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FEEDING MECHANISM FOR SEWING MACHINES

Filed March 28, 1951

3 Sheets-Sheet 1

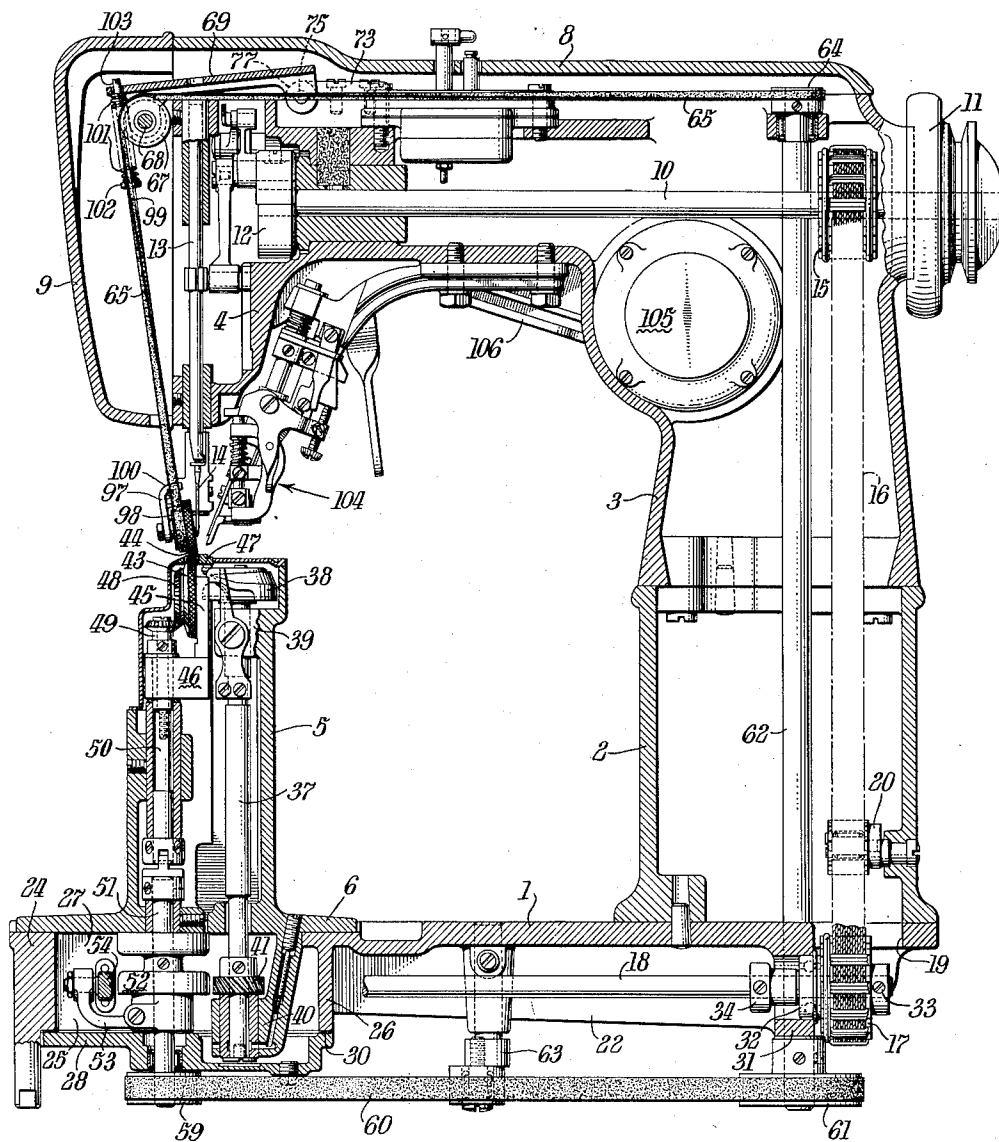


Fig. 1.

