June 30, 1953 G. M. REIMER 2,643,625

WORK FEEDING MECHANISM FOR SEWING MACHINES

Filed March 21, 1950 5 Sheets-Sheet 1

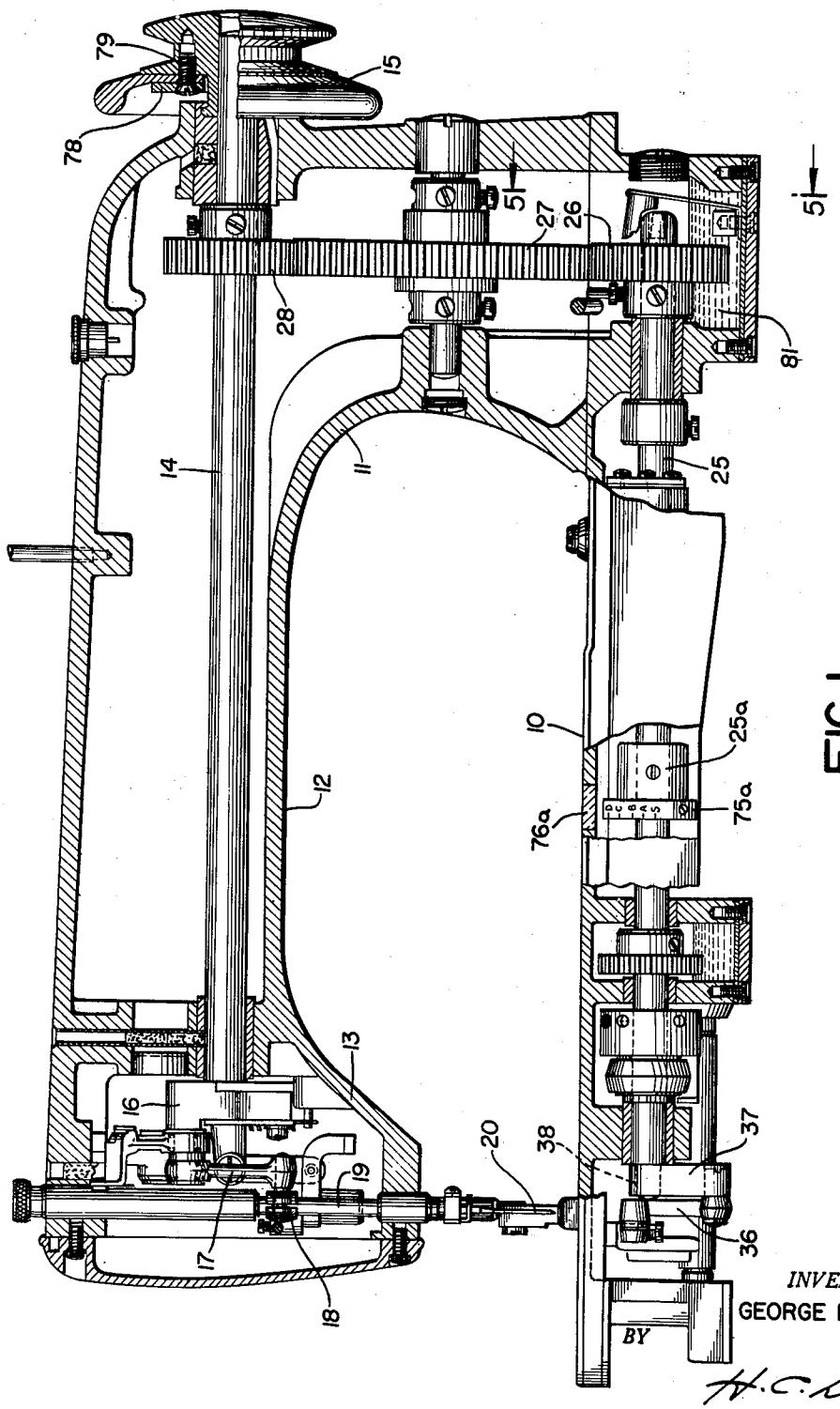


FIG. 1

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WORK FEEDING MECHANISM FOR SEWING MACHINES

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FIG. 2

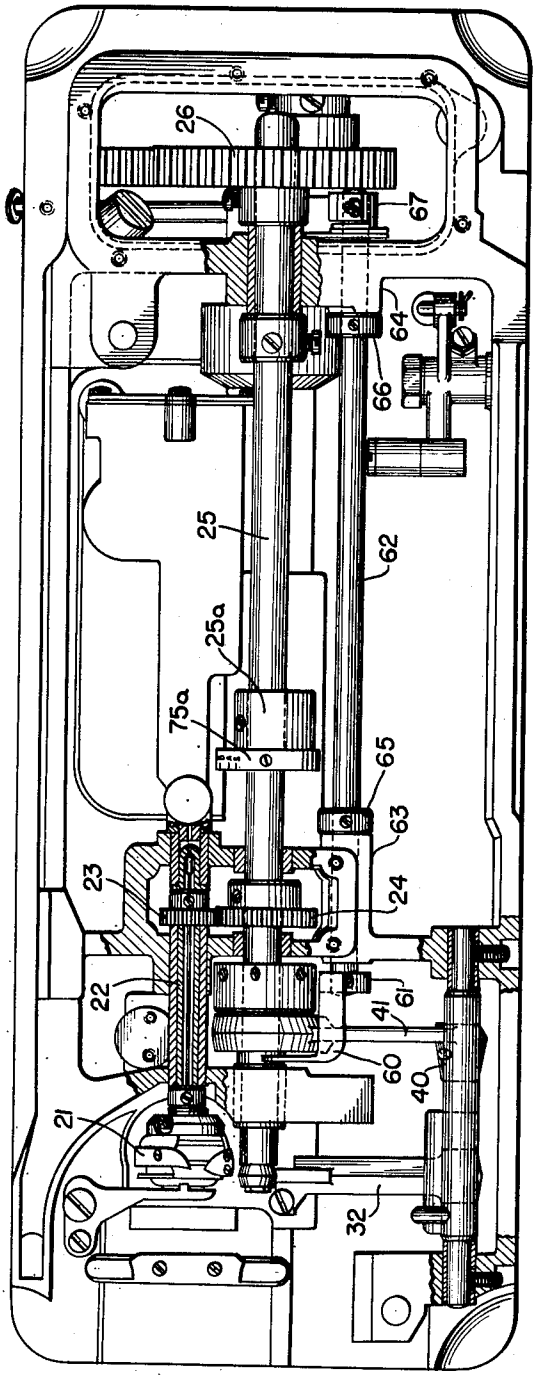
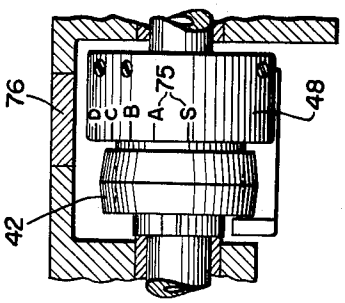


