United States Patent

Smith

[15] 3,687,096

[45] Aug. 29, 1972

[54] **FEED ADJUSTING MECHANISM FOR SEWING MACHINES**

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[73] Assignee: **Union Special Machine Company,** Chicago, Ill.

[22] Filed: **Dec. 23, 1970**

[21] Appl. No.: **101,046**

[52] **U.S. Cl.** **112/206**

[51] **Int. Cl.** **D05b 27/20**

[58] **Field of Search** 112/206

[56] **References Cited**

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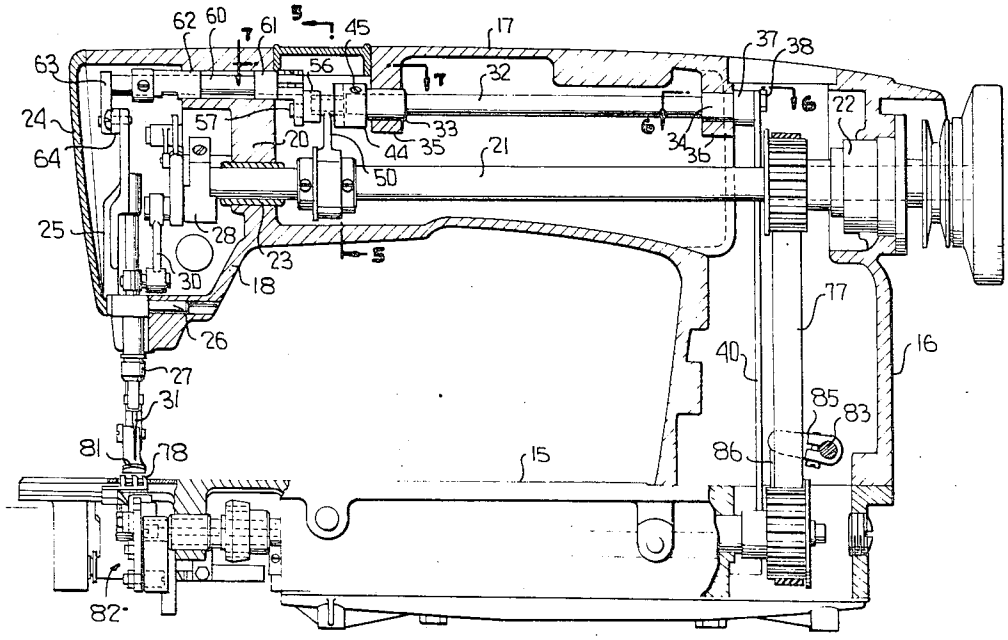
[57] **ABSTRACT**

This disclosure relates to sewing machines having upper needle feed means and lower feed dog means, and means for adjusting the length and direction of the feed stroke of the feed dog and of the needle feed means in synchronism. A simple mechanism is provided for adjusting the amplitude of the oscillation of the needle for varying the feed stroke of the needle and this same mechanism is adjustable to change the direction of oscillation of the needle so as to reverse the feeding stroke of the needle. In addition, a single control is provided for regulating the needle feed adjusting mechanism is conjunction with adjusting mechanism for the lower feed means simultaneously and synchronously.

15 Claims, 11 Drawing Figures



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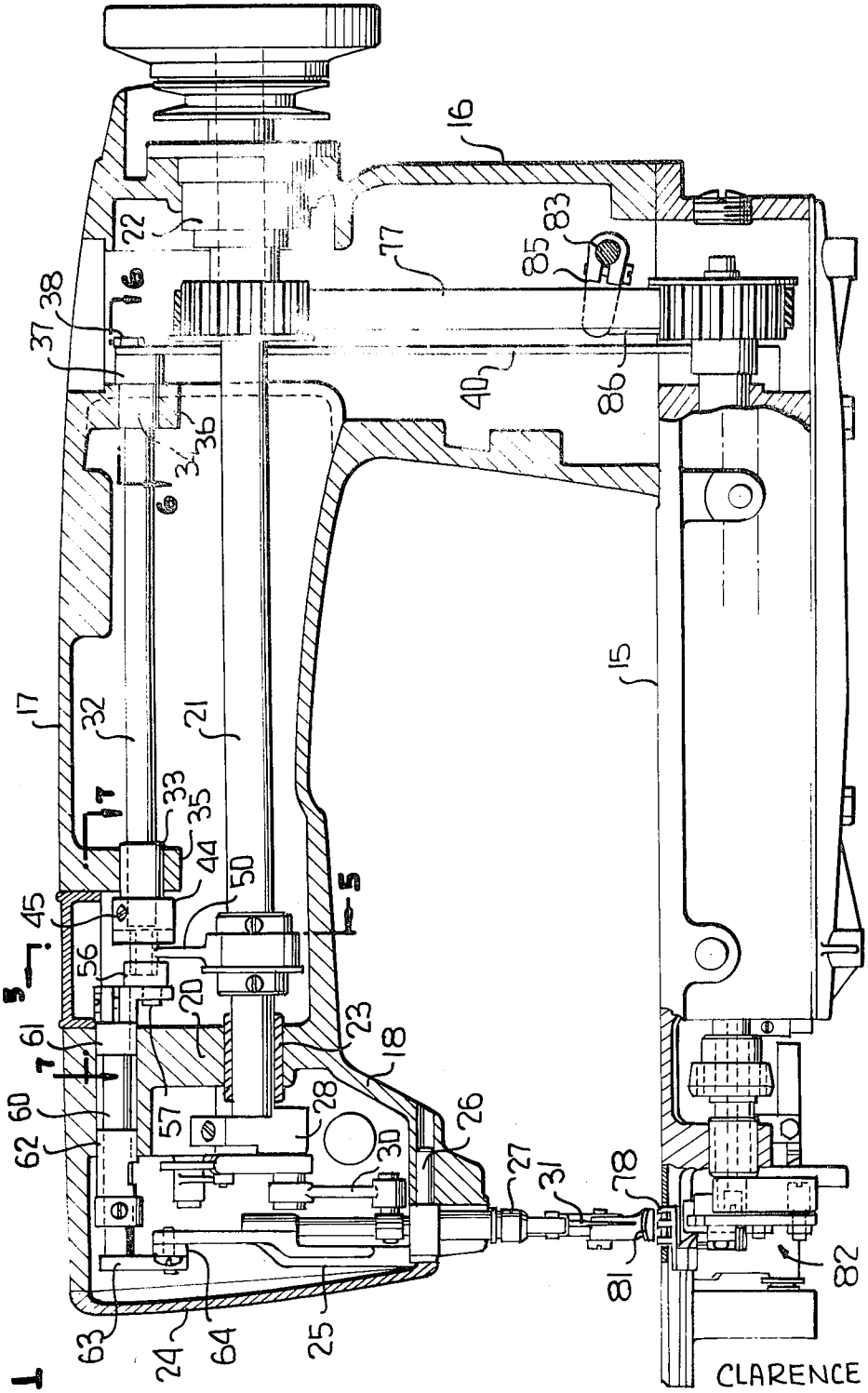