WITNESS

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3 Sheets-Sheet 2

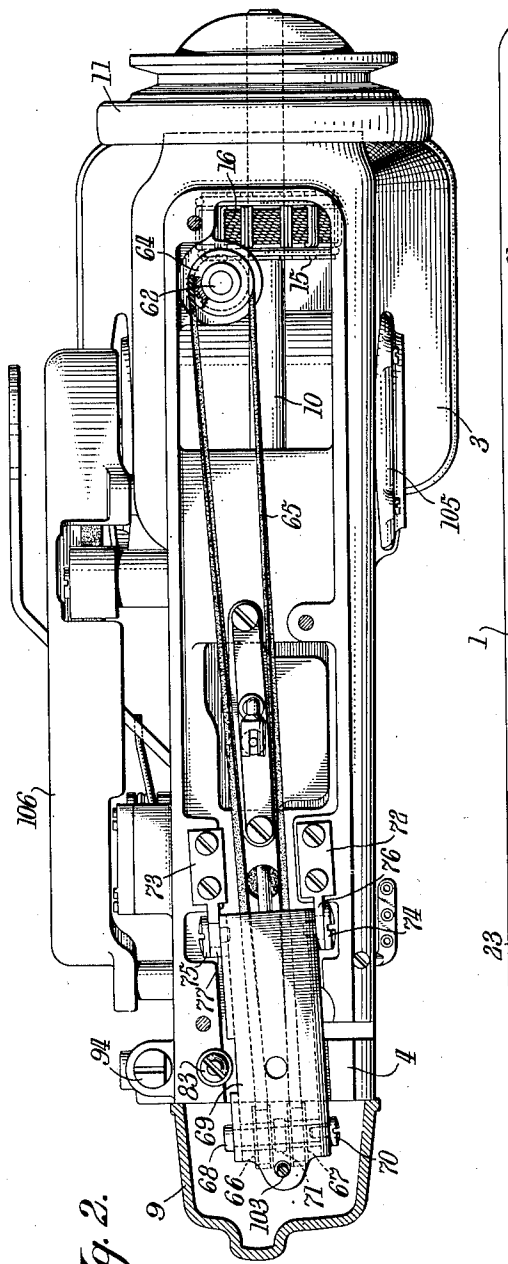


Fig. 2.

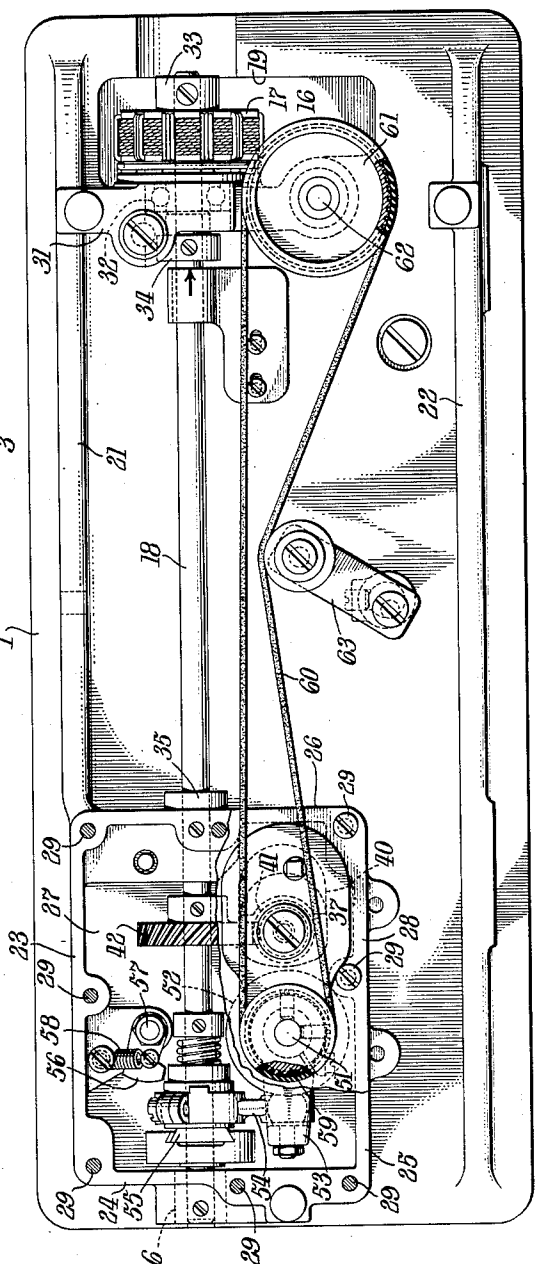


Fig. 3.

