Dec. 23, 1941. S. ZONIS 2,267,581

LUBRICATING MEANS FOR SEWING MACHINES

Filed Jan. 3, 1940 2 Sheets-Sheet 1

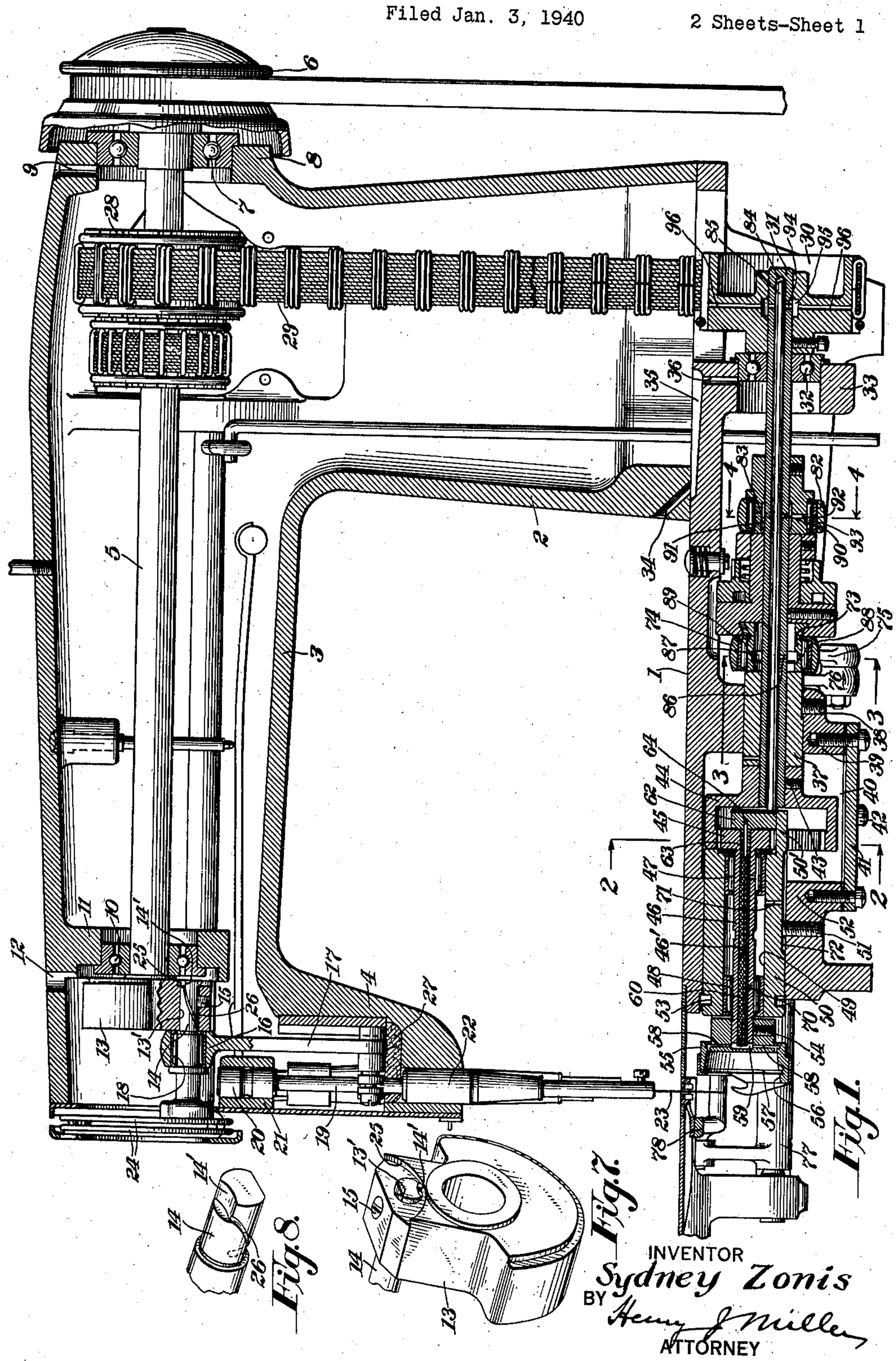

Fig. 1.

Fig. 2.

Fig. 8.

