having a strap that cooperates with an eccentric secured to the shaft 14. Rotation of the shaft 14 will thus rock the shaft 35, through the connections described, and impart needle-avoid movements to the two loopers. A strap 37 at the end of a second pitman surrounds another eccentric on the shaft 14, this eccentric being of spherical form. The opposite end of this second pitman carries a strap which is connected with a ball pin at the end of an arm (not shown) secured to a rock shaft 38 (Fig. 3). The latter carries an upwardly extending arm 39 which is connected by a link 40 with a ball stud carried by the looper carrying arm 32. Through these connections, the eccentric acting upon the strap 37 imparts loop seizing and shedding movements to the two loopers.

A movable trimmer blade 41 (Figs. 1, 2, 8, and 9) is carried by a rock member 42 pivotally mounted on a pin or rod 43 carried by the base portion of the frame. A downwardly extending arm of the member 42 is pivotally connected with an arm 44 having at its opposite end a strap 45 which surrounds an eccentric on the drive shaft 14. Through these connections the trimmer blade 41 is carried downwardly and upwardly into and out of cooperation with a stationary blade 41*a* (Fig. 9) for the purpose of trimming off the edge of the work in advance of the point of stitch formation. In general this construction is similar to that disclosed in the patent to Kucera, No. 2,121,526, granted June 21, 1938. It will be understood that suitable spring means of the type disclosed in said patent are provided for urging the movable blade into appropriate coaction with the stationary blade.

For the purpose of feeding the work past the trimming and stitch forming instrumentalities an improved work feeding assembly is provided which is adapted to impart a feeding action to both the bottom and top surfaces of the work. This, as hereinabove indicated, is desirable in dealing with multiply work. The feeding mechanism comprises a feed rocker 46 (Figs. 1, 2, 4, 9, 10, 11 and 12) having a pair of downwardly extending arms 47 secured to a rockable shaft 48. The latter is mounted for rocking movement in a pair of upstanding bosses 49 on the base. A laterally projecting trunnion 50 carried by the feed rocker 46 is arranged to receive a clamp 51 integral with an arm 52 which carries at its opposite end a pivotally connected link 53 having a strap surrounding an eccentrically disposed sleeve or element 54 and sleeve 54*a* adjustably mounted on a disc 55 carried by the shaft 14. The adjustable eccentric unit or assembly may be of the same general form and construction as that shown in the patent to Wohlpart, No. 1,817,727, granted August 4, 1931. It will be apparent that upon rotation of the shaft 14 the eccentric sleeve 54 will impart rocking movements to the arm 52 and the rocker 46. The extent of such movements may be varied by appropriate radial adjustment of the eccentric sleeve 54 on the disc 55.

A pin or rod 56, suitably journaled in openings 56*a* (Fig. 12) in upstanding arms of the feed rocker 46, extends outwardly beyond these arms and cooperates with branches 57 and 58 of a yoke integral with a top feed bar 59. The arrangement is such that the feed bar will be given longitudinal movement upon rocking of the feed rocker but may be rocked upwardly and downwardly about the axis of the rod 56 to carry a feed dog into and out of cooperation with the upper surface of the work. A feed dog carrying post 60 is secured to the forward end of the feed bar and extends vertically upward therefrom. At its bottom the post 60 is provided with a tongue 60*a* adapted to fit a groove 59*a* extending transversely of the feed bar. A screw 60*b* serves to secure