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3 Sheets-Sheet 3

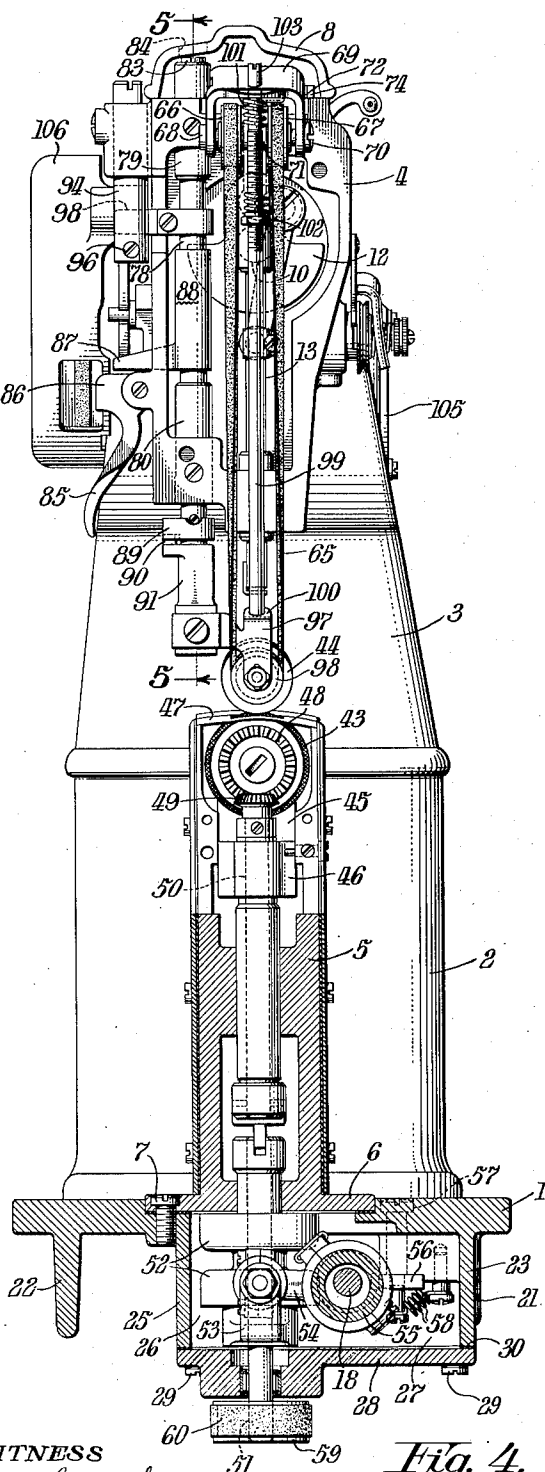


Fig. 4.

WITNESS

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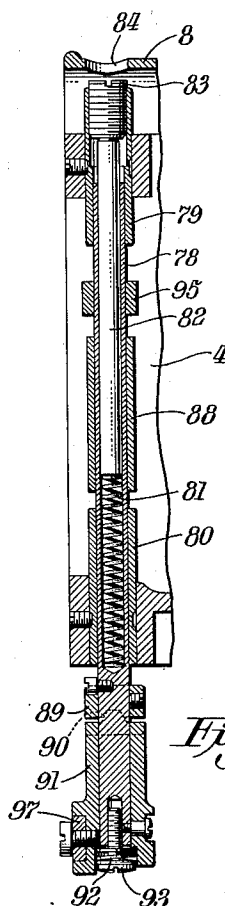


Fig. 5.

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FEEDING MECHANISM FOR SEWING
MACHINES

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Application March 28, 1951, Serial No. 217,937

17 Claims. (Cl. 112—214)

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This invention relates to feeding mechanisms for sewing machines and has for its primary object to provide an improved mechanism for actuating an upper feeding member of the machine.

Another object of the present invention is to provide an improved belt drive for an upper feed-wheel of a sewing machine, in which drive the binding effect produced by belt-tension upon the usual presser-bar is neutralized, so that the upper feed-wheel can readily traverse cross-seams or other variations in the thickness of the work.

With the above and other objects in view, as will be apparent to those skilled in the art, a presently preferred embodiment of this invention will hereinafter be described in detail with reference to the accompanying drawings which form a part of this disclosure, and in which:

Fig. 1 is a vertical sectional view taken longitudinally of a machine equipped with the present invention.

Fig. 2 is a top plan view of the machine with the bracket-arm cover plate removed and the face-plate in section to show more clearly the internal mechanism.

Fig. 3 is a bottom view of the bottom plate for the lubricant chamber partly broken away.

Fig. 4 is a left end elevational view with the face-plate removed and the work-supporting post and bed in section.

Fig. 5 is a vertical sectional view of the presser-bar taken on the line 5—5 of Fig. 4.

With reference to the drawings, the sewing machine frame includes a bed 1, an arm-base or pedestal 2 projecting upwardly therefrom at one end thereof, and a bracket-arm 3 mounted upon the pedestal 2 and overhanging the bed. The bracket-arm 3 terminates in a head 4 that is positioned directly above a work-supporting and feed post 5. The feed post 5 includes a flange 6 at its lower end and is secured to the bed 1, as by screws 7. The bracket-arm 3 is provided with a cover 8, and a face-plate 9 is positioned over the end of the head 4.