FIG. 9



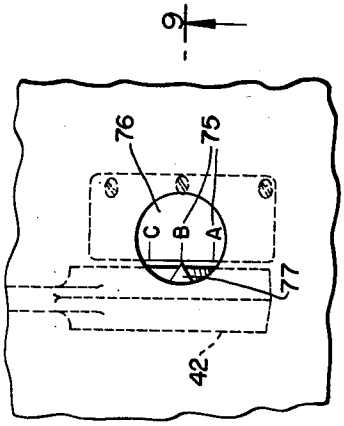


FIG. 8

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WORK FEEDING MECHANISM FOR SEWING MACHINES

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FIG. 3

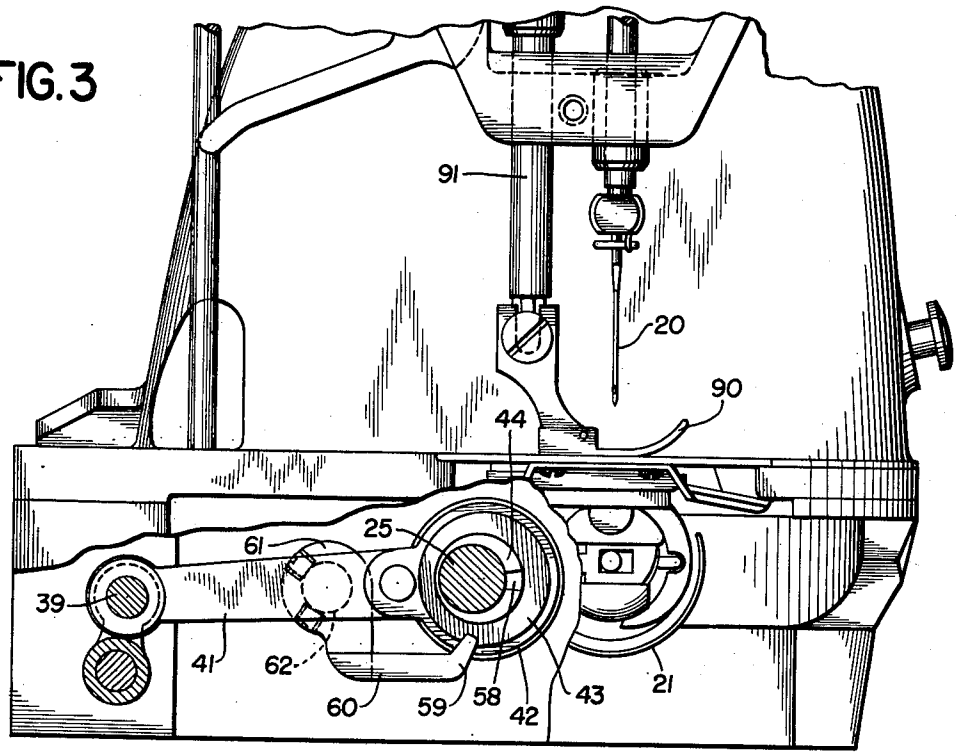
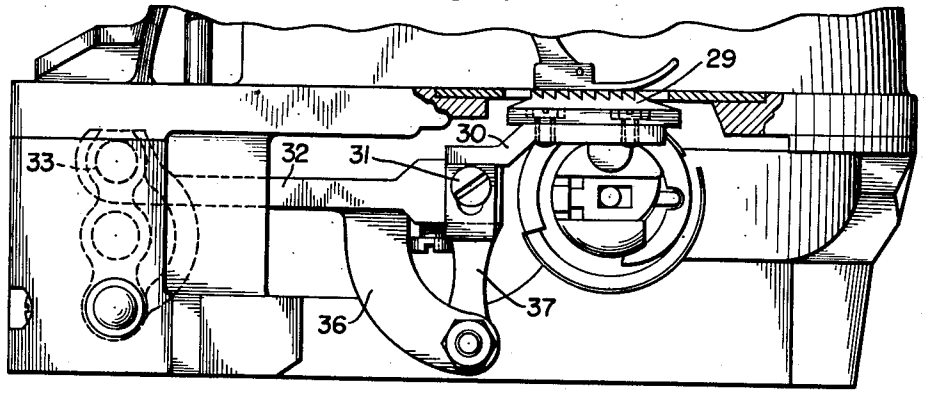


