

Sept. 5, 1967

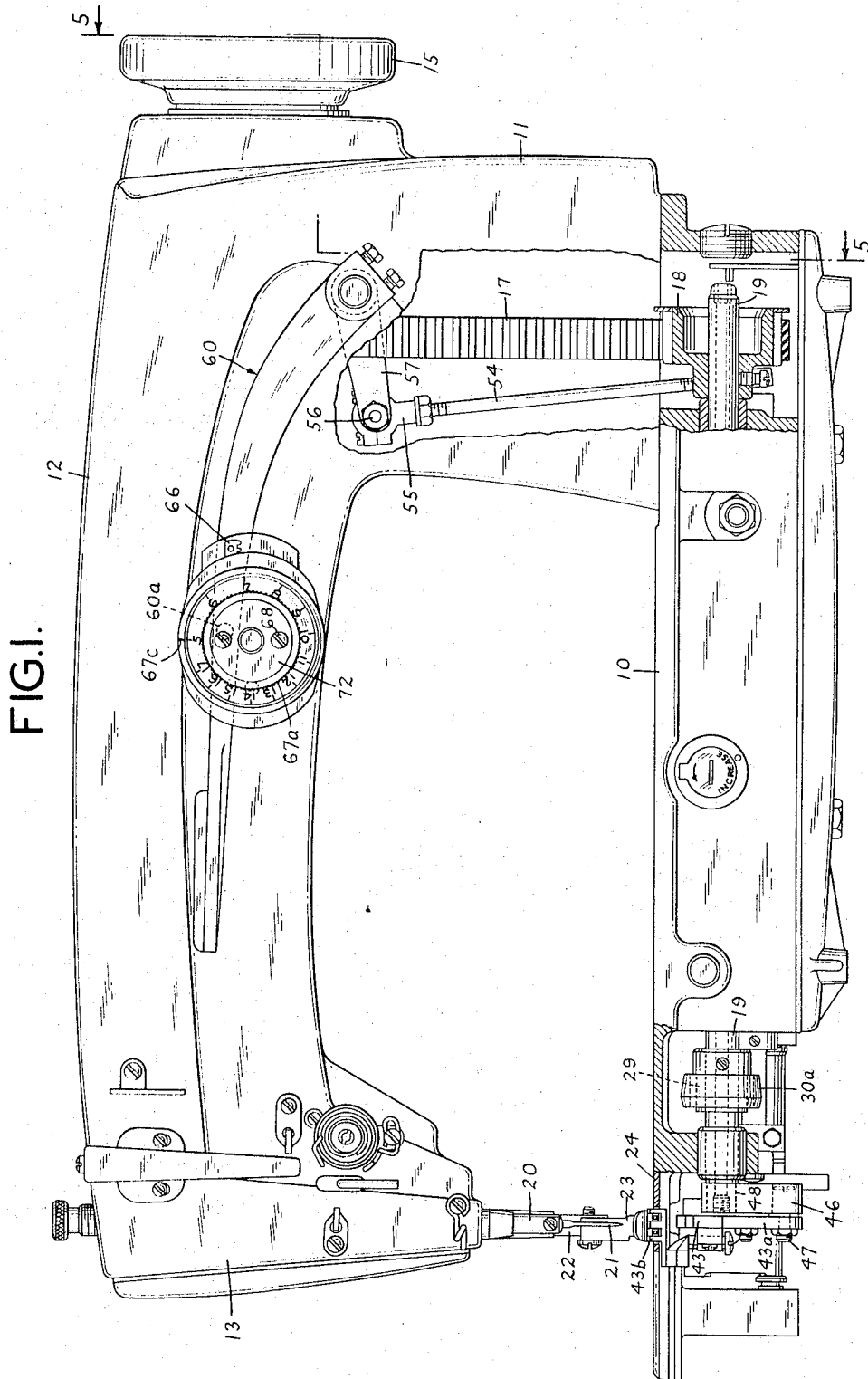
C. C. SMITH

3,339,509

FEED MECHANISM FOR SEWING MACHINES

Filed Jan. 4, 1965

6 Sheets-Sheet 1



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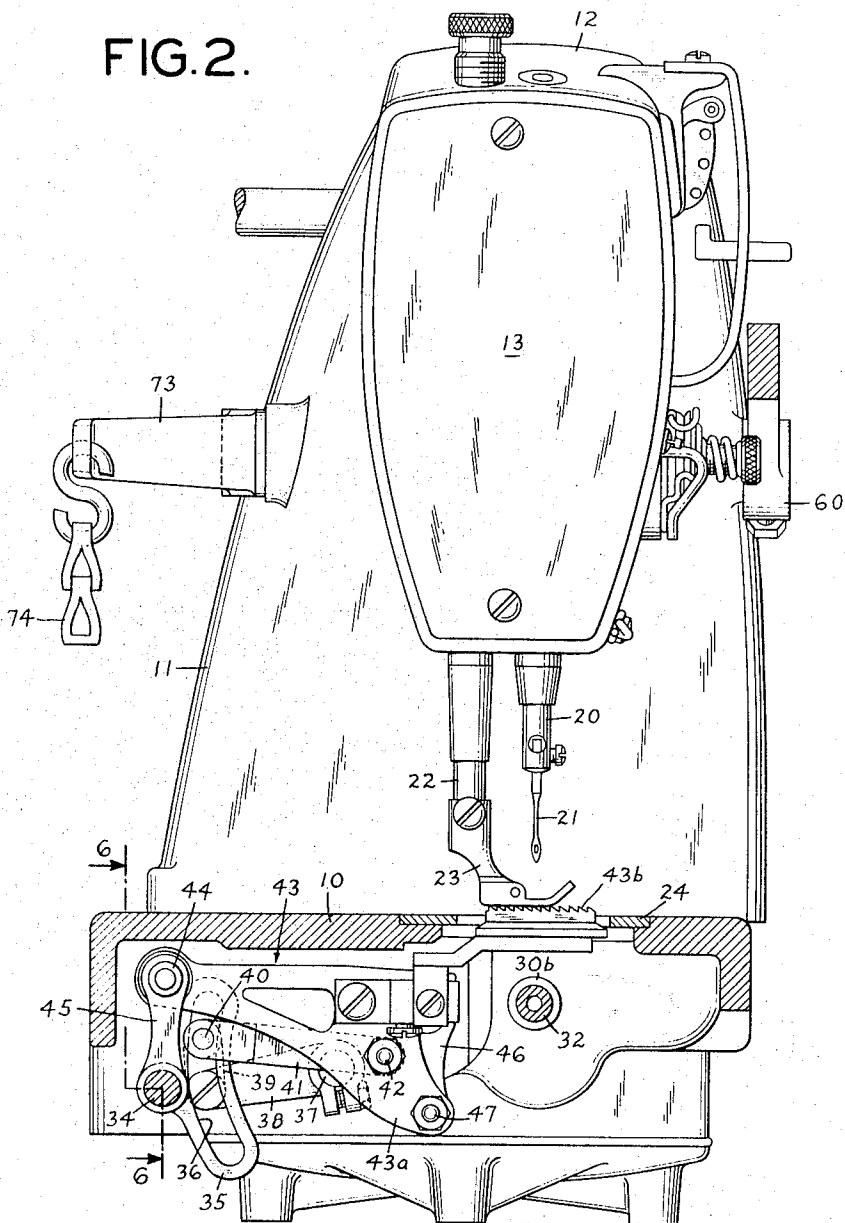
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FIG. 2.