INVENTOR
Sydney Zonis
BY Henry J. Miller
ATTORNEY

Dec. 23, 1941. S. ZONIS 2,267,581

LUBRICATING MEANS FOR SEWING MACHINES

Filed Jan. 3, 1940 2 Sheets-Sheet 2

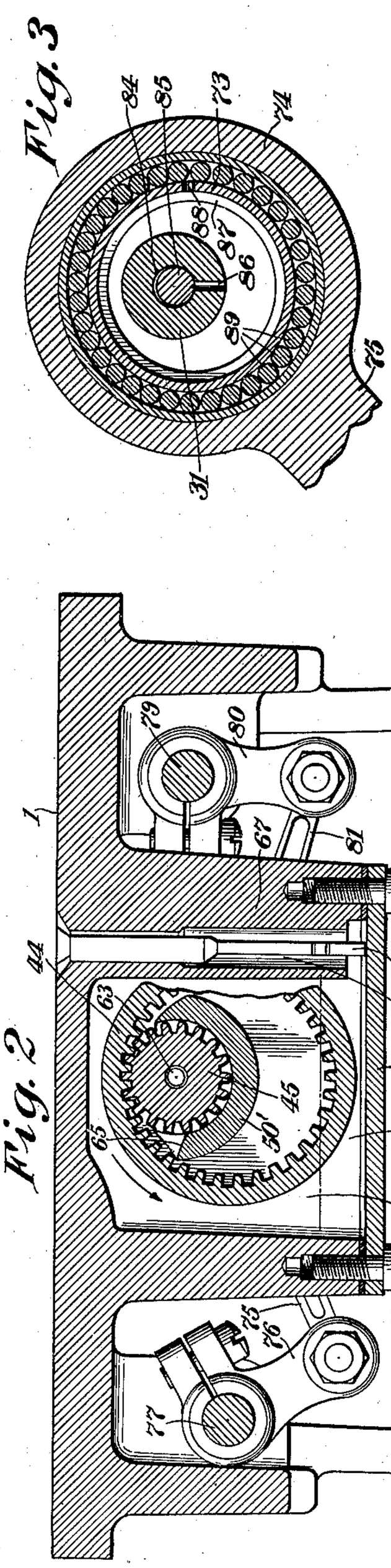

Fig. 2

Fig. 3

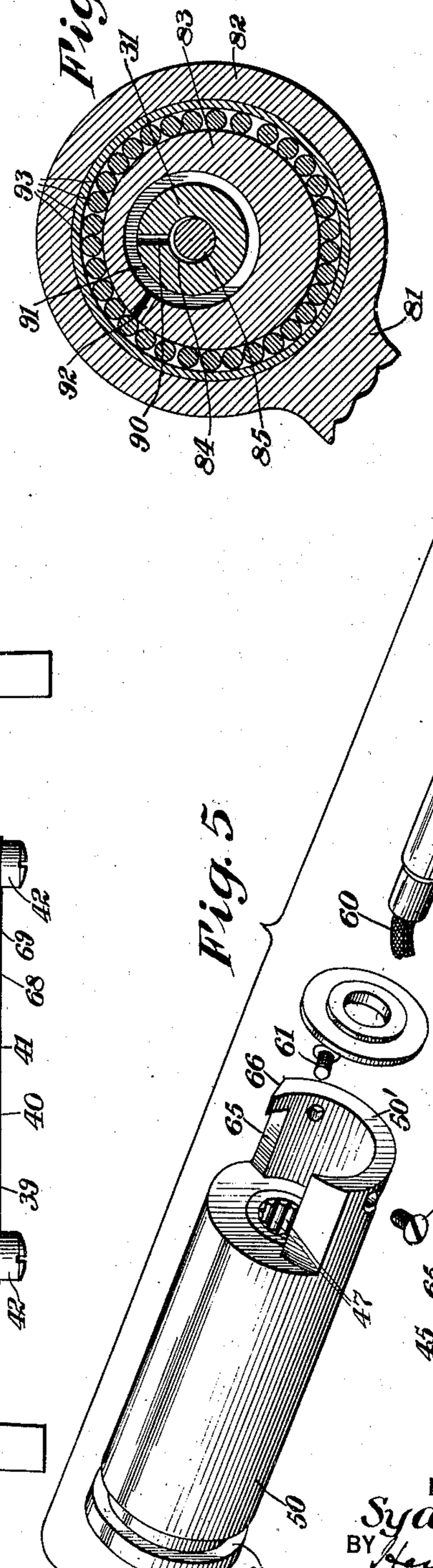

Fig. 4

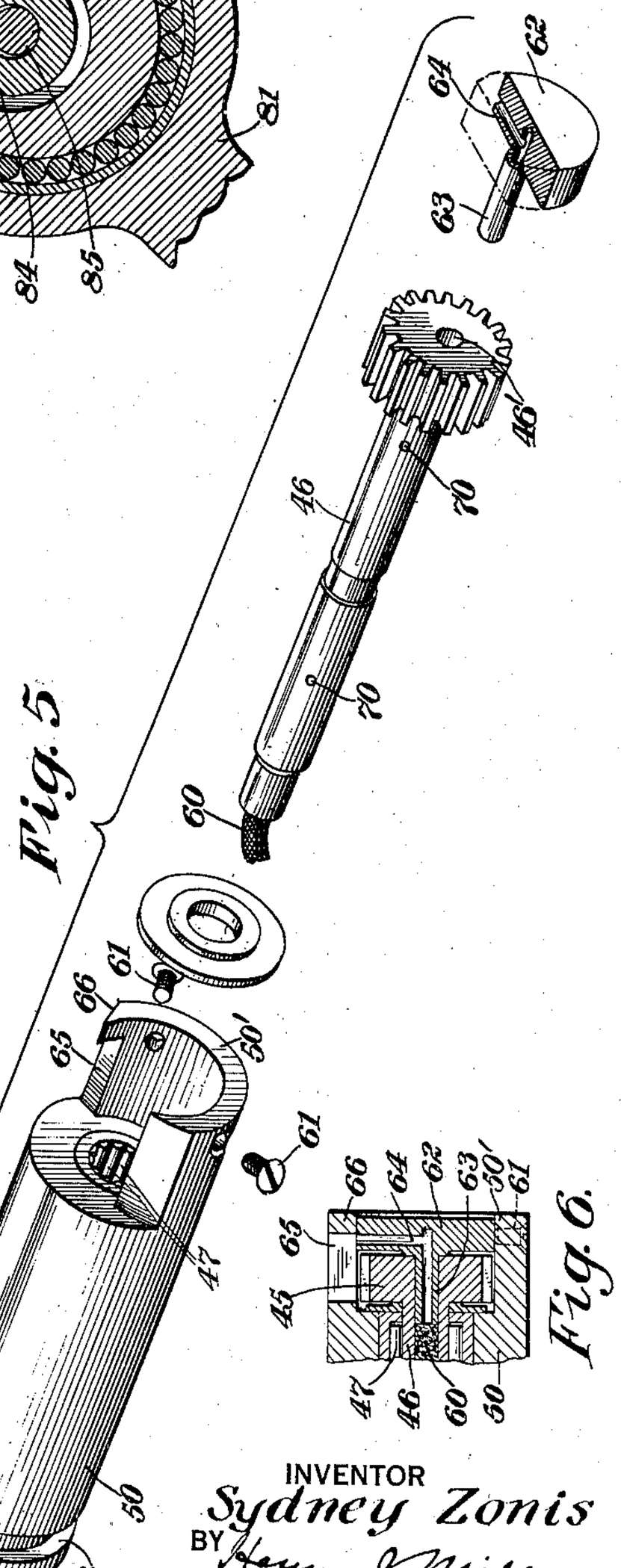

Fig. 5

Fig. 6.

INVENTOR
Sydney Zonis
BY Henry J. Miller
ATTORNEY

Patented Dec. 23, 1941 2,267,581

UNITED STATES PATENT OFFICE

2,267,581

LUBRICATING MEANS FOR SEWING MACHINES

Sydney Zonis, Stratford, Conn., assignor to The Singer Manufacturing Company, Elizabeth, N. J., a corporation of New Jersey

Application January 3, 1940, Serial No. 312,247

16 Claims. (Cl. 112—256)

This invention relates to improvements in sewing machines and has for an object to provide a quiet-running high-speed loop-taker mechanism for sewing machines, together with simple means for adequately lubricating said mechanism automatically.

The invention has for a further object to provide simple but effective means for supplying lubricant automatically to the feed-actuating mechanism of a sewing machine. A further object of the invention is to provide a sewing machine having a hollow bracket-arm with improved means for supplying lubricant to actuating mechanism housed by the bracket-arm.

With these and other objects in view, as will hereinafter appear, the invention consists in the devices, combinations and arrangement of parts described in connection with the accompanying drawings which illustrate a preferred embodiment of the invention and in which:

Fig. 1 represents a vertical longitudinal section of a sewing machine containing the present improvements. Fig. 2 represents a transverse section of the machine bed-plate on substantially the line 2—2 of Fig. 1. Fig. 3 represents an enlarged ross-section of the feed-advance eccentric on substantially the line 3—3 of Fig. 1. Fig. 4 represents an enlarged cross-section of the feed-lift eccentric on substantially the line 4—4 of Fig. 1. Fig. 5 is a disassembled perspective view of the loop-taker shaft bushing and the shaft supported thereby. Fig. 6 represents a horizontal section of the loop-taker shaft bushing and of the pinion partly embraced thereby. Fig. 7 is an enlarged perspective view of the needle-bar reciprocating crank-disk. Fig. 8 is an enlarged perspective view of a portion of the crank-pin carried by the crank-disk of Fig. 7.

The sewing machine illustrated in the drawings has a bed- or cloth-plate 1, from one end of which rises the standard 2 of a hollow bracket-arm 3 overhanging the cloth-plate and terminating at its free end in a head 4.