FIG. 1

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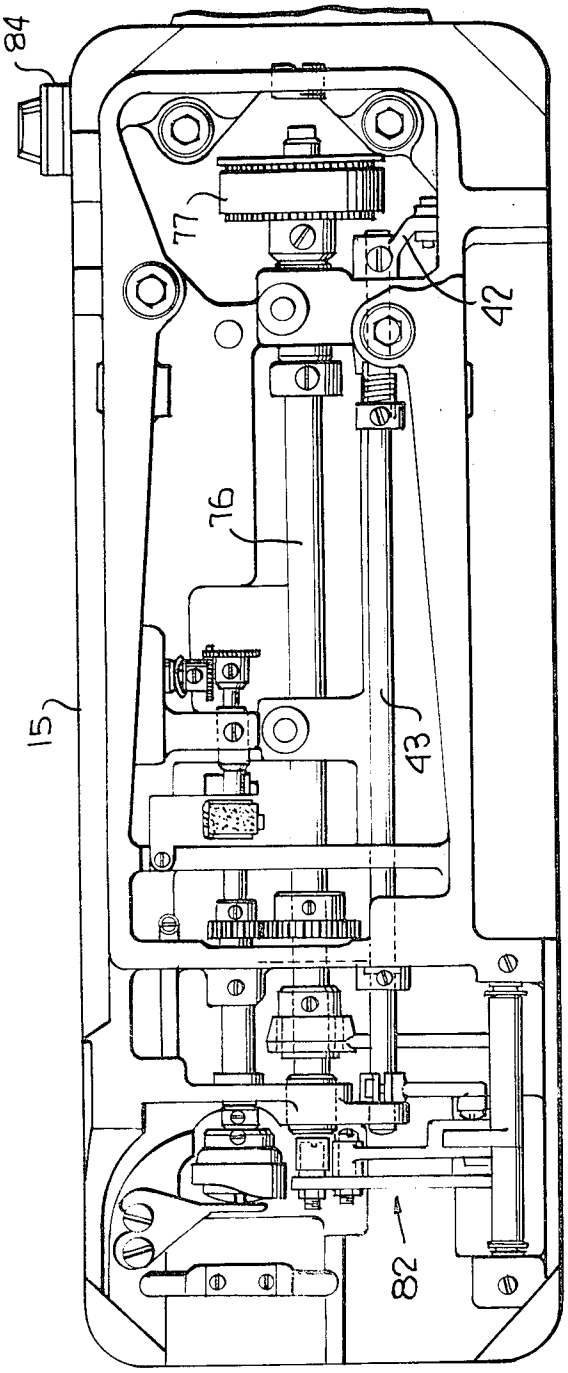