FIG. 4



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WORK FEEDING MECHANISM FOR SEWING MACHINES

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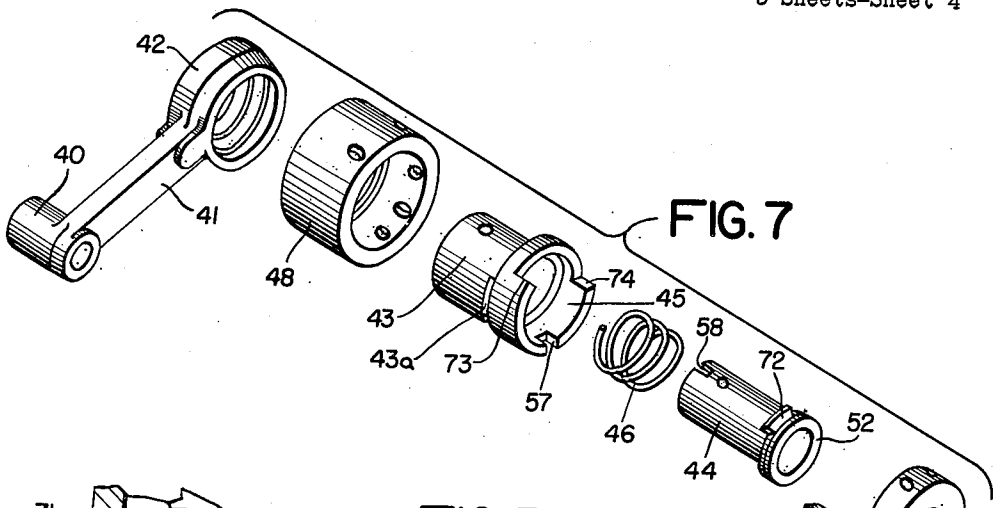