the post to the feed bar. This arrangement is preferably such that the position of the post transversely of the bar may be varied slightly, this being accomplished by providing an opening through the feed bar, to receive the screw 60*b*, which is slightly larger than the shank of the screw. The post 60 extends upwardly through the work support 11 (Fig. 8) through a suitable opening in a cloth plate 61 that is removably carried by the work support. This opening is adjacent the inner longitudinal edge of a throat plate 62 also removably secured to the work support. The outer vertical face of the post 60 is provided with a channel or groove 63 arranged to receive the shank 64 of a top feed dog 65. Shank 64 has a vertically elongated opening 66 arranged to receive the shank of a screw 67 by means of which the feed dog is secured to the post 60. This arrangement is such that a limited vertical adjustment of the feed dog in relation to the post 60 is permitted. If desired, the width of the channel or groove 63 may be made slightly greater than the width of the shank 64 so that the feed dog may be tilted slightly either upwardly or downwardly from the horizontal. Any suitable means may be employed to lock the feed dog in adjusted angular position. Secured to the rearward face of the post 60 is a member 68 having a laterally bent finger 68*a* arranged to be engaged by a part on the presser bar for lifting of the top feed dog when the presser bar is lifted, in the manner to be explained. Member 68 is secured to post 60 by means of screws 68*b* which cooperate with an elongated slot 68*c* in the member and threaded openings in the post.

Feed bar 59 is provided with a laterally projecting trunnion 69 having a bore 70 extending through the same, alined with similar openings in the main body of the feed bar. A pin 71 inserted in the bore 70 is adapted to cooperate with an opening 72 in the upper part of an arm 73 which fits between two downwardly extending portions 74 of the feed bar 59. A screw 75 inserted in an opening 75*a* in the arm 73 cooperates with the pin 71 to retain the latter in the arm. Upon the outer surface of the trunnion 69 there is mounted a coil spring 76 having a downwardly extending branch 77 arranged to fit into a groove 78 in a lateral extension 79 of the arm 73. A rearwardly extending branch 80 at the opposite end of the spring 76 is adapted to fit into a groove 81 in a laterally extending portion 82 of the top feed bar. A set screw 83 cooperating with a threaded opening 84 is arranged to engage the top surface of the branch 80 of the spring, so that by proper adjustment of the screw 83 the tension of the spring 76 may be varied. It will be apparent that the spring 76 tends to rock the arm 73 in a clockwise direction (Fig. 12) in relation to the pivot pin 71 and urges the top surface 85 of the arm 73 into engagement with the head of a stud 86, preferably formed of brass or copper, inserted in the under face of the feed bar 59. Slight relative rocking movement between the arm 73 and the feed bar 59 is, however, permitted against the action of the spring 76. The extent of this relative rocking movement is determined by the cooperation of the top surface 85 of arm 73 with the under face of the feed bar. This relative movement of the parts provides a yielding support for the top feed dog which permits the operating arm 73 to be drawn downwardly a slight distance after the feed dog 65 has been brought into engagement with the work and is prevented from further downward movement. It is while the dog is thus yieldingly engaged with the work that it is advanced by the rocking of the feed rocker 46 to impart a feeding action to the top surface of the work. The relative movement provided, as explained, between the feed bar 59 and the operating arm 73 also enables lifting of the top feed dog, in a manner to be described, whenever a presser foot member is lifted to permit the introduction and removal of work.

Arm 73 is provided with a forwardly extending portion 87 having an opening 88 therethrough arranged to

receive a pivot pin 89 which is held against axial movement by means of a set screw 90. Cooperating with the ends of the pin 89, and arranged for rocking movements about the latter, are two spaced arms 91 extending from a strap member 92 which cooperates with an eccentric 93 secured to the main drive shaft 14. It will be understood that the pin 89 is inserted after the openings shown in the arms 91 are alined with the opening 88 in the arm 73. Through the connections described, the arm 73 will be oscillated upon each revolution of the shaft 14 and will impart such oscillation to the feed bar 59 and thus raise and lower the feed dog 65 at appropriate points in the cycle.