FIG. 2

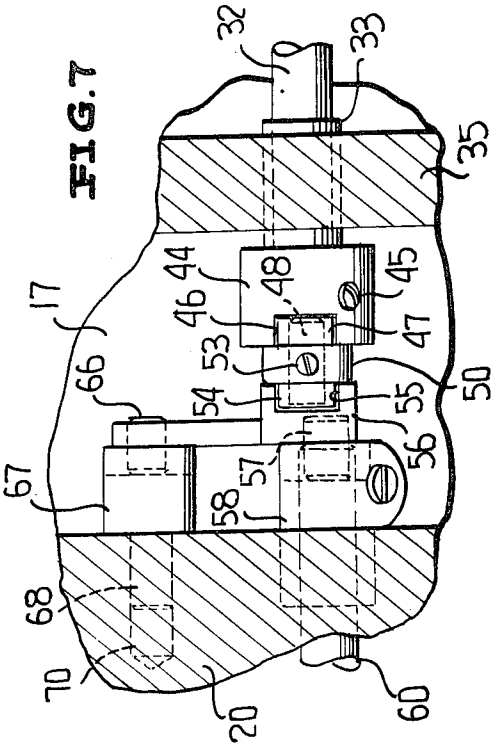

FIG. 7

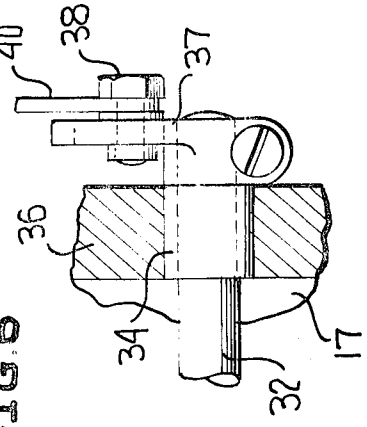

FIG. 6

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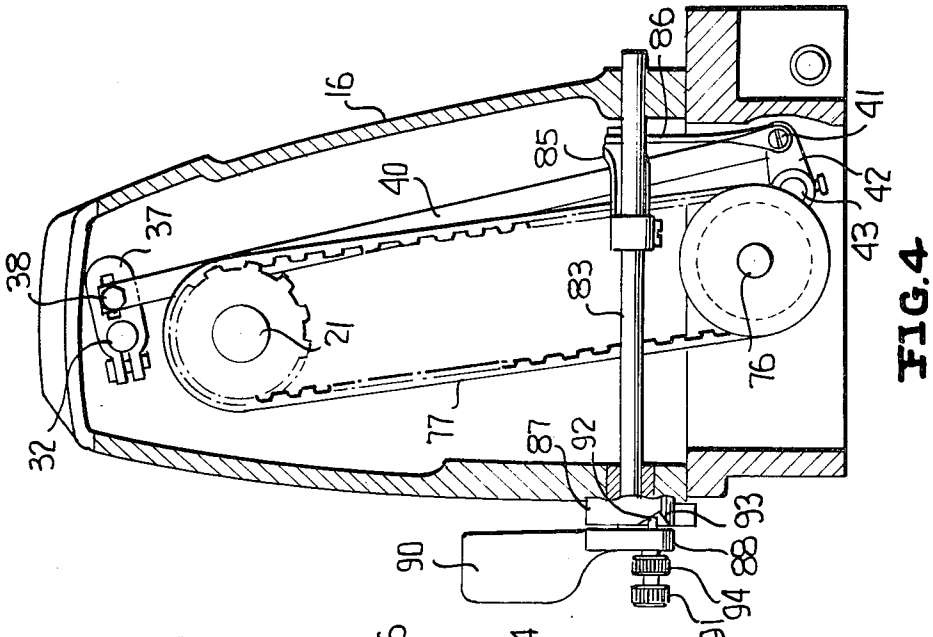