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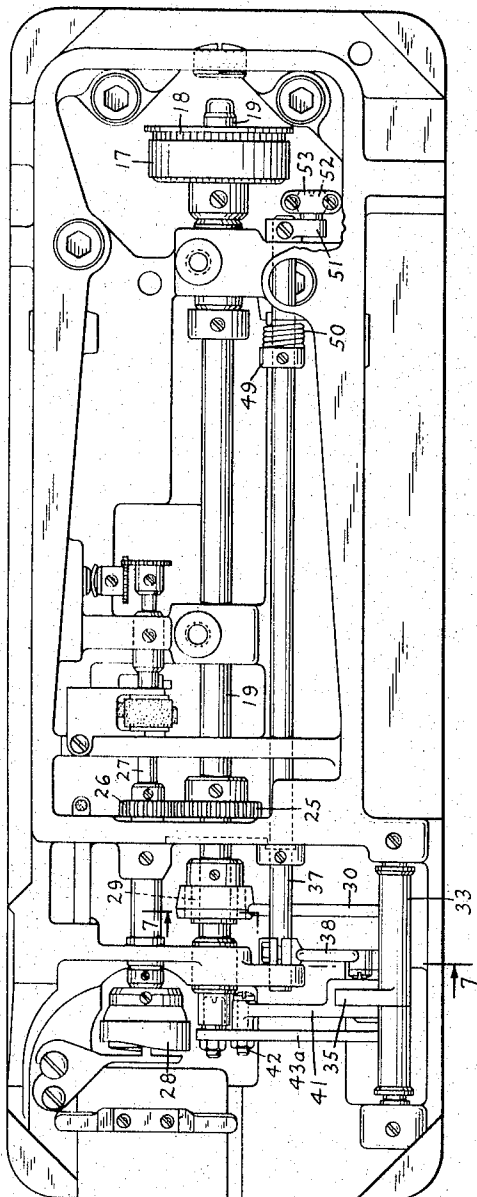


FIG. 3.

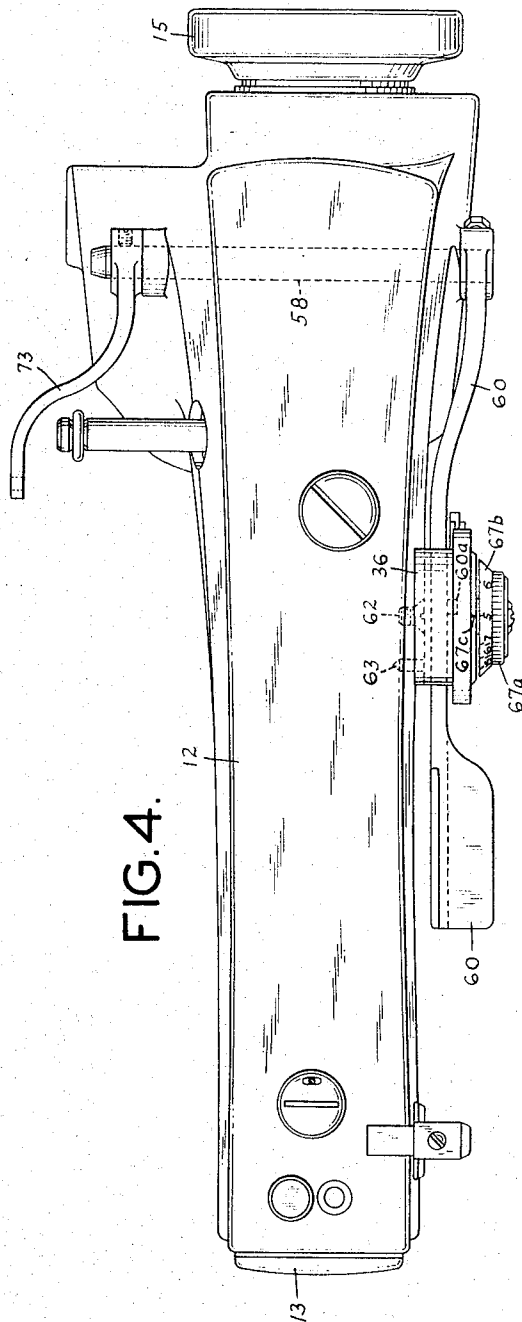


FIG. 4.