Rotatably journaled in the bracket-arm 3 is a horizontally-disposed main actuating shaft 5, carrying at one end a belt-pulley 6 disposed directly adjacent a ball-bearing 7 for that end of the shaft 5, the shouldered outer race ring of said ball-bearing being fixed in an apertured boss 8 of the bracket-arm 3. Lubricant may be supplied to the ball-bearing 7 through a duct 9 provided in the upper wall of the boss 8 directly adjacent the inner end of the ball-bearing 7. Adjacent its opposite end, the shaft 5 is journaled in a ball-bearing 10 of which the outer race-ring is suitably fixed in a horizontally apertured lug 11 within the bracket-arm 3, and lubricant may be supplied to said ball-bearing 10 through a duct 12 in the upper wall of the bracket-arm 3.

Carried by the end of the shaft 5, adjacent and spaced slightly from the ball-bearing 10, is a counterbalanced crank-disk 13 which has an aperture 13' receiving a crank-pin 14 secured to the crank-disk by a screw 15 which preferably engages a flattened portion of said crank-pin. The portion of the crank-pin 14 directly adjacent the crank-disk 13 is loosely embraced by an apertured boss 16 at the upper end of a needle-bar link 17, a roller-bearing 18 of the "needle-bearing" type being interposed between the boss 16 and the crank-pin 14. At its lower end the link 17 is pivotally connected to a vertically reciprocatory needle-bar 19 between vertically spaced bearings for said needle-bar. The upper-bearing of the needle-bar 19 comprises a bushing 20 suitably secured in a frame-bracket 21, said bracket being disposed directly below the crank-pin 14 in the lowest position of the latter. The lower needle-bar bearing comprises a bushing 22 suitably secured in the head 4 of the bracket-arm. At its lower end, the needle-bar carries a needle 23.

Secured to the free end of the crank-pin 14 is one of a pair of disks 24 of a rotary take-up device, said disks 24 being concentric with the main-shaft 5 and cooperating with another or rearward pair of take-up disks (not shown) in handling the needle-thread in substantially the manner more fully disclosed in my prior patent application Serial No. 168,553, filed Oct. 12, 1937 which has resulted in U. S. Patent No. 2,191,736 dated February 27, 1940.

The inner side face of the crank-disk 13, in the region of the crank-pin 14, is cut away to provide a segmental and undercut lubricant-catching shoulder 25. The end of the crank-pin 14 which terminates adjacent said lubricant catching shoulder 25 is likewise cut away segmentally to provide a lubricant-entrance recess 14' adjacent the shoulder 25 and connected by a peripheral spiral groove 26 of the crank-pin 14 with the needle-bearing 18. In the usual stopped position of the machine, the needle-bar 19 is approximately at the upper end of its stroke and, in this position, the crank-disk shoulder 25 is disposed directly below the lubricant-duct 12. Consequently, when oil is introduced into said duct 12, it will not only serve to lubricate the ball-bearing 10, but a portion of the oil will also be caught by the crank-disk shoulder 25 and

enter the crank-pin recess 14'. Upon operation of the machine, the oil in the recess 14' will be conducted by the spiral groove 26 to the needle-bearing 18. Excess oil introduced through the duct 12 will drain to the inner bottom wall of the bracket-arm head 4 and will be absorbed by a pad 27 of felt, or other suitable material, disposed so as to be engaged by the lower end of the needle-bar link 17, thereby lubricating the pivotal connection between said link and the needle-bar 19.

The main shaft 5 carries a peripherally grooved pulley 28 connected by a clip-belt 29 disposed within the arm-standard 2, to a grooved pulley 30 carried by one end of a loop-taker and feed-actuating shaft 31 rotating one-to-one with the shaft 5 and disposed below the bed-plate 1 in substantial parallelism with said shaft 5. The shaft 31 has the pulley end portion thereof journaled in a ball-bearing 32, of which the outer race-ring is suitably fixed in a horizontally apertured bearing-lug 33 depending from the bed-plate 1. To supply lubricant to the ball-bearing 32, the arm-standard 2 is provided with an inclined oil-duct 34 terminating in a bed-plate recess 35 which is drained by a duct 36 in the bed-plate lug 33, said duct 36 having its lower end terminating at the inner side face of the ball-bearing 32.

The opposite end portion of the shaft 31 is journaled in a bushing 37 secured by a screw 38 in a wall 39 of a substantially rectangular gear-casing and lubricant reservoir 40 depending from the bed-plate 1, said gear-casing 40 having a bottom closure-plate 41 secured to the rim of the casing by screws, as 42. The shaft 31 extends beyond the bushing 37 to terminate within said gear-casing, and secured upon that end of the shaft, by a screw 43, is the hub of an internal gear 44. Disposed within the flange of said internal gear 44 is a driven pinion 45 in mesh with the teeth of the gear 44, the axis of rotation of the pinion 45 being preferably in the same vertical plane as and above the level of the axis of rotation of the shaft 31. The ratio of the internal gear 44 and pinion 45 is such that said pinion rotates twice for each rotation of the gear 44.