FIG. 4

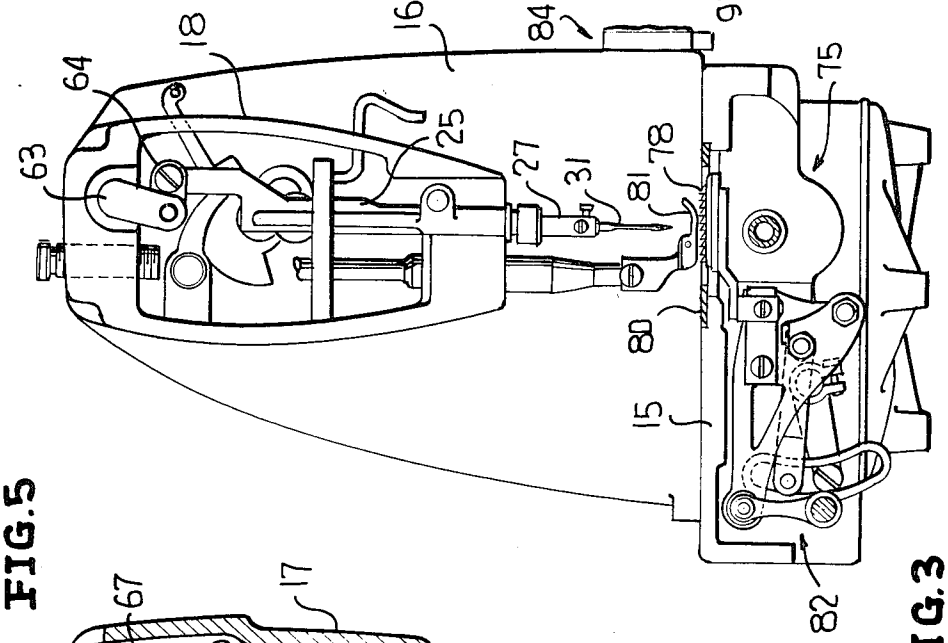

FIG. 3

FIG. 5

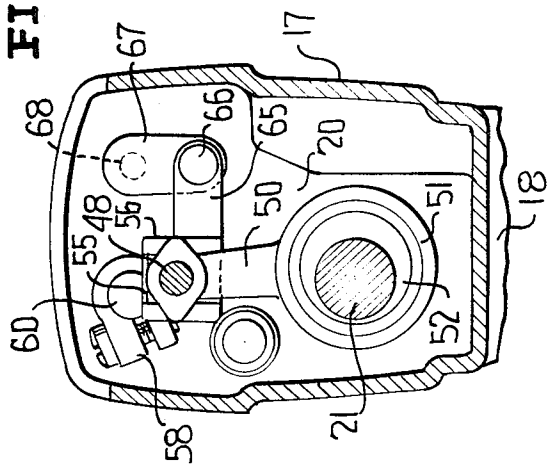

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FIG.9

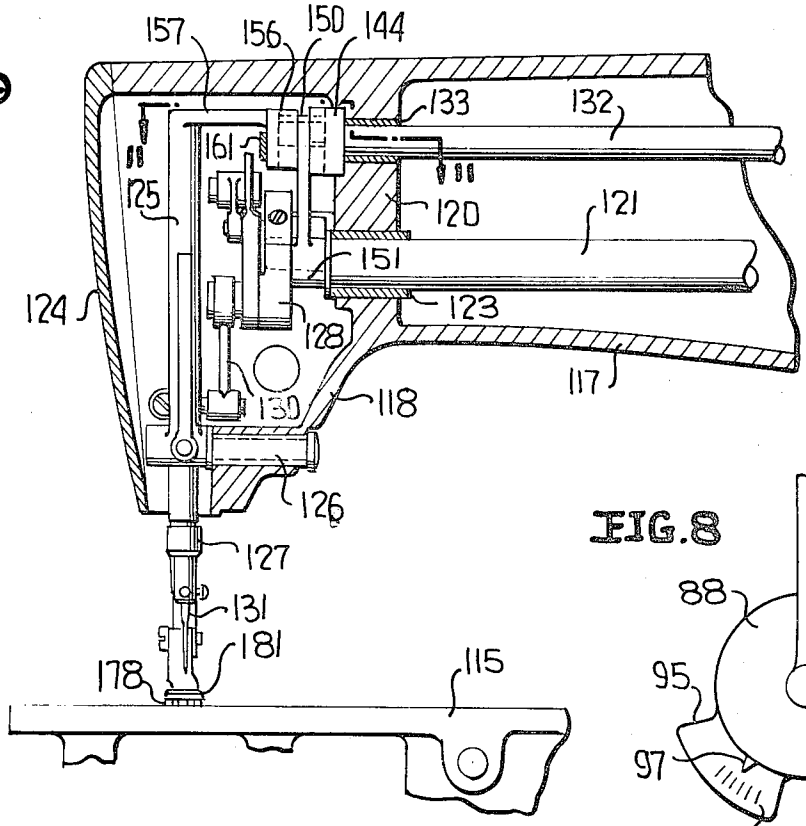


FIG.8

FIG.10

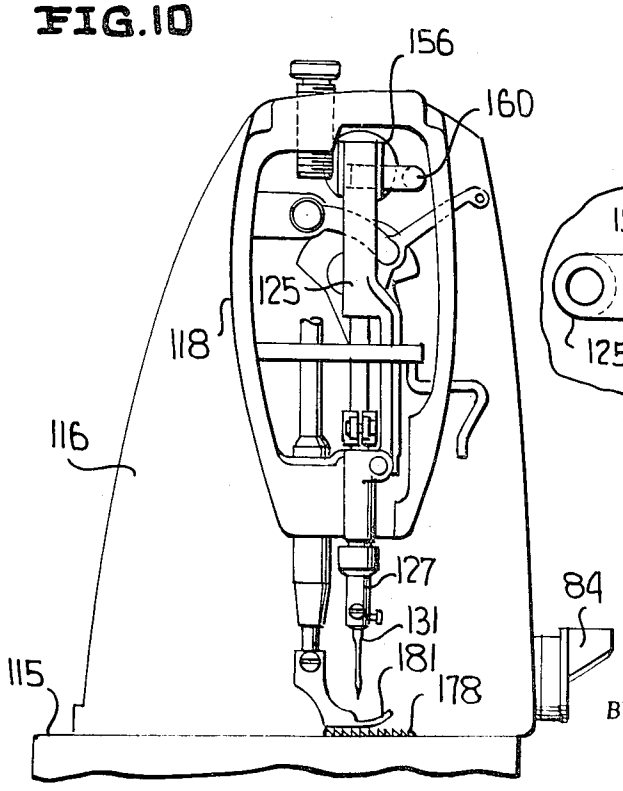
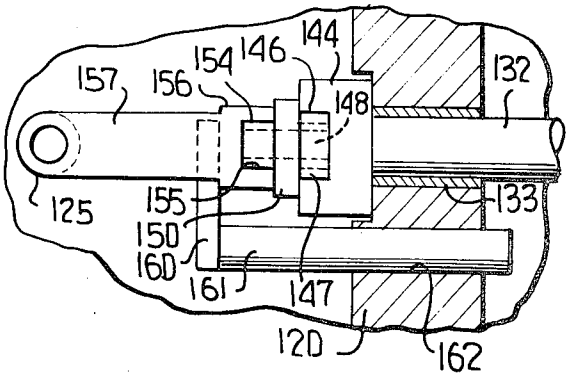


FIG.11



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FEED ADJUSTING MECHANISM FOR SEWING MACHINES

This invention in general relates to new and useful improvements in the feed adjusting mechanism for sewing machines, and more particularly relates to a new and improved mechanism for adjusting the amplitude of the oscillation of the needle for varying the feed stroke of the needle and to change the direction of the oscillation of the needle so as to reverse the feeding stroke of the needle.

BACKGROUND OF THE INVENTION

The patent to Oscar Quist U.S. Pat. No. 2,749,861 granted June 12, 1956, discloses a basic needle feed sewing machine wherein the needle bar is carried by a rock frame with there being a rock shaft driven from the main drive shaft for effecting the oscillation of the rock frame. Manual adjustment means are provided for adjusting the effective stroke of the rock shaft and the rock frame, but these adjustment means are of a nature wherein a cover in the overhanging arm must be opened to manually adjust the needle feed. The sewing machine of this patent is also provided with a lower feed mechanism for adjusting the length of the stroke of the feed dog for advancing the work. The two feed adjusting mechanisms are not interconnected.

The patent to Rudolf Reeber U.S. Pat. No. 3,198,154 granted Aug. 3, 1965, discloses upper and lower feed adjusting mechanisms for adjusting the needle feed and the feed dog stroke which are controlled by the machine operator by means of a readily available control member. The two feed mechanisms are simultaneously adjustable. However, the drive mechanisms of this sewing machine are quite different from those found in most sewing machines and the adjustment mechanisms of the sewing machine of this patent are not readily adaptable to sewing machines of the type to which this invention relates. Furthermore, the adjustment of the feed mechanisms is one of amplitude only and does not provide for a reversal of feed direction.

The patent to John R. Haugen U.S. Pat. No. 3,331,344 most closely approaches the sewing machine of this invention. The sewing machine is provided with an upper needle feed adjusting mechanism and a lower feed dog stroke adjusting mechanism. These two mechanisms are simultaneously controllable by an external lever which is readily operable by the machine operator. However, while the direction of feed dog movement is reversible, only the stroke of the needle feed is variable, the stroke of the needle feed not being reversible in direction.