Journalled in suitable bearings in the bracket-arm 3, is a main-shaft 10 which carries at one end a combined belt-pulley and hand-wheel 11 adapted to be connected through a drive belt to any suitable source of power for the purpose of driving the machine. At the other end, the main-shaft 10 is connected to the usual counter-balanced needle-bar actuating crank 12 which, through appropriate linkage, actuates a needle-bar 13. The needle-bar 13 is mounted for vertical reciprocation in the usual manner in suitable bearings in the head 4, and carries at its lower end a needle 14.

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On the main-shaft 10 adjacent the belt-pulley 11, there is provided a sprocket or grooved belt-pulley 15 connected by a clip-belt 16 to a similar pulley 17 mounted on a rotary bed-shaft 18 journaled in the bed 1. The bed 1 is provided with an aperture 19 to permit the clip-belt 16 to pass therethrough. The pulleys 15 and 17 are of the same size so that the bed-shaft 18 will be driven at the same speed as the main-shaft 10. A belt tightener 20 is secured to an inner side of the walls of the pedestal 2 and permits the proper adjustment of the tension of the belt 16.

The bed 1 is formed with integral depending flanges 21 and 22 longitudinally thereof for reinforcement. The flange 21 connects with the flanges 23, 24, 25 and 26 which also are integral with the bed 1 and depend therefrom. The flanges 23, 24, 25 and 26 are formed as the walls of a lubricant chamber 27 sealed at the bottom by a cover 28 held in place as by bolts 29. A gasket 30 is interposed between the cover and the bottom edges of the flanges 23, 24, 25 and 26.

The bed-shaft 18 at one end is journaled in a conventional ball-bearing 32 mounted in a depending flange 31 integral with the bed 1, the bed-shaft projecting through the flange and having mounted on it the belt-pulley 17. The hub of the belt-pulley 17 is elongated and adapted to receive a set-screw 33 that locks it to the bed-shaft 18. A collar 34 is secured to the bed-shaft 18 on the opposite side of the flange 31 from the belt-pulley 17 and serves to hold the bed-shaft and ball-bearing 32 in their proper position. The other end of the bed-shaft 18 projects through the walls 24 and 26 of the lubricant chamber 27 and is journaled therein as by bearing bushings 35 and 36.

The bed 1 is provided with an aperture above the lubricant chamber 27, which aperture is closed by the flanged end of the feed post 5. The feed post 5 has mounted therein a vertical axis loop-taker shaft 37 carrying at its upper end a loop-taker 38 that cooperates with the needle in the formation of stitches. The shaft 37 is journaled at its upper end adjacent the loop-taker in a lug 39 integral with the post 5. At its lower end, the shaft 37 projects into the lubricant chamber 27 and is journaled in a depending portion 40 of the flange 6. The loop-taker shaft has secured thereto within the lubricant chamber 27 a spiral gear 41 which meshes with a similar gear 42 on the bed-shaft 18. The ratio between the gears 41 and 42 is such that the shaft 37 will be driven at twice the speed of the shaft 18 as is common in such sewing machines.

The feeding of the work past the stitching

mechanism is accomplished by a lower feed-wheel 43 and an upper feed-wheel 44. The lower feed-wheel 43 is journaled upon an upstanding arm 45 of a vertically adjustable block 46 to permit regulation of the extent that the feed-wheel projects through a throat-plate 47. The feed-wheel 43 carries a bevel gear 48 which meshes with a bevel gear 49 mounted upon a vertical feed-shaft 50 suitably journaled in the block 46 and post 5. The shaft 50 is connected through a key-and-slot coupling to a feed-drive shaft 51 suitably journaled in the post 5 and bottom cover 28 of the lubricant chamber 27. That portion of the shaft 51 which projects into the lubricant chamber 27 carries a one-way clutch 52. The clutch 52 is identical with that disclosed in the U. S. patent of Hacklander, No. 2,277,971, and reference is made to that patent for a complete description of it. It is sufficient for a complete understanding of the present invention to point out that the clutch 52 imparts an intermittent, one-way rotation to the shaft 51.

The clutch 52 includes a radially projecting actuating-arm 53 connected to a pitman 54 of which one end embraces an adjustable eccentric means 55 secured upon the shaft 16. The adjustable eccentric is substantially the same as that disclosed in the U. S. patent of Myers, No. 2,128,031 and it is not deemed necessary to include a more complete description of it in this disclosure. To provide for changing the eccentricity of the eccentric 55, thereby to vary the stitch length, the machine is equipped with a detent 56 (Figs. 3 and 4) mounted on the lower end of a supporting stud 57 freely journaled on the bed 1. With the aid of a screw driver inserted in the exposed slotted head of the supporting stud 57, the detent can be turned, in opposition to the spring 53, so that the adjusting member of the eccentric is locked against rotation. Manual turning of the hand-wheel 11 then effects an adjustment in the eccentricity of the eccentric 55 in the well understood manner.