FIG. 7

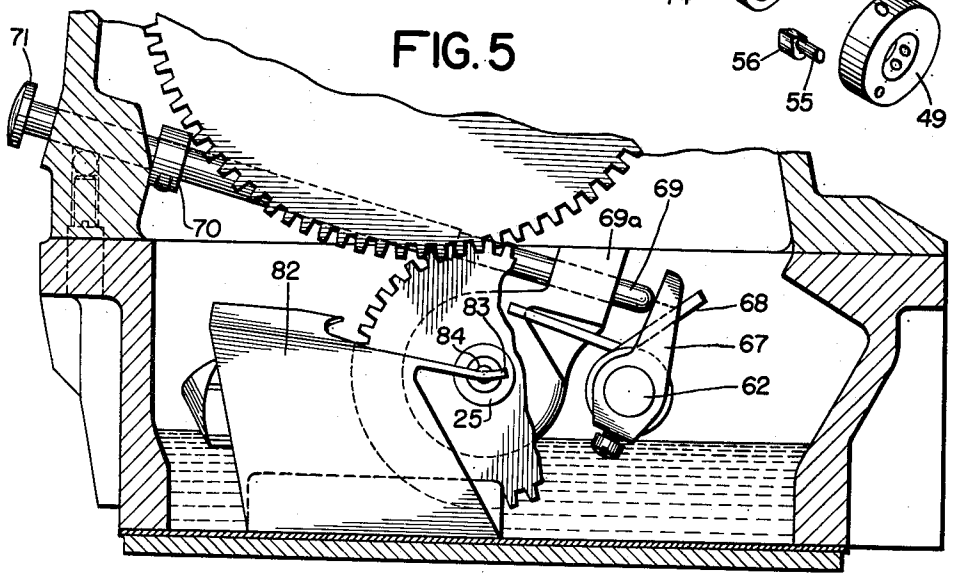


FIG. 5

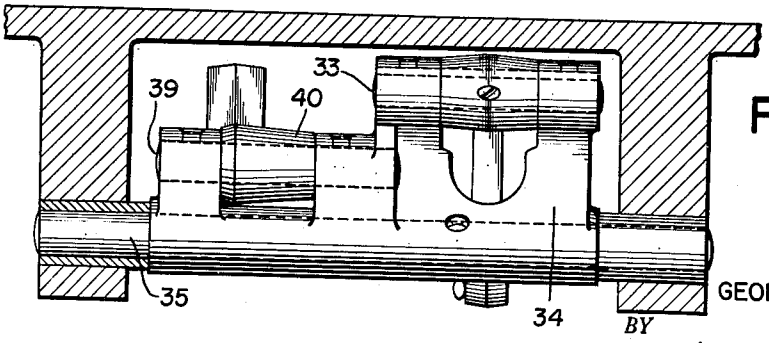


FIG. 6

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WORK FEEDING MECHANISM FOR SEWING MACHINES

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FIG. 10

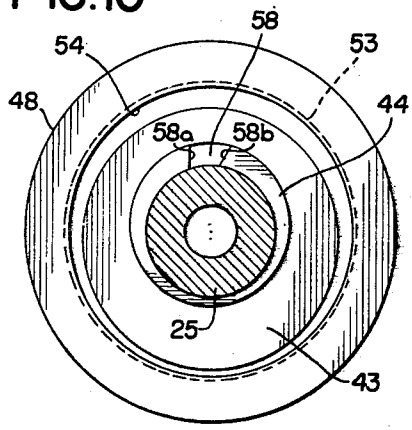


FIG. 11

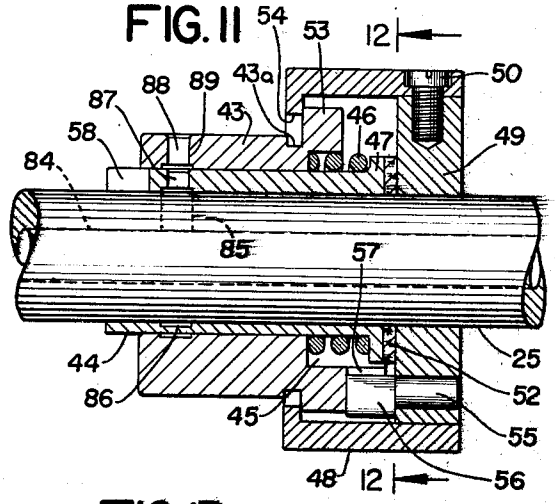


FIG. 12

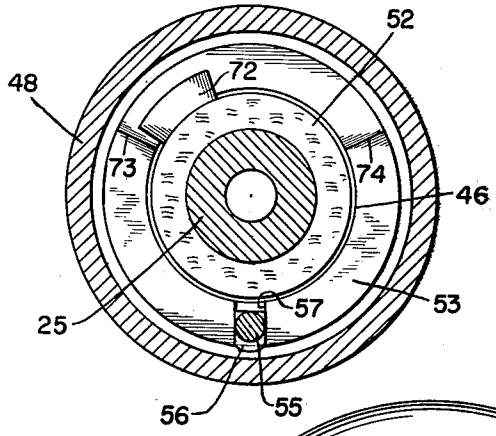
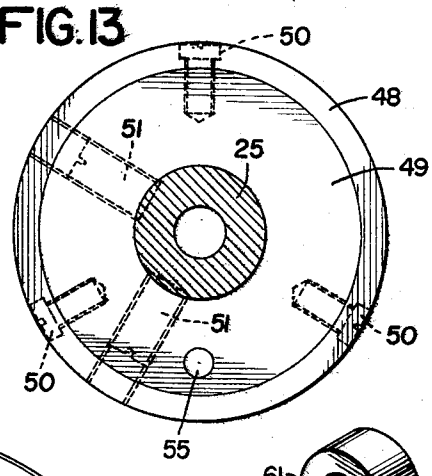


FIG. 13



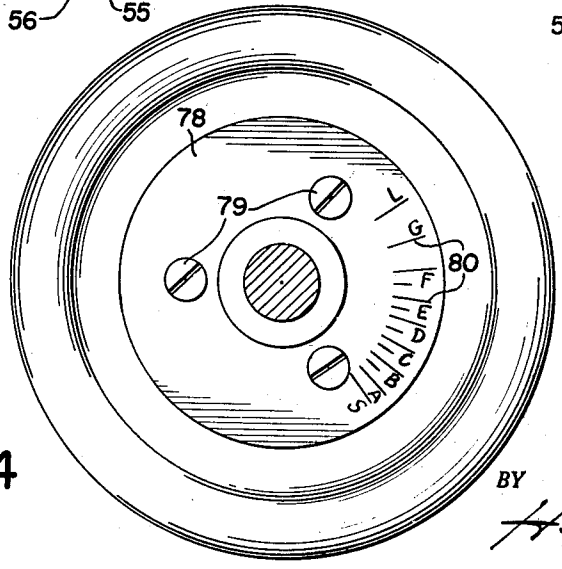


FIG. 14

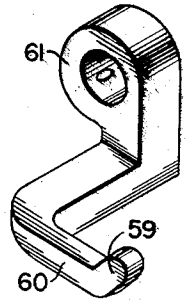


FIG. 15

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Patented June 30, 1953

2,643,625

UNITED STATES PATENT OFFICE

2,643,625

WORK FEEDING MECHANISM FOR SEWING MACHINES

George M. Reimer, Oak Park, Ill., assignor to Union Special Machine Company, Chicago, Ill., a corporation of Illinois

Application March 21, 1950, Serial No. 150,843

10 Claims. (Cl. 112—210)

1

This invention relates to work feeding mechanism for sewing machines and especially to the type involving a four motion feed dog.

An object of the invention has been to provide driving means for a work feeding member which includes devices that may be readily and accurately adjusted and then retained in any set position, to predetermine the extent of movement of said member on operation of the machine and hence the length, of stitch to be formed. More specifically it has been an object to provide an adjustable eccentric which may be easily and quickly adjusted to vary its eccentricity, through turning of the handwheel of the machine, and which is reliable in its operation and will be effectively retained in any adjusted position.

Another object has been to provide an adjustable eccentric, of the character and for the purpose indicated, which is of simple and compact construction and formed of few parts that are easily produced and assembled.

A further object has been to provide an adjustable eccentric unit of the character indicated which has all of its parts firmly and permanently assembled so that the unit may be freely handled and inserted in the machine as a completed subassembly. The construction is such that the unit with the driven element applied thereto may be simply held in position and the operating shaft then passed through it and the unit secured to the shaft by a pair of screws or the like.

Still another object has been to provide a unit of the character set forth having simple means associated therewith, as assembled in the machine, for indicating visually the stitch length for which it has been set.

Important further features of the invention include provisions for automatic lubrication of the relatively sliding surfaces of the unit and the provision of convenient means, remote from the unit itself, for controlling and effecting the adjustment of the eccentricity of the unit. The latter feature is such that the control means is operable manually at the front of the vertical standard of the machine frame while the means for effecting adjustment is the handwheel located adjacent the end wall of the standard. Moreover, the control means is such that it may be quickly and easily rendered effective.