Turning now to the lower feed mechanism, the feed rocker 46 is provided with a pair of rearwardly extending lugs or projections 94 and 95 having alined openings 96 arranged to receive a pivot pin 97. The latter also passes through an opening in a sleeve portion 98 of a lower feed bar 99. A set screw 100 serves to retain the pivot pin 97 against axial movement when the parts are assembled. The forwardly extending end 101 of the feed bar 99 has a flat surface arranged to cooperate with a corresponding surface on a feed dog holder 102 which carries a stud 102*a* that fits into an opening 103 in the part 101 of the feed bar. A washer 104*a* and a nut 104 cooperating with the stud 102*a*, which is threaded at its outer end, serve to retain the member 102 on the feed bar. The arrangement is such, however, that the member 102 may be adjusted angularly to a slight extent about the axis of the stud 102*a* to tilt the feed dog in one direction or the other. When appropriately adjusted the member 102 may be locked in set position by a pair of screws 105 and 106. The feed dog 107 is provided with a shank 108 which fits in a channel 109 in the member 102. Shank 108 is provided with a vertically elongated slot 110 which receives a screw 111 having threaded engagement with an opening through the member 102 and which extends into the stud 102*a*. Screw 111 serves to retain the feed dog in desired vertical relation to the retaining member 102.

Feed bar 99 is provided with a downwardly and forwardly extending arm 112 having a portion 113 of reduced width at its outer end. This reduced portion fits between spaced arms 114 of a strap member 115. A pivot pin 116, cooperating with alined openings in the arms 114 and in the portion 113 of arm 112, provides a pivotal connection between these parts. Pin 116 is held against axial movement by a set screw 117. The strap 115 cooperates with an eccentric 118 secured to the main drive shaft 14. It will be apparent that upon each revolution of the shaft 14 the eccentric 118 will impart lifting and lowering movements to the arm 112 and its connected feed bar 99 and feed dog 107. Feed and return movements are imparted to the feed bar and to the feed dog 107 by the rocking of the feed rocker 46. Due to the fact that the pivotal axis of the feed bar 99, provided by the pin 97, is closer to the axis of the rock shaft 48 about which the feed rocker is rocked, than is the pivotal axis of the pin 56 about which the top feed bar is lifted and lowered, the lower feed bar will be given a somewhat shorter feed stroke than the top feed bar. Moreover, the location of the pins 56 and 97 in relation to the feed rocker 46 and its supporting shaft 48 is such that the horizontal component of the arc of movement of the pin 97 is decreased further in relation to the horizontal component of the arc of movement of the pin 56. In this way the desired greater feed stroke of the top feed dog in comparison with the lower feed dog is insured without special adjustment.

It should be understood that the disposition of various parts as shown in the exploded perspective view (Fig. 12) is not in conformity with their actual disposition when assembled in the machine. Certain parts, particularly the strap elements 92 and 115 and their related eccentrics are shown in an abnormal position in order to enable a clearer showing of other parts. Straps 92 and 115 actually extend upwardly from their pivot pins when assembled in the machine so as to cooperate with the indicated eccentrics on the shaft 14 which is disposed above the curved arms 73 and 112 and beneath the main horizontal portions of feed bars 59 and 99, as indicated with respect to the strap 92 in Fig. 5. All of the parts shown in Fig. 12 constitute portions of a unitary work feeding assembly as indicated in Figs. 10 and 11. This sub-assembly may be readily incorporated in the illustrated machine.