The pinion 45, in the present case, is integral with one end of a horizontally disposed and tubular loop-taker shaft 46 having the opposite end portions thereof rotatably journaled in needle-bearings 47 and 48. The needle-bearings 47 and 48 are disposed in relatively spaced relation in the horizontal aperture 49 of a bushing 50 secured by a set-screw 51 in a suitable aperture in a wall 52 of the gear-casing opposite to the wall 39 thereof. The bushing 50 has a peripheral groove 53 adjacent to and externally of the casing wall 52 for engagement by a tool suitable for manually adjusting the bushing endwise when free of the screw 51.

The end of the loop-taker shaft 46 opposite the pinion 45 extends beyond the bushing 50, and secured upon that end of the shaft 46, by a screw 54, is the hub of a loop-taker 55 of the rotary hook type, said loop-taker being complemental to the needle 23 in the formation of lock-stitches. The loop-taker 55 has a cup-shaped body of which the side wall has a conical inner face 56 divergent toward the rim of the loop-taker body, said side wall being provided with the usual thread-carrier raceway 57. The base of the rotary loop-taker has radial oil-ducts 58 extending in opposite directions from a central oil-cavity 59 in the loop-taker body, said oil ducts 58 being connected by suitable ducts with the inner face 56 of the loop-taker. A wick 60 is disposed in the bore 46' of the tubular loop-taker shaft 46 and serves to feed oil lengthwise of said shaft into the oil-cavity 59, from which the oil is conducted by centrifugal force to the loop-taker raceway 57.

The end portion of the bushing 50, disposed within the gear-casing 40, is partly cut away to provide a substantially U-shaped bushing-extension 50' which partly embraces the pinion 45 and affords the necessary clearance for driving engagement of said pinion by the internal gear 44. Secured by screws 61 in the bushing-extension 50', at the side of the pinion 45 opposite to the loop-taker shaft 46, is a segmental block 62, which is rounded to fit the extension 50' and has its upper portion cut away to provide clearance for the internal gear 44.

Extending horizontally from a side face of the block 62 and freely into the open end of the tubular loop-taker shaft 46 disposed within the gear-casing 40, is a tubular oil-conduit 63, and the block 62 is provided with a horizontally radial duct 64 disposed substantially normal to and connected with the conduit 63. The outer end of the duct 64 terminates in the peripheral face of the block 62 directly adjacent the rear rim 65 of the bushing extension 50', said rim extending lengthwise horizontally and being widthwise beveled downwardly and inwardly to form a lubricant runway in conjunction with the teeth of the adjacent pinion 45, as illustrated in Fig. 2 of the drawings. The runway 65 terminates in a shoulder 66 provided at the free end of the bushing-extension 50', thereby to obstruct the flow of oil along the runway in the region of the block-aperture 64. Excess oil supplied to the runway 65 will escape over the side edges thereof within the internal gear 44.

As illustrated in Fig. 2 of the drawings, an enlarged portion of the front wall 67 of the gear-casing 40 is partly cut away at the lower end of the wall and is spaced from the bottom closure plate 41, and said enlarged portion of the wall 67 is provided with a shouldered lubricant-supplying aperture 68 extending vertically from the upper face of the bed-plate 1 to terminate in said cut away portion of the wall 67. Removably disposed in said aperture 68 is a shouldered and preferably partly flattened oil-supply measuring rod 69 adapted to contact the bottom closure plate 41 when the upper end of the rod is substantially flush with the upper face of the bed-plate 1.

Lubricant is supplied to the gear-casing 40 through the aperture 68 and preferably to the level indicated by the dot-dash line of Fig. 2, whereby the bushing extension 50' is disposed above the level of the lubricant supply and the internal gear 44 dips into said supply. The internal gear 44 rotates in the direction of the arrow shown in Fig. 2 and the gear teeth thereof serve as carriers for the lubricant. A portion of the lubricant carried by the teeth of the internal gear 44 is squeezed out of said teeth at the point of intermeshing engagement of the teeth of the pinion 45 with the teeth of said gear 44. However, a portion of the lubricant is carried by the intermeshing gear and pinion teeth beyond the intermeshing point of said teeth and is discharged upon the runway 65. Consequently, the intermeshing pinion 45 and gear 44 serve, in a sense, to measure the quantity of oil discharged

upon the runway **65**, from which the oil is supplied by means of the duct **64** and conduit **63** into the bore of the tubular loop-taker shaft **46** and to the wick **60** in said shaft. As before explained, the wick **60** feeds the oil lengthwise of the loop-taker shaft into the oil-cavity **59** of the rotary loop-taker, from which cavity the oil is conducted to the loop-taker raceway **57**.