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

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Fig. 1 is a vertical sectional view taken substantially along the longitudinal axis of a machine embodying the invention;

Fig. 2 is a bottom plan view of the machine with portions broken away and parts shown in section for better illustration of the construction;

Fig. 3 is an enlarged end elevational view of the lower portion of the machine as seen from the left in Fig. 1, parts being broken away and shown in section;

Fig. 4 is a view similar to Fig. 3 but with only a portion of the work support and throat plate broken away and shown in section;

Fig. 5 is an enlarged transverse vertical section through the lower portion of the machine, taken along the line 5—5 of Fig. 1;

Fig. 6 is a rear elevational view of the feed rocker and connected parts, a portion of the supporting structure being shown in section;

Fig. 7 is an exploded perspective view of the parts constituting the adjustable eccentric and the pitman cooperating with it;

Fig. 8 is a detail view, in plan, of a portion of the work support in the region of the adjustable eccentric, the latter being indicated in broken lines, this view showing one form of indicating means that may be employed;

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

Fig. 10 is an end elevational view of the adjustable eccentric, with the supporting shaft shown in section;

Fig. 11 is a vertical sectional view through the axis of the parts shown in Fig. 10;

Fig. 12 is a transverse vertical section taken along the line 12–12 of Fig. 11;

Fig. 13 is an end elevational view of the adjustable eccentric, taken from the right in Fig. 11, with the supporting shaft shown in section;

Fig. 14 is a detail view showing the combined handwheel and pulley in elevation and the main drive shaft in section, this view illustrating another arrangement for indicating stitch length; and

Fig. 15 is a perspective view illustrating the eccentric retaining member shown in Figs. 2 and 3.

Referring now to the drawings, the invention has been illustrated as applied to a lockstitch machine having a frame including a base 10 with a work supporting surface, a vertical standard 11 rising from one end of the base and either formed integral therewith or as a separate casting secured to the base by suitable screws (not

shown) and an overhanging arm 12 extending over the base from the top of the vertical standard and terminating in a needle head 13. Extending longitudinally of the overhanging arm is an operating shaft 14 suitably journaled in a bearing adjacent the needle head and in a bearing in the end wall of the vertical standard. A combined handwheel and pulley 15 is secured to the outer end of the shaft exteriorly of the frame. Within the needle head a crank 16, carried by the shaft 14, is connected by a link 17 with a block 18 secured to a needle bar 19 which is mounted for vertical reciprocation in suitable bearing sleeves carried by the needle head. A needle 20 secured to the lower end of the needle bar is reciprocated by the connections described toward and through the work support beneath which it cooperates with a rotary hook 21. The latter (Figs. 2 and 3) is secured to the outer end of a shaft 22, suitably journaled in the base, which carries a gear 23 meshing with a gear 24 secured to a lower main rotary shaft 25. Gearing 23, 24 is such as to impart two revolutions to the shaft 22 for each revolution of the shaft 25. The latter is suitably journaled in bearings in the base of the frame and carries a gear 26 at its right end (Fig. 2) which meshes with an idler gear 27 journaled in the vertical standard. Gear 27 meshes with a gear 28 secured to the shaft 14, the arrangement being such that the shafts 14 and 25 are driven in synchronism at the same angular speed.

For advancing the work in stitch formation, a four motion feed dog 29 (Fig. 4) is provided. This is preferably secured in a manner to permit slight horizontal adjustment on a member 30 which, in turn, is secured by a screw 31 to the forward end of a feed bar 32. Provision is made, through the elongated slot shown, for slight vertical adjustment of the member 30 in relation to the feed bar. The latter is secured to a shaft 33 rockably mounted in suitable bearings carried by upwardly extending arms of a feed rocker 34 (Fig. 6). This is secured to a shaft 35 journaled in bearings carried by the base of the frame. A downwardly and forwardly extending arm 36 integral with the feed bar is connected by a link 37 with an eccentric or crank pin 38 (Fig. 1) at the left end of the shaft 25. This serves to impart lifting and lowering movements to the feed dog.

Referring now to Figs. 3 and 6, a shaft 39 rockably mounted in a pair of upward extensions of the feed rocker has secured thereto, intermediate said extensions, a hub portion 40 of a pitman 41 which at its opposite end carries a strap 42 that surrounds an eccentric 43 (see also Fig. 7). This eccentric surrounds and snugly fits an inner eccentric 44 carried by the shaft 25. As will be explained, the eccentric 44 is adapted to be turned relative to the shaft, while the eccentric 43 turns with the shaft. This, it will be understood, serves to vary the extent of eccentricity of the eccentric 43 in relation to the axis of the shaft. Eccentric 43 is recessed or counterbored as indicated at 45 (Figs. 7 and 11) to receive a coil spring 46 which is compressed between the shoulder formed at the base of the counterbore and a radially extending flange 47 on the adjacent end of eccentric 44. Thus the spring 46 urges the two eccentrics axially in opposite directions. A cylindrical collar or housing 48 surrounds the indicated portions of the two eccentrics in the region of the spring 46, this collar being secured to a disc 49 by means

of screws 50 (Figs. 11 and 13). Disc 49 is in turn secured to the shaft 25 by two screws 51. A friction element 52 is interposed between the flanged end of the eccentric 44 and the inner face of the disc 49. This friction member may suitably be formed of cork or similar material and is preferably of the same annular contour as the flanged end of the eccentric 44 to which it is preferably secured by adhesive means or the like. A radially extending flange 53 at the inner end of the eccentric 43 is arranged to cooperate with a portion of an inwardly extending flange 54 at the left end of the collar 48 (Fig. 11). The relationship between the flanges 53 and 54 and the main body of the collar 48 is such that relative movement in a radial direction may take place between the flanges as the eccentric is adjusted. Eccentric 43 may be provided with a groove 43a in its outer surface, extending partially or completely around the same, to permit the necessary radial movement in relation to the flange 54. The regions of contact between the two flanges will vary as the eccentric is adjusted. However, at all times there will be some portions of the two flanges in engagement to resist outward axial movement of the eccentric 43 in relation to the collar 48 under the force of the spring 46. By virtue of the flanges mentioned and the engagement of the cork lining 52 with the disc 49, relative axial movement of the two eccentrics in response to the force of the spring is likewise prevented.