The driving means for the upper feed-wheel 44 includes a pulley 59 secured to the lower end of the feed-drive shaft 51 which projects through the cover 28 of the lubricant chamber. A belt 60 engages the pulley 59 and connects it with a similar pulley 61 mounted on the lower end of a vertical shaft 62 suitably journaled in the bracket-arm 3 and bed 1. A belt-tightener 63 is secured on a depending boss on the bed 1 to permit adjusting the tension of the belt 60. As more clearly seen in Fig. 3, the faces of each of the pulleys 59 and 61 are serrated to reduce slippage between the belt and pulleys. At its upper end, the shaft 62 carries a pulley 64, also serrated as seen in Fig. 2. A belt 65 which is wound around the pulley 64 completes the driving connections to the upper feed-wheel 44.

As clearly seen in Fig. 1, the belt 65 is bent through substantially more than a right angle in its travel between the pulley 64 and feed-wheel 44. This change of direction is accomplished by entraining the two runs of the belt over idler pulleys 66 and 67. The idler pulleys are journaled upon a spindle 68 which projects through apertures in depending portions of a pivoted bracket 69, and which spindle 68 is held in position by a screw 70. The idler pulleys 66 and 67 are held in spaced relationship on the spindle 68 by a spacer 71. The bracket 69 is mounted upon the pivot-brackets 72 and 73, which are screwed to the upper portion of the bracket-arm 3 adjacent the head 4, by means of the pivot bolts 74

and 75 that project through the apertured, forwardly projecting ears 76 and 77 of the pivot-brackets 72 and 73 respectively.

The upper feed-wheel 44 is journaled upon the lower end of a conventional hollow presser-bar 78 (Fig. 4) journaled for vertical sliding movement in spaced bearing bushings 79 and 80 in the head 4 of the machine frame. Disposed within the hollow presser-bar 78 is a spring 81 and a rod 82 (Fig. 5). The spring 81 reacts between the presser-bar 78 at its lower end and the rod 82 at its upper end to create a downward bias on the presser-bar. At its upper end, the rod 82 abuts against a spring-pressure adjusting screw 83 threaded into the upper end of the bearing bushing 79. The bracket-arm cover 3 is provided with an aperture 84 to permit access to the screw 83. The usual presser lifter lever 85, that includes the cam surface 86 adapted to act upon a surface 87 of a bracket 88 secured to the presser-bar 78, is provided to permit raising and lowering of the presser-bar. A projection 89 is secured to the lower end of the presser-bar 78 and includes a slot adapted to slidably receive a tooth 90 on a bracket 91 loosely mounted upon the extreme lower end of the presser-bar. The bracket 91 is biased upwardly on the presser-bar by an internal spring 92, which abuts at its lower end against a screw 93 screwed into the lower end of the presser-bar 78 and at its upper end against a shoulder formed on the bracket 91, to maintain the tooth engaged in the slot of the projection 89. The tooth and slot connection may be manually disengaged by a downward pressure to release the bracket 91 for rotation about the presser-bar 78 and thus remove the upper feed-wheel from above the work. A position guide 94 is secured to the head 4 of the machine and includes a slotted lower end into which projects an arm 95 secured to the presser-bar 78. A screw 96 is threaded through the lower end of the slot to permit adjustment of the ears of the slot toward each other to take up wear between the sides of the slot and the arm 95. This arrangement provides a delicate adjustment that holds the presser-bar against any turning about its longitudinal axis. The above construction is all conventional in the art and it is not deemed necessary to further expand this disclosure in relation thereto.

At its lower end, the bracket 91 carries an arm 97 in which is journaled the upper feed-wheel 44. With reference to the drawings, Fig. 1, it will be noted that the feed-wheel 44 is journaled at an angle slightly offset in a vertical plane from a horizontal line passing through its center to provide clearance for the upper stitching device. The feed-wheel 44 includes a pulley 98 about which is entrained the belt 65. The belt 65 is also entrained about the idler pulleys 66 and 67 and the pulley 64 to deliver power to the upper feed-wheel. The ratios involved in the system for driving the upper feed-wheel 44 are such that it is driven at the same peripheral speed as the lower feed-wheel 43.