The loop-taker shaft **46** is provided with radial apertures, as **70**, open to the needle-bearings **47**, **48** to supply oil to said bearings. Excess oil supplied to the needle-bearings **47**, **48** and discharged therefrom into the bushing-aperture **49** is drained through a duct **71** in said bushing and is free to flow back into the gear-casing along a flattened groove **72** provided in the outer face of said bushing and engaged by the set-screw **51**. It will be understood, of course, that the major portion of the excess oil supplied to the bore **46'** of the loop-taker shaft will be discharged by centrifugal force through the radial aperture **70** proximate to the pinion end of said shaft. Consequently, the likelihood of oil leakage from the loop-taker shaft bearing adjacent the loop-taker **55** is minimized.

The work is advanced past the stitch-forming mechanism by feeding means which is, in general, the same in construction as that disclosed in my prior Patent No. 2,151,308, Mar. 21, 1939. The feeding mechanism includes a feed-advance eccentric **73** adjustably carried by the shaft **31** and embraced by the strap **74** of the pitman **75** pivotally connected to the crank-arm **76** of the feed-advance rock-shaft **77**. The rock-shaft **77** is operatively connected to the feed-dog carrying bar **78** deriving rising and falling movements from the feed-lift rock-shaft **79**, said feed-lift rock-shaft carrying the crank-arm **80** pivotally connected to the pitman **81** having a strap **82** embracing a feed-lift eccentric **83** carried by the shaft **31**.

In the present machine, the rotary shaft **31** is provided with a longitudinal bore **84** extending from the end of said shaft within the gear-casing **40** and closed at the opposite end of said shaft. Loosely disposed in the shaft-bore **84** is a substantially straight lubricant-conducting rod **85** which preferably has a slightly smaller diameter than that of the shaft-bore **84**. The rod **85** preferably extends from the closed end of the shaft-bore **84**, within the hub of the pulley **30**, to and slightly beyond the opposite end of the shaft to protrude slightly therefrom within the internal gear **44**. In the operation of the machine, flying particles of oil within the internal gear **44** will adhere to the rod **85**, enter the shaft-bore **84** and will be conducted by capillary action between the rod and shaft lengthwise of the bore of the shaft **31** to the opposite end of said bore.

The shaft **31** is provided, within the feed-advance eccentric **73**, with a radial oil-duct **86** and the inner face of the eccentric **73** has a circumferential groove **87** opposite to the oil-duct **86**. The eccentric **73** also has an oil-duct **88** connecting the groove **87** with a needle-bearing **89** interposed between the outer face of the eccentric **73** and the pitman-strap **74**. By means of this arrangement, a portion of the lubricant in the bore **84** of the shaft **31** is centrifugally supplied to the needle-bearing **89**.

The shaft **31** has another radial oil-duct **90** within the feed-lift eccentric **83**, and the inner face of the latter is provided with a circumferential groove **91** opposite to said aperture **90**. The feed-lift eccentric **83** also has an oil-duct **92** connecting the groove **91** with a needle-bearing **93** interposed between the eccentric **83** and the pitman-strap **82** embracing the same. Consequently, the needle-bearing **93** is also supplied with lubricant from the bore **84** of the shaft **31**, through the oil-duct **90** of the shaft, and the groove **91** and oil-duct **92** of the feed-lift eccentric **83**.

Within the hub of the pulley **30**, the shaft **31** has a diametral oil-duct **94** open at its opposite ends to a circumferential groove **95** provided in the shaft-aperture face of said pulley hub. The pulley **30** has a diametral oil-duct **96** connecting the groove **95** of the pulley **30** with the outer periphery thereof, thereby providing means for supplying oil from the shaft-bore **84** to the clip-belt **29**. Obviously, only a very small quantity of oil is supplied to the belt **29** by the oil feeding means described. The oil taken up by the belt **29** from the pulley **30** is, in the main, thrown off by the belt in its travel, thereby creating within the bracket-arm **2**, **3**, a fine lubricant mist which finds its way to the bearings housed by said bracket-arm. Consequently, inadvertent neglect to supply lubricant to said bearings through the frame oil-ducts provided for the purpose is not fatal to continued successful operation of the machine. In fact, the provision for direct lubrication of the bearings within the bracket-arm comprises primarily a safety factor.

It is believed that the present improvements will be clearly understood from the foregoing description. The housing of the internal-gear **44** and pinion **45** in a gear-casing which constitutes an oil-reservoir insures adequate lubrication of the intermeshing gear and pinion, and provides a silent running and durable means for driving the rotary loop-taker a plurality of times for each needle reciprocation. The arrangement described furthermore provides simple means for automatically lubricating the thread-carrier raceway of the rotary loop-taker and other operating mechanism of the machine. Consequently, manual lubrication of the mechanism is minimized and requires only infrequent attention on the part of the sewing machine operator.