A driving connection is provided between the disc 49 and the eccentric 43, so that the latter will rotate at all times with the shaft 25. This connection comprises a pin 55 inserted in an opening in the disc 49 and having an enlarged head 56 provided with flat sides which cooperate with the walls of a notch 57 formed in the enlarged end or flanged portion of eccentric 43.

It will be seen from the foregoing that the two eccentrics, the collar 48 and disc 49, together with the parts between these elements, constitute a unitary assembly which may be easily handled and may be applied to the machine in assembled form. In assembling the unit on the machine the parts shown in Fig. 7 will be brought together in the relationship shown and the screws 50 may be inserted to retain the disc 49 in proper relation to the collar 48. The parts as so assembled may simply be positioned properly in the base of the machine, as shown in Fig. 2, and the shaft 25 then passed through the bore of the inner eccentric 44. Screws 51 may then be tightened to retain the eccentric in its proper position on the shaft 25. In the operation of the machine the outer eccentric 43 is driven positively from the shaft by the element 56, as explained, while the inner eccentric 44 will rotate with the rest of the parts due to the friction of the disc 52, which supplements the friction between the surfaces of the shaft and the inner eccentric and between the outer surface of the latter and the bore of the eccentric 43.

To facilitate adjustment of the inner eccentric in relation to the other parts of the assembly, a notch 58 is provided in the outer end of the eccentric 44, this being preferably located in the region where the wall of the eccentric is thickest. The notch is adapted to be engaged by a finger 59 (Fig. 3) at the outer end of an arm 60 which is bent laterally and forwardly from a collar 61 secured to a rock shaft 62. Arm 60, finger 59 and collar 61 are best shown in Fig. 15. As shown in Figs. 3 and 10, the lead-

ing and trailing edges of the notch **58** are not radial toward the center of the shaft **25** or the center of the eccentric. The edge **58***a* is substantially parallel with but spaced from the line passing through the two centers while the edge **58***b* is inclined at an angle of about 30° to the edge **58***a*. This not only facilitates the introduction of the finger **59** into the notch in the manner to be explained when it is desired to adjust the eccentric, due to the greater width of the outer periphery of the notch, but it also tends to urge the detent out of the notch regardless of the direction in which the adjustment is being made. Accordingly, the finger may be readily retracted by its spring to be described. To further facilitate the introduction of the detent, the end of the finger **59** is rounded slightly in the plane of its path of movement, as best indicated in Fig. 3. The faces of the finger **59** which cooperate with the edges of the notch **58** are preferably inclined at the same angles as the latter.

Shaft **62** extends longitudinally of the base of the frame parallel with the shaft **25**, as best shown in Fig. 2. It is suitably journaled in portions **63** and **64** of the frame and is held against axial movement by collars **65** and **66** secured to the shaft. At its end within the vertical standard, the shaft **62** carries a finger **67** which is urged by a coil spring **68** in a counterclockwise direction (Fig. 5) into abutment with the inner end of a rod **69**. Outward movement of the latter is limited by a collar **70**, secured to the rod, which engages the inner surface of the wall of the standard. The rod is mounted for axial sliding movement in an opening in the front wall of the frame and in an inner bearing **69***a* carried by the frame adjacent the arm **67**. The outer end of the rod has an enlarged head **71** by which it may be manually pressed inwardly to rock the shaft **62** and cause the finger **59** (Fig. 3) to move in a plane transverse to the axis of shaft **25** and engage the periphery of the eccentric **44**. As pressure is maintained, on the head **71** and the hand wheel of the machine is turned to rotate the shaft **25**, the notch **58** will be brought in line with the finger **59** and the latter will then enter the notch. Further turning of the eccentric **44** will be arrested and the continued turning of the hand wheel will cause the outer eccentric **43** to be rotated relative to the inner eccentric to vary the total eccentricity of the unit. The relative turning of the two eccentrics need not be more than through an arc of about 90° for the purposes of the invention. To limit the relative movement to the desired extent a radial extension **72** (Figs. 7 and 12) is provided on the end flange **47** of the eccentric **44** and this cooperates with shoulders **73** and **74** formed by a cut away portion of the counterbored flange at the adjacent end of the eccentric **43**. The relative turning of the two eccentrics may be in either direction depending upon whether the stitch length is to be increased or decreased. Upon completion of the adjustment the rod **69** is released and the spring **68** readily retracts the detent from the notch **58**.