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FIG. 5.

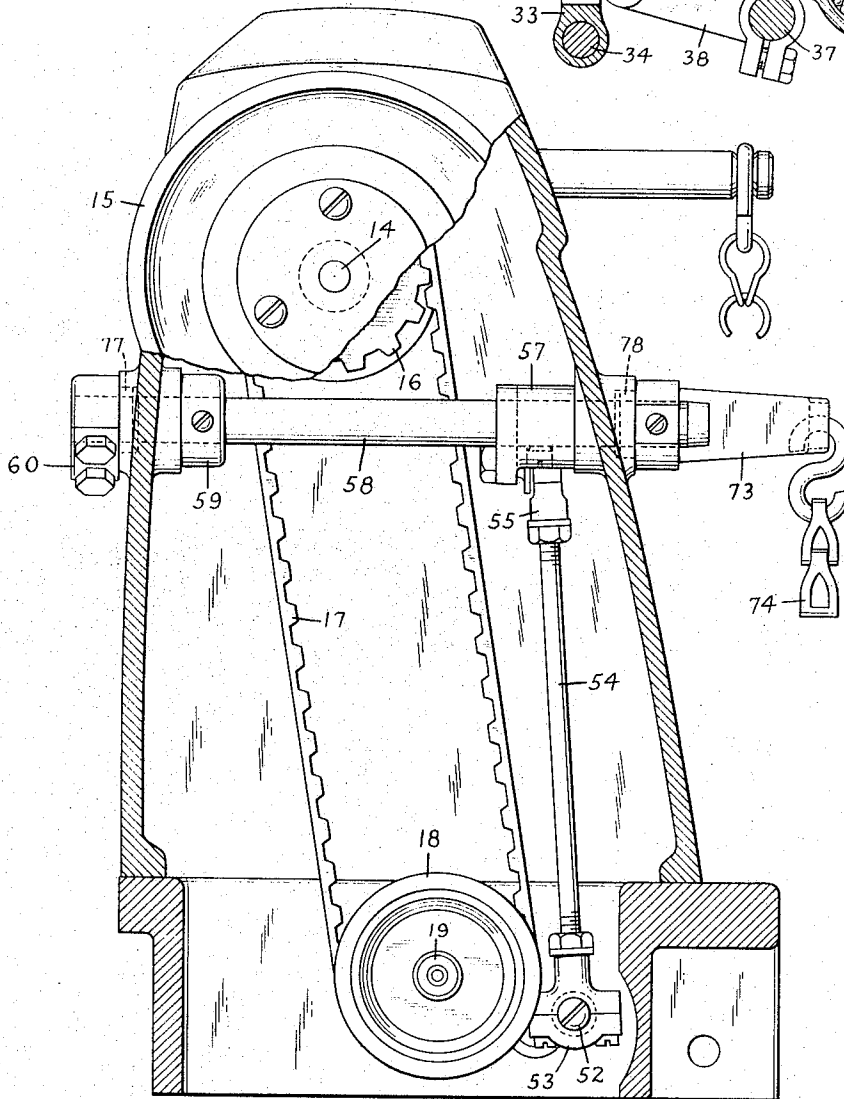


FIG. 7.

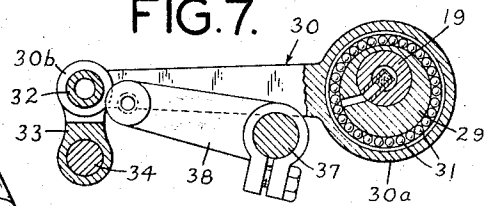
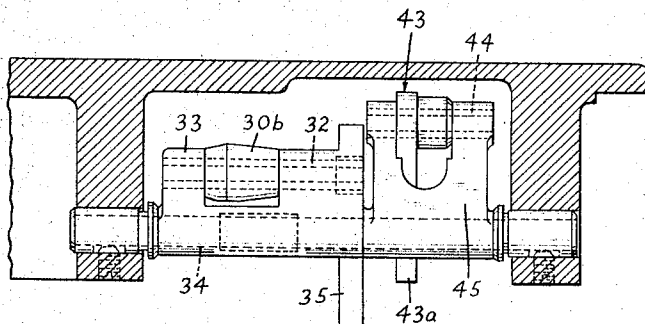


FIG. 6.



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FIG. 8.

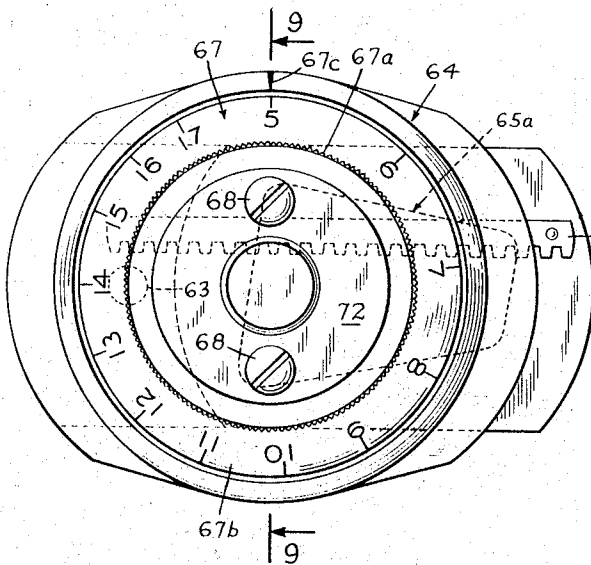


FIG. 9.