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

1. In a sewing machine, a rotary loop-taker, a casing providing a lubricant-supply chamber, a loop-taker carrying shaft extending through a wall of said casing, a pinion carried by said shaft within said casing, a rotary actuating shaft extending into said chamber through a wall of said casing opposite to said first mentioned wall, and an internal-gear carried by said actuating shaft in driving engagement with said pinion and having the teeth thereof adapted to dip into a supply of lubricant within said casing.

2. A sewing machine having a horizontally disposed bed-plate, casing walls depending from said bed-plate, a bottom closure-plate detachably secured to said casing walls and providing there with a lubricant-chamber, a horizontal-axis rotary loop-taker shaft journaled in one of the walls of said casing, a pinion carried by said shaft and disposed within said casing, a horizontal-axis rotary actuating shaft journaled in a wall of said casing opposite to said first mentioned wall, an internal-gear carried by said actuating shaft and in driving enagement with said pinion within said casing, said internal gear having the teeth thereof adapted to dip into a supply of lubricant in said chamber, and a vertically disposed filling aperture in a wall of said

casing, the lower end of said filling aperture being disposed in proximity to and spaced vertically from said bottom closure-plate.

3. In a sewing machine, a rotary loop-taker having a thread-carrier raceway, a casing providing a lubricant-supply chamber, an internal-gear disposed within said casing and having the teeth thereof adapted to dip into a supply of lubricant within the casing, means for rotating said internal-gear, a bushing removably secured in a wall of said casing, a loop-taker carrying shaft rotatably journaled in said bushing, a pinion carried by said loop-taker shaft and disposed within said internal-gear for engagement thereby, a lubricant-catching device provided upon said bushing within said internal-gear and disposed above the level of the supply of lubricant in said casing, and lubricant-conducting means connecting said lubricant-catching device with said raceway.

4. In a sewing machine, a rotary loop-taker having a thread-carrier raceway, a casing providing a lubricant-supply chamber, an internal-gear disposed within said casing and having the teeth thereof adapted to dip into a supply of lubricant within the casing, means for rotating said internal-gear, a loop-taker shaft, a pinion carried by said loop-taker shaft and engaged by said internal-gear, a lubricant-catching device disposed within said internal-gear above the level of the supply of lubricant in said casing, and lubricant-conducting means connecting said lubricant-catching device with said loop-taker raceway.

5. In a sewing machine, a rotary loop-taker having a thread-carrier raceway, a casing providing a lubricant-supply chamber, a loop-taker carrying shaft, a pinion carried by said shaft within said casing, an internal-gear in driving engagement with said pinion and having the teeth thereof adapted to dip into a supply of lubricant within said casing, means for rotating said internal-gear, a stationary lubricant-catching device disposed within said internal-gear at the teeth-disengaging side of said pinion, and lubricant-conducting means connecting said lubricant-catching device with said raceway.

6. In a sewing machine, a rotary loop-taker having a thread-carrier raceway, a casing providing a lubricant-supply chamber, an internal-gear disposed within said casing and having the teeth thereof adapted to dip into a supply of lubricant within the casing, means for rotating said internal-gear, a loop-taker carrying shaft having a longitudinal bore connected with said raceway, a pinion carried by said loop-taker shaft within and engaged by said internal gear, a lubricant-catching device disposed within said casing between said gear and pinion, and means for conducting lubricant from said lubricant-catching device into said bore of the loop-taker shaft.

7. In a sewing machine, a rotary loop-taker having a thread-carrier raceway, a casing providing a lubricant-supply chamber, an internal-gear disposed within said casing and adapted to dip into a supply of lubricant within the casing, means for rotating said internal-gear, a bushing removably supported by a wall of said casing, a loop-taker carrying shaft rotatably journaled in said bushing, a pinion carried by said loop-taker shaft within said casing for engagement by said internal-gear, a lubricant-catching device carried by said bushing and disposed within said casing above the level of the supply of lubricant therein, and lubricant-conducting means connecting said lubricant-catching device with said raceway.

8. In a sewing machine, a rotary loop-taker having a thread-carrier raceway, a casing providing a lubricant-supply chamber, an internal-gear disposed within said casing and adapted to dip into a supply of lubricant within the casing, means for rotating said internal-gear, a loop-taker carrying shaft having a longitudinal bore connected with said raceway, a pinion carried by said loop-taker shaft within and engaged by said internal gear, a lubricant-catching device disposed within said internal gear above the level of the supply of lubricant in said casing, and means disposed within said casing for conducting lubricant from said lubricant-catching device into said bore of the loop-taker shaft.