Since the inner eccentric **44** assumes a definite predetermined position when the finger **59** is engaged with the notch **58**, the relative position of the outer eccentric to the inner eccentric may be indicated, as shown in Figs. 8 and 9, by indicia **75** provided on the periphery of the collar **48**. These indicia may be viewed through a transparent disc **76** in the top of the base just above the eccentric. An index **77** carried by the disc **76**, viewed in relation to the indicia, serves to indicate the particular setting. In lieu of providing the indicia on the member **48** they may be provided on a separate disc **75***a* (Figs. 1 and 2) secured to the shaft **25** adjacent a counterweight **25***a* thereon. A Lucite disc **76***a* for viewing the indicia, similar to disc **76**, may then be provided directly over the disc **75***a*. There is less danger of scratching the outer surface of the Lucite disc in this location. The indicia could, if desired, be applied to the periphery of the counterweight **25***a*. Still another way of indicating the setting is shown in Figs. 1 and 14. This comprises simply a disc or annulus **78** secured by screws **79** to the inner face of the hand wheel. Indicia **80** carried by the disc, read in relation to an index mark carried by the frame of the machine adjacent the hand wheel, will indicate the relative adjustment of the two eccentrics when the finger **59** is engaged with the notch **58**.

Provision is made for automatic lubrication of various moving parts of the machine including the adjustable eccentric. For this purpose a body of lubricant **81** is retained in a reservoir in the base of the vertical standard. The gear **26** is partially immersed in the lubricant and in the course of operation of the machine this gear serves to create a lubricant mist throughout the hollow standard. A part of the mist is collected, either directly or by dripping from other parts, by a plate **82** (Figs. 1 and 5) secured to the base of the reservoir and extending above the lubricant level. This plate is so formed as to direct some of the lubricant along an arm **83** having a projection aligned directly with and in juxtaposition to the inlet of a bore **84** extending longitudinally of the shaft **25**. From this bore some of the lubricant is delivered through a radial passage **85** (Fig. 11) to an annular channel **86** extending around the inner surface of the eccentric **44**. Channel **86** communicates, by means of a radial passage **87** through the eccentric, with an annular channel **88** extending around the inner surface of the eccentric **43**. A radial passage **89** extending through the eccentric **43** serves to deliver lubricant from the channel **88** to the outer surface of the eccentric which is in bearing engagement with the strap **42**.

It will be understood that the machine embodies other devices commonly employed in sewing machines, including suitable thread handling and controlling members and a presser foot **90** (Fig. 3) cooperating with the upper surface of the work to hold it against the throat plate and feed dog **29**. The presser foot, of any suitable construction, is carried by the lower end of a presser bar **91**. Any suitable means may be employed for applying a spring pressure to the presser bar and for lifting the presser bar against the action of the spring whenever desired.

While an illustrative form of the invention has been disclosed in considerable detail and various modifications have been suggested, it will be understood that other changes may be made in the construction and arrangement of the several parts without departing from the general principles of the invention. For example, the flange **47** of the inner eccentric element and the cork lining secured thereto may have their outer peripheries concentric with the axis of the eccentric rather than that of the shaft, if desired. So also, the flange **53** of the outer eccentric may

have its outer periphery concentric either with the shaft or with the axis of the eccentric itself.

What I claim is:

1. In a sewing machine having a rotary drive shaft and a work feeding device, connections from said drive shaft to said device for operating the latter which comprises a pair of eccentric elements telescopically arranged on said shaft and adapted for relative rotation to vary the eccentricity of the outer element with respect to said shaft, a member surrounding portions of said elements and secured to said shaft, and a coil spring surrounding said shaft within said member and coacting with said elements to urge the same axially in opposite directions, said member having portions opposing such axial movement of said elements.

2. In a sewing machine having a rotary drive shaft and a work feeding device, connections from said drive shaft to said device for operating the latter which comprises a pair of eccentric elements telescopically arranged on said shaft and adapted for relative rotation to vary the eccentricity of the outer element with respect to said shaft, a member surrounding portions of said elements and secured to said shaft, a coil spring surrounding said shaft within said member arranged to urge said elements axially in opposite directions, said member having portions opposing such axial movement of said elements, and friction means between the inner of said eccentric elements and the portion of said member opposing axial movement thereof.

3. In a sewing machine having a rotary drive shaft and a work feeding device, connections from said drive shaft to said device for operating the latter which comprises a pair of eccentric elements telescopically arranged on said shaft and adapted for relative rotation to vary the eccentricity of the outer element with respect to said shaft, the inner of said elements extending axially beyond the outer of said elements at both ends, a member secured to said shaft and surrounding portions of said elements at one end thereof, a spring interposed between said elements and urging them axially in opposite directions into a predetermined axial position in relation to each other, means on said member for limiting the relative axial movement of said elements, means connecting the outer element with said shaft for rotation therewith, and means cooperating with the other end of the inner element for preventing rotation thereof while the outer element is being turned with said shaft.

4. In a sewing machine having a rotary drive shaft and a work feeding device, connections from said drive shaft to said device for operating the latter which comprises a pair of eccentric elements telescopically arranged on said shaft and adapted for relative rotation to vary the eccentricity of the outer element with respect to said shaft, the inner of said elements extending axially beyond the outer of said elements at both ends, a member secured to said shaft and surrounding portions of said elements at one end thereof, a spring interposed between said elements and urging them axially in opposite directions into a predetermined axial position in relation to each other, means on said member for limiting the relative axial movement of said elements, means connecting the outer element with said shaft for rotation therewith, and means cooperating with the other end of the inner element for preventing rotation thereof while the outer element is being turned with said shaft, said last mentioned means including a finger movable in a plane transverse to the axis of said shaft, a rock shaft to which said finger is secured, and manually operable means remote from said finger for operating said rock shaft.