Cooperating with the feed dogs in advancing the work is a presser foot 120 (Fig. 1), of any suitable form, having a shank 121 which is secured to the lower end of a presser bar 122 mounted for vertical reciprocation in the needle head. A screw 123 serves to clamp the shank of the presser foot upon the lower end of the presser bar and the head of this screw projects sufficiently from the shank to extend beneath the finger 68*a* of the member 68 hereinbefore described. This arrangement is such that upon lifting of the presser bar, in the manner to be explained, the head of screw 123 will engage the lower edge of finger 68*a* and will lift the latter and the top feed dog to facilitate the introduction or removal of work. A spring 124 surrounding the presser bar 122 and compressed between the lower end of an adjustable screw threaded sleeve 125, carried by the top of the needle head, and a block 126, secured to the presser bar, serves to urge the latter yieldingly downwardly to retain the presser foot under suitable pressure against the work. It will be understood that the presser foot is permitted to rise and fall with the lifting and lowering movements of the lower feed dog against which the work is held by the presser foot. For lifting the presser bar and presser foot at the will of the operator, to facilitate the introduction and removal of work, a link 127 is connected at its lower end with the block 126 and at its upper end with the end of an arm of a bell-crank lever 128 rockably mounted in the needle head. A pin and slot connection is preferably provided between the block 126 and link 127 to permit limited upward movement of the block without movement of the link and connected parts as different thicknesses of work pass beneath the presser foot. Suitable connections are provided from a knee press or foot treadle for rocking the lever 128 when desired. For further details as to the construction and mode of operation of the presser bar and presser foot, reference may be had to the above mentioned patent to Peterson et al., No. 2,598,426.

The operation of the work feeding devices will now be briefly summarized. When a new piece of work is to be introduced, the presser bar 122 is lifted in the manner described and this automatically lifts the top feed dog by engagement of screw 123 with finger 68*b*, particularly if the top feed dog is in the lower zone of its path of movement. The work may then be inserted beneath the presser foot and properly positioned in relation to the trimming and stitch forming devices. At this time the presser foot is lowered under the force of spring 124 and the machine is set into operation. Rocking of the feed rocker 46 by the described connections from the adjustable sleeve 54 of the adjustable eccentric will impart feed and return movements to the feed dogs 65 and 107. These feed dogs will be alternately lifted and lowered by connections from the eccentrics 93 and 118, respectively, so that they will be engaged with the work during the feed movements and out of engagement with the work during the return movements. As explained, the feed stroke imparted to the top feed dog will be somewhat greater than that imparted to the lower feed dog for any adjustment of the sleeve 54 of the adjustable eccentric. The timing of the lifting and lowering movements of the top and lower feed dogs is such that they will be carried toward and away from the work at substantially the same time. For this purpose the eccentrics 93 and 118 will be angularly displaced substantially 180° in relation to each other.

Suitable means are provided for lubricating the various operating parts of the machine. The lubrication system shown is of the general character of that disclosed in said Peterson et al. patent. It involves the provision of lubricant conducting channels in the base of the machine through which lubricant is supplied from a reservoir in the base to the various bearing surfaces by means of wick filled tubes or the like. In Fig. 12 there is shown means for supplying lubricant in this manner to certain of the bearing surfaces of the feed assembly. These means include a bracket **130** having a forked lower portion **131** adapted to straddle the rock shaft **48** which carries the feed rocker. This rock shaft is lubricated in the manner disclosed in said Peterson et al. patent. Excess lubricant supplied to the rock shaft is delivered to the pivot pin **97**, which carries the lower feed bar **99**, by means of wicking **132**. This wicking is looped at its lower end, as indicated at **133**, to surround the rock shaft **48** adjacent one end of the feed rocker and it extends upwardly and then laterally along the bracket **130**. The latter has an arcuate wick supporting portion **134** which fits into a bore **135** of the pivot pin **97**. The latter has openings **135***a* extending from the bore to the outer surface of the pin for delivering lubricant to that portion of such surface which is oscillated within the lugs **94** and **95** of the feed rocker **46**.

A section of wicking **136**, which is inserted within the bore of hollow pin **71**, serves to deliver lubricant through radial openings **136***a* in that pin to the bearing surface of the bore **70** of trunnion **69**. Similarly, a section of wicking **137** positioned within the bore of pivot pin **116** and arranged to extend beyond the ends of the latter serves to deliver lubricant through radial openings **137***a* in the pin to the bearing surfaces of the arms **114** of strap member **115**. Likewise, a section of wicking **138** inserted in the bore of pivot pin **89** serves to deliver lubricant through openings **138***a* in this pin to the bearing surfaces of arms **91** of the strap member **92**. Lubricant is delivered to the sections of wicking **136**, **137**, and **138** through a wick filled tube **139** (Fig. 2), which communicates with one of the lubricant delivering channels in the base of the frame. The arrangement is preferably such that the several sections of wicking will rub across a portion of the wicking extending from the tube **139** so as to transfer lubricant from the latter to the parts to be lubricated.