SUMMARY OF THE INVENTION

In accordance with this invention, a new and improved mechanism is provided for adjusting the amplitude of the oscillation of the needle for varying the feed stroke of the needle. This same mechanism provides for the changing of the direction of oscillation of the needle so as to reverse the feeding stroke of the needle.

The mechanism for adjusting the needle feed is greatly controllable by means of a simple control shaft which may be actuated in unison with the control shaft for varying the feed of the feed dog whereby the stroke of both the needle and the feed dog both as to amplitude and direction may be readily varied by the machine operator through the use of an external control.

Another feature of this invention is the provision of a new and improved mechanism for adjusting both the amplitude of the oscillation of a needle and the stroke direction of the needle, the mechanism being of an extremely simple construction and readily adaptable to existing sewing machine construction design.

A principal advantage of the feed adjusting mechanism is the ability of the machine operation through the use of a simple control device to adjust both the length and direction of the feed stroke of the upper and lower feed means of the sewing machine. The control device may include a feed stroke adjusting mechanism such as that disclosed in FIGS. 7–10 of the patent to Hermann F. Daniel U.S. Pat. No. 3,033,141.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings:

IN THE DRAWINGS:

FIG. 1 is a longitudinal, vertical section of the sewing machine of the needle feeding type.

FIG. 2 is a bottom plan view of the sewing machine of FIG. 1 with the bottom plate removed.

FIG. 3 is a left-end elevation of the machine with the cover plate of the needle head removed.

FIG. 4 is a transverse vertical sectional view through the machine showing the details of the controls for the feed adjusting means.

FIG. 5 is a fragmentary transverse vertical sectional view taken generally along the line 5—5 of FIG. 1 and shows the adjustable needle feed mechanism.

FIG. 6 is a fragmentary horizontal sectional view taken generally along the line 6—6 of FIG. 1 and shows the adjustable connection between the control linkage and the upper control shaft.

FIG. 7 is a fragmentary horizontal sectional view taken generally along the line 7—7 of FIG. 1 and shows more specifically the details of the needle feed adjusting mechanism.

FIG. 8 is a fragmentary elevational view of the feed stroke adjusting mechanism.

FIG. 9 is a fragmentary longitudinal, vertical section of a sewing machine incorporating a modified form of needle feed adjusting mechanism.

FIG 10 is a left-end elevation of the sewing machine of FIG. 9 with the needle head cover plate removed.

FIG. 11 is a fragmentary horizontal sectional view taken along the line 11—11 of FIG. 9 and shows more specifically the details of the modified form of needle feed adjusting mechanism.

The sewing machine to which the needle feed adjusting mechanism is particularly adapted is of the general type disclosed in the aforementioned Haugen U.S. Pat. No. 3,331,344 and includes a main frame comprising a work supporting base 15, a hollow vertical standard 16, and a hollow overhanging arm 17. The arm 17 carries a needle head 18 at its outer end. A partition wall 20 separates the space within the overhanging arm 17 from that within the needle head 18.

A main drive shaft 21 extends longitudinally through the overhanging arm 17. At its right end, the shaft 21 is journaled in a bushing 22 forming part of the end wall of the standard 16. The partition wall 20 has a bushing 23 forming a bearing for the opposite end of the drive shaft 21.

The needle head 18 is provided with a removable cover 24 and houses a needle bar rock frame 25 and portions of the mechanism for oscillating the needle bar rock frame about a pivot stud 26. Also enclosed in the needle head 18 is part of the mechanism for reciprocating a needle bar 27 which is carried by the rock frame 25 for relative reciprocatory movement in the normal manner.

It is to be noted that one end of the drive shaft 21 projects into the needle head 18 and is provided with a crank member 28 which is connected by means of a pitman 30 to the needle bar 27 in a conventional manner for effecting the vertical reciprocatory movement of the needle bar 27 and a needle 31 carried thereby.

An adjustment control shaft 32 is journaled in the upper portion of the overhanging arm 17 in suitable bearings 33 and 34 carried by downwardly depending web portions 35 and 36 of the overhanging arm 17.

The right end of the control shaft 32 extends beyond the bearing 34 and carries a crank arm 37 (FIG. 6) in which there is adjustably secured a pin or screw 38 to which is pivotally connected the upper end of a link 40 which extends substantially vertically in the standard 16.

The lower end of the link 40 is pivotally connected to a stud or screw 41 (FIG. 4) received in a crank pin 42 carried by a lower feed adjusting shaft 43 which may be considered a lower control shaft. The new path of the control shaft 43 and the function thereof will be described hereinafter.

Referring once again to FIG. 1, it will be seen that the upper control shaft 32 protrudes to the left of the bearing 33 and has mounted thereon a grooved member in the form of a block 44 which is secured to the control shaft 32 by means of a screw 45. The block 44 is preferably of a cylindrical configuration and is provided on its left-hand face with a diametrical slot 46 (FIG. 7). The slot 46 serves as a guide slot for a sliding block 47 which is loosely positioned on a pivot pin 48 protruding at both sides from the end portion of a pitman 50. The pitman 50 is provided at its other end with a strap portion 51 (FIG. 5) which surrounds an eccentric 52 which is rigidly secured on the main drive shaft 21.

The pivot pin 48 is rigidly fastened in the upper end of the pitman 50 by a screw 53 and protrudes both to the left and to the right of the pitman sufficiently far to carry on each protruding end a slide block. One of these slide blocks is the previously mentioned slide block 47.

A second slide block 54 is received in a guide slot 55 provided in the face of a block element 56 which may be considered a second grooved member. The block 56 is pivotally mounted on a pivot pin 57 which, in turn, is carried by a crank or rocker arm 58 which is secured to one end of a rock shaft 60.