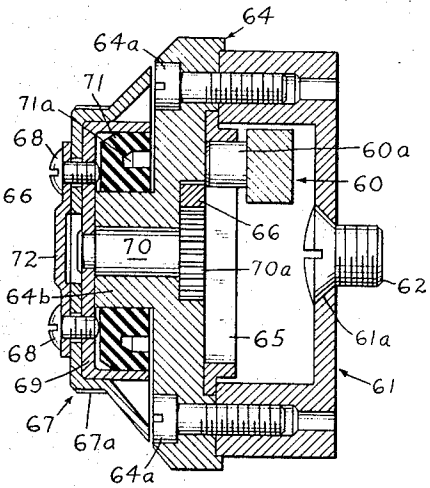


FIG. 10.

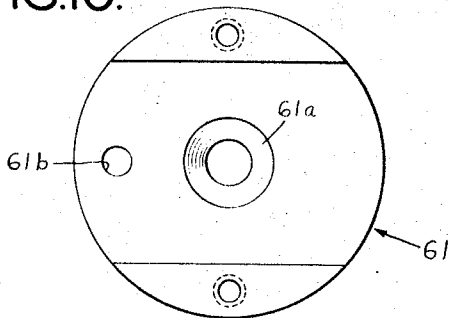


FIG. 11.

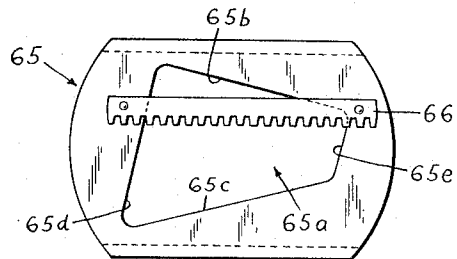


FIG. 12.

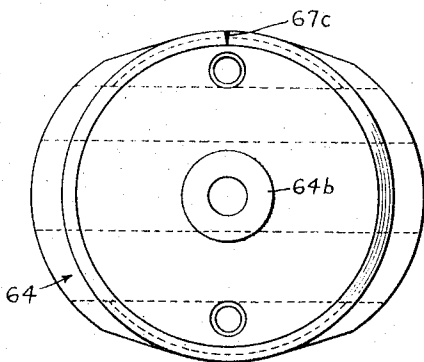


FIG. 13.

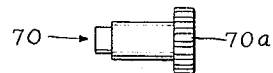
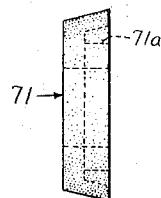


FIG. 14.



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FIG.15.

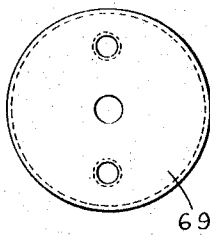


FIG.16.

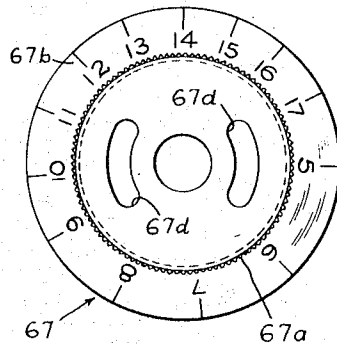


FIG.17.

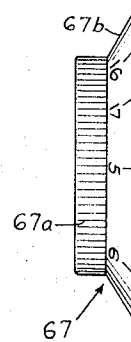


FIG.20.

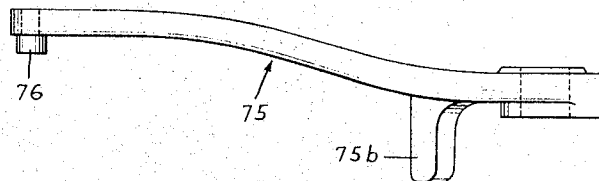


FIG.19.

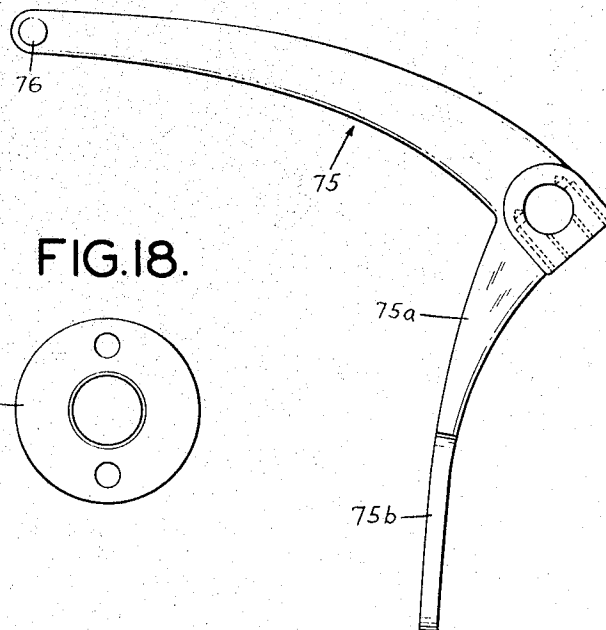
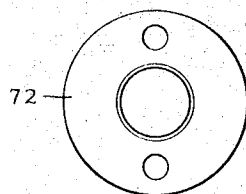


FIG.18.



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FEED MECHANISM FOR SEWING MACHINES
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Filed Jan. 4, 1965, Ser. No. 423,022
 13 Claims. (Cl. 112—210)

ABSTRACT OF THE DISCLOSURE

A sewing machine having work feeding mechanism provided with means for controlling the stitch length produced by the work feeding mechanism and for bringing about a reverse feeding action of the same. The control means for adjusting the extent of feed and the direction of feed are so mounted on the frame of the machine as to render them readily operable by one hand of the operator seated in front of the machine. Various special features are incorporated in the construction for facilitating the very accurate adjustment of the stitch length to be provided by the machine in both the forward and reverse directions. For this purpose a control knob is provided which is rotatable through an angle of nearly 360 degrees. The stitch length adjusting means comprises a slidable control element having divergent surfaces thereon, i.e. surfaces disposed in sloping relation to each other adapted to cooperate with a pin or the like associated with the work feeding mechanism for controlling the extent of feed upon each cycle of operation of the machine. Said pin is carried by a lever and is adapted to cooperate with one of said sloping surfaces to determine the extent of forward feed of the work in the normal operation of the machine and to cooperate with the other of said sloping surfaces to determine a corresponding reverse extent of feed whenever the lever is manually operated by the operator. Connections from the lever determine the extent and direction of feed upon a cycle of operation of the machine. A feature of the construction which greatly simplifies the control over the direction of feed is the arrangement of the control lever mentioned in a position in which it passes at least partially through the base of the control knob structure that determines the extent of feed. This arrangement is such that the lever is normally urged upwardly to carry its pin into engagement with one of the sloping surfaces mentioned and is readily rocked downwardly by the operator to engage the pin with the other of the sloping surfaces mentioned.