5. In a sewing machine having a rotary drive shaft and a work feeding device, connections from said drive shaft to said device for operating the latter which comprises a pair of eccentric elements telescopically arranged on said shaft and adapted for relative rotation to vary the eccentricity of the outer element with respect to said shaft, means positively connecting the outer of said elements with said shaft for rotation in unison therewith, friction means tending to drive the inner of said elements in unison with said shaft, said inner element extending axially beyond said outer element and having a notch formed in the projecting portion thereof in the region of maximum radial dimension of the eccentric portion of said inner element, and a pivoted detent arranged to enter said notch to hold said inner element against rotation with said shaft, the outer end of the portion of said detent which enters said notch being rounded.

6. In a sewing machine having a rotary drive shaft and a work feeding device, connections from said drive shaft to said device for operating the latter which comprises a pair of eccentric elements telescopically arranged on said shaft and adapted for relative rotation to vary the eccentricity of the outer element with respect to said shaft, means positively connecting the outer of said elements with said shaft for rotation in unison therewith, friction means tending to drive the inner of said elements in unison with said shaft, said inner element extending axially beyond said outer element and having a notch formed in the projecting portion thereof in the region of maximum radial dimension of the eccentric portion of said inner element, and a pivoted detent arranged to enter said notch to hold said inner element against rotation with said shaft, said notch having its end surfaces diverging toward the outer surface of said inner element.

7. In a sewing machine having a rotary drive shaft and a work feeding device, connections from said drive shaft to said device for operating the latter which comprises a pair of eccentric elements telescopically arranged on said shaft and adapted for relative rotation to vary the eccentricity of the outer element with rtspect to said shaft, means positively connecting the outer of said elements with said shaft for rotation in unison therewith, friction means tending to drive the inner of said elements in unison with said shaft, said inner element extending axially beyond said outer element and having a notch formed in the projecting portion thereof in the region of maximum radial dimension of the eccentric portion of said inner element, and a pivoted detent arranged to enter said notch to hold said inner element against rotation with said shaft, the cooperating surfaces of said notch and said detent being disposed at such an angle to radial planes extending from the axis of said shaft that a force component tending to urge said detent out of the notch is created upon either direction of rotation of said outer element.

8. In a sewing machine having a frame comprising a base, a vertical standard and an overhanging arm, said base having a rotary drive shaft, a work support overlying said shaft and a work feeding member extending through said

work support, the combination of connections from said shaft for imparting work feeding movements to said member which comprise a pair of telescopically arranged eccentrics mounted on said shaft, said eccentrics having radially extending shoulders, spring means interposed between said shoulders for urging said eccentrics axially in relation to each other, positive means connecting the outer of said eccentrics with said shaft for rotation therewith and serving to restrict relative axial movement of said eccentrics, friction surfaces urged together by said spring means normally causing rotation of the inner eccentric with said shaft, means for retaining said inner eccentric against rotation with said shaft, means driven by said outer eccentric for operating said member, said positive means having a cylindrical portion surrounding a part of each of said eccentrics and said spring means, indicia on said cylindrical portion for indicating the relative positions of said eccentrics, and a transparent member extending through said work support above said cylindrical portion through which the indicia thereon may be read.

9. In a sewing machine having a frame comprising a base, a vertical standard and an overhanging arm, said base having a rotary drive shaft, a work support overlying said shaft and a work feeding member extending through said work support, the combination of connections from said shaft for imparting work feeding movements to said member which comprise a pair of telescopically arranged eccentrics mounted on said shaft adjacent said member, positive means connecting the outer of said eccentrics with said shaft for rotation therewith, friction means normally causing rotation of the inner eccentric with said shaft, means for retaining said inner eccentric against rotation with said shaft, said retaining means including an arm rockable in a plane transverse to the axis of said shaft into and out of engagement with said inner eccentric, the interengageable portions of said arm and said inner eccentric having coacting surfaces spaced circumferentially in relation to the axis of said drive shaft, said coacting surfaces being so disposed in relation to said axis and to the axis about which said arm is rocked that the forces imparted by said eccentric to said arm upon rotation of said drive shaft in either direction will urge said portion of said arm away from said eccentric, a rock shaft carrying said arm, said rock shaft extending longitudinally of said base to a point beneath said standard, manually operable means extending through the wall of said standard for rocking said rock shaft, the eccentricity of said outer eccentric being varied in relation to said drive shaft upon the relative rotation of said eccentrics, and means driven by the outer eccentric for operating said work feeding member.

10. In a sewing machine having a frame comprising a base, a vertical standard and an overhanging arm, said base having a rotary drive shaft, a work support overlying said shaft and a work feeding member extending through said work support, the combination of connections from said shaft for imparting work feeding movements to said member which comprise a pair of telescopically arranged eccentrics mounted on said shaft adjacent said member, positive means connecting the outer of said eccentrics with said shaft for rotation therewith, friction means normally causing rotation of the inner eccentric with said shaft, means for retaining said inner eccentric against rotation with said shaft, said retaining means including an arm rockable in a plane transverse to the axis of said shaft into and out of engagement with said inner eccentric, the interengageable portions of said arm and said inner eccentric having coacting surfaces spaced circumferentially in relation to the axis of said drive shaft, the interengageable portion of said arm being rounded in the plane of its path of movement and the interengageable portions of said inner eccentric being formed by spaced opposed surfaces angularly disposed relative to each other and said coacting surfaces being so disposed in relation to said axis and to the axis about which said arm is rocked that the forces imparted by said eccentric to said arm upon rotation of said drive shaft in either direction will urge said portion of said arm away from said eccentric, a rock shaft carrying said arm, said rock shaft extending longitudinally of said base to a point beneath said standard, manually operable means extending through the wall of said standard for rocking said rock shaft, the eccentricity of said outer eccentric being varied in relation to said drive shaft upon the relative rotation of said eccentrics, and means driven by the outer eccentric for operating said work feeding member.

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