Referring once again to FIG. 1, it will be seen that the rock shaft 60 is mounted within suitable bearings 61, 62 carried by the wall 20 for oscillatory movement. That end of the rock shaft 60 which projects into the needle head 18 is provided with a second crank or rocker arm 63 which is pivotally connected to a link 64, which, in turn, is pivotally connected to the upper portion of the rock frame 25 whereby oscillatory movement of the rock shaft 60 results in oscillatory movement of the rock frame 25 about the pivot pin 26.

Referring now to FIGS. 5 and 7, it will be seen that the slot or groove 55 formed in the block 56 is vertically disposed. Since the block 56 is pivotally carried by the rocker arm 58, it normally would be free to pivot and thus lose this particular orientation of the slot 55. In order that the vertical orientation of the slot 55 may be maintained, there is fixedly secured to the block 56 an arm 65 which extends at right angles to the slot 55. The free end of the arm 65 is connected by means of a pivot pin 66 to a substantially vertical arm 67 which, in turn, is rotatably journalled by means of a stub shaft 68 mounted in a suitable bore 70 formed in the wall 20.

The axis of rotation of the stub shaft 68 extends parallel to and in the same horizontal plane as the axis of the rock shaft 60. The axis of the pivot of crank pin 57 also extends parallel to and lies in a common horizontal plane with the pin 66, the crank pin 57 being vertically offset from the center of the block 56, as is best shown in FIG. 1. Consequently, the center distances between the rock shaft 60 and the crank pin 57 on the one hand, and stub shaft 68 and crank pin 66 on the other hand, are equal.

Also, from FIG. 5, it can be seen that the center distance between rock shaft 60 and stub shaft 68 is equal to the center distances between the crank pins 57 and 66. The resultant structure is a parallelogram type lever arrangement the purpose of which is to stabilize the block 56 so as to retain the guide slot 55 thereof in a substantially vertical disposition regardless of the angular disposition of the block 56 relative to the rock shaft 60. The reason for this arrangement is to prevent changes in the effective length of the rock arm 58 during the driving stroke of the pitman 50. This is highly desirable since due to the sliding motion of blocks 47 and 54 in the slots 46 and 55, respectively, the effective length of the rock arm 58 would be subjected to continuous changes during one full reciprocation of the pitman 50. That, in turn, would result in alternate accelerations and decelerations in the oscillating movement of rock shaft 60 and, accordingly, of the motion of the needle bar rock frame 25. The result would be an undesirable erratic needle feed motion.

In order to assure proper function of the drive mechanism for the rock frame 25, the rock or crank arm 58 would extend vertically when the needle 31 is in its centered position. With this correlation of the rock arm 58 and the vertical disposition of the slot 55 of the block 56, it will be seen that any movement of the block 56 to the right or to the left, as viewed in FIG. 5, will result in a displacement of the rock frame 25 about the pivot pin 26.

OPERATION

It will be readily apparent that the position of the block 44 controls both the direction of needle feed and the amplitude of needle feed. When the slot 46 of block 44 is vertically disposed, it is aligned with the slot 55, as is shown in FIG. 7, and reciprocatory movement of the

pin 48 and the blocks 47 and 54 will be limited to vertical movement. Since the slot 55 is vertically disposed, this will result in no displacement of the rocker arm 58 and no movement of the rock shaft 60. Thus, the needle 51 will merely reciprocate vertically.

When the control shaft 32 is rotated, this will result in a like rotation of the block 44 with the slot 46 therein being angularly displaced from its vertical orientation. As a result, when the pin 48 is vertically reciprocated, and the block 47 slides vertically within the slot 46, there will be a horizontal displacement of the pin 48, the displacement varying in accordance with the angular displacement of the slot 46. Because of the manner in which the block 56 is supported so as to maintain the slot 55 thereof vertically at all times, the horizontal displacement of the pin 48 will result in a like horizontal displacement of the block 56, which, in turn, will result in a swinging of the rocker arm 58 and oscillatory movement of the rock shaft 60. The oscillatory movement of the rock shaft 60 will, in turn, result in oscillatory movement of the rock frame 25 and resultant feeding displacement of the needle 31 during the reciprocatory movement thereof.

The amount of needle displacement will be controlled by the angular displacement of the slot 46 between a vertical zero feed position thereof to a maximum in accordance with the desires of the sewing machine design. It is to be understood that the path of movement of the point of the needle 31 will be generally that of a vertically elongated oval.

It is also to be noted that when the block 44 is pivoted or rocked in one direction, it will result in the feeding of the needle in one direction about the oval path of movement, and when it is rocked in the opposite direction, it will result in the feeding of the needle in an opposite direction about the oval path of movement. Thus, by angularly displacing the slot 46 of the block 44, both the amplitude and direction of needle displacement may be controlled.

At this time it is pointed out that there is mounted within the base 15 of the sewing machine a conventional work feed mechanism which is generally identified by the numeral 75. This work feed mechanism is adjustable and includes a lower drive shaft 76 which is coupled to the upper drive shaft 21 for rotation in unison by means of a toothed belt and sprocket arrangement 77.

The feed mechanism 75 includes a work feed dog 78 which projects upwardly through a throat plate 80 and cooperates with a presser foot 81 for the feeding of work both between the presser foot 81 and the feed dog 78.

It is to be understood that the drive shaft 76 is connected to the feed dog 78 by means of conventional drive linkage, generally identified by the numeral 82 which is adjustable in the manner specifically disclosed in my U.S. Pat. No. 3,339,509, granted Sept. 5, 1967, so as to control both the feed direction and amplitude of feeding movement of the feed dog 78. As was previously mentioned, the sewing machine includes a lower control shaft 43 which will effect the adjustment of the linkage 82 and retain the same in an adjusted position. The control shafts 32 and 43 being connected together for movement in unison, it will be seen that it will be possible for an operator of the sewing machine to simultaneously and synchronously adjust both the upper needle feed and the lower feed dog feed. In view of the fact that the details of the adjustable feed dog feed are not in of themselves part of this invention, no further description of the structure or operation will be made here.