This invention relates to mechanism for varying the extent of feed of the work feeding mechanism of a sewing machine and the control over the direction of feed of said mechanism.

It has long been found desirable to provide work feeding mechanism in a sewing machine which will not only enable ready adjustment of the extent of feed of the mechanism during each cycle of operation of the machine but will also enable reversal of the direction of feed whenever desired. Such reversal of the direction of feed is ordinarily desired at both the beginning and the end of a lockstitch seam to prevent unraveling of the seam. It is, however, useful for other purposes.

A variety of mechanisms have been developed over the years for achieving the results above stated. However certain difficulties have been encountered in the use of such mechanisms. Thus it has been found difficult to provide mechanisms of the character mentioned which are capable of fine and accurate adjustment of the extent of feed of the work during each cycle of the machine, and thus the number of stitches provided per inch of a seam, and also to reverse the direction of feed of the work. Moreover,

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feed control mechanisms of the character above mentioned, as heretofore developed, have made it difficult to provide manual control means for regulating the extent and direction of feed which is so located as to enable the operator to quickly set and operate the same, with a minimum of effort and without preventing the operator from properly manipulating the work in the course of changing the direction of feed. In many instances the manual means for adjusting the extent of feed and the direction of feed have been so located that the proper adjustment and functioning of the feed mechanism has been disturbed, sometimes with serious damage to the mechanism, when the operator or a mechanic has found it necessary to tilt the machine rearwardly in a conventional manner about its supporting table to provide access to parts in the base portion of the frame.

The improved adjusting and feed direction control means of the present invention have been found particularly useful in connection with operating mechanism of the type disclosed in the Daniel Patent No. 3,033,141, granted May 8, 1962. However certain aspects of the invention will be found useful in connection with mechanisms of other types. Important considerations are the ability to change the stitch length quickly and accurately within the desired range of stitch lengths and to enable the direction of feed of the work to be reversed quickly and readily whenever desired.

With the foregoing objectives in view, the invention will now be described in detail in conjunction with the accompanying drawings in which:

FIG. 1 is a front elevational view of the machine with certain parts broken away and shown in section;

FIG. 2 is a side elevational view of the machine, as seen from the left in FIG. 1, with certain parts broken away and shown in section;

FIG. 3 is a bottom plane view of the machine;

FIG. 4 is a top plan view of the machine;

FIG. 5 is a vertical sectional view taken along the line 5—5 of FIG. 1;

FIG. 6 is a vertical sectional view through the base portion of the frame of the machine, taken along the line 6—6 of FIG. 2;

FIG. 7 is a detail view, partly in elevation and partly in vertical section, taken along the line 7—7 of FIG. 3;

FIG. 8 is a face view of the stitch-length controlling knob and cooperating parts;

FIG. 9 is a vertical sectional view taken along the line 9—9 of FIG. 8;

FIG. 10 is a detail view of an element incorporated in the stitch-length controlling assembly;

FIG. 11 is a face view of another element incorporated in the stitch-length controlling assembly;

FIG. 12 is a face view of the main supporting structure for the control knob and certain related parts;

FIG. 13 is a detail view, in side elevation of a pinion element incorporated in the control mechanism;

FIG. 14 is a side elevational view of a resilient, friction-producing element incorporated in the control assembly;

FIG. 15 is a face view of a drum element secured to the control knob;

FIG. 16 is a face view of the control knob;

FIG. 17 is a side elevational view of the control knob;

FIG. 18 is a face view of a disc incorporated in the outerface of the control knob;

FIG. 19 is a detail view, in side elevation of a modified form of control lever that may be incorporated in the stitch-length controlling mechanism; and

FIG. 20 is a plan view of the element shown in FIG. 19.

The invention as disclosed herein is applied to a lockstitch sewing machine of the character disclosed in somewhat greater detail in the patent to Covert No. 2,977,910, granted Apr. 4, 1961. It comprises a frame structure

having a base portion 10, a vertical standard 11 and an overhanging arm 12 terminating in a needle head 13. Suitably journaled in the overhanging arm, with its right-end, FIG. 1, extending outwardly of the vertical standard is a main drive shaft 14 provided with a combined hand-wheel and pulley 15 at its outer end. It will be understood that the pulley is connected with a suitable power source by a belt or the like. The main shaft 14 may also be turned by hand through manual rotation of the member 15 for adjustment purposes or the like. Within the vertical standard the shaft 14 has secured thereto a toothed wheel 16 adapted to cooperate with a toothed belt 17 which is connected at its lower end with a toothed member 18 secured to a shaft 19 suitably journaled in the base portion of the frame. Through the two shafts 14 and 19, all of the operating parts of the machine are suitably driven.

Within the needle head 13 there is mounted for vertical reciprocation a needle bar 20 adapted to carry one or more needles 21. Also mounted for vertical movement within the needle head is a presser bar 22 carrying at its lower end a presser foot 23. The latter is urged downwardly into engagement with a throat plate 24 carried by the base portion of the frame. This part of the mechanism is well known in the art.