As more clearly seen in Fig. 1, the belt 65 is slanted from a vertical plane in its travel between the idler pulleys 66 and 67 and the feed-wheel pulley 98. This construction tends to produce an undesirable side-thrust on the presser-bar 78 due to the necessary tension in the belt. The side-thrust, if unopposed, would cause the presser-bar to bind in its bearings and prohibit free reciprocation which is essential to permit compensation for changes in the thickness of ma-

terial being sewed, as in sewing across a seam. To eliminate this tendency to bind there is provided a neutralizing bar 99 which projects loosely through an aperture in the bracket 69 at its upper end and abuts against a flange 100 of the arm 97 at its lower end. A compression spring 101 encircles the rod at its upper end and abuts against the bracket 69 and a nut 102 threaded on the rod 99. The extreme upper end of the rod 99 is provided with a slot 103 which is adapted to be engaged by a screw-driver or other similar instrument to turn it while the nut 102 is held stationary, and thus adjusts the compression of the spring 101.

It will be noted that the bolts 74 and 75 which pivot the bracket 69 to the pivot-brackets 72 and 73 are centered on a horizontal plane passing through the belt 65 along its path in the bracket-arm 3. Thus all forces resulting from the belt tension are transmitted to the frame through the pivot-bolts 74 and 75 and no side-thrust is developed on the presser-bar 78. The pivotal mounting of the idler-pulleys 66 and 67, and the slidable, spring-biased mounting of the neutralizing rod 99 with respect to the bracket 69 provide a means for maintaining the proper tension in the belt 65 and permit the upper feed-wheel 44 to move in a vertical direction in response to either actuation of the presser-bar lifting lever 85 or a change in the thickness of the material.

This machine also includes a trimming mechanism 104 driven by a motor 105 embedded in the bracket-arm 3 of the machine, the belt-drive between the motor and the trimming mechanism being enclosed on the one side by a cover member 106. The trimming mechanism is substantially the same as that set forth in my prior Patent No. 2,533,197, and the motor drive and motor mounting form the subject of my co-pending application, Serial No. 220,445, filed April 11, 1951.

It will appear obvious to those skilled in the art that the portion of the belt 65 between the idler pulleys 66 and 67 and the upper feed-wheel 44 could be exactly vertical rather than as shown in the drawings and still produce an undesired side-thrust upon the presser-bar which would be eliminated by the present construction, and the horizontal portion of the belt 65 could be outside rather than within the bracket-arm 3. Also, for a flat bed machine or one in which the feed-post is relatively low, a single continuous belt could be substituted for the belts 60 and 65, and thus eliminate the vertical shaft 62 by the use of two sets of idler pulleys similar to the idler pulleys 66 and 67 but stationary on the arm and the bed of the machine. These and all other similar modifications and equivalents which would occur to those skilled in the art are intended to be included within the purview of the appended claims.

Having thus set forth the nature of my invention, what I claim herein is:

1. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, and a presser-bar mounted for reciprocation in the bracket-arm, said feeding mechanism comprising a feed-wheel rotatably carried by the presser-bar, actuating mechanism for the feed-wheel including a belt having a first portion disposed longitudinally of the bracket-arm and a second portion disposed at an angle to the first portion and to one side of the longitudinal axis of the presser-bar, the latter portion of the belt being entrained about the feed-wheel, and means

to neutralize the side-thrust upon the presser-bar caused by the belt tension.

2. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, and a presser-bar mounted for reciprocation in the bracket-arm, said feeding mechanism comprising a feed-wheel rotatably carried by the presser-bar, actuating mechanism for the feed-wheel including a belt having a first portion disposed longitudinally of the bracket-arm and a second portion disposed at an angle to the first portion and inclined to the longitudinal axis of the presser-bar, the latter portion of the belt being entrained about the feed-wheel, and means to neutralize the side-thrust upon the presser-bar caused by the belt tension.

3. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, and a presser-bar mounted for reciprocation in the bracket-arm, said feeding mechanism comprising a feed-wheel rotatably carried by the presser-bar on an axis inclined to the longitudinal axis of the presser-bar, actuating mechanism for the feed-wheel including a belt having a first portion disposed longitudinally of the bracket-arm and a second portion inclined to the longitudinal axis of the presser-bar, the latter portion of the belt entrained about the feed-wheel at substantially a right angle to the axis thereof, and means to neutralize the side-thrust upon the presser-bar caused by the belt tension.

4. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, and a presser-bar mounted for vertical reciprocation in the bracket-arm, said feeding mechanism comprising a feed-wheel journaled on the lower end of the presser-bar on an axis inclined to the longitudinal axis of the presser-bar, actuating mechanism for the feed-wheel including a belt having a substantially horizontal portion disposed longitudinally of the bracket-arm and a second portion inclined to the longitudinal axis of the presser-bar, the latter portion of the belt being entrained about the feed-wheel at substantially a right angle thereto, and means to neutralize the side-thrust upon the presser-bar caused by the belt tension.

5. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, and a presser-bar mounted for reciprocation in the bracket-arm, said feeding mechanism comprising a feed-wheel rotatably carried by the presser-bar, actuating mechanism for the feed-wheel including a belt having a first portion disposed longitudinally of the bracket-arm and a second portion disposed at an angle to the first portion and to one side of the longitudinal axis of the presser-bar, the latter portion of the belt being entrained about the feed-wheel, a bracket pivoted to the bracket-arm, the pivotal axis of which bracket lies in the plane of the first portion of the belt, idler pulleys carried by the bracket over which the belt is entrained to effect the change of direction of the belt, and a spring-biased compression member abutting at one end against the bracket and at the other end against the axis of the feed-wheel.

6. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, and a presser-bar mounted for reciprocation in the

bracket-arm, said feeding mechanism comprising a feed-wheel rotatably carried by the presser-bar, actuating mechanism for the feed-wheel including a belt having a first portion disposed longitudinally of the bracket-arm and a second portion disposed at an angle to the first portion and to one side of the longitudinal axis of the presser-bar, the latter portion of the belt being entrained about the feed-wheel, a bracket pivoted to the bracket-arm, the pivotal axis of the bracket being in the plane of the first portion of the belt and to one side of the presser-bar and the free end of the bracket being on the other side of the presser-bar, idler pulleys journaled upon the free end of the bracket over which the belt is entrained to effect the change of direction of the belt, and a spring-biased compression member abutting at one end against the bracket and at the other end against the axis of the feed-wheel to neutralize the side-thrust upon the presser-bar caused by the belt tension.

7. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, a presser-bar mounted for reciprocation in the bracket-arm, said feeding mechanism comprising an upper feed-wheel journaled on the lower end of the presser-bar, a lower feed-wheel journaled in the work-supporting surface, and interrelated actuating mechanisms for the upper and lower feed-wheels whereby said feed-wheels will be driven at the same peripheral speed, said actuating mechanism for the upper feed-wheel including a belt having a portion disposed longitudinally of the bracket-arm and a portion inclined to the longitudinal axis of the presser-bar, and means to neutralize the side-thrust upon the presser-bar caused by the belt tension.

8. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, and a presser-bar mounted for reciprocation in the bracket-arm, said feeding mechanism comprising a lower feed-wheel, actuating mechanism for the lower feed-wheel including a shaft adapted to impart intermittent, one-way rotation to said feed-wheel, an intermediate shaft, a belt entrained about the lower feed-wheel shaft and the intermediate shaft, an upper feed-wheel carried by the presser-foot, a second belt entrained about the intermediate shaft and the upper feed-wheel and having a first portion disposed longitudinally of the bracket-arm and a second portion inclined to the longitudinal axis of the presser-bar, and means to neutralize the side-thrust upon the presser-bar caused by the belt tension.

9. Feeding mechanism for a sewing machine having a frame provided with a work-support, a standard and an overhanging bracket-arm, said feeding mechanism comprising an upper feed-wheel, a lower feed-wheel opposed to the upper feed-wheel, a feed-wheel drive-shaft connected to the lower feed-wheel, means including a one-way clutch for imparting intermittent rotary motion to the feed-wheel drive-shaft, a second shaft journaled in said standard, direct drive means connecting the second shaft to said drive-shaft, and means operatively connecting the second shaft to said upper feed-wheel for actuating the upper feed-wheel in unison with the lower feed-wheel.

10. Feeding mechanism for a sewing machine having a frame provided with a work-support, a standard and an overhanging bracket-arm, and

a reciprocatory presser-bar mounted in the bracket-arm, said feeding mechanism comprising an upper feed-wheel, a lower feed-wheel opposed to the upper feed-wheel, a feed-wheel drive-shaft connected to the lower feed-wheel, means including a one-way clutch for imparting intermittent rotary motion to the feed-wheel drive-shaft, a second shaft journaled in said standard, a belt connecting the second shaft to said drive-shaft, and a second belt operatively connecting the second shaft to said upper feed-wheel for actuating the upper feed-wheel in unison with the lower feed-wheel.

11. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, and a presser-bar mounted for reciprocation in the bracket-arm, said feeding mechanism comprising a feed-wheel rotatably carried by the presser-bar, actuating mechanism for the feed-wheel including a belt having a first portion disposed longitudinally of the bracket-arm and a second portion disposed at an angle to the first portion and to one side of the longitudinal axis of the presser-bar, the latter portion of the belt being entrained about the feed-wheel.

12. Feeding mechanism for a sewing machine having a work-supporting surface, a bracket-arm disposed above the work-supporting surface, and a presser-bar mounted for reciprocation in the bracket arm, said feeding mechanism comprising a work-advancing feed-wheel rotatably carried by the presser-bar, actuating mechanism for the feed-wheel including a vertical axis pulley mounted adjacent the upstanding portion of the bracket-arm and a belt, idler pulleys carried by the bracket-arm, said belt being entrained over the idler pulleys and having at one side of the idler pulleys a first portion disposed longitudinally of the bracket and at another side of the idler pulleys a second portion disposed at an angle to the first portion, the first portion of the belt being entrained about the vertical axis pulley and the second portion of the belt being entrained about the feed-wheel.

13. Feeding mechanism for a sewing machine having a work-support, a standard rising from said work-support, a bracket-arm having a free end overhanging said work-support, and a presser-bar mounted for reciprocation in the free end portion of said bracket-arm, said feeding mechanism comprising a work-advancing feed-wheel rotatably carried by the presser-bar, actuating mechanism for the feed-wheel including a vertical-axis pulley mounted adjacent the upper portion of said standard and a belt, a bracket pivoted to the bracket-arm adjacent the presser-bar, idler pulleys journaled in the bracket and a connecting member between the bracket and the feed-wheel, said belt being entrained over the idler pulleys and having at one side of the idler pulley a first portion disposed longitudinally of the bracket-arm and at another side of the idler pulleys a second portion disposed at an angle to the first portion, the first portion of the belt being entrained about said vertical-axis pulley, and the second portion being entrained about the feed-wheel, the pivotal axis of the bracket being so located that the feed-wheel may be raised without disengaging the belt from the pulleys and feed-wheel.

14. Feeding mechanism for a sewing machine having a frame provided with a work-support, a standard and an overhanging bracket-arm, said feeding mechanism comprising an upper feed-

wheel, a lower feed-wheel opposed to the upper feed-wheel, a first shaft journaled longitudinally in said standard, a feed-wheel drive-shaft journaled in said work support substantially parallel to said first shaft and operatively connected to the lower feed-wheel, means including a one-way clutch for imparting intermittent rotary motion to the drive-shaft, direct drive means connecting the drive-shaft to said first shaft, and means operatively connecting the first shaft to said upper feed-wheel for actuating the upper feed-wheel in unison with the lower feed-wheel.

15. Feeding mechanism for a sewing machine having a frame provided with a work-support, a standard and an overhanging bracket-arm, said feeding mechanism comprising an upper feed-wheel, a lower feed-wheel opposed to the upper feed-wheel, a first shaft journaled longitudinally in said standard, a feed-wheel drive-shaft journaled in said work support substantially parallel to said first shaft and operatively connected to the lower feed-wheel, means including a one-way clutch for imparting intermittent rotary motion to the drive-shaft, direct drive means connecting the drive shaft to said first shaft, and a belt operatively connecting the first shaft to said upper feed-wheel for actuating the upper feed-wheel in unison with the lower feed-wheel.

16. In a sewing machine having a work-supporting surface and a bracket-arm overhanging the work-supporting surface, a presser-bar mounted for reciprocation in the bracket-arm, a feed-wheel supporting arm pivotally secured to the presser-bar, a feed-wheel rotatably carried by the arm, and a belt for rotating the feed-wheel, said belt being entrained about said feed-wheel

and including opposed runs lying in a plane substantially parallel to a plane including the axis of the presser-bar, whereby said feed-wheel may be readily swung between operative and inoperative positions without disconnecting said belt therefrom.

17. Feeding mechanism for a sewing machine having a frame provided with a work-support, a standard and an over-hanging bracket-arm, and a reciprocatory presser-bar journaled in the bracket-arm, said feeding mechanism comprising a lower feed-wheel journaled in said work-support, means for imparting intermittent rotary motion of variable amplitude to said lower feed-wheel, a feed-wheel supporting arm pivotally secured to the bracket-arm, an upper feed-wheel journaled in the supporting arm and opposed to said lower feed-wheel, and means including a belt for imparting rotary motion to said upper feed-wheel corresponding to the motion of the lower feed-wheel, said belt having runs lying in a plane substantially parallel to the pivotal axis of said arm to permit swinging the upper feed-wheel to inoperative position without disconnecting said belt from said upper feed-wheel.

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