In order that the feeds of the sewing machine may be readily adjusted by the operator, there is rotationally mounted within the standard 16 a transverse rod or shaft 83 which has the forward end thereof projecting out of the standard 16 and provided with a feed stroke adjusting mechanism 84. The shaft 83 is provided with a crank arm 85 which has pivotally connected thereto a link 86, which, in turn, is pivotally connected to the crank arm 42 by means of the pivot 41.

Reference is now made to the specific construction of the feed stroke adjusting mechanism 84, which is more specifically disclosed in the Daniel U.S. Pat. No. 3,033,141. The feed stroke adjusting mechanism 84, as is best shown in FIGS. 4 and 8, includes a disc 87 which is fixedly secured to the outer face of the front wall of the sewing machine frame. The shaft 83 extends through and may be rotatably journalled within the disc 87. On the end of the shaft 83, closely adjacent the disc 87, is a further disc 88. The disc 88 is provided with an operating lever 90 which may be used to manually turn the disc 88.

A screw 91 has a screw threaded engagement with the disc 88 and has a relative inner end 92 arranged to cooperate with oblique walls of a V-shaped recess 93 formed in the disc 87. By turning the screw 91 its rounded inner end may be adjusted to a greater or lesser depth within the recess 93. The further the rounded end extends into the recess 93, the shorter will be the stitch length provided.

A knurled lock nut 94 is carried by the screw 91 and serves to retain it in any adjusted position. When it is desired to adjust the position of the disc 88 relative to the disc 87, the lock nut 94 is released, after which the screw 91 is adjusted to the desired position, followed by the turning of the lock nut 94 to its screw securing position.

As is best shown in FIG. 8, the disc 87 is provided with an extension 95 which is provided with a suitable scale 96. A pointer 97 is carried by the disc 88 and in association with the scale 96 serves to indicate the stitch length or feed stroke for which the machine has been set by means of the screw 91. It will be readily apparent that when the shaft 83 is turned in one direction, the control shafts 32 and 43 will be rotated in one direction, and when the shaft 83 is turned in the opposite direction, the control shafts 32 and 43 will be turned in the opposite directions.

Reference is now made to FIGS. 9, 10 and 11 wherein there is illustrated a second embodiment of the invention. The sewing machine of FIGS. 9, 10 and 11 will have a frame construction very similar to that shown in FIGS. 1 through 8, with there being minor changes in the details of the overhanging arm as far as the supporting of components of the adjustable drive mechanism and the control shaft therefor is concerned. The illustrated portions of the machine frame include a base 115, an overhanging arm 117 and a needle head 118. The needle head 118 is separated from the overhanging arm by means of a wall 120.

The sewing machine also includes a main drive shaft 121 which is supported at the opposite end portions thereof by means of suitable bearings of which only a bearing 123 carried by the wall 120 is illustrated.

The needle head 118 is provided with a removable cover 124 and mounted within the needle head 118 is a rock frame 125 which is mounted for rocking movement on a pivot pin 126. The rock frame 125 carries for reciprocating motion in the normal manner a needle bar 127. The needle bar 127 is vertically reciprocated relative to the rock frame 125 by means of a crank 128 mounted on the end of the drive shaft 121 projecting into the needle head 118 and through suitable drive mechanism including a pitman 130.

It is also to be understood that the needle bar 127 will be provided with a needle 131 in the customary manner. Further, the needle head 118 will support in the customary manner a presser foot 181 which cooperates with a feed dog 178 carried by the base 115 and driven in the manner disclosed, for example, in my prior U.S. Pat. No. 3,339,509.

The means for controlling the direction and amplitude of feed or movement of the rock frame 125 includes a control shaft 132. The control shaft 132 is mounted within the overhanging arm 117 in suitable bearings of which only a bearing 133 carried by the wall 120 is shown. The control shaft 132 has an end thereof projecting into the needle head 118 and has secured thereto a grooved member in the form of a block 144 having a slot 146 therein, as is best shown in FIG. 11. A block 147 is seated in the slot 146 for reciprocatory movement together with a reciprocating member in the form of a pin 148. The pin 148, is, in turn, carried by the upper end of a pitman 150 which includes a lower strap portion which is mounted on an eccentric (not shown) carried by the drive shaft 121 within the needle head 118.

The pin 148 has mounted on the opposite end thereof remote from the block 147 a further block 154 which is mounted within a slot 155 of a block-like member 156.

The block-like member 156 is either formed integral with or is fixedly secured to an arm 157 forming an upper part of the rock frame 125 and extending generally horizontal at the upper end thereof. The arm 157 may be integrally formed with the rock frame 125 or rigidly secured thereto as a rigid component thereof.

With particular reference to FIG. 11, it will be seen that a guide 160 is provided for the block-like portion 156. The guide 160 is in the form of an arm which is carried by a stub shaft 161 which is rigidly secured in a bore 162 formed in the wall 120. As is clearly shown in FIG. 9, the block-like portion 156 depends below the arm 157 and the guide 160 engages the depending portion of the block-like portion 156 on the side thereof remote from the wall 120. The guide 160 serves to retain the desired relationship between the block-like portion 156 and the block 144 notwithstanding the cantilever mounting thereof with respect to the remainder of the rock frame 125 remote from the pivot pin 126 on which the rock frame 125 is mounted.

OPERATION

It will be understood that the operation of the drive mechanism for the rock frame 125 is substantially identical to that described with respect to the drive for the rock frame 25 except that certain linkage has been dispensed with. When the shaft 121 rotates, the pitman 150 will impart a generally vertically reciprocating movement to the pin 148. When the control shaft 132 is adjusted to a position wherein the slot 146 is vertically disclosed, vertical reciprocation of the pin 148 and the block 147 carried thereby will result in the reciprocatory movement of the block 154 in the slot 155 without imparting any movement whatsoever to the rock frame 125. On the other hand, if the block 144 is rotated in either direction from its neutral position, the slot 146 will be disposed in angular relation with respect to the vertical and vertical reciprocation of the pin 148 and the block 147 will result in transverse movement of the pin 148 and the block 154 with respect to the axis of the control shaft 132. This transverse movement will, in turn, be imparted to the block portion 156, the arm 157 and finally the rock frame 125 to rock the rock frame 125 about the pivot shaft 126.