The shaft 19 in the base has secured thereto a gear 25 which meshes with a pinion 26 secured to a shaft 27 suitably journaled in the frame in parallel relation to the shaft 19. Gear 25 and pinion 26 are such as to cause two revolutions of shaft 27 for one revolution of the shaft 19. As shown in FIG. 3 the shaft 27 has secured to its left-end the rotary component of a rotary hook. The latter cooperates in a conventional manner with the reciprocatory needle to produce lockstitches.

To the shaft 19 there is also secured an eccentric 29 (FIGS. 3 and 7) which cooperates with the strap portion 30a of a pitman 30. Preferably, as shown, a needle-bearing unit 31 is provided between the eccentric 29 and the strap 30a. At its right-end (FIG. 7) the pitman 30 has a portion 30b which is pivotally connected with a rod or sleeve 32 carried at the upper end of a rock member 33. The latter is mounted for free-rocking movement about a fixed shaft 34.

The rock member 33 is the means by which the feed bar of the machine is given reciprocatory movement, in the manner to be explained. Integral with rock member 33 is an arcuate extension 35 provided with an arcuate passage or opening 36 therethrough. This passage is preferably curved along an arc having the axis of a shaft 37 as its center of curvature. Shaft 37 extends parallel with the lower driven shaft 19 (FIG. 3) and has its left-end adjacent the feed bar and its driving connections, while its right-end extends into a region below the vertical standard of the frame. Secured to the shaft 37, adjacent to its left end, is an arm 38 which, as best shown in FIGS. 3 and 7, is clamped to the shaft 37. The outer end of arm 38 has pivotally connected thereto a link 39 (FIG. 2) the upper end of which is connected by a pin 40 to the forked end of a pitman 41. At its right-end (FIG. 2), the pitman 41 is pivotally secured by a bolt 42 to a downwardly extending portion 43a of a feed bar 43. The left-end of this feed bar is pivotally mounted upon a stud or sleeve 44 mounted in the upper portion of a rocker 45 adjacent the rocker 33. Like the latter, it is mounted for turning movement about the fixed shaft 34. Toward the right-end of the feed bar 43 (FIG. 2) there is connected with the downwardly extending portion 43a of said feed bar, a link or pitman 46. The lower end of the latter is pivotally connected with portion 43a of the feed bar by a bolt 47. At its upper end the pitman 46 has an opening therethrough cooperating with an eccentric portion 48 at the left-end of the shaft 19 (FIG. 1). Thus, as the shaft 19 rotates, the eccentric portion 48 imparts, a lifting and lowering movement to the pitman 46 and imparts a corresponding lifting and lowering movement to the forward

end of the feed bar to which is adjustably secured a feed dog 43b. Four motion movements are thus imparted to the feed dog 43b, longitudinal movements being imparted through the rocking of member 35 which acts upon the pin 40 to shift the link 41, and hence the feed bar, to an extent depending upon the position of the pin 40 within the arcuate passage 36. Lifting and lowering movements are imparted to the feed dog by the eccentric 48 and the pitman 46. It will be apparent that the feed dog will be given its work feeding movements toward the left (FIG. 2) when the pin 40 is above the horizontal plane containing the axis of fixed shaft 34, while it will be given its work feeding movements toward the right (FIG. 2) when the pin 40 is below the horizontal plane through the axis of shaft 34.

The position of pin 40 within the arcuate passage 36 is determined by the angular position of the shaft 37.

Normally, the latter is urged in a clockwise direction (FIG. 2) by the action of spring 50 shown in FIG. 3. This is a torsion spring having one end engaged in an opening provided in a collar 49 secured to shaft 37, and having its other end cooperating with a shoulder on the frame of the machine. At its right end (FIG. 3) shaft 37 has secured thereto an arm 51 which carries a ball pin 52 cooperating with a strap 53 at the lower end of a pitman 54 (FIGS. 1 and 5). The upper end of pitman 54 has adjustably secured thereto a strap 55 cooperating with a ball pin 56 mounted in the outer end of an arm 57. The latter is secured to a rock shaft 58 journaled in the front and rear walls of the vertical standard of the frame. Axial movement of the shaft 58 is prevented by cooperation of various elements thereon with the frame structure. Thus a collar 59 (FIG. 5) secured to the shaft adjacent its left end prevents axial movement of the shaft toward the left. Outwardly of the frame there is secured to the left end of shaft 58 a lever 60 which extends substantially in a horizontal direction as best shown in FIG. 1. Means to be presently described serve to limit the extent of rocking movement of the shaft 58 and arm 60 in a clockwise direction by the action of the spring 50. So also the extent of counterclockwise movement of the arm 60 by the hand of the operator is limited by the control means to be described.

Turning now to the special control means of the present invention, this comprises an element 61, best shown in FIGS. 9 and 10, having a beveled opening 61a therethrough adapted to receive an attaching screw 62 which serves to firmly secure the element 61 to the overhanging arm of the frame. To retain the element 61 against rotation, it is preferably provided with an opening 61b adapted to receive and retain a pin 63 (FIG. 4) which cooperates with an opening through the front wall of the overhanging arm. Secured to the outer face of the element 61 is a member 64 (FIGS. 9 and 12), this member being secured to element 61 by a pair of screws 64a. Slidable within a passage provided between the element 61 and member 64 is a slide member 65. As best shown in FIGS. 9 and 11, this slide member has vertically extending flanges which are adapted for sliding movement within a channel provided between surfaces of element 61 and member 64. Secured to slide member 65 is a rack 66 by which the position of the slide member may be adjusted in the manner to be described. Referring to FIG. 11 it will be noted that slide element 65 has an opening 65a therethrough which provides divergently sloping surfaces 65b and 65c with which a pin 60a (FIGS. 4 and 9) is adapted to cooperate. That pin is carried by the lever 60 which extends laterally through the housing provided by the element 61 and member 64. The pin 60a will normally be urged upwardly into engagement with surface 65b by the action of the spring 50. When the lever 60 is operated by the hand of the operator, the pin 60a will be carried downwardly into cooperation with the surface 65c.