9. In a sewing machine, a rotary loop-taker having a thread-carrier raceway, a casing providing a lubricant-supply chamber, an internal-gear disposed within said casing and adapted to dip into a supply of lubricant within the casing, means for rotating said internal-gear, a loop-taker carrying shaft having a longitudinal bore connected at one end with said raceway and terminating at its opposite end within said internal gear above the level of the supply of lubricant in said casing, a lubricant-catching device disposed within said casing above the level of the supply of lubricant therein, and means for conducting lubricant from said catching device into the end of the loop-taker shaft bore disposed within said internal-gear.

10. In a sewing machine, a rotary loop-taker having a thread-carrier raceway, a casing providing a lubricant-supply chamber, an internal-gear disposed within said casing and adapted to dip into a supply of lubricant within the casing, means for rotating said internal-gear, a loop-taker carrying shaft having a longitudinal bore connected at one end with said raceway and terminating at its opposite end within said internal gear above the level of the supply of lubricant in said casing, a lubricant-catching device disposed within said casing above the level of the supply of lubricant therein, and a tubular lubricant-conduit connected with said lubricant-catching device and extending into the end of the loop-taker shaft bore disposed within said internal-gear.

11. In a sewing machine, a rotary loop-taker having a thread-carrier raceway, a loop-taker carrying shaft provided with a longitudinal bore connected with said raceway, a casing providing a lubricant-supply chamber, a pinion carried by said shaft within said casing, an internal-gear in driving engagement with said pinion and adapted to dip into a supply of lubricant within said casing, means for rotating said internal-gear, a stationary lubricant-catching device disposed within said casing above the level of the supply of lubricant therein, a supporting member disposed within said internal-gear between said pinion and the hub of said gear, a lubricant-conduit carried by said member and extending into said loop-taker shaft bore endwise thereof, and lubricant-conducting connections between said lubricant-catching device and said conduit.

12. In a sewing machine, a rotary actuating shaft provided with a longitudinal bore and with a radial oil-duct leading from said bore, a bearing having lubricant-conducting connections with said oil-duct, means for conducting oil

longitudinally of said shaft-bore toward said oil-duct comprising a substantially straight rod loosely disposed for sidewise movement in the bore of said shaft into engagement with the inner wall of the shaft, and means spaced from said oil-duct longitudinally of said shaft to supply oil to said rod.

13. In a sewing machine, a rotary actuating shaft provided with an open-end longitudinal bore and with a radial oil-duct leading from said bore, a bearing having lubricant-conducting connections with said oil-duct, means for conducting oil longitudinaly of said shaft-bore comprising a subtantially straight rod loosely disposed for sidewise movement in the bore of said shaft into engagement with the inner wall of the shaft, said rod extending from the open end of the shaft-bore toward said oil-duct, and means for supplying oil to said rod at the open end of the shaft-bore.

14. In a sewing machine, a rotary actuating shaft provided with an open-end longitudinal bore and with a radial oil-duct leading from said bore, an eccentric carried by said shaft and provided with an oil-duct, the oil-duct of said eccentric being disposed therein to receive oil from the oil-duct of said shaft and to discharge the oil between the outer face of the eccentric and the inner face of said strap, means for conducting oil longitudinally of said shaft-bore comprising a substantially straight rod loosely disposed for sidewise movement in the bore of said shaft into engagement with the inner wall of the shaft, said rod extending from the open end of the shaft-bore toward said shaft oil-duct, and means for supplying oil to said rod at the open end of the shaft-bore.

15. A sewing machine having a frame including a hollow bracket-arm, actuating mechanism including bearings disposed in said bracket-arm, and means for creating a lubricant mist in said bracket-arm comprising a rotary actuating shaft having a longitudinal bore and a radial oil-duct connected with said bore, a belt-pulley carried by said shaft and having a radial oil-duct connected with said shaft oil-duct, a rotary shaft journaled in said bracket-arm, a pulley carried by the bracket-arm shaft, a belt connecting said pulleys, and means for introducing oil into the bore of said shaft.

16. A sewing machine having a frame including a hollow bracket-arm, actuating mechanism including bearings disposed in said bracket-arm, and means for creating a lubricant mist in said bracket-arm comprising a rotary actuating shaft having a longitudinal bore and a radial oil-duct connected with said bore, a belt-pulley carried by said shaft and having a radial oil-duct connected with said shaft oil-duct, a rotary shaft journaled in said bracket-arm, a pulley carried by the bracket-arm shaft, a belt connecting said pulleys, a substantially straight rod loosely disposed for sidewise movement in the bore of said shaft into engagement with the inner wall of the shaft, said rod extending toward the radial aperture thereof, and means for supplying lubricant to said rod.

SYDNEY ZONIS.