It is to be understood that the angular relationship of the slot 146 to the vertical controls the amplitude of the movement of the rock frame 125 and that the direction in which the slot 146 is rotated with respect to the vertical control the direction of rocking of the rock frame 125.

It is to be understood that the sewing machine of FIGS. 9 through 11 will be constructed to provide for variations in amplitude and feed direction of the feed dog 178 in the manner described with respect to FIGS. 1 through 8. It is also to be understood that a single control readily accessible to the operator may be utilized for simultaneously controlling the direction and amplitude of feed of both the needle and the feed dog in the previously described manner.

Although only two preferred embodiments of the drive mechanism for the rock frame have been specifically illustrated and described herein, it is to be understood that minor variations may be made in the drive mechanism without departing from the spirit and scope of the invention, as defined by the appended claims.

I claim:

1. In a sewing machine including a machine frame, a needle feed mechanism comprising a needle bar rock frame, a pivot carried by said machine frame pivotally supporting said rock frame, a needle bar slidably carried in said rock frame, driving means in said machine frame for said needle feed mechanism including a drive shaft journaled for rotation within said machine frame, first drive means connecting said drive shaft to said needle bar for effecting reciprocation of said needle bar relative to said rock frame in response to rotation of said drive shaft, and second drive means connecting said drive shaft to said rock frame for selectively effecting a controlled rocking of said rock frame both as to feed direction and feed amplitude, said second drive means including a first grooved member connected to said rock frame and a second grooved member opposing said first grooved member, a reciprocating member having opposite end portions seated in the grooves of said grooved members, a rotary motion to reciprocating motion connection between said drive shaft and said reciprocating member, and support means for said

second grooved member mounted in said machine frame for adjustment to vary the angular position of the groove in said second grooved member.

2. The needle feed mechanism of claim 1 wherein said reciprocating member includes a pin extending between said grooved members, and slide blocks pivotally mounted on opposite ends of said pin and slidably engaged in said grooved members.

3. The needle feed mechanism of claim 1 wherein a rock shaft is rotatably journalled in said machine frame, a first rock arm on one end of said rock shaft connected to said rock frame, and second rock arm on the other end of said rock shaft carrying said first grooved member.

4. The needle feed mechanism of claim 3 wherein said first grooved member is pivotally mounted on said second rock arm, and there are stabilizing means connected to said first grooved member for maintaining a constant angular relationship between the groove of said first grooved member and said machine frame as said first grooved member oscillates in response to the actuation thereof by said reciprocating member.

5. The needle feed mechanism of claim 4 wherein said stabilizing means is in the form of a parallelogram type lever arrangement.

6. The needle feed mechanism of claim 4 wherein said stabilizing means is in the form of a parallelogram type lever arrangement including a stabilizing arm extending laterally from said first grooved member as a rigid part thereof, said stabilizing arm having a free end pivotally connected to a crank member journalled in said machine frame, said crank member having a crank arm extending parallel to said second rock arm.

7. The needle feed mechanism of claim 3 wherein said machine frame includes a base, a standard, an overhanging arm and a needle head, said machine frame also including a wall separating said overhanging arm from said needle head, said rock shaft being journaled in said wall with said grooved members and said reciprocating member being disposed within said overhanging arm.

8. The needle feed mechanism of claim 1 wherein said support means is in the form of a control shaft, and means disposed externally of said machine frame for operation by an operator for readily rotating said control shaft to vary both needle feed and direction of needle feed.

9. The needle feed mechanism of claim 1 wherein said sewing machine also includes a lower work feed mechanism having adjustable feed means, and operator controlled means connected to both said support means and said work feed mechanism for simultaneously and synchronously adjusting said needle feed mechanism and said work feed mechanism.

10. The needle feed mechanism of claim 1 wherein said first grooved member is rigid with said rock frame.

11. The needle feed mechanism of claim 10 wherein said machine frame includes a base, a standard, an overhanging arm and a needle head, said machine frame also including a wall separating said overhanging arm from said needle head, said grooved members and said reciprocating member being arranged in said overhanging arm.

12. The needle feed mechanism of claim 11 wherein said support means is in the form of a control shaft journaled in said wall.

13. The needle feed mechanism of claim 11 together with a guide engaging said first grooved member for controlling the plane of movement thereof.

14. In a sewing machine including a machine frame, a needle feed mechanism comprising a needle bar rock frame, a pivot carried by said machine frame pivotally supporting said rock frame, a needle bar slidably carried in said rock frame, driving means in said machine frame for said needle feed mechanism including a drive shaft journaled for rotation within said machine frame, first drive means connecting said drive shaft to said needle bar for effecting reciprocation of said needle bar relative to said rock frame in response to rotation of said drive shaft, and second drive means connecting said drive shaft to said rock frame for selectively effecting a controlled rocking of said rock frame both as to feed direction and feed amplitude, said sewing machine also including a lower work feed mechanism having adjustable feed means, and operator controlled means connected to both said needle feed mechanism and said work feed mechanism for simultaneously and synchronously adjusting said needle feed mechanism and said work feed mechanism, said operator controlled means including a manually settable disc conveniently positioned on said machine frame and connected to a control shaft which is in turn connected to said needle feed means and said work feed means for adjusting the strokes thereof.

15. The needle feed mechanism of claim 14 wherein said manually settable disc has a screw actuated wedge type positioning mechanism.

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