Mounted for rotary adjustment on the assembly above described is a knob consisting of a number of elements.

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These include a member 67, shown in detail in FIGS. 16 and 17, having a knurled portion 67a and a frusto-conical portion 67b provided with indicia adapted to indicate the setting of the knob in relation to a fixed pointer, such as a notch or arrow 67c carried by member 64. Within the member 67, and secured thereto by screws 68 is a drum element 69, as best shown in FIGS. 9 and 15. The screws 68 cooperate with arcuate openings 67d in the wall of the knurled portion 67a to enable relative adjustment of the knob with its dial to other portions of the control mechanism. Rigidly secured to the drum 69 is a shaft 70 having secured thereto, at its inner end, a pinion 70a which cooperates with the rack 66 to shift the latter and the slide member 65. Shaft 70 may be turned with the knob and dial and is in bearing engagement with an opening extending through the member 64, including a sleeve like extension 64b of the latter. Within the drum there is mounted a resilient friction element 71, best shown in FIGS. 9 and 14. Its outer surface is normally of frusto-conical form but it is squeezed into the configuration shown in FIG. 9 by the cooperation therewith of the inner cylindrical surface of the drum 69 and the extension 64b of member 64. An annular groove 71a in element 71 enables this distortion of the latter. The primary purpose of this resilient friction member is to eliminate the danger of turning of the knob accidentally or through the vibration of the machine in the course of its operation. Outwardly of the member 67 there is preferably provided a disc 72 which is retained in assembled relation with the element 67 and drum 69 by the screws 68. This disc 72 serves to cover up the arcuate openings 67d in member 67.

It is highly desirable, for quick and accurate adjustment of the desired stitch-length, that the indicia on the dial 67b extend substantially around the complete circumference of this dial, as best shown in FIG. 16. However, it is not essential that the indicia extend completely around the dial, so long as the different stitch-length numbers are adequately spaced for accurate adjustment of the mechanism. This may be accomplished to a substantial extent if the indicia extend around an arc of at least 180°. It will be appreciated that the arcuate openings 67d in the knob and dial element enable slight turning of the latter in relation to the drum 69 and the pinion 70a rigidly connected with said drum. As a result of this it may be determined by operation of the main shaft of the machine, by manual turning of the hand-wheel 15, whether the extent of feed of the work during a single revolution of the main shaft, and hence the resultant stitch-length, coincides properly with the number on the dial that is aligned with the index arrow or groove 67c carried by the stationary member 64. If the selected number on the dial does not coincide precisely with the intended stitch-length, the dial may be turned slightly in relation to drum 69 and pinion 70a to bring about proper coincidence. In making this adjustment, the screws 68 are loosened slightly and then retightened after the adjustment has been completed.

The extent to which the knob 67 may be turned in selecting the desired stitch-length is controlled by the end surfaces 65d and 65e of the opening 65a in slide member 65. In the construction illustrated, these end surfaces are so located as to permit substantially a complete revolution of the control knob 67 and the pinion 70a turned therewith. The arrangement just described prevents the danger of turning the knob 67 too far in either direction.

From the foregoing, it will be clear that the normal position of the lever 60 and the parts connected therewith will be determined by the position of the slide member 65, which brings a particular point along the surface 65b in a position to be engaged by the pin 60a under the influence of spring 50. Also the extent of downward movement of lever 60 will be determined by the point along the surface 65c of slide member 65 which is brought into the path of the pin 60a. Thus, it will be clear that the lateral position into which the slide 65 is adjusted, by rotation of the control knob 67, will determine the upper and lower

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positions of the pin 40 within the arcuate opening 36 of the feed dog reciprocating element 35. This will regulate the extent of feed of the work during each cycle of operation of the machine, and depending upon whether the spring 50 or the operation of lever 60 determines the position of pin 40 in opening 36, the work will be moved in either a forward or a reverse direction to produce the same stitch length.

To enable the operator of the machine to reverse the direction of feed without removing either hand from the work, connections are also provided for rocking the shaft 58 against the action of spring 50 through a foot treadle or a knee press. For this purpose there is secured to the rear end of the shaft 58, outside of the frame of the machine, an arm 73 (FIGS. 4 and 5) which is connected by a chain 74, or the like, with a treadle or knee press member, not shown. Thus, upon operation of the treadle or knee press member the shaft 58 may be rocked in the same manner as by operation of hand lever 60. If desired, the lever 60 may be so constructed that it has no portion engageable by the hand of the operator to bring about reversal of the feed, and this function may be then accomplished solely by the operation of the foot treadle or knee press member described. In the accompanying claims the term "manually operable" shall be understood to mean operable either by the hand, foot or knee of the operator.

In FIGS. 19 and 20, there is shown a modified construction of the hand-operated lever for bringing about reversal of the direction of feed. As here shown, the lever 75 is of a form similar to that portion of lever 60 above described which extends from the rock shaft 58 into the interior of the control knob assembly. Thus, the substantially horizontally extending portion of lever 75 carries at its outer end a pin 76 which is located in the same position and performs the same function as the pin 60a of the lever 60. To enable manual operation of lever 75, the latter is provided with a downwardly extending arm 75a having at its lower end a laterally, outwardly extending portion 75b adapted to be readily engaged by the hand of the operator, whenever it is desired to reverse the direction of feed of the work.

Provision is made for automatic lubrication of the various operating parts within the enclosed portion of the frame of the machine, and some parts outside of said frame. The means employed for this purpose is known in the art and will not be here described. However a brief reference will here be made to means associated with the shaft 58 of the present invention for preventing escape of lubricant along said shaft. Thus, as shown in FIG. 5, there is provided an O ring 77 around the shaft 58 between the lever 60 and the bearing for the shaft at the left end thereof. A similar O ring 78 is provided around the shaft between the hub of arm 73 and the bearing for the right end of the shaft. These O rings are preferably made of synthetic, oil resistant material and serve as oil seals.