While a preferred embodiment of the invention has been disclosed in considerable detail it will be understood that various changes may be made in the construction and arrangement of the several parts without departing from the general principles and scope of the invention.

What is claimed is:

1. A sewing machine having a work supporting base adapted to support work to be stitched, a rotary drive shaft extending longitudinally of said base, a feed rocker mounted for rocking movement about a pivotal axis in said base, connections from said shaft to said feed rocker for rocking the same about said axis, a top feed bar having its major portion disposed within said base and pivotally connected directly with said feed rocker along an axis removed from the pivotal axis of said feed rocker, said top feed bar being formed by two pivotally connected members arranged for limited angular movement in relation to each other, spring means normally urging said members into one position in relation to each other but enabling relative yielding movement thereof, one of said members having an arm extending upwardly therefrom to a point above said work supporting base, a feed dog rigidly carried by said arm of said one of said members and arranged to cooperate with the top surface of the work, connections from said shaft to the other of said members for lifting and lowering said top feed bar, said connections including an eccentric on said shaft and a link having a strap at one end cooperating with said eccentric and having its other end pivotally connected with said other of said members, a lower feed bar pivotally connected with said feed rocker along another axis removed from both the pivotal axis of the top feed bar and the pivotal axis of said feed rocker, a feed dog rigidly carried by said lower feed bar and adapted to cooperate with the under surface of the work, and connections from said shaft to said lower feed bar for lifting and lowering the same in coordination with said top feed bar but in opposed directions.

2. A sewing machine having a work supporting base, a rotary drive shaft extending longitudinally of said base, a feed rocker mounted for rocking movement about a pivotal axis in said base, connections from said shaft to said feed rocker for rocking the same about said axis, a top feed bar pivotally connected with said feed rocker along an axis removed from the pivotal axis of said feed rocker, said top feed bar being formed by two pivotally connected members arranged for limited angular movement in relation to each other, spring means housed within said base normally urging said members into one position in relation to each other but enabling relative yielding movement thereof, one of said members having a portion extending above the surface of said work supporting base, a feed dog rigidly carried by said one of said members above said surface, and connections from said shaft to only the other of said members for lifting and lowering said top feed bar, said connections comprising an eccentric on said shaft and a member having one end surrounding said eccentric and its other end pivotally connected with said other of said members.

3. A unitary work feeding assembly for a sewing machine which comprises a feed rocker, an arm rigidly connected with said feed rocker, an eccentric receiving strap member pivotally connected with said arm and adapted to operate said feed rocker, a pair of feed bars, separate, non coaxial pivot pins for connecting said feed bars pivotally with said feed rocker, an eccentric receiving strap pivotally connected with each of said feed bars arranged to oscillate said feed bars about the axes of said pivot pins, and a feed dog rigidly carried by each of said feed bars, one of said feed bars having a pair of pivotally connected parts and a spring normally urging said parts into a predetermined angular relationship but enabling limited angling of said parts in relation to each other, the strap and the feed dog connected with said one of said feed bars being attached to different ones and only one of said pivotally connected parts.

References Cited in the file of this patent

UNITED STATES PATENTS

459,350	Staples et al.	Sept. 8, 1891
591,517	Woodward	Oct. 12, 1897
1,243,160	Grieb	Oct. 16, 1917
1,265,812	Onderdonk	May 14, 1918
1,995,945	Rubel et al.	Mar. 26, 1935

FOREIGN PATENTS

838,541	France	Dec. 7, 1938