SUMMARY

It will be seen from the foregoing that the present invention provides means for readily and exceedingly accurately selecting a desired stitch length for a high speed sewing machine. Also the invention provides a novel arrangement of parts for reversing the direction of feed of the work whenever desired, as at the beginning and end of a lockstitch seam produced by a high speed lockstitch sewing machine. The mechanisms provided for the foregoing purposes are extremely rugged and conveniently located. Their location is such as to minimize danger of accidental operation in the course of handling of the machine, as in tilting the latter rearwardly in the course of its use, which has resulted in serious damage in the case of mechanisms heretofore employed. Moreover, provision is made in the new stitch length adjusting means for preventing change in its adjustment either accidentally or due to vibrations resulting from high speed operation of the machine.

While the construction disclosed herein constitutes a preferred embodiment of the invention, with a suggested modified construction of a manually operable member for reversing the direction of feed, it will be understood that various other changes may be made in certain features of the overall construction within the scope of the appended claims.

What is claimed is:

1. In a sewing machine having a frame comprising a base, a vertical standard and an overhanging arm, a main drive shaft journaled in said frame, means driven by said shaft for feeding the work, means comprising a rotary member carried by said overhanging arm adjustably revoluble through an angle of at least 180° for controlling the extent of feeding of the work, a supporting base secured to said arm and on which said rotary member is mounted for adjustment, manually operable means comprising a lever passing at least partially through said supporting base and readily operable by the operator of the machine, and connections from said last mentioned means to said first mentioned means for reversing the direction of feed of the work.

2. In a sewing machine as set forth in claim 1, said rotary member being revoluble through any desired angle up to substantially a complete revolution to select the desired extent of feed of the work.

3. In a sewing machine having a frame comprising a base, a vertical standard and an overhanging arm, a main drive shaft journaled in said frame, means driven by said shaft for feeding the work, means comprising a rotary member carried by said overhanging arm adjustably revoluble through an angle of at least 180° for controlling the extent of feeding of the work, manually operable means readily operable by the operator of the machine, connections from said last mentioned means to said first mentioned means for reversing the direction of feed of the work, a pinion carried by and rotatable with said rotary member, a slideable member carrying a rack cooperating with said pinion for lateral movement of said slideable member upon rotation of said rotary member, said slideable member having divergent surfaces thereon, and an element carried by said manually operable means adapted to normally cooperate with one of said divergent surfaces to provide a selected extent of forward work feeding action of said work feeding means upon each revolution of said drive shaft, depending upon the position of said slideable member.

4. In a sewing machine as set forth in claim 3, said manually operable means being adapted to shift said element into cooperation with the other of said divergent surfaces to bring about a reverse feeding action of said first mentioned means.

5. In a sewing machine as set forth in claim 4, said divergent surfaces being so inclined as to produce substantially the same extent of feed in the forward and reverse directions, depending upon the one of said surfaces with which said element carried by said manually operable means is engaged, when said slideable member is in a predetermined position.

6. In a sewing machine as set forth in claim 3, said first mentioned means comprising a rockable member having an arcuate passage therein, a feed bar carrying a feed dog adapted to engage and shift the work, connections from said drive shaft for rocking said rockable member about a fixed axis, said arcuate passage extending to opposite sides of a plane containing said fixed axis, a pitman connecting said rockable member with said feed bar, one end of said pitman being slideable along said arcuate passage, and means operable by said manually operable means for shifting said one end of said pitman in relation to said arcuate passage from one side to the opposite side

of said plane while carrying said element out of engagement with said one of said divergent surfaces into engagement with the other of said surfaces.

7. In a sewing machine having a main drive shaft, a feed bar having a four-motion toothed work engaging element adapted to be carried into and out of engagement with work being stitched to feed the work, connections from said shaft to said feed bar for imparting four-motion movement to said work engaging element and means for controlling the extent of feed imparted to the work by said element during a revolution of said shaft, which comprises an adjustably rotatable control knob, a pinion connected with said knob for rotation therewith, a slide member mounted for movement transversely of the axis of said knob and pinion, a rack carried by said slide member cooperating with said pinion for shifting the slide member upon turning of said pinion, and means cooperating with said slide member adapted to adjust said connections from said shaft to said feed bar.

8. In a sewing machine as set forth in claim 7, said slide member having a pair of diverging surfaces with which said last recited means cooperate, a spring normally urging said last recited means into cooperation with one of said surfaces, and manually operable means for urging said last recited means into cooperation with the other of said surfaces and thereby reversing the direction of movement of said work engaging element when the latter is engaged with the work.

9. In a sewing machine as set forth in claim 7, indicating means carried by said knob adapted to indicate the position of adjustment of the knob, a cylindrical drum within said knob, said drum being connected with said pinion and serving to connect the latter with said knob, means enabling adjustment of said knob and said indicating means angularly in relation to said drum and retaining the same in angularly adjusted position.

10. In a sewing machine as set forth in claim 9, a stationary member about which said knob and drum are adapted to be adjustably rotated, said stationary member having a cylindrical portion extending into said drum, and an annular resilient friction member disposed within said drum and having surfaces in frictional engagement with the inner surface of said drum and the outer surface of said cylindrical portion of said stationary member.

11. In a sewing machine as set forth in claim 10, said sewing machine having a frame providing a work supporting portion, a vertical standard and an overhanging arm extending over said work supporting portion, said stationary member being secured to said overhanging arm, said pinion and said drum being secured to a shaft journaled in said stationary member.

12. In a sewing machine as set forth in claim 11, said stationary member having a cavity into which said manually operable means extends and having guiding and retaining surfaces for said slide member.

13. In a sewing machine as set forth in claim 12, said manually operable means having a free end portion engagable by the operator extending outwardly from said cavity substantially parallel with said overhanging arm of the